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

Session: D1
Theme: Third Pole Environment: high resolution simulation/reanalysis & its
      implication/application
Day and time: Thursday 17th October, 14:00 – 16:00
Chair(s): Deliang Chen, Shiori Sugimoto, Tandong Yan, Peter van Ovelen
Rapporteur: Mahesh Ramadoss

<u>Top Highlights</u>

1. **New CORDEX FPS in response to the call of the TPE was approved by CORDEX on 17 October, 2019 (PI: Deliang Chen from Sweden): 21 Partners from Austria, China, India, Japan, Nepal, Norway, Pakistan, Spain, UK, US.**

2. **TPE has identified high resolution climate modeling over the Tibetan Plateau as a priority area.**

3. **Non-Cumulus Parameterization experiment captures better the diurnal cycle of precipitation frequency.**

4. **MSKF experiments better reproduced the diurnal cycle of precipitation intensity**

5. **Kilometer-scale models enable enhanced process understanding in often poorly observed mountain regions.**

6. **High resolution topography helps to understand the moisture transport process to TP.**

7. **There is a lack of knowledge about connection between organized convection between synoptic background condition and surface features.**

8. **Need additional parameters from the regional analysis to get clear relationship between meso scale convective system and extreme precipitation.**

9. **Small scale forcing captures the dryness-witness contrast between northwest and southwest TP.**

10. **Nearly 2km high resolution simulations produce better result compare to 10km and 30km resolutions.**

Additional Notes and Takeaways

Invited Speaker 1: Tandong Yao

- TPE is focusing on water and human activity, particularly impacts of changing Asian water towers and cooperation between scientists and policy makers in the view of adaptation strategy.

- TPE concentrates in Asia water towers, conservation process phases and improve the function of ecology buffer

- Upcoming TPE event
  November 29-30, TPE workshop, Frankfurt, Germany

Invited Speaker 2: Andreas Prein

- Mountains are warming faster than land-atmosphere.
- Kilometer-scale models are needed to stimulate mountain regions.
- Capturing Realistic mountain structure is very important for understanding the water cycle.
- Increase more observations to reduce the observation bias and improve the performance of kilometer-scale models
- High resolution model can realistically stimulate snow back dynamics.

Speaker 1: Shiori Sugimoto

- Cloud-resolving simulation supports to understand the diurnal cycle in precipitation and physical process

- The topography resolution affects the diurnal cycle in precipitation over the Himalayas

- Afternoon precipitation increases in the lower topography at the mid-altitude of Himalayas. Midnight precipitation decreases at the lower latitude of Himalayas.

- High resolution topography stimulation supports to understand the moisture transport process to TP.

speaker 2: Yahhang Gao

- Largest Bias and inconsistent in reanalysis and GCM over TP region.
- Very less observation stations are in eastern part of Himalayas.
- Some precipitation datasets have more uncertainty in the TP compared to CMA station records.
- DDM generates better show cover fraction than three merged precipitation runs.
- The outputs of Noah-MP run which driven by merged precipitation dataset underestimate the show cover fraction in the central and eastern TP, Particularly in the Brahmaputra Grand Canyon.

Speaker 3: Xu Zhou

- High resolution models can stimulate the less air water vapor to interior plateau. It indicates the precipitation bias in the model.
- High resolution models identify the air water vapor transport.
- Difficulties exists in simulating the precipitation at the southern slope of TP.

Speaker 4: Tinghai Ou

- Regional Dynamic downscaling method is required.
- Investigate impact of CUs on the simulations of summer rainfall diurnal cycle over the TP.
- No – Cumulus Scheme works fine at 9km resolution.
- MSKF experiments reproduce the better diurnal cycle of precipitation intensity.
- Simulations with Cumulus Scheme overestimate the summer hourly precipitation frequency compared to observation.

Speaker 5: Jianpang Tang

- WRF with high resolution stimulates the surface wind in complex terrain.

- The WRF stimulates the spatiotemporal variations of annual mean precipitation and surface air temperature over TP without convection scheme evidently.

- Large warm bias presents precipitation over eastern IP and also more cold bias presents in temperature over western IP.

Speaker 6: Kun Yang

- Established 55 newly constructed rainfall observation network.
- Representing complex terrain,lake,snow and land air interactions is crucial in the model.
- AsiaPEX supports to collect the data from in-situ, model evaluation and process studies.
- There are thousand lakes on the third poles. Lake-air water vapor/ heat and momentum exchanges must be expressed well.

Speaker 7: Deliang Chen

- Assess the ability of RCM models through inter-comparison of models.
- Configuring models in variation combination of aspects, in stimulating convective and stratiform precipitation assist to estimate the performance of RCM models.
- Elaborate the studies about understanding of physical process behind the variablilty of convective precipitation and its contributions over the TP.

General Discussion
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