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

**Quarterly Report for Jan 1, 2018 – Mar 31, 2018**

**Quarter Accomplishments:**

- **PCMDI**
  - **PMP**
    - Develop a code for power spectrum analysis that potentially will be implemented to PMP
    - Sensitivity test of power spectrum parameters (tapering and segmentation)
    - Conduct a statistical test (Kolmogorov–Smirnov test)
    - Implementation of half-power point identification in power spectrum analysis
    - PMP modes of variability evaluation code was enhanced its flexibility and reusability by implementing parameter file usage
    - ENSO Metrics implementation to PMP as collaboration with IPSL - generated a preliminary result for collections of ENSO metrics (MC1 and MC2) and wrote a code for creating extended portrait plot of the ENSO metrics for CMIP5 models
    - Discovered issue of area-averaging on ocean native grid structure

  - **OBS4MIPs**
    - Secure and convert observation datasets (TRMM, GPCP, CRU, Tropflux, OAflux, etc) for OBS4MIPs (and also for the ENSO metrics for PMP)

- **UV-CDAT**
  - Wrote tutorials using Jupyter Notebook
    - Power Spectrum
    - Log 1-D plot
  - cdat v3.0 beta test
  - Made progress on an extreme weather evaluation study for a regional climate model (RCM) as incorporation of UV-CDAT (especially cdms, cdutil, genutil) and NASA JPL's RCMES (Python tool developed for evaluation of RCMs)
    - High frequency (3-hour) RCM, GCM, and satellite observation (TRMM)
    - Wrote a reusable code for the Joint probability distribution function (JPDF)

- **Proposal**
  - Participated developing an idea and preparing a white paper for LDRD-ER call. The proposal is titled "Inter-Seasonal Prediction of Western U.S. Seasonal Snowpack with Deep Learning"

- **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; manuscript revised and resubmitted)

- o **Lee, J.-W.,** Y. Xue, F. De Sales, I. Diallo, L. Marx, M. Ek, K. Sperber, and P. Gleckler, 2018: Evaluation of multi-decadal UCLA-CFSv2 simulation and impact of interactive atmospheric-ocean feedback on global and regional variability. *Climate Dynamics* (in review; manuscript revised and resubmitted)
- o Park, H.-H., **J.-W. Lee**, E.-C. Chang, and M. Joh, 2018: Impact of domain nesting strategy on convection-permitting WRF simulation of an extreme snowfall: a case study over eastern coast of Korea. *Asia Pacific Journal of Atmospheric Sciences* (in review; manuscript revised and resubmitted)
- 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)

**Next Quarter's Roadmap**
- Prepare a draft of next research paper regarding PMP work: Power spectrum and ENSO
- Enhance flexibility and reusability of PMP power spectrum code by implementing parameter file usage
- 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