

WGII: Aerosol and cloud microphysics

Chair: Jost Heintzenberg

Major gap:

The influence of aerosols on the initiation of convective precipitation is unclear.

Hypotheses

- Maritime and continental type clouds develop differently over heterogeneous terrain
- Sub-cloud aerosol variability does not affect precipitation
- Ice formation in convective clouds is not controlled by measurable aerosol properties
- Cloud turbulence promotes coagulation and aggregation

Instrumentation needed

- Polarization radar + FMCW radar, wind profiler, cloud radar
- In-situ measurements of drop + ice phase
- Micrometer radiometer + lidars + FTIR
- Satellite observations
- In-situ aerosol and turbulence characteristics at cloud base + surface

Instrumentation missing

- Ice nucleating aerosol properties
- Ice phase
- In-situ data on drizzle properties
- RH and supersaturation in clouds

Models

- Include relevant aerosol physics in forecast models
- Use LM in the IOP time windows of 2005 and 2006 to optimize IOP planning
- Use 2005 Lindenberg exercise for intercalibration of remote sensing instruments for LM

Open issues

- Continuous profiling versus scanning
- Statistics of aerosol influence on clouds
- Do not forget instrument intercomparisons in IOP
- Interaction modellers and experimentalist
- Acknowledgment by GEWEX, THORPEX necessary