Geophysical Research Abstracts
Vol. 21, EGU2019-3116, 2019
EGU General Assembly 2019

Tracking the increase in surface ocean carbon dioxide with the Surface Ocean CO_2 Atlas (SOCAT)

Dorothee C.E. Bakker (1), Siv K. Lauvset (2,3), Rik Wanninkhof (4), Kevin M. O'Brien (5,6), Benjamin Pfeil (3), Rocío Castaño-Primo (3), Kim Currie (7), Stephen D. Jones (3), Alex Kozyr (8), Camilla S. Landa (3), Nicolas Metzl (9), Shin-ichiro Nakaoka (10), Are Olsen (3), Denis Pierrot (4,11), Ute Schuster (12), Karl Smith (5,6), Adrienne J. Sutton (5), Bronte Tilbrook (13,14), and all >100 SOCAT Contributors ()

(1) University of East Anglia, Centre for Ocean and Atmospheric Sciences, School of Environmental Sciences, Norwich, United Kingdom (d.bakker@uea.ac.uk), (2) NORCE Norwegian Research Centre AS, Nygårdsgaten 112, 5008 Bergen, Norway, (3) Geophysical Institute, University of Bergen Bergen and Bjerknes Centre for Climate Research, 5020 Bergen, Norway, (4) Atlantic Oceanographic and Meteorological Laboratory, National Oceanic and Atmospheric Administration, Miami, FL 33149, USA, (5) Pacific Marine Environmental Laboratory, National Oceanic and Atmospheric Administration, Seattle, WA 98115, USA, (6) Joint Institute for the Study of the Atmosphere and Ocean, University of Washington, Seattle, WA 98105, USA, (7) National Institute of Water and Atmospheric Research, Dunedin 9054, New Zealand, (8) Ocean Carbon Data System, National Centers for Environmental Information, National Oceanic and Atmospheric Administration, Knoxville, Tennessee, USA, (9) Sorbonne Universités (UPMC, Univ Paris 06), CNRS, IRD, MNHN, LOCEAN/IPSL Laboratory, 75005 Paris, France, (10) National Institute for Environmental Studies, Tsukuba, Ibaraki, 305-8506, Japan, (11) Cooperative Institute for Marine and Atmospheric Studies, Rosenstiel School for Marine and Atmospheric Science, University of Miami, Miami, FL 33149-1098, USA, (12) College of Life and Environmental Sciences, University of Exeter, Exeter EX4 4QE, United Kingdom, (13) CSIRO Oceans and Atmosphere, Hobart, Tasmania 7001, Australia, (14) Antarctic Climate and Ecosystems Cooperative Research Centre, University of Tasmania, Hobart, Tasmania 7001, Australia

The Surface Ocean CO_2 Atlas (SOCAT, www.socat.info) is a synthesis activity by international marine carbon scientists (>100 contributors) with annual public releases. SOCAT documents the increase in surface ocean CO_2 (carbon dioxide), as the oceans are taking up about one quarter of the global CO_2 emissions from human activity. The current SOCAT version (version 6, released in June 2018) has 23.4 million in situ, quality controlled surface ocean fCO_2 (fugacity of CO_2) observations for the global oceans and coastal seas from 1957 to 2017, as well as additional calibrated sensor data. SOCAT enables quantification of the ocean carbon sink and ocean acidification, and evaluation of ocean biogeochemical and coupled climate models in a changing world. SOCAT, which celebrated its 10th anniversary in 2017, has made a Voluntary Commitment of annual public releases to the 2017 United Nations Ocean Conference (#OceanAction20464) for SDG (Sustainable Development Goal) 14.3, to 'Minimize and address the impacts of ocean acidification'. The annual SOCAT releases in mid-June are timed to meet requirements for annual updates of the Global Carbon Budget. SOCAT represents a milestone in biogeochemical and climate research and in informing government policy and high-profile climate negotiations. Continuation of the SOCAT effort requires sustained funding.