12.806 / 10.571 Atmospheric Physics & Chemistry

Spring 2006

R. Prinn & G. McRae

Thursday, 2:30–4:00 PM

12.806 / 10.571 Atmospheric Physics & Chemistry

Course Outline: Spring 2006

Tuesday and Thursday, 2:30–4:00 PM

FEB 7	Introduction, properties of the atmosphere	(Prinn, McRae)
9	Combustion sources of stoichiometry	(McRae)
14	Chemical thermodynamics / kinetics	(McRae)(Prinn out)
16	Radiative transfer and photochemistry	(McRae)
21	Tropospheric chemistry: CO	(McRae)
23	Tropospheric chemistry: NOx and Ozone	(McRae)
28	Tropospheric chemistry: HCHO and Ozone	(McRae)
MAR 2	Tropospheric chemistry: Complex Hydrocarbons	(McRae)
7	Atmospheric chemistry and transport: continuity equation	(Prinn)
9	Atmospheric chemical transport models: continuity equation (cont'd)	(Prinn)
14	Atmospheric chemical transport models: basic structures	(Prinn)
16	Tropospheric chemistry: Homogeneous processes	(McRae)
21	Tropospheric chemistry: Homogeneous processes	(McRae)(Prinn out)
23	Tropospheric chemistry: Heterogeneous processes	(McRae)(Prinn out)
27-31	*Spring Break*	
APR 4	Air Pollution Controls	(McRae)(Prinn out)
6	Air Pollution Controls	(McRae)(Prinn out)
11	Integrated Assessment of Air Pollution	(McRae)
13	Atmospheric chemical transport models: numerical integration	(Prinn)
20	Incorporating chemical and physical processes in models	(Prinn)
25	Atmospheric chemical transport models: examples	(Prinn)
27	Atmospheric chemical transport models: examples	(Prinn)
	[Take-home exam distributed]	
MAY 2	Atmospheric chemistry: measurement systems and estimation	(Prinn)
4	Inverse Methods in Atmospheric Chemistry: optimal estimation	(Prinn)
9	Inverse Methods in Atmospheric Chemistry: statistical methods *[Take-home exam due]*	(Prinn)
11	Inverse Methods in Atmospheric Chemistry: examples	(Prinn)
16	Inverse Methods in Atmospheric Chemistry: examples	(Prinn)
18	Inverse Methods in Atmospheric Chemistry: examples	(Prinn)

12.806 / 10.571 Atmospheric Physics & Chemistry

Course Outline: Page 2

Problem sets (50% of grade) plus
Take-home exam in final 2 weeks (50% of grade)

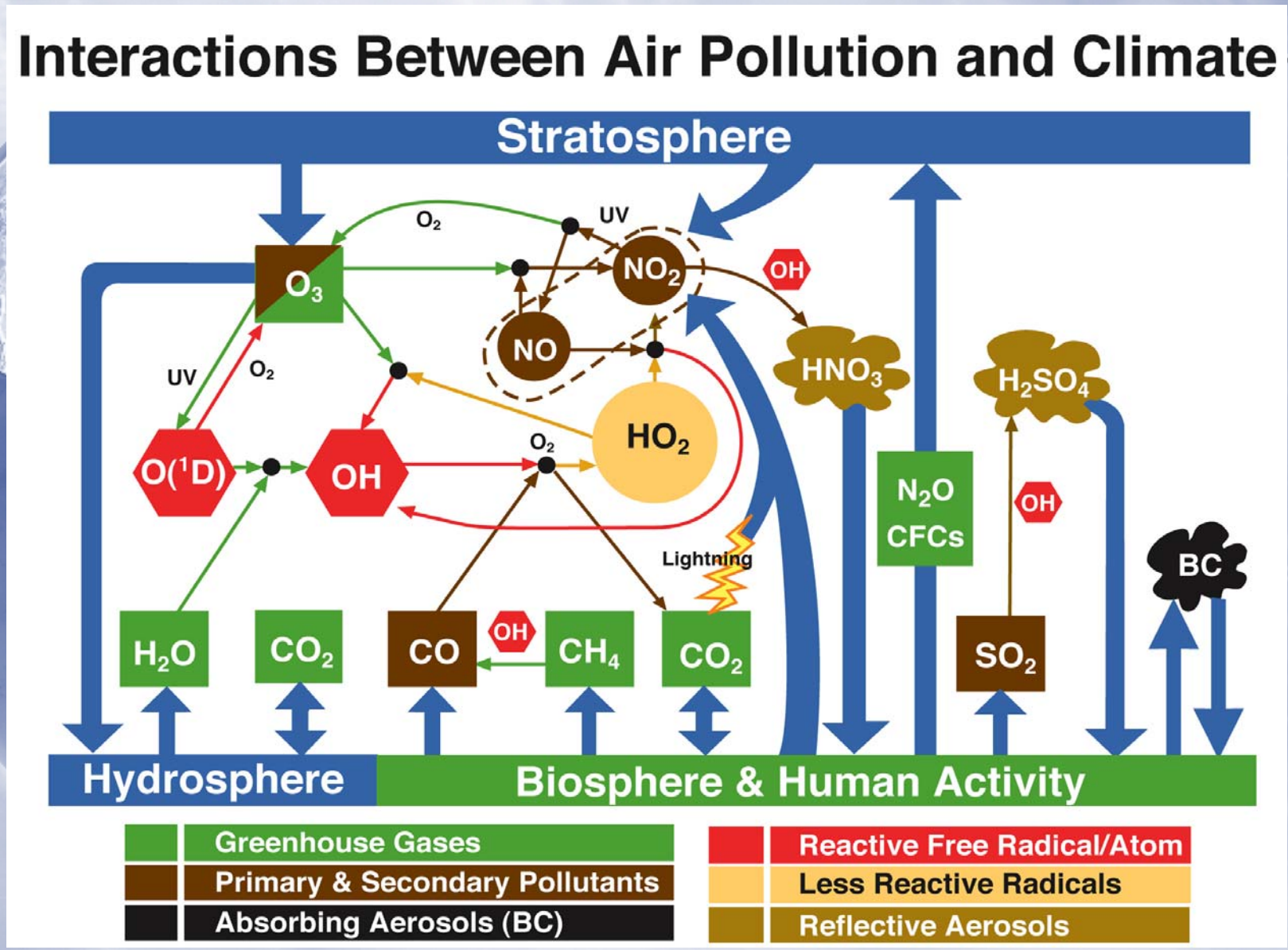
Faculty: Prof. G. McRae
Prof. R. Prinn

Teaching Assistant: Alex Lewis

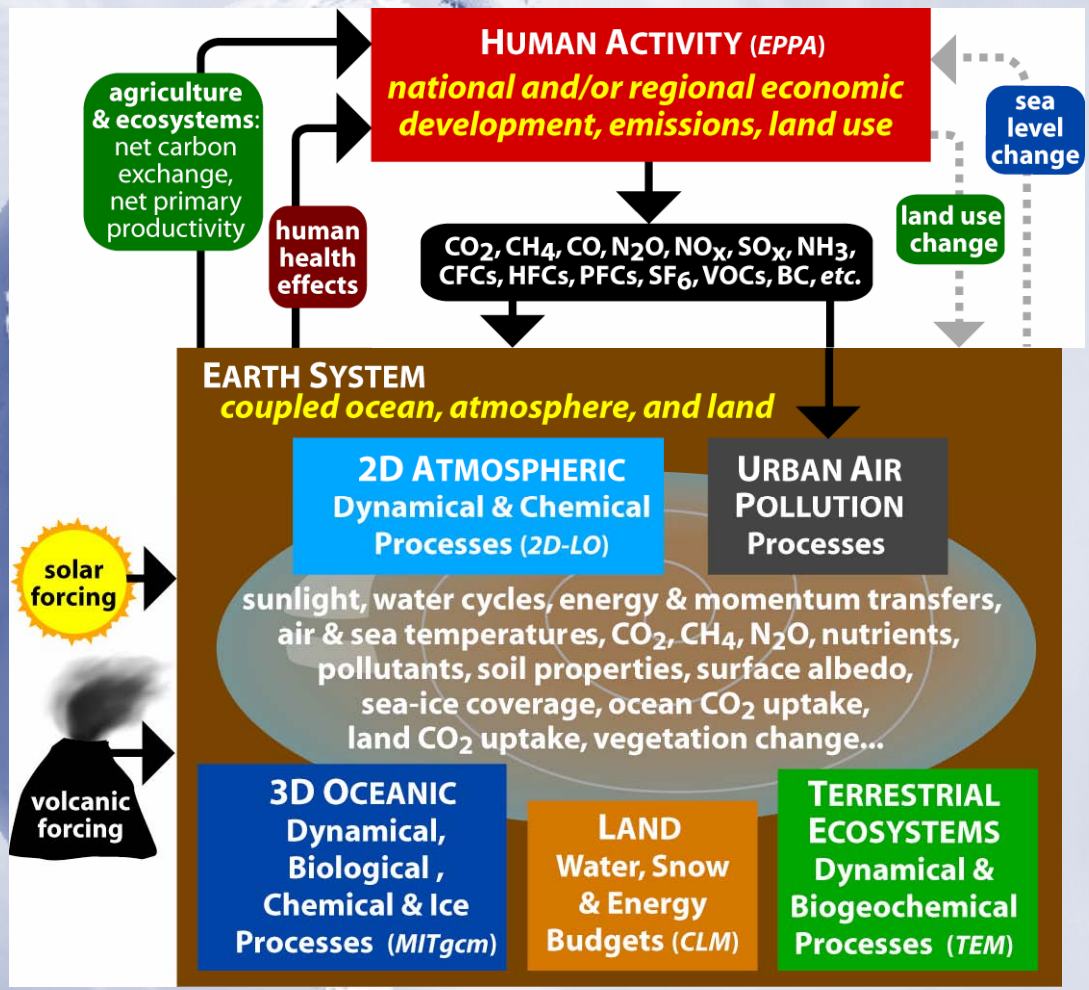
Recommended Textbook [* indicates book on reserve at Lindgren Library]

*Seinfeld, J.H., and S.N. Pandis, Atmospheric Chemistry and Physics (J. Wiley & Sons)

ATMOSPHERIC PHYSICS & CHEMISTRY



INTEGRATED ASSESSMENT: MIT Integrated Global System Model (IGSM)



GDP growth, energy use, policy costs, agriculture and health impacts...

global mean and latitudinal temperature and precipitation, sea level rise, sea-ice cover, greenhouse gas concentrations, air pollution levels...

soil and vegetative C, net primary productivity, trace gas emissions from ecosystems, permafrost area...