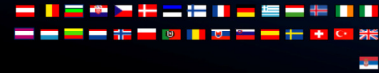


Climate Monitoring

Christine Träger-Chatterjee (EUMETSAT)

Steffen Kothe (CM SAF, DWD)



Why Climate Monitoring ?

Climate affects our every day life in various ways: ...



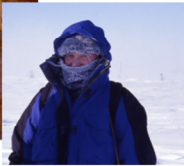
... the way we do agriculture



... the way we build our houses



... the way we dress



... the problems we have to deal with



Why Climate Monitoring ?

Climate vs. Weather

Climate



Weather



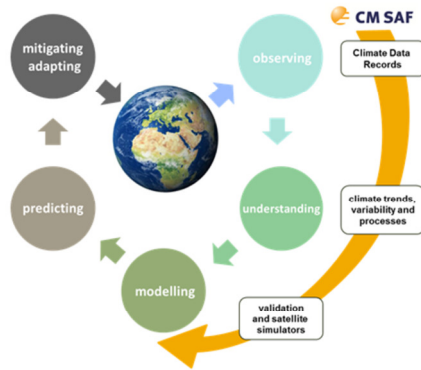
Status of the atmosphere at a certain point in time and space



Mean status of the atmosphere over a reasonably long period of time

Why Climate Monitoring?

- Assess past and current climate to
 - Understand the climate system
 - assess possible trends and changes
- Support the development of climate models
- Assess climate impacts
- Provide a basis for political decisions and infrastructure planning



4 - Go to 'View' menu and click on 'Slide Master' to update this footer. Include DM reference, version number and date

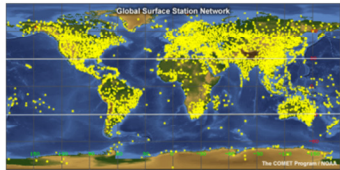
EUMETSAT

With its data sets and services the CM SAF contributes to entire cycle of observing, understanding, and modelling the climate to provide a scientifically sound basis for decision making.

Ground based vs. Satellite

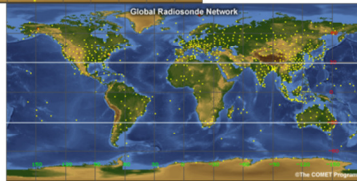
Climate Monitoring from the Earth's Surface

- large areas with almost no data
- important for Climate Monitoring, due to long time series
- important for validation and calibration of sat-data



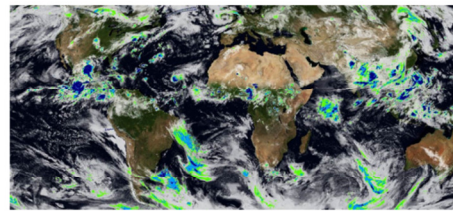
Global Network of surface stations For meteorological observations

Global Network of radiosonde stations



Climate Monitoring from Space (Satellites)

- Area wide coverage, i.e. global from polar orbiting satellites, or whole disk from geostationary satellites
- Observation of variables that are not / hardly observable from ground, e.g. cloud-microphysics, radiation-budget at Top of Atmosphere, upper atmosphere temperature and humidity
- Observations available from the early 1980's onward
- Importance is growing, as time series are growing and quality is increasing



Coverage of satellite based meteorological observations

5 Go to 'View' menu and click on 'Slide Master' to update this footer. Include DM reference, version number and date

EUMETSAT

Ground based (in situ) observations still form an important data basis, due to the long time span they are covering. In addition, they are crucial to validate and calibrate satellite derived information.

Satellite observations are becoming more and more important in climate monitoring and climate science as their quality improves and as they now cover time series of several decades. Furthermore, satellite based data provide information about regions with no or only sparsely available ground based observations. In addition, variables such as cloud microphysical parameter or the radiation budget at the top of the atmosphere (an important variable to evaluate the energy balance of climate models), are not available from ground measurements.