## Who we are

The **LCRS** is a working group within the Faculty of Geography at the University of Marburg. Research is done in the fields of Climatology, Remote Sensing and numerical modelling, with a focus on atmospheric and boundary layer climatology, climate-ecology and climate change impact research.

What we do

Main research activities at LCRS are:

- Climatological remote sensing
- Simulation of atmosphere and ecosystem processes
- Climate change impact research

Investigations are generally based on a combination of *in-situ* field measurements, satellite- and ground-based remote sensing, numerical models as well as (geo-) statistics.
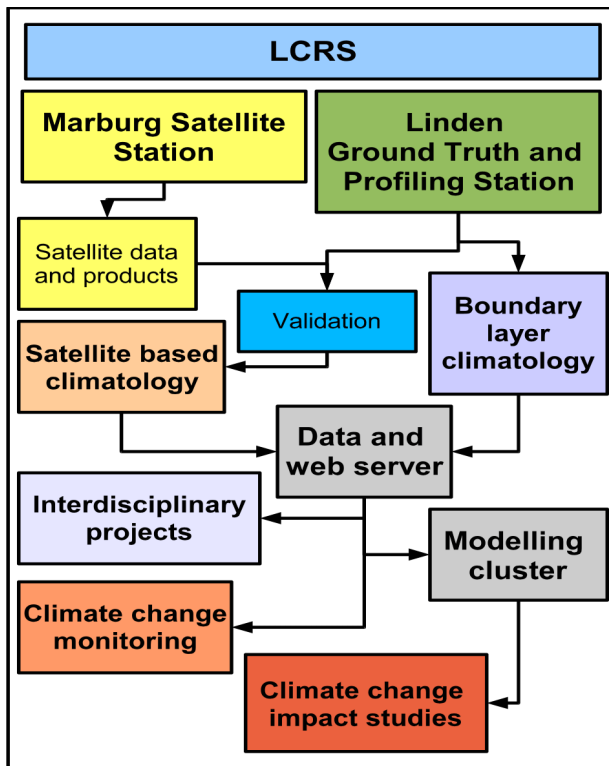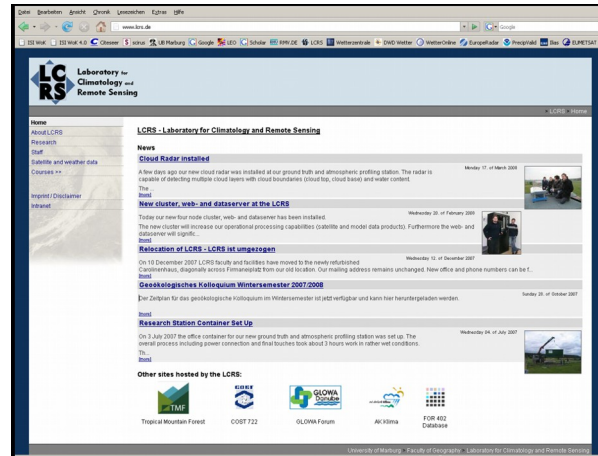

Facilities:

1. **Marburg Satellite Station**
2. **Ground Truth and Profiling Station Linden**
3. **Modelling cluster, process and data server**

More information

www.lcrs.de

- Objectives and Methods
- Research Disciplines
- Projects
- Publications

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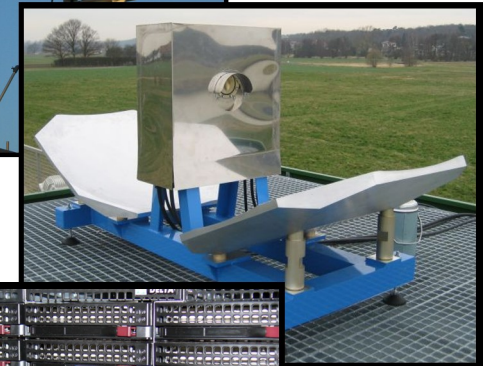Fax: ++49 (06421) 28-28950
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Laboratory for Climatology and Remote Sensing

**Faculty of Geography**

Philipps Universität Marburg

Challenge: Climate Change Monitoring, Assessment and Impact Modelling

1. Marburg Satellite Station

One major goal of the LCRS is the development of rainfall retrieval and fog detection techniques based on satellite data, applicable to climatological studies. In this context, the MSS forms the ground segment for the reception of high resolution satellite data. The main receiving stations are located in Marburg and ingest data from various sensors:

NOAA-AVHRR, MSG-SEVIRI, TERRA/AQUA MODIS,

METOP and GOES.
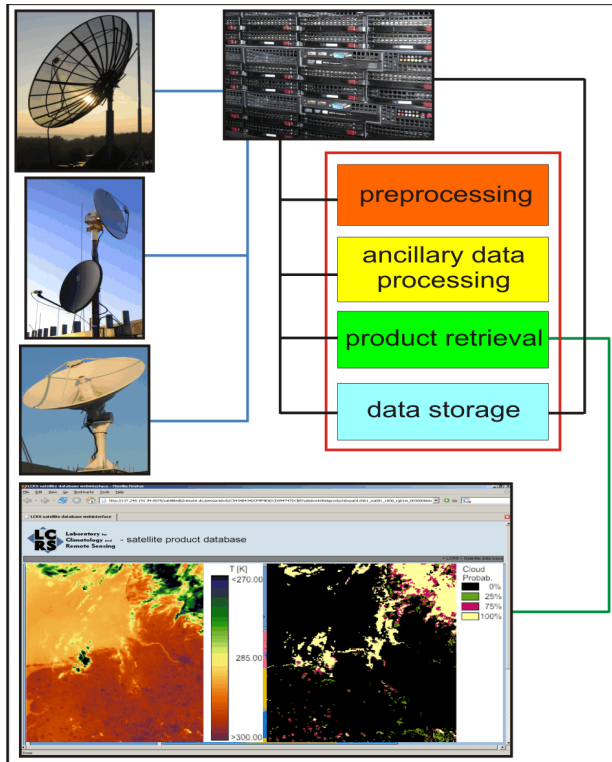
The received data are operationally processed and archived. Together with the retrieved products this data are used for a wide range of applications in meteorological and environmental sciences.

2. Linden Ground Truth and Profiling Station

The Marburg Ground Truth and Profiling Station is located in Linden-Leihgestern, about 30 km south of Marburg. It is implemented in cooperation with the Justus-Liebig University Gießen which operates a station for climate impact research and the Hessisches Landesamt für Umwelt und Geologie that operates an official air quality monitoring station.

The principal aim of the station is to provide validation data for satellite-products of low clouds and precipitation developed at LCRS. Another important objective is the measurement of meteorological and climatological phenomena in the boundary layer.
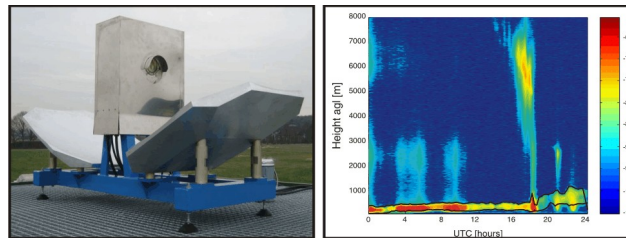
94 Ghz cloud radar and microwave profiler and plotted radar reflectivity (dBz)
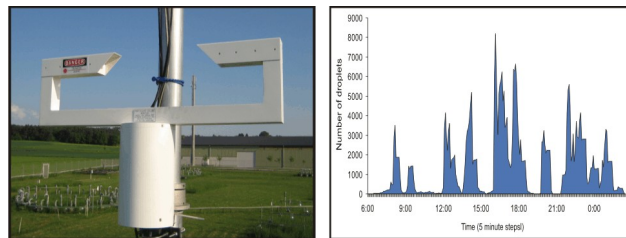

Particulate Volume Monitor and plotted droplet numbers.

Core instruments are:

- 94 Ghz cloud radar and microwave profiler
- 24 Ghz doppler rain radar profiler
- Sonic detection and ranging SODAR ECHO-1
- Ceilometer
- Particulate Volume Monitor
- Present Weather Sensor
- Ultrasonic Anemometer
- Climate station (temperature, humidity, wind speed and direction, rain rate)

3. Modelling cluster, process and data server

A major research goal at LCRS is the simulation of atmospheric dynamics with a focus on mesoscale weather systems as well as the examination of interactions between soil, vegetation and atmosphere (SVAT).
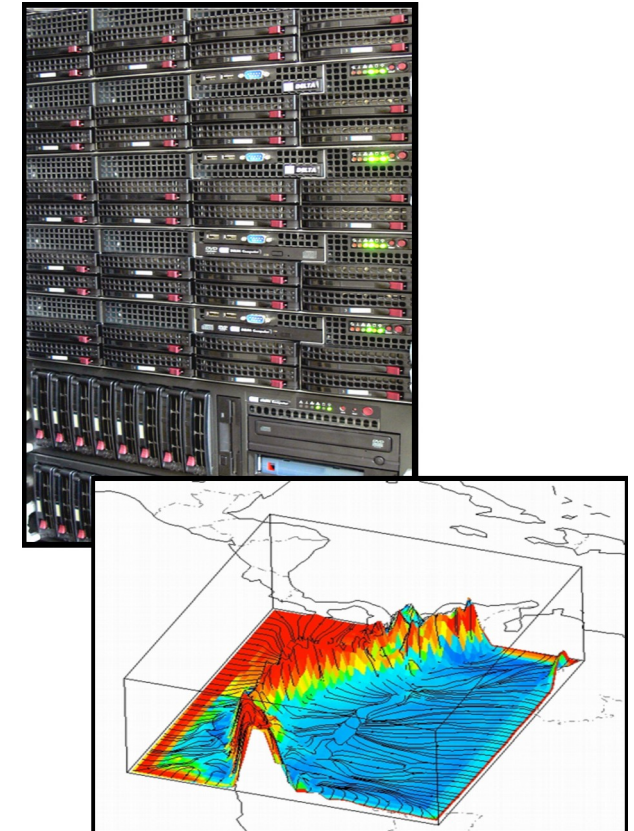
For this purpose we use state of the art SVAT models together with numerical weather models of the latest generation. Our modelling cluster provides the sophisticated hardware essential for this task.

The coupled simulations of atmosphere and ecosystem processes are the basis for extensive research activities at LCRS concerning climate change impacts.

The operational processing chains of the developed MSS algorithms are implemented on our process server. The retrieved data are archived on our data server and form the basis for various climatological studies and particularly for interdisciplinary ecological projects.