

NWP Test suite: Verification reports

- ✓ Labor intensive in preparation
- ✓ currently report is expanded to higher and coarser resolution comparison for both seasons making the comparison more challenging
- ✓ Direct feedback is hard to be extracted by reviewer (FG) or reader
- ✓ Quite long in size (>30 pages)
- ✓ Restrictions: VERSUS software capabilities
- ✓ Required number differences to be prepared and represented externally

Propositions from SPM for the report content

- Add more numerical form in the representation of scores in addition to the graphical ones
- Statistical significance of the comparison results (as differences are marginal)
- Possibility to add a unified score (combining the performance of various parameters)
- Group upper air verification on one graph

Develop the tool for convective-scale applications

NWP Test suite: Scorecard

- can summarize a large amount of information on differences between the two model versions in a more comprehensive and compact way
- can include upper-air and surface skill verified against both analyses and observations for different pressure levels and domains, for all forecast ranges (day1-3)
- ideally can give an indication of the significance of these differences (not straight forward in VERSUS)
- statistics on a station stratification can be added
- ECMWF scorecard protoype could be followed in a more simplified manner and on top of the complete graphical representation of scores (cross model graphs)

NWP Test suite: Scorecard

Domain	Parameter	Level	Anomaly correlation										RMS error																										
			Forecast day										Forecast day																										
			1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10																	
Europe	Relative humidity	300hPa	▲																																				
		700 hPa	▲																																				
	Temperature	100 hPa	▲	▲																																			
		500 hPa	▲	▲																																			
		850 hPa	▲	▲																																			
		1000 hPa	▲	▲																																			
	Wind	200 hPa	▲	▲																																			
		850 hPa	▲	▲																																			
	Geopotential	100 hPa	▲	▲	▲																																		
		500 hPa	▲	▲																																			
850 hPa		▲	▲																																				
Extratropical Northern Hemisphere	10 m wind		▲	▲																																			
			▲	▲																																			
	Relative humidity	300hPa	▲																																				
		700 hPa	▲	▲																																			
	Waves	swh																																					
		mwp	▲	▲																																			
	Temperature	100 hPa	▲																																				
		500 hPa	▲	▲																																			
		850 hPa	▲	▲																																			
		1000 hPa	▲	▲																																			
Wind	200 hPa	▲	▲																																				
	850 hPa	▲	▲																																				
Geopotential	100 hPa	▲	▲	▲																																			
	500 hPa	▲	▲																																				
	850 hPa	▲	▲																																				
	1000 hPa	▲	▲																																				

	Parameters	Scores	Forecast day	Confidence Intervals
Surface	10m wind sp	RMSE BIAS ACC	1,2,3	?
	2mT			
	DewP temp			
	TCC			
	MSLP	FBI, ETS, SEEPS		
	Precipitation			
Upper air 1000,850, 700, 500, 200hPa	geopotential	ACC RMSE		
	RH			
	Wind			
	Temp			

Symbol legend: for a given forecast step...

(d: score difference, s: confidence interval width)

- ▲ Cy38r2 better than Cy38r1 – statistically highly significant
- ▲ Cy38r2 better than Cy38r1 – statistically significant
- Cy38r2 better than Cy38r1 – not statistically significant
- Little difference between Cy38r2 and Cy38r1
- Cy38r2 worse than Cy38r1 – not statistically significant
- ▼ Cy38r2 worse than Cy38r1 – statistically significant
- ▼ Cy38r2 worse than Cy38r1 – statistically highly significant