

LS4P-II RCM team meeting Minutes (zoom meeting)

Apr.19, 2023

Present: Sinchan Chou, Jinmin Feng; Sun Jian; Yelin Jiang; Xin Zhong Liang; Yu Miao; Tomonori Sato; Shiori Sugimoto; Hiroshi Takahashi; Jianping Tang; Guiling Wang; Haoran Xu; Yongkang Xue; Kun Yang; Wang (Miao's student).

Staff: Zhijiong Cao

JP Tang: present the draft paper for climate dynamics LS4P special issue

Questions and comments:

1)

Liang: Resolution. Which observation reference we should choose?

2)

Liang: Should we cover the interannual variability?

Jianping: Did calculate the correlation between different models but didn't do deeper analysis.

3)

Liang: Need to talk about the physical processes, not just evaluate the model

Yongkang: first half evaluation, second half discussion

4)

Guiling: Any systematic bias difference between the 2 family of models?

Liang: Should make it more general, could more generally package it instead of separation, need to use cluster analysis to make sure if we should separate.

5)

Tomonori Sato: sub-Seasonal variation?

Jianping: Checked for several WRF models, not for all the models, maybe choose some months to check the behavior

6)

Kun Yang: Many tests about WRF exist, what is the focus of the sensitivity test?

Jianping: Only used the RegCM4, didn't compare all the simulations with WRF, but can provide CWRF runs with the same length.

7)

Kun Yang: Each WRF model has different domain settings

8)

Shiori Sugimoto: JAMSTEC experiment starts from end of April, and its domain size is different from other models, may be a cause to the cold bias.

Yongkang: Didn't do the elevation correction, need to pay attention.

Liang: Can provide a paper, which shows the importance of elevation correction.

Kun Yang: The reason why we have the cold bias may be the initialization of surface condition, there's too much snow cover at the beginning.

9)

Kun Yang: Question the reference data for precipitation.

Liang: The reanalysis may underestimate the precipitation over Tibetan Plateau and Northern China, can use Prof. Yang's 0.1-degree data to validate the results.

2. Jianping: introduce phase 2 experiment designs and work plan

Questions and comments:

1)

Yongkang: Need to improve initialization to see if can improve the simulation

Liang: Need good data not only over Tibetan Plateau, but over the whole China related domain, because the snow at that area has strong controlling effect on the jet stream.

Yongkang: If use the same LBC, the jet location will be the same. Force internally with much stronger forcing, the jet will shift. Maybe do not emphasize the real comparison in the experiments here, but we can test the sensitivity.

Liang: LBC strongly controls the upper level jet, but the lower level is strongly regulated by land surface interaction, which is where the regional model is important, cannot do it without considering regional forcing.

2)

Yongkang: In the WRF domain, most snow in TP. Some small part of Siberia snow. But it needs to be studied separately.

3)

Chou: Any comparison of the TRIMS data? If this data is cooler or warmer, will it lead to similarity to the sensitivity tests?

Jianping: Will check.

Yongkang: Bias is ~2 degrees, in sensitivity tests, the change in temperature is ~5/10 degrees, can see the response like jet shifting

4)

Guiling: Acceptable size of domain? May be too small to see response.

Liang: My domain is the blue shading, which is probably the most reasonable for China simulation. Have several papers on it. Resolution: 30 km so far, also done 15/10 km.

Shiori Sugimoto: Used 20 km resolution in phase 1.

5)

Shiori Sugimoto: Can we choose tasks we'd like to focus on? Hard to do all. Maybe 3 tasks are the maximum. Do task 1&2 and choose one from other tasks.

Yongkang: Maybe limit to 3 tasks.

6)

Shiori Sugimoto: Deadline of data submission?

Yongkang: Maybe next summer, rough idea is to finish phase 2 experiments by the end of next year.

6)

Guiling: The balance between the resolution and the feasibility.

7)

Guiling: The rationale of task 2? Can go directly to task 3 from task 1.

8)

Miao Yu: Need to consider snow coverage besides snow depth in task 5.

9)

Yongkang: Any group willing to do prototype test on task 3&5?

10)

Liang & Hiroshi Takahashi: ERA5-Land or MERRA-2-Land reanalysis that assimilate surface observations can be good references.

11). There are a few strategic considerations:

(1). What's the advantage of RCM compared to the GCM?

(2). The LS4P explores a new direction like people did in the early 1980s for ENSO and SST.

There are many issues that need to be explored. In addition to the group experiments, based on your interest and funding, you may try to explore some new issues. You are welcome to discuss with Yongkang to develop your ideas.