

Accepted Manuscript

Impact of SST on heavy rainfall events on eastern Adriatic during SOP1 of HyMeX

Stjepan Ivatek-Šahdan, Antonio Stanešić, Martina Tudor, Iris Odak Plenković, Ivica Janeković

PII: S0169-8095(17)30453-2
DOI: doi: [10.1016/j.atmosres.2017.09.019](https://doi.org/10.1016/j.atmosres.2017.09.019)
Reference: ATMOS 4074

To appear in: *Atmospheric Research*

Received date: 19 April 2017
Revised date: 25 August 2017
Accepted date: 22 September 2017



Please cite this article as: Ivatek-Šahdan, Stjepan, Stanešić, Antonio, Tudor, Martina, Plenković, Iris Odak, Janeković, Ivica, Impact of SST on heavy rainfall events on eastern Adriatic during SOP1 of HyMeX, *Atmospheric Research* (2017), doi: [10.1016/j.atmosres.2017.09.019](https://doi.org/10.1016/j.atmosres.2017.09.019)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Impact of SST on heavy rainfall events on eastern Adriatic during SOP1 of HyMeX

Stjepan Ivatek-Šahdan^a, Antonio Stanešić^a, Martina Tudor^a, Iris Odak Plenković^a, Ivica Janeković^{b,c}

^a*Croatian Meteorological and Hydrological Service, Grič3, Zagreb, Croatia*

^b*Rudjer Bošković Institute, Bijenička 54, Zagreb, Croatia*

^c*The University of Western Australia, School of Civil, Environmental and Mining Engineering & UWA Oceans Institute, Crawley, WA 6009, Australia*

Abstract

The season of late summer and autumn is favourable for intensive precipitation events (IPE) in the central Mediterranean. During that period the sea surface is warm and contributes to warming and moistening of the lowest portion of the atmosphere, particularly the planetary boundary layer (PBL). Adriatic sea is surrounded by mountains and the area often receives substantial amounts of precipitation in short time (24 hours). The IPEs are a consequence of convection triggered by topography acting on the southerly flow that has brought the unstable air to the coastline. Improvement in prediction of high impact weather events is one of the goals of The Hydrological cycle in the Mediterranean eXperiment (HyMeX). This study examines how precipitation patterns change in response to different SST forcing. We focus on the IPEs that occurred on the eastern Adriatic coast during the first HyMeX Special observing period (SOP1, 6 September to 5 November 2012). The operational forecast model ALADIN uses the same SST as the global meteorological model (ARPEGE from Meteo France), as well as the forecast lateral boundary conditions (LBCs). First we assess the SST used by the operational atmospheric model ALADIN and compare it to the insitu measurements, ROMS ocean model, OSTIA and MUR analyses. Results of this assessment show that SST in the eastern Adriatic was overestimated by up to 10 K during HyMeX SOP1 period. Then we examine the sensitivity of 8 km and 2 km resolution forecasts of IPEs to the changes in the SST during whole SOP1 with special attention to the intensive precipitation event in Rijeka. Forecast runs in both resolutions are performed for the whole SOP1 using

Download English Version:

<https://daneshyari.com/en/article/5753530>

Download Persian Version:

<https://daneshyari.com/article/5753530>

[Daneshyari.com](https://daneshyari.com)