Data Management and Sharing Protocol for the Joint Program of Scientific Research and Monitoring of the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean

Central Arctic Ocean Fisheries Agreement (CAOFA)
Scientific Coordinating Group (SCG)

In accordance with Central Arctic Ocean Fisheries Agreement (CAOFA) and the *Recommendation of PSCG to Establish a PSCG Data Sharing Protocol Working Group (DSP-WG)* approved by the COP on May 31, 2022, the Data Management and Sharing Protocol shall be part of the Joint Program of Scientific Research and Monitoring (JPSRM), which builds upon the draft plan from the 5th FiSCAO meeting and was informed by the discussions during the PSCG meetings in 2022. This hybrid framework of Data Management and Sharing Protocol consists of a centralized data management system collected specifically for the JPSRM and a distributed data management system for relevant accessible data not directly associated with the JPSRM, also taking into account other international data management policies and sharing protocols and public data portals/repositories.

Objective

1. For the purpose of the CAOFA, this Data Management and Sharing Protocol shall serve as part of the JPSRM to promote data sharing efficiency towards the achievement of the JPSRM aim.

Data management

2. This Data Management and Sharing Protocol adopts a hybrid framework for data management to include the following:
   a. Data collected under the JPSRM are managed in a centralized data archive.
   b. Data collected by national scientific programs, and from sources external to the SCG and the Agreement that are relevant to the review and implementation of CAOFA are recorded and maintained through distributed data archives.

3. The SCG is responsible for the overall coordination of data management and data sharing. Specific responsibilities include:
   a. Identify roles and responsibilities of a Data Management Secretariat who will be responsible to store the JPSRM data managed in the centralized data archive and coordinate metadata of the original data in the distributed data archives.
   b. Identify the content and method of collection and sharing of Indigenous Knowledge and local knowledge.

c. Adopt and when necessary develop new standards and formats for data collection and management in accordance with international standards and following the internationally mandated principles of FAIR, CARE, TRUST, and EEE.[1]
d. Consider data submission time for different JPSRM datasets.
e. Consider potential embargo times for public accessibility of the different JPSRM datasets.

4. Establish a Data Management Secretariat to coordinate the collection, manage, and share the data managed through the centralized data archive.[2] Specific responsibilities of the Secretariat include:
   a. Inform all potential contributors of data to the JPSRM of the data management process under the Agreement and ensure that data will be made available swiftly and reliably, following the principles of the JPSRM data management plan.
   b. Develop and maintain the data management and sharing system.
   c. Ensure that JPSRM data and metadata are complete prior to acceptance.[3]
   d. Facilitate access by Parties of the JPSRM data for the purpose of implementation of the CAOFA.
   e. Facilitate inclusion and sharing of Record metadata for other scientific data relevant to the JPSRM from distributed data archive where appropriate.

5. The centralized data archive shall include the following:
   a. Data collected under the JPSRM.
   b. Indigenous Knowledge and local knowledge collected under the JPSRM.
   b. Metadata collected by national scientific programs.
   c. Metadata from relevant sources external to the SCG and the Agreement.
   d. Citation list of publications related to JPSRM data, Indigenous Knowledge, or local knowledge.

6. The distributed data archives may include the following information relevant to the implementation of CAOFA (harmonized text with 2b):
   a. Other scientific data collected by other national scientific programs and other sources external to the SCG.
   b. Historical data.
   c. Environmental or ecological data.
   d. Indigenous Knowledge and local knowledge as provided by its respective knowledge holders.

7. The data collected under the JPSRM (JPSRM data) and managed by the centralized data archive shall include:

[1] Added by EU.
[2] Comment from EU: We may consider writing instead: overseeing all data relevant to the JPSRM, including those from external sources.
[3] Comment from Canada: Are we referring to data validation / cleaning / remediation? If so, we would need to discuss how this "quality" will be checked? Further, what if the data transmitted are in such a state that cleaning it/ensuring quality places considerable workload on the individual handling it? Can the individual ask the Party to resend the dataset with corrections?

a. Raw data: the data recorded by observation equipment with minimal processing to remove extraneous values recorded between sampling events, and essential calibrations.
b. Quality controlled data: the data after quality control that can be directly used for mapping and ecosystem evaluation.
c. Data products: the data generated from mapping and evaluation of fish stocks and the ecosystem.

8. The JPSRM data should be submitted in the following time:
   a. The metadata will be submitted within one month after the completion of the data collection.
   b. The raw data will be submitted within 3 months after the completion of the data collection.
   c. The quality controlled data will be submitted within 1 year after the completion of the data collection with consideration for data quality control requirements consistent with section 3d.
   d. Metadata collected by national scientific programs data may be submitted to the centralized data archive within 1 year after the completion of the data collection.

9. The metadata for the centralized data archive will adopt the WMO Core Profile of the ISO 19115: Geographic Information Metadata standard.[4]

10. The JPSRM data shall be quality controlled by the original data observer or the owner of the observation instrument to ensure the quality of the data being processed.

11. Data submitted to the centralized data archive shall be quality checked by the Data Management Secretariat prior to acceptance into the archive.

Data sharing[5]

12. The JPSRM data shall be exchanged among all Parties in a free and unrestricted manner for the purpose of implementing the CAOFA.

13. Data collected from national programs, Indigenous Knowledge,[6] local knowledge, and international organizations shall respect national and international data policies.

14. The maximum duration prior to public sharing of JPSRM data would not exceed two years after the completion of the data collection (e.g., project or cruise). The implementation plan will address the level of data made publicly available.[7]

[4] Question from EU: Are there more metadata standards to consider?
[5] One example for a data sharing agreement is OBIS: https://manual.obis.org/policy
[6] Users are advised to consult the Circumpolar Inuit Protocols for the Equitable and Ethical Engagement: https://hh30e7.p3cdn1.secureserver.net/wp-content/uploads/EEE-Protocols-LR-WEB.pdf
[7] Suggestion of EU: Consider adding the reference to para 3(d)

15. All Parties shall have equal rights and obligations regarding the management and sharing of data generated by the JPSRM.

16. The JPSRM data managed by the centralized data archive before public sharing will be password protected and accessible only by authorized Party individuals.

17. For the purposes of implementing the CAOFA before public sharing, users shall directly apply to the Data Management Secretariat for access to JPSRM data, and the Secretariat shall directly provide the data upon confirmation.

18. For JPSRM scientific data intended for peer review publication, users shall apply directly to the data provider for review and final decision as to whether to use and publish the data.

19. For JPSRM Indigenous Knowledge intended for publication or public dissemination, acknowledging the unique nature of interpretation of Indigenous Knowledge, users shall apply directly to the knowledge provider for review and final decision as to whether to use and publish the knowledge.

20. For scientific data, Indigenous Knowledge or local knowledge collected under the JPSRM users shall apply directly to the data provider for possible use of the data in publication or any form of public dissemination not directly related to CAOFA, and the data provider has the final decision whether the data can be used and published. This practice is encouraged and should be followed after the two year data embargo (point 14) has ended.

21. The users shall apply directly to the data provider for access to data included in the distributed data archive. The data provider shall decide whether to share and provide data.

22. The JPSRM data will include data Digital Object Identifier (DOI) standards supported by international coordination groups such as the Research Data Alliance (RDA). The Data Management Secretariat shall entrust an existing organization to help data providers develop DOIs if their institutional or national data archive cannot provide the service.

23. When using the JPSRM data, the source of the data should be cited in the report or paper by means of DOI or in the acknowledgments department. If a published report or article uses data from different sources, specify the source of all the data.

24. A report or paper published using the JPSRM data, if the data provider or survey monitor contributed to the report or paper, the author of the paper or report should contact the data provider about whether to list the data provider or survey as a co-author.

25. The centralized data archive will develop a citation list of publications from the submitted citations. Whenever possible, the archive will use DOIs to link to a publication to its data source(s). The shared archive will make the citation list public via the archive website to

provide a continuous record of applications and analyses of JPSRM data and JPSRM scientific achievements.

Terminology

26. *Centralized data management system* means that the data collected under the JPSRM are stored at a single physical location.

27. *Distributed data management system* means that the data collected by national program are stored by different programs or Parties.

28. *Metadata* are data that provides information about other data, but not the content of the data, such as the text of a message or the image of itself.

29. *Data provider* is the original entity that collected the information or provider of the information to the JPSRM archive.

30. *JPSRM data* are the scientific data, Indigenous Knowledge, or local knowledge collected under the JPSRM.