



BASE DE DONNEES RELATIONNELLE POUR LE CO<sub>2</sub>:  
SURFACE OCEAN CO<sub>2</sub> ATLAS (SOCAT)

*[www.socat.info](http://www.socat.info)*

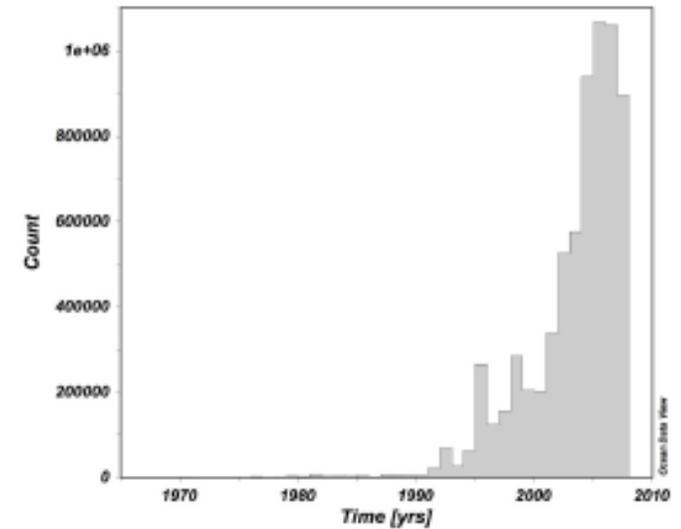
*LOCEAN, ODATIS, 2-3 Juillet 2019*

# CONTEXTE & OBJECTIFS

- Suivi du CO<sub>2</sub> dans l'océan et l'atmosphère (fCO<sub>2</sub>) par des réseaux d'observations avec systèmes autonomes embarqués

*(Atlantique: FP5 CAVASSOO, FP6 CARBOOCEAN, FP7 CARBOCHANGE)*

- Augmentation importante des observations, maximiser l'utilisation scientifique des données -> lancement de SOCAT par la communauté internationale en 2007 (workshop UNESCO à Paris, 2007)



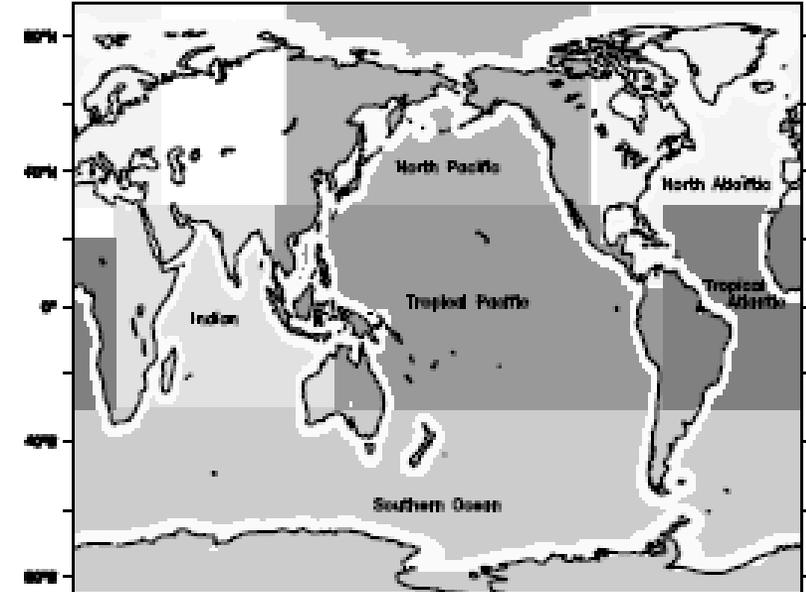
*Nombre d'observations par an  
(Pfeil et al., ESSD, 2013)*

## **SOCAT:**

- Rassembler toutes les données de fCO<sub>2</sub> dans une base de données de format uniforme, QC, publique et actualisée annuellement
- Assurer le stockage à long terme de chaque jeu de données et de sa documentation (metadata)
- Approche transparente, développer des outils utilisables par la communauté pour l'intégration des données de façon routinière

# ORGANISATION DU CONTROLE DE QUALITE

- Envoi des fichiers (données + metadata) au gestionnaire de la base de données
- Handbook pour les paramètres du CO<sub>2</sub> (Dickson et al., 2007)
- Mesures **directes en continu de xCO<sub>2</sub> par détection infrarouge** (ou chromatographie) -> calcul pCO<sub>2</sub> puis fCO<sub>2</sub>  
(NB: depuis 2013 autres capteurs permis)
- Identification des différents jeux de données par **expocode**  
(*identifiant navire + date début*)
- Définition des **critères pour attribuer des flags** (Cookbook)
- Répartition du travail par **région océanique**



1 groupe global

8 Groupes régionaux pour QC

(mers et océan côtier, Arctique, Atlantique Nord, Pacifique Nord, Atlantique Tropical, Pacifique Tropical, Indien, océan Austral)

# CRITERES POUR LE CONTROLE DE QUALITE

## 1<sup>er</sup> QC: vérification des données

- Points aberrants (gamme de valeurs, vitesse du navire), absence de dates

## 2<sup>ème</sup> QC par les groupes régionaux

- Examen des metadata (procédure suivie: SOP, précision des données)
- Examen des données (comparaison avec autres campagnes si possible)



Attribution des flags

| Cruise flag (ID) | Criteria  |
|------------------|---|
| A (11)           | <ol style="list-style-type: none"><li>1. Followed approved methods or SOP criteria and</li><li>2. Metadata documentation complete and</li><li>3. Extended QC was deemed acceptable and</li><li>4. A comparison with other data was deemed acceptable.</li></ol> |
| B (12)           | <ol style="list-style-type: none"><li>1. Followed approved methods or SOP criteria and</li><li>2. Metadata documentation complete and</li><li>3. Extended QC was deemed acceptable.</li></ol>   |
| C (13)           | <ol style="list-style-type: none"><li>1. Did not follow approved methods or SOP criteria and</li><li>2. Metadata documentation complete and</li><li>3. Extended QC was deemed acceptable (including comparison with other data if possible).</li></ol>          |
| D (14)           | <ol style="list-style-type: none"><li>1. Did or did not follow approved methods or SOP criteria and</li><li>2. Metadata documentation incomplete and</li><li>3. Extended QC was deemed acceptable (including comparison with other data if possible).</li></ol> |
| S (Suspend)      | <ol style="list-style-type: none"><li>1. Did or did not follow methods or SOP criteria and</li><li>2. Metadata documentation complete or incomplete and</li><li>3. Extended QC revealed non-acceptable data</li><li>4. Data are being updated.</li></ol>        |
| X (15) (Exclude) | The cruise (data set) duplicates another cruise (data set) in SOCAT.  |
| N (No flag)      | No cruise flag has yet been given to this cruise.   |
| U (Update)       | The cruise data have been updated.<br>No cruise flag has yet been given to the revised data.  |

## Standard Operating Procedure (SOP):

Systeme calibré avec au moins 2 gaz étalons, températures précises à 0.05°C, pression à 0.5 hPa, conditions sur le réchauffement...

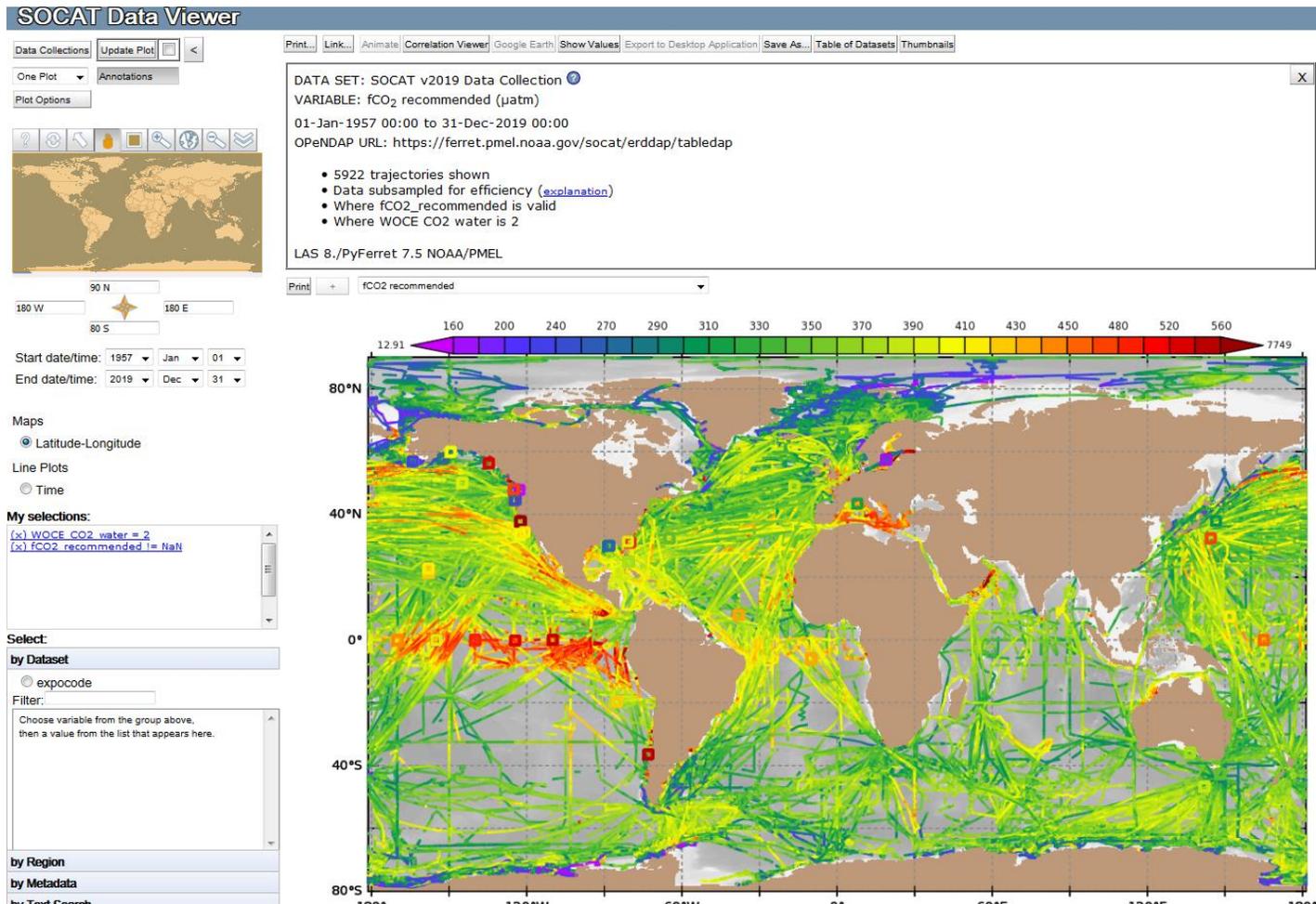
# DEVELOPPEMENT DE L'INTERFACE WEB

Accès aux données via l'interface web

Filtres pour sélection par régions, par dates, par navire, par PI etc...



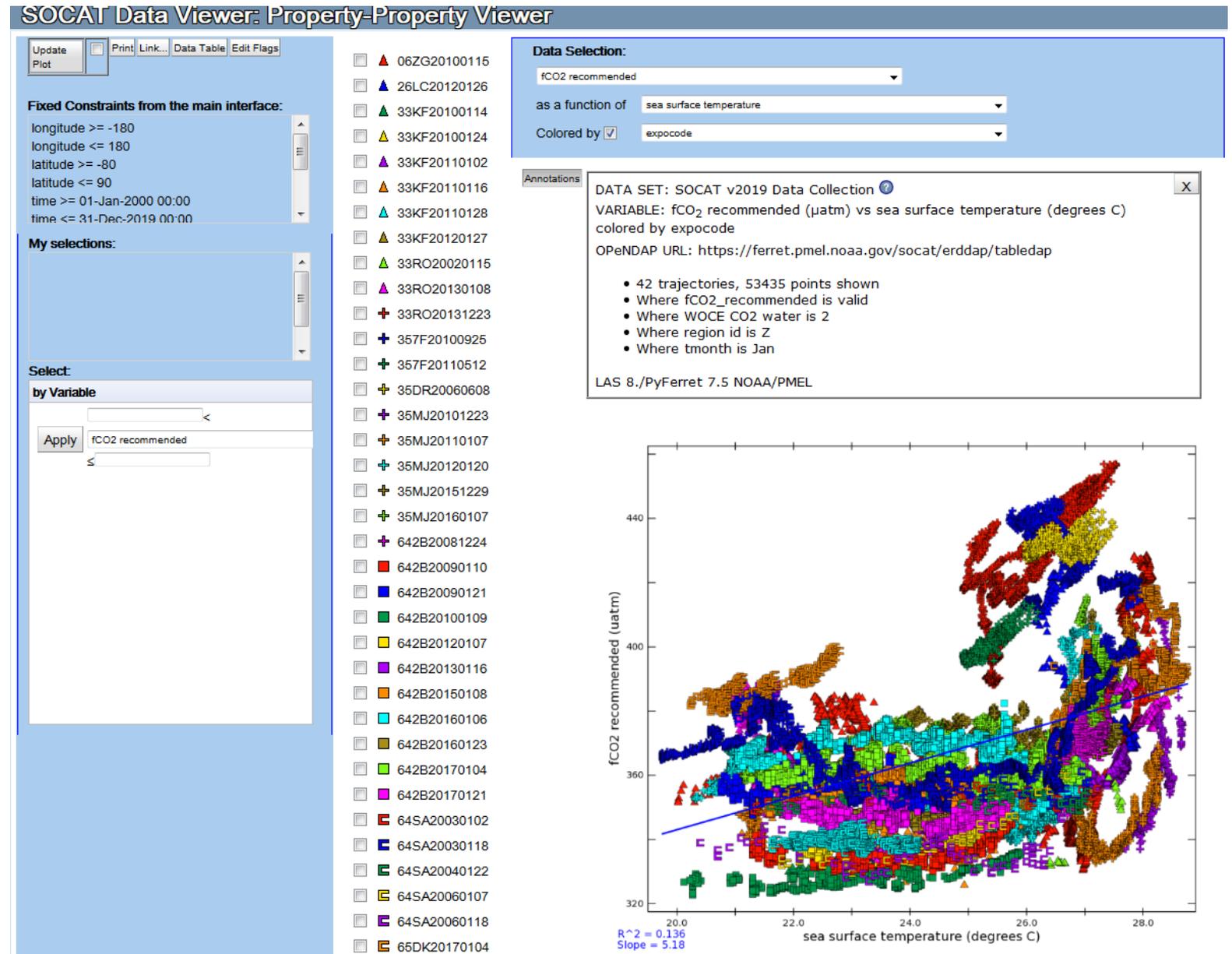
- Liste des campagnes avec navire, PI, flag, accès à la documentation et la visualisation
- Vérification de crossover



| expcode      | platform_name       | platform_type | investigators                                    | qc_flag | documentation                 | download                   | crossovers                           | qc flags                         | thumbnails                 |
|--------------|---------------------|---------------|--|---------|-------------------------------|----------------------------|--------------------------------------|----------------------------------|----------------------------|
| 06AQ20150204 | Polarstern          | Ship          | "van Heuven, S. ; Hoppema, M."                   | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 06AQ20151030 | Polarstern          | Ship          | "van Heuven, S. ; Hoppema, M."                   | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 06AQ20160412 | Polarstern          | Ship          | "van Heuven, S. ; Hoppema, M."                   | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 06AQ20170321 | Polarstern          | Ship          | "van Heuven, S. ; Hoppema, M."                   | D       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 08D820170918 | Victor Angelescu    | Ship          | "Padin, X.A. ; Negri, R."                        | D       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 29AH20161105 | Sarmiento de Gamboa | Ship          | "Padin, X.A."                                    | D       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 320620150905 | Nathaniel B. Palmer | Ship          | "Takahashi, T. ; Sweeney, C. ; Sutherland, S.C." | D       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 33RO20170220 | Ronald H. Brown     | Ship          | "Wanninkhof, R. ; Pierrot, D."                   | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20150226 | Colibri             | Ship          | "Lefevre, N. ; Diverres, D."                     | A       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20150312 | Colibri             | Ship          | "Lefevre, N. ; Diverres, D."                     | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20150526 | Colibri             | Ship          | "Lefevre, N. ; Diverres, D."                     | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20150607 | Colibri             | Ship          | "Lefevre, N. ; Diverres, D."                     | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20151014 | Colibri             | Ship          | "Lefevre, N."                                    | A       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20151109 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20151229 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20160107 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20160304 | Colibri             | Ship          | "Lefevre, N."                                    | A       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20160319 | Colibri             | Ship          | "Lefevre, N."                                    | A       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20160504 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20160519 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20160812 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20160825 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20170825 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20171102 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 35MJ20180430 | Colibri             | Ship          | "Lefevre, N."                                    | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 642B20150108 | Benguela Stream     | Ship          | "Schuster, U. ; Jones, S.D. ; Watson, A.J."      | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 642B20150205 | Benguela Stream     | Ship          | "Schuster, U. ; Jones, S.D. ; Watson, A.J."      | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 642B20150222 | Benguela Stream     | Ship          | "Schuster, U. ; Jones, S.D. ; Watson, A.J."      | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 642B20150430 | Benguela Stream     | Ship          | "Schuster, U. ; Jones, S.D. ; Watson, A.J."      | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 642B20150517 | Benguela Stream     | Ship          | "Schuster, U. ; Jones, S.D. ; Watson, A.J."      | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 642B20150527 | Benguela Stream     | Ship          | "Schuster, U. ; Jones, S.D. ; Watson, A.J."      | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |
| 642B20150624 | Benguela Stream     | Ship          | "Schuster, U. ; Jones, S.D. ; Watson, A.J."      | B       | <a href="#">Documentation</a> | <a href="#">Save As...</a> | <a href="#">Check for crossovers</a> | <a href="#">Examine QC Flags</a> | <a href="#">Thumbnails</a> |

# OUTIL GRAPHIQUE PROPRIETE-PROPRIETE

Possibilité d'extraire des données  
et de visualiser différents  
paramètres (fCO<sub>2</sub>, SST, SSS, lat,  
lon, pression, date)



# AUTOMATISATION DE LA SOUMISSION DES DONNEES

Interface WEB sur site SOCAT, accès avec identifiants pour déposer des fichiers dans SOCAT

| My Datasets            |    | Select...                | Dataset ID   | Upload Date            | Data Status   | OME Metadata  |
|------------------------|----|--------------------------|--------------|------------------------|---------------|---------------|
| Identify Columns       | 1  | <input type="checkbox"/> | 35MJ20180430 | 2019-01-03 14:47 +0100 | No warnings   | (no metadata) |
| Edit OME Metadata      | 2  | <input type="checkbox"/> | 65DK20180918 | 2019-01-03 14:44 +0100 | No warnings   | (no metadata) |
| Supplemental Documents | 3  | <input type="checkbox"/> | 65DK20180821 | 2019-01-03 11:54 +0100 | No warnings   | (no metadata) |
| Preview Dataset        | 4  | <input type="checkbox"/> | 65DK20180724 | 2019-01-03 11:46 +0100 | No warnings   | (no metadata) |
| Submit for QC          | 5  | <input type="checkbox"/> | 65DK20180624 | 2019-01-03 11:40 +0100 | No warnings   | (no metadata) |
| Suspend Dataset        | 6  | <input type="checkbox"/> | 35MJ20160825 | 2018-01-04 17:15 +0100 | No warnings   | (no metadata) |
| Show Datasets          | 7  | <input type="checkbox"/> | 35MJ20170825 | 2018-01-04 17:11 +0100 | No warnings   | (no metadata) |
| Hide Datasets          | 8  | <input type="checkbox"/> | 35MJ20160812 | 2018-01-04 17:06 +0100 | No warnings   | (no metadata) |
| Change Datasets Owner  | 9  | <input type="checkbox"/> | 35MJ20171102 | 2018-01-04 17:02 +0100 | No warnings   | (no metadata) |
| Delete Datasets        | 10 | <input type="checkbox"/> | 65DK20170525 | 2018-01-04 17:00 +0100 | No warnings   | (no metadata) |
|                        | 11 | <input type="checkbox"/> | 65DK20170130 | 2018-01-04 16:51 +0100 | No warnings   | (no metadata) |
|                        | 12 | <input type="checkbox"/> | 65DK20170225 | 2018-01-04 16:43 +0100 | 6258 warnings | (no metadata) |
|                        | 13 | <input type="checkbox"/> | 65DK20170423 | 2018-01-04 16:39 +0100 | No warnings   | (no metadata) |
|                        | 14 | <input type="checkbox"/> | 65DK20170617 | 2018-01-04 16:38 +0100 | No warnings   | (no metadata) |
|                        | 15 | <input type="checkbox"/> | 65DK20170717 | 2018-01-04 16:31       | No warnings   | (no metadata) |

Chargement automatique des fichiers de données, de metadata et envoi pour QC

**SOCAT**  
SURFACE OCEAN CO<sub>2</sub> ATLAS  
A Collection of Underway Ocean CO<sub>2</sub> Observations  
Welcome to the SOCAT Data Access System

**SOCAT Data Products:**

- Upload Dashboard (v2020)
- QC Editor (v2020)
- Data Download (v2019 = v7)
- Fair Data Use Statement\*
- Publications\*
- SOCAT Credits\*

**SOCAT Help:**

- Uploading Data to SOCAT
- Upload Dashboard tutorial
- SOCAT QC cookbook (2019)
- Alt. Sensors QC Paper
- QC system tutorial
- How to set QC flags
- How to set WOCE flags

\*external link to <https://www.socat.info/>

solas 20|s2 | IMBER

Please contact [oar.pmel.socat.support@noaa.gov](mailto:oar.pmel.socat.support@noaa.gov) to report problems with this webpage.

| Metadata   | Dataset ID   | Upload Date            | Data Status   | OME Metadata  | File Name                 | QC Status | QC Flags | QC Comments   | File Name        | QC Status |
|--|--------------|------------------------|---------------|---------------|---------------------------|-----------|----------|---------------|------------------|-----------|
| Metadata_cslo18_28sep2018.docx (2019-01-03 14:44 +0100)  | 35MJ20180430 | 2019-01-03 14:47 +0100 | No warnings   | (no metadata) | cslo1804_18_28sep2018.txt | 2019.0    | Flag B   | Sent to QCADS | nathalie.lefevre |           |
| Metadata_cslo21aug1sep2018.docx (2019-01-03 11:55 +0100) | 65DK20180918 | 2019-01-03 14:44 +0100 | No warnings   | (no metadata) | cslo_21aug1sep2018.txt    | 2019.0    | Flag B   | Sent to QCADS | nathalie.lefevre |           |
| Metadata_cslo24jul2018.doc (2019-01-03 11:47 +0100)      | 65DK20180821 | 2019-01-03 11:54 +0100 | No warnings   | (no metadata) | cslo_24jul27jul2018.txt   | 2019.0    | Flag B   | Sent to QCADS | nathalie.lefevre |           |
| Metadata_cslo24jun6jul2018.doc (2019-01-03 11:42 +0100)  | 65DK20180724 | 2019-01-03 11:46 +0100 | No warnings   | (no metadata) | cslo_24jun6jul2018.txt    | 2019.0    | Flag B   | Sent to QCADS | nathalie.lefevre |           |
| metadata_coli25aug4sep2016.doc (2018-01-04 17:18 +0100)  | 35MJ20160825 | 2018-01-04 17:15 +0100 | No warnings   | (no metadata) | coli_25aug4sep2016.txt    | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| metadata_coli25aug1sep2017.doc (2018-01-04 17:14 +0100)  | 35MJ20170825 | 2018-01-04 17:11 +0100 | No warnings   | (no metadata) | coli_25aug1sep2017.txt    | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| metadata_coli12aug21aug2016.doc (2018-01-04 17:08 +0100) | 35MJ20160812 | 2018-01-04 17:06 +0100 | No warnings   | (no metadata) | coli_12aug21aug2016.txt   | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| metadata_coli2nov12nov2017.doc (2018-01-04 17:03 +0100)  | 35MJ20171102 | 2018-01-04 17:02 +0100 | No warnings   | (no metadata) | coli_2nov12nov2017.txt    | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| Metadata_cslo25may2017.doc (2018-01-04 17:01 +0100)      | 65DK20170525 | 2018-01-04 17:00 +0100 | No warnings   | (no metadata) | cslo_25may29may2017.txt   | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| Metadata_cslo30jan2017.doc (2018-01-04 16:52 +0100)      | 65DK20170130 | 2018-01-04 16:51 +0100 | No warnings   | (no metadata) | cslo_30jan6feb2017.txt    | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| Metadata_cslo25feb2017.doc (2018-01-04 16:45 +0100)      | 65DK20170225 | 2018-01-04 16:43 +0100 | 6258 warnings | (no metadata) | cslo_25feb9mar2017.txt    | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| Metadata_cslo23apr2017.doc (2018-01-04 16:40 +0100)      | 65DK20170423 | 2018-01-04 16:39 +0100 | No warnings   | (no metadata) | cslo_23apr4may2017.txt    | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| Metadata_cslo17jun2017.doc (2018-01-04 16:39 +0100)      | 65DK20170617 | 2018-01-04 16:38 +0100 | No warnings   | (no metadata) | cslo_17jun29jun2017.txt   | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |
| Metadata_cslo17jul2017.doc                               | 65DK20170717 | 2018-01-04 16:31       | No warnings   | (no metadata) | cslo_17jul11aug2017.txt   | 6.0       | Flag B   | Archived      | nathalie.lefevre |           |

## Calendrier annuel pour l'actualisation de la base SOCAT:

- Soumission des données par les Pis (15 janvier)
- QC de la base par les groupes régionaux (31 mars)
- Nouvelle version de SOCAT rendue publique (juin)

