

Reading Summary – Red highlights refer to material we have covered, but was not stressed in detail

Chapter 1 - Introduction/Basics

- Pages 1-5 Overview
- Pages 5-7 Aerosols
- Pages 6-10 Major and Minor Gases

Chapter 2 – Atmospheric “Physics”

- Pages 11-14 Pressure, Temperature, and Mixing Ratios
- Pages 17-19 Vertical structure, lapse rates, and stability
- Pages 20-24 Transport and Winds

Chapter 3 – Sources and Sinks of Atmospheric Species

- Pages 25-26 Cycles and Lifetimes
- Pages 26-28 Sources of atmospheric constituents
- Page 32 Chemistry
- Pages 32-36 Sinks (Chemistry, Deposition) and Intro to Steady State
- Pages 36-40 Lifetimes, transport, and atmospheric variability

Chapter 4 – Observations and Models

- **Pages 41-47 Measurements and methods**
- **Pages 47-53 Models**
- Pages 53 Families of reactants

Chapter 5 – Ozone chemistry

- Pages 57-59 Introduction
- Pages 59-63 Formation of ozone, comparison with observations
- Pages 64-66 Tropospheric ozone – Oxidation by OH, NO₃ and O₃.
- Page 66 Absorption of ultraviolet light

Chapter 6 – Cycles

- Pages 67-71 Chemical Cycles
- Pages 77-79 Examples: Nitrogen and Sulfur

Chapter 7 – Tropospheric chemistry

- Pages 99-100 Introduction
- Pages 101-105 Tropospheric ozone chemistry and nitrogen oxides
- Pages 105-110 Oxidation of hydrocarbons, **PAN, more complex VOCs.**
- Pages 115-121 **Sulfur Chemistry** (formation of H₂SO₄)
- Pages 128-136 Heterogeneous chemistry

Chapter 8 – Stratospheric Chemistry

- Pages 137-139 Chapman chemistry and “odd oxygen”
- Pages 140-143 Catalytic Cycles
- Pages 143-145 Sources of ozone-destroying radicals
- Pages 145-148 Null cycles, holding cycles and reservoirs
- Pages 148-149 Summary of gas-phase (homogeneous) chemistry

- Pages 149-150 Heterogeneous reactions important in the stratosphere
- Pages 150-162 Polar ozone holes
- Pages 169-172 **Volcanoes and heterogeneous chemistry**

Chapter 9 – Issues in Atmospheric Chemistry

- Pages 206-211 Local and regional air pollution
- Pages 212-213 Acid rain
- Pages 213-219 Photochemical smog
- Pages 221-224 Stratospheric ozone depletion
- Pages 227-230 Chlorofluorocarbons
- Pages 233-235 International regulations
- Pages 235-242 Return to the polar ozone hole phenomenon