Climate Change

Copernicus Climate Change Service and the operationalisation of climate service provision

Conference Climate Science from Space

April 2021

Carlo Buontempo

ECMWF

Copernicus Europe's eyes on Earth | European Commission | ECMWF

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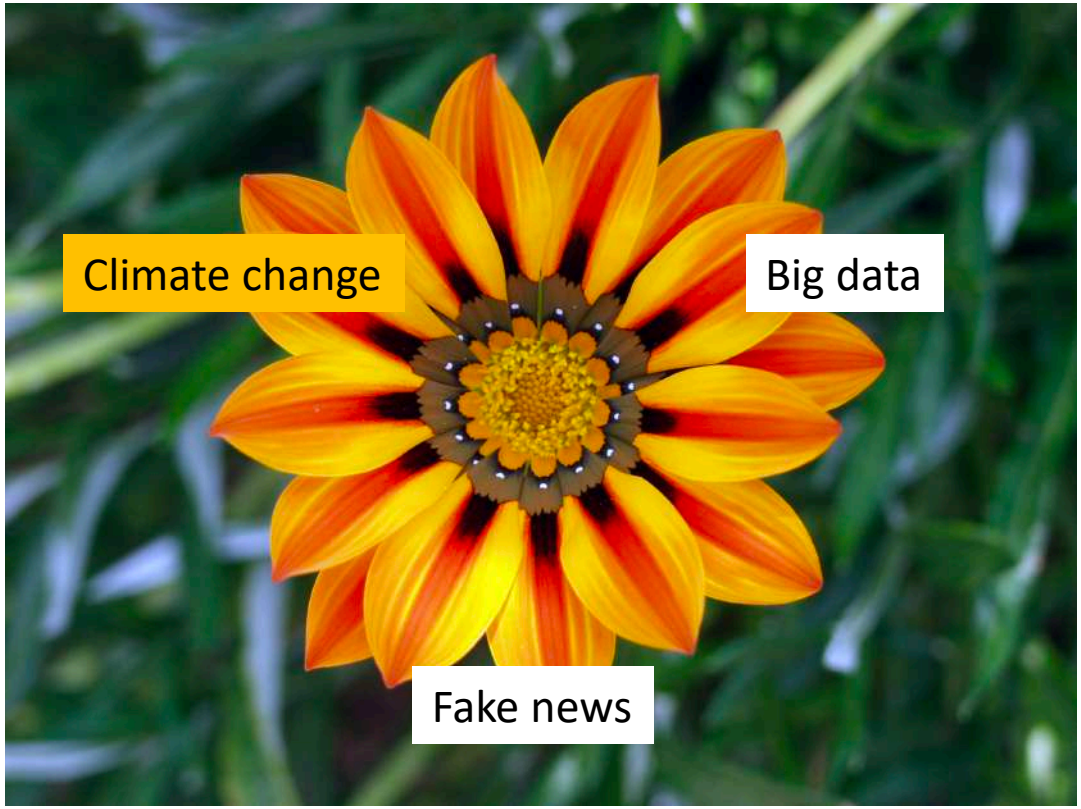
Challenges…



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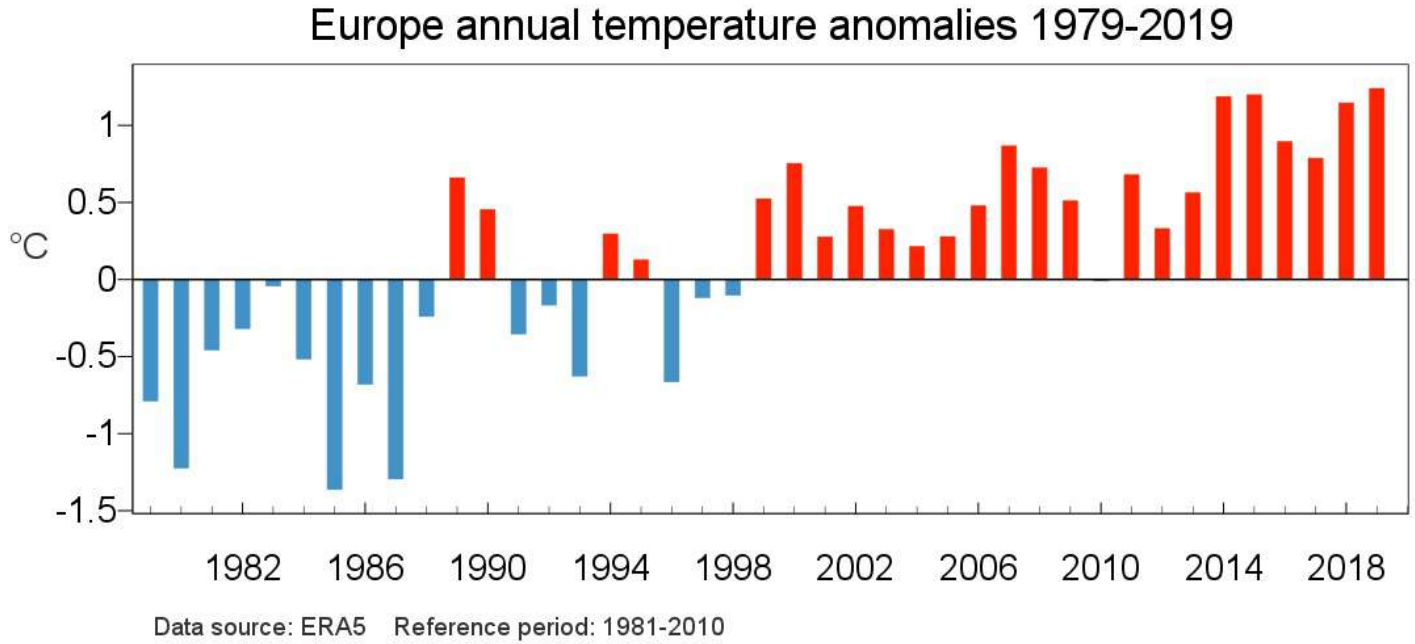
A changing climate …



Copernicus Climate Change Service
European State of the Climate | 2019

IMPLEMENTED BY ECMWF

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Energy

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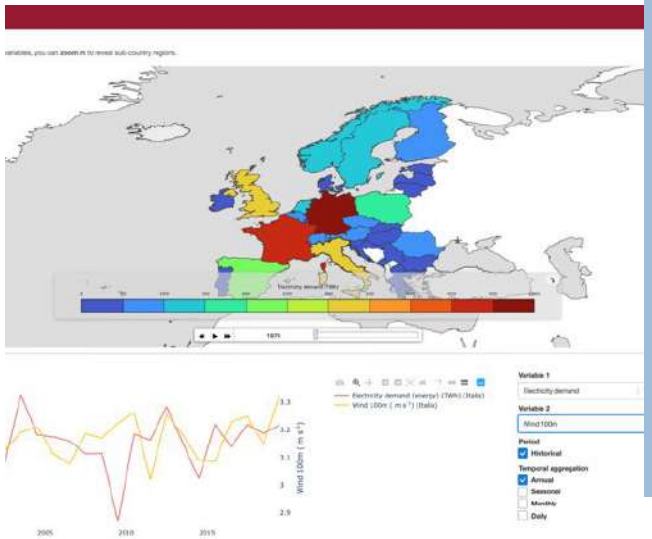
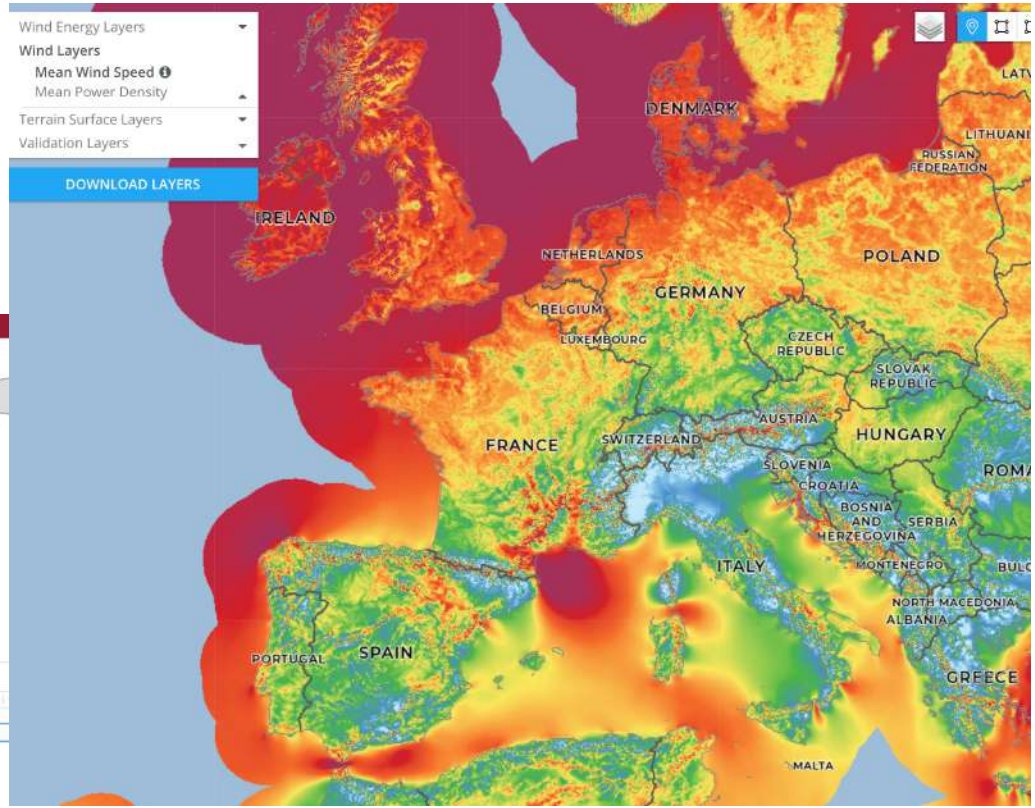
https://climate.copernicus.eu/operational-service-energy-sector





https://globalwindatlas.info/

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Finance

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To identify, gather and process data on **climate hazards** to develop high-quality financial disclosures aligned with the **Task Force on Climate-related Financial Disclosures**

Climate hazards data include “acute“and “chronic” hazards

Definition of relevant climate indicators

The Climate Data Factory

https://climate.copernicus.eu/climate-hazards-data-prepare-financial-institutions-future
https://financial-disclosures.climate.copernicus.eu/

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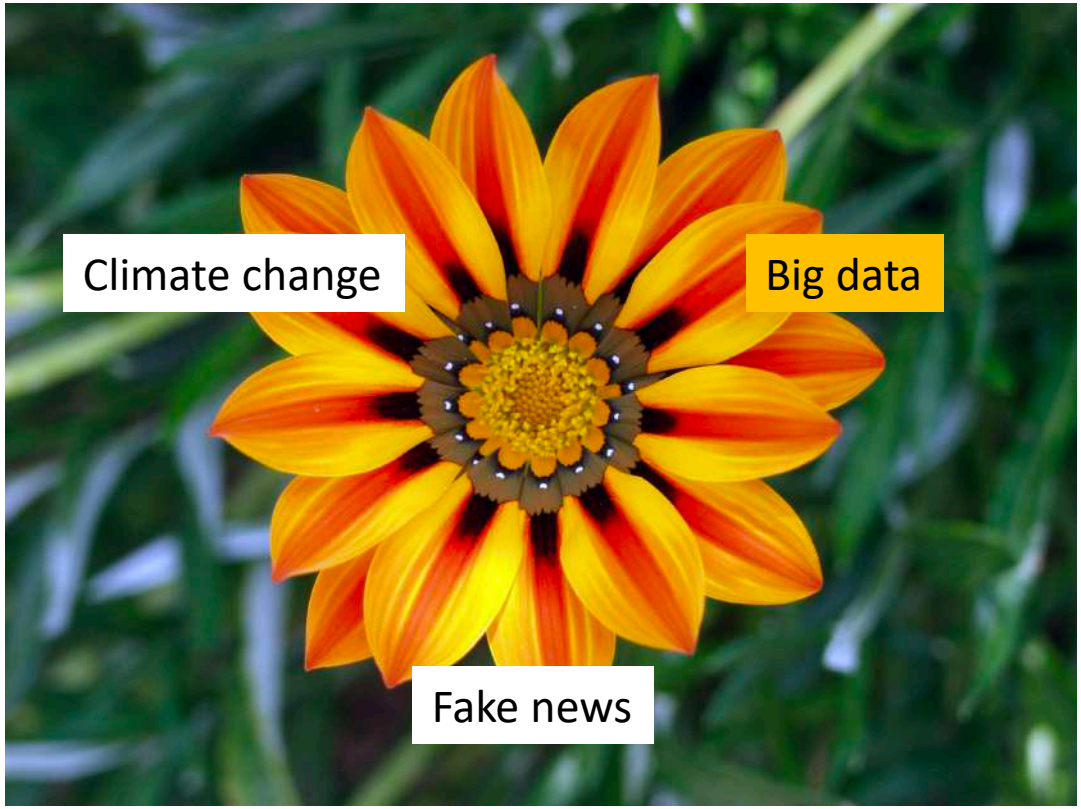
Challenges …



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Dealing with large data

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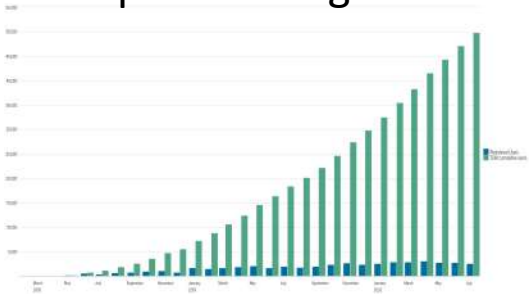
User registrations keep increasing



Most popular dataset ~8PB

Current record download: 105 TB /day

~100 datasets currently available

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What is C3S?

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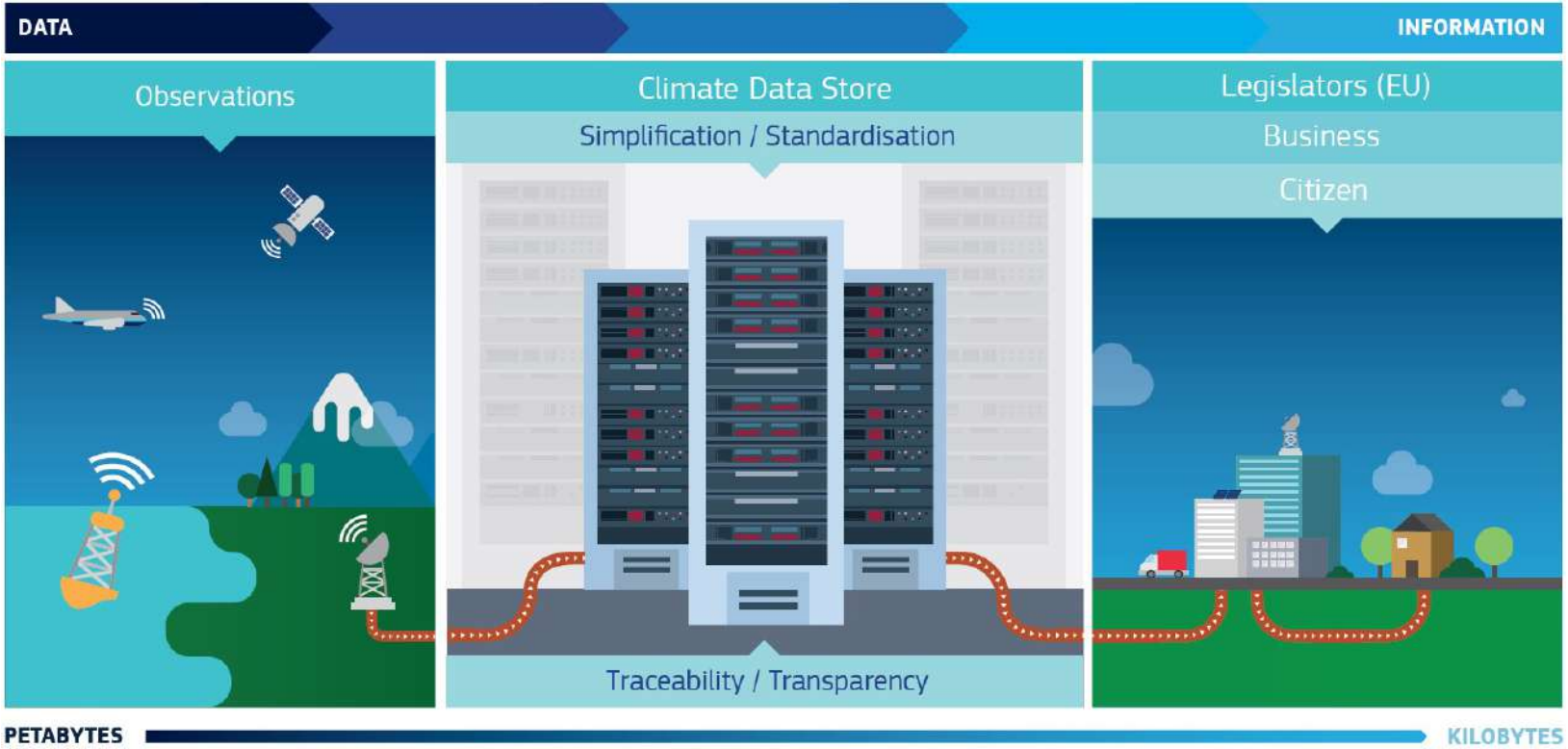

cds.climate.copernicus.eu

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State of the climate report

Climate data is being used **in the European State of the Climate**, **as climate indicators** and as a measure of the state of health of our environment.

Glaciers

Both globally and in Europe, glaciers are seeing a substantial and prolonged loss of ice mass.

Over most of the 20th century, the rate of mass loss was low and some periods of mass gain were observed at both regior and decadal scales. Since 1997, the monitored glaciers in Europe have lost 10 to 29 m of mass, with a regional averag loss of around 16 tonnes of freshwater per square metre. of around 16 tonnes of freshwater per square metre.

Ice thickness loss

Globally around

30 m loss ▼

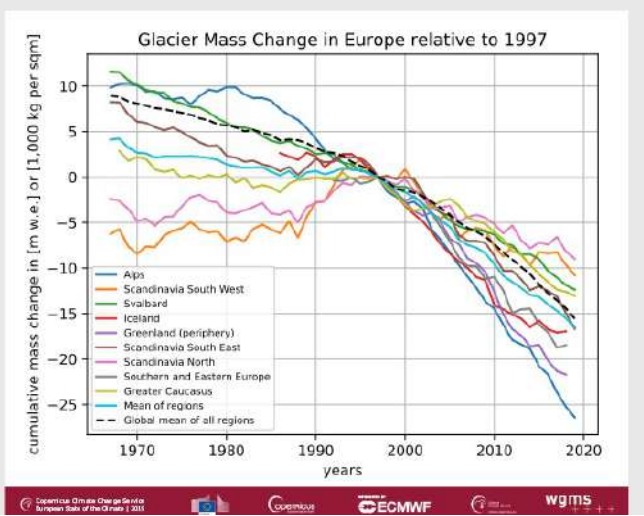
in ice thickness since 1957

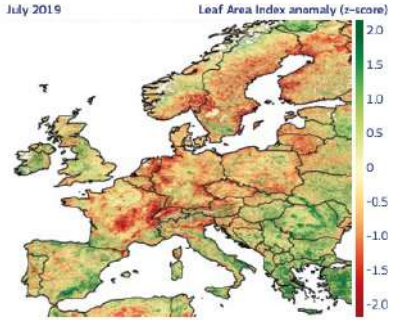
In Europe observed

4–35 m loss ▼

in ice thickness in southwestern Scandinavia and the Alps respectively, since the 1960s

Reference glacier network with more than 30 years of ongoing observations





Leaf Area Index anomalies for July 2019 as estimated from satellites

Data source: VGT/PROBA-V (PROBA-V_2018 anomaly given a climatology

Vegetation

Drought conditions across Europe became noticeable in June, bringing an impact on vegetation, as shown by below-average Leaf Area Index (LAI) values, particularly in northern Germany.

As the dry conditions persisted through the summer, LAI was below average in several regions of western Europe, the B and Scandinavia. By autumn, vegetation had sta in western Europe, other than in central Eu Peninsula. However, in southeaste Sea) LAI started to show h

Sea ice

In the Arctic, sea ice ex since 1979. The ns of the year time of ns annual minimum.

erating in the late 1990s and early September retreat has been levelling off since ate 2000s. In the Antarctic, the total sea ice extent has shown no clear long-term trend since 1979, although more prominent changes have occurred in certain sectors of the Southern Ocean.

Sea ice data record covering 1979–2019

In the Arctic, March sea ice extent

−3.2 ± 0.2% ▼

per decade during 1979–2019 (relative to the 1981–2010 average)

In the Arctic, September sea ice extent

−14.5 ± 1.2% ▼

per decade during 1979–2019 (relative to the 1981–2010 average)

In the Antarctic, no clear trend in total sea ice extent

Thursday: https://climate.copernicus.eu/ESOTC/2020

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Challenges …

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October 2020: Launch of EQC framework

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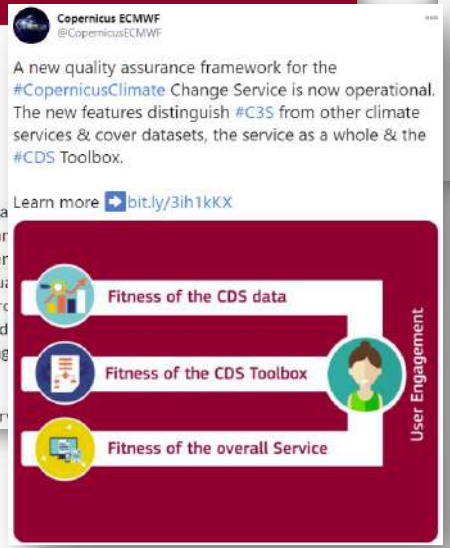

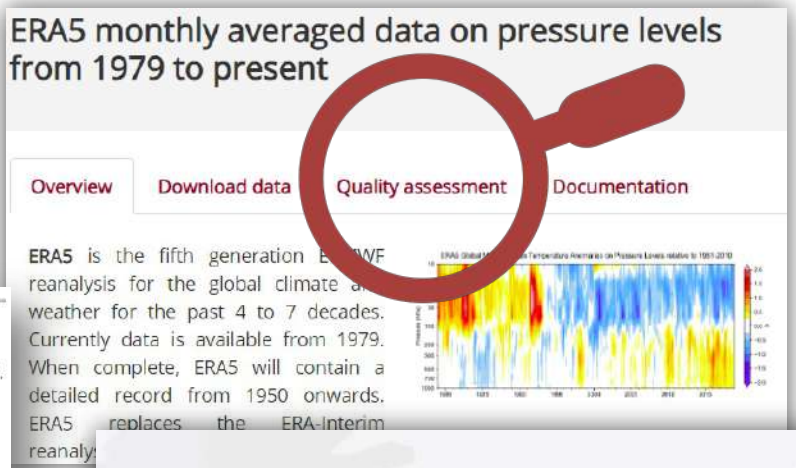

https://climate.copernicus.eu/ensuring-quality-performance-c3s

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Thank you for your attention

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