

Monthly Technical Report

(Due to AQR Project Manager on the 8th day of the month following the last day of the reporting period.)

PROJECT TITLE	Analysis of VOC, NO ₂ , SO ₂ and HCHO data from SOF, mobile DOAS and MW-DOAS during DISCOVER-AQ,	PROJECT #	14-007
PROJECT PARTICIPANTS (Enter all institutions with Task Orders for this Project)	Chalmers University of Technology University of Houston	DATE SUBMITTED	11/12/14
REPORTING PERIOD	From: October 1, 2014 To: October 31, 2014	REPORT #	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 AQR by the 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task *(Include all Task actions conducted during the reporting month.)*

Task 1b) Evaluation of slant columns from the 30° Mobile DOAS measurements have been performed and the results have been examined. The spectral retrieval of the measurements seems good, but interpreting the evaluated slant columns will require some additional work. This will be dependent on the radiative transfer modeling task (task 1c).

Task 1c) UH have worked on producing sets of atmospheric profiles of absorbing species and aerosol optical parameters from various measurements for use in the radiative transfer simulations that should be performed. Chalmers has been involved in discussions about the details of these data sets as they have been developed iteratively. Meanwhile, the various other relevant parameters of the model that will be employed have been investigated. The first preliminary dataset for the radiative transfer simulations is now finished and will soon be tested in the model.

Task 1d) A cloud filter based on color index have been developed and tested on the test measurements made during September. The filter has shown good results and can qualitatively distinguish between clear sky and the clouds that were observed independently during the test measurements. The next step is to apply this filter to the measurements during the Discover-aq campaign.

Task 1e) Investigations of the test measurements as well as of Discover-aq measurements have led to the conclusion that clouds does not appear to cause significant residual spectral structures

in the evaluations. Instead the changes in evaluated columns associated with clouds appear to be the results of changed paths of the measured light due to scattering in the clouds. This precludes the possibility of improving measurements in cloudy and partly cloudy conditions by modifications to the spectral retrieval. Instead the cloud filter will be used to filter out the cloud-affected measurements during partly cloudy conditions. In the process of investigating cloud effects, a spectral artifact believed to be caused by the instrument was discovered. This artifact can affect the evaluated columns but it may be possible to account for it in the spectral retrieval, thus improving the quality of the measurements.

Task 3) Archived data from the Discover-aq aircrafts have been download and initial work has been done to read this data and visualize it to be able to compare it to Mobile DOAS measurements.

Preliminary Analysis *(Include graphs and tables as necessary.)*

NA

Data Collected *(Include raw and refine data.)*

NA

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments

None

Goals and Anticipated Issues for the Succeeding Reporting Period

We will continue with task 1 b and 1 c and 1 e. The data will be finalized and we will strat the comparisons to the Discover data. .

Detailed Analysis of the Progress of the Task Order to Date *(Discuss the Task Order schedule, progress being made toward goals of the Work Plan, explanation for any delays in completing tasks and/or project goals. Provide justification for any milestones completed more than one (1) month later than projected.)*

Submitted to AQRP by: _____

Principal Investigator: Johan Mellqvist_____

(Printed or Typed)