Global climate and extremes of 2018

Climate Change

Freja Vamborg, C3S team and friends

ECMWF, Copernicus Climate Change Service (C3S)

Copernicus Europe's eyes on Earth

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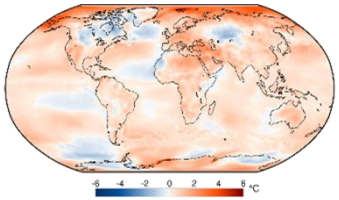
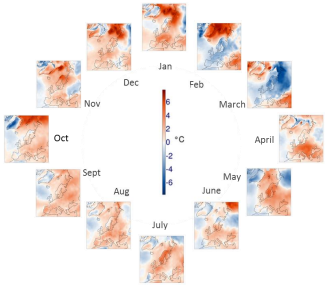
Outline

The Copernicus Programme

Climate of 2017

- Global temperatures
- Key events in Europe
- Impacts on …





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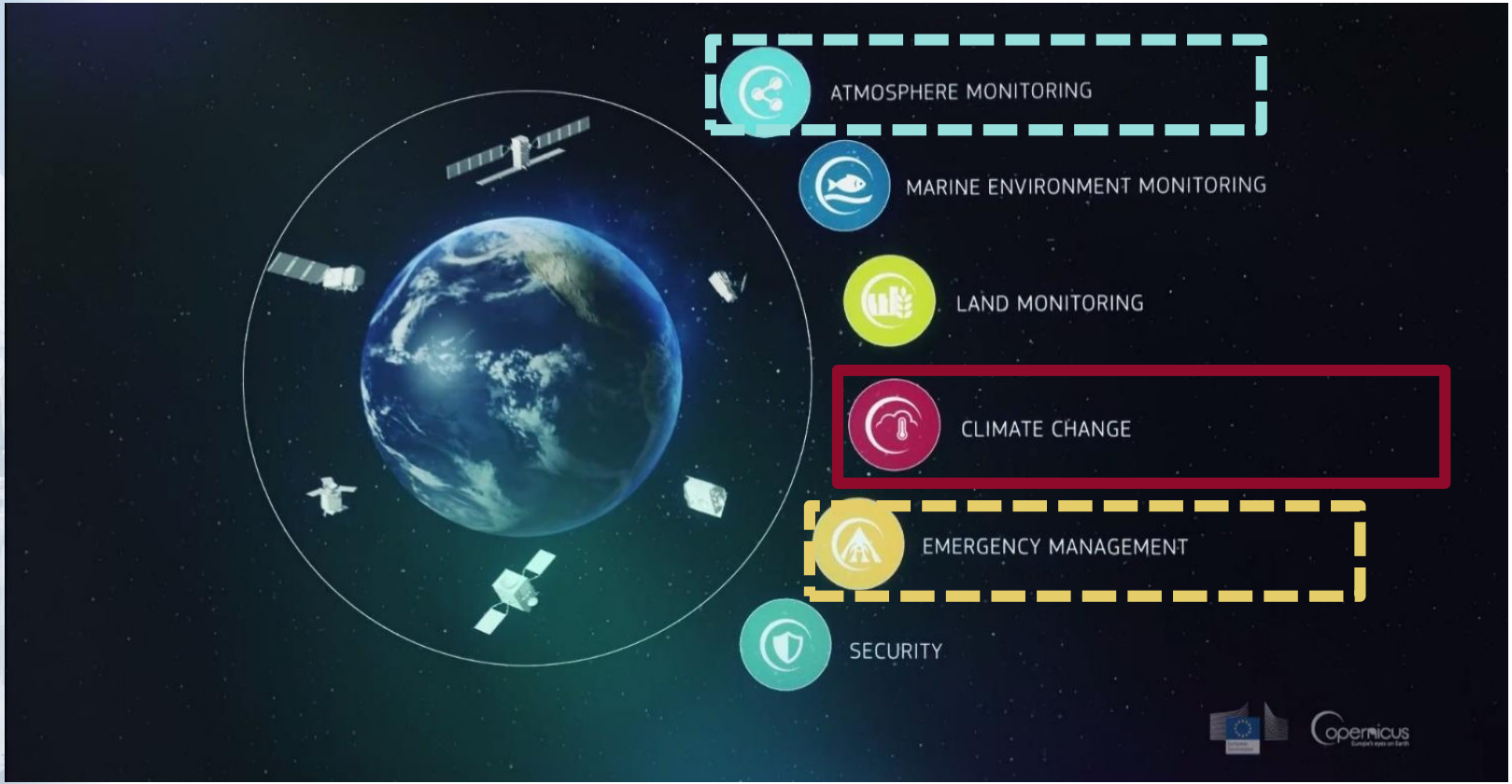
Copernicus: Earth observations and information services



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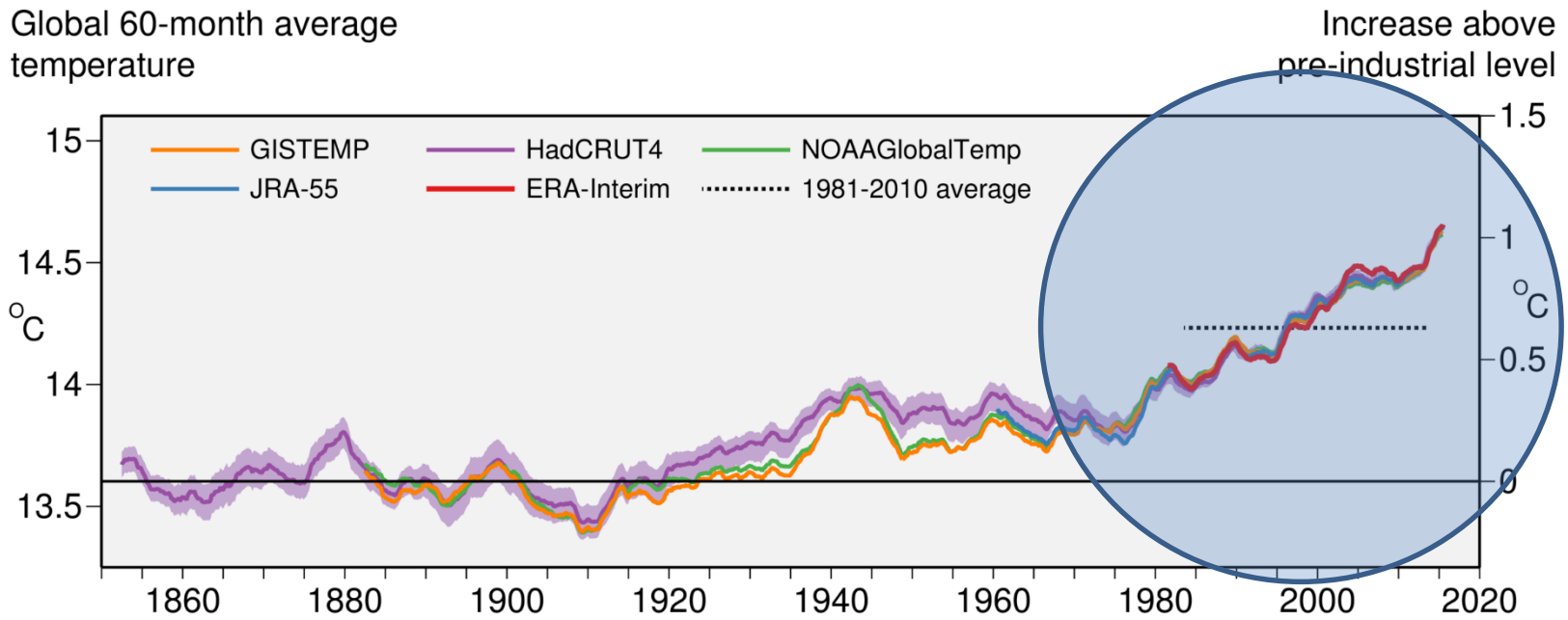
Temperature increase since pre-industrial



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2018 - one of four warmest years on record

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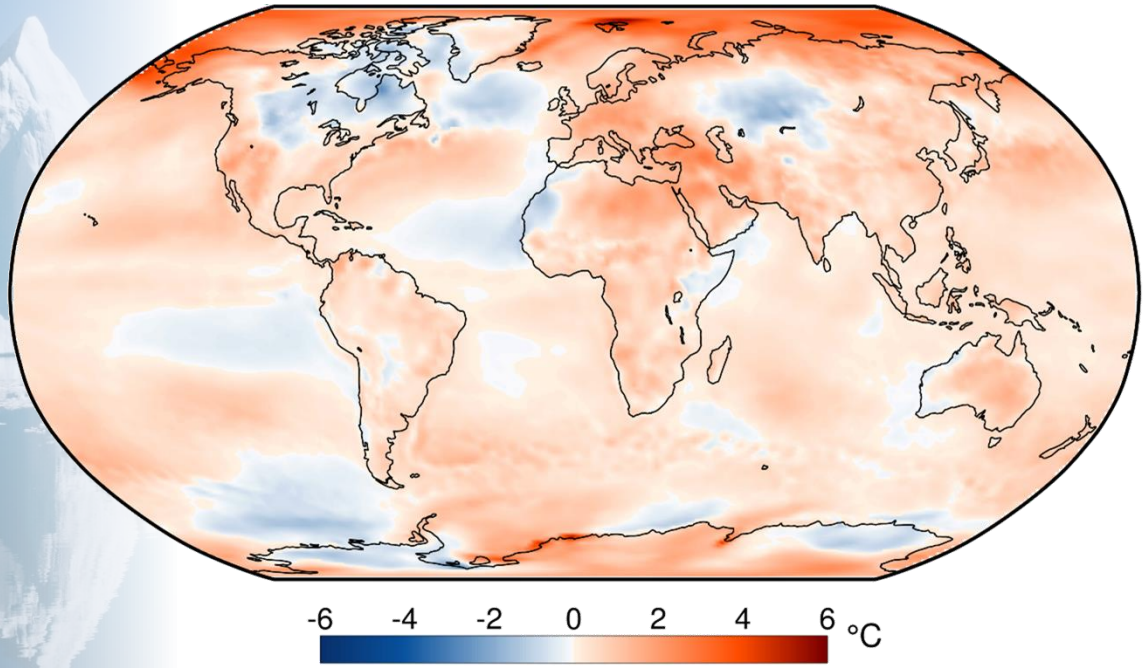
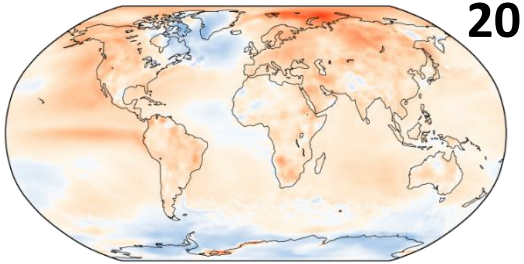
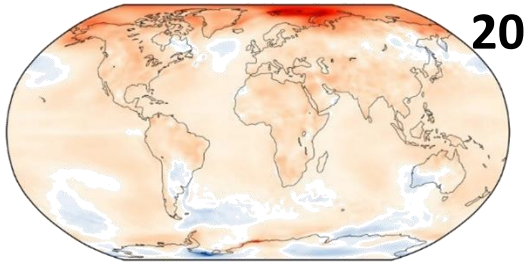
2018



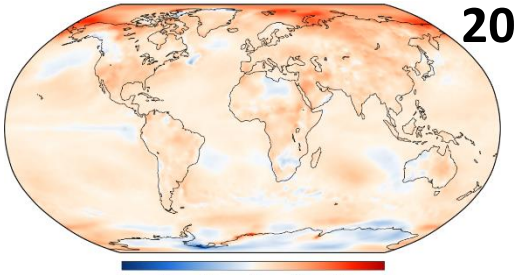
2015



2016



2017



Average surface air temperature compared to 1981-2010

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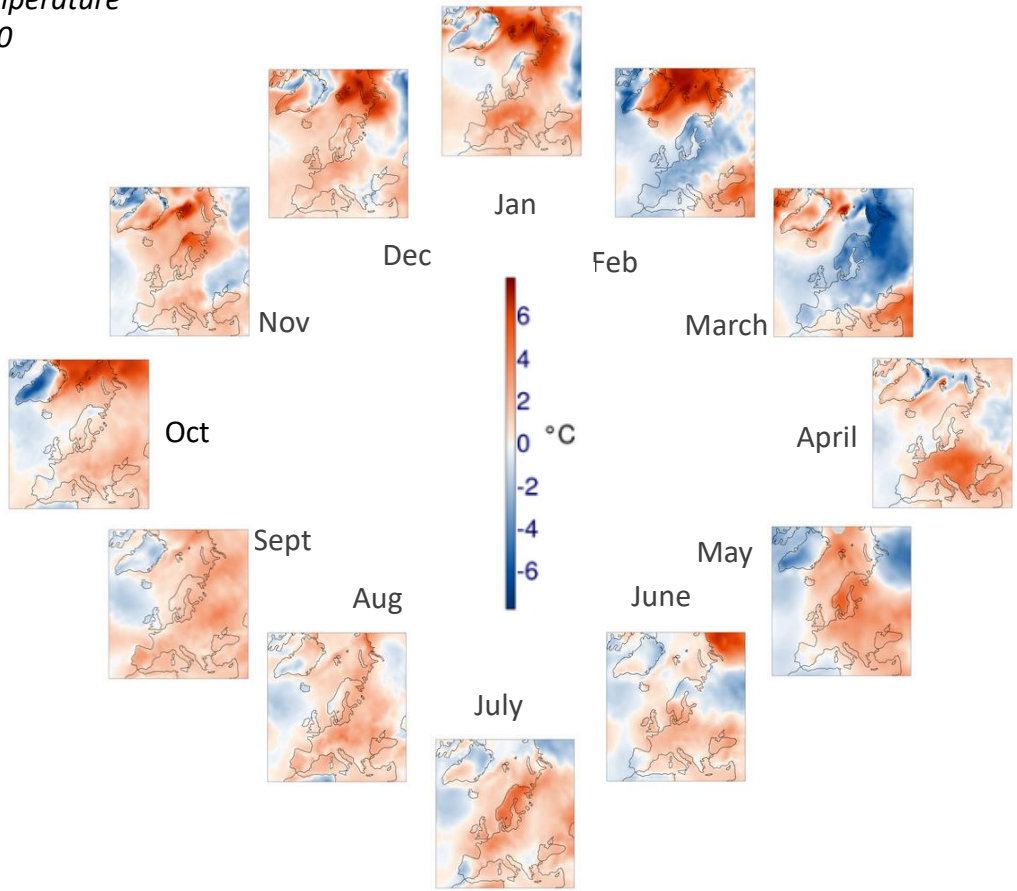
A year of European temperature anomalies

Average surface air temperature compared to 1981-2010



The beast from the East – cold across Europe

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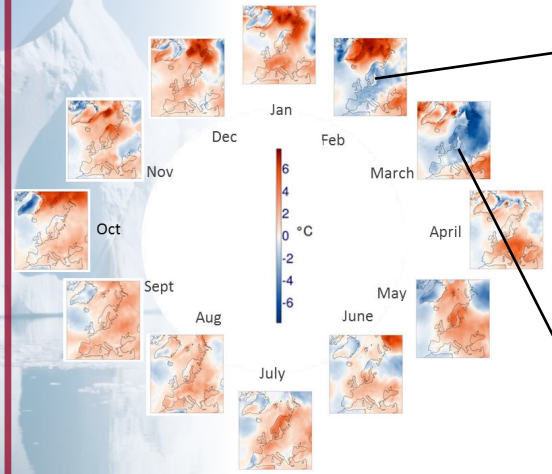

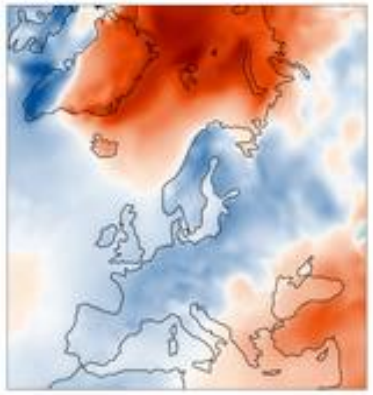

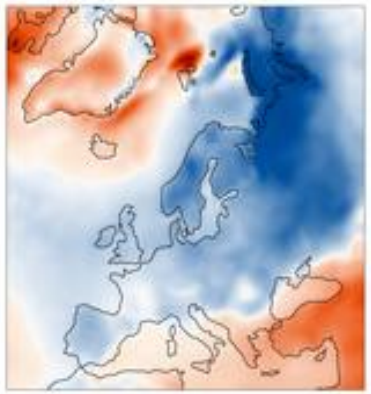

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ARCTIC WARMER
THAN EUROPE
climate update

April to early Autumn - persistent warmth

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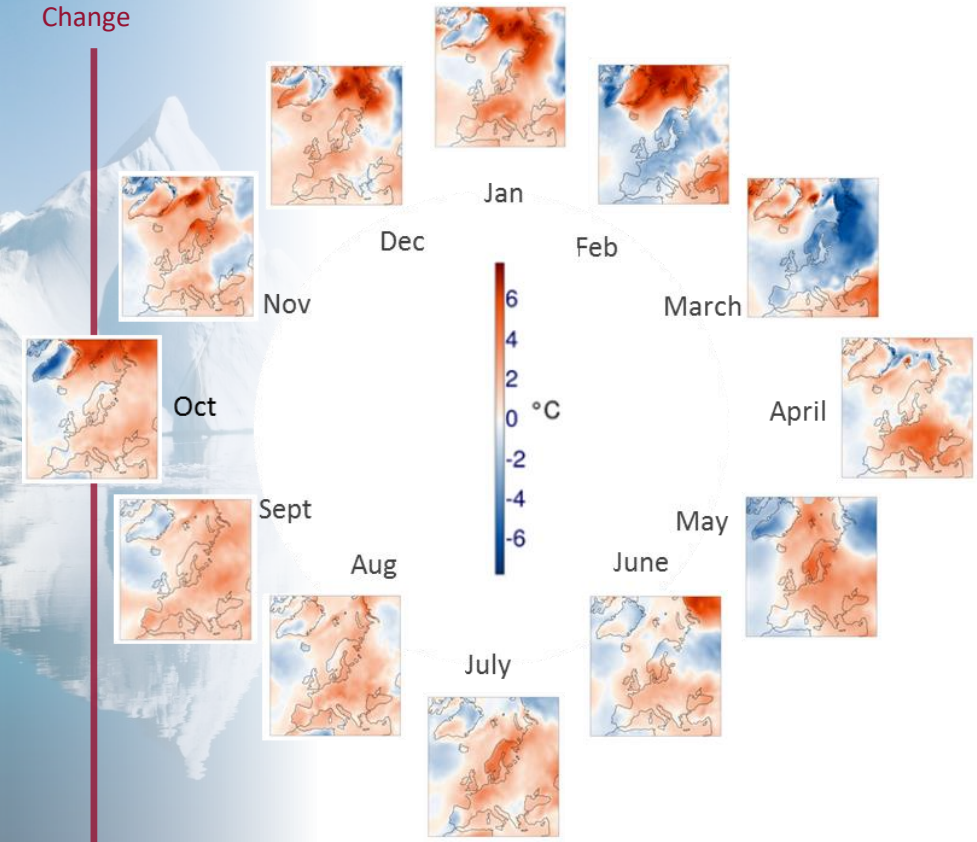

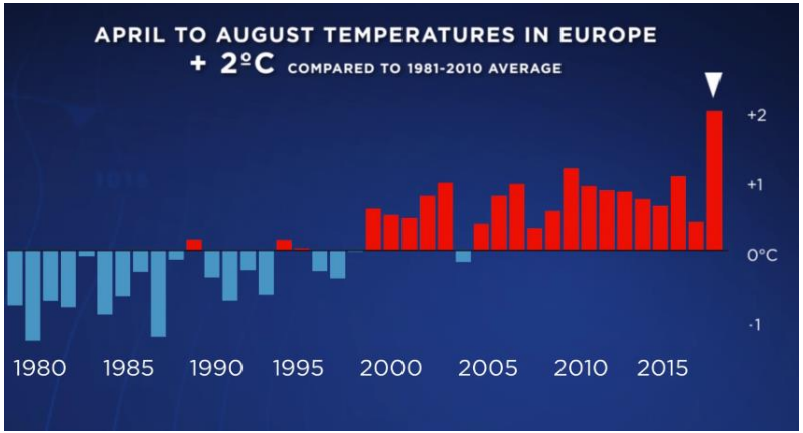

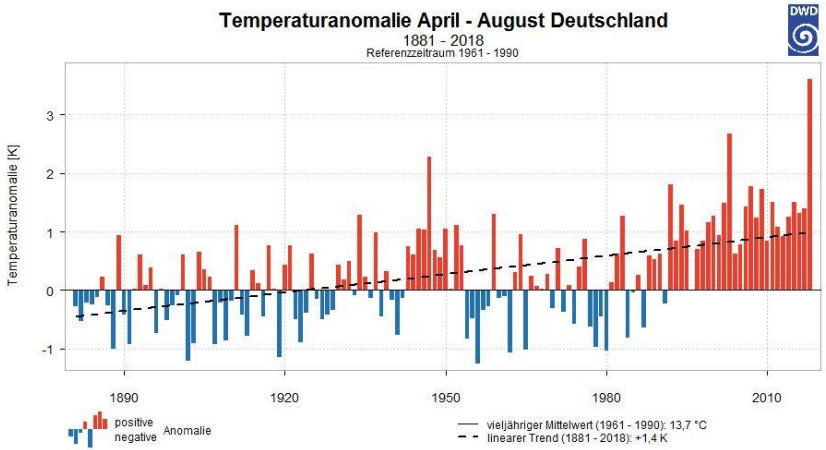

North/South saw a dry/wet divide

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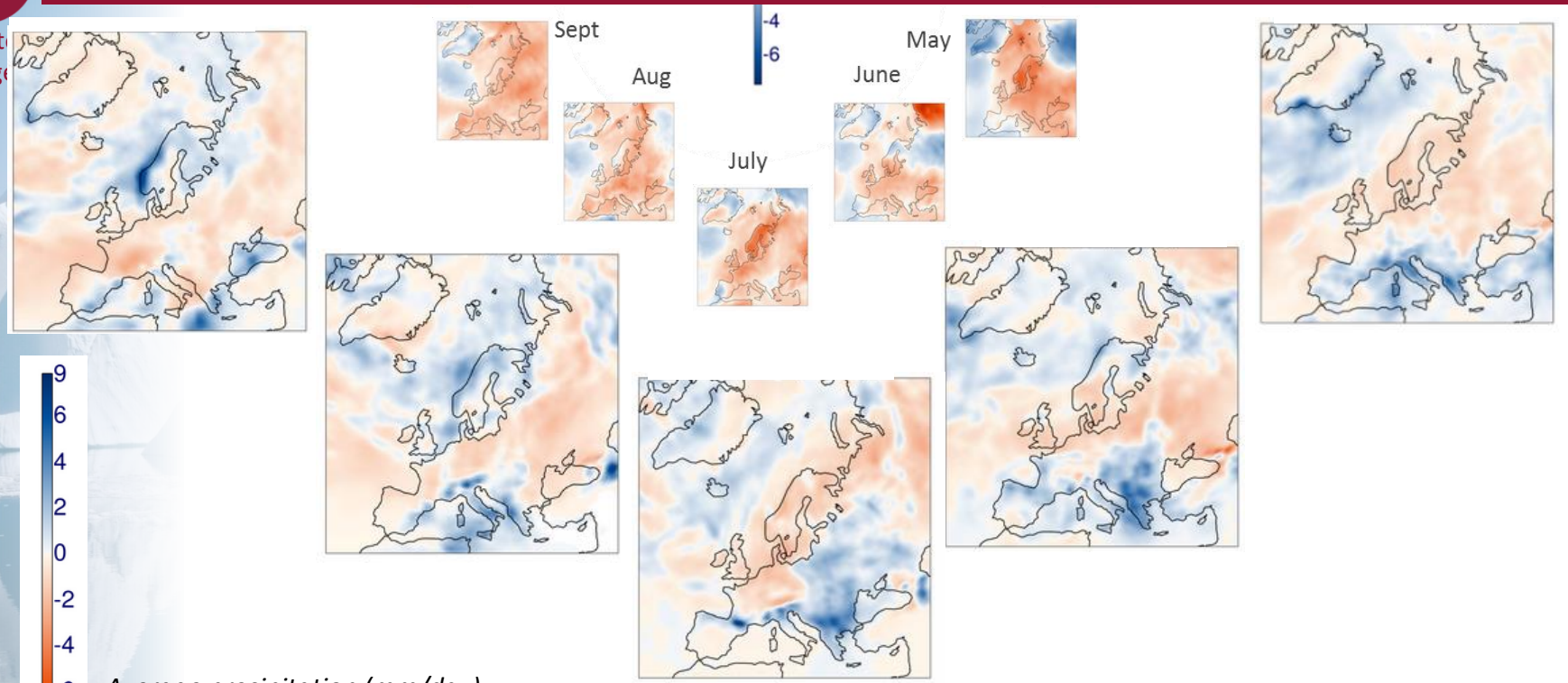

Average precipitation (mm/day) compared to 1981-2010

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Impacts on Alpine glaciers

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Pizolgletscher in Eastern Switzerland
Photos by Matthias Huss, GLAMOS

- Snow-rich winter but very warm and very sunny summer
- mass loss in 2018 amongst top ten since the 1960s
- Many of the small glaciers in the Alps are disintegrating due to the extreme mass losses of the last years

Contribution from WGMS

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Impacts on Hydrology – Soil Moisture

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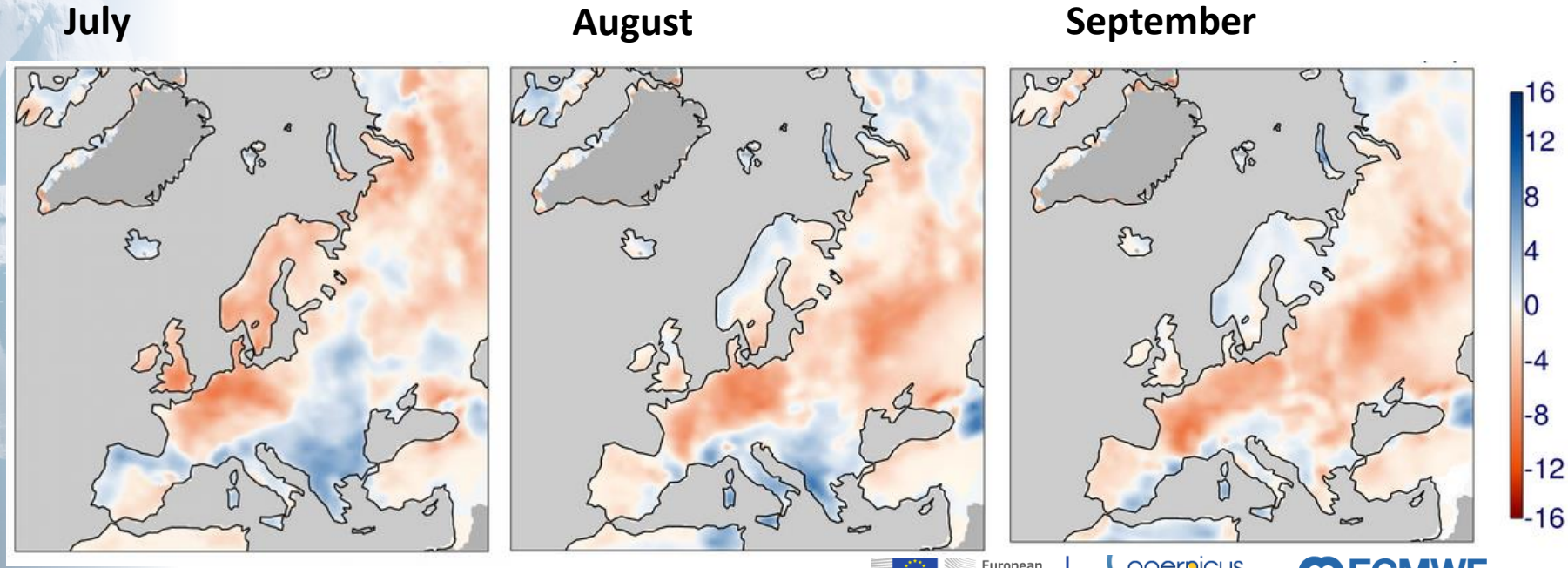
- Very low soil moisture in northern and central Europe, much wetter than average in south



Average top layer soil moisture (%) compared to 1981-2010

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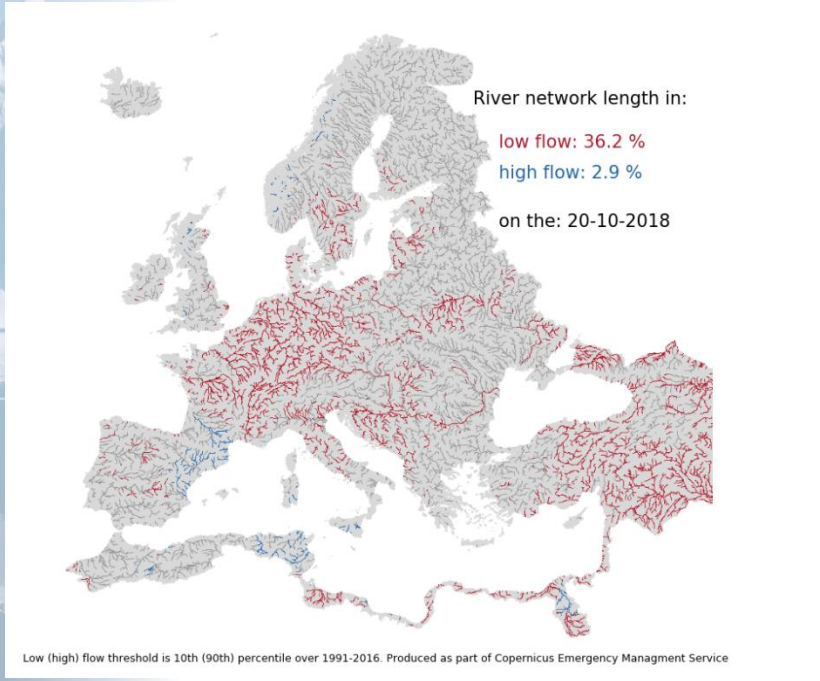
Impacts on Hydrology – River flow

- By end of summer Extremely low river flows, record-breaking in many central European rivers



Rivers with very lows flows

From: Shaun Harrigan, Louise Arnal (ECMWF, CEMS)

Phys.org

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Impacts on Wildfire Activity

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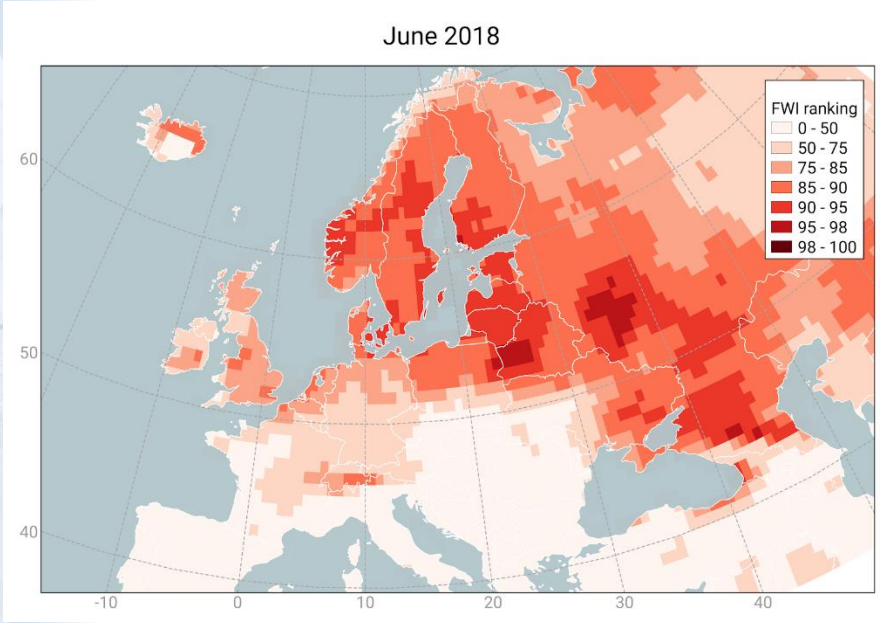
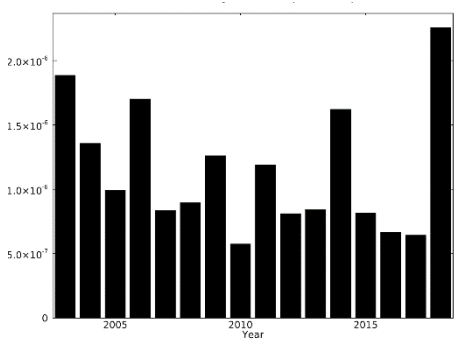
- Much above average fire danger across northern, central and eastern Europe



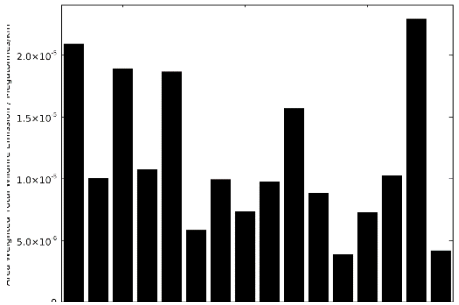
Fire danger classes calculated with the Global ECMWF Fire Forecast (GEFF) System

From: Claudia Vitolo (ECMWF, CEMS)

North EU



South EU



Fire emissions

From: Mark Parrington (ECMWF, CAMS)

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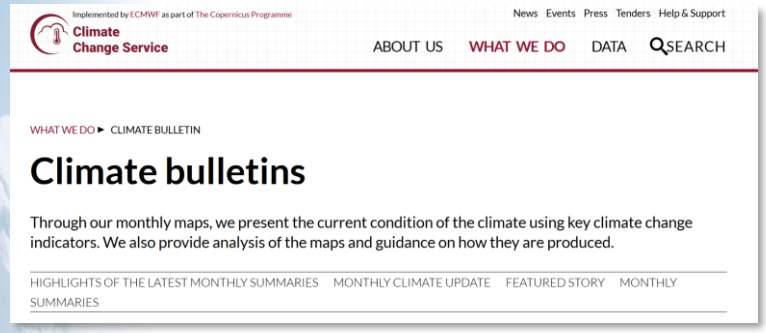
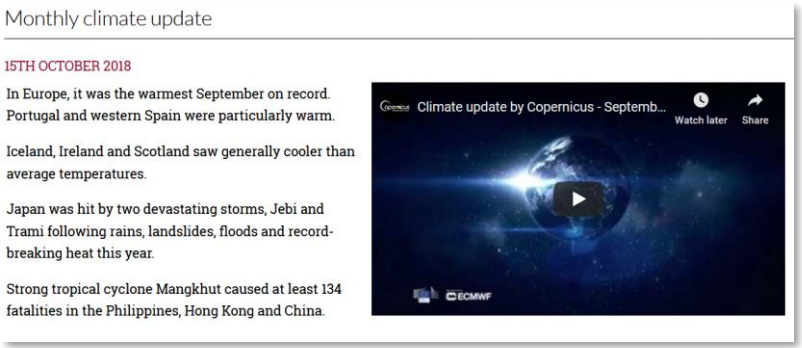
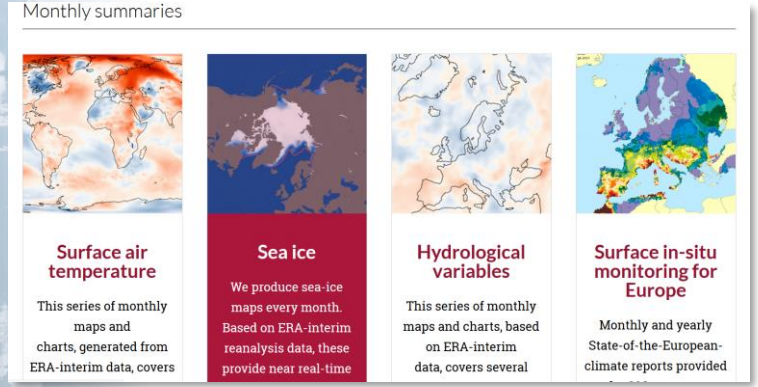
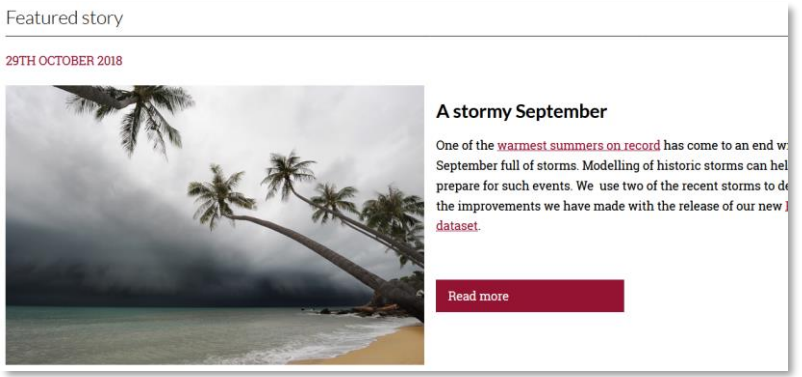
Monthly climate bulletins - first info 4th to 6th of each month









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European State of the Climate – March/April each year

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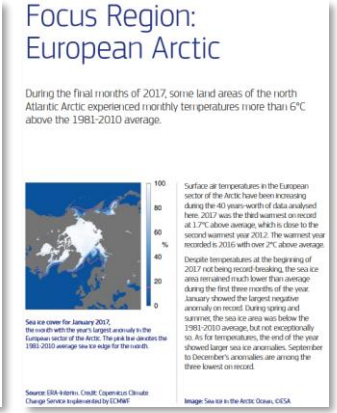

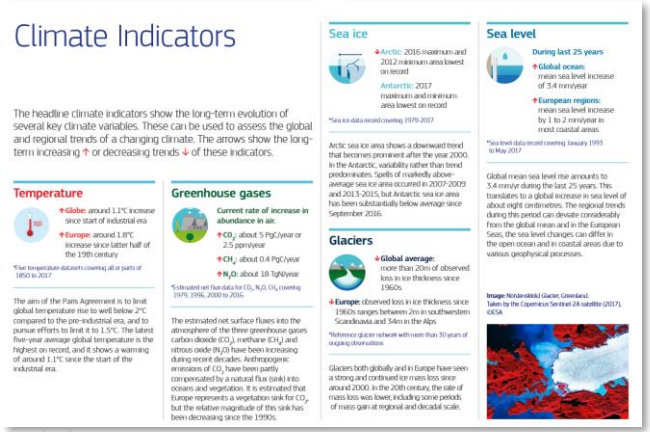

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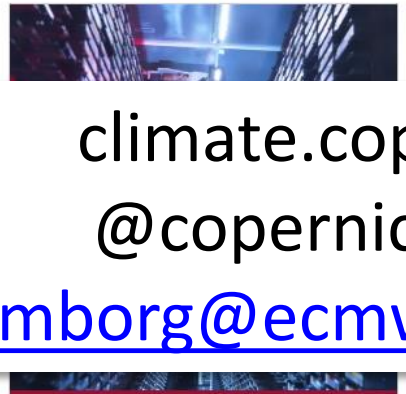
Climate bulletins



Climate Data Store

Data in action

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