

AQRP Monthly Technical Report

PROJECT TITLE	Use of satellite data to improve specifications of land surface parameters	PROJECT # 14-022	14-022
PROJECT PARTICIPANTS	R. McNider, Y. Wu, K.Doty	DATE SUBMITTED	3/10/2015
REPORTING PERIOD	From: February 1, 2015 To: February 28, 2015	REPORT #	2

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 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task

Insolation Impacts: WRF modeling using the satellite insolation product has been carried out for the first ten days of the Discovery AQ period (September 1, 2013-September 10, 2013). Comparisons of the control WRF insolation case against the satellite insolation have been made. While in most grids where satellite clouds are consistent with model clouds there or only small differences, there are some grids where differences are substantial. Maps of these differences have been created and initial evaluations against National Weather Service observations have been carried out. The March 15 deliverable on insolation impacts is being completed.

Evaluation of Satellite Skin Temperature Products: We have begun collecting and auditing satellite derived skin temperature data. We have found some outliers in the GOES NOAA GCIP data base and have made initial comparisons against a second GOES data set these will be reported in the April deliverable on the skin temperature data sets.

Preliminary Analysis

Satellite skin temperature products and insolation products have been preliminarily compared.

Data Collected

Insolation products and skin temperature products from MSFC and NOAA Class have been downloaded for the Discovery AQ period.

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments

In the WRF insolation comparisons while substantial improvements are made at some points the overall use of the satellite insolation shows a slight increase in bias. We are tracking this down and feel it may be due to differences in clear sky cases. We are looking at the difference in products just for clear sky to uncover the source of the differences. We have also had

correspondence with the NOAA contact responsible for the NOAA GCIP skin temperature product.

Goals and Anticipated Issues for the Succeeding Reporting Period

We will shift from the insolation work to the skin temperature work in the next period and hope to have a method to discount the outliers in skin temperature found in the NOAA

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. 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 hurt by the clear sky differences.

Submitted to AQRP by:

Principal Investigator: Richard T. McNider

