COURSE DETAIL

ATMOSPHERIC COMPOSITION AND AIR QUALITY
Country Netherlands
Host Institution Wageningen University and Research Center
Program(s) Wageningen University
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Earth & Space Sciences
UCEAP Course Number 101
UCEAP Course Suffix
UCEAP Official Title ATMOSPHERIC COMPOSITION AND AIR QUALITY
UCEAP Transcript Title ATMOSPHRE&AIR QULTY
UCEAP Quarter Units 5.00
UCEAP Semester Units 3.30

Course Description

This course shows how simple principles of physics and chemistry can be applied to describe a complex system as the atmosphere, and how one can reduce the complex system to build models. The second objective is to convey a basic but current knowledge of atmospheric composition in terms of air pollution and greenhouse gas concentrations, and their effects, along with an appreciation for the research that led to this knowledge. This course gives students the knowledge and skills to understand today's most pressing issues in atmospheric chemistry and air quality. This includes the chain of processes that occur between emissions of pollutants from natural and anthropogenic sources, and their effect on ecosystems, human health, and the composition of the atmosphere. Special emphasis is on quantifying the effects of air pollution through acquisition and analysis of field measurements, and through numerical modelling of the processes involved (e.g., transport, chemistry, deposition, biogeochemical cycles). Sources, effects, and possible abatement measures of local air pollution, acid deposition, eutrophication, ozone in troposphere and stratosphere (the Antarctic ozone hole) and climatic change are explained. This course covers the following: the structure and composition of the atmosphere and the fundamental drivers of its composition; the global cycles of oxygen (O), carbon (C) and nitrogen (N) through the Earth reservoirs, and how these make life on Earth possible; what controls climate on Earth; the different roles of climate parameters such as solar radiation, CO2, water vapor, aerosols and clouds; the role of emissions and chemistry leading to ozone smog and how ozone events may be countered in practice; the role of aerosols in air pollution, climate change, and stratospheric ozone depletion; the concepts of emissions, residence time, lifetime, and distance of transport to set up a mass balance; time series of air pollutant measurements and the main processes affecting them; frequently used atmospheric composition models used to evaluate various pollution scenarios.

Language(s) of Instruction

English

Host Institution Course Number

MAQ-34806

Host Institution Course Title ATMOSPHERIC COMPOSITION AND AIR QUALITY
Host Institution Course Details
Host Institution Campus Soil, Water, and Atmosphere
Host Institution Faculty
Host Institution Degree
Host Institution Department Meteorology and Air Quality
Course Last Reviewed

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