

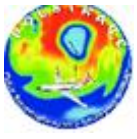
# How ECMWF supports field campaigns

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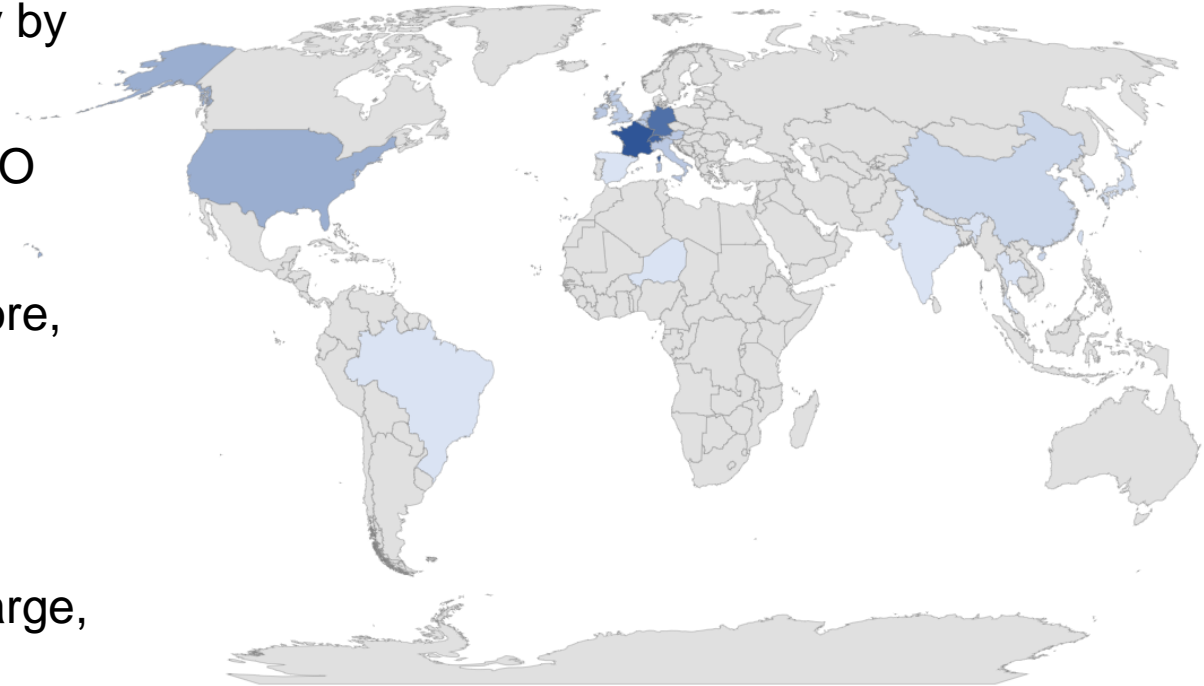




## What do we support?

- 198 active research licences across 34 Member and Co-operating States & ECMWF
- Not including the research conducted directly by the Member & Co-operating States
- Also support NMHS research projects in WMO countries
- Provision of real-time and historical data before, during and after observation campaigns
- ecCharts & static Web Charts can also be provided for campaign planning
- Data can be provided free of Information Charge, but may be subject to Handling Charges

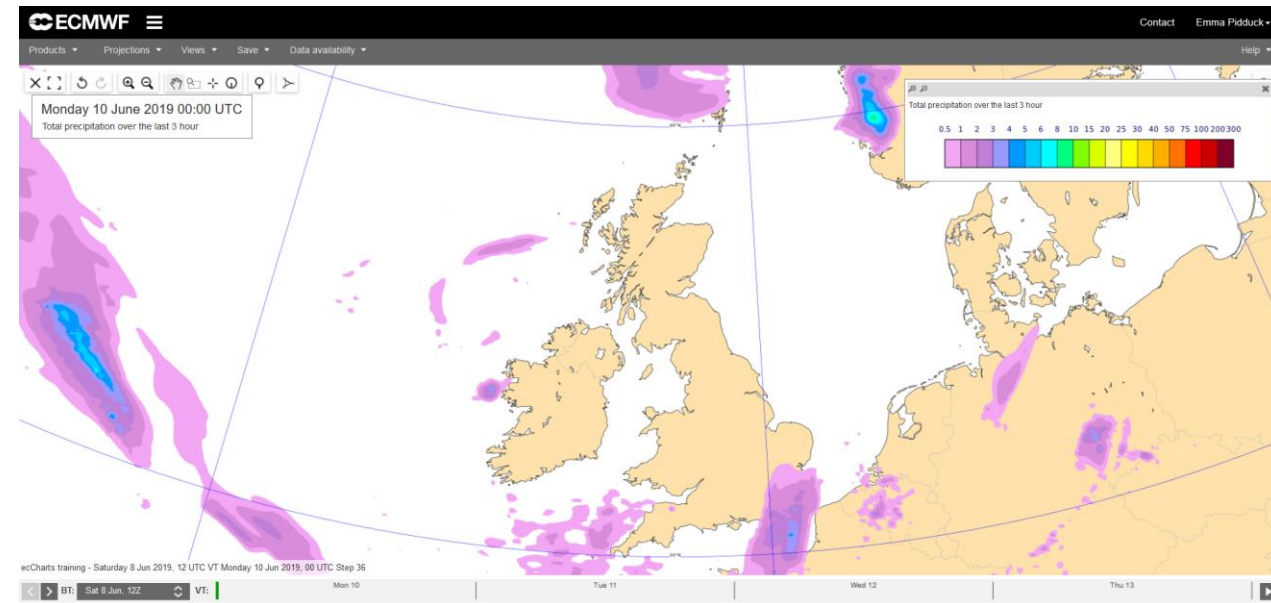
Active Real-time Research Licences



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# Available data

- Real-time
  - 7 Datasets available in the catalogue:
    - Atmospheric model high-resolution (9km) (10-days)
    - Ocean wave model high-resolution (10-days)
    - Atmospheric model ensemble (18km) (15-days)
    - Ocean wave model ensemble (15-days)
    - Atmospheric ENS-extended (46-days)
    - Seasonal (7 months)
    - Multi-model seasonal forecast (EUROSIP)
- Archive data
  - 220 Petabytes in 9.8 million files
  - More than  $380 \times 10^9$  meteorological fields
  - Also contains specific scientific experiments that may be run in support of such campaigns



*Access to ecCharts and Web Charts also available*

# How do I get ECMWF data for my research?

## **Data from Member & Co-operating States**

*For access to organisations within one of the Member & Co-operating States*

- Contact Computing Representative or Catalogue Contact Point
- Member & Co-operating States can provide access to real-time and archive data via 'direct access' to MARS
- Member & Co-operating States can also provide access to run processes on ECMWF systems
- For advice or in case of difficulty, can contact ECMWF Data Services

## **Data from ECMWF**

*For organisations outside of the ECMWF Member & Co-operating States*

- Contact Data Services
- Provide an overview of the project including:
  - How ECMWF data will be used
  - What data is required
  - Project partners (if any)
  - Details of the data required
- Project overview will be passed to management for approval
- If approved, delivery can be via FTP push or FTP pull

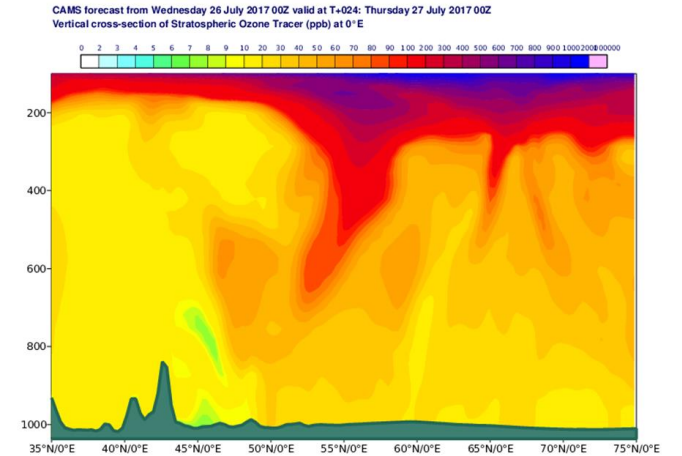
# Conditions & restrictions for a research licence

- “Any project organised for non-commercial research purposes only. A necessary condition for recognition of non-commercial purposes is that all the results obtained are openly available at delivery costs only, without any delay linked to commercial objectives, and that the research itself is submitted for open publication.”
- Redistribution of data is not permitted (for all data types)
  - Need written permission to be able to provide the data with any publication
- Project partners should be made aware of the licence conditions
- Please acknowledge and cite ECMWF as the data source
- Can only use the data for the purposes of the project (*even if that means have more than one research licence!*)

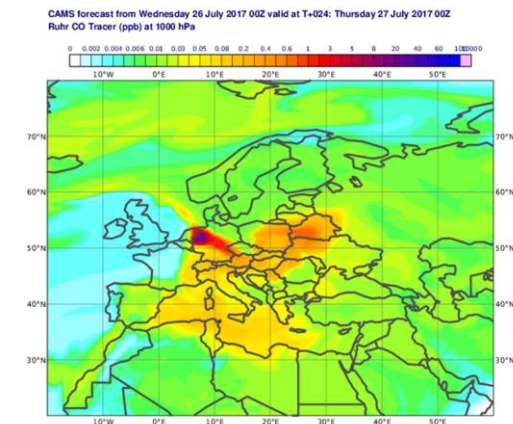
# Copernicus Atmospheric Monitoring Service

ACSYS, WE-CAN,  
CAFÉ, CoMet,  
EmeRGe-Asia,  
AQABA,  
EmeRGe-EU,  
CLARIFY/ORACLES/AEROCLOSA,  
PRE-TECT, A-LIFE, DACCIIWA,  
ICE-D, AROMAT-2, OMO, GLAM,  
CAST/CONTRAST/ATTREX,  
DISCOVER-AQ, SAMBBA,  
ACCESS, TRAQA, TCAP, DC3,  
MOCCA, CARDEX, FENNEC,  
POLARCAT, HIPPO

- Free service by CAMS at ECMWF to provide tailored plots for campaign study area from the operational CAMS global atmospheric composition forecast
- Suite with tagged hypothetical tracer forecasts:
  - Carbon monoxide from different regions and biomass burning or anthropogenic sources
  - Stratospheric ozone in the troposphere
- CAMS FCS assists:
  - Flight route planning to identify pollutant plumes in advance
  - Source attribution of observed concentration patterns
- PI to fill in on-line campaign request form
- 30 campaigns supported since 2009
- Very good feedback from campaigns and valuable specialised evaluation of IFS/CAMS system



*Cross section of stratospheric ozone tracer over Europe to support flight routine planning for the EMERGE-EU campaign*



*Plume of hypothetical tagged tracer driven by anthropogenic CO emissions from the Ruhr Area to support flight routine planning for the EMERGE-EU*

## Links & contacts

- ECMWF Real-time Data Catalogue: <https://www.ecmwf.int/en/forecasts/datasets/catalogue-ecmwf-real-time-products>
- MARS Archive Catalogue: <https://apps.ecmwf.int/archive-catalogue/>
- Catalogue Contact Points: <https://www.ecmwf.int/en/about/contact-us/catalogue-contact-points>
- Computing Representatives: <https://www.ecmwf.int/en/about/contact-us/computing-representatives>
- ECMWF Data Services: [data.services@ecmwf.int](mailto:data.services@ecmwf.int)
- Copernicus Atmospheric Management Service (CAMS): <https://atmosphere.copernicus.eu/scientific-field-campaign-support>

Any Questions?



## Example Campaigns supported by ECMWF – talks this week

- Application of Ensemble-based sensitivity to ECMWF ENS Forecasts in field campaigns – Ryan Torn *et al* – Monday 10 June 16:00
- The impact of dropsonde and extra radiosonde observations from the field campaigns in NAWDEX and SHOUT in 2016 – Martin Weissman
- The gauging and modelling of rivers in the sky – David Lavers *et al.* - Wednesday 12 June 10:00
- YOPP supports the Japanese Arctic research cruise in 2018 – Jun Inoue – Wednesday 12 June 15:30