The MetPy Concept and its applications

desperately trying to forget about technical details ...

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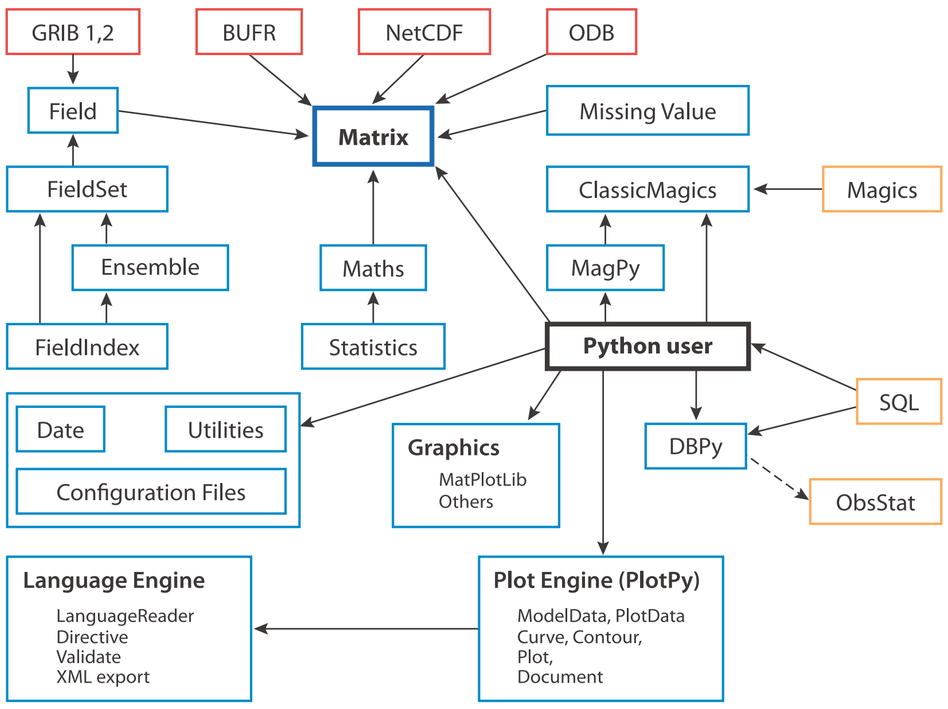
The MetPy Concept is an attempt to offer a lightweight, easy-to-use, portable and open framework to decode, process and encode meteorological, climate and environmental data, hiding as much complexity as possible from the user.

Design

- Python
- Object orientation
- grib_api and emoslib
- netCDF
- ODB
- matPlotLib
- Magics
- Missing values
- Maths
- Statistics
- Web



Properties

- Fast
- Lightweight
- Easy for occasional users
- Powerful for advanced programmers
- Versatile
- Modular

Verify 2008

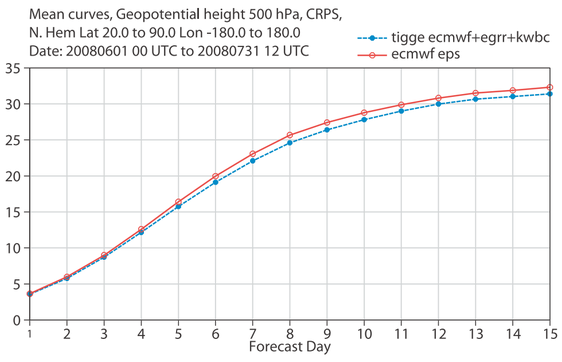
Computation and presentation of verification scores of meteorological forecasts.

Verify retrieves model fields and observations and computes an extended set of scores and statistics based on different types of forecasts. It comprises:

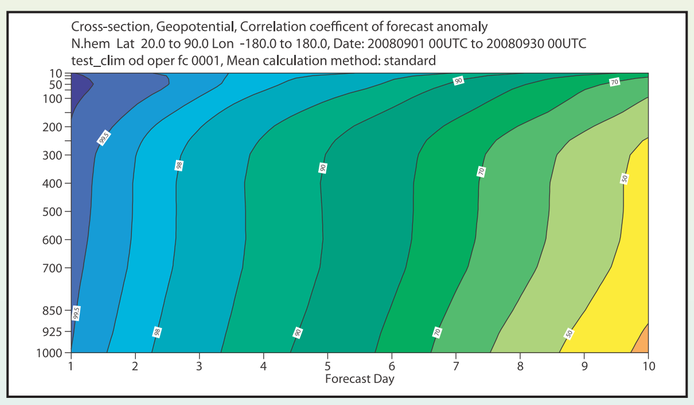
- a high level non-programming interface
- score computing modules
- a database
- plotting capabilities

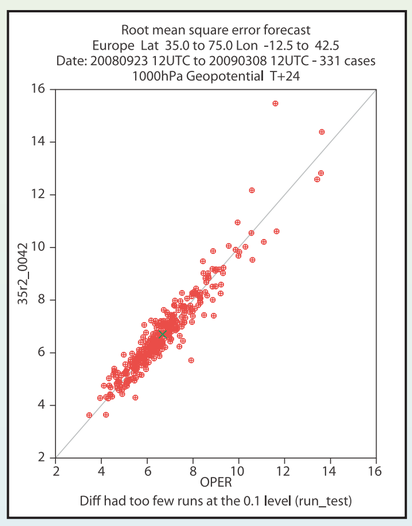
Example: TIGGE multi-ensemble verification

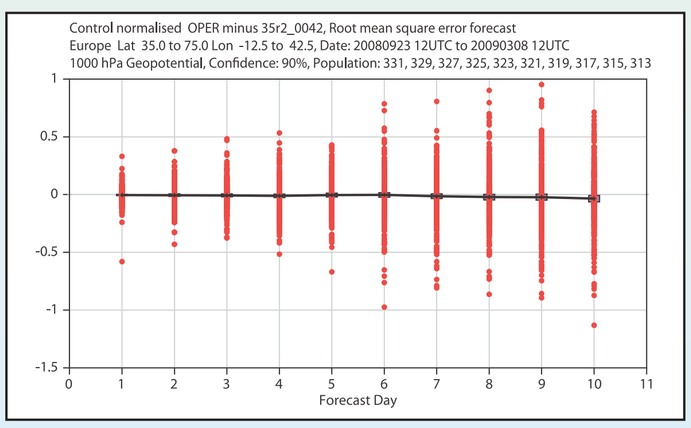
```
compute(
   fc = tigge_eps(
      date = DateSequence(2008060100,2008073112,12),
      step = StepSequence(24,360,24),
      producer=['ecmf','egrr','kwbc'],
   ),
   specifics = specifics(
      levtype = 'pl',
      levelist = 500,
      parameter = 'gh',
      score = 'crps',
      area = ['europe','n.hem'],
   )
   vstream='multimodel',
)
```



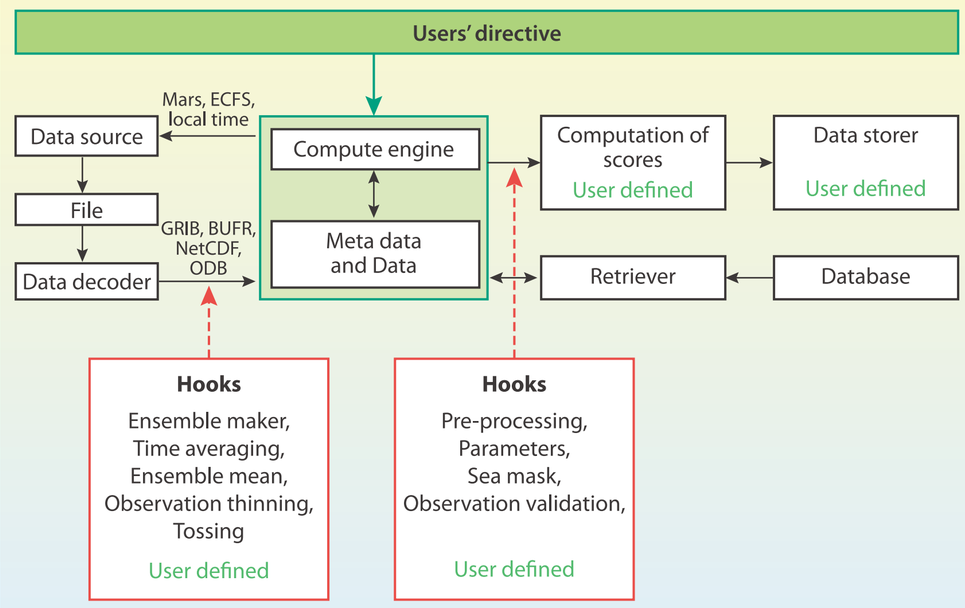
'tigge_eps' is a template which encapsulates knowledge about the TIGGE archive at ECMWF.





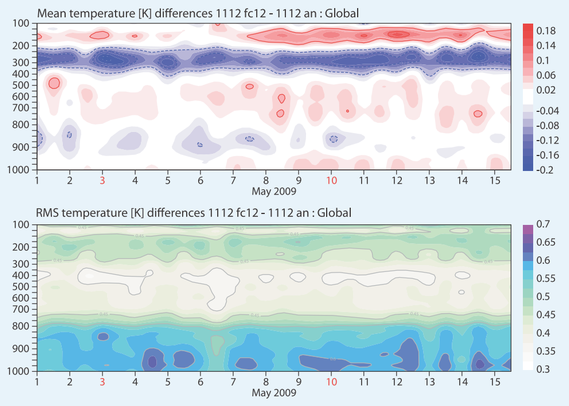


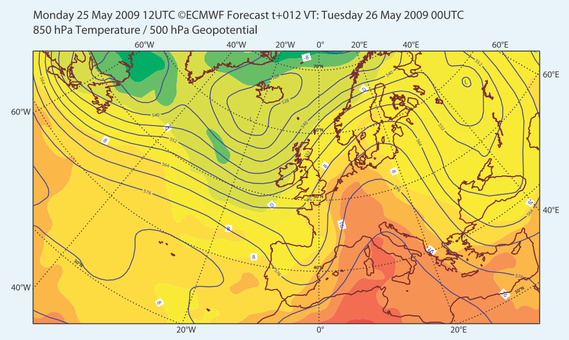
Compute score

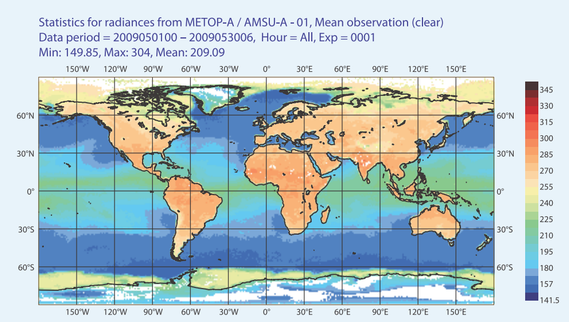


Other applications at ECMWF

- Operational plot production for the web (GEMS as well)
- Operational and research verification
- Statistics on observations used in ERA Interim
- Satellite monitoring plotting
- Diagnostics in research experiments
- GEMS (MACC) regional air quality model verification







ECMWF