

# GLOBAL CLIMATE OBSERVING SYSTEM

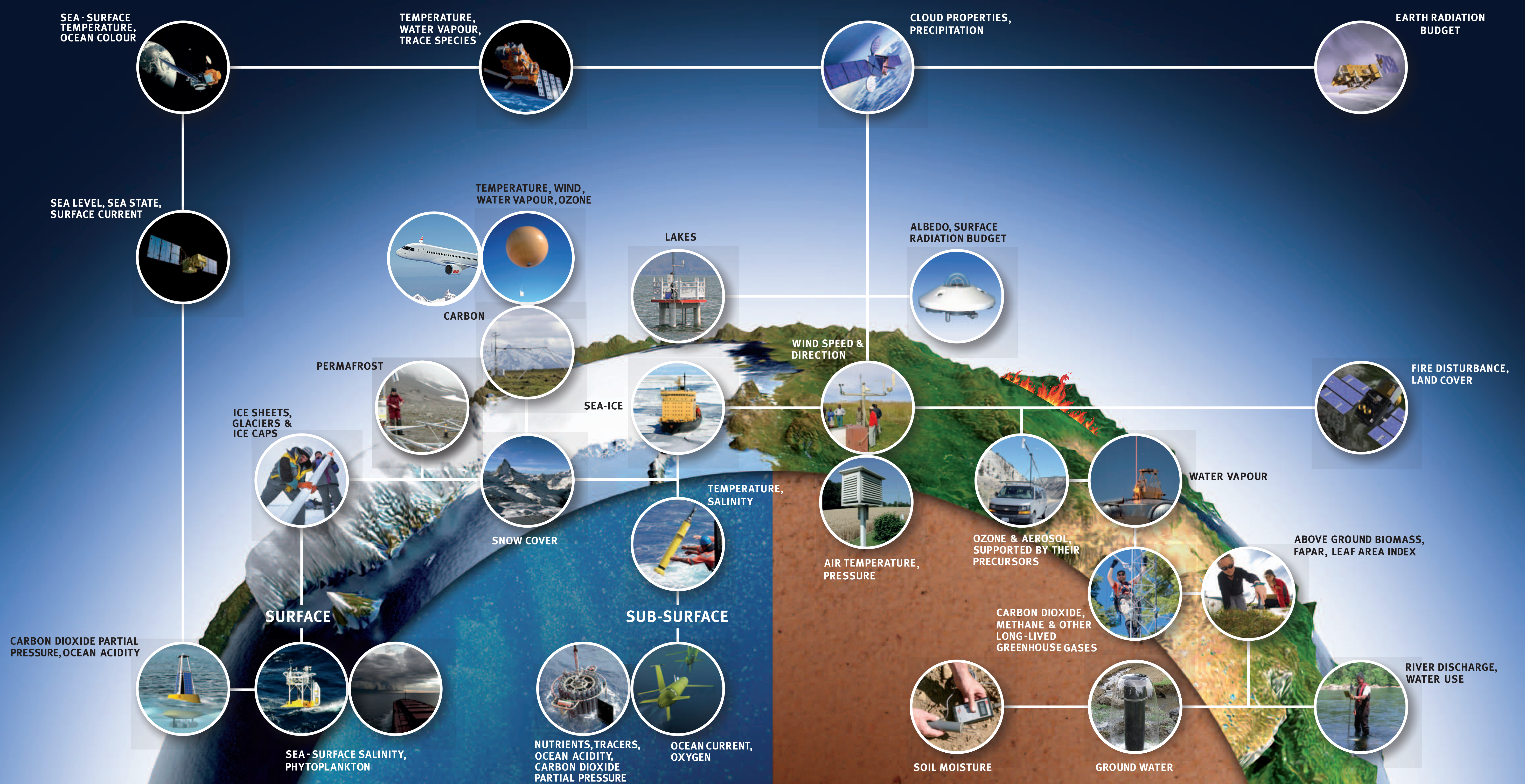
## THE GCOS ESSENTIAL CLIMATE VARIABLES (ECVs)

As an outcome of the Second World Climate Conference, the Global Climate Observing System (GCOS) was established in 1992 to ensure that the observations and information needed to address climate-related issues are obtained and made available to all potential users.

The goal of GCOS is to provide comprehensive information on the total climate system, involving a multidisciplinary range of physical, chemical, and biological properties and atmospheric, oceanic, hydrologic, cryospheric and terrestrial processes.

Climate observations must be enhanced and sustained in order to enable users to:

- Detect further climate change and determine its causes
- Model and predict the climate system
- Assess impacts of climate variability and change
- Monitor the effectiveness of policies for mitigating climate change
- Support adaptation to climate change
- Develop climate information services
- Promote sustainable national economic development
- Meet other requirements of the UNFCCC and other international conventions and agreements



### OCEANIC

#### Surface (10)

- Sea-surface temperature
- Sea-surface salinity
- Sea level
- Sea state
- Sea ice
- Surface current
- Ocean colour
- Carbon dioxide partial pressure
- Ocean acidity
- Phytoplankton

#### Sub-surface (8)

- Temperature
- Salinity
- Current
- Nutrients
- Carbon dioxide partial pressure
- Ocean acidity
- Oxygen
- Tracers

### ATMOSPHERIC

#### Surface (6)

- Air temperature
- Wind speed and direction
- Water Vapour
- Pressure
- Precipitation
- Surface radiation budget

#### Upper-air (5)

- Temperature
- Wind speed and direction
- Water Vapour
- Cloud properties
- Earth radiation budget (incl. solar irradiance)

#### Composition (5)

- Carbon dioxide
- Methane
- Other long-lived greenhouse gases
- Ozone, supported by their precursors
- Aerosol, supported by their precursors

### TERRESTRIAL

#### Biological/Ecological/Other (7)

- Land Cover
- FAPAR
- Leaf area index
- Above ground biomass
- Soil carbon
- Fire disturbance
- Albedo

#### Hydrological (5)

- River discharge
- Water use
- Ground water
- Lakes
- Soil moisture

#### Cryospheric (4)

- Snow cover
- Glaciers and ice caps
- Ice sheets
- Permafrost