Advancing the science to improve global forecasts:
ECMWF in 2017
European co-operation at its best: pooling resources
ECMWF’s role is to address the critical and most difficult research problems in medium-range NWP that no one country could tackle on its own.
PLAYING A UNIQUE ROLE

- 34 member and co-operating states
- 300 staff +
- 30 countries
European co-operation at its best: **deliverables**

- Global numerical weather forecasts
- Supercomputing & data archiving
- Education & training programme

- EU activities: operation of Copernicus Climate and Atmosphere Services, contributions to the Emergency Management Service
Ensemble prediction: an overview
Ensemble prediction: an overview
Medium-Range:  
**Extreme forecast index (EFI)**

Measures the distance between  
the ENS cumulative distribution  
and the model climate distribution

Indicates places where the ENS distribution is  
towards the extreme of the climate distribution
Monthly forecast:
Forecasting large scale patterns

European heat wave
29 June – 5 July 2015

Forecast week 1.5

Forecast week 2.5
Seasonal: El Nino
Supporting planning activities

NINO3 SST anomaly plume
ECMWF forecast from 1 Sep 2017
Monthly mean anomalies relative to NCEP/NCAR 1981-2010 climatology

Anomaly (deg C)
ECMWF working with the EU to forecast fires

Operating the Copernicus Atmosphere Monitoring Service
ECMWF working with the EU to monitor climate change

Operating the Copernicus Climate Change Service
ECMWF working with the EU to forecast flooding

Contribution to Copernicus Emergency Management Service
Snapshot of today: **correlation above 80% up to 7 days**

500hPa geopotential
Anomaly correlation
NHem Extratropics (lat 20.0 to 90.0, lon -180.0 to 180.0)
Date: 201605 to 201704

<table>
<thead>
<tr>
<th>Method</th>
<th>Line Color</th>
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<tbody>
<tr>
<td>NCEP</td>
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<td>ECMWF</td>
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**100%**

**80%**

**Forecast Day**

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<td>92.5</td>
<td>90</td>
<td>87.5</td>
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Mean method: standard | Population: 20°12 (averaged)
ECMWF and the use of satellite observations

- ECMWF collaborates with space agencies for satellite data requirements, monitoring and assimilation

- More than 98% of observations are coming from satellites

- ECMWF involved in SMOS since 2007

- Operational use of SMOS TB in the IFS for monitoring purpose; showed very interesting potential for flood cases (e.g. in Morocco in February 2017)

- Operational production of the SMOS near real time neural network level 2 soil moisture product for ESA. This product is very beneficial for the hydrology and NWP communities

- Soil moisture data assimilation research supports model developments

- We also look at L-band potential for wind analysis and at SMOS sea ice products
THE STRENGTH OF A COMMON GOAL