Nat. Hazards Earth Syst. Sci. Discuss., 3, C874–C877, 2015
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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "An assessment of the potential of earth observation data to detect and monitor storm cells associated with natural hazards – an application to an extreme weather event in southeastern Mediterranean" *by* T. Mavrakou and C. Cartalis

Anonymous Referee #1

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The authors use two well-known RGB combinations of MSG spectral channels in one case study over the southeastern Mediterranean to demonstrate nowcasting an extreme weather event. The paper address relevant scientific and technical questions within the scope of NHESS. It does not present any new concepts, ideas, tools, methods or results. I think that after a major revision, which will take care of the following problems, this paper could be considered again for publication as a "classroom experi-

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ence" (Levy and Pinker, 2007).

General comments:

1. The "algorithm"

In the following statements the authors claim that they developed an algorithm for production of composites:

P. 2195 line 21: In this study a standalone algorithm for the production of composites is developed. . . P. 2196 line 15: development of an algorithm for Airmass and Convective storm composites. P. 2198 line 5: The developed Airmass algorithm. . . P. 2198 line 20: The developed Convective storm algorithm. . .

The authors did not develop these composites. They are in use by EUMETSAT for many years, and are freely distributed from: http://oiswww.eumetsat.org/IPPS/html/MSG/RGB/

The "algorithm" is described in: http://oiswww.eumetsat.org/WEBOPS/msg_interpretation/msg_channels.php RGB part 04 - RGB composites with Channels 01-11 and their interpretation. These composites were also documented in Lensky and Rosenfeld (2008).

At the end of the Methodology section the authors state that: P. 2199 line 7: In this study, improvements of the algorithms refer to (a) the estimation of the solar zenith angle per pixel, thus enabling the processing of MSG data, and (b) the production of the composites every 15 min.

I don't understand what the authors want to say: (a) Whoever wants to work quantitatively with satellite data needs to have the solar zenith angle. Why do the authors consider such a basic (and standard) stage as an improvement of an algorithm? (b) Can production of composites every 15 minutes be considered as an improvement of the algorithm?

P. 2198 line 6: there is no Gamma correction in the "Airmass" RGB.

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Finally, there are many documented case studies with "Airmass" and "convective storms" RGB in: http://www.eumetsat.int/website/home/Images/ImageLibrary/index.html

2. Usage of appropriate RGB composites

There is no relevant information from the "convective storms" RGB in figure 8. "Day microphysical" RGB should be much more informative in this case.

P. 2197 line 18-21: There is no relevant information from the Airmass RGB in figure 11, you could just use BT of channel 9 (10.8μm). "Night microphysical" RGB should be much more informative in this case.

3. Physical explanations

P. 2198 line 18 and P. 2199 line 16: The stratospheric air is dry. The red color indicates sinking dry air, which could be of stratospheric origin.

4. Please give credit to all the data providers: EUMETRAIN, UK MET OFFICE, etc.

Specific comments:

Figures 5 & 6: The PVU contours (panel 5c) should be overlaid on the Airmass RGB (panel 5a). Join figures 5 and 6 to one figure with 6 panels (every 12 hours). Use the same extent for all panels.

Figures 5, 6 & 11: use a different color for the land/sea lines Figure 7: the maps in all four panels should have the same extent, projection and background colors (for land, sea and borders).

Add locations of the precipitation data (figures 10 & 12) in figures 9 & 11 and discuss it in the text. If you cannot say anything from satellite data on the distribution of precipitation at this resolution, then don't show these figures.

Technical corrections

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Page 2195 line 1: change pairsof to pairs of.

My suggestions for the authors

Rewrite this paper as a “classroom experience” (Levy and Pinker, 2007). Use the excellent tool provided by EUMETRAIN: http://www.eumetrain.org/eport.html In ePort select: Archive: Europe You can guide your “students” through the relevant RGBs and overlay the relevant parameters from ECMWF NWP. Add more physical explanations on both RGB and meteorological phenomena, Finally, send the corrected MS to English editing before resubmitting.

References Lensky, I. M. and D. Rosenfeld, 2008: Clouds-Aerosols-Precipitation Satellite Analysis Tool (CAPSAT), Atmos. Chem. Phys., 8, 6739-6753, doi:10.5194/acp-8-6739-2008 Levy R. C. and R. T. Pinker, 2007: Remote Sensing of Spectral Aerosol Properties: A Classroom Experience. Bull. Amer. Meteor. Soc., 88, 25–30. doi:10.1175/BAMS-88-1-25

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