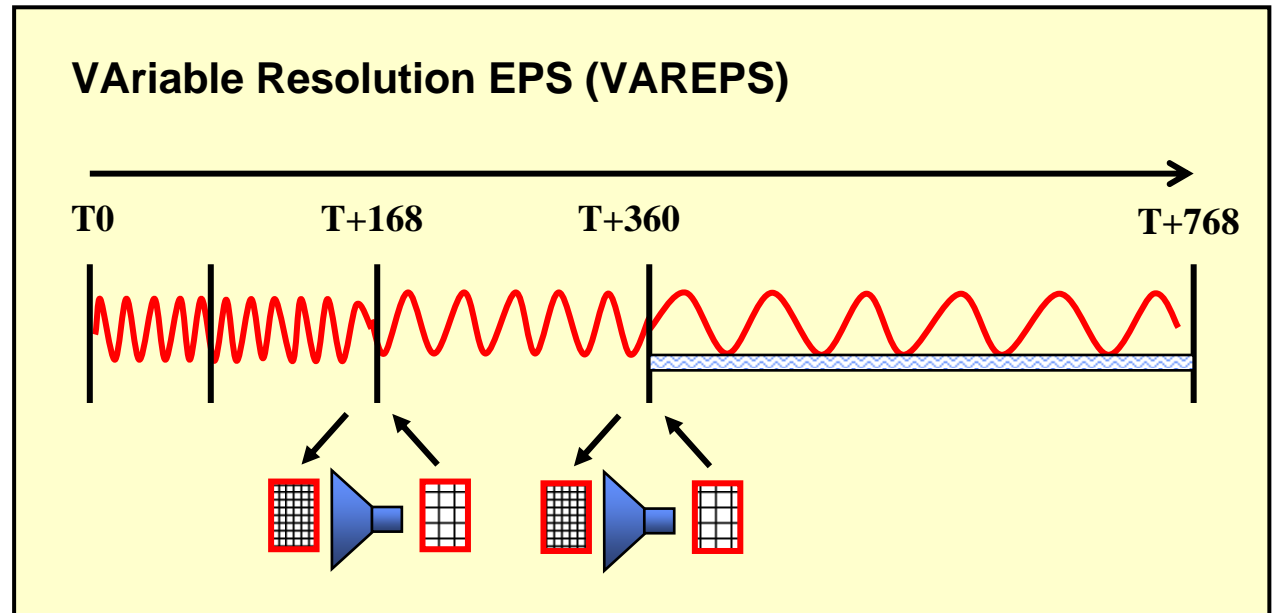




VAREPS M9 report (*September 2005*)

Roberto Buizza, Jean Bidlot, Manuel Fuentes, Frederic Vitart and Nils Wedi
European Centre for Medium-Range Weather Forecasts





Summary with key conclusions

1. Expected average impact of EPS upgrade

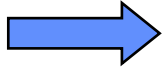
- Results based on the comparison of Z500 and total precipitation predictions (38 cases, 51mem) indicate that the EPS upgrade will bring gains of up to 12 hours.

2. Cycle 29R2

- Tests are under way to finalize the archiving scripts (overlap data, waves, ..)
- The first case of a 3-leg VAREPS has completed (IC 17-08-2002 00UTC)
 - Day 0- 7: T_L399L40^{DT1800s}
 - Day 6-15: T_L255L40^{DT2700s}
 - Day 15-32: T_L255L40^{DT2700s} coupled



Outline



- 1. Expected average impact of EPS upgrade**
- 2. Cycle 29R2 results**



1. EPS configurations tested with 51-members, CY28R3

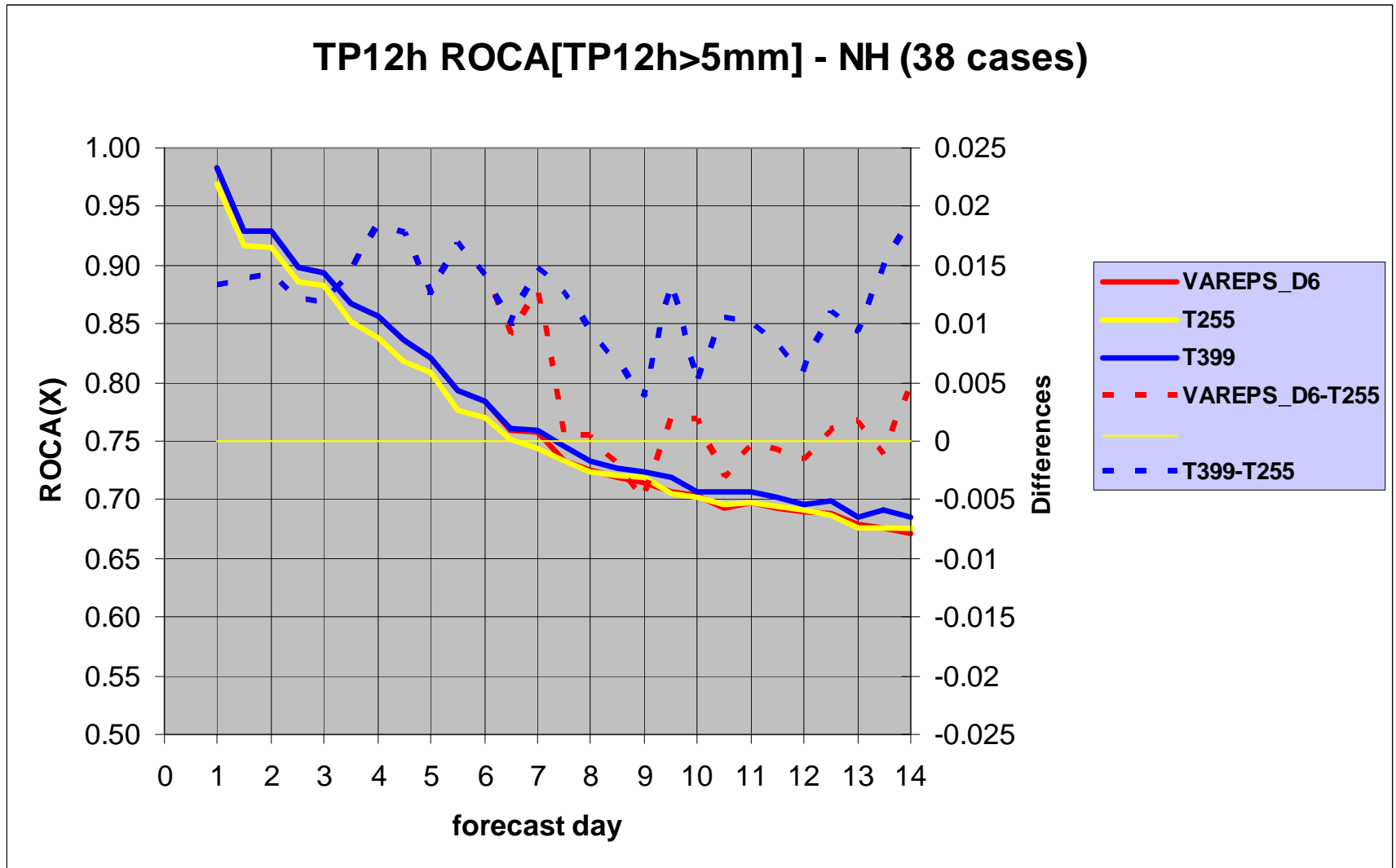
The performance of ensembles run in the following four configurations have been compared for **38 cases** (17 cases from a warm and 21 from a cold season). Experiments for 8 more cases have been submitted.

Average results based on the comparison of 500 hPa geopotential height (Z500) and total precipitation (TP) forecasts are briefly reviewed hereafter.

<i>fc-day</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
VAR7D6	TL399L40-1800s													
								TL255L40-2700s						
VAR7D7	TL399L40-1800s													
								TL255L40-2700s						
T399	TL399L40-1800s													
T255 (OPE)	TL255L40-2700s													

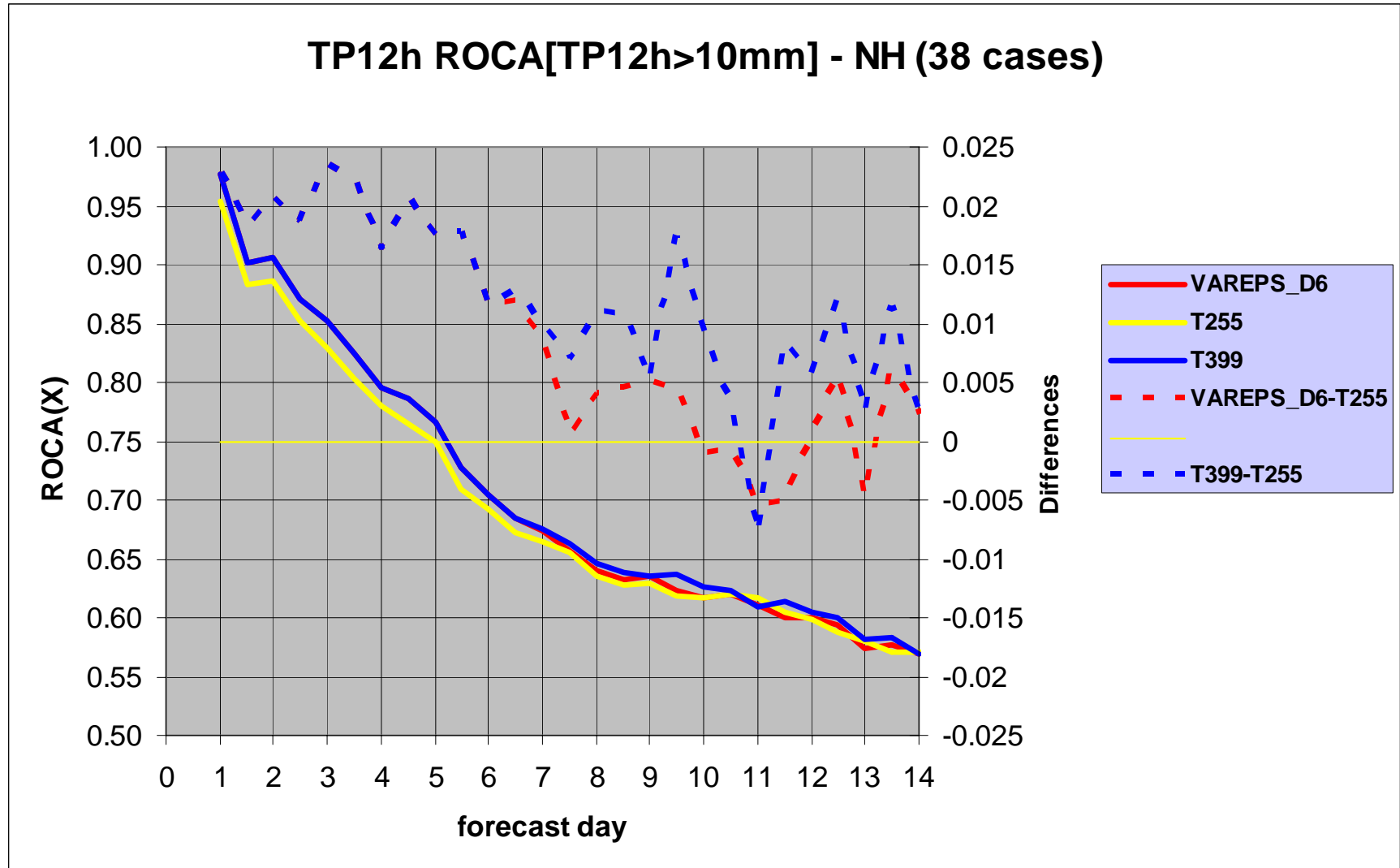


1. Expected impact of EPS upgrade: $\pi[TP12 \geq 5\text{mm}]$



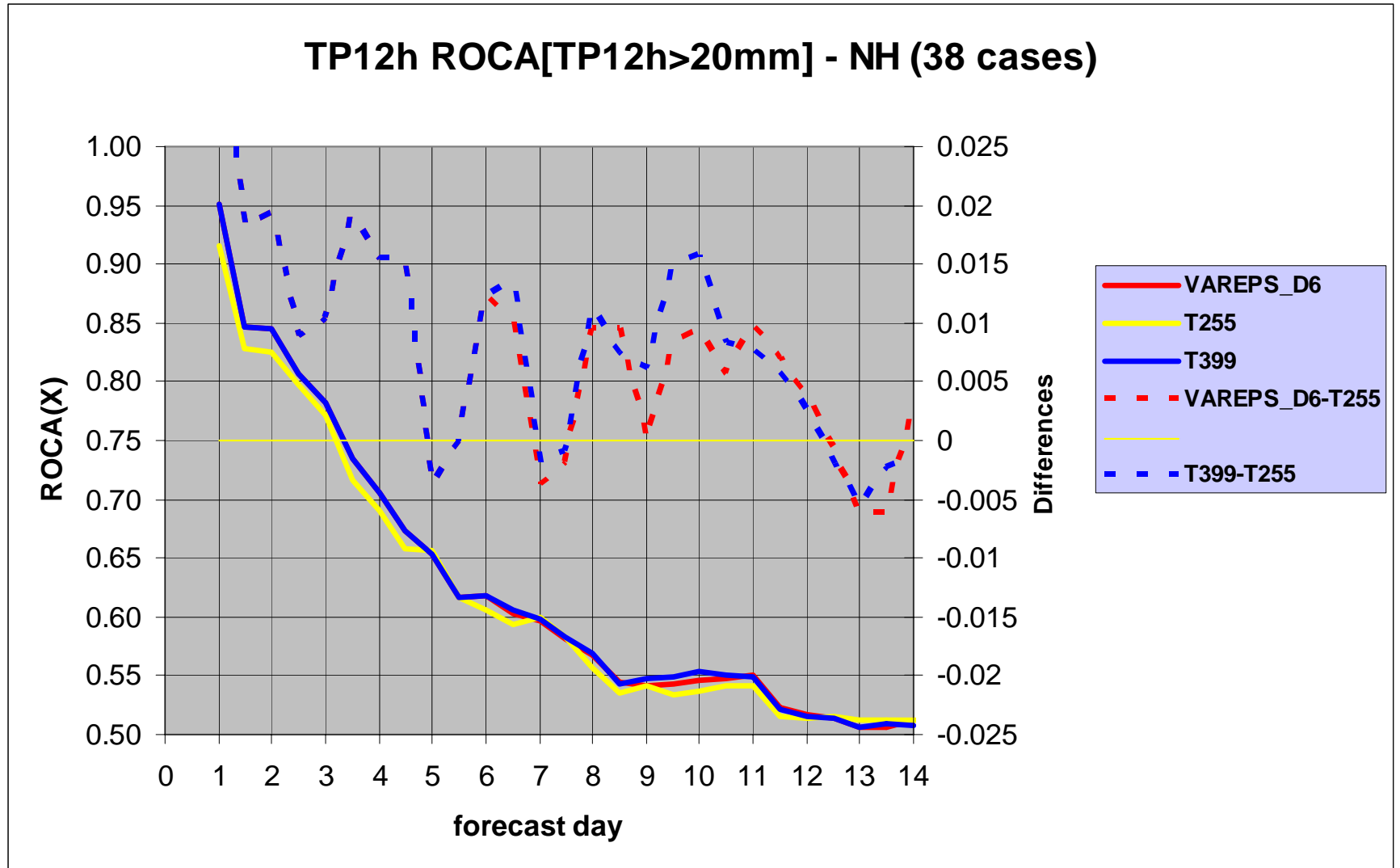


1. Expected impact of EPS upgrade: $\pi[TP12 \geq 10\text{mm}]$



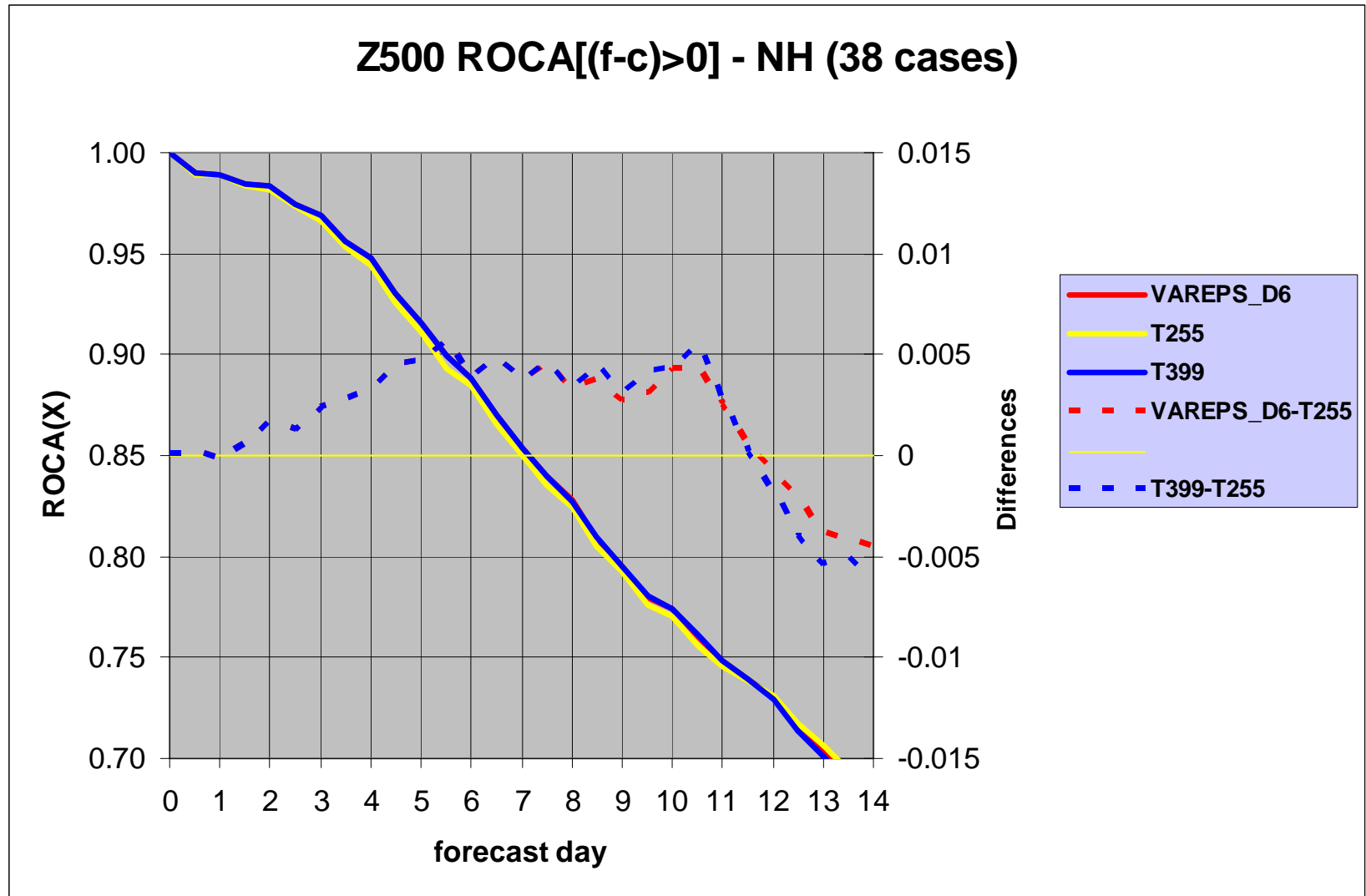


1. Expected impact of EPS upgrade: $\pi[TP12 \geq 20\text{mm}]$



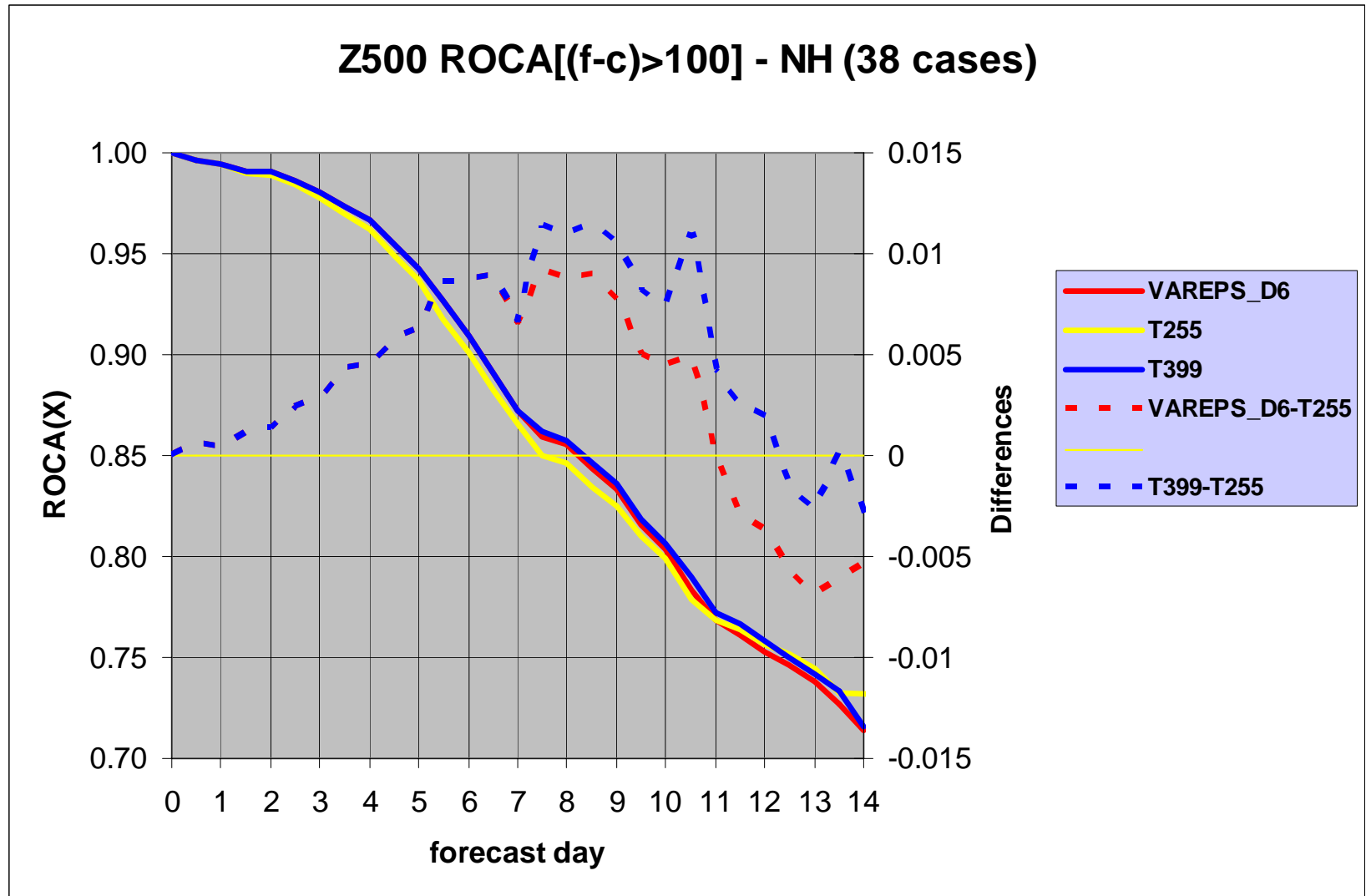


1. Expected impact of EPS upgrade: $\pi[(Z500-cli)>0]$



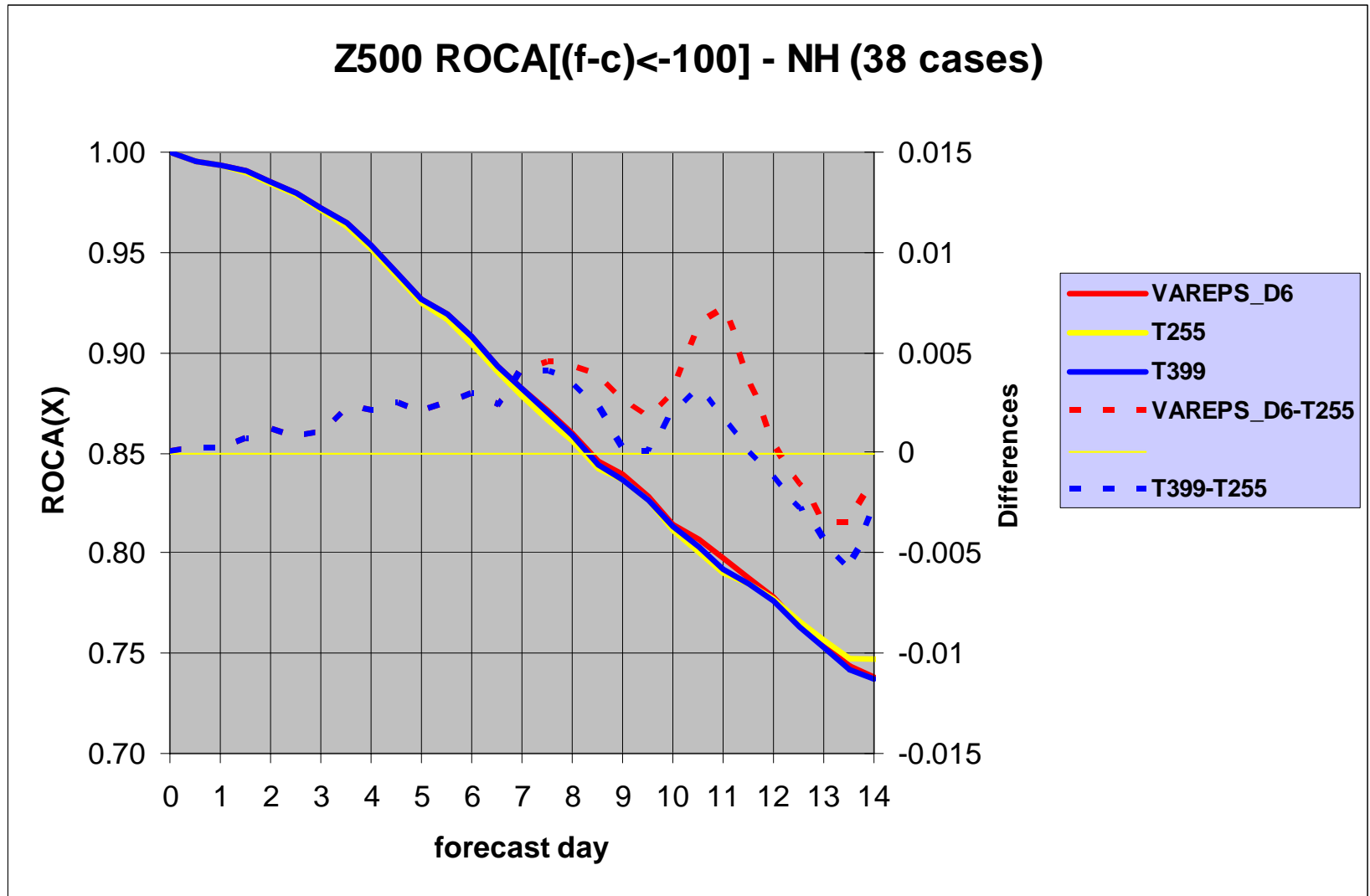


1. Expected impact of EPS upgrade: $\pi[(Z500-cli)>100]$



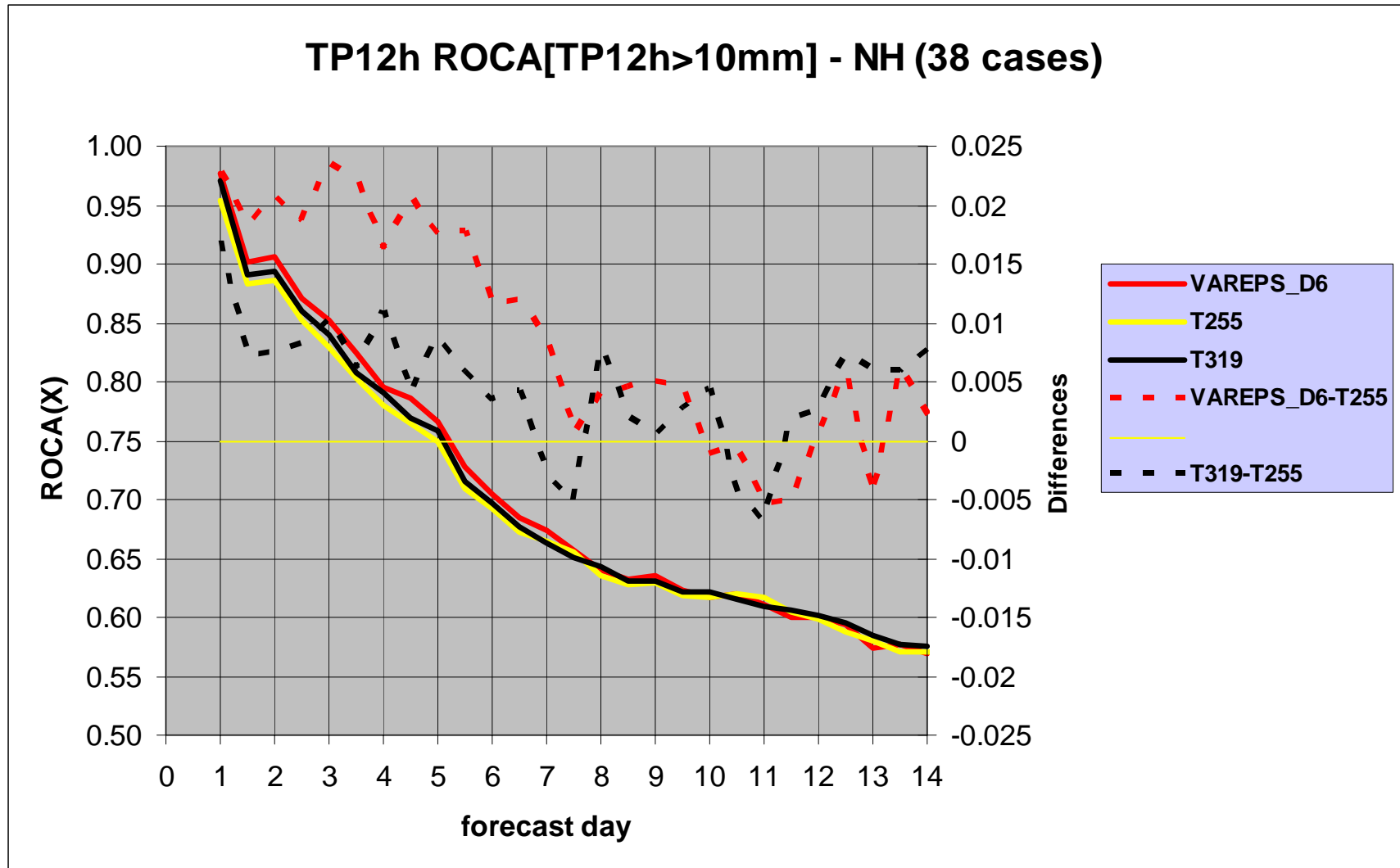


1. Expected impact of EPS upgrade: $\pi[(Z500-cli)<-100]$



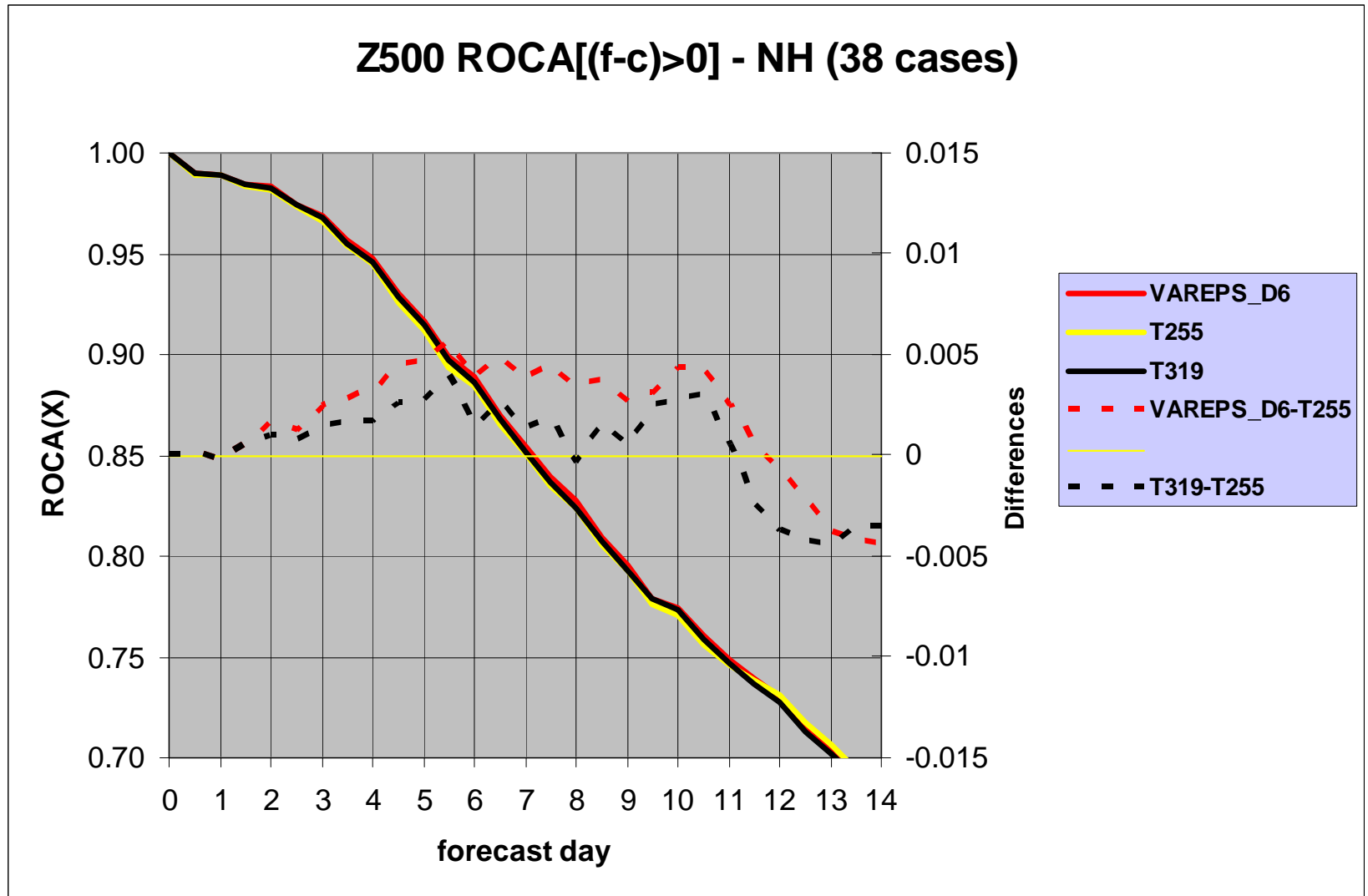


1. Constant vs variable resolution: $\pi[TP12 \geq 10\text{mm}]$





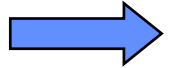
1. Constant vs variable resolution: $\pi[(Z500-cli)>0]$





Outline

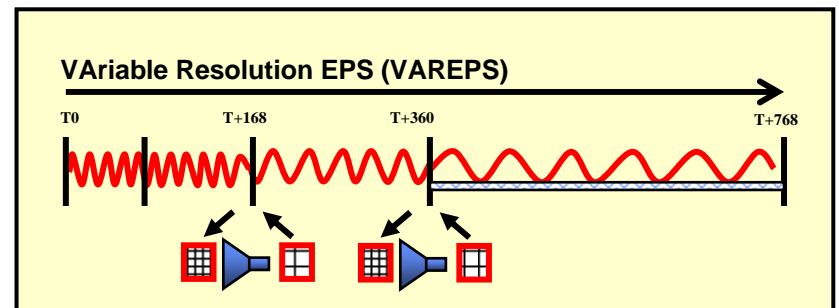
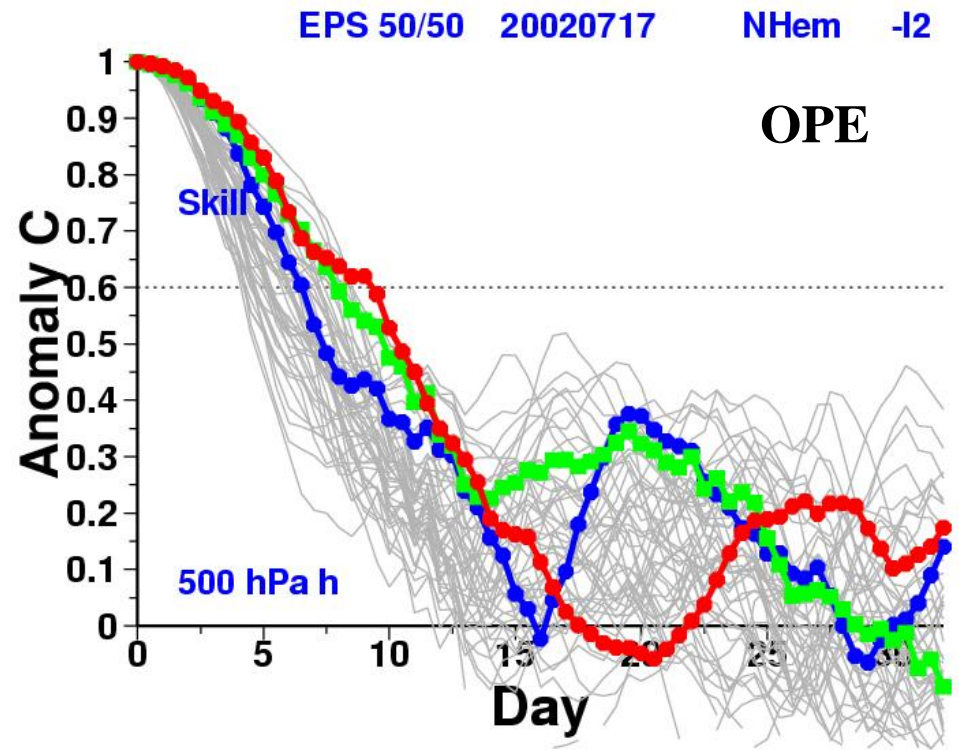
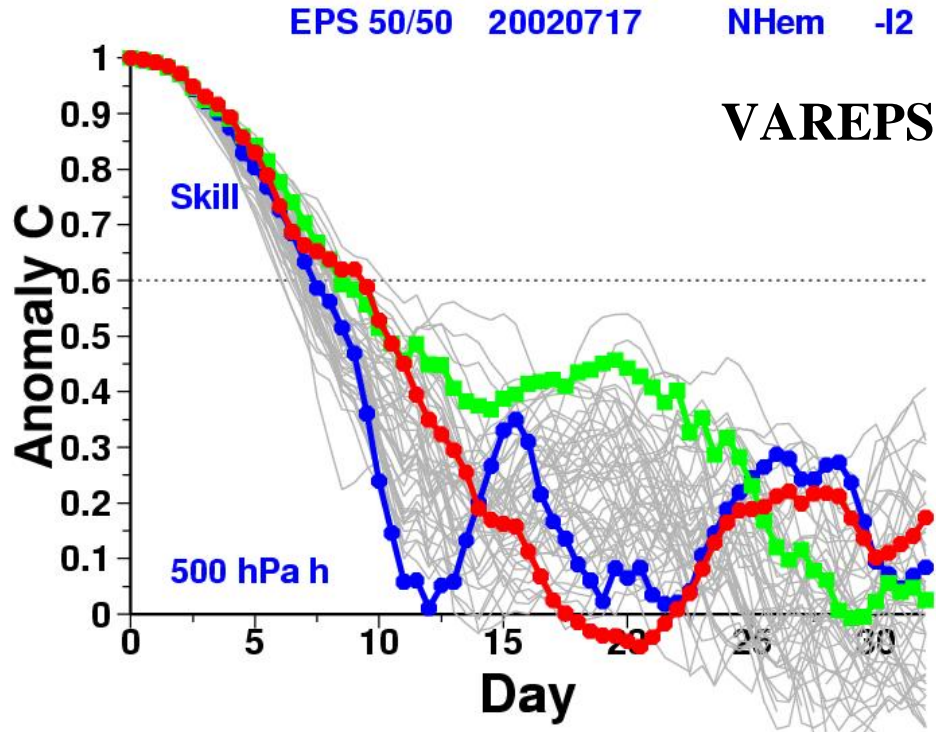
1. Expected average impact of EPS upgrade



2. Cycle 29R2 results

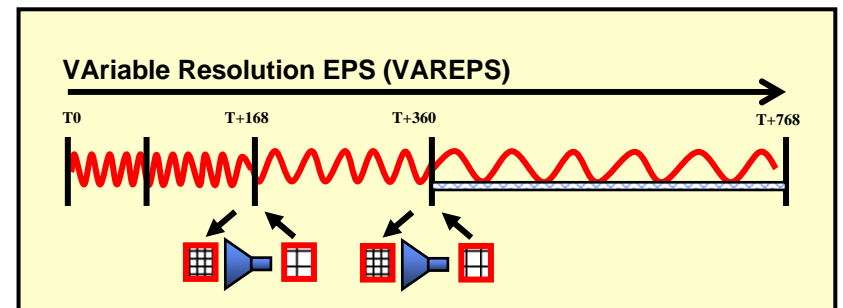
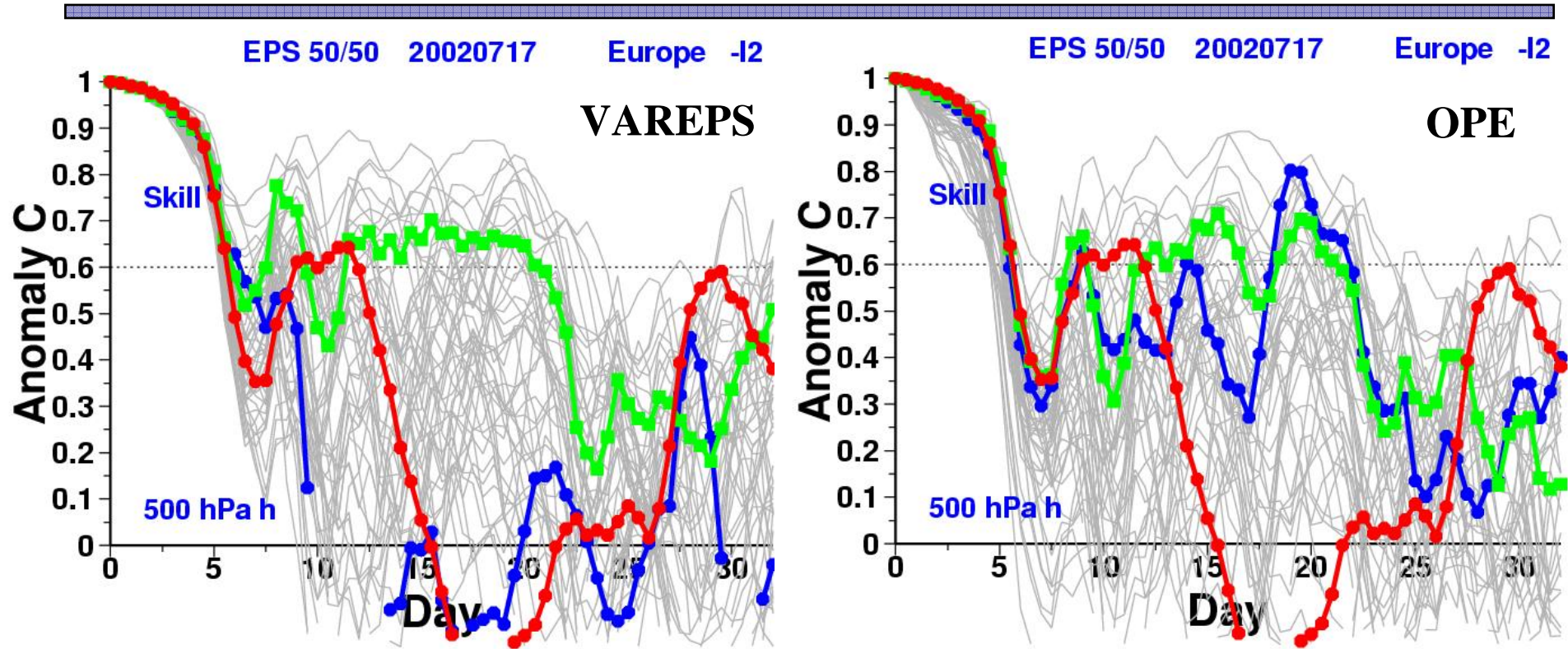


2. CY29R2 first case of a 3-legs VAREPS (17 July 2002)





2. CY29R2 first case of a 3-legs VAREPS (17 July 2002)





... other support material ...

.... To be used if needed ...

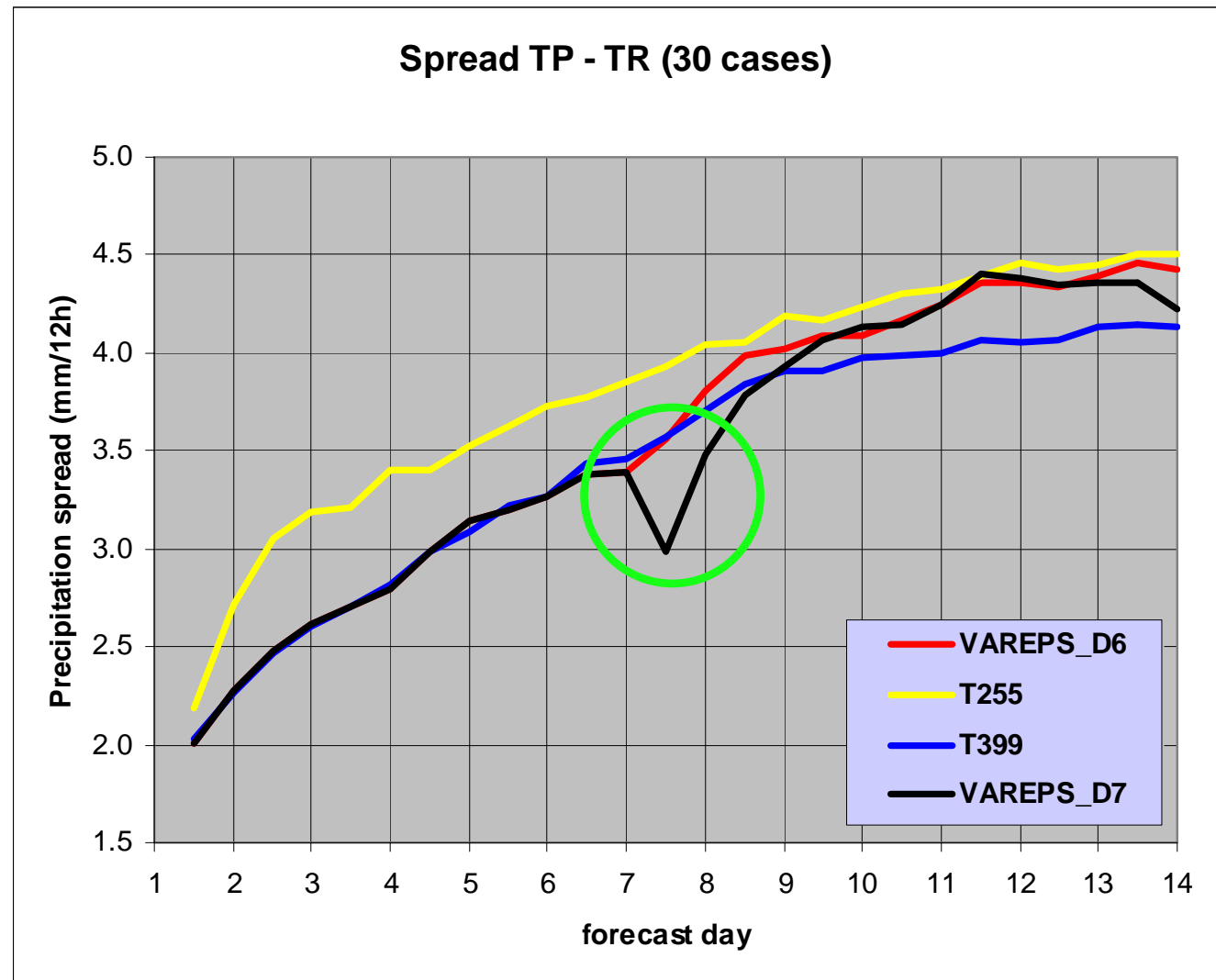


Why do we need an overlap period?

The truncation from TL399 to TL255 affects variables such as precipitation.

Compared to the T_{L399} precipitation, the T_{L255} precipitation during the first 24h forecast is lower. This induces a reduction in ensemble precipitation spread, especially over the tropics (black line).

This spread reduction can be cured by starting VAREPS at forecast day 6 but using it only from forecast day 7 (red line).





Why do we need an overlap period?

The impact of truncation is smaller over the NH, but it is still detectable (black line). This spread reduction can be cured by starting VAREPS at forecast day 6 but using it only from forecast day 7 (red line).

