

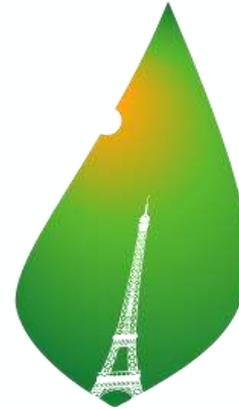


United Nations Framework
Convention on Climate Change

Tasked with preventing
'dangerous' human
interference with the climate
system

- Lead the international effort to combat climate change
- Body responsible for driving global climate action
- Make decisions on climate change mitigation and adaptation

→ Requires systematic observations of the climate system



Legally-binding treaty to limit global warming to well-below 2C, and preferably 1.5C

PARIS2015

"...to reach global peaking of greenhouse gas emissions as soon as possible ... and to undertake rapid reductions thereafter in accordance with best available science...to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century."



Satellites Earth Observations:

- global coverage
- uniformity
- rapid measurements & continuity

→ Take the pulse of our planet !

Complementary to other source of data (e.g., in situ, drones, airborne, measurements) to build global integrated observing system

ESA Climate Change Initiative ECVs

GCOS defined **55** Essential Climate Variables (ECVs) | **36** benefit from space observations | **27** generated by ESA's Climate Program

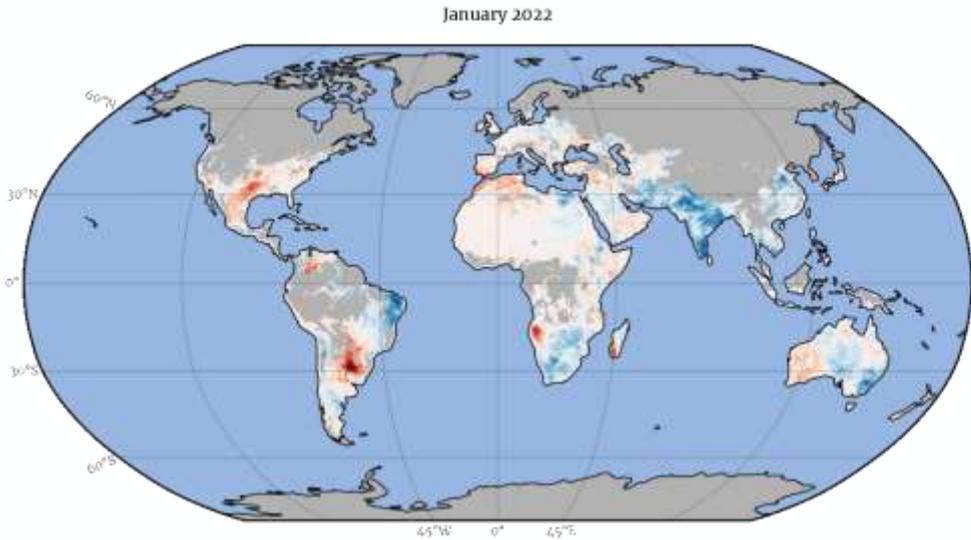


ESA EO's archived combined with data from third party and current missions

<https://climate.esa.int/data>

ESA Climate Change Initiative: Soil Moisture ECV

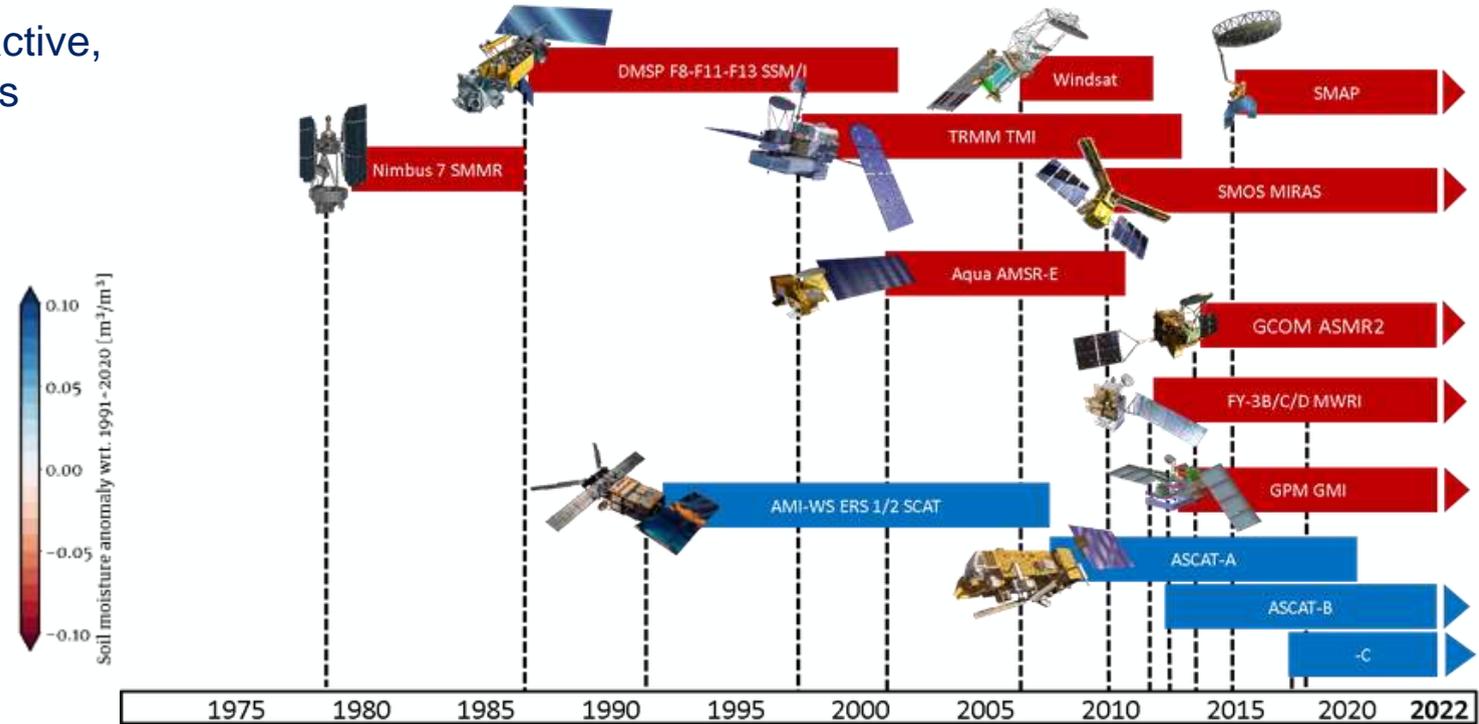
- Annually algorithmically updated global climate data record of soil moisture spanning > 40-yr
- 3 separate soil moisture products derived from active, passive and combined (active + passive) sensors
- 14 public releases to date



Soil moisture anomalies for the year 2022 derived from the ESA CCI COMBINED v08.1 product

Now generated operationally via C3S

<https://climate.esa.int/en/projects/soil-moisture/>



ESA CCI soil moisture v08.1 products utilize 5 active and 12 passive microwave sensors (released May 2022)

➔ V08.1 (1979-2022), already available at:

<https://www.esa-soilmoisture-cci.org/>

