

ACRIDICON-Zugspitze field campaign

Manfred Wendisch, Dagmar Rosenow, et al.

Summary

From September 17 to October 5, 2012, a field campaign with focus on clouds, aerosols, radiation and dynamics and their interaction in clouds that was coordinated and organized by the Leipzig Institute for Meteorology took place at the Zugspitze mountain.

Zusammenfassung

Vom 17. September bis 5. Oktober wurde vom Leipziger Institut eine Feldkampagne zur Untersuchung der Wechselwirkung von Aerosolen, Niederschlag und Strahlung insbesondere in Hinblick auf konvektive Wolken auf der Zugspitze koordiniert und organisiert.



Fig.1: (left) *Distribution of instruments between the Zugspitze summit and the environmental research station Schneefernerhaus. (right) : LIDAR observing clouds at the summit.*

Strong precipitation and associated strong wind can create substantial damages. In order to lay the foundation for a better risk assessment, more precise knowledge of the responsible complex processes is necessary. To this end, a detailed investigation of the involved gases, aerosols, cloud particles and radiation needs to be carried out. This was the focus of the field campaign in which the universities Leipzig, Mainz, Cologne, Munich, Frankfurt, Darmstadt, the Leibniz Institute for Tropospheric Research (TROPOS), the Karlsruhe Institute of Technology (KIT), the DLR German Aerospace Center in Oberpfaffenhofen and the Research Center Jülich participated. Together, they provided 45 instruments that complemented one another and to some extent permitted a mutual evaluation.

The chosen deployment: Schneefernerhaus/Zugspitze

For the location of the field campaign, the spacious and well-equipped environmental research station Schneefernerhaus 300 m below the summit as well as the meteorological situation at the Zugspitze mountain characterized by the occurrence of mixed-phase cloud all year round were beneficial. While cloud microphysical in-situ instruments were deployed on the roof of the Eibsee cable car mountain station, the remote sensing instruments that determine microphysical parameters through the use of radiation measurements were installed on the terraces of the Schneefernerhaus. In this way, the instruments complemented each other and made possible a detailed investigation of the



Fig.3: (left) Cloud microphysical instruments on the roof of the mountain station of the Eibsee cable car. (right) One of the desired meteorological situations: the summit is covered in clouds while the Schneefernerhaus is cloud-free.

clouds that occurred at the summit. In addition, inside the Schneefernerhaus and on its terraces instruments investigating trace gases, aerosols and ice nuclei were installed. They allowed to examine cloud properties as well as the properties of cloud-free air in comparison. During the campaign's core time, 5 radiosondes ascents were performed daily from Garmisch-Partenkirchen.

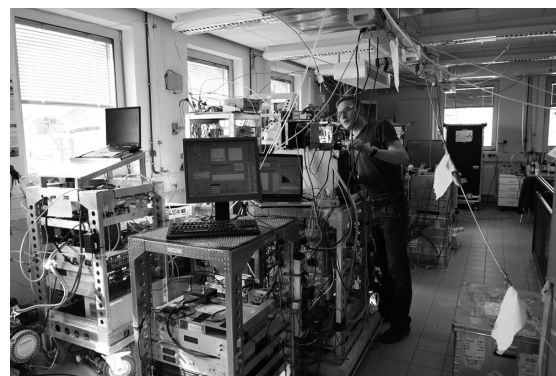


Fig.3: (left) Radiation measurements on the terrace of the Schneefernerhaus. (right) Aerosol, trace gas- and ice nuclei instruments in the Schneefernerhaus.

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