

Lecture 43. Summary. Review of the course for final exam

Topics to review for the final exam:

- Major air pollutants: classification and their environmental effects (Lecture 2 and 42).
- Structure of the natural atmosphere: composition, temperature and pressure profiles (Lectures 3-4).
- Ideal gas law. Mixing ratio. Particle number and mass concentrations (Lecture 3).
- Oxidation states (Lecture 6).
- Rate of a chemical reaction. Rate of change of species concentration in multistep reactions. Steady-state principal for the multistep reactions. (Lecture 7).
- Major air transport processes (Lecture 17).
- Steady-state box models (Lecture 10).
- Residence time of a species affected by several independent processes (Lecture 20).
- Photochemical smog: primary pollutants and products; formation (Lectures 19-21).
- Acid rain: major strong acids and their gaseous precursors, pH (Lectures 22-24)
- Greenhouse effect: main greenhouse gases, global warming (Lectures 33-34)
- Stratospheric ozone depletion: Chapman mechanism; ozone hole formation (Lectures 35-37)

- Simple climate model based on the balance of sun energy and the Earth's thermal radiation. Effective temperature of the planet. (Lecture 31). Electromagnetic radiation (Lecture 5).
- Impacts of atmospheric aerosols of anthropogenic origin: visibility reduction (Lecture 26) ; direct radiative forcing (Lectures 39-41).
- Exams 1-2.
- Homework#1(Problems 1, 2, 3, 5)
- Homework#2(Problems 1, 2, 4)
- Homework#4(Problem 3)
- Homework#5(Problems 1, 2, 3, 4)
- Homework#6(Problems 1, 3)
- Homework#7 (Problems 1, 2)
- Homework#8(Problem 2)
- Homework#9 (Problems 1, 2, 4).
- Homework#10(Problems 1, 2)