

## Aim

- *to provide comprehensive information on the total climate system involving the multi-disciplinary range of physical, chemical and biological properties and atmospheric, oceanic, hydrologic, cryospheric and terrestrial processes*

## How does GCOS do this?

- *GCOS identifies what needs to be observed and defines requirements of these observations*
  - ***the Essential Climate Variables: ECV***
- *GCOS reviews the performance of observations of ECV and reports to UNFCCC, WMO, IOC and others*
- *GCOS provides advice and support*
- *GCOS engages widely to involve observing and user communities*



## Needs for climate data

- *Climate system monitoring, climate change detection and monitoring the impacts of and response to climate change, especially in terrestrial ecosystems and mean sea-level;*
- *Data for application to national economic development;*
- *Research toward improved understanding, modelling and prediction of the climate system*



- GCOS was founded in 1992 to meet the needs of the UNFCCC's agenda on Systematic Observations.
- CCI aims to meet some of the needs for climate observations (i.e. ECV), using satellite data
- Many ECV, especially terrestrial and ecosystem variables are difficult to monitor on a broad scale
  - Access can be difficult, measurement expensive, capacity can be lacking and reporting inconsistent and unreliable.
- Satellites can, potentially, fill this gap e.g.:
  - International reporting of data on rivers and lakes is very patchy
  - Permafrost is not measured over large areas
  - Above-ground biomass and land cover are vital for forest monitoring and REDD+
  - Near-global coverage of biosphere variables (LAI, FAPAR etc.) allows changes to be monitored (e.g. phenology, “global greening”)
  - Snow and ice coverages especially where access is difficult
- Provided:
  - Data is freely and widely available (e.g. Copernicus and ECV Inventory)
  - There is a commitment to long-term observations
  - Calibration and validation allow accurate measurement of trends that can be small compared to annual variability
- Feedback to GCOS from CCI on feasibility of observations, and use cases of datasets, is vital for updating ECV and the next GCOS Implementation Plan.