

## 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>14-022</b>	14-022
<b>PROJECT PARTICIPANTS</b>	R. McNider, Y. Wu, K.Doty, Pius Lee, Min Huang	<b>DATE SUBMITTED</b>	4/9/2015
<b>REPORTING PERIOD</b>	<b>From:</b> March 1, 2015 <b>To:</b> March 31, 2015	<b>REPORT #</b>	3

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

**Task 1 Insolation Impacts:** Following the report on the insolation impacts we have carried out further comparisons of four insolation products – the WRF product, the GSIP Product and the UAH old product and the new UAH/UW product. An updated Task 1 (March 15) report will be provided after an analysis of these products.

**Task 2 Diagnosed Skin Temperature in the WRF Pleim-Xiu Scheme:** We have completed the deliverable report on the documentation and implementation of a diagnosed skin temperature in the Pleim-Xiu scheme and it will be delivered April 9, 2015.

**Task 3 Evaluation of Satellite Skin Temperature Products:** We have continued collecting and auditing the satellite derived skin temperature data. We are working on techniques to limit the outliers (temperatures that are physically too warm in the Western U.S.) found in the GOES NOAA GCIP data base. We made initial comparisons against a second GOES data set and these will be reported in the April deliverable on the skin temperature data sets.

Commented [KD1]: Don't you mean May?

### Preliminary Analysis

NOAA and GMU have made preliminary runs using the TCEQ model set up using the NOAA land surface scheme. The present project will employ the Pleim-Xiu scheme, but this TCEQ NOAA set up will be used as a final baseline of improved performance of the Pleim-Xiu with satellite assimilation.

### Data Collected

Insolation products and skin temperature products from MSFC and NOAA Class have been downloaded for the Discovery AQ period. NOAA has obtained the initial Discovery AQ data and is preparing to make this data available for model evaluation. UAH has provided

NOAA/GMU the first WRF skin temperature runs and NOAA/GMU will be transferring their WRF NOAA runs.

**Commented [KD2]:** Yu-ling has provided the WRF run with Pleim soil nudging turned off – transfer of our other runs will have to wait until they are rerun with the OBSGRID correction.

**Identify Problems or Issues Encountered and Proposed Solutions or Adjustments –** We did find some issues in the way OBSGRID was used and configured in the model evaluation and assimilation of NWS data into the Pleim –Xiu scheme. We are correcting this implementation.m

**Commented [KD3]:** Incomplete sentence

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

We expect to have a selection of the satellite skin temperature products to be used for evaluation and assimilation by the next monthly report.

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

We believe we are on schedule for the project but the NOAA skin temperature error in the High Plains is troublesome. NOAA GMU have made good progress in obtaining the DISCOVERY AQ special observations. We also are going to have to do a bit more work to isolate the differences in clear sky insolation between WRF and the satellite product. While the satellite product is doing much better for clouds the clear sky differences need to be better understood or the improvements in clouds will be degraded by the clear sky differences.

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Submitted to AQRP by:

Principal Investigator: Richard T. McNider

