Ji-Woo Lee
Supported Projects: PCMDI, ESGF, CASC postdoc

Quarterly Report for Oct 1, 2017 – Dec 31, 2017

Quarter Accomplishments:
- **PMP**
    - Created plots for CMIP5 models' climatology of various variable fields (>1000 plots) for CMEC website
    - Analyzed 7 modes of variability (2 more modes were added) obtained from 180 CMIP5 simulations (all available models and ensemble members) and advanced analysis result and the research paper was re-submitted to Climate Dynamics.
    - Enhanced understanding of theoretical background of the EOF analysis; Principle component analysis and Singular vector decomposition
    - Developed PMP's driver script for IPSL's ENSO metrics (continuing) and generated a portrait plot of the ENSO metrics for CMIP5 models

- **UV-CDAT**
    - Wrote tutorials using Jupyter Notebook and added them on the website
        - Blue Marble background image control
        - Logo control
    - Tested updated UV-CDAT, version (v2.12), by reproducing currently displayed examples in UV-CDAT website
        - 3D plots (continuing)
        - Discovered potential improvements for Taylor Diagram
    - Initiated an extreme weather evaluation study for a regional climate model (RCM) by applying both UV-CDAT (especially cdms, cdutil, genutil) and NASA JPL's RCMES (Python tool developed for evaluation of RCMs)
        - High frequency (3-hour) RCM and satellite observation (TRMM)
        - Apply Joint probability distribution function (JPDF)

- **Proposal**
    - Participated preparing a white paper for E3SM proposal call, which titled "Development of Neural Network Framework for Automated Model Tuning in E3SM Infrastructure."

- **Publication**
    - **Lee, J.-W.,** K. Sperber, P. Gleckler, C. Bonfils, and K. Taylor, 2018: Quantifying the Agreement Between Observed and Simulated Extratropical Modes of Interannual Variability. *Climate Dynamics* (in review)
    - **Lee, J.-W.,** Y. Xue, F. De Sales, I. Diallo, L. Marx, M. Ek, 2018: Impact of interactive atmospheric-ocean feedback on global and regional variability in the multi-decadal CFSv2/SSiB2 Simulation. *Climate Dynamics* (in review)
    - Park, H.-H., **J.-W. Lee**, E.-C. Chang, M. Joh, 2018: Impact of domain nesting strategy on cloud resolving WRF simulation of an extreme snowfall: a case study over eastern coast of Korea. *Meteorology and Applied Physics* (in review)

- o **Lee, J.-W.**, and K. Lee, 2018: Evolution of precipitation characteristic over Korea in climate change: Assessment of a regional climate model using Joint Probability Distribution Function (in preparation)

- **Presentation**
  - o **Lee, J.**, C. Zhang, S. K. Kim, S. Ames, and D. N. Williams, 2017: Framework for Detection and Localization of Extreme Climate Event with Pixel Recursive Super Resolution. The American Geophysical Union (AGU) Fall Meeting, New Orleans, USA, 11-15 December
  - o **Lee, J.-W.**, K. Sperber, P. Gleckler, C. Bonfils, K. Taylor, 2017: New Approach to Evaluate Large-scale Variability in CMIP models. Earth System Grid Federation (ESGF) Face-to-Face Conference. San Francisco, 4-8 December
  - o **Lee, J.-W.**, K. Sperber, P. Gleckler, C. Bonfils, K. Taylor, 2017: Quantifying the Agreement Between Observed and Simulated Extratropical Modes of Interannual Variability. LLNL Internal Climate and Weather Seminar Series. Nov 29.

Next Quarter's Roadmap
- Discover further research topics regarding PMP work; Power spectrum, ENSO (continue)
- Advance PMP modes of variability evaluation code by enhancing its flexibility and reusability
- Advance UV-CDAT scientific examples and tutorials with Jupyter Notebook (continue)
  - o Map projections
  - o Vertical profile (i.e., Skew-T Log-P diagram)
  - o Interactive Portrait plot
  - o Useful CDMS functions, etc.

Resources Required to Achieve Goals
- Nothing special at this moment