UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

The Climatic Role of Atmospheric Aerosol in the Arctic

2627-1-124R003

Title

The climatic role of atmospheric aerosol in the Arctic

Teacher(s)

Prof. Luca Ferrero

Language

English

Short description

The role of atmospheric aerosols is significant to the Arctic warming and is related the worldwide changes in the aerosol chemical composition. The aerosol chemistry influences its direct, indirect and semi-direct effects. Moreover, several aerosol-related processes and feedbacks can enhance the Arctic amplification.

Along the present course students will learn:

- how aerosol-gases in the atmosphere interact in the Arctic influencing the final aerosol concentrations and chemical characteristics focusing on the sources, their apportionment (e.g. anthropogenic transported

aerosol, dust, biomass burning) and the chemical feedback involving different environmental compartment (e.g. the sea)

- the main aerosol sampling and monitoring systems, from direct to indirect techniques, either at ground and along vertical profiles
- the aerosol, optical properties and climatic effects in the Arctic
- the heating rate determination with respect to the effect of clouds and aerosol sources and atmospheric transports
- the overall feedbacks involving aerosol in the Arctic and the interaction with mid-latitudes and equator

Final evaluation: discussion of the content of one research paper connected with the topic of Arctic Amplification and the role of aerosol on it

CFU / Hours

1 CFU - 8 Hours (lecture)

Teaching period

I semester

Sustainable Development Goals

CLIMATE ACTION