

PHY392S

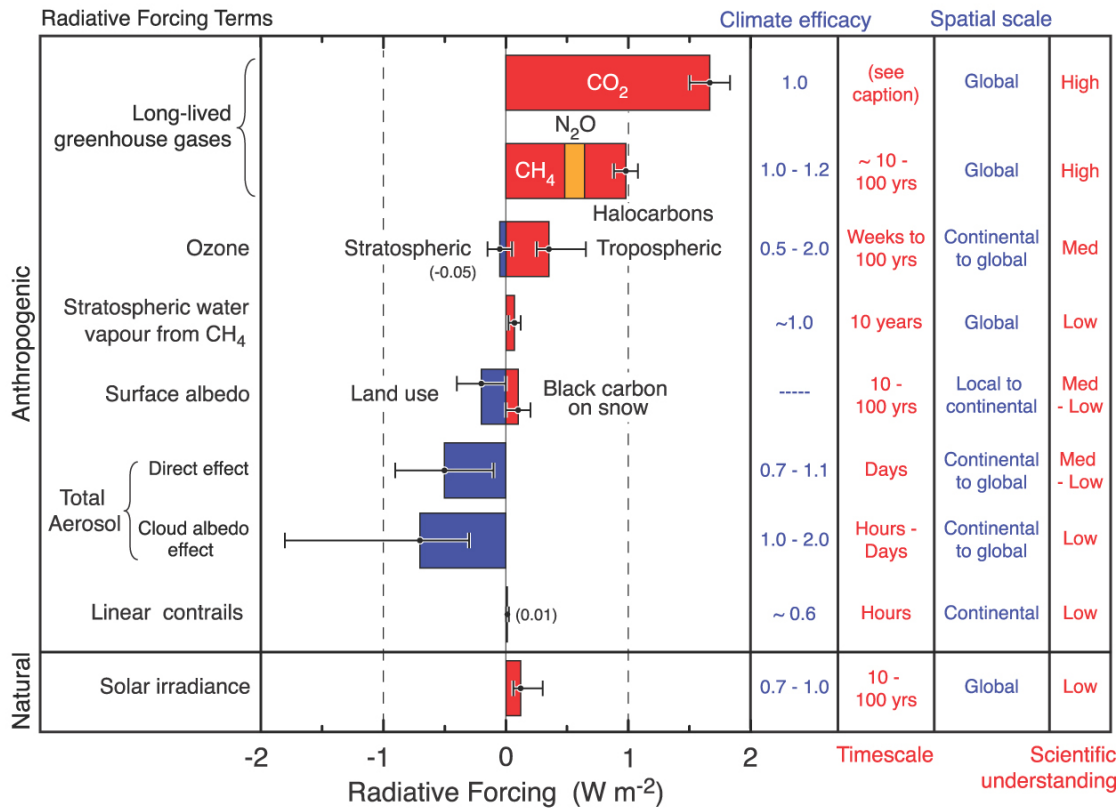
Physics of Climate

Lecture 11

Supplementary slides

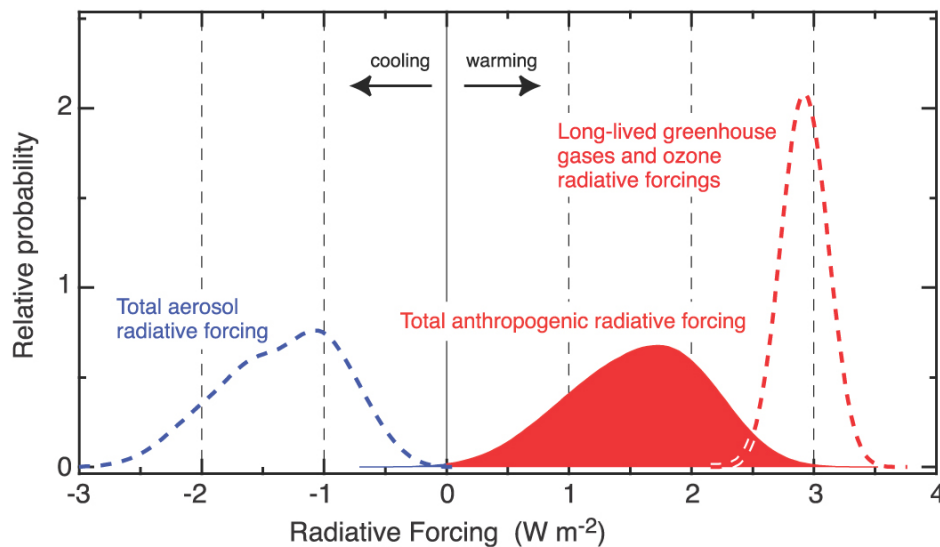
A.

Radiative forcing of climate between 1750 and 2005



Global Radiative Forcing of Climate, 1750-present

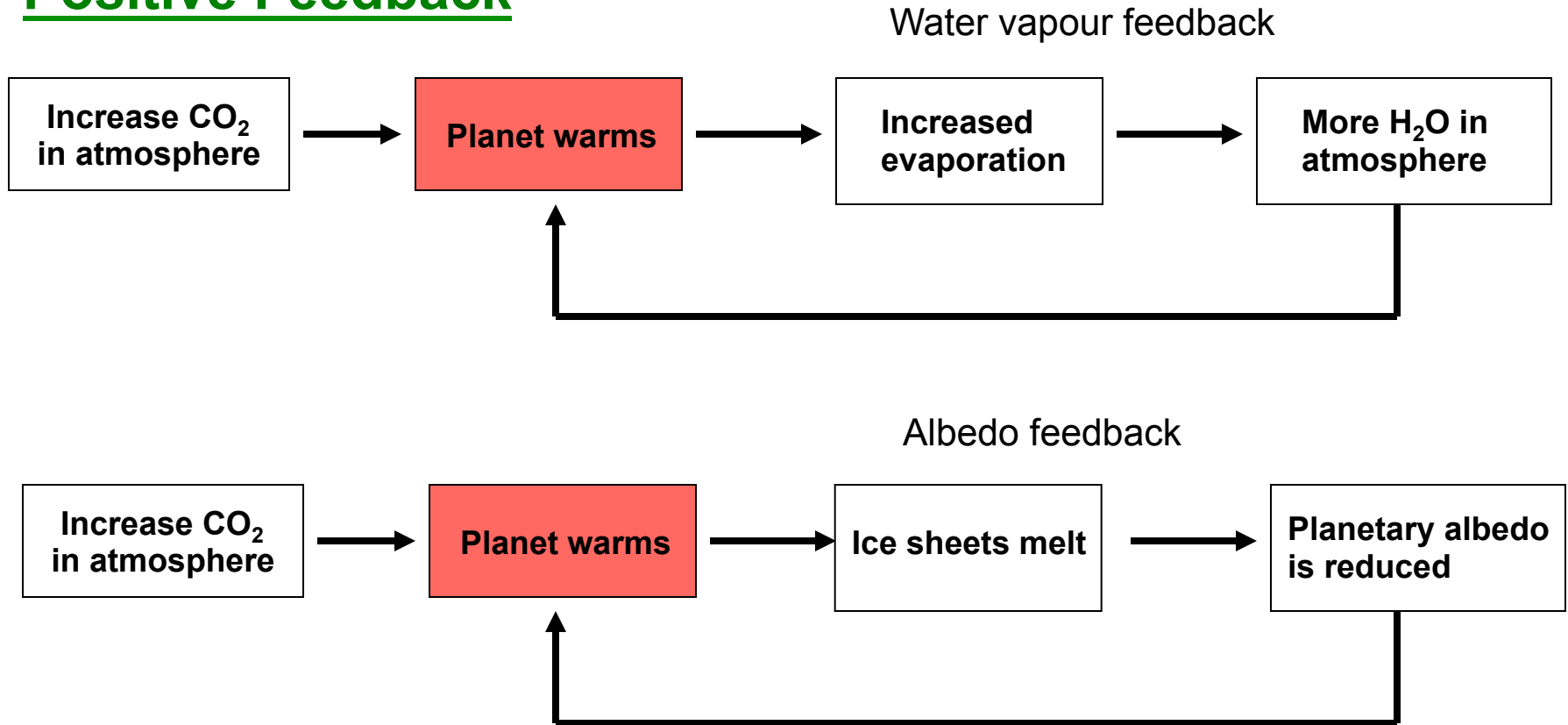
B.



IPCC [2007]

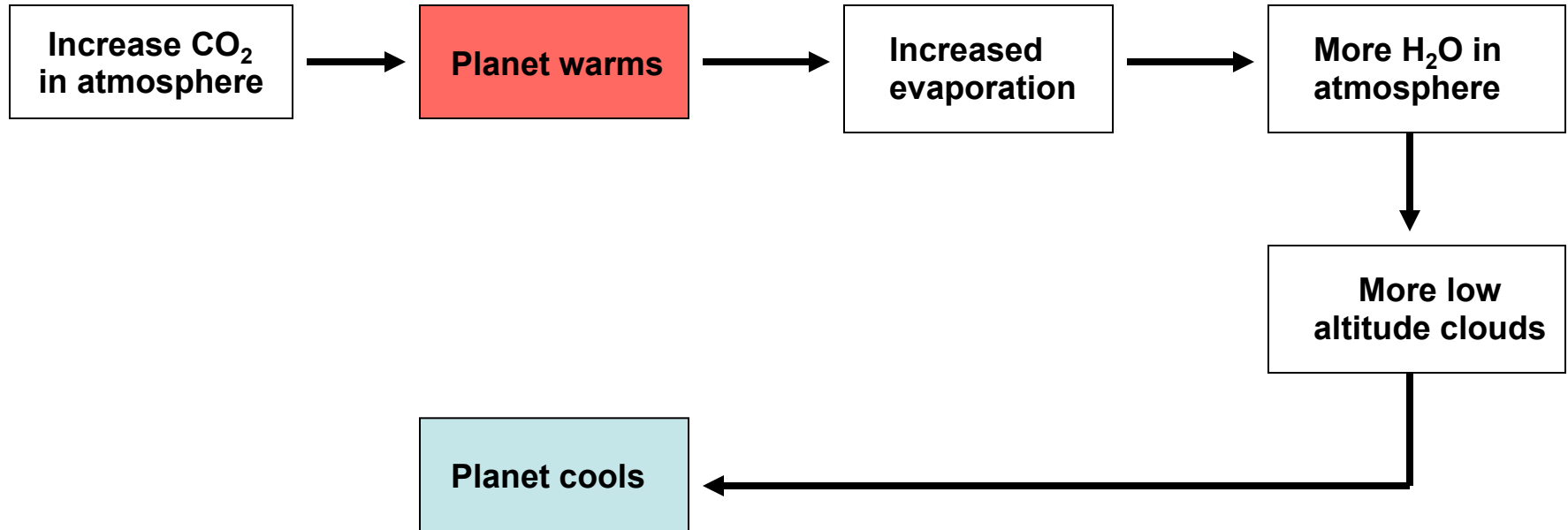
Positive and Negative feedbacks in the Climate System

Positive Feedback



Positive and Negative feedbacks in the Climate System

Negative Feedback



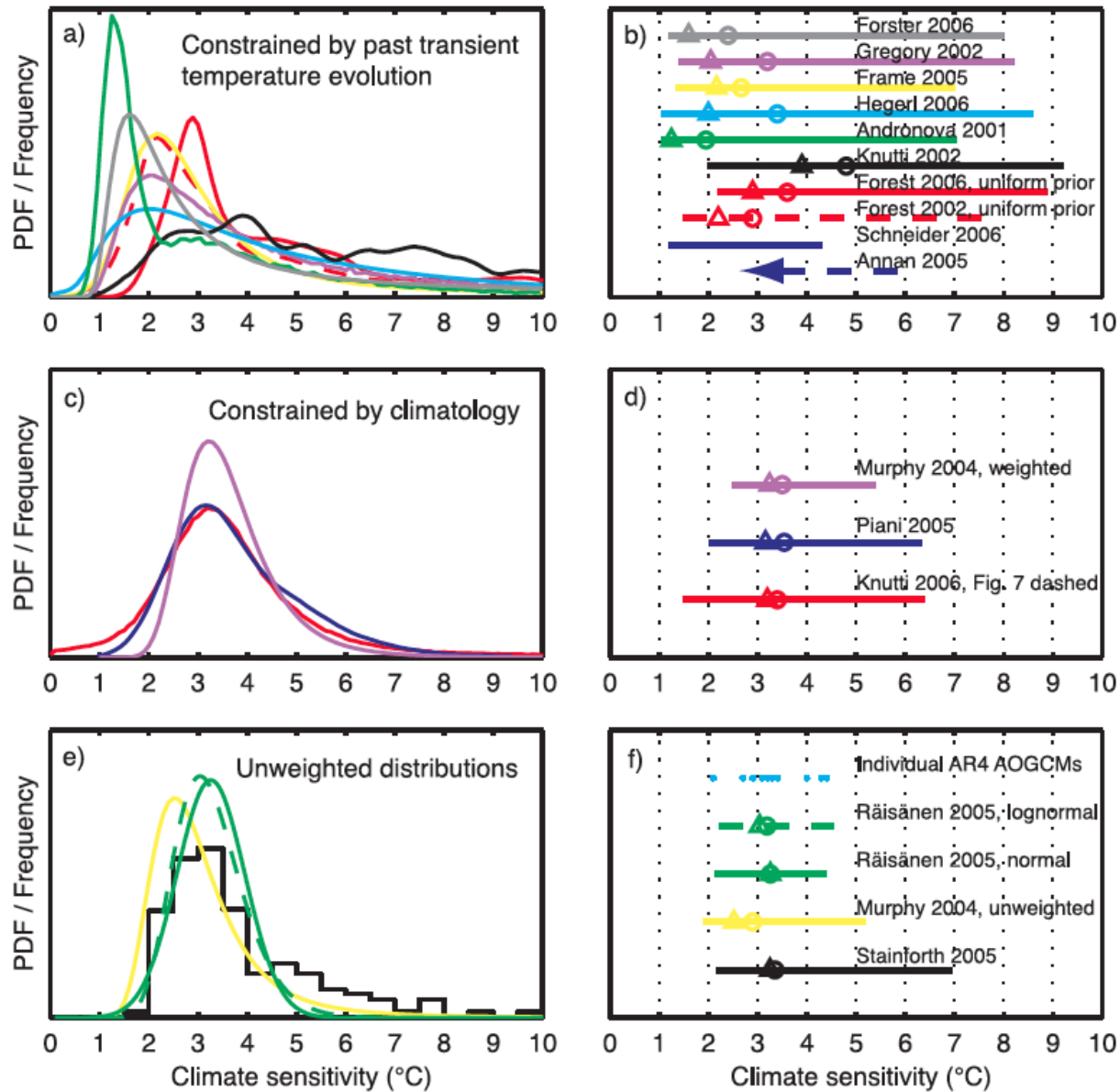
AOGCM	Equilibrium climate sensitivity (°C)	Transient climate response (°C)
1: BCC-CM1	n.a.	n.a.
2: BCCR-BCM2.0	n.a.	n.a.
3: CCSM3	2.7	1.5
4: CGCM3.1(T47)	3.4	1.9
5: CGCM3.1(T63)	3.4	n.a.
6: CNRM-CM3	n.a.	1.6
7: CSIRO-MK3.0	3.1	1.4
8: ECHAM5/MPI-OM	3.4	2.2
9: ECHO-G	3.2	1.7
10: FGOALS-g1.0	2.3	1.2
11: GFDL-CM2.0	2.9	1.6
12: GFDL-CM2.1	3.4	1.5
13: GISS-AOM	n.a.	n.a.
14: GISS-EH	2.7	1.6
15: GISS-ER	2.7	1.5
16: INM-CM3.0	2.1	1.6
17: IPSL-CM4	4.4	2.1
18: MIROC3.2(hires)	4.3	2.6
19: MIROC3.2(medres)	4.0	2.1
20: MRI-CGCM2.3.2	3.2	2.2
21: PCM	2.1	1.3
22: UKMO-HadCM3	3.3	2.0
23: UKMO-HadGEM1	4.4	1.9

Climate Sensitivity in AOGCMS

Equilibrium climate sensitivity is *likely to be in the range* 2°C to 4.5°C with a most likely value of about 3°C.

ΔT assuming a $\Delta F = 4 \text{ W m}^{-2}$
from doubling CO₂

[IPCC, 2007]



[IPCC, 2007]

Large spread in sensitivities, with a long tail