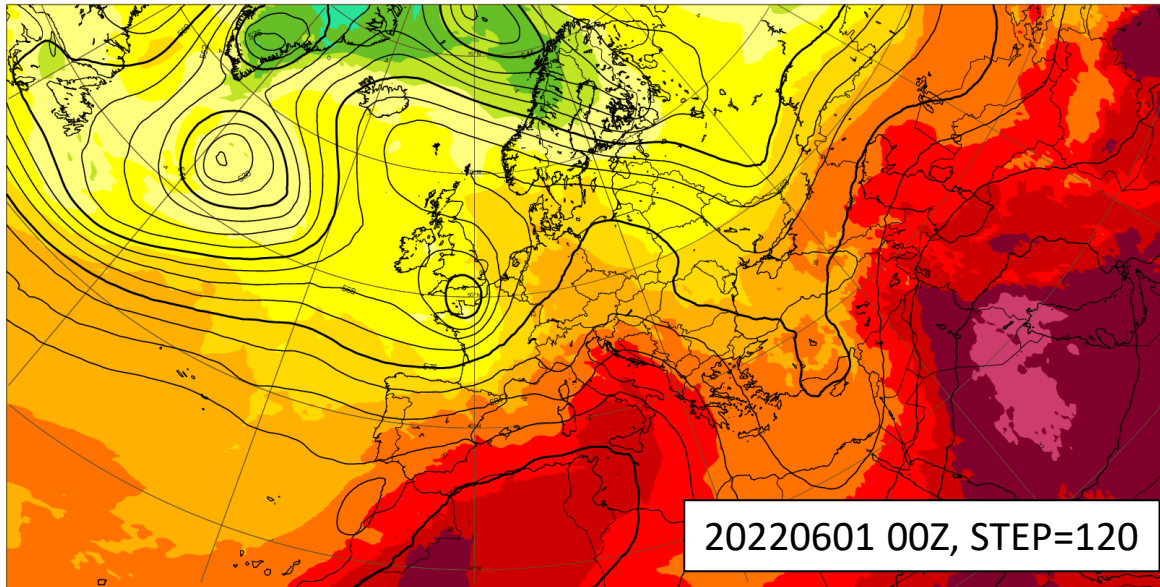
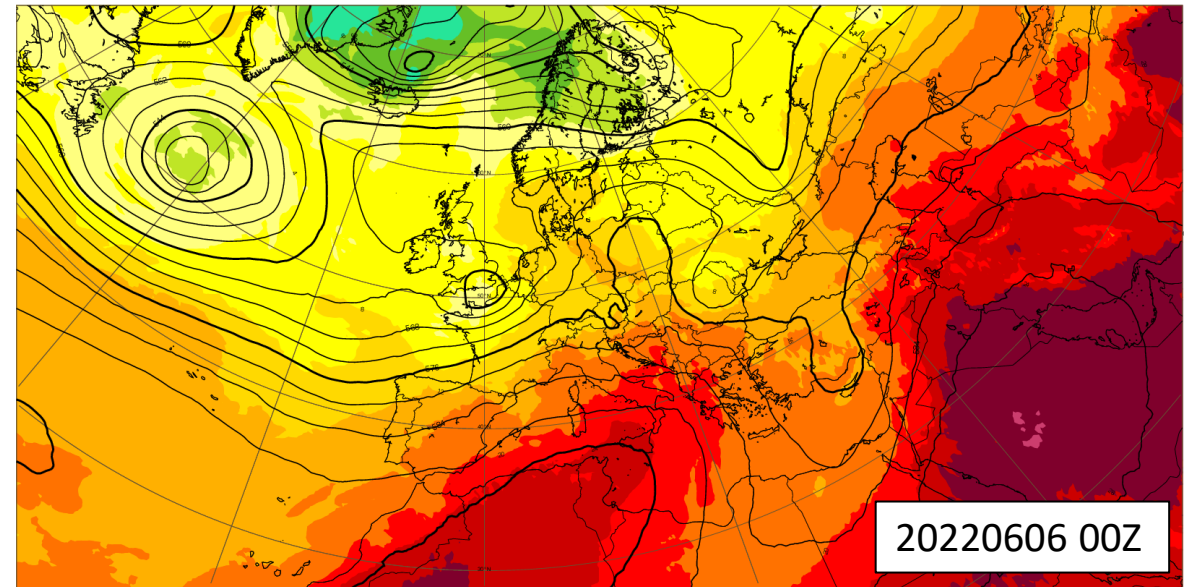


News on ECMWF's forecast performance

Thomas Haiden, UEF 2022



Day 5 forecast



Verifying analysis

Overview

- Upper-air scores
- Weather parameters / surface fields
- Extended-range forecast skill
- Seasonal forecast

Q: Effects from model cycle 47r3 (12 Oct 2021)

Q: Comparison with other centres

ENS upper-air headline score

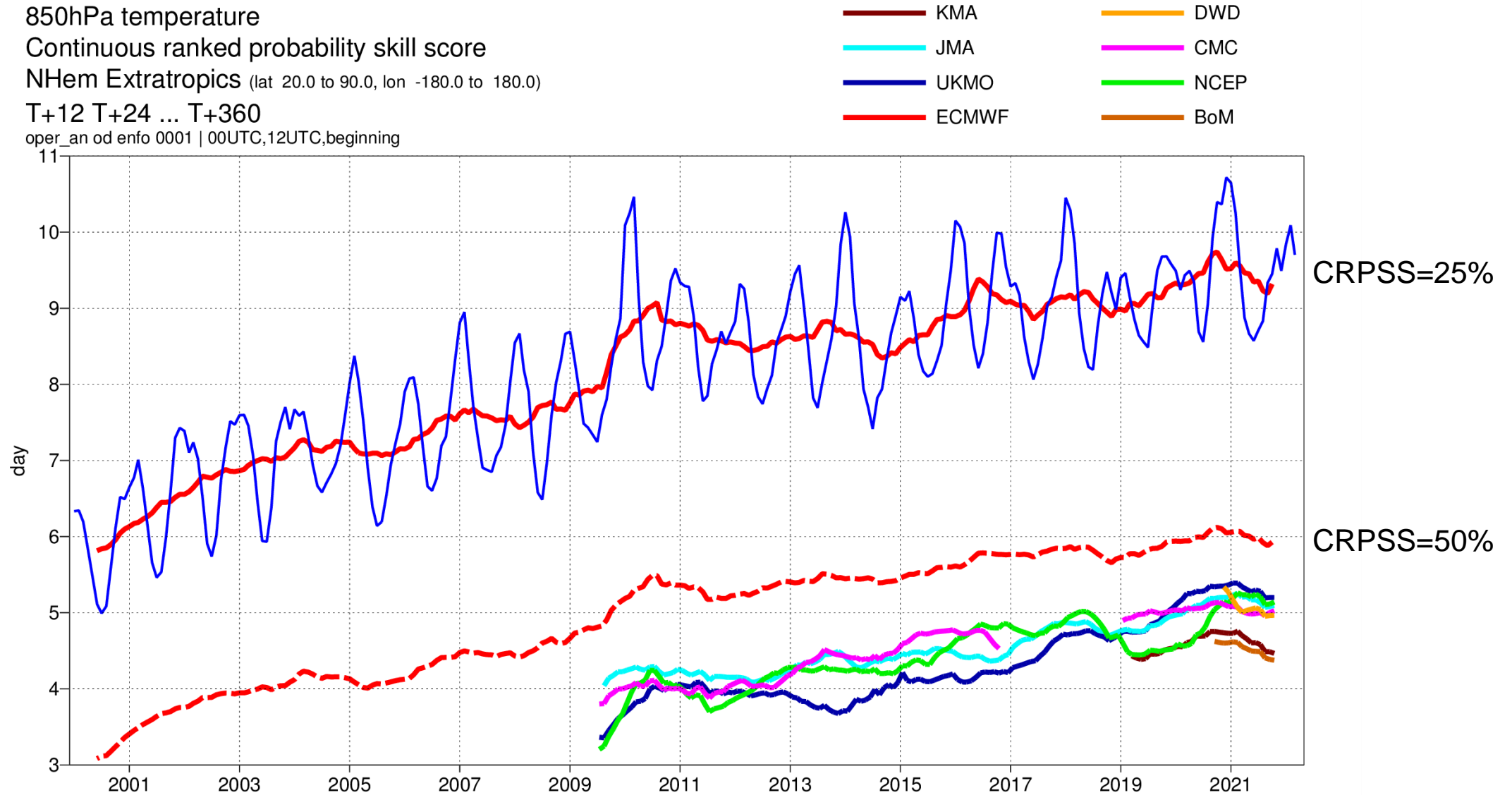
850hPa temperature

Continuous ranked probability skill score

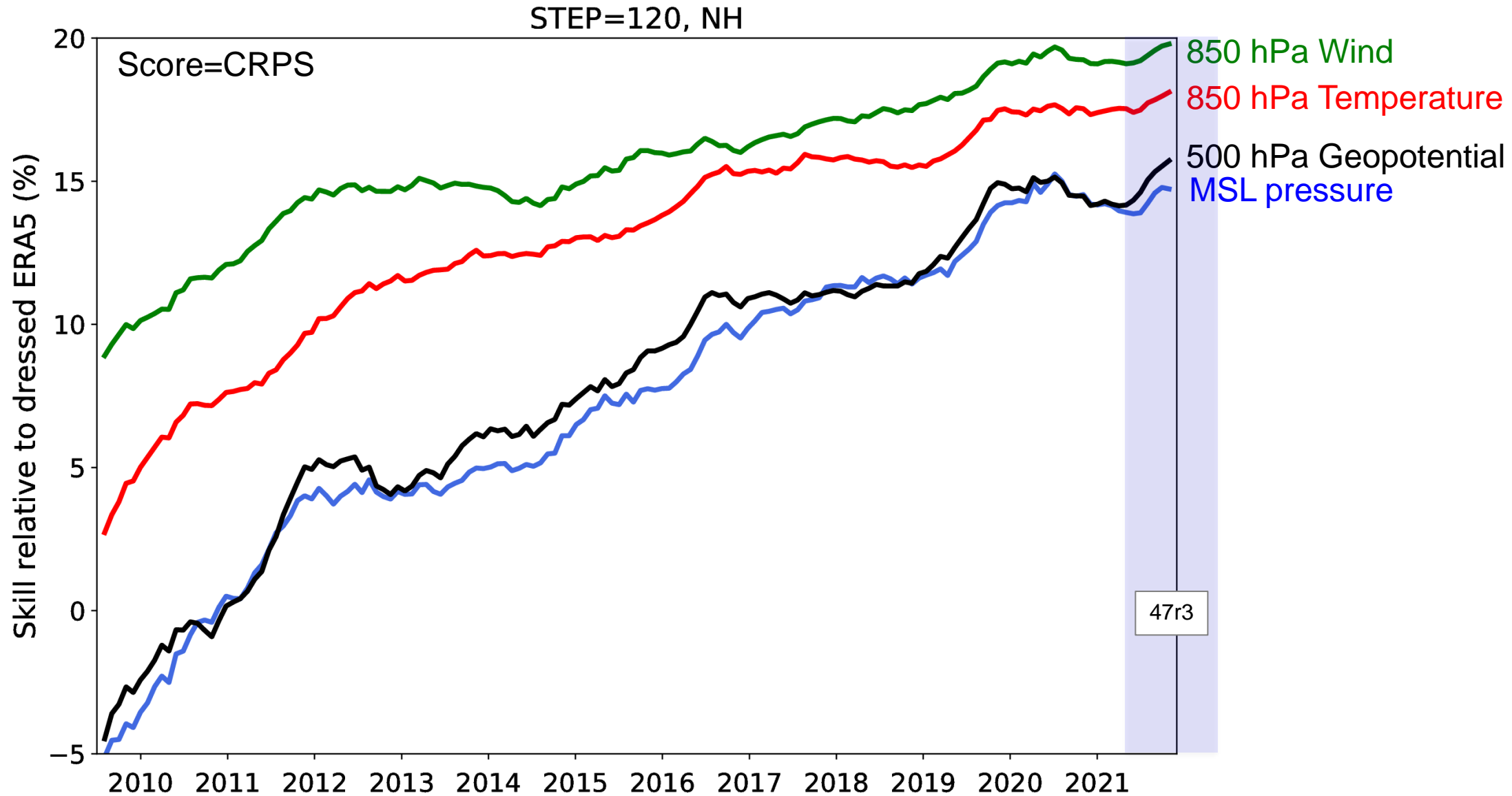
NHem Extratropics (lat 20.0 to 90.0, lon -180.0 to 180.0)

T+12 T+24 ... T+360

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



ENS skill relative to dressed ERA5 – Day 5

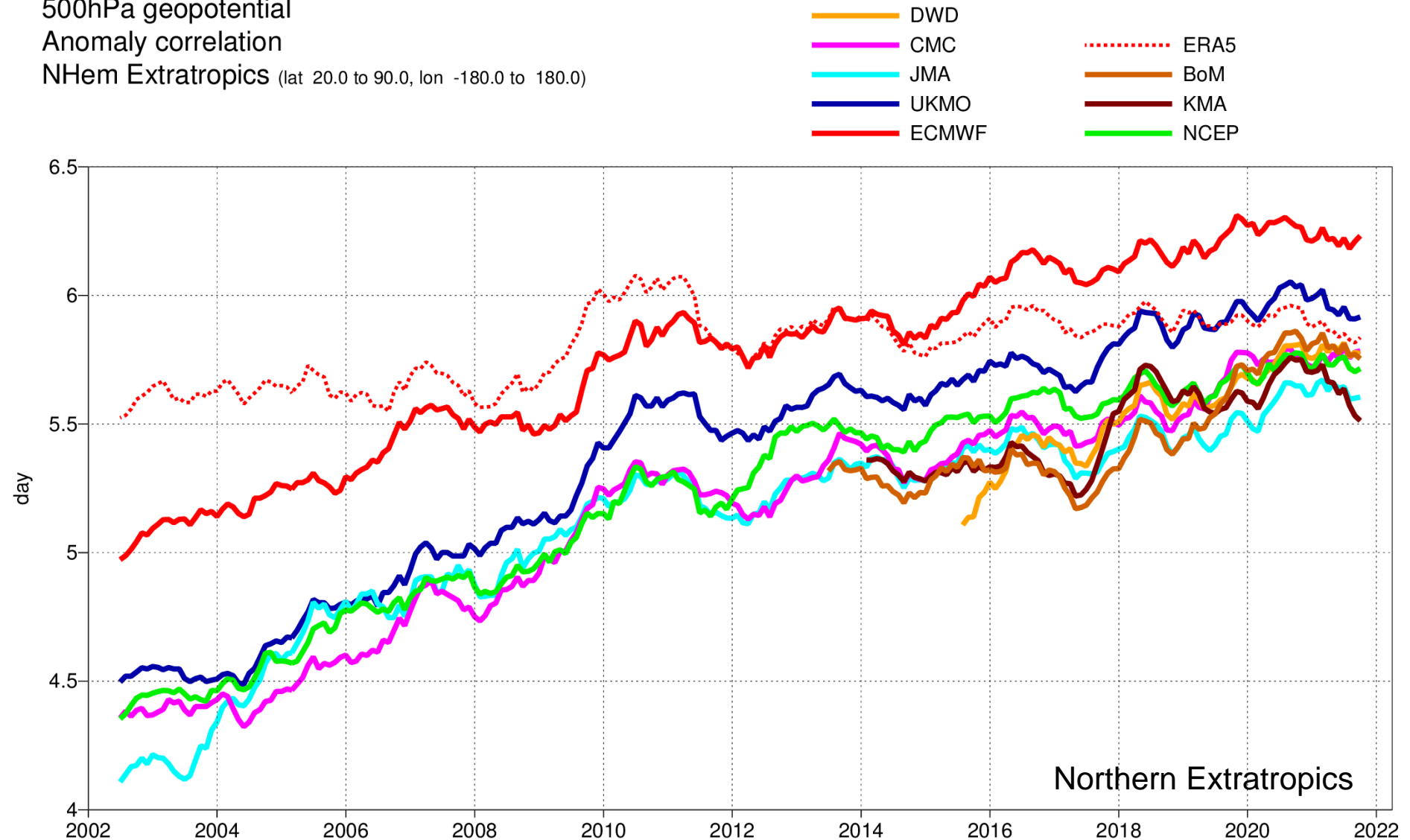


Anomaly correlation of 500 hPa geopotential

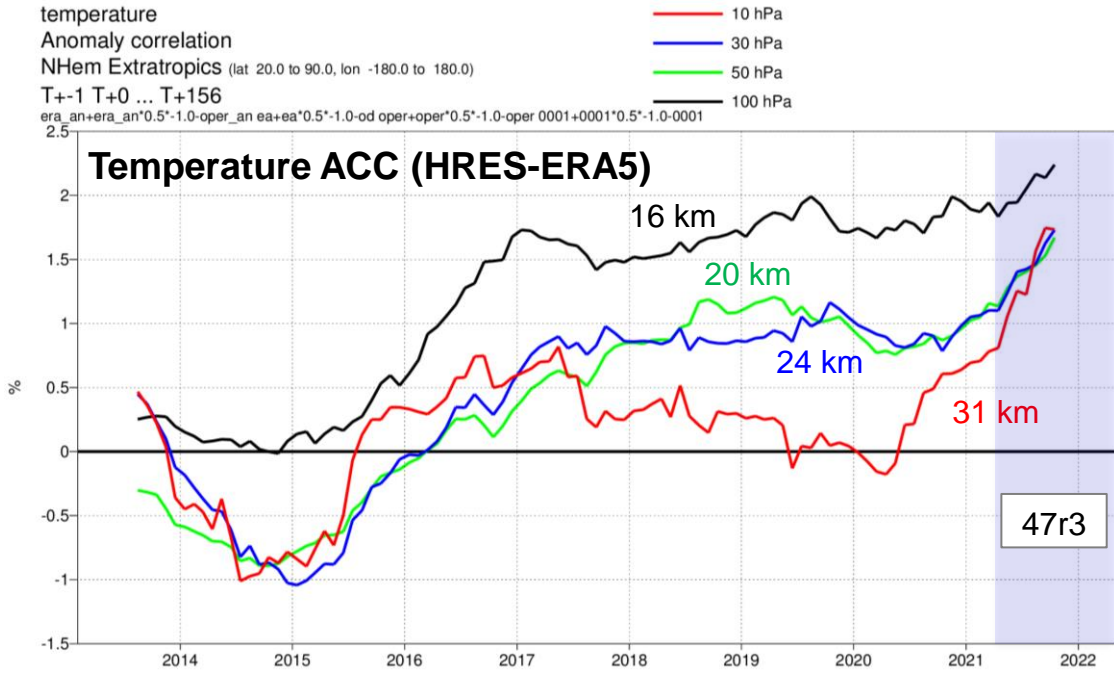
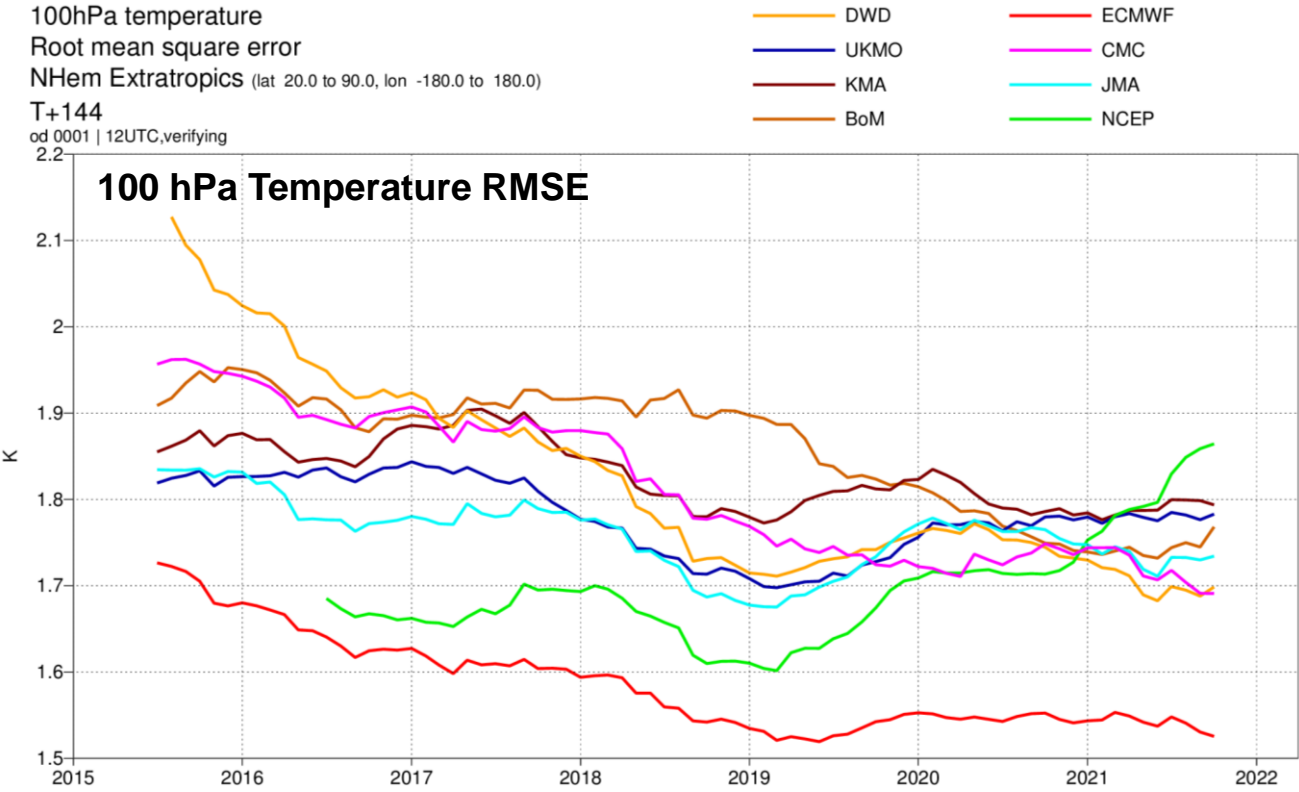
500hPa geopotential

Anomaly correlation

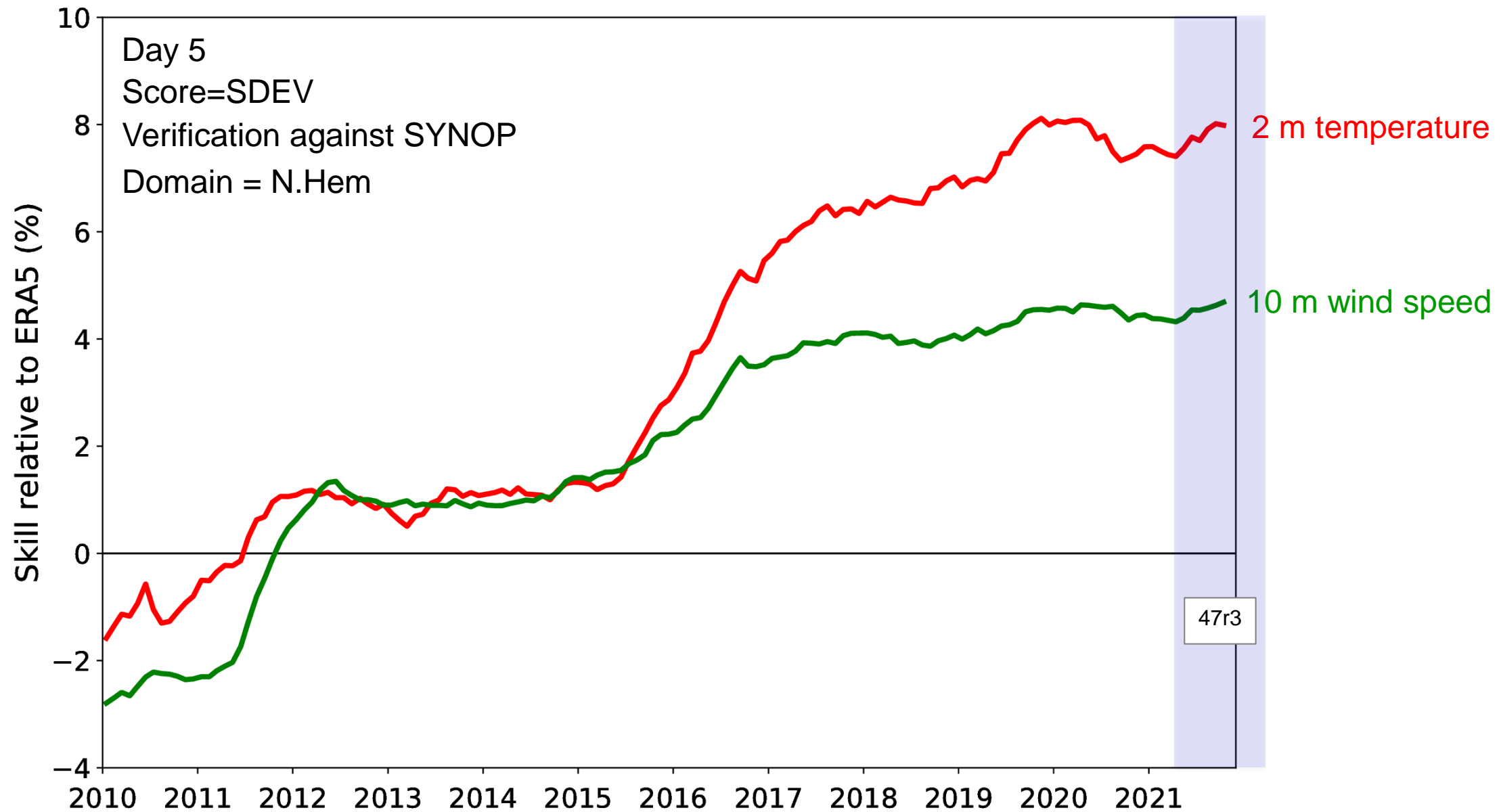
NHem Extratropics (lat 20.0 to 90.0, lon -180.0 to 180.0)



Stratospheric scores

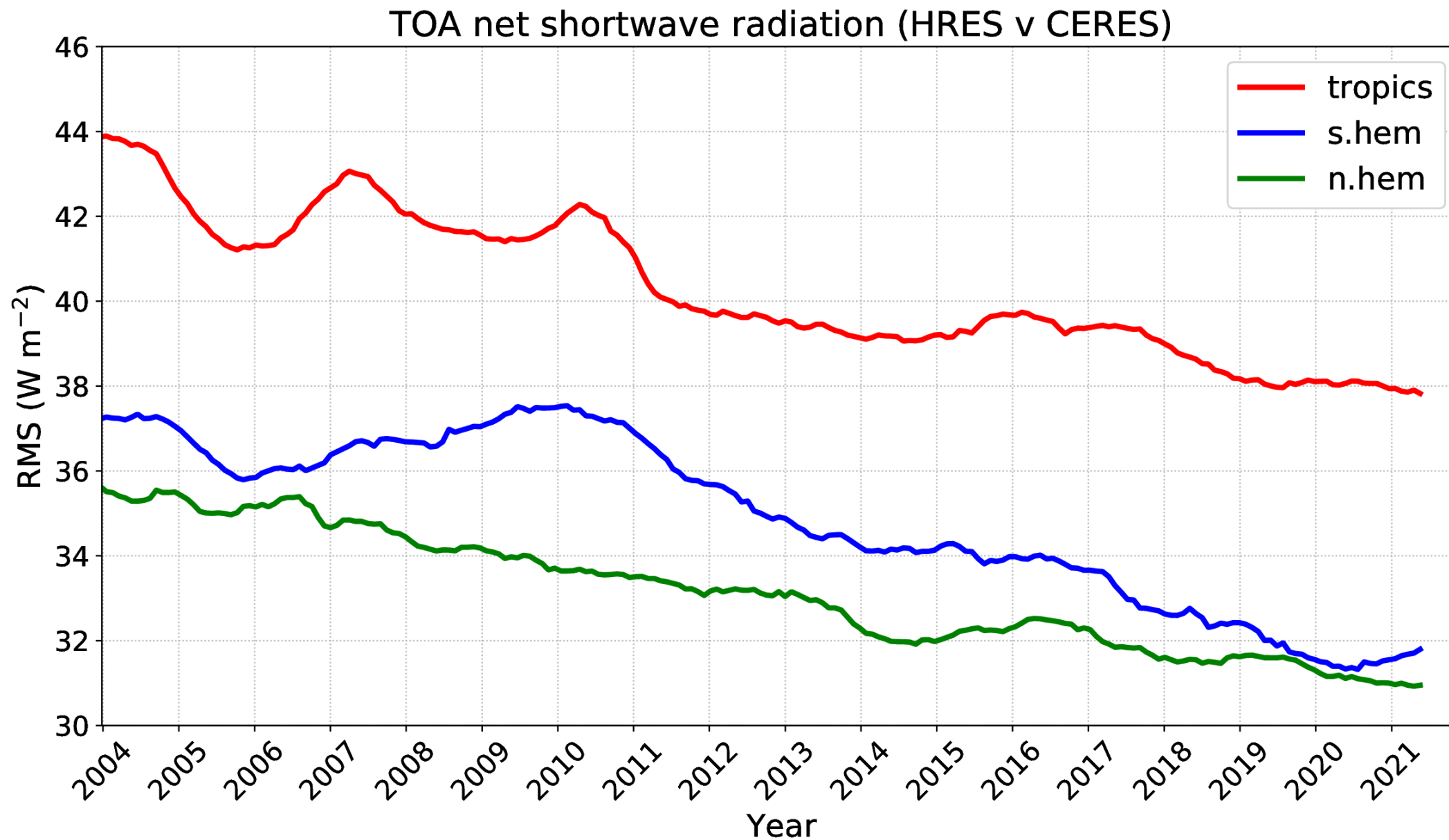


HRES surface skill relative to ERA5



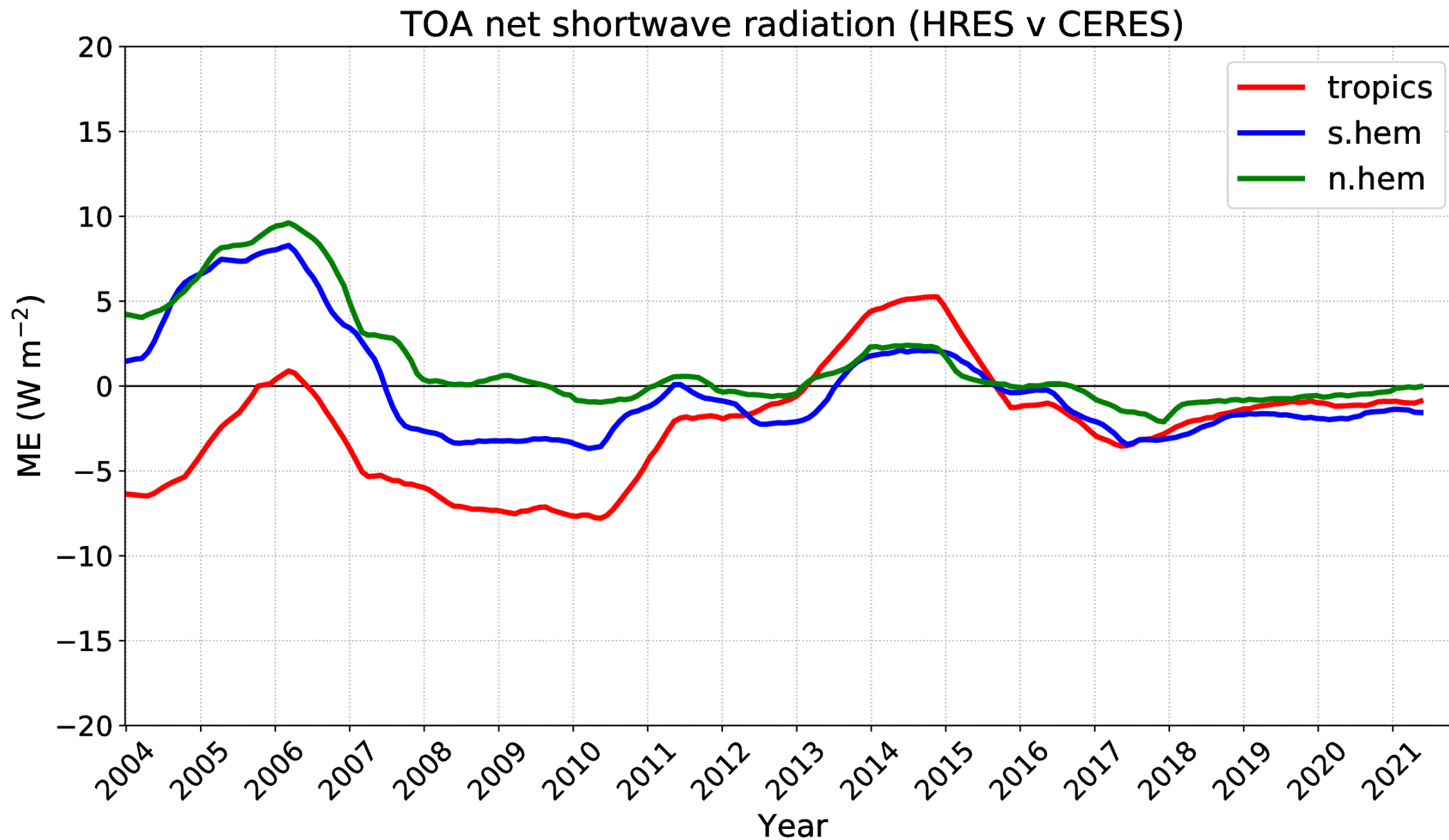
Solar radiation (STEP=120)

Run: 00 UTC



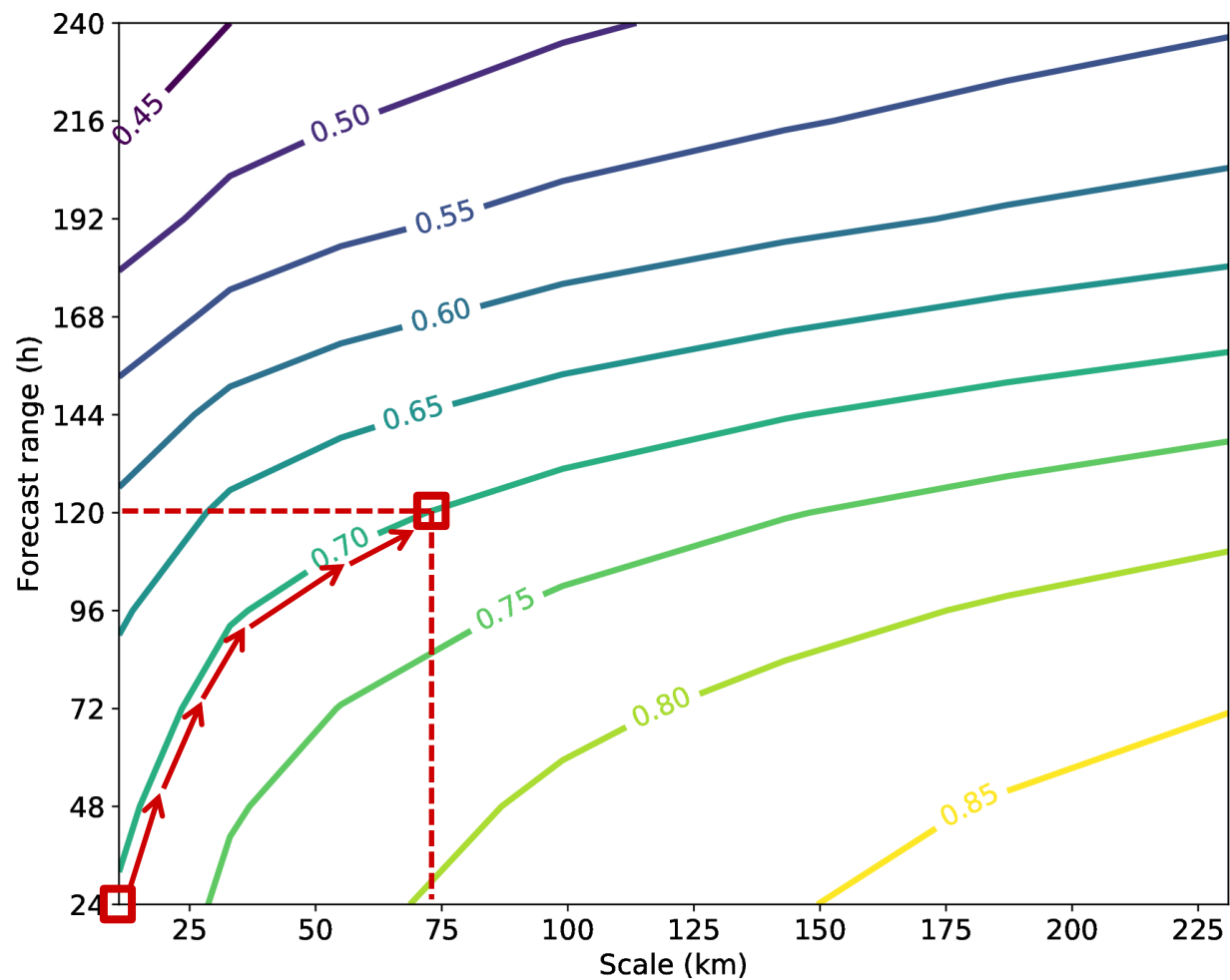
Solar radiation (STEP=120)

Run: 00 UTC

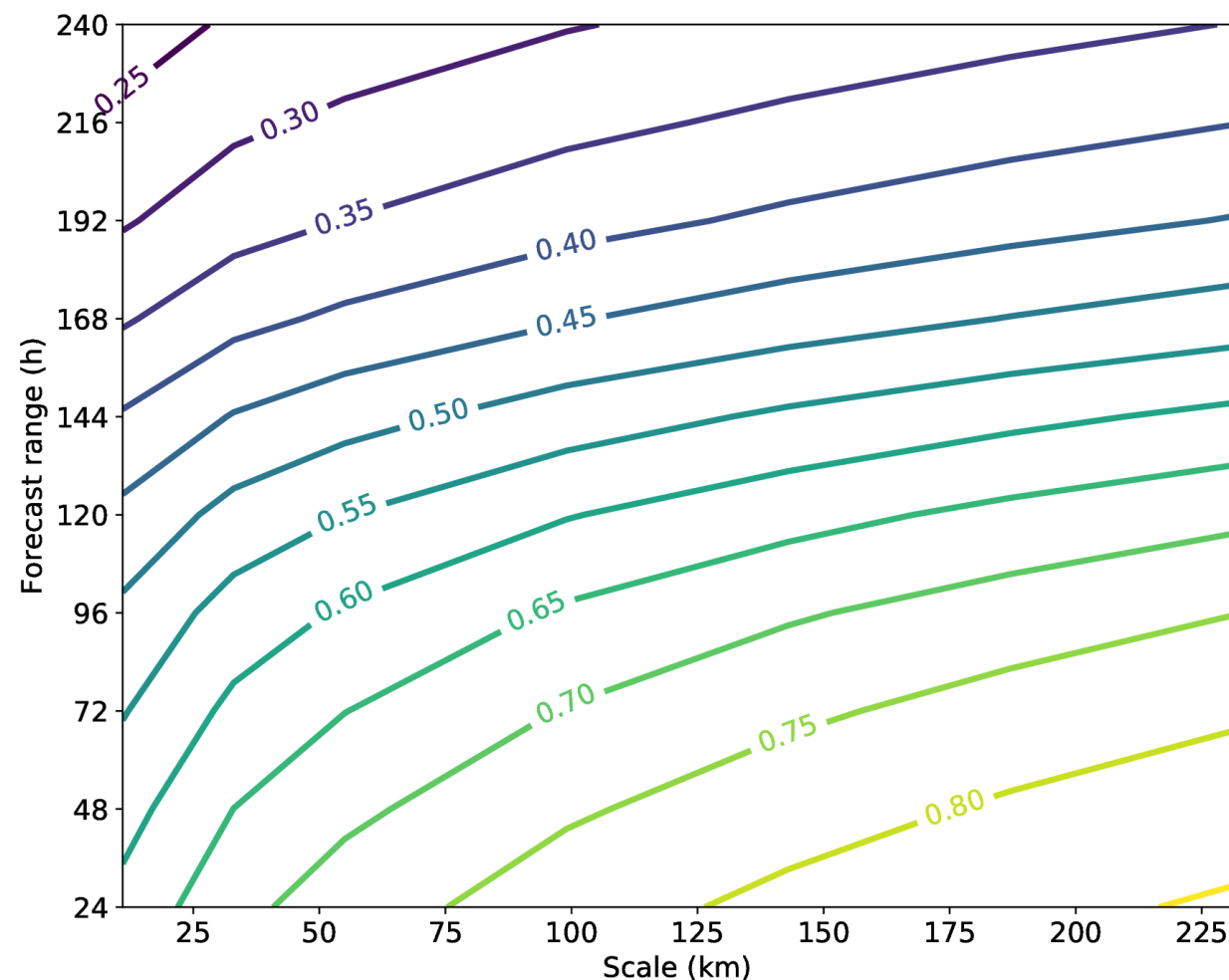


FSS for 24-h precipitation (GPM-IMERG)

Area:
35N to 60N
12.5W to 42.5E
Period:
202006-202103



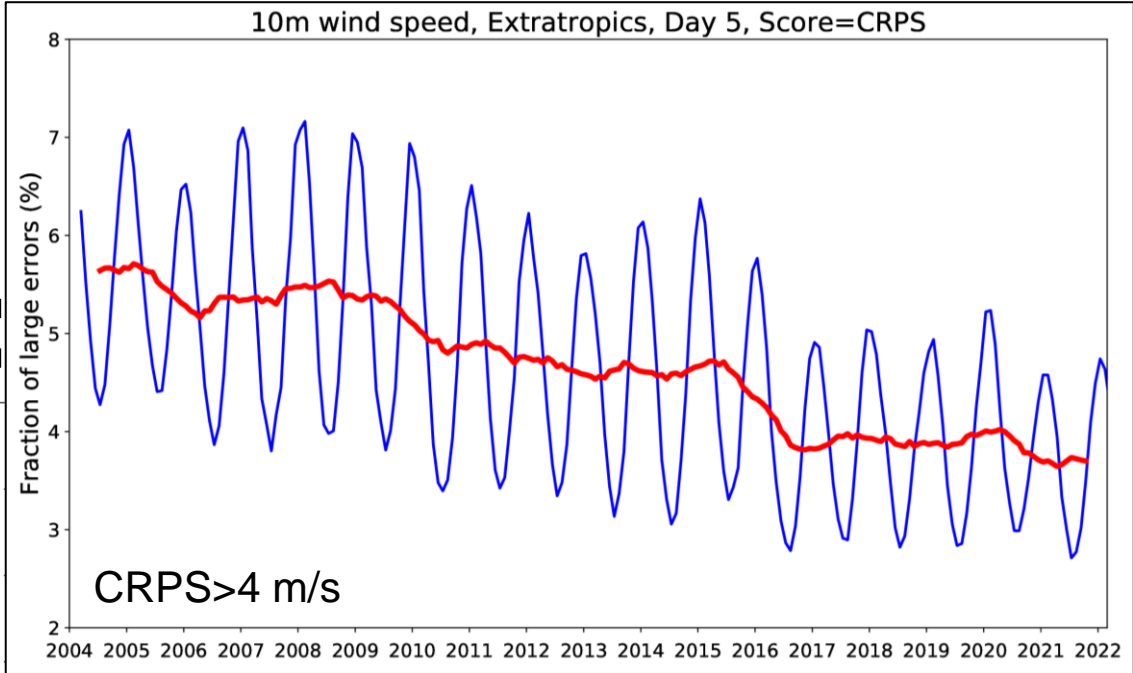
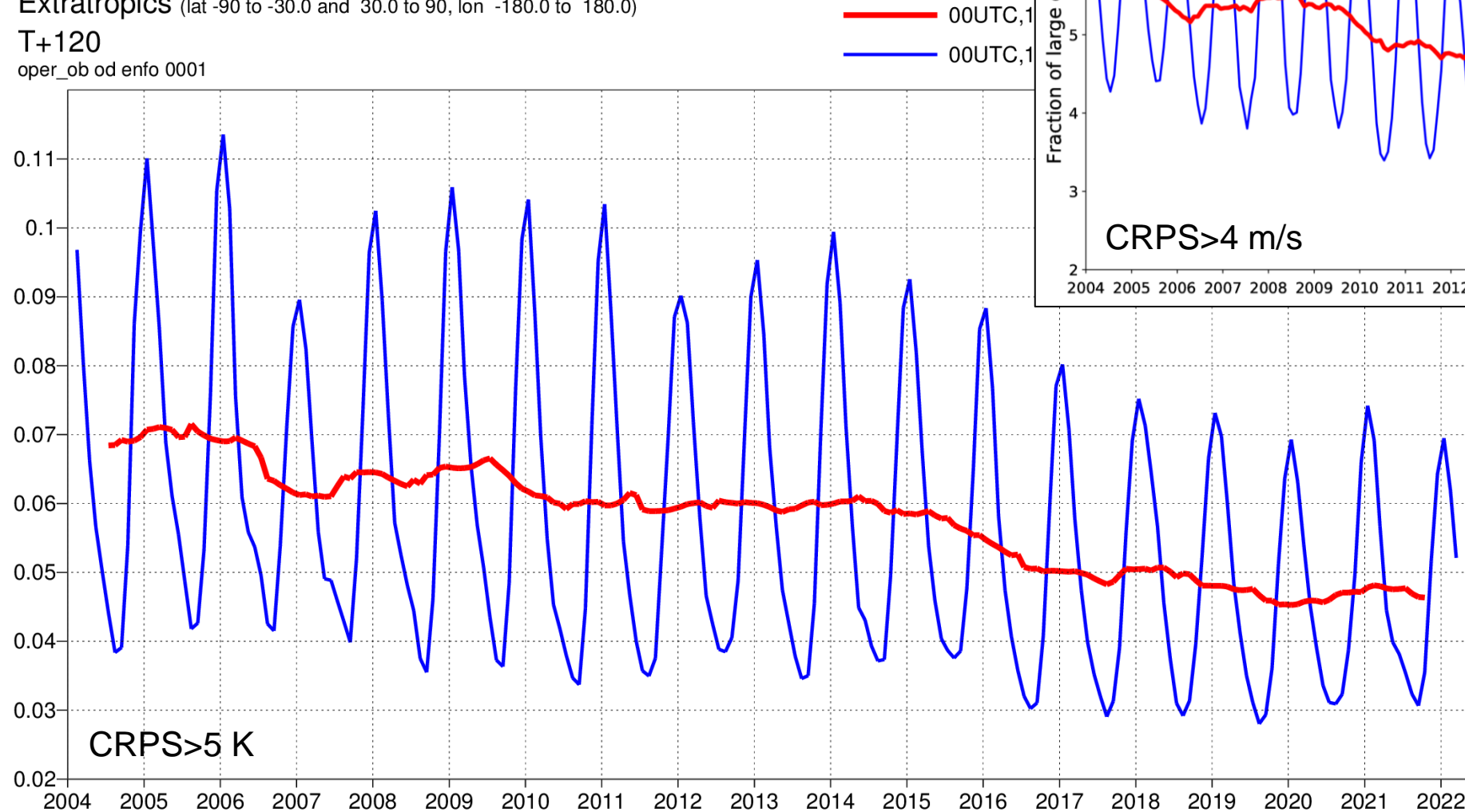
THR=1mm



THR=5mm

Fraction of large ENS T2M errors

2 meter temperature
Fraction of large CRPS value >5.0
Extratropics (lat -90 to -30.0 and 30.0 to 90, lon -180.0 to 180.0)
T+120
oper_ob od enfo 0001

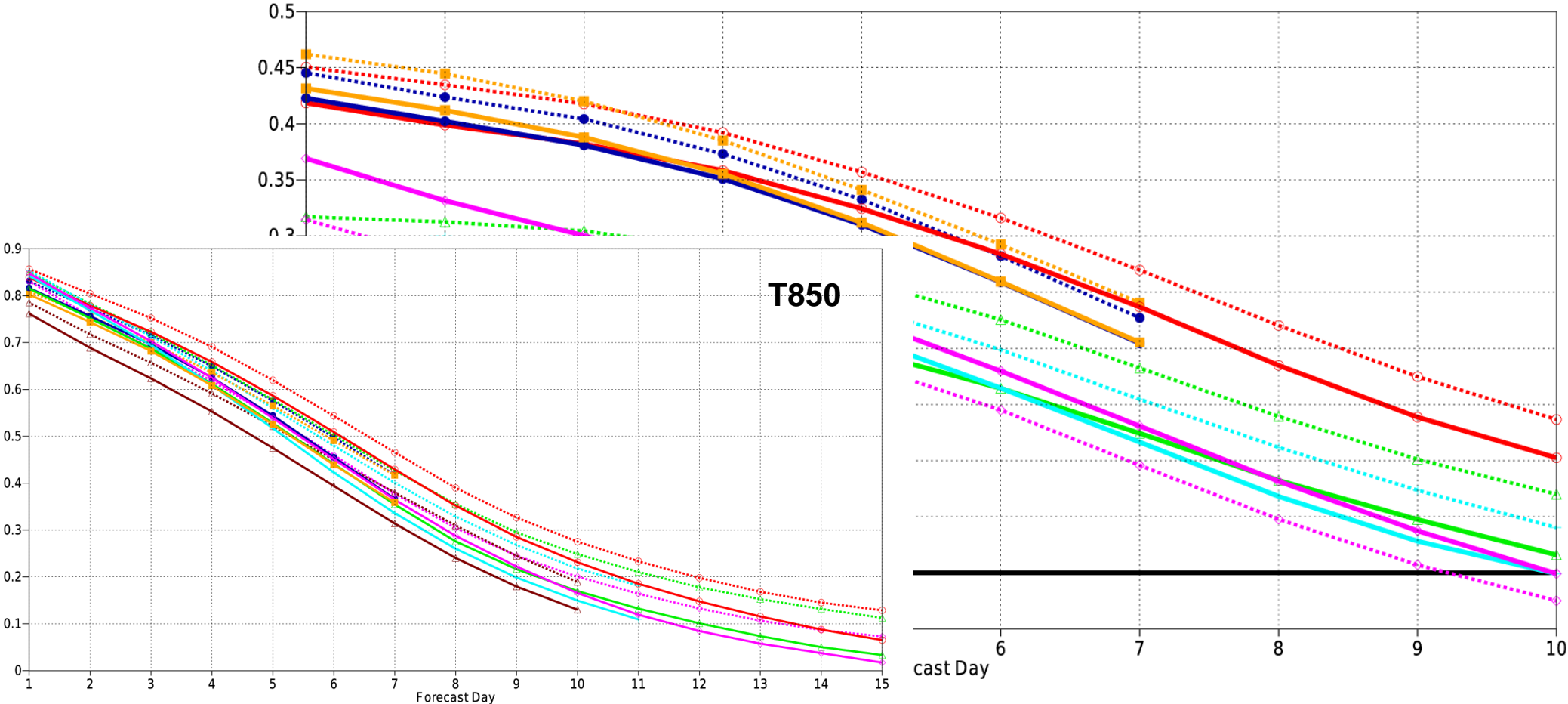


ENS 2m Temperature

season:DJ F

2 meter temperature
Continuous ranked probability skill score
Extratropics (lat -90 to -30.0 and 30.0 to 90, lon -180.0 to 180.0)

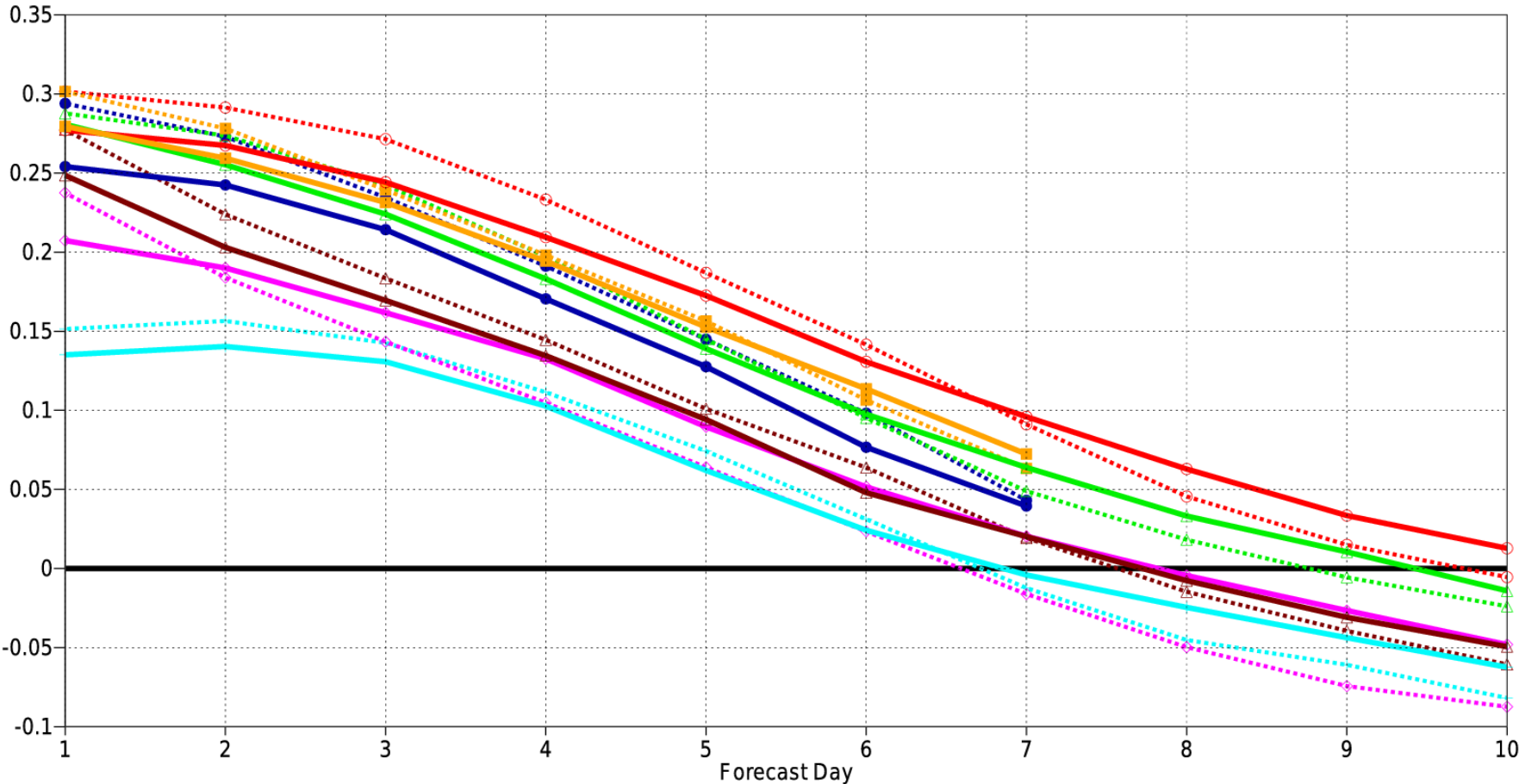
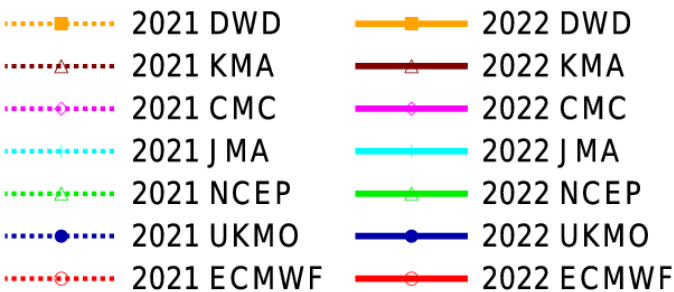
- | | |
|------------|------------|
| 2021 DWD | 2022 DWD |
| 2021 KMA | 2022 KMA |
| 2021 CMC | 2022 CMC |
| 2021 JMA | 2022 JMA |
| 2021 NCEP | 2022 NCEP |
| 2021 UKMO | 2022 UKMO |
| 2021 ECMWF | 2022 ECMWF |



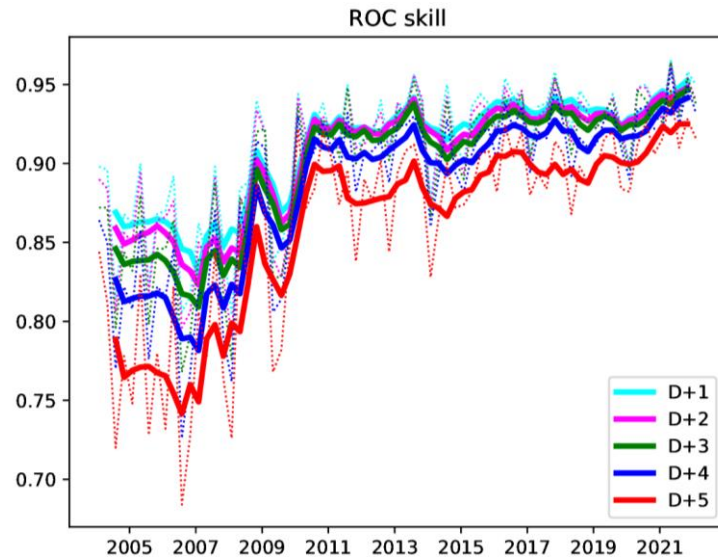
ENS 24-h precipitation

season:DJ F

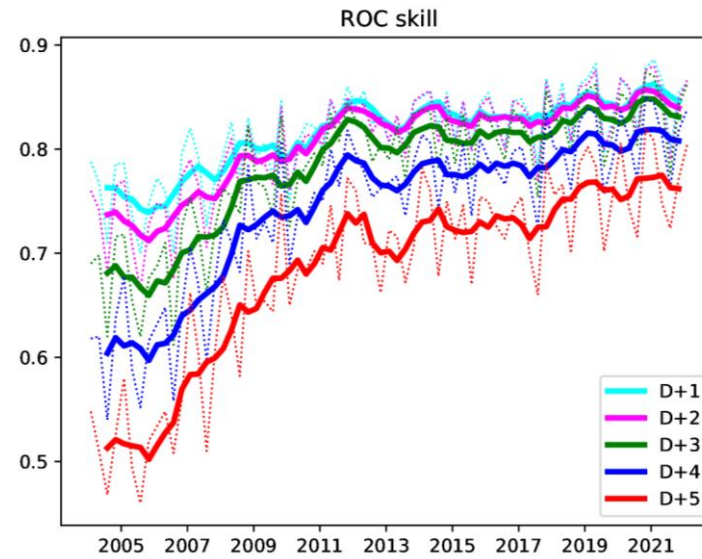
total precipitation
Continuous ranked probability skill score
Extratropics (lat -90 to -30.0 and 30.0 to 90, lon -180.0 to 180.0)



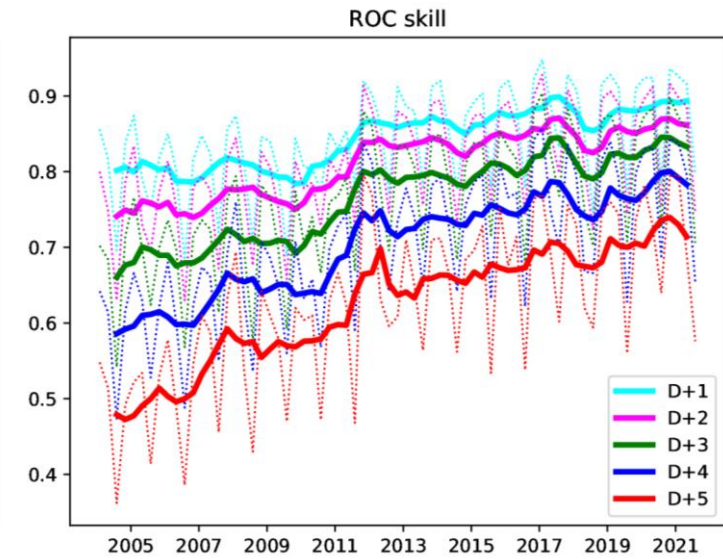
Extreme forecast index (EFI)



2m temperature



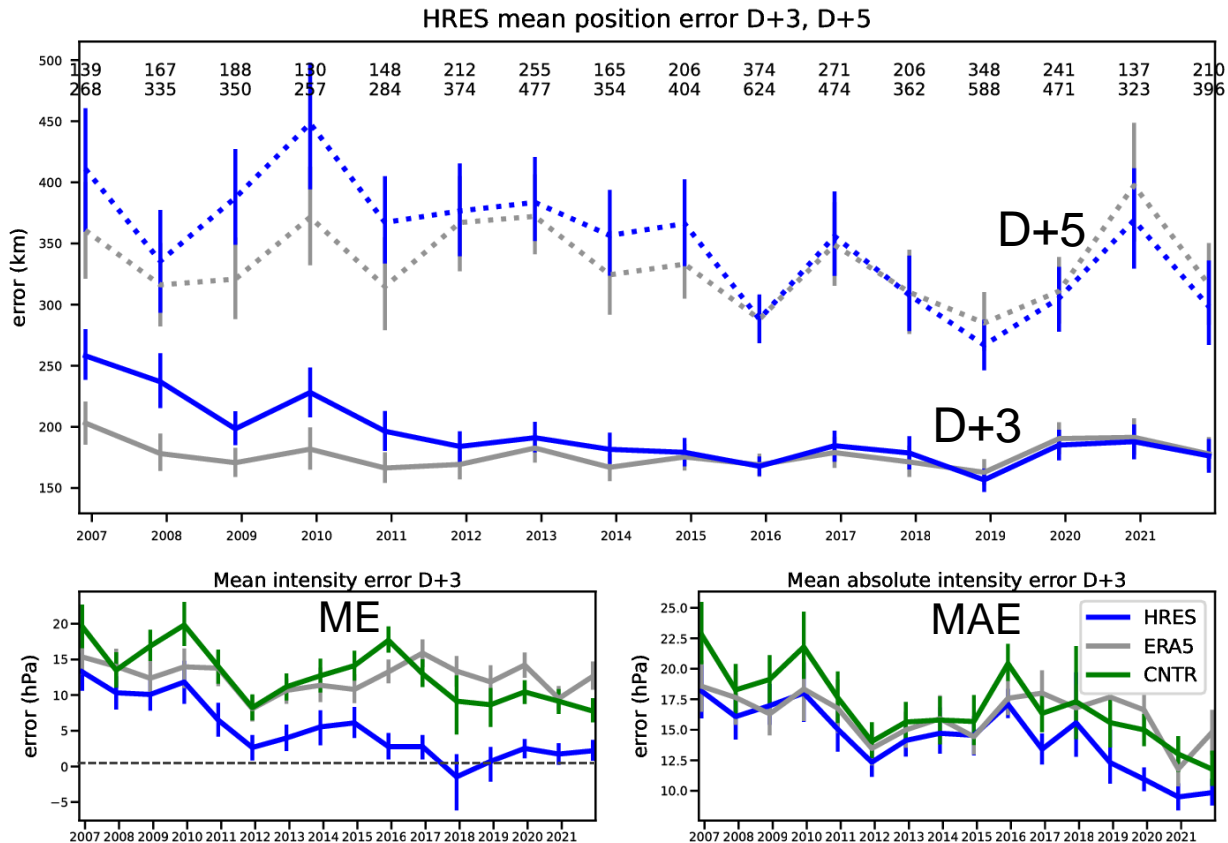
10m wind speed



24-h precipitation

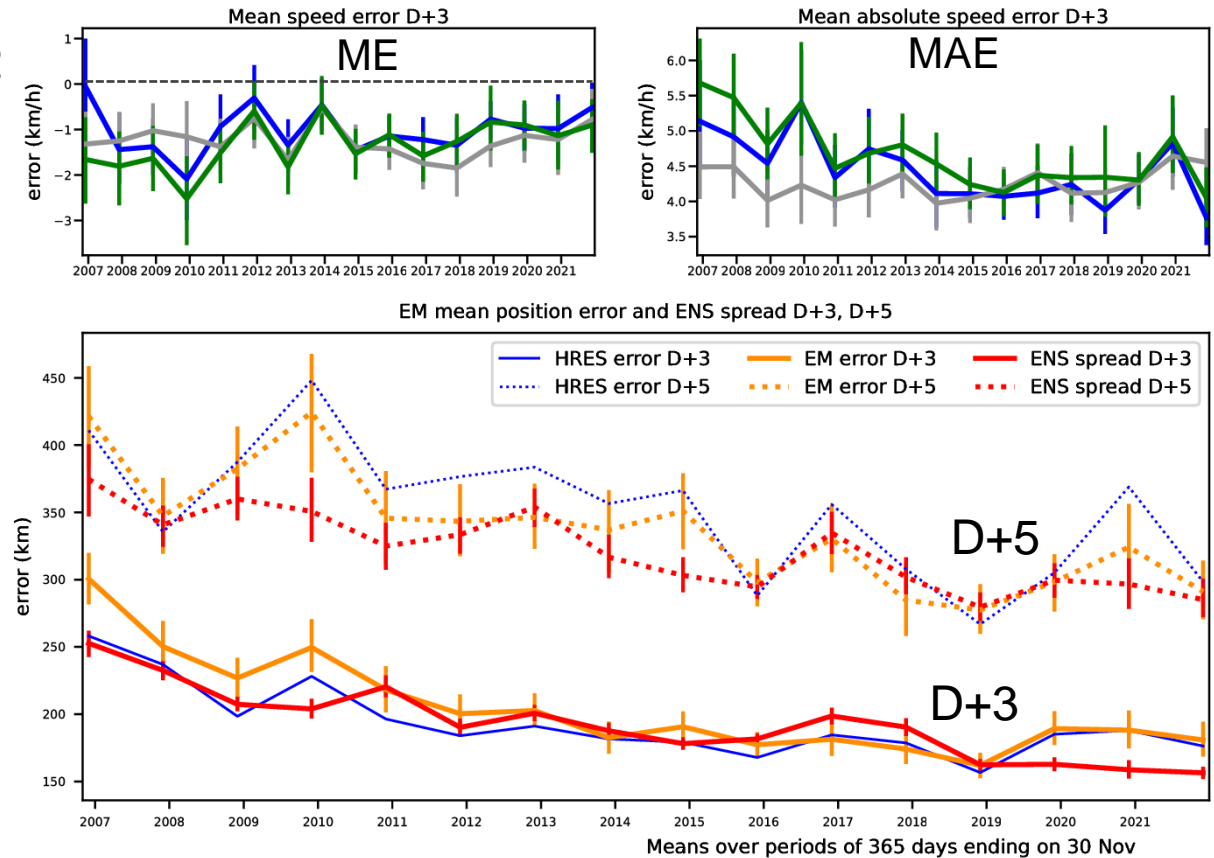
Tropical cyclone verification

Position (HRES)



Central pressure

Speed

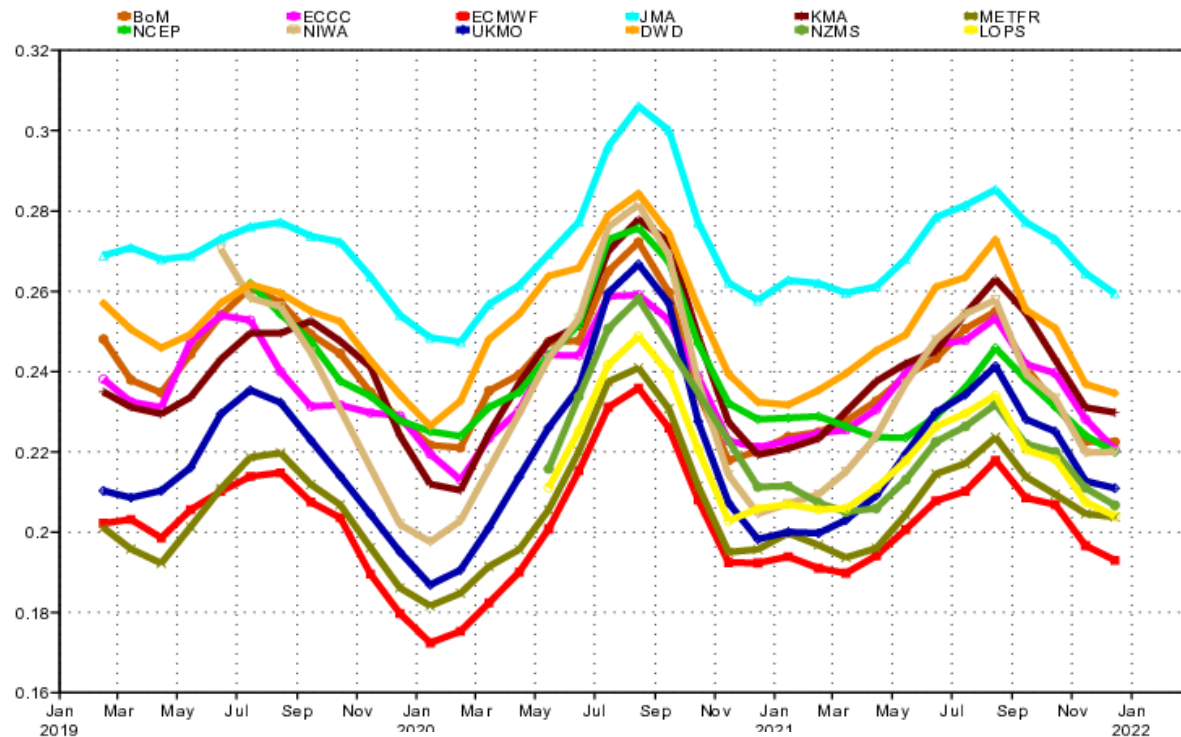


Position (ENS)

Ocean waves – verification against buoys

Scatter index | significant wave height | NHem Extratropics

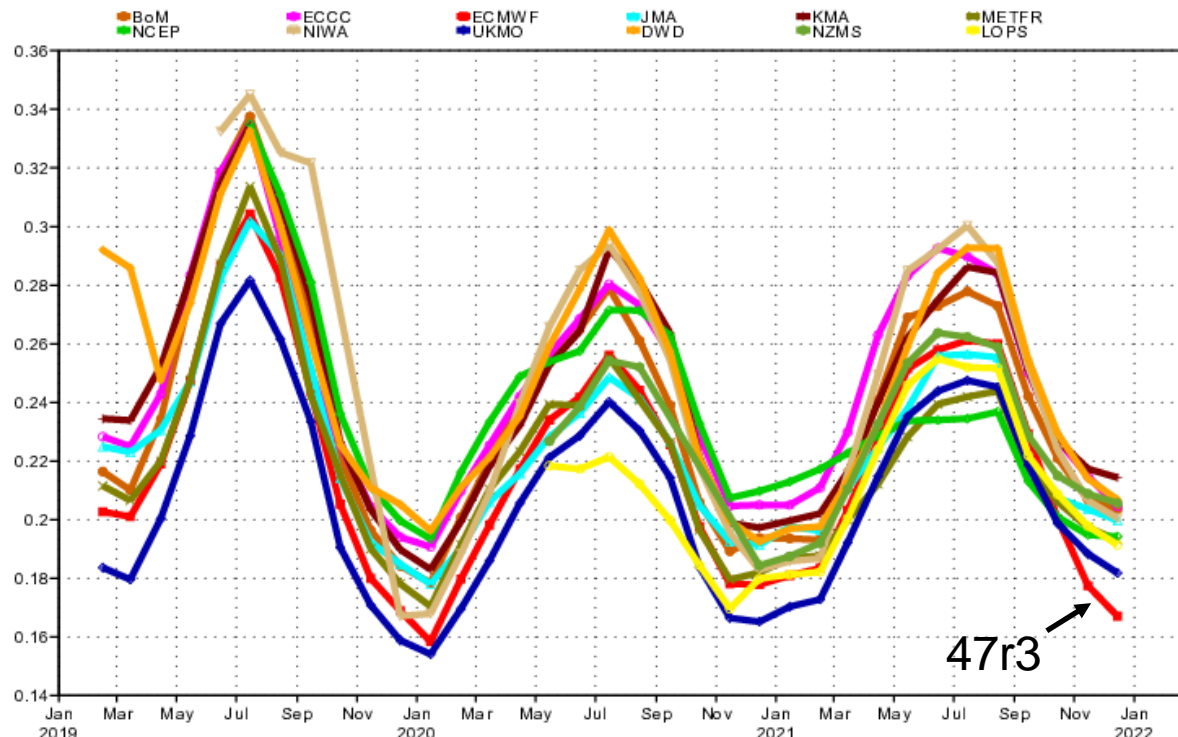
T+72 | waveapi lw wave prod 00z



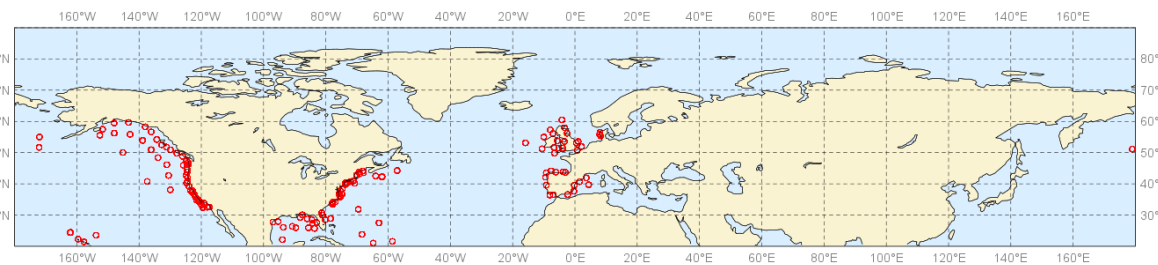
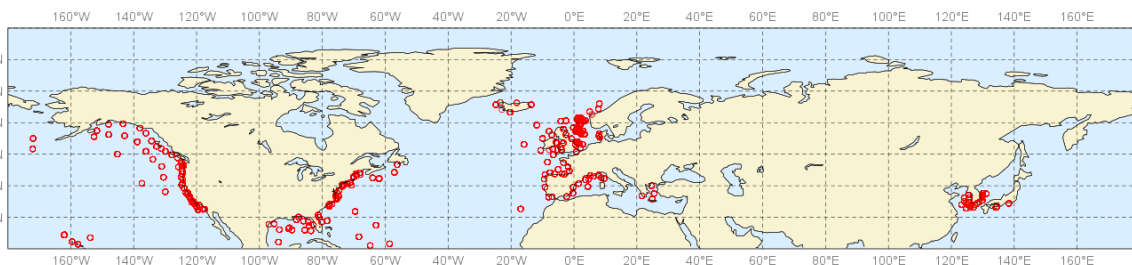
Significant wave height

Scatter index | pp1d | NHem Extratropics

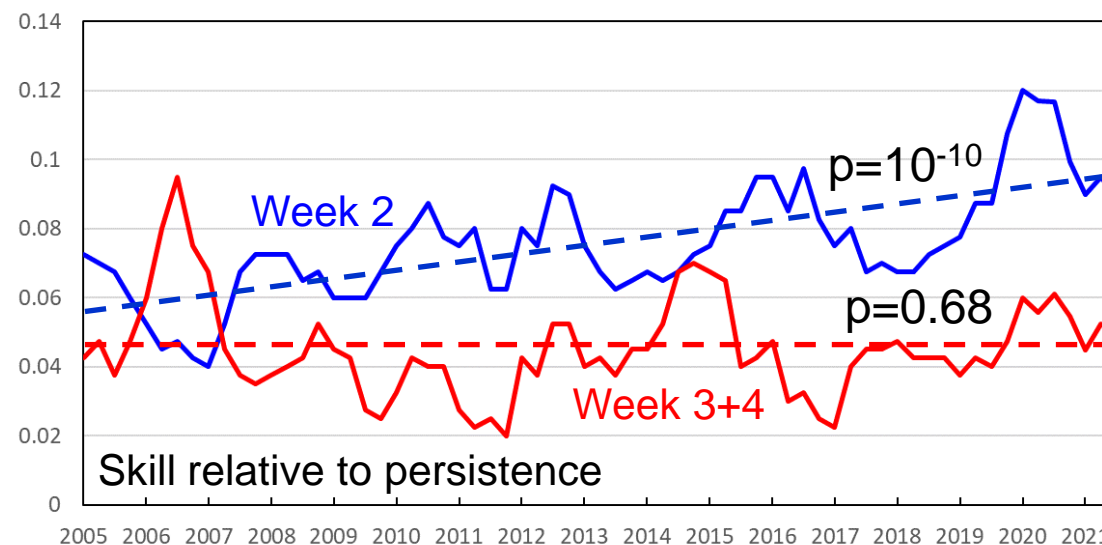
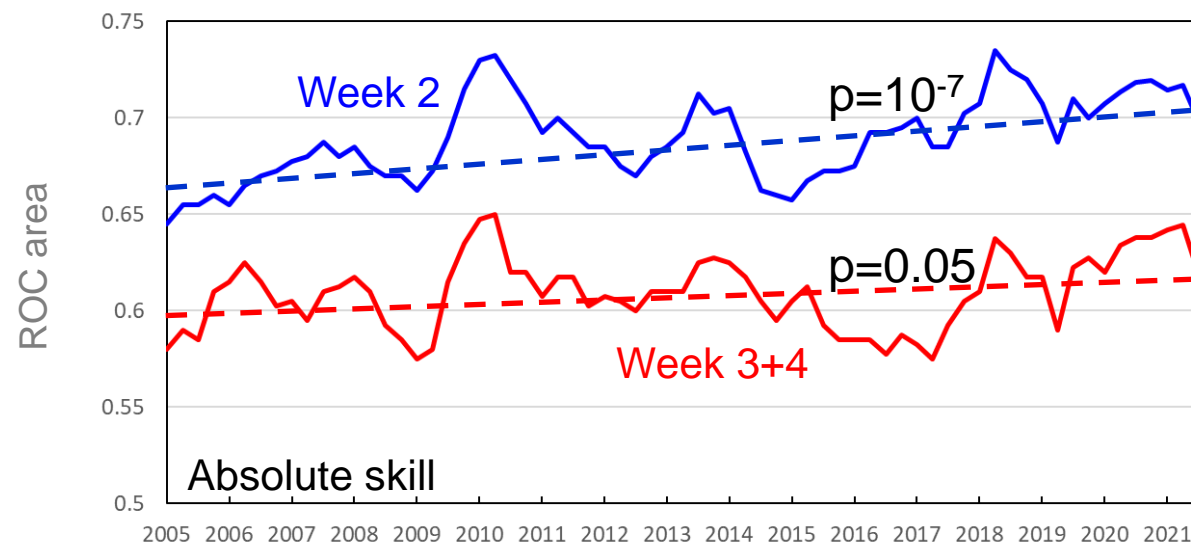
T+72 | waveapi lw wave prod 00z



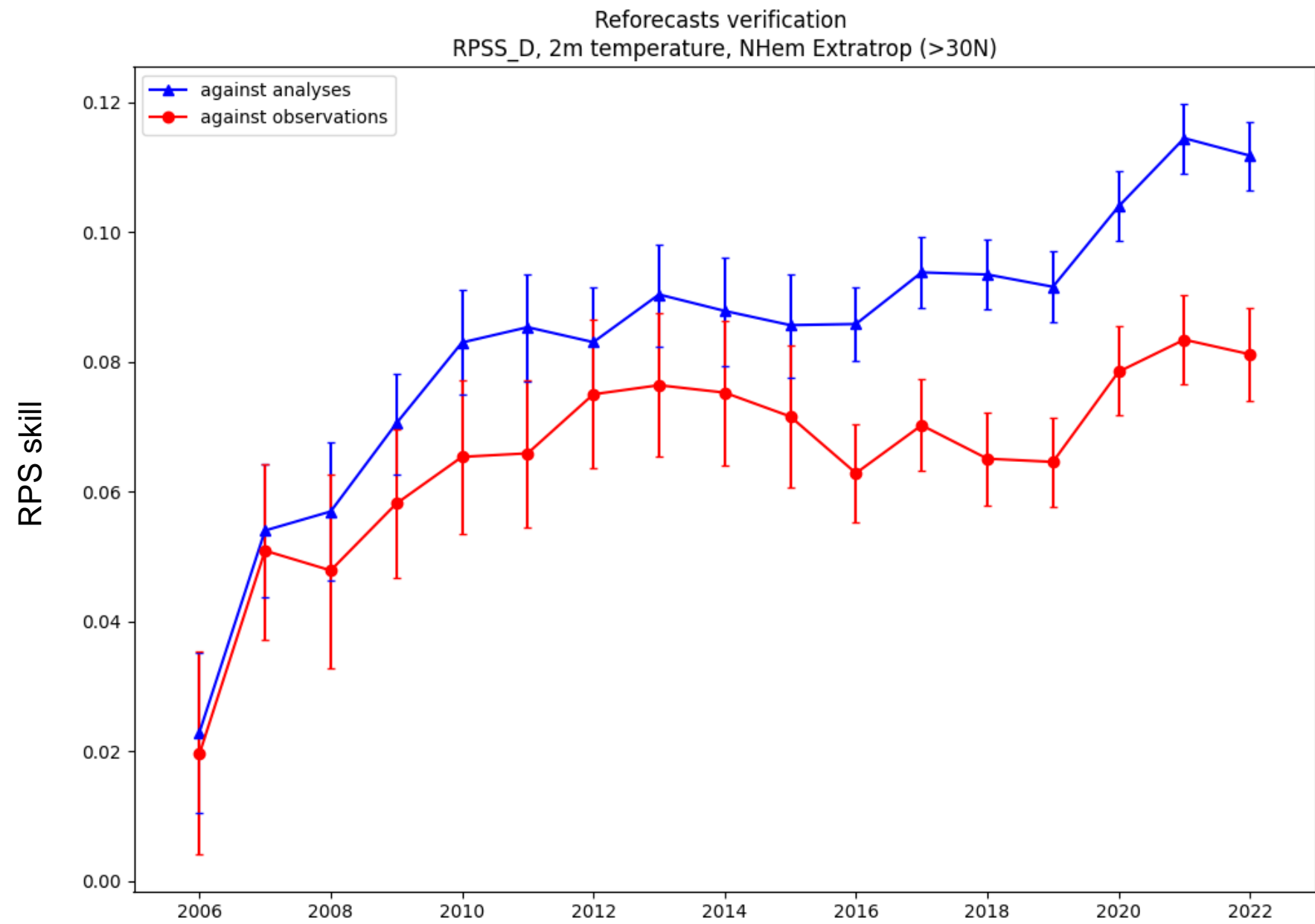
Peak period



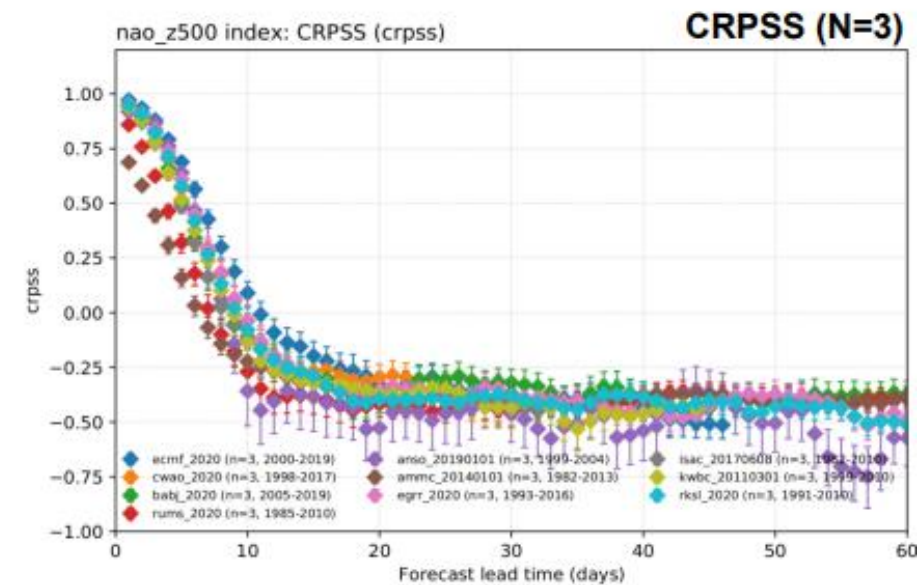
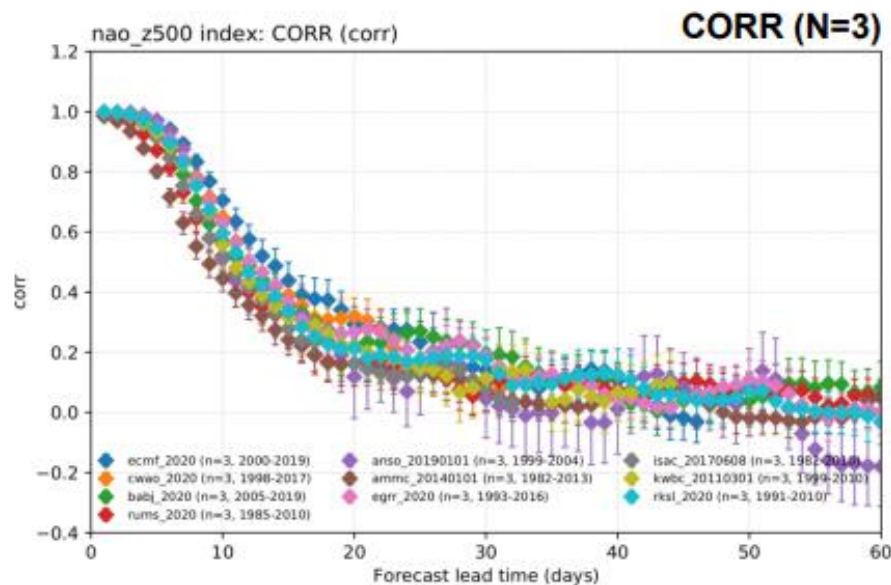
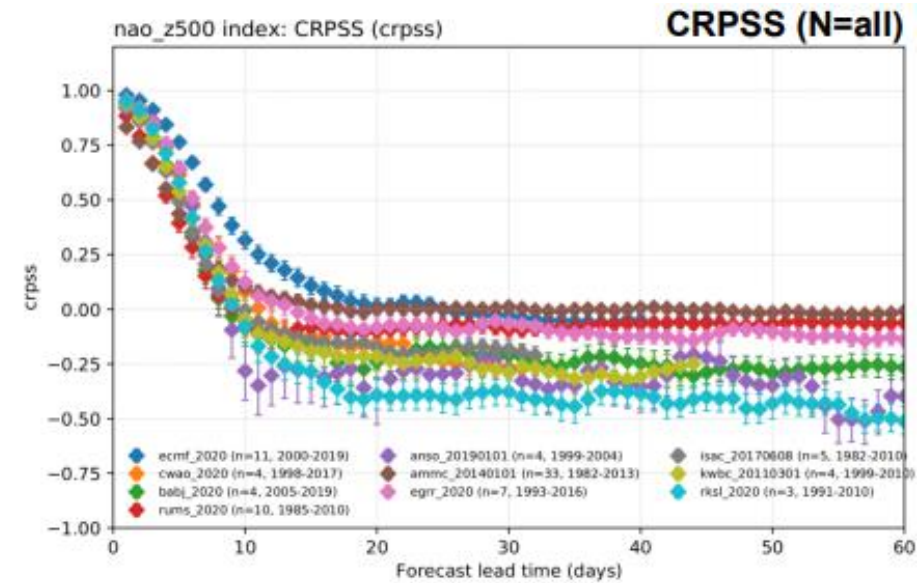
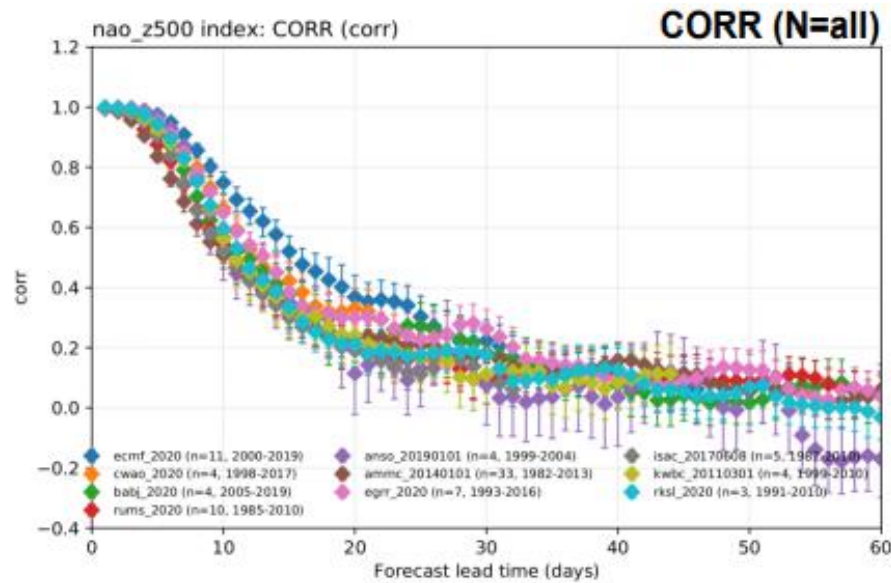
Extended range: T2m real-time forecasts



ENS 2m temperature in week 3 (terciles)



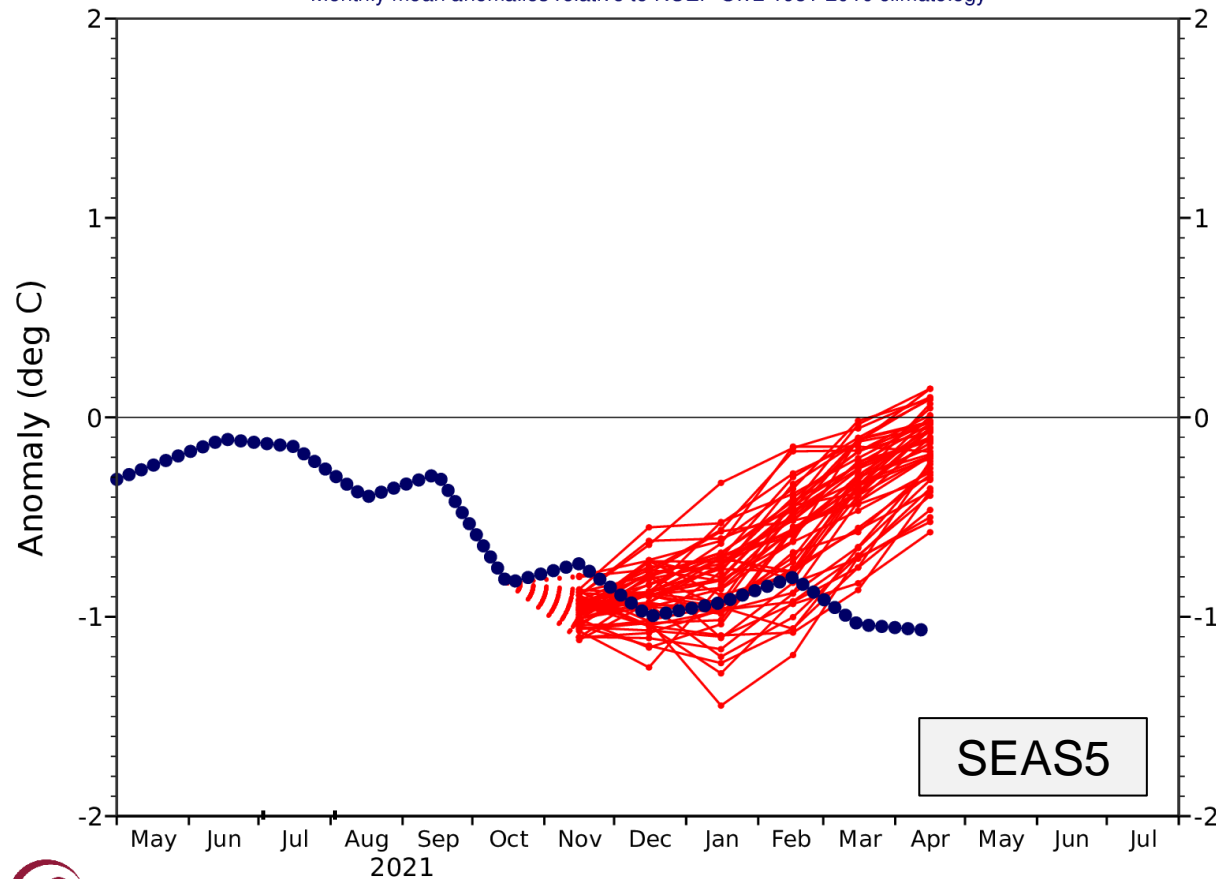
Extended range: NAO (Z500 EOF1) anomaly index



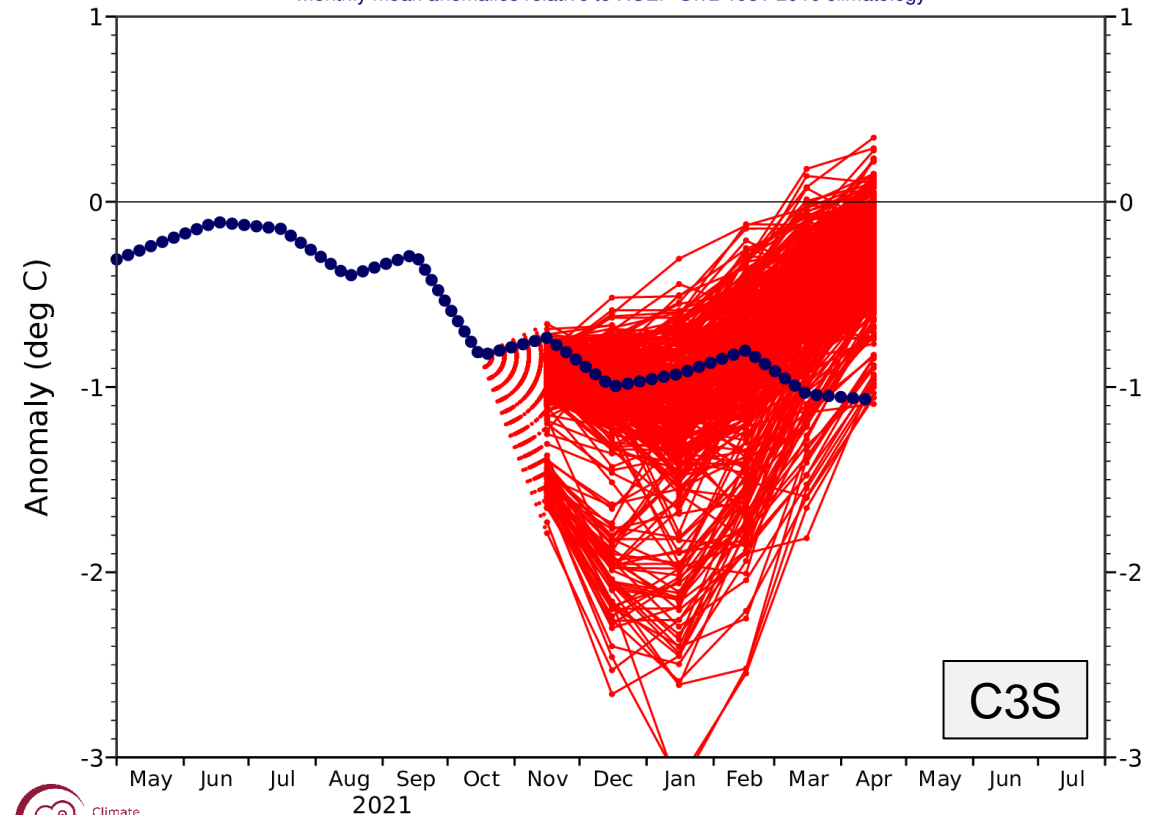
C. Roberts

Seasonal forecast: El Niño (DJF 2022)

NINO3.4 SST anomaly plume
C3S: ECMWF contribution from 1 Nov 2021
Monthly mean anomalies relative to NCEP Olv2 1981-2010 climatology

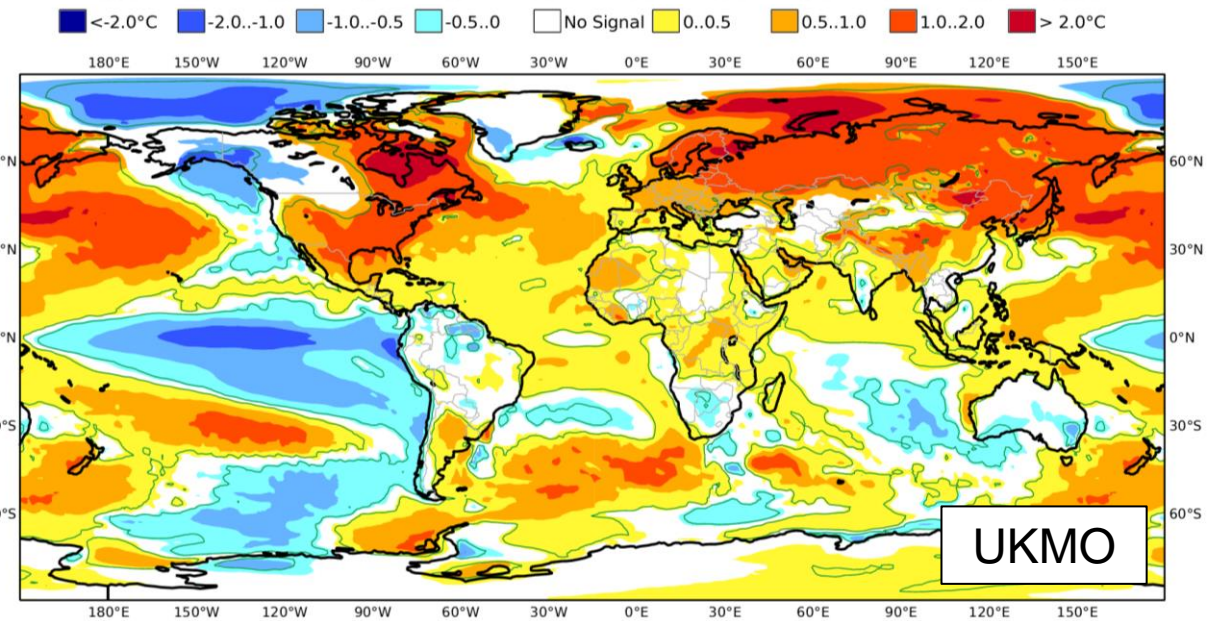
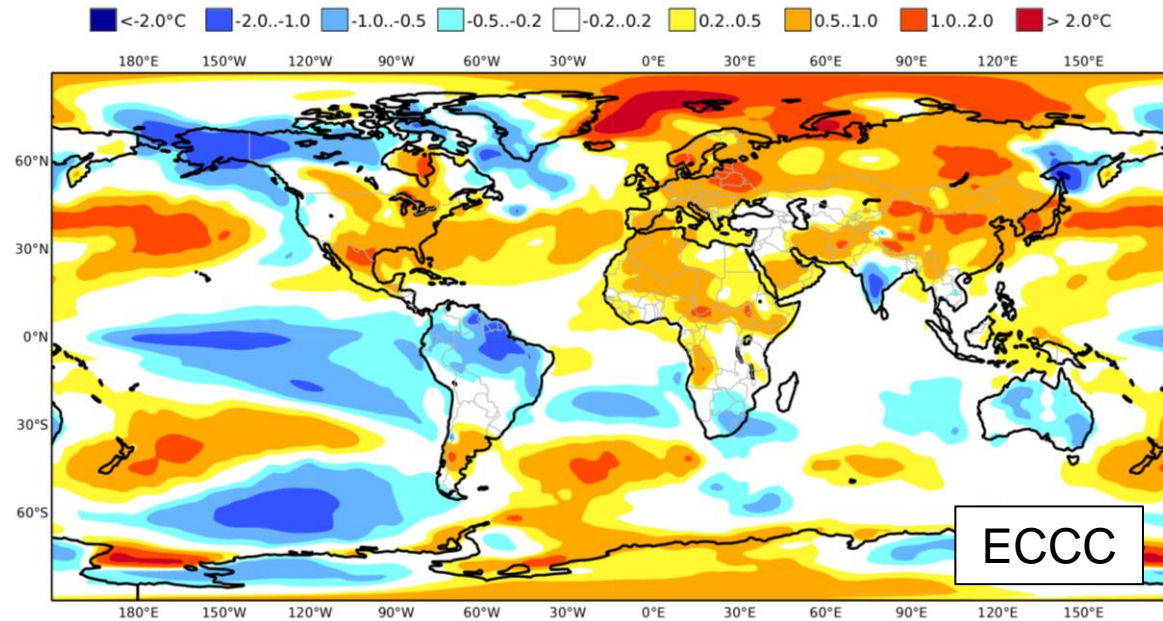
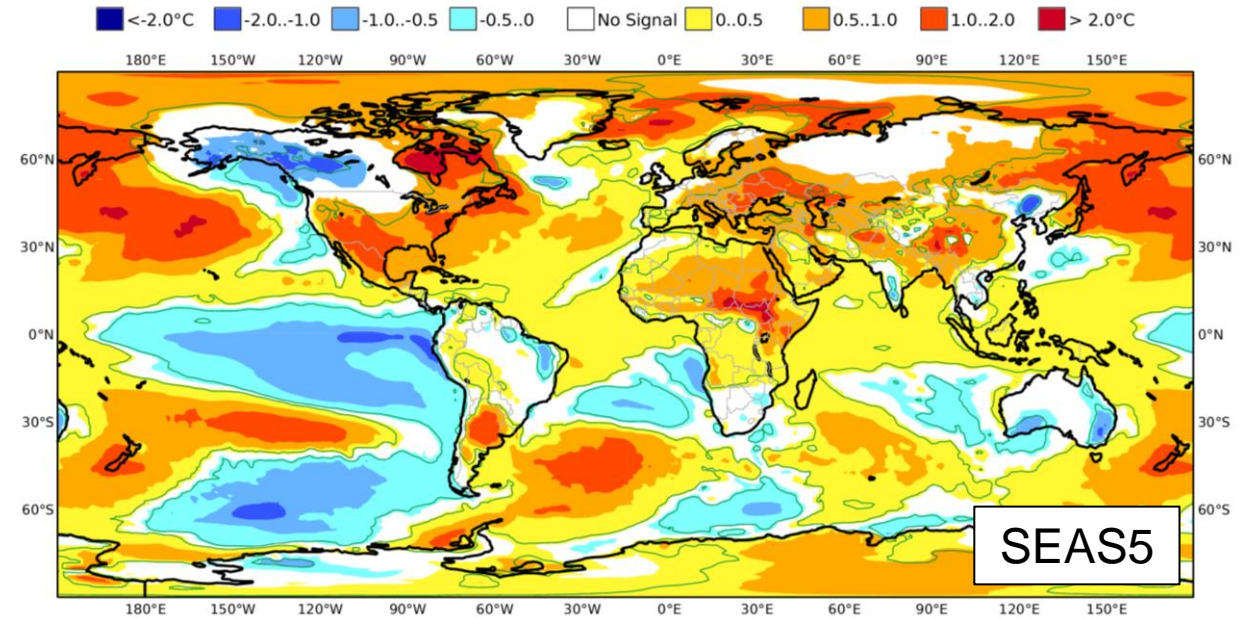
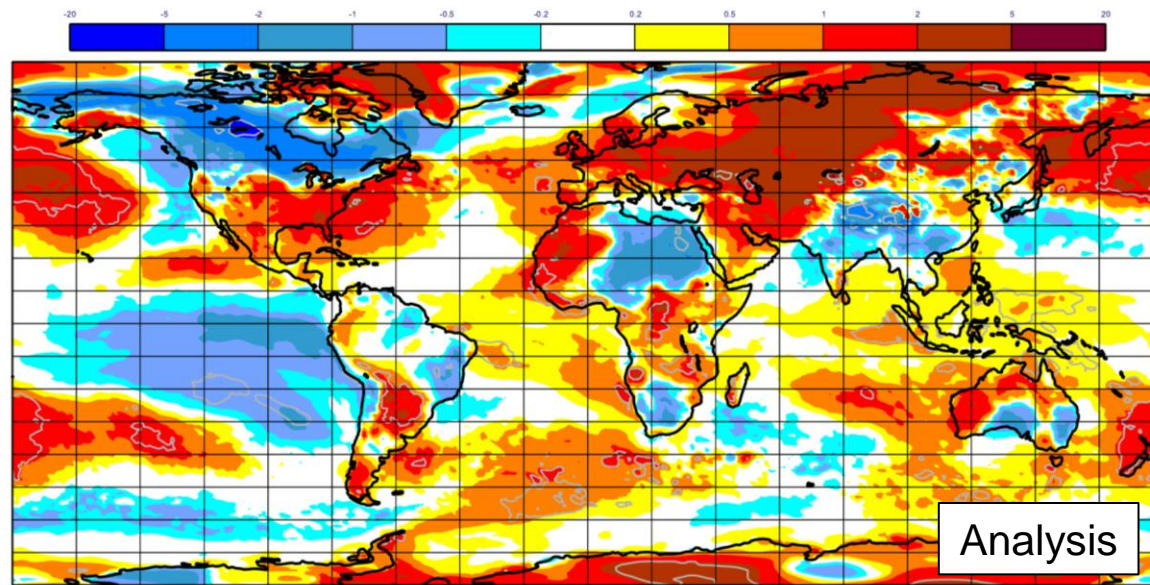


NINO3.4 SST anomaly plume
C3S multi-system forecast from 1 Nov 2021
ECMWF, Met Office, Météo-France, CMCC, DWD, NCEP, JMA, ECCC
Monthly mean anomalies relative to NCEP Olv2 1981-2010 climatology

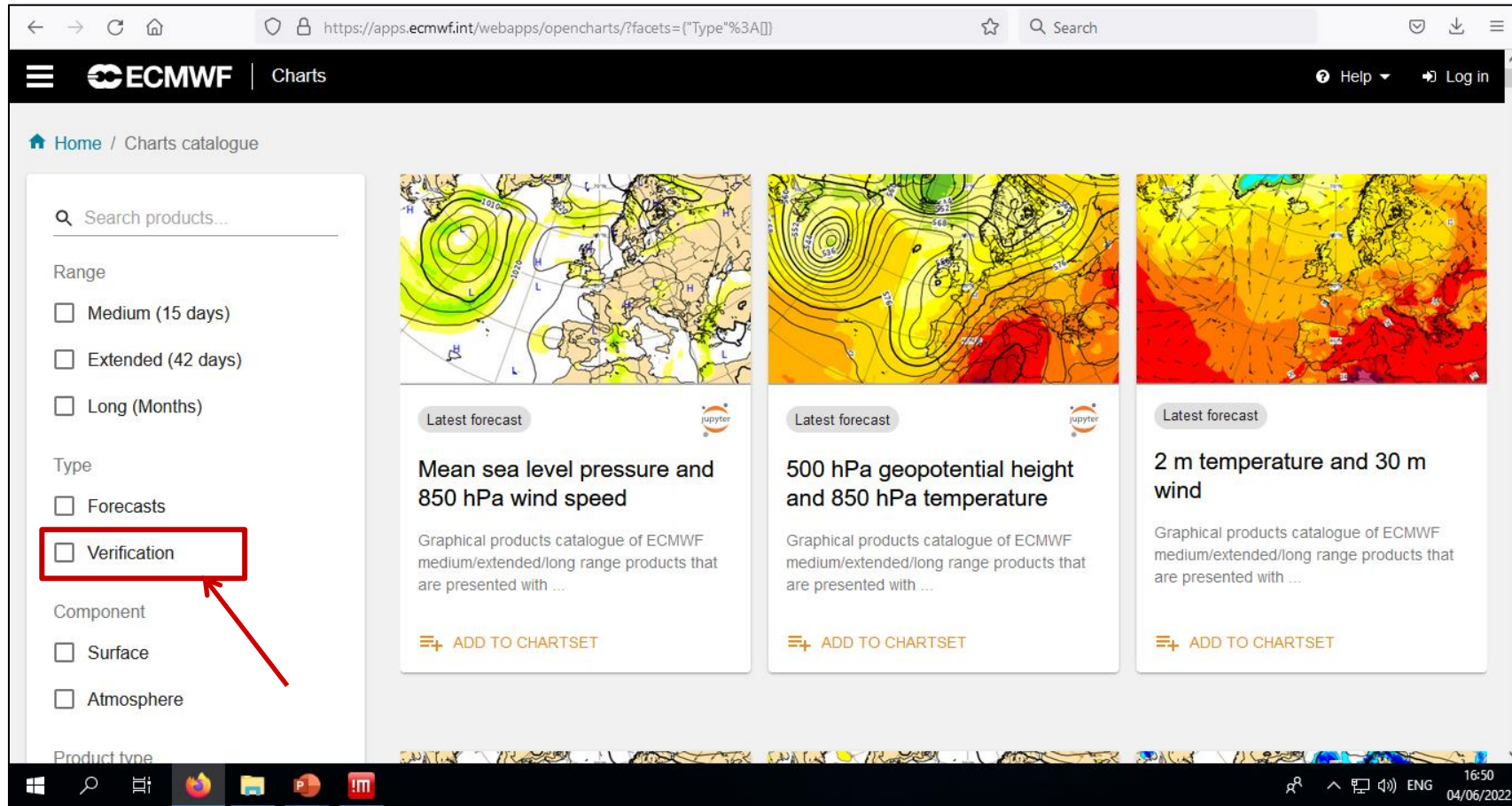


Seasonal forecast: T2m anomalies DJF 2022

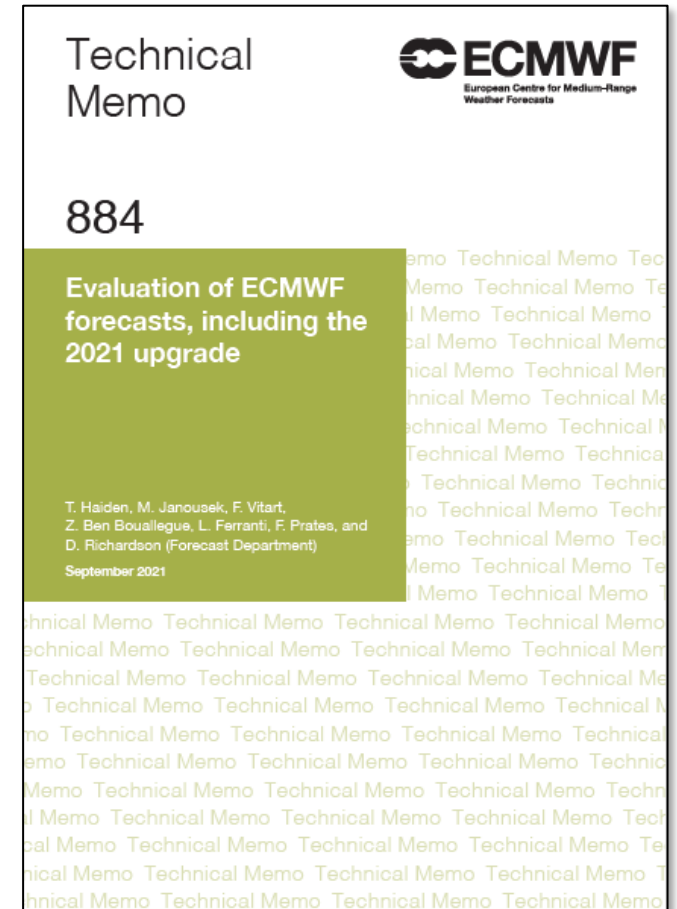
relative to 1993-2016



More verification results in ECMWF charts & Tech Memos



The screenshot shows the ECMWF Charts catalogue interface. The left sidebar contains filters for Range (Medium, Extended, Long), Type (Forecasts, Verification), Component (Surface, Atmosphere), and Product type. The 'Verification' checkbox is highlighted with a red box and an arrow. The main content area displays three chart thumbnails: 'Mean sea level pressure and 850 hPa wind speed', '500 hPa geopotential height and 850 hPa temperature', and '2 m temperature and 30 m wind'. Each chart includes a 'Latest forecast' label and an 'ADD TO CHARTSET' button. The browser address bar shows the URL: [https://apps.ecmwf.int/webapps/opencharts/?facets=\[\"Type%3A\"\]](https://apps.ecmwf.int/webapps/opencharts/?facets=[\). The Windows taskbar at the bottom shows the date as 04/06/2022 and time as 16:50.



The image shows the cover of ECMWF Technical Memo 884, titled 'Evaluation of ECMWF forecasts, including the 2021 upgrade'. The cover features the ECMWF logo and the text 'European Centre for Medium-Range Weather Forecasts'. The authors listed are T. Haiden, M. Janousek, F. Vitart, Z. Ben Boualleague, L. Ferranti, F. Prates, and D. Richardson (Forecast Department). The publication date is September 2021. The background of the cover is a repeating pattern of the text 'Technical Memo'.

WMO Lead Centre for Deterministic NWP Verification (LC-DNV)

WMO Lead Centre for Wave Forecast Verification (LC-WFV)