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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Extreme temperature days and potential impacts in Southern Europe" *by* A. Cardil et al.

Anonymous Referee #2

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GENERAL COMMENTS

The main objective of this paper was to identify spatial patterns and differences in magnitude of recent change in extreme temperature day frequencies. In particular, the authors explored trends in extreme temperature events over time (1978-2012) across Southern Europe analyzing (i) annual number of high temperature days and their spatial distribution, and (ii) temporal trends of extreme temperature events.

Data used in this study consist in air temperature data at 850 hPa for 34 points distributed uniformly across Southern Europe below the 45th parallel. The analysis covered five countries (Portugal, Spain, southern France, Italy and Greece) and the period 1978-2012.

The Results section includes 2 Tables and 5 Figures. Here it is a summary of the main results reported in the paper: - Annual number of high temperature days (HTD) by studied point, using different temperature thresholds (20, 22.5, 25 °C), and the 95th percentile of air temperature at 850 hPa during the summer period. - Relationship between latitude and (i) number of days with air temperature at 850 hPa greater than threshold temperatures (using also percent changes), and (ii) 95th percentile of air temperature at 850 hPa during the summer period.

The Discussion section (1/3 of the MS) is mainly devoted to speculate about the potential implications of the observed spatial and temporal trends on four sectors: human health, energy demands, forest fire risk, agriculture.

I find that the context of the research in general is appropriate for NHESS. However, I found the Discussion section not appropriate and too long. I think that most of this section should be used to discuss the result obtained rather than speculate on the potential implications of the temperature changes obtained from the analysis. Most of the discussion section covers topics already well known and does not contribute to improve our knowledge on the subject. Although the study seems in general well conducted, I strongly recommend the improvement of the Discussion section. For these reasons, I think that the MS needs major revision before publication in NHESS.

SPECIFIC COMMENTS AND TECHNICAL CORRECTIONS

- Page 3864, lines 18-19. "...including 2003 where summer temperatures across Europe were the highest of the last 500 years (Luterbacher et al., 2004)". I think that this sentence needs to be rephrased using the same cautious approach of Luterbacher et al., which wrote "Taking into account the uncertainties in our reconstructions, it appears that the summer of 2003 was very likely warmer than any other summer back to 1500." This is different from saying that in 2003 summer temperatures across Europe were the highest of the last 500 years. - Page 3866, line 12. Substitute "the summer period (June-September) from 1978 to 2012." for "the summer period from June–September

from 1978–2012." - Page 3866, line 23. Substitute "... below ..." for "... bellow ..." - Page 3869, line 23. Substitute "... was significantly larger at higher latitudes ..." for "... was significantly higher in higher latitudes ..." - Page 3875, line 11. Substitute "... were larger at higher latitudes." for "... were higher at higher latitudes." - Page 3875, lines 15-16. Replace "Adaptive measures should be instituted in an attempt to diminish the negative consequences ..." with "Adaptive measures should be taken for reducing the negative consequences ..." - Page 3884, Figure 3. In the first line of the caption substitute "Celsius" for "Celcius" - Page 3885, Figure 4. Substitute "The analysis included only sites where significant temporal changes were identified." for "Only sites where significant temporal changes were identified were included in the analysis."

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 3863, 2014.