

Assimilation of Odin/SMR data.

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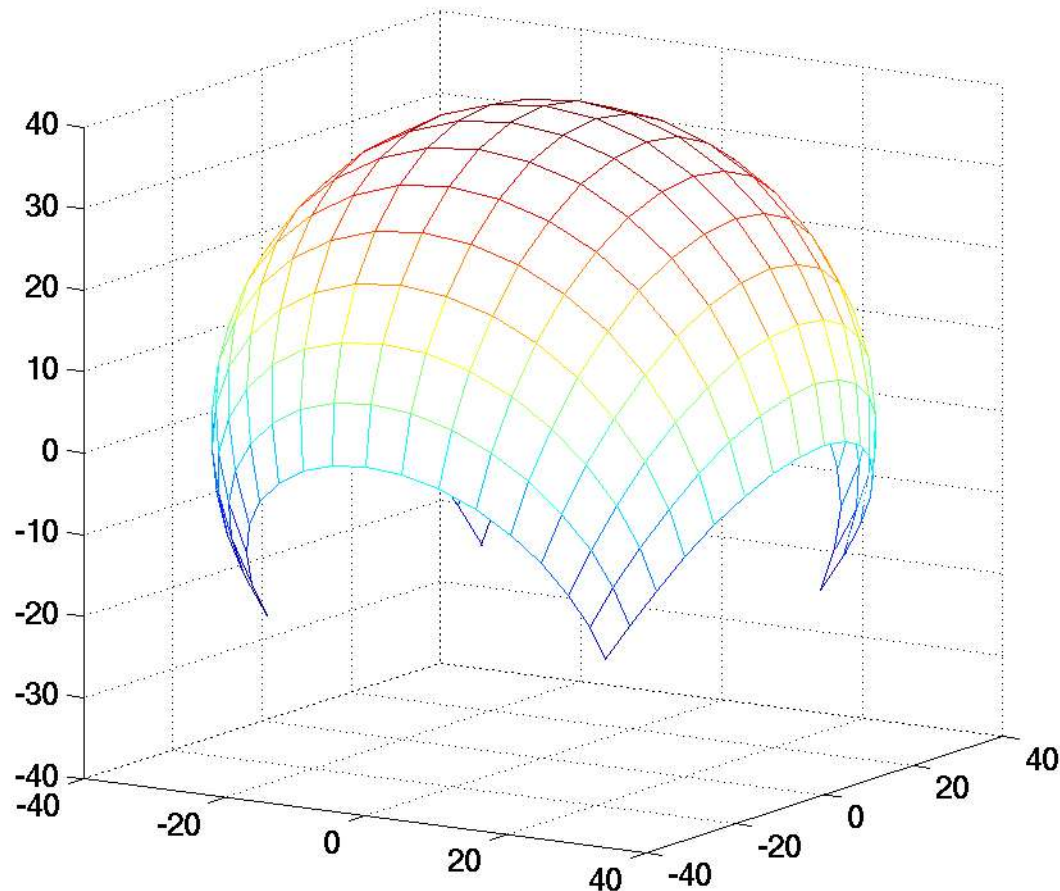
The DIAMOND model

(Dynamic Isentropic Assimilation model for Odin Data)

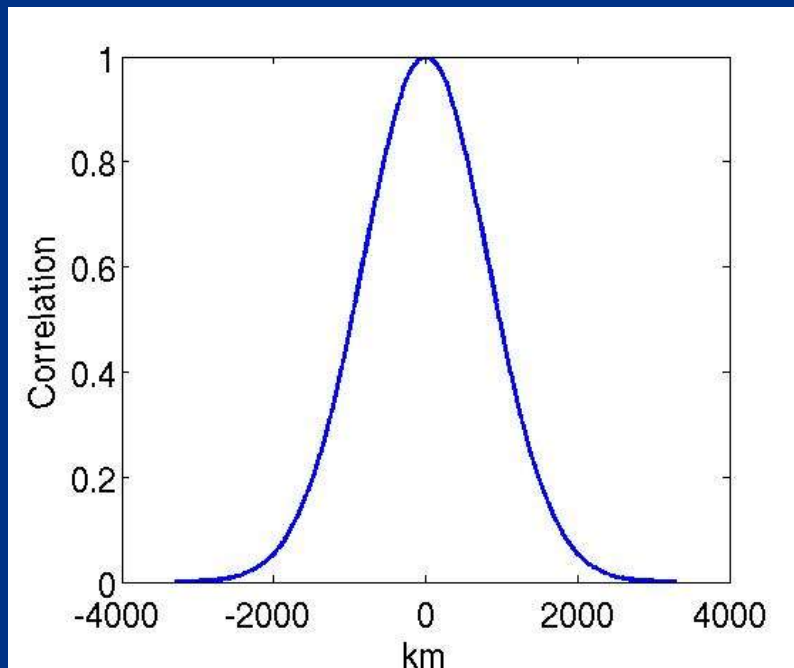
- Forecast model:
 - Transport on isentropic surfaces. (Constant PT)
 - Prather transport scheme
 - Square grid dedicated for the poles
 - ECMWF winds
- Assimilation scheme:
 - Statistical interpolation / Kalman Filtering
 - Transported analysis errors

Horizontal Grid.

167x167 km

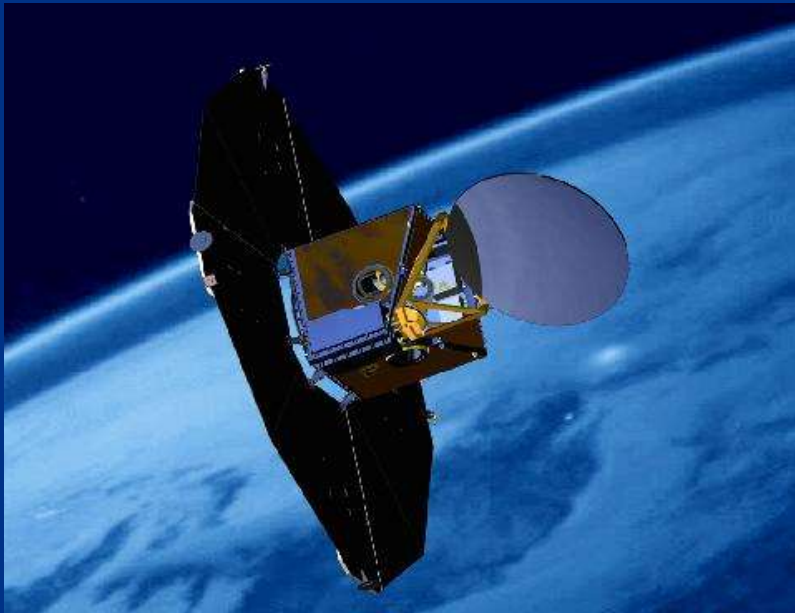


Assimilation Scheme



- Sequential.
- Kalman Filter.
- Eulerian transport of error-variances.
- Correlation between grid-points is estimated using a Gaussian function of distance.

Odin/SMR



- Limb Scanning Sub-Millimetre Radiometer
- 501.5 GHz (v2.1)
- Ozone, N₂O, ClO, HNO₃
- 17-70 km

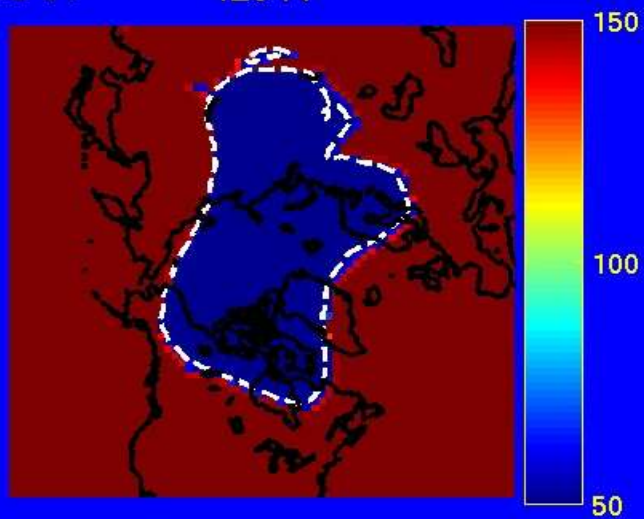
The DIAMOND model has been used for estimating:

- Transport accross the border of the polar vortex.
- Decent rates in the polar vortex.
- Ozone loss rates within the vortex.

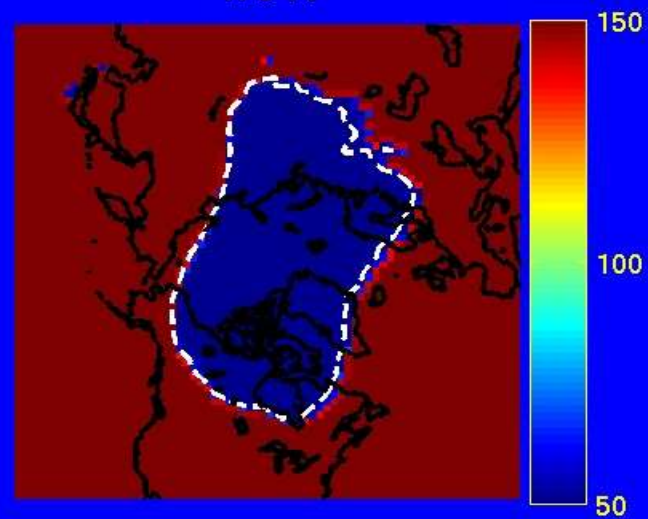
Estimates of transport into the
Arctic polar vortex during
February and March of 2005.

2005-02-01

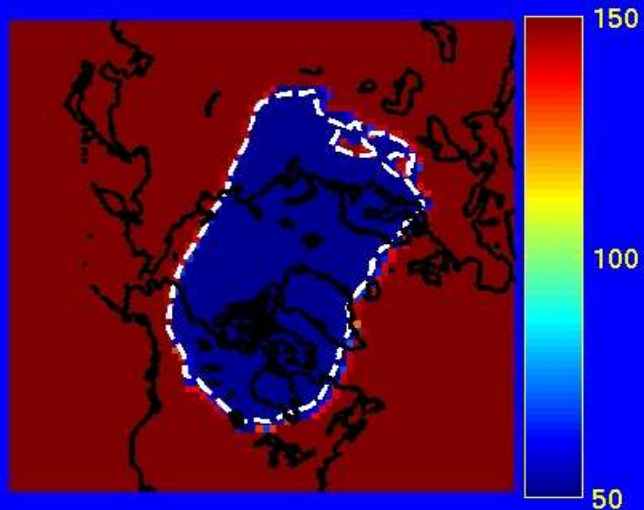
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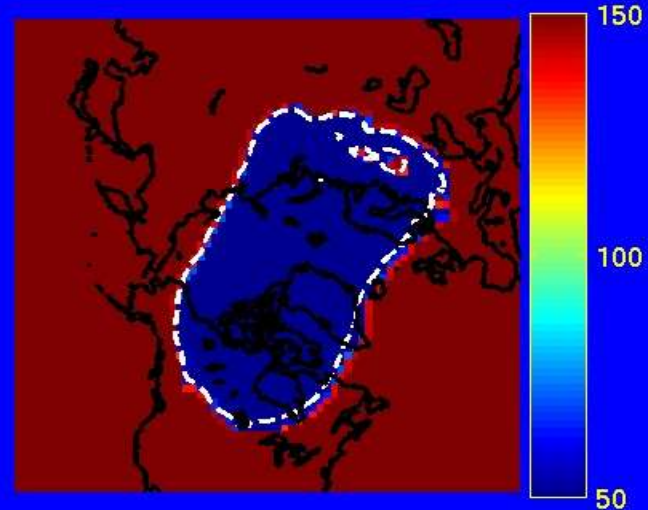
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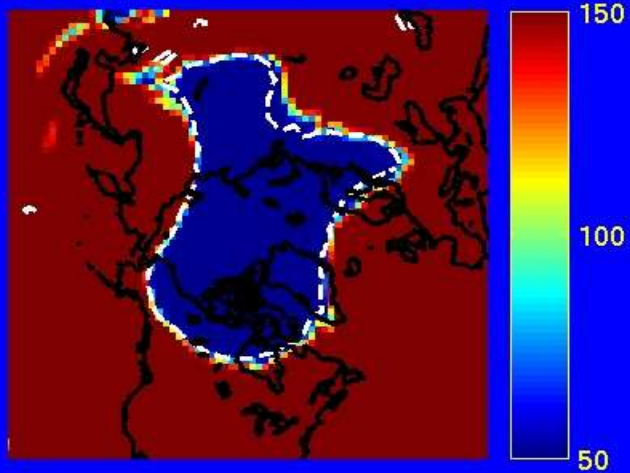


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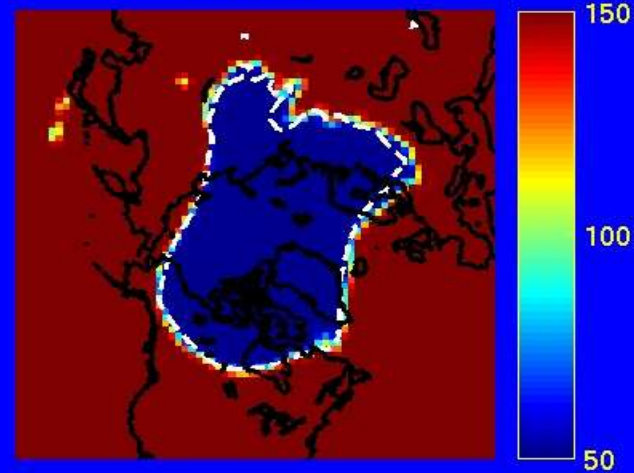


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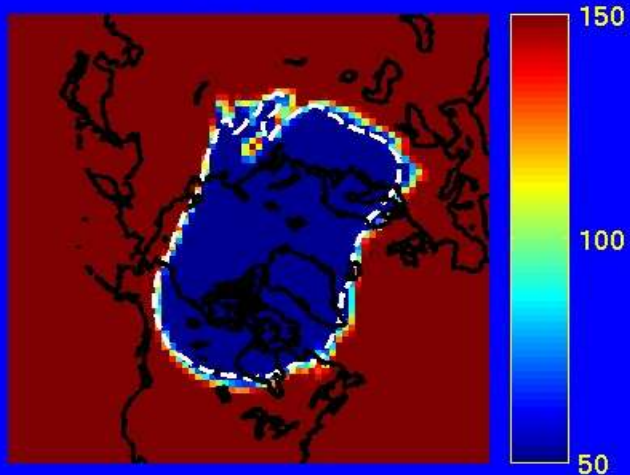
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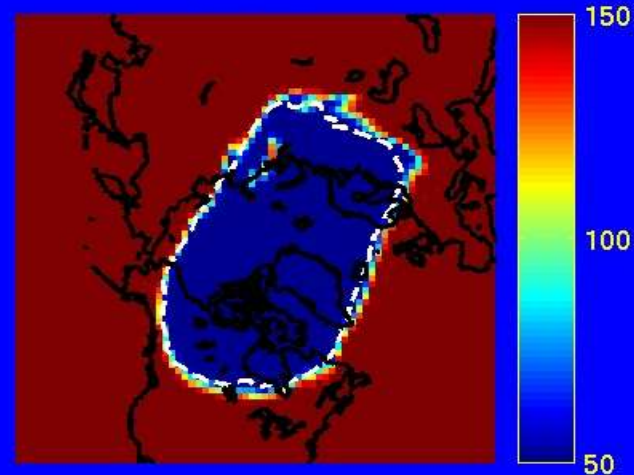
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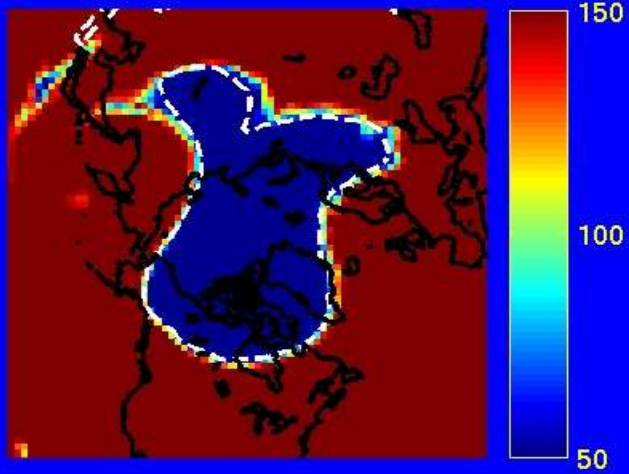


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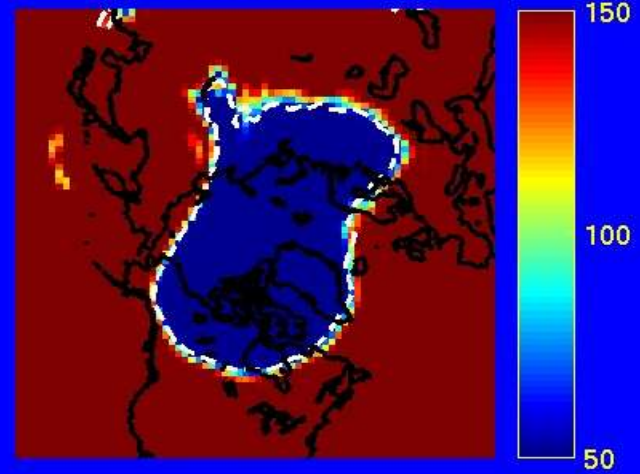


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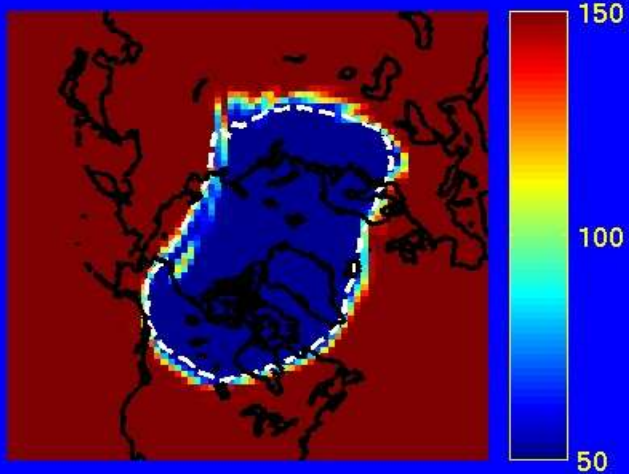
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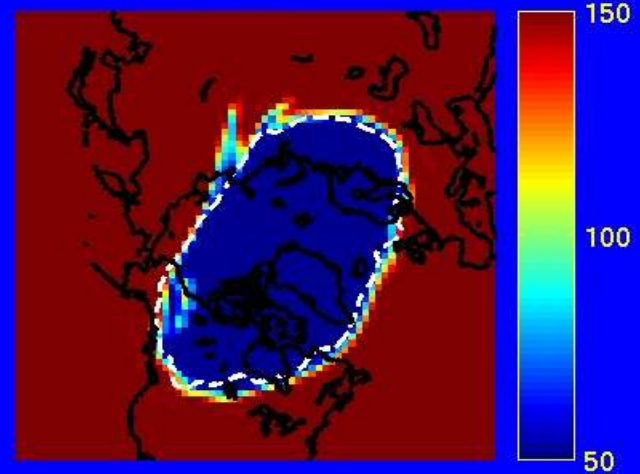
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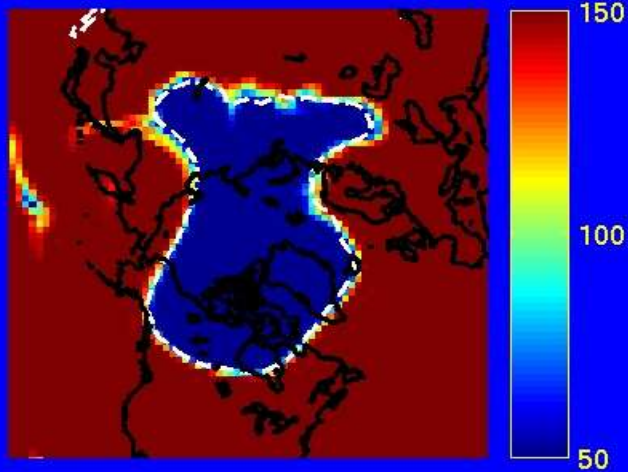


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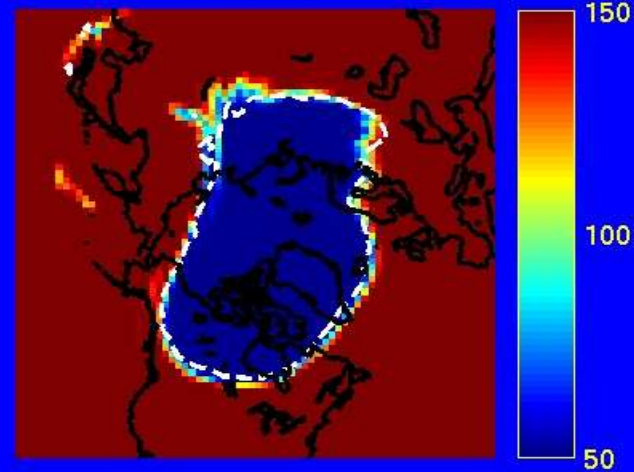


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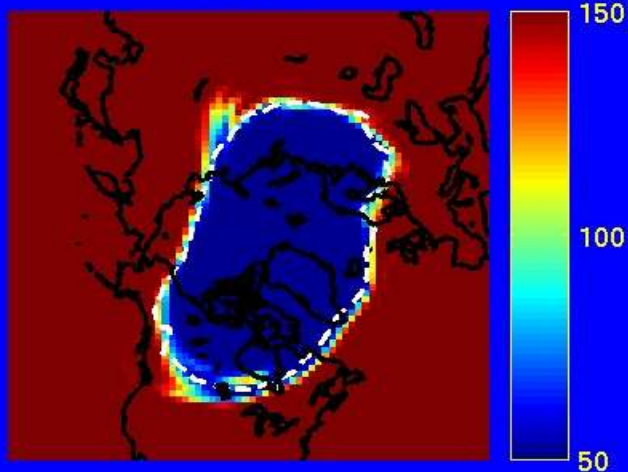
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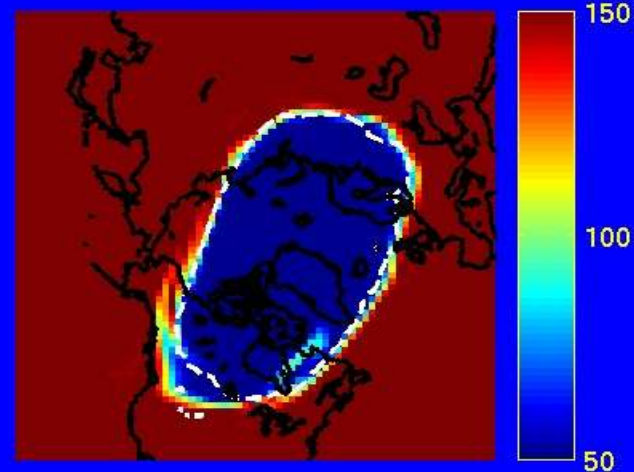
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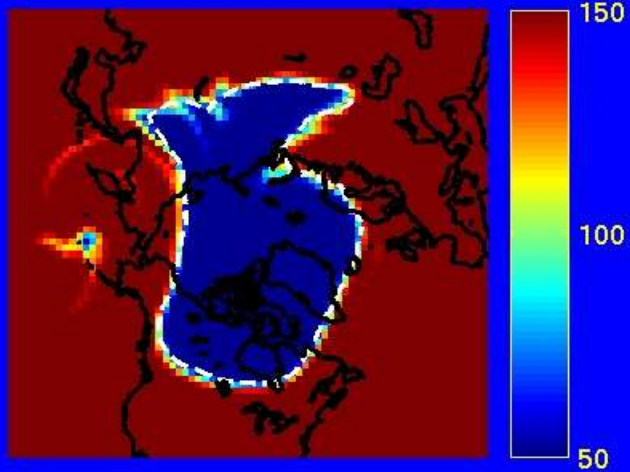


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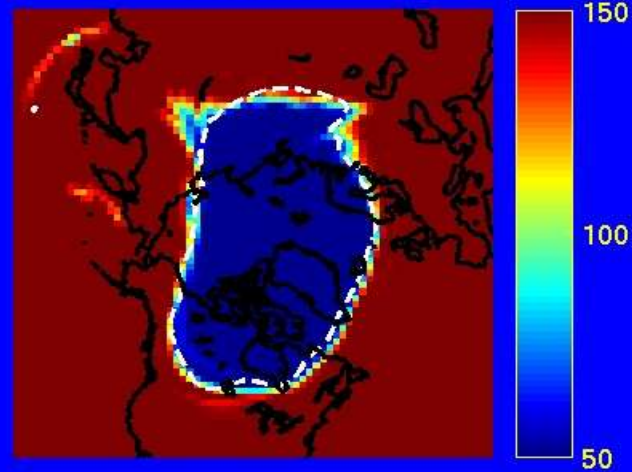


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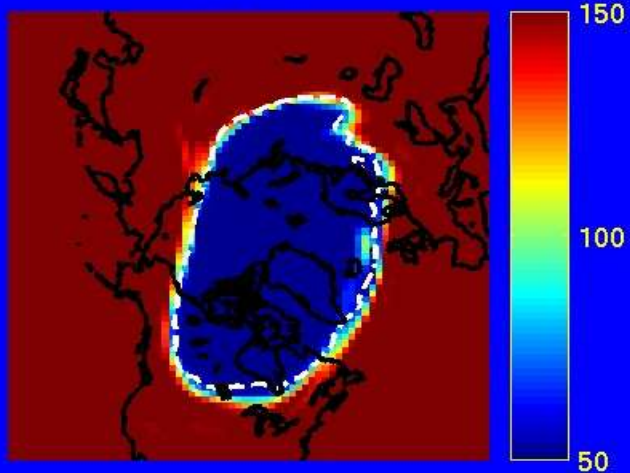
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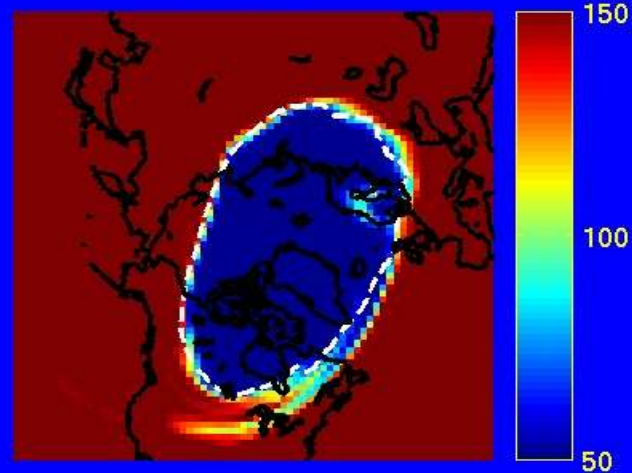
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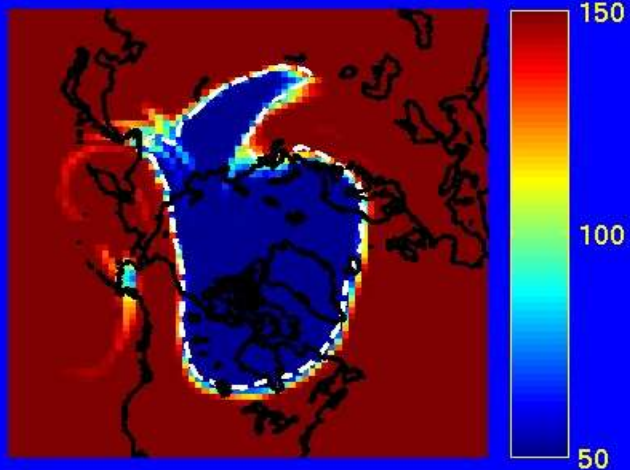


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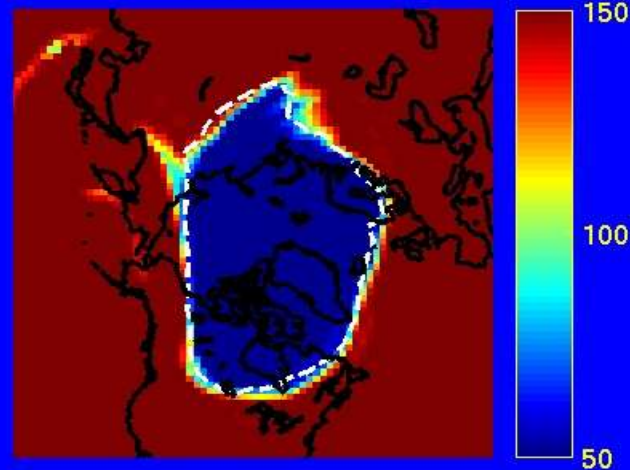


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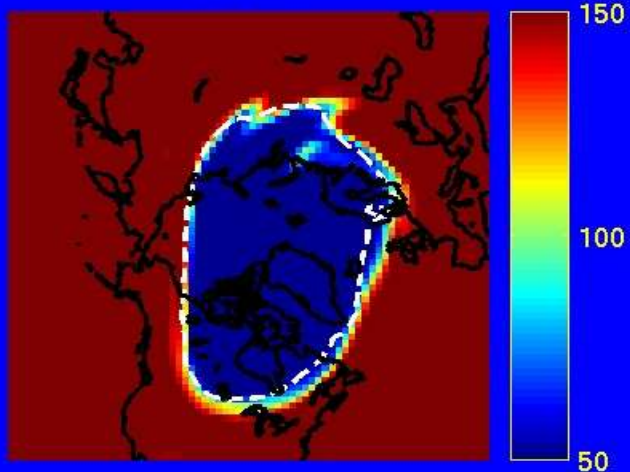
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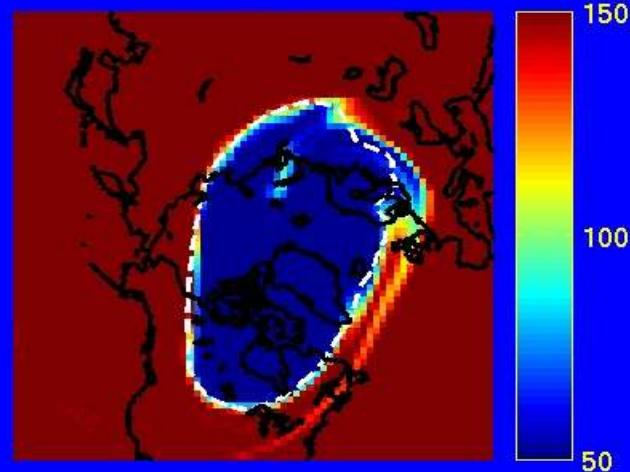
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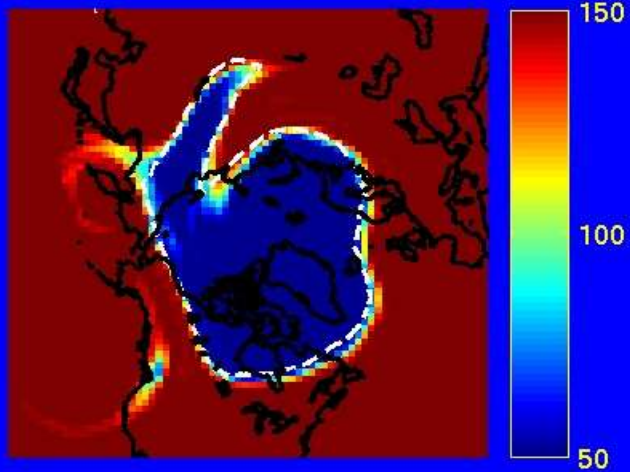


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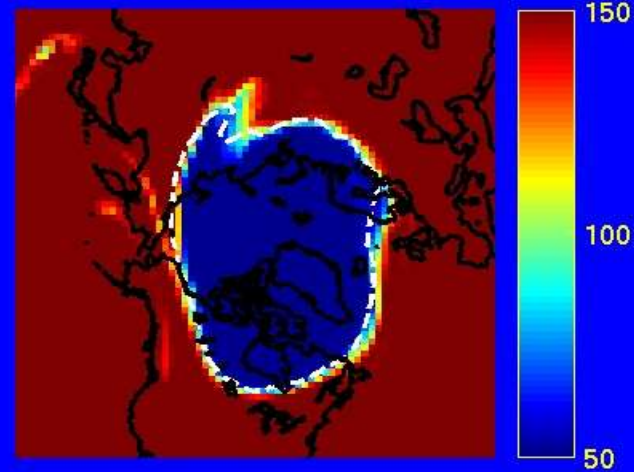


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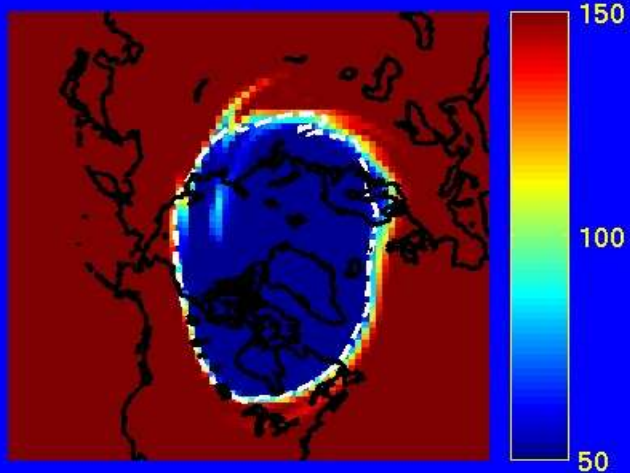
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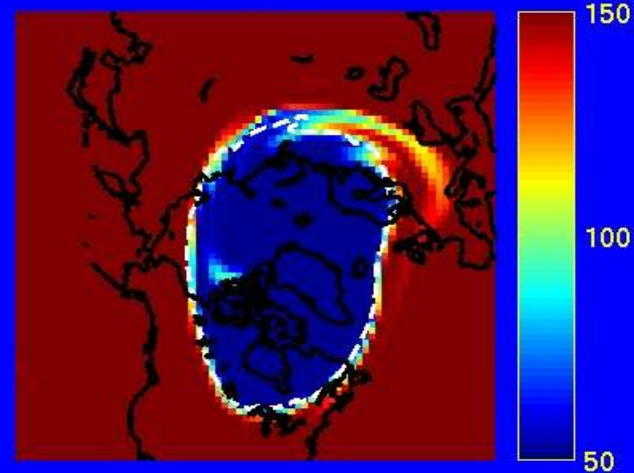
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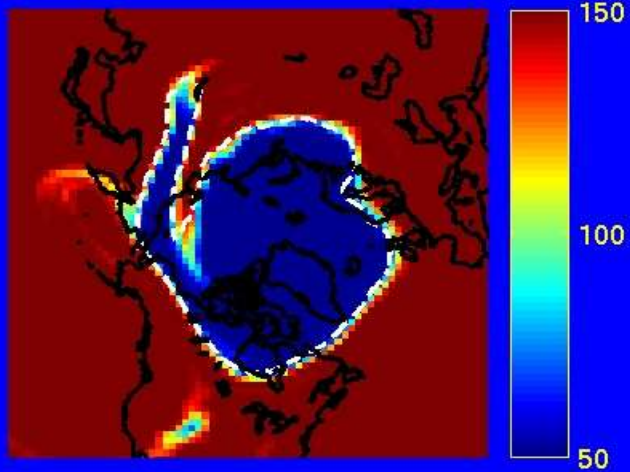


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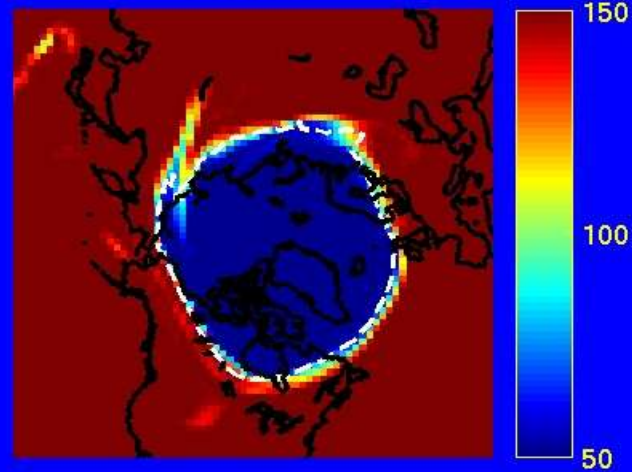


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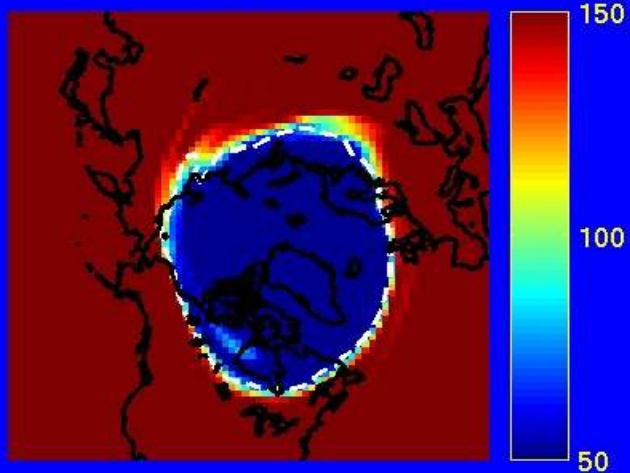
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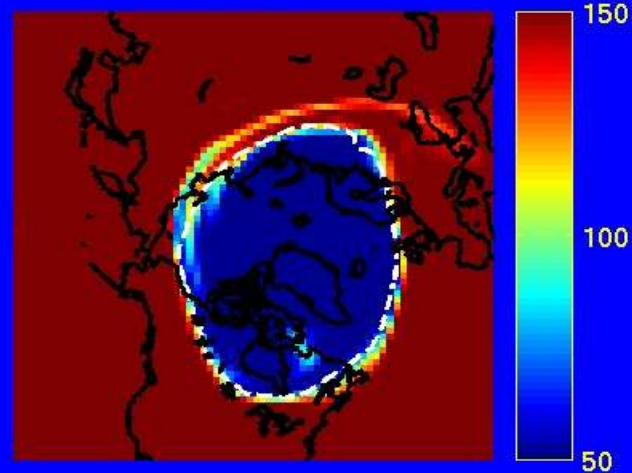
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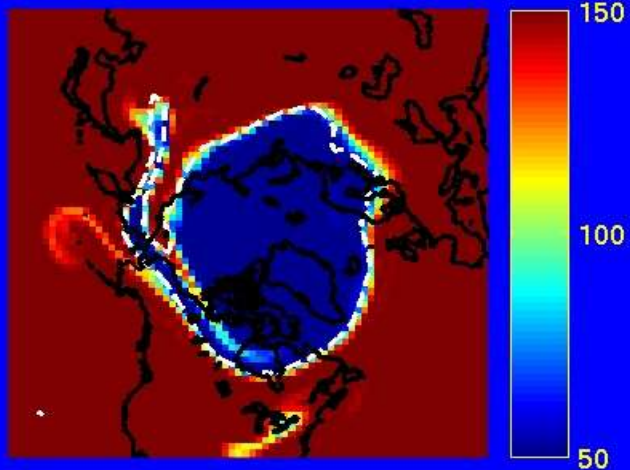


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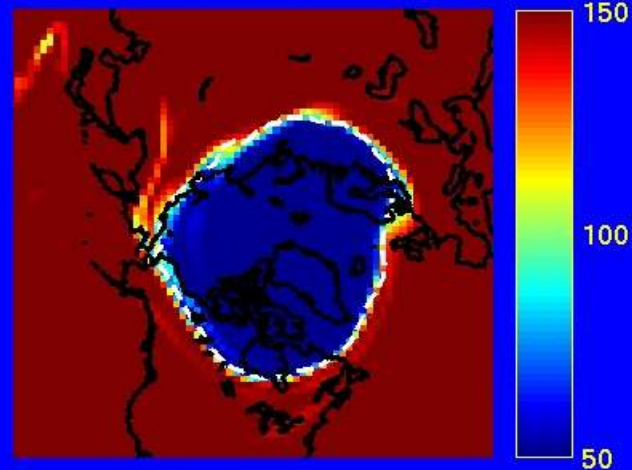


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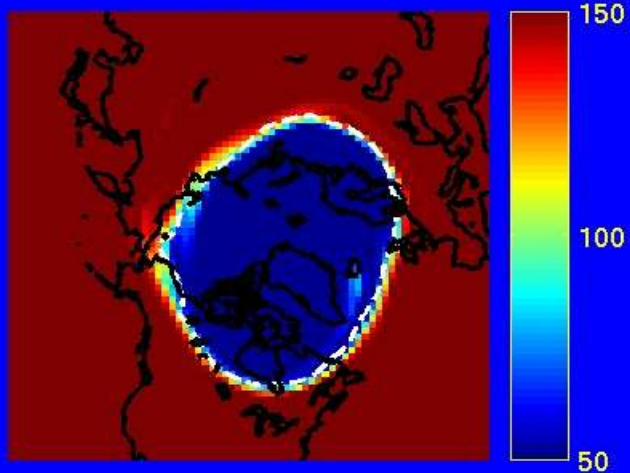
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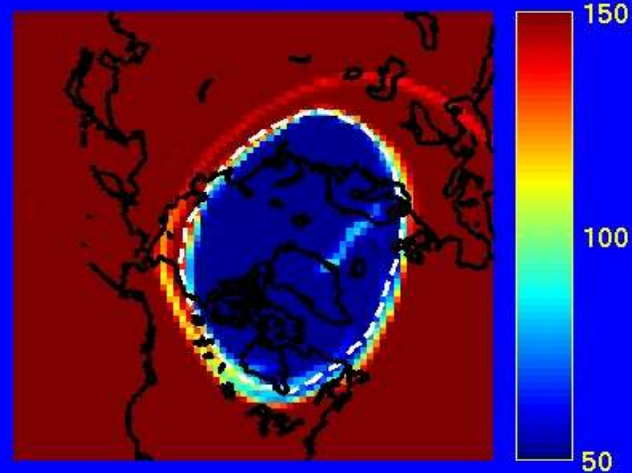
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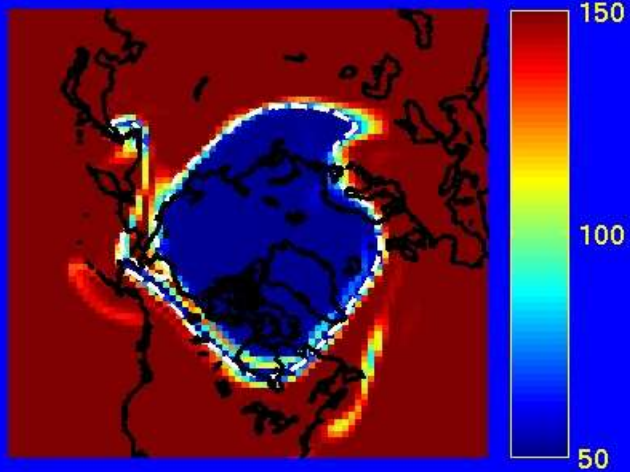


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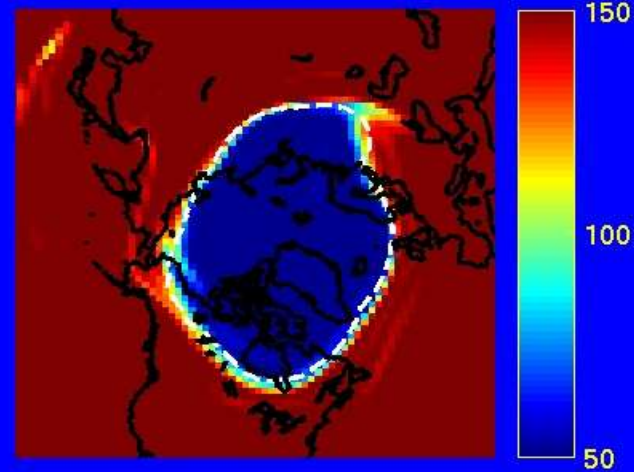


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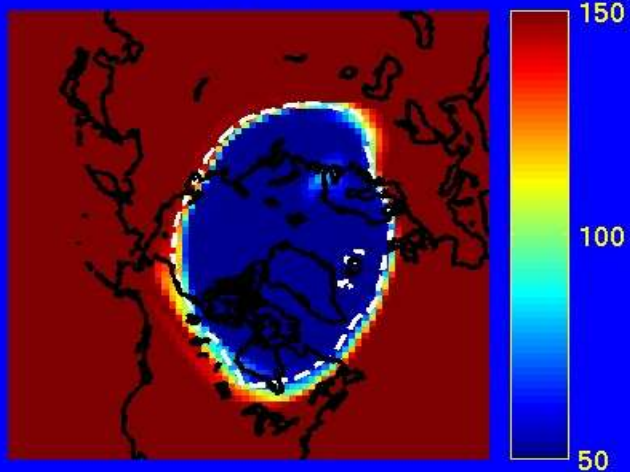
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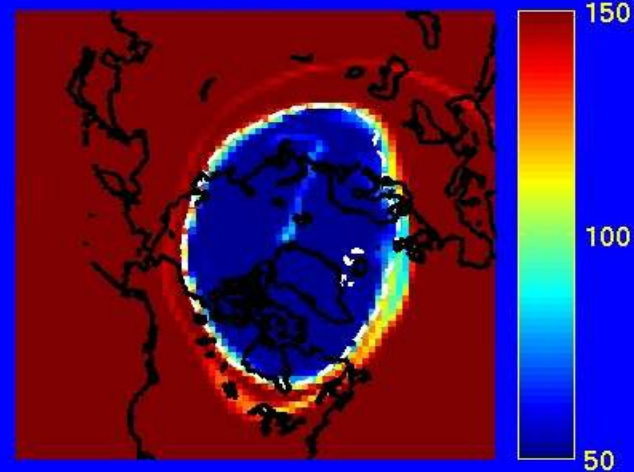
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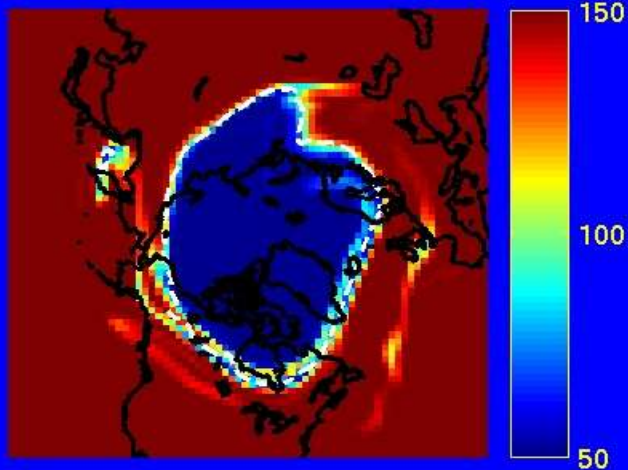


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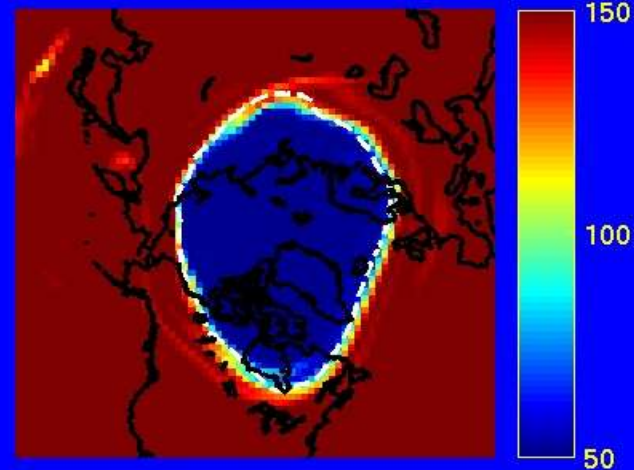


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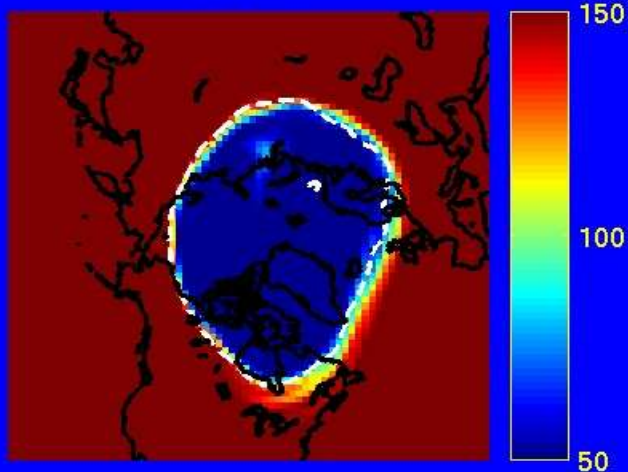
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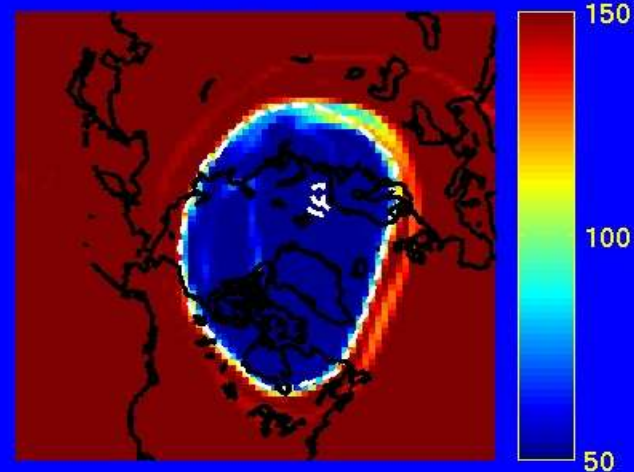
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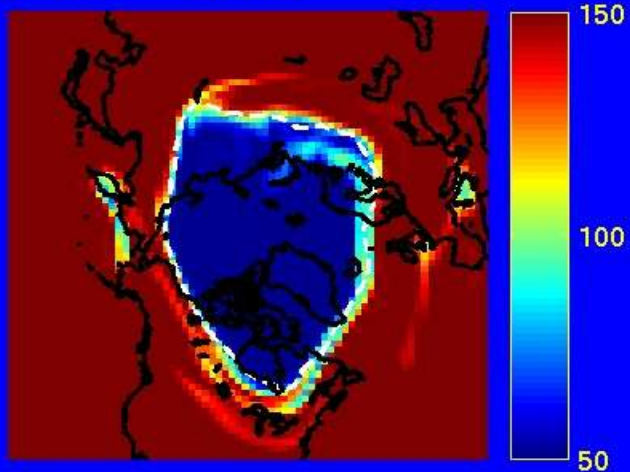


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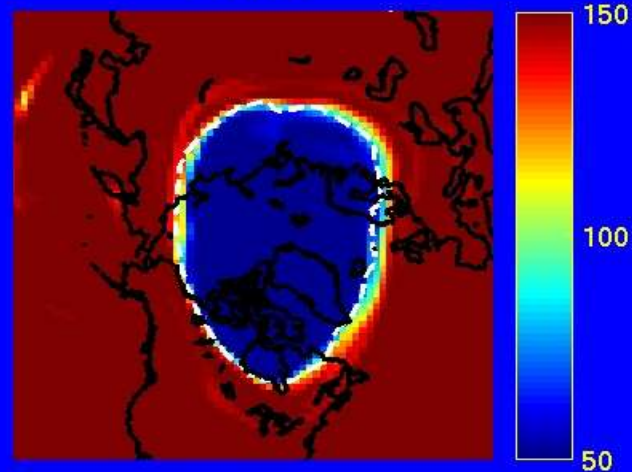


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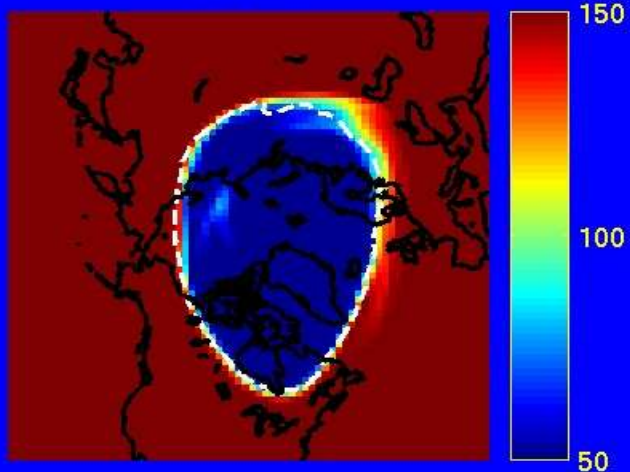
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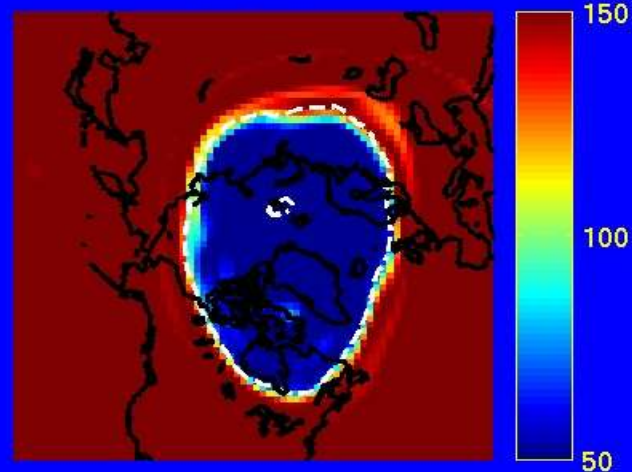
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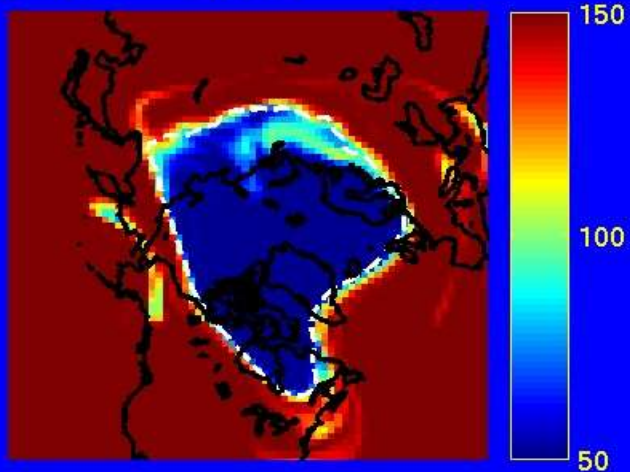


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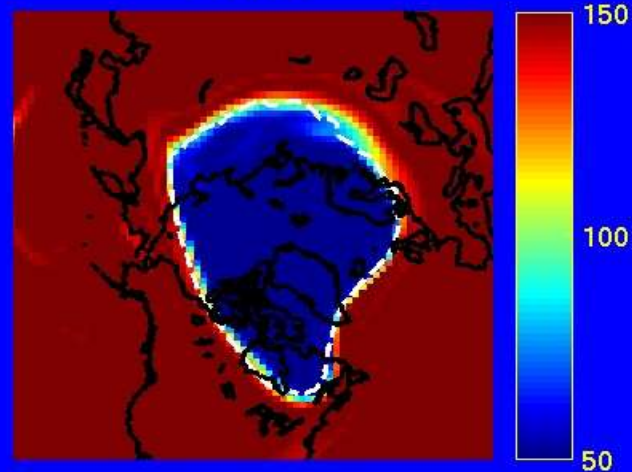


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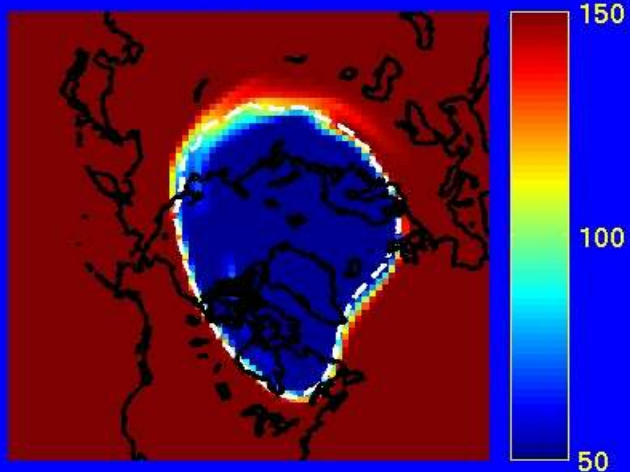
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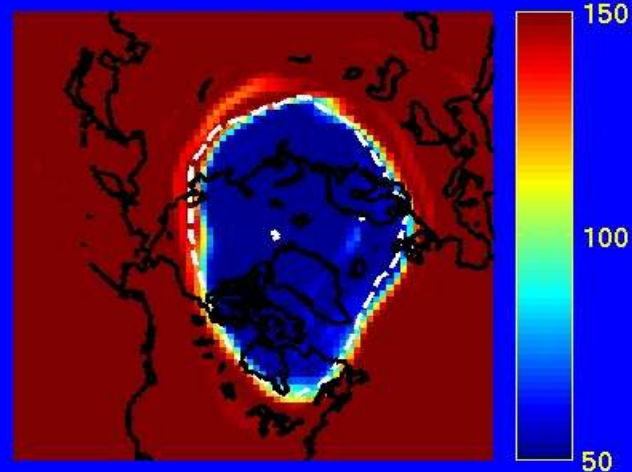
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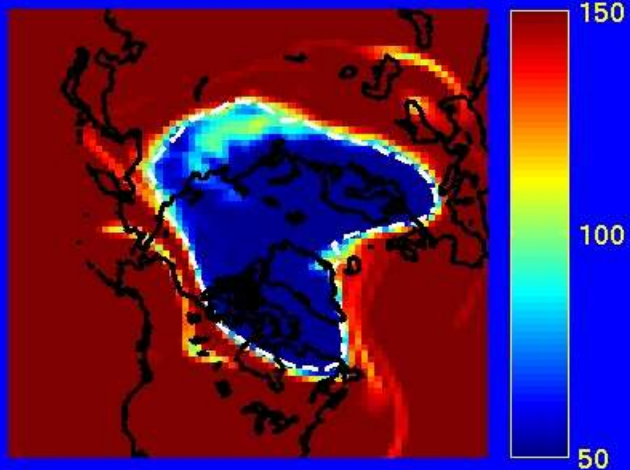


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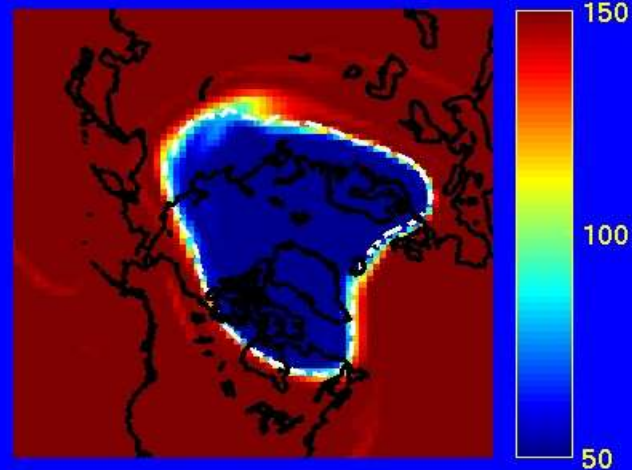


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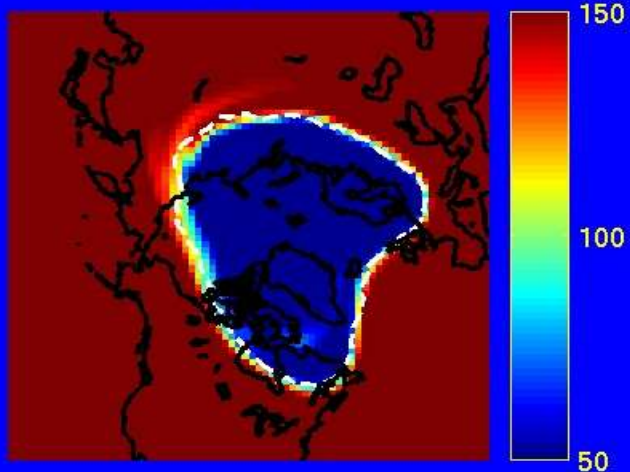
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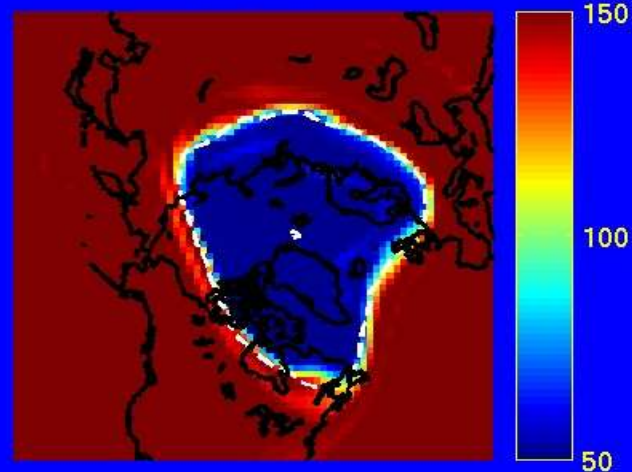
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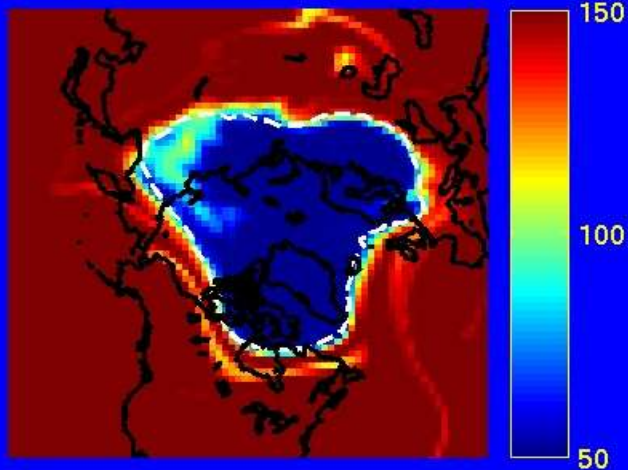


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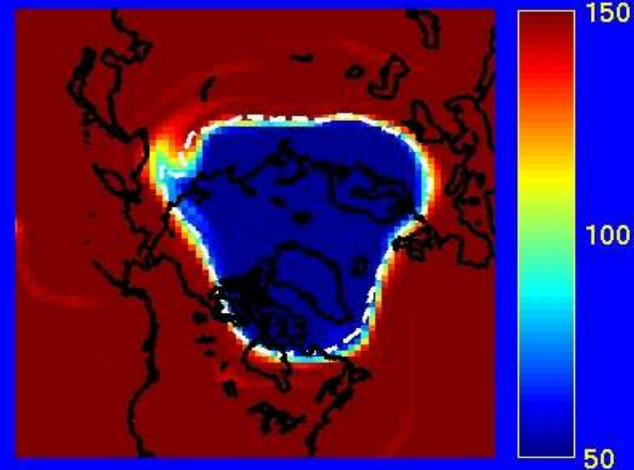


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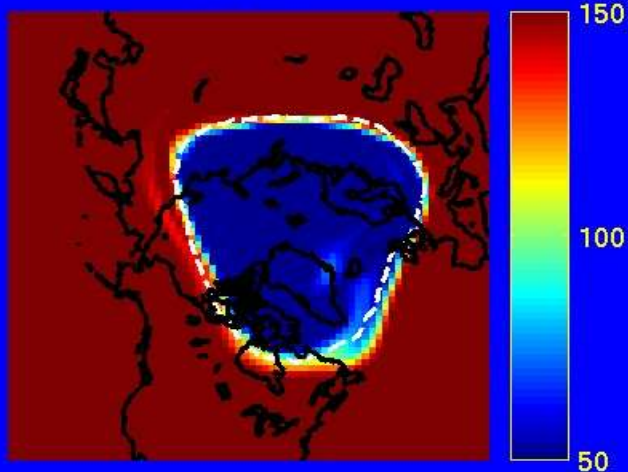
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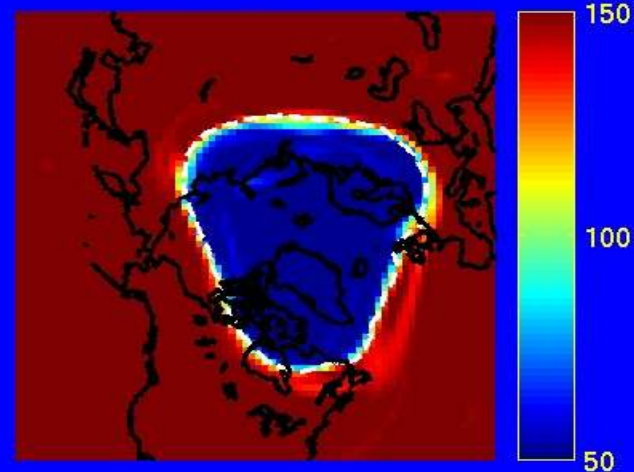
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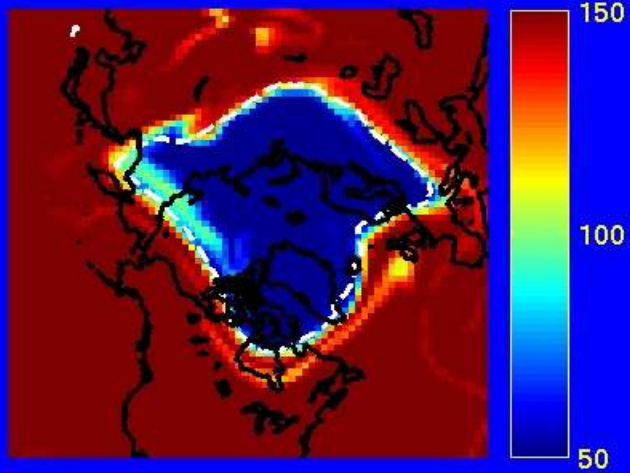


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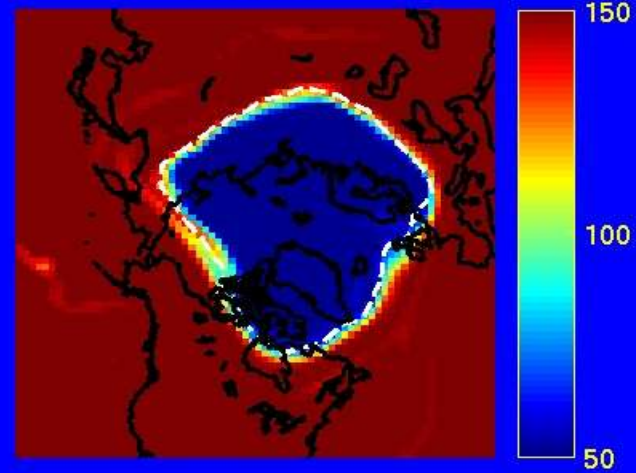


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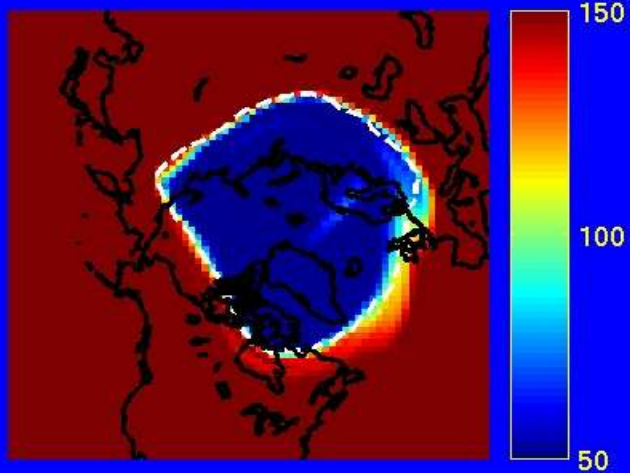
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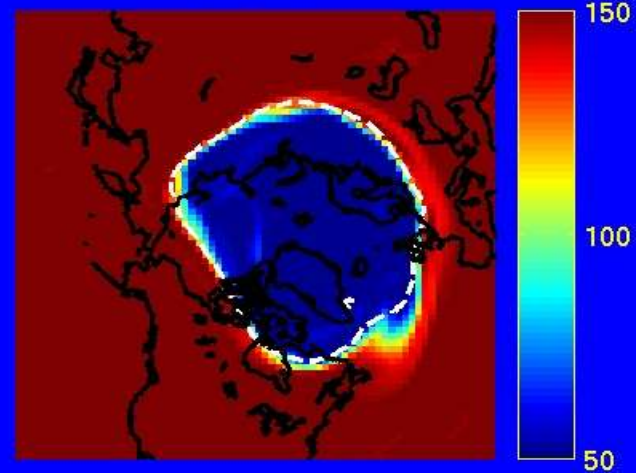
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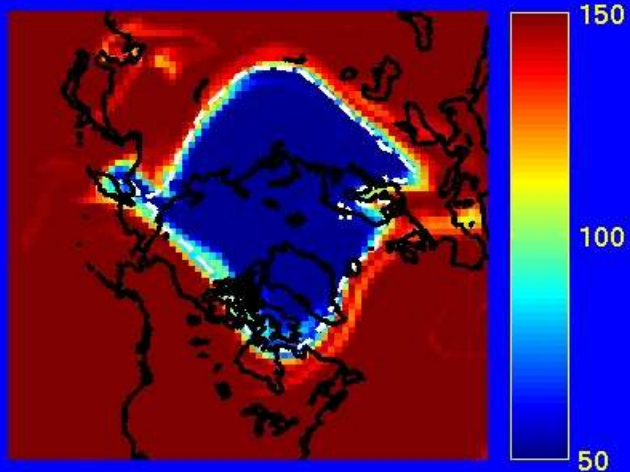


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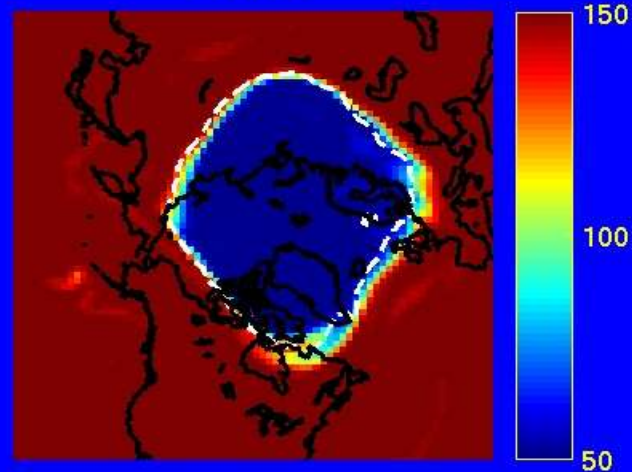


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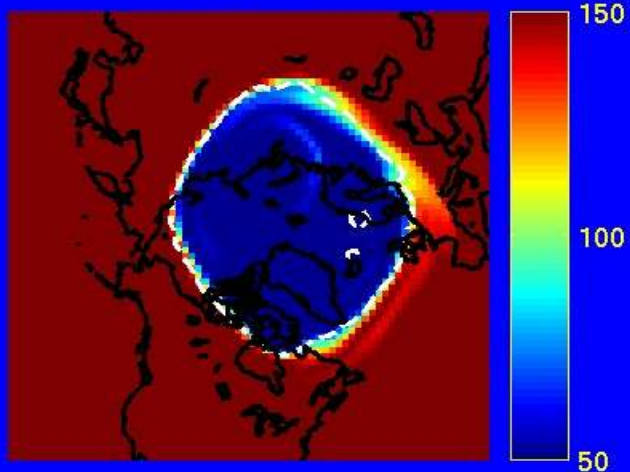
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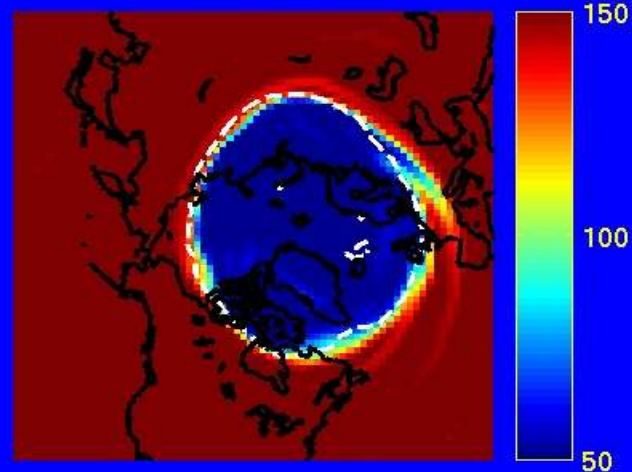
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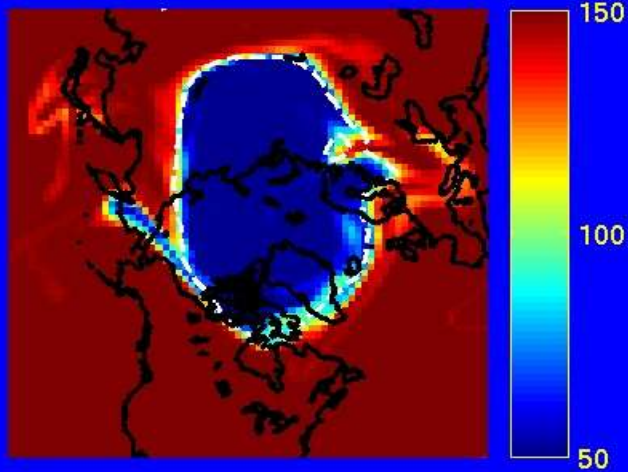


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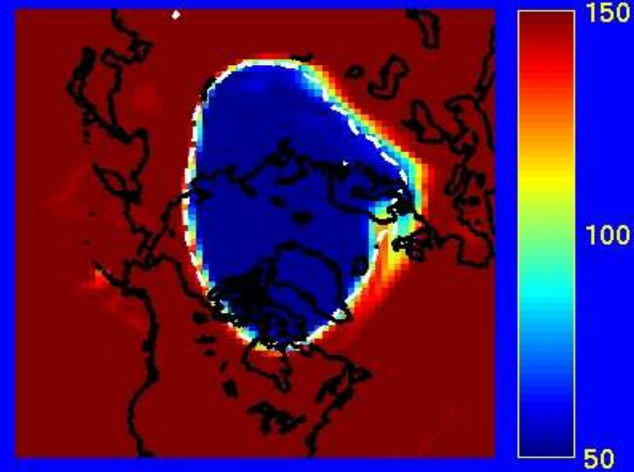


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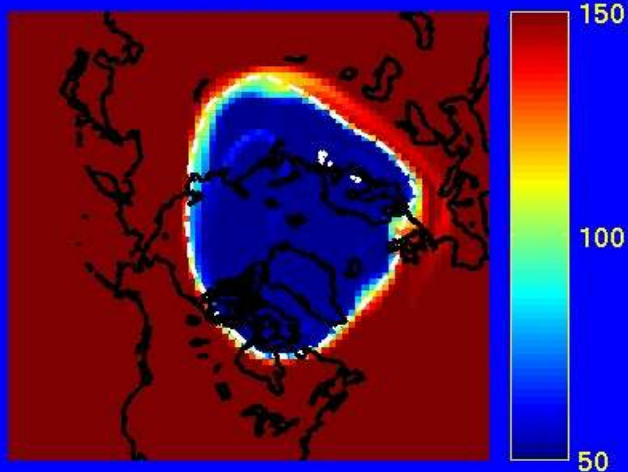
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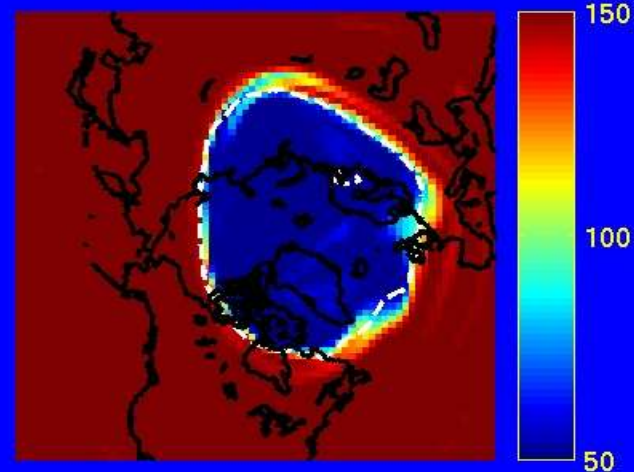
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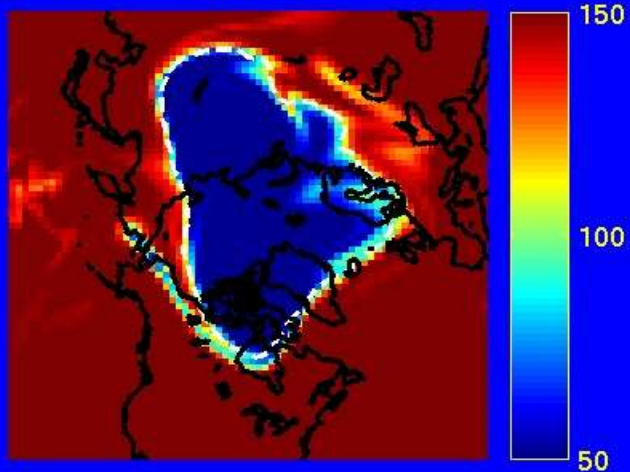


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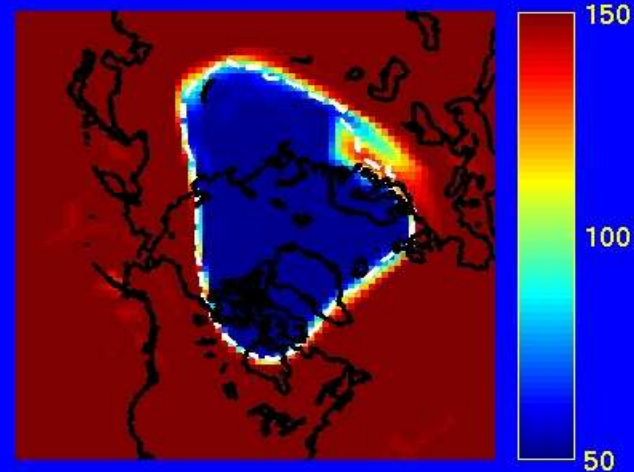


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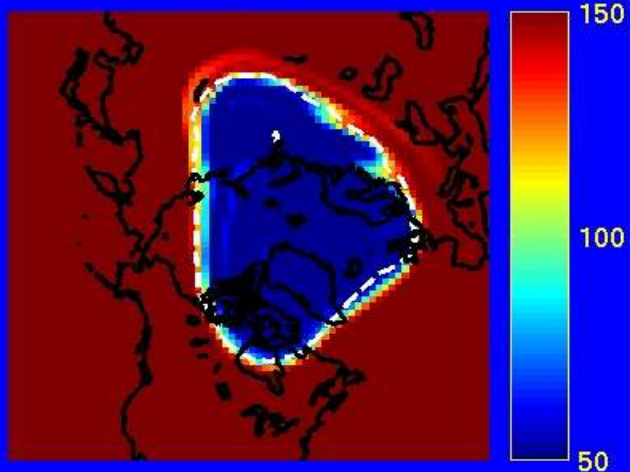
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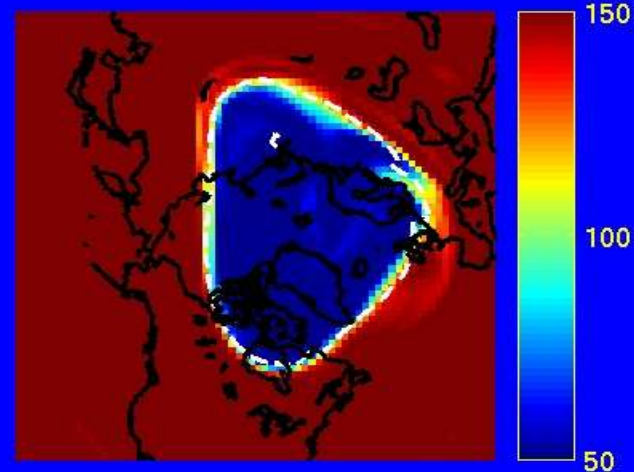
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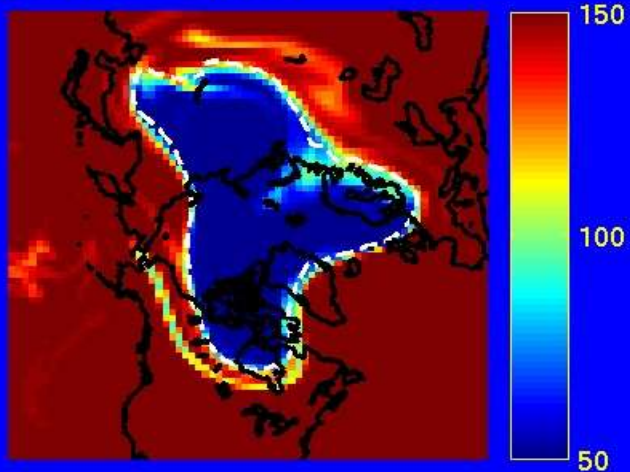


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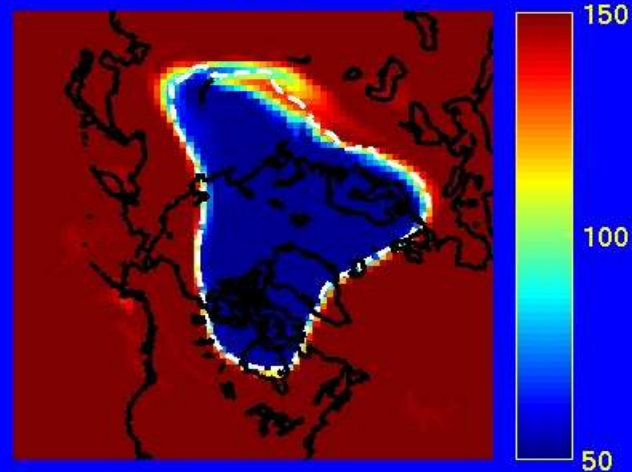


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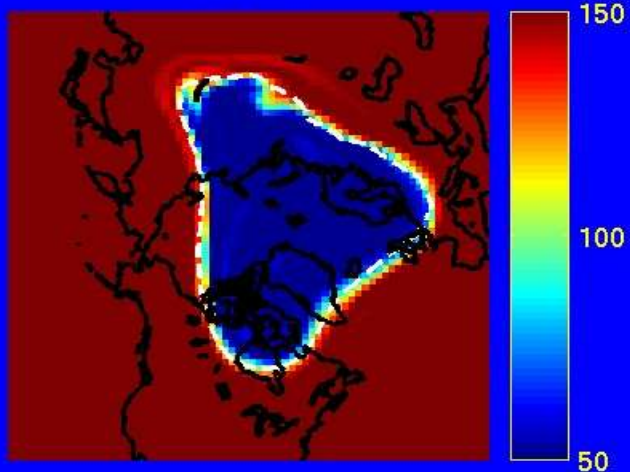
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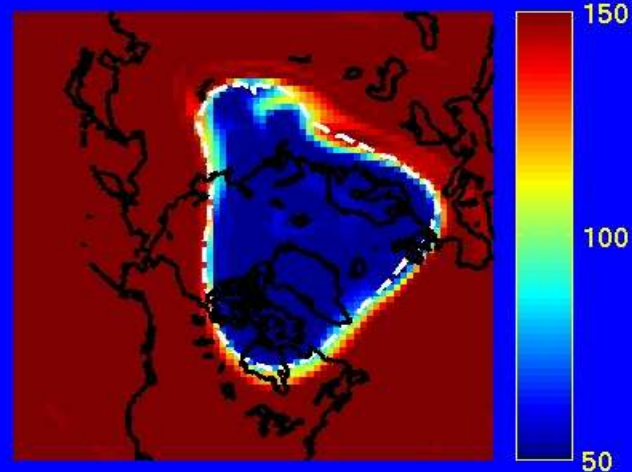
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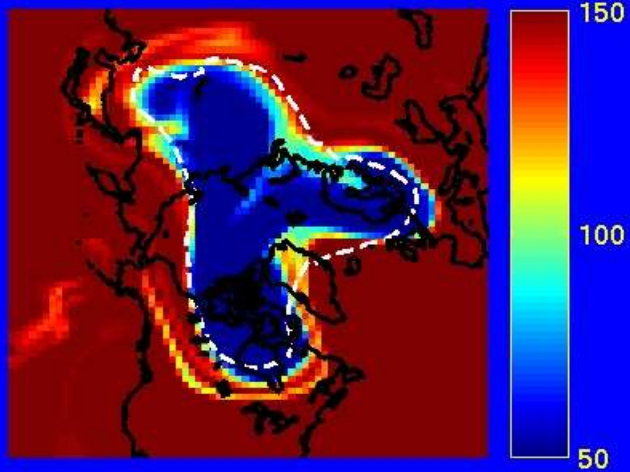


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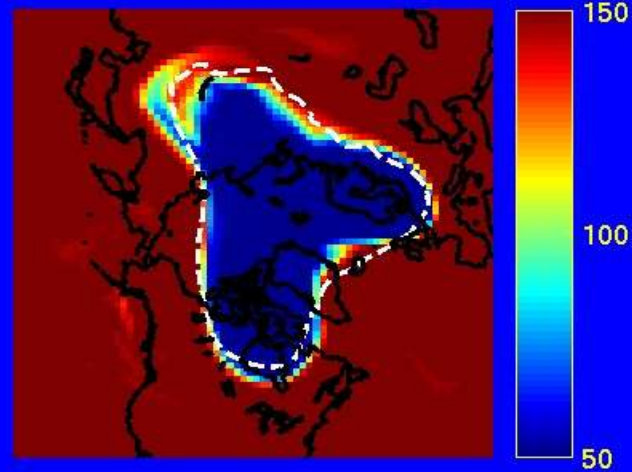


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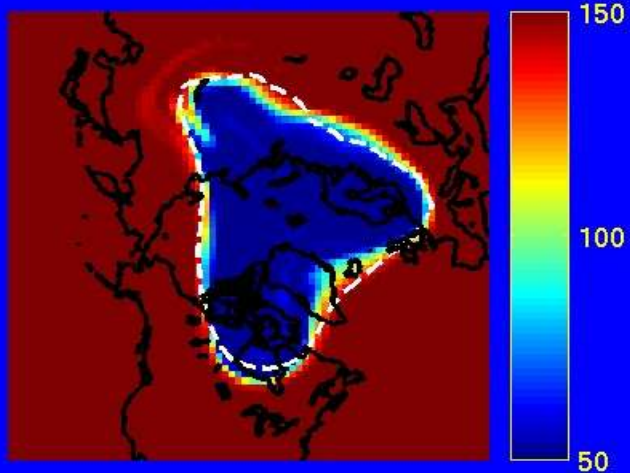
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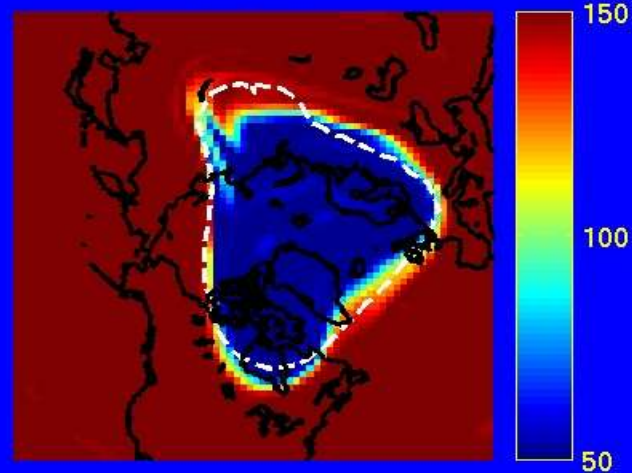
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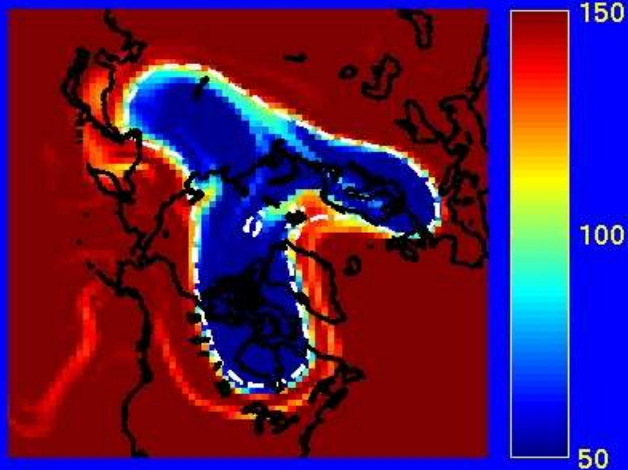


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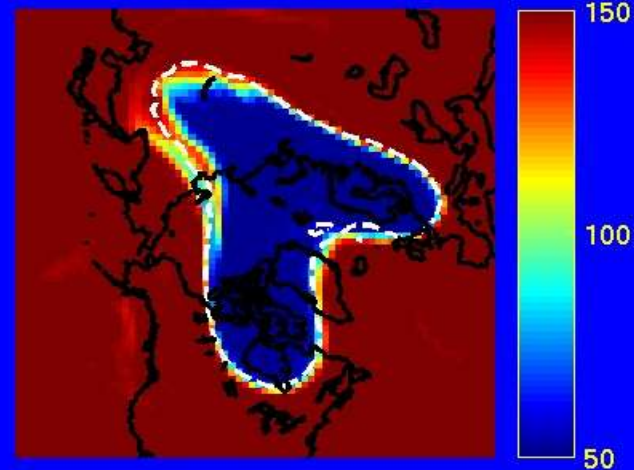


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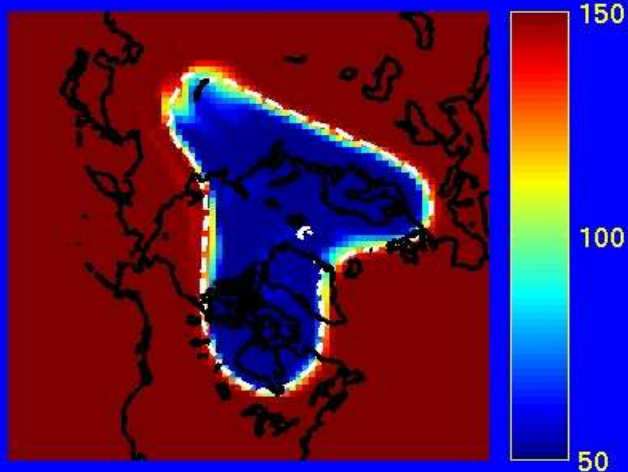
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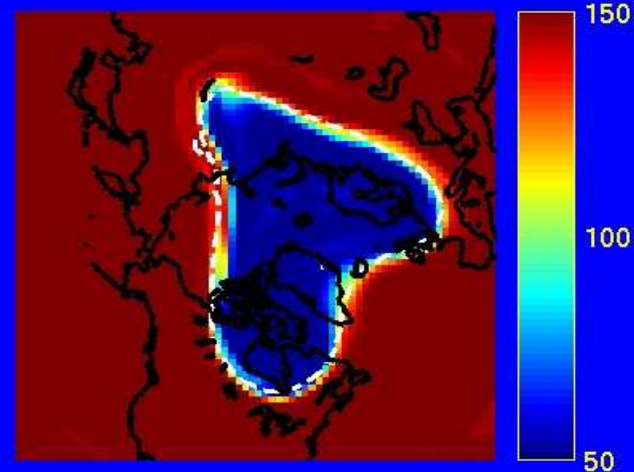
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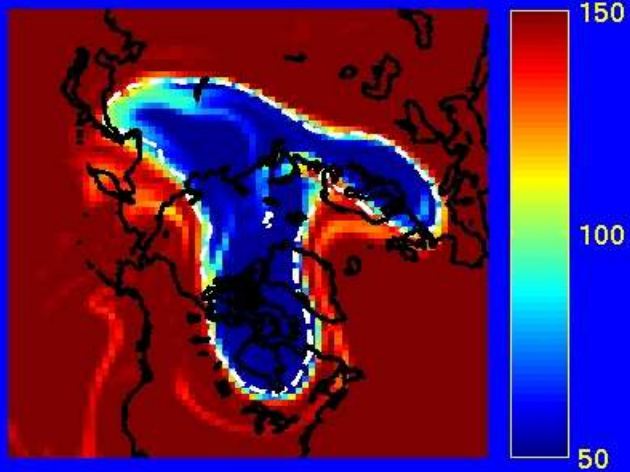


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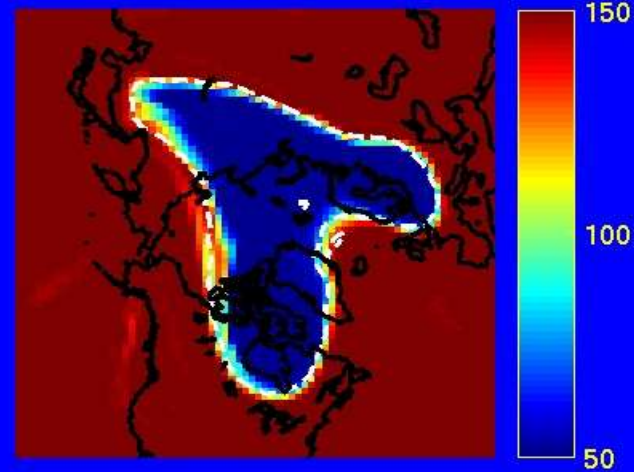


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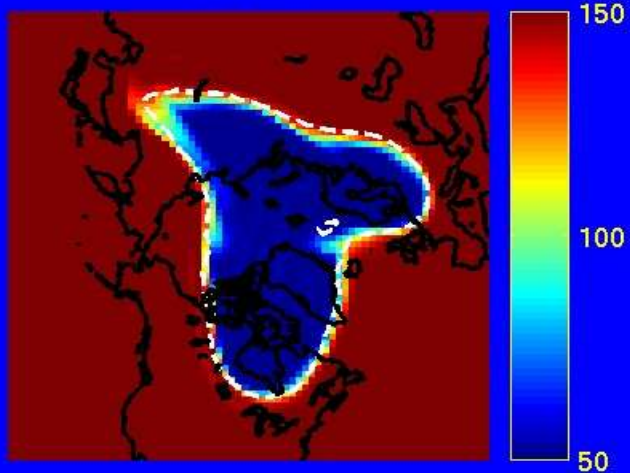
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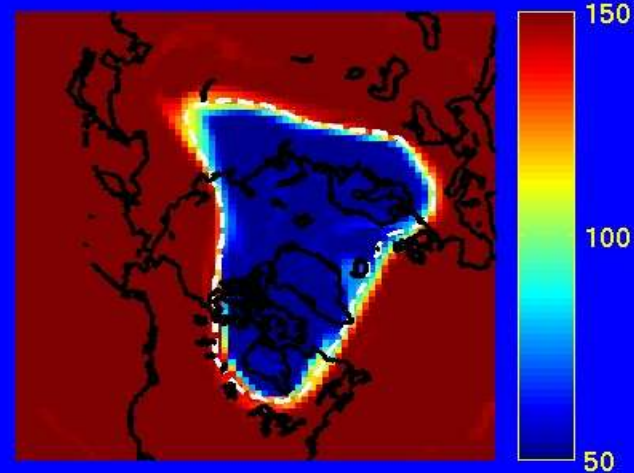
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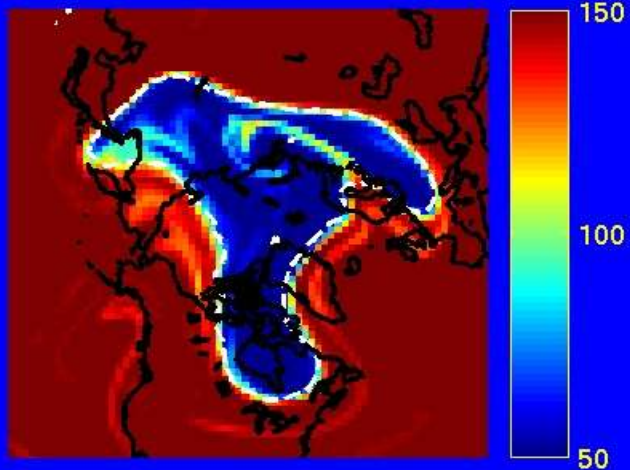


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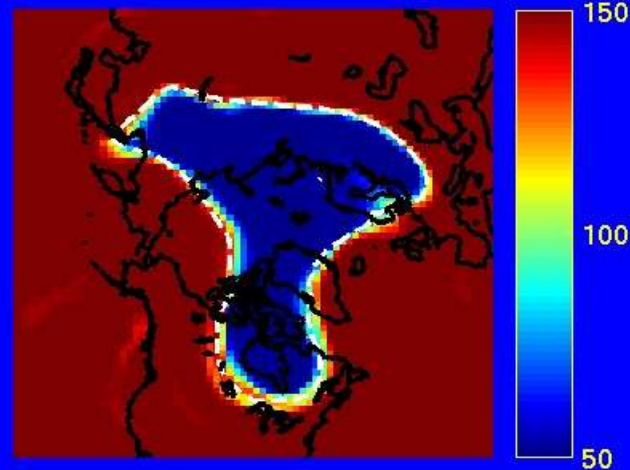


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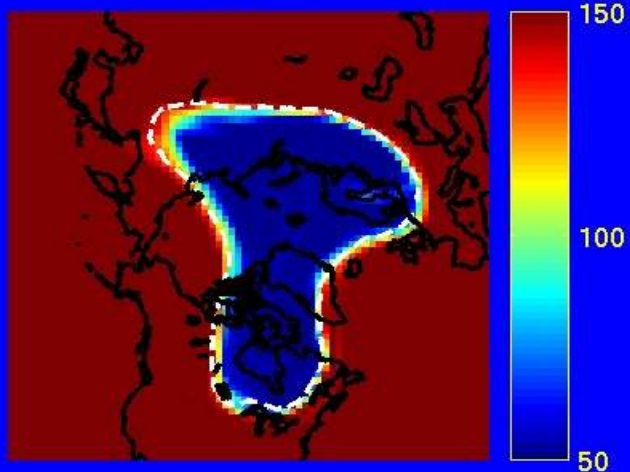
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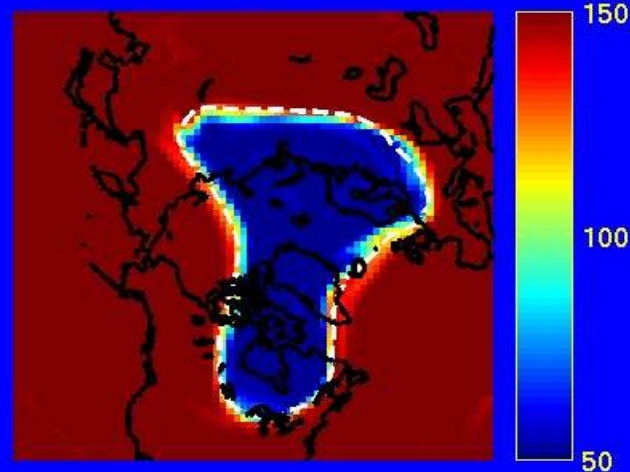
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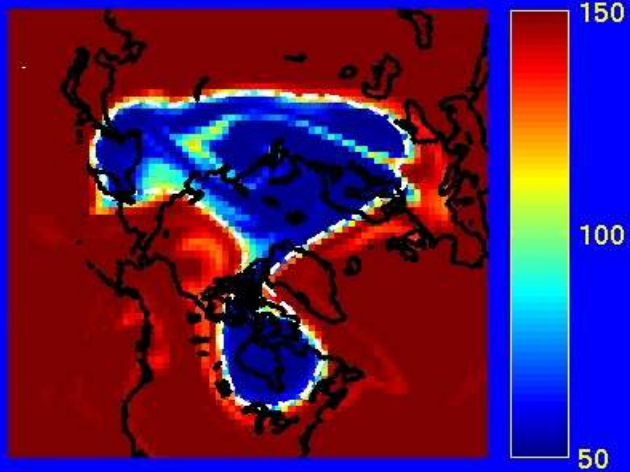


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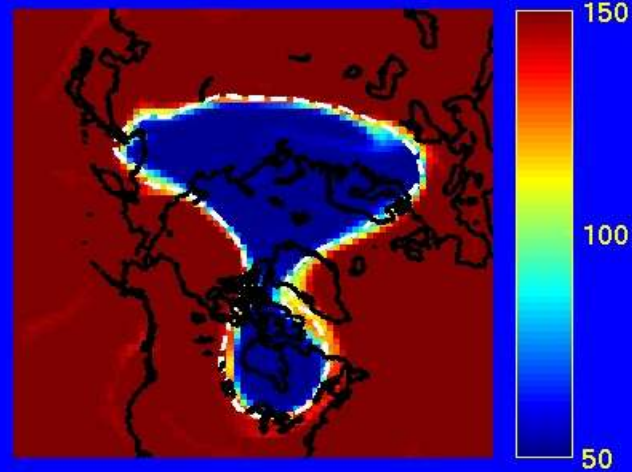


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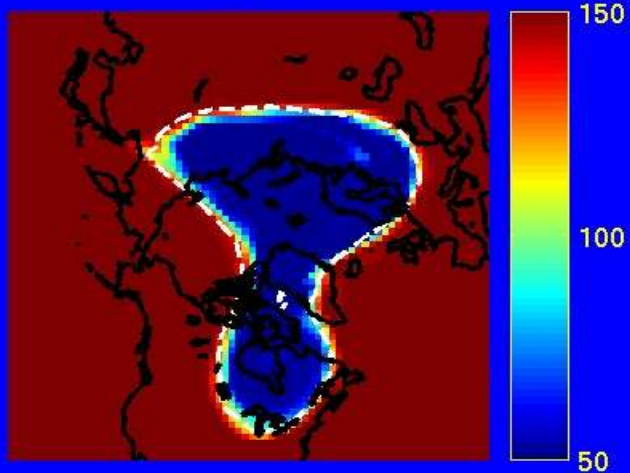
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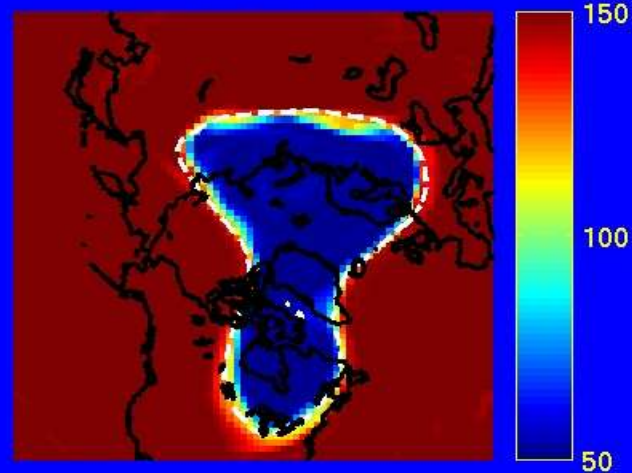
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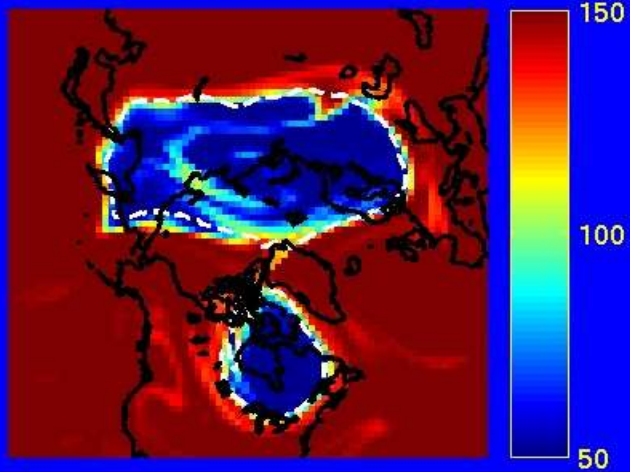


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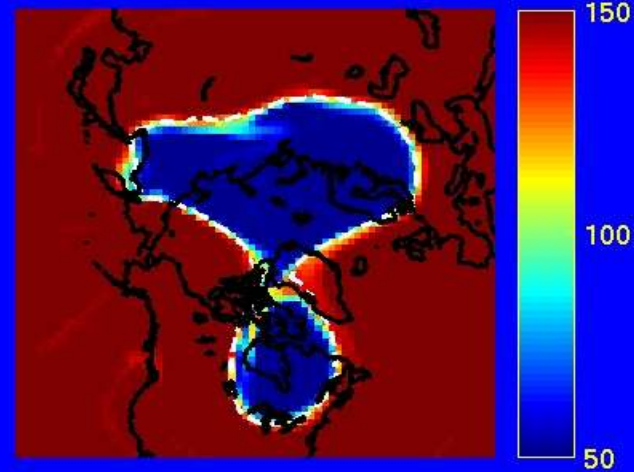


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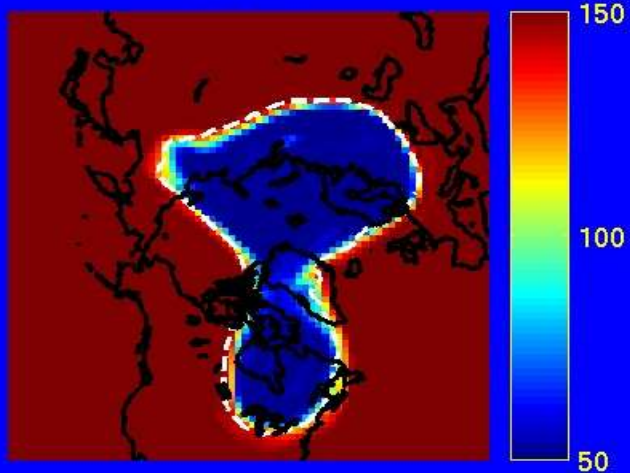
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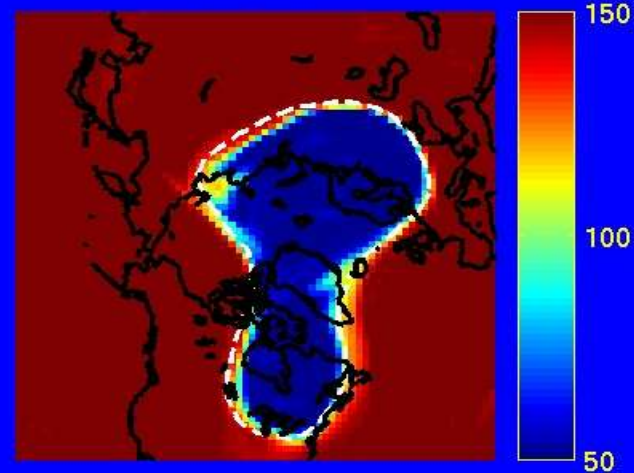
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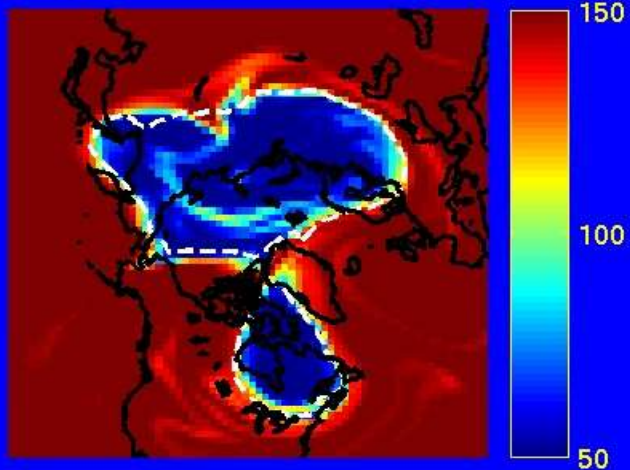


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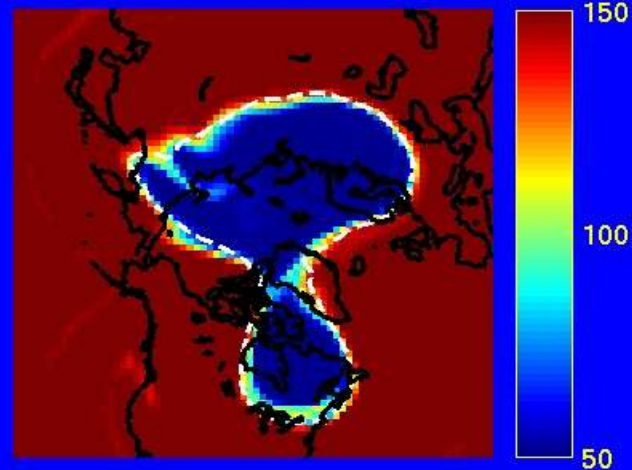


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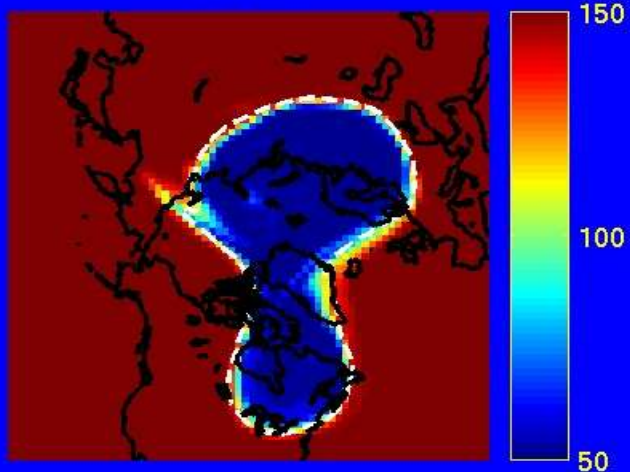
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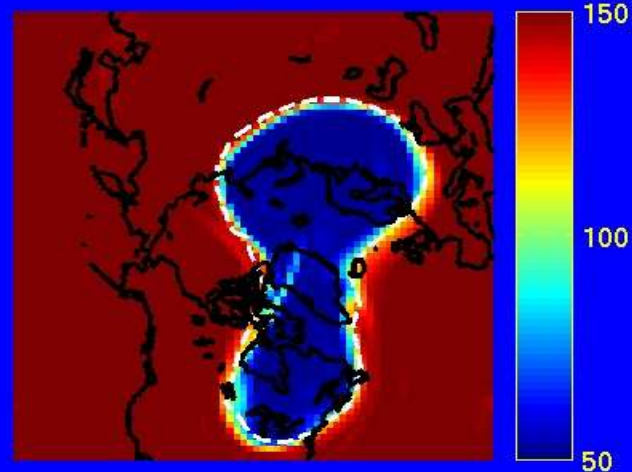
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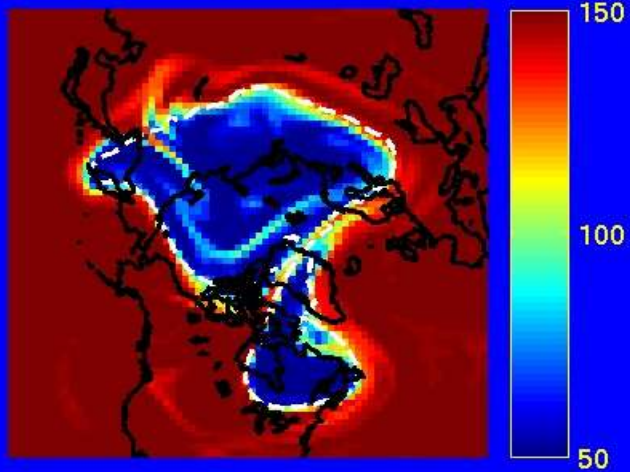


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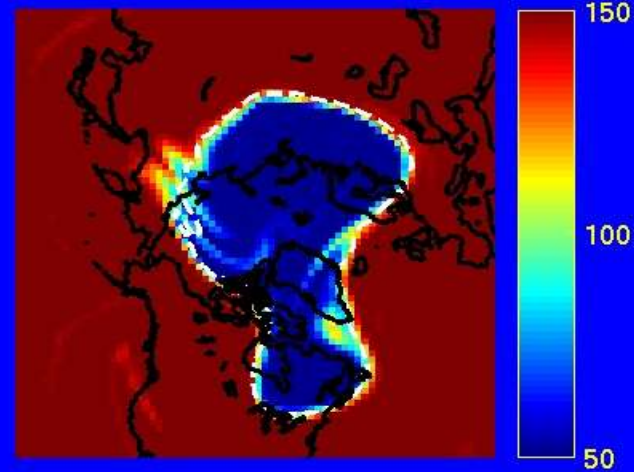


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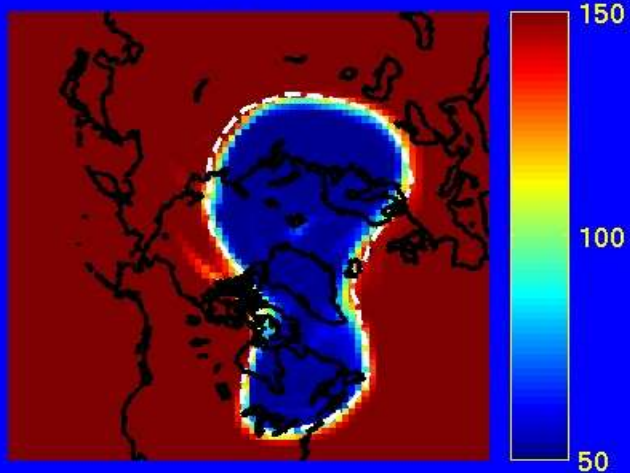
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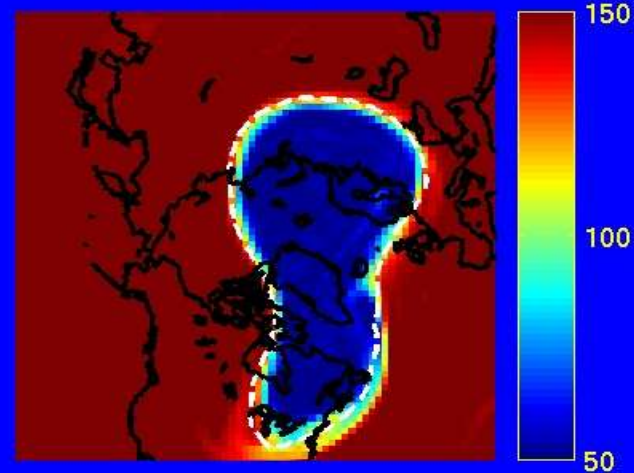
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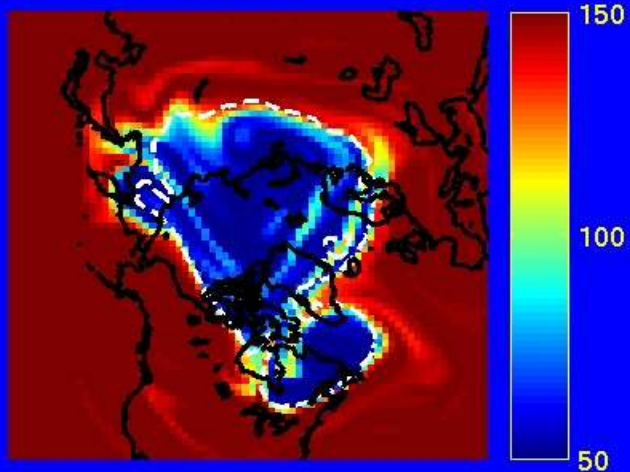


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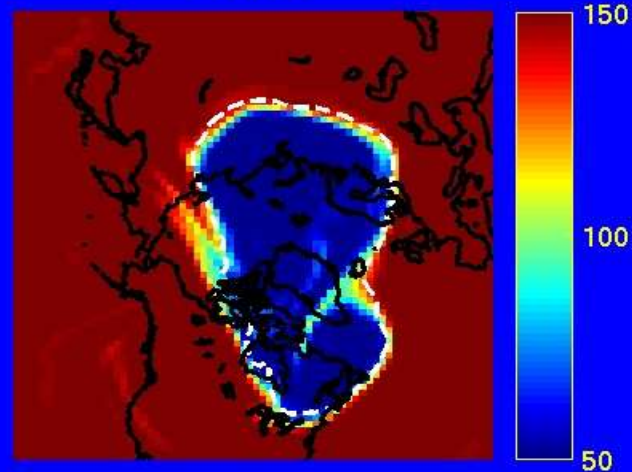


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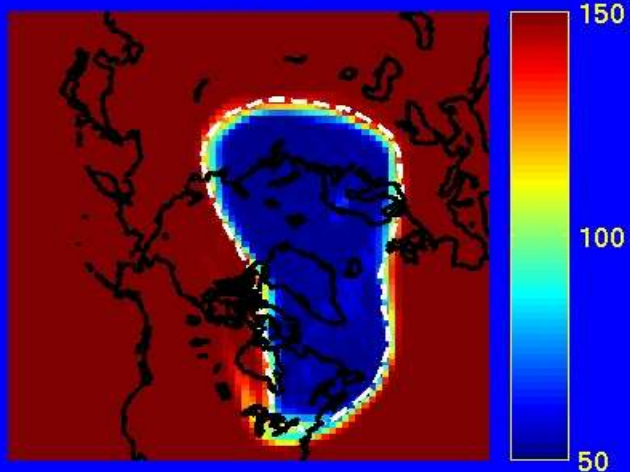
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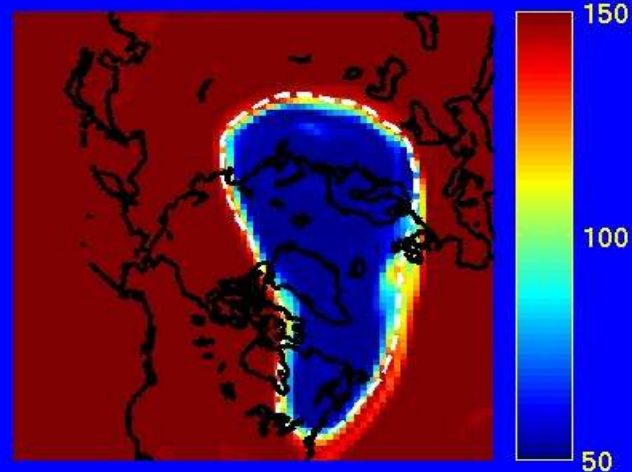
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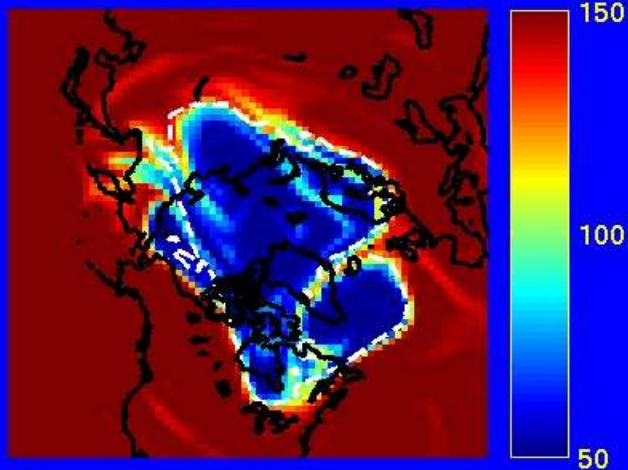


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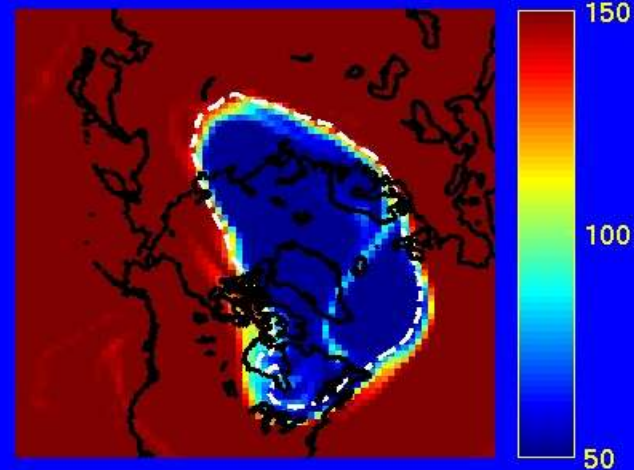


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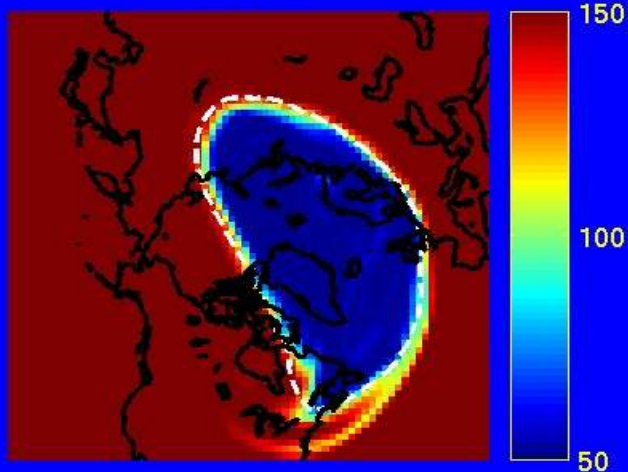
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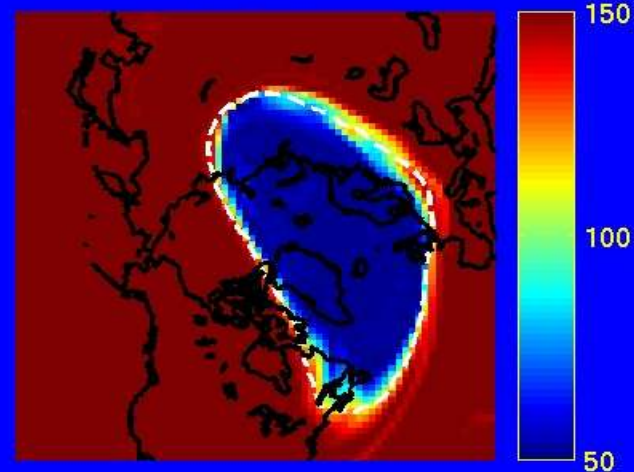
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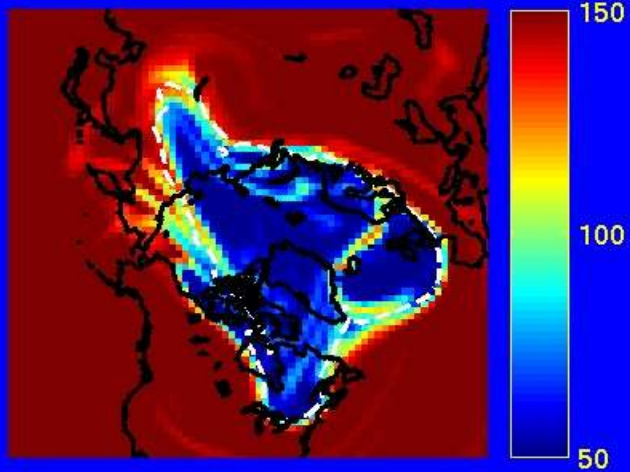


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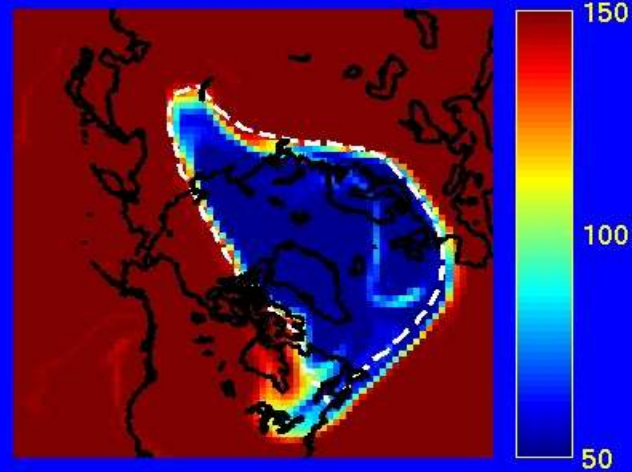


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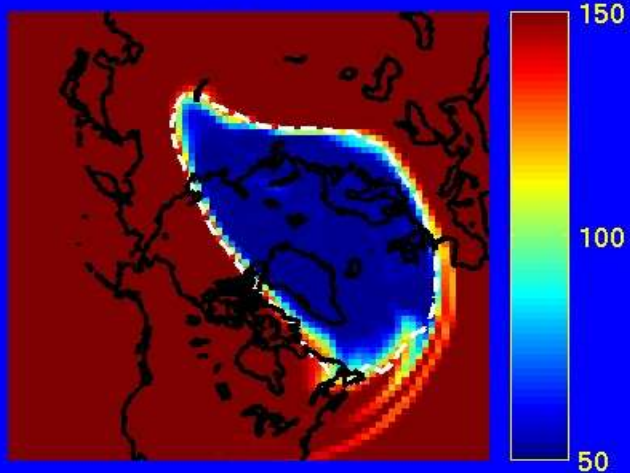
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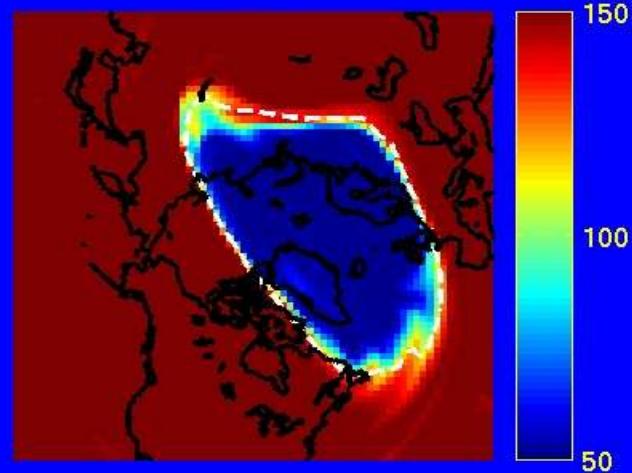
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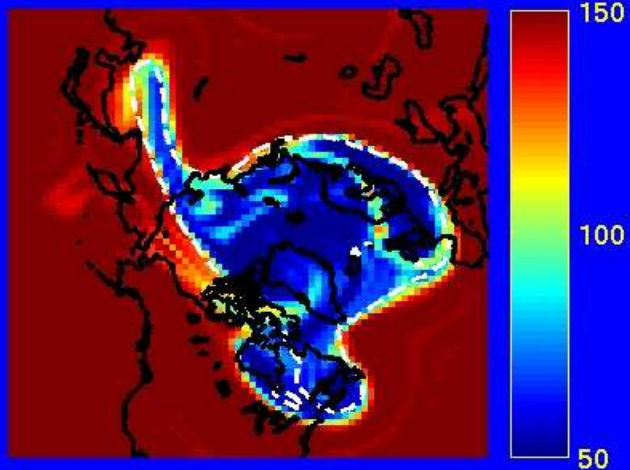


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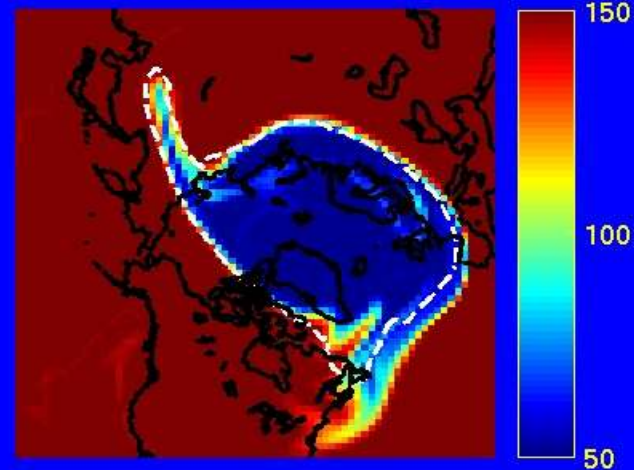


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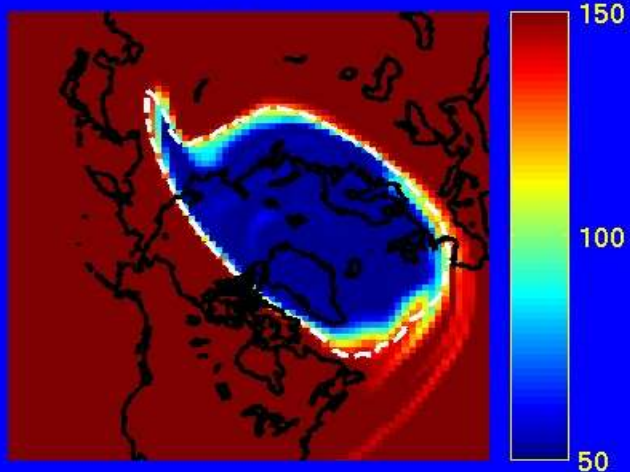
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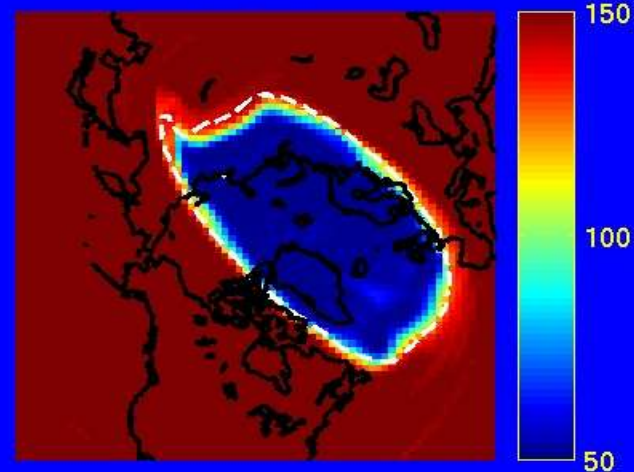
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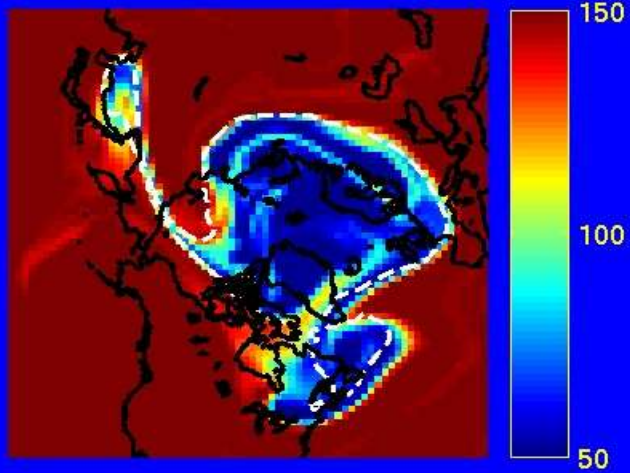


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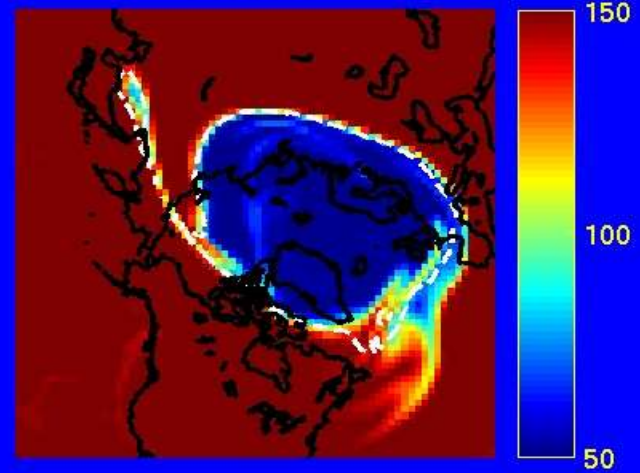


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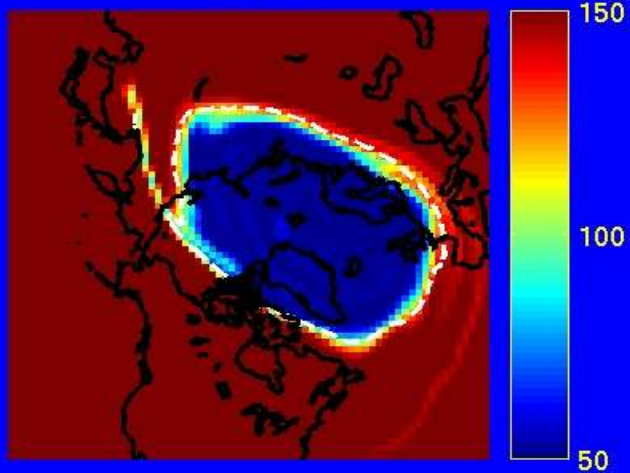
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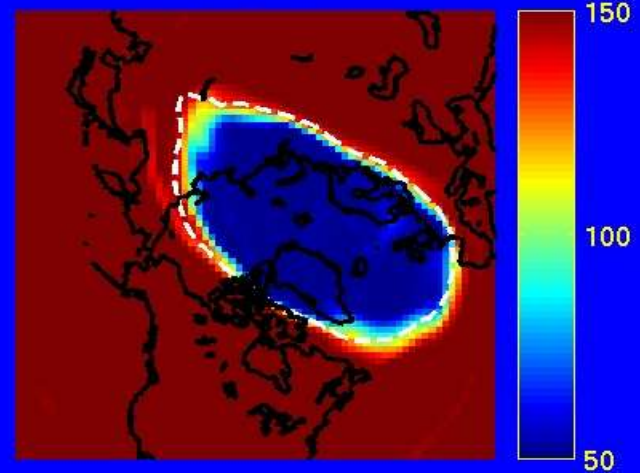
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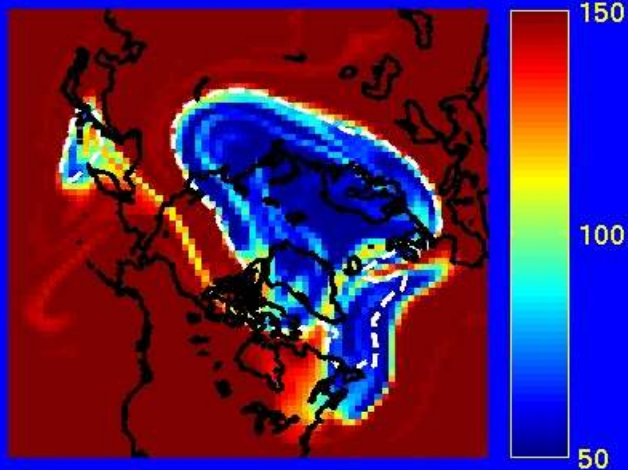


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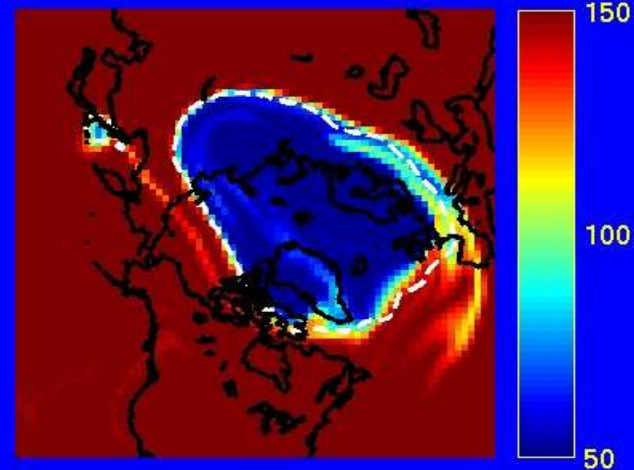


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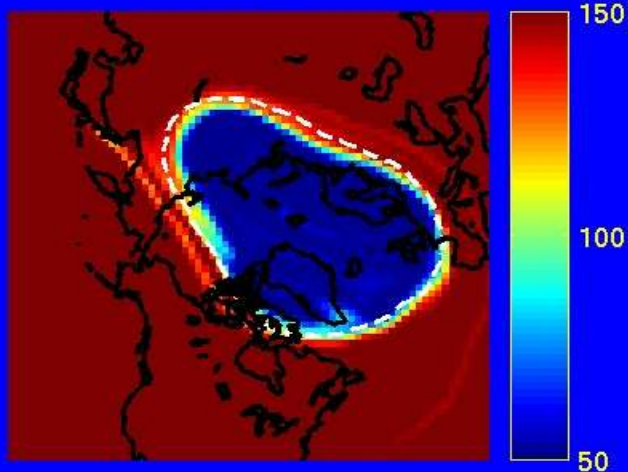
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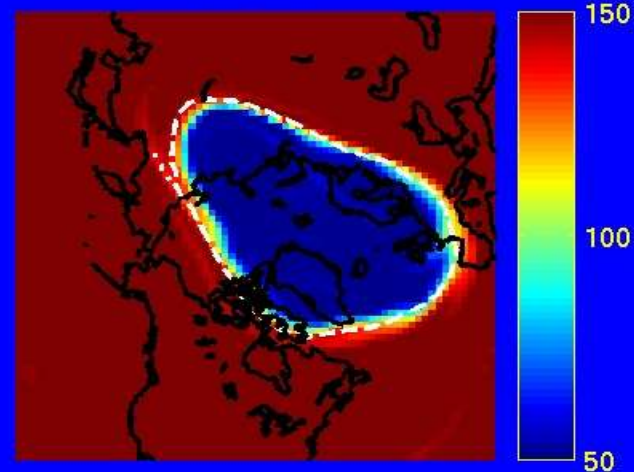
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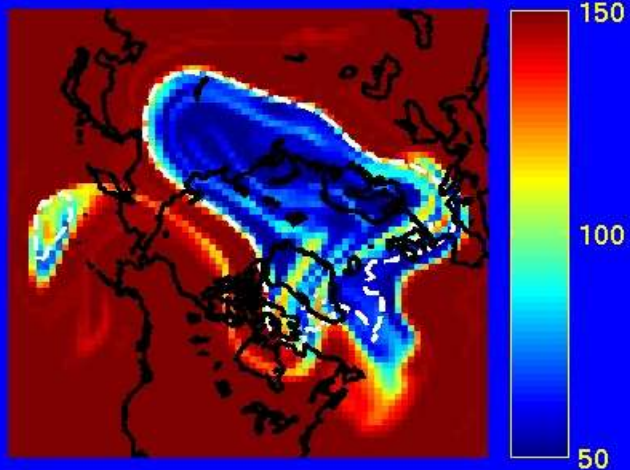


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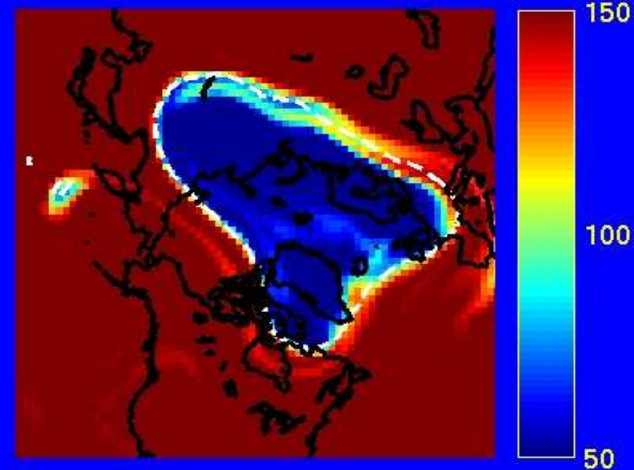


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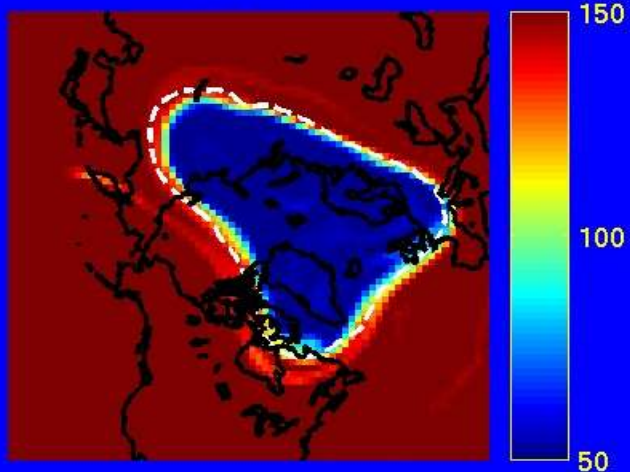
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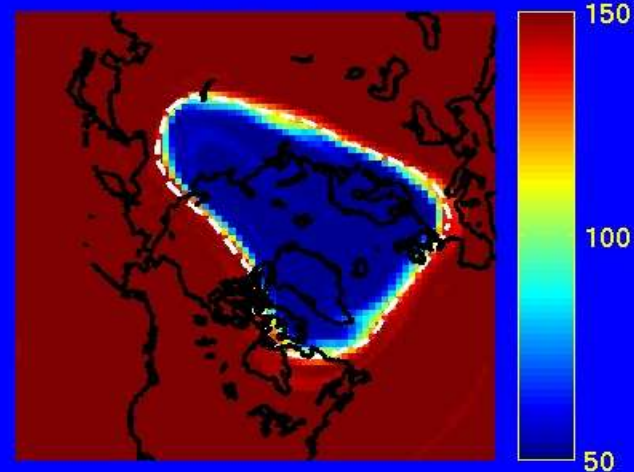
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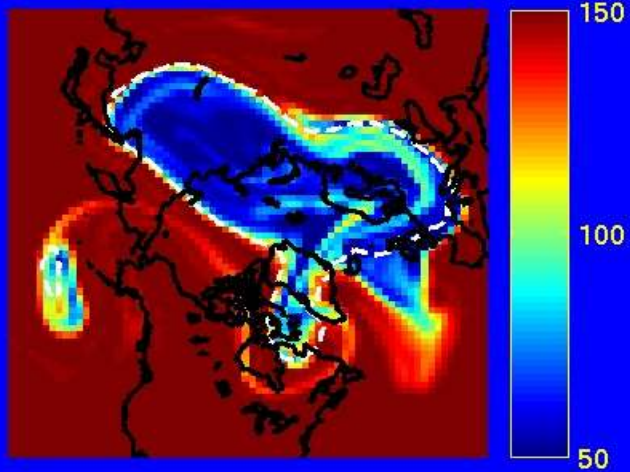


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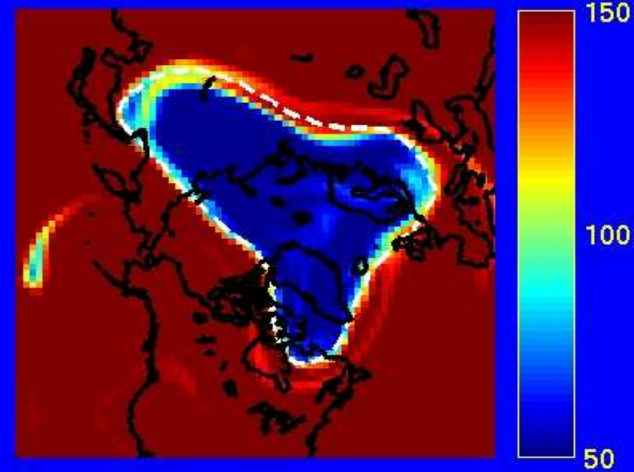


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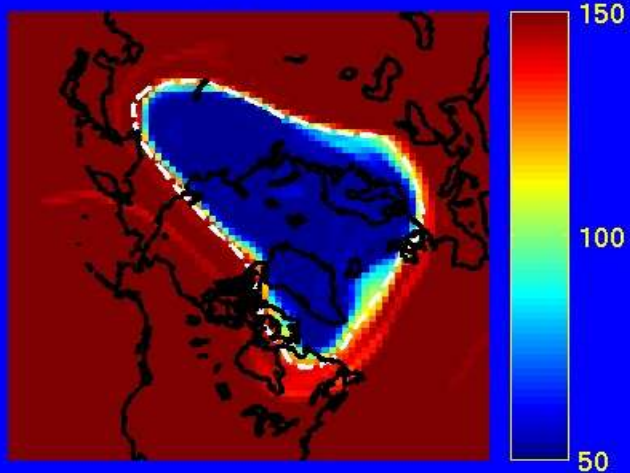
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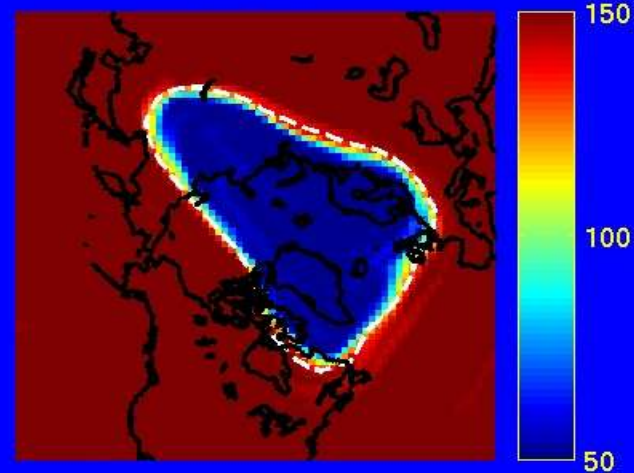
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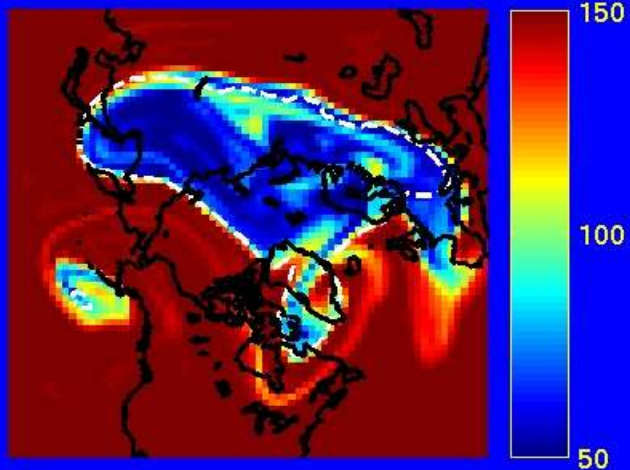


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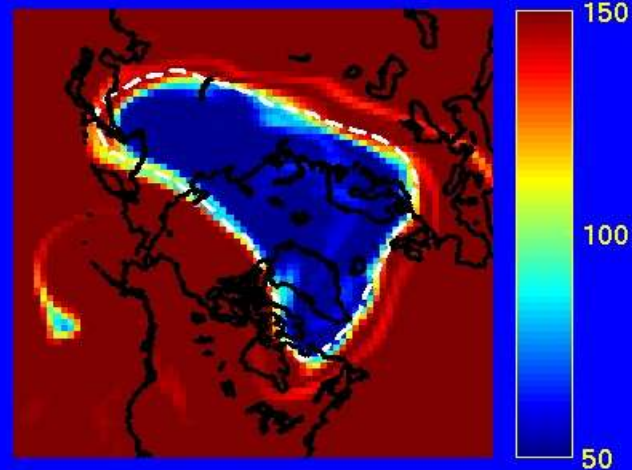


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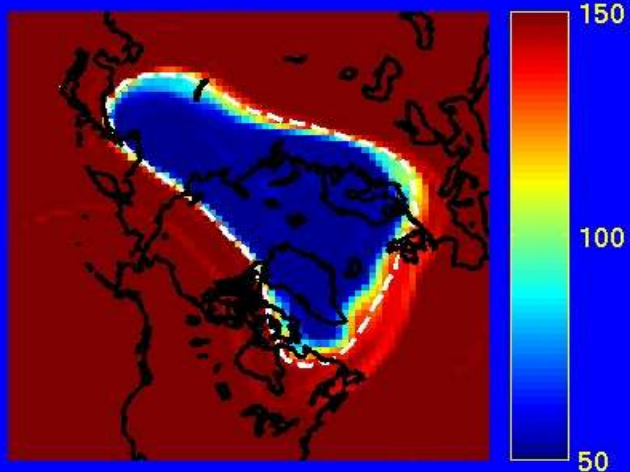
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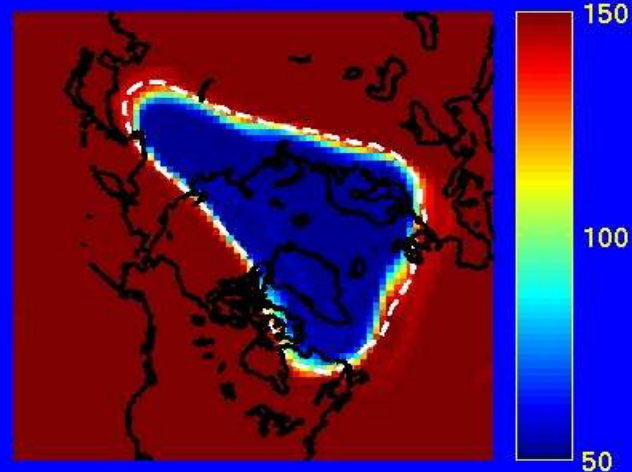
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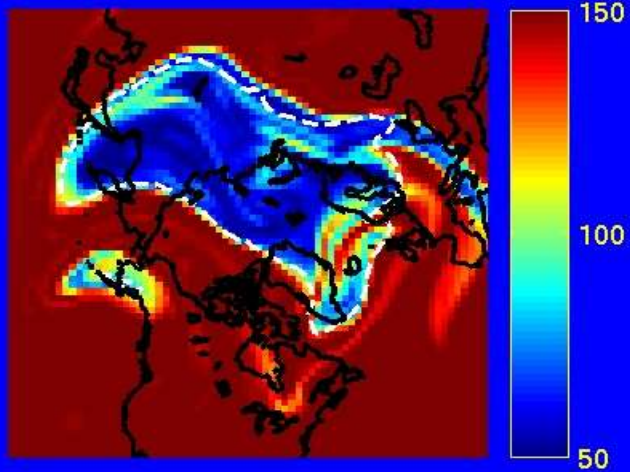


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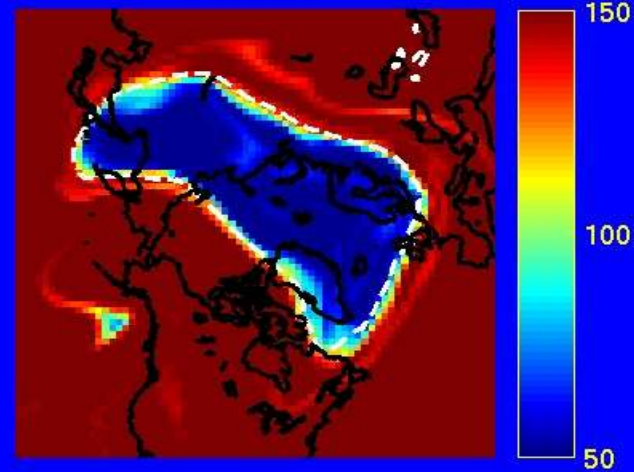


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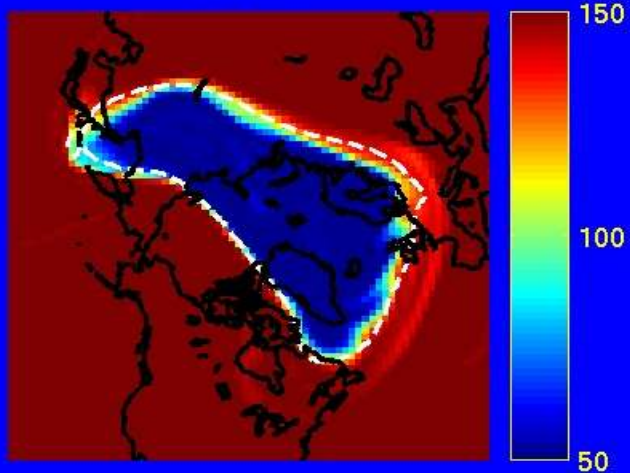
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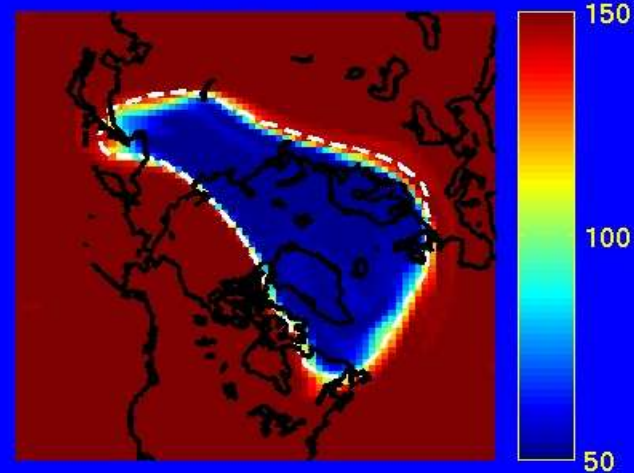
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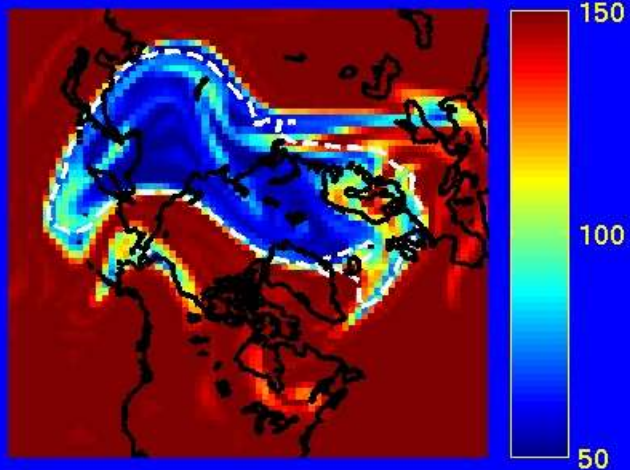


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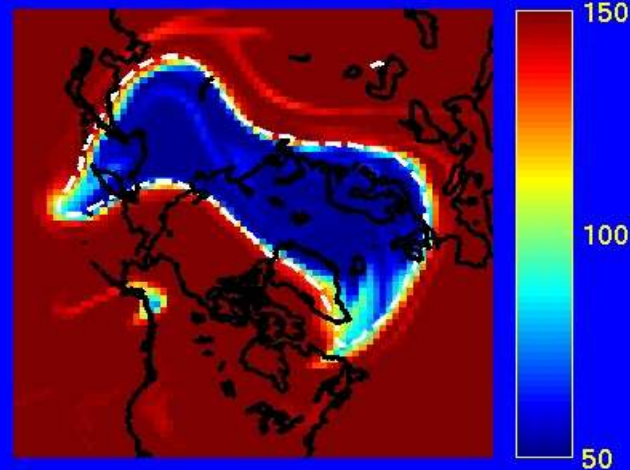


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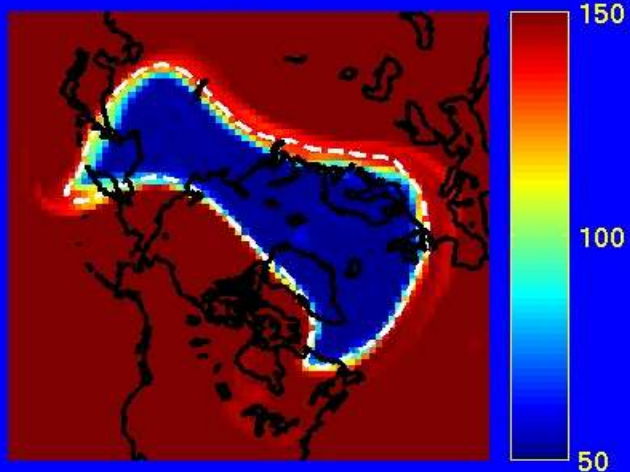
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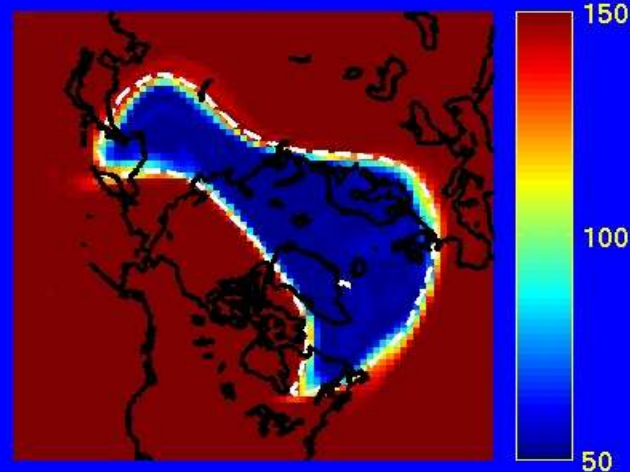
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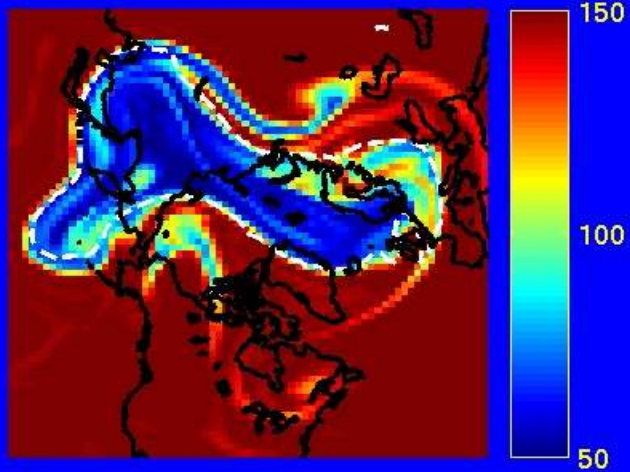


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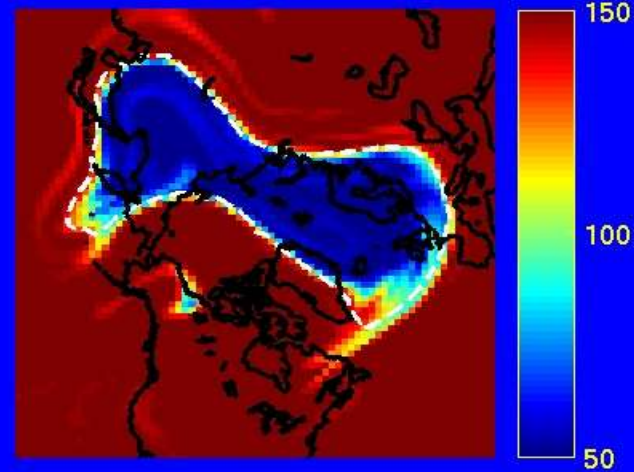


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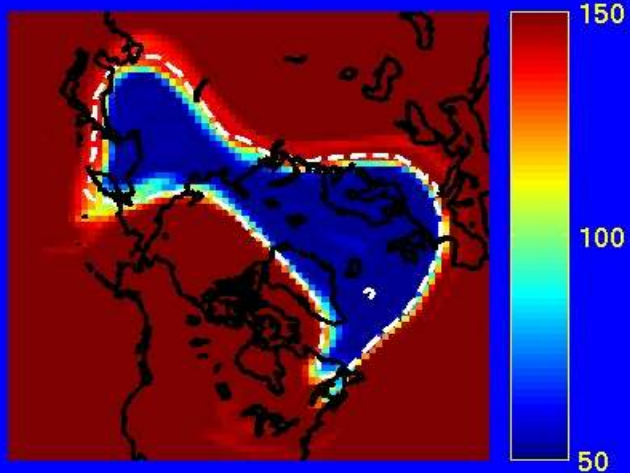
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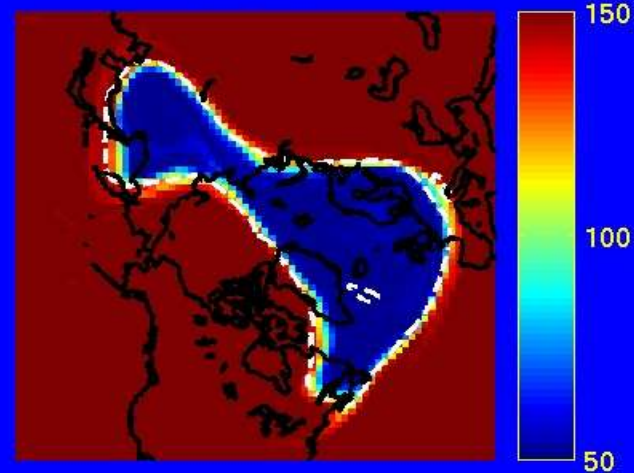
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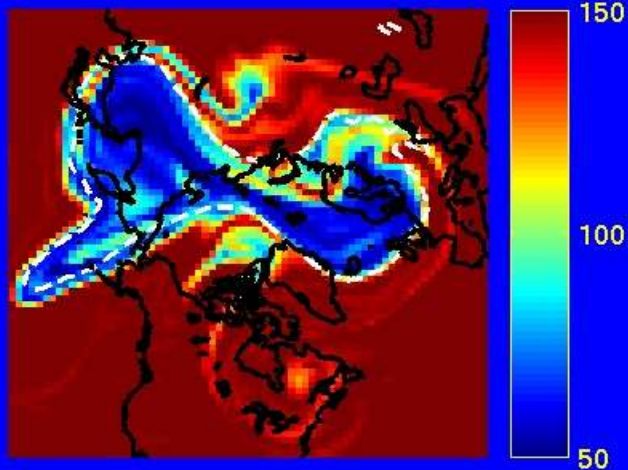


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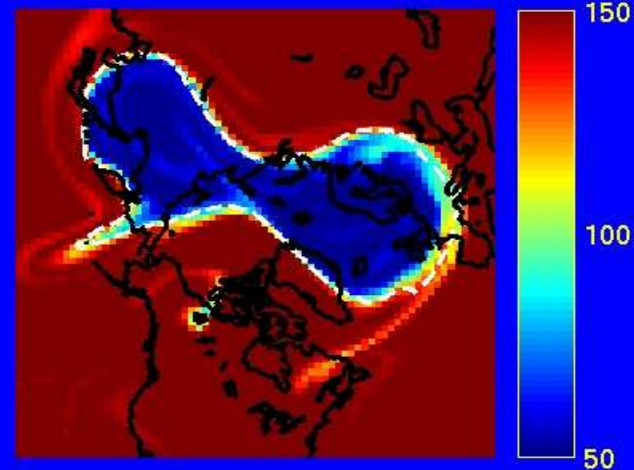


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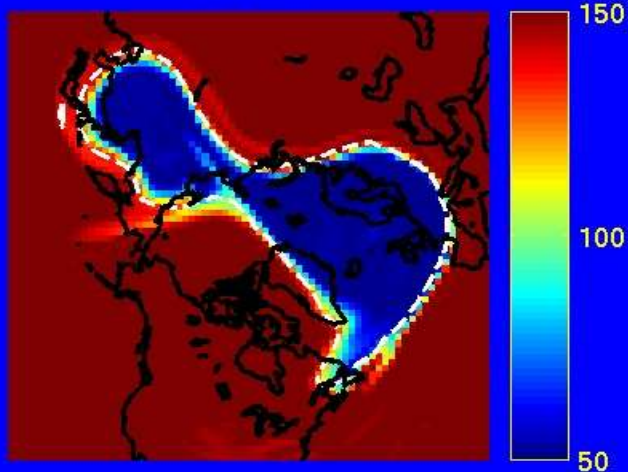
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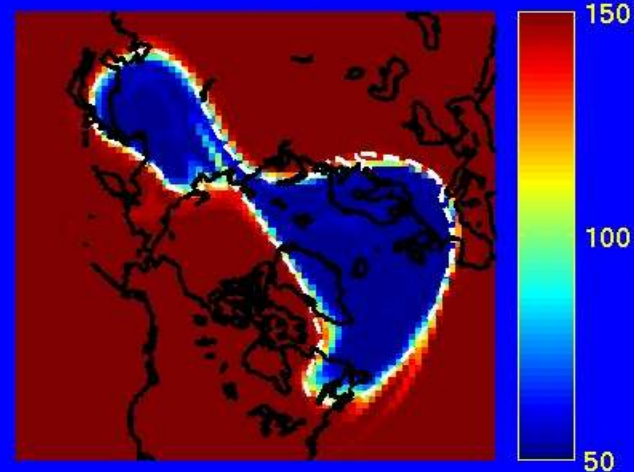
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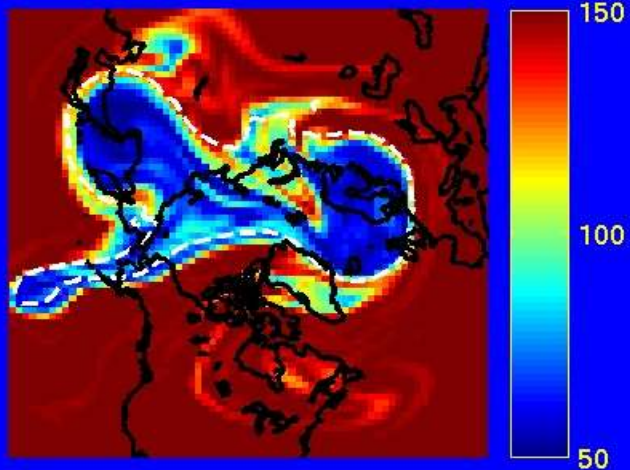


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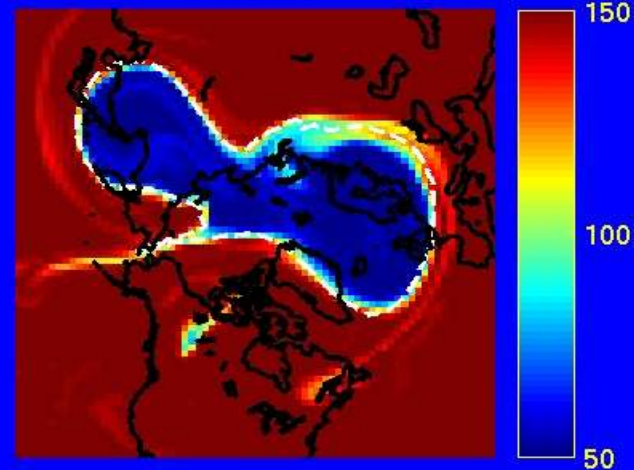


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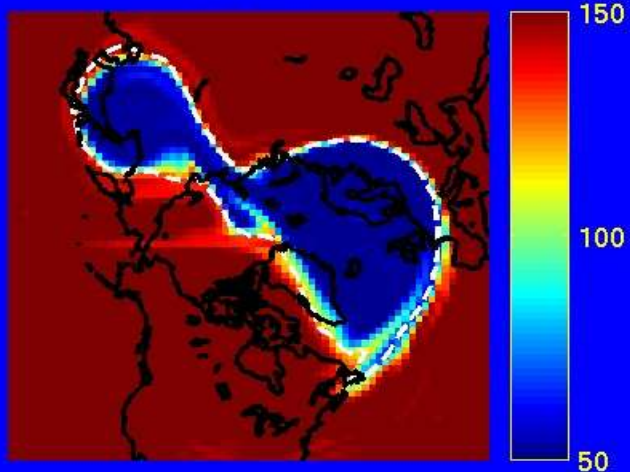
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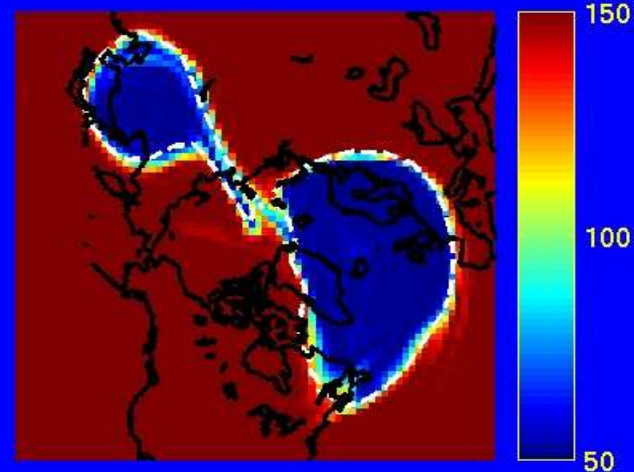
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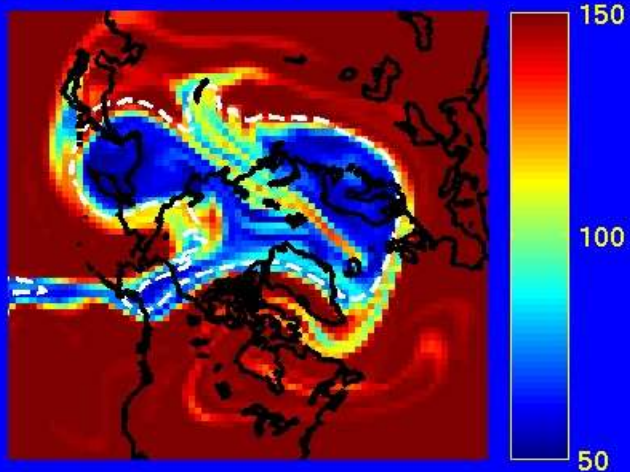


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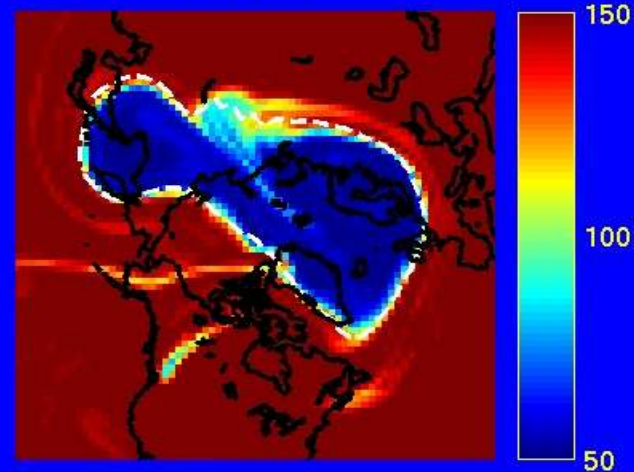


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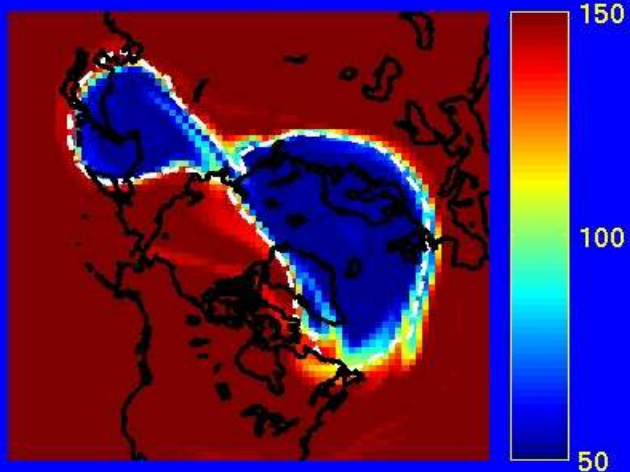
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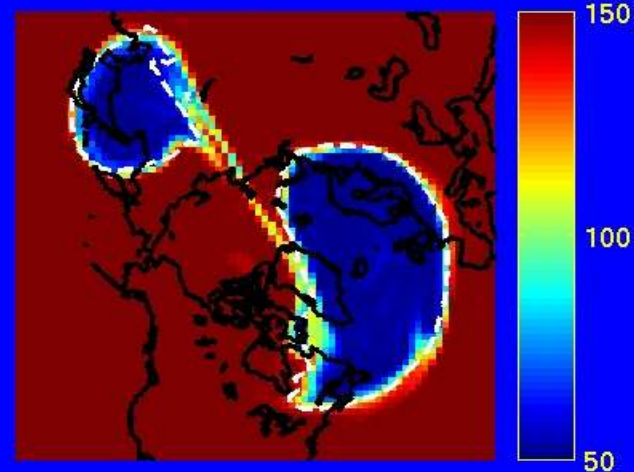
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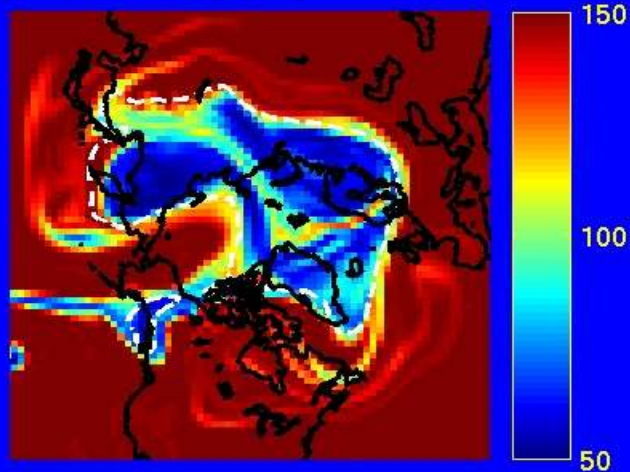


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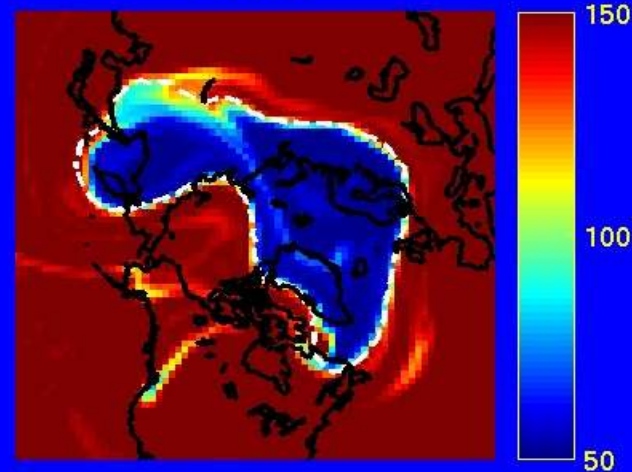


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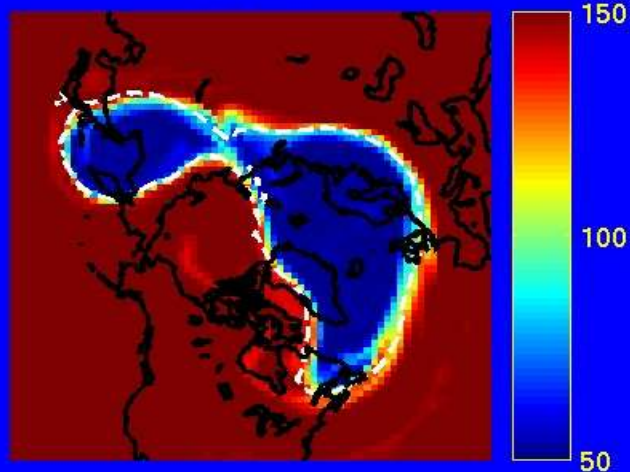
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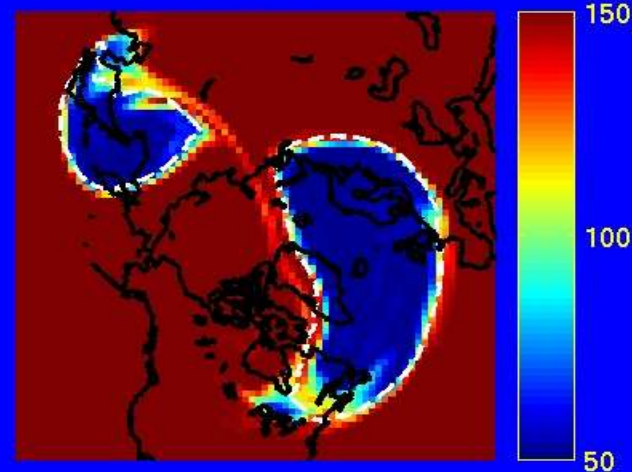
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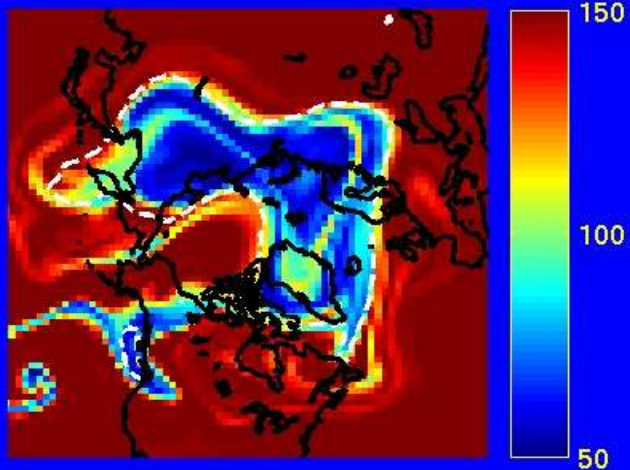


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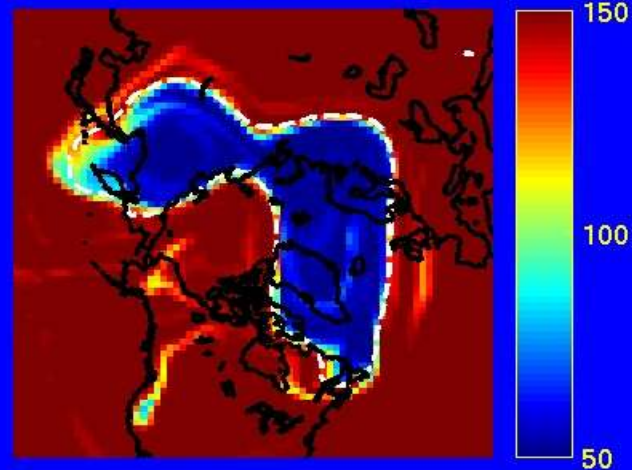


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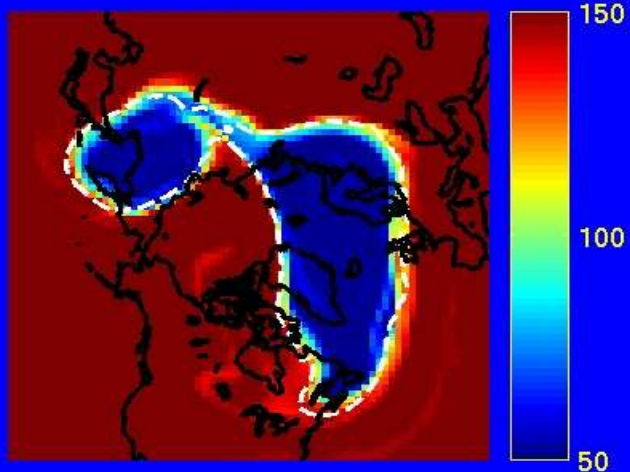
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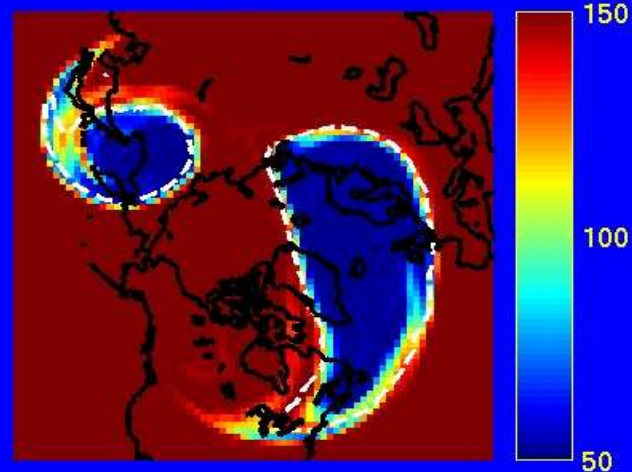
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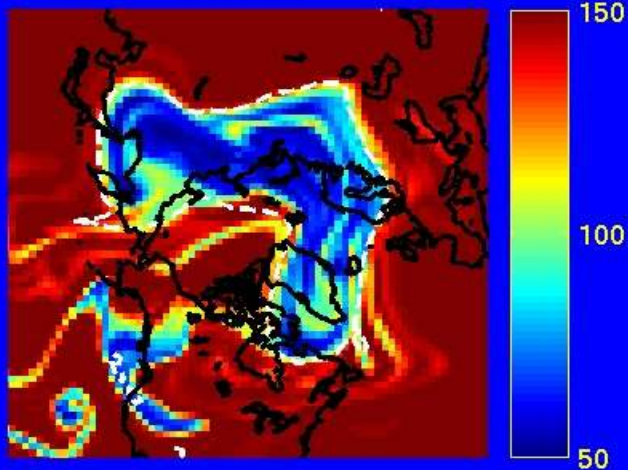


575 K

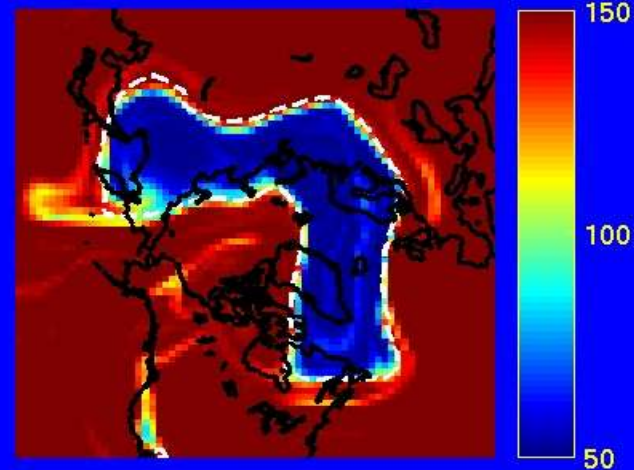


2005-03-18

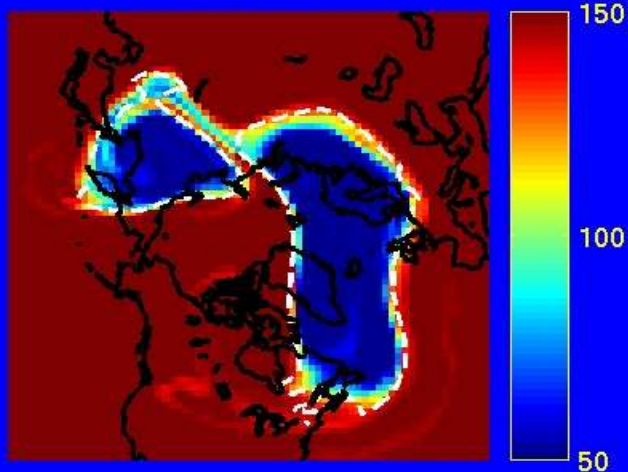
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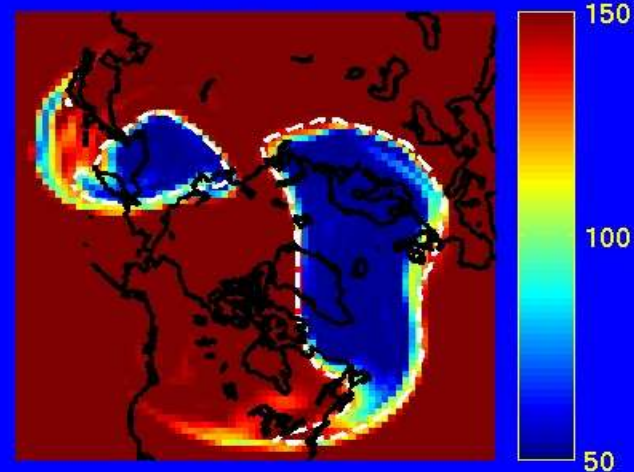
475 K



525 K

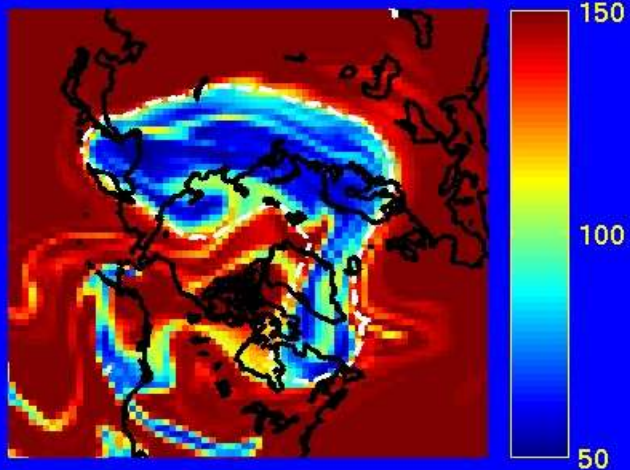


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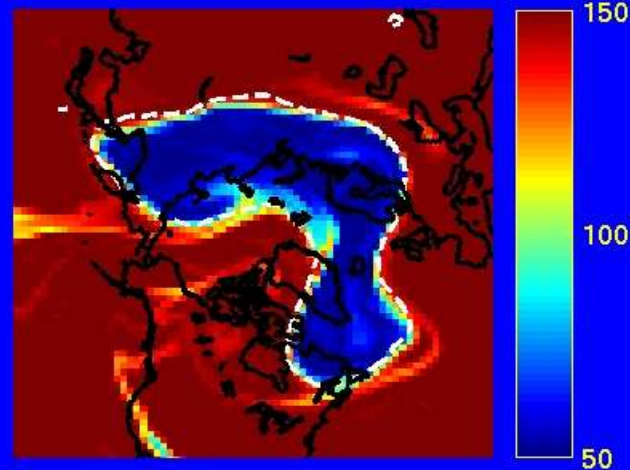


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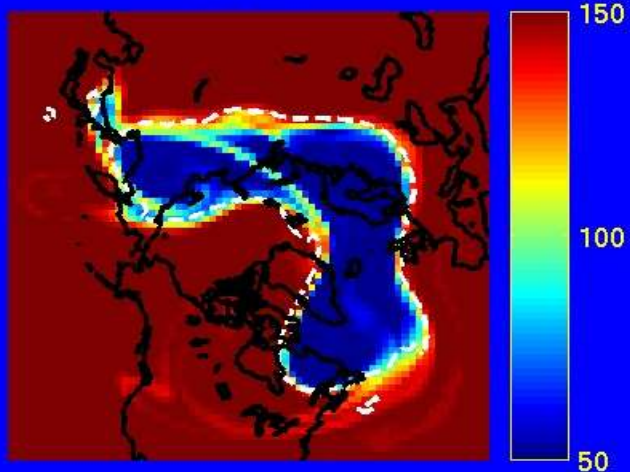
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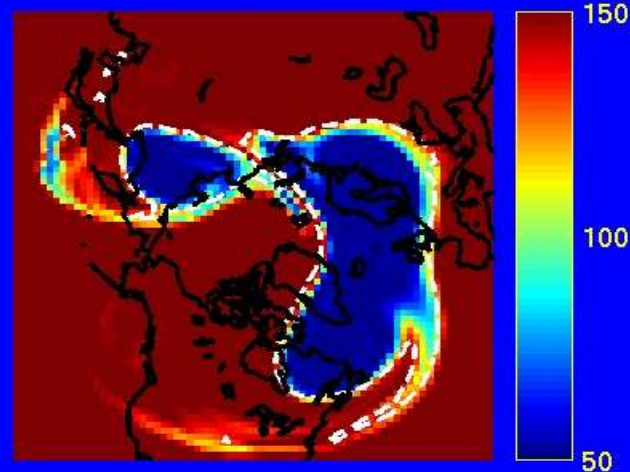
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525 K

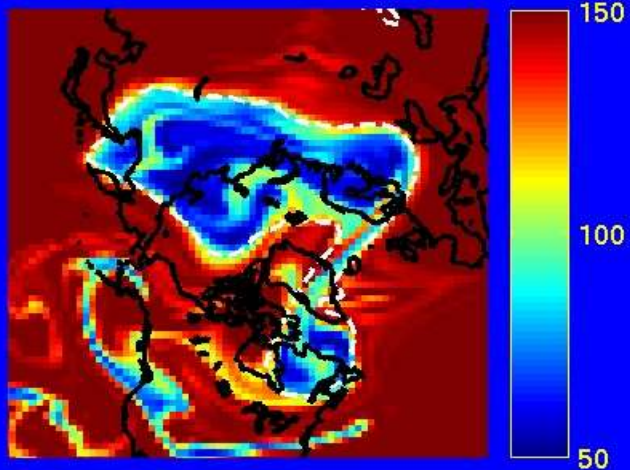


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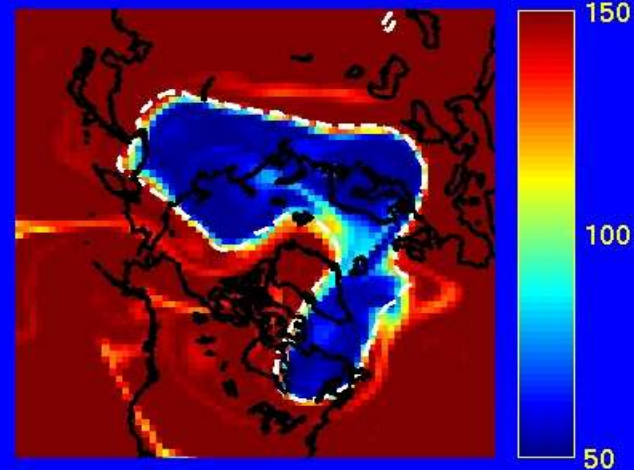


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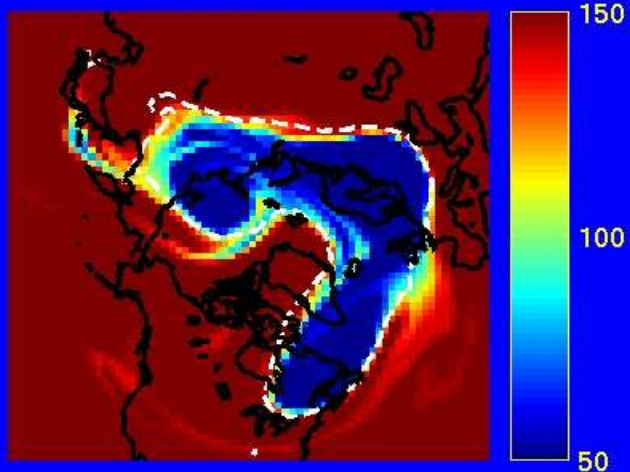
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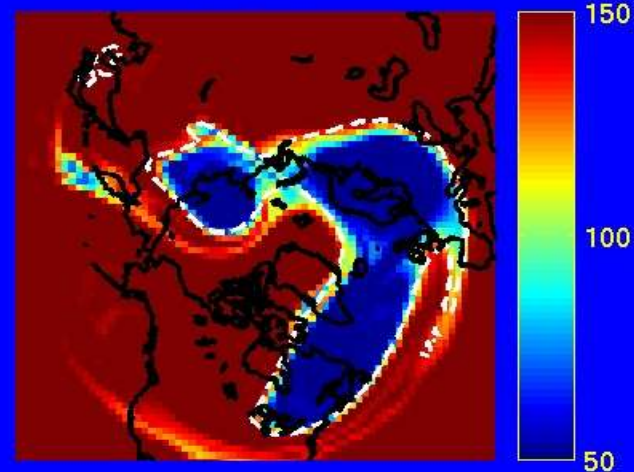
475 K



525 K

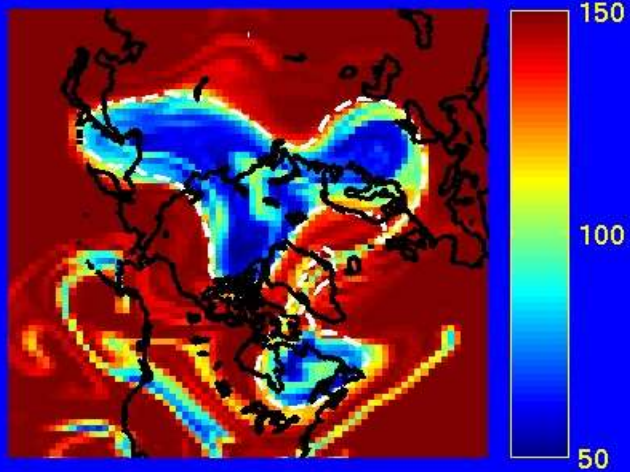


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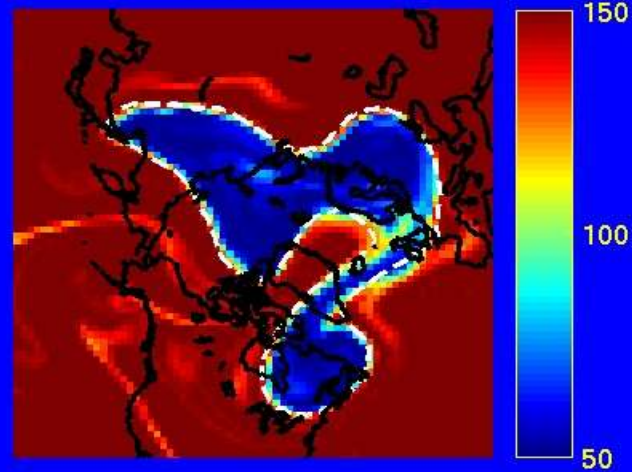


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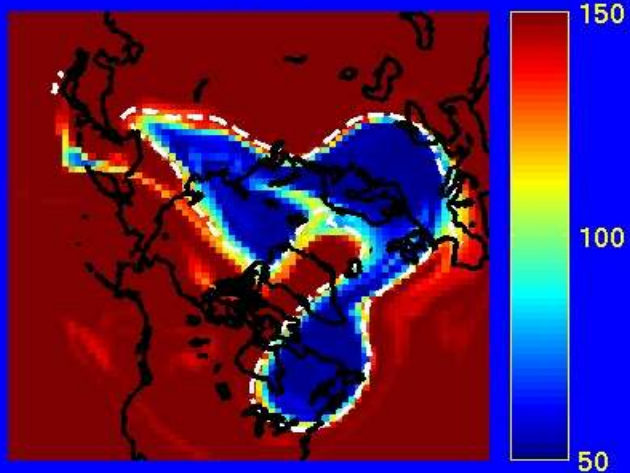
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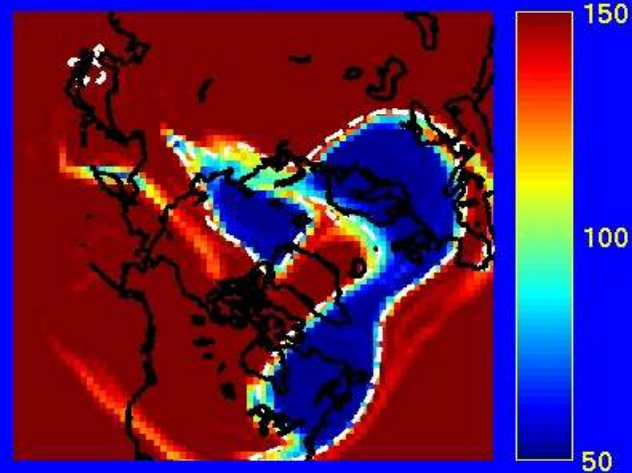
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525 K

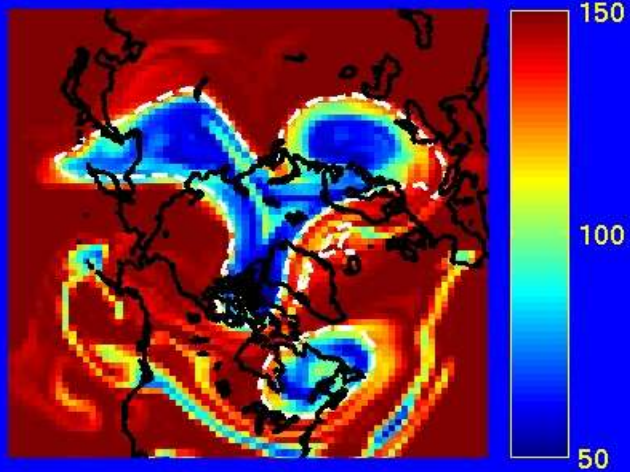


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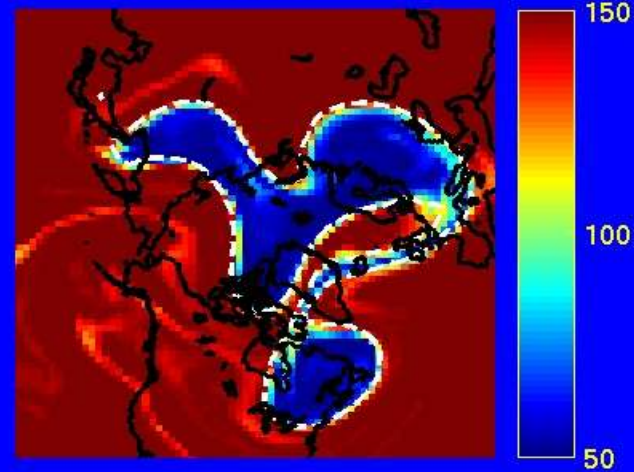


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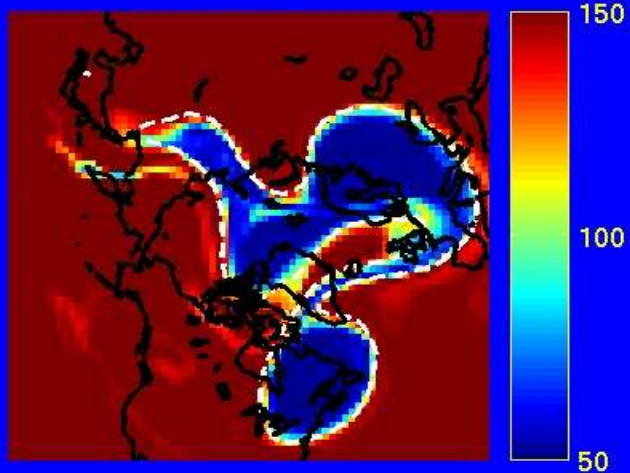
425 K



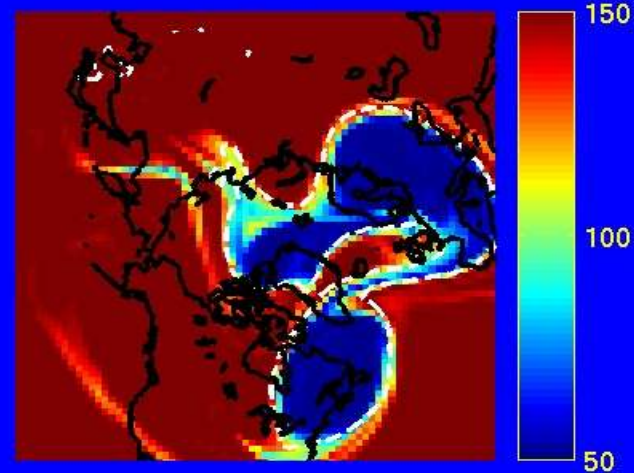
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525 K

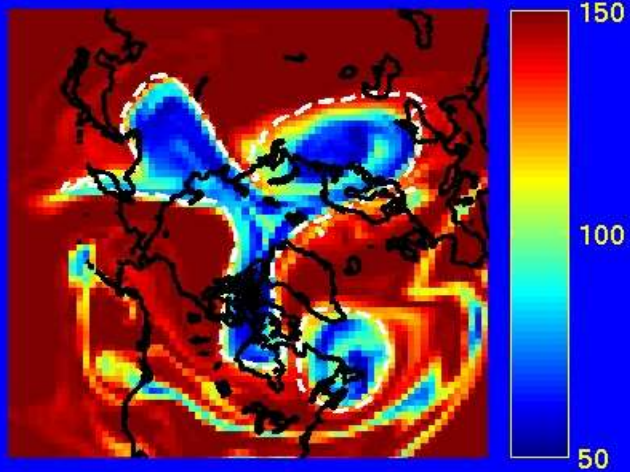


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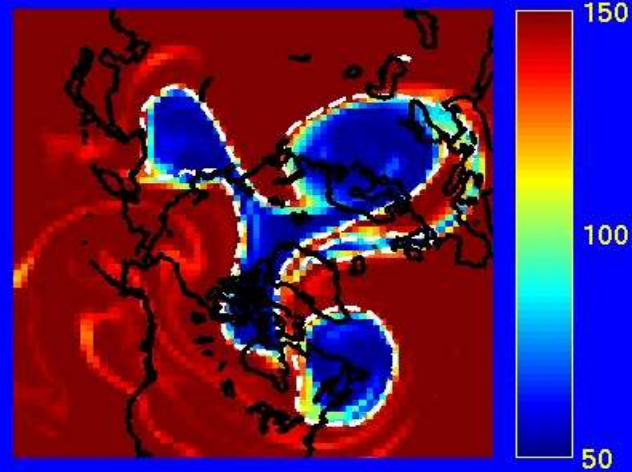


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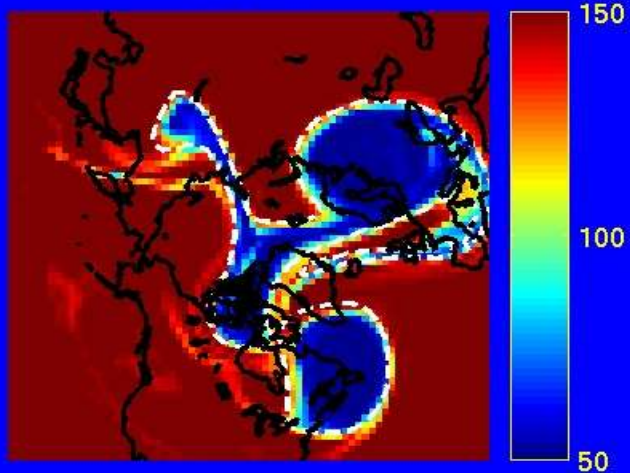
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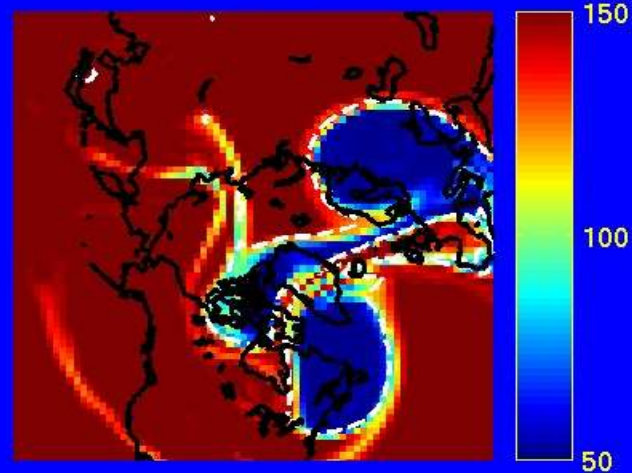
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525 K

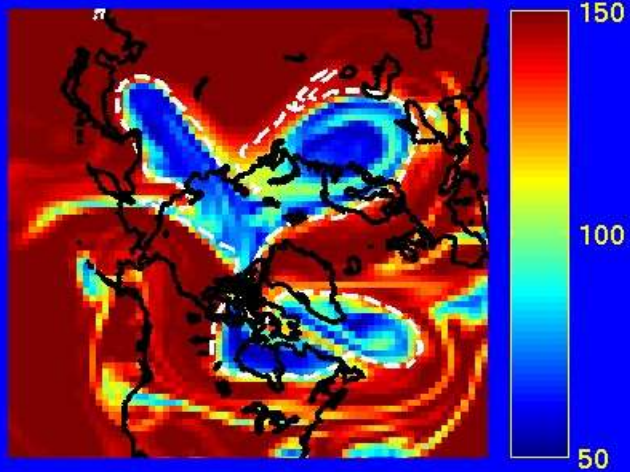


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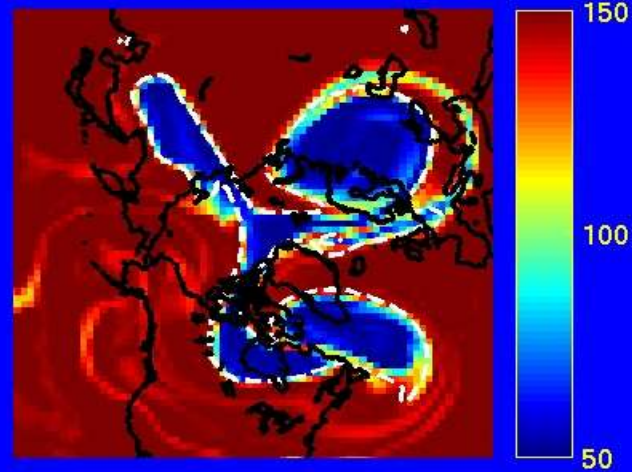


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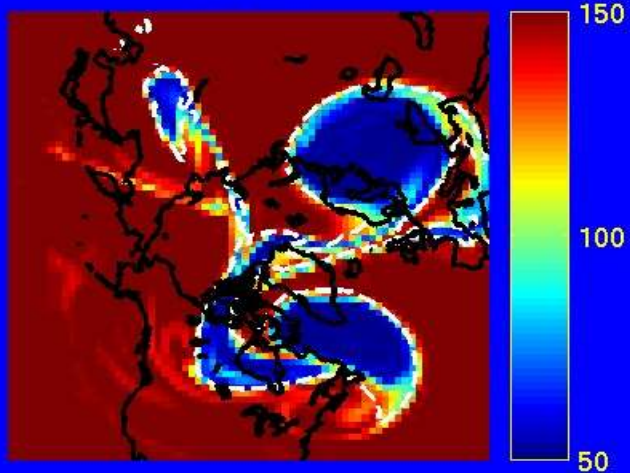
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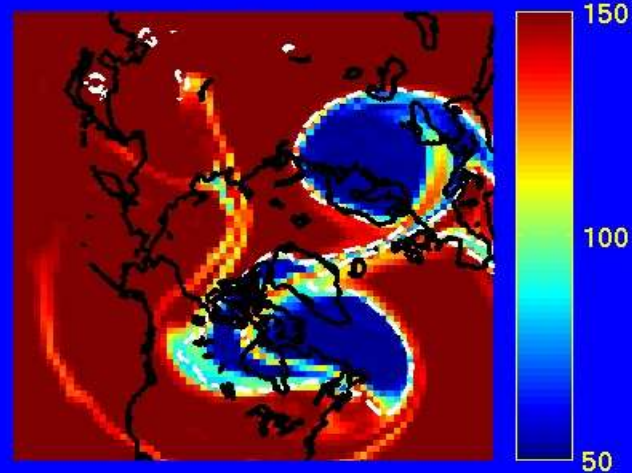
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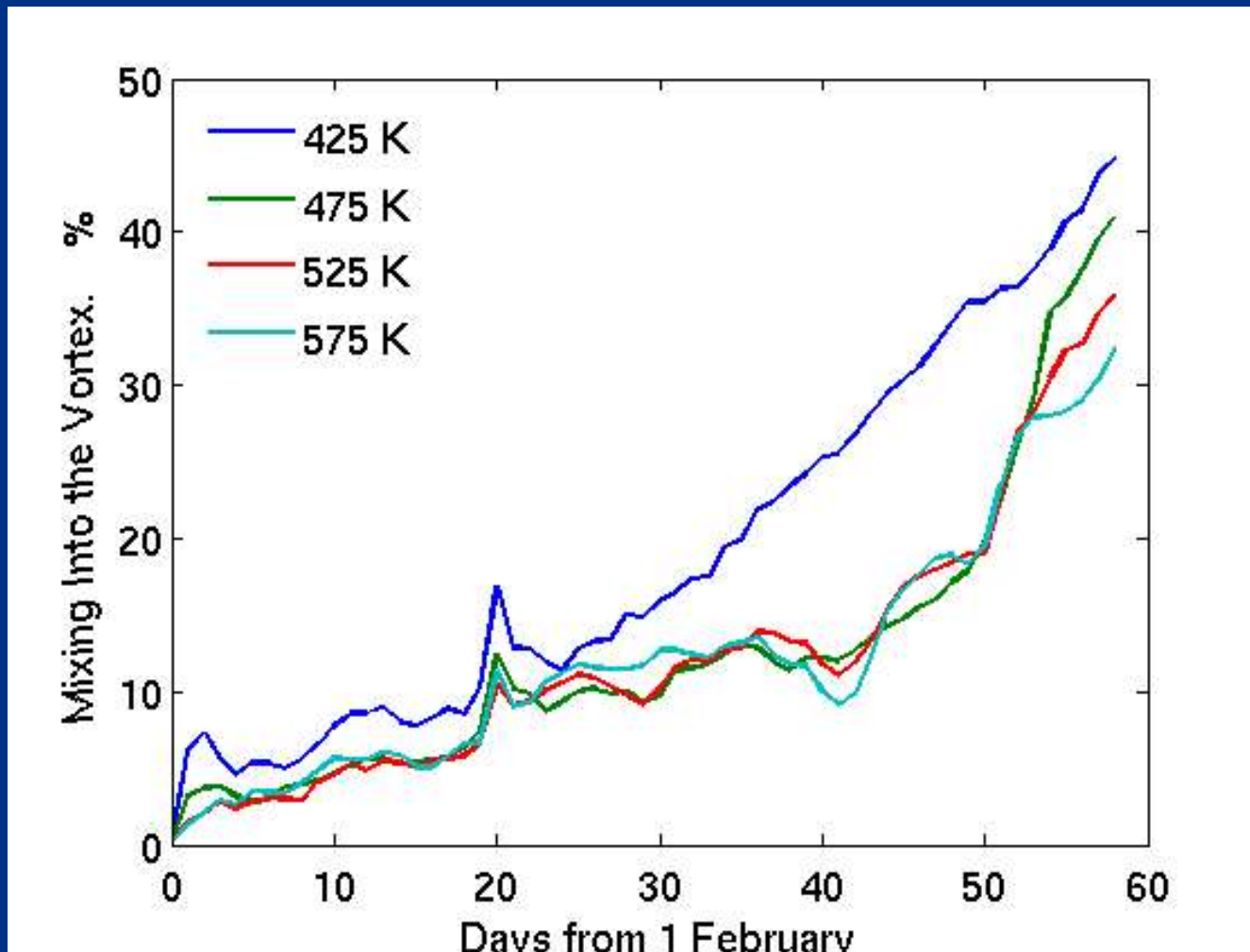
525 K



575 K



Accumulated Transport Into the Vortex.

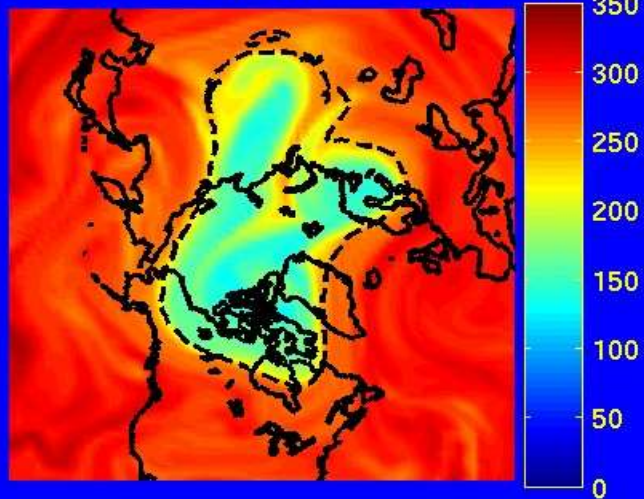


Assimilated N_2O fields from
February and March of 2005.

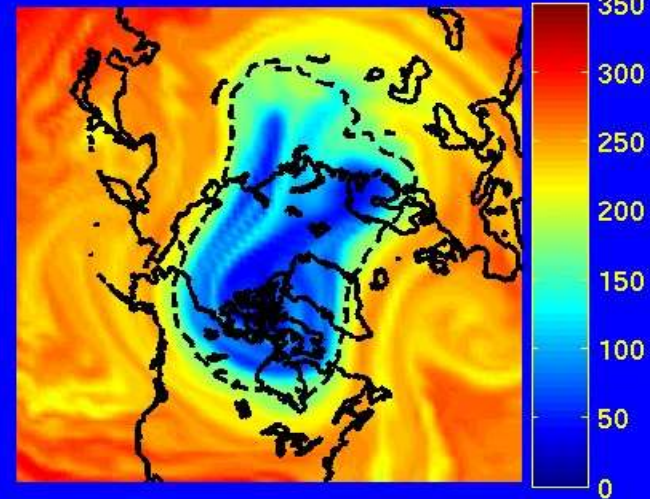
Used to estimate vertical
transport in the polar vortex

2005-02-01

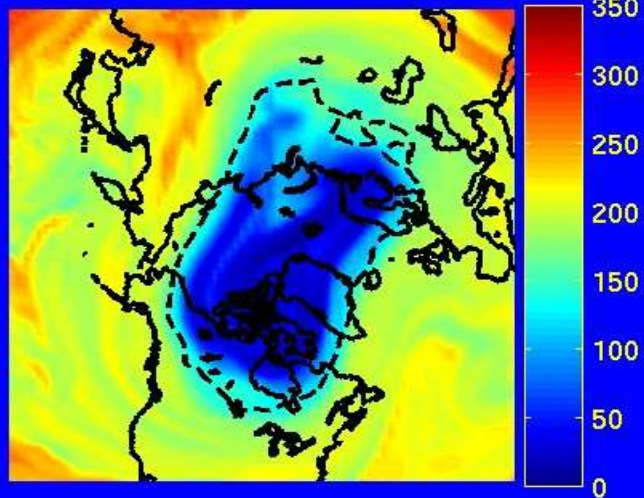
425 K



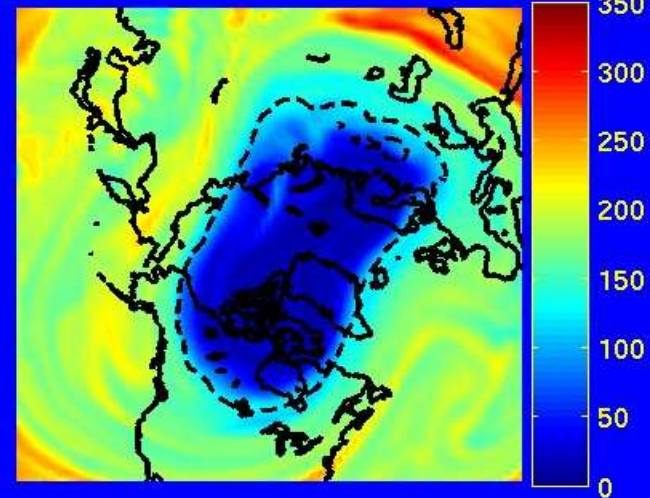
475 K



525 K



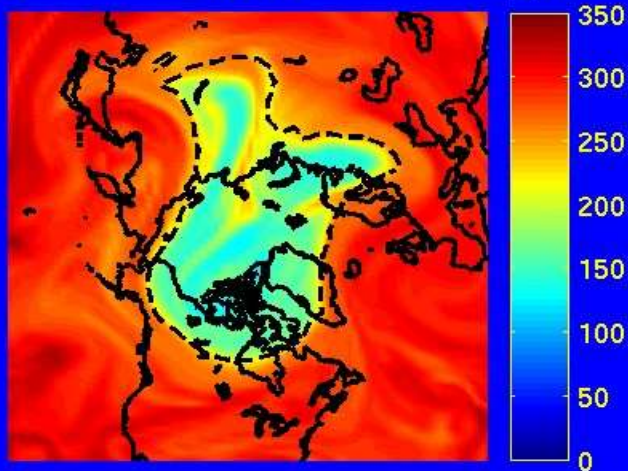
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2005-02-02

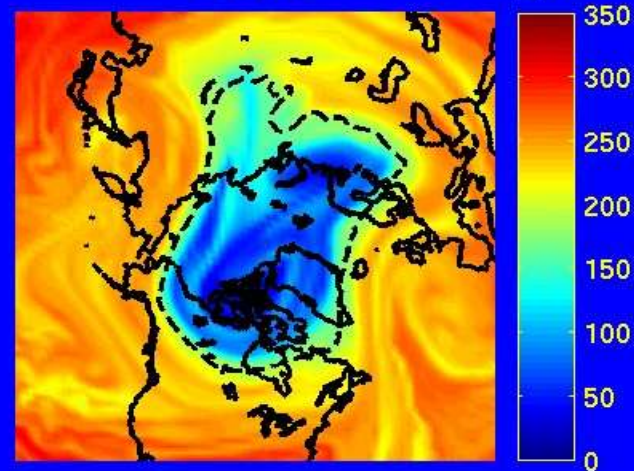
425 K

ppb



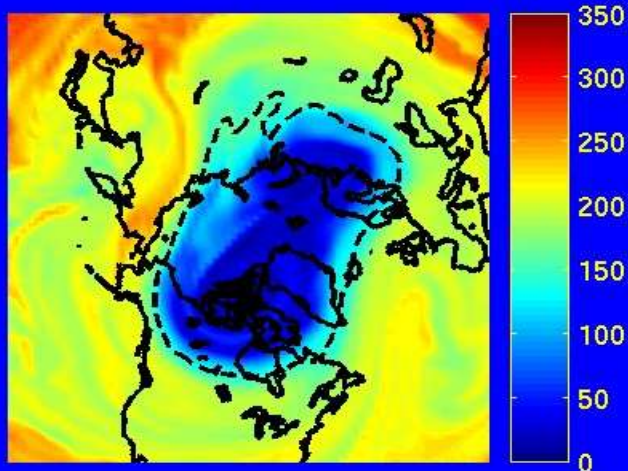
475 K

ppb



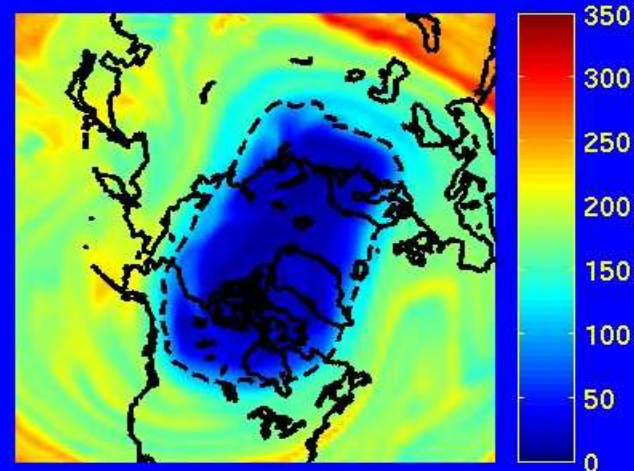
525 K

ppb



575 K

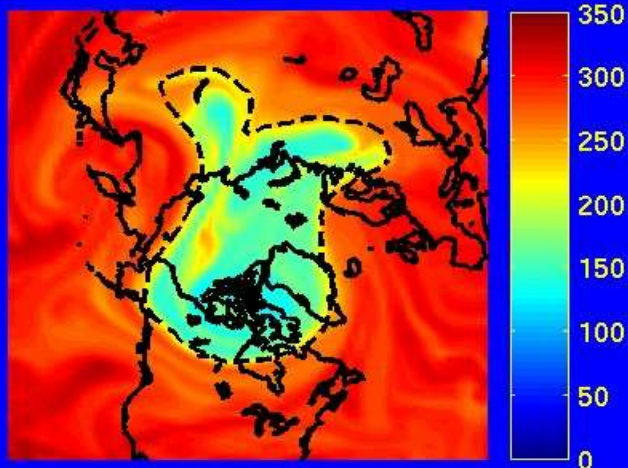
ppb



2005-02-03

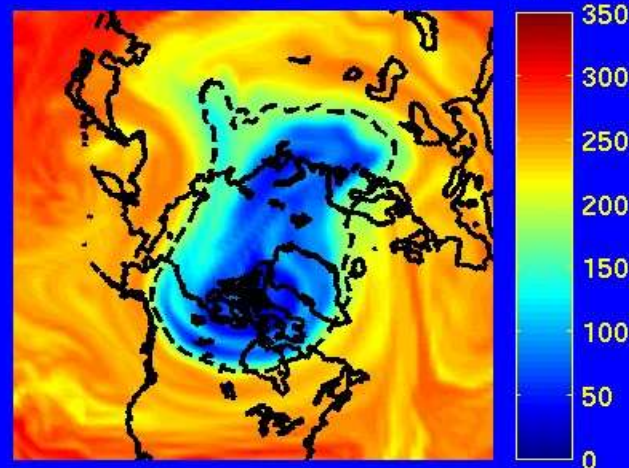
425 K

ppb



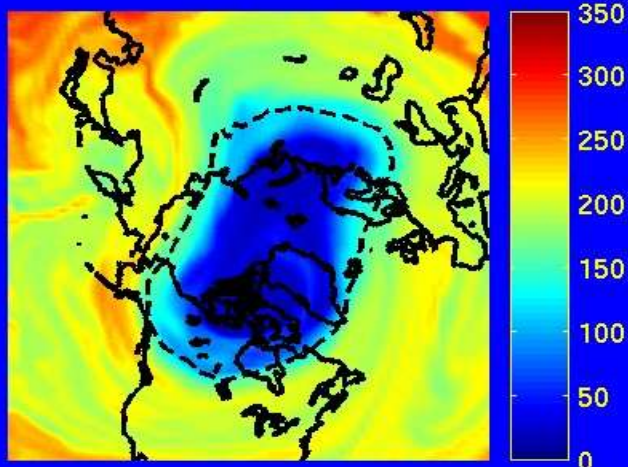
475 K

ppb



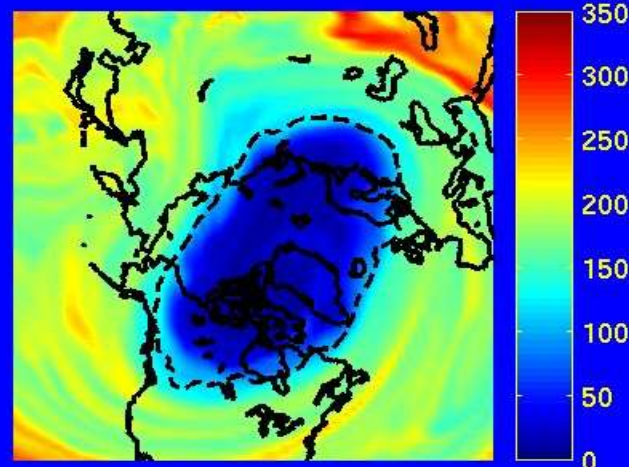
525 K

ppb



575 K

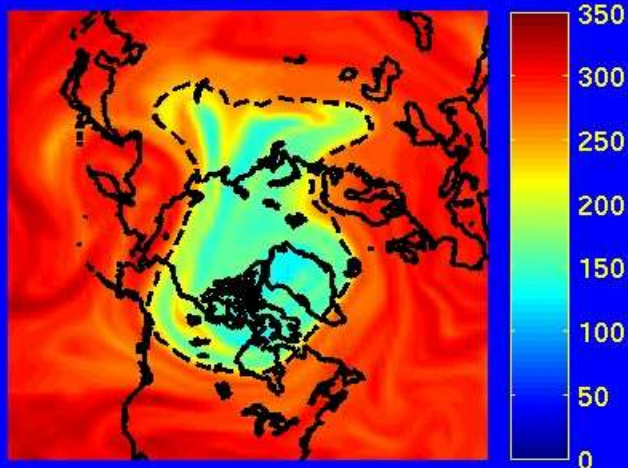
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2005-02-04

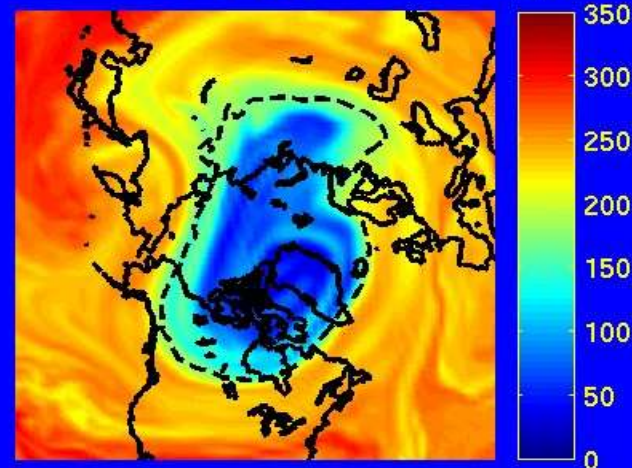
425 K

ppb



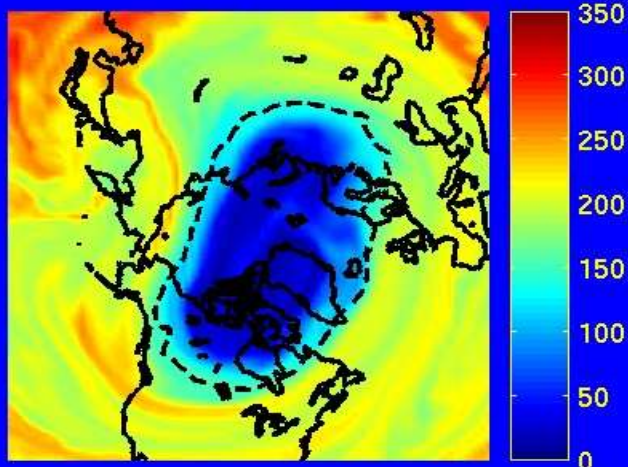
475 K

ppb



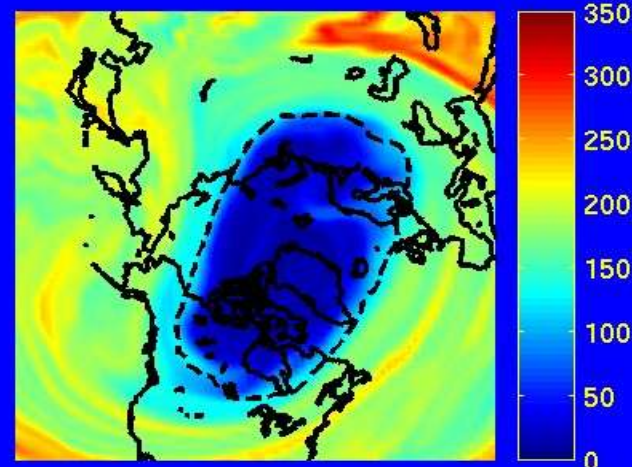
525 K

ppb



575 K

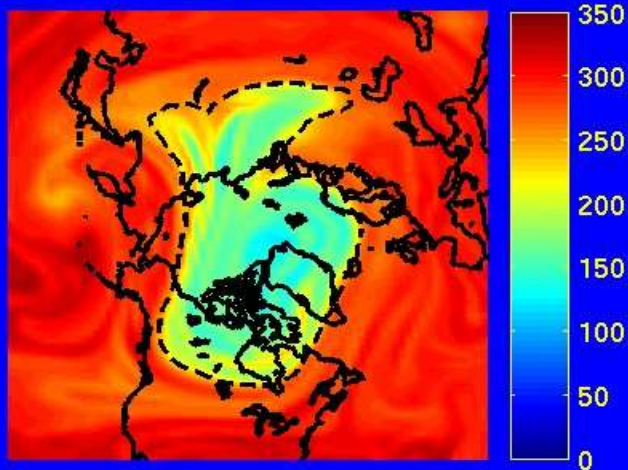
ppb



2005-02-05

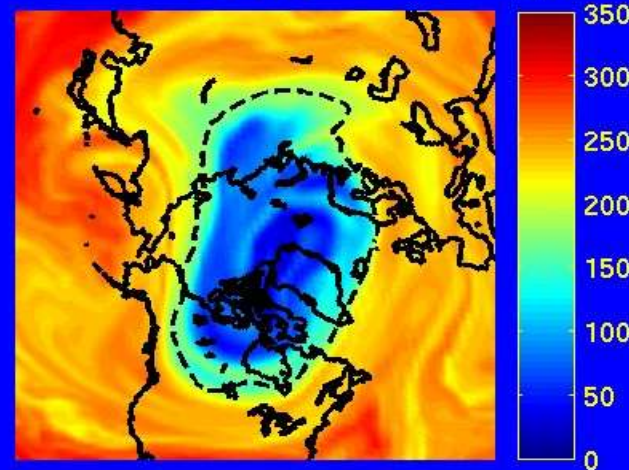
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ppb



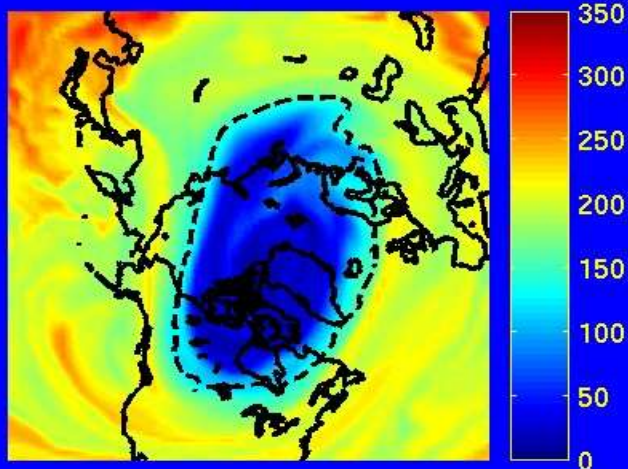
475 K

ppb



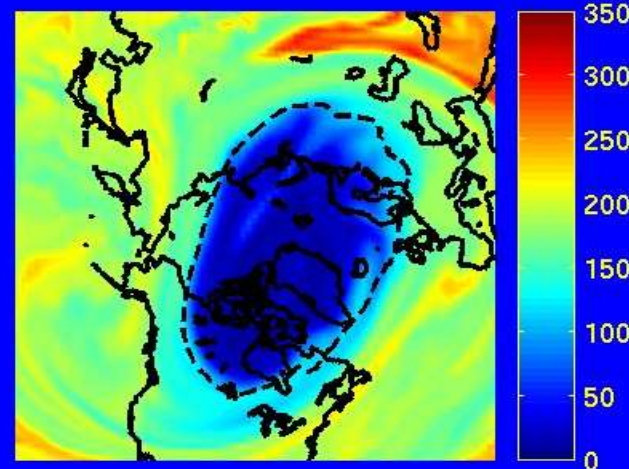
525 K

ppb



575 K

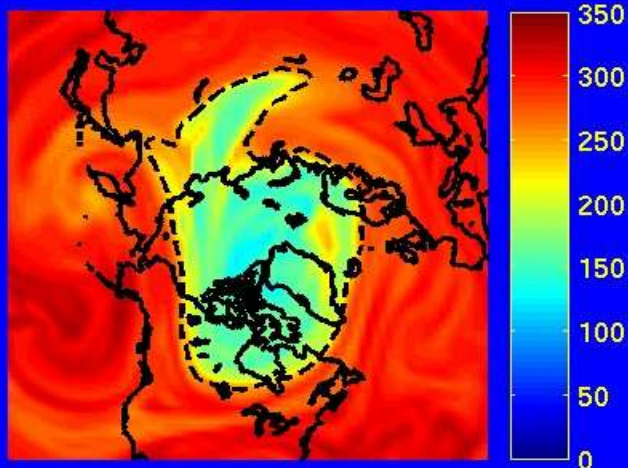
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2005-02-06

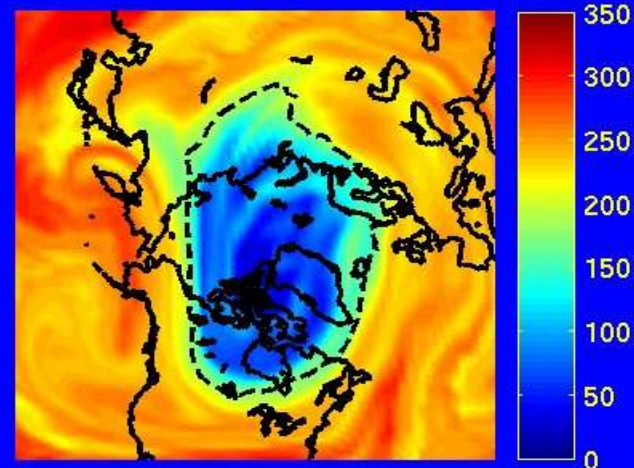
425 K

ppb



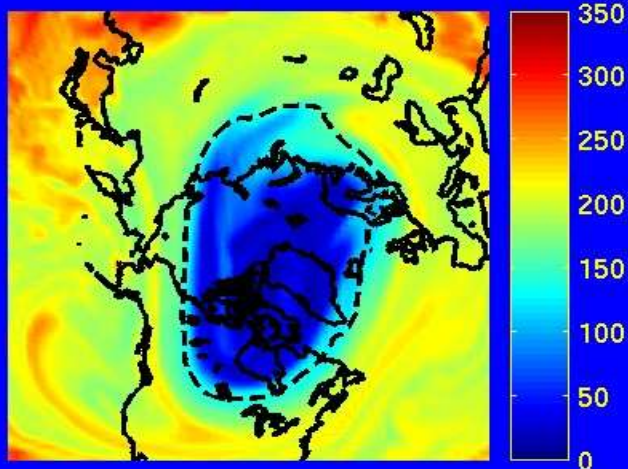
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ppb



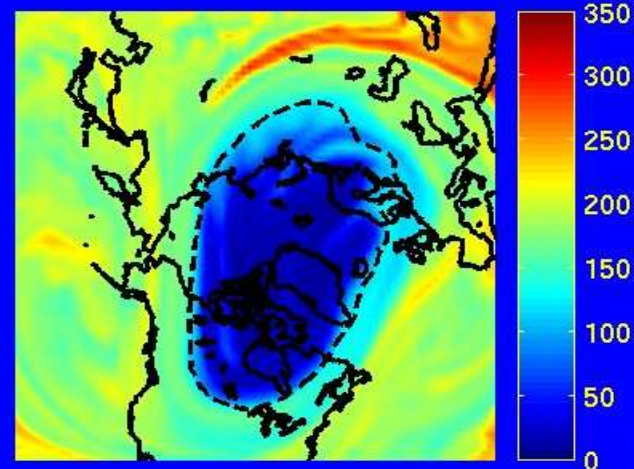
525 K

ppb



575 K

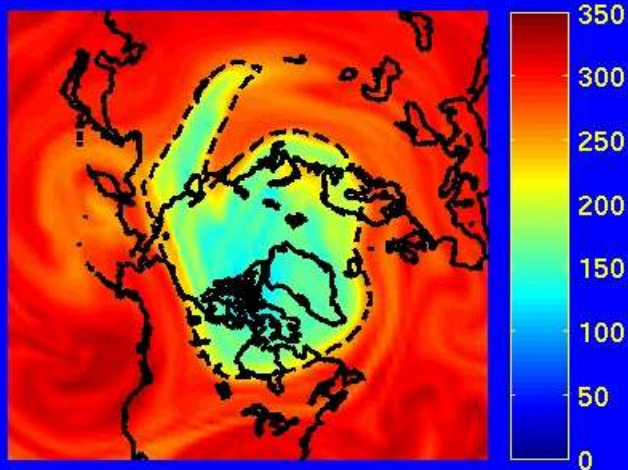
ppb



2005-02-07

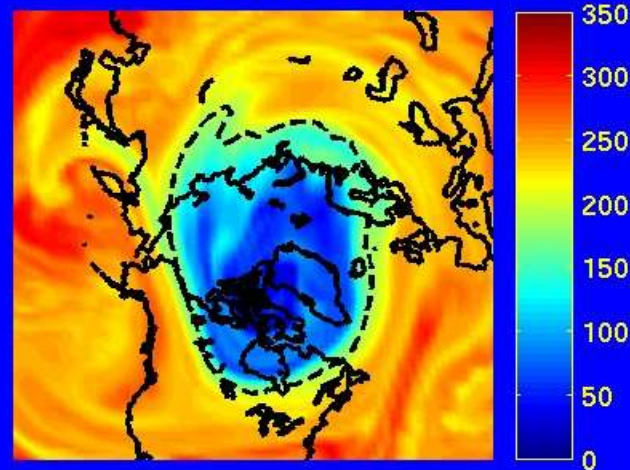
425 K

ppb



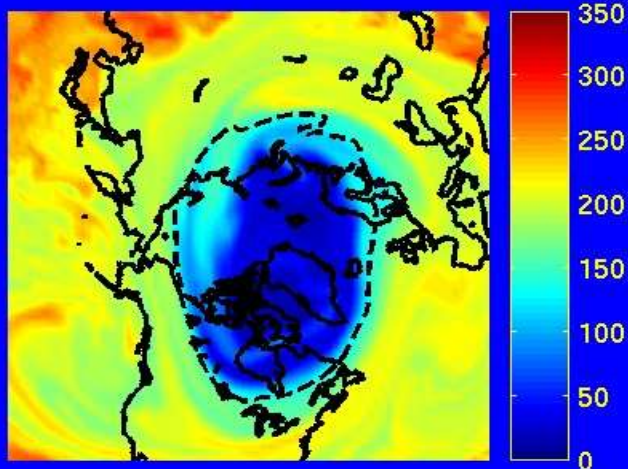
475 K

ppb



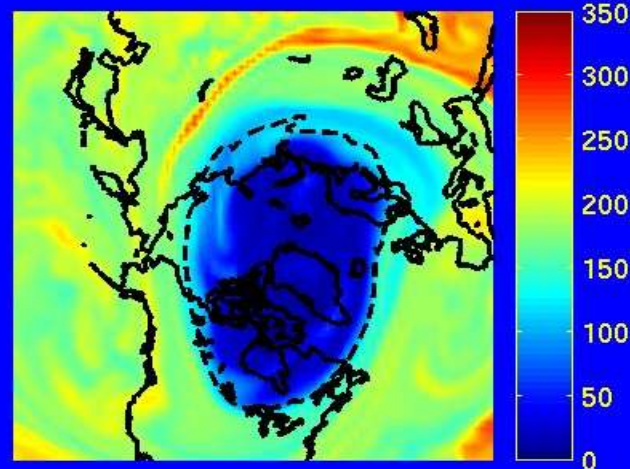
525 K

ppb



575 K

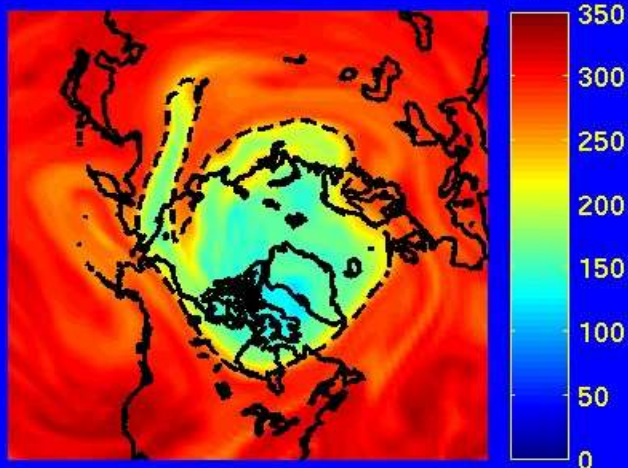
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2005-02-08

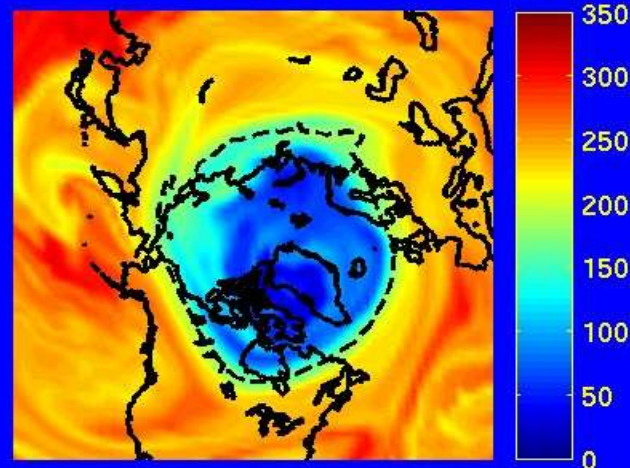
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ppb



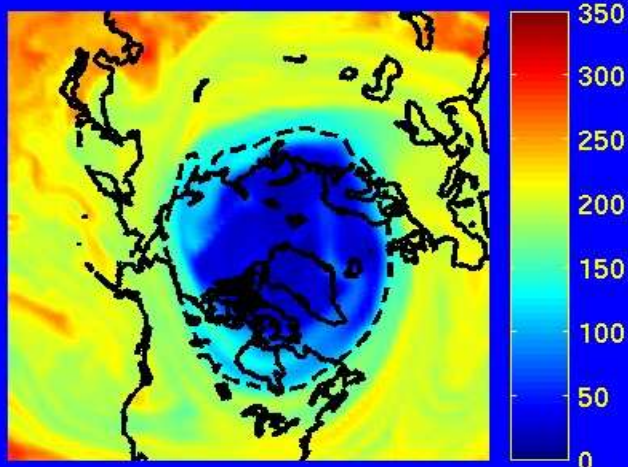
475 K

ppb



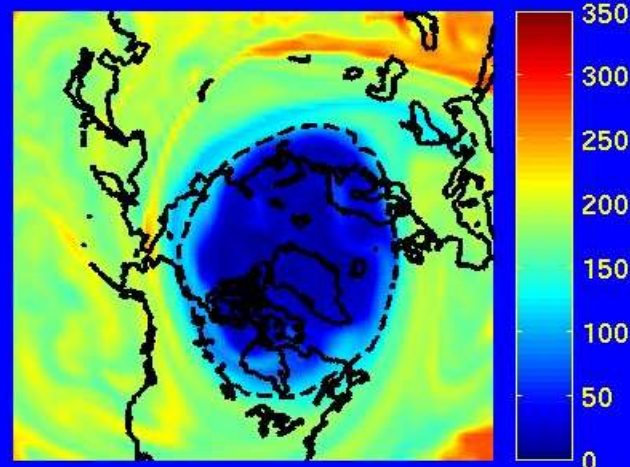
525 K

ppb



575 K

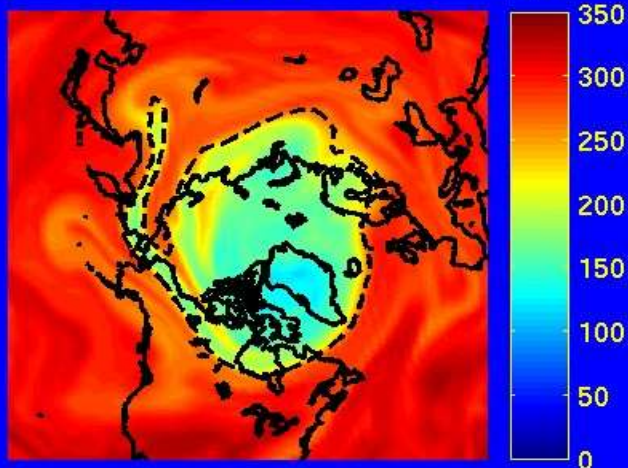
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2005-02-09

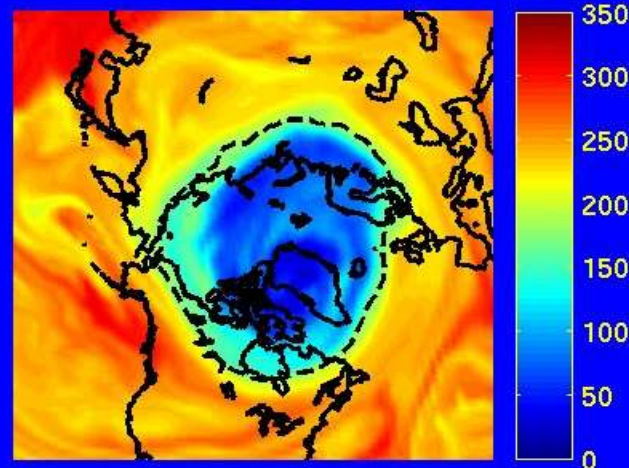
425 K

ppb



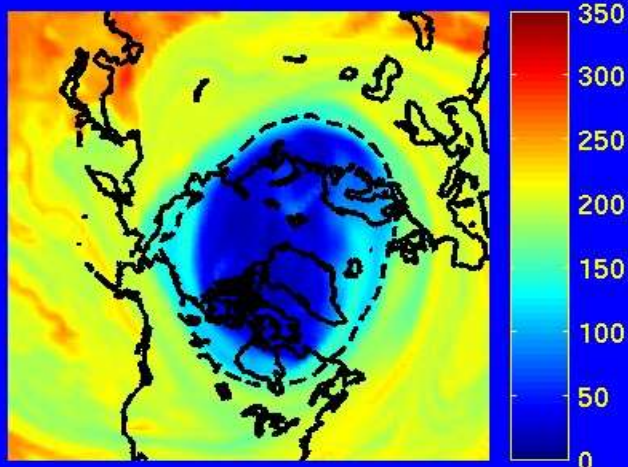
475 K

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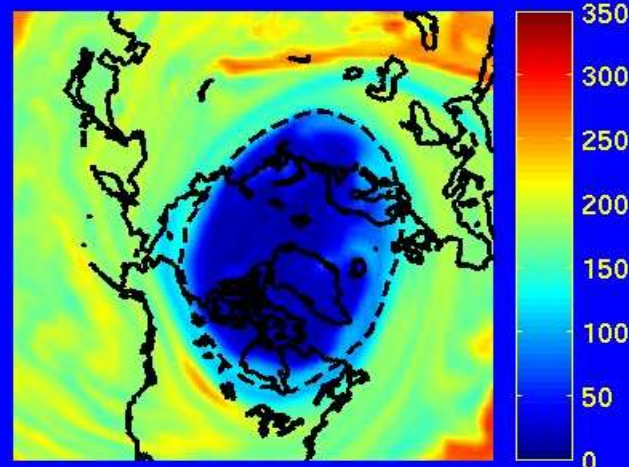
525 K

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575 K

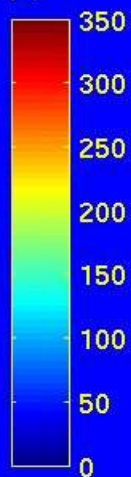
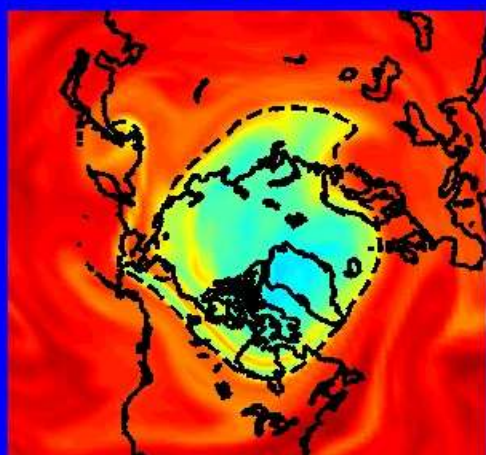
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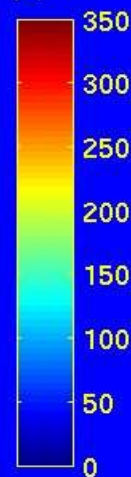
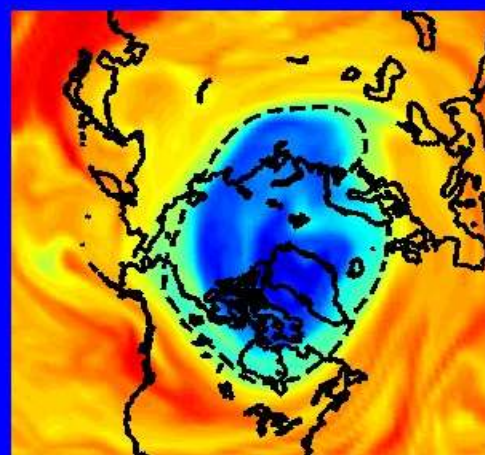
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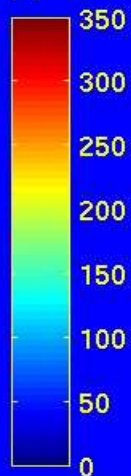
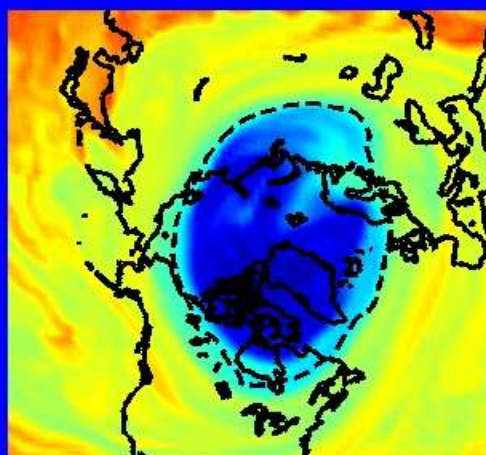
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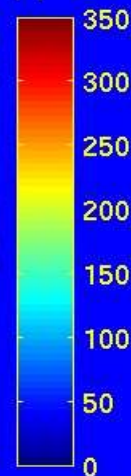
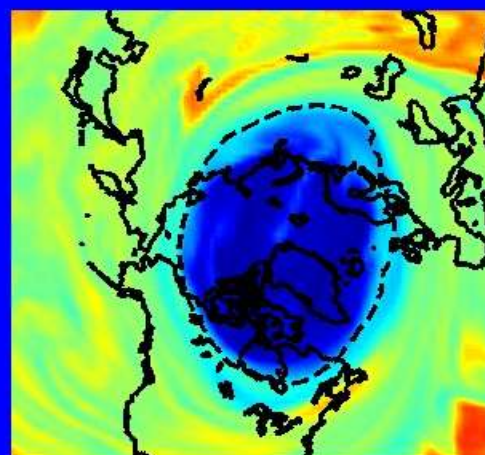
525 K

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575 K

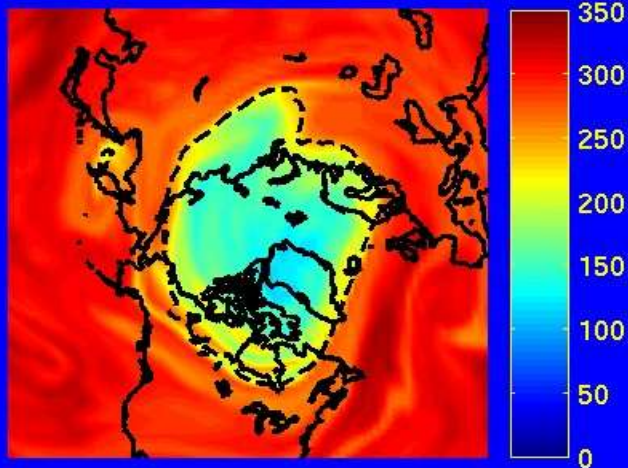
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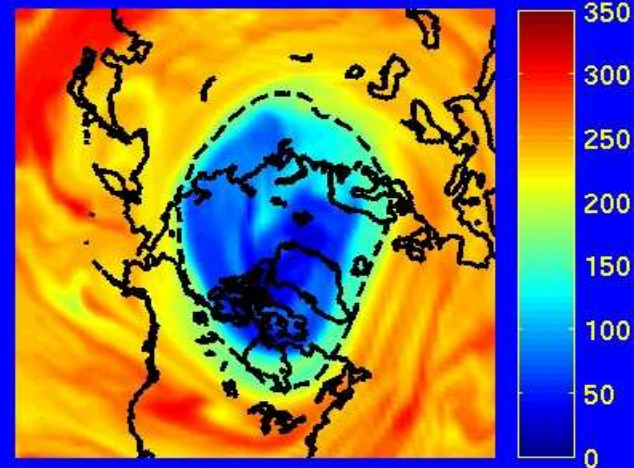
425 K

ppb



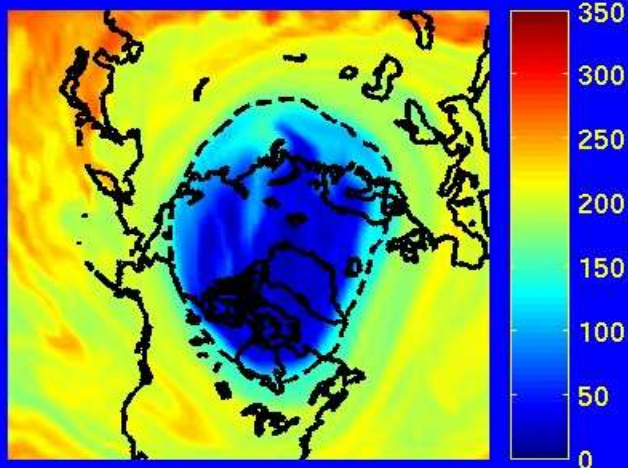
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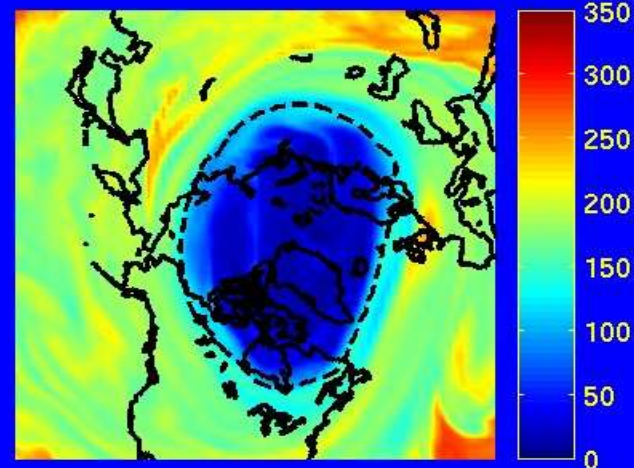
525 K

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575 K

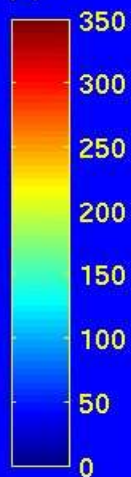
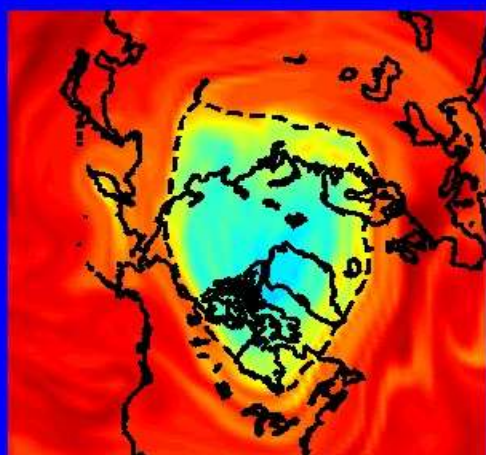
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2005-02-12

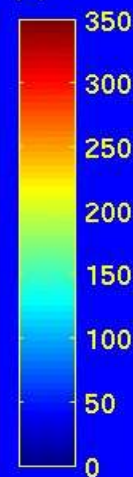
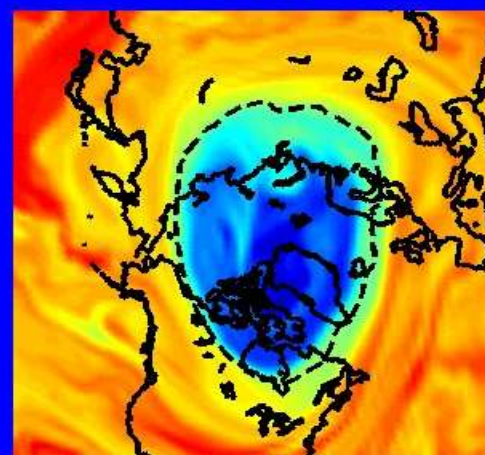
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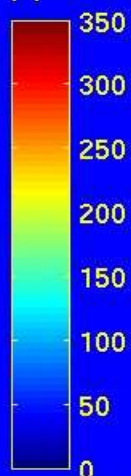
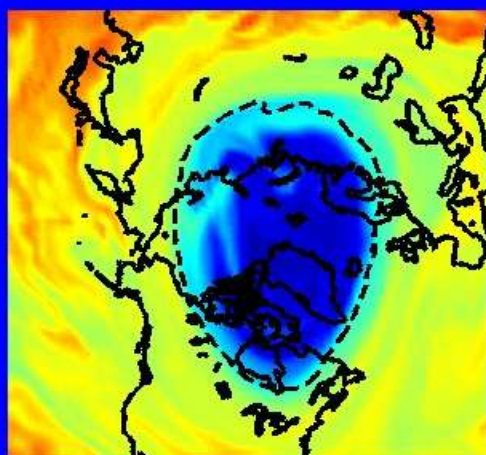
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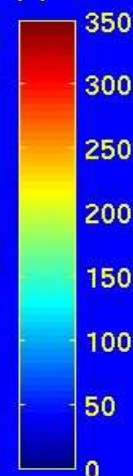
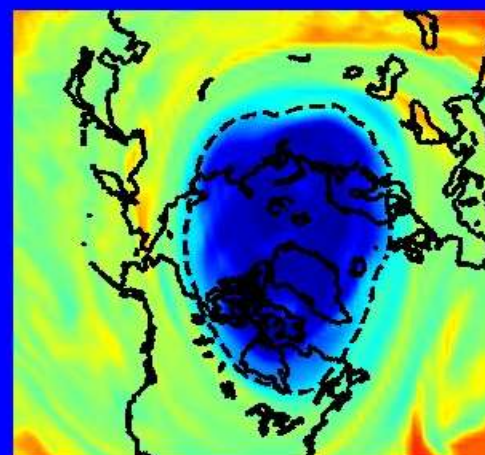
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575 K

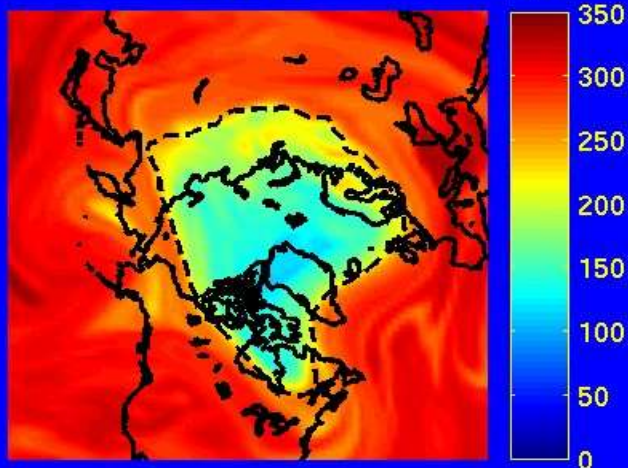
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2005-02-13

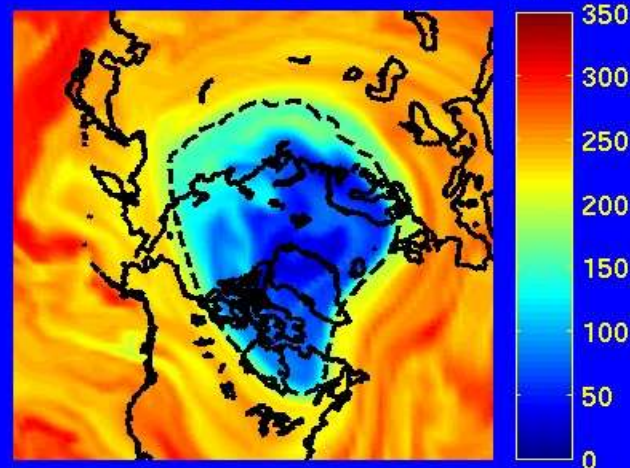
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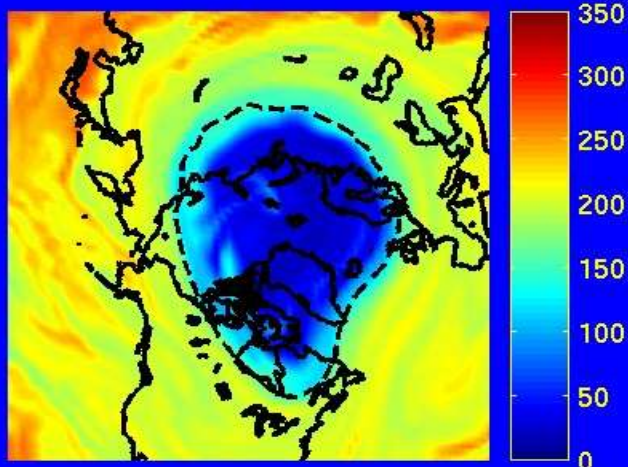
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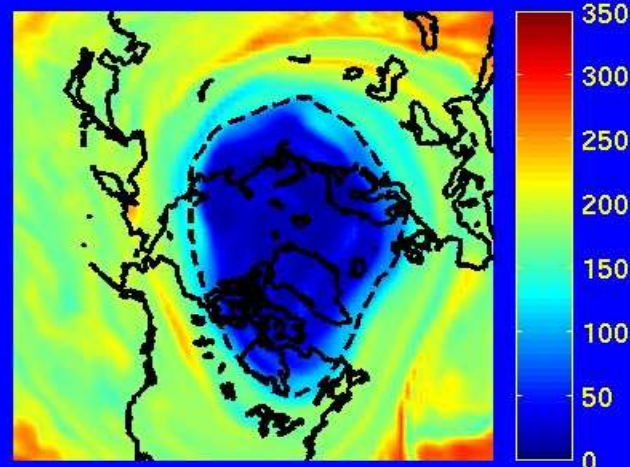
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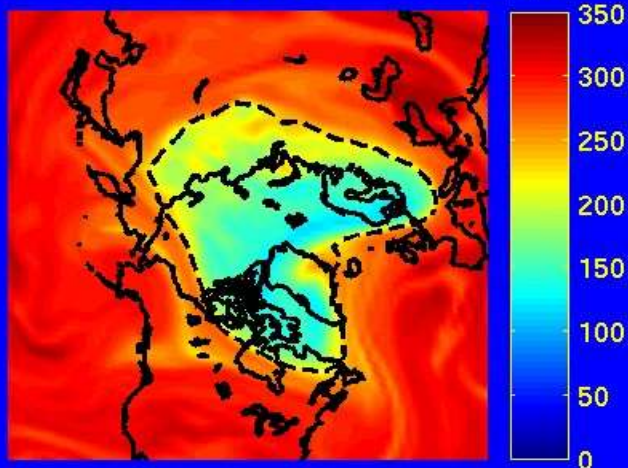
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2005-02-14

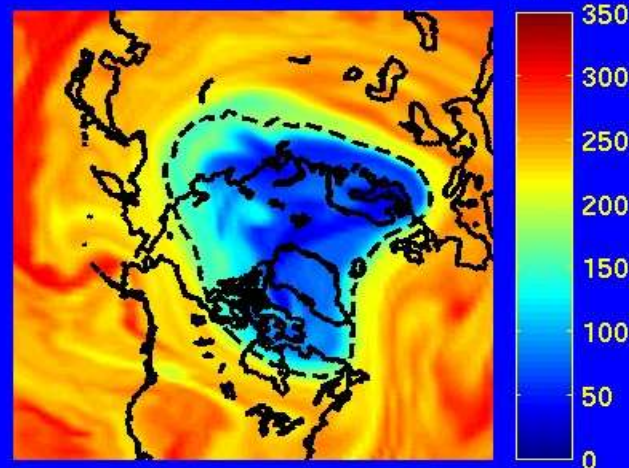
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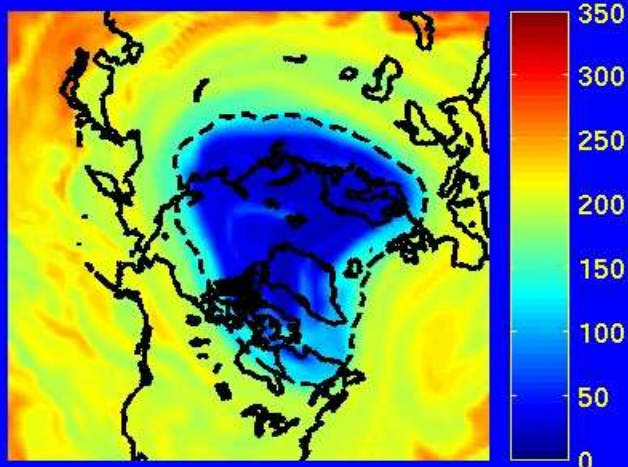
475 K

ppb



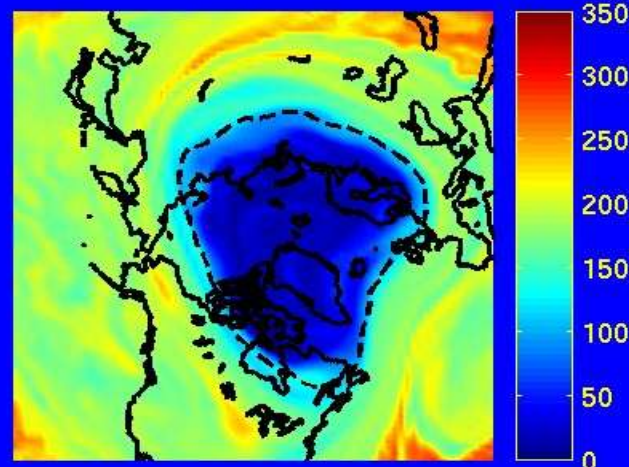
525 K

ppb



575 K

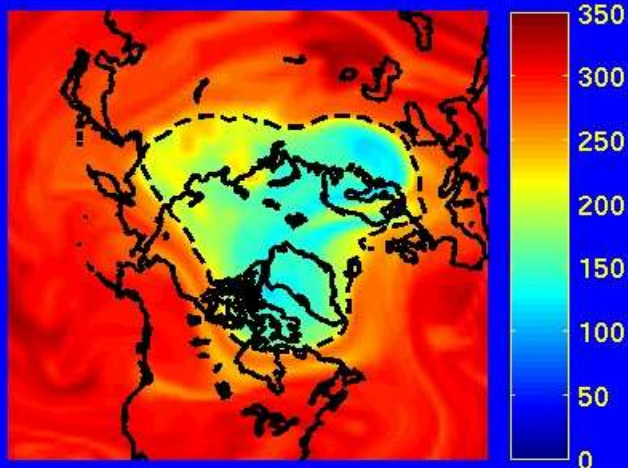
ppb



2005-02-15

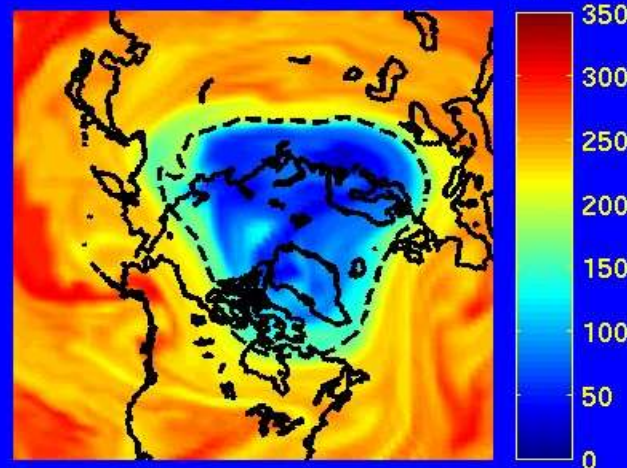
425 K

ppb



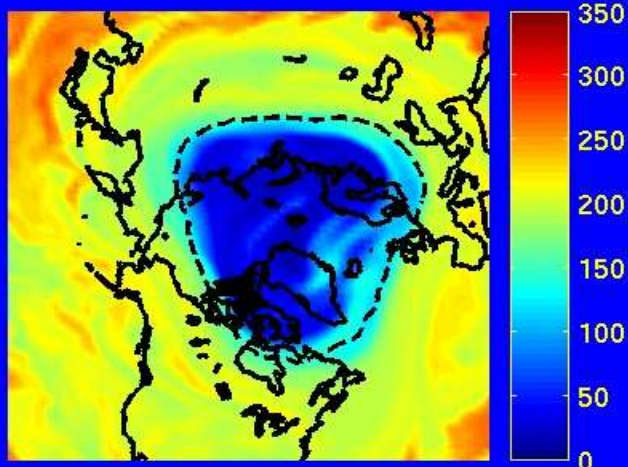
475 K

ppb



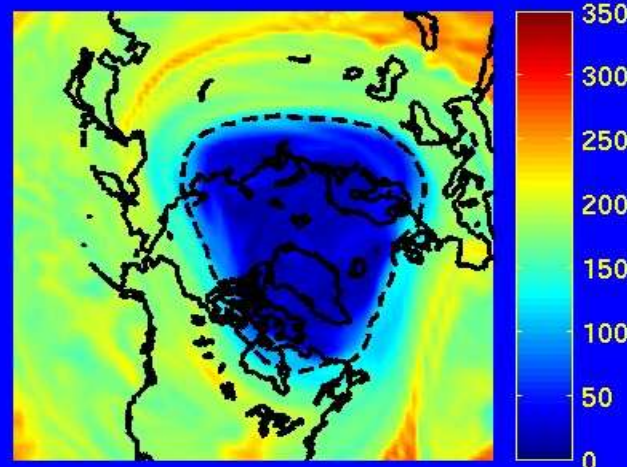
525 K

ppb



575 K

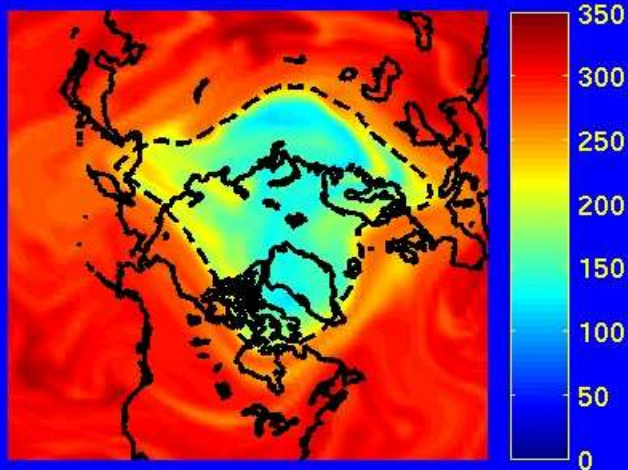
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2005-02-16

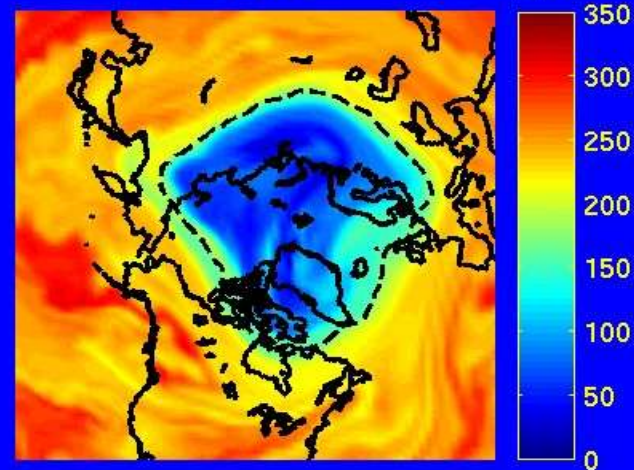
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ppb



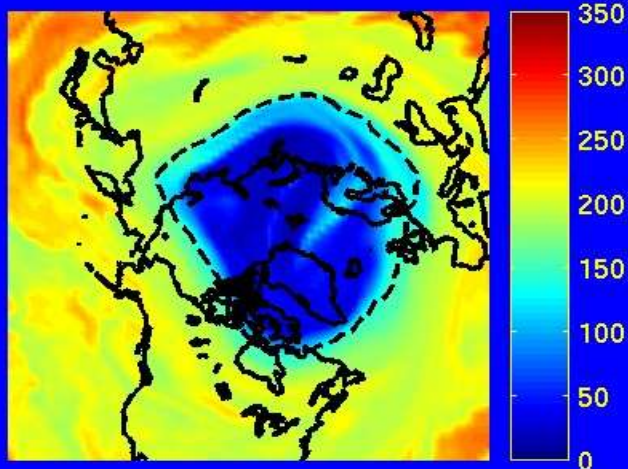
475 K

ppb



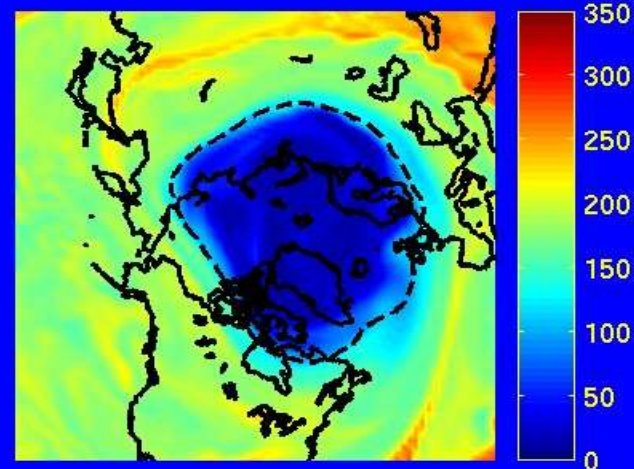
525 K

ppb



575 K

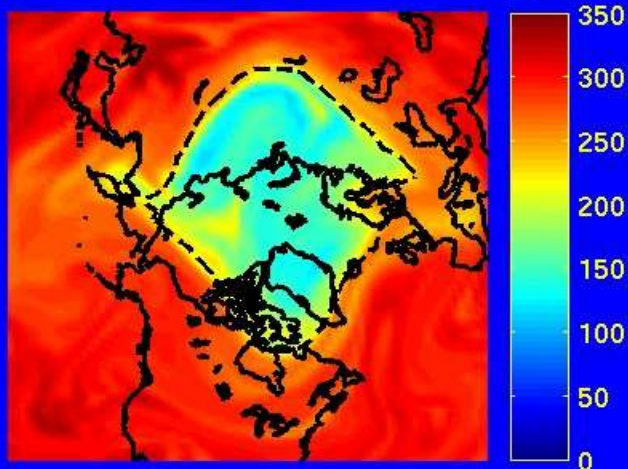
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2005-02-17

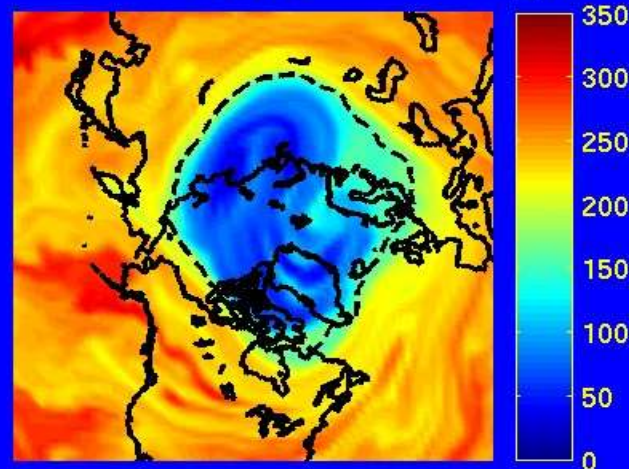
425 K

ppb



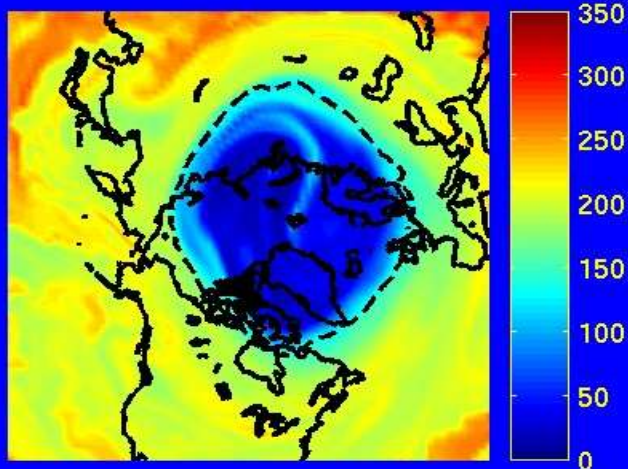
475 K

ppb



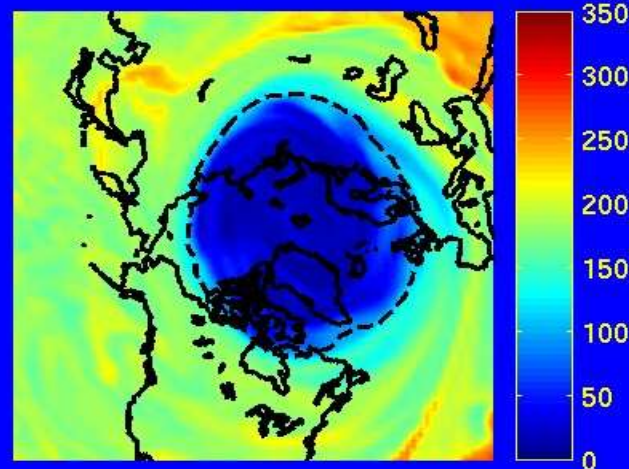
525 K

ppb



575 K

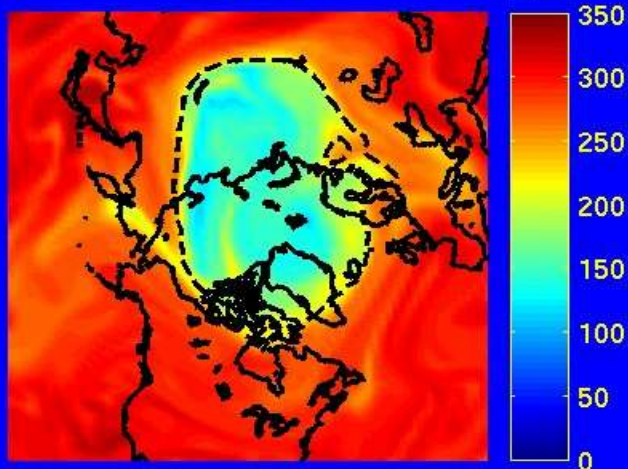
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2005-02-18

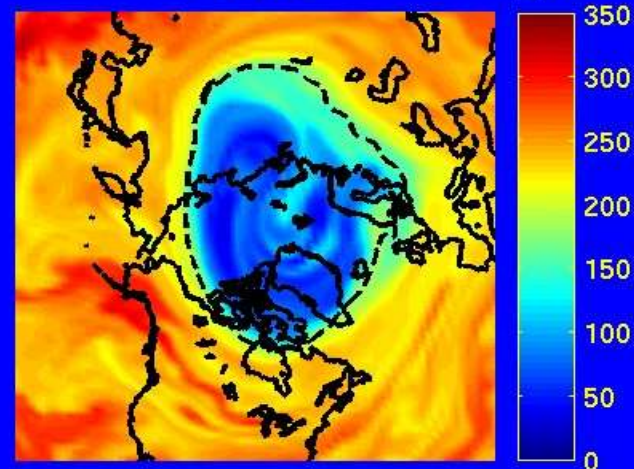
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ppb



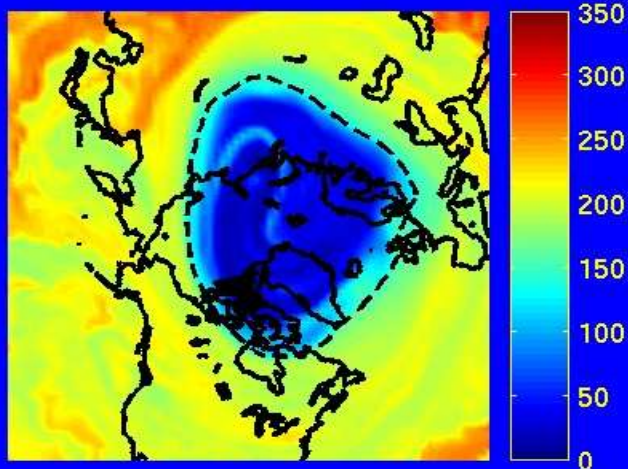
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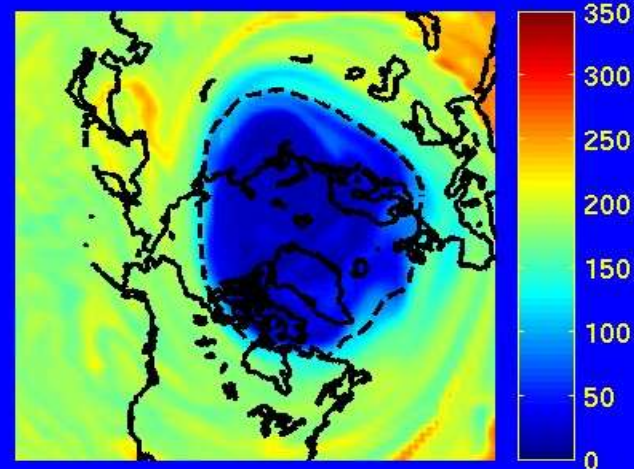
525 K

ppb



575 K

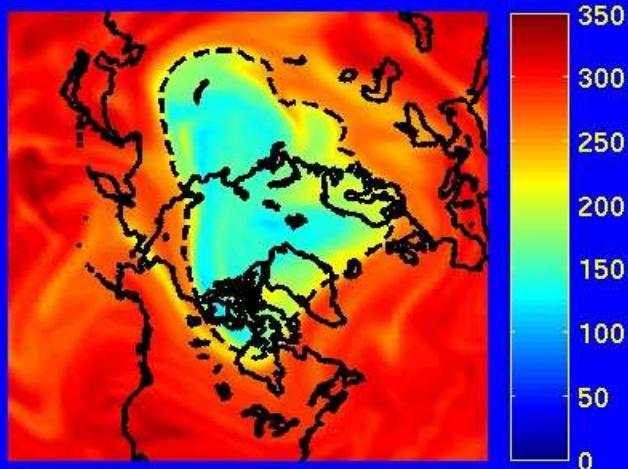
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2005-02-19

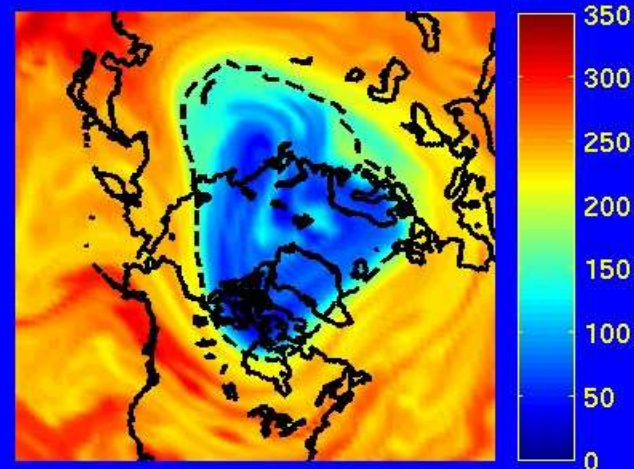
425 K

ppb



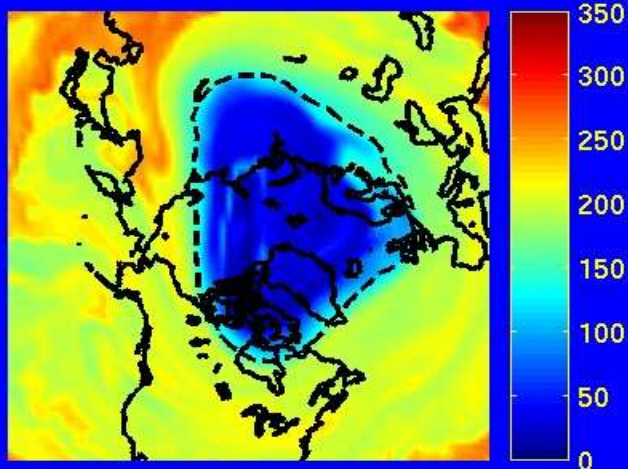
475 K

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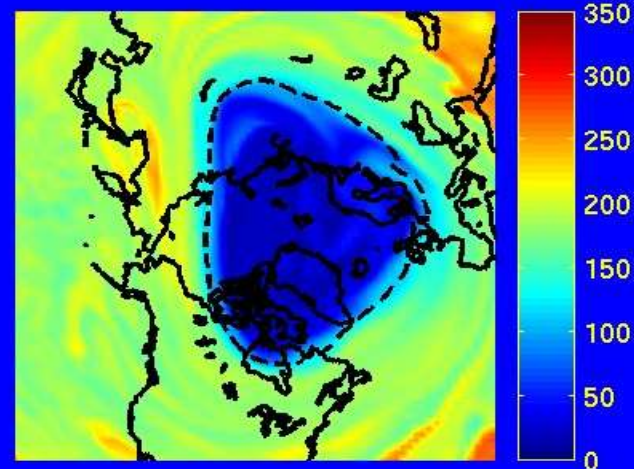
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ppb



575 K

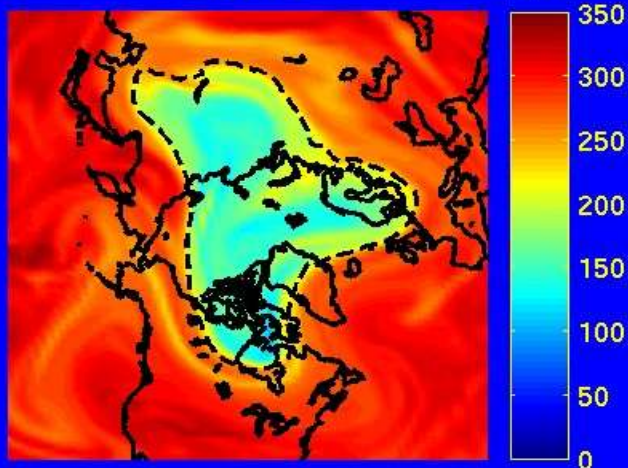
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2005-02-20

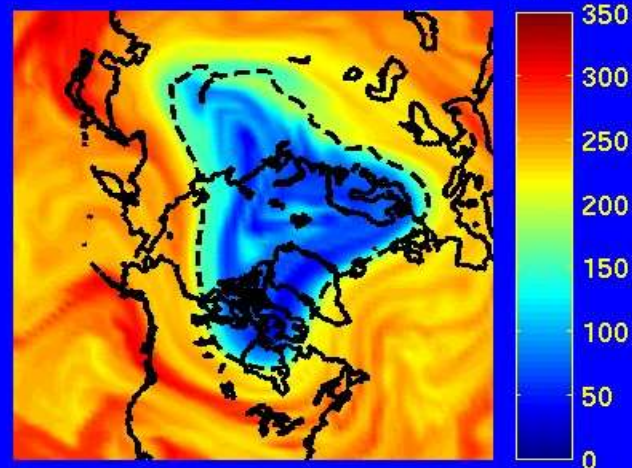
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ppb



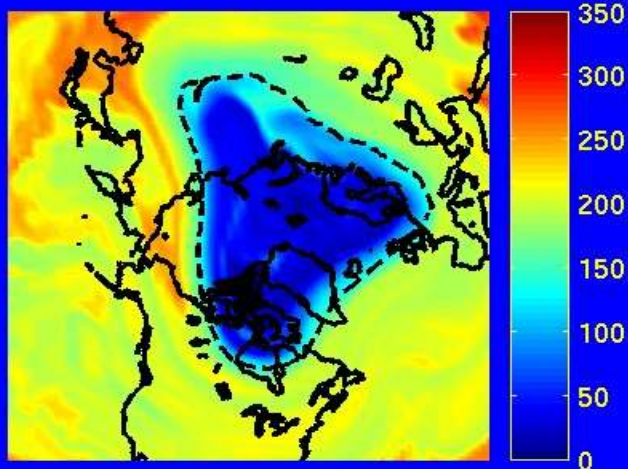
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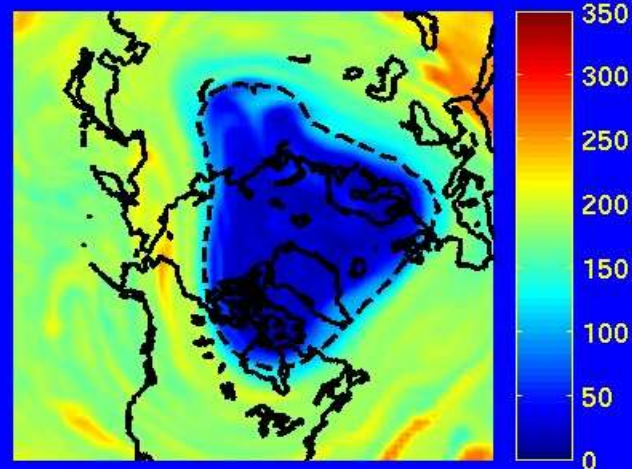
525 K

ppb



575 K

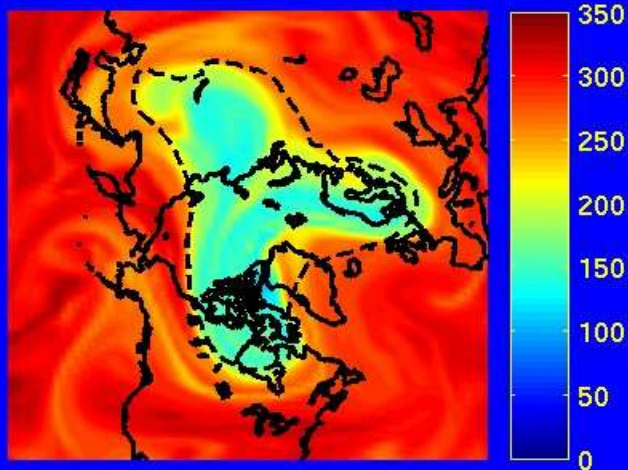
ppb



2005-02-21

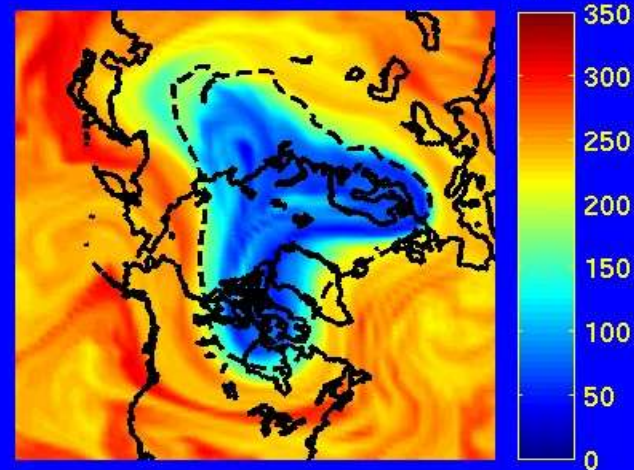
425 K

ppb



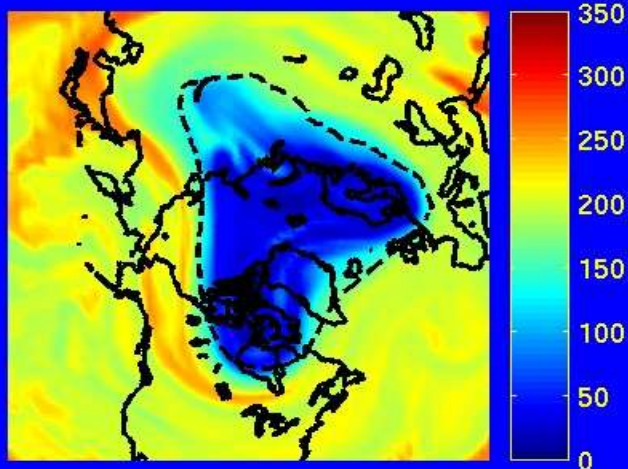
475 K

ppb



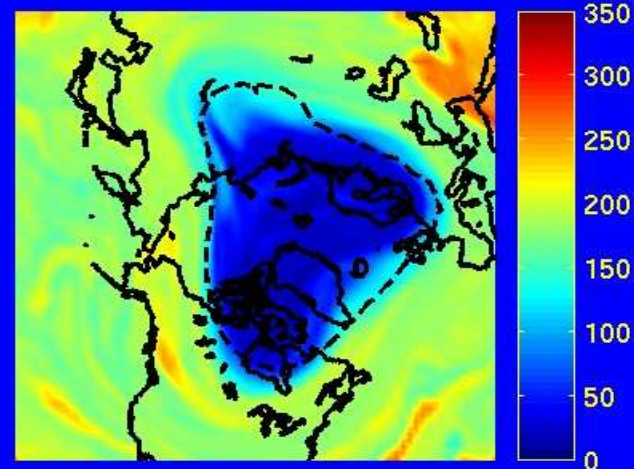
525 K

ppb



575 K

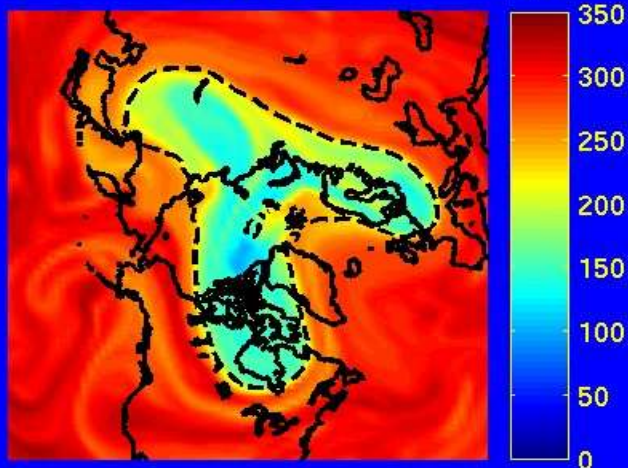
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2005-02-22

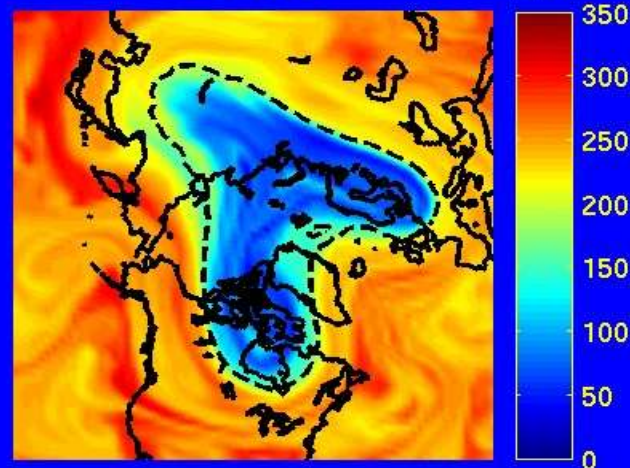
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ppb



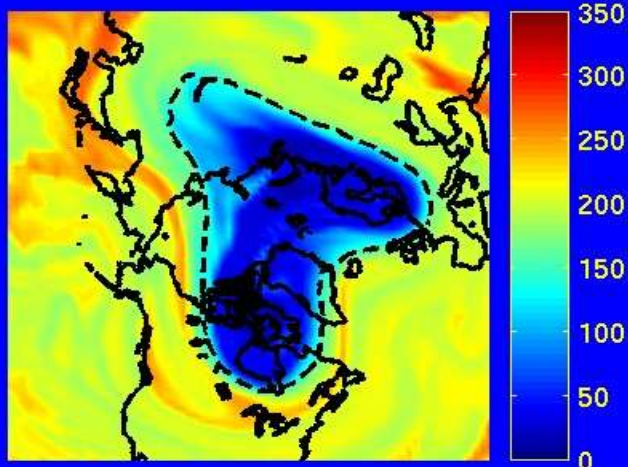
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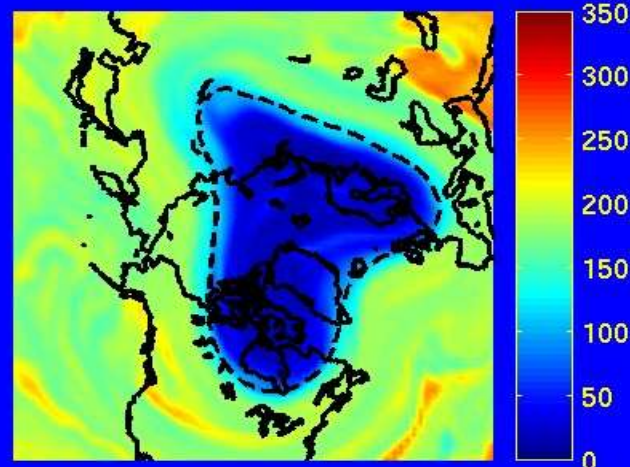
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575 K

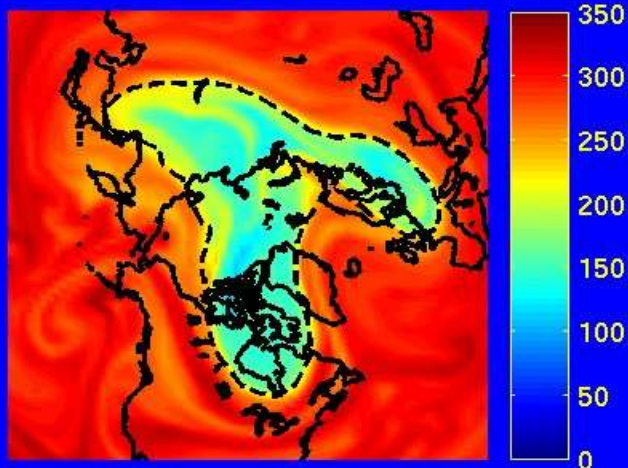
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2005-02-23

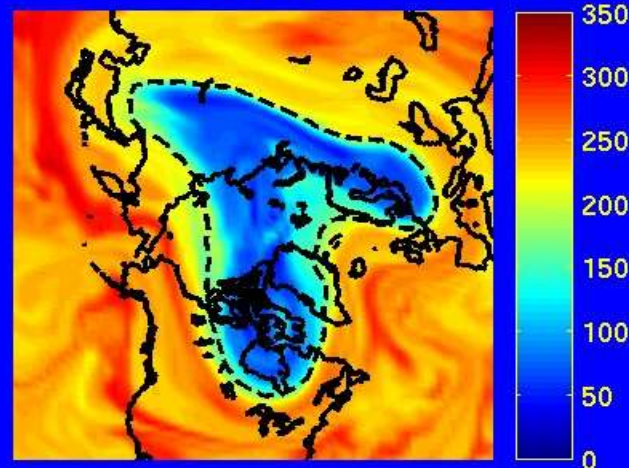
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ppb



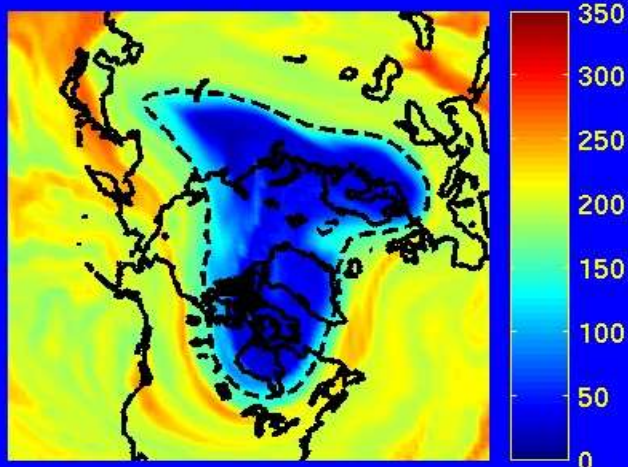
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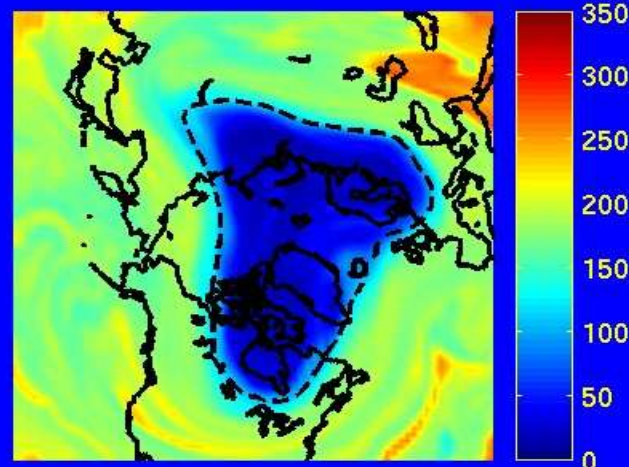
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ppb



575 K

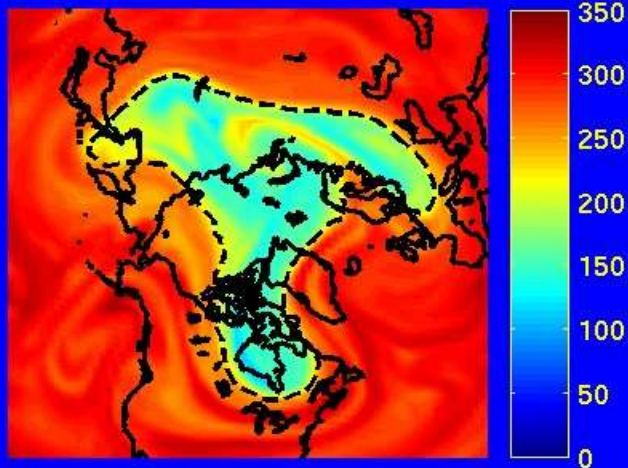
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2005-02-24

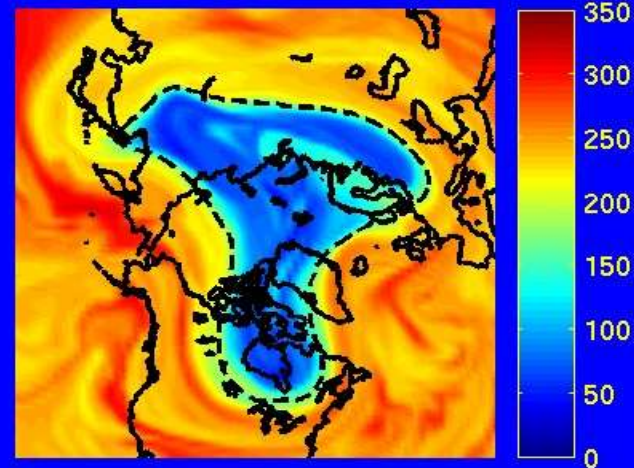
425 K

ppb



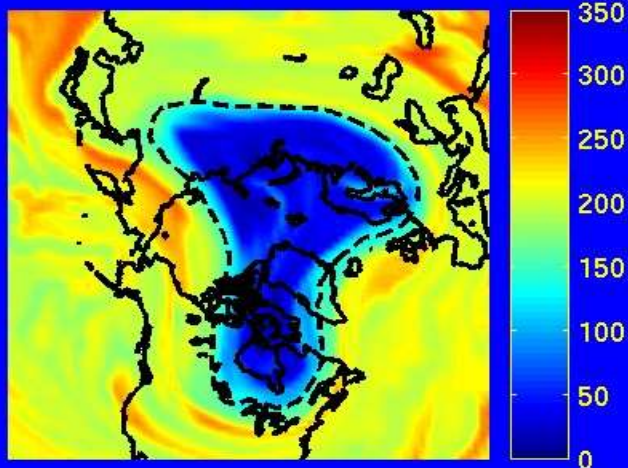
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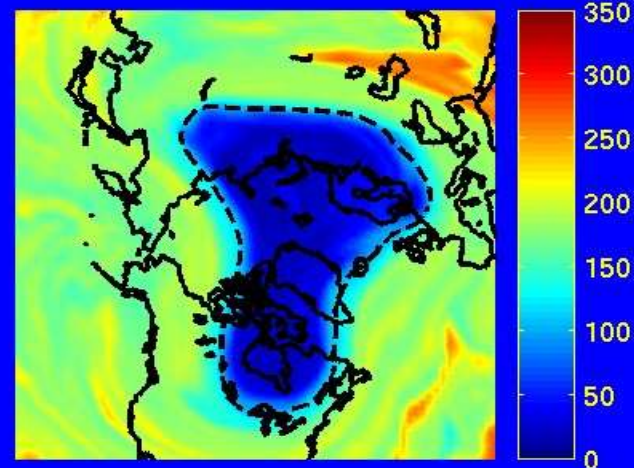
525 K

ppb



575 K

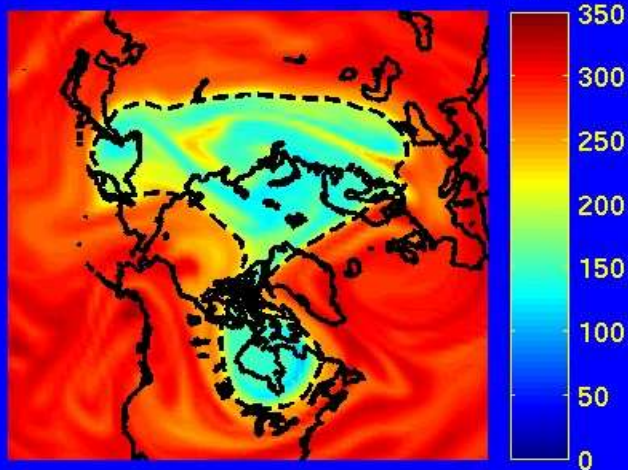
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2005-02-25

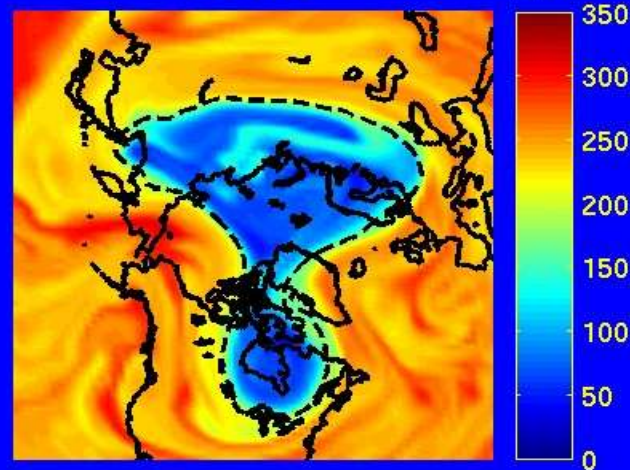
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ppb



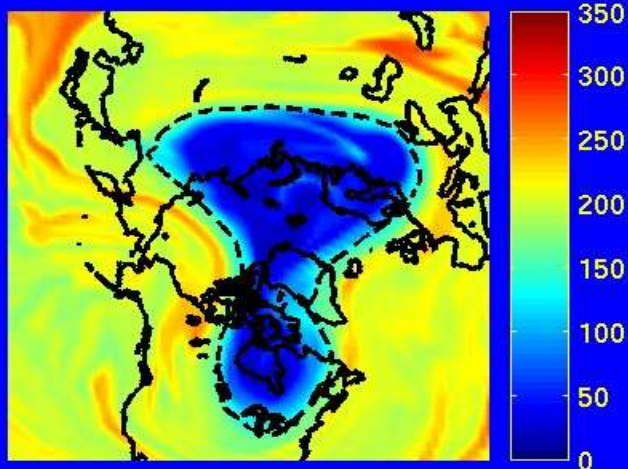
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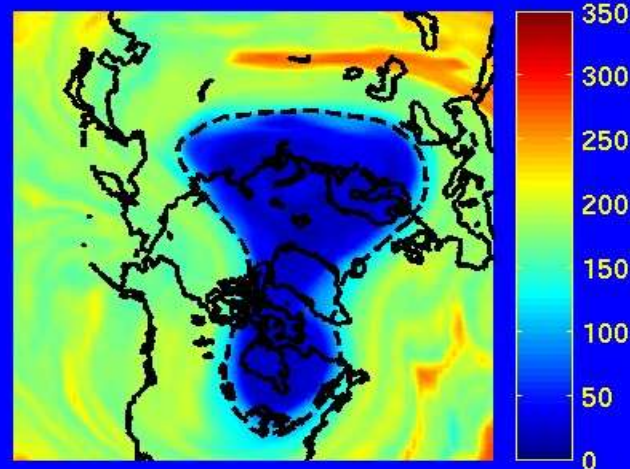
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ppb



575 K

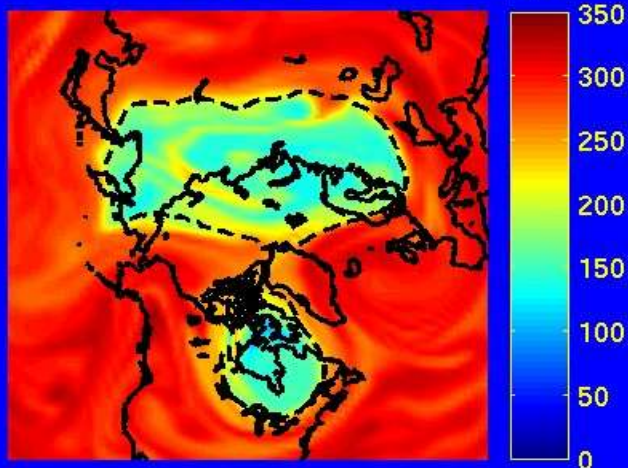
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2005-02-26

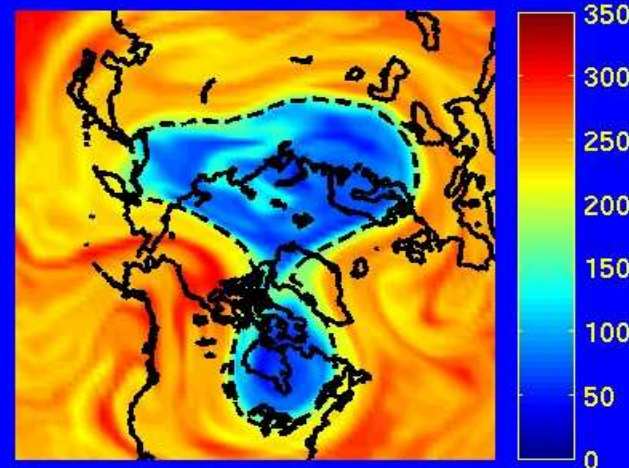
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ppb



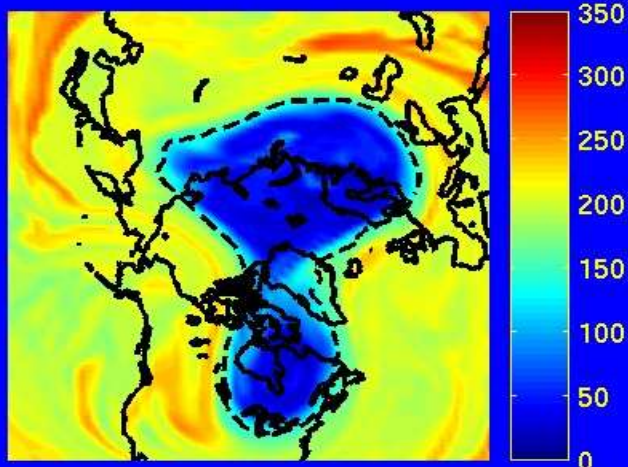
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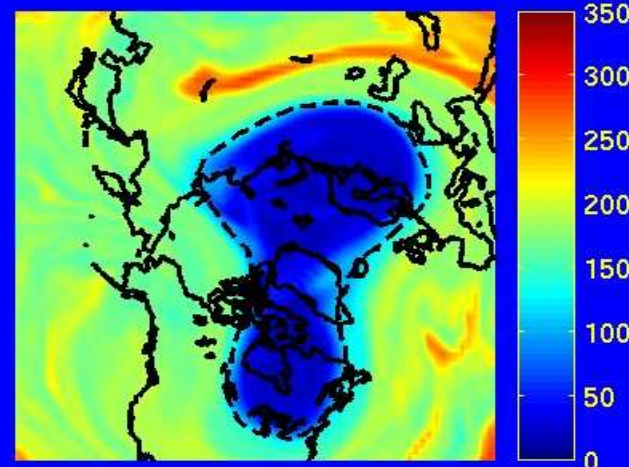
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ppb



575 K

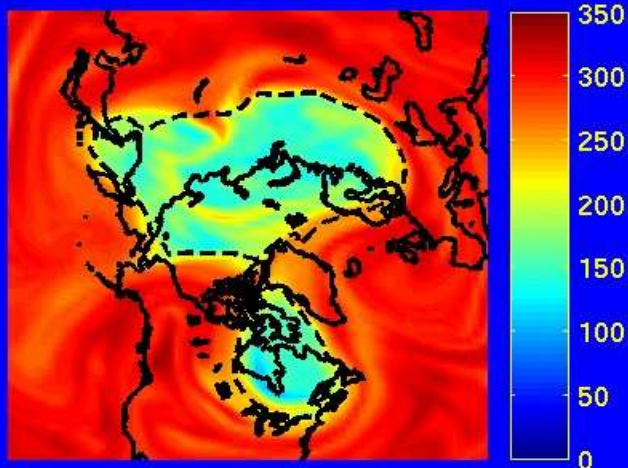
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2005-02-27

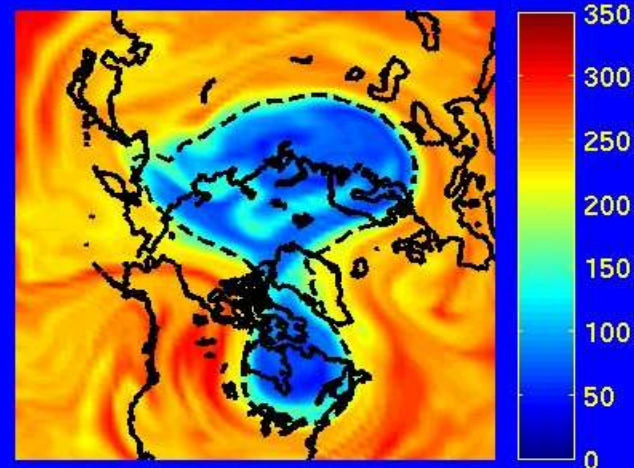
425 K

ppb



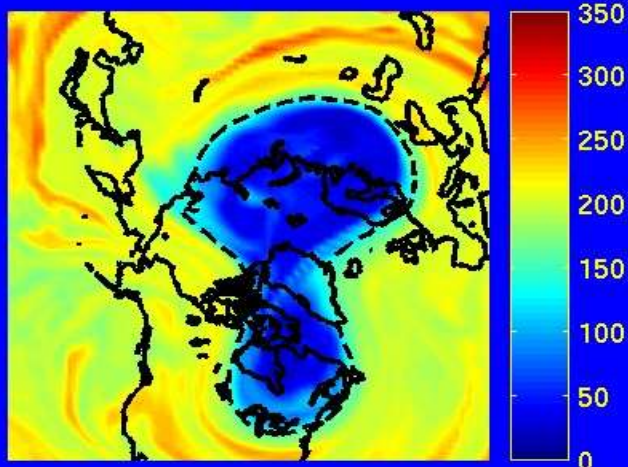
475 K

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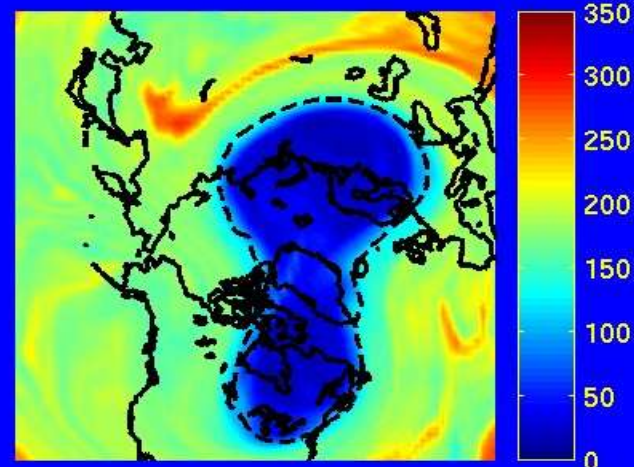
525 K

ppb



575 K

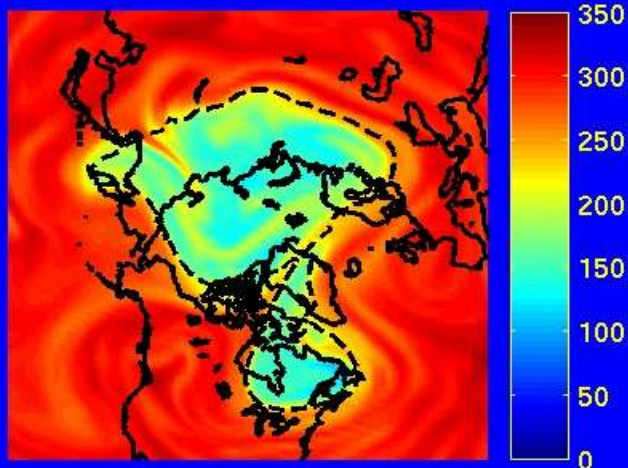
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2005-02-28

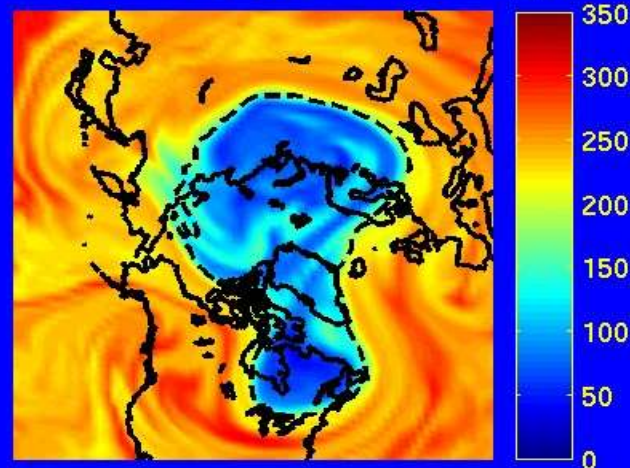
425 K

ppb



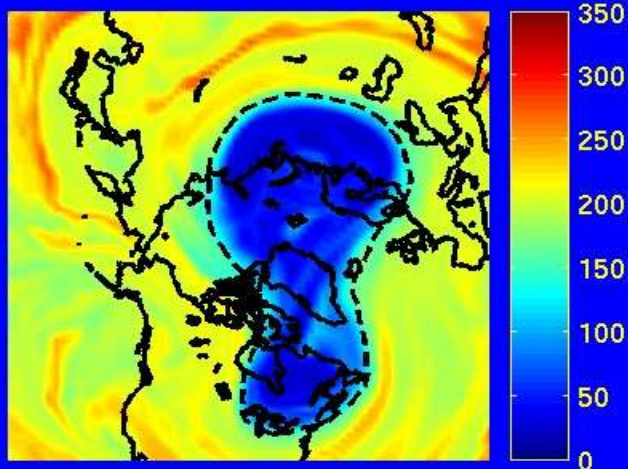
475 K

ppb



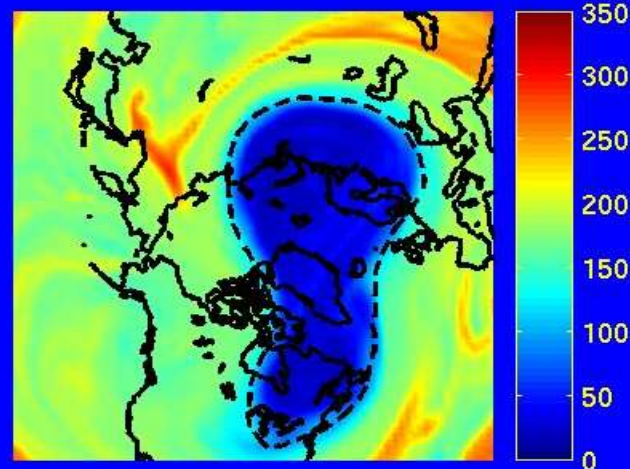
525 K

ppb



575 K

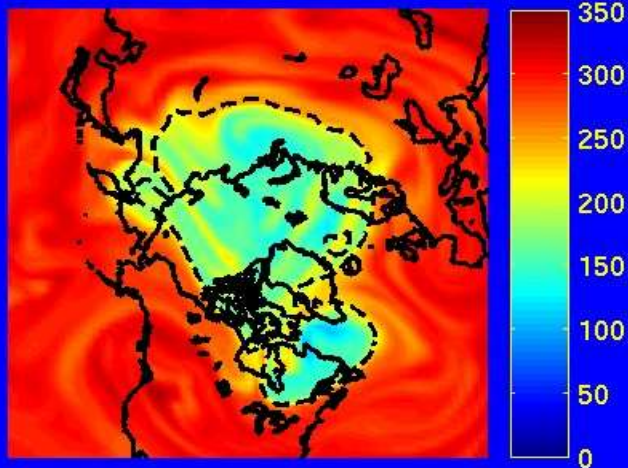
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2005-03-01

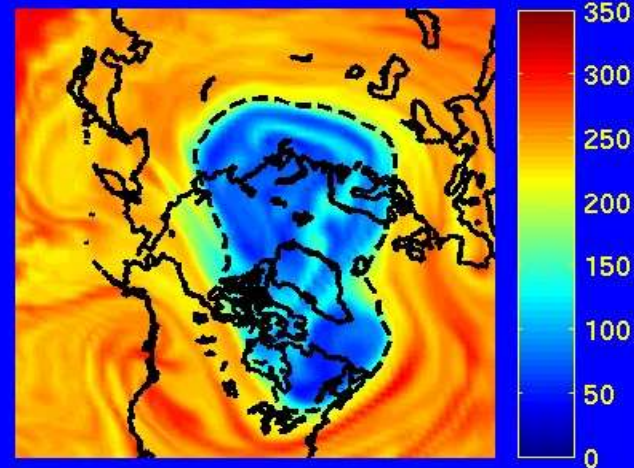
425 K

ppb



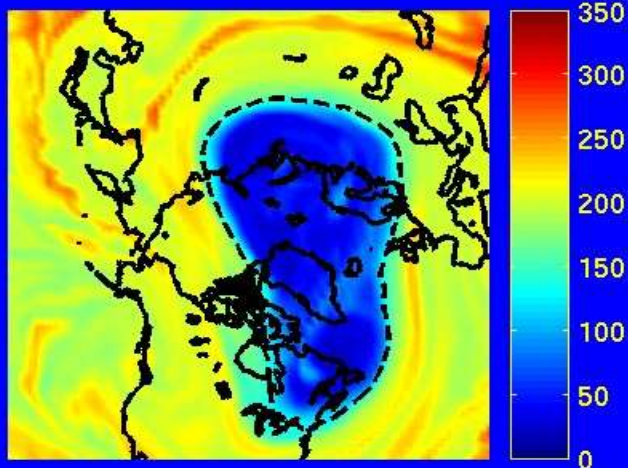
475 K

ppb



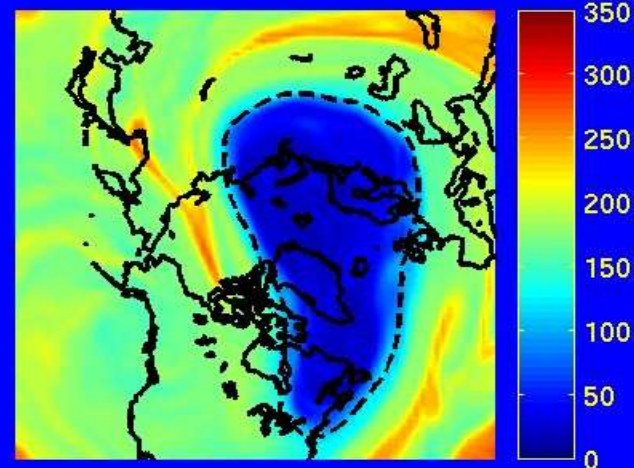
525 K

ppb



575 K

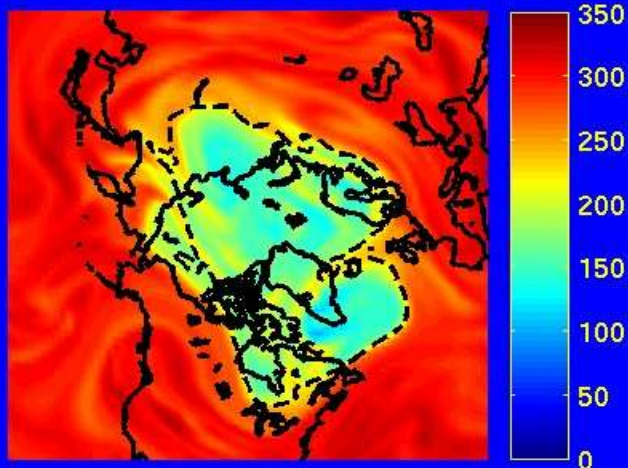
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2005-03-02

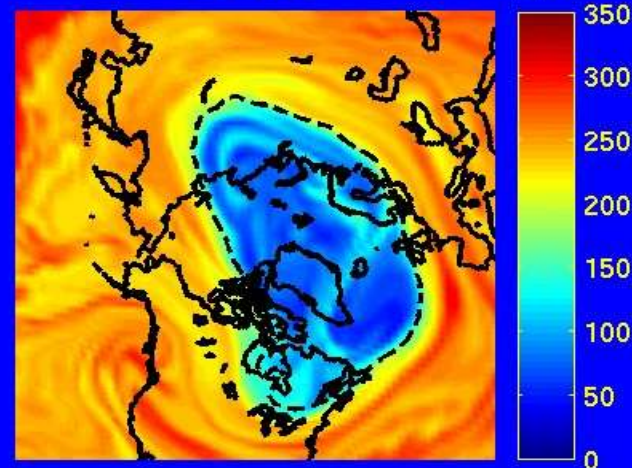
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ppb



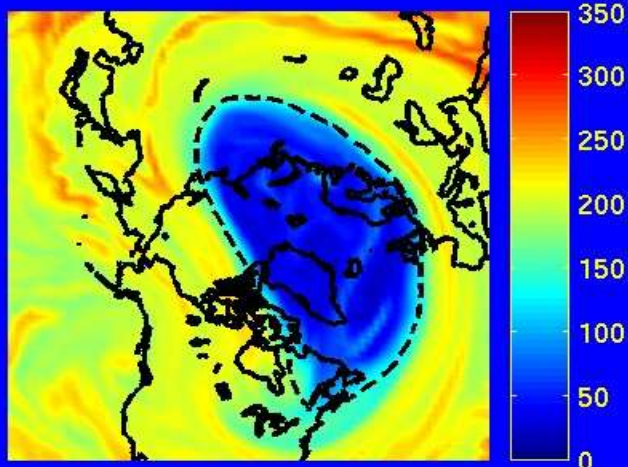
475 K

ppb



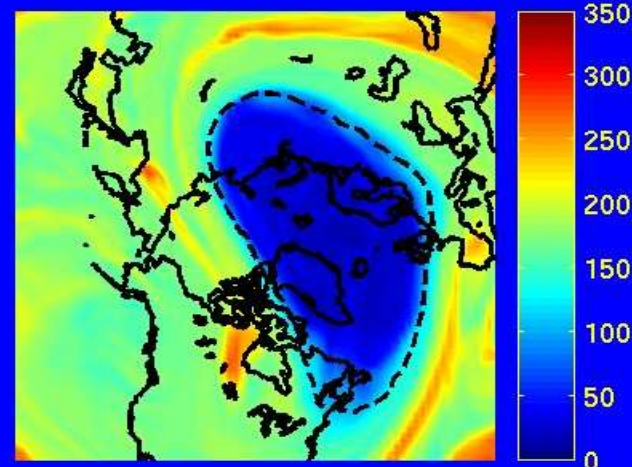
525 K

ppb



575 K

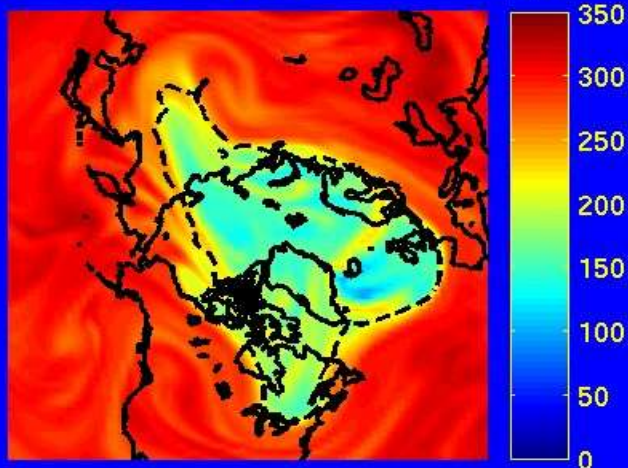
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2005-03-03

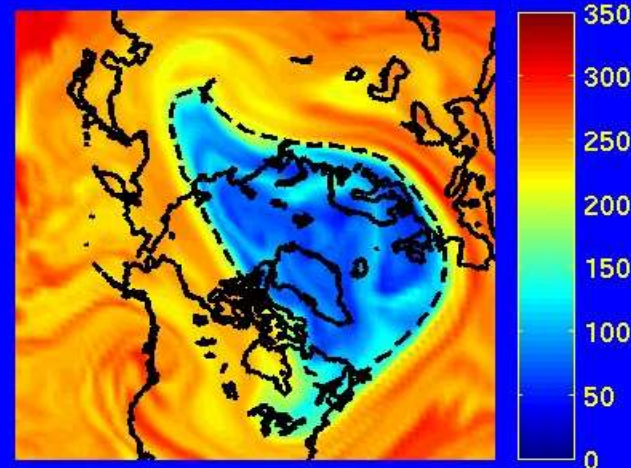
425 K

ppb



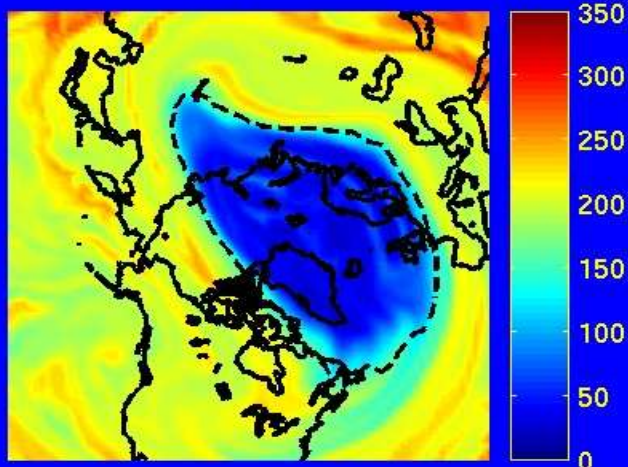
475 K

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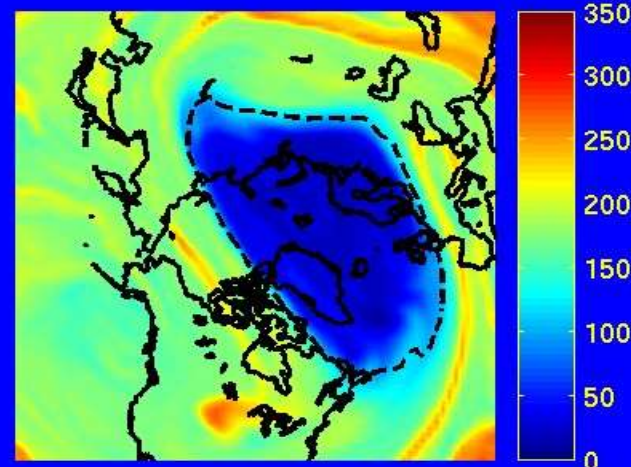
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ppb



575 K

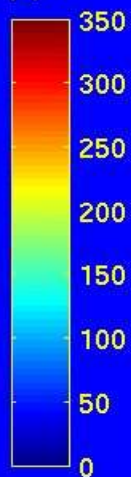
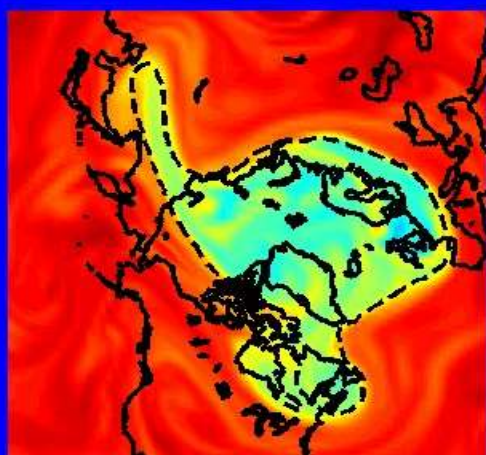
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2005-03-04

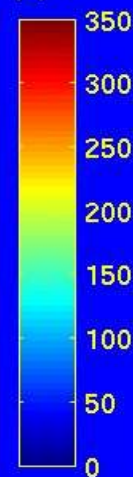
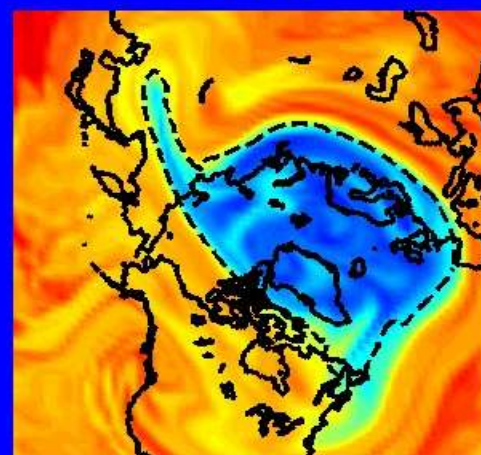
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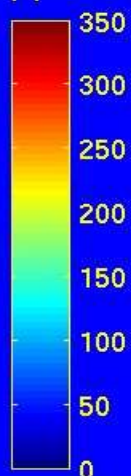
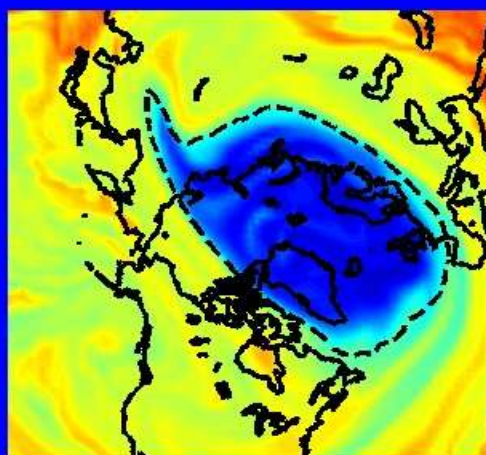
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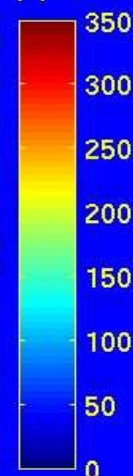
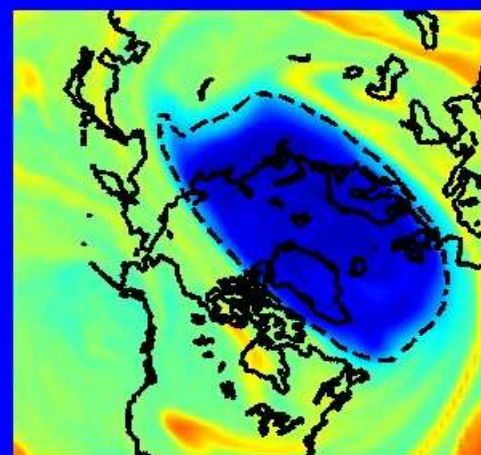
525 K

ppb



575 K

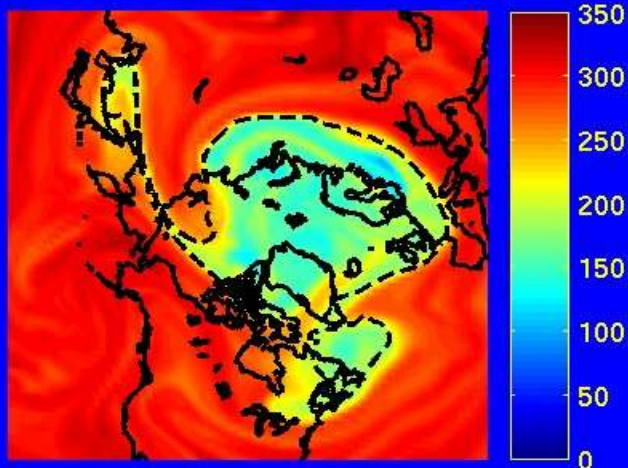
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2005-03-05

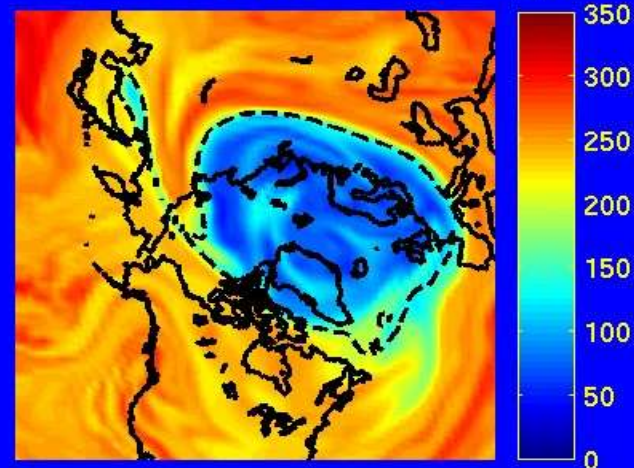
425 K

ppb



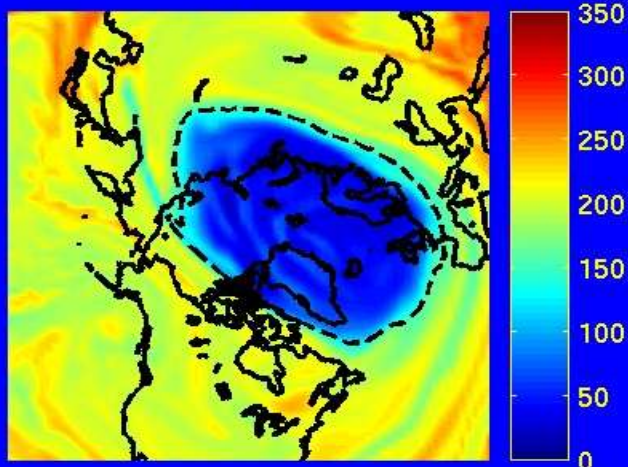
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ppb



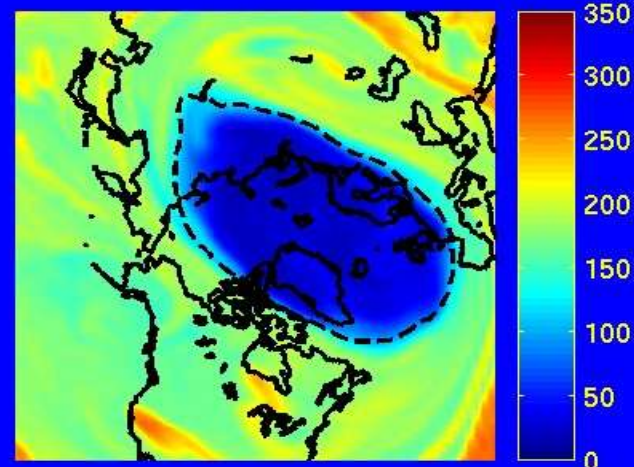
525 K

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575 K

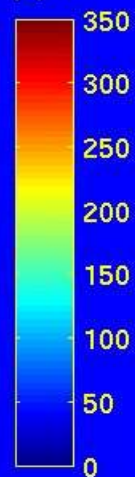
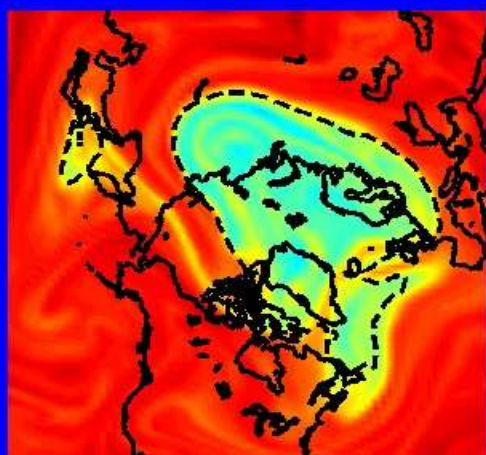
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2005-03-06

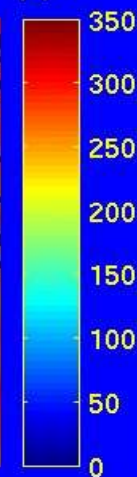
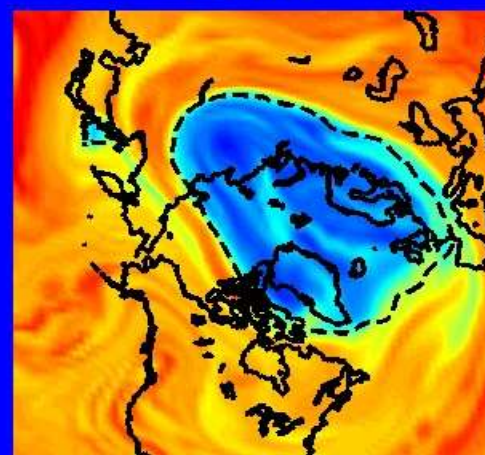
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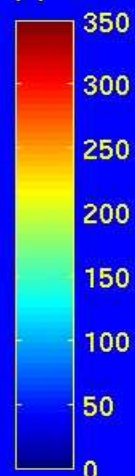
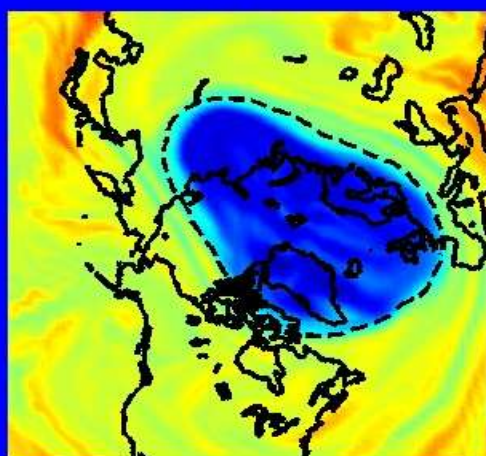
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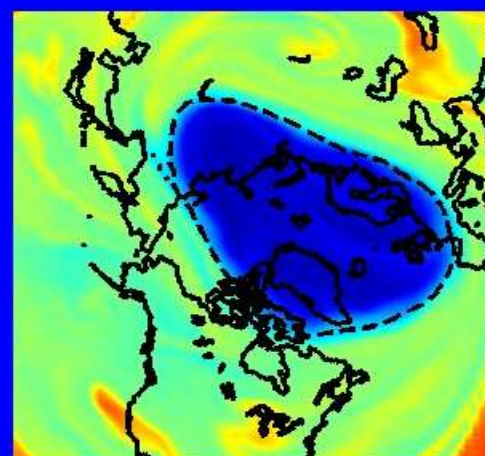
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575 K

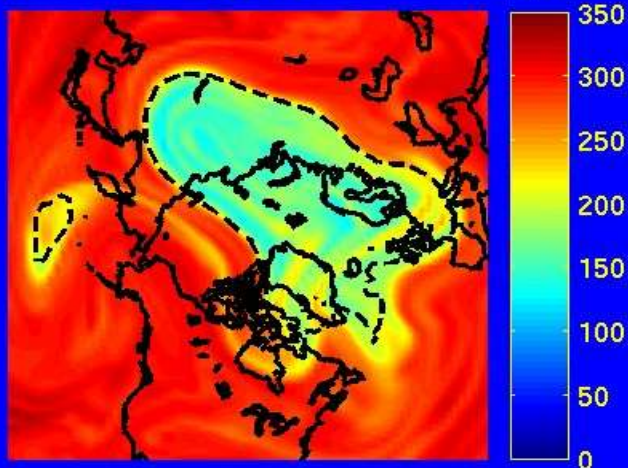
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2005-03-07

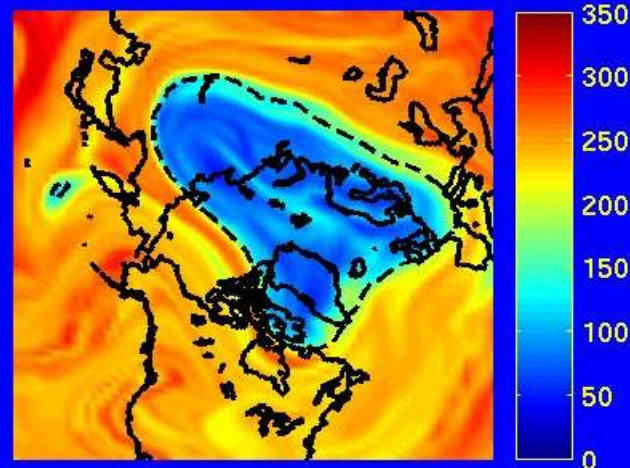
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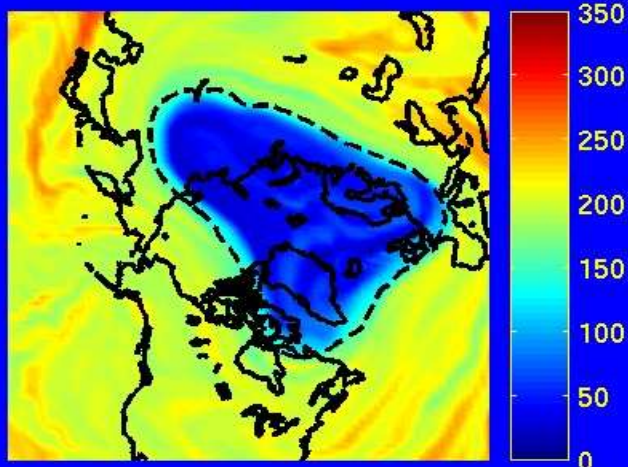
475 K

ppb



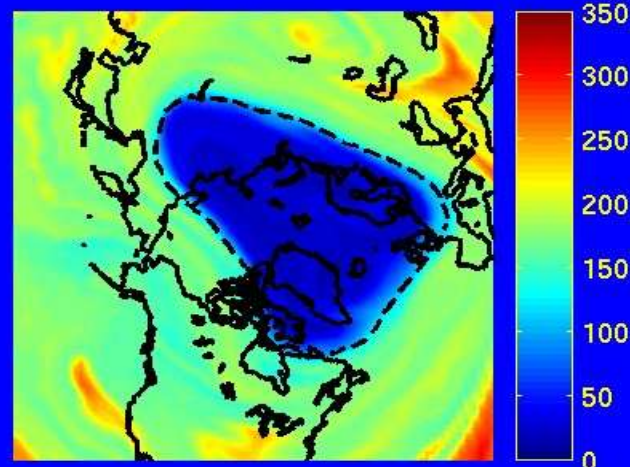
525 K

ppb



575 K

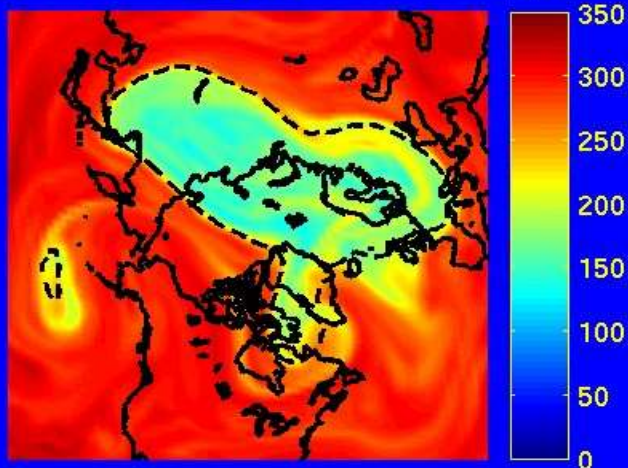
ppb



2005-03-08

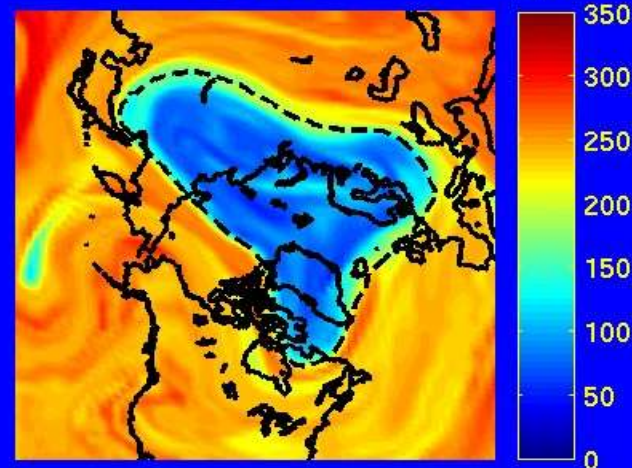
425 K

ppb



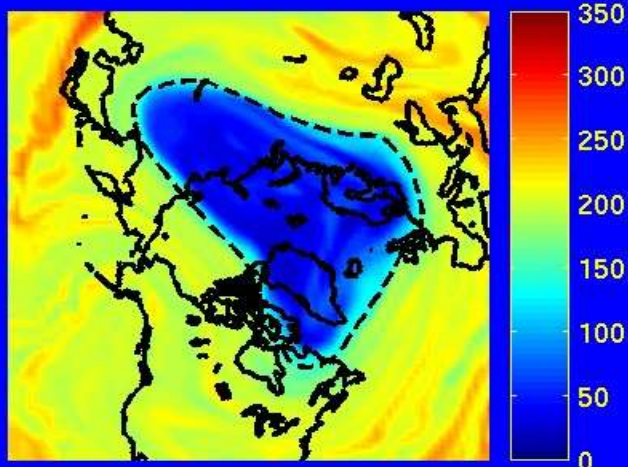
475 K

ppb



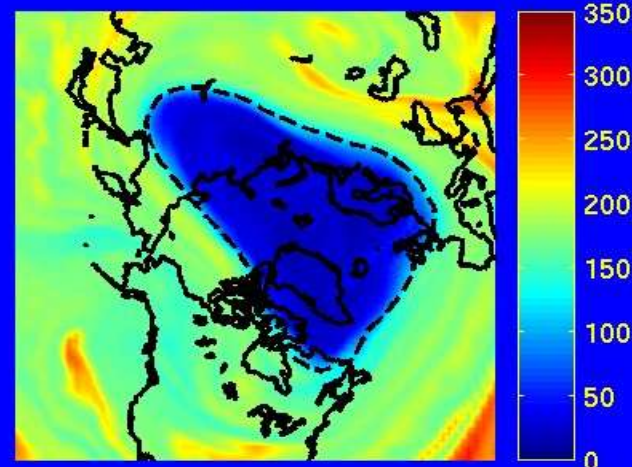
525 K

ppb



575 K

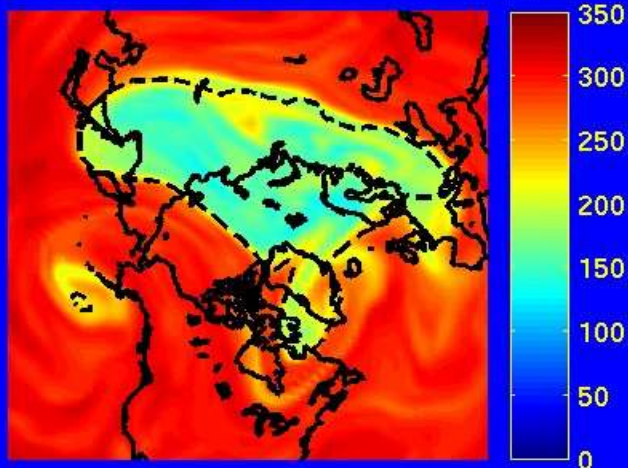
ppb



2005-03-09

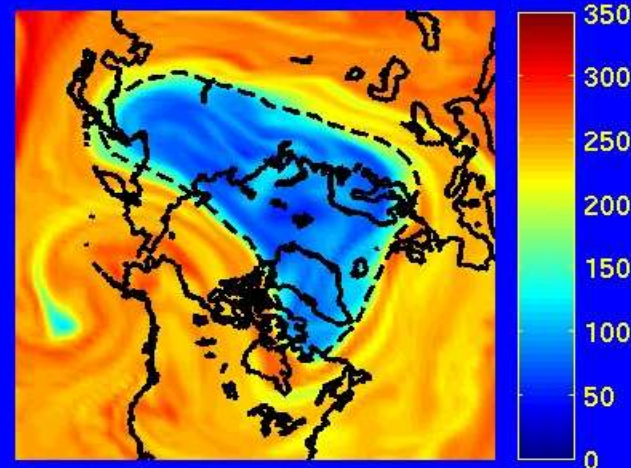
425 K

ppb



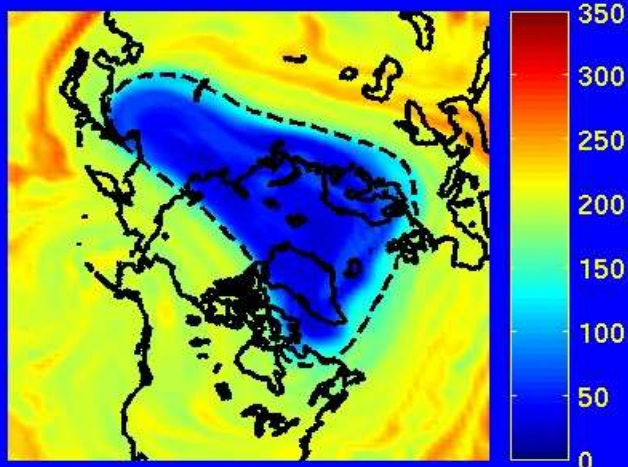
475 K

ppb



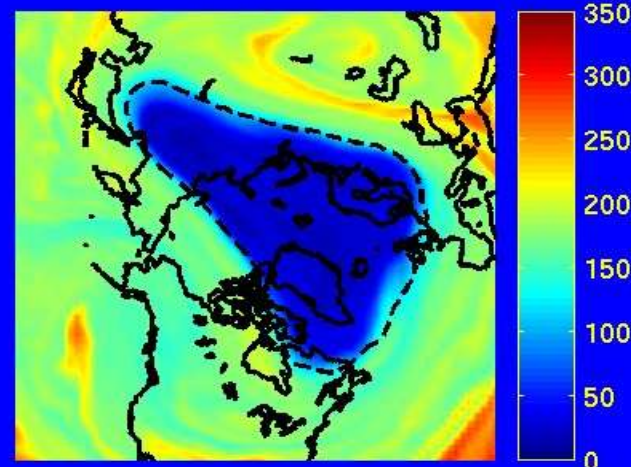
525 K

ppb



575 K

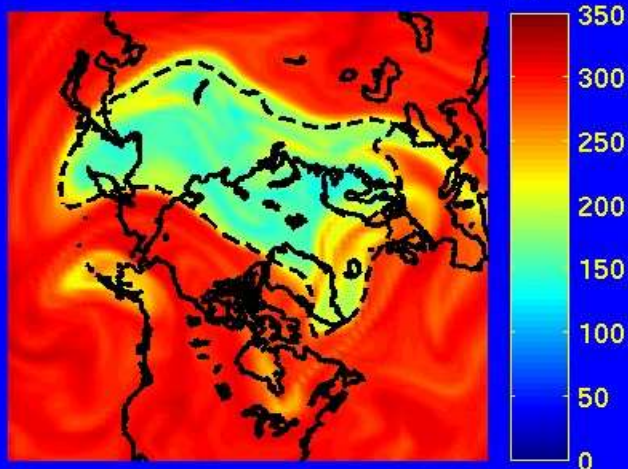
ppb



2005-03-10

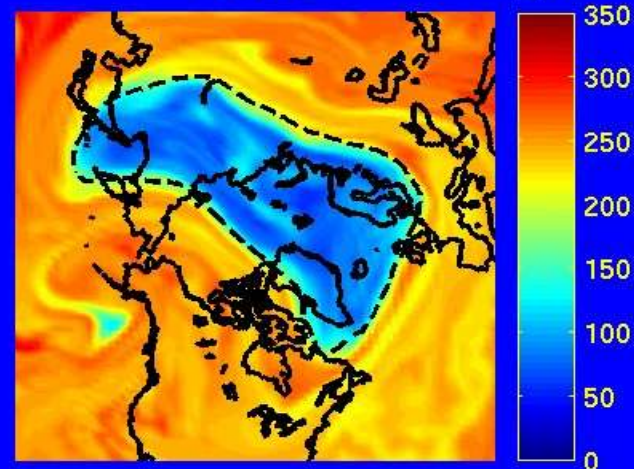
425 K

ppb



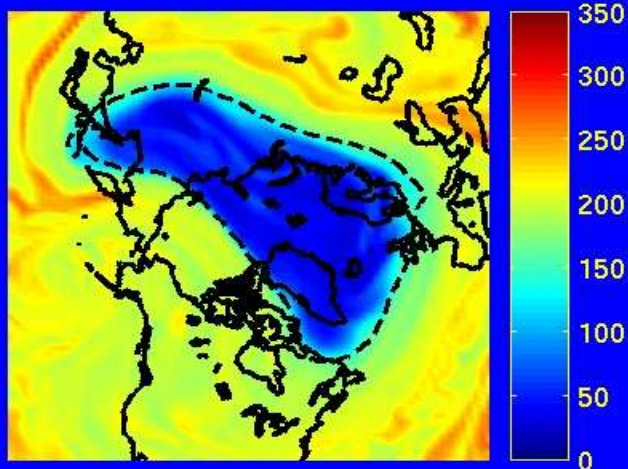
475 K

ppb



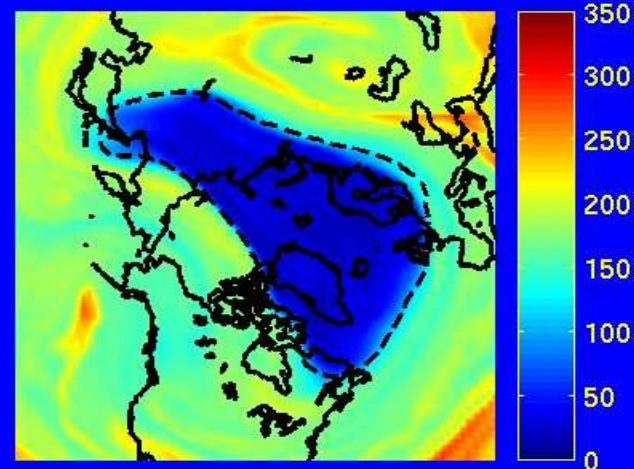
525 K

ppb



575 K

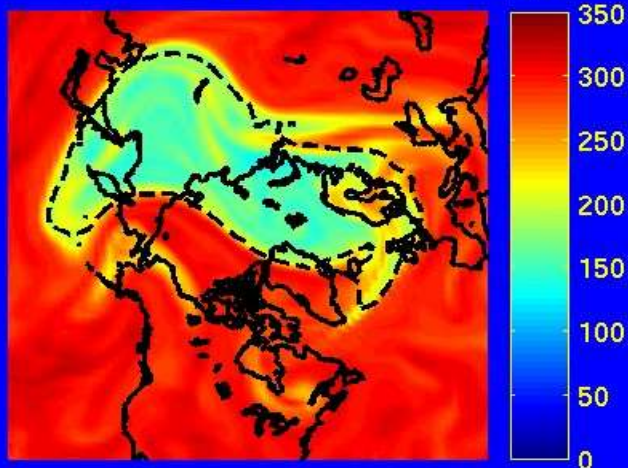
ppb



2005-03-11

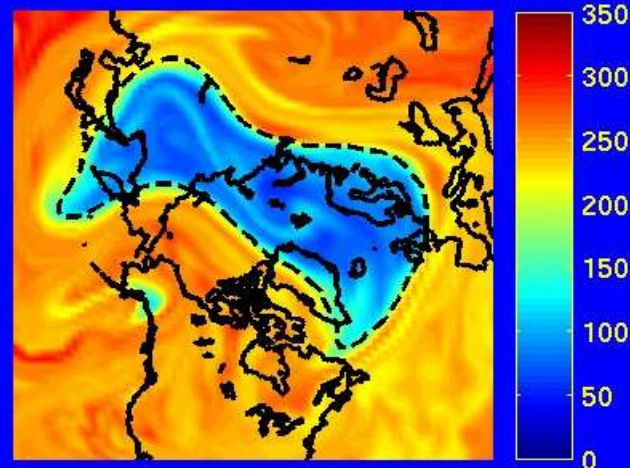
425 K

ppb



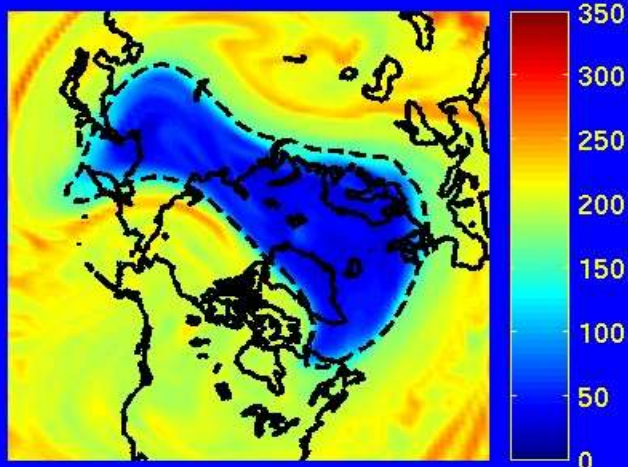
475 K

ppb



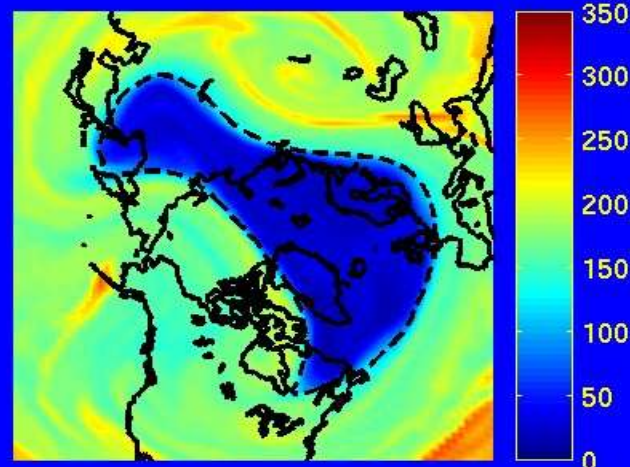
525 K

ppb



575 K

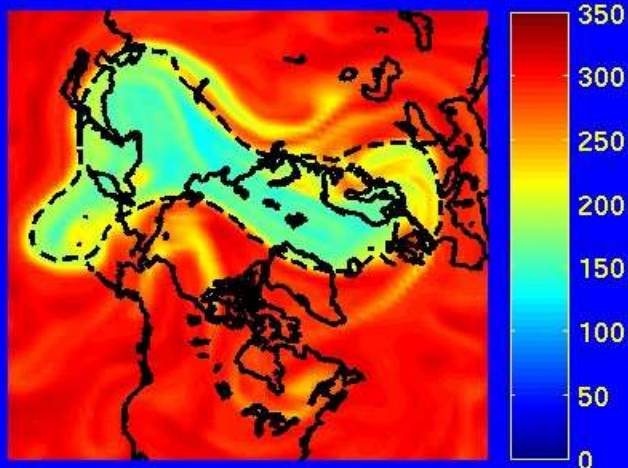
ppb



2005-03-12

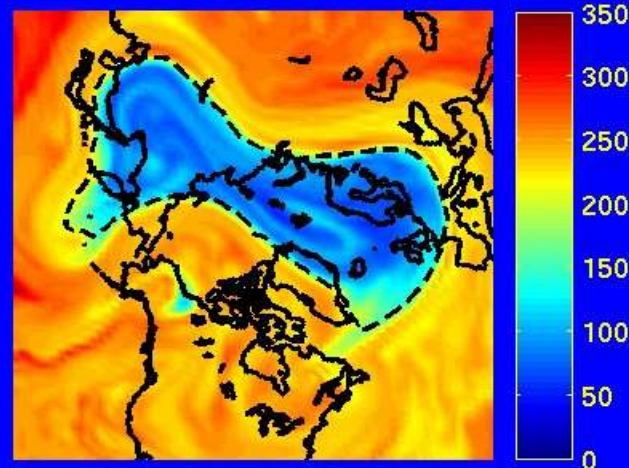
425 K

ppb



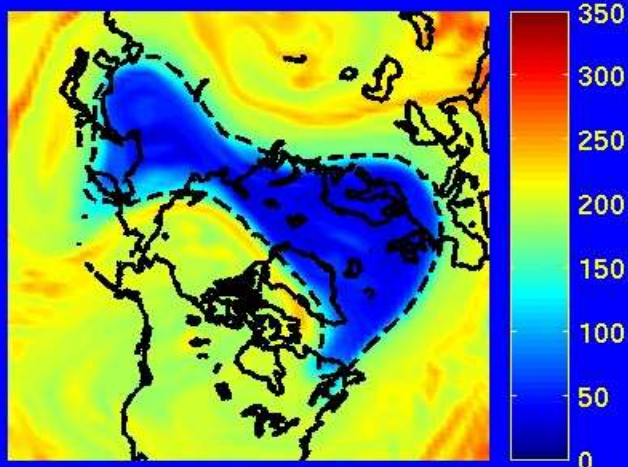
475 K

ppb



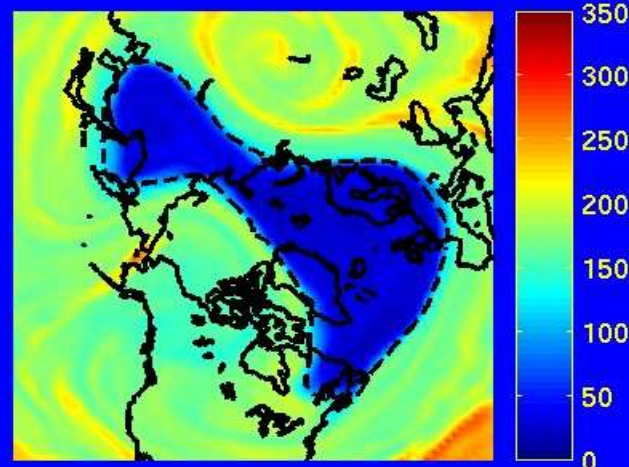
525 K

ppb



575 K

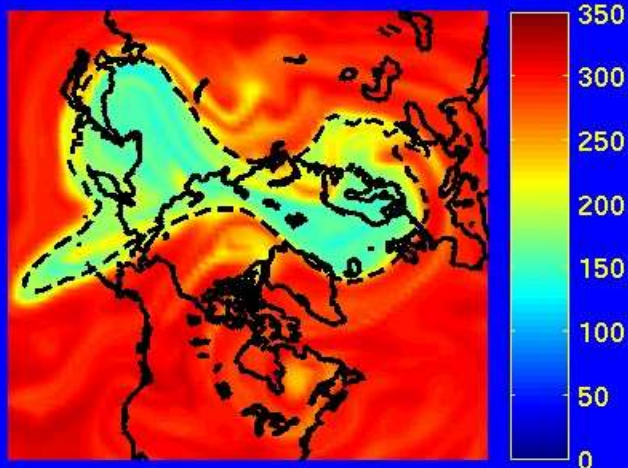
ppb



2005-03-13

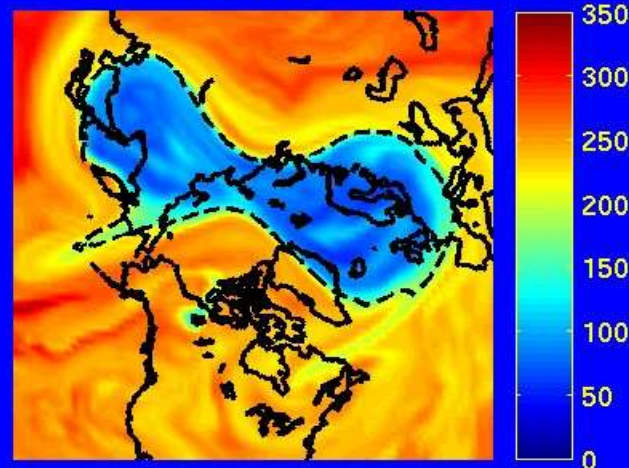
425 K

ppb



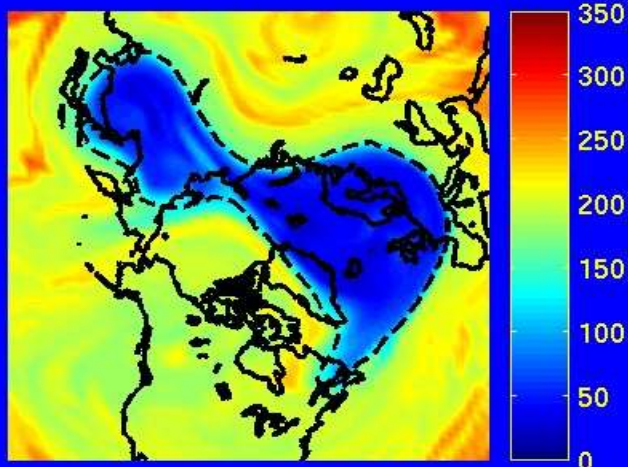
475 K

ppb



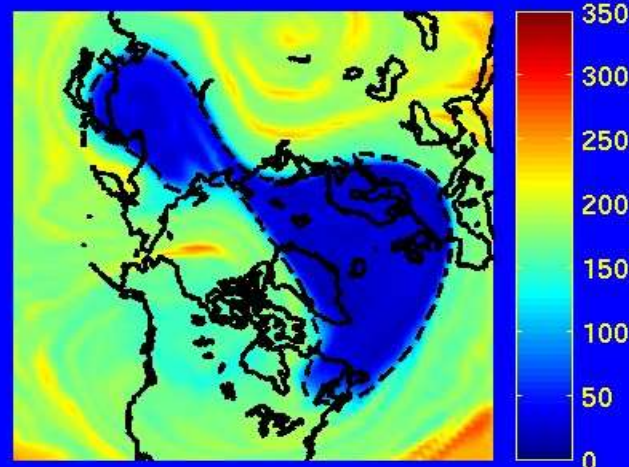
525 K

ppb



575 K

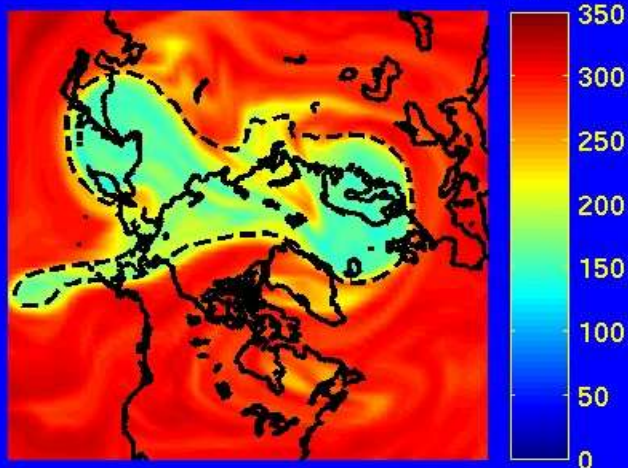
ppb



2005-03-14

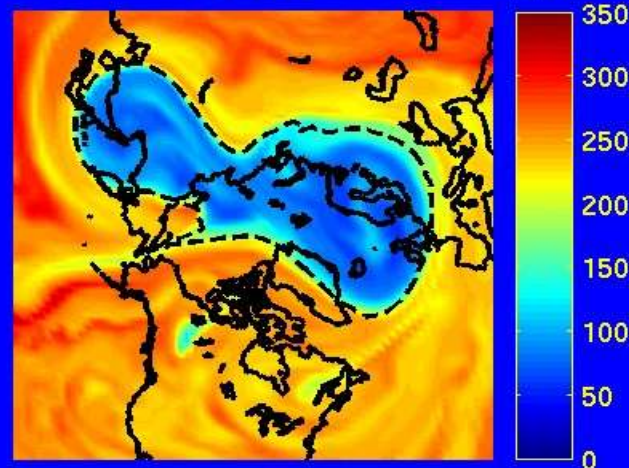
425 K

ppb



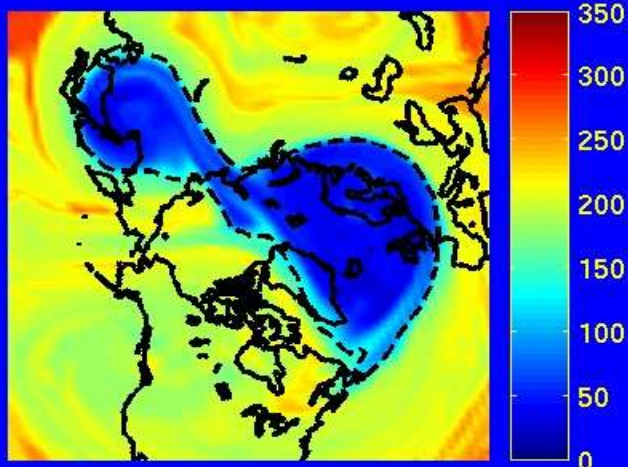
475 K

ppb



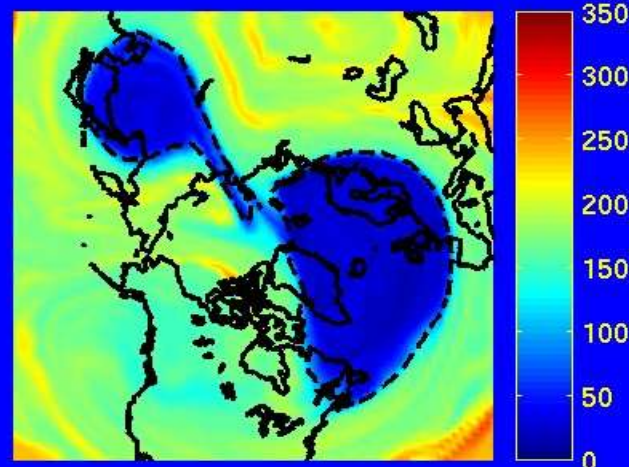
525 K

ppb



575 K

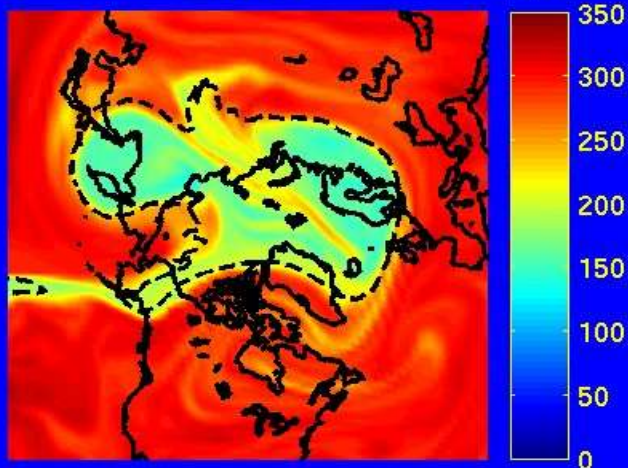
ppb



2005-03-15

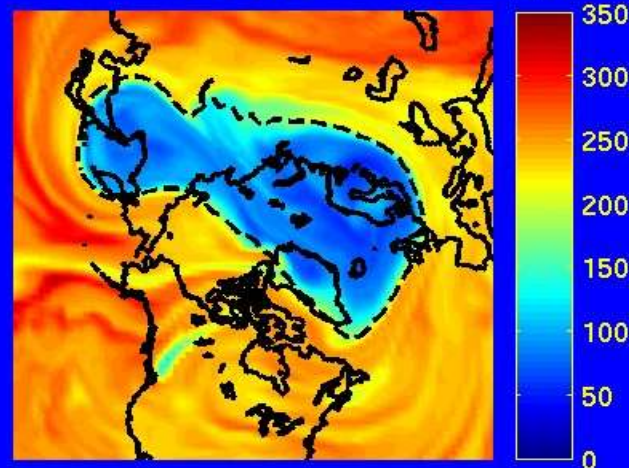
425 K

ppb



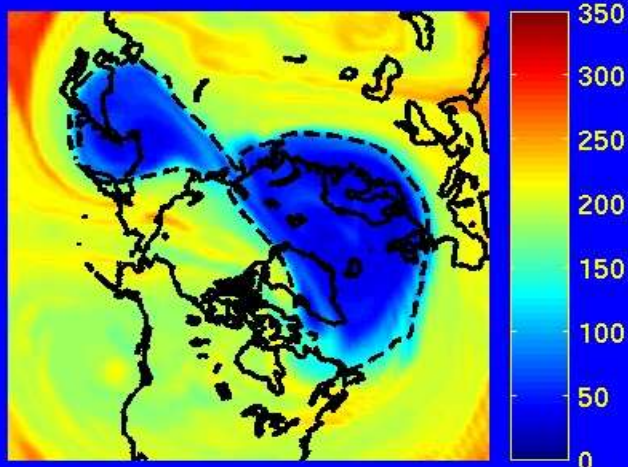
475 K

ppb



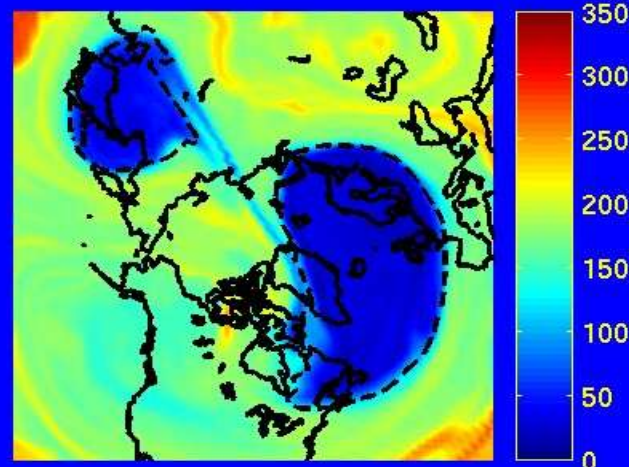
525 K

ppb



575 K

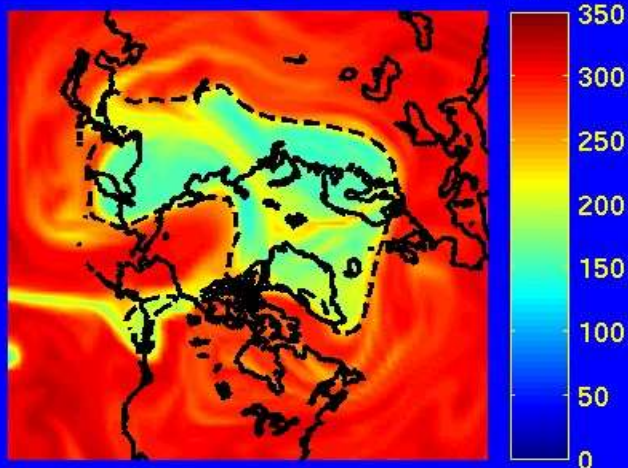
ppb



2005-03-16

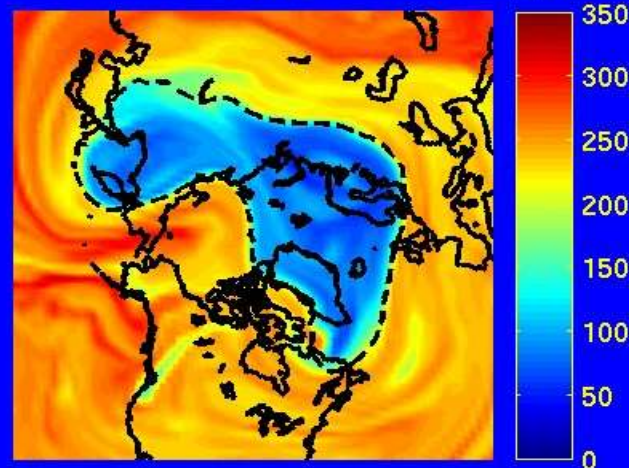
425 K

ppb



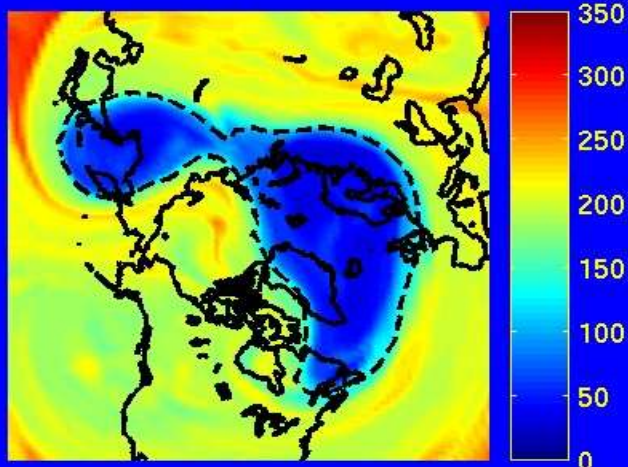
475 K

ppb



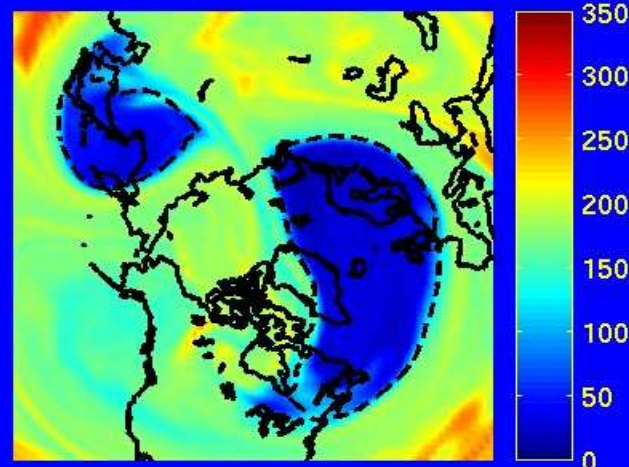
525 K

ppb



575 K

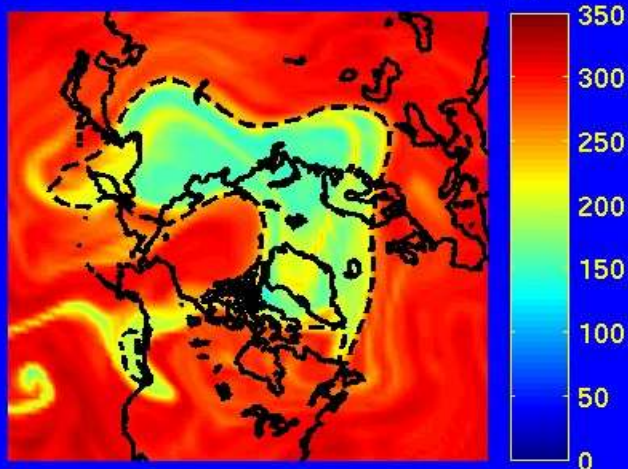
ppb



2005-03-17

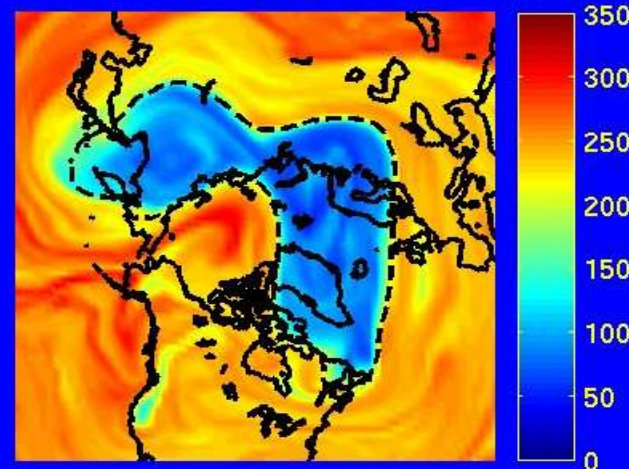
425 K

ppb



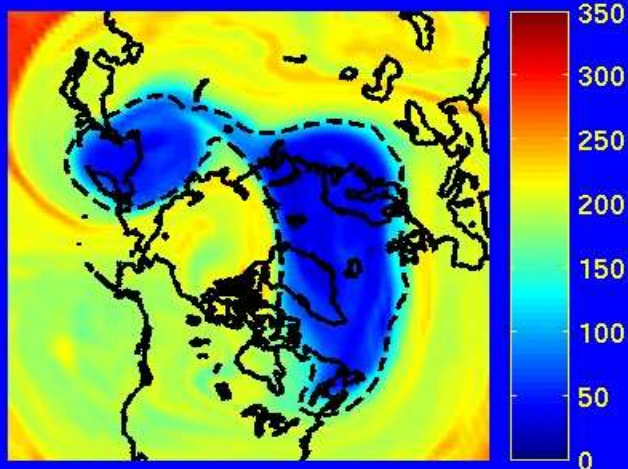
475 K

ppb



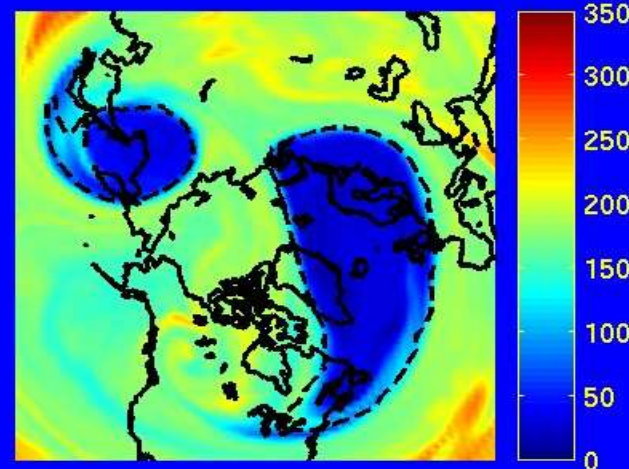
525 K

ppb



575 K

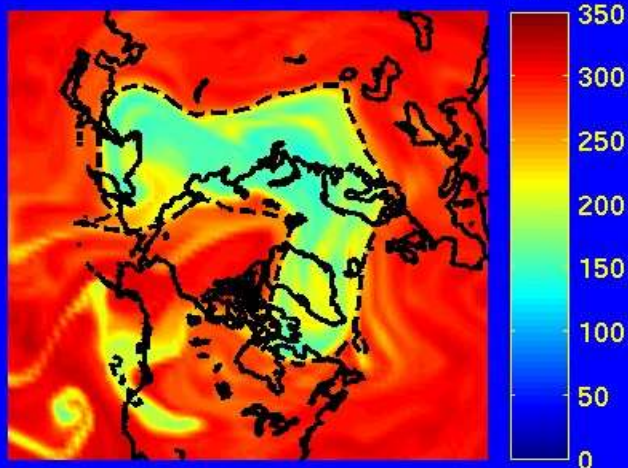
ppb



2005-03-18

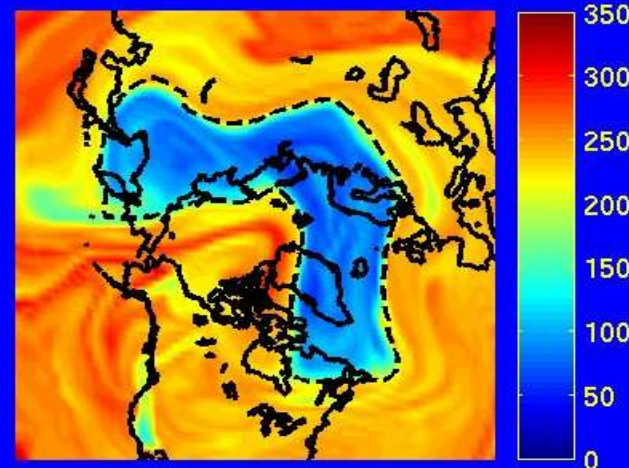
425 K

ppb



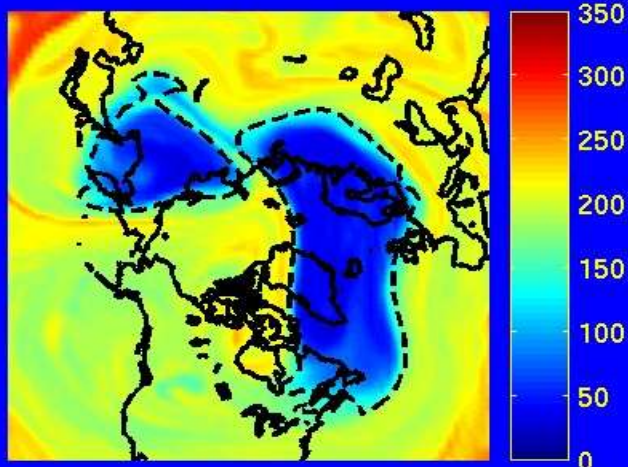
475 K

ppb



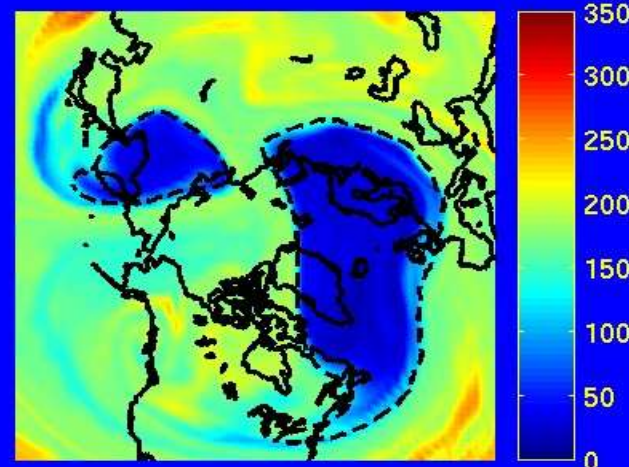
525 K

ppb



575 K

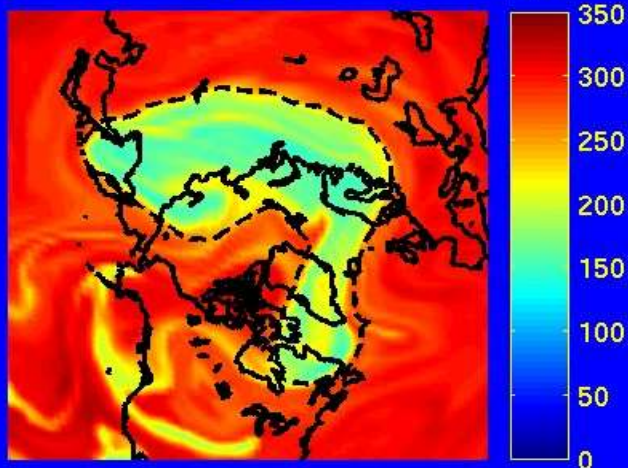
ppb



2005-03-19

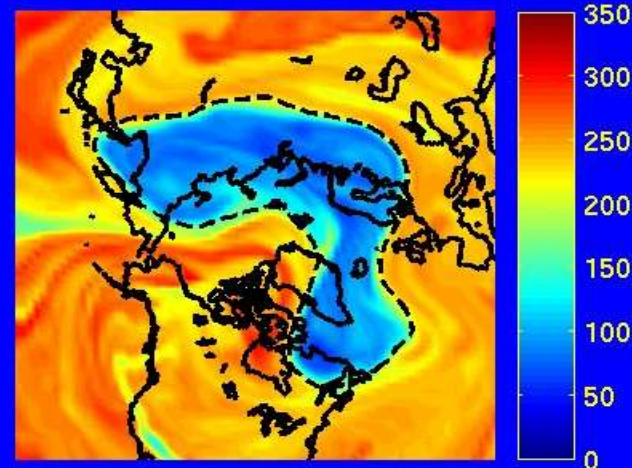
425 K

ppb



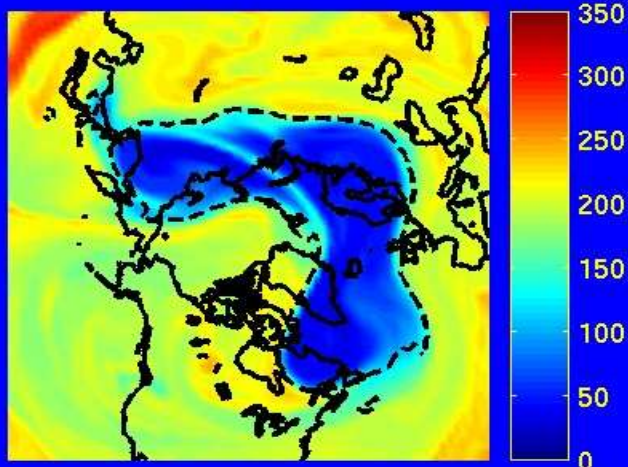
475 K

ppb



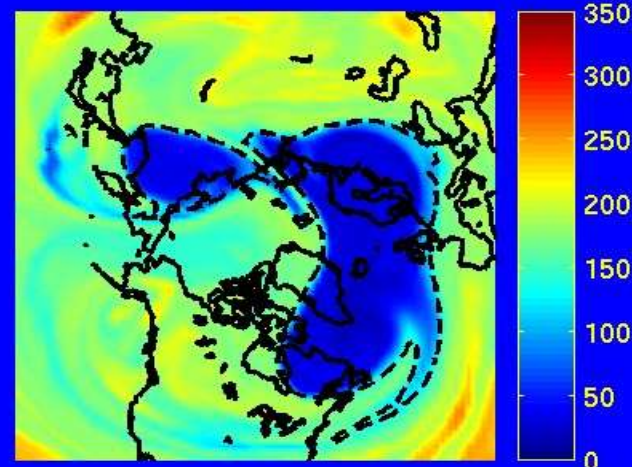
525 K

ppb



575 K

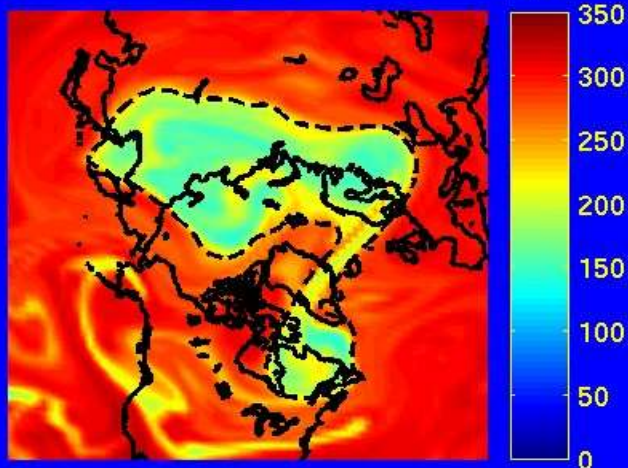
ppb



2005-03-20

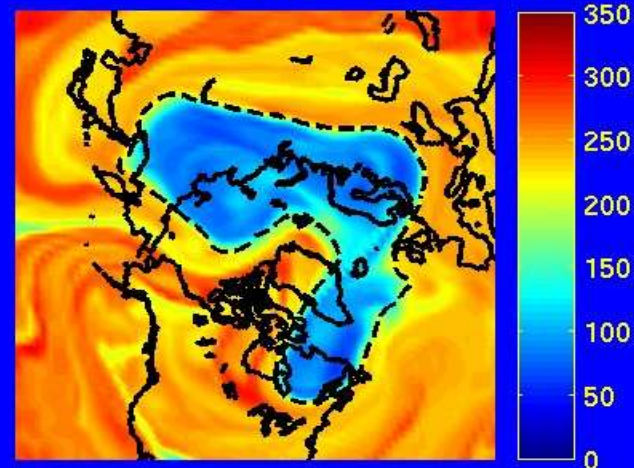
425 K

ppb



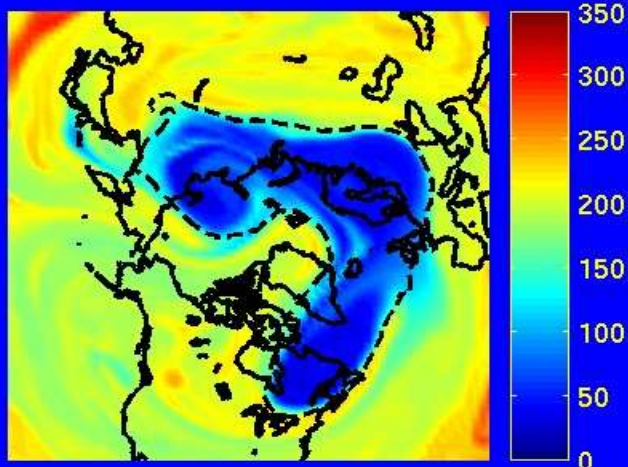
475 K

ppb



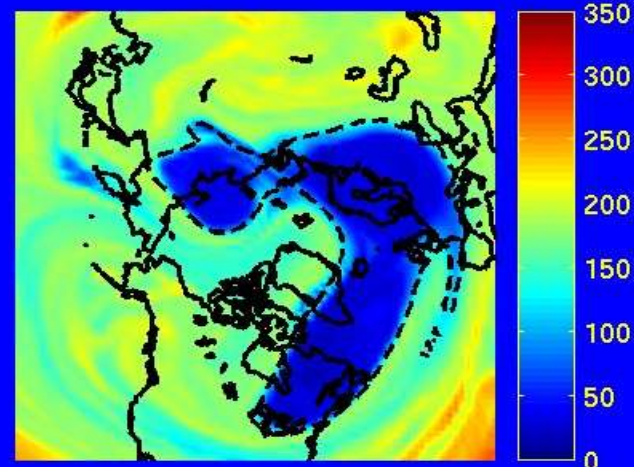
525 K

ppb



575 K

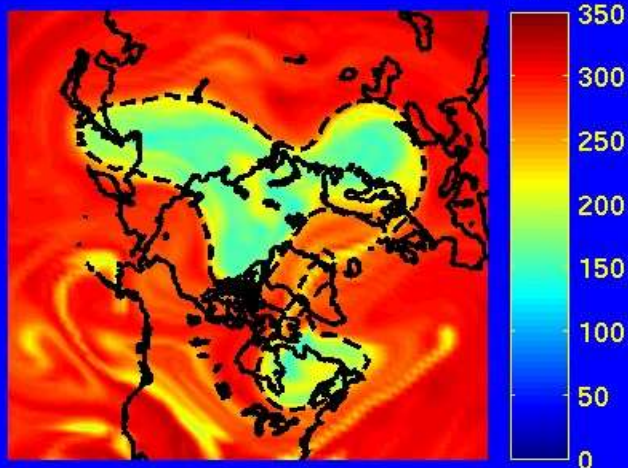
ppb



2005-03-21

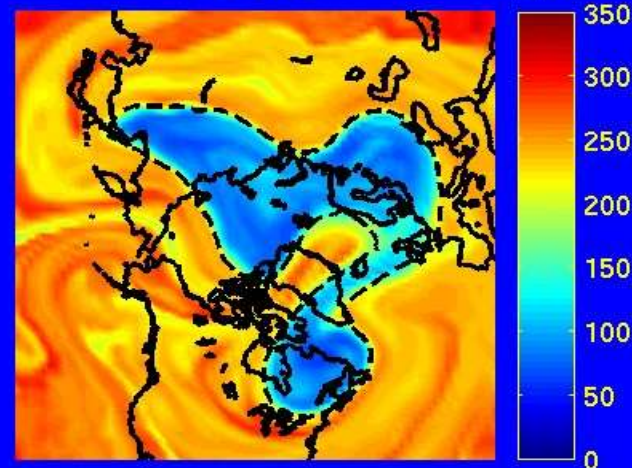
425 K

ppb



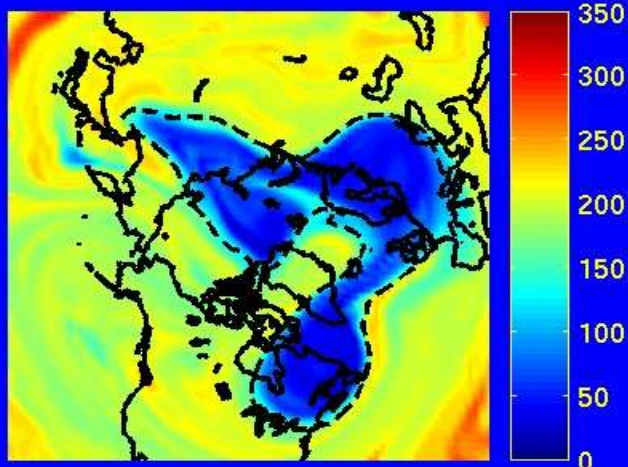
475 K

ppb



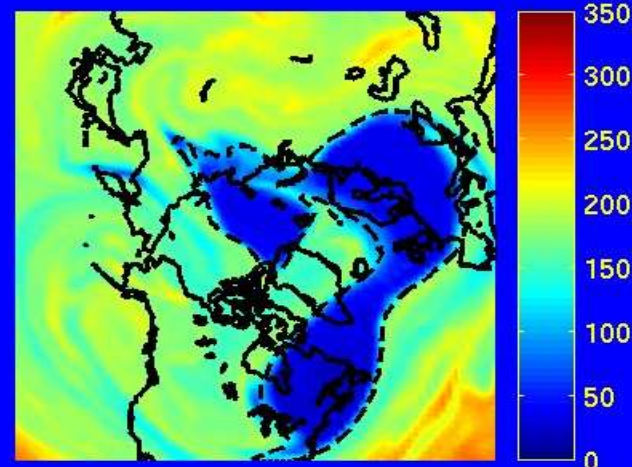
525 K

ppb



575 K

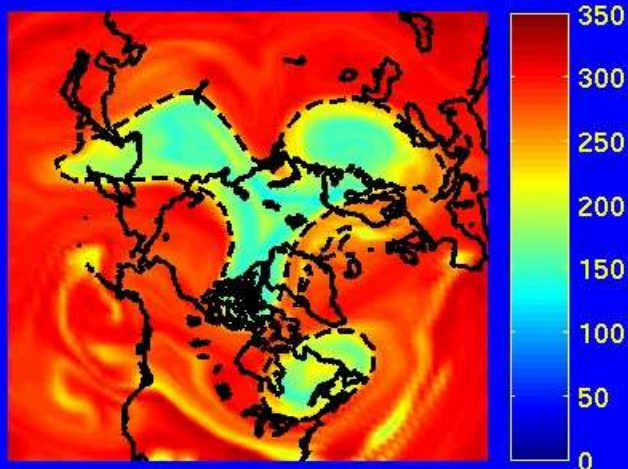
ppb



2005-03-22

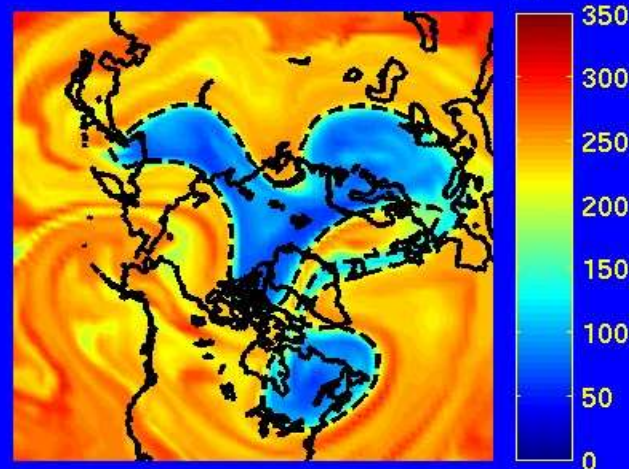
425 K

ppb



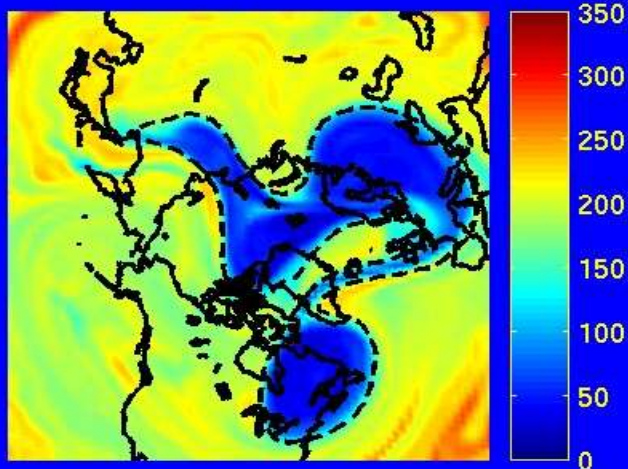
475 K

ppb



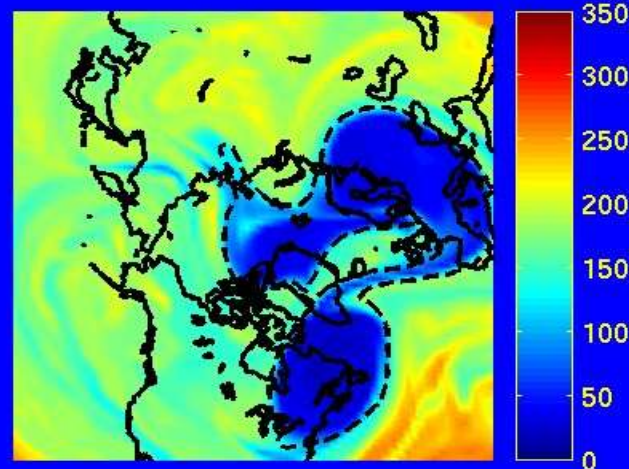
525 K

ppb



575 K

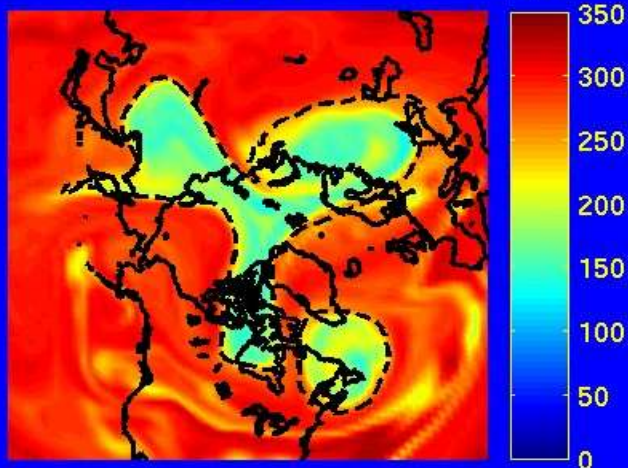
ppb



2005-03-23

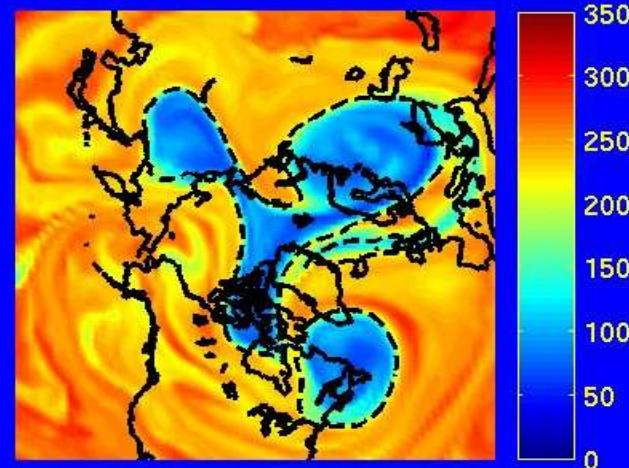
425 K

ppb



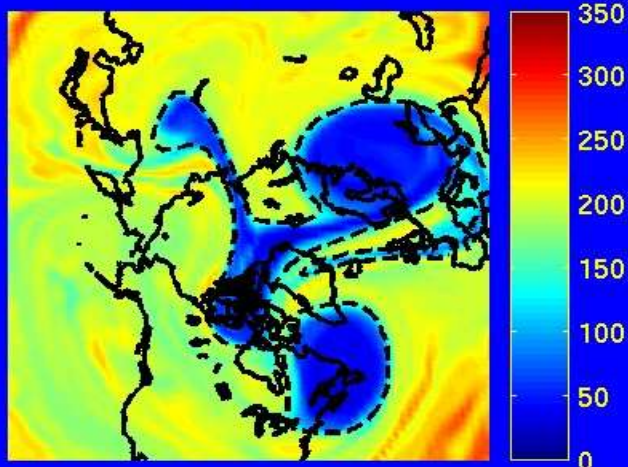
475 K

ppb



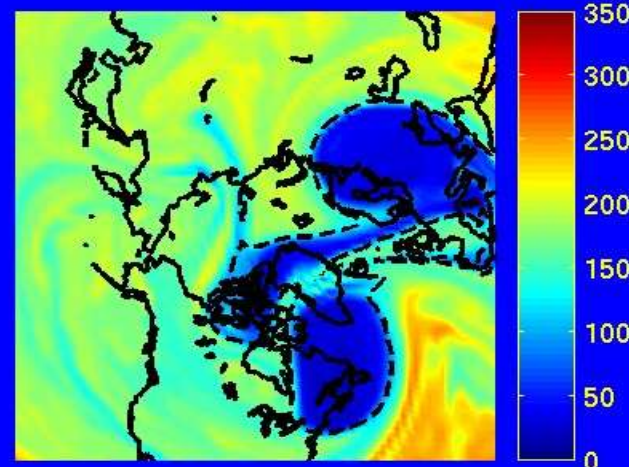
525 K

ppb



575 K

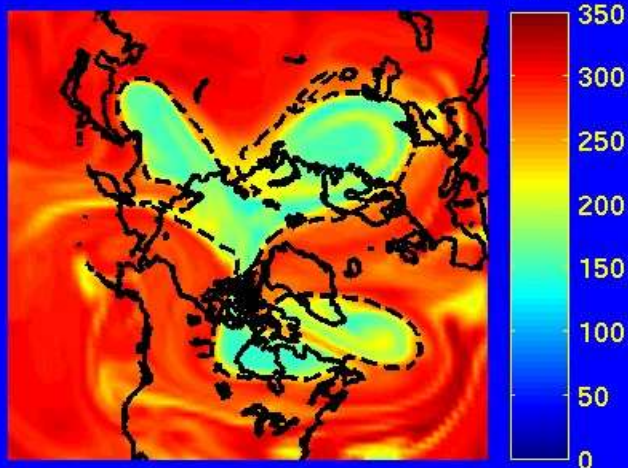
ppb



2005-03-24

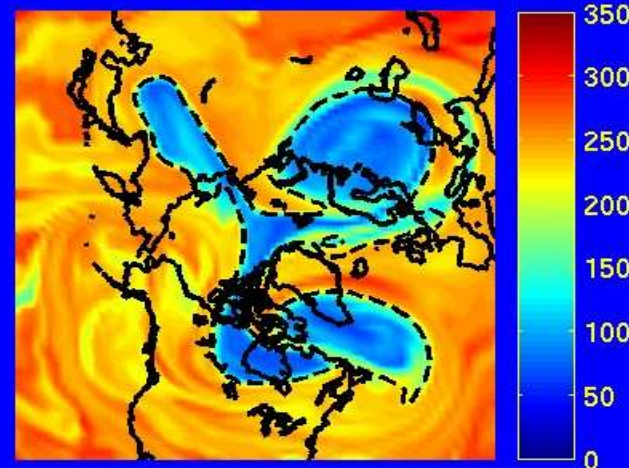
425 K

ppb



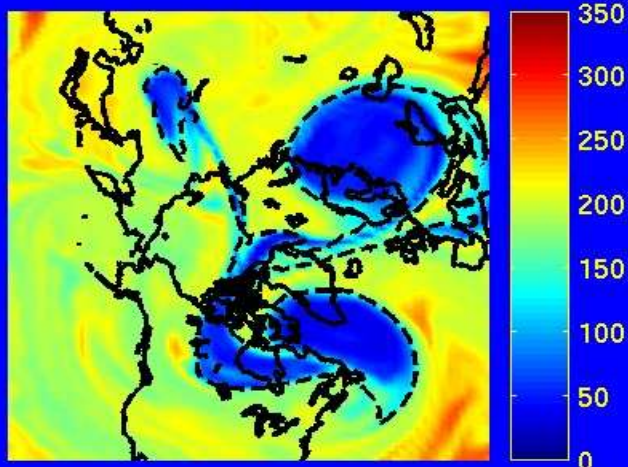
475 K

ppb



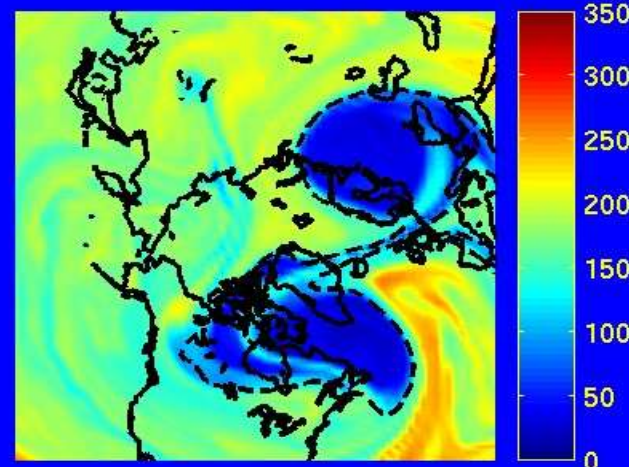
525 K

ppb

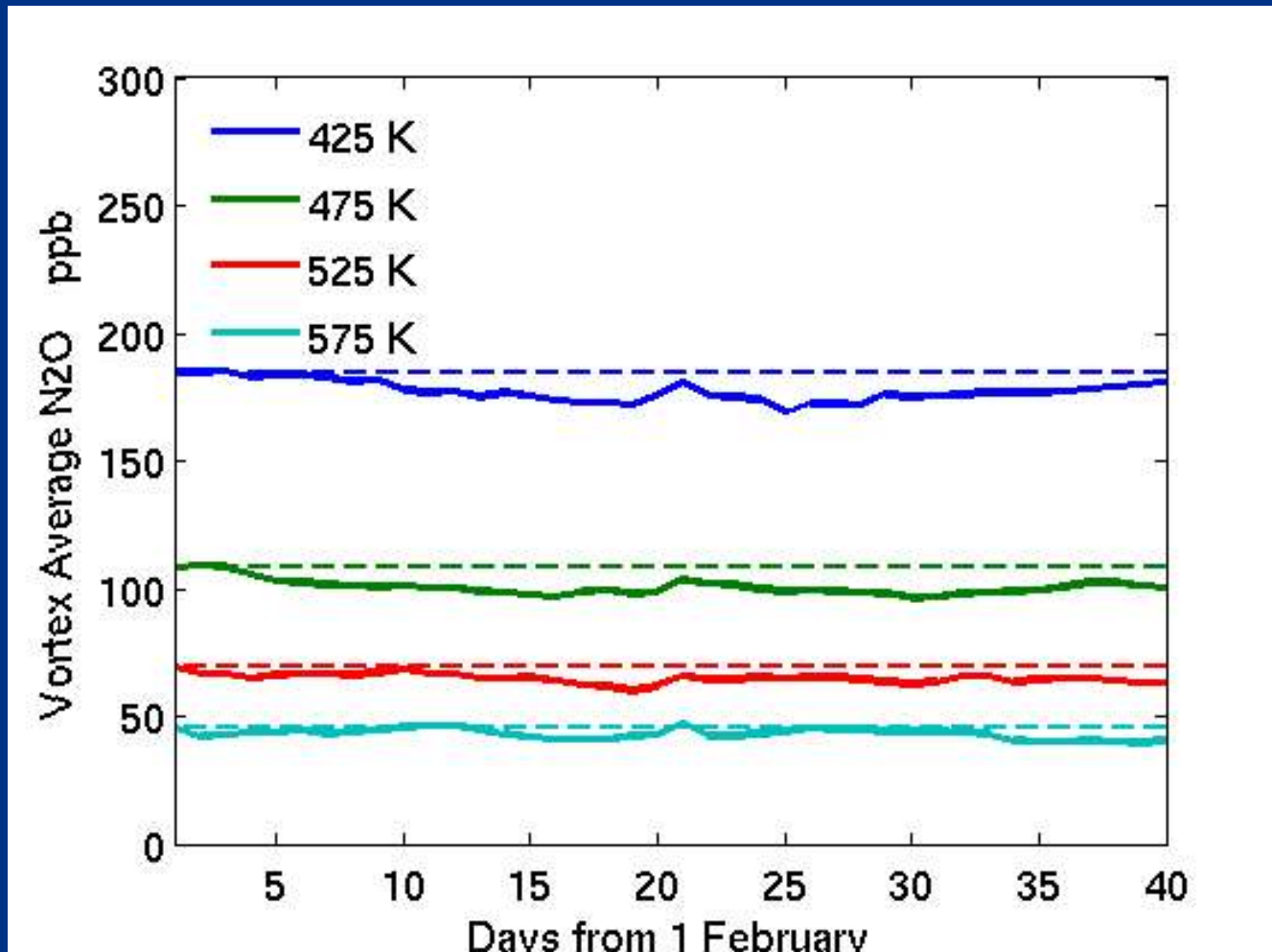


575 K

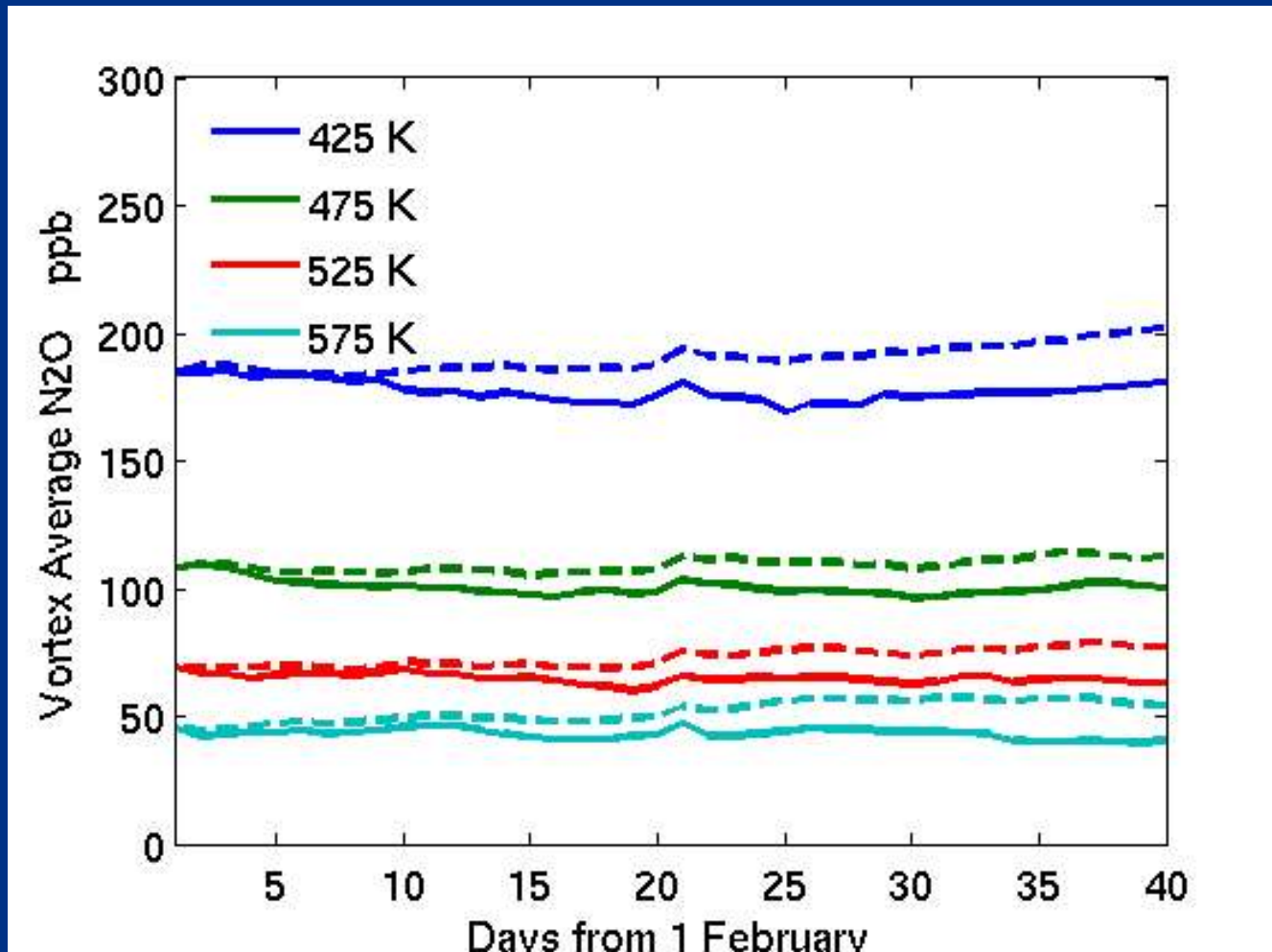
ppb



Averaged N₂O mixing ratios in the polar vortex.



Assimilated N₂O compared to passively transported.

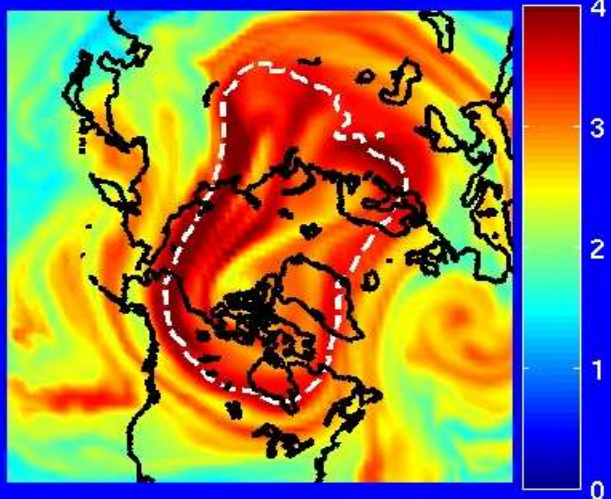


Estimates of ozone depletion in the Arctic winter of 2004/2005.

2005-02-01

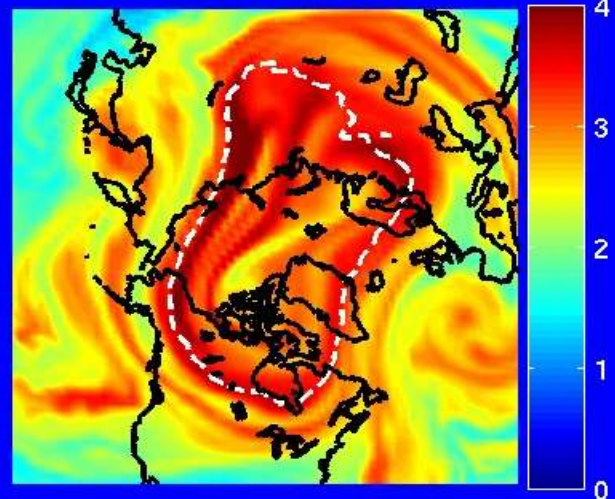
Assimilated Ozone

ppm



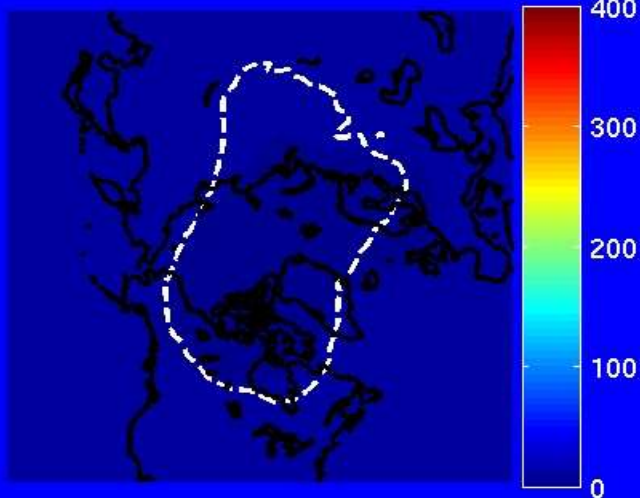
Passive Ozone

ppm



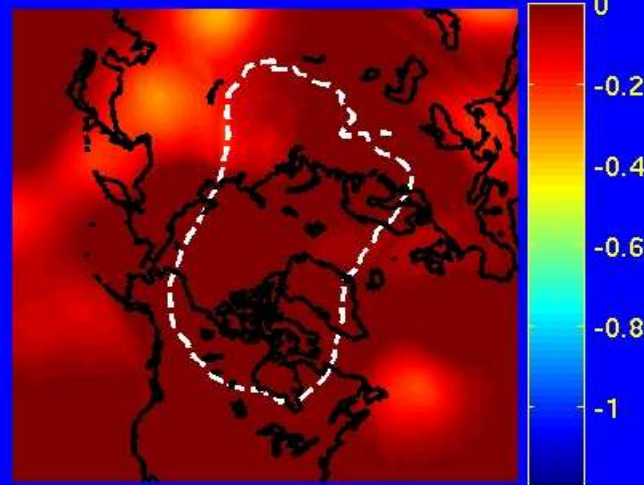
Sunlit Hours

h



Ozone Loss

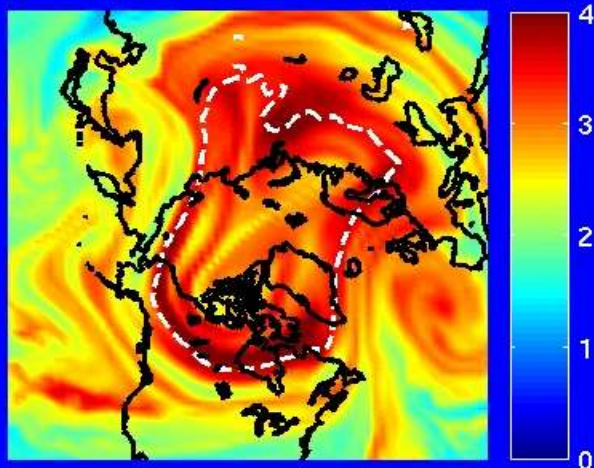
ppm



2005-02-02

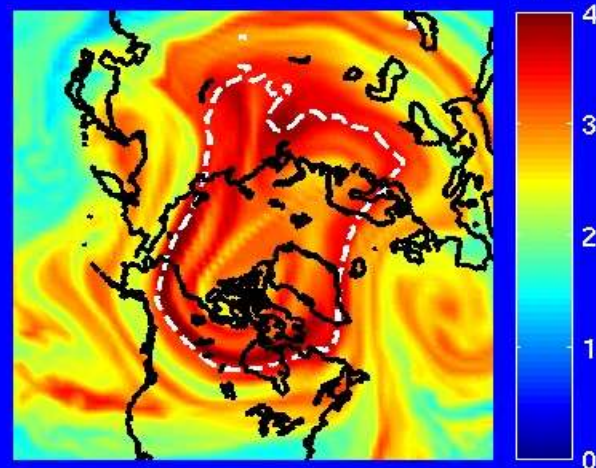
Assimilated Ozone

ppm



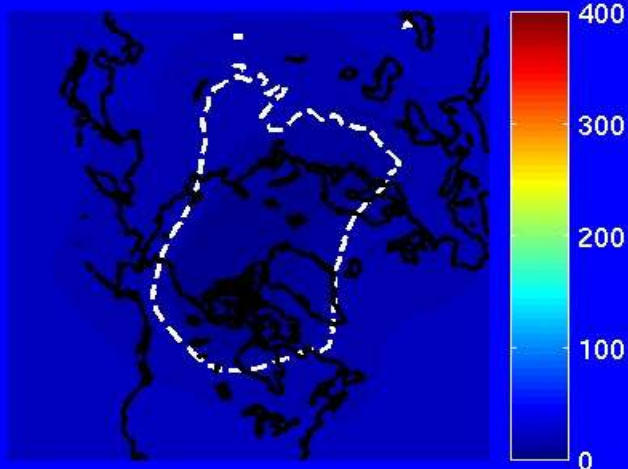
Passive Ozone

ppm



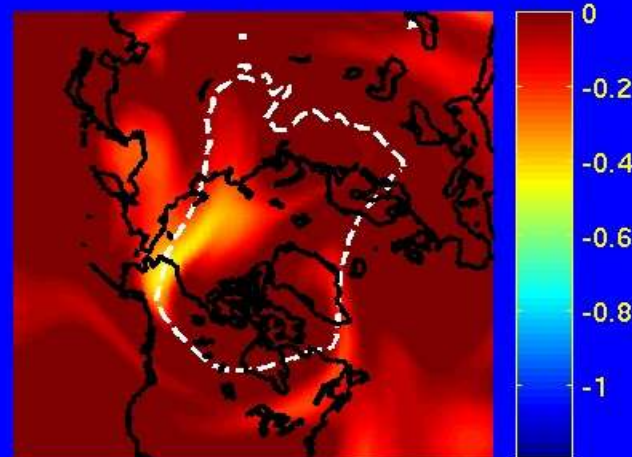
Sunlit Hours

h



Ozone Loss

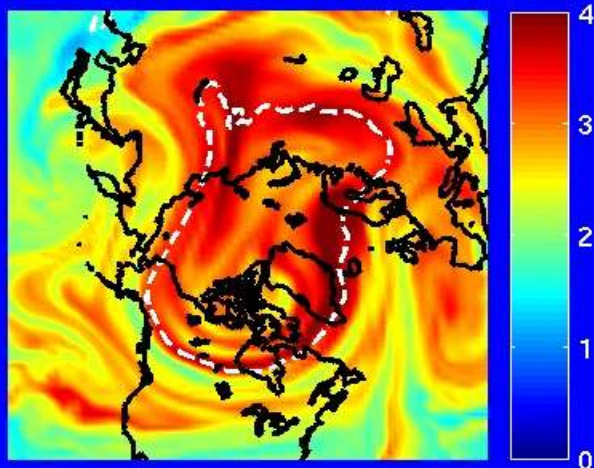
ppm



2005-02-03

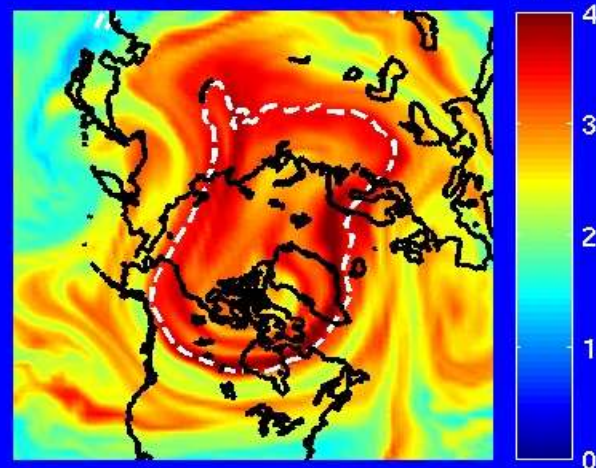
Assimilated Ozone

ppm



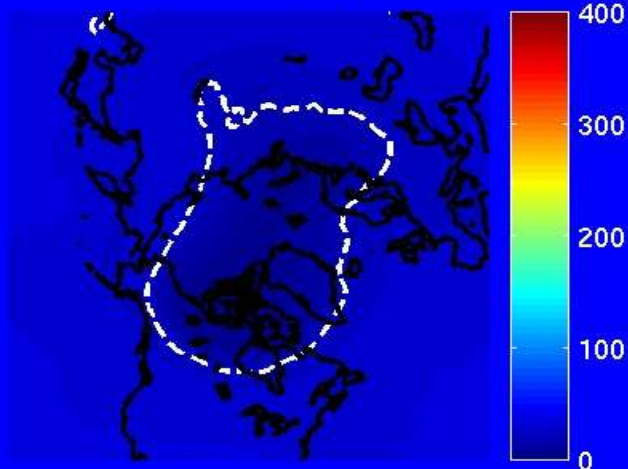
Passive Ozone

ppm



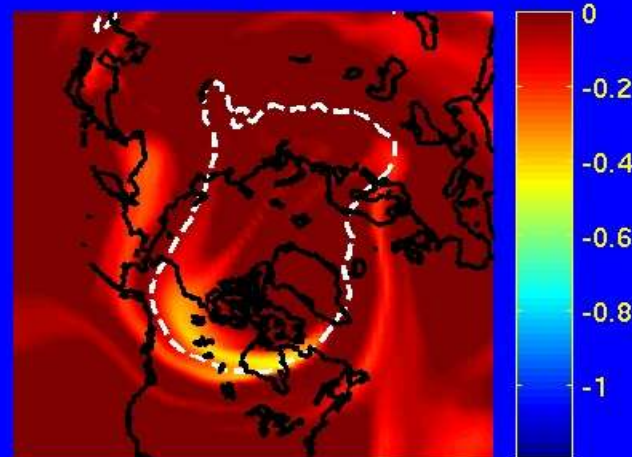
Sunlit Hours

h



Ozone Loss

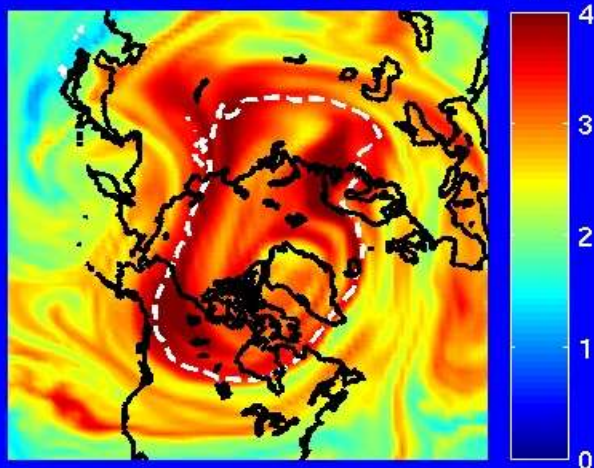
ppm



2005-02-04

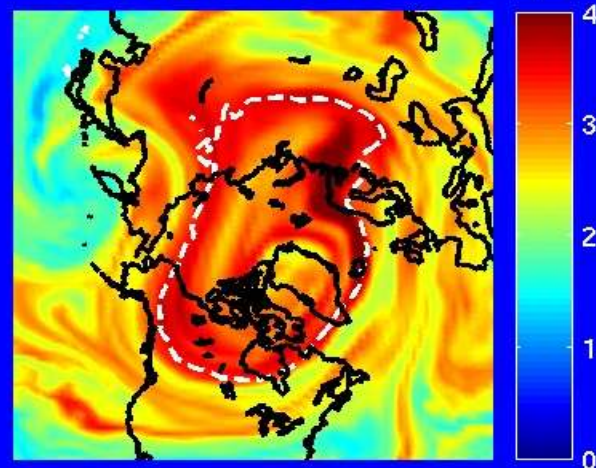
Assimilated Ozone

ppm



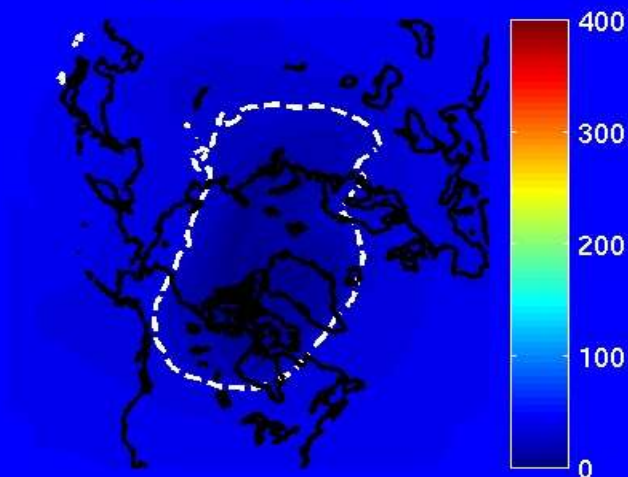
Passive Ozone

ppm



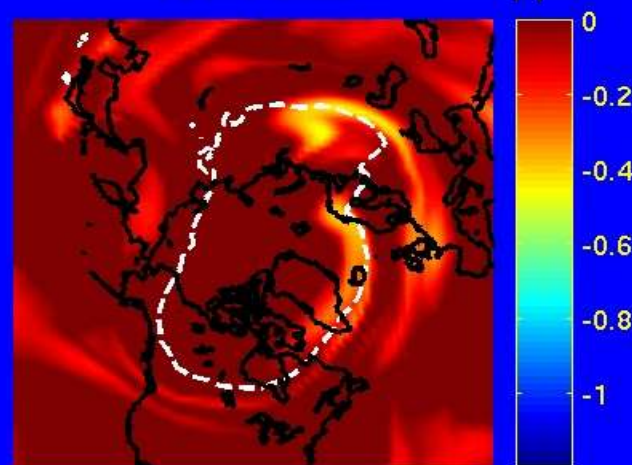
Sunlit Hours

h



Ozone Loss

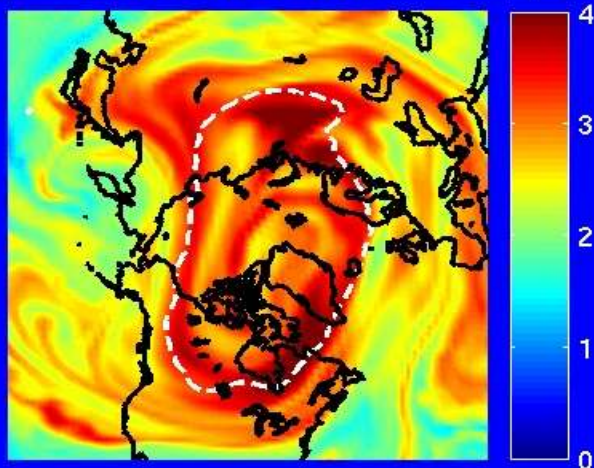
ppm



2005-02-05

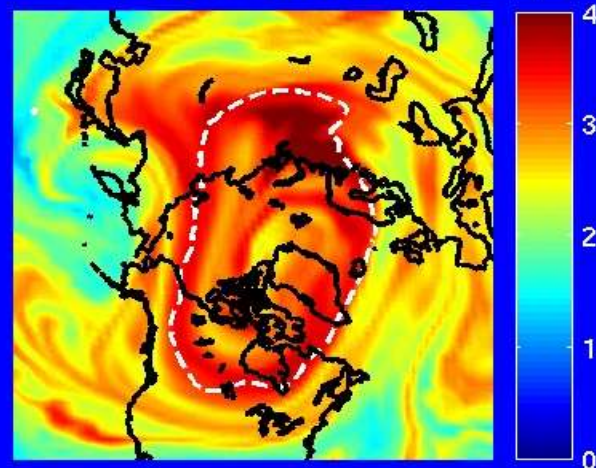
Assimilated Ozone

ppm



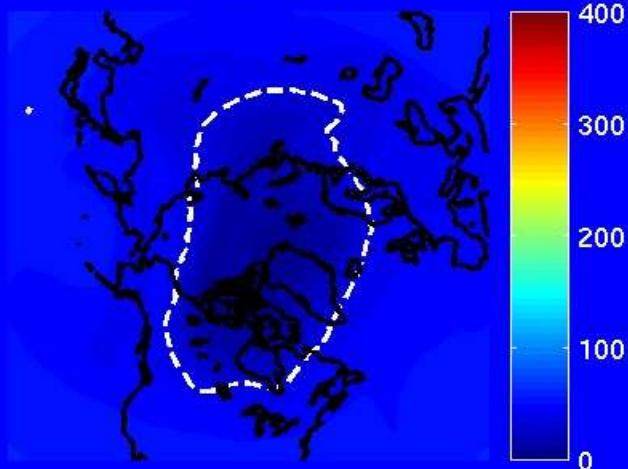
Passive Ozone

ppm



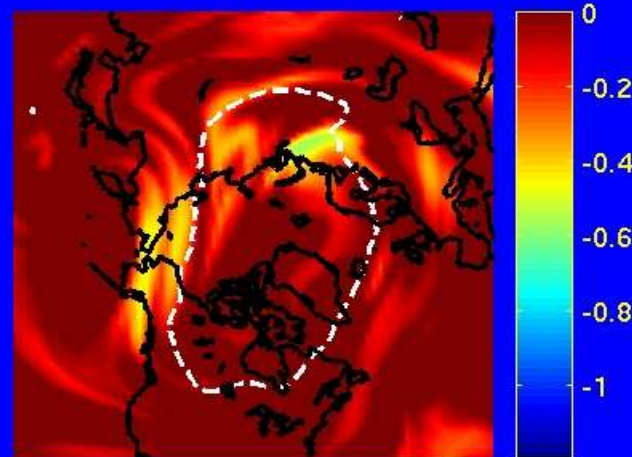
Sunlit Hours

h



Ozone Loss

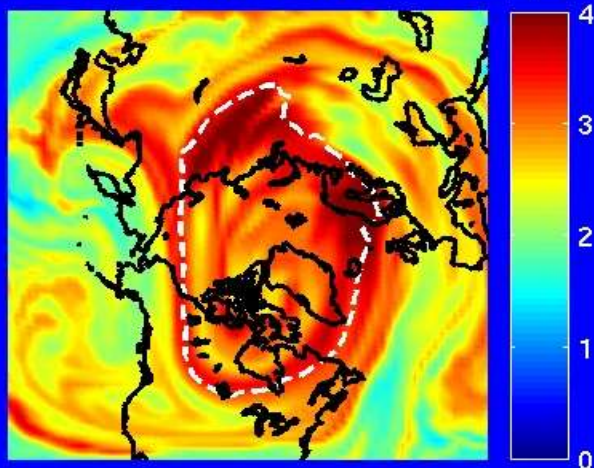
ppm



2005-02-06

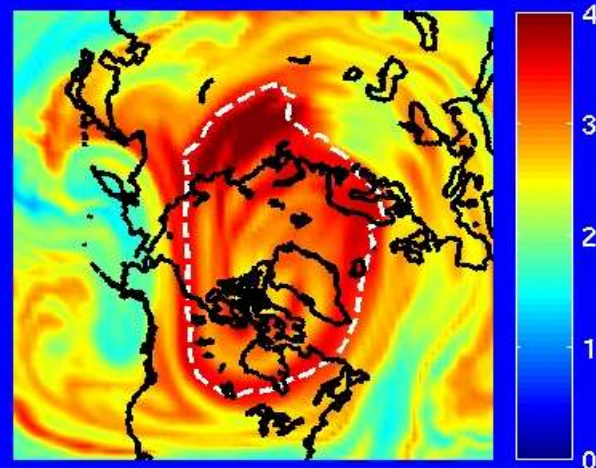
Assimilated Ozone

ppm



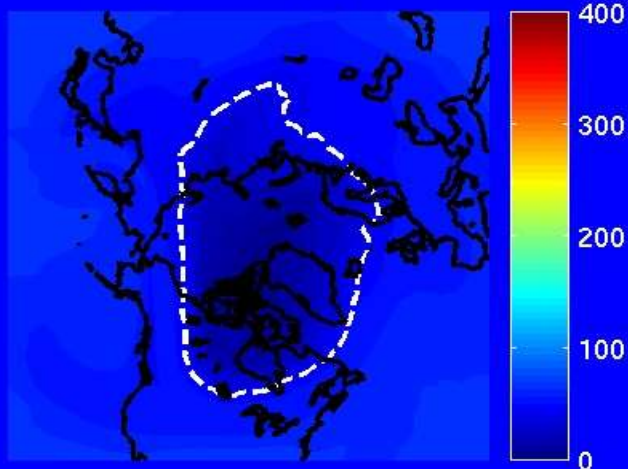
Passive Ozone

ppm



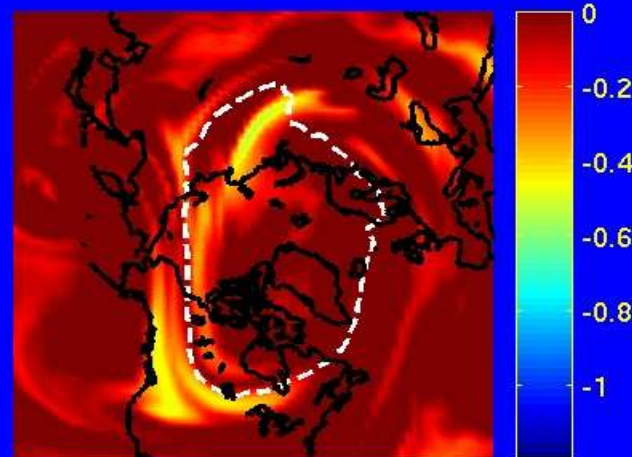
Sunlit Hours

h



Ozone Loss

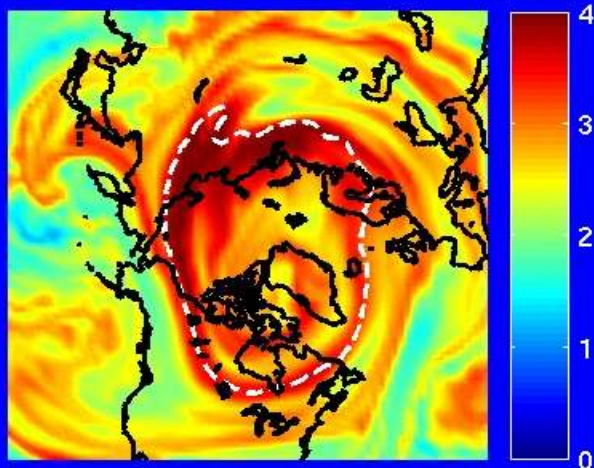
ppm



2005-02-07

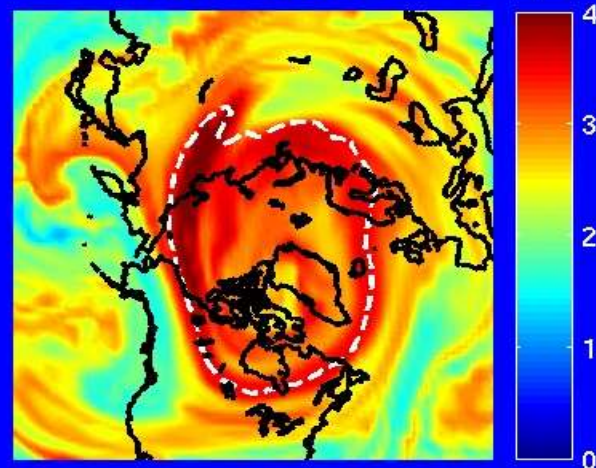
Assimilated Ozone

ppm



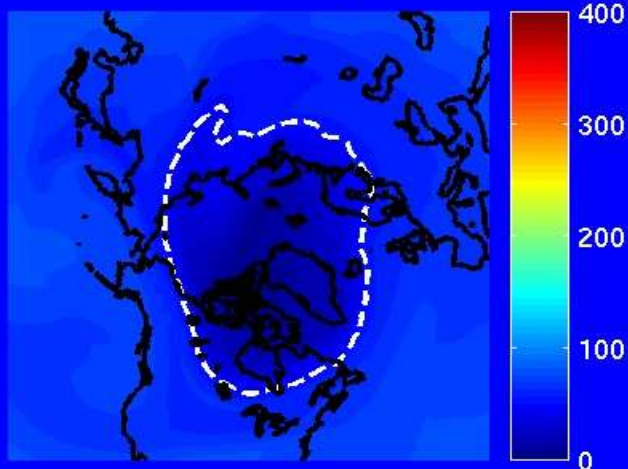
Passive Ozone

ppm



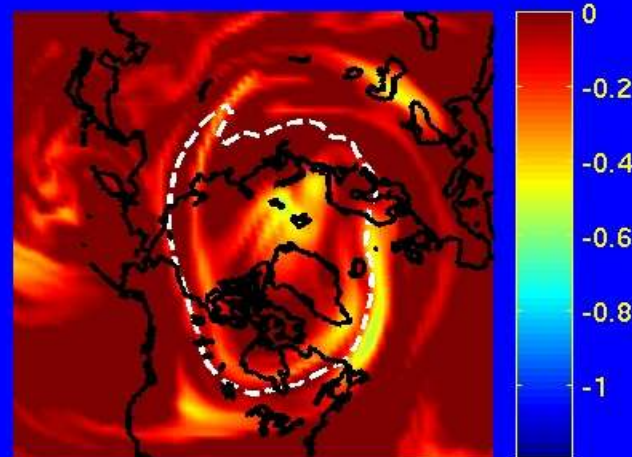
Sunlit Hours

h



Ozone Loss

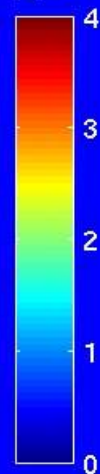
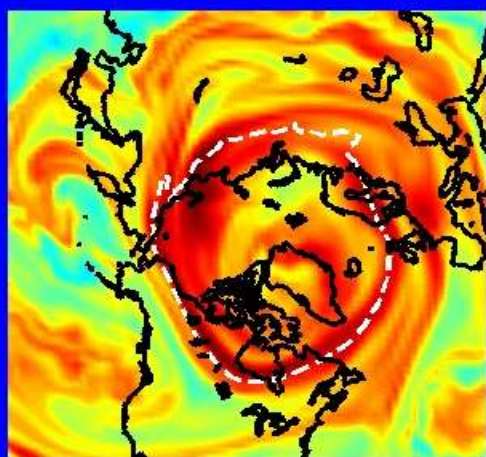
ppm



2005-02-08

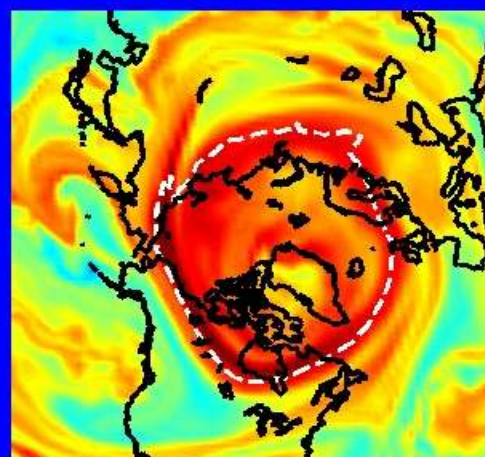
Assimilated Ozone

ppm



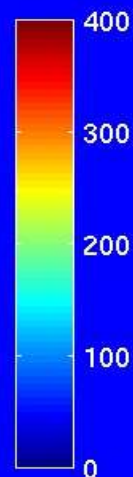
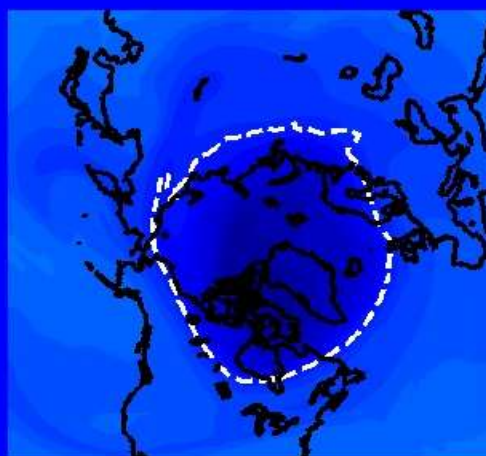
Passive Ozone

ppm



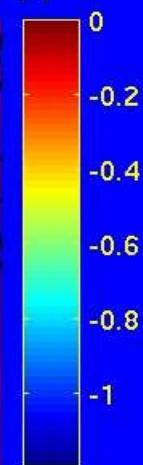
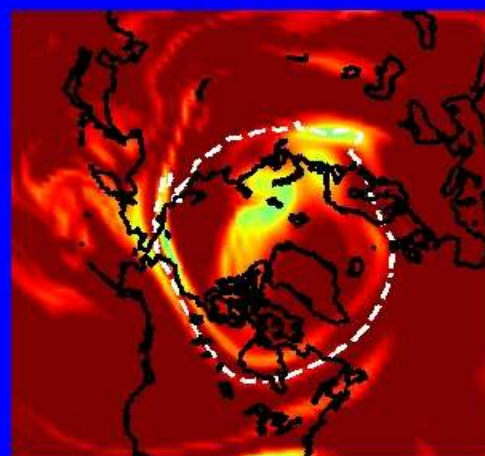
Sunlit Hours

h



Ozone Loss

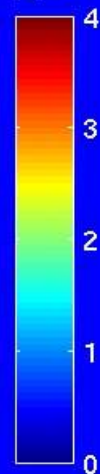
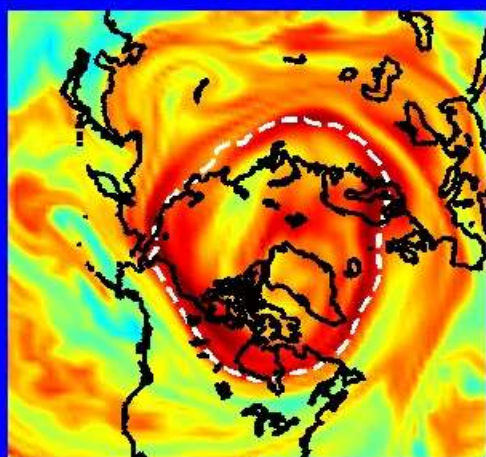
ppm



2005-02-09

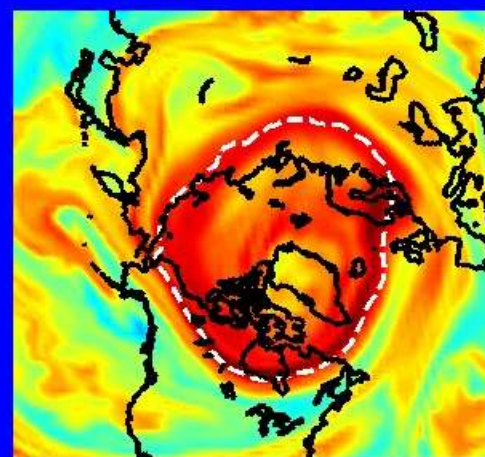
Assimilated Ozone

ppm



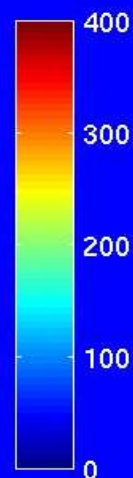
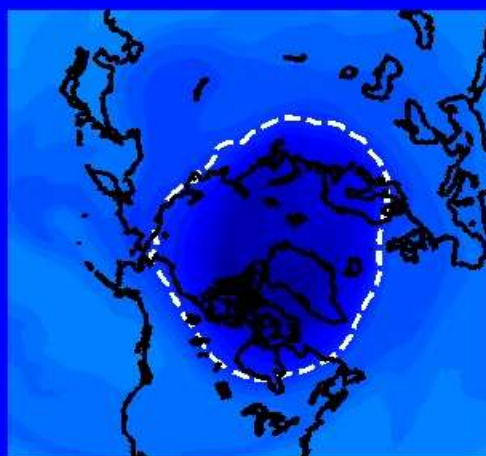
Passive Ozone

ppm



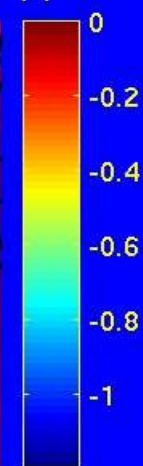
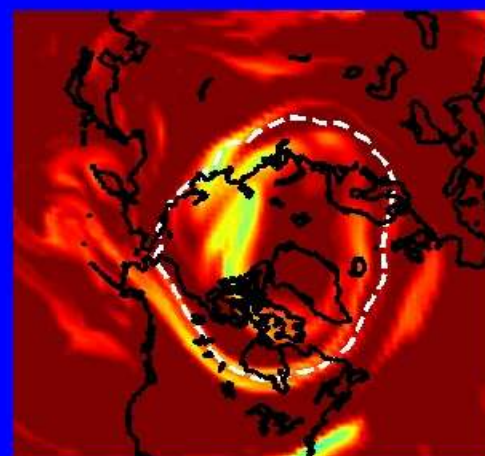
Sunlit Hours

h



Ozone Loss

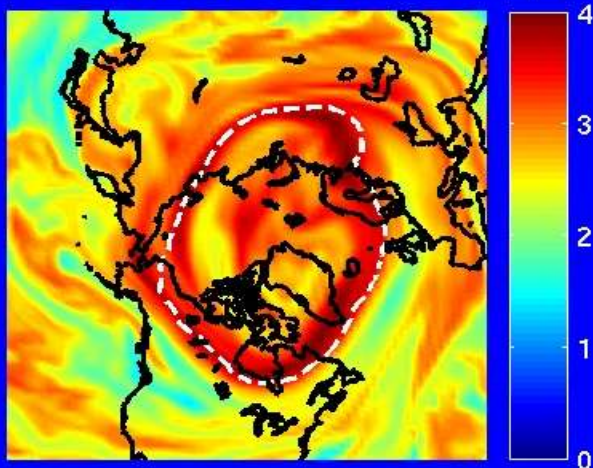
ppm



2005-02-10

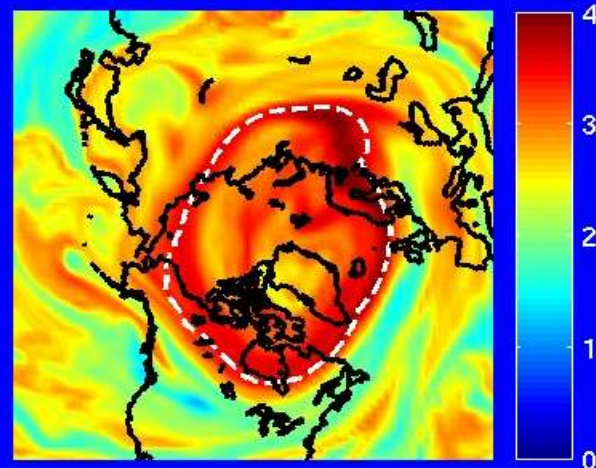
Assimilated Ozone

ppm



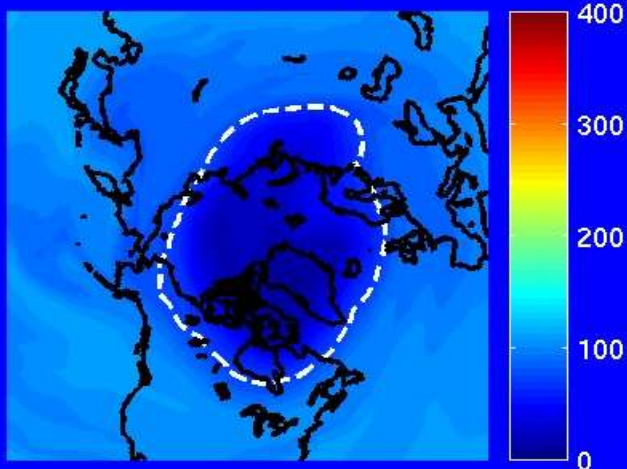
Passive Ozone

ppm



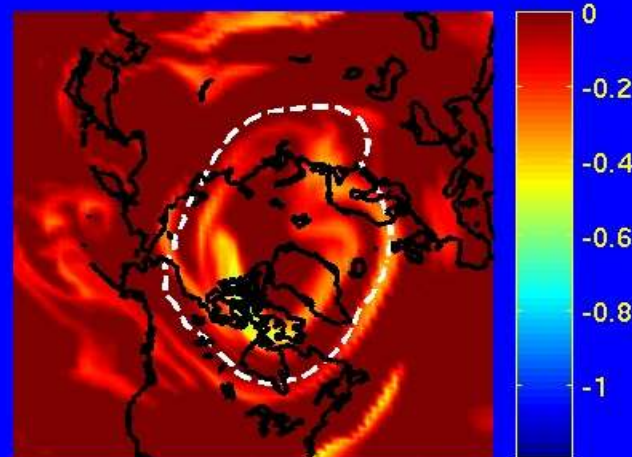
Sunlit Hours

h



Ozone Loss

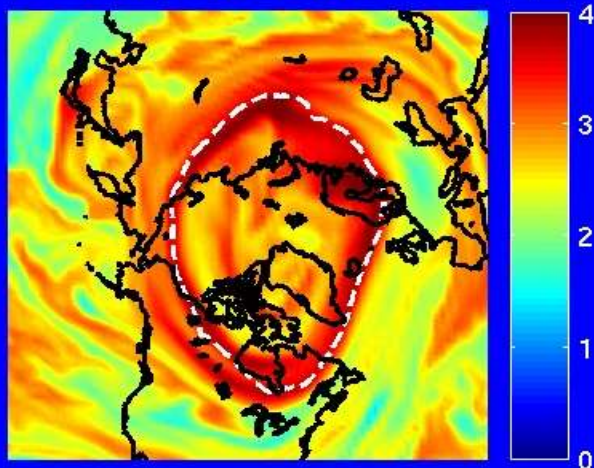
ppm



2005-02-11

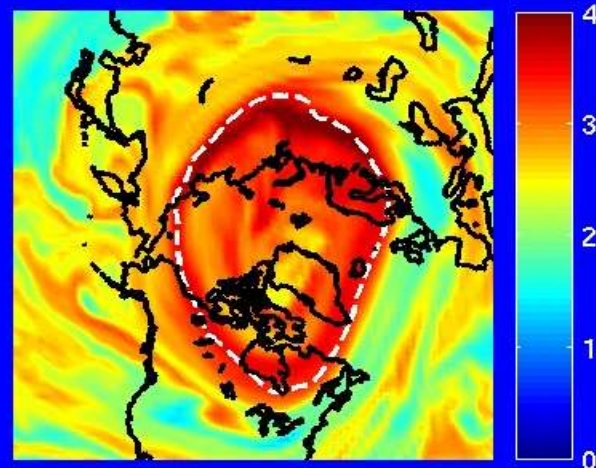
Assimilated Ozone

ppm



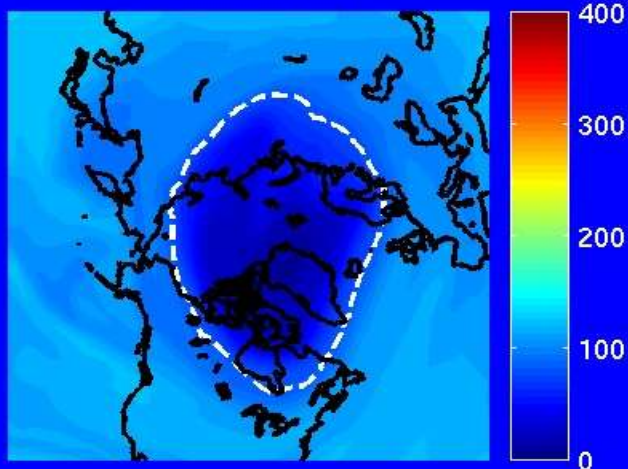
Passive Ozone

ppm



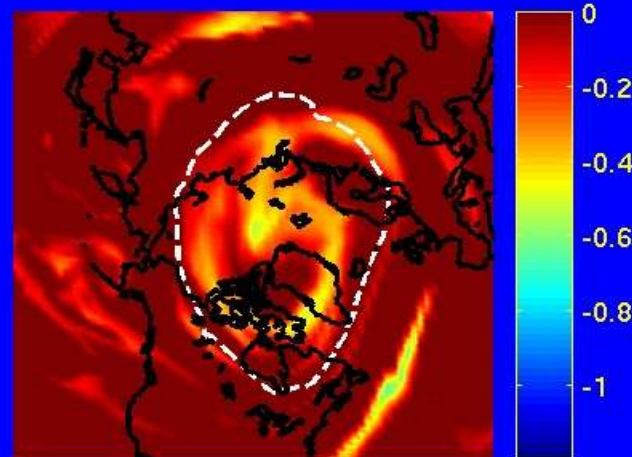
Sunlit Hours

h



Ozone Loss

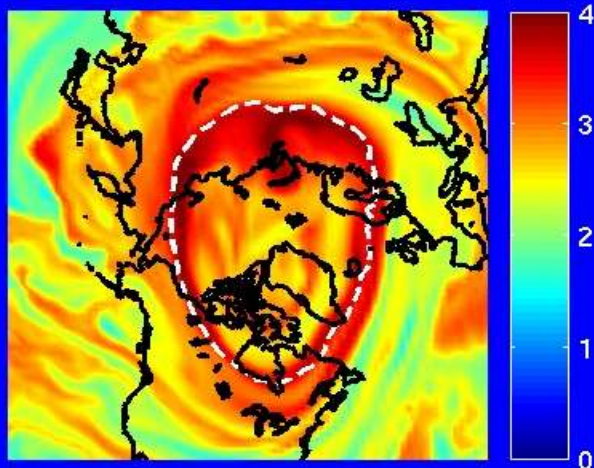
ppm



2005-02-12

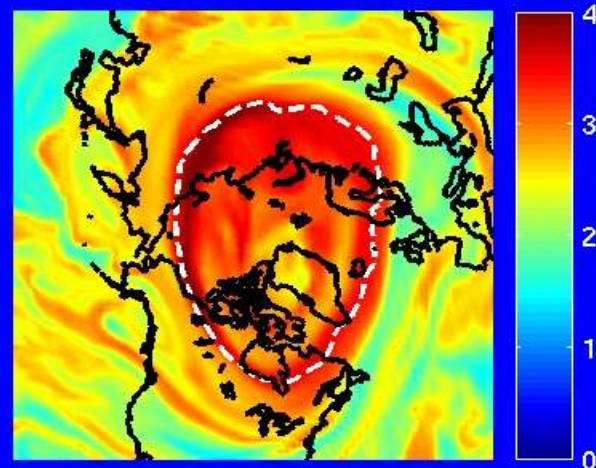
Assimilated Ozone

ppm



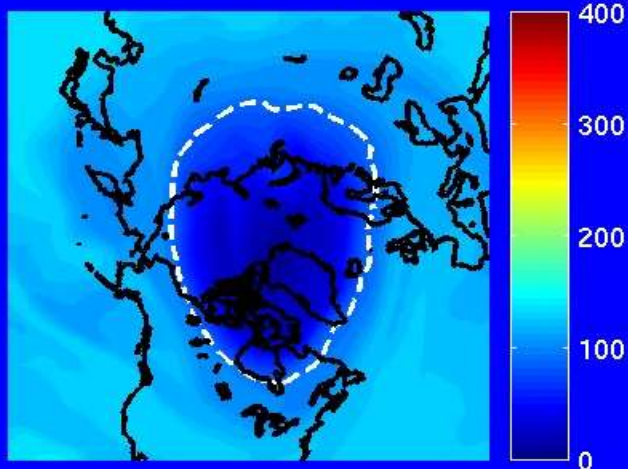
Passive Ozone

ppm



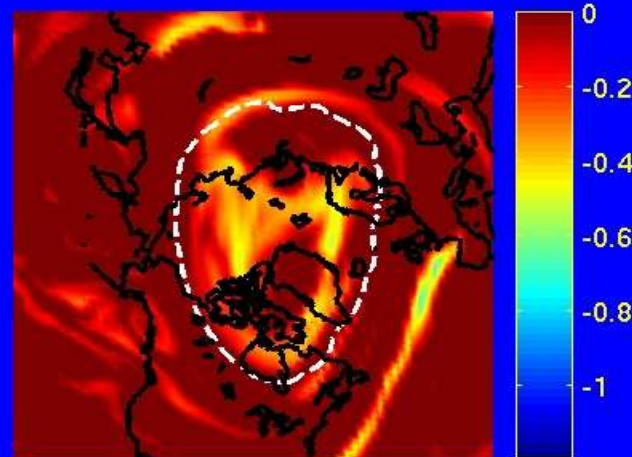
Sunlit Hours

h



Ozone Loss

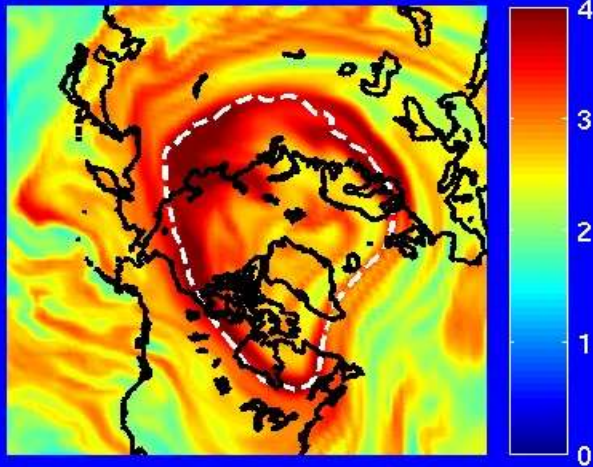
ppm



2005-02-13

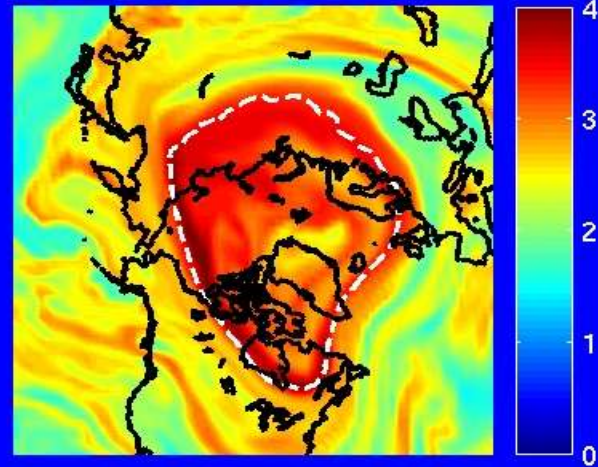
Assimilated Ozone

ppm



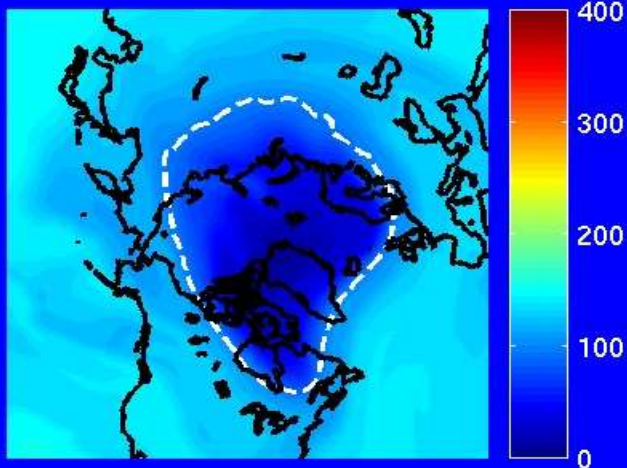
Passive Ozone

ppm



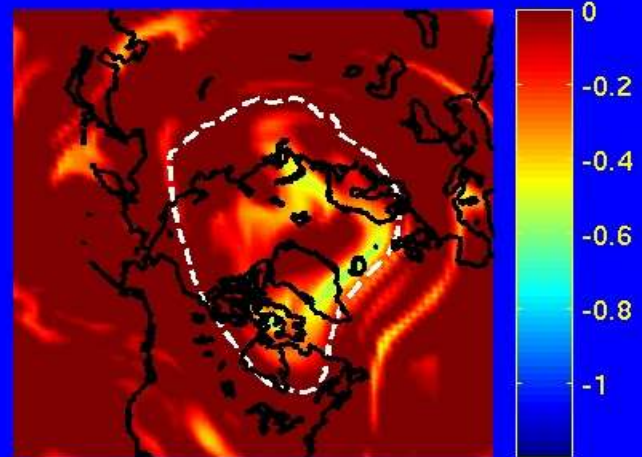
Sunlit Hours

h



Ozone Loss

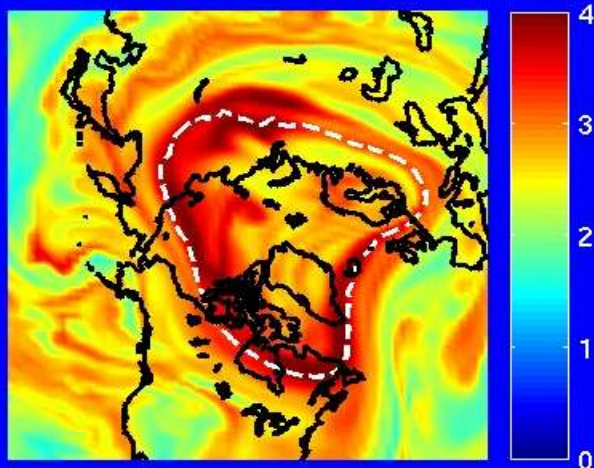
ppm



2005-02-14

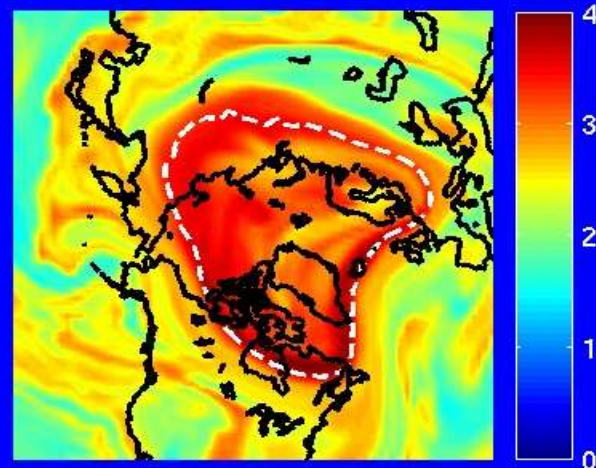
Assimilated Ozone

ppm



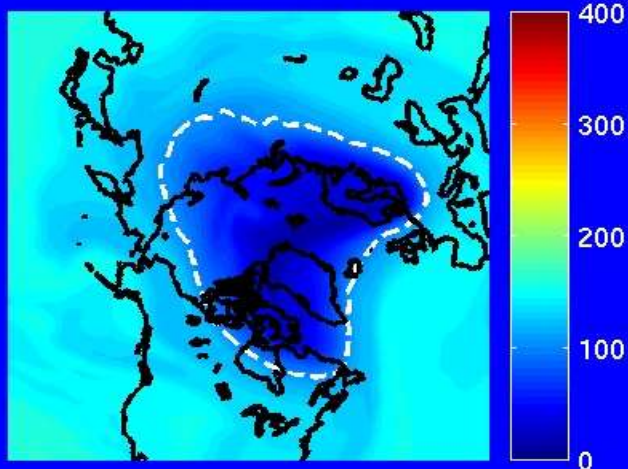
Passive Ozone

ppm



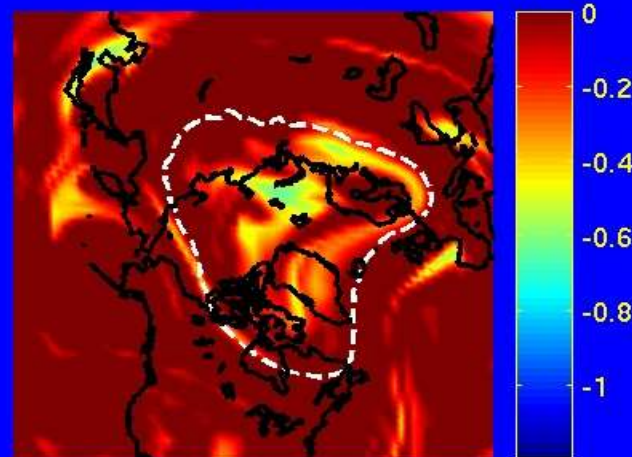
Sunlit Hours

h



Ozone Loss

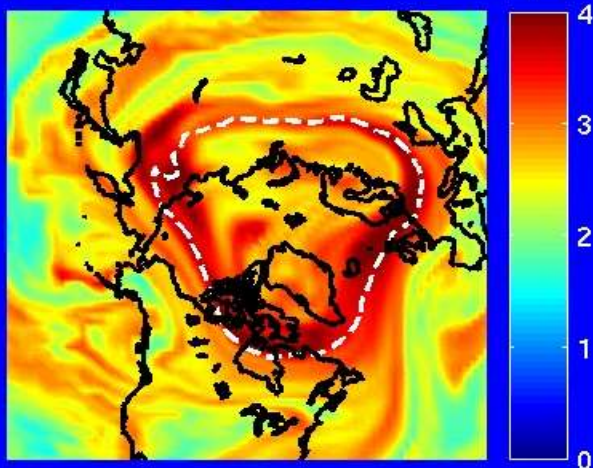
ppm



2005-02-15

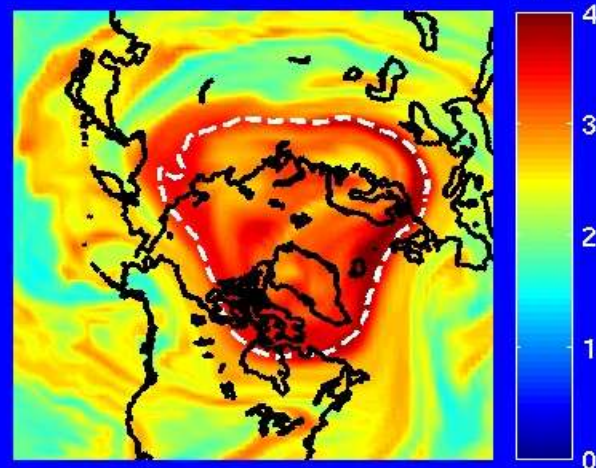
Assimilated Ozone

ppm



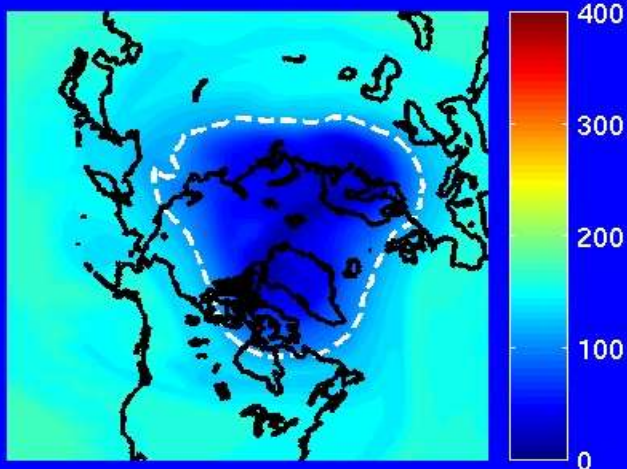
Passive Ozone

ppm



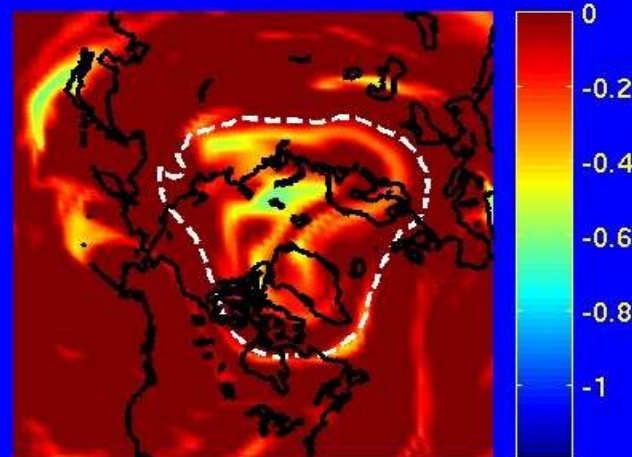
Sunlit Hours

h



Ozone Loss

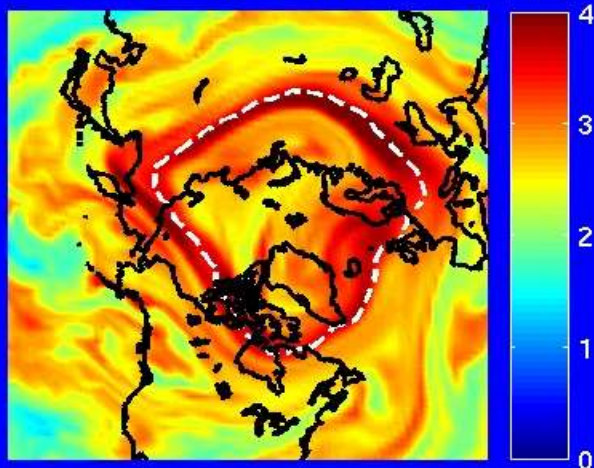
ppm



2005-02-16

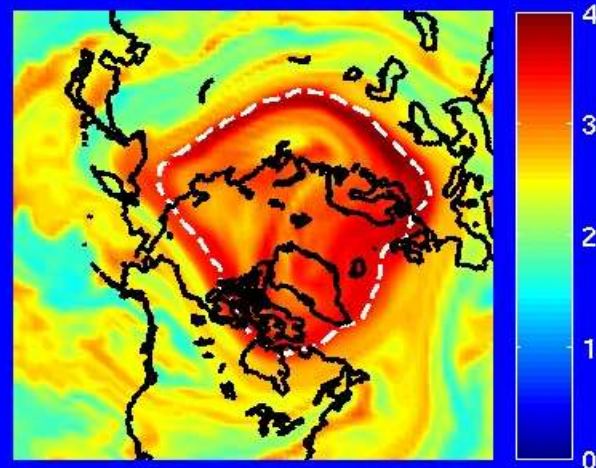
Assimilated Ozone

ppm



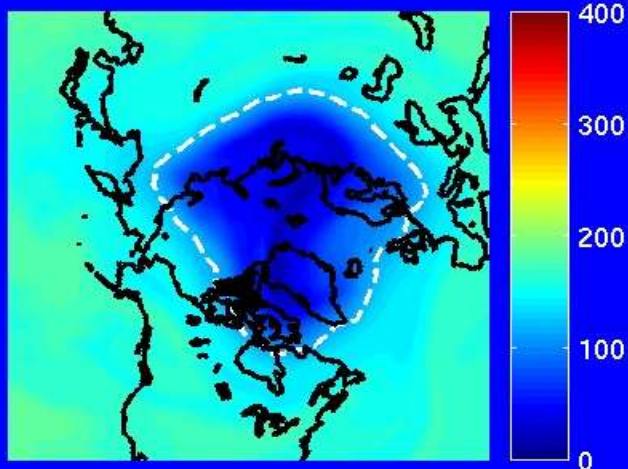
Passive Ozone

ppm



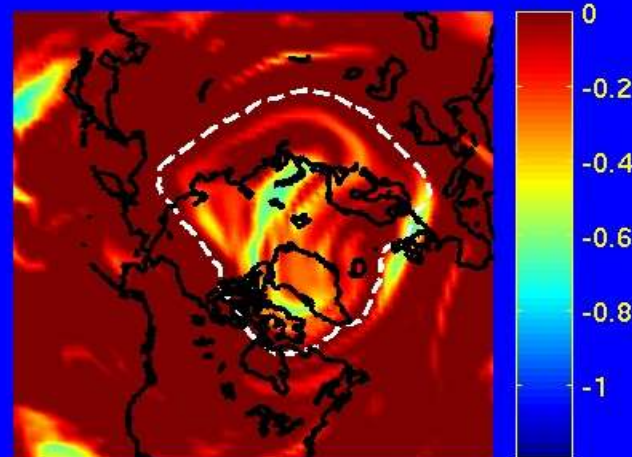
Sunlit Hours

h



Ozone Loss

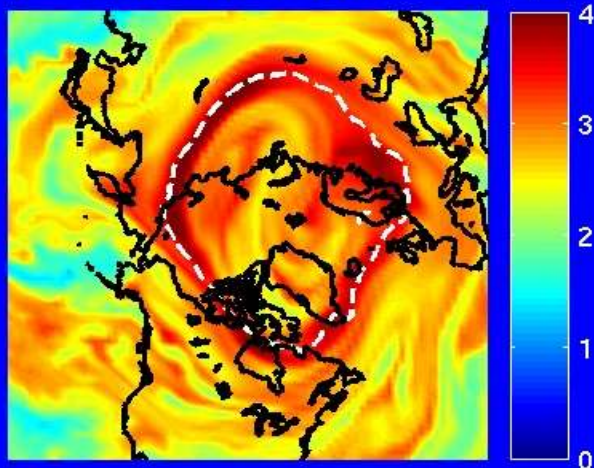
ppm



2005-02-17

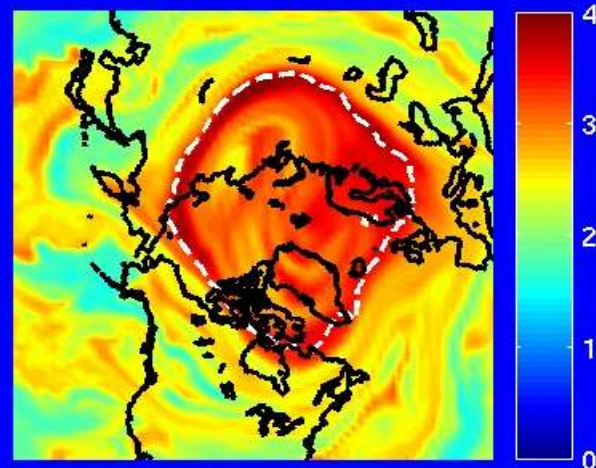
Assimilated Ozone

ppm



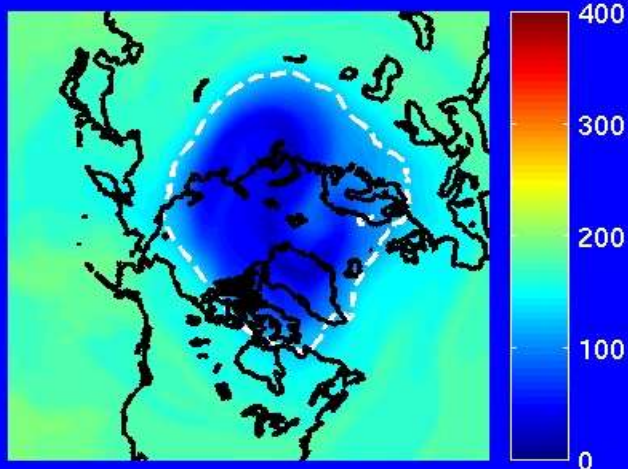
Passive Ozone

ppm



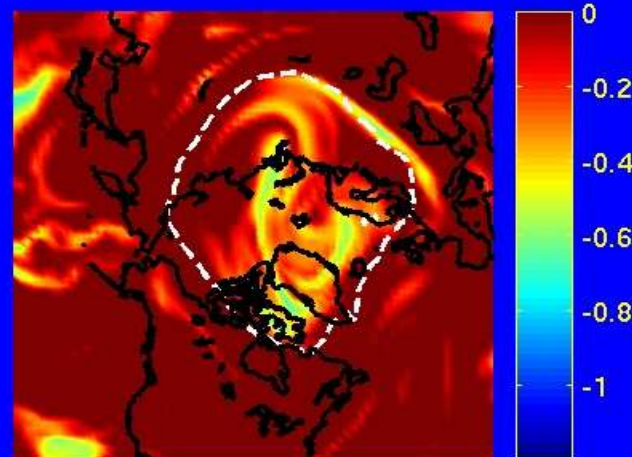
Sunlit Hours

h



Ozone Loss

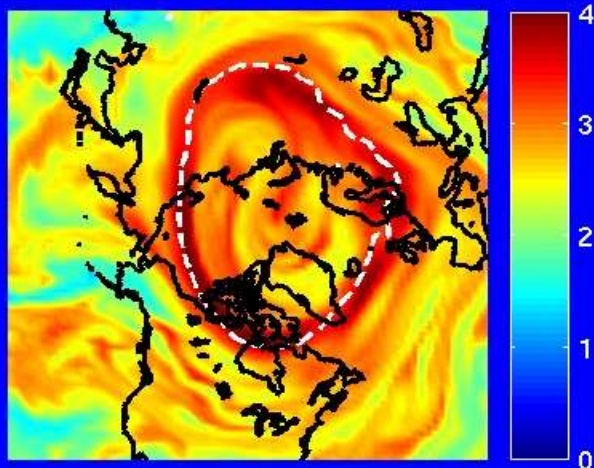
ppm



2005-02-18

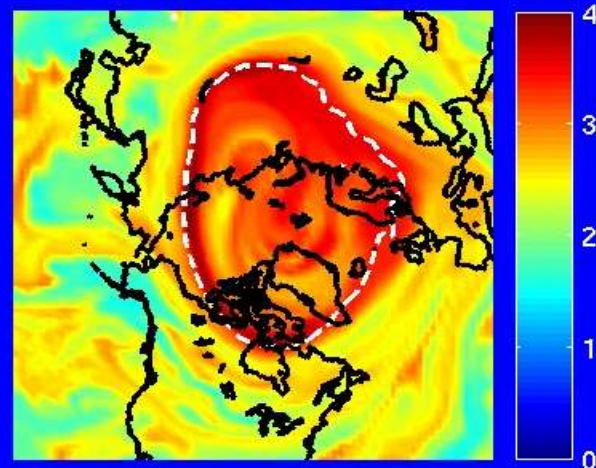
Assimilated Ozone

ppm



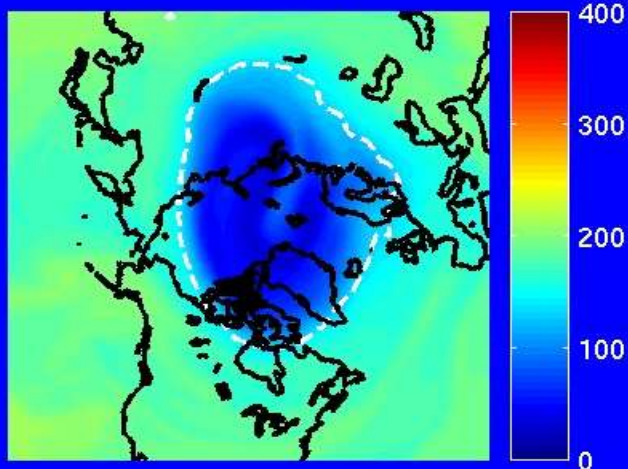
Passive Ozone

ppm



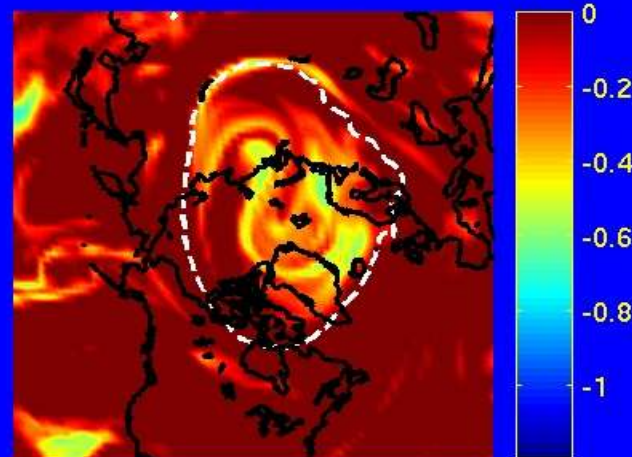
Sunlit Hours

h



Ozone Loss

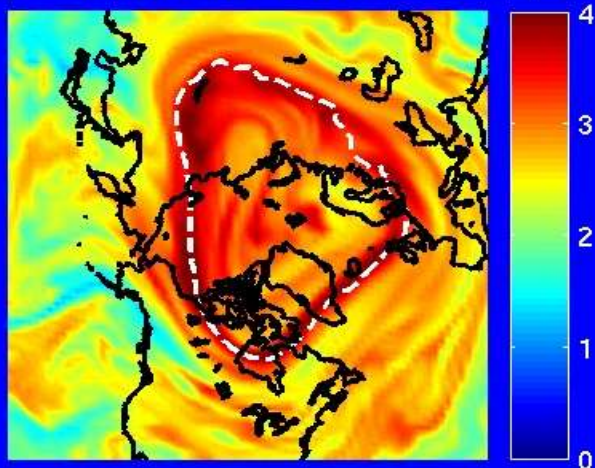
ppm



2005-02-19

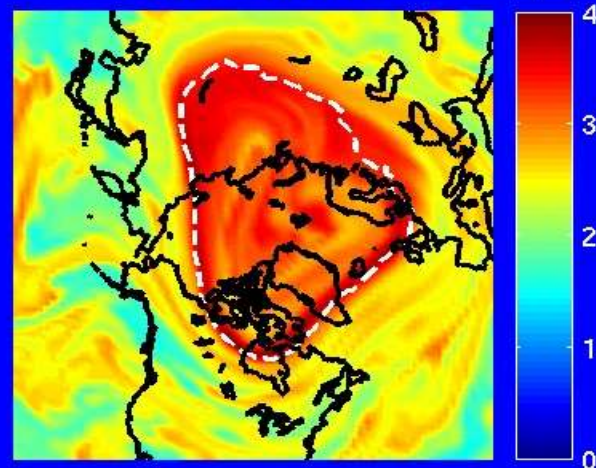
Assimilated Ozone

ppm



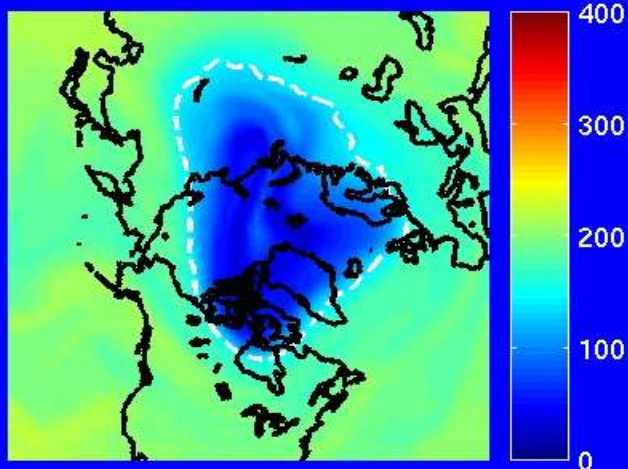
Passive Ozone

ppm



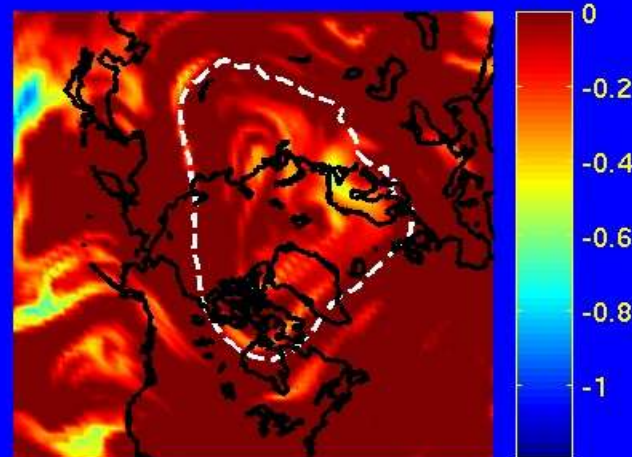
Sunlit Hours

h



Ozone Loss

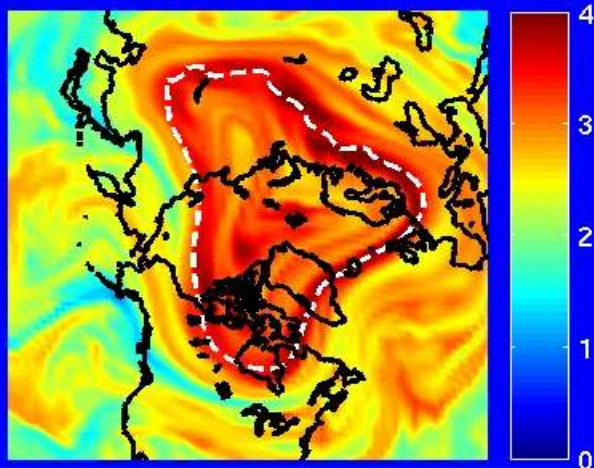
ppm



2005-02-20

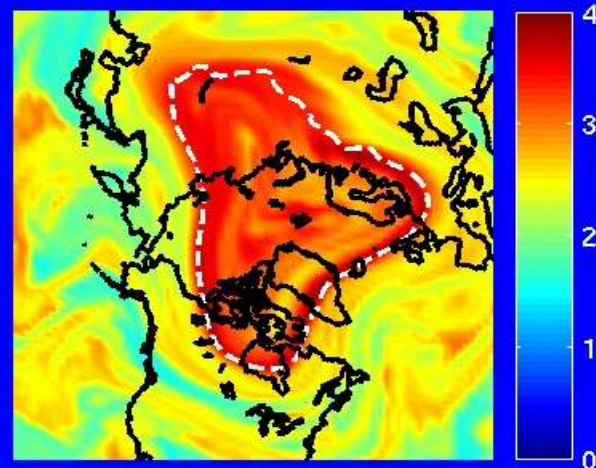
Assimilated Ozone

ppm



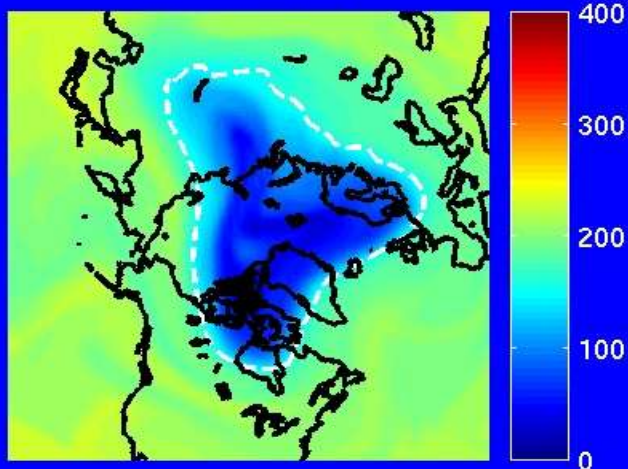
Passive Ozone

ppm



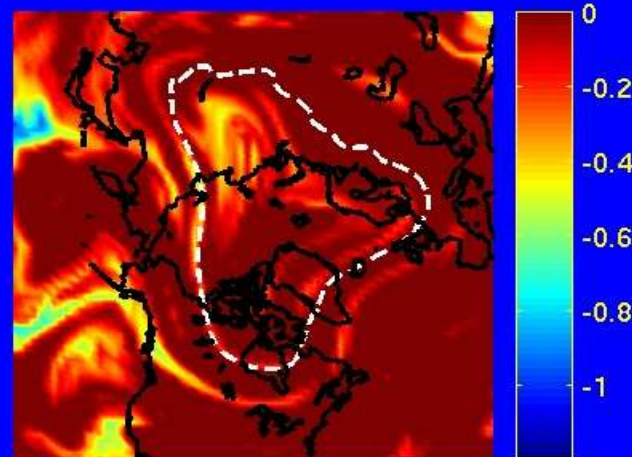
Sunlit Hours

h



Ozone Loss

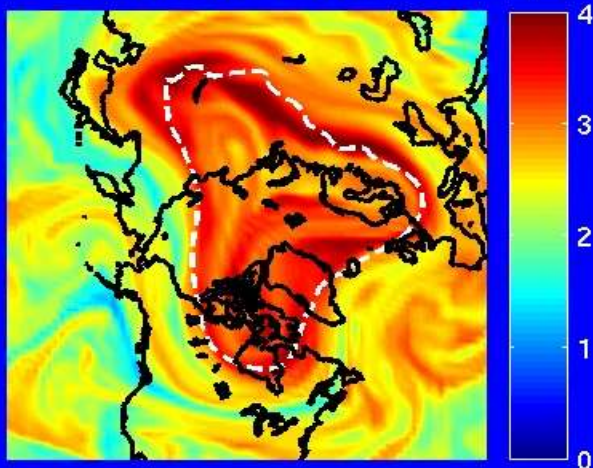
ppm



2005-02-21

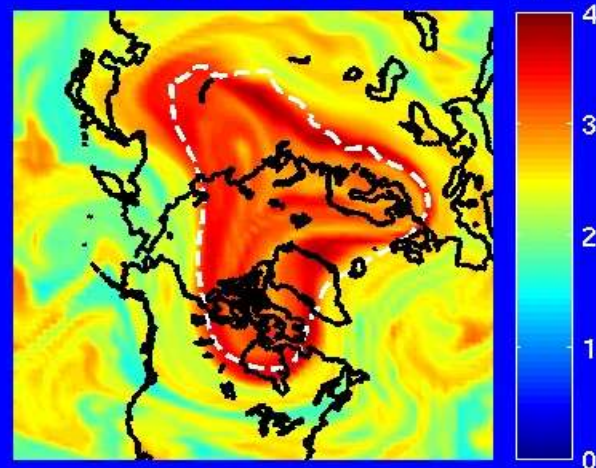
Assimilated Ozone

ppm



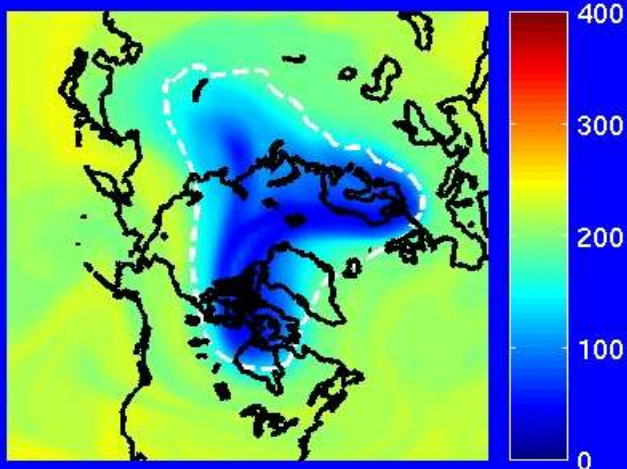
Passive Ozone

ppm



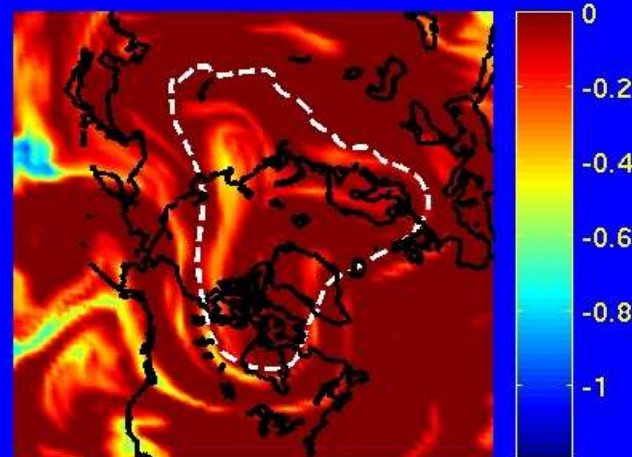
Sunlit Hours

h



Ozone Loss

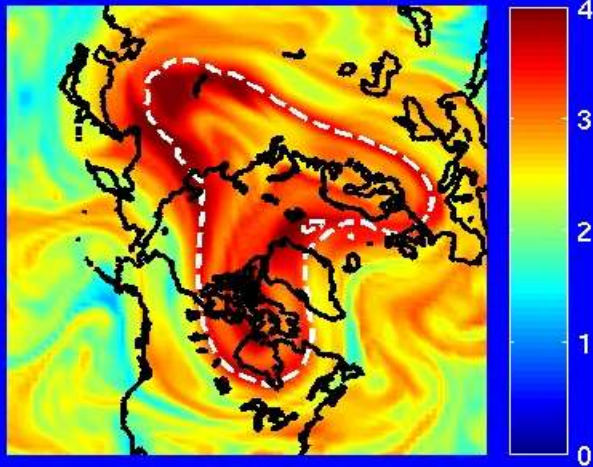
ppm



2005-02-22

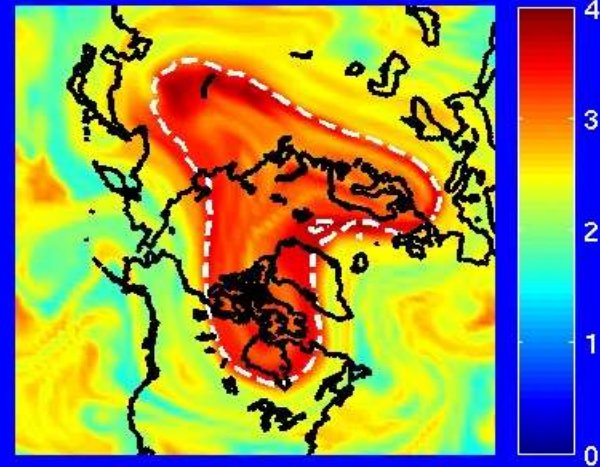
Assimilated Ozone

ppm



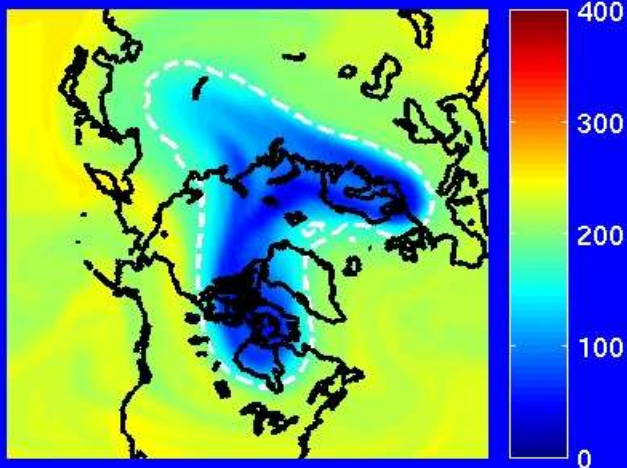
Passive Ozone

ppm



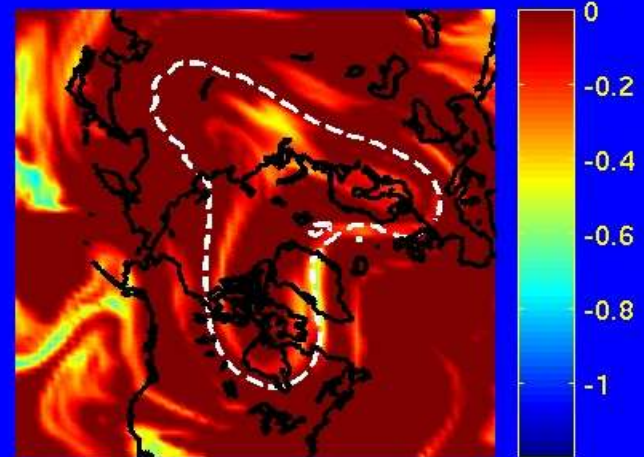
Sunlit Hours

h



Ozone Loss

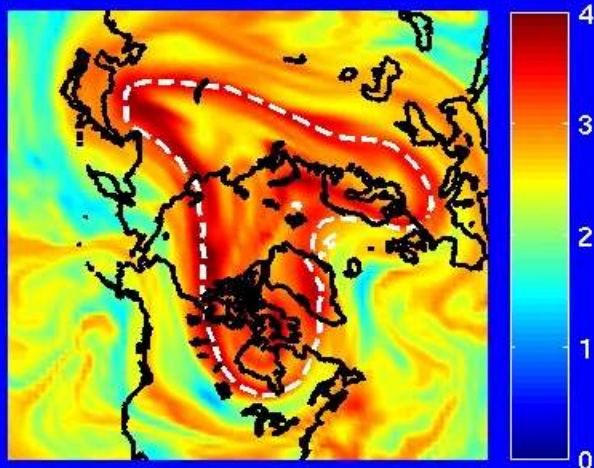
ppm



2005-02-23

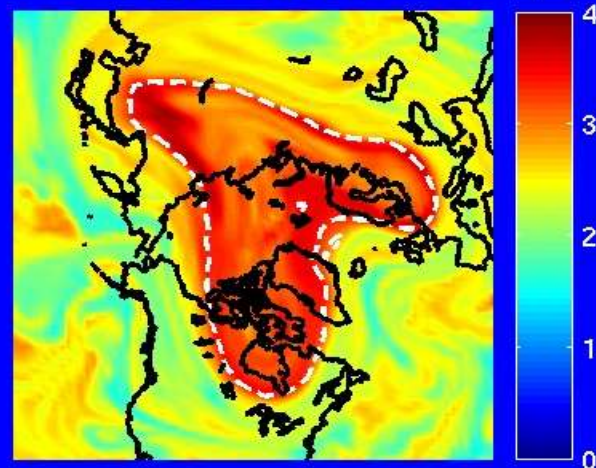
Assimilated Ozone

ppm



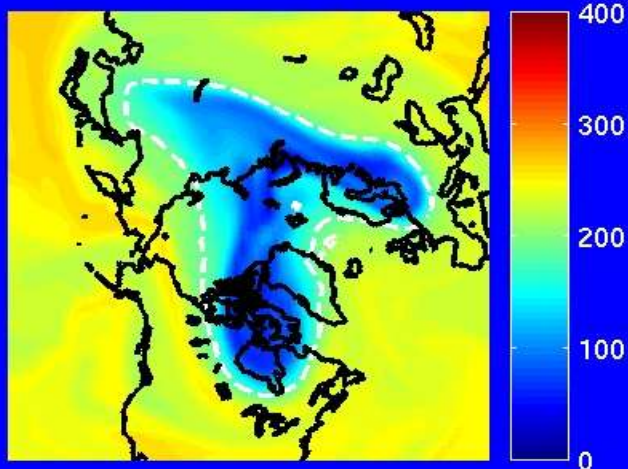
Passive Ozone

ppm



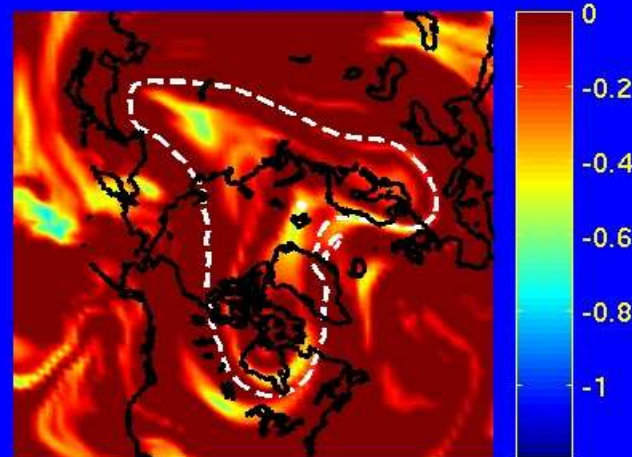
Sunlit Hours

h



Ozone Loss

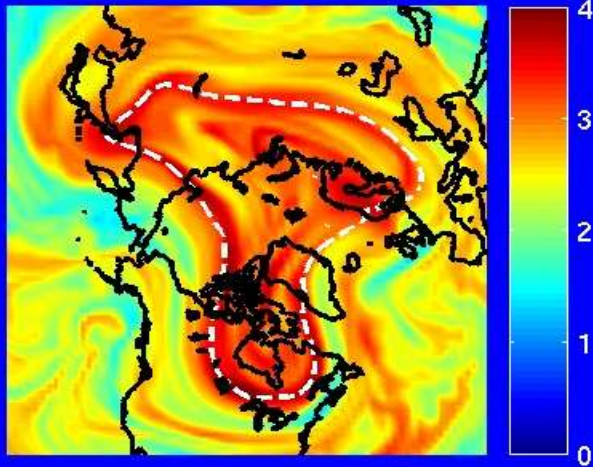
ppm



2005-02-24

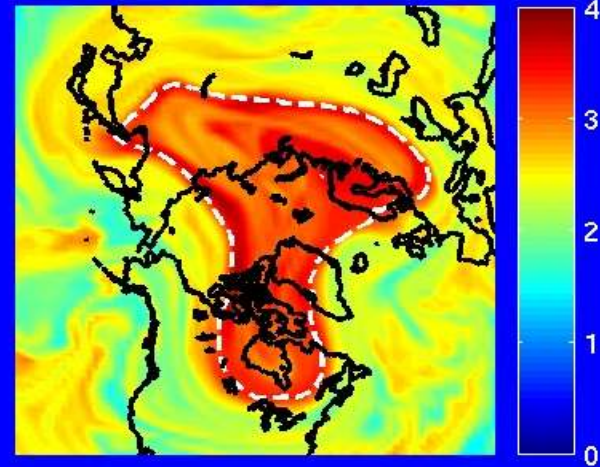
Assimilated Ozone

ppm



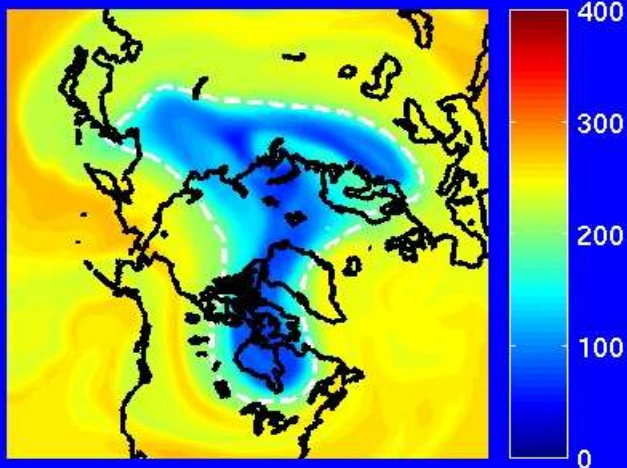
Passive Ozone

ppm



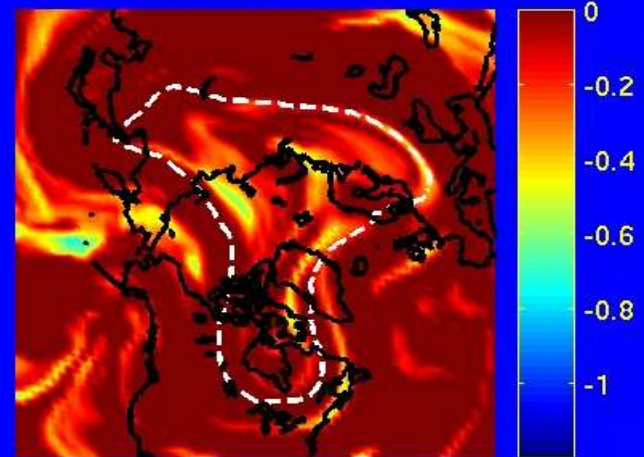
Sunlit Hours

h



Ozone Loss

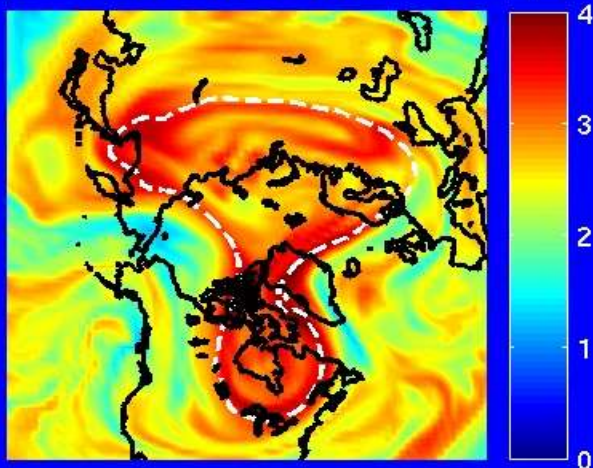
ppm



2005-02-25

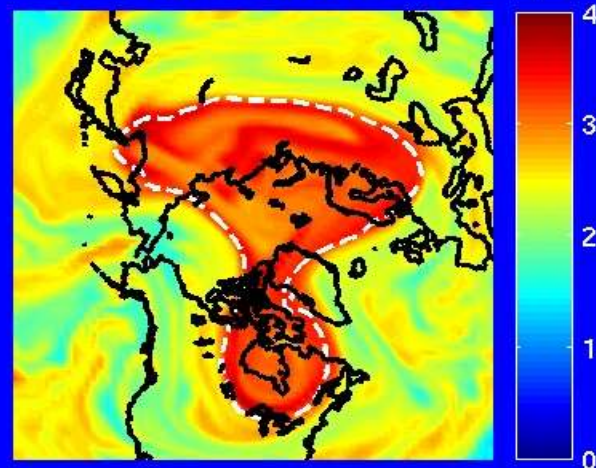
Assimilated Ozone

ppm



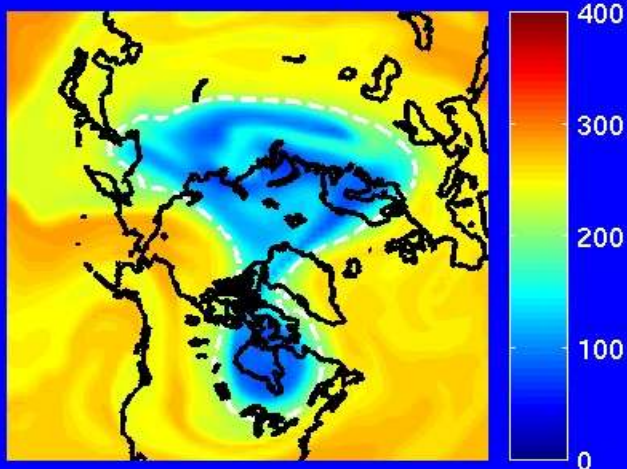
Passive Ozone

ppm



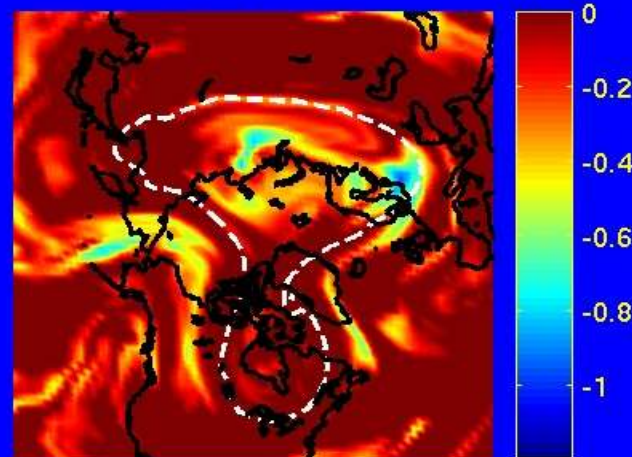
Sunlit Hours

h



Ozone Loss

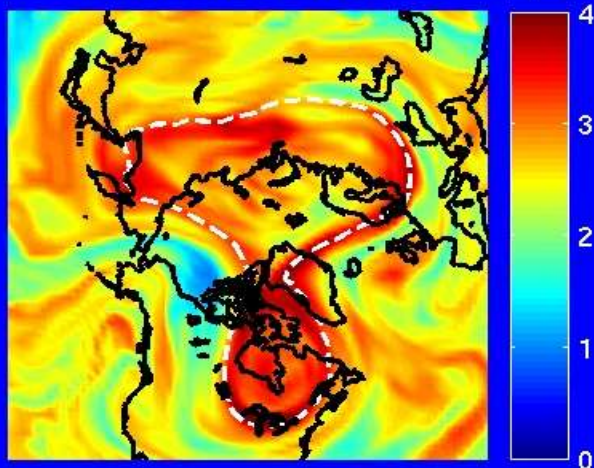
ppm



2005-02-26

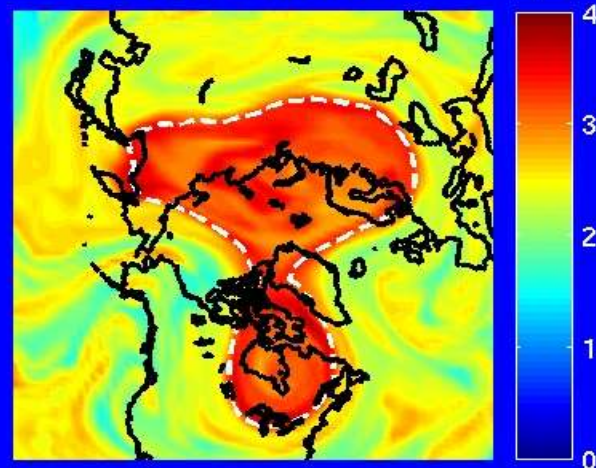
Assimilated Ozone

ppm



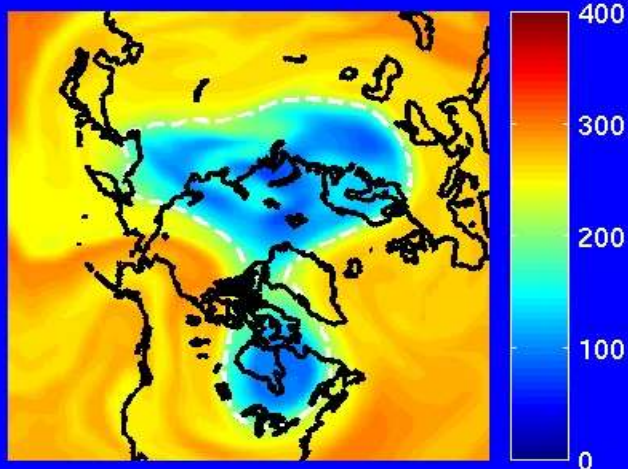
Passive Ozone

ppm



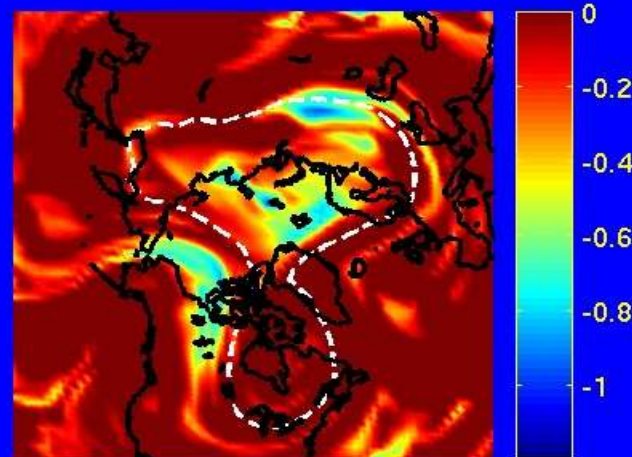
Sunlit Hours

h



Ozone Loss

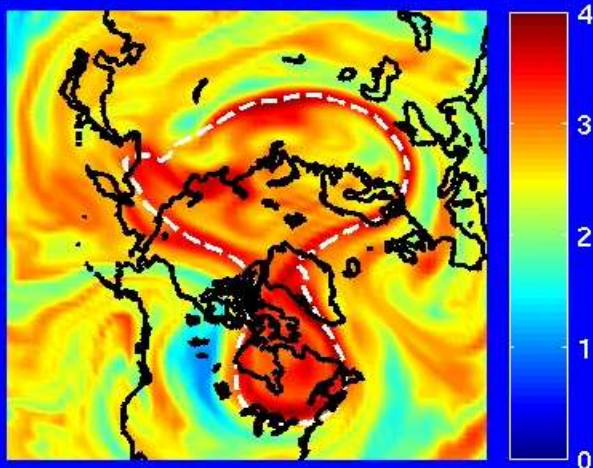
ppm



2005-02-27

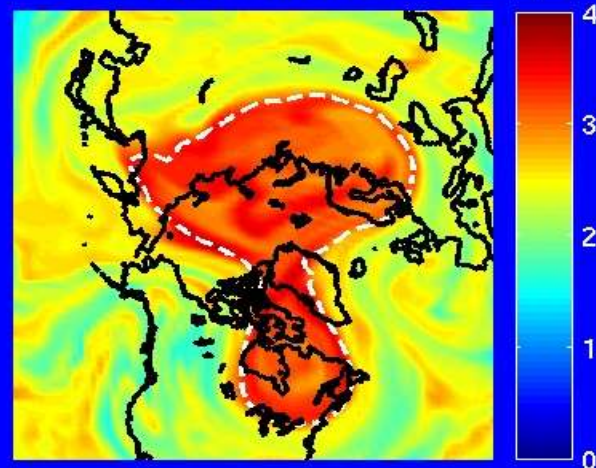
Assimilated Ozone

ppm



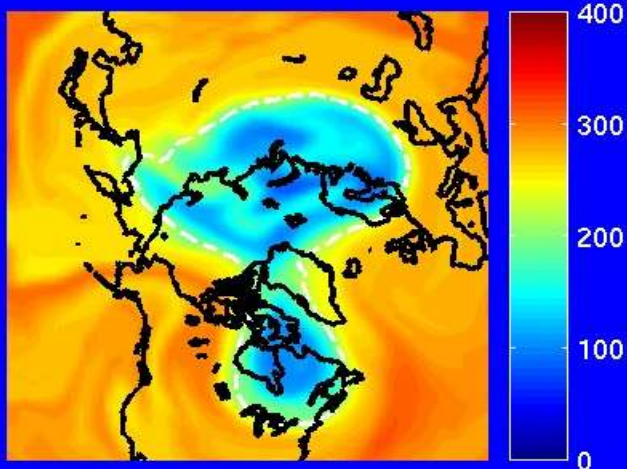
Passive Ozone

ppm



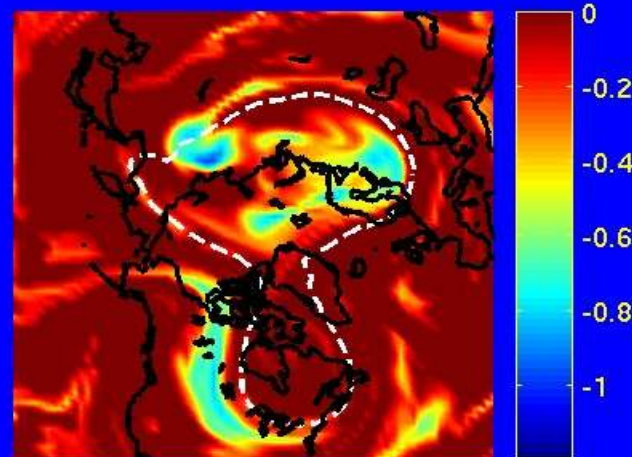
Sunlit Hours

h



Ozone Loss

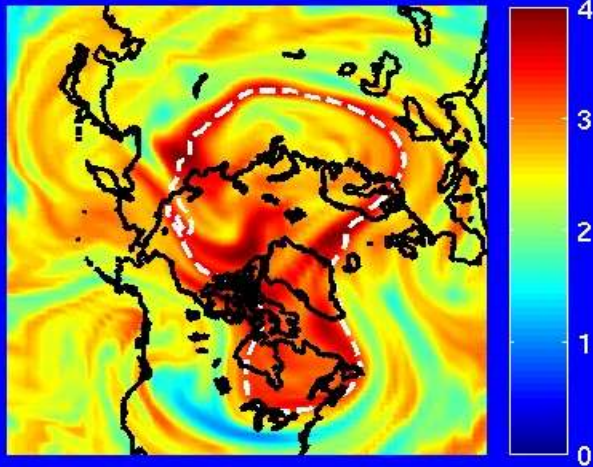
ppm



2005-02-28

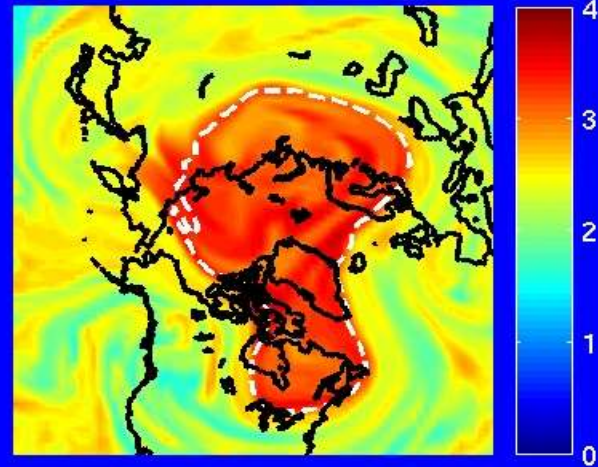
Assimilated Ozone

ppm



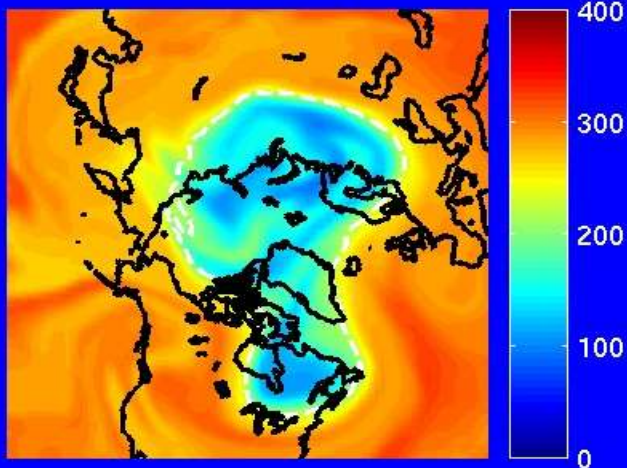
Passive Ozone

ppm



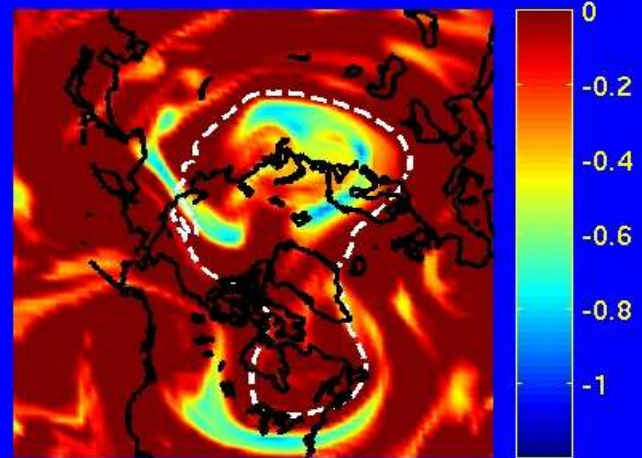
Sunlit Hours

h



Ozone Loss

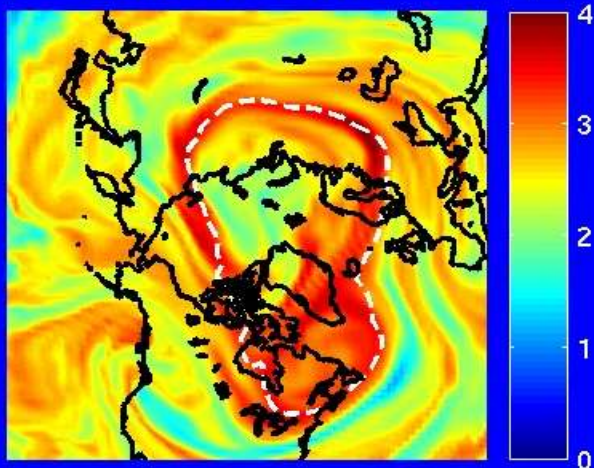
ppm



2005-03-01

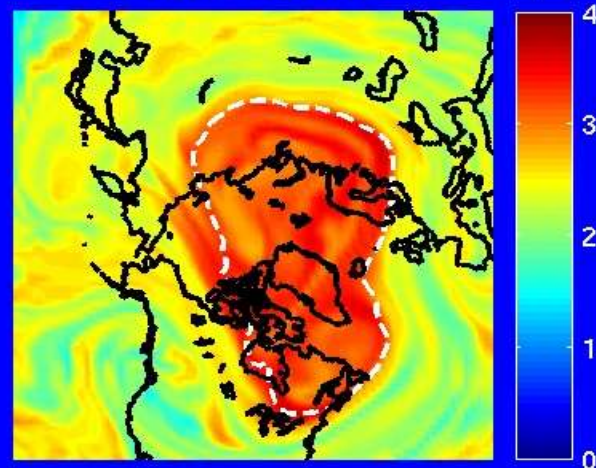
Assimilated Ozone

ppm



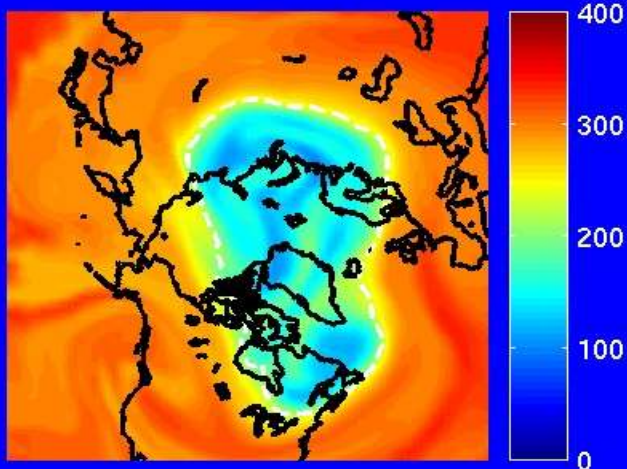
Passive Ozone

ppm



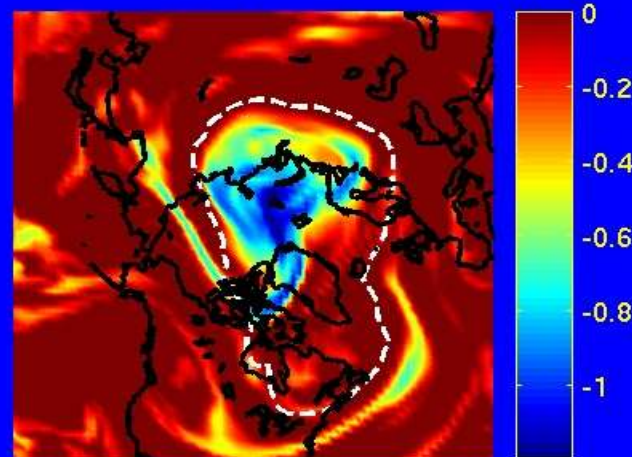
Sunlit Hours

h



Ozone Loss

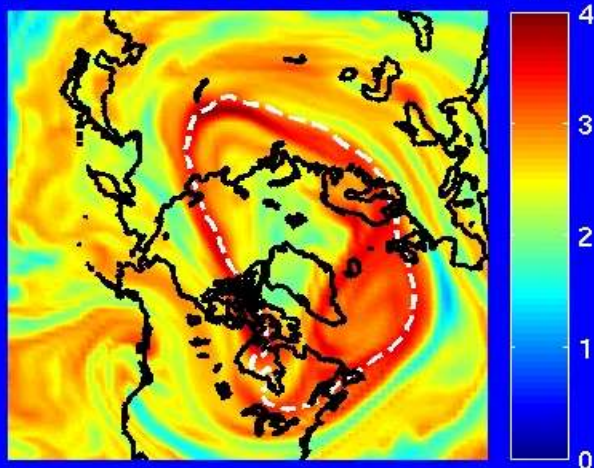
ppm



2005-03-02

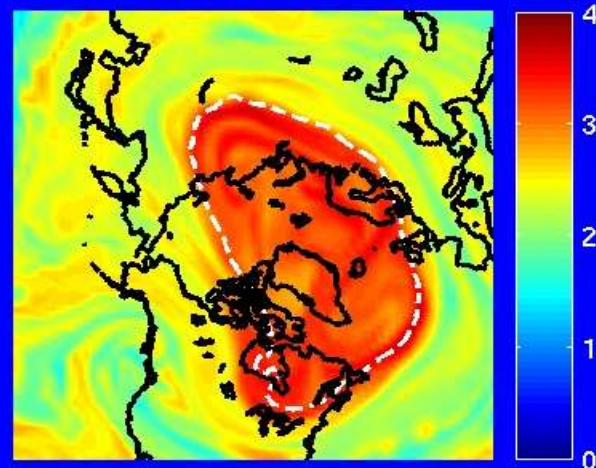
Assimilated Ozone

ppm



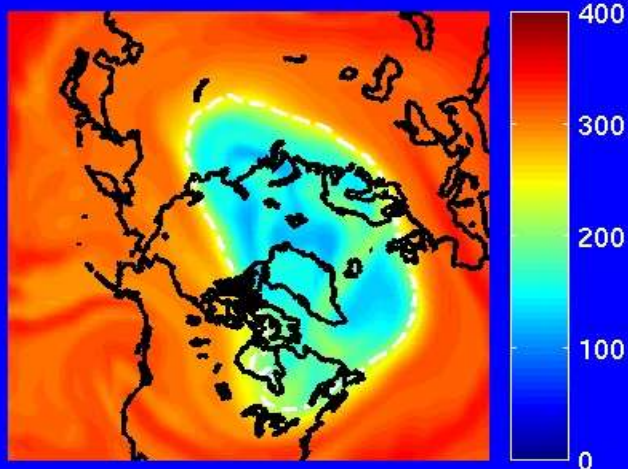
Passive Ozone

ppm



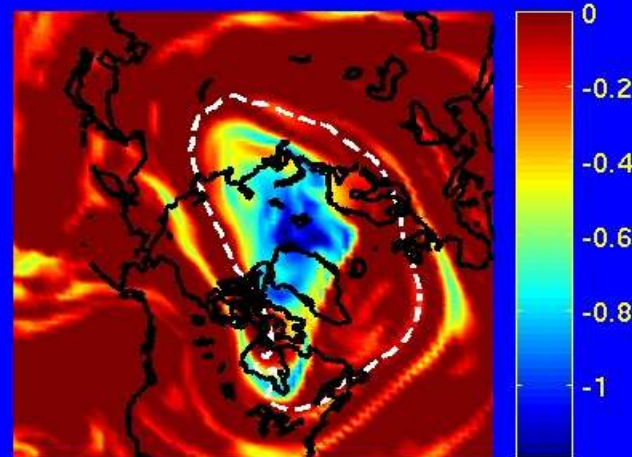
Sunlit Hours

h



Ozone Loss

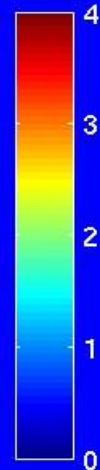
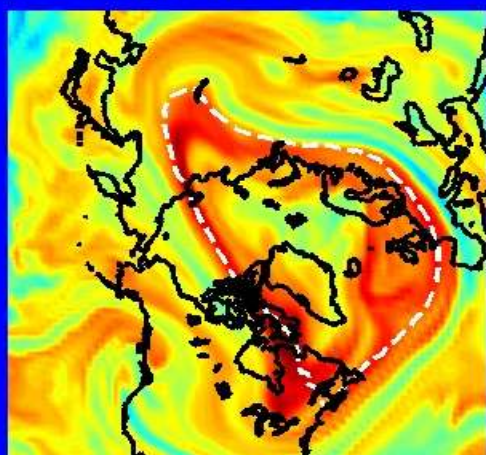
ppm



2005-03-03

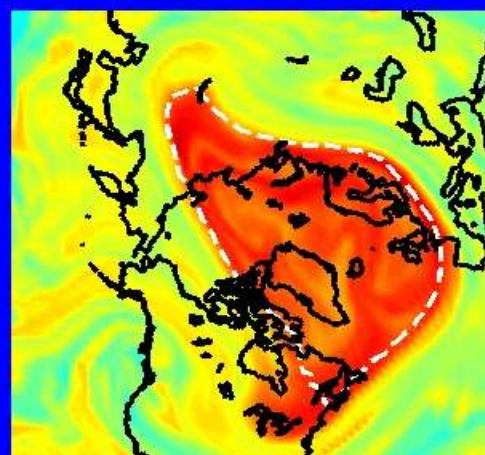
Assimilated Ozone

ppm



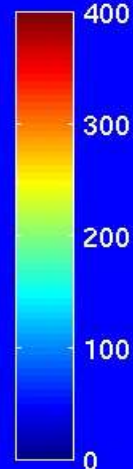
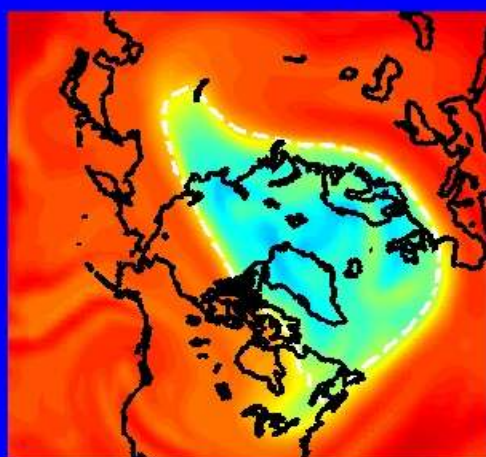
Passive Ozone

ppm



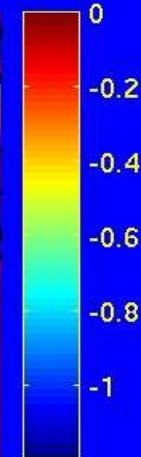
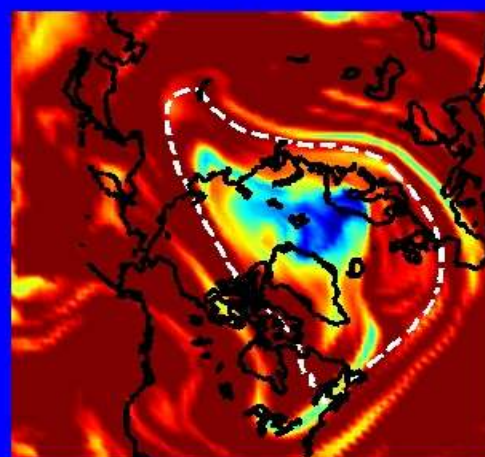
Sunlit Hours

h



Ozone Loss

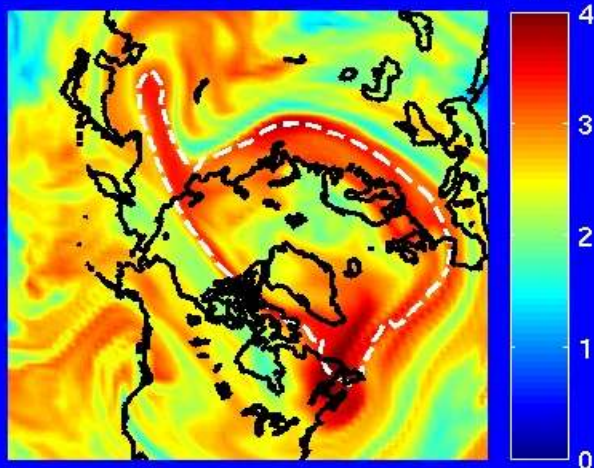
ppm



2005-03-04

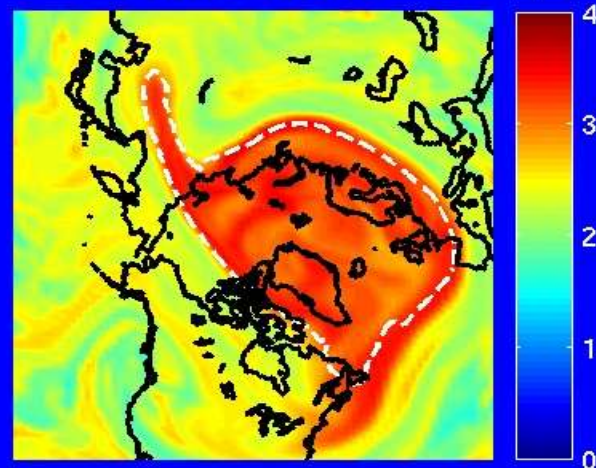
Assimilated Ozone

ppm



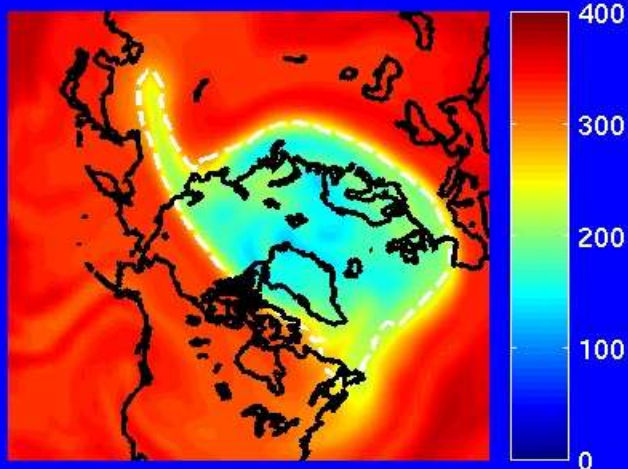
Passive Ozone

ppm



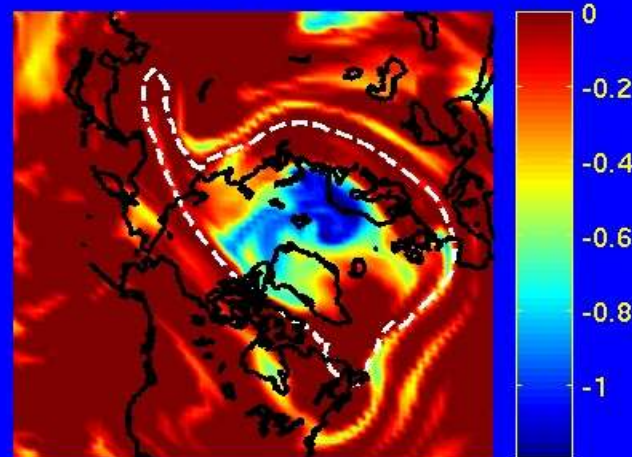
Sunlit Hours

h



Ozone Loss

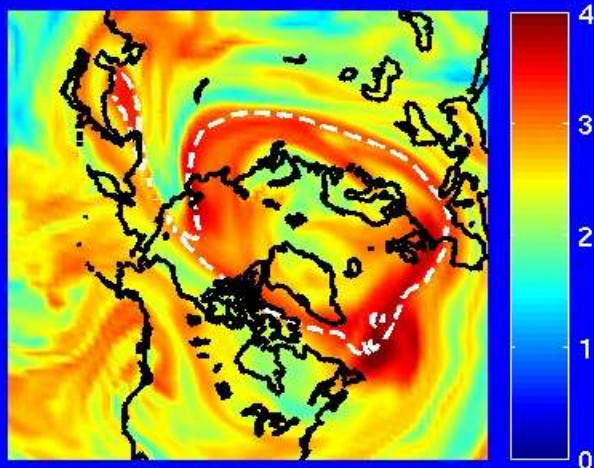
ppm



2005-03-05

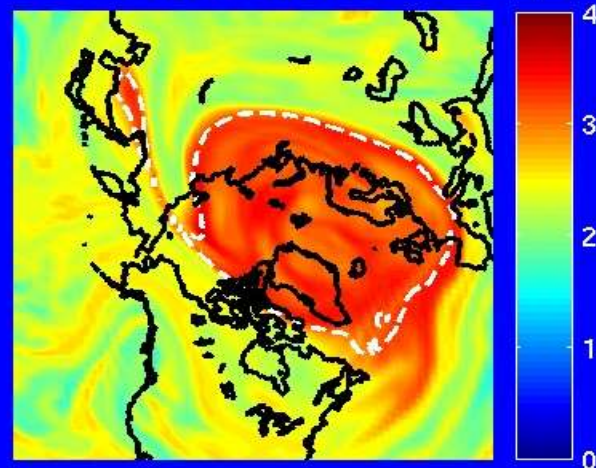
Assimilated Ozone

ppm



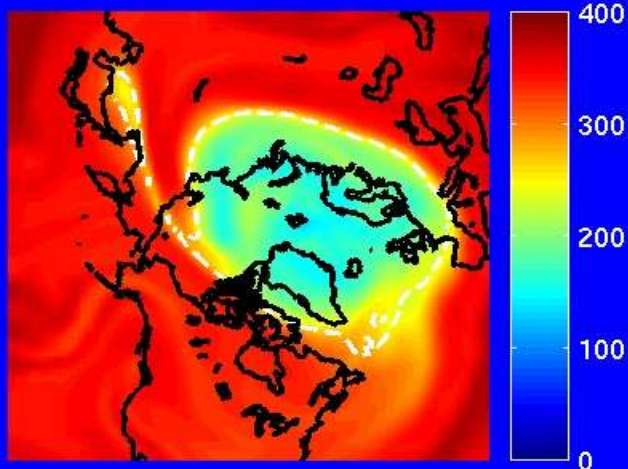
Passive Ozone

ppm



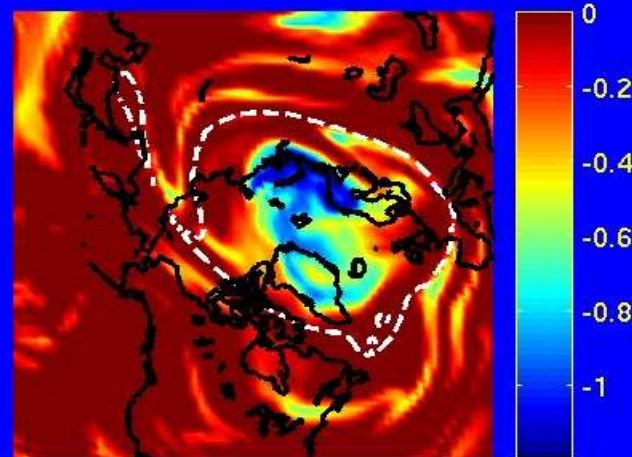
Sunlit Hours

h



Ozone Loss

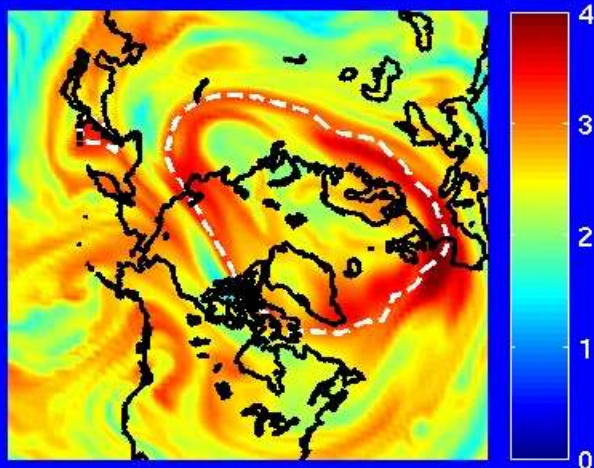
ppm



2005-03-06

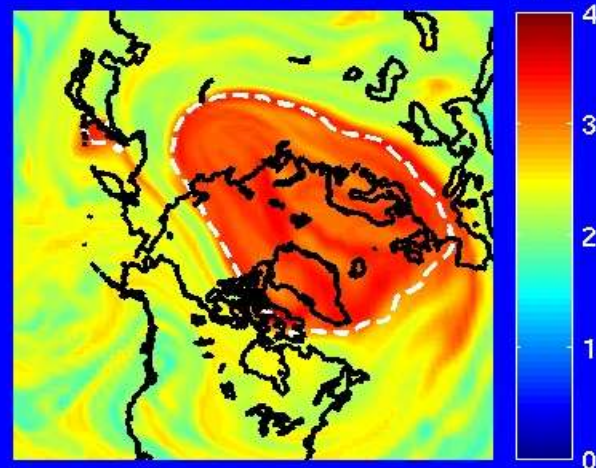
Assimilated Ozone

ppm



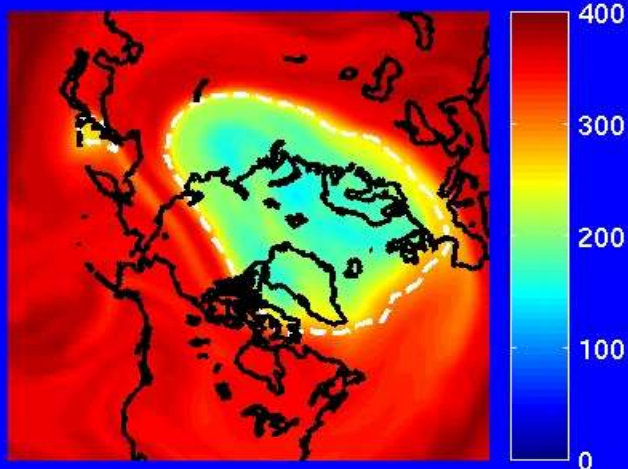
Passive Ozone

ppm



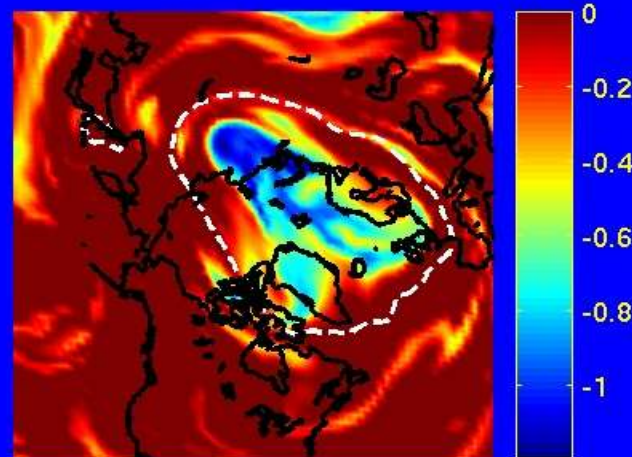
Sunlit Hours

h



Ozone Loss

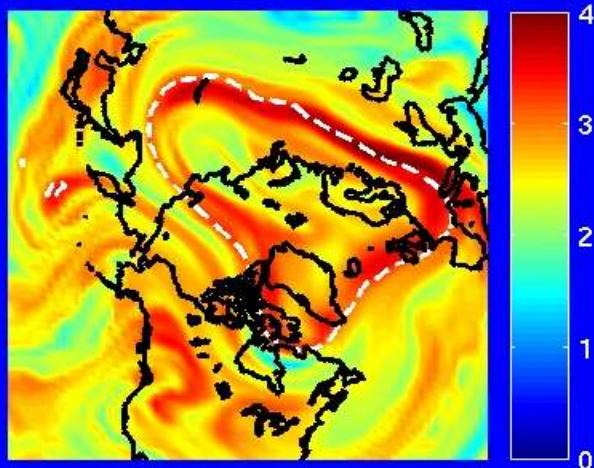
ppm



2005-03-07

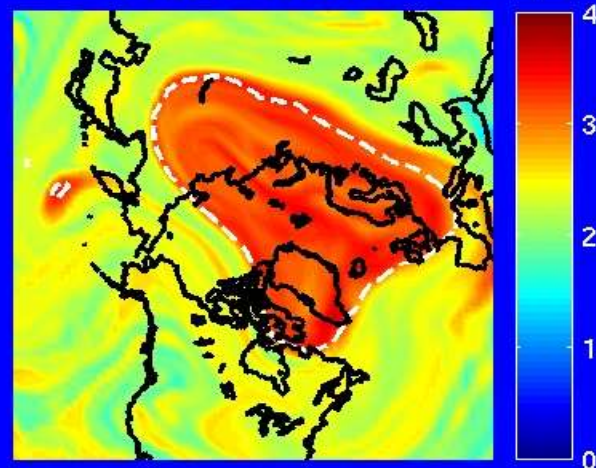
Assimilated Ozone

ppm



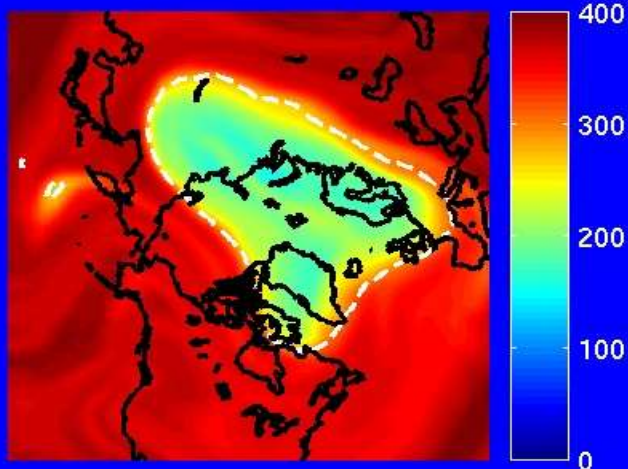
Passive Ozone

ppm



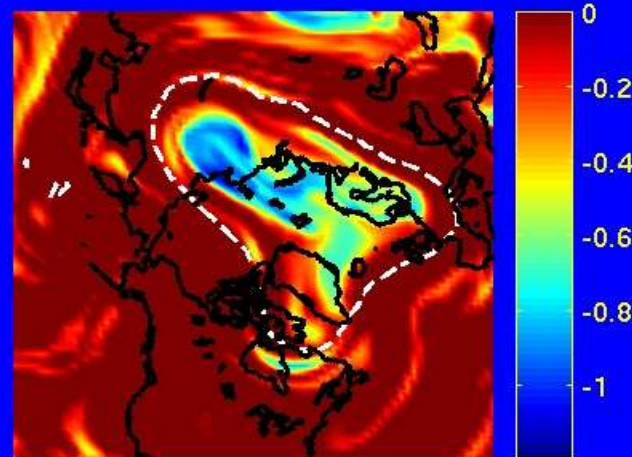
Sunlit Hours

h



Ozone Loss

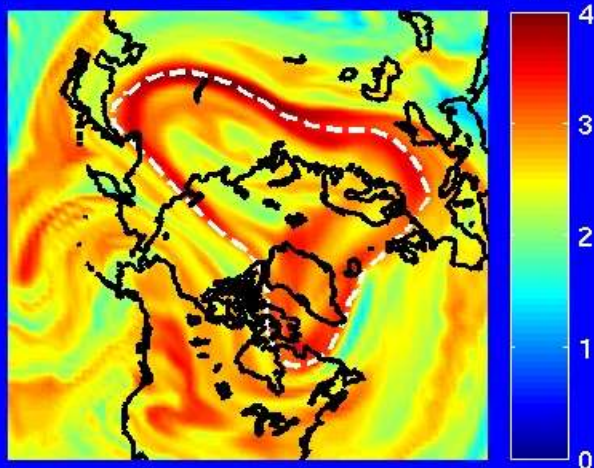
ppm



2005-03-08

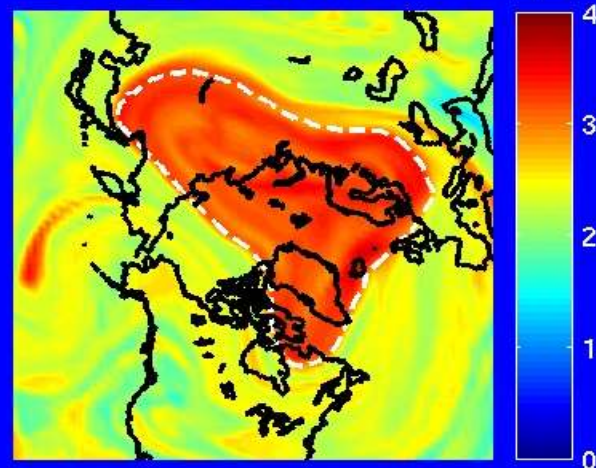
Assimilated Ozone

ppm



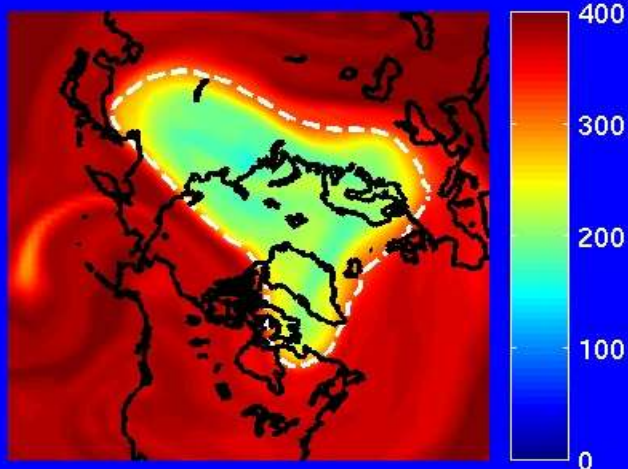
Passive Ozone

ppm



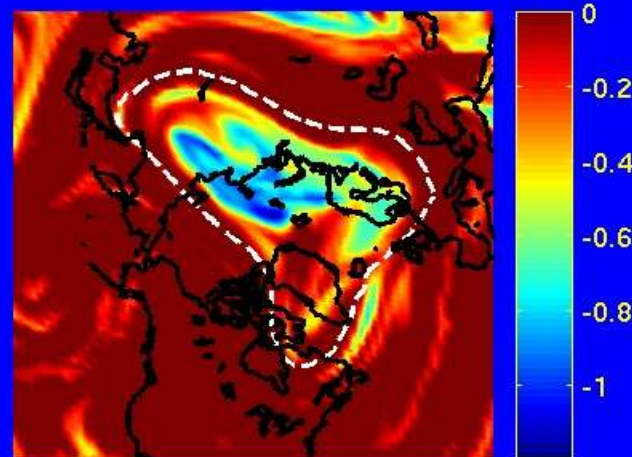
Sunlit Hours

h



Ozone Loss

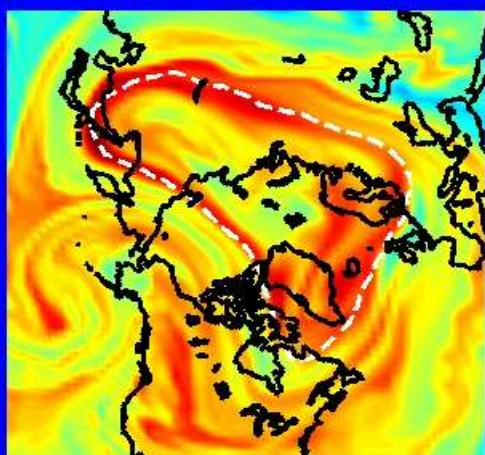
ppm



2005-03-09

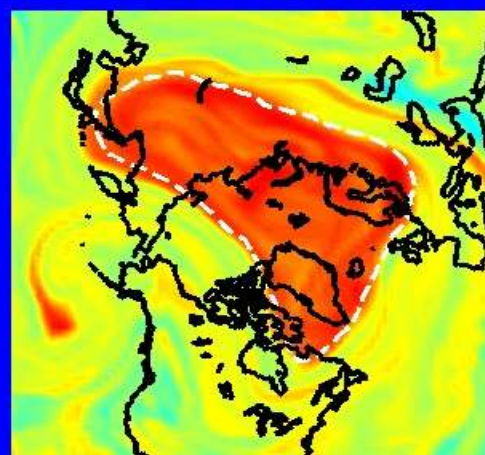
Assimilated Ozone

ppm



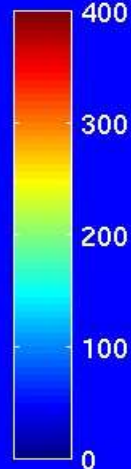
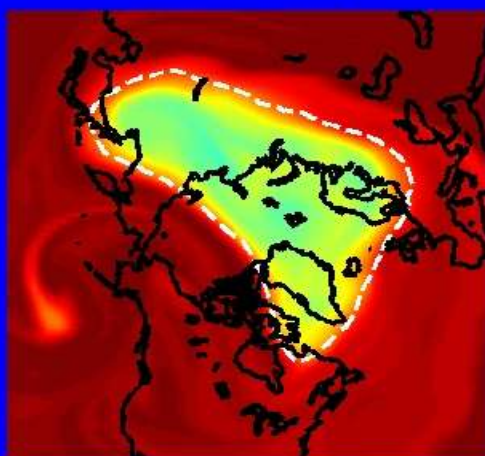
Passive Ozone

ppm



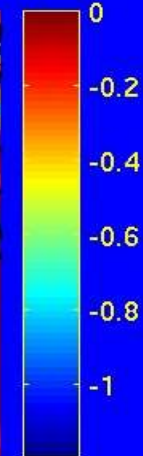
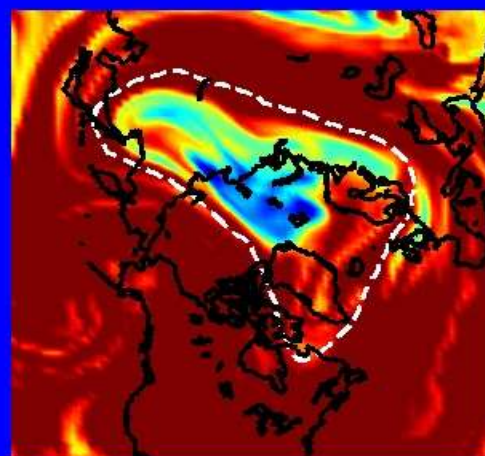
Sunlit Hours

h



Ozone Loss

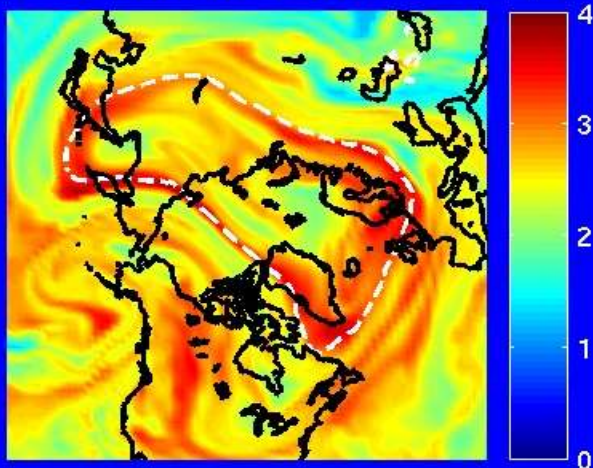
ppm



2005-03-10

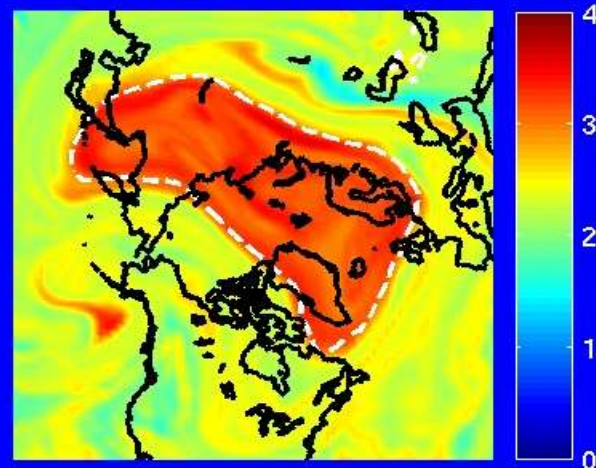
Assimilated Ozone

ppm



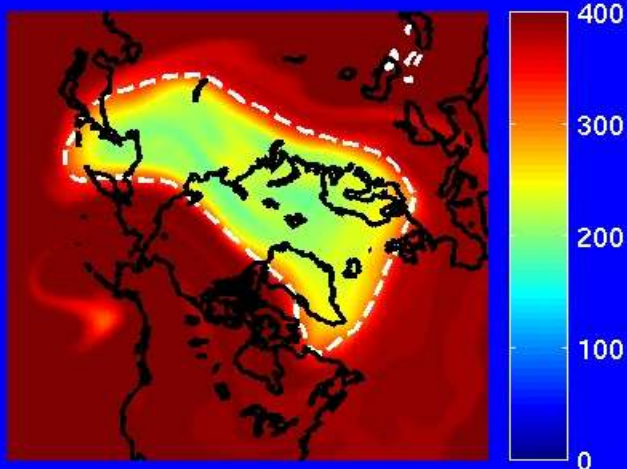
Passive Ozone

ppm



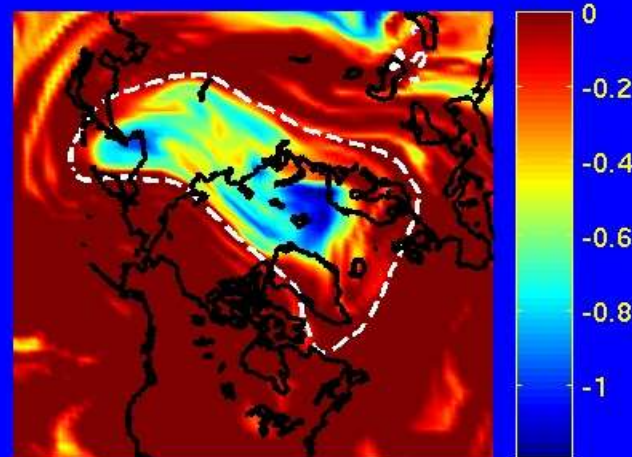
Sunlit Hours

h



Ozone Loss

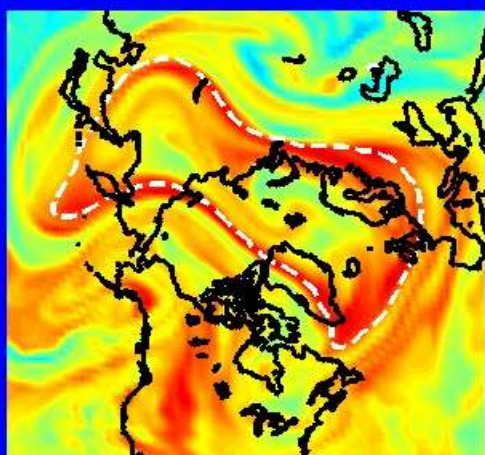
ppm



2005-03-11

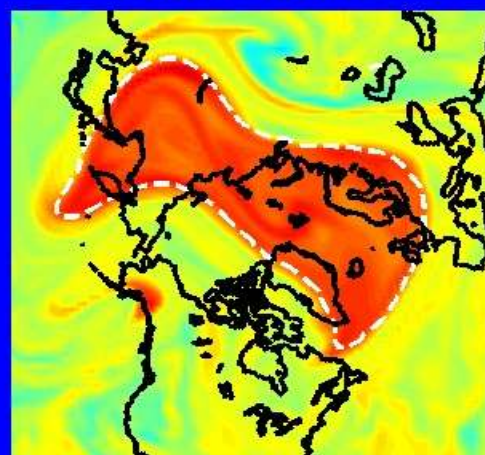
Assimilated Ozone

ppm



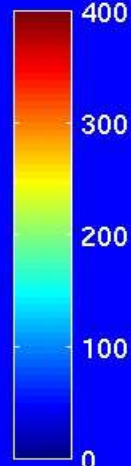
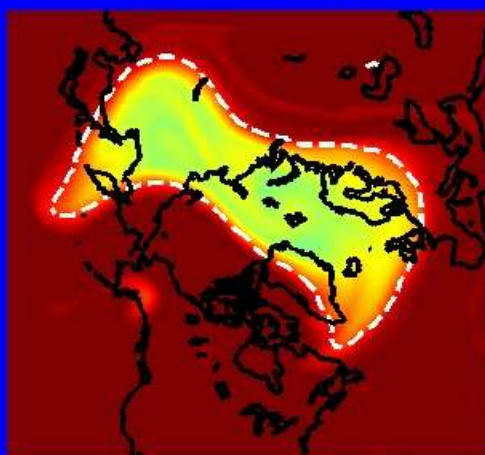
Passive Ozone

ppm



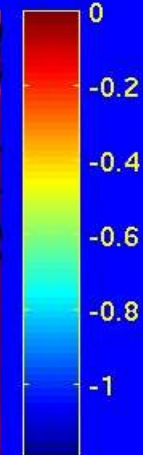
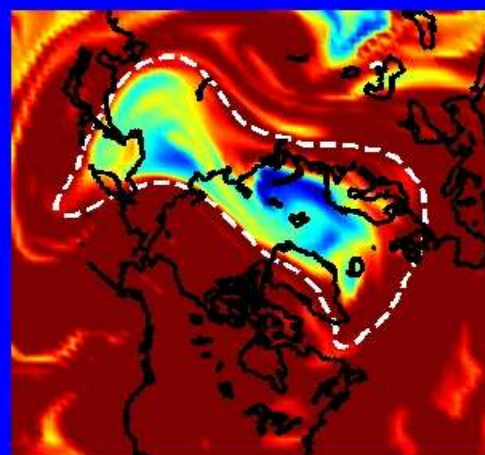
Sunlit Hours

h



Ozone Loss

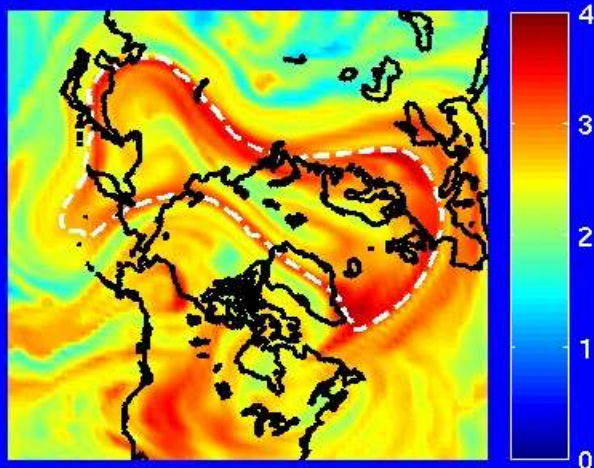
ppm



2005-03-12

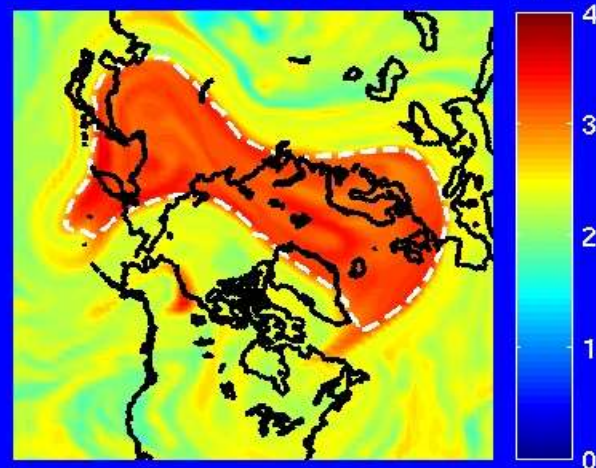
Assimilated Ozone

ppm



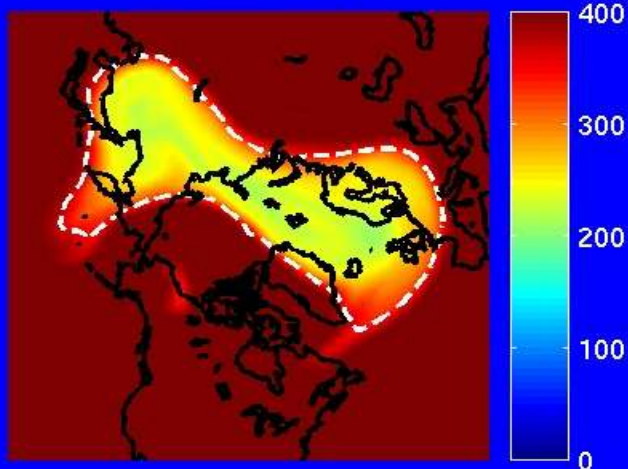
Passive Ozone

ppm



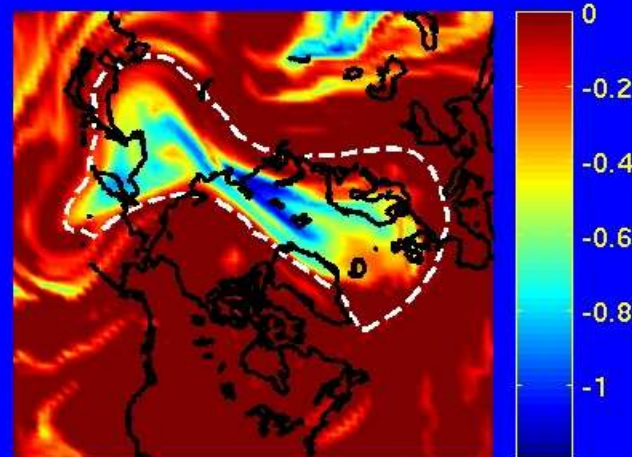
Sunlit Hours

h



Ozone Loss

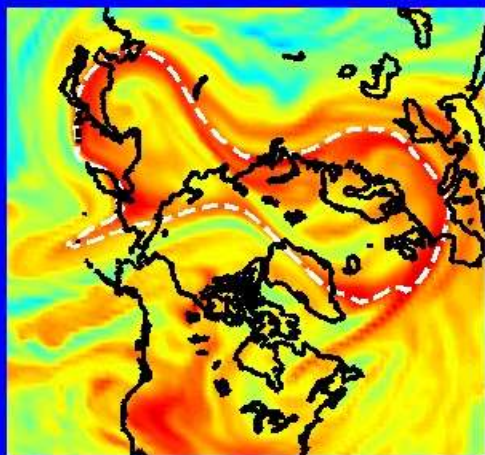
ppm



2005-03-13

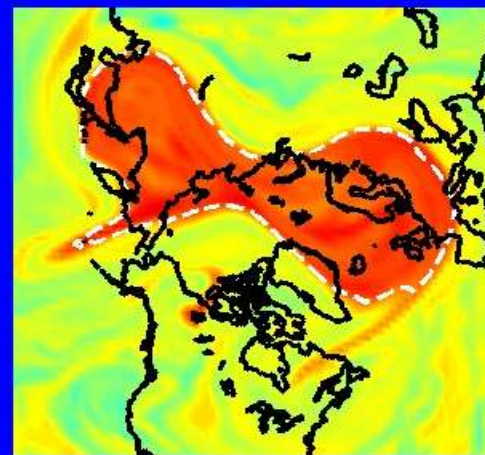
Assimilated Ozone

ppm



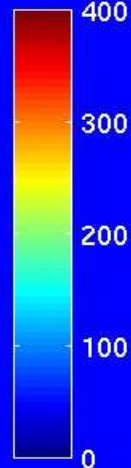
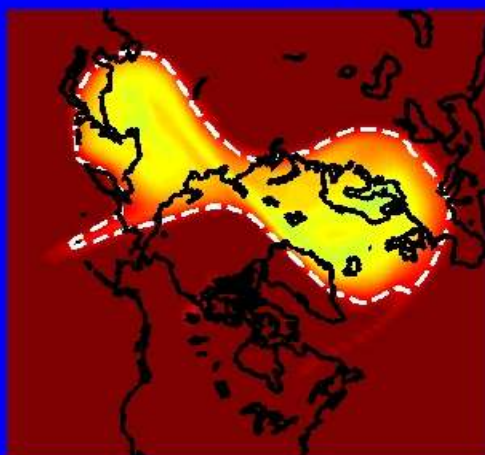
Passive Ozone

ppm



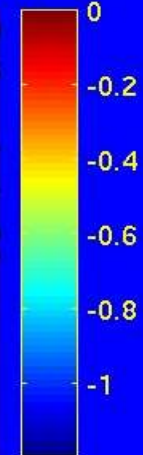
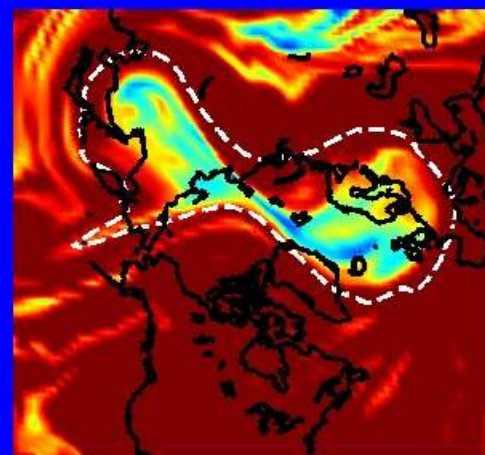
Sunlit Hours

h



Ozone Loss

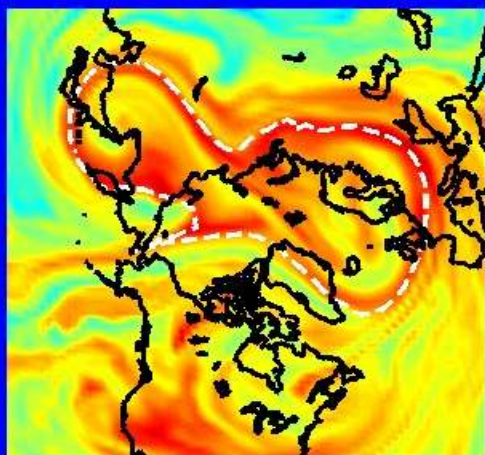
ppm



2005-03-14

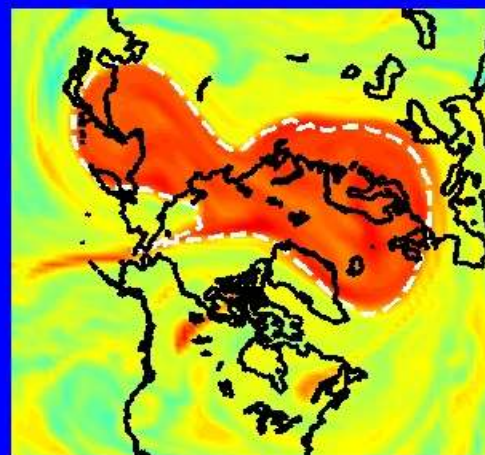
Assimilated Ozone

ppm



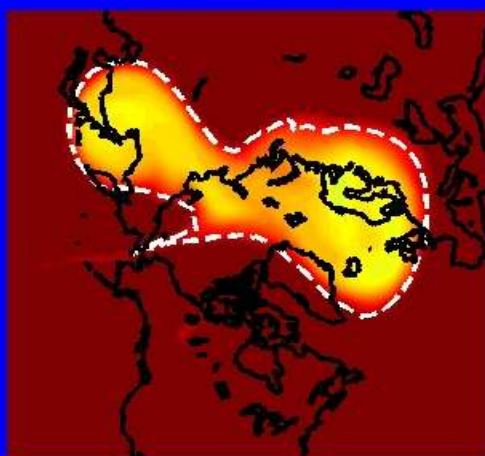
Passive Ozone

ppm



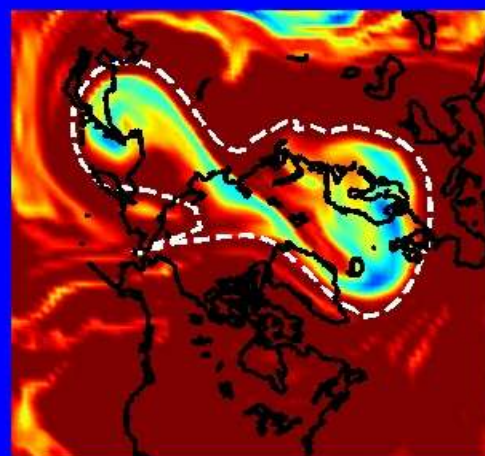
Sunlit Hours

h



Ozone Loss

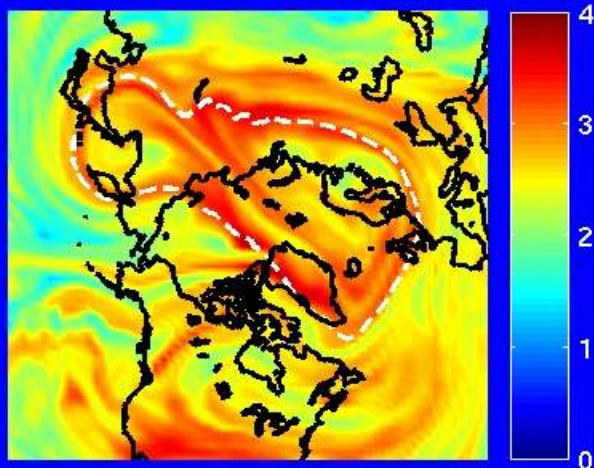
ppm



2005-03-15

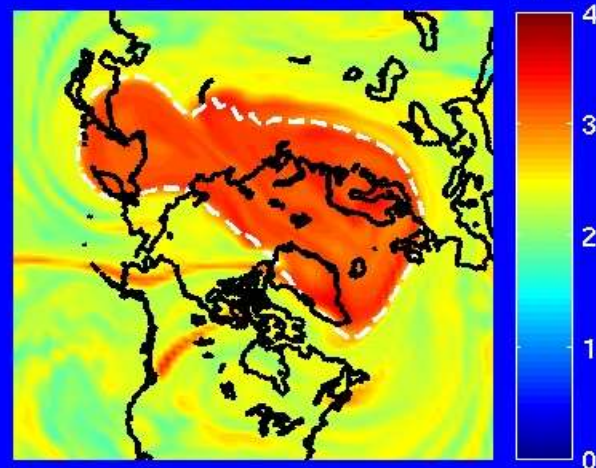
Assimilated Ozone

ppm



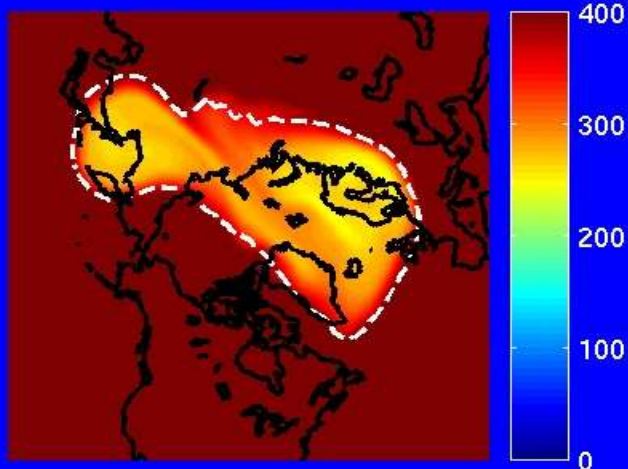
Passive Ozone

ppm



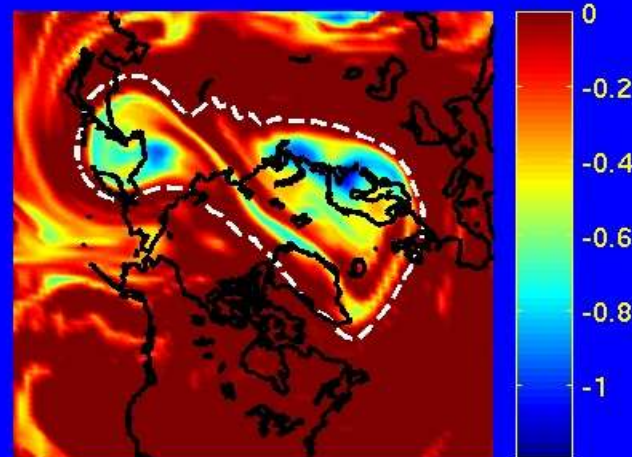
Sunlit Hours

h



Ozone Loss

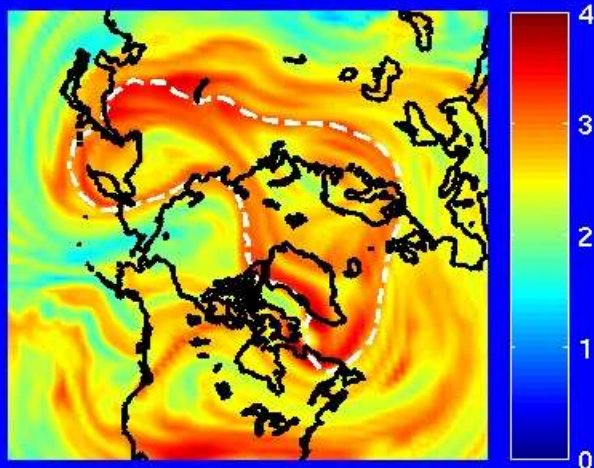
ppm



2005-03-16

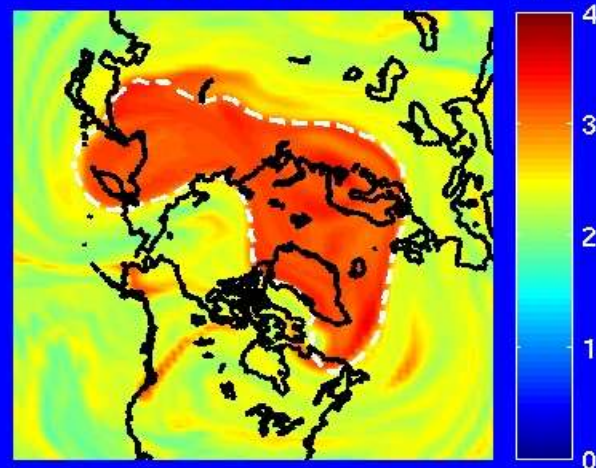
Assimilated Ozone

ppm



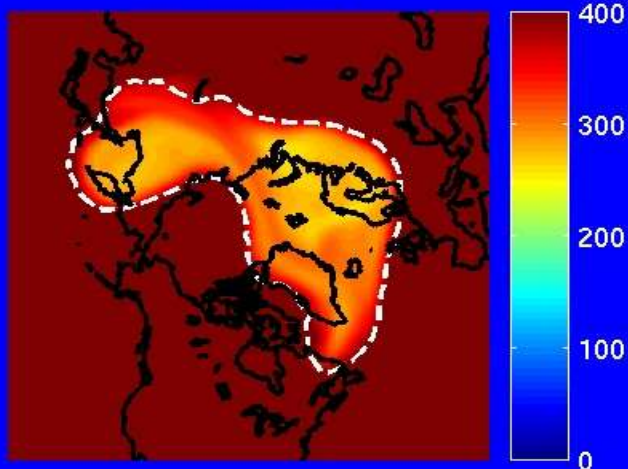
Passive Ozone

ppm



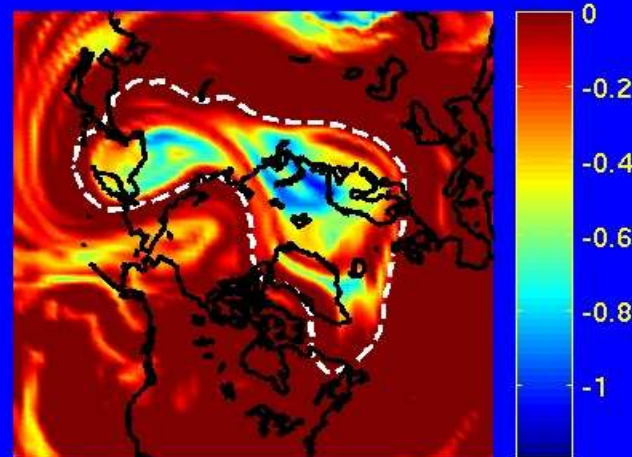
Sunlit Hours

h



Ozone Loss

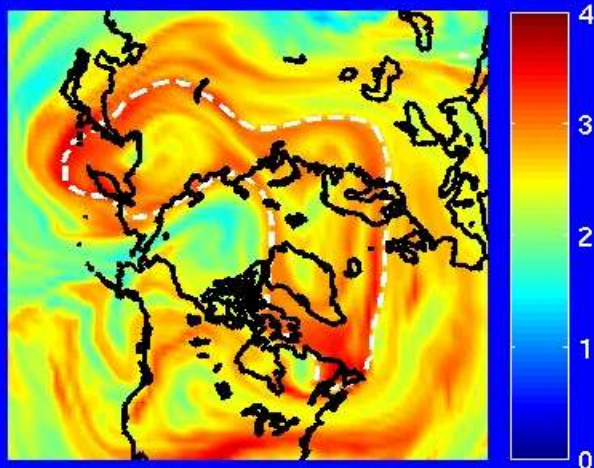
ppm



2005-03-17

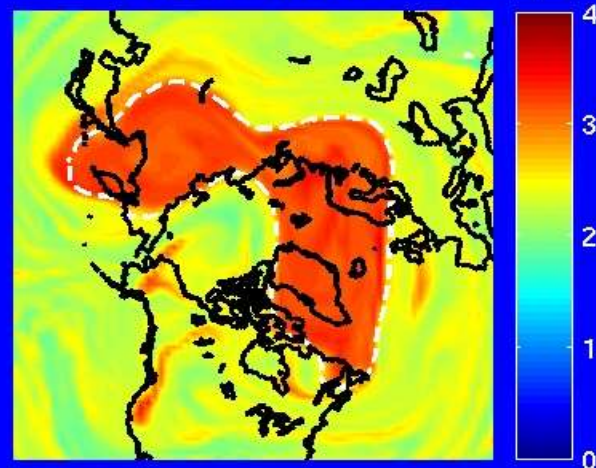
Assimilated Ozone

ppm



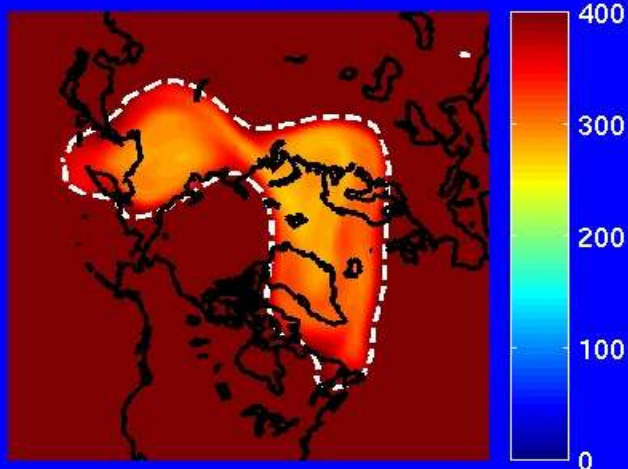
Passive Ozone

ppm



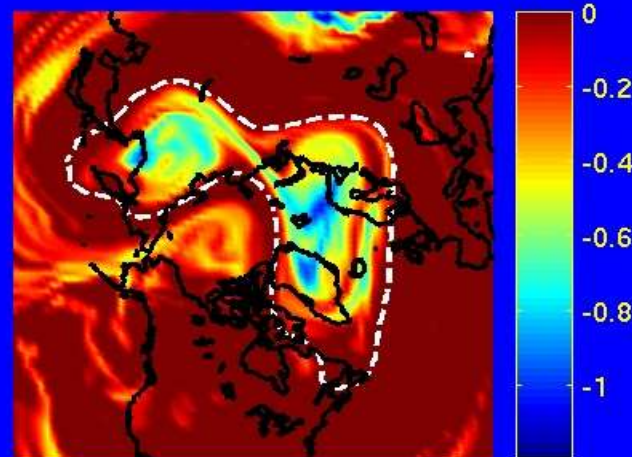
Sunlit Hours

h



Ozone Loss

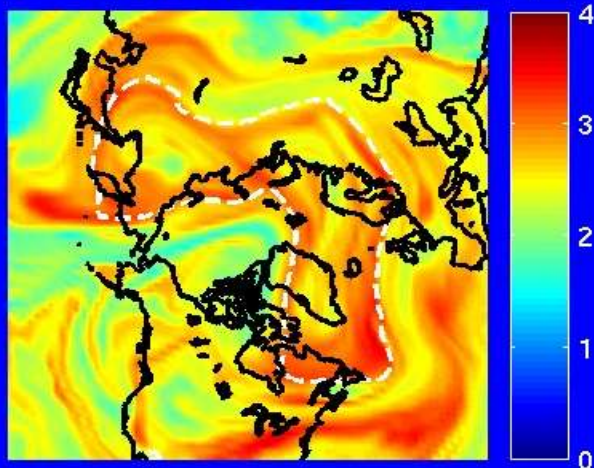
ppm



2005-03-18

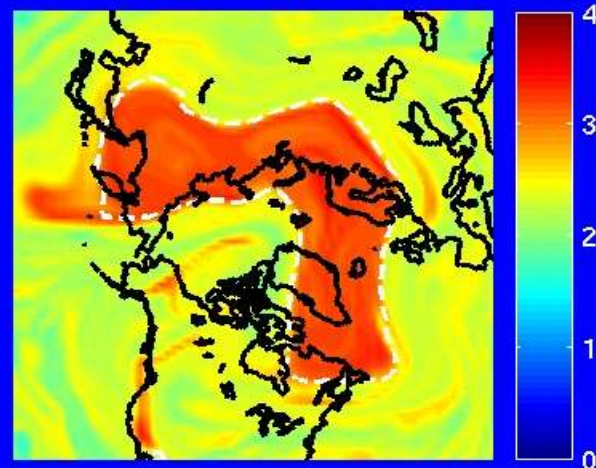
Assimilated Ozone

ppm



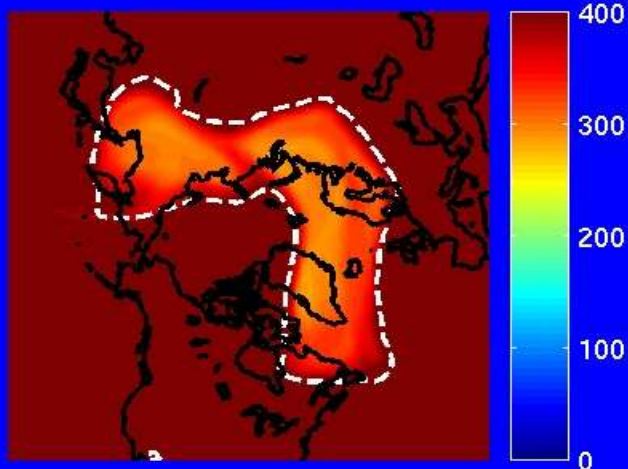
Passive Ozone

ppm



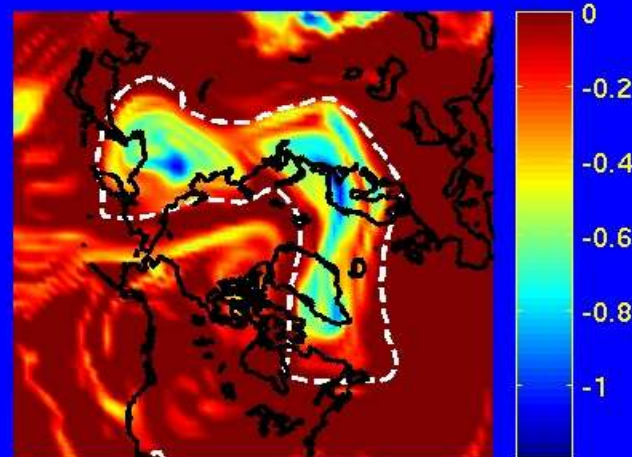
Sunlit Hours

h



Ozone Loss

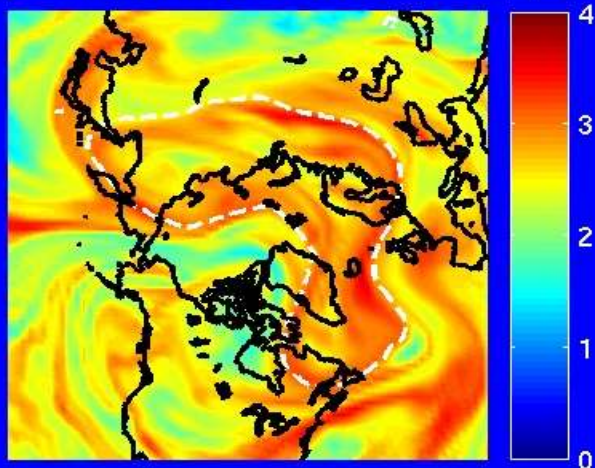
ppm



2005-03-19

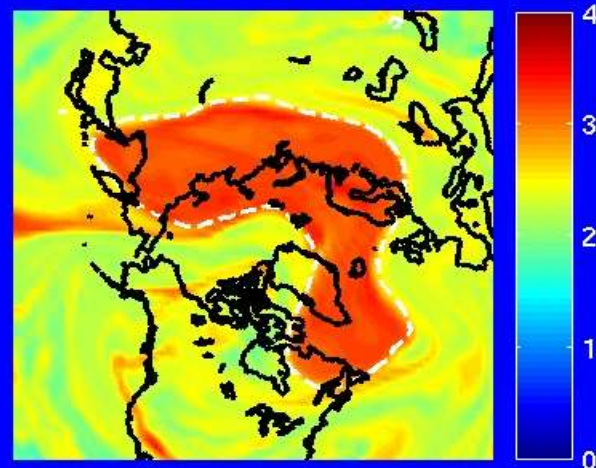
Assimilated Ozone

ppm



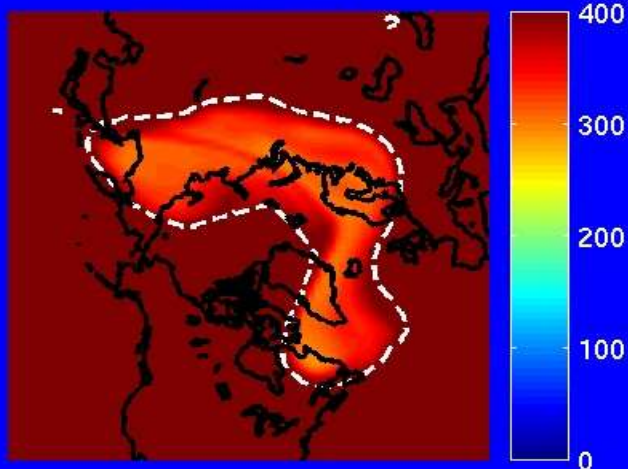
Passive Ozone

ppm



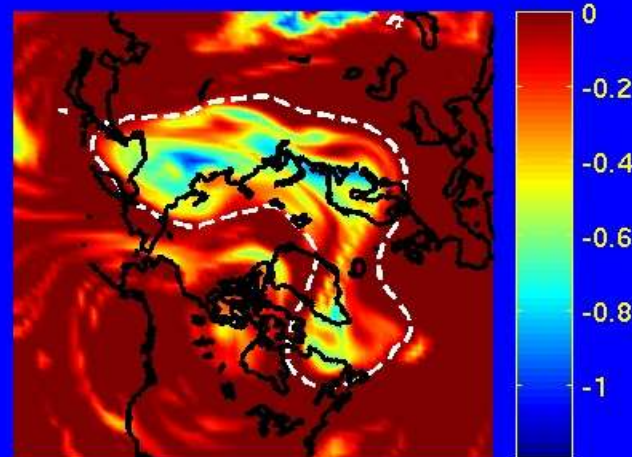
Sunlit Hours

h



Ozone Loss

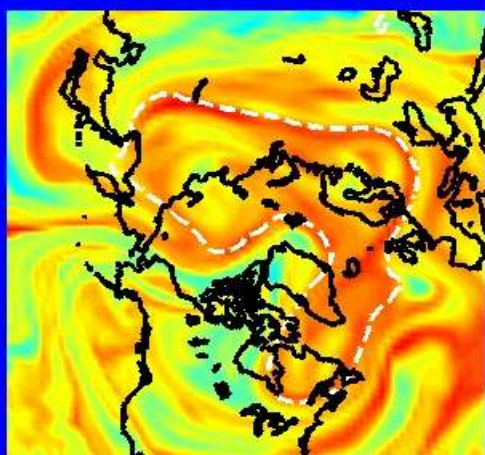
ppm



2005-03-20

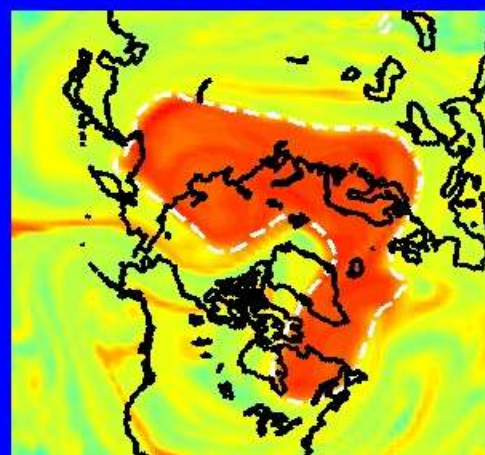
Assimilated Ozone

ppm



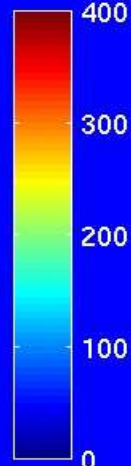
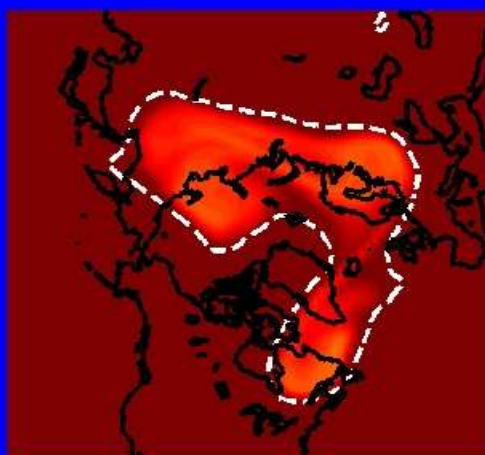
Passive Ozone

ppm



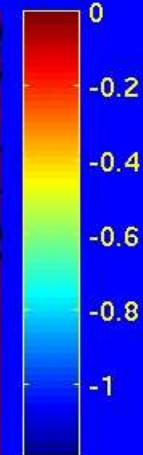
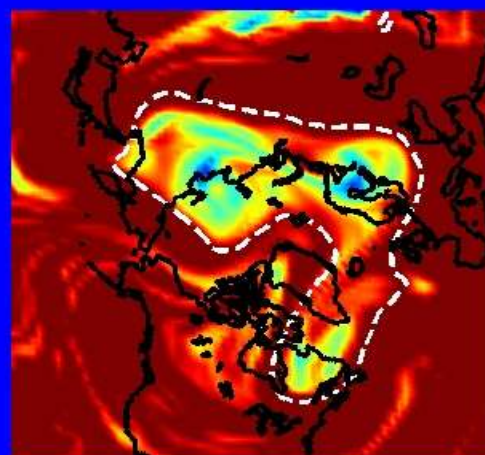
Sunlit Hours

h



Ozone Loss

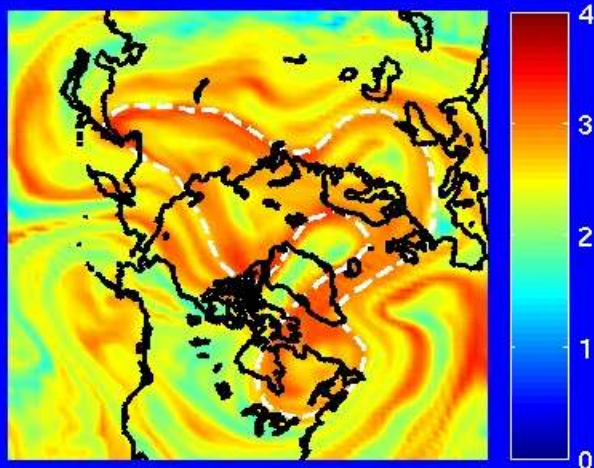
ppm



2005-03-21

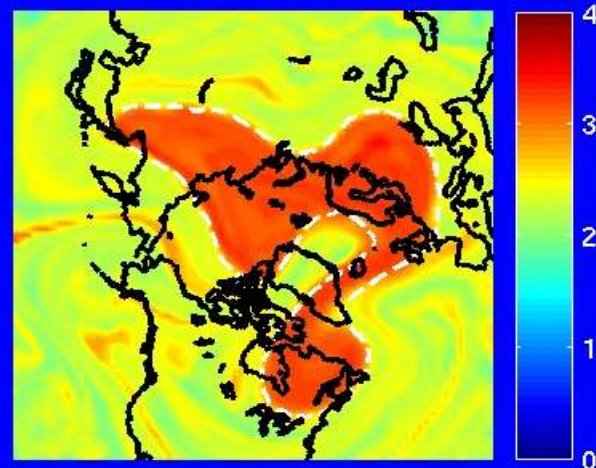
Assimilated Ozone

ppm



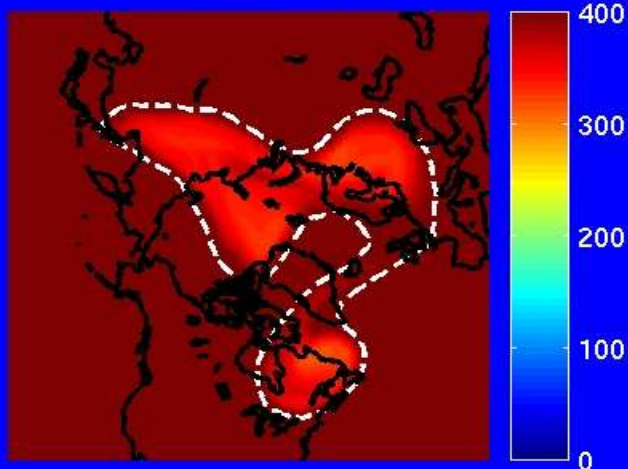
Passive Ozone

ppm



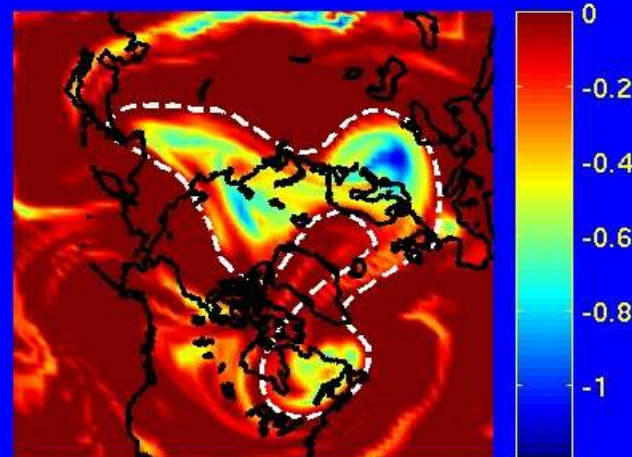
Sunlit Hours

h



Ozone Loss

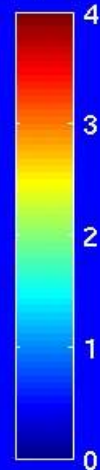
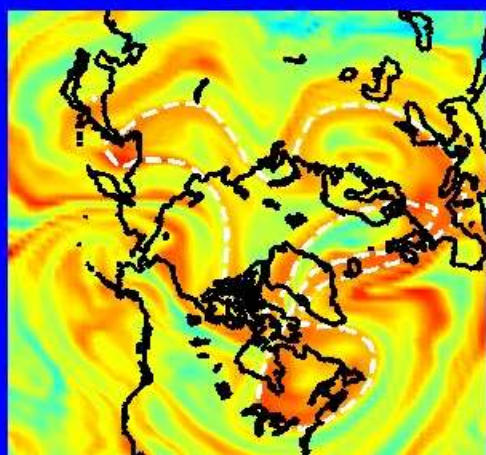
ppm



2005-03-22

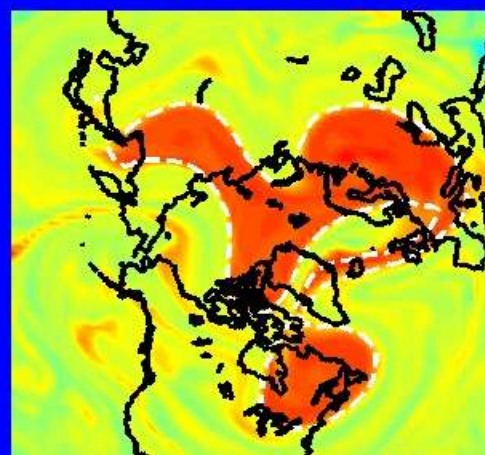
Assimilated Ozone

ppm



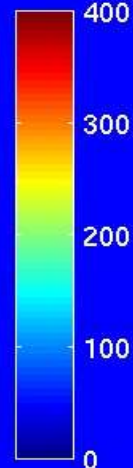
Passive Ozone

ppm



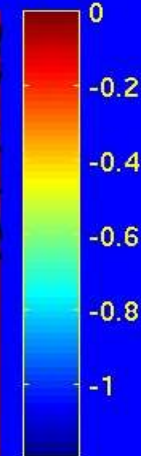
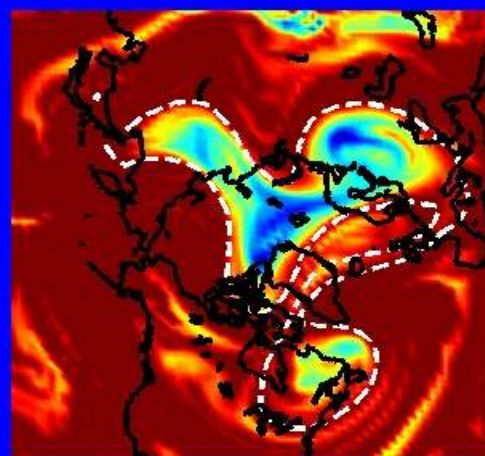
Sunlit Hours

h



Ozone Loss

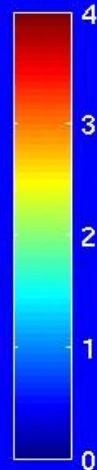
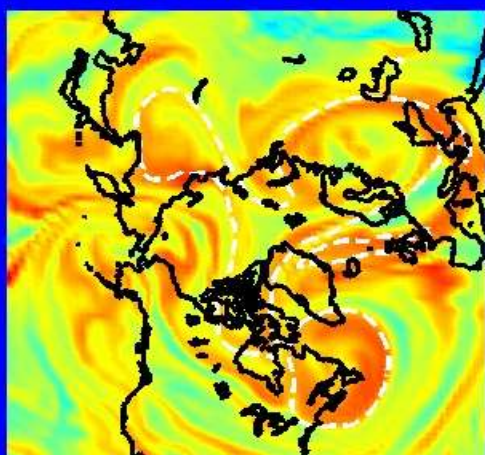
ppm



2005-03-23

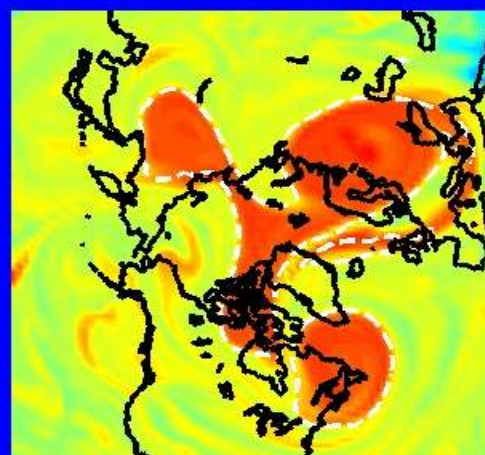
Assimilated Ozone

ppm



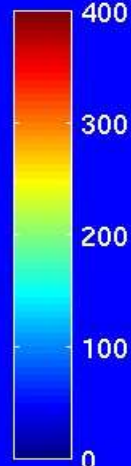
Passive Ozone

ppm



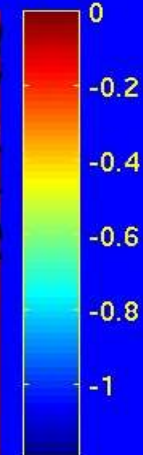
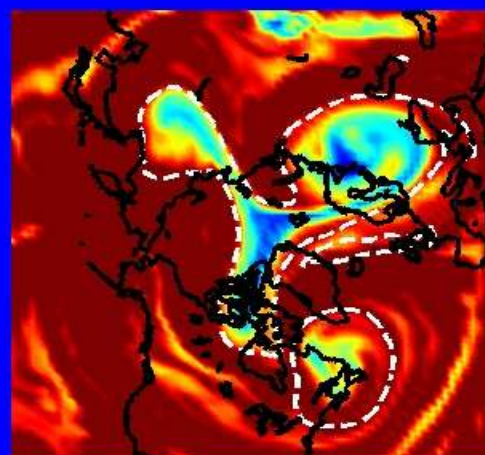
Sunlit Hours

h

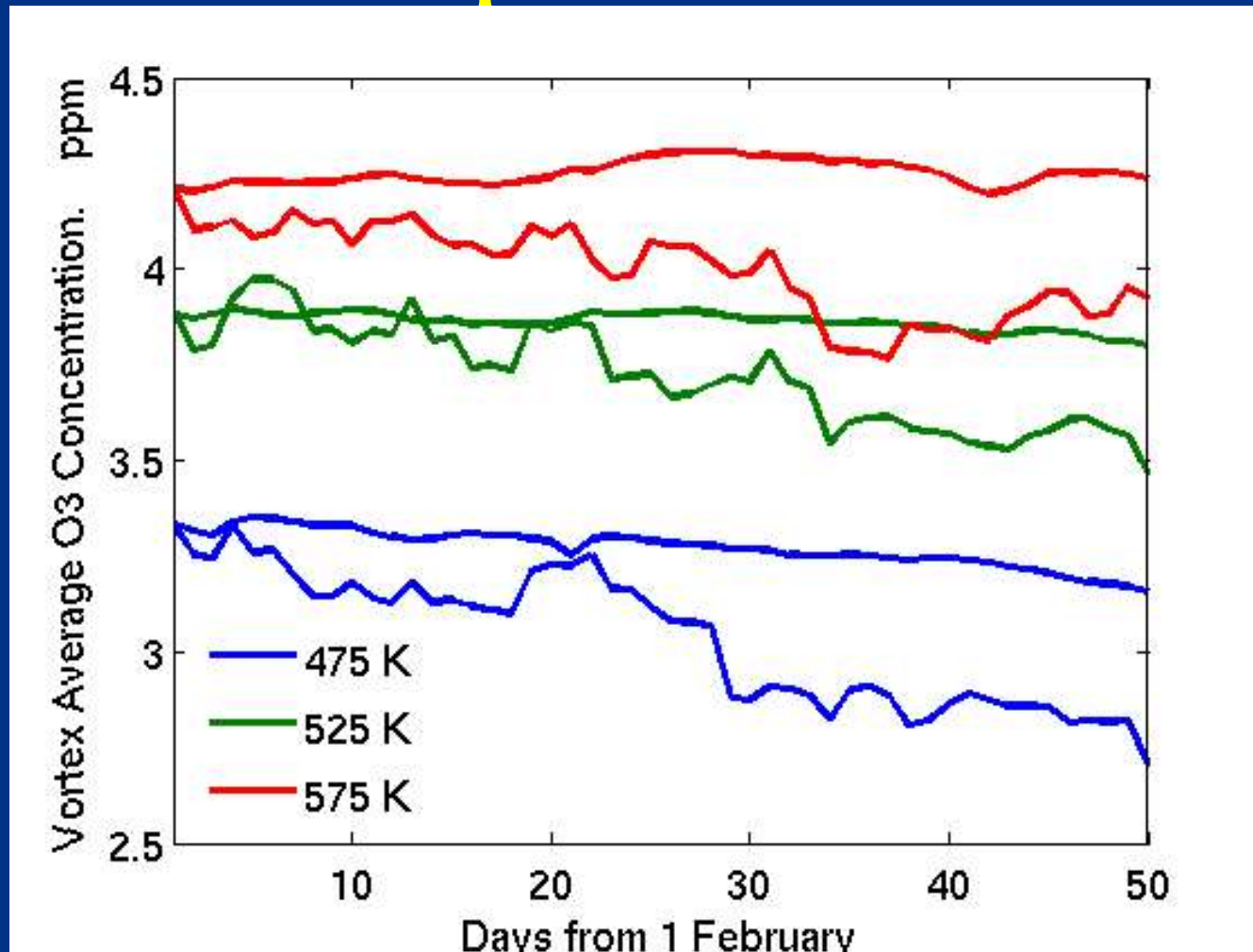


Ozone Loss

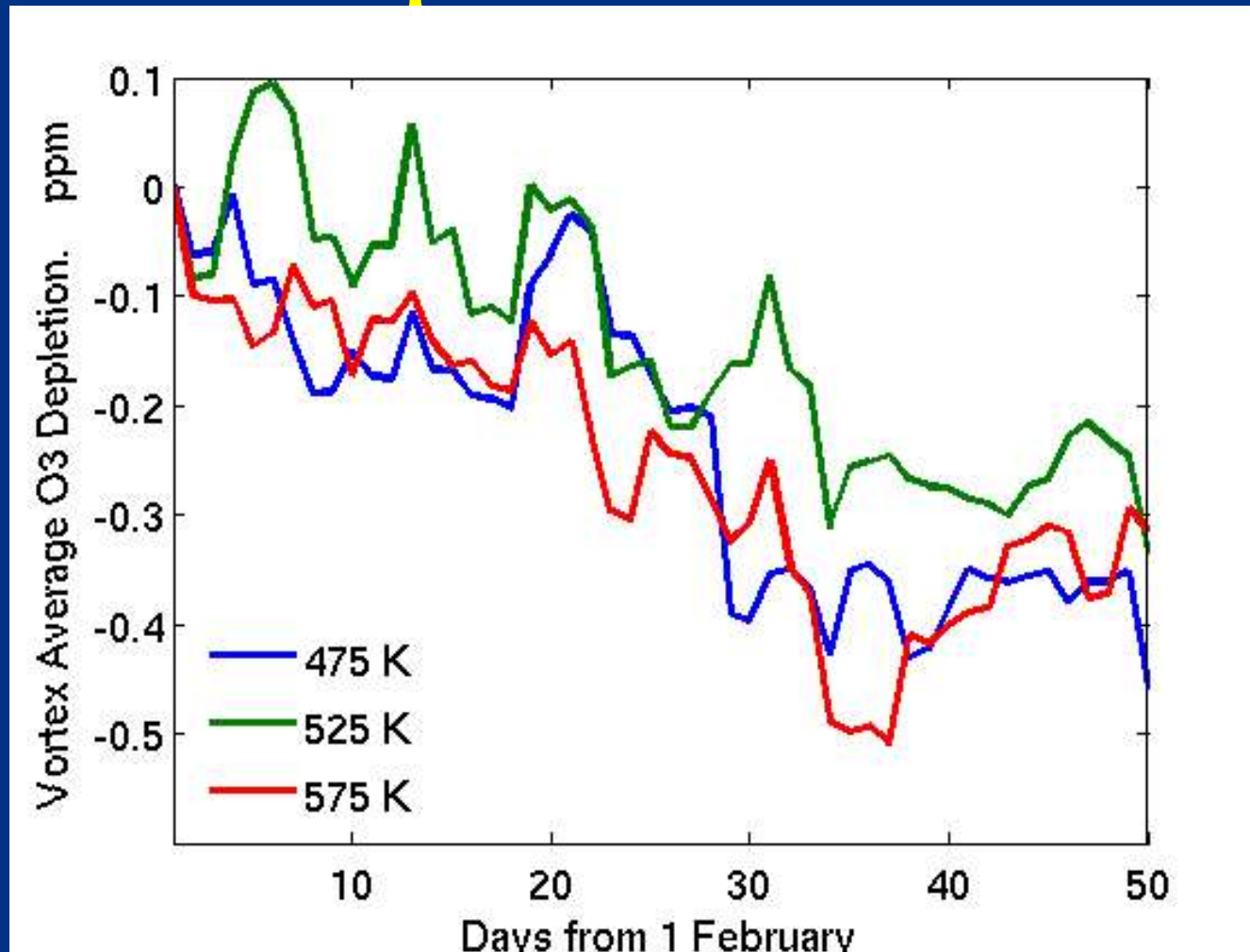
ppm



Averaged ozone mixing ratios in the polar vortex.



Averaged ozone depletion in the polar vortex.



Future work

- Include vertical transport. (Radiative cooling/heating)
- Include models for gas phase and heterogeneous chemistry.