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Data Management Policy

Final Draft: 31 March 2021; Revised: 19 July 2021

Contents:

1. Introduction

ArcticNet is a Network of Centres of Excellence of Canada (NCE) that brings together scientists and managers in the natural, human health and social sciences with their partners in Inuit organizations, northern communities, federal and provincial government agencies, and the private sector to study the impacts of environmental change in the Arctic regions in Canada. The central objective of ArcticNet is to contribute to the development and dissemination of knowledge needed to formulate adaptation strategies and national policies to help Canadians face the impacts and opportunities of the transformation of the Arctic.

The wealth of knowledge and data generated by ArcticNet research must be managed, to ensure and maximize the exchange and accessibility of relevant data, and to leave a lasting legacy. The ArcticNet Data Management Committee (ADMC) was formed by the Research Management Committee (RMC) on 1 March 2006, and was tasked with developing the ArcticNet Data Management Plan that included the ArcticNet Data Policy (ADP), first published 18 January 2008 and updated 10 January 2011. ArcticNet commissioned a fulsome update of the ADP in November 2020, resulting in the ArcticNet Data Management Policy (ADMP) presented here.

The function of this document is to provide a network-wide data management policy that outlines the objectives, principles, and guidelines for the management, retention, use, and dissemination of data generated and collected by ArcticNet-funded projects. The ADMP was created based on current best practices in research data management and in consultation with the *Tri-Agency Statement of Principles on Digital Data Management*[1] and *Research Data Management Policy.*[2]

2. Objectives

The central goal of the ADMP is to facilitate exchange of information about the Arctic regions in Canada among researchers and other user groups, including northern communities and international programs. The specific objectives are to:
- Implement data management best practices that include the highest professional and domain standards, nationally and internationally, to support research excellence in ArcticNet-funded projects;
- Maximize the value of data collected and generated through ArcticNet-funded research by making results as accessible as possible to advance knowledge, avoid duplication, and encourage reuse, for the benefit of society and research communities;
- Enhance the quality and impact of ArcticNet-funded research through encouraging increased FAIRness of data - that is, data which is Findable, Accessible, Interoperable and Reusable[3];

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[1] Government of Canada. (2015). *Tri-Agency Statement of Principles on Digital Data Management.* http://www.science.gc.ca/eic/site/063.nsf/eng/h_83F7624E.html.
[2] Government of Canada (2021). *Tri-Agency Research Data Management Policy.* http://www.science.gc.ca/eic/site/063.nsf/eng/h_97610.html.
[3] Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. (2016). *The FAIR Guiding Principles for Scientific Data Management and Stewardship. Scientific Data, 3*(160018). https://doi.org/10.1038/sdata.2016.18.

- Encourage scientific and interdisciplinary collaboration among ArcticNet-funded researchers, and the general research community, through clear mechanisms and mandates for responsible data sharing and recognition of the data providers;
- Encourage responsible data sharing by providing guidance to ArcticNet researchers working with sensitive data; and
- Recognize and actively support First Nations, Inuit, and Métis Nation data sovereignty and governance through adherence to community-generated research requirements, practices, and principles, such as the pan-Indigenous CARE Principles[4] which ensure Collective Benefit, Authority to Control, Responsibility, and Ethics are thoroughly considered in research involving Indigenous peoples, lands, governments, communities, or organizations (further community- and region-specific, distinctions-based guidance, such as First Nations Information Governance Centre Principles of OCAP[®5] and the Inuit Tapiriit Kanatami (ITK) *National Inuit Strategy on Research*[6], are detailed in *Section 10.2 Indigenous Research*).

3. Principles

The overall principle guiding the ADMP is a view of publicly-funded research data as a public good that should be as open as possible to facilitate reuse, while also respecting privacy, security, ethical considerations and appropriate intellectual property protection. The following sub-principles further guide the responsible, effective and ethical management of ArcticNet data:

- Ensure ArcticNet data and metadata are made publicly available as quickly as possible, though restrictions may be placed on access where necessary to allow researchers to benefit from their efforts, to respect confidentiality, privacy and sensitivity requirements, cultural protocols and requirements, and researcher rights to publication;
- Recognize that human health, social science and humanities studies, as well as research involving and data collected from or about Indigenous peoples, will have specialised data management and privacy considerations;
- Ensure ArcticNet data are citable, publishable, and acknowledged as valuable contributions to knowledge dissemination;
- Ensure the preservation of ArcticNet data (when appropriate);
- Ensure that there are strong linkages to Canadian and international Arctic data management processes;
- Use existing systems and infrastructure, wherever appropriate (i.e., ensure connectivity and interoperability of data, while avoiding unnecessary duplication of systems) and observe and address any gaps or areas of needs; and
- Support researchers in their efforts to establish and implement best practices for data management that are consistent with ethical, legal, cultural, and commercial

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[4] Global Indigenous Data Alliance (GIDA). (2019). *CARE Principles for Indigenous Data Governance*. https://www.gida-global.org/care.

[5] First Nations Information Governance Centre (FNIGC). (2020). *The First Nations Principles of OCAP®.* https://fnigc.ca/ocap-training/.

[6] Inuit Tapiriit Kanatami (ITK). (2018). *National Inuit Strategy on Research (NISR)*. https://www.itk.ca/wp-content/uploads/2020/10/ITK-National-Inuit-Strategy-on-Research.pdf.

obligations, as well as other funder requirements, through outreach, training, resources, and guidance.

4. Application

The ADMP applies to all data that is derived from research that is funded entirely or in part by ArcticNet. In situations where research is co-funded and data management policies differ between funders, ArcticNet reserves the right to consider how the ADMP is applied. This document will be reviewed periodically by ArcticNet and its stakeholders to ensure the principles and guidelines herein remain relevant. ArcticNet retains authority to revise this document as deemed necessary. In the event of revisions, consultations will be made with affected stakeholders.

5. Definitions

ArcticNet Data (hereafter, "data") are any and all data that have been collected and/or generated by ArcticNet researchers and collaborators in the performance of research initiatives funded by ArcticNet.

Data may take many forms, and depending on discipline and culture, can mean different things. This includes but is not limited to: survey results, written observations, software, interview transcripts, photographs, automatic measurements, hand-drawn maps, stories, video footage, audio recordings, and physical samples. Thus, the ADMP defines data as incorporating all ways of knowing: Western/academic, Indigenous, and local ways of knowing.[7]

ArcticNet Metadata (hereafter, "metadata") is the documentation providing information about the data, specifically the *what, where, when, by whom* it was collected, its current location, and any access information.

ArcticNet Researchers (hereafter, "researchers") are all Network Investigators (NIs) and highly qualified personnel (HQP; including students, research assistants [RAs], Indigenous researchers and knowledge holders, technicians, and postdocs) working on projects funded in whole or in part by ArcticNet.

Indigenous and Local Knowledge, encompassing Indigenous Knowledge (IK), Traditional and Local Knowledge (TLK), and Local Knowledge (LK), refers to the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings. For rural and Indigenous peoples, local knowledge informs decision-making about fundamental aspects of day-to-day life.

This knowledge is integral to a cultural complex that also encompasses language, systems of classification, resource use practices, social interactions, ritual and spirituality. These

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[7] Government of Canada. (2017). *Data Management Principles and Guidelines for Polar Research and Monitoring in Canada.* https://www.canada.ca/en/polar-knowledge/publications/data-management- principles-and-guidelines-2017-may.html.

unique ways of knowing are important facets of the world's cultural diversity, and provide a foundation for locally-appropriate sustainable development.[8]

6. Data Management Plans

In accordance with international best practices and requirements from the Tri-Agency federal funding bodies, ArcticNet requires all projects to complete and maintain a data management plan (DMP) that describes how the data will be managed throughout the lifecycle of the project, including collection, documentation and metadata, storage and backup, long-term preservation, sharing and reuse, responsibilities and resources, and ethics and legal compliance. DMPs assist researchers in determining the costs, benefits and challenges of managing data, and should be consulted and updated throughout the research project. Often the details included in a DMP may be reused for writing research proposals, funding applications, abstracts, metadata, and other related reporting throughout a project.

The content and length of DMPs will depend on the nature of the project, but generally they describe the following (adopted from the *Tri-Agency Research Data Management Policy*[9]):
- how data will be collected, documented, formatted, protected and preserved;
- how existing datasets will be used and what new data will be created over the course of the research project;
- whether and how data will be shared;
- where data will be deposited;
- how the data provider will be recognized (i.e., the citation and/or attribution models to be used);
- who is responsible for managing the project's data as well as other roles and responsibilities; and
- ethical, legal and commercial constraints the data are subject to.

These aspects are discussed in the following sections of this policy, and Appendix A provides further guidelines for writing a DMP. Researchers may also consider the use of a standardized tool, such as the Portage Network's *DMP Assistant*,[10] to assist in developing DMPs.

7. Data Quality and Metadata Standards

ArcticNet, in collaboration with the Canadian and international Arctic data management community, seeks to promote the highest standards in the stewardship of data and metadata resources resulting from its research activities. ArcticNet funds research across a variety of disciplines, including natural, human health, and social sciences, and as such, data covered by the ADMP are highly diverse in terms of data type, format, size, and management

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[8] United Nations Educational, Scientific and Cultural Organization (UNESCO). (2017). *Local and Indigenous Knowledge Systems*. http://www.unesco.org/new/en/natural-sciences/priority-areas/links/related-information/what-is-local-and-indigenous-knowledge

[9] Government of Canada (2021). *Tri-Agency Research Data Management Policy*. http://www.science.gc.ca/eic/site/063.nsf/eng/h_97610.html.

[10] https://assistant.portagenetwork.ca/.

requirements. Researchers must therefore adhere to the data management best practices and generally accepted metadata standards used by their discipline or field.

Metadata standards are diverse and will vary across disciplines, but when possible, common and generally accepted disciplinary standards are preferred (such as ISO 19115[11], FGDC[12], or Dublin Core[13]). Metadata should include, but not be limited to, records related to the collection, storage, and retrieval of data, as well as steps taken to process, analyze, and visualize data. At minimum, data must include clear supporting documentation and metadata sufficient for reuse and replication of results by other researchers.[14] Researchers may consult existing resources and guidance on achieving more detailed metadata and documentation, and additional support may be offered by repositories.[15]

Standardized metadata records consist of a defined set of fields that generally include, at minimum, who created the data and when, information on how the data were created, their quality, accuracy and precision, as well as other features necessary to enable understanding and reuse. Metadata records should be submitted to the data repository of choice as early as possible to indicate the presence of the data and project and may be updated regularly as the project progresses. Data that are described with rich metadata and documentation are inherently more findable, accessible, interoperable and reusable, and thus in alignment with the FAIR Guiding Principles.[16]

8. Data Storage, Retention and Preservation

Researchers are not expected to deposit their data within a centralized ArcticNet repository. NCEs are not structured for the long-term preservation of data. Individual projects are responsible for the identification of appropriate long-term repositories.[17] The choice of repository will vary across disciplines and data types, ranging from national or international, to institutional or discipline-specific repositories, however preference should be given to certified repositories that support open access where possible (such as Polar Data Catalogue[18], Nordicana D[19], Global Biodiversity Information Facility [GBIF],[20] Ocean Biodiversity Information System [OBIS],[21] or other domain-specific repositories supporting

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[11] https://www.iso.org/standard/53798.html.

[12] https://www.fgdc.gov/metadata/geospatial-metadata-standards.

[13] http://dublincore.org/specifications/dublin-core/.

[14] Please note that this requirement does not apply retroactively to existing metadata records related to ArcticNet data.

[15] For further guidance, consult the UK Data Service (https://www.ukdataservice.ac.uk/ manage-data/document/metadata.aspx) or Cornell University (https://data.research.cornell.edu/ content/writing-metadata).

[16] Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. (2016). *The FAIR Guiding Principles for Scientific Data Management and Stewardship. Scientific Data, 3*(160018). https://doi.org/10.1038/sdata.2016.18.

[17] For further guidance, consult the Registry of Research Data Repositories (re3data; https://www.re3data.org/) or the Portage Network Guide to *Repository Options in Canada* (2019; https://doi.org/10.5281/zenodo.3966349).

[18] https://www.polardata.ca/.

[19] http://www.cen.ulaval.ca/nordicanad/.

[20] https://www.gbif.org/

[21] https://obis.org/

long-term preservation, digital object identifier [DOI] attribution and open access). Researchers are required to deposit into a recognized digital repository all data and metadata that directly support research results. The repository will ensure safe storage, preservation, and curation of data.

Plans for data storage (short-term or active), retention and preservation (long-term) should be considered during the early stages of project planning and be implemented through all stages of the project lifecycle. Measures may be taken to ensure data is preservation-ready, such as migration to preservation-friendly, non-proprietary file formats.[22] Data should be retained for as long as they are of continuing value to the stakeholder community, and as long as specified by the research funder, legislative, and other regulatory requirements. In many instances, stakeholders will resolve to retain research data for a period that exceeds the minimum requirement.[23]

To determine whether data should be preserved or archived, researchers should consider the data needed to validate research findings and results, and support replication and reuse, as well as the potential benefits that preserving and sharing the data long-term will have for their own or other fields of research, and for society at large. Researchers should also consider whether any ethical, legal, commercial, or cultural obligations prohibit sharing or preserving the data, and whether any de-identification or restricted access is required. Decisions and rationale for preservation and retention should be defined in the DMP.[24]

9. Data Access and Sharing

In accordance with the principles of this document, and with national and international best practices, ArcticNet data should be easily discoverable or findable and ultimately accessible, in addition to interoperable and reusable. While interoperability and reusability are enabled in part by use of rich metadata and domain-relevant community standards, discoverability or findability is enabled by ensuring metadata are published in an appropriate international, national, institutional, or subject-specific catalogue during the early stages of a project's life cycle, or listed in a central, publicly accessible index. Accessibility is enabled by making the data publicly available through an international, national, institutional, or subject-specific repository, or by documenting in an appropriate index a mechanism for access.

The use of persistent identifiers (PIDs), such as digital object identifiers (DOIs), also supports discoverability or findability and accessibility through uniquely identifying, and providing long-lasting reference to, data publications, research objects, researchers, and organizations.[25] As such, assigning globally unique and persistent identifiers to data and

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[22] National Archives. (n.d.). *Digital File Types.* https://www.archives.gov/preservation/products/definitions/filetypes.html.

[23] Government of Canada. (2017). *Data Management Principles and Guidelines for Polar Research and Monitoring in Canada.* https://www.canada.ca/en/polar-knowledge/publications/data-management- principles-and-guidelines-2017-may.html.

[24] Government of Canada. (2015). *Tri-Agency Statement of Principles on Digital Data Management.* http://www.science.gc.ca/eic/site/063.nsf/eng/h_83F7624E.html.

[25] Leggott, M., Shearer, K., Ridsdale, C.I, Barsky, E., & Baker, D. (2016). *Unique Identifiers: Current Landscape and Future Trends.* http://doi.org/10.5281/zenodo.557106.

metadata further enhances FAIRness and maximises value and impact of ArcticNet research.[26]

Researchers have the right to benefit from the data they collect and generate, and as such all data users must provide appropriate citation, acknowledgement, or other attribution (when applicable, adhering to the request of the data originator) in any publications, presentations, or products arising from the use of the data.[27] In instances when formal citations are not possible, such as with some medical and social science data, the use of ethical policies for data collection and data use are recommended, such as those outlined in Article 8(j) of the 1992 United Nations Convention on Biological Diversity.[28]

10. Special Considerations for Data Access and Sharing

To support open access practices that maximize the benefit of proper data stewardship, researchers are encouraged to make data and metadata available fully, freely, and openly, with minimal delay. While data should be as open as possible, where ethical and legal considerations are present, it should also be as closed as necessary. The following exceptions to open access and sharing apply (adopted from the *Data Management Principles for Polar Research and Monitoring in Canada*[29]):

- Where human subjects are involved or in situations where small sample sizes may compromise anonymity, confidentiality may be protected as appropriate and guided by the principles of informed consent and the legal rights of affected individuals;
- Where Indigenous research and data is concerned, involving Indigenous and Local Knowledge, the rights of the knowledge holders shall not be compromised;
- Where data release may cause harm or compromise security or safety, specific aspects of the data may need to be protected (for example, locations of nests of endangered birds or locations of sacred sites); and
- Where pre-existing data are subject to access restrictions, access to data or information using this pre-existing data may be partially or completely restricted.

Any data access restrictions must be described and justified in a DMP based on these ethical, rather than proprietary, principles of data sharing. In cases where open public access may impede the researcher's right to benefit from the data they collect and generate, or where special considerations regarding data are present, such as the exceptions described above or further described in the following subsections, data may be stored privately for a time period of limited duration to allow for publication (i.e., an embargo), or may be stored privately indefinitely with access granted on an individual and limited basis.

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[26] Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. (2016). *The FAIR Guiding Principles for Scientific Data Management and Stewardship. Scientific Data, 3*(160018). https://doi.org/10.1038/sdata.2016.18.

[27] Marine Environmental Observation Prediction & Response Network (MEOPAR). (2017). *Data Management Policy.* https://meopar.ca/wp-content/uploads/2021/01/Data_Management_Policy_ - _September_2017.pdf.

[28] Convention on Biological Diversity. (1992). Article 8(j): *Traditional Knowledge, Innovations and Practices.* https://www.cbd.int/traditional/.

[29] Government of Canada. (2017). *Data Management Principles and Guidelines for Polar Research and Monitoring in Canada.* https://www.canada.ca/en/polar-knowledge/publications/data-management- principles-and-guidelines-2017-may.html.

Access requests should identify the intended use of the data, how it will be handled, and how it will be cited, acknowledged or otherwise attributed. Such requests must be responded to and must not be unreasonably denied.[30]

10.1 Sensitive Data

As indicated by the exceptions listed in the previous section, certain types of data (e.g., data containing personally identifiable information [PII], Indigenous and Local Knowledge, or data related to commercially valuable or endangered species) may be considered sensitive, with the release of such data resulting in potential harms. The rights and privacy of individuals must be protected at all times. Any data made publicly available must therefore be free of PII and other variables that could lead to the deductive disclosure of the identity of individual subjects.[31] Any research and its corresponding data involving human subjects must conform to guidelines outlined in the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2),*[32] and could involve the use of standard anonymization and access restriction procedures, and various institutional ethics review processes.[33]

10.2 Indigenous Research

Indigenous data, or those collected by governments and institutions about Indigenous Peoples and their languages, knowledge, practices, technologies, natural resources, and territories, are essential for Indigenous Peoples to exercise their individual and collective rights to self-determination and self-governance. Indigenous data sovereignty reinforces the rights to engage in decision-making in accordance with Indigenous values and collective interests. Research involving Indigenous data should adhere to community-generated research requirements, practices, and principles, such as the pan-Indigenous CARE Principles for Indigenous Data Governance, ensuring Collective Benefit, Authority to Control, Responsibility, and Ethics are thoroughly considered in collaboration with the Indigenous community involved in the research at hand.[34]

Supporting Indigenous data sovereignty and governance inherently includes support for First Nations, Inuit, and Métis Nation researchers, further brokering access, ownership and control over their research and their data. This support extends to building capacity for community-based data management practices, systems, and infrastructure where needed. First Nations, Inuit and the Métis Nation are best positioned to determine what information should be collected, how this information should be stored, analysed, monitored, used,

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[30] Marine Environmental Observation Prediction & Response Network (MEOPAR). (2017). *Data Management Policy.* https://meopar.ca/wp-content/uploads/2021/01/Data_Management_Policy_ - _September_2017.pdf.

[31] Shearer, K. (2015). *Comprehensive Brief on Research Data Management Policies.* https://portagenetwork.ca/wp-content/uploads/2016/03/Comprehensive-Brief-on-Research-Data-Management-Policies-2015.pdf.

[32] Government of Canada. (2018). *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans – TCPS 2.* https://ethics.gc.ca/eng/policy-politique_tcps2-eptc2_2018.html.

[33] For further guidance, consult the Portage Network's *Sensitive Data Toolkit for Researchers Part 2: Human Participant Research Data Risk Matrix* (https://doi.org/10.5281/zenodo.4088954).

[34] GIDA. (2019). *CARE Principles for Indigenous Data Governance.* https://www.gida-global.org/care.

shared, and preserved in ways that maximize benefits to communities while minimizing harm.[35]

For non-Indigenous researchers, Indigenous research must begin first and foremost with appropriate engagement of Indigenous peoples, communities or organizations throughout the entire data lifecycle, formal attribution of contributed knowledge, establishment of informed consent for use of knowledge and derived products, and the maintenance of contributor control of data.[36] This kind of engagement and consultation must occur first before any research is formally proposed, and, like the building of any meaningful relationship, will take time.

In accordance with Article 8(j) of the Convention on Biological Diversity (1992) concerning Traditional knowledge, innovations and practices,[37] researchers shall respect, preserve and maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity. In the context of Canada specifically, Chapter 9 of the *TCPS 2, Research Involving the First Nations, Inuit and Métis Peoples of Canada*[38] defines Indigenous Research as referring to primary research including:

- research conducted on First Nations, Inuit or Métis Nation lands in Canada and Indigenous lands worldwide;
- recruitment criteria that include Indigenous identity as a factor for the entire study or for a subgroup in the study;
- research that seeks input from participants regarding a community's cultural heritage, artefacts, knowledge or unique characteristics;
- research in which Indigenous identity or membership in an Indigenous community is used as a variable for the purpose of analysis of the research data or in the creation of survey tools; and
- interpretation of research results that will refer to Indigenous Peoples, lands, language, history and/or culture.

While the CARE Principles and United Nations conventions, such as the Convention on Biological Diversity and the Declaration on the Rights of Indigenous Peoples (UNDRIP)[39], provide global pan-Indigenous frameworks, and Chapter 9 of the *TCPS 2* provides national Canadian guidance, the diversity and distinctions between First Nations, Inuit and the Métis Nation in Canada must be recognized and respected. Additional resources and guidance must be consulted based on the specific Indigenous Peoples, community, or organization the research concerns or will involve. For example, the First Nations Information Governance Centre (FNIGC) Principles of OCAP®, standing for Ownership, Control, Access,

[35] Inuit Tapiriit Kanatami (ITK). (2018). *National Inuit Strategy on Research (NISR)*. https://www.itk.ca/wp-content/uploads/2020/10/ITK-National-Inuit-Strategy-on-Research.pdf. =

[36] International Arctic Science Committee (IASC). (2013). *The State of Principles and Practices for Arctic Data Management*. https://iasc.info/images/data/IASC_data_statement.pdf.

[37] Convention on Biological Diversity. (1992). Article 8(j): *Traditional Knowledge, Innovations and Practices*. https://www.cbd.int/traditional/.

[38] Government of Canada. (2018). *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans – TCPS 2*. https://ethics.gc.ca/eng/policy-politique_tcps2-eptc2_2018.html.

[39] United Nations (UN). (2007). *United Nations Declaration on the Rights of Indigenous Peoples*. https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf.

and Possession, clearly establish how First Nations data should be collected, protected, used, or shared.[40] The Inuit Tapiriit Kanatami (ITK) *National Inuit Strategy on Research (NISR)* similarly offers specific context and guidance on conducting research in Inuit Nunangat, identifying priority areas for advancing Inuit governance in research in support of self-determination.[41]

Required institutional ethics review processes will guide data management in these contexts, however Indigenous Peoples, governments, communities or organizations may have specific practices or requirements in place, and it is the responsibility of researchers to familiarize themselves with and adhere to these. These requirements may include storing and preserving data within the community, in which case researchers must opt for community-based repositories where possible, or writing data management, storage and long-term preservation capacity into funding applications to accommodate. Ongoing community consultation, engagement, and adherence to requirements builds respectful and meaningful partnerships that enhance the efficacy, impact, and usefulness of research for all involved or those it concerns.

10.3 Intellectual Property

Intellectual Property refers to all materials, concepts, know-how, formulae, inventions, improvements, industrial designs, processes, patterns, machines, manufactures, compositions of matter, compilations of information, patents and patent applications, copyrights, trade secrets, technology, technical information, software, prototypes and specifications, including any rights to apply for protections under statutory proceedings available for those purposes, provided they are capable of protection at law. Ownership shall be determined by the applicable Canadian Law. Data made available to researchers by third parties is not subject to data sharing requirements. Researchers shall not enter agreements with a third party that would restrict the use or sharing of data collected or generated by ArcticNet researchers. Data pertaining to Indigenous knowledge and data may be subject to additional sharing restrictions (see Section 10.2).

10.4 Ownership and Confidentiality

The researchers shall ensure that the appropriate agreements concerning the disclosure of Confidential Information and the transfer of biological and other materials are entered into prior to any disclosure of Confidential Information or transfer of material. Where such information is disclosed or material is transferred, it shall be in accordance with the form of the Confidentiality Agreement or the Material Transfer Agreement available within the NCE Network Agreement.

The data (or "Content") is provided by the researchers. ArcticNet does not warrant that such Content does not infringe the rights of any other person or entity. Furthermore, the researchers acknowledge that information or material which they provide electronically

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[40] First Nations Information Governance Centre (FNIGC). (2020). *The First Nations Principles of OCAP®.* https://fnigc.ca/ocap-training/.
[41] Inuit Tapiriit Kanatami (ITK). (2018). *National Inuit Strategy on Research (NISR).* https://www.itk.ca/wp-content/uploads/2020/10/ITK-National-Inuit-Strategy-on-Research.pdf.

through their access to or usage of repositories or databases is not confidential or proprietary, except as may be required under applicable law, and acknowledge that unprotected e-mail communication over the Internet is subject to possible interception, alteration or loss. Trademarks and logos (collectively, "Marks") displayed on these repositories or databases are registered or unregistered Marks of the respective participating research programs, and are the property of their respective owner, and may not be used without written permission of the owner of such Marks.

10.5 Exclusion of Warranties

ArcticNet makes no representation or warranty regarding the functionality or condition of databases chosen by researchers, their suitability for use, or that their use will be uninterrupted or error-free. The databases and all their content are provided to the researchers "as is" without warranties of any kind. ArcticNet disclaim all warranties or conditions, written or oral, statutory, express or implied, including without limitation, no representation or warranty that (i) the content contained in or made available through the database will be of merchantable quality and fit for a particular purpose, (ii) the databases or their content will be accurate, complete, current, reliable, secure, or timely, (iii) that the operation of the databases will be uninterrupted or error-free, (iv) that defects or errors in the databases or the content, be it human or computer errors, will be corrected, (v) that the databases will be free from viruses and/or harmful components, and (vi) that communications to or from the databases will be secure and/or not intercepted. The Content is not intended to provide specific technical, business, accounting or other advice for the researchers' individual circumstances, and they should consult their own professional advisors to determine how any information or material provided on these Databases apply to their individual circumstances. These exclusions are in addition to any specific exclusion otherwise provided in these terms. To the extent that the jurisdiction to which the researchers are subject does not allow exclusion of certain warranties, such exclusions which are not permitted, do not apply.

10.6 Limitation of Liability

ArcticNet assumes no legal responsibility for the use of data provided by or held by ArcticNet NIs and expects all NIs to strive for the highest quality of data and metadata in their research. ArcticNet will not be liable for any damages, either direct or indirect, incidental, special or consequential, for use of or inability to use products or services of any kind, delay of or partial delivery, termination of rights or loss of profits, data, business or goodwill, whether on a contractual or extra contractual basis, or to provide indemnification or any other remedy to the researchers or any third party. The foregoing limitation shall apply even if ArcticNet knew of or ought to have known of the possibility of such damages. The researchers' sole and exclusive remedy is to discontinue using and accessing the repositories or databases. To the extent that the jurisdiction to which the researchers are subject does not allow any part of such limitation, such part does not apply.

10.7 Links

Links and references to other Internet websites are provided to the researchers as a convenience only. ArcticNet has not reviewed and does not expressly or impliedly endorse

other Internet websites or any information or material, or the accessibility thereof, via such links, and does not assume any responsibility for any such other Internet websites, information or material posted thereon, or products or services offered thereon.

For More Information

Other policies consulted when authoring this document:

Government of Canada. (2017). *Data Management Principles and Guidelines for Polar Research and Monitoring in Canada.* https://www.canada.ca/en/polar-knowledge/publications/data-management-principles-and-guidelines-2017-may.html.

Government of Canada. (2021). *Tri-Agency Research Data Management Policy.* http://www.science.gc.ca/eic/site/063.nsf/eng/h_97610.html.

Government of Canada. (2015). *Tri-Agency Statement of Principles on Digital Data Management.* http://www.science.gc.ca/eic/site/063.nsf/eng/h_83F7624E.html.

International Arctic Science Committee (IASC). (2013). *The State of Principles and Practices for Arctic Data Management.* https://iasc.info/images/data/IASC_data_statement.pdf.

International Polar Year (IPY). (2006). *International Polar Year 2007-2008 Data Policy.* http://ppsarctic.nina.no/files/ipy%20data%20policy.pdf.

Marine Environmental Observation Prediction & Response Network (MEOPAR). (2017). *Data Management Policy.* https://meopar.ca/wp-content/uploads/2021/01/Data_Management_Policy_-_September_2017.pdf.

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Contact

For any questions or concerns about the ADMP, please contact ArcticNet:

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Appendix A: Data Management Plan Guidelines

The following information constitutes the minimum required components of a Data Management Plan (DMP) and should be included in the project proposal (adopted from *Data Management Principles and Guidelines for Polar Research and Monitoring in Canada*). The information below should be used in conjunction with the requirements on metadata included in the ADMP and may be used in the creation of metadata records for a project. Consult this brief guide for more details, or consider the use of a standardized tool, such as the Portage Network's DMP Assistant, to develop a DMP.

1. Names of the Principal Investigator and members of the research team.
2. Location(s) of the data collection activities.
3. Purpose: A one-paragraph summary of the intentions with which the dataset will be developed, that includes:
   a. The research question(s);
   b. The research domain;
   c. Methods;
   d. Expected results.
4. Abstract: A description of data to be collected and managed, that includes:
   a. Brief descriptive title(s) of dataset(s);
   b. Information about incorporation of Indigenous data, including Indigenous and Local Knowledge, if applicable;
   c. Types of data, samples, physical collections, software, curriculum materials, expected location of research (including GPS coordinates), and other materials or information to be produced during the course of the project;
   d. File formats and estimate of total expected volume of data in MB, GB, etc.;
   e. Plans for documentation and proposed method(s) for describing data;
   f. Timelines of data submission and schedule of data release, including any requests for temporary or permanent limits to access;
   g. Information about incorporation of any data funded by other organizations.
5. Confirmation that the project will conform to the requirements in the ADMP and any exceptions requested.
6. Documentation of necessary provisions for appropriate protection of privacy or confidentiality or other applicable ethical and/or legal rights and data management protocols, and justification for requested exception(s) to the default open data policy.
7. Confirmation that the project will preserve data in an appropriate institutional or disciplinary data repository, including justification and documentation regarding the long-term preservation standards and procedures of the alternative repository and confirmation that appropriate documentation and access through appropriate portals are provided.
8. Provision of copies of participant and/or community consent forms.
9. Documentation for incorporation of Indigenous data, if applicable.
10. If applicable, any additional data preservation or archiving considerations, including specialized ownership and control of data or intellectual property.