Met Office Gridded Calibration Work

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Nina

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MOGREPS

Met Office Global and Regional Ensemble Prediction System

4 cycles per day | 12 members per cycle

24 member products by lagged averaging of last 2 cycles

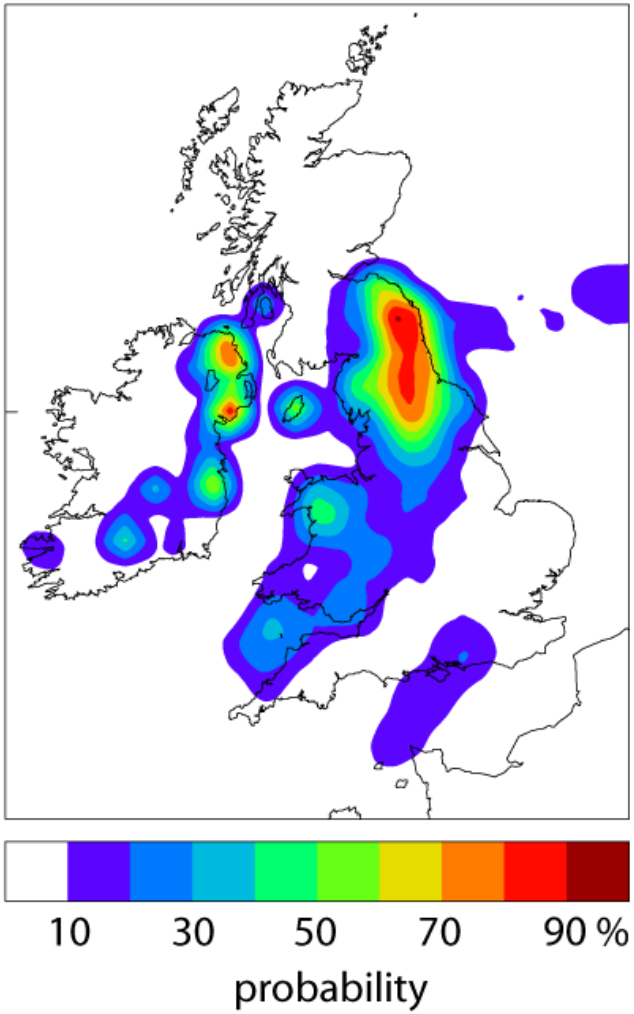
Operational since 2008 following 3 years of trials

Global Component (MOGREPS-G)

- 33km, 70 Levels (N400L70)
- T+7 days
- Run at 00, 06, 12 and 18 UTC
- ETKF for Initial Condition perturbations
- Stochastic physics (SKEB2) and random parameters

MOGREPS-UK

- Setup in time for the London 2012 Olympic and Paralympics games
- 2.2km resolution, 12-member ensemble
- Run to T+36h 4xdaily at 03 / 09 / 15 / 21UTC
- Nested in 33km MOGREPS-G
- Based on 1.5km UKV (our deterministic UK model) physics
- Products use Neighbourhood Processing to account for spatial uncertainty not covered by ensemble spread



Met Office gridded calibration history 1

Christine Johnson (QJRMS, 2009)
Weighting and bias correction for surface temperature, sea-level pressure and 500 hPa height vs model analyses

Applied to MOGREPS global model, ECMWF EPS and NCEP GEFS with results up to 15 days lead time using multimodel analyses as ‘truth’.

Ran in real time with products available to Met Office forecasters and scientists.

Met Office gridded calibration history 2

Jonathan Flowerdew (Tellus A, 2014)

Calibrating ensemble reliability while preserving spatial structure

Precipitation, temperature, dewpoint, wind speed PMSL callibrated over Europe using in-house Euro-PP analysis as ‘truth’

(Like Christine before) applied to MOGREPS global model, ECMWF EPS and NCEP GEFS (courtesy of Tigge archive) with results up to 15d

Met Office gridded calibration history 3

Yongming Tang (internal report)

Applied Jonathan Flowerdew's method to MOGREPS-UK forecasts of temperature and 10m wind using UK PP analysis as truth

Some improvement in wind speed forecasts at T+24h

Met Office gridded calibration history 4

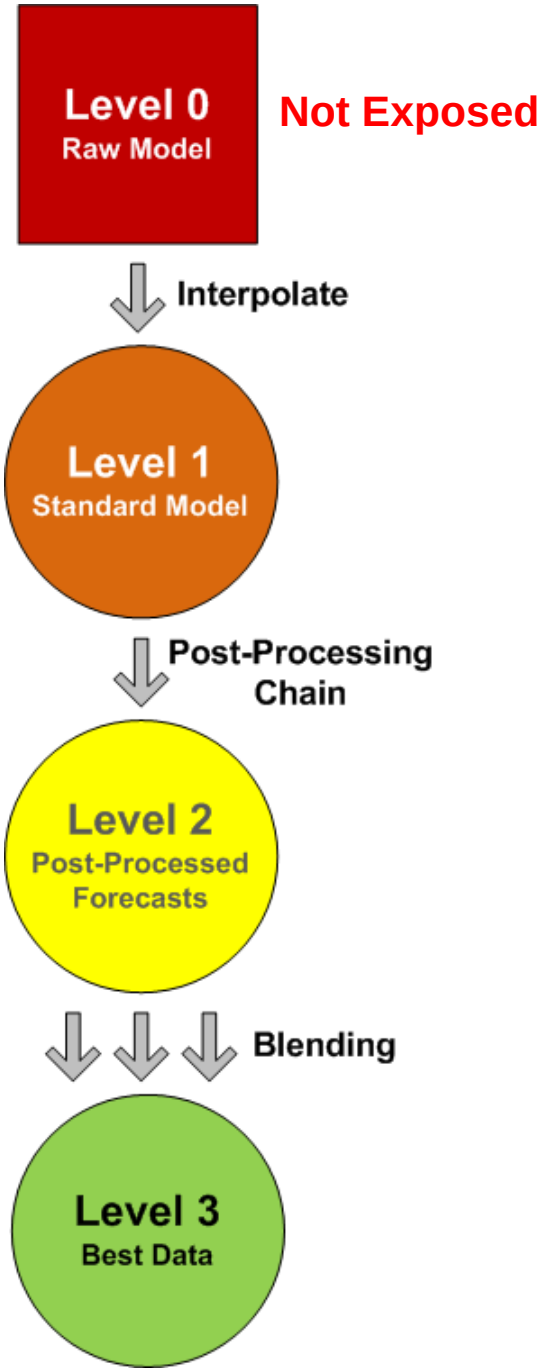
Piers (in progress)

T+24hr forecasts of temperature calibrated using ECMWF analysis just over UK area to begin with

EMOS calibration code adapted by Nina

Next step to look at longer lead times (2,3 or even 5 days) and other param(s) such as 10m wind speed
Aim of this work is to ultimately deliver in *real time* and *operationally.*

Standard model processing under proposed best gridded data structure



As post processing happens after the interpolation stage, calibration techniques will have the potential to be applied to other centres models e.g. ECMWF EPS, NCEP GEFS...

Now Nina’s slides...