7–10 June 2022 #UEF2022

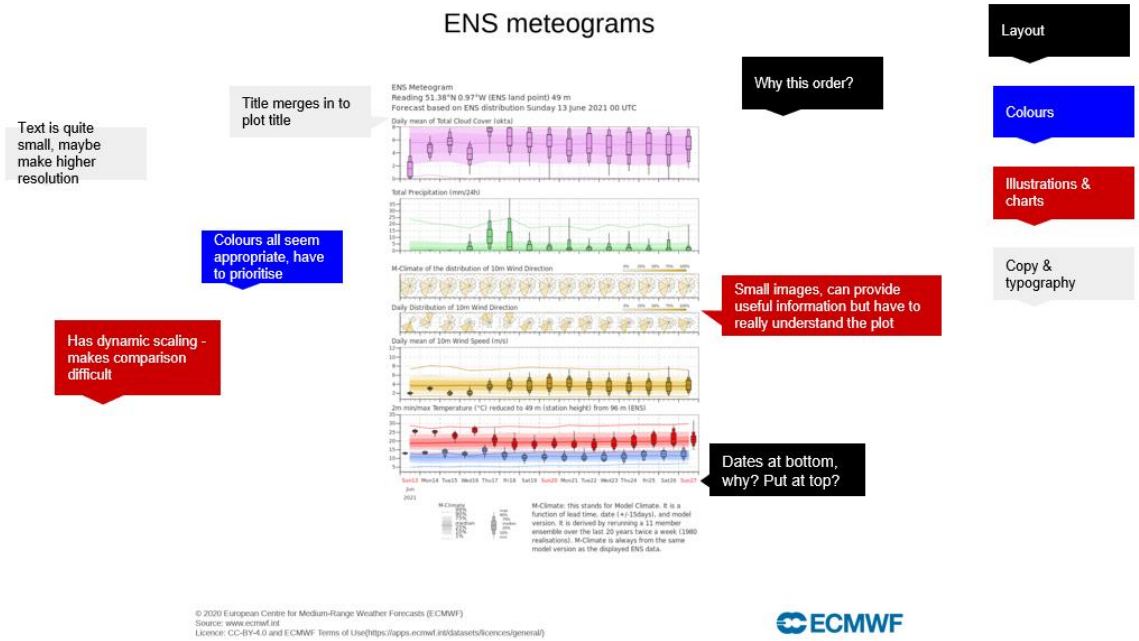
UEF 2022

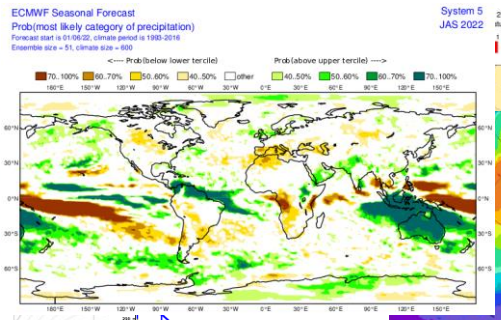
Visualising Meteorological Data

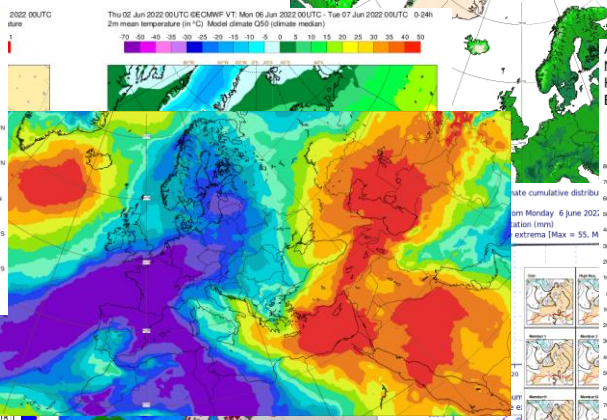
ECMWF

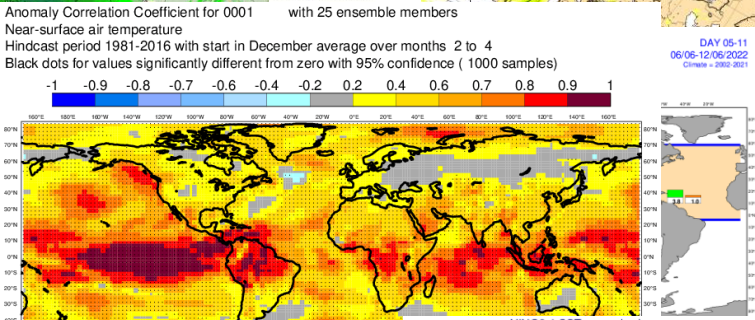
It started with UEF feedback and ideas and a training course…

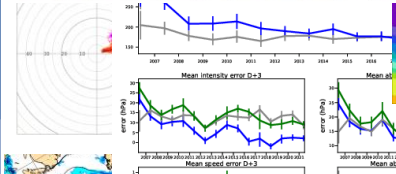
…and a exercise looking at ECMWF products



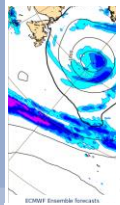

ECMWF Seasonal Forecast
Prob(most likely category of precipitation)
System 5
JAS 2022

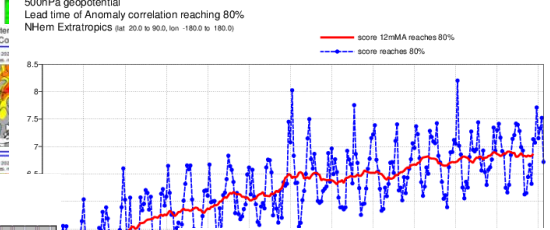


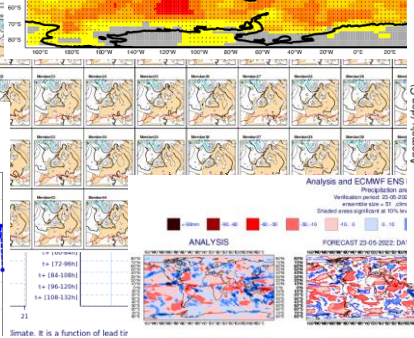

Anomaly Correlation Coefficient for 0001 with 25 ensemble members
Near-surface air temperature
Hindcast period 1981-2016 with start in December average over months 2 to 4
Black dots for values significantly different from zero with 95% confidence (1000 samples)
DAY 05-11
06/06-12/06/2022

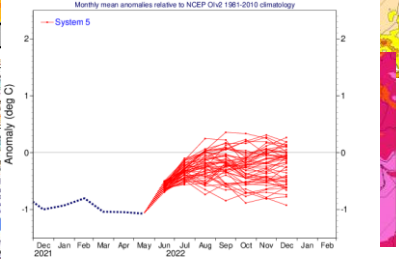


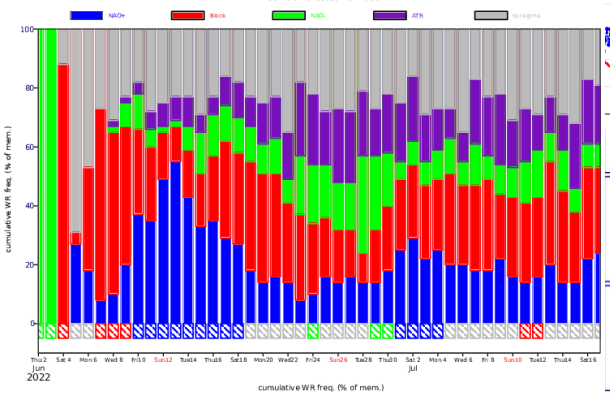
Mean intensity error D+3
Mean absolute speed error D+3
Mean speed error D+3
EM mean position error and ENS spread D+3, D+5
HRES error D+3
EM error D+3
ENS spread D+3
HRES error D+5
EM error D+5
ENS spread D+5

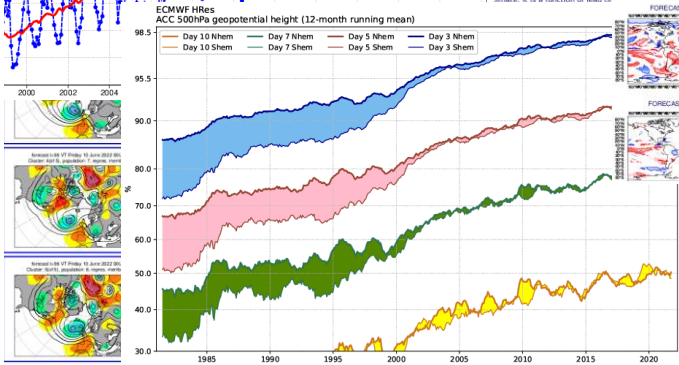


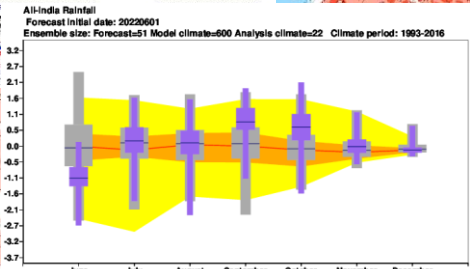

500hPa geopotential
Lead time of Anomaly correlation reaching 80%
NHem Extratropics
score 12mMA reaches 80%
score reaches 80%


Analysis and ECMWF ENS
ANALYSIS
FORECAST 23-05-2022: DAY 1-7
FORECAST 16-05-2022: DAY 8-14
FORECAST 12-05-2022: DAY 12-18
FORECAST 09-05-2022: DAY 15-21
FORECAST 05-05-2022: DAY 19-25


NINO3.4 SST anomaly plume
ECMWF forecast from 1 Jun 2022
Monthly mean anomalies relative to NCEP OIv2 1981-2010 climatology
System 5
Anomaly (deg C)


Weather Regime frequency
Ensemble Forecast: 20220602
NAO+
Block
NAO-
ATR
cumulative WR freq. (% of mem.)

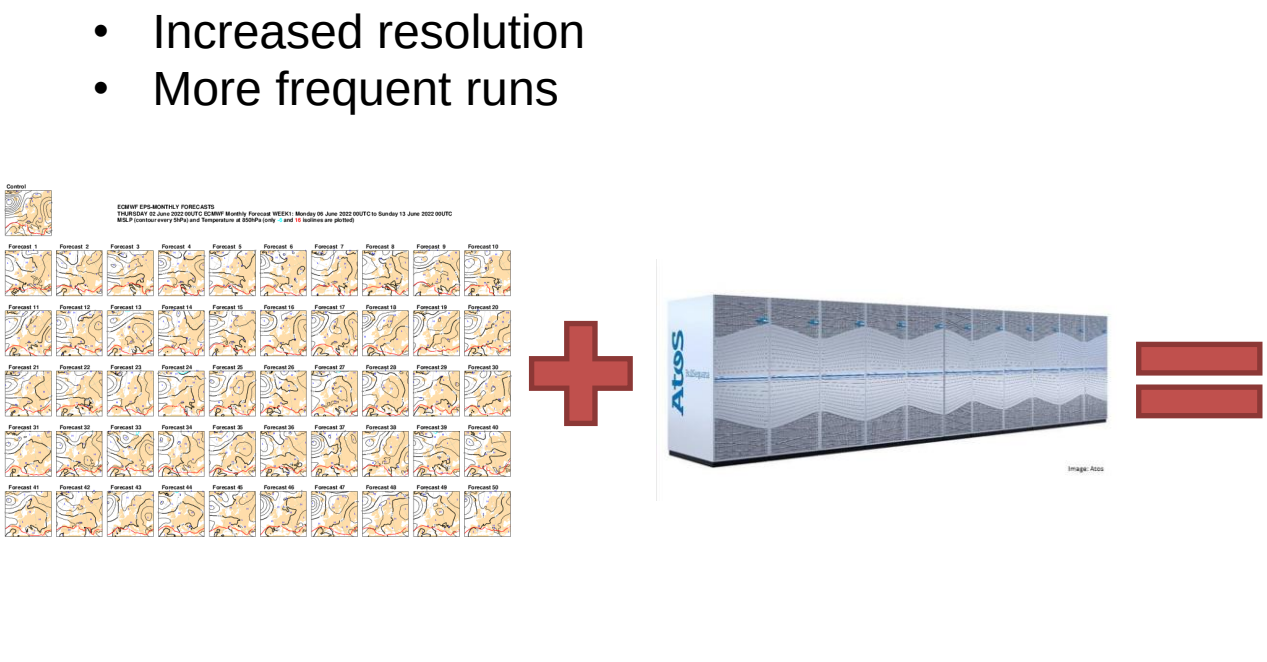

ECMWF HRes
ACC 500hPa geopotential height (12-month running mean)
Day 10 Nhem
Day 7 Nhem
Day 5 Nhem
Day 3 Nhem
Day 10 Shem
Day 7 Shem
Day 5 Shem
Day 3 Shem


All-India Rainfall
Forecast initial date: 20220601
Ensemble size: Forecast=51 Model climate=600 Analysis climate=22 Climate period: 1993-2016

With the new Atos and 48r1…

Data volumes increase due to:

- Increased number of ensemble members
- Increased resolution
- More frequent runs



With the new Atos and 48r1…

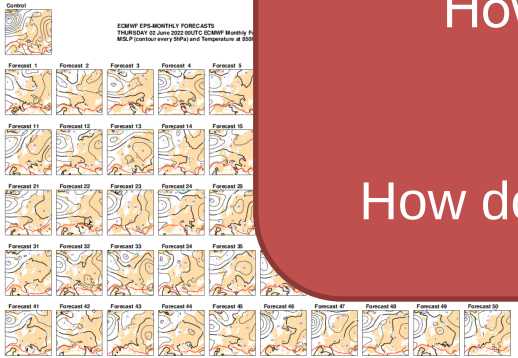
Data volumes increase due to:

- Increa
- Incre
- More

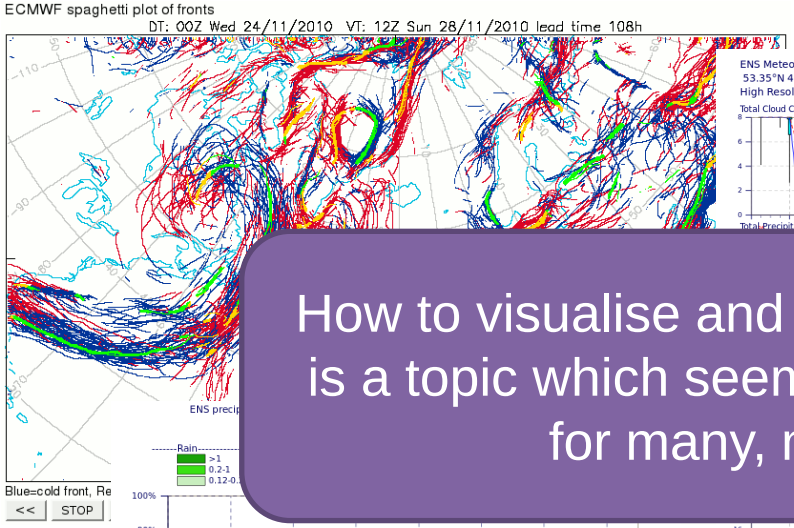
How do we process all the data so it's useable?

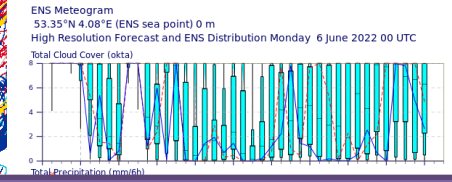
How do we visualise all this data so it's understandable?

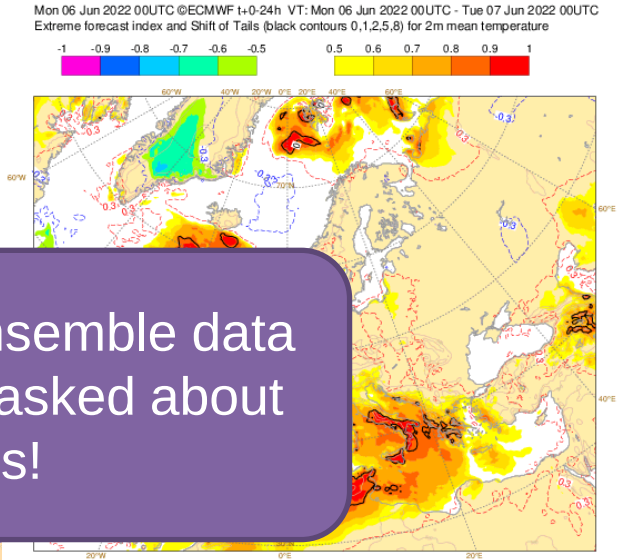
How do we make this data available to users?



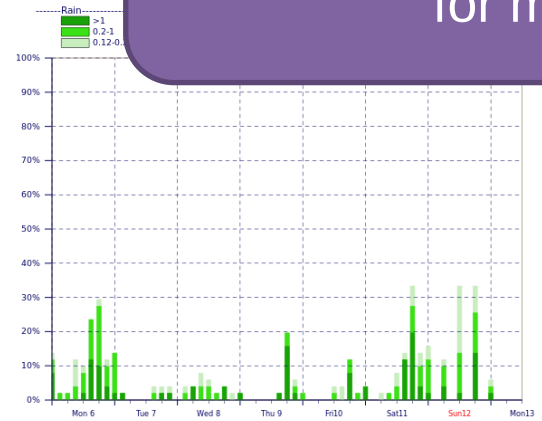
Ensemble Data visualisation and communication

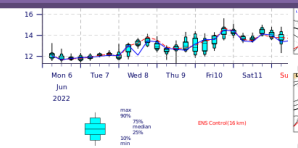


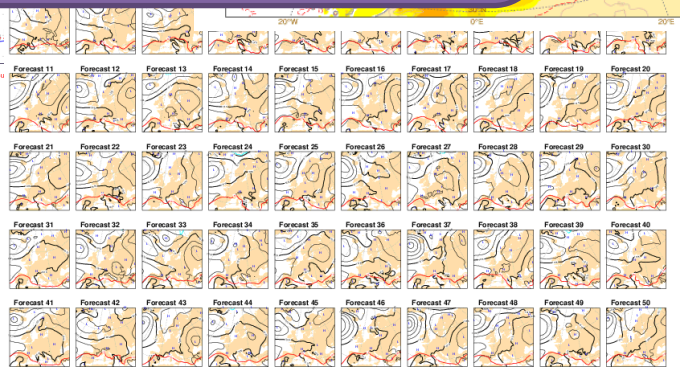




How to visualise and communicate ensemble data is a topic which seems to have been asked about for many, many, many years!

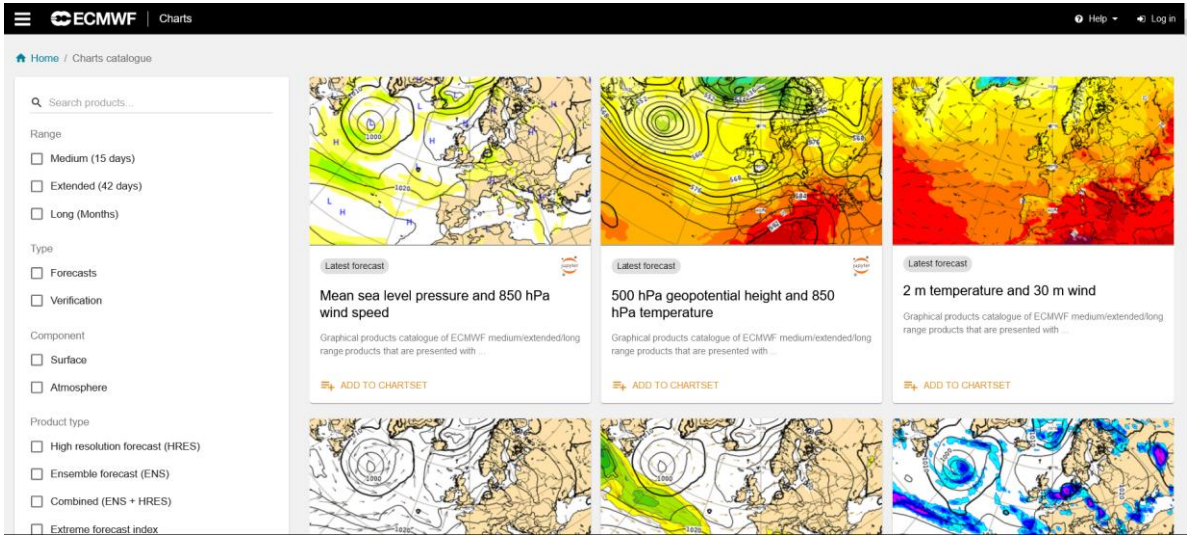




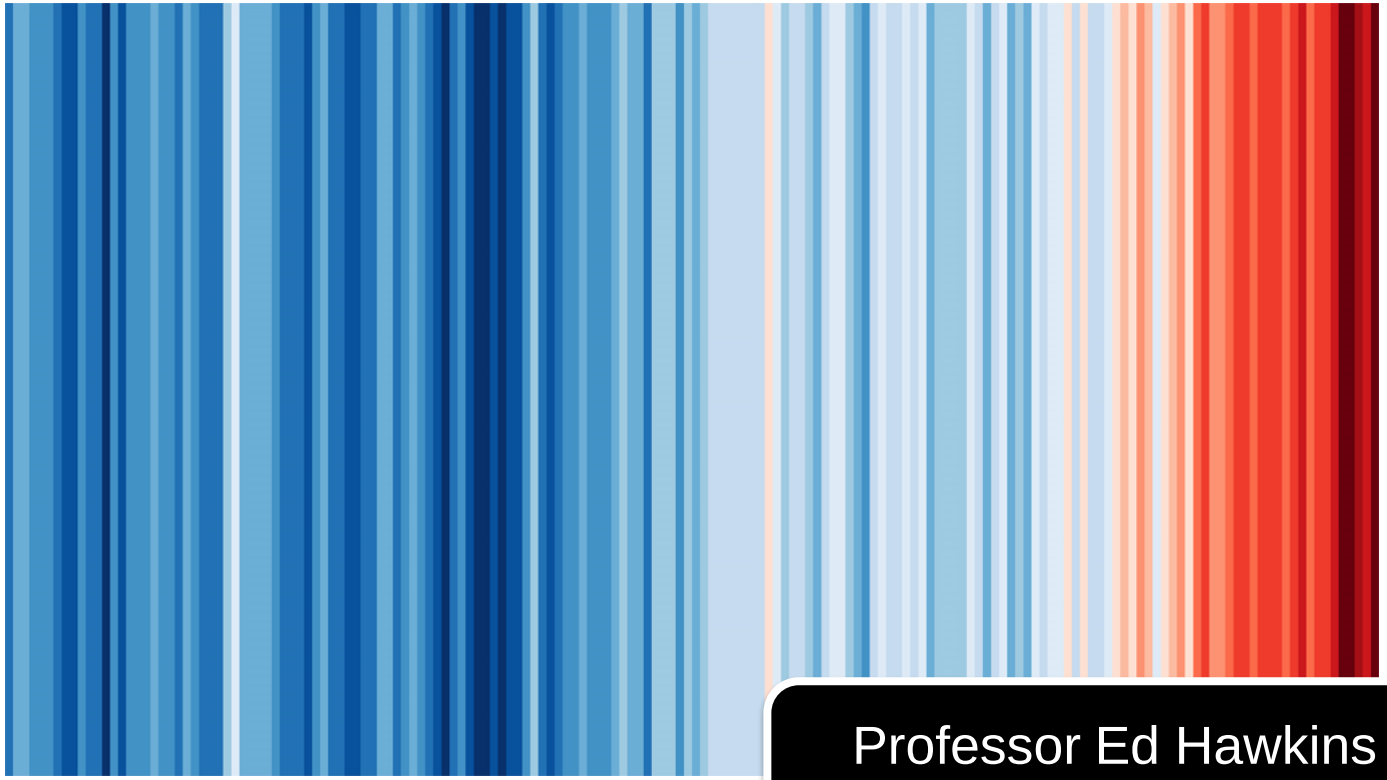


Open Data Initiatives

Need to not only make the raw data accessible but develop products which use it e.g. OpenCharts and Jupyter Notebooks



Climate Data Visualisation #ClimateStripes

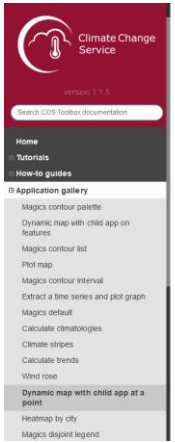


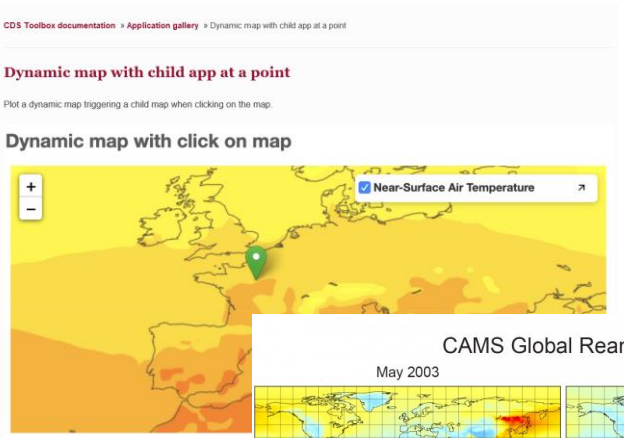
Professor Ed Hawkins will be talking in just a few minutes!!!!!

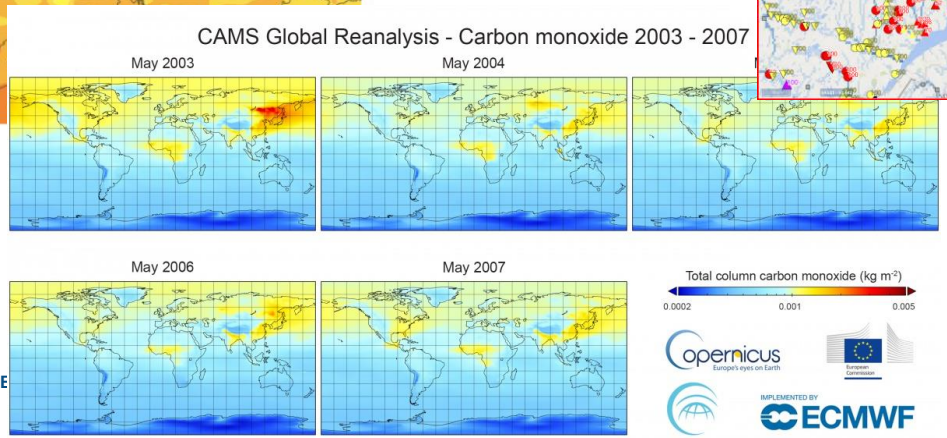
Climate Change Service

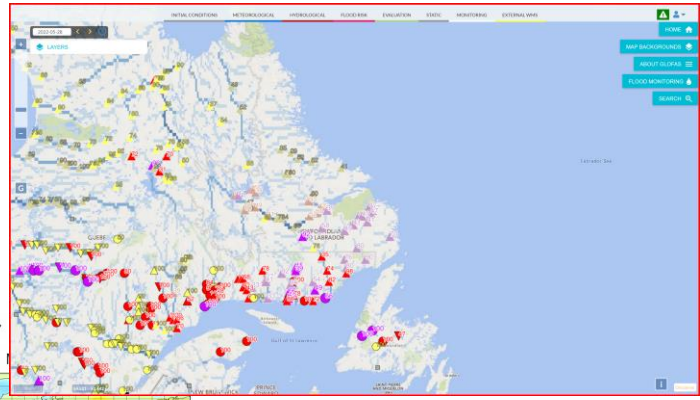
Atmosphere Monitoring Service

Emergency Management Service









ECMWF

EUROPE

UEF2022 Thematic Areas

- Presenting and visualising meteorological data
- Communicating forecast and climate data
- Technology to display and process meteorological data
- Data visualisation and understanding in other fields

11/12 June 2022 #VisMetHack

Hackathon 2022

Visualising Meteorological Data

ECMWF

Challenges:

- Visualising data - #VisData
- Telling stories with data - #StorytellingData
- Data processing - #101MemberEnsemble
- Open - #OpenHack

Encompassing meteorological, climate and hydrological data and visualisation!

11/12 June 2022
In-person at ECMWF HQ, Reading, UK

More information and registration:

- https://events.ecmwf.int/event/305/
- Google 'ECMWF Hackathon 2022'
- @ECMWF #VisMetHack on Twitter
- GitHub https://github.com/vismethack

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UEF 2022

Visualising Meteorological Data

ECMWF