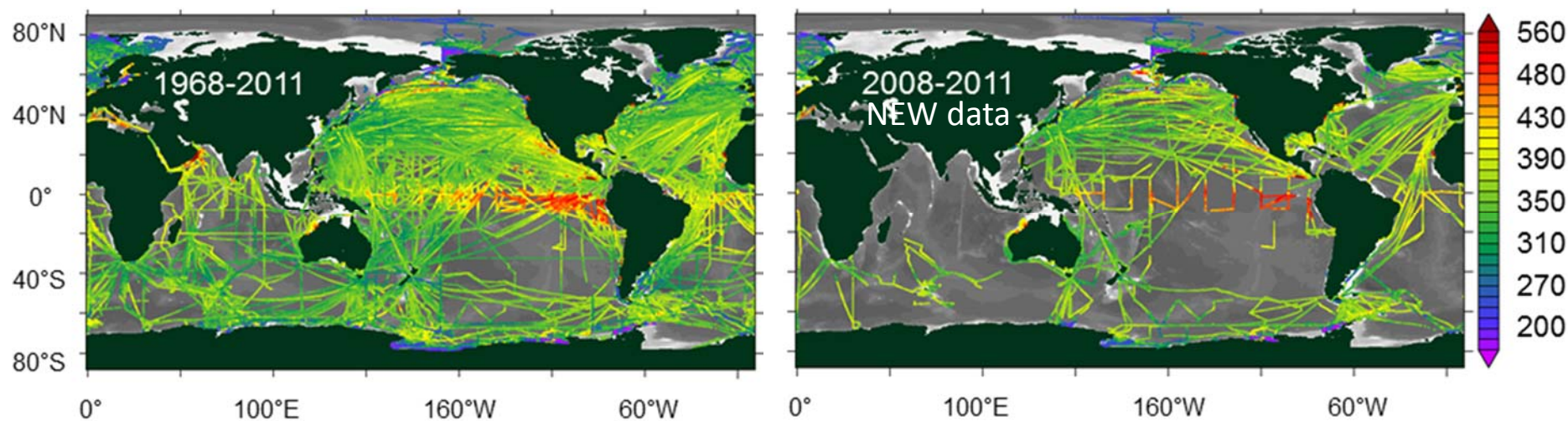
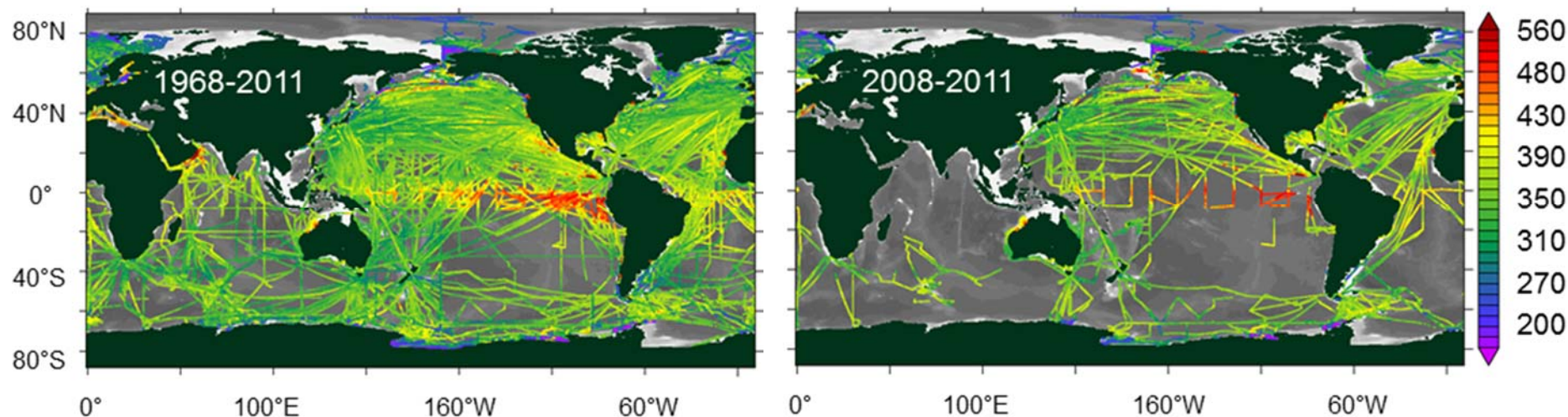


The Surface Ocean CO₂ Atlas

D. C. E. Bakker, B. Pfeil, K. Smith, S. Hankin, A. Olsen, S. R. Alin, C. Cosca, S. Harasawa, A. Kozyr, Y. Nojiri, K. O'Brien, U. Schuster, M. Telszewski, B. Tilbrook, C. Wada and all other SOCAT contributors



Surface water fCO₂ (µatm)



Surface water fCO₂ (µatm)

Recalculated surface ocean fCO₂ (fugacity of CO₂) in uniform format with quality control; transparent, fully documented, regular updates;

Global synthesis product for the global oceans and coastal seas;

Global gridded products without interpolation (1° x 1° global, ¼° x ¼° coastal);

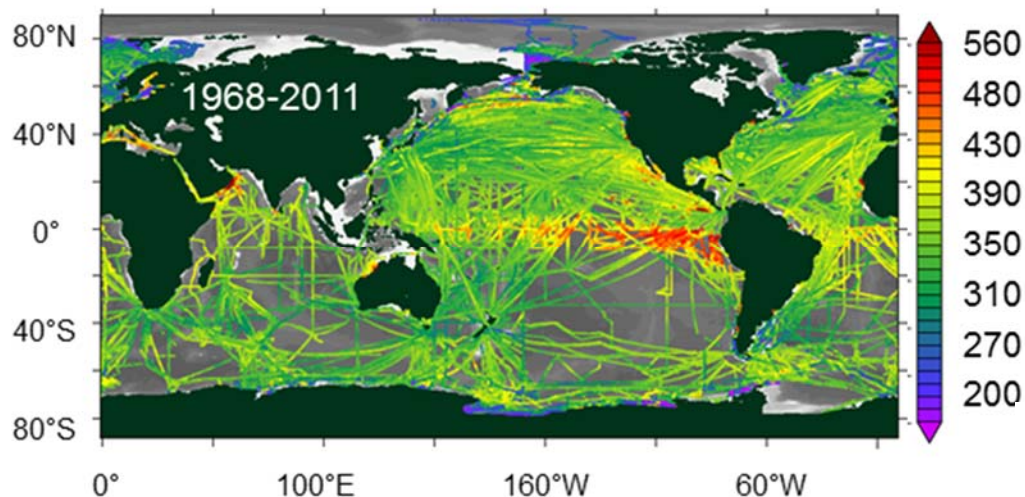
Access via <http://www.socat.info/>

Interactive online viewers (Live Access Server);

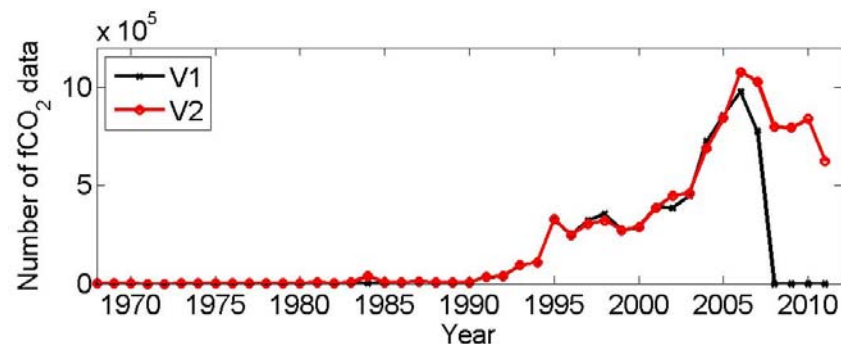
Available in various formats, including in Ocean Data View;

The Surface Ocean CO₂ Atlas

www.socat.info



Surface water fCO₂ (µatm)



2007: No public global fCO₂ data set. Many formats, many data not public.

SOCAT: Surface ocean fCO₂ in uniform format with quality control;

Version 1: 6.3 million fCO₂, 1851 cruises, 1968 to 2007 (09/2011);

Version 2: 10.1 million fCO₂, 2660 cruises, 1968 to 2011 (06/2013);

Please, cite publications by SOCAT and its data providers;

V1: Bakker et al. (2012) Eos 93(12); Pfeil et al. (2013) ESSD 5: 125-143; Sabine et al. (2013) ESSD 5: 145-153; V2: Bakker et al. ESSD submitted.

Future SOCAT

Submit your data to CDIAC at all times.

Data submission for V3 by 31/12/2013.

No **additional parameters** (nutrients, DIC, N₂O, ..) until V4 or later.

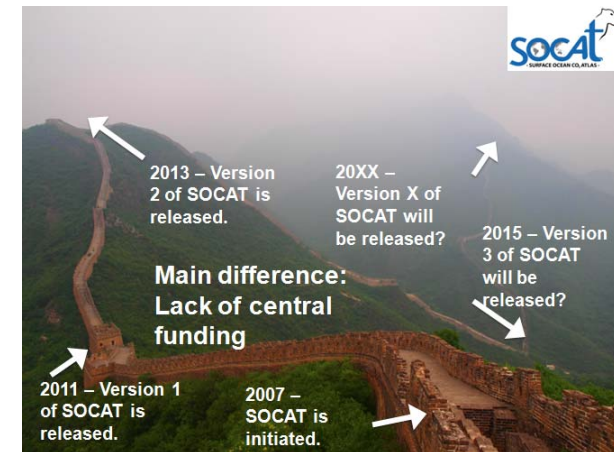
Only include extra parameters, if these can be quality controlled and if sufficient manpower (or automation) is in place for this QC.

Alternative sensors in V3 (Wanninkhof et al.):

- Flag C and D: accuracy < 5 μatm ;
- Flag E (NEW): for alternative sensors, accuracy < 10 μatm ;
- Flag A: strict cross-over definition.

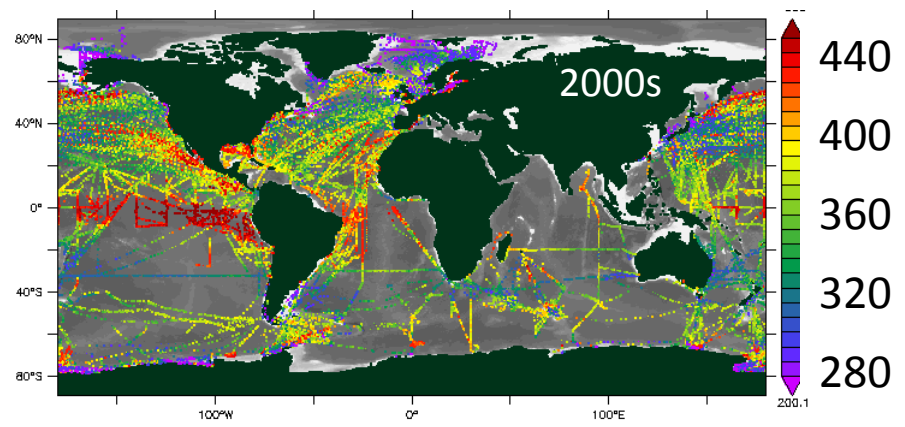
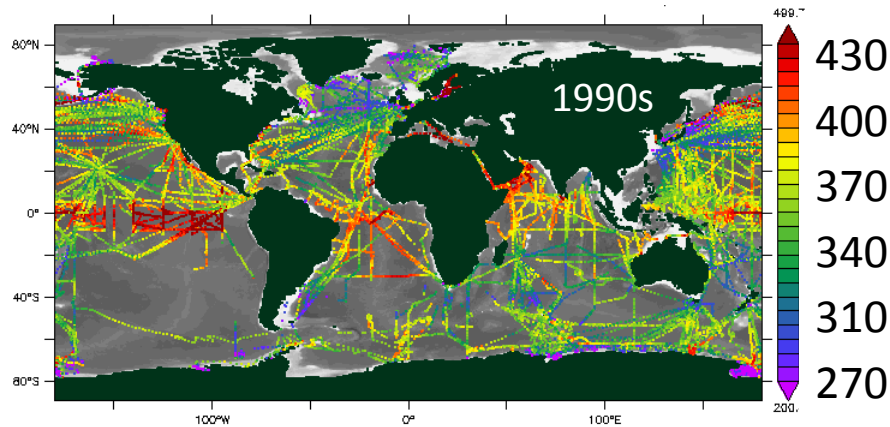
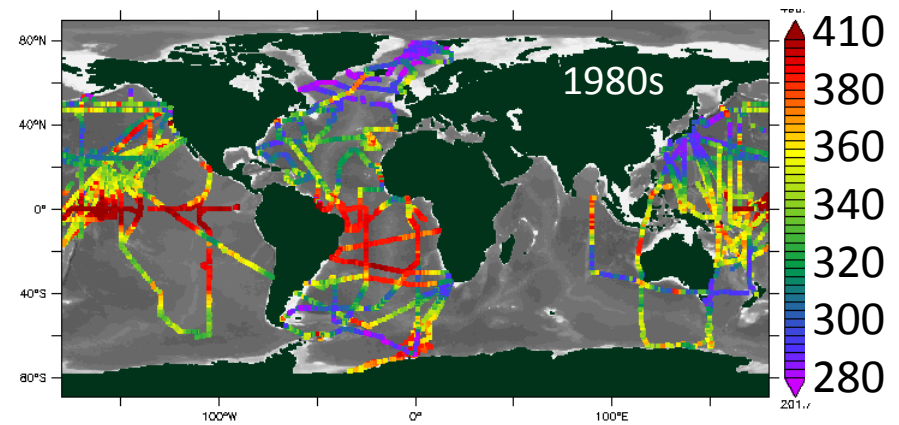
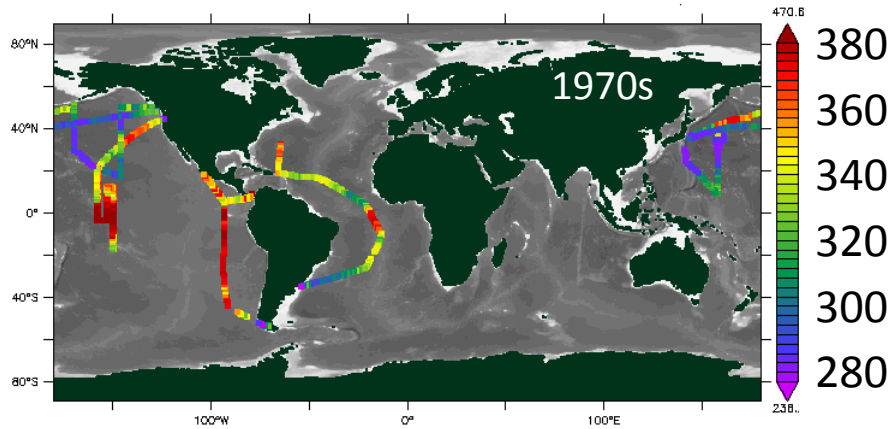
Automated data submission system ready in 01/2014 for V4.

'Manual' data submission will remain possible.



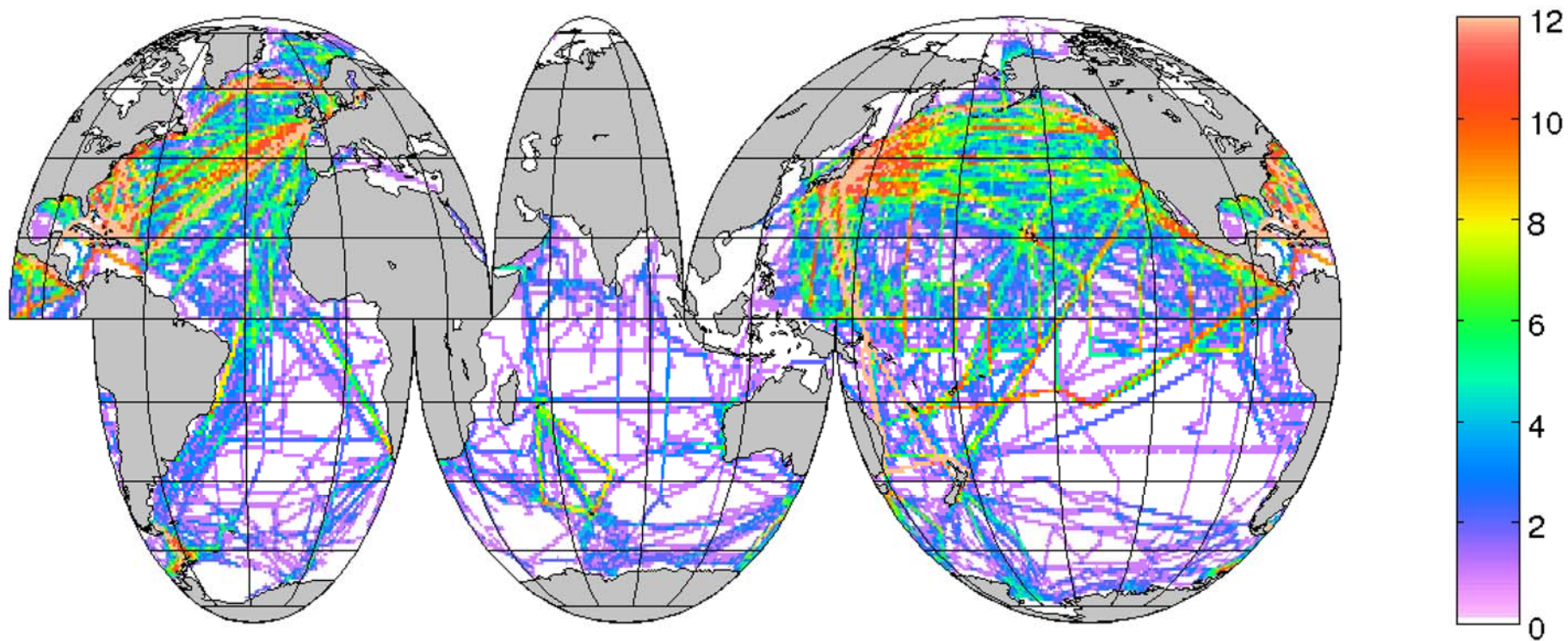
Data coverage per decade

www.socat.info



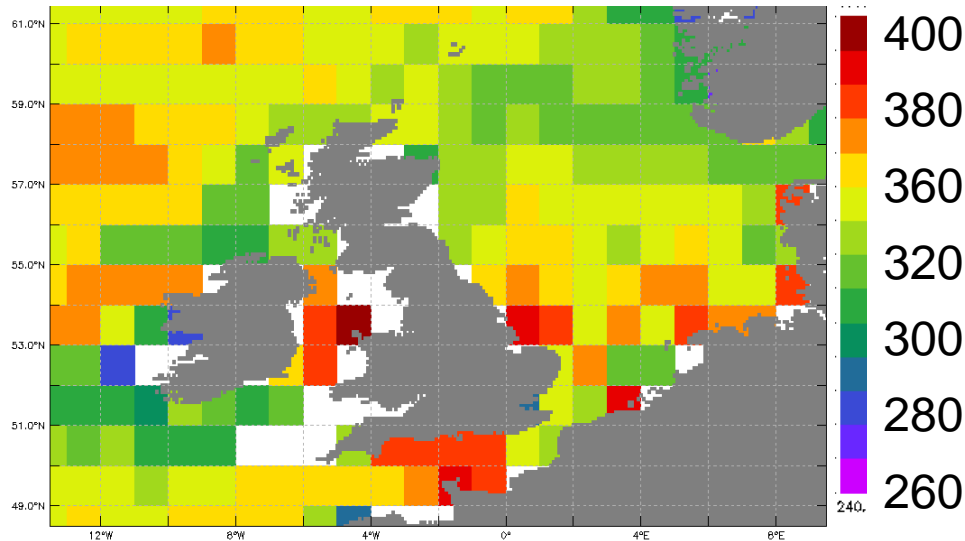
Surface water $f\text{CO}_2$ (μatm)

Data coverage (1970-2011)

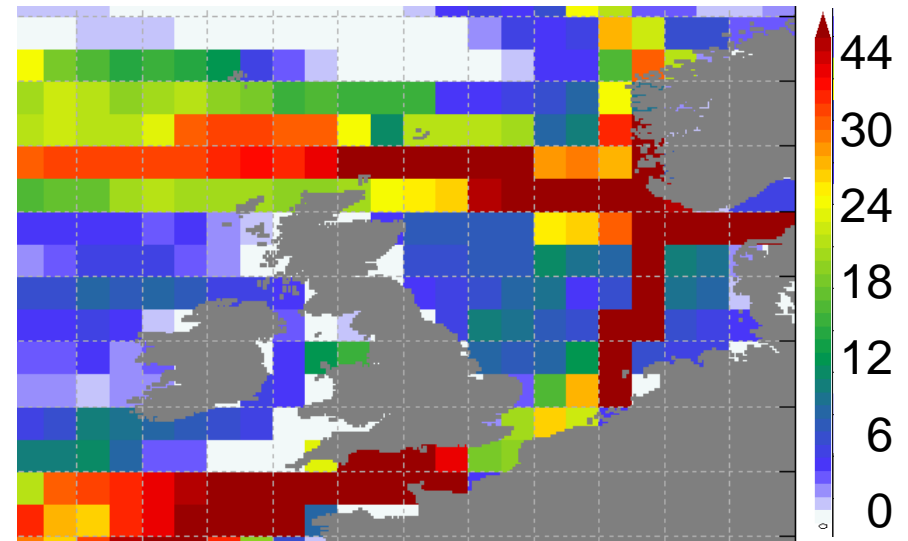


Number of unique months with fCO₂ observations
per 1° x 1° grid cell (1970-2011)

SOCAT for shelf sea carbon studies



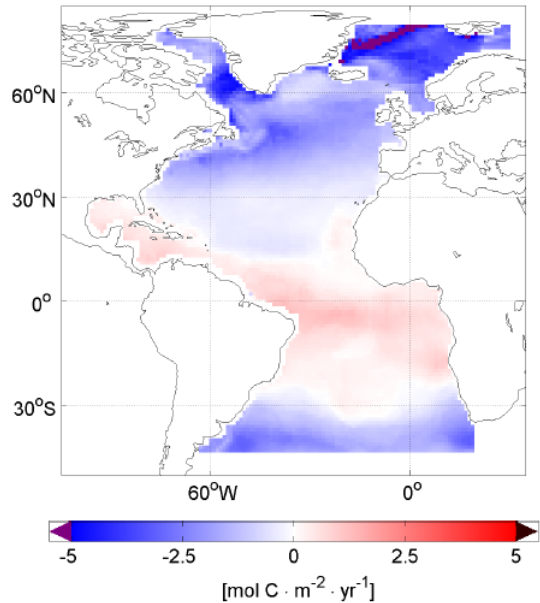
Mean $f\text{CO}_2$ (μatm), 2000-2009



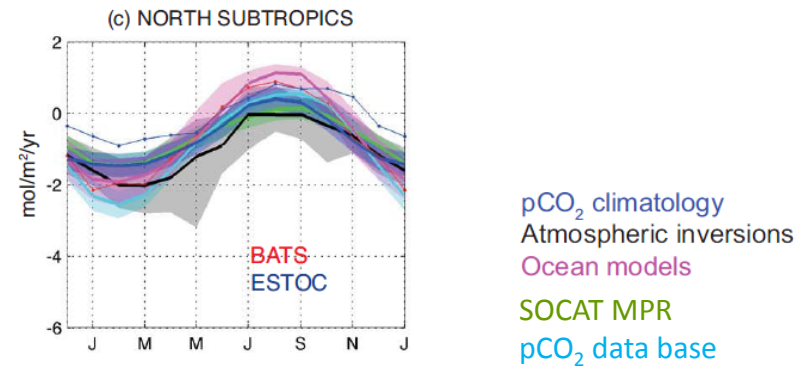
Number of cruises, 2000-2009

- Good $f\text{CO}_2$ data coverage from Voluntary Observing Ships.
- Less than 10 cruises and seasonal bias elsewhere.

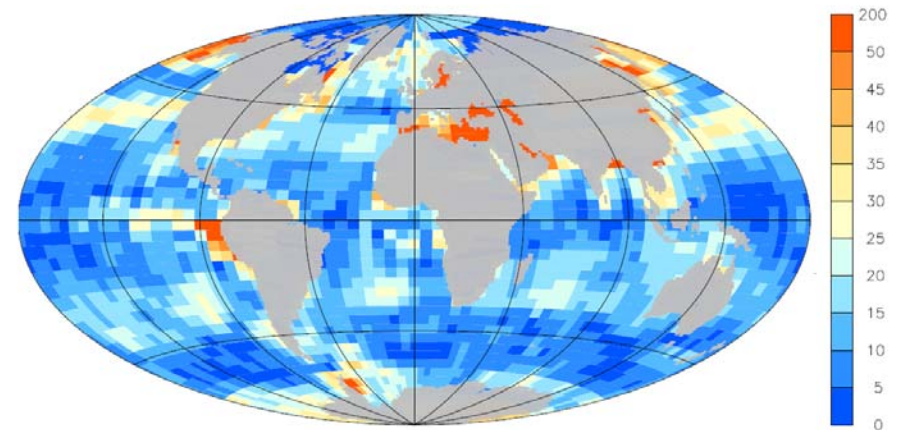




Atlantic CO₂ air-sea fluxes
 (Landschützer et al., subm., BGD)

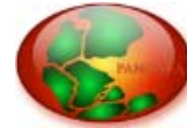


Monthly Atlantic CO₂ air-sea fluxes
 (Schuster et al., 2013, BG)

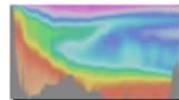


Seasonal amplitude of pCO_{2w} (µatm)
 (Rödenbeck et al., 2013, OS)

- Process studies;
- Ocean carbon sink and its seasonal, year-to-year, decadal variation;
- **Intercomparison** of SOCAT-based flux estimates in progress (Rödenbeck);
- Initialisation and validation of ocean carbon cycle models.



*Many thanks to all data contributors,
group leads, quality controllers and
data managers!*



www.socat.info
Public data products



Welcome to SOCAT

A Collection of Underway Ocean CO₂ Observations Quality Controlled by
the Science Community



SOCAT Version 2 Data Products:

Cruise Data Viewer

Gridded Data Viewer

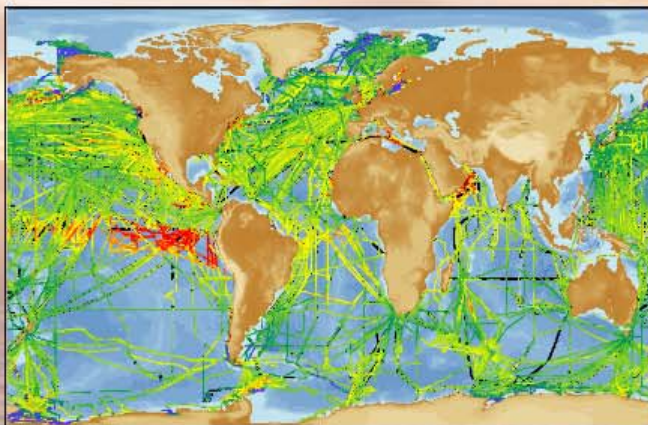
Table of Cruises

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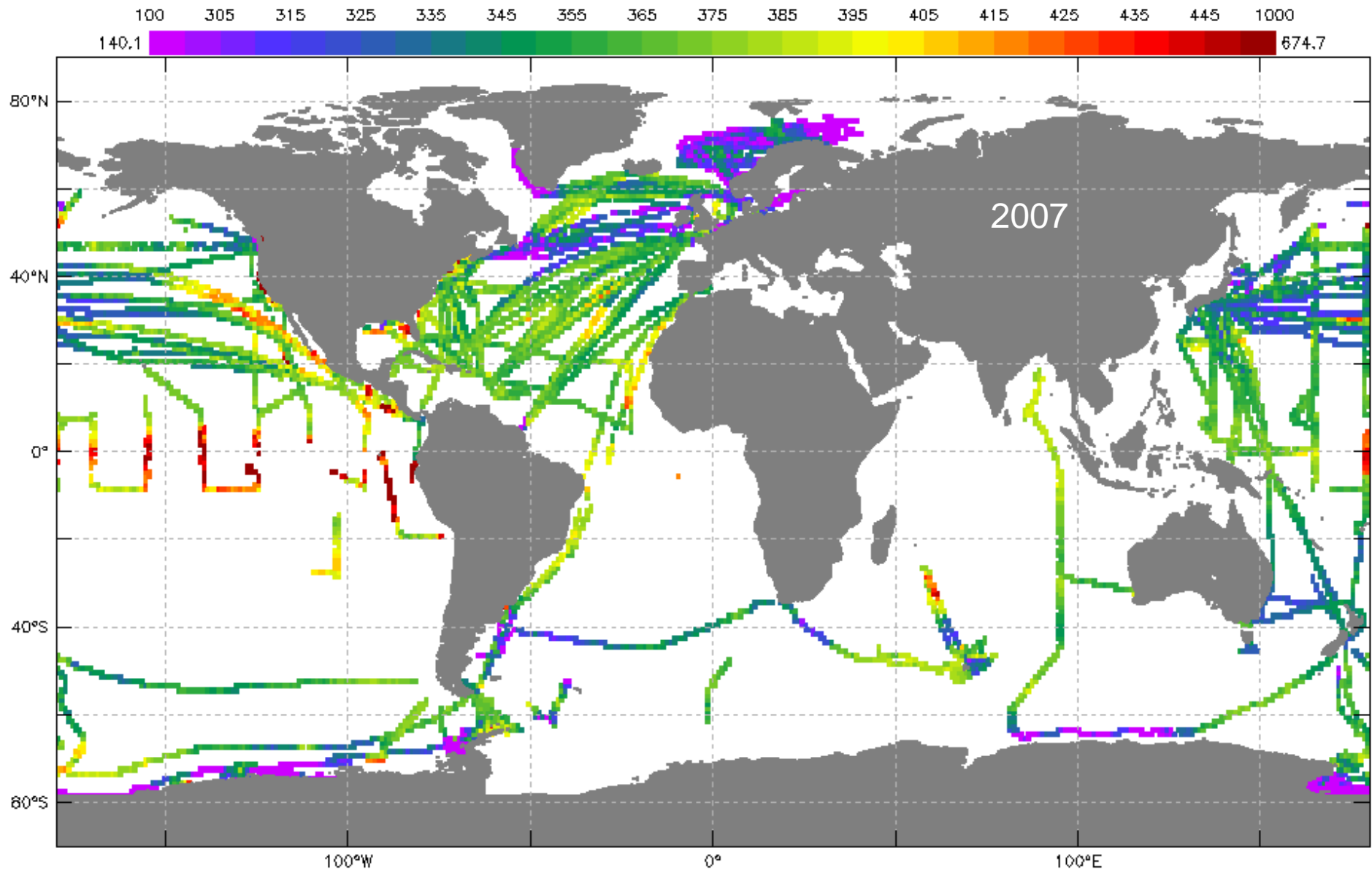
Frequently Asked Questions

Please contact submit@socat.info to report problems.

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This page has been designed by Heather Koyuk, University of Washington/JISAO, Seattle (USA)

Surface water fCO₂ (μatm)

Movie (1970) 1978 – 2011, annual, gridded 1° x 1°



2013 – Version 2 of SOCAT is released.

20XX – Version X of SOCAT will be released?

2015 – Version 3 of SOCAT will be released?

**Main difference:
Lack of central
funding**

2011 – Version 1 of SOCAT is released.

2007 – SOCAT is initiated.

