

Notes for the “ICRC-CORDEX 2019 International Conference On Regional Climate”

Session: D3

Theme: Regional responses to global warmings of 1.5 °C and 2°C

Day and time: THURSDAY 17th OCTOBER 14:00-16:00

Chair(s): Zhihong Jiang, Weidong Guo, Shuyu Wang

Rapporteur: Ester Salimun, Marium Alleyne, Mei Li, Alizadeh Choobari Omid, Sun Cenxiao, Li Tong, Kjellström Erik

Top Highlights

1.

Using multi-model (CMIP5, HAPPI, CESM-low warming etc.) and multi-methods (Dynamic/statistical downscaling, machine learning etc.) to identify the responsive hotspots, precipitation under 1.5°C and 2 °C warming. Results show that the highly impacted areas of increasing extreme temperature are different with extreme precipitation.

2.

Using EURO-CORDEX’s simulation, find that in Europe there exist a strong relationship with the large-scale circulation and its internal variability as given by the choice of GCMs and regional processes have a strong impact on the simulated climate change. RCMs also can alter the results leading either to attenuation or amplification of the climate change signal in the underlying GCMs.

3.

Applying the ONI index and modified Cai index to investigate the characteristics of the inter-decadal variation of the atmosphere-ocean interaction, results show a slight decrease of extreme El Niño events and a slight increase of extreme La Niña events under global warming; and during strong El Niño, the anomalous Consecutive Dry Days (CDD) can be more than 50% compared to normal years.

4.

Except for the various regional projection results, the examination can be explored by self-organizing map method. The overall intensification of rainfall over Yangtze-Huaihe river basin in the late 21st century can be linked to the raise of extreme wet pattern with westward Subtropical High and eastward South Asia High and the reduction of extreme dry pattern with far-away Subtropical High and South Asia High.

Additional Notes and Takeaways

Speaker 1 Ester Salimun

- *Scientists from most influenced small island consider the SIDS' contextual vulnerability and the integration of inherent characteristics of domain under specific climate change scenarios.*

Speaker 2 Sun Cenxiao

- *An variance analysis of national-averaged results over China based on the HAPPI project shows that, under 1.5°C and 2.0°C the mean temperature shows a larger inter-model spreading against internal variability, while for most extreme temperature indices, a dominant internal variability is observed. For an additional warming of 0.5°C and for all indices, the variance is mainly brought in by internal variability whose contribution is more than 85%.*

Speaker 3 Li Tong

- *When RF models were used in multi-model ensemble, comparing with MME, there exists some differences. For temperature indices, the projection's spread simulated by RF ensembles are larger than MME. For precipitation indices, the sensitive wetter areas are not identical, and the wetting intensity in the sensitive area are significant stronger.*

General Discussion

- *There is an important discussion about the sensitive region. Different variables and indices, as well as downscaling methods, would lead to the different results. As to dynamical downscaling, maybe the consideration of oceanic influence can be helpful for the good performance.*
- *Another discussion is about the shortcoming of machine learning. The learning stage only covers the historical period with current aerosol forcing and human activities which would change a lot in the future. Maybe it would have some effects on the projection in the future.*