

## Atmospheric Chemistry and Climate Changes

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1.**Time:**Monday 9:00-12:00, Venue: Room 1121, South Humanities and Social Sciences Building , Academia Sinica

2.**Instructor:**Shaw-Chen Liu

3. Core course of Atmospheric Science.

4.**Teaching Objective:** The focus of this course is to discuss atmospheric chemistry and important research problems of air quality and climate changes. We will use real current research topics to demonstrate problem-solving methods.

5.**Syllabus:**

**Outline:**

The course includes the following major topics:

(1) Chemical evolution of the atmospheres of Earth; (2) Chemical composition and structure of the atmosphere; (3) Greenhouse gases and how do they relate to the biosphere and geosphere; (4) Sulfur species in the atmosphere, aerosols, Asian dust storms, long-range transport; (5) Tropospheric ozone; (6) Climate changes; (7) Aerosols and clouds; (8) Extreme precipitation, floods and droughts; (9) Paleo-climate; (10) Mitigation and adaptation.

We' ll have data analysis and problem solving demonstrations, including O<sub>3</sub> pollution in East Asia, aerosols/Asian Dust Storms, long-range transport of air pollutants, effects of aerosols on regional climate, precipitation and climate change.

**Key words:**Air pollution, atmospheric chemistry, climate changes

**Office Hours:** 9 am – 5 pm, Monday - Friday

**Textbook:**none

**Supplementary reading:** (1) Seinfeld and Pandis: Atmospheric Chemistry and Physics, from Air Pollution to Climate Change, (2) IPCC2007.

**Grading**

Homework 100% (Monthly reviews of lectures)