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Natural Hazards and Earth System Sciences
Discussions

# *Interactive comment on* "Overview of the first HyMeX Special Observation Period over Croatia" *by* Branka Ivančan-Picek et al.

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Reply to reviewer comments on "Overview of the firs HyMeX Special Observation Period over Croatia" by Ivančan-Picek, Tudor, Horvath, Stanešić and Ivatek-Šahdan

The authors would like to thank the Reviewer for the through review of the manuscript. We will do our best to improve the manuscript, according to the comments. General comments: 1. We agree with the reviewer that that the manuscript would be more readable if English language native speaker would proof-red the manuscript and correct the grammar. Before submitting a revised final version of our paper, English text will be corrected by a native English speaker. 2. Accepted. We appreciate the comments made by the Reviewer, which pointed that the description of the different IOPs is difficult to follow in the information flow (particularly in Subsection 3.1). In the revised



manuscript we will remedy the problem. What we plan to do is to reorganise the text in accordance to the reviewer comments. In the Subsection 3.1 we will also highlight the different physical proceses that produced HPE during the different IOPs. Minor points: 1. Line 139-141; Line 364 – Locations of radiosounding stations, radar sites and other places mentioned in the text will be added in Fig. 2 2. Line 144: Majority of SYNOP stations are also equipped with an automatic station ... how many? We propose to change the sentences in Line 143-145 in: The meteorological measurements and observations on 58 SYNOP stations (31 of them are automatic stations) are done every hour and reported in real time during the SOP1. 3. Line 152: The number of climatological stations of the network in Croatia is 120. Average distance between stations are 20 km. We will add this information in the text. 4. Line 153: why are the synoptic observations not taken at the main synoptic hours? Our high- resolution analysis are based on the dense network of climatological stations that make the observations three times a day (06, 13 and 20 UTC). 5. Lines 165-167: It is not clear what SAP refers to: is it a technique to select relevant parameters? Sensitive area prediction is a prediction of where might a more accurate definition of the initial state of the atmosphere benefit the quality of the forecast over the region in question. Sensitive areas are regions where extra observations are expected to have the largest impact on the forecasts for the verification area.

We reformulated the sentence accordingly: The selection of sensitive area predictions (SAP), that is predictions of regions where observations are expected to have the largest impact on the forecasts for the verification, used methods developed by ECMWF and Meteo-France (Prates et al., 2009). 6. Line 199: Why is the convection parameterization employed at 2 km grid spacing? Why not using an explicit treatment? As explained in the text and more elaborately in references that describe the 2km resolution operational forecast and its parametrisations in more detail: ALADIN is a spectral model and operationally we are using quadratic truncation. This means that gridpoint resolution is 2 km but the shortest resolved wave has a wavelength of 6 km. The 3MT convection scheme can be run in multiple scales and substantial amount of literature

shows that substantial part of convection remains unresolved even in 1km resolution (e.g. Kajikawa et al., 2016). Therefore, we will add the reference: “Kajikawa et al., 2016: resolution dependence of deep convections in a global simulation from over 10-km to sub-kilometer grid spacing. Progress in Earth and Plnetary Science, DOI: 10.1186/s40645-016-0094-5”

7. Accepted. Subsection 2.3.1 is devoted to the description of the well known operational 8 km ALADIN forecast. Therefore, we will reduce the lenght of this section and remove unnecessary details which could find in the listed references. 8. Line 218: What is biperiodization? The biperiodization is a numerical technique to facilitate spectral computations for dynamics in LAM Specific for spectral LAM uses FFT. 9. Line 312-316: We agree. The details about NAO will be removed. 10. Line 390-391: Instead of sentence "Large-scale conditions such as found in these IOPs help to generate mesoscale and local processes which modify additionally flow regimes leading to quite different precipitation patterns“ we propose "Similar large-scale conditions such as found in these IOPs help to generate mesoscale and local processes leading to quite different precipitation patterns“ 11. Line 434: Accepted. We will add proposed sentence. 12. Line 459: No. To clarify this we propose to include in the text: ALADIN model at 2km grid spacing during SOP1 was assessed by comparing forecasts from the nearest model point with respect to the observation location with the measurements from Croatian surface observation network. 13. Line 471-499: We agree. The definition of the verification measures (indices) used in Tables 2 and 3 will be done in Appendix. 14. We appreciate the comments made by the Reviewer, which reminded the authors to the reference Migletta et al. (2016). We will refer to this paper which focuses on the IOP2 over northeastern Italy. 15. Figure 6 - What is ARPEGE resolution? In 2012, ARPEGE resolution over the western Mediterrannean Sea was about 11 km and more than 14 km easward (stretched grid). This is gridpoint resolution since ARPEGE is also a spectral model.

Other points:



All accepted and problem will be corrected.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-247/nhess-2016-247-AC1-supplement.pdf

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