



NWP at Meteorological and Hydrological Service of Croatia - 2016

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INTRODUCTION

The operational model version used is AL38T1 with ALARO0 physics for 8, 4 and 2 km resolution forecasts. Operational forecasts run for:

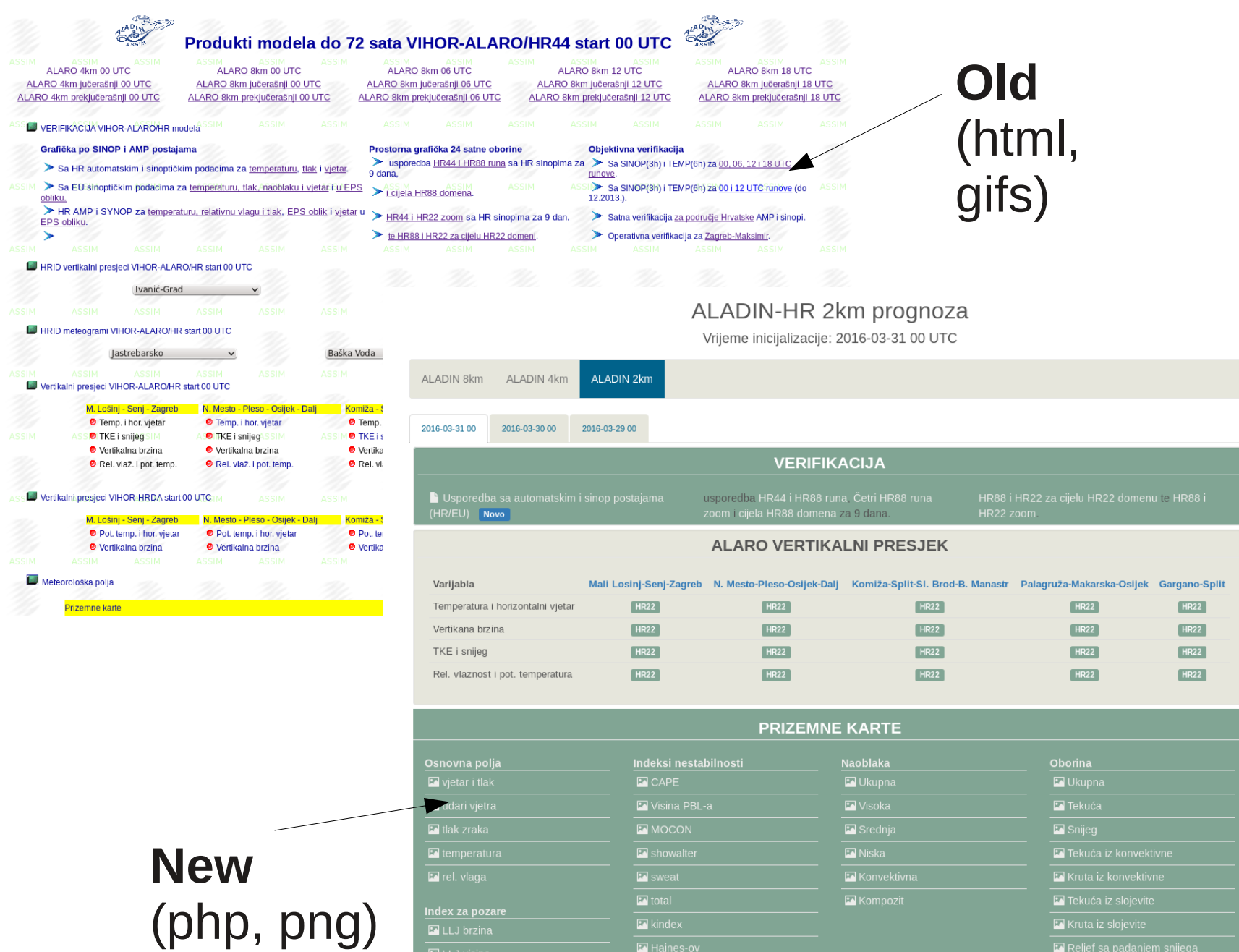
- 8 km res, 360 sec, 4 times per day, 3D var and surface OI, 6 h cycling, to 72 hours, LBCs: IFS, 37 levs.
- 4 km res, 180 sec, hydrostatic and nonhydrostatic in parallel, both only from 00 UTC up to 72 hours, surface OI, 6h cycling, LBCs: IFS, 73 levs, (still!) to do: 3D var.
- 2 km dynamical adaptation, 60 sec timestep, hourly, up to 72 hours,
- 2 km non-hydrostatic run, 60 sec timestep, using AL36T1 with available ALARO0 developments, from 06 UTC up to 24 hours.

20 years of ALADIN project in Croatia

In 2015 we also celebrated 15 years of running operational forecast using ALADIN model. These anniversary is celebrated by a special issue of Croatian Meteorological Journal (Vol. 50, also a nice round number) featuring a number of articles describing several features from the past, the current status of the operational suite and recent developments. Hard copies are already printed and the articles should be available online (not yet but soon) at <http://hrcak.srce.hr/hmc>.

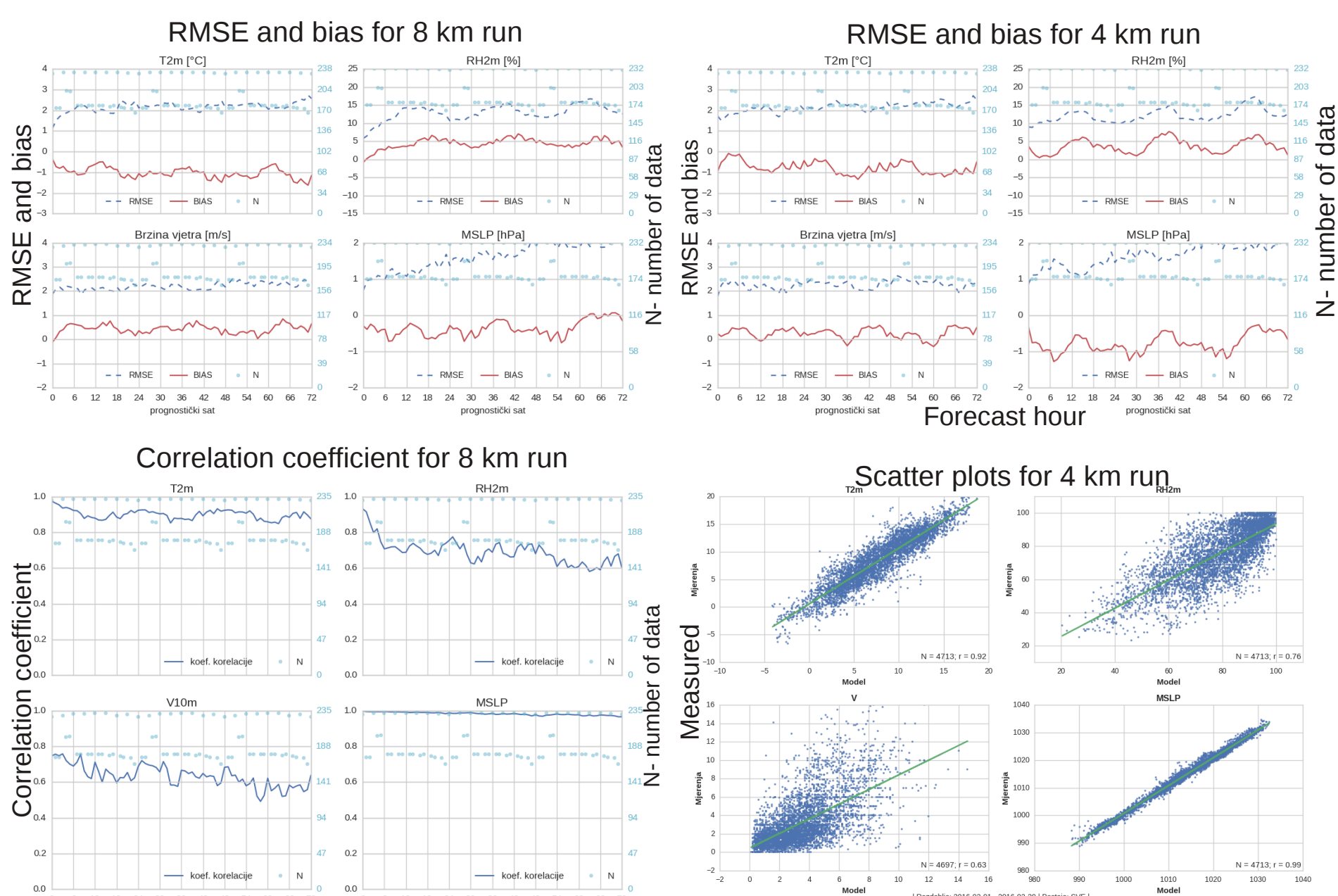
New interface to the model products

The web interfaces on the internet (password protected) and intranet as well as the scripts that generate plots and tables there have been severely modified in order to produce plots of higher quality for the operational visualization products and simplify future changes (maintained by local Aladin staff, lot of work, no science).



More verification scores

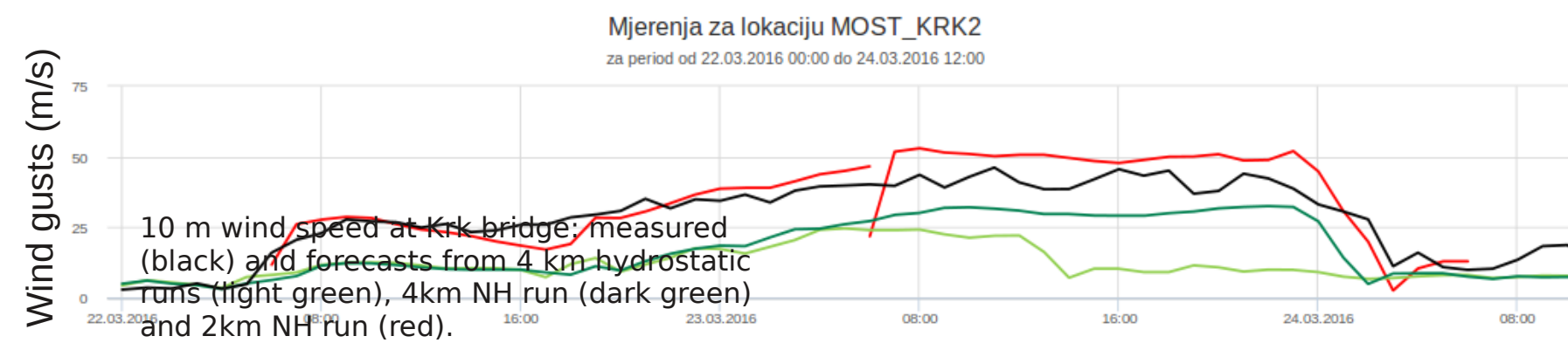
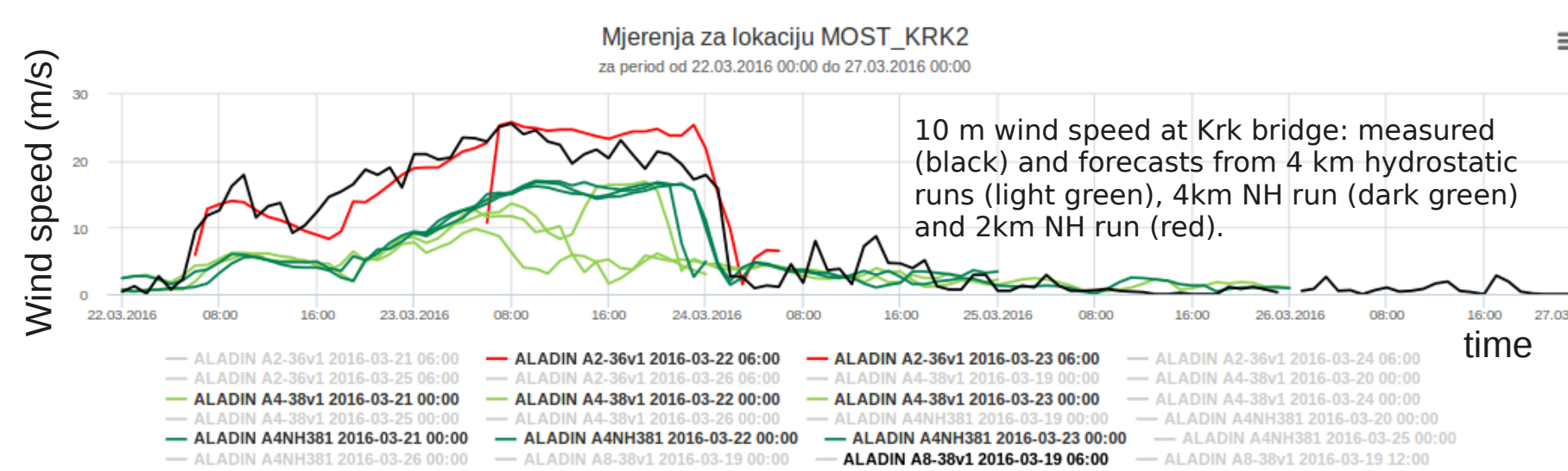
There are VERAL and HARMONIE verification packages available, however there are also local tools developed that enable operational (automatic) model validation.



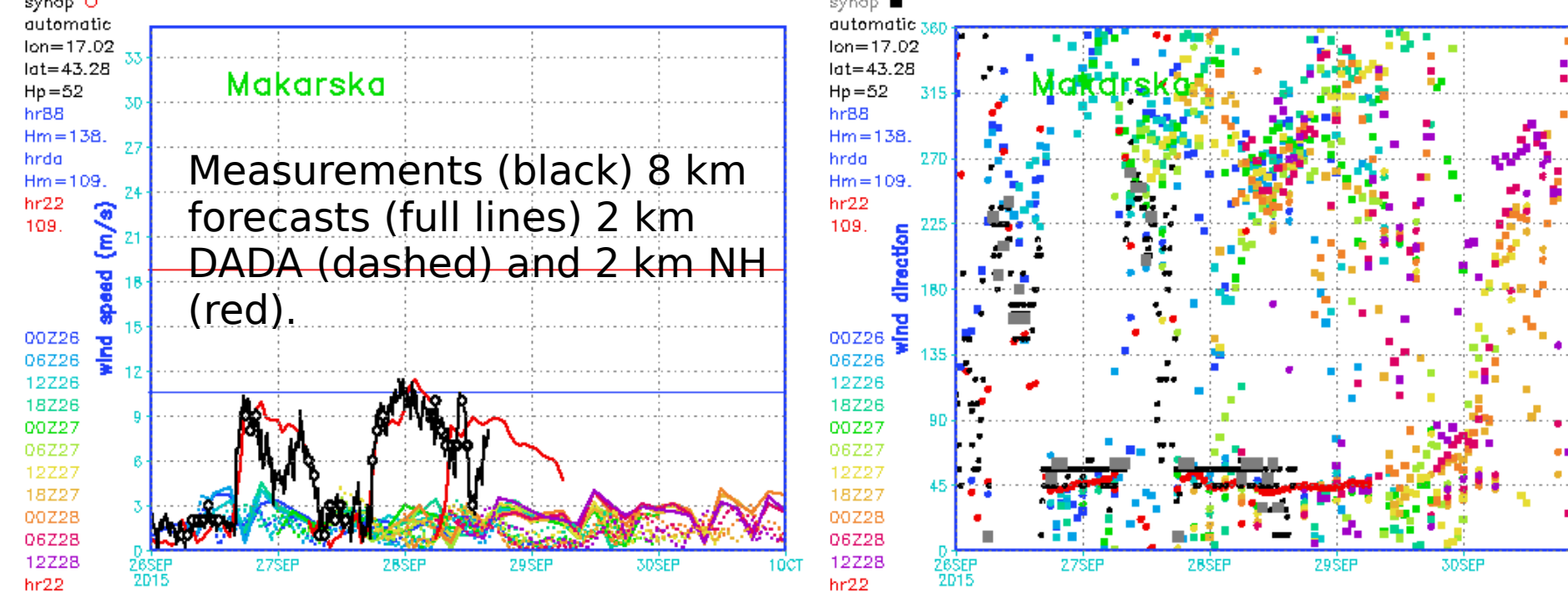
RMSE and bias (top row) correlation coefficient and scatter plots (bottom row) for 8 km (left column) and 4 km (right column) operational forecasts in Feb 2016 (the above plots are for only 7 Croatian stations).

When is NH forecast better?

Severe bura events can be missed by hydrostatic run but correctly predicted by non-hydrostatic forecast.

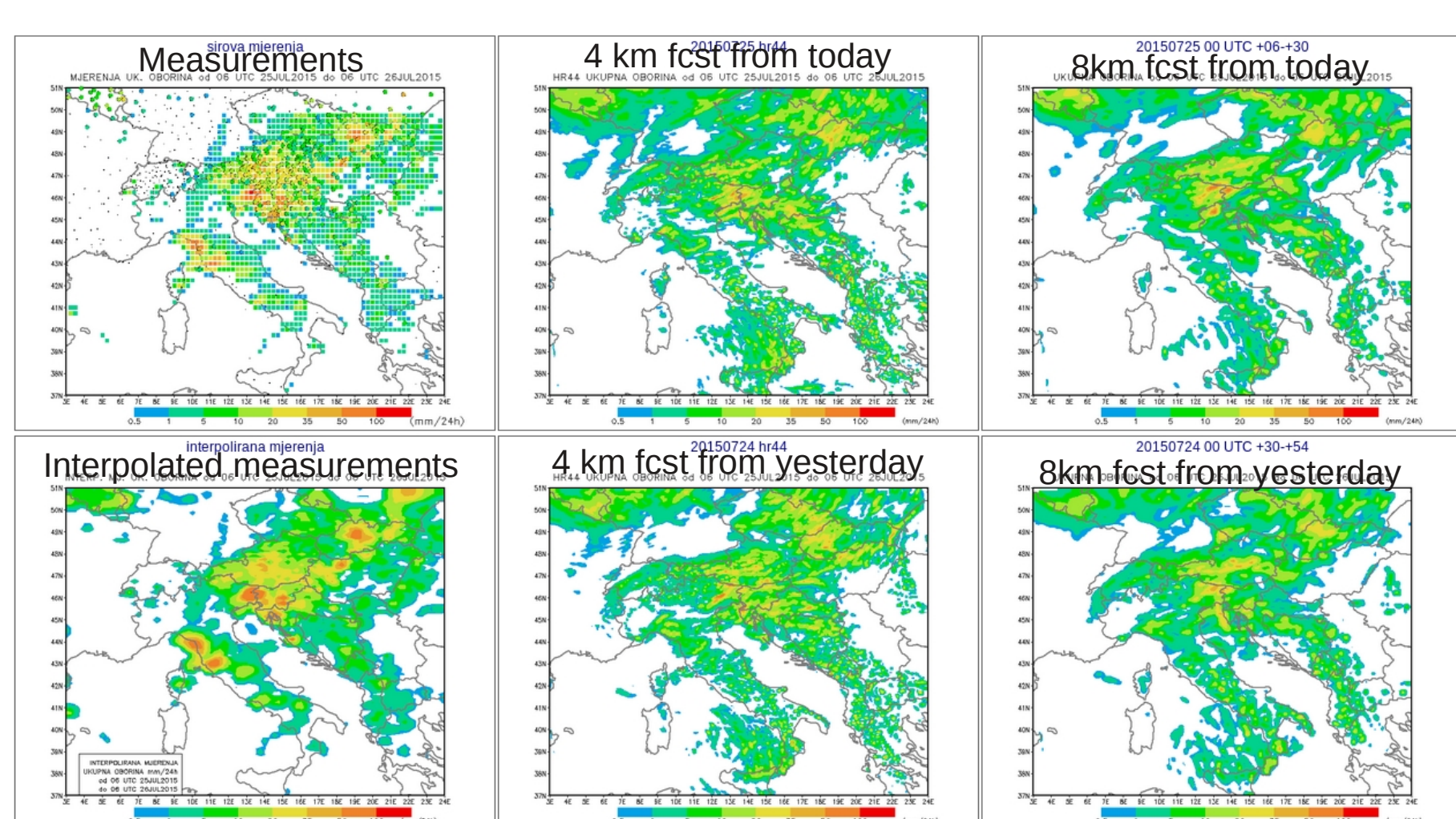
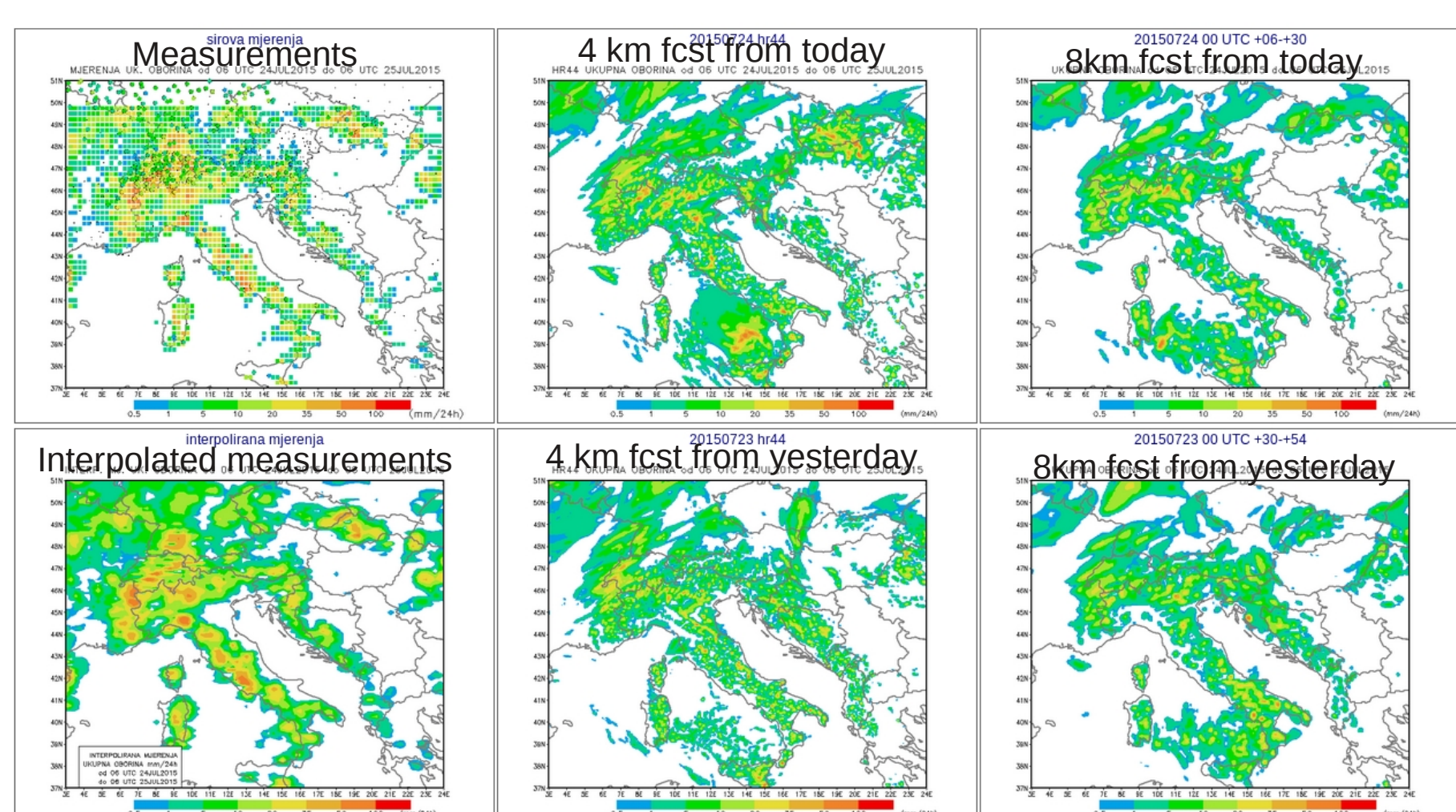
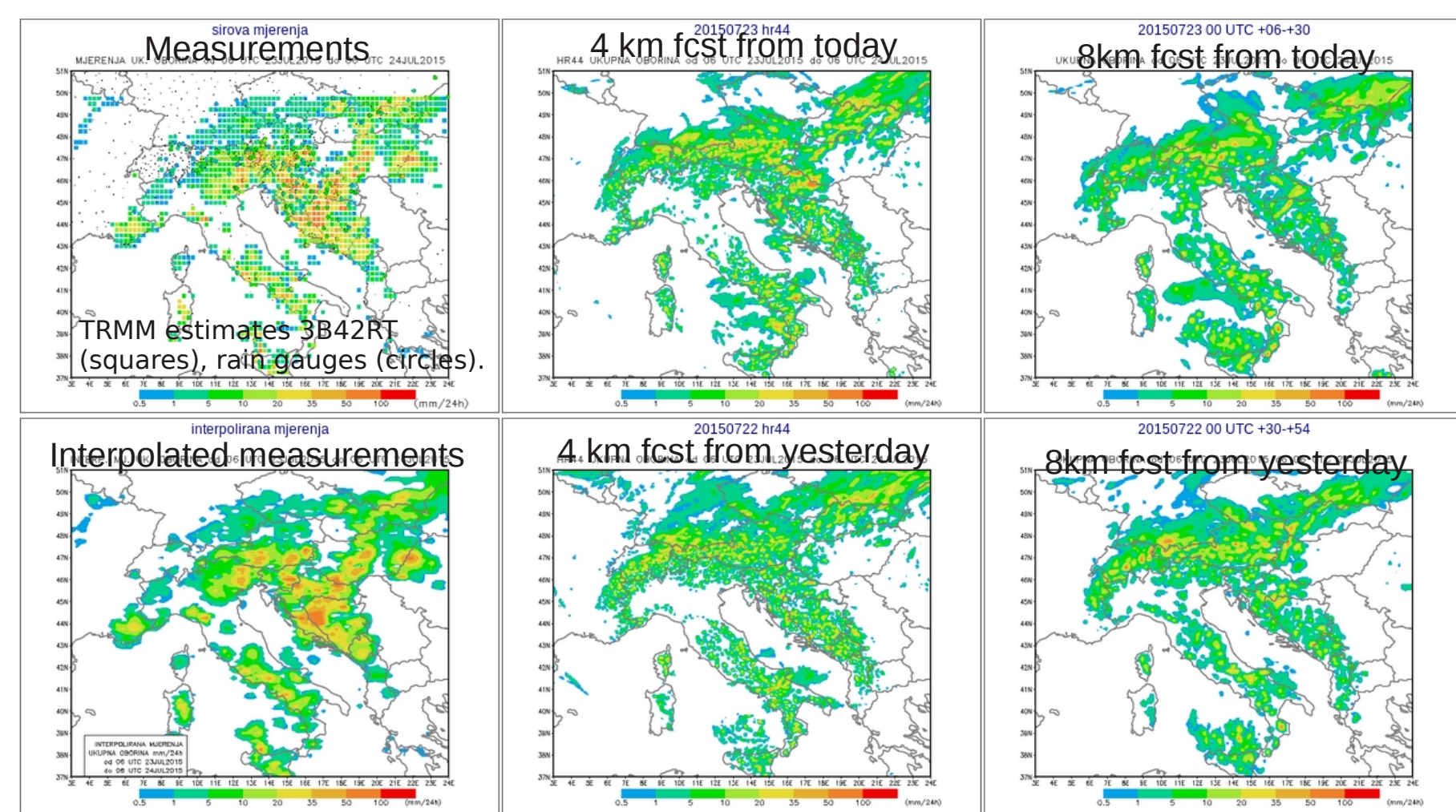


Severe bura events in Makarska can be missed by dynamical adaptation but correctly predicted by non-hydrostatic forecast using the full physics package.



Case with cold front and wrong timing

In July 2015, a cold front brought fresh weather with rain that lingered for few days. The arrival was forecast for late afternoon while it reached Croatia in the late morning yielding 14C error in 2m temperature.



The accumulated 24 hourly precipitation: measured (left), 4km (middle) and 8km (right) operational forecasts.

SST in the coupling files from ARPEGE and IFS

SST is taken from initial file and remains constant during the model forecast. There are two sets of SST fields provided in the coupling files, from operational forecasts of IFS and ARPEGE. Here we compare the SST from the coupling files with the values measured on stations. There are large discrepancies in measured and model SST in certain regions, especially in autumn and winter along western Adriatic coastline.

