2014 TCCIP International Workshop for Climate Change

Summary and Discussion

Topic: Climate Projection and Analysis

Afternoon, Jan.13, 2014

Simulation and Projection of Interannual Variability by Seasonal Prediction and CMIP3/5 Models

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Summary

- ***Performance of CMIP5 AOGCMs in simulating present-climate interannual variability has been notably improved over CMIP3.***
- ***Seasonal prediction models tended to over-emphasize the ENSO effect on tropical variability but under-simulate extratropical variability, likely due to the nature of seasonal forecast design.***
- ***CMIP5 projects weaker interannual variability of winter T2m in the northern extratropics and tropical precipitation in the end of 21st century under RCP8.5 scenario. The changes, however, will not be stationary in time.***

Future Changes in the Asian Monsoon Rainfall under a Warmer Climate

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and

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Summary

- Global monsoon
  - **Decreased** monsoon rainfall from the 1950s to 1980s both in observations and simulations
  - **Remarkable increase** in monsoon precipitation in the 21st century
- Regional monsoon
  - Increase rate of **Asian monsoon rainfall** is much larger than other monsoons
  - Dynamical weakening of the Asian monsoon is less than other monsoons
  - These features are common in CMIP3 and CMIP5 model projections

[Kitoh et al., 2013, JGR; Endo and Kitoh, 2014, submitted]

Q & A , Discussions, Comments

- Model Bias should be taken into account when analyzing
- Increase rate of **Asian monsoon rainfall** is much larger than other monsoons, especially for " Land Monsoon"
- Change of Asian Summer Monsoon is pointed out.
- Discussion of Characteristics of Global Monsoon is required.

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Future Increase in Super-typhoon Intensity Associated with Climate Change

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SOUSEI

Summary

- We used the Cloud Resolving Storm Simulator (CReSS) which is a non-hydrostatic and compressible model designed for parallel computers, in the present study.
- The results show that number of super-typhoon increases in the future climate.
- The maximum intensity of super-typhoon will increase substantially.
- The life-time minimum sea level pressure of the most intense typhoon in the future climate is projected to reach 850-870 hPa.
- These changes correspond to the increase of SST by 2 ℃ while other typhoon environmental metrics are not changed largely.

Q & A , Discussions, Comments

- The performance of super typhoon in CReSS is discussed.
- The middle level relative humidity in CReSS is suggested to be analyzed for evaluating the MPI variation.

Evaluation of present climate in non-hydrostatic regional climate simulations for SOUSEI program

Akihiko MURATA

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4. Summary

- Evaluation of the present climate reproduced by 5 km-mesh NHRCM
- Surface air temperature
  - Elimination of excess in the number of data around zero degrees Celsius
  - Negative bias over northern regions in winter
- Precipitation
  - Reduction in negative bias over the region of southwestern islands
  - Positive bias in summer

Q & A , Discussions, Comments

- The method to deal with Unfrozen water under the ground is discussed.
- The results of improved K-F scheme around island is also discussed.