

AQRP Monthly Technical Report

PROJECT TITLE	Use of Satellite Data to Improve Specifications of Land Surface Parameters	PROJECT #	17-039
PROJECT PARTICIPANTS	Richard McNider, Arastoo Pour –Biazar, Kevin Doty, Yuling Wu	DATE SUBMITTED	1/24/2017
REPORTING PERIOD	From: November 16, 2016 To: November 30, 2016	REPORT #	1

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

- (1) **Task 7 - Additional Model Evaluation Period** As noted in the proposal for this project, the Discover AQ period was not a particularly representative period for air quality concerns. Many active fronts and pervasive cloudiness dominated the period. Thus, as part of this year's effort an additional modeling period was to be chosen in conjunction with TCEQ. After discussion with TCEQ it was decided that the period July 1, 2012 – August 31, 2012 would be the new period. The drier 2012 year is a contrast to the 2013 Discover AQ period. This period may coincide with potential SIP work in Texas.

- (2) **Task 2 –Skin Temperature Tendencies:** In last's years project for the Discover AQ 2013 period it was found that the NOAA operational skin temperature product (GSIP) had unrealistic values (too warm) especially in the Western U.S. when compared to both MODIS and two other geostationary skin temperature products. In order to have more realistic skin temperatures another NOAA product was obtained for the Discovery AQ period. However, this required special processing by NOAA. In order to be able to provide skin temperature data for other periods such as 2012 period (see above), Chris Hains of NOAA has provided their processing code. This code has been installed at UAH and preliminary tests run. This system will be used to process data for the 2012 period and provide 24 hour skin temperature data. Additional cloud mask/detection algorithms developed by UAH will be added to the processing step. It is anticipated that the 2012 data can be processed by January 30, 2017.

Preliminary Analysis

Time Scales for Skin Temperature Assimilation: In last year's project morning satellite skin temperature was used to adjust surface moisture and late afternoon skin temperature was used to adjust surface heat capacity. As part of this year's activity several sensitivity runs have been made using different periods for data assimilation, e.g 7:00AM – 10:00AM or 7:00AM – 12:00Noon. Based on performance statistics an optimal period will be chosen.

Data Collected

GOES images (IR and Vis) have started to be collected for the 2012 period

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments

None at this point. However , we are updating to latest WRF 3.8 code

Goals and Anticipated Issues for the Succeeding Reporting Period

Process skin temperatures for 2012

Detailed Analysis of the Progress of the Task Order to Date

Project is on track

Submitted to AQRP by: Richard McNider

Principal Investigator: Richard McNider