AQRP Monthly Technical Report

PROJECT TITLE	Incorporating Space-borne Observations to Improve Biogenic Emission Estimates in Texas	**PROJECT #**	14-017
PROJECT PARTICIPANTS	Arastoo Pour-Biazar; Richard McNider; Daniel Cohan, Rui Zhang	**DATE SUBMITTED**	12/10/2014
REPORTING PERIOD	**From:** November 1, 2014 **To:** November 30, 2014	**REPORT #**	7

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

Continued evaluation of satellite-based PAR and made few adjustments to the retrieval algorithm. We also added zenith angle dependency to the insolation to PAR conversion factor. In addition, we revised the functional form of the conversion factor to agree with the full radiative transfer calculations. **(TASKS 2&3)**

We continued work on task 3 (biogenic emissions using MEGAN and satellite PAR) and evaluated the impact of satellite-derived PAR. **(TASK 3)**

Preliminary Analysis

The second set of retrievals were produced and evaluated against surface observations. Based on our evaluation analysis, we have been making incremental improvements to the PAR generation algorithm. The analysis also indicated a systematic bias in satellite-derived insolation. We are performing a bias correction before retrieving PAR. The new set of PAR retrievals include the bias correction.

Biogenic emissions estimated by MEGAN using satellite derived PAR is also being evaluated. The results are being compiled for the quarterly report and will be documented in the report.

Data Collected

Previous PAR retrievals for 2006 from the University of Maryland (http://metosrv2.umd.edu/~srb/gcip/cgi-bin/historic.cgi?auth=no&parameter=par) were downloaded. New satellite derived PAR for September 2013 and June-July 2011 were produced.

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments
Our analysis indicated a systematic bias in satellite-derived insolation. The bias is small in the western half of the continental United States and increases toward the eastern U.S. We think that this is due to an assumption in the retrieval algorithm that uses a constant average precipitable water amount for moisture correction. We are transitioning to a new retrieval system in which many of the shortcomings of the current retrieval algorithm are addressed. While re-processing our entire archive is the long term solution to this problem, however, in the meantime, to satisfy the needs of this project we will be applying a bias correction to the insolation data before retrieving PAR.

Goals and Anticipated Issues for the Succeeding Reporting Period
We are in the process of compiling the results to be documented in the quarterly report.

Detailed Analysis of the Progress of the Task Order to Date
Quarterly report has documented the satisfactory progress with respect to tasks 1-3 and has been submitted. Activities with respect to task 4 is underway.

Arastoo Pour Biazar

Submitted to AQRP by:

Principal Investigator: Arastoo Pour Biazar