

Interactive comment on “An update of IPCC climate reference regions for subcontinental analysis of climate model data: Definition and aggregated datasets” by Maialen Iturbide et al.

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Along the next lines, the different comments posed by the reviewer RC1 are reviewed point by point.

Comment: General Comments The manuscript presents the updated climate reference regions for regional synthesis of observed and projected climate change information. The rationale behind the definition of the new regions is presented together with regional aggregated datasets generated from different observational temperature and precipitation datasets and from information of global climate models from the Coupled Model Intercomparison Project Phase 5 and 6 (CMIP5 and CMIP6) to assess observed

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climate and future climate projections (for different time horizons and emission scenarios). The manuscript provides the reference regions, datasets and code through a GitHub repository (<https://github.com/SantanderMetGroup/ATLAS>). The manuscript presents a valuable contribution for climate change assessments at sub-continental scales that rely on the efficient use of huge volumes of climate data and on the distillation and production of climate information for decision making. The topic of the manuscript is very interesting, the aims and results are clearly presented, and the code and data are easily accessible.

Response: We thank the referee for the time devoted to review our manuscript, and for the positive feedback provided.

Comment: Specific comment: I consider the updated and redefined regions make a significant improvement regarding the two premises established: climatic consistency and representativeness of model results. I would suggest adding a comment about that although the use of the aggregated climate information for each sub-continental region is very useful for a broad spectrum of users and they represent regions with climate- consistent regimes, detailed climate information at local or regional scales (in each sub-continental region) would require further analysis.

Response: We will include a comment on the limitations of the aggregated data.

Comment: Technical comments: Page 3, line 29: Wouldn't it be "from these datasets"?

Response: Yes. This will be changed in the revised manuscript.

Comment: Page 4, line 11: Reference period 1986-2005 for climate projections and WMO period (page 3, line 35) 1980-2010. These maybe confusing for readers who are not familiar with these periods. I suggest adding a brief explanation

Response: For the current WMO climatological normal period (1981–2010) we included a reference in the manuscript (WMO, 2017), which provides a clear description. For the reference period 1986-2005, in the revised manuscript we will clarify that his

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was the standard period used in AR5-WGI for modern climate.

Comment: Caption Figure 1: What do the white regions? I think they are the regions that did not change from one AR to the other but it would be good to clarify it in the caption.

Response: The white areas indicate ocean regions within the land reference regions which should be excluded from the analysis (masked out) to obtain land-only results. The blue color is reserved for ocean reference regions. This will be clarified in the revised manuscript.

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