SOCAT Update and Road Ahead

Dorothee Bakker, Kim Currie, Are Olsen, Minutes: Steve Jones

13:00 Ongoing and future activities (Dorothee Bakker), including:
   Sea surface temperature, salinity, atmospheric pressure
   Other surface water parameters
   Data upload (Camilla Landa, 5 min)
   Automation of metadata upload (video by Kevin O’Brien, 3 min)
   Surface water CH$_4$ and N$_2$O (Tobias Steinhoff, 3 min)

Discussions on:
13:15 SOCAT quality control (Siv Lauvset)
13:30 Atmospheric CO$_2$ – Value added, requirements (Jonathan Bent)
13:45 Calculated surface water fCO$_2$ (Rik Wanninkhof)
14:00 End
Global synthesis and gridded products of surface ocean fCO$_2$ (fugacity of CO$_2$) in uniform format with quality control; No gap filling; Annual public releases; V5: 21.5 million fCO$_2$ values from 1957-2017, accuracy < 5 µatm (flags A-D); Plus calibrated sensor data (< 10 µatm, flag E); Online viewers, downloadable (text, NetCDF), ODV; Documented in ESSD articles; Fair Data Use Statement; Community activity with >100 contributors worldwide.

(Pfeil et al., 2013; Sabine et al., 2013; Bakker et al. 2014, 2016, ESSD)
SOCAT has:

- **Surface ocean fCO₂ measurements** from moving and fixed platforms (i.e. no fCO₂ calculated from pH, TA, DIC, no profiling data);
- **Original fCO₂** from the data originator (i.e. not from a data product);
- Checked sea surface temperature and salinity, but these checks do not meet physical oceanographic standards for temperature and salinity.

(U Schuster, A Sutton)
Accuracy $f\text{CO}_2$ in data products

Flags A & B
Accuracy < 2 µatm
SOP criteria met
Full documentation

Flags C & D
Accuracy < 5 µatm
SOP criteria not met/
No full documentation

Flag E
Accuracy < 10 µatm
Calibrated sensor data
Full documentation

Synthesis files & ODV
Gridded data files
Gridded Data Viewer

Data Set Viewer (Select criteria)
Individual files at Pangaea

Flag E data file
Annual releases and automation

- Automation of data upload enables annual SOCAT releases (V4).
- Releases timed for the annual Global Carbon Budget
- Update to SOCAT website (www.socat.info, NEW)

Ongoing / planned:
- Automation of metadata upload (top priority, by summer 2018 for V7)
- Update of ‘Cookbook’ for quality control (high priority, V6)
- V6 data submission ends 15 January 2018
- V6 quality control ends 31 March 2018
Global Carbon Budget

Corinne Le Quéré in discussion with Are Olsen and Dorothee Bakker

1 author per data set, 2 authors for very large data sets.

Only data PI-s as authors for data that **significantly contribute to the GCB update**, in general flags A-D and some (but not all) coastal data.

**Full data sets**, not just one cruise / a few days.

**Keep authorship discussions honest and polite.**
<table>
<thead>
<tr>
<th>What</th>
<th>Status</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other surface ocean parameters (nutrients, DIC, TA,..)</td>
<td>Agreed, no quality control, Bergen 2014, GLODAP variables by V7?</td>
<td>Karl, Kevin, global group</td>
</tr>
<tr>
<td>Surface ocean CH$_4$, N$_2$O using LAS infrastructure</td>
<td>Ongoing discussion since 2015</td>
<td>Tobias Steinhoff, MEMENTO, global group</td>
</tr>
<tr>
<td>Atmospheric CO$_2$</td>
<td>Agreed 2014-15. Scope and QC tbd</td>
<td>Jonathan Bent, Penelope Pickers, Ingrid Luijkx, all</td>
</tr>
<tr>
<td>Calculated surface ocean fCO$_2$</td>
<td>tbd</td>
<td>tbd</td>
</tr>
</tbody>
</table>

SOCAT needs to prioritize. Actions take volunteers and time to implement. SOCAT annual releases not to be put at risk.