

Deterministic (HRES) and ensemble (ENS) verification scores, other centres, SEEPS categories, YOPP

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Outline

- Global HRES(deterministic) and ENS (ensemble) scores evolution between 1998 – 2018
- WMO comparison to other centres, added DWD (sfc not avail), some periods missing data from CMC (global), NCEP (arctic sfc)
- SEEP categories
- YOPP 2018 – Arctic and Antarctic

HRES - Headline score Z500, time series of acc=0.8

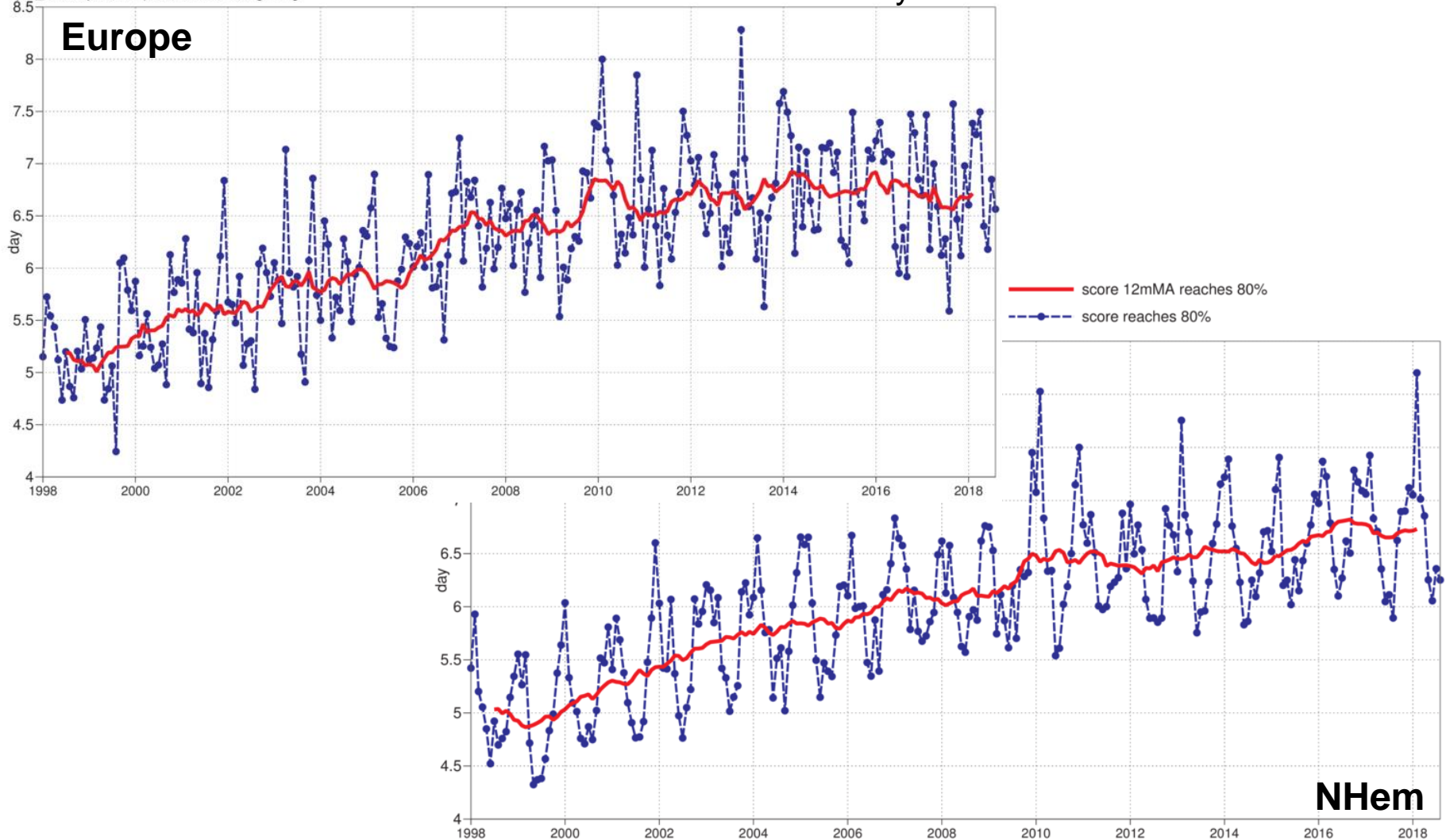
500hPa geopotential

Anomaly correlation

Europe (lat 35.0 to 75.0, lon -12.5 to 42.5)

T+0 T+12 ... T+240

oper_an od oper 0001 | 00UTC,12UTC,beginning



HRES verification against ERA Z500 time series of acc=0.8

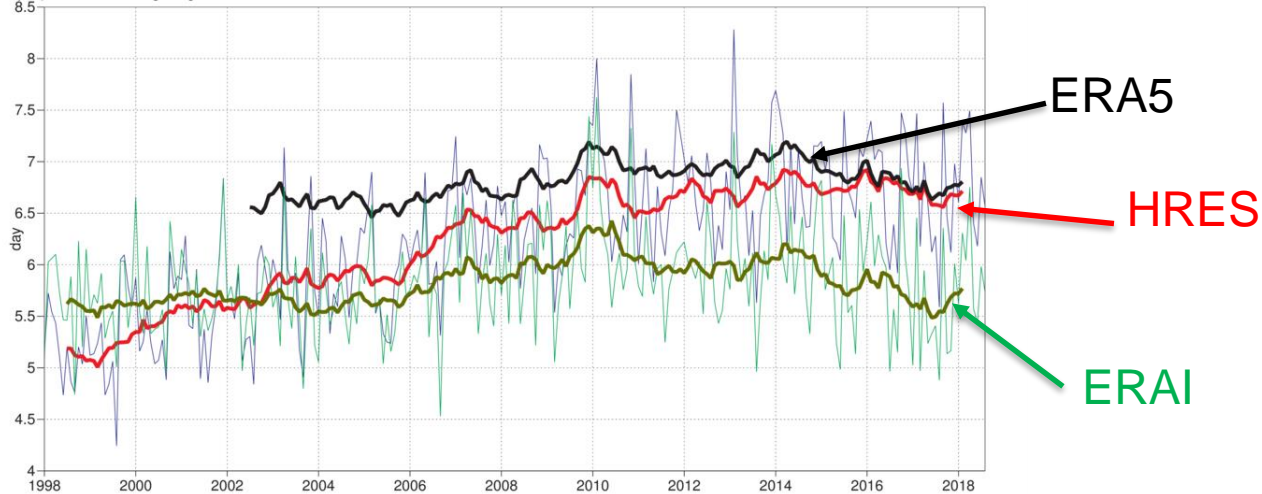
HRES and ERA 00,12UTC forecast skill

500hPa geopotential

Lead time of Anomaly correlation reaching 80%

Europe (lat 35.0 to 75.0, lon -12.5 to 42.5)

oper | 00UTC,12UTC,beginning



ERA5 uses data
an extra 6 hours
into the future!



ENS - Headline probabilistic score, CRPSS, T850

ECMWF EPS verification

850hPa temperature

Continuous ranked probability skill score

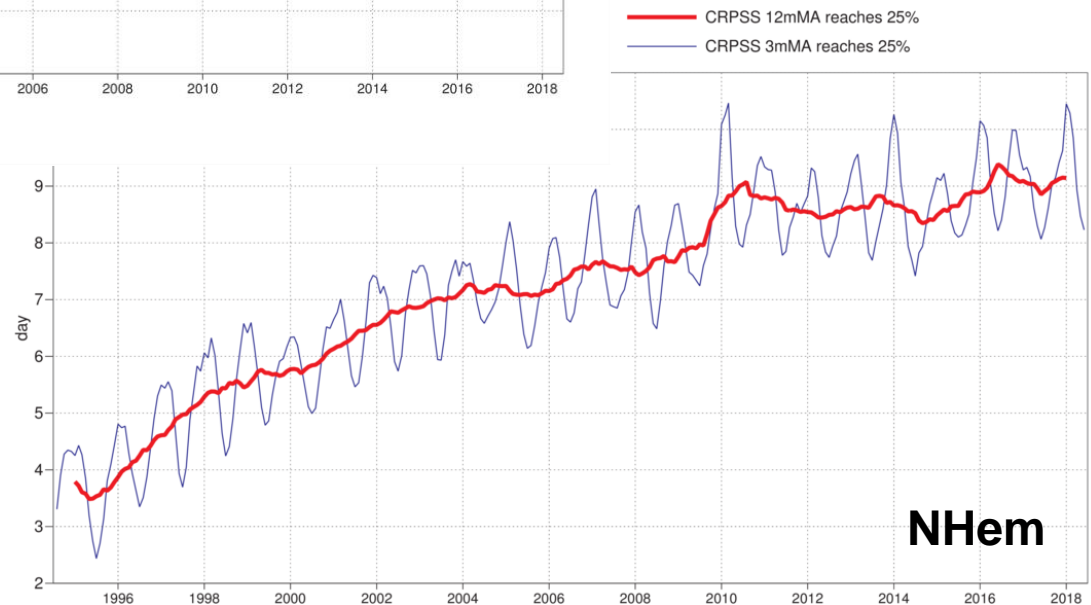
Europe (lat 35.0 to 75.0, lon -12.5 to 42.5)

T+0 T+12 ... T+360

oper_an od enfo 0001 | 00UTC,12UTC,beginning

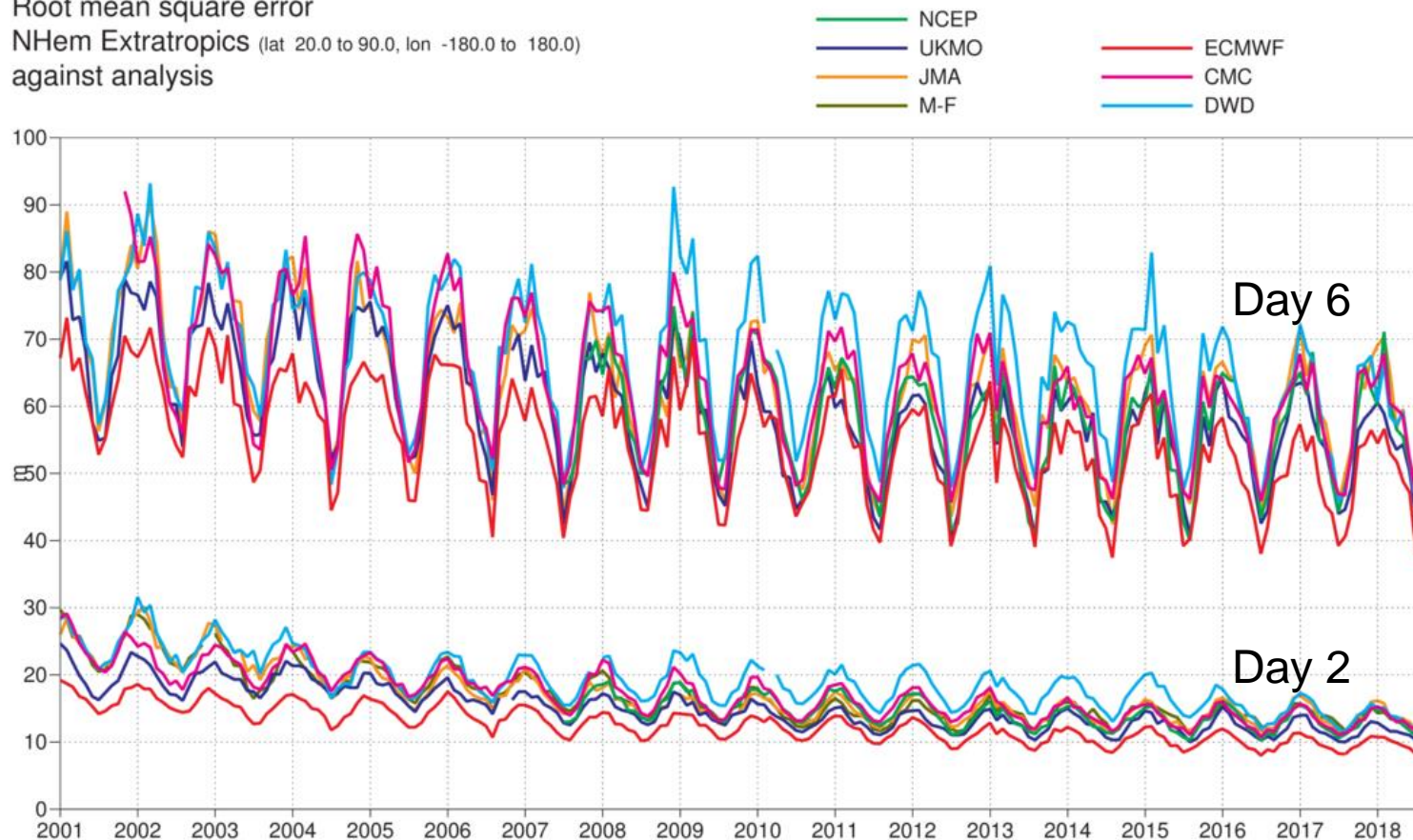


Day at which skill score reaches 25%



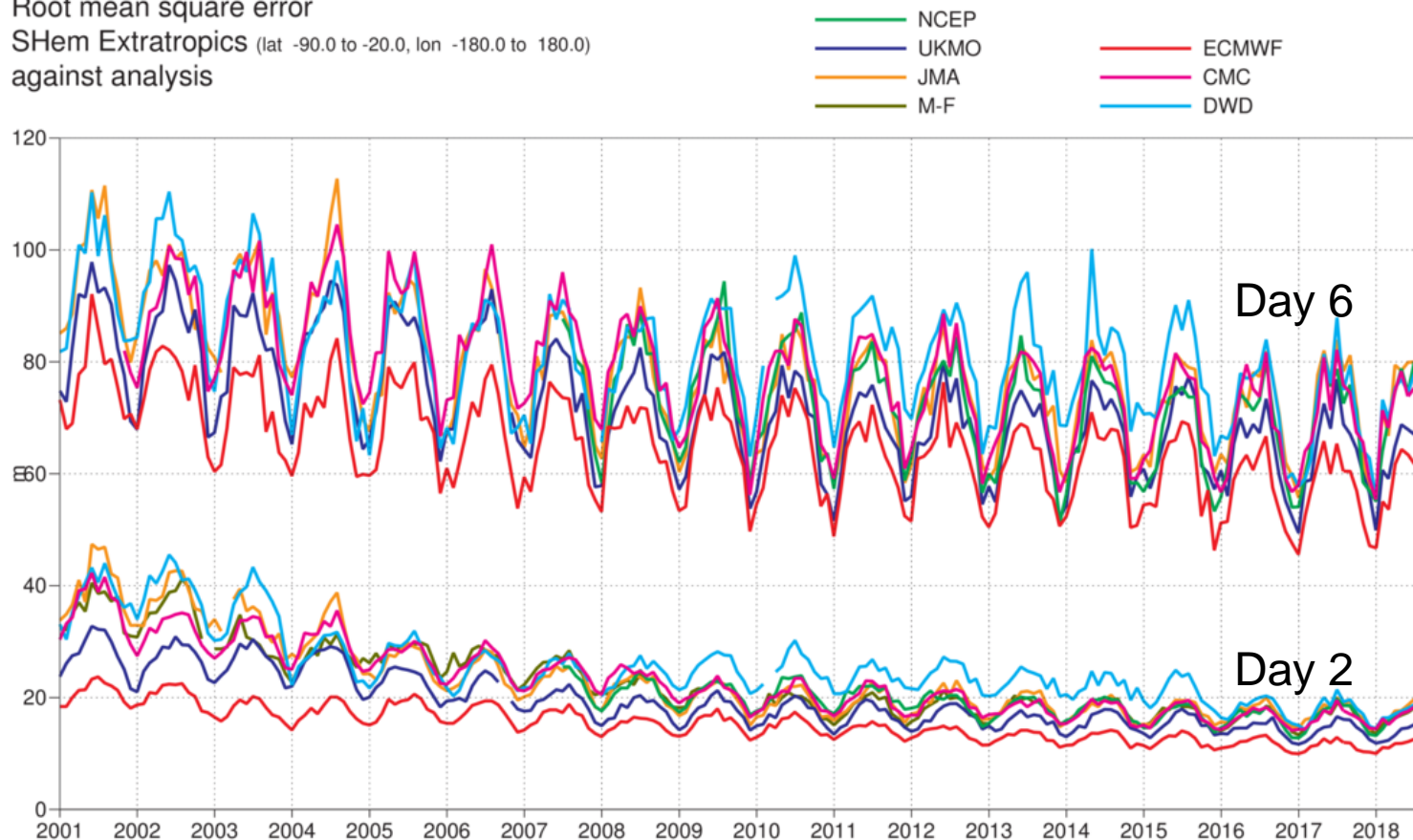
HRES - WMO scores Z500 Nhem, analysis

geopotential 500hPa
Root mean square error
NHem Extratropics (lat 20.0 to 90.0, lon -180.0 to 180.0)
against analysis



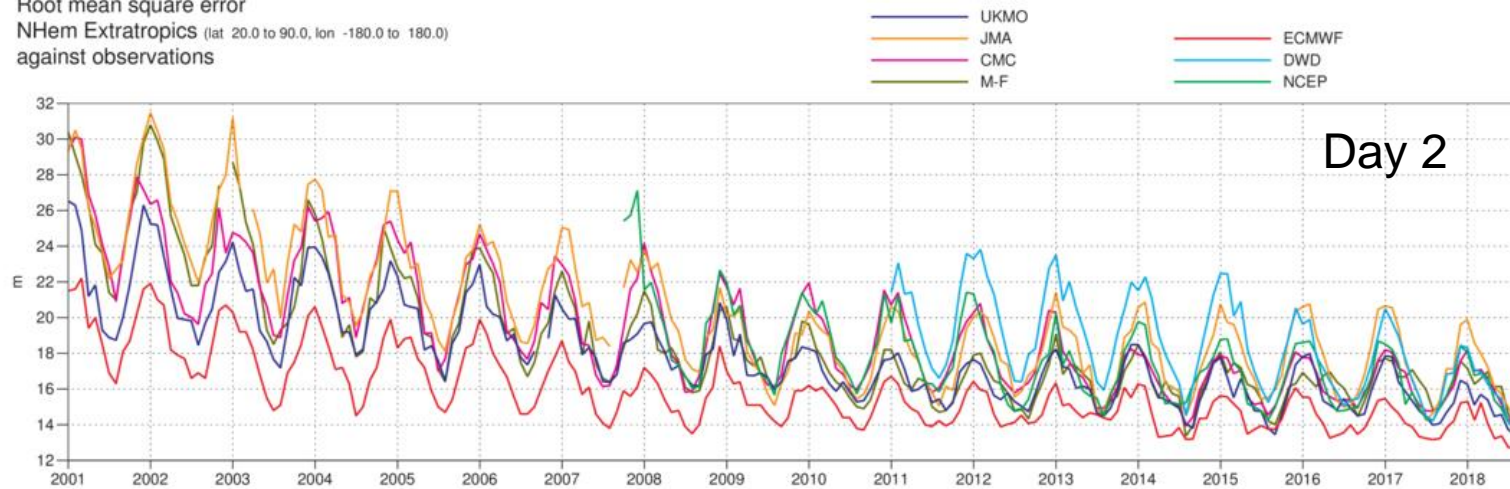
HRES - WMO scores Z500 Shem, analysis

geopotential 500hPa
Root mean square error
SHEM Extratropics (lat -90.0 to -20.0, lon -180.0 to 180.0)
against analysis

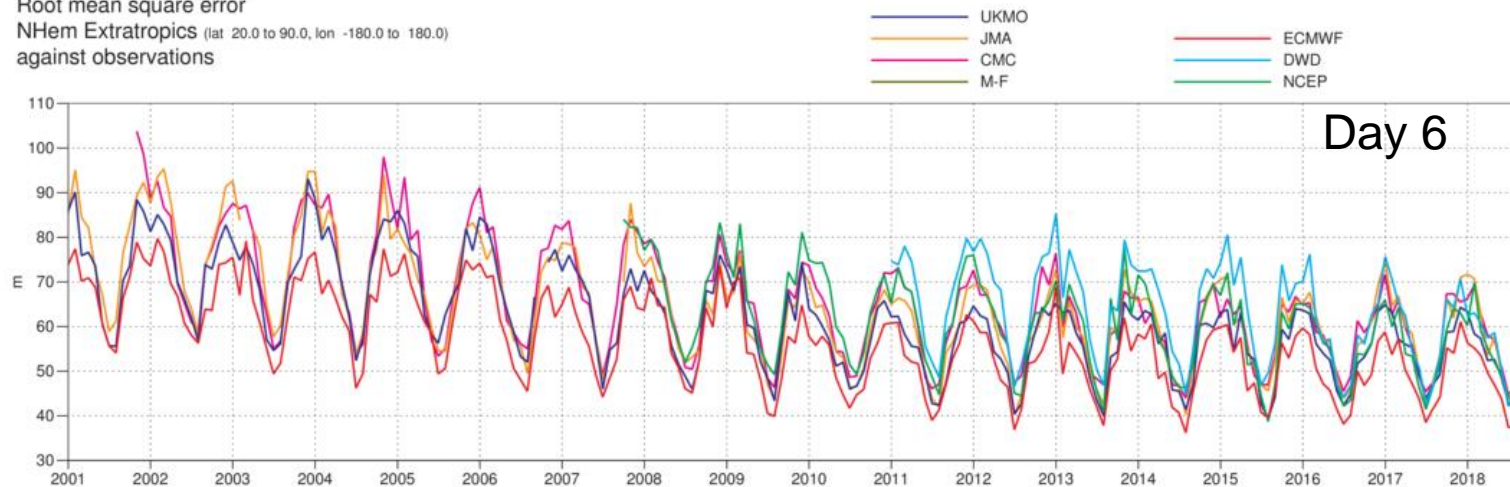


HRES - verification against observations, Z500, Nem

geopotential 500hPa
Root mean square error
NHem Extratropics (lat 20.0 to 90.0, lon -180.0 to 180.0)
against observations

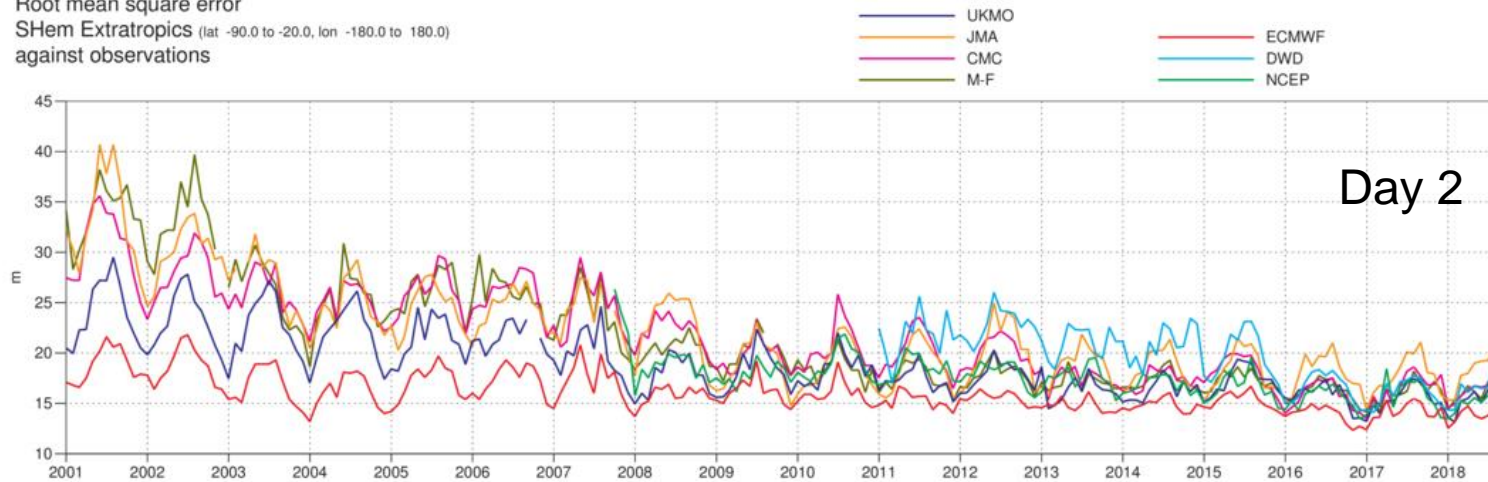


geopotential 500hPa
Root mean square error
NHem Extratropics (lat 20.0 to 90.0, lon -180.0 to 180.0)
against observations

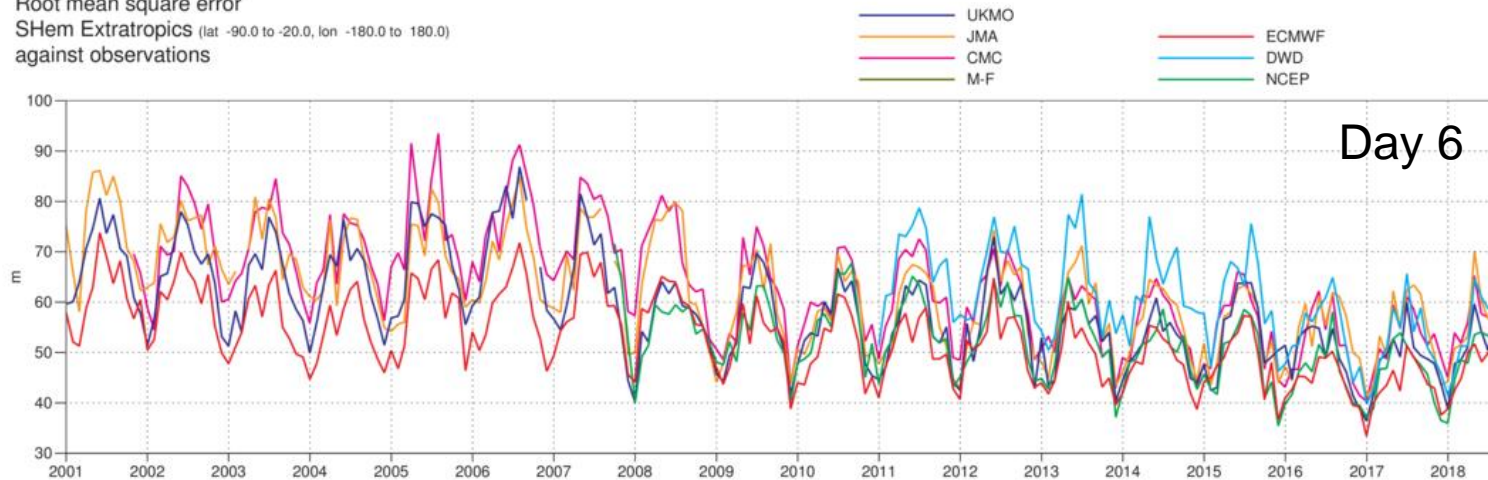


HRES - verification against observations, Z500, Shem

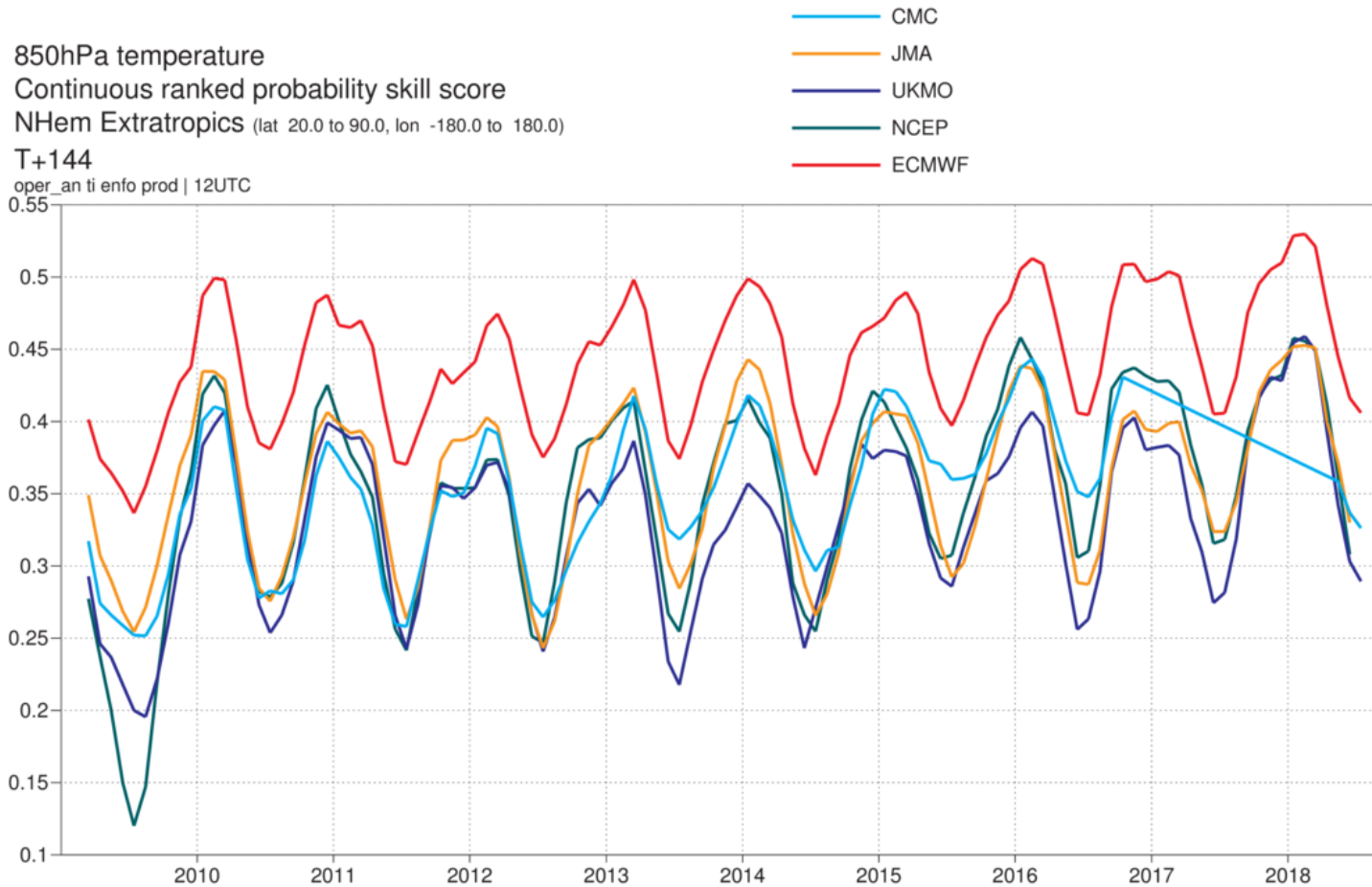
geopotential 500hPa
Root mean square error
SHem Extratropics (lat -90.0 to -20.0, lon -180.0 to 180.0)
against observations



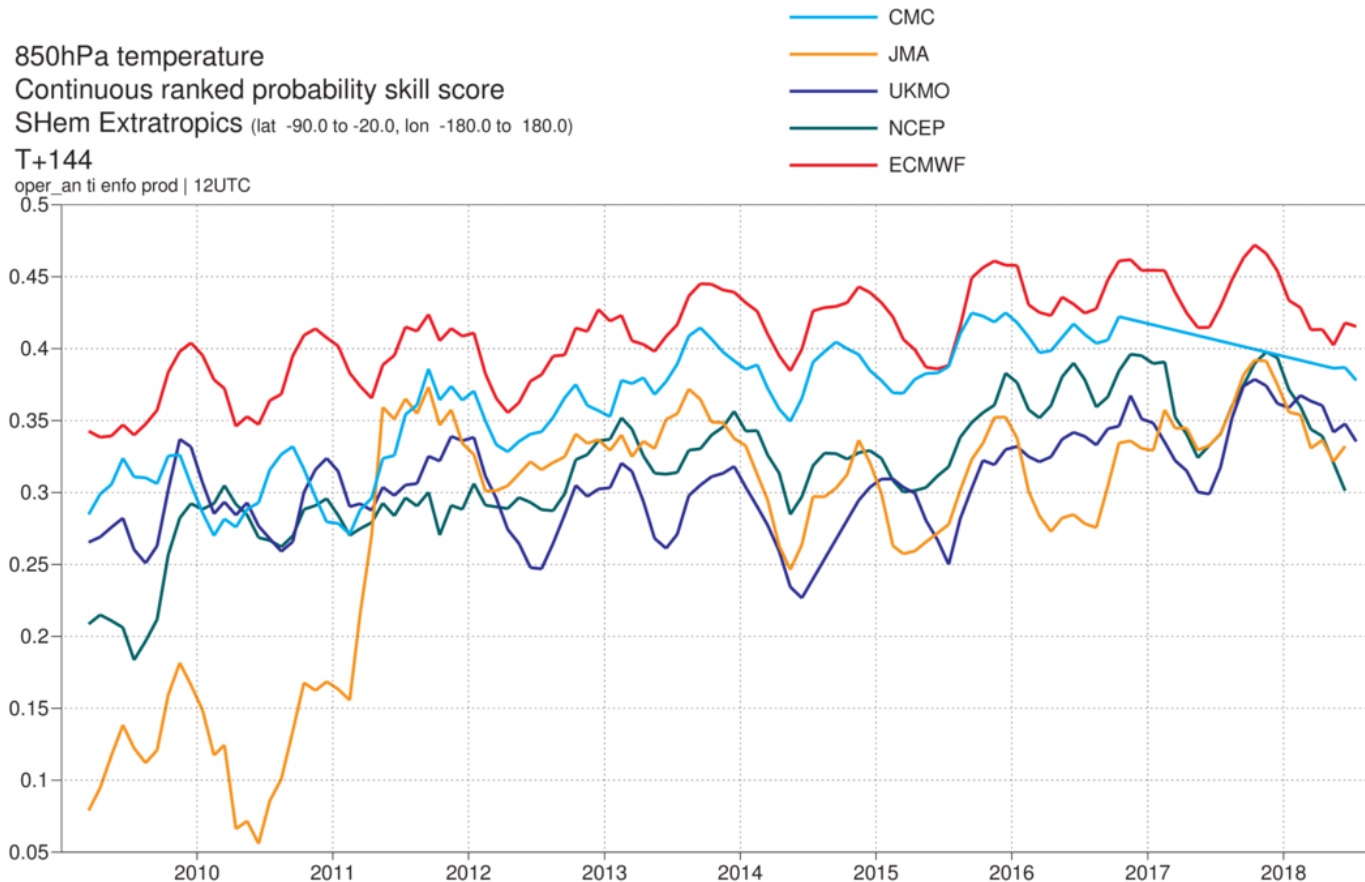
geopotential 500hPa
Root mean square error
SHem Extratropics (lat -90.0 to -20.0, lon -180.0 to 180.0)
against observations



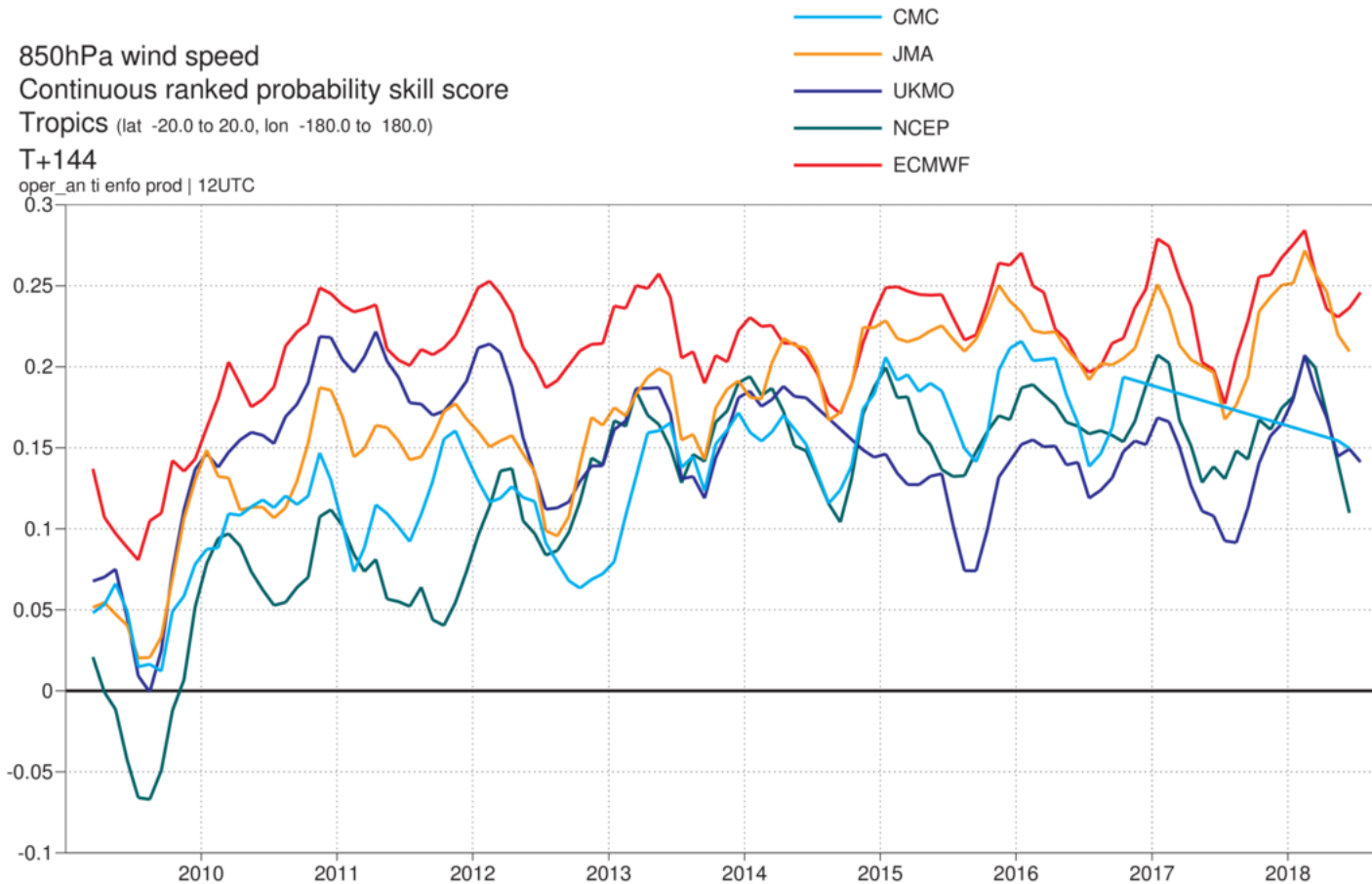
ENS - CRPSS, T850, NHem, day 6



ENS - CRPSS, T850, SHem, day 6

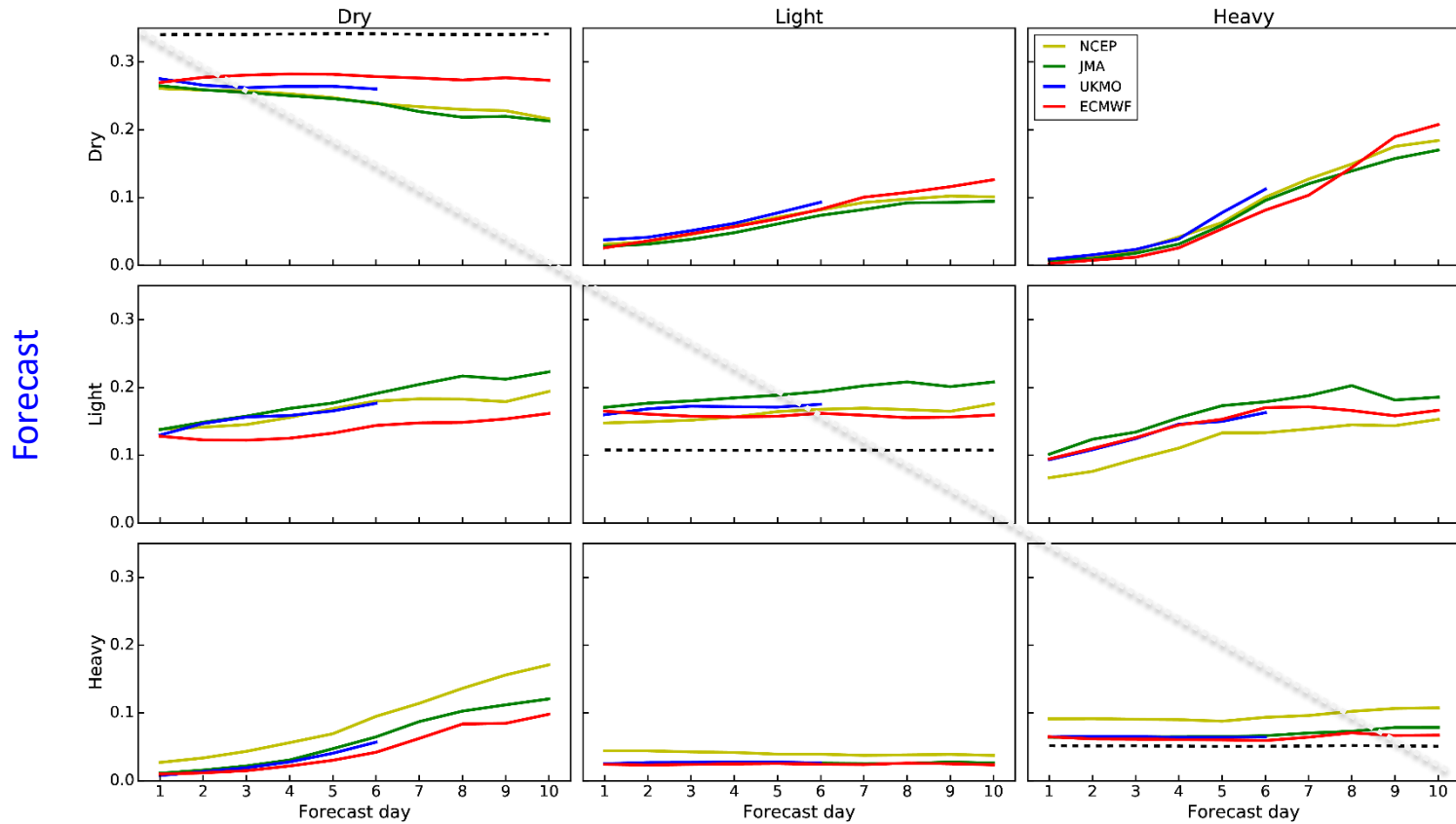


ENS - CRPSS, T850, Tropics, day 6



SEEPS decomposition Europe, DJF 2016-17

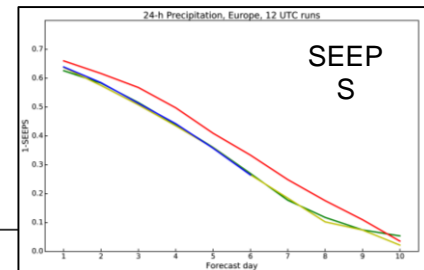
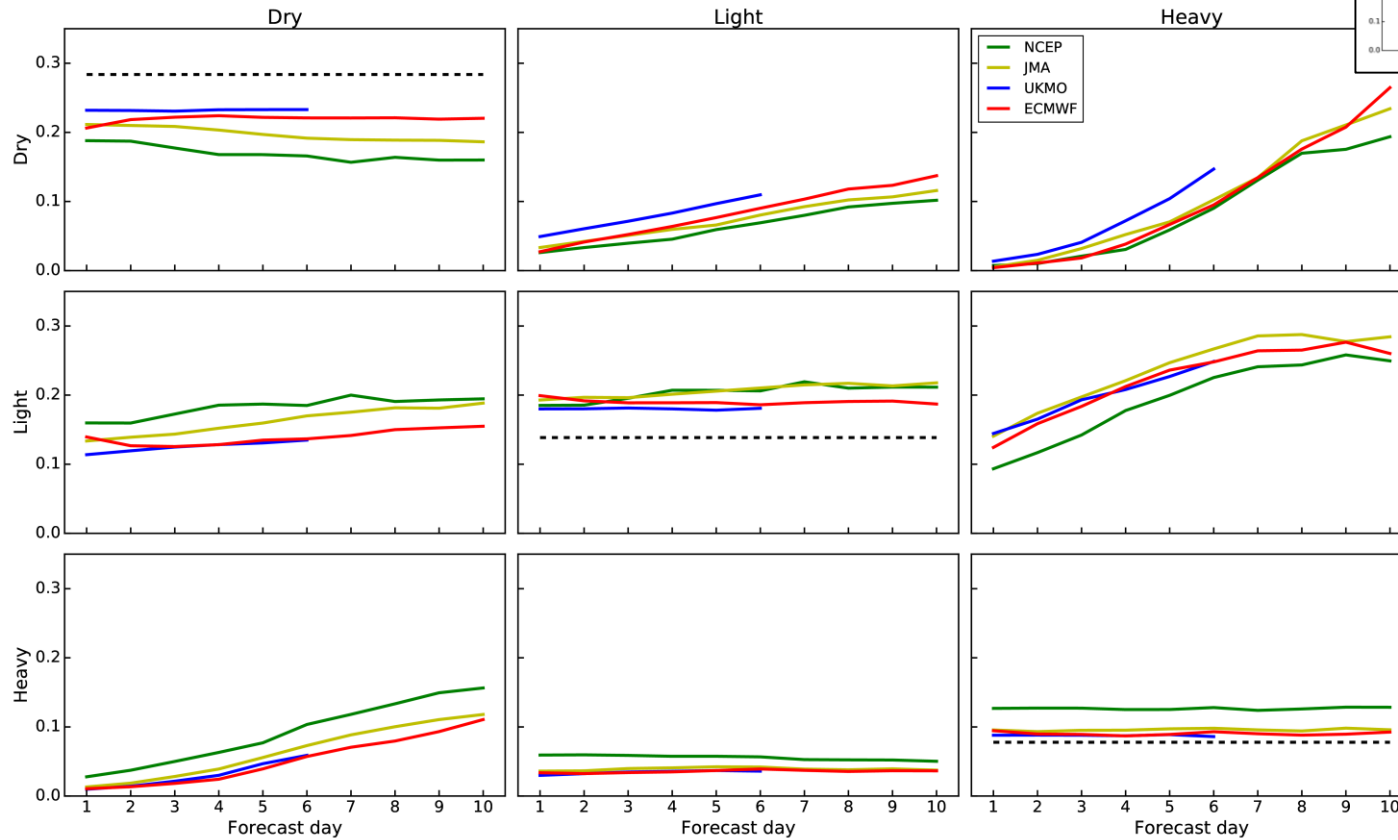
Observed



SEEPS decomposition Europe, DJF 2017-18

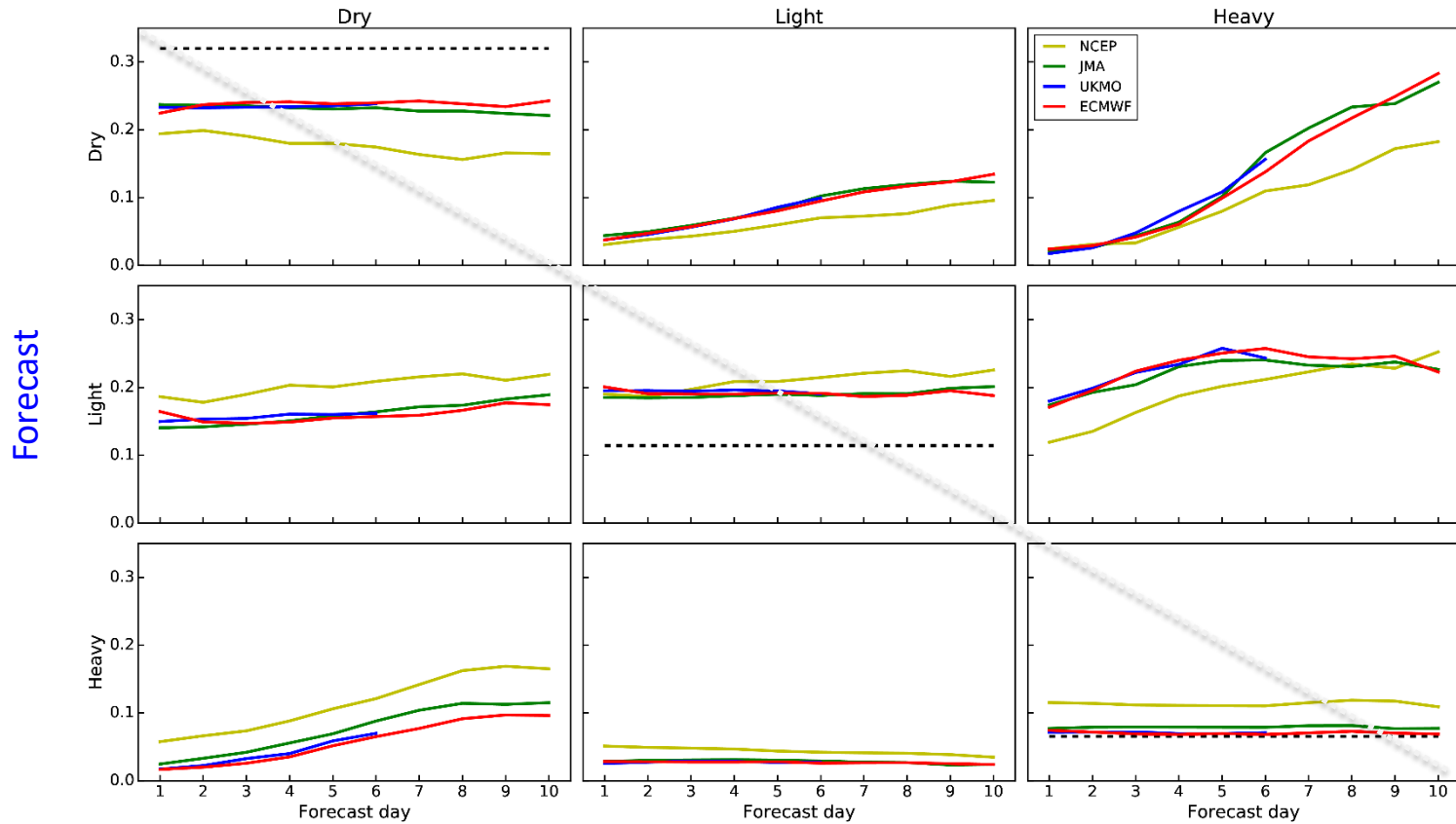
Observed category

Forecast category



SEEPS decomposition Europe, JJA 2017

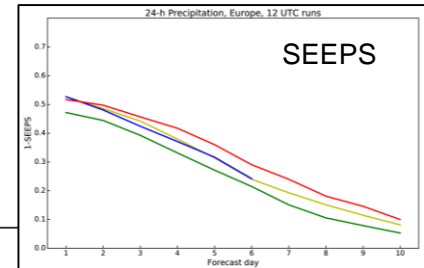
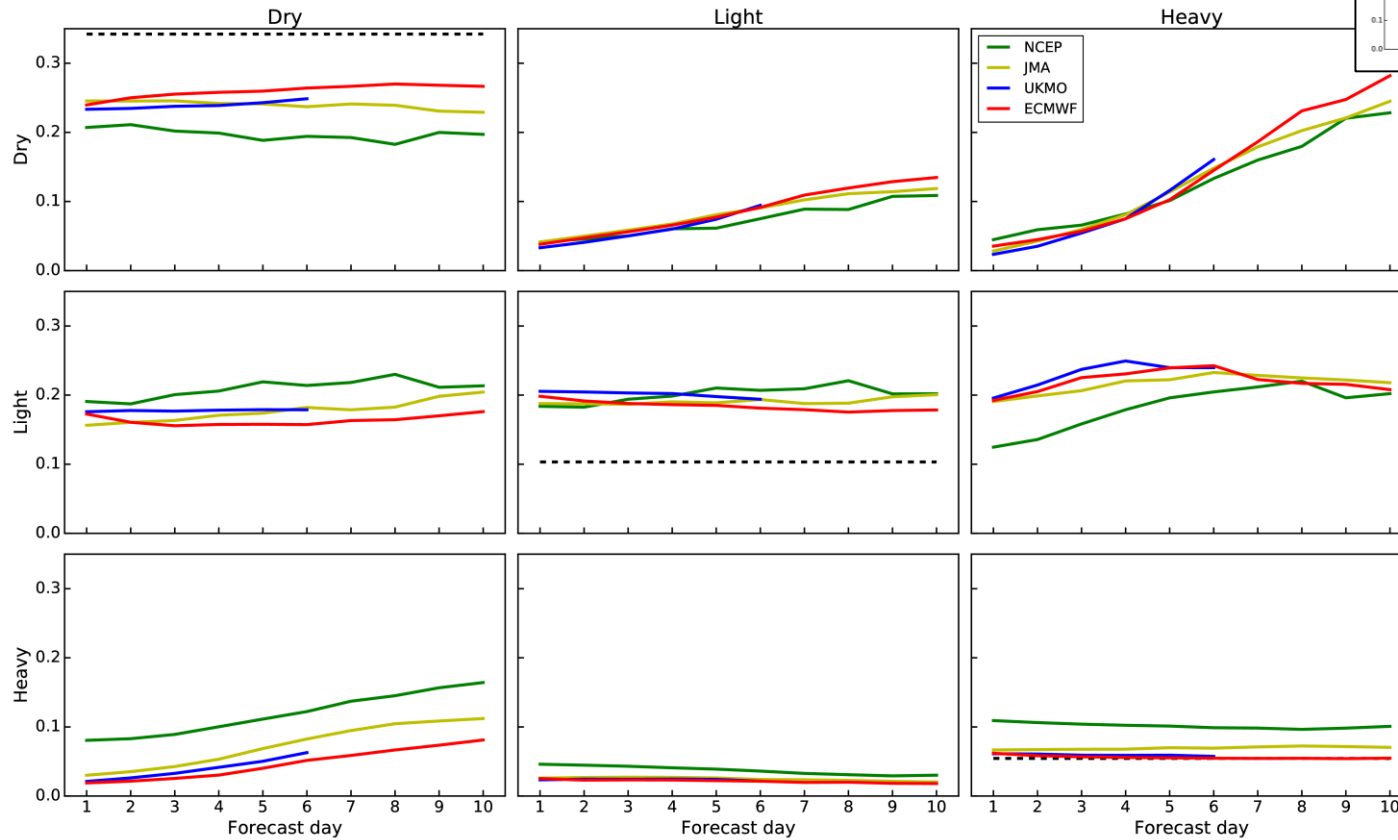
Observed



SEEPS decomposition Europe, JJA 2018

Observed category

Forecast category



Year Of Polar Prediction

DJF 2018

DJF 2018

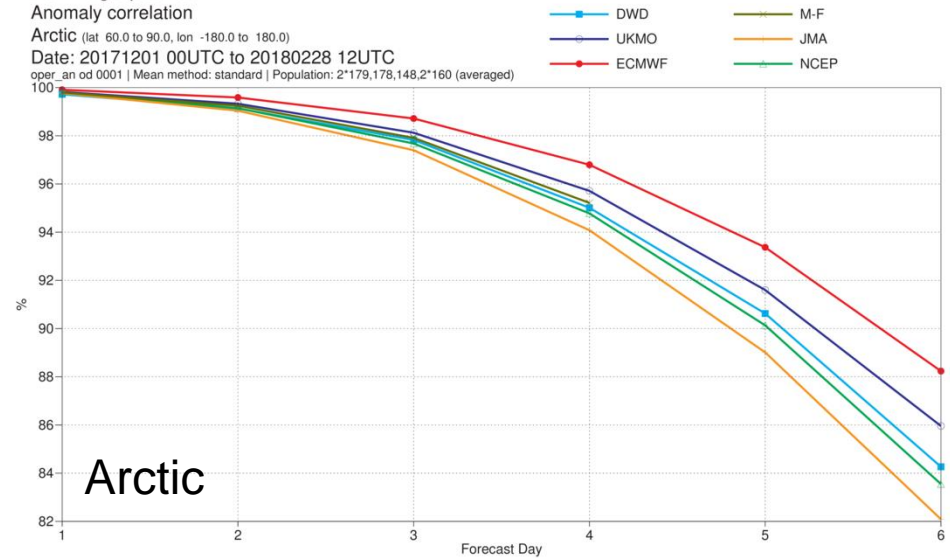
500hPa geopotential

Anomaly correlation

Arctic (lat 60.0 to 90.0, lon -180.0 to 180.0)

Date: 20171201 00UTC to 20180228 12UTC

oper_an od 0001 | Mean method: standard | Population: 2*179,178,148,2*160 (averaged)



Arctic

DJF 2018

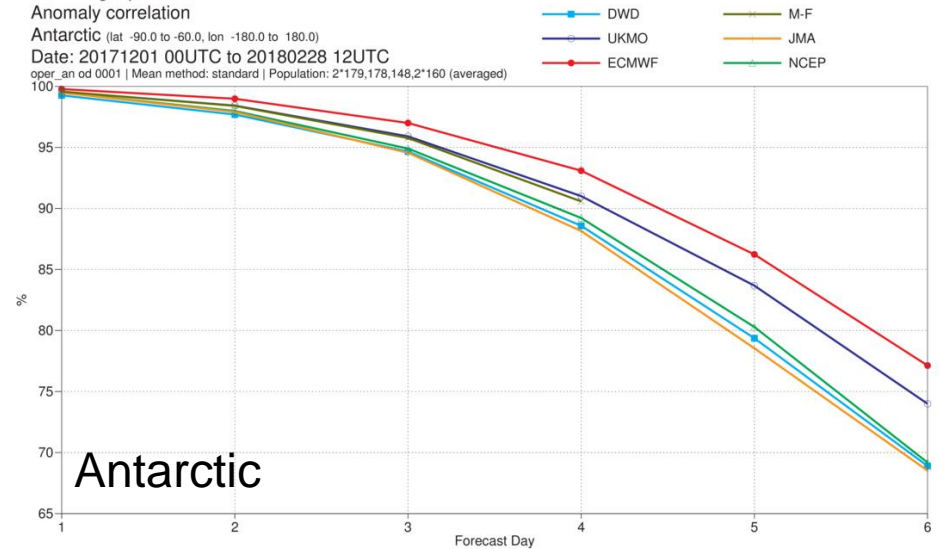
500hPa geopotential

Anomaly correlation

Antarctic (lat -90.0 to -60.0, lon -180.0 to 180.0)

Date: 20171201 00UTC to 20180228 12UTC

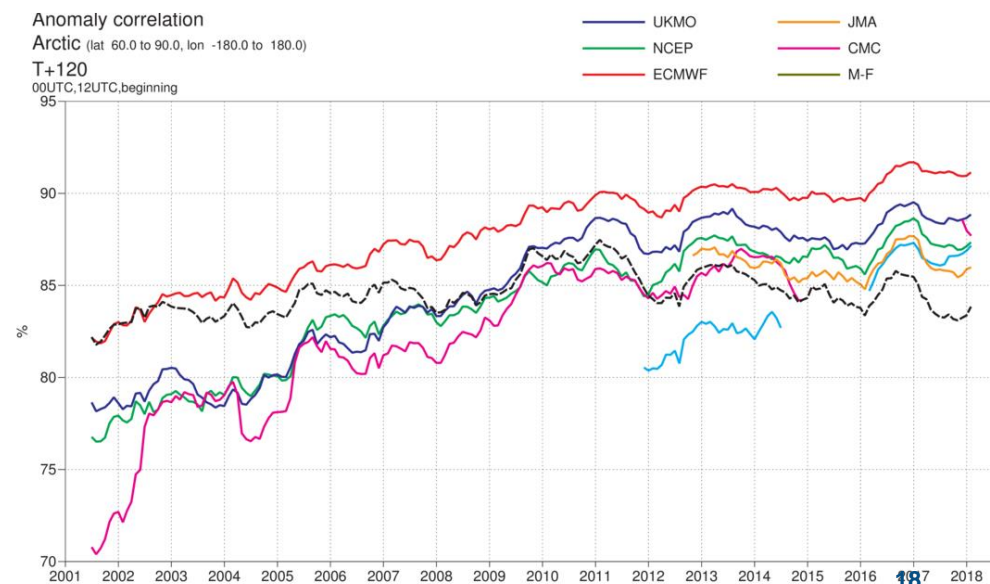
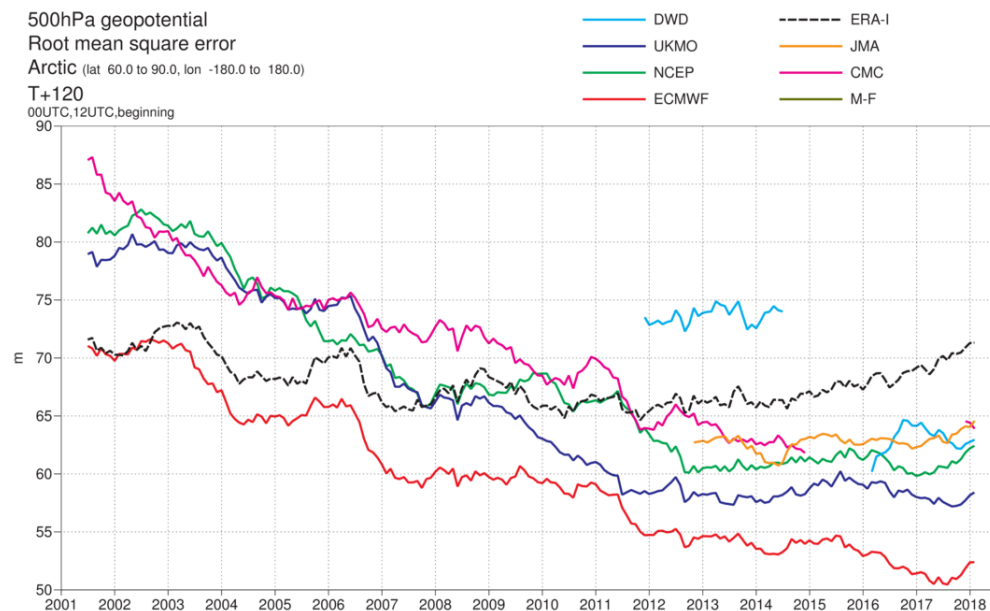
oper_an od 0001 | Mean method: standard | Population: 2*179,178,148,2*160 (averaged)



Antarctic

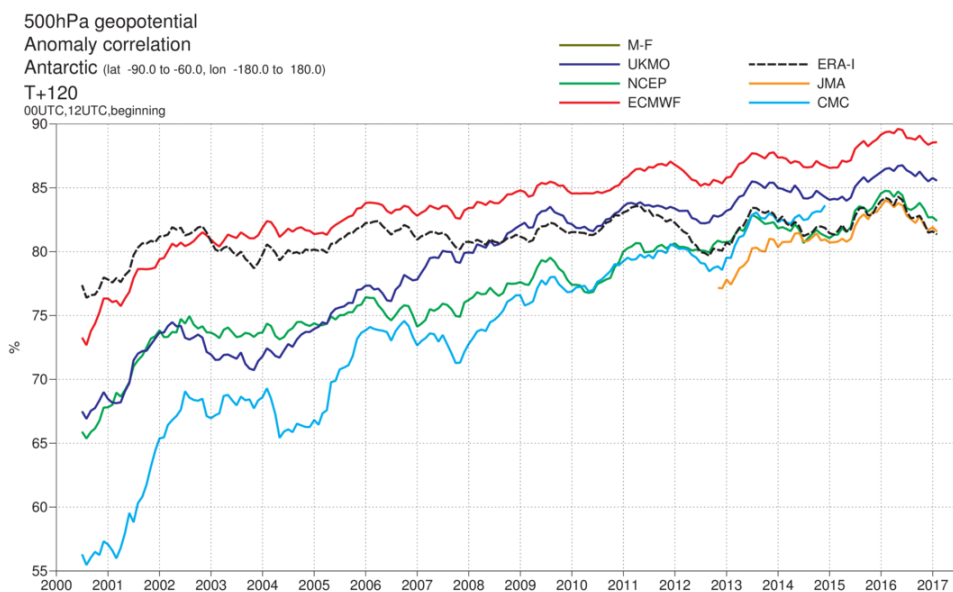
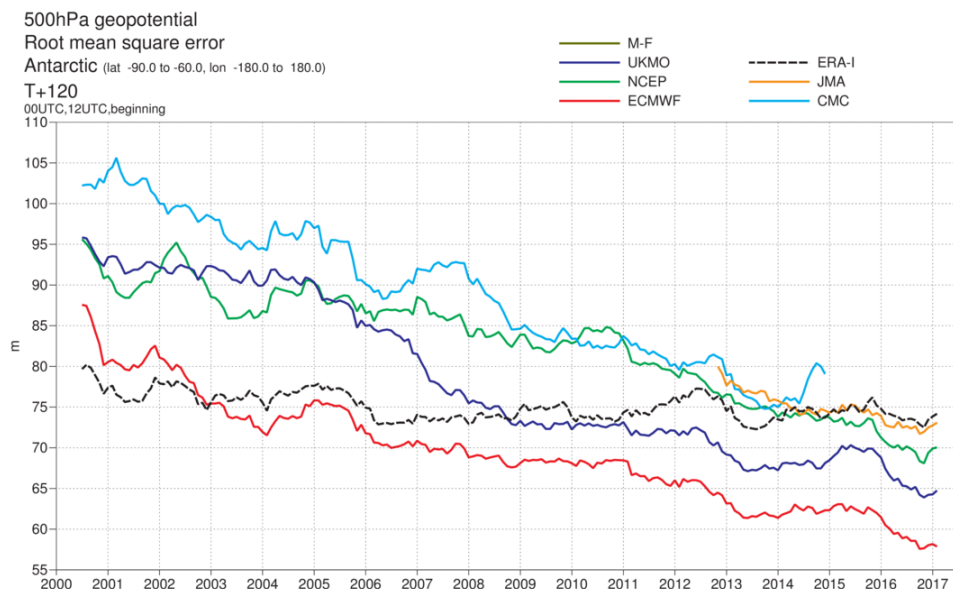
Year Of Polar Prediction Arctic scores

Day 5



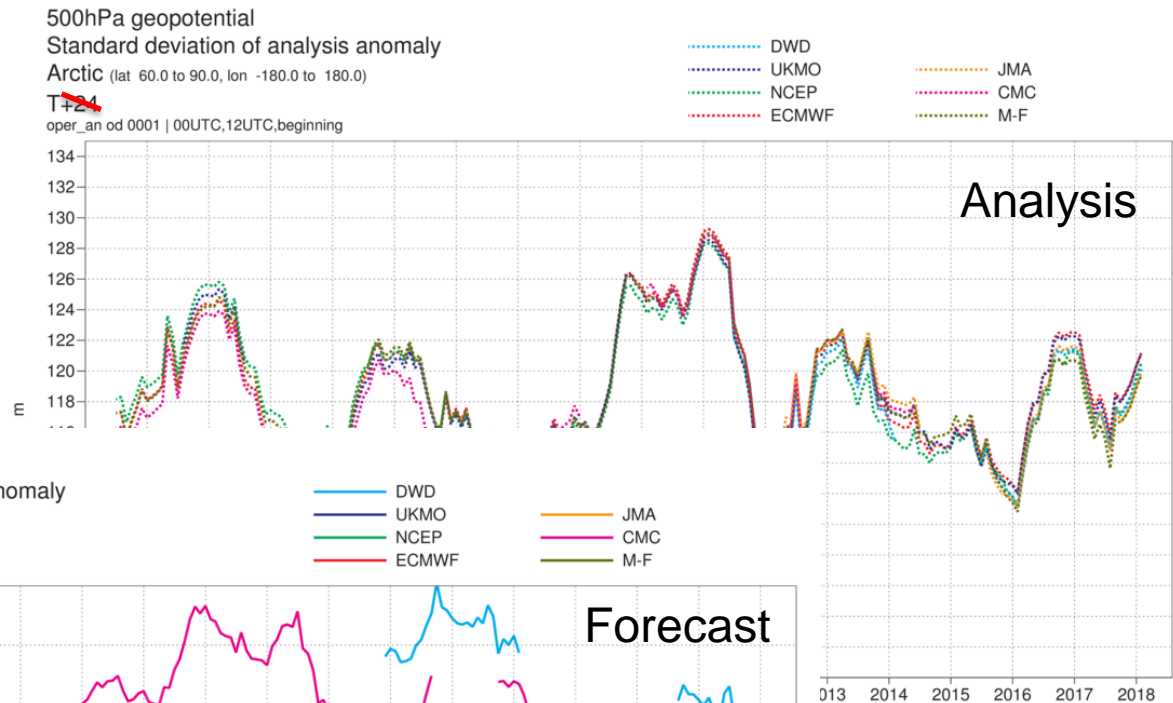
Year Of Polar Prediction Antarctic scores

Day 5

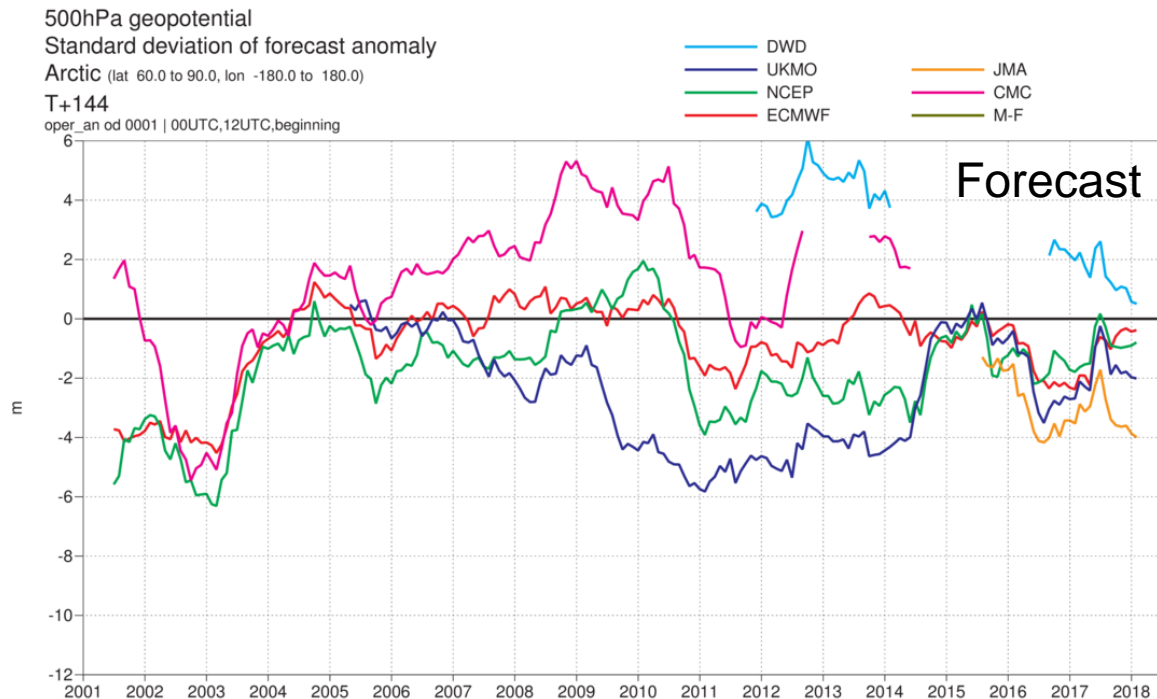


Arctic, analysis and model activity

Difference of stdev of
forecast and analysis
anomalies

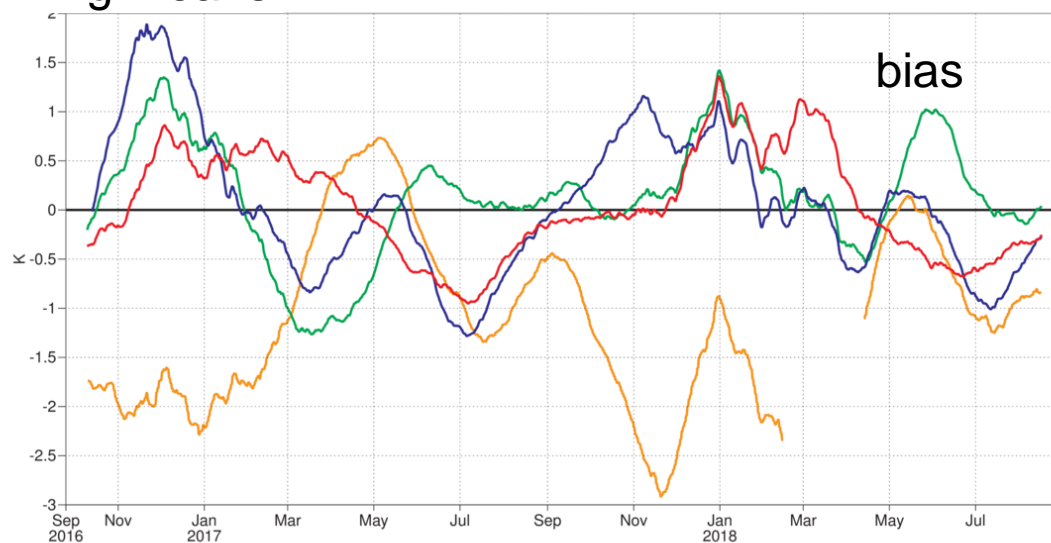
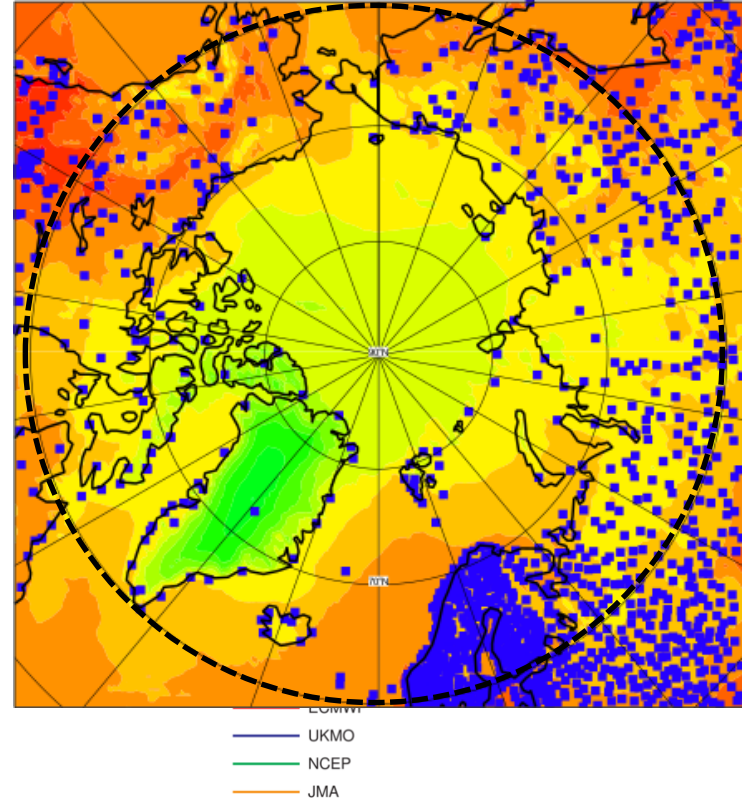
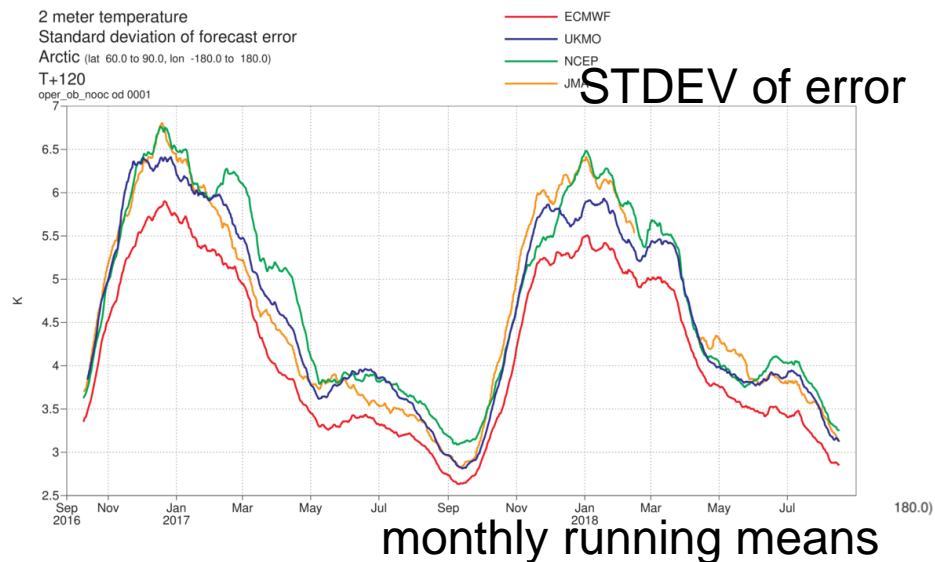


gain



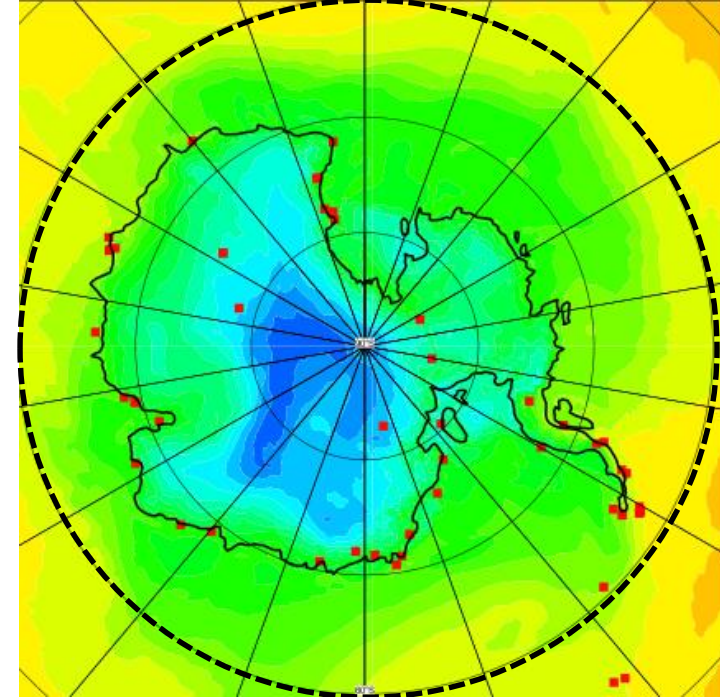
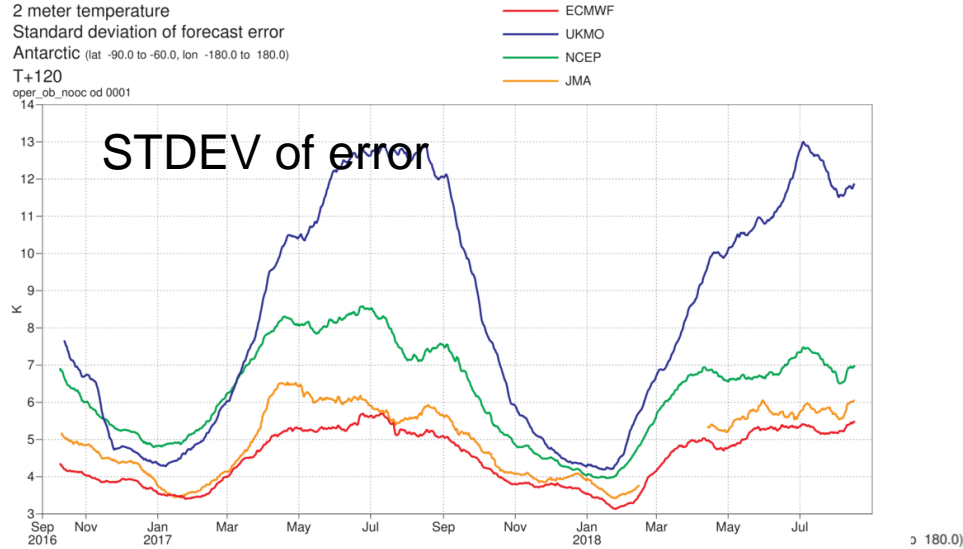
loss

2m temperature, against SYNOP Arctic

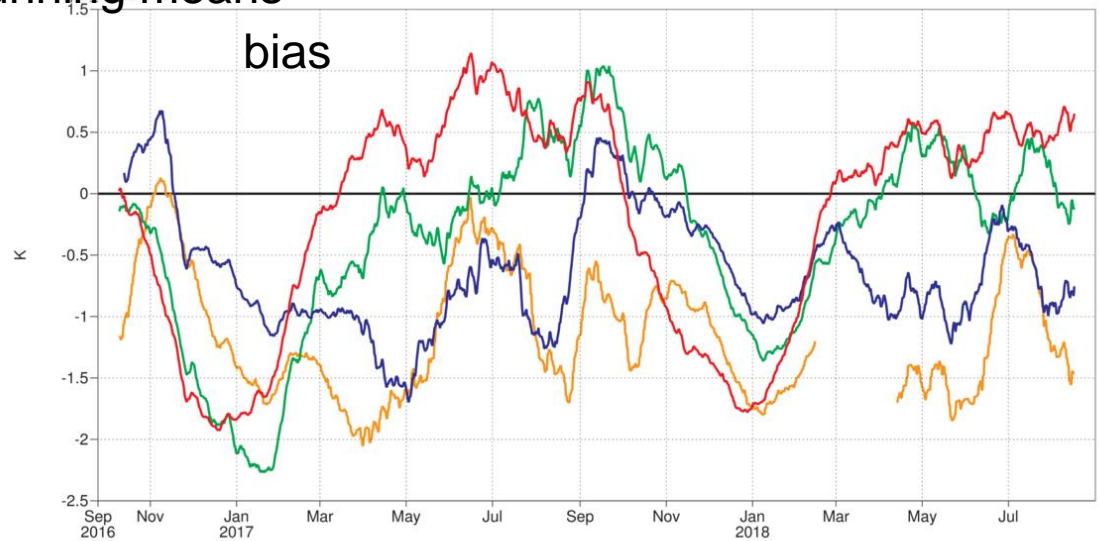


2m temperature, against SYNOP Antarctic

2 meter temperature
Standard deviation of forecast error
Antarctic (lat -90.0 to -60.0, lon -180.0 to 180.0)
T+120
oper_cb_nooc od 0001



ECMWF
UKMO
NCEP
JMA



WMO Lead Centre for Deterministic Forecast NWP Verification (WMO-LCDNV)

- Collecting upper-air verification reports from global centres continues, most of centres have migrated to new definition of scores and the exchange format

