1. Project status and progress

This project received its final increment of funding in FY’09. Accomplishments are described in the “Topics and Collaboration” and “Publications” Section. The NEWS funding supported or co-supported the publications listed.

2. Topics and Collaborations

Each publication is highlighted by a preceding superscript that corresponds to the itemized list of collaboration(s) described below.

1. Synergistic contributions to NASA-MAP Subseasonal Project (PI S. Schubert). This concerns prediction, predictability and model verification issues, associated with intraseasonal variability.

2. NEWS integration provided for the development of a substantial area of research with Olson, Tao & L’Ecuyer on MJO TRMM heating retrievals, which has even received follow-on funding via NSF through UCLA.

3. NEWS integration provided for the first ever characterization of the water cycle of the MJO, of which one publication included Liu’s moisture convergence retrievals.

4. Synergistic activities with the CLIVAR MJO Working Group have provided the means to better quantify model error associated with the MJO and has led to an international and operational MJO prediction activity. (co-chair of MJOWG).

5. Contribute Water Cycle Modeling and Projection associated with regional climate changes, specifically the western US. This also served as contributions to California’s Biennial Climate Change report put together by the California Energy Commission.

6. Development and implementation activities for the WCRP/WWRP YOTC Program.

7. Global Water Cycle studies: 1) new methodology to retrieval global runoff and evapotranspiration estimates, 2) evaluation of global water cycle from IPCC models.

8. Other water cycle related activities related to GRACE, AIRS and subtropical humidity maintenance.
3. Publications

MODELING, PREDICTION AND PREDICTABILITY


OBSERVATIONS AND MODEL VERIFICATION


4. Issues or concerns

- TRMM-based estimates are beginning to be useful to describe heating although models don’t routinely output the necessary output for comparisons.
- There is a lack of comprehensive water and energy cycle components provided from conventional model hindcast/forecast and IPCC AR4 data sets that allow for robust diagnostics.
- Significant challenges remain on closing water cycle budget from satellite observations for the large time and space scales e.g., MJO. See Waliser et al. 2009.
- GEOS5 delays impacted some aspects of original goals but collaborative opportunities provided he means for many other productive activities.

5. Integration

Overall integration was challenging to address as individuals or even in the context of the programmatic efforts but the opportunities for collaborative activities were significant and facilitated by the program. These opportunities provided our team with numerous avenues for important and new areas of research relevant to the water cycle and its simulation and prediction/predictability.