

Surface Ocean CO₂ Atlas (SOCAT) and Surface Ocean pCO₂ Mapping Intercomparison (SOCOM) Event



The **Surface Ocean CO₂ Atlas (SOCAT)** and the **Surface Ocean pCO₂ Mapping Intercomparison (SOCOM)** held a joint event in Kiel on 7 September 2015, in conjunction with the SOLAS (Surface Ocean Lower Atmosphere Study) Open Science Conference. The 54 participants from 18 countries included SOCAT data providers, data managers, quality controllers, users, SOCOM contributors and science programme managers.

The Surface Ocean CO₂ Atlas provides quality controlled and documented, synthesis fCO₂ (fugacity of carbon dioxide) data products for the global oceans and coastal seas. SOCAT was initiated in 2007, as the need for a publicly available, surface ocean CO₂ data synthesis product was recognized.

SOCAT Version 3 was released at the Kiel event. Version 3 has 14.5 million surface water fCO₂ values collected between 1958 and 2014. New features include 4.4 million additional fCO₂ values, extension of the data set, inclusion of fCO₂ data from well calibrated sensors and alternative platforms, a new data set flag of E, accuracy criteria for all fCO₂ values, automated data checks, and powerful visualisation tools in the interactive Cruise Data Viewer.

A system for automated data upload to SOCAT was formally launched. This automation system integrates data upload, data submission and quality control on a single platform, thereby enabling annual SOCAT releases from Version 4 onwards. Version 4 deadlines for data submission and quality control are 31 January and 31 March 2016, respectively. Version 4 will be released on 30 June 2016.

SOCAT data products enable detection of changes in the ocean carbon sink, quantification of ocean acidification and model validation. Numerous research publications and scientific reports have used and cited SOCAT, as listed on the website (<http://www.socat.info/publications>). These include high-impact reports and over 100 peer-reviewed, scientific publications. The SOCAT and SOCOM Event included discussion of additional surface water parameters, data set flags, collaboration with the Global Carbon Project and the data usage policy. The long-term sustainability and funding of SOCAT were discussed, as well as the need to strengthen SOCAT impact at policy level.

The **Surface Ocean pCO₂ Mapping Intercomparison** (<http://www.bgc-jena.mpg.de/SOCOM/>) is a comparison of data-based air-sea CO₂ flux estimates, many of them using SOCAT. Different methods are applied for interpolating sparse pCO₂ (partial pressure of CO₂) data in time and space. Approaches include interpolation, regression and model-based regression or tuning. The SOCOM initiative aims to quantify uncertainties and to identify common features in the surface ocean pCO₂

mapping methods. The event enabled presentation of SOCOM science and discussion on SOCOM progress.

Members of the SOCAT and SOCOM communities expressed a strong wish to continue the collaboration between both projects, to mutual advantage.

Dorothee Bakker, Chair of the SOCAT global group, was recognised for her outstanding contribution to the SOCAT community with an award presented at the SOLAS Open Science Conference.

A full report of the SOCAT and SOCOM Event will be posted on the SOCAT and SOCOM websites.



Participants of the SOCAT and SOCOM Event (Photo by Mariana Ribas Ribas).