

## AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	<b>Use of Satellite Data to Improve Specifications of Land Surface Parameters</b>	<b>PROJECT #</b>	<b>17-039</b>
<b>PROJECT PARTICIPANTS</b>	Richard McNider, Arastoo Pour –Biazar, Kevin Doty, Yuling Wu	<b>DATE SUBMITTED</b>	9/14/2017
<b>REPORTING PERIOD</b>	<b>From:</b> April 1, 2017 <b>To:</b> April 30, 2017	<b>REPORT #</b>	6

A Financial Status Report (FSR) and Invoice will be submitted separately from each of the Project Participants reflecting charges for this Reporting Period. I understand that the FSR and Invoice are due to the AQRP by the 15<sup>th</sup> of the month following the reporting period shown above.

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### Detailed Accomplishments by Task

#### (1) Activities applicable to Tasks 2, 3, 6 and 7

In starting this year's project we wanted to improve on the results of the last project's statistical performance. However, we switched to a newer version of WRF 8.1 rather than the WRF 6.1 used in last projects. Also, some input data changed such as land use. We also decided to use a newer analysis field for nudging the NAM analysis rather than the NARR analysis. Early initial comparisons show that model performance appeared to be degraded in the control run. We are actively looking for the source of the degradation. One change that was made was in vertical grid resolution we are exploring the role it may have in degradation.

(2) **Task 6 - Satellite Derived Insolation and Albedo** – The initial comparison of the satellite albedo with default WRF model shows that the WRF model albedo is consistently higher than satellite albedo. This may be an issue with more net radiation available at the surface. This changes the energy budget considerably. While the satellite albedo is considered better in most cases the P-X scheme may have been tuned to a higher albedo. This will be evaluated.

(3) **Task 7 - Additional Model Evaluation Period** – As part of running the new 2012 simulation period we decided to review all of the model set ups in WRF. This came in light of initial evaluation of the 2013 case in which we found that some setups that came from prior runs needed some changes. We made initial 2012 control runs but in light of the 2013 degradation in model performance compared to last the project control runs these will have to be rerun.

### Preliminary Analysis

### Data Collected

We plan to start 2013 rerun during April. We are continuing data collection for new 2012 run including processing of skin temperature data. As stated above, GOES skin temperature retrievals for June-August, 2012 was produced. We are in the process of devising techniques to remove all pixels that might be affected by cloud contamination.

**Identify Problems or Issues Encountered and Proposed Solutions or Adjustments**

In light of some recent simulations we are revisiting some of the basic model set ups used in the 2013 cases (see above). We are going through a process to try to determine what differences in model set ups are causing the degradation

**Goals and Anticipated Issues for the Succeeding Reporting Period**

We were delayed in making 2013 simulations in April as we tried to deduced the causes of the degradation.. We are preparing to redo 2013 period and plan to carry out 2013 simulations in May

**Detailed Analysis of the Progress of the Task Order to Date**

Because of some issues which required some analytical redirection as discussed above we are a bit behind on making some simulations but believe we can catch up in coming months.

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Submitted to AQRP by: Richard McNider

Principal Investigator: Richard McNider