## Editor:

- acknowledgements: it feels appropriate to thank the reviewers for their very detailed and constructive comments that helped greatly to improve the paper. **Reply:** Yes indeed. Added

- line 15: "The ... winds is ..." is grammatically incorrect, either "The winds are" or "The wind is". Please check the entire paper for similar grammatical issues! **Reply:** changed

- line 15: "emerging from" **Reply:** changed

- line 22: maybe add year for the Samalas eruption **Reply:** added

- line 261: "Large eruptions are ideal ..." **Reply:** changed

- line 268: "that reduce adiabatic heating" **Reply:** changed

- line 271: "the ensemble averaging ... suppresses ..." **Reply:** changed

- line 275: I don't understand "provided the internal variability had been negligible". If your simulation did not show Etesians in this year, then this part of the sentence can be deleted(?). **Reply:** the modified sentence now reads:

These circulation changes are clearly detected after the largest eruptions in the past millennium. According to the CESM-LME, the first post-eruption year after Samalas in the observation record should have been a summer without Etesians, provided the internal variability had been negligible.

- line 279 and in other places: "SLPs" does not make sense, there is no plural of "sea level pressure" **Reply:** changed

**Keply:** changed

- line 282: do you mean "cooling in the tropics"? **Reply: changed** 

- line 291: do you mean "for some of the unknown eruptions"? **Reply: changed** 

- caption of Fig. 1: write "m/s" as "m s^{-1}" **Reply:** Not sure why should be written in this way. Is it to follow the journal's style? Reviewer 1

Specific Comments L22: "in the extreme case of the eruption of the Samalas" **Reply:** Kept original

L31-32: "between the high-pressure systems covering central Europe and the Balkans and the Anatolian low-pressure system" **Reply:** changed

L33: "the topography of the EMed channels"? **Reply:** Has the meaning of directing the winds

L34: "northwesterly direction" Introduction and elsewhere: Please replace "Etesians" by "The Etesians" **Reply:** changed

L39: "over the Aegean Sea" **Reply: c**hanged

L41,48, 49 and elsewhere: I am not a native speaker of English myself but I think that since the focus of the study is on atmospheric responses (and not in the ocean), it is more appropriate to write "over the EMed". The authors may wish to check with a native speaker and change this throughout the manuscript. **Reply:** changed

L47: "an important source that modulates interannual variability"? **Reply:** it now reads as *as an important component of Etesian winds variability on interannual time scales* 

L57: "Chronis et al. (2011).... You may want to start a new sentence here. **Reply:** kept original

L79-80: This is a bit awkward sentence. Please rephrase.

Reply: it now reads as

we present model evidence for a significant decline of the Etesian winds in response to volcanic eruptions over the last millennium, with a stronger sensitivity to NH eruptions

L103-107: This is a very long sentence with many parentheses that makes it difficult to understand. Please rephrase. **Reply:** Moved parentheses to the end of the sentence.

L127: "Etesian winds" **Reply:** Not sure what is commented here

L145: "We first analyse.." **Reply:** changed

L147-150: Please rephrase this long sentence. **Reply:** not changed

Figure 5 and Section 3.2: I might miss something but the anomalies following the eruption of Tambora (Fig. 5c) receive minimum attention in this section. However, the anomalies both over the eastern Mediterranean and India are statistically significant. Please comment. **Reply:** Yes we agree with the reviewer that responses are significant for Tambora as well as for other eruptions presented as shown in the supplementary Figures. We perhaps discussed more extensively effects after the Laki eruption because results are more surprising given its considerably weaker magnitude compared to Tambora. This demonstrates the amplified sensitivity to NH eruptions.

L217-219: Causality is not addressed by this study so it may be better to write "This indicates a weakened SLP pressure gradient over the Aegean Sea, which is associated with reduced wind speeds, as evidenced with the southerly anomalies of about 1 m/s (arrows in Figure 5 and Sup. Figure 2). **Reply:** changed

L223: "increasing shortwave heating"? **Reply:** Changed to *This can also explain the anomalous surface warming simulated over India given that a reduction in the cloud amount and increased downward shortwave radiation in years of reduced ISM can cause positive surface temperature anomalies.* 

L225-227: I am sorry but I still cannot figure out where to look for the anomalous northwesterly anomalies over the Arabian Sea in Fig. 5e. Is it near the coast of Saudi Arabia? Please clarify. **Reply:** changed

L247: "Figure 6e" **Reply:** changed

L282: "given that they induce negligible cooling to the tropics" **Reply:** changed

Fig 1e, Fig. 4 & L471: I would recommend the use units of "hPa" throughout the manuscript. **Reply:** We kept the original units in Pa.