

Global forecast verification statistics

Slide 1



Fig 11: WMO scores Z500 N Hemisphere

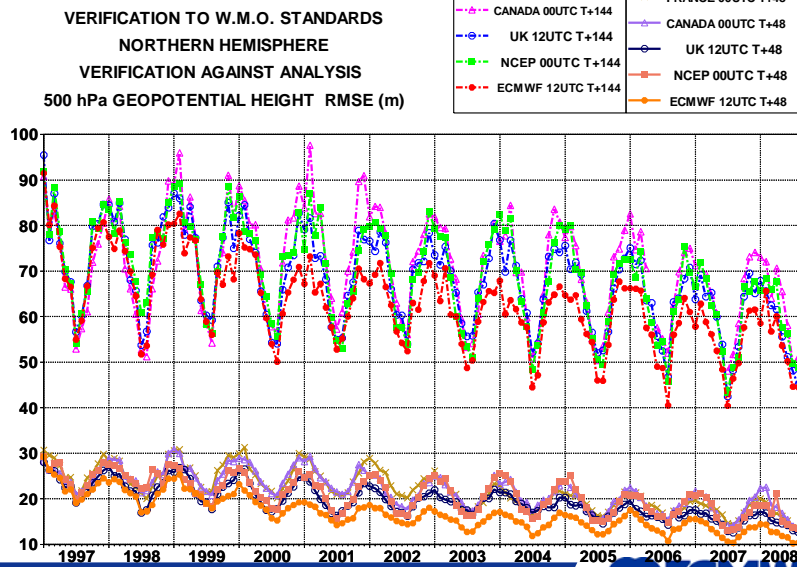
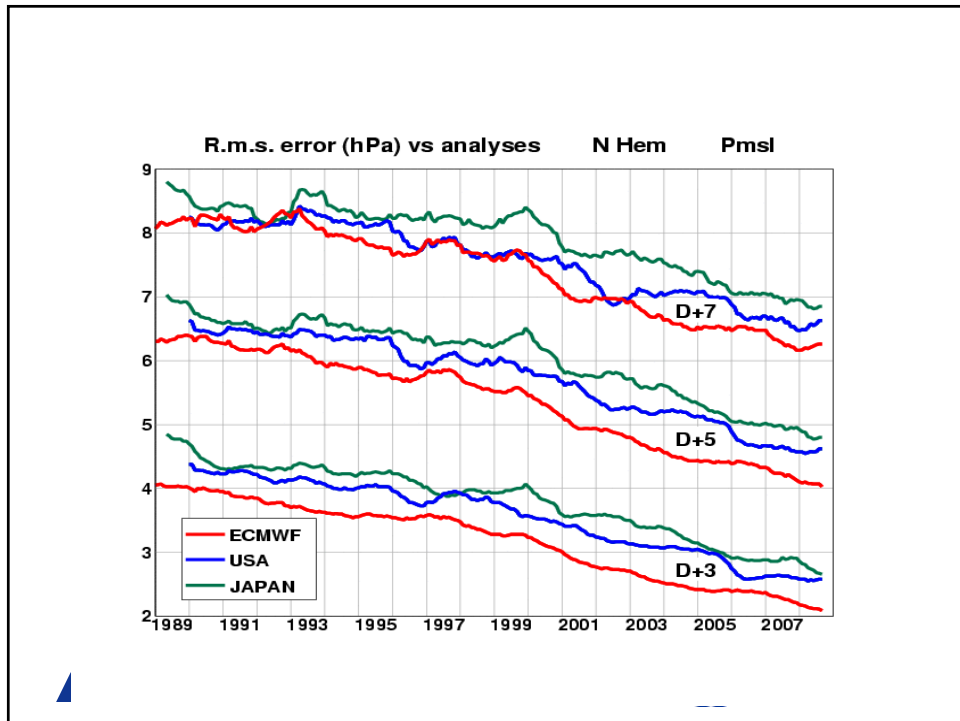
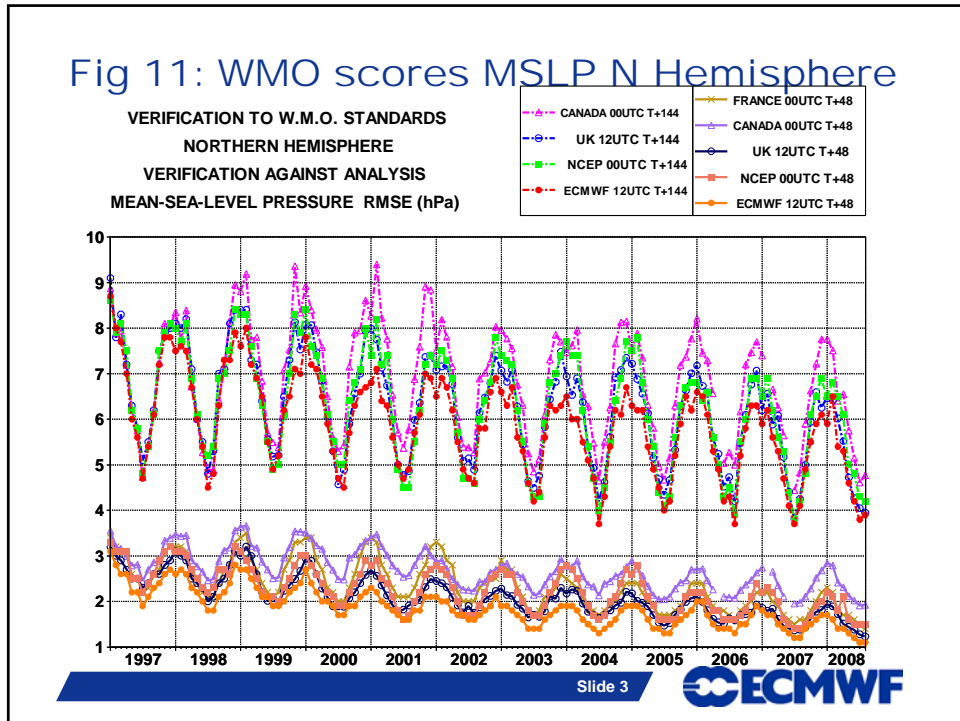


Fig 11: WMO scores MSLP N Hemisphere



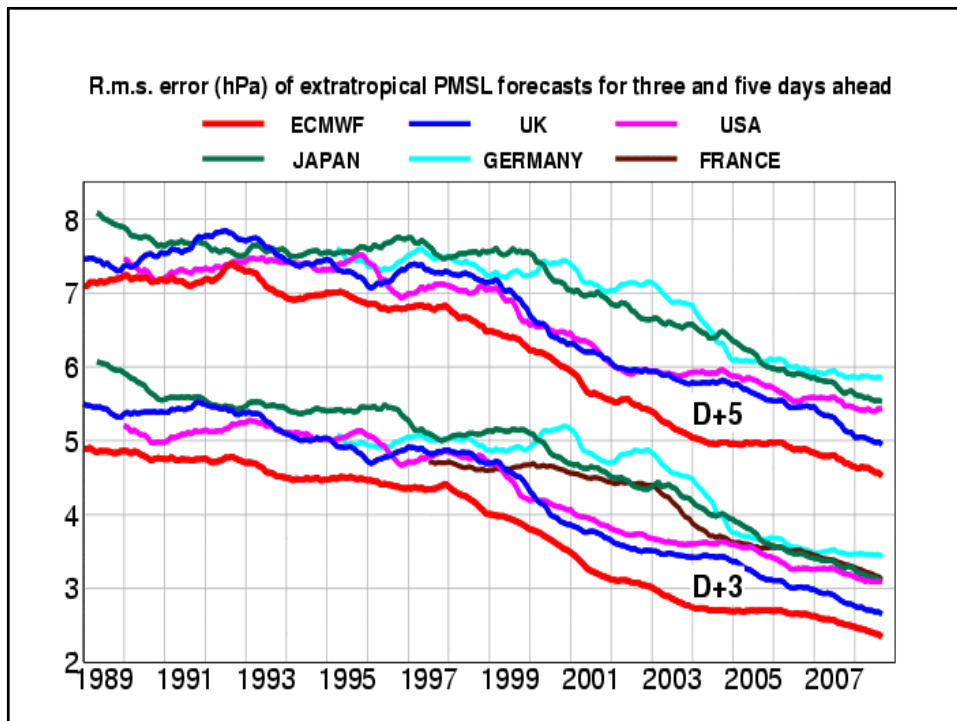
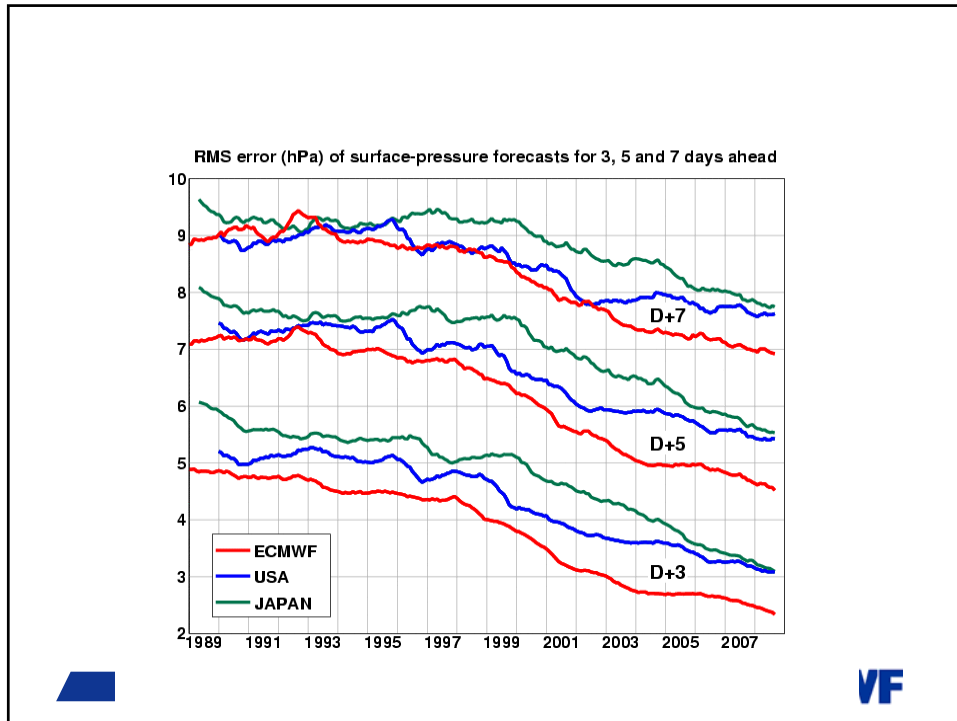
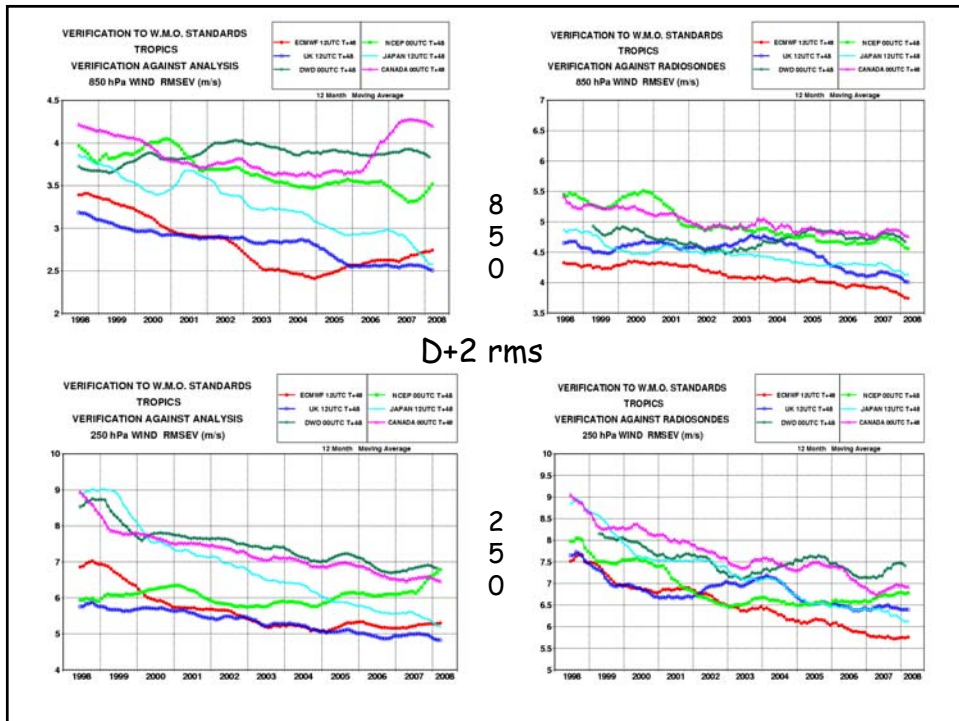
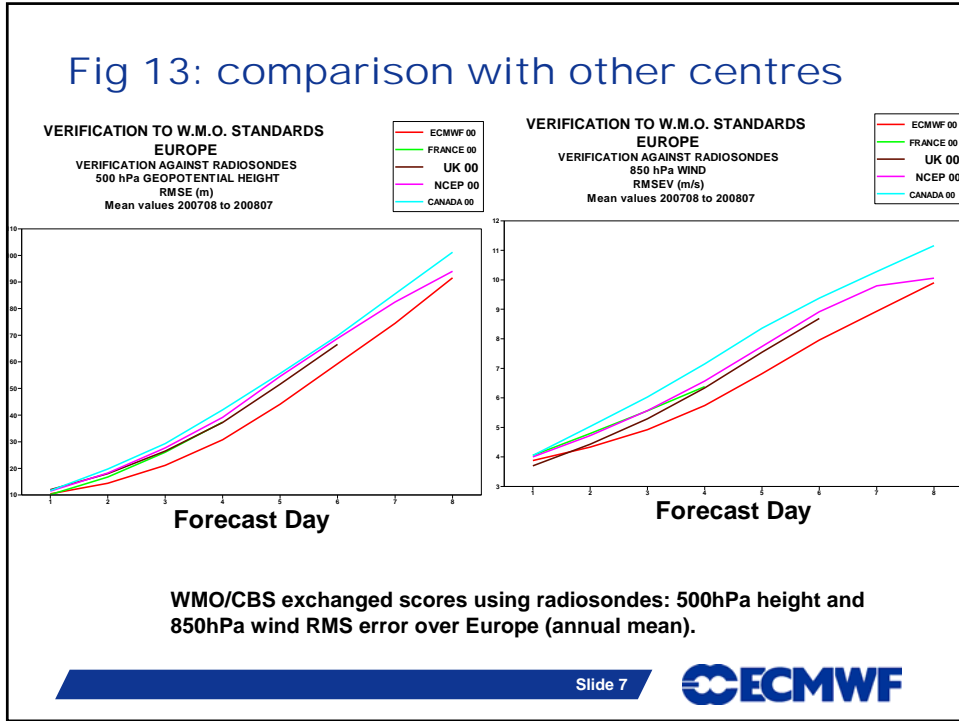
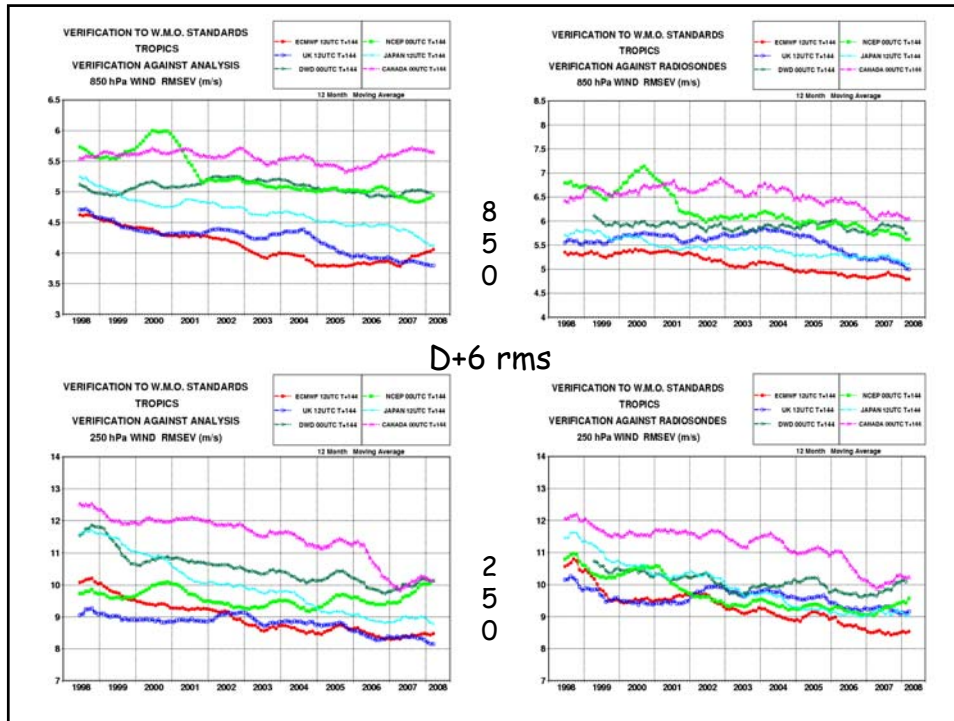


Fig 13: comparison with other centres





Precipitation comparison with other centres

- Verification over Europe using gridded high-resolution observation data
- Comparison of TIGGE control forecasts (on 1° grid)

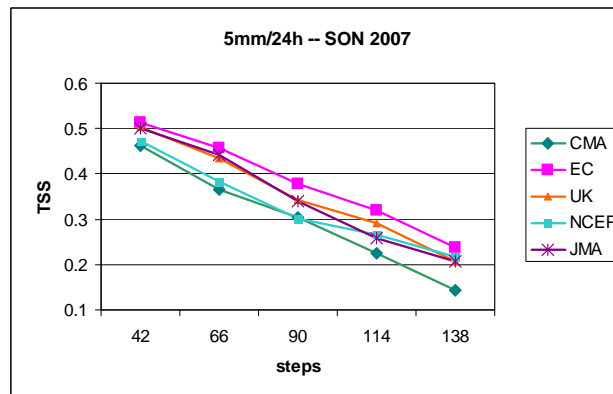
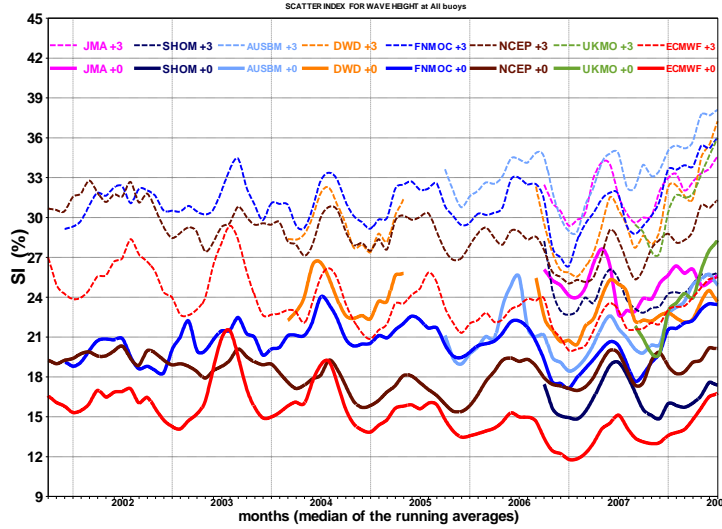


Fig 24: Waves – comparison to other centres

Verification of different model wave height forecasts using a consistent set of observations from wave buoys. The scatter index (SI) is the standard deviation of error normalised by the mean observed value; a three-month running mean is used.

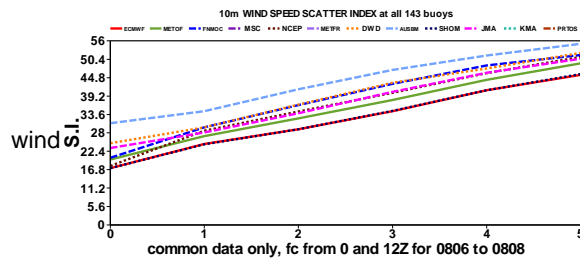
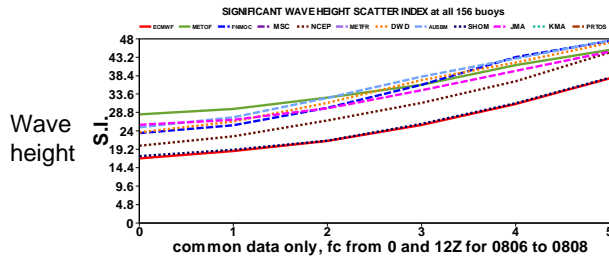


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Waves – comparison to other centres

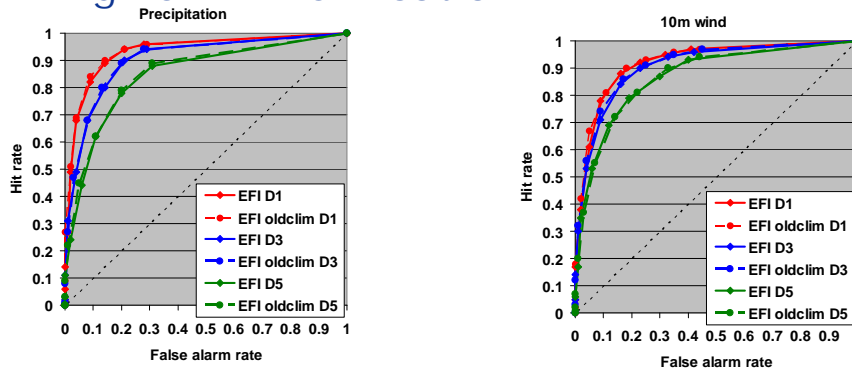
- New centre added
 - Met Office (green)
- SHOM scores close to EC, as expected
 - Uses ECMWF winds
 - Based on ECMWF WAM



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Fig 25: EFI verification



Verification of Extreme Forecast Index (EFI) for precipitation (left) and 10m wind (right) over Europe for October 2007 - March 2008. Extreme event is taken as an observation exceeding 95th percentile of station climate. Hit rates and false alarm rates are calculated for EFI exceeding different thresholds. Results are shown for forecast days 1 (red), 3 (blue) and 5 (green) using both old (dashed lines) and new (solid lines) EFI climates (the new climatology was introduced into operations in March 2008).

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| | | |
|-----------------|-----------------|-----------------------|
| | Observed yes | Observed no |
| Forecast yes | a hits | b False alarm |
| Forecast no | c misses | d Correct negative |

$$\text{Hit Rate} = a/(a+b)$$

$$\text{Frequency Bias Index} = (a+b)/(a+c)$$

$$\text{False Alarm Rate} = b/(b+d)$$

$$\text{Extreme Dependency Score} = -1 + 2 * (\log(a+c/n))/\log(a/n)$$

where $n=a+b+c+d$

$$\text{True Skill Score} = (\text{Hit Rate} - \text{False Alarm Rate})$$

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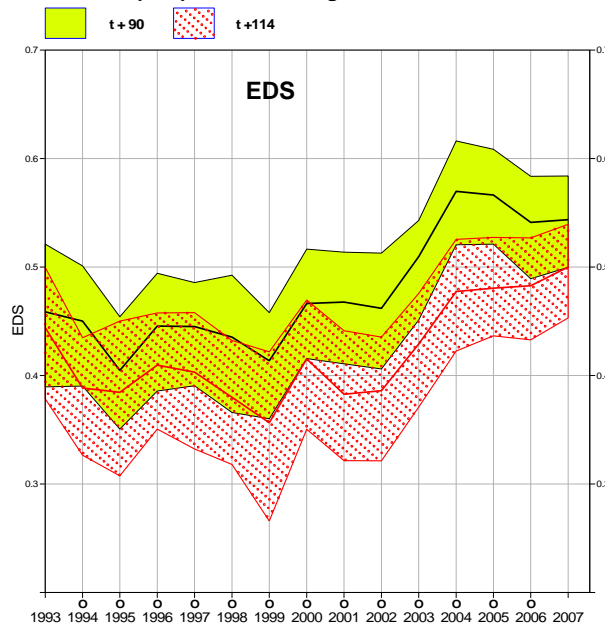
24h accumulated precipitation – Europe

Threshold > 40mm/24h

The plot shows the European rainy season (October to April) from 1993 to 2008

The lines are the values of the score for the ranges t+90 (black) and t+114 (red). The shaded areas represent the 5 and 95% confidence intervals (t+90 in green and t+114 in red)

This plot shows the positive effects of increased horizontal resolution on the precipitation forecasts: T511 in 2000 and T799 in 2006

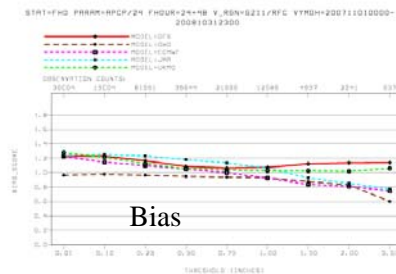
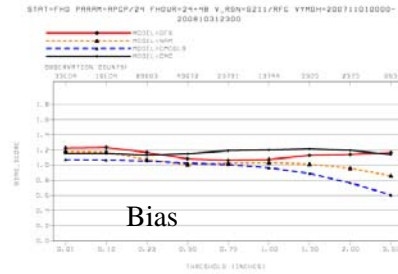
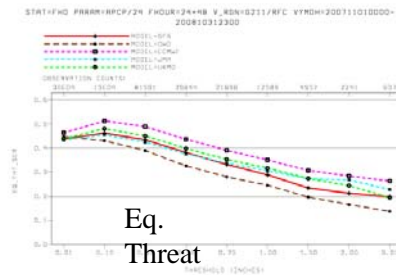
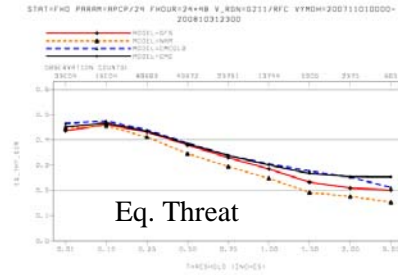


Mention that large scale has improved more than convective precipitation

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QPE Skill Scores over ConUS, Nov 2007 – Oct 2008



GFS, NAM, CMCLB, CMC

GFS, DWD, ECMWF, IAP, UKMO

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