SOLAS into the Future: Designing the next phase of the Surface Ocean-Lower Atmosphere Study
A change in the landscape of Global Change science coordination: the future of SOLAS

• A change in the landscape of Global Change science coordination

• IGBP is winding down in 2015 and Future Earth research for Global sustainability started in 2013

• SOLAS decided that it will transition from IGBP to Future Earth in the first half of 2014.

• In this new landscape, SOLAS 2015-2025 will have more emphasis on the human relevance of SOLAS science (e.g. geoengineering and environmental services)
.... towards Future Earth

Transition statement addressed to Future Earth in November 2014, Future Earth reply provided last April, responses to referees comments sent to Future Earth end of May,

SOLAS Science Plan 2015-2015 sent to Future Earth December 2014,

ECS Ocean Governance, socio-economists and SOLAS Scientist Workshop, June 2015, Kiel, Christa Marandino, Erik van Doorn, Ulrike Kronfeld-Goharani, Sarah Gahlen

OSC Kiel 2015: Plenary on SOLAS Science and Society, September 2015, Kiel Hans Joachim Schellnhuber (Germany), Lucia Fanning (Canada), Phil Boyd (Australia), David Turner (Sweden)
SOLAS 2015-2025 core themes

- Integrated Topics:
  - Regional process studies in high sensitivity systems
  - SOLAS and Geoengineering
  - SOLAS and Society

Greenhouse gases and the oceans

Air-sea interface and fluxes of mass and energy

Atmospheric deposition and ocean biogeochemistry

Aerosols, clouds, and ecosystems

Ocean biogeochemical controls on atmospheric chemistry
Surface Ocean CO₂ Atlas (SOCAT)
SOCAT articles

SOCAT highlight – Science News or EOS, .. (Bakker et al.)

ESSD technical article(s) - The more the better!
• Technical global paper on the uniform data and QC (Olsen, Pfeil, Bakker et al.), draft available at public release, main reference for SOCAT data set;
• Technical paper on LAS (Hankin, Koyuk, Malczyk?);
• Technical paper on the gridding (Chris?);
• Regional technical papers ?

Scientific articles – THINK articles!
• At least 1 high flying paper;
• Special Issue?
• Some papers in time for IPCC AR5.

Individual data set files / Global synthesis product / Global gridded products; Public access to regular releases via http://www.socat.info/; Interactive online viewers (LAS); Downloadable (text, NetCDF, ODV, Matlab); Documented in 3 ESSD articles (68 citations in peer-reviewed publications);
SOCAT data policy:
Recognise the contribution of SOCAT data contributors and quality controllers by invitation to co-authorship or citation of articles. Regional studies: Invite data contributors as co-authors.

Cite the relevant SOCAT ESSD publication:
V1: Pfeil et al. (2013) ESSD 5: 125-143;
V1: Sabine et al. (2013) ESSD 5: 145-153;
## Impact of SOCAT


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<th>Scientific application</th>
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<td>Reference to SOCAT and/or fCO₂ data</td>
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<td>Use of SOCAT tools</td>
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<td>Figure of fCO₂ data distribution</td>
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<td>fCO₂ in process studies, e.g. ocean acidification and genomics</td>
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<td>Coastal and ocean CO₂ sink estimates</td>
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Data-based methods estimate different year-to-year and long term variation in the ocean carbon sink.

(Figures: Le Quéré et al., 2014; Landschützer et al., 2014; Rödenbeck et al., 2014)
Conclusions

SOCAT is a powerful data synthesis product documenting the ocean carbon cycle.

Applications include:
• Quantification of the ocean CO$_2$ sink (e.g. Global Carbon Budget, SOCOM);
• Assessments of ocean acidification;
• Validation of ocean biogeochemical models.

SOCAT has >> 100 contributors. Contribute to and/or use SOCAT. Acknowledge the contribution of the data providers, e.g. by invitation to co-authorship, notably in regional studies. d.bakker@uea.ac.uk.
SOCAT is a community activity!

>100 data contributors, group leads, quality controllers and data managers!
Upcoming event

SOLAS Open Science Conference
7 - 11 September 2015
Kiel, Germany
Registration opening September 2014

www.solas-int.org/osc2015.html