Partner University of Bergen/Geophysical Institute

Scientific Committee member

Benjamin Pfeil
Bjerknes Climate Data Centre
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1825</td>
<td>Bergen Museum is established on the initiative of Wilhelm Frimann Koren Christie, who was president of the Norwegian parliament – Stortinget.</td>
</tr>
<tr>
<td>1865</td>
<td>The new Bergen Museum building opened. Today this is the main building of the University of Bergen.</td>
</tr>
<tr>
<td>1948</td>
<td>University of Bergen officially opens with three faculties in place: Faculty of Humanities, Faculty of Mathematics and Natural Sciences, and Faculty of Medicine.</td>
</tr>
<tr>
<td>1970</td>
<td>Two more faculties are established: Faculty of Social Sciences and Faculty of Odontology. The latter was fused with Faculty of Medicine in 2008.</td>
</tr>
<tr>
<td>1980</td>
<td>Another two faculties open: Faculty of Law and Faculty of Psychology. Today there are six faculties at the University of Bergen.</td>
</tr>
<tr>
<td>2015</td>
<td>The opening of the new assembly hall at the University Museum of Bergen. The new hall will become a meeting point between the university and the city of Bergen.</td>
</tr>
</tbody>
</table>
Main Focus Areas: Ocean, Life, Society

Global Social Challenges  Marine Research  Climate and Energy Transition
1. MEDIA CITY BERGEN CLUSTER

2. KNOWLEDGE CLUSTER FOR HEALTHCARE DISCIPLINES

3. MARINE RESEARCH CLUSTER

4. CLIMATE RESEARCH CLUSTER

5. KNOWLEDGE CLUSTER FOR FUTURE ENERGY AND TECHNOLOGY SOLUTIONS

6. CLUSTER FOR MEDIEVAL RESEARCH
The Bjerknes Centre is a collaboration on climate research, between the University of Bergen, Uni Research, the Institute of Marine Research, Nansen Environmental and Remote Sensing Centre.

Årets 2°C er her


Les mer
>> Data Portal

Find Data

Query (syntax help):
Anything in data description: Olsen, Are

Find Data

Search Results: 419 datasets found! (Query time: 0.008 s)

   Data Center: CDIAC; Carbon Dioxide Information Analysis Center
   Parameters: ALKALI; CTDSAL; CTDTEMP; NITRAT; NITRIT; PHSPHT; SALNTY; SILCAT; TCARBN
   Link - Score: 100%

RI ICOS Ocean Thematic Centre
data management

Benjamin Pfeil, Truls Johannessen, Steve Jones & Camilla Stegen Landa

Geophysical Institute/University of Bergen
Bjerknes Centre for Climate Research
Bjerknes Climate Data Centre
UNRAVELING EARTH’S GREENHOUSE GAS BALANCE WITH MEASUREMENTS

ICOS RI is a pan-Europe scientific data on CAF available at the CARI.

ICOS National Networks for atmosphere (a), ecosystem (b) and ocean (c) measurements.

Welcome to the ICOS RI.

ICOS RI is an organisation of eleven member countries and over 100 greenhouse gases measuring stations aimed at quantifying and understanding the greenhouse gas balance of Europe and measurements system, says ICOS ERIC General Assembly Chair.
ICOS OTC network

The suggested network of stations for the ocean-network:
- 18 SOOP/VOS lines
- 22 fixed time series stations
- 7 repeat hydrographic sections

Data life cycle from NRT to QCed data and products

Red lines - Ships of Opportunities
Green lines - Repeat Sections
Circles - Fixed Ocean Stations
Global Ocean Biogeochemistry Data Management

Benjamin Pfeil
IOCCP SSC member responsible for data and information management
Bjerknes Climate Data Centre @ University of Bergen
The Global Ocean Acidification Observing Network (GOA-ON) is a collaborative international approach to document the status and progress of ocean acidification in open-ocean, coastal, and estuarine environments, to understand the drivers and impacts of ocean acidification on marine ecosystems, and to provide spatially and temporally resolved biogeochemical data necessary to optimize modeling for ocean acidification.

---

**Approach and Goals**

Detailed information about the GOA-ON background, design, implementation, and data strategy can be found here:

*Global Ocean Acidification Observing Network: Requirements and Governance Plan (JA Newton, RA Feely, EB Jewett, P Williamson, J Mathis)*

**GOA-ON high-level goals:**

**Goal 1 - Improve our understanding of global OA conditions:**
- Determine status and spatial/temporal patterns in carbon chemistry, assessing the generality of response to ocean acidification.
- Document and evaluate variation in

---

**What's New**

GOA-ON releases a new Data Portal

The GOA-ON Interactive map has a new format and many new features, including:
- the ability to find platforms based on regions, platform type, and variables;
- overlays of aragonite saturation state and surface CO₂ concentration;
- real-time display of data from participating platforms;
- and much more!

Mouse over the buttons below to see examples of the new functionality.

---

**An International Effort**

See how GOA-ON has grown!

**Network Members** - 330 Scientists from 67 countries are currently participating in the GOA-ON.

Interested in becoming a member? Contact us here: [info@goa-on.org](mailto:info@goa-on.org)

**Friends of GOA-ON** - a charitable fund administered by The Ocean Foundation to support the goals and activities of GOA-ON. Click here to donate.

**Newsletters/Workshops/Activities**

- 3rd GOA-ON Science Workshop, 8-10 May 2016, Hobart, Australia; attended by 130 scientists from 37 nations.
- GOA-ON 2013 Workshop, St. Andrews, UK attended by 87 participants from 26 countries
Framework for Ocean Observing
Approved governance structure

GOOS Steering Committee

GOOS Panels

- **Essential Ocean Variables Panels**
  are advisory bodies which supply the GSC with scientific studies and expertise underpinning the strategic goals of GOOS. The Ocean Observations Panel for Climate (OOPC) continues its role advising GOOS and GCOS on global ocean physics essential ocean variables. The Biogeochemistry Panel will naturally be organized by the International Ocean Carbon Coordination Panel (IOCCP). The Biology & Ecology panel is a new creation, which has received support for a new Secretariat hosted by Australia. Biology & Ecosystem and Biogeochemistry Panels had their first formative meetings in Nov. 2013.

Links to the Three different Panels:

- GOOS Biology and Ecosystems Panel (Bio-Eco)
- **GOOS Biogeochemistry Panel (IOCCP)**
- GOOS Physics Panel (OOPC)

(Observing technologies and networks, Variable focus: data and products, synthesis, link to models)
Driven by requirements, negotiated with feasibility

**Essential Ocean Variables**

- We cannot measure everything, nor do we need to
- Basis for including new elements of the system, for expressing requirements at a high level
- Driven by requirements, negotiated with feasibility
- Allows for innovation in the observing system over time

Credit: Maciej T.
IOCCP Major Activities – Hydrographic Sections
GLODAP office will move to UiB in 2017
The Surface Ocean CO₂ Atlas enables quantification of the ocean carbon sink and ocean acidification

Dorothee Bakker (d.bakker@uea.ac.uk), Benjamin Pfeil, Karl Smith, Simone Alin, Kim Currie, Steve Jones, Alex Kozyr, Camilla Landa, Peter Landschützer, Siv Lauvset, Nathalie Lefèvre, Nicolas Metzl, Shin-ichiro Nakaoka, Yukihiro Nojiri, Kevin O’Brien, Are Olsen, Christian Rödenbeck, Ute Schuster, Maciej Telszewski, Bronte Tilbrook, Chisato Wada, Rik Wanninkhof and all >100 SOCAT contributors
Global synthesis and gridded products of surface ocean fCO$_2$ (fugacity of CO$_2$) in uniform format with quality control;
V4: 18.5 million fCO$_2$ values, accuracy < 5 µatm from 1957-2015 (flags of A-D);
Plus calibrated sensor data (< 10 µatm, flag of E);
Online viewers;
Downloadable (text, NetCDF, ODV, Matlab);
Documented in ESSD articles;
Fair Data Use Statement;
Community activity with >100 contributors worldwide.
Annual releases upon automated data upload (v4)

Automation for is funded and will be done at the BCDC

Automation of data upload, initial data checks speeds up data submission and enables annual, public releases of SOCAT.

SOCAT data is discoverable, accessible and citable.

Future: Automation of metadata upload.

(O’Brien et al., in prep.)
Applications of SOCAT in peer-reviewed articles

SOCAT is named or cited in >150 peer-reviewed articles:
- Ocean carbon budgets,
- Ocean acidification studies,
- Model evaluation,
- Environmental studies,
- Figures or tools,
- Reference to SOCAT.

Sources

- Fossil fuel & cement sources: 9.3 Pg C yr\(^{-1}\) (91%)

Sinks

- Atmosphere (44%): 4.5 Pg C yr\(^{-1}\)
- Ocean sink (26%): 2.6 Pg C yr\(^{-1}\)
- Land sink (residual): 3.2 Pg C yr\(^{-1}\) (31%)

(CDIAC; NOAA-ESRL; Houghton et al 2012; Giglio et al 2013; Le Quéré et al 2016; Global Carbon Budget 2016)
Work so far for SDC

- EOV Carbonate System (standardized vocabs)
- Setup of a sharing NOD
- Automation on how to convert all SOCAT files (4250 cruises)
- Challenges were found with NEMO and MIKADO and solved in collaboration with Ifremer colleagues
- Plan on sharing more data (GLODAP, ICOS)
- Expect to have all SOCATv4 data as CDIs within the next weeks
Thank you!