

Report for the year 2015 and future activities

SOLAS INDIA

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Please note that this report has two parts!

Part 1: reporting of activities in the period of January 2015 – December 2015

Part 2: reporting on planned activities for 2016 to 2018/19.

The information provided will be used for reporting, fundraising, networking and strategic development. In particular, **in 2016 SOLAS will develop its Implementation Plan, which will be largely based on the information from part 2 of the national reports, as well as input from international SOLAS initiatives and activities.** This info will be crucial in order to draft a realistic Implementation Plan representative of SOLAS, internationally.

IMPORTANT: May we remind you that this report should reflect the efforts of the SOLAS community in the entire country you are representing (all universities, institutes, lab, units, groups)!

PART 1 - Activities from January 2015 to December 2015

1. Scientific highlight

Describe one scientific highlight with a title, text (max. 200 words), a figure with legend and full references. Please focus on a result that would not have happened without SOLAS, and we are most interested in international collaboration.

Example to be deleted:

Glyoxal and methyl glyoxal over the Southern Hemisphere oceans

Dicarbonyls glyoxal and methylglyoxal have been measured in clean marine air over the temperate Southern Hemisphere oceans, both during the SOLAS-endorsed Surface Ocean Aerosol Production (SOAP) Voyage in the South West Pacific, and at Cape Grim Baseline Station [1]. Both are present in non-negligible mixing ratios, even in pristine marine air, suggesting the likely widespread contribution of these gases to secondary organic aerosol production over the oceans. This is the first study to measure a range of dicarbonyl precursors (VOCs), including isoprene and monoterpenes over the ocean in parallel with the dicarbonyls, allowing the expected yield of dicarbonyls to be determined. At most only 29% of the observed glyoxal and methylglyoxal can be explained from the measured precursors; this supports suggestions from other studies that there must be another major source contributing to formation of the glyoxal, and we show for the first time that another source must also be contributing to methylglyoxal formation.

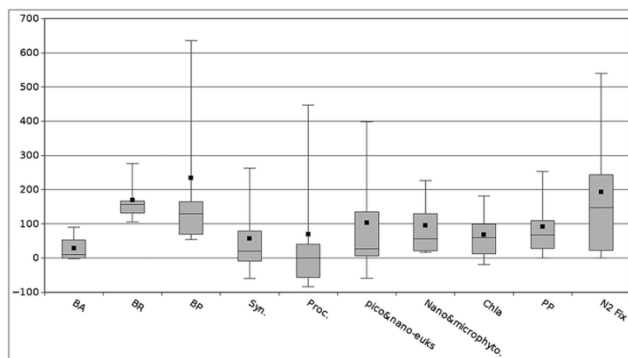


Figure: Seasonal glyoxal VCDs retrieved from GOME-2 and calculated from surface based observations at Cape Grim and Chatham Rise.

In situ glyoxal observations were converted to vertical column densities (VCDs) and show that GOME-2 satellite VCDs are significantly higher than those calculated from in situ observations. This discrepancy may be due to the incorrect assumption that all glyoxal observed by satellite is within the boundary layer, or may be due to challenges retrieving low VCDs of glyoxal over the

oceans due to interferences by liquid water absorption, or use of an inappropriate normalisation reference value in the retrieval algorithm. This study provides much needed data to verify the presence of these short lived gases over the remote ocean and provide further evidence of an as yet unidentified source of both glyoxal and also methylglyoxal over the remote oceans.

Lawson, S.J., Selleck, P.W., Galbally, I.E., Keywood, M.D., Harvey, M.J., Lerot, C., Helmig, D. and Ristovski, Z., Seasonal in situ observations of glyoxal and methylglyoxal over the temperate oceans of the Southern Hemisphere Atmos. Chem. Phys. Discuss., 14, 21659–21708, 2014

2. Activities/main accomplishments in 2015 (projects, field campaigns, events, model and data intercomparisons, capacity building, international collaborations, contributions to int. assessments such as IPCC, interactions with policy makers or socio-economics circles, etc.)

Two cruises have been undertaken in the northern Indian Ocean by ORV Sindhu Sankalp and ORV Sagar Kanya to collect atmospheric aerosol and upper water column sampling.

3. Top 5 publications in 2015 (only PUBLISHED articles) and if any weblinks to models, datasets, products, etc.

For journal articles please follow the proposed format:

Author list (surname and initials, one space but no full stops between initials), year of publication, article title, full title of journal (italics), volume, page numbers, DOI.

PART 2 - Planned activities from 2016 to 2018/19

1. Planned major field studies and collaborative laboratory and modelling studies, national and international (incl. all information possible, dates, locations, teams, work, etc.)

1. Mesocosm experiments have been planned along the east coast of India in the Bay of Bengal to examine the influence of atmospheric dust driven nutrients on the coastal ecosystem
2. Ecosystem response in the temperature and salinity frontal zone is proposed to examine in the northern Indian Ocean during winter/spring when significant number of short-lived fronts are formed
3. Simultaneous collection of atmospheric dust and surface water column is proposed to measure to examine the influence of atmospheric dust (mainly sulfates and nitrates) on surface ocean acidification.

2. Events like conferences, workshops, meetings, schools, capacity building etc. (incl. all information possible)

NA

3. Funded national and international projects / activities underway (if possible please list in order of importance and indicate to which part(s) of the SOLAS 2015-2025 science plan the activity topics relate – including the themes on ‘SOLAS science and society’ and ‘Geoengineering’)

GEOTRACES project is planned to complete by March 2017. We discussed with Ministry to extend this for additional five years (2017-2022). Some discussions are underway and brainstorming discussions are planned to conduct in June 2016. In which SOLAS related work is also included.

4. Plans / ideas for future projects, programmes, proposals national or international etc. (please precise to which funding agencies and a timing for submission is any)

A project on “Land-Ocean-Atmosphere interactions and biogeochemical and ecosystem responses” was proposed to Council of Scientific and Industrial Research (CSIR) for possible funding and decision is yet to receive.

5. Engagements with other international projects, organisations, programmes etc.

GEOTRACES, SIBER programs.

Comments