

Surface Ocean CO₂ Atlas (SOCAT) –

ein Gemeinschaftsprojekt zur

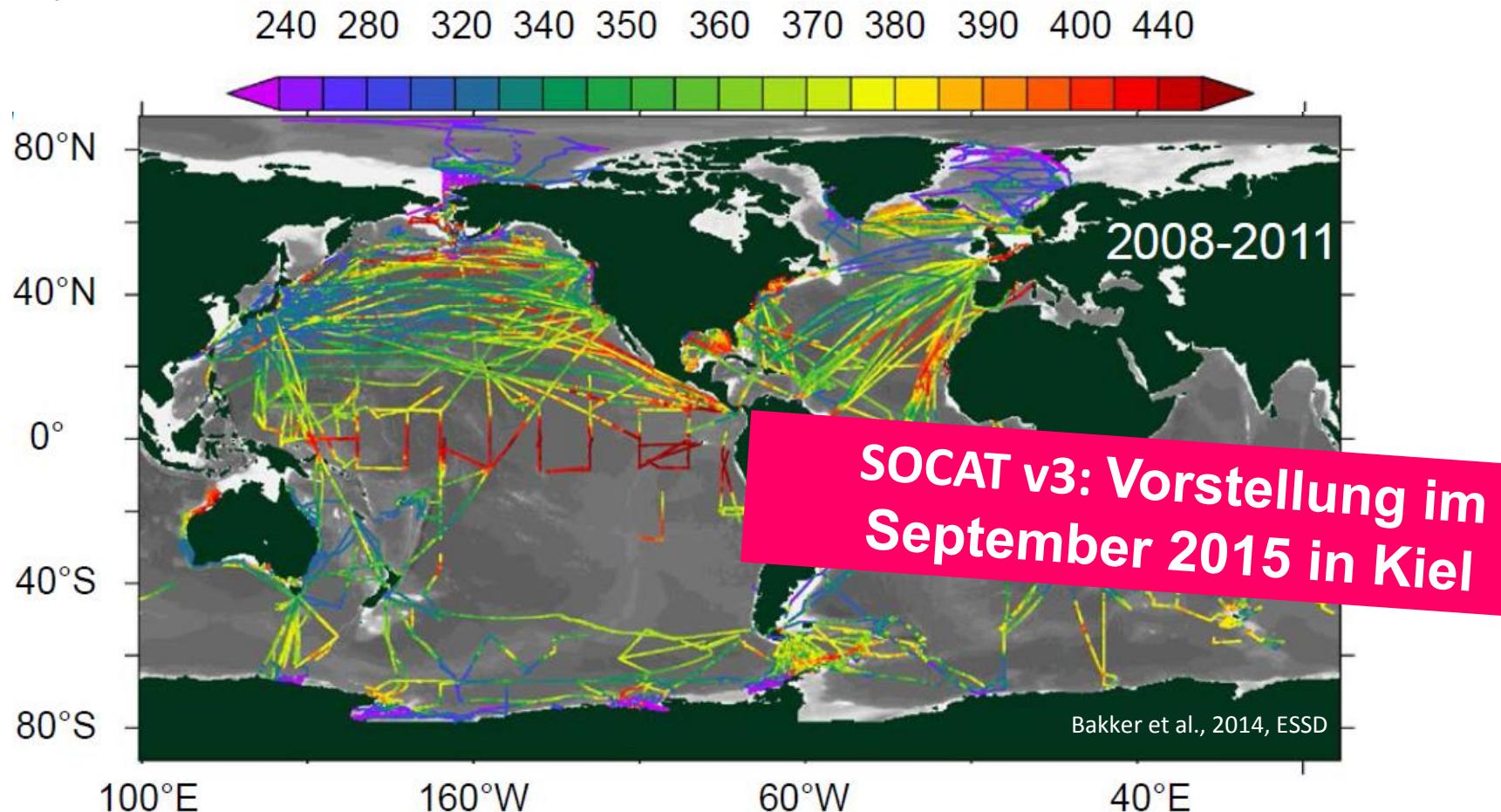
Quantifizierung der ozeanischen CO₂-Senke

SOCAT v2.0

10,127,694 Stations

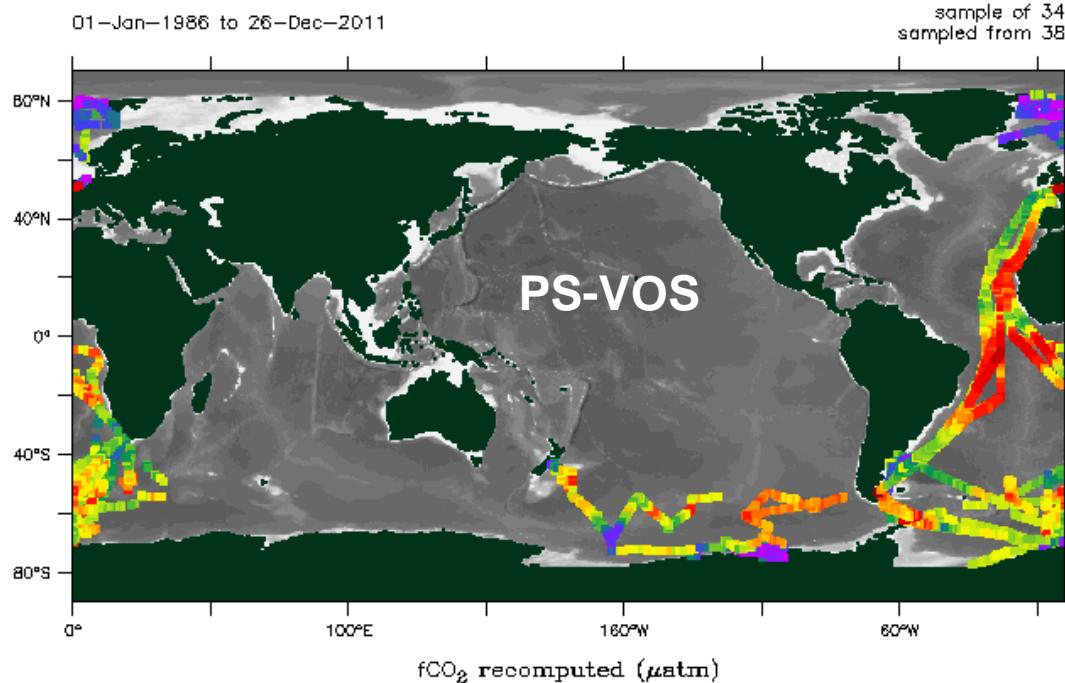
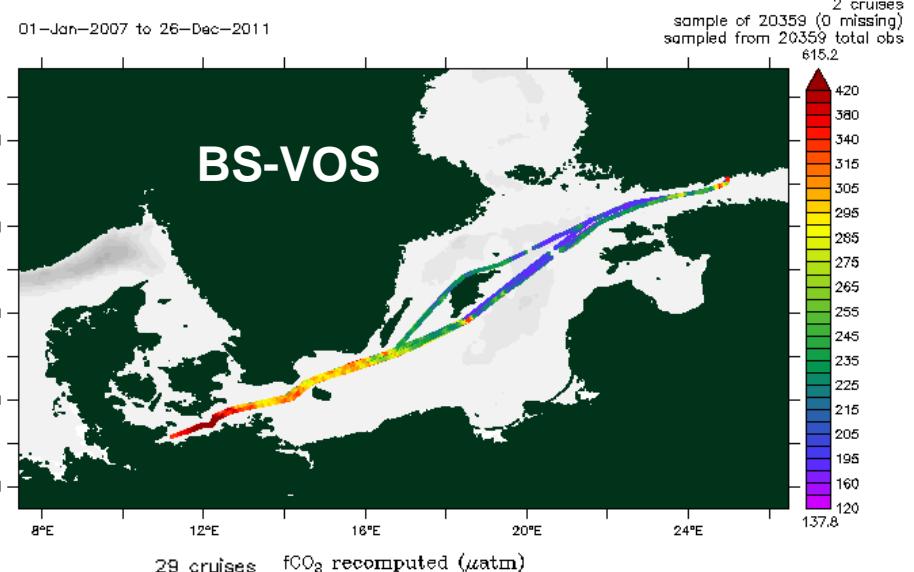
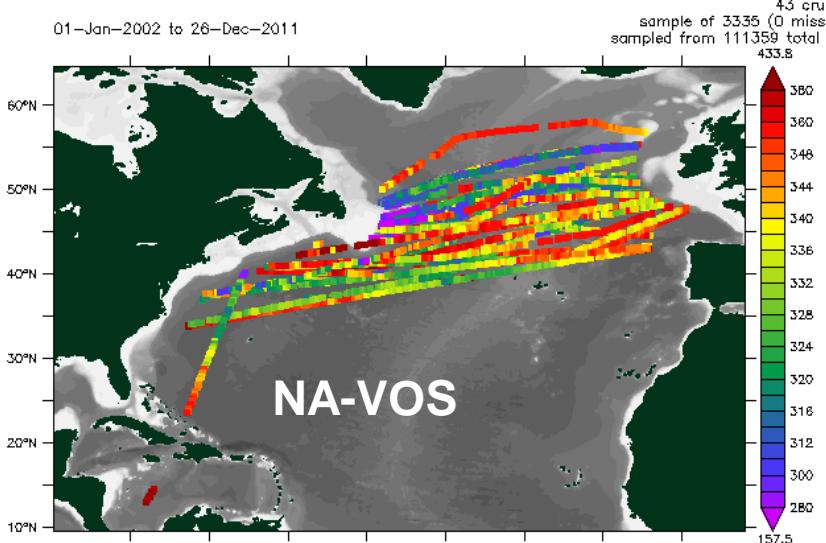


Surface Ocean CO₂ Atlas



- 2007: Keine öffentlich zugängliche $f\text{CO}_2$ -Datenbank, fragmentierte Daten, unterschiedlichste Formate, keine gemeinsamen Regeln;
- 2011: Version 1: 1968-2007, 6.3 Mill. $f\text{CO}_2$ -Datenpunkte, 1851 Fahrten;
- 2013: Version 2: 1968-2011, 10.1 Mill. $f\text{CO}_2$ -Datenpunkte, 2660 Fahrten;
- 2015: Version 3: 1957-2014, ~19 Mill. $f\text{CO}_2$ -Datenpunkte, ~3900 Fahrten.

ICOS-D VOS-Linien in SOCAT v2



- NA-VOS: ~110.000 surface water $f\text{CO}_2$ values from 43 cruises between 2002 and 2011
 - BS-VOS: ~20.000 surface water $f\text{CO}_2$ values from 2 cruises between 2007 and 2011
 - PS-VOS: ~382.000 surface water $f\text{CO}_2$ values from 29 cruises between 1986 and 2011

Dokumentation und Datenpolitik

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A uniform, quality controlled Surface Ocean CO₂ Atlas (SOCAT)

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~40 Zitierungen

J. Salisbury²⁹
I. Skjelvan^{1,2,16}
H. Thomas⁴⁹, B.
A.

Surface Oc

C. L. Sabine¹, S. Han
A. Fassbender^{1,20}, A
J. Boutin⁹, P.
M. Gonzalez-Dav
C. W. Hunt²⁵, D. Hy
S. V. Leifer^{1,2}

~13 Zitierungen

J. Salisbury²⁵, J. M.
R. Sieger²⁴,
M. Telszewski^{43,*}

An upda

D. C. E. Bakker¹, B.
A. Kozyr⁸, Y. Noji¹
J. Akl¹¹, L. Barbero¹
L. Chen^{21,22}, M. Chi
Z. Gao²¹

~15 Zitierungen

E. M. Jones³¹, S. D. Jones³⁴, S. Jutterström³⁵, V. Kitidis³⁶,
G. Koschützen¹, S. K. Lauvset^{2,3}, N. Lefèvre^{38,39}, A. B. Manke⁴, J. T. Mathis⁴,
E. Merlivat¹⁵, N. Metzl¹⁵, A. Murata⁴⁰, T. Newberger⁴¹, A. M. Omar^{6,3,2}, T. Ono³³, G.-H. Park⁴²,
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R. Schlitzer³¹, R. Sieger³¹, I. Skjelvan^{6,2,3}, T. Steinhoff³⁷, K. F. Sullivan¹³, H. Sun²¹, A. J. Sutton^{4,5},
T. Suzuki⁴⁶, C. Sweeney⁴¹, T. Takahashi⁴⁷, J. Tjiputra^{6,3}, N. Tsurushima⁴⁸, S. M. A. C. van Heuven⁴⁹,
D. Vandemark³², P. Vlahos⁵⁰, D. W. R. Wallace⁵¹, R. Wanninkhof¹⁹, and A. J. Watson^{9,*}



Global Data Products Help Assess

SOCAT Datenpolitik:

- Daten sind frei verfügbar**
- Nutzer zitieren relevante ESSD-Publikation zu SOCAT:**
 - V1: Pfeil et al. (2013) ESSD 5: 125-143;
 - V1: Sabine et al. (2013) ESSD 5: 145-153;
 - V2: Bakker et al. (2014) ESSD 6: 69-90.
- Nutzer erkennen SOCAT-Daten durch Zitierung von Artikel der Datenurheber/Datenbankersteller bzw. durch Einladung zur Ko-Autorenschaft (besonders bei regionalen Studien) an**

CO₂ (fCO₂) similar to partial pressure data from all ocean areas, to optimize their documentation and quality control (QC), and to ensure their long-term storage.

SOCAT Framework, Quality Control,
and Products

Approximately 50 international seagoing marine carbon scientists and data

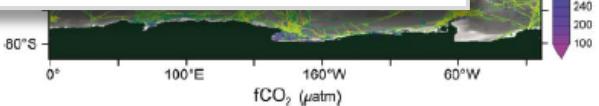
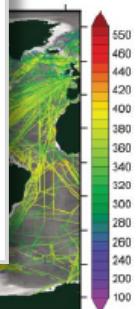


Fig. 1. Surface water fCO₂ (similar to partial pressure) measured in microatmospheres (μatm) in the global oceans and coastal seas from 1968 to 2007. Data are from Surface Ocean CO₂ Atlas (SOCAT) version 1.5. Note the uneven data distribution across the oceans and coastal seas.

oceans and coastal seas. The data originate from 1851 onwards by research vessels and moored as is. Two SOCAT data sets: (1) a global fCO₂ from 1968 calculated using a subject to QC gridded, monthly data product and spatial interannual products and can be downloaded from www.pangea.org/council for Science CDIAC (<http://cdiac.ornl.gov/>). The data produced via an interactive analysis tool, and Ocean Data View (<http://www.socat.org/>)

and Future

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is products are
OCAT products
Earth Observa-
[Takahashi

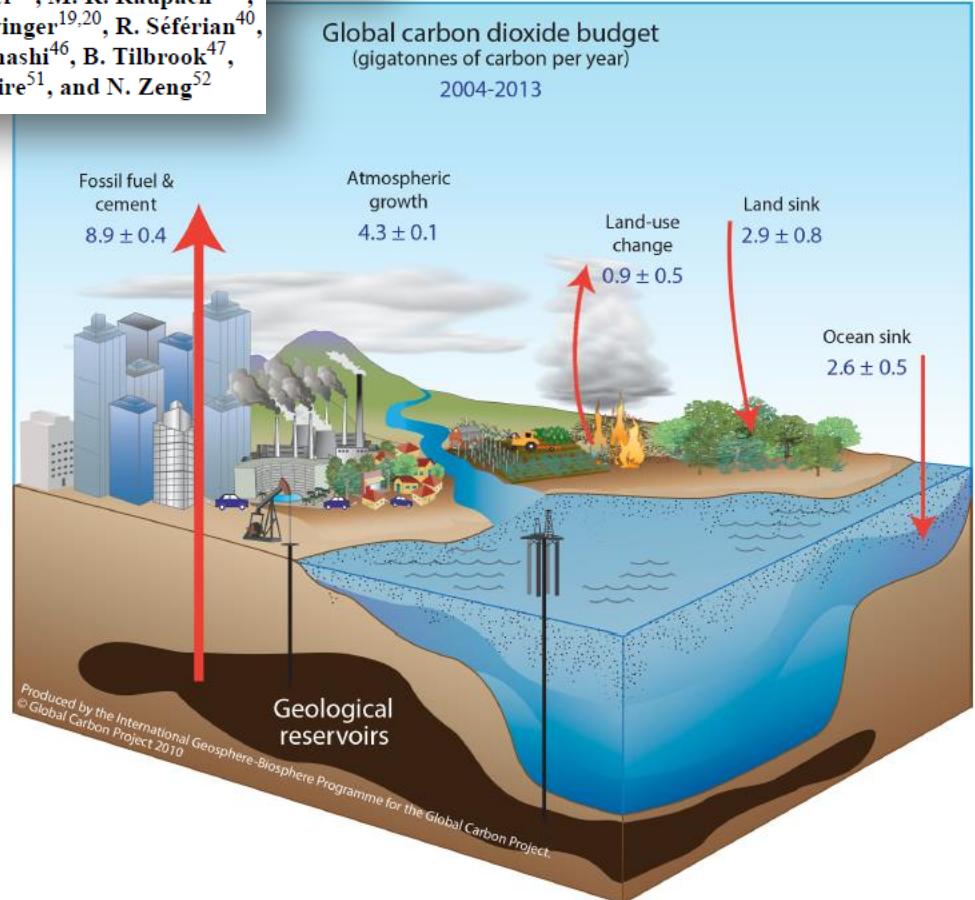
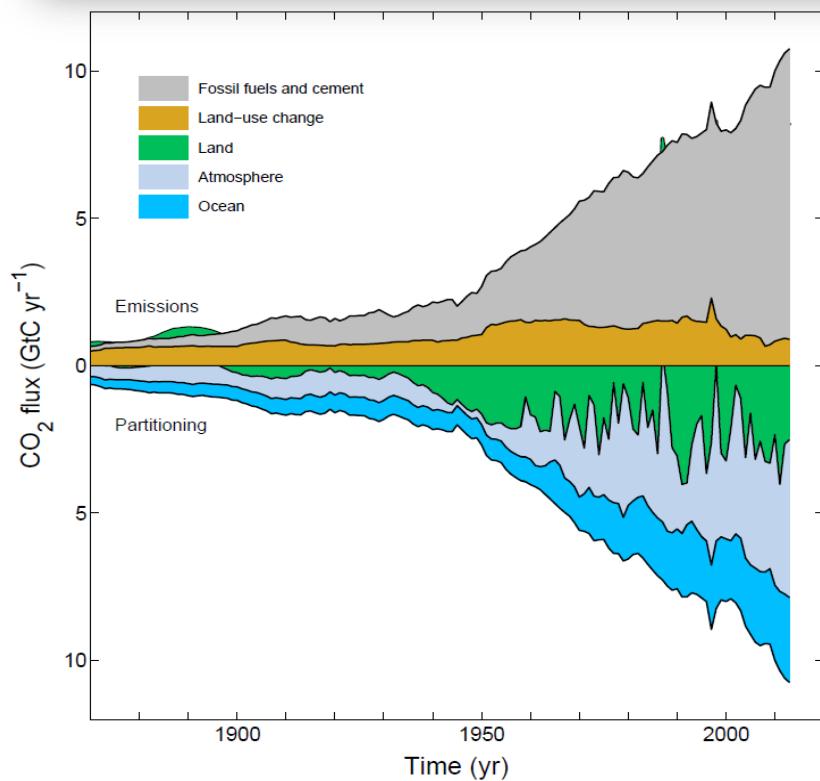


Nutzung

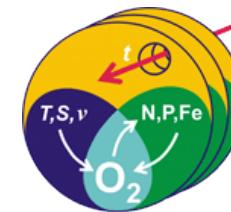
Global carbon budget 2013

Global carbon budget 2014

C. Le Quéré¹, R. Moriarty¹, R. M. Andrew², G. P. Peters², P. Ciais³, P. Friedlingstein⁴, S. D. Jones¹, S. Sitch⁵, P. Tans⁶, A. Arneth⁷, T. A. Boden⁸, L. Bopp³, Y. Bozec^{9,10}, J. G. Canadell¹¹, L. P. Chini¹², F. Chevallier³, C. E. Cosca¹³, I. Harris¹⁴, M. Hoppema¹⁵, R. A. Houghton¹⁶, J. I. House¹⁷, A. K. Jain¹⁸, T. Johannessen^{19,20}, E. Kato^{21,22}, R. F. Keeling²³, V. Kitidis²⁴, K. Klein Goldewijk²⁵, C. Koven²⁶, C. S. Landis^{19,20}, P. Landschützer²⁷, A. Lenton²⁸, I. D. Lima²⁹, G. Marland³⁰, J. T. Mathis¹³, N. Metzl³¹, Y. Nojiri²¹, A. Olsen^{19,20}, T. Ono³², S. Peng³, W. Peters³³, B. Pfeil^{19,20}, B. Poulter³⁴, M. R. Raupach^{35,†}, P. Regnier³⁶, C. Rödenbeck³⁷, S. Saito³⁸, J. E. Salisbury³⁹, U. Schuster⁵, J. Schwinger^{19,20}, R. Séférian⁴⁰, J. Segschneider⁴¹, T. Steinhoff⁴², B. D. Stocker^{43,44}, A. J. Sutton^{45,13}, T. Takahashi⁴⁶, B. Tilbrook⁴⁷, G. R. van der Werf⁴⁸, N. Viovy³, Y.-P. Wang⁴⁹, R. Wanninkhof⁵⁰, A. Wiltshire⁵¹, and N. Zeng⁵²



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climate change



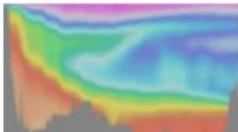
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