# The Copernicus Climate Change Service
Evaluation and Quality Control framework

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Copernicus Services

The Copernicus Climate Change Service (C3S) is one of six services provided by Copernicus to inform primarily policy makers and public authorities on environmental information.

Surface air temperature anomaly (°C) in July 2017 relative to 1951-1980 average[1]

−4.1 −4.0 −2.0 −1.0 −0.5 −0.2 0.2 0.5 1.0 2.0 4.0 8.0
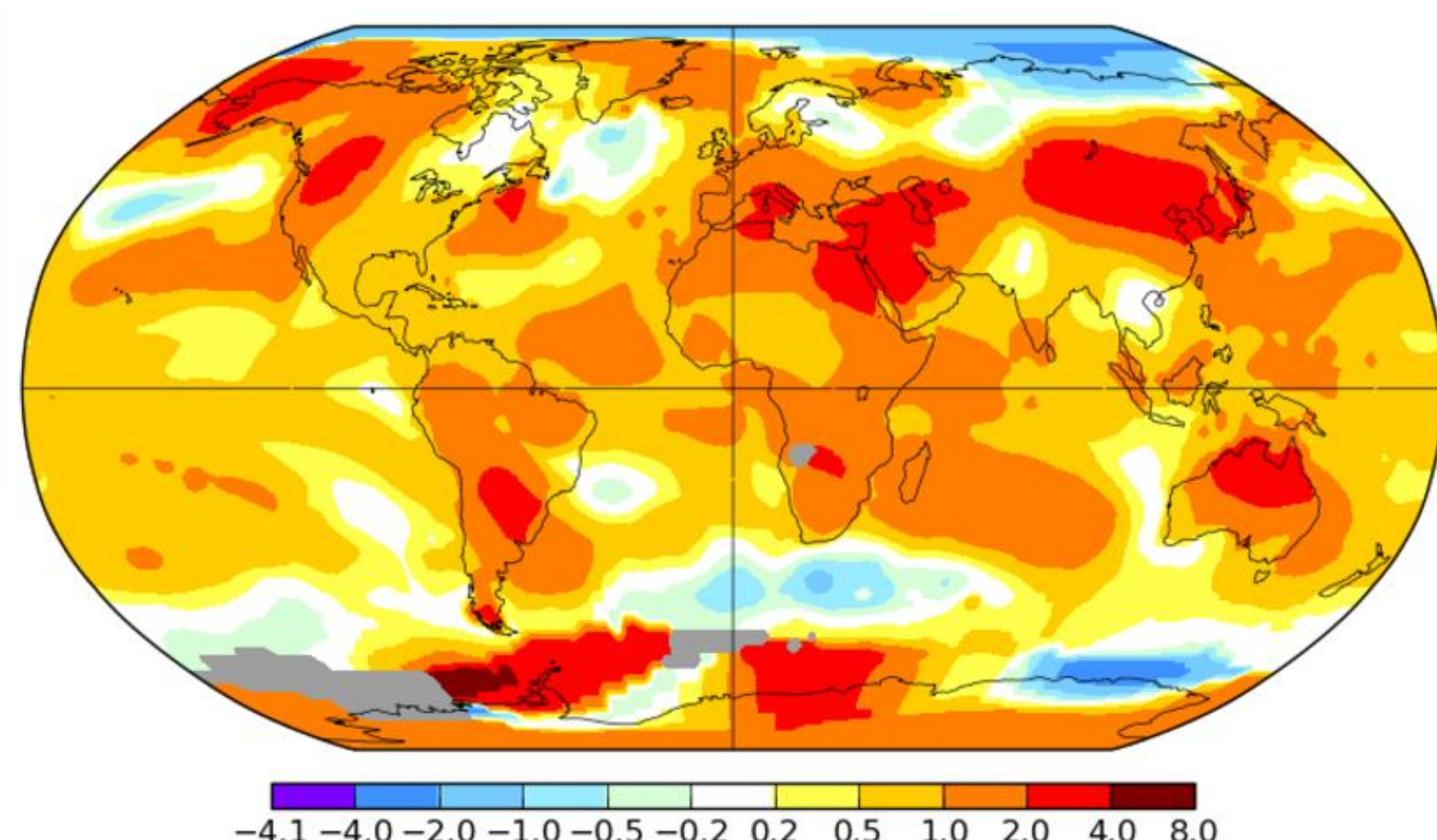
C3S Objective:

- Provide **reliable** information about the current, past and future state of climate through the Climate Data Store (CDS) which will help support **adaption** and **mitigation** of climate change

| Observations | Climate reanalysis | Seasonal forecasts | Climate projections |

## Climate Change Service

Climate Data Store

The climate data store is a database providing access and geophysical information for a large number of currently available datasets of essential climate variables (ECVs[3])

ECVs

It will include data from observations, climate reanalysis, seasonal forecasts and climate projections

The EQC section of the climate data store will provide an assessment of **technical performance** and **scientific quality** of datasets

The EQC will present relevant quality information for a variety of scientific abilities so that individuals can judge the applicability of various datasets for their specific application
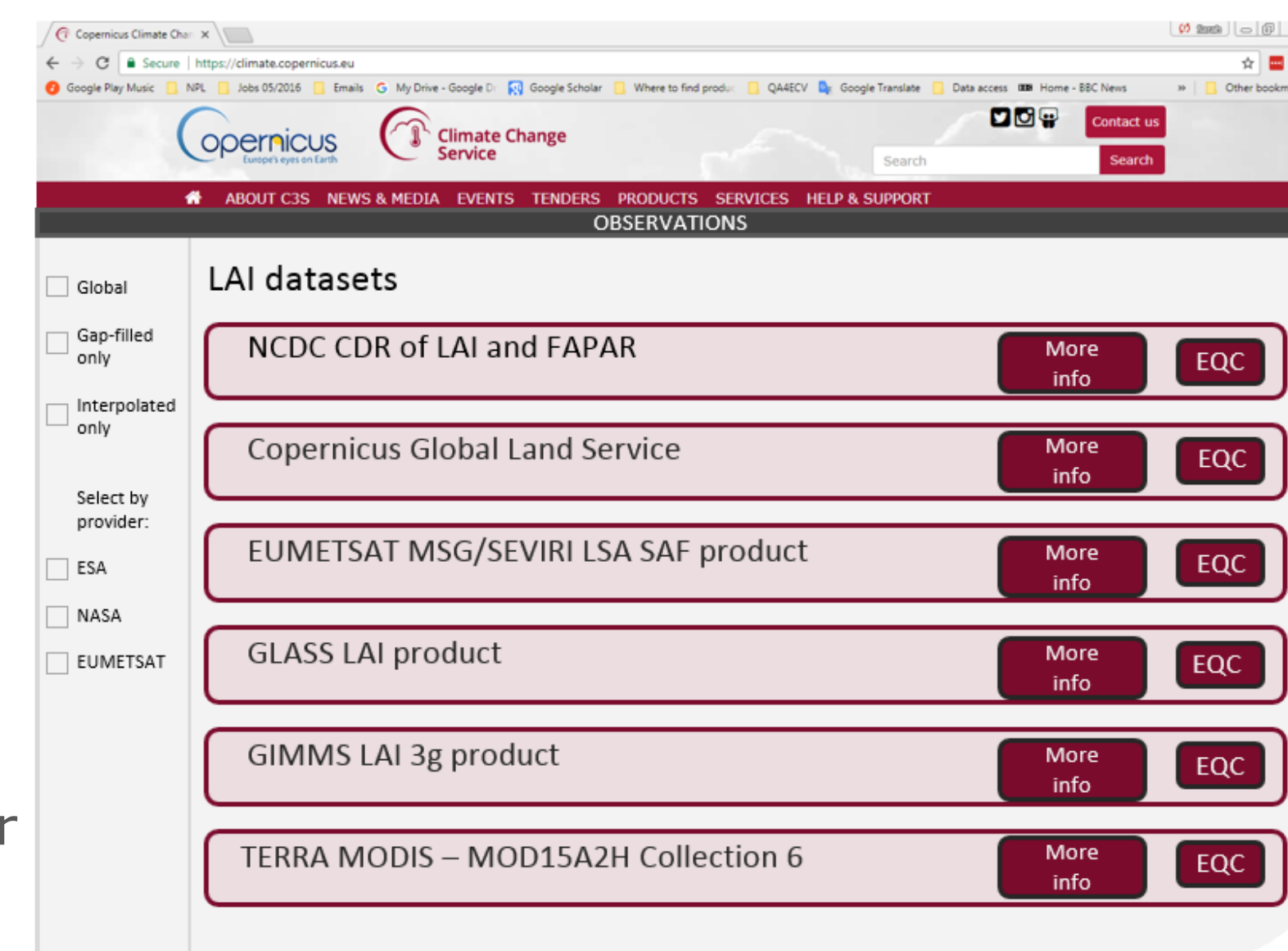
Are you a potential user?
We currently have a user survey asking potential users what they would want from the service. It has examples of our ideas and room for you to write yours. Please go to the link below[4] or use the QR code

Evaluation and Quality Control for Observations

Aim: Provide guidance for how to assess and present quality information for data derived from observations (from both satellite and in situ measures)

1 IDENTIFY GAPS IN QUALITY INFO

- Metrological Traceability & Uncertainties
- Performance Metrics against standards
- Documentary Traceability, Quality Indicators & Validation
- User Guidance & Support (Policy & Science)

ECV Observations available through C3S CDS

Fitness-for Purpose Evaluation (User & Application)

2 PROVIDE QUALITY ASSESSMENT FRAMEWORK

Start QA process

Product Details	0 %
Traceability	0 %
Quality Flags	0 %
Validation	0 %
Metrological Traceability	0 %
Assessment against standards	0 %

Generate QA summary

Develop a smart web form allowing quality information to be inputted by assessors. This information will then be automatically presented in a range of ways.

3 PRESENT QUALITY INFO ON THE CDS

$$R_E = a_0 + \frac{a_1 R_T - a_2 \hat{C}_L^2 C_E + a_2 C_E^2 + O}{C_T}$$

SECTIONS OF QUALITY BRIEF
- Assessment Status
- What is the Product?
- How do I get the product?
- What documentation is available?
- How has the product been produced?
- Product quality attributes
- How has the product been validated?
- Product uncertainties
- Applications of product

Traceability Chain[2]

Basic
Intermediate
Advanced

4 GATHER FEEDBACK FROM VARIETY OF USERS

Policy maker | Energy expert | Climate scientist | Flood risk manager

Soil Moisture | Leaf Area Index | fAPAR | Surface Air Temp | Precipitation | Ocean Colour | Albedo | Glaciers and Ice Caps | SST | Sea Level | Sea Ice | Ozone and Aerosol | CO_2 and CH_4 | Fire Disturbance | Snow Cover | Ice Sheets | Permafrost | Land Cover

1. GISS Surface Temperature Analysis using ERSST_v5 and smoothing radius 1200km on a Robinson map projection, GISTEMP Team, 2016: *GISS Surface Temperature Analysis (GISTEMP)*. NASA Goddard Institute for Space Studies. Dataset accessed 2017-08-21 at https://data.giss.nasa.gov/gistemp/.
2. Traceability chain of the Globalbedo product made in QA4ECV http://www.qa4ecv.eu/ecv/globalbedo/main
3. ECVs as defined by GCOS https://www.ncdc.noaa.gov/gosic/gcos-essential-climate-variable-ecv-data-access-matrix
4. C3S EQC for observations survey link: https://www.surveygizmo.com/s3/3555723/EQCOProject

Copernicus Europe's eyes on Earth