

The

## CCAMLR-SOOS Synergies Workshop

*8 April 2018, IMAS-UTAS, Australia*



**SOOS**  
SOUTHERN OCEAN  
OBSERVING SYSTEM



**ANTARCTIC  
GATEWAY PARTNERSHIP**

A Special Research Initiative of  
the Australian Research Council

## Summary

The workshop was a one-day event to bring together scientists involved in SOOS and SC-CAMLR to identify mechanisms and opportunities for improved communication, collaboration, and cooperation between both communities. This workshop was sponsored by the Australian Research Council's Antarctic Gateway Partnership and the Southern Ocean Observing System (SOOS).

## Objectives

The objectives of this workshop were to:

- Improve understanding and awareness of relative roles and operations of SOOS and SC-CAMLR between both communities
- Identify reciprocal pathways of communication for exchange of information between SOOS and SC-CAMLR)
- Identify mechanism for inclusion of CCAMLR observational and operational data needs in the work of the SOOS Regional Working Groups
- Identify synergies in data requirements and data management planning,

The first part of the workshop consisted of a series of presentations that addressed Objectives 1 and 2 followed by a discussion session addressing Objectives 3 and 4.

## Presentations

### CCAMLR Overview

Keith Reid (CCAMLR Science Manager) provided an overview of CCAMLR data requirements, including the distinction between data that is required to be reported to the Secretariat and data that is desired by scientists contributing to the work of CCAMLR. He described the various data that is required by CCAMLR as part of its fishery management processes associated with:

- Fishery notifications detailing where/when fishing vessels are going to fish in the coming season
- Real-time monitoring of vessels and activity, including VMS, summary catch reports
- Detailed catch data (haul by haul, incl. bycatch), scientific observer data (biological data on length, sex etc),

CCAMLR has an agreed set of rules for data access and use; these specify that data submitted to CCAMLR is freely available to members for analysis and document preparation that contributes to the work of the Scientific Committee and the Commission. There are rules for data access and use that set out the modes of interaction with CCAMLR data.

## **SOOS Overview**

Louise Newman (SOOS Executive Officer) described SOOS' governance structure as a body of SCAR and SCOR. While not officially a regional alliance of GOOS (Global Ocean Observing System), SOOS does work closely with GOOS to connect regional/national observing programs (e.g., IMOS).

SOOS aims to provide services to communicate data and increase its discoverability. It does not have funds to directly collect observations but aims to improve data accessibility and coordination of data collection, including through focussed short-term data collection efforts.

## **SOOS Regional Working Groups**

Andrew Constable (SOOS co-chair) outlined how the work of SOOS is coordinated through Regional Working Groups (made up of nations involved in different areas). Part of the role of Regional Working Groups is to connect with researchers and work being done in each region to encourage participation in SOOS. In terms of data management, SOOS Regional Working Groups encourage their members to directly share datasets through public data repositories, in line with the Antarctic Treaty obligations for data sharing. Where sharing of actual datasets is not possible, SOOS encourages its members to, at a minimum, publish metadata records describing the datasets and pathways to accessing the datasets.

Currently there are Regional Working Groups for the following regions:

- Ross Sea
- Amundsen/Bellingshausen Sea
- West Antarctic Peninsula
- Weddell/Dronning Maud Land
- Indian Sector

The development of the regional groups is at different stages but all provide a focus of discussion of key data observations needed, coordination of the collection of these data to increase spatial coverage and identification of how value can be added to existing and historic data collection programs (rather than simply repeating what's already been done).

In addition to the regional working groups, SOOS also has Capability Working Groups that bring together scientists from specific fields to develop data collection capabilities to address specific issues such as ocean flux and the use of satellite imagery to count predator populations. There is also a specialist group on Observing System Design that works on the delivering tools to better design observational programs.

## **WG-EMM/CEMP field sites, observations and data collection plans**

Malgorzata Korczak-Abshire (Convener CCAMLR Working Group on Ecosystem Monitoring and Management WG-EMM) described the CCAMLR Ecosystem Monitoring Program (CEMP) that was established to detect changes in the krill-based ecosystems to provide a basis for regulating the harvest of krill.

There are currently 15 active CEMP sites operated by different nations that collect data on parameters including breeding success, population size, diet, foraging trip duration of indicator species such as penguins, albatross, and seals. The CEMP Special Fund awards grants to expand monitoring programs, develop automated methods, develop collaborations.

CCAMLR's WG-EMM is working to expand CEMP data collection (new remote collection methods, new sites), data analysis and integrating analyses across spatial and temporal scales. The CCAMLR Secretariat is continuing to work on developing CEMP metadata that will increase discoverability and be valuable for incorporation into SOOS.

## **Research fishing field sites, observations, and data plans**

Dirk Welsford (Convener CCAMLR Working Group on Fish Stock Assessment WG-FSA) described the data collection and research requirements associated with CCAMLR's Antarctic toothfish fishery. CCAMLR's management approach is an ecosystem-based conservation and as part of exploratory fishing campaigns, all vessels carry observers and quantify catch/bycatch/effort. In addition, for fisheries that do not have sufficient data for an integrated assessment, a research plan is required that includes research to understand toothfish habitat and stock structure, e.g., benthic video cameras on fishing gear used to assess seafloor habitats and toothfish behaviour and the use of CTDs on demersal fishing gear.

There is a need to improve metadata records to increase discoverability of existing research data and materials, such as tissue samples, plankton samples, wildlife observations (birds/whales), and CTD data.

## **CCAMLR Data Streams**

Tim Jones (CCAMLR Information Systems and Data Services Manager) provided an overview of the data streams that are delivered into the CCAMLR database, these include data on:

- Fisheries notifications
- Vessel licensing
- Vessel movements
- Vessel inspections
- Transshipment activities

- Catch Documentation System (CDS)
- CCAMLR CEMP
- SISO – Scheme of International Scientific Observation
- Satellite-linked Vessel Monitoring System (VMS)
- IUU Vessel Lists
- Catch and Effort

The specifications for the data collection required by CCAMLR are based on the commission's specified conservation measures. Data systems are being developed to analyse and report on compliance with those conservation measures. The CCAMLR website is increasingly used to provide a user interface for compliance-related information that was previously in the form of pdf documents which meant the data are not readily accessible. More data are now available on the website although some datasets are visible only with appropriate levels of permissions. These levels of permission depend on the individual user and they may change over time (i.e., might be available after SC/Commission).

### **Future of CCAMLR Data**

Christian Reiss (Convener of SC-CAMLR Data Management Group) described the CCAMLR data that is of direct use/relevance to the science community, including:

- Management data (e.g. fishing boundaries, SSMUs etc)
- Fishery-dependent data (e.g. krill/fish catch, bycatch, observer data, gear etc)
- Fishery-independent data (e.g. CEMP)
- Member-provided special data (e.g. MPA data layers; CCAMLR 2000)
- Other potential data streams (e.g. model output and codes, reports etc)
- In 2017, SC-CAMLR created a Data Management Group (DMG) to provide a conduit between CCAMLR data users and the secretariat on issues such as:
  - Communication of data and metadata management and development
  - Development of data quality standards and rules
  - Data infrastructure

The DMG has representatives from CCAMLR Members and is coordinated through an e-group. A key role of the DMG is to determine what the broader scientific community want from CCAMLR, including what the broader community think CCAMLR has, can they be served as raw data or derived data products and are they needed in real time?

There are data that are collected as part of research conducted in CCAMLR fisheries that are not directly housed at CCAMLR (e.g., otolith data, tissue samples, bathymetry) and it is not always clear how these are managed at the national level. Could SOOS potentially provide a way to coordinate and provide (serve) these 'orphaned' datasets, and provide metadata records?

There does need to be awareness to what data CCAMLR can make publicly available. Understanding the sensitivities around various data needs to start with discussion with data providers.

## **Southern Ocean Data Management**

Anton Van de Putte (SC Representative for Belgium, CCAMLR DMG member, chief officer for Standing Committee on Antarctic Data Management, and member of SOOS Data Management Sub Committee) described the role of CCAMLR in the context of Southern Ocean data management (rather than in the context of fisheries management). He noted that the Antarctic Treaty requires that scientific data should accord to the FAIR principles such that data should be:

- Findable
- Accessible
- Interoperable
- Re-useable

In applying these principles, the workshop participants agreed that it is important to have clarity on the definitions of 'data' and 'metadata' as there is currently much confusion caused by these terms being used in different ways. Generally speaking, the broader scientific community expects metadata to be discoverable and accessible, even when there are restrictions on accessing the data itself.

## **SOOS Data and Coordination Tools**

Pip Bricher (SOOS Data Officer) outlined SOOS data tools that reflect the data policy of SOOS in respect of the obligations for:

- Data owners (Provide comprehensive metadata records and make data accessible)
- Data centres (Make data discoverable, secure, accessible, and traceable)
- Data users (Cite others' data appropriately)

The two key data products of SOOS are SOOSmap and DueSouth. SOOS Map provides an access interface for a data for a wide variety of data sources that can be searched by various parameters (area, time, platform type, or data network) from long-term, broad-scale projects rather than single-year, small scale data collection. Importantly, it provides direct access to data itself and not just metadata (though there are a few exceptions to this rule). A key example of the SOOS data effort is the comprehensive network of moorings that has been developed and delivered through SOOSmap. This layer of over 600 moorings indicates where moorings have been deployed, what data was collected and where the data is available from.

DueSouth is a Database of Upcoming Expeditions to the Southern Ocean. It is a community sourced tool that provides information on which ships are going to which area and when, and which scientific projects will be occurring on board. This allows people to assess opportunities for collaboration and additional data collection. This promotes communication directly with those responsible for the expeditions/projects to improve collaboration and enhance the value of expensive Southern Ocean research.

There is good potential for CCAMLR fishing trips to be included in DueSouth, with some technical refinement of the database to allow users to provide polygons of CCAMLR Areas, Subareas, and Divisions, where port-to-port track lines cannot be provided. Where DueSouth asks for contact details for voyage leadership, the CCAMLR Secretariat may be able to provide contact details for CCAMLR Members to assist SOOS in initiating further discussion/communication between DueSouth users and individual Members.

## **General discussion**

The following points were raised in general discussion arising from the individual presentations.

- 1) There is an assumption that countries engaged in Antarctic research will have their own Antarctic Data Centres. It would be useful to find out which CCAMLR Member nations have a dedicated Antarctic Data Centres and what role they play with respect to CCAMLR data.

*Action: CCAMLR Secretariat to communicate with Members to provide an inventory of Antarctic Data Centres and the available datasets and their accessibility.*

- 2) CEMP data is a major source of ecological data from the Antarctic that is supplied voluntarily by Members and held in the CCAMLR Secretariat. However, the Secretariat does not have the mandate to package this data up and circulate it.

*Action: Explore options for derived data products from CEMP that could be distributed.*

- 3) How could different CCAMLR data sources be made available through metadata records in SOOSmap to identify what data exist with links to request access to the data?

*Action: Develop a metadata exchange process so that available data are better exposed and findable. As part of this, it will be important to ensure that data users appropriately cite and acknowledge the work of those who collected the data.*

- 4) Fishery research proposals on toothfish being developed by CCAMLR Members could benefit if Research Blocks were available on SOOSmap, so that Members could search and see what data is already available within those areas.

*Action: Promote use of SOOSmap in the development of research proposals at WG-SAM*

## **Outcomes**

There is a strong desire to continue to improve the respective understanding between SOOS and CCAMLR and to improve linkages and communication. The workshop outlined the following three separate papers to further this improved understanding and communications.

### *SOOS - CCAMLR introduction paper*

Introduce the respective Scientific Committee representatives from CCAMLR Members and SOOS representatives. Promote the use of SOOS Map in exploratory fisheries research proposal to identify existing environmental /oceanographic data, also highlight SOOS Map and Mooring metadata as well as fishery updates on the CCAMLR website. [Keith and Louise]

### *An introduction to SOOS Regional Working Groups*

Submission of an Information Paper to CCAMLR SC to describe the SOOS Regional Working Groups to CCAMLR describing who is involved, areas of specific interest, where they overlap with CCAMLR activities. The SOOS Regional Working Groups provide a mechanism for engagement with members of CCAMLR at a spatial scale relevant to CCAMLR fisheries.

### *Data Sharing between CCAMLR and SOOS*

Identify specific opportunities for improved data links and interoperability between CCAMLR data and SOOS with description of how these links be used to promote uptake and improve interaction. To be prepared by Tim & Anton who are reciprocal members of SOOS/CCAMLR data management committees.

## **Participants:**

- Louise Newman
- Andrew Constable
- Pip Bricher
- Yuhua Pei
- James Cusick
- Dave Connell
- Keith Reid
- Dirk Welsford
- Tim Jones
- Christian Reiss
- Malgorzata Korczak-Abshire
- Anton van de Putte
- Mercedes Santos
- Elanor Miller