



ALASKA SCIENCE CENTER DATA POLICY

RESEARCH DATA MANAGEMENT PLAN GUIDANCE & FORMS FOR PRINCIPAL INVESTIGATORS

August 8, 2014

Version 1.0

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CONTENTS

Objective.....	3
ASC Data Policy	4
Research Data Management Planning Process	5
RDMP Workflows.....	6
1. Submit a project proposal	7
2. Project Selected for Funding	8
3 4. Design Spreadsheet/Database	9
5. Build Database.....	10
6. Design Field Form	11
7. Acquire & Archive Raw Data.....	12
8. Complete QC of Raw Data & Archive Base Data	13
9. Conclude Research Cycle	14
10. Publish Data.....	15
11. Publish Paper.....	16
Research Data Management Plan Forms.....	17
ASC Project Proposal Form.....	19
ASC Project Implementation Form.....	20
ASC Project Forms Table of Contents.....	21
ASC New Data Collection Form	22
ASC Existing Data Form	23
ASC Data Product Form	24
ASC Custom Software Form	25
ASC Model Form.....	26
ASC Data Description Form	27
ASC Data Domain Form	28
ASC Data Process Step / Data Quality / Lineage Form	29
ASC Project Contact Form	30
Glossary	31
References	33

OBJECTIVE

The primary objective of the Alaska Science Center Data Management Plan and Data Policy is to fulfill the requirements inherited with acceptance of federal research funding and implement these requirements to benefit the Alaska Science Center (ASC), USGS, the greater scientific community, and the public.

The data management requirements are stated in a series of federal laws and mandates, DOI policies, and agency directives which together orchestrate the management of federal research data to ensure that the highest levels of data quality, integrity, and utility are achieved for the benefit of current and future scientists, decision-makers, and the public. USGS must also follow the requirements of our Fundamental Science Practices (FSPs) that clarify how science is conducted and resulting products are developed, reviewed, approved, and released.

At the federal level there is a growing emphasis on sharing data. In particular, a memorandum issued by the Executive Office of the President, Office of Science and Technology Policy, “Increasing Access to the Results of Federally Funded Scientific Research,” dated February 2013 sets the requirement “...that, to the greatest extent and with the fewest constraints possible and consistent with law and the objectives set out below, the direct results of federally funded scientific research are made available to and useful for the public, industry, and the scientific community.” This memorandum was followed in May of 2013 by a memorandum from the Office of Management and Budget, “Open Data Policy – Managing Information as an Asset” providing specific guidance on the management of federal data assets.

The ASC data policy statements asserted in the *ASC Data Policy* section of this document define the Center’s responsibilities in meeting the objectives outlined in the federal memorandums and are consistent with USGS FSP procedures. Other objectives targeted by the ASC Data Policy to be achieved through formalizing of data management practices include the following:

- Obtain the maximum benefit from our research investment by preparing and preserving our data to a standard sufficient for its long-term use in research
- Realize efficiencies from consistency in our methodologies for documenting, preserving, and delivering data
- Provide the researchers with an easy to follow approach to fulfill their ASC and Project data management responsibilities
- Provide automated tools and personalized support to assist the researchers in meeting their data management responsibilities
- Increase the visibility and awareness of the science being conducted at the Alaska Science Center

Data management at the ASC involves a partnership between science, information technology (IT), and data management (DM) staff. The purpose of this document, whose primary audience is the Principal Investigator and their science staff, is to make clear what data management responsibilities are incurred by the ASC, PI, IT, and DM and what information needs to be made available for a productive interaction between the responsible parties leading to the desired end result.

ASC DATA POLICY

The cost in effort, time, resources, and money of effective data management will ultimately be justified by the value of data and products that are shared with others. The development and maintenance of accurate data, computational models, software, and documentation are complex and nontrivial matters, and the validity of the science depends upon the documented proof that the work was done professionally. All staff and others working for, or funded by, the ASC will be required to understand the policy statement listed below, adhere to these data policies, and create a Research Data Management Plan (RDMP).

The Data Policy for ASC staff and contractors requires that research data, computational models, software and scripts, web-based tools, and information products (collectively “data”) adhere to the following policy statements:

- I. Data will comply with all Federal, DOI, and USGS laws, policies, directives, and standards.
- II. Data will meet the requirements of the Alaska Science Center.
- III. Data will have a designated Data Steward knowledgeable in the specific topic who is accountable and responsible for the specifications and quality of the dataset for the project.
- IV. Data will have a designated Data Manager who is accountable and responsible for its long-term safe-keeping, description, management, maintenance, and availability.
- V. Established ASC databases are to be used whenever possible for data archive, storage, and distribution.
- VI. Project data are developed in an ASC managed workspace where
 - a. proactive protection from loss or corruption are provided through the use of access permission, back-ups, version control, and off-site storage,
 - b. files and other documents are organized and accessible in digital or paper folders in an understandable fashion that would allow a knowledgeable peer, to
 - i. continue the work with minimal startup effort in the absence of the employee, and
 - ii. replicate the work given the same starting material.
- VII. Data made public will
 - a. be published to the finest possible level of granularity practicable and permitted by law,
 - b. use machine-readable and open formats, and
 - c. have open licenses that place no restrictions on copying, publishing, distributing, transmitting, adapting, or otherwise using the information for non-commercial or commercial purposes.
- VIII. Data are associated with up-to-date documentation, including
 - a. Project Research Data Management Plans (RDMPs) that include project identity information, contacts, ASC relevance, staff roles and responsibilities, individual files and data elements, original source material, temporal and spatial extent, quality assurance and processing performed, limitations of the data, and final disposition in an archive or data repository,
 - b. appropriate data flow diagrams and data models that conceptually or logically describe workflow, processes and data structures, and
 - c. full provenance information that gives credit to original sources, describes how data were acquired for use, and identifies authors and actions for modifications, transformations, and improvements to the data.
- IX. Data will be finalized in a way that products are
 - a. documented using formal standardized metadata formats such as ISO 19115-2 or FGDC,
 - b. provided with a valid digital object identifier (doi),
 - c. ready to share with other ASC staff through a designated ASC repository in a timely manner,
 - d. shared with the public at large within 12 months of completion of the work or product, and
 - e. undergo a review process and receive approval before archiving or release to the public.
- X. ASC will maintain an inventory of data resources which will in turn update the USGS data inventory.
- XI. ASC will maintain a listing of public data which will in turn be listed at data.usgs.gov in human- and machine-readable formats.

- XII. ASC will maintain the authoritative copy of data and metadata for public distribution. Copies distributed to other distribution centers will refer to ASC for maintenance and updates.

RESEARCH DATA MANAGEMENT PLANNING PROCESS

The ASC Research Data Management Plan (RDMP) documents the data requirements of a project. The RDMP collects information about data inputs, data transformation processes, custom software and scripts, project contacts, and data products. The RDMP uses a set of forms to guide the Principal Investigator (PI) through the process of gathering and documenting the required information. Together, the set of completed forms provides the preponderance of information needed to prepare ISO or FGDC project and data metadata.

In practice no two projects are likely follow the same workflow. The RDMP acknowledges this variability in project requirements and a PI’s independence in determining the research approach. To accommodate this variability the RDMP Guidance is organized into discrete events which when they occur trigger some data management responsibility on the part of the PI. The RDMP forms are designed to describe single data collections and should be added to the project’s RDMP as needed.

While each project may proceed using its optimal workflow, the expectation remains that as the project concludes all objectives defined in the ASP Data Policy statements will have been met.

The following table describes in general terms what RDMP requirements at various stages of project development.

Project Stage	RDMP Action Required
Pre-proposal	None.
Proposal	<p>Each new project proposal requires a completed Project Proposal Form accompanied by a separate New Data Collection Form, Existing Data Form, Data Product Form, Custom Software Form, and Model Form for each data collection planned for the project. Note that the forms for new data collections, existing data, data products, custom software, and models only require the <u>Name:</u> and <u>Description:</u> fields to be filled in for the project proposal. The remaining form fields can be ignored until after the project has been approved for funding.</p> <p>A short consultation with a Data Management staff member is required to acquaint Data Management (DM) with anticipated data documentation, archival, and deployment needs. This is also an opportunity for the PI to learn how DM may be able to help with database design, RDMP completion, data preservation, metadata preparation, and data publication.</p>
Selected for Funding	<p>Once the project has been selected for funding the “Project Implementation Form” should be completed. This includes meeting with your Information Technology (IT) representative to request work space on an IT managed server appropriate for your project’s work and data files. A new project record should be added to the ASC Science Portal for your project containing known information and a status of “In Progress”.</p>

Project Stage	RDMP Action Required
Research	As research progresses, data, software, and model forms initiated in the Proposal stage should gradually be completed. This includes adding new forms for data, software, and models not anticipated during the Proposal stage and dropping forms for discarded data. The project record in the ASC Science Portal should also be periodically updated.
Completion	At project completion, DM will use the completed RDMP forms to prepare metadata records for raw and base data required to be archived, product data for internal USGS use, and data to be published. DM will add raw and base data to the ASC data archives. Document Object Identifiers (doi) will be obtained for data products selected for publication. The project record in ASC Science Portal should be updated. DM will work with the PI to publish data products through the ASC Portal and distribute data and metadata to additional repositories as required by the PI.

RDMP WORKFLOWS

The project workflow described in this section is intended to lead a researcher through the steps necessary to fulfill the Alaska Science Center data management requirements. Note that only steps that are the responsibility of the PI are identified in the workflow. Additional steps to be taken by members of the Data Management staff to handle the long-term preservation, exposure, and delivery of data are not presented.

The workflow is expressed as an event model. These events do not always occur in the same order and may occur multiple times or not at all within a particular project cycle. When one of the following events does occur, the PI should proceed to the corresponding section of the workflow to learn what data management actions he/she should take.

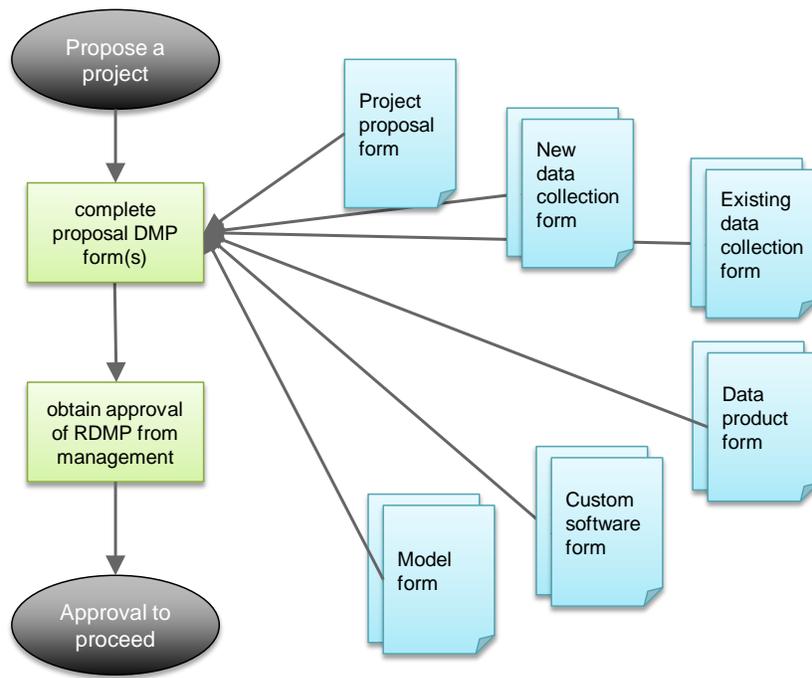
Project events requiring data management action:

1. [Submit a project proposal](#)
2. [Project selected for funding](#)
3. [Design a spreadsheet](#)
4. [Design a database](#)
5. [Build a database](#)
6. [Design a field data collection form](#)
7. [Acquire & archive raw data](#)
8. [Complete QC of raw data & archive base data](#)
9. [Conclude research cycle](#)
10. [Publish data](#)
11. [Publish paper](#)

The PI is encouraged to consult with or request assistance from DM staff members as needed to interpret or complete any data management action related to the above events or complete a RDMP forms.

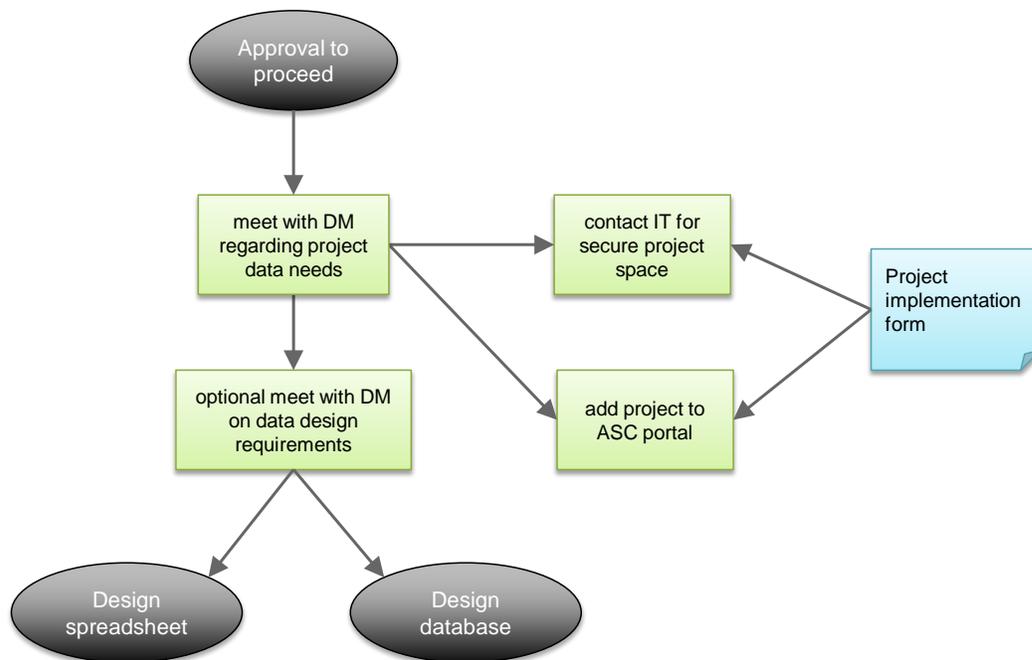
1. SUBMIT A PROJECT PROPOSAL

- a. Research Data Management Plan -> Each new project proposal is required to attach a brief Research Data Management Plan (RDMP). The proposal-level RDMP outlines the project's anticipated data requirements and serves as a skeleton for full RDMP should the project be funded. Details will be added to the RDMP through the research cycle once the project is approved and research begins. The proposal-level RDMP requires a completed [Project Proposal Form](#) accompanied by separate [New Data Collection Forms](#), [Existing Data Forms](#), [Data Product Forms](#), [Custom Software Forms](#), and [Model Forms](#) for each data, software, or model item planned for the project. Note that for the proposal-level RDMP only the Name: and Description: fields of these forms needs to be completed. The remaining fields can be ignored until after the project has been approved for funding.
- b. Approval -> After completing the RDMP obligation for a proposed project you will need to obtain an ASC Manager sign-off of the Project RDMP to submit a qualified project proposal.



2. PROJECT SELECTED FOR FUNDING

- a. Consultation -> A short consultation with a Data Management staff member is required to acquaint Data Management (DM) with anticipated data documentation, archival, and deployment needs. This is also an opportunity for the PI to learn how DM may be able to help with completion of RDMP forms, database design, data preservation, metadata preparation, and data publication. The PI and other project staff are encouraged to make use of these services whenever the need arises.
- b. Research Data Management Plan -> Once your project has been selected for funding you should add the [Project Implementation Form](#) to your RDMP and complete the form.
- c. ASC Science Portal -> Add your project record to the ASC Science Portal with a status of "In Progress".
- d. Project Folder -> Coordinate with your Information Technology (IT) representative to have a secure space on an IT managed servers set up to hold your project files and data. IT will apply access permissions to this folder according to the schedule you prepared on the Project Implementation Form.
- e. Data Design Consultation -> You have the option to meet with DM to discuss data design requirements for your project. This is not a required step but it is an optimal time to discuss your data design options.



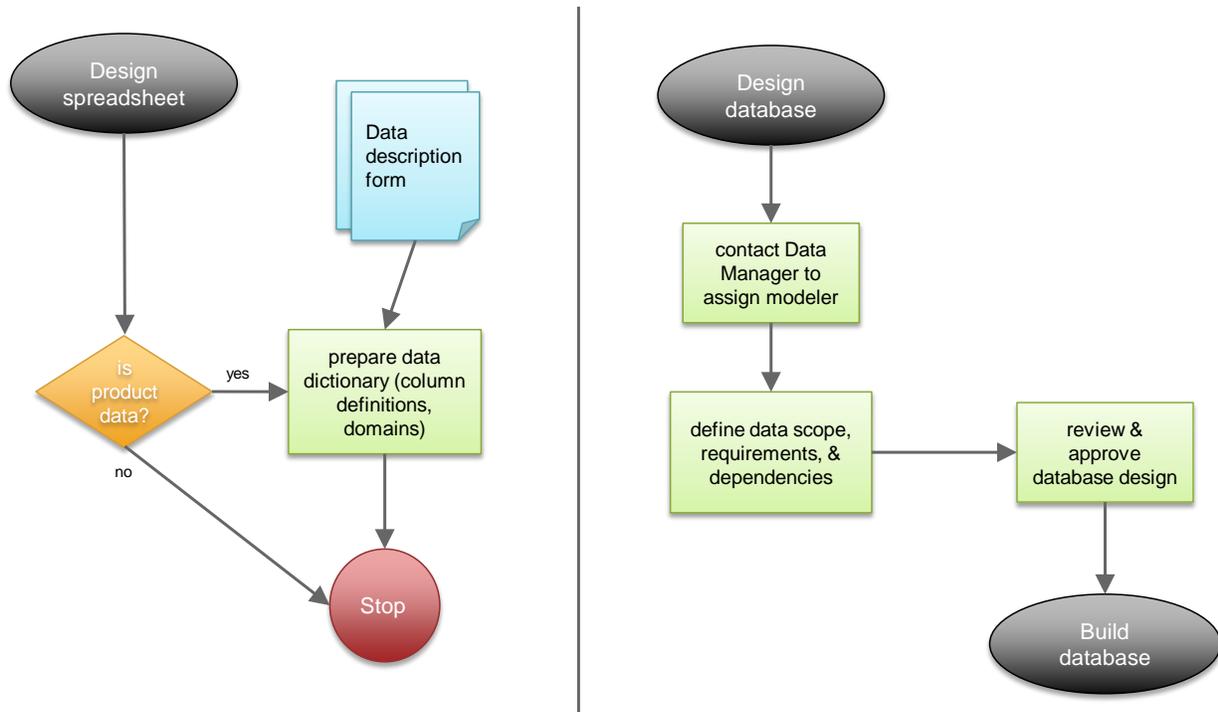
3 | 4. DESIGN SPREADSHEET/DATABASE

Design Spreadsheet

- a. Research Data Management Plan -> If the spreadsheet will become a data product (i.e. be archived, used in future research, published with a paper, or become available to the public) add a [Data Description Form](#) to your RDMP for each sheet in the spreadsheet. Complete the form(s) and remember to attach a [Data Domain Form](#) for each domain used by a spreadsheet column. Spreadsheets that are used only as intermediate work steps do not need to be documented.

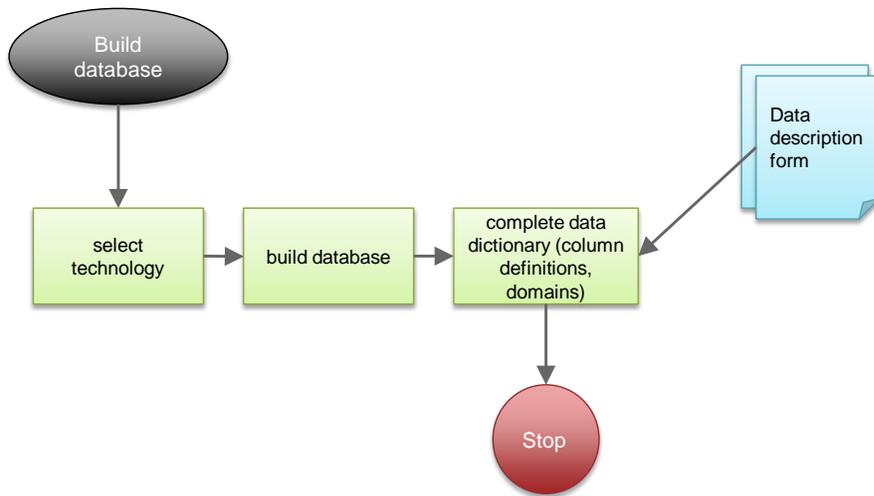
Design Database

- a. Assign Data Modeler -> All new database designs will need to be reviewed and approved by the project's Data Manager prior to building the database. Contact your Project's Data Manager to have a Data Modeler assigned to your database project. It is not required that the Data Modeler perform the database design work or build the database, although these options are open and encouraged. The Data Modeler can alternatively provide consultation during the design process and will be responsible for the final review and approval of any design.
- b. Design Database -> Define the database scope, entities and attribution, dependencies between entities, and attribute domains.
- c. Review & Approval -> Submit the database design to the Data Modeler assigned to the project for final review and approval by the Data Manager. The Data Modeler may suggest some changes to improve database integrity and/or performance.



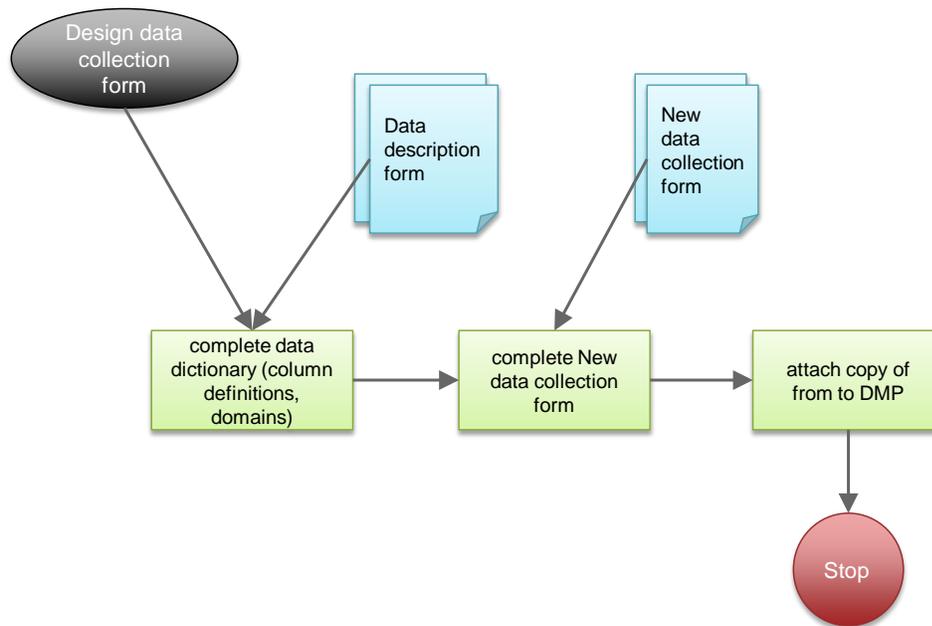
5. BUILD DATABASE

- Select Database Technology -> Select the database technology for implementing the database. Selection of a technology commonly used at the ASC is encouraged. Your assigned Data Modeler can help you make this choice taking into consideration size, user community, features, and Project team member experience.
- Build the Database -> Write the database schema definitions in the database language selected.
- Document the Database -> For each table in the database, add a [Data Description Form](#) to your RDMP. Complete the form and remember to attach a separate [Data Domain Form](#) for each domain used by the table(s).



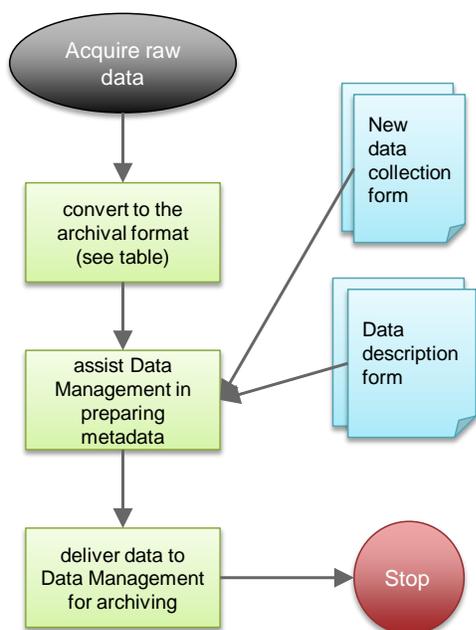
6. DESIGN FIELD FORM

- Design Data Collection Form -> Design your field or lab data collection form. Remember to include fields to record the observer name, date, and some unique identifier or sequence number on each form.
- Document the Form -> For each form, add a [Data Description Form](#) to your RDMP. Complete the form and remember to attach a separate [Data Domain Form](#) for each domain used by a form field.
- Add Form to RDMP -> Add a copy of the form to your RDMP to complete the documentation.



7. ACQUIRE & ARCHIVE RAW DATA

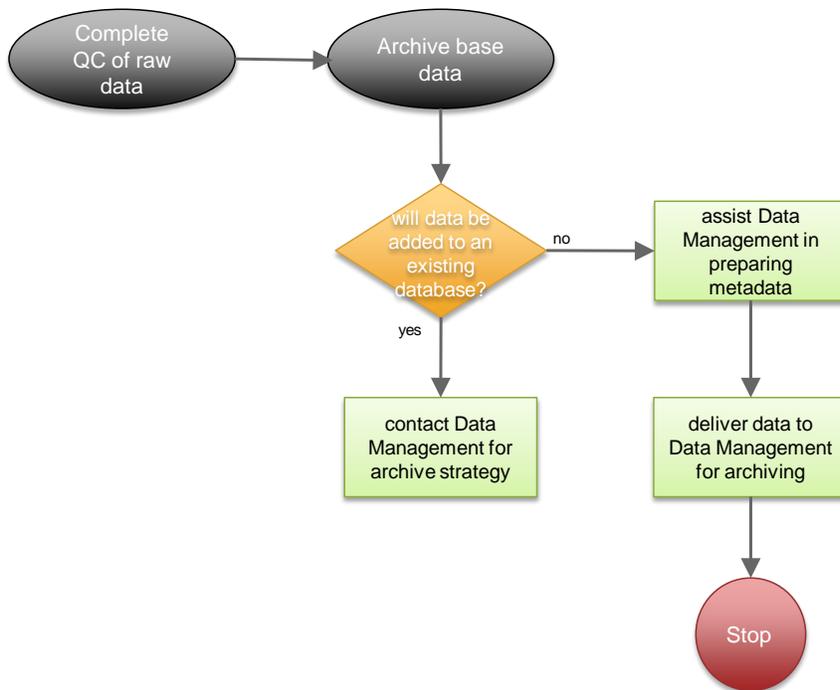
- Prepare Raw Data for Archive** -> Raw data should be archived as soon as possible after collection. This practice will preserve the raw data in its truest state and reduce the possibility of loss. Raw data will not be released beyond the immediate Project team members without authorization from the PI. Convert the raw data to the most appropriate archival format as depicted in the table below. If the prescribed conversion is impractical or your raw data format is not represented in the table, contact your Project's Data Manager.
- Prepare Metadata** -> All archived raw data files will have comprehensive metadata records and will be prepared to the Library of Congress standard 'bagit 0.9'. The PI should work with the Project's Metadata Specialist to prepare the metadata and archive package. [Data Description Forms](#) prepared earlier will be used by Metadata Specialist to complete this task. If the necessary forms were not completed earlier, that task will need to be added here.
- Archive Raw Data** -> Deliver the fully documented archive package(s) to the Metadata Specialist for archiving. Request READ access for Project team members to access the archive folder.



raw data format	archival format
field form, field notes, lab report, paper document	scan to PDF
e-document	convert to ASCII, .rtf
data table	convert to ASCII, .csv
photo	JPEG, DNG (for raw)
video	MP4, MOV
instrument data (binary)	process to ASCII
instrument data (ASCII)	ASCII
remote sensed data	contact Data Management

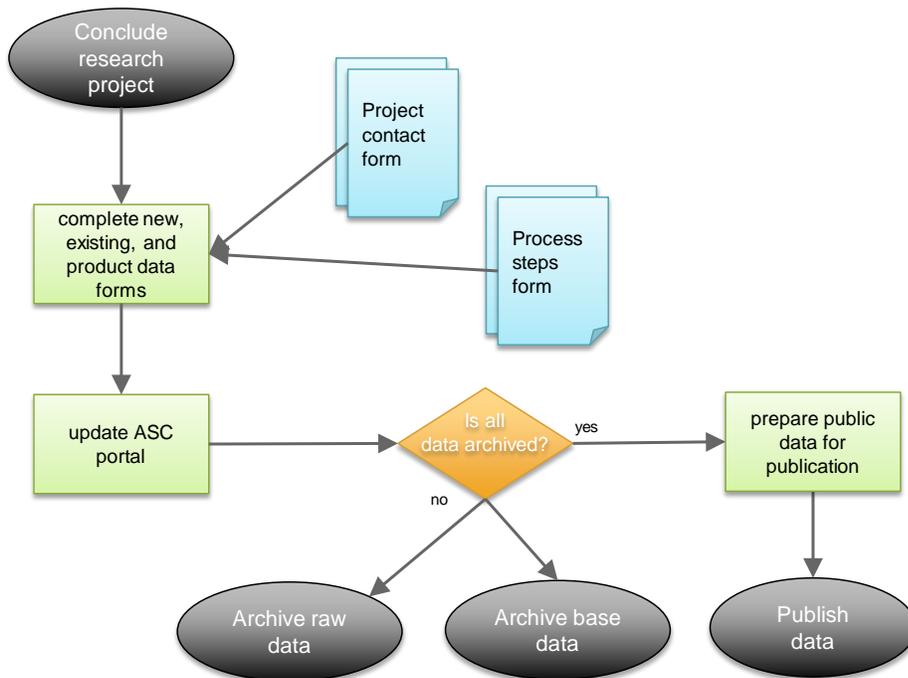
8. COMPLETE QC OF RAW DATA & ARCHIVE BASE DATA

- a. QC Raw Data -> Perform quality control (QC) of raw data. Raw data that has been QC'ed and verified ready for use in research is termed 'base' data. Base data is also archived to the same standards as raw data.
- b. Prepare Metadata -> All base data archived files will have comprehensive metadata records and will be prepared to Library of Congress standards 'bagit 0.9'. The PI should work with the Project's Metadata Specialist to prepare the metadata and archive package. [Data Description Forms](#) prepared for the raw data archive will be used by Metadata Specialist to complete this task. If the necessary forms were not completed earlier, that task will need to be added here.
- c. Archive Base Data -> Deliver the fully documented archive package(s) to the Metadata Specialist for archiving. Request READ access for Project team members to access the archive folder. At the conclusion of the research project the folder will become accessible to all USGS researchers.
- d. Add Base Data to Existing Database -> If the base data is to be added an existing database or archive, contact your Project's Data Manager for determining next steps.



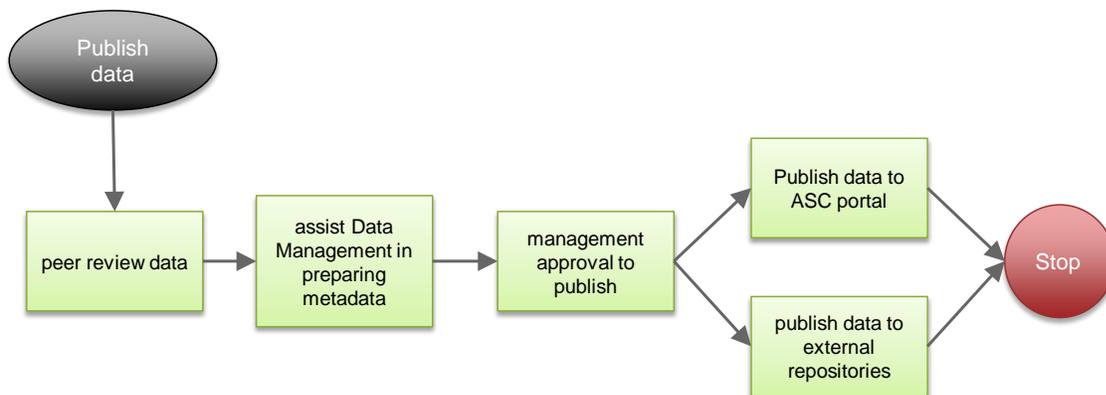
9. CONCLUDE RESEARCH CYCLE

- a. Complete RDMP Data Forms -> Complete any RDMP [New Data Collection Forms](#), [Existing Data Forms](#), [Data Product Forms](#), [Custom Software Forms](#), and [Model Forms](#) not completed earlier as these will be needed to create your project and data metadata records prior to publication. This includes [Project Contact Forms](#) and [Process Step Forms](#) not already completed for the Project's data forms.
- b. Update the ASC Science Portal -> Complete the Project's record in the ASC Science Portal. Remember to update the record status and release the record to the public.
- c. Archive Raw and Base Data -> Archive any raw and base data not already archived.
- d. Prepare Public Data -> Meet with your Project's Data Manager to determine which of your project data is appropriate for publication, adjust its granularity, and determine potential USGS and external repositories.



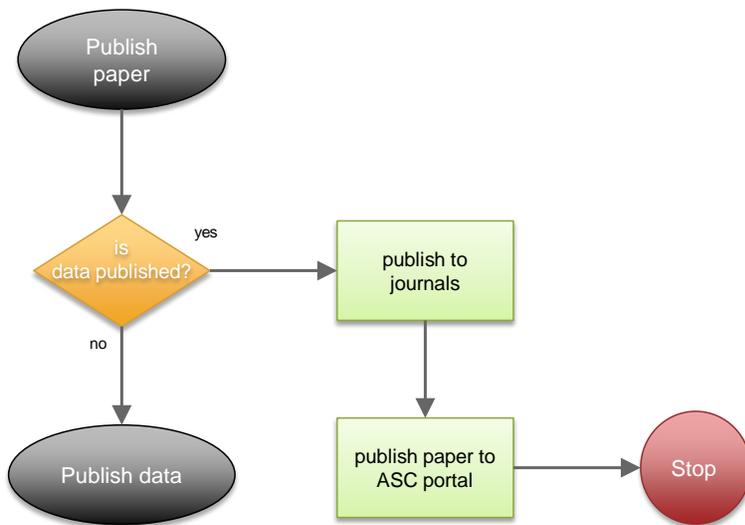
10. PUBLISH DATA

- a. Peer Review Data -> All data destined for publication is to be peer reviewed. The Project's Data Manager will be a member of the review team in addition to any reviewers named by the PI.
- b. Prepare Metadata -> All public data files will require comprehensive metadata records and will be prepared to FGDC Content Standard for Digital Geospatial Metadata (CSDGM), ISO 19115-2:2009, or ISO 19115-1:2014 standards. Engage with your Project's Metadata Specialist to prepare the metadata for your data publications. [Data Product Forms](#) and [Data Description Forms](#) prepared earlier will be required by Metadata Specialist to complete this task. If the forms were not completed, that task will need to be added here.
- c. Manager Approval to Publish -> Results of the peer review, completed data distribution packages, metadata, and forms are to be submitted to the Project's Manager for approval to publish.
- d. Publish to Portal -> All data to be made public and/or to accompany a publication will be accessible through the ASC Science Portal. The Project's Data Manager will assist the PI with getting this data online.
- e. Publish to Other Repositories -> The PI is free to publish data approved for release to the public through other thematic portals or repositories as are appropriate.



11. PUBLISH PAPER

- Publish Data -> It is a good practice – and required by some publishers – to publish your Project’s data prior to the publication of paper. This practice ensures web links and Digital Object Identifiers (doi) included in the journal article are accurate and those reading the article have immediate access to the supporting data. If you have not published the data supporting this research paper, that step should be inserted here.
- Publish to Journal -> The PI should follow all normal and established USGS protocols for publishing science articles.
- Publish to Portal -> All ASC publication for Alaska science are to be made accessible through the ASC Science Portal. If the article is also to be published in a science journal, publication in the ASC Portal should follow publication of the journal. The Project’s Data Manager is available to assist the PI with getting the paper online.



RESEARCH DATA MANAGEMENT PLAN FORMS

This section contains templates for the project and data forms. Please copy the form tables as needed and paste them into your project's Research Data Management Plan before entering information into the form fields.

1. [ASC Project Proposal Form](#)
This form is to be completed and submitted with the project proposal. It gathers very general information about the project that will contribute to ASC Science Portal entries and project metadata and identification of responsible parties for the various data management roles. The form requires the signature of a Program Manager.
2. [ASC Project Implementation Form](#)
This form is to be completed after the project has been selected for funding. The form gathers some additional project detail for the ASC Science Portal and records the project's top folder location and access permissions. The form also requires a signature from the project's Data Manager denoting the PI has met with the DM to discuss anticipated data requirement for the project.
3. [ASC Project Forms Table of Contents](#)
This form should be added to the RDMP at the proposal stage. Add entries to the table of contents (TOC) for each form attached to the RDMP (other than the Project Proposal and Project Implementation forms). The TOC form also has checkboxes that provide a fast over view of the RDMP status by data collection.
4. [ASC New Data Collection Form](#)
Add this form to the RDMP for each new data collection ([see Glossary](#)) originated by the project. For the project proposal, only the Name: and Description: fields need to be completed. The remaining fields pertinent to the data collection should be completed during the research cycle as the information becomes known.
5. [ASC Existing Data Form](#)
Add this form to the RDMP for each existing data collection ([see Glossary](#)) used by the project. For the project proposal, only the Name: and Description: fields need to be completed. The remaining fields pertinent to the data collection should be completed during the research cycle as the information becomes known.
6. [ASC Data Product Form](#)
Add this form to the RDMP for each data product ([see Glossary](#)) produced by the project. For the project proposal, only the Name: and Description: fields need to be completed. The remaining fields pertinent to the data product should be completed during the research cycle as the information becomes known.
7. [ASC Custom Software Form](#)
Add this form to the RDMP for each non-trivial custom software application, script, and/or web tool developed by the project as a product or required to fully understand the scientific process applied. For the project proposal, only the Name: and Description: fields need to be completed. The remaining fields pertinent to the custom software should be completed during the research cycle as the information becomes known.
8. [ASC Model Form](#)
Add this form to the RDMP for each computational model developed by the project. For the project proposal, only the Name: and Description: fields need to be completed. The remaining fields pertinent to the model should be completed during the research cycle as the information becomes known.

9. [ASC Data Description Form](#)

Add this form to the RDMP for each sheet in a spreadsheet, table in the database, and field collection form which is to be archived, distributed, or otherwise requires metadata prepared. Add a row to the Data Description Form or each attribute of the sheet, table, or form. Note that not all fields will be appropriate for each attribute. Fill in Name: and Definition: for each attribute and complete the other fields as appropriate.

For attributes which are domains complete an ASC Data Domain Form, attach it to the RDMP, and place the domain form's ID on the Data Description Form.

For attributes which receive quality control checks complete an ASC Data Process Steps / Data Quality / Lineage Form, attach it to the RDMP, and place the process steps form's ID on the Data Description Form.

10. [ASC Data Domain Form](#)

Add this form to the RDMP for each data domain used. Attach the domain's form ID to the appropriate Data Description Form.

11. [ASC Data Process Steps / Data Quality / Lineage Form](#)

Add this form to the RDMP to describe processing steps for New Data Collection, Existing Data, and Data Product preparation or Quality Control steps for Data Description forms. Only describe the non-trivial steps and keep the definitions brief, these descriptions are for metadata. Full descriptions of the processing steps are best left to the project's paper.

12. [ASC Project Contact Form](#)

Add this form to the RDMP for each contact. The contact may be an individual or an organization. Place the contact form's ID in the appropriate field for the form requesting contact information. Note that once a contact has been documented on a contact form it may be referenced by multiple other forms.

ASC PROJECT PROPOSAL FORM

This form is to be completed during the project proposal/planning phase.

PROJECT [10T]	
Title:	<i>Enter full project name</i>
Funding Source:	USGS Program: Major Initiative:
Abstract:	10T 10T
Project Start Date:	10T
Project End Date:	10T
Spatial Description:	10T
Temporal Description:	10T
Responsible parties:	Program Manager: 10T Principal Investigator(s): 10T Researcher(s): 10T Data Steward: 10T Data Manager: Metadata Specialist:
Hardware environment:	10T
Software environment:	10T
ASC manager sign-off:	Program Manager signature/date:

ASC PROJECT IMPLEMENTATION FORM

This form is to be completed during early implementation of the project.

DM consultation sign-off:	Data Manager signature/date:
Short abstract for web:	10T
Project location:	Map point: 10T 10T Boundary polygon: 10T Common Place Names: 10T
Keywords:	10T
ASC Portal information:	Project ID: 10T Contact ID: 10T
Project folder:	10T 10T Permissions: Management: write Project team: Data Management: USGS ASC: USGS all: Public:
Responsible parties:	Funding Organization(s): 10T Point of Contact(s): 10T Principal Investigator(s): 10T Researcher(s): 10T

ASC PROJECT FORMS TABLE OF CONTENTS

Use this form is to list the ASC Data Management Forms attached to your project.

New Data Collections:	Form Name: 10T <input type="checkbox"/> field form design <input type="checkbox"/> raw metadata prep <input type="checkbox"/> base metadata prep	ID: 10T <input type="checkbox"/> data collected <input type="checkbox"/> archive raw data <input type="checkbox"/> archive base data	<input type="checkbox"/> RDMP form complete <input type="checkbox"/> QC raw data
Existing Data Collections:	Form Name: 10T <input type="checkbox"/> data acquired	ID: 10T <input type="checkbox"/> RDMP form complete	
Project Data Products:	Form Name: 10T <input type="checkbox"/> RDMP form complete <input type="checkbox"/> archive data <input type="checkbox"/> publish	<input type="checkbox"/> metadata prep <input type="checkbox"/> prep data for public	ID: 10T <input type="checkbox"/> data review <input type="checkbox"/> web development
Custom Software:	Form Name: 10T <input type="checkbox"/> document software	<input type="checkbox"/> RDMP form complete	ID: 10T <input type="checkbox"/> archive software
Models:	Form Name: 10T		ID: 10T
Project Contacts:	Form Name: 10T		ID: 10T
Data Description:	Form Name: 10T		ID: 10T
Data Domain:	Form Name: 10T		ID: 10T
Data Lineage:	Form Name: 10T		ID: 10T

ASC NEW DATA COLLECTION FORM

Complete this form for data that does not currently exist and will be collected or generated during the project; for example, a new field data collection. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Name:	10T
Description:	10T
----- To be completed after project has been approved for funding -----	
Format:	10T
Data collection template:	Link to template: 10T Data Description Form: 10T
Data collection protocols:	10T
Spatial reference system:	10T
Spatial scope & scale:	Description: 10T Scale: 10T
Temporal scope & scale:	Description: 10T Scale: 10T
Data description:	Form ID: 10T
Keywords:	10T
Data Process Steps:	Form ID: 10T
Data volume estimate:	10T
Restrictions:	Use: 10T Legal: 10T
Repository(s) for data:	Alaska Science Center 10T
Exclusive use period:	Period: Justification: 10T
Citation:	10T
Digital object identifier:	10T
Contact:	Form ID: 10T

ASC EXISTING DATA FORM

Complete this form for existing collections include data that will be used for the purposes of creating the final data products and/or project deliverables. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Name:	10T
Description:	10T
Source:	Name: 10T Link: 10T
Restrictions:	Use: 10T Legal: 10T
Fees:	10T
Format:	10T
----- To be completed after project has been approved for funding -----	
Data Process Steps:	Form ID: 10T
Spatial reference system:	10T
Spatial scope & scale:	Description: 10T Scale: 10T
Temporal scope & scale:	Description: 10T Scale: 10T
Volume Estimate:	10T
Acquisition Date:	10T
Citation:	10T
Digital object identifier:	10T
Contact:	Form ID: 10T

ASC DATA PRODUCT FORM

Complete this form for each internally and publicly published data product. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Name:	10T
Description:	10T
----- To be completed after project has been approved for funding -----	
Format:	10T
Spatial reference system:	10T
Spatial scope & scale:	Description: 10T Scale: 10T
Temporal scope & scale:	Description: 10T Scale: 10T
Data description:	Form ID: 10T
Keywords:	10T
Data Process Steps:	Form ID: 10T
Volume Estimate:	10T
Maintenance frequency:	
Restrictions:	Use: 10T Legal: 10T
Repositories for data:	Alaska Science Center 10T
Exclusive use period:	Period: Justification: 10T
Deployment considerations:	Distribution: 10T Web page: 10T
Citation:	10T
Digital Object Identifier:	10T
Contact:	Form ID: 10T

ASC CUSTOM SOFTWARE FORM

Describe each custom software package written for use in this project. Use a separate form for each code package. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Name:	10T
Description:	10T
----- To be completed after project has been approved for funding -----	
Source file link:	10T
Dependencies:	10T
Maintenance & support:	Frequency: Support Plan: 10T
Languages:	<input type="checkbox"/> ASP. Net <input type="checkbox"/> C# <input type="checkbox"/> ESRI API <input type="checkbox"/> Java <input type="checkbox"/> JavaScript <input type="checkbox"/> jQuery <input type="checkbox"/> Python <input type="checkbox"/> Rails <input type="checkbox"/> Ruby 10T
Environment:	10T
Contact:	Form ID: 10T

ASC MODEL FORM

Describe the function and methodology used for any models that are part of the project. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Name:	10T
Description:	10T
----- To be completed after project has been approved for funding -----	
Model version:	10T
Source link:	10T
Model input(s):	10T
Model output(s):	10T
Spatial reference system:	10T
Spatial scope & scale:	Description: 10T Scale: 10T
Temporal scope & scale:	Description: 10T Scale: 10T
Calibration details:	10T
Contact:	Form ID: 10T

ASC DATA DOMAIN FORM

This form is to be completed for each data domain used in spreadsheets, data tables, and/or forms which are to be archived, distributed or for other reasons need metadata prepared. Copy-paste domain value section in the form table as needed to complete a definition for each domain value. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Name:	10T
Description:	10T
Domain value(s):	Value: 10T Definition: 10T

	Value: 10T Definition: 10T

ASC DATA PROCESS STEP / DATA QUALITY / LINEAGE FORM

This form is to document non-trivial data processing steps for raw data collection and handling, pre-processing of existing data, and preparation of product data. Copy-paste process step section in the form table as needed to complete a definition of each significant process step. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Name:	10T
Data acquisition methodology:	10T
Report conformance with process steps:	10T
Process Steps(s):	Step ID: 10T Description: 10T Contact ID: 10T
	Step ID: 10T Description: 10T Contact ID: 10T

ASC PROJECT CONTACT FORM

This form is to be completed for each project participants. Remember to add the form Name: and ID: to the Project Table of Contents.

ID [10T]	
Organization:	10T
Name:	First Name: 10T Middle Name: 10T Last Name: 10T Preferred Name: 10T
Title:	10T
Address (mailing):	Address Line 1: 10T Address Line 2: 10T City: 10T, State: 10T, Zip: 10T
Phone(s):	Office: 10T Mobile: 10T SMS: 10T
eMail address(s):	10T 10T
Web link(s):	10T 10T
Project role:	<input type="checkbox"/> funder <input type="checkbox"/> PI <input type="checkbox"/> contributor <input type="checkbox"/> owner <input type="checkbox"/> distributor <input type="checkbox"/> custodian 10T

- *base data*
'base' data refers to raw data which have been reviewed, edited for quality when necessary, and certified for general use. Being certified for use is the primary defining criterion of base data. Activities that transition raw to base data include flagging values for quality issues; removing outliers; handling missing data as appropriate; standardizing field names, units and formats; rearranging data; aggregating data into collections with similar data; and making collections of data accessible. In some cases well-formed raw data may simply become certified as base quality and undergo no change at all. In other cases high-frequency instrument-generated data may be reduced to a surrogate value appropriate for scientific research. The result of these activities produces the high-quality, accepted, base facts used in all higher level interpretations of the original data. Base data may exist in many forms, such as discrete facts in relational databases, processed scenes from satellites, or LIDAR delivered by a contractor.
- *data*
Data includes "... textual information, numeric information, instrument readouts, equations, statistics, images (whether fixed or moving), diagrams, and audio recordings. It includes raw data, processed data, published data, and archived data. It includes data generated by experiments, by models and simulations, and by observations of natural phenomena at specific times and locations. It includes data gathered specifically for research as well as information gathered for other purposes that is then used in research."
(ref: National Academy of Sciences, 2009, pg. 22).
- *Data Manager*
The Data Manager is the highest-level manager of Data Management services in the Program. The Data Manager is the manager most directly responsible for data management, including coordinating data governance, data stewardship activities, overseeing data management projects, and supervising data management professionals.
- *data product*
'data product' is any data product produced and published from base, derived, data from a project database, or any combination of these sources.
- *Data Steward*
A Data Steward is a person knowledgeable in a particular area or topic who is assigned accountability for data specifications and data quality for a specific Project or dataset. A Data Steward will draft, review, and refine data definitions; review and approve data model specifications; define data quality requirements and business rules; review and approve project and data level metadata; identify and help resolve data issues; and provide input to data policy, standards, and procedure for their assigned area.
- *doi*
A digital object identifier (DOI) is a character string used to uniquely identify an object such as an electronic document. Metadata about the object is stored in association with the DOI name and this metadata may include a location, such as a URL, where the object can be found. The DOI for a document remains fixed over the lifetime of the document, whereas its location and other metadata may change. Referring to an online document by its DOI provides more stable linking than simply referring to it by its URL, because if its URL changes, the publisher need only update the metadata for the DOI to link to the new URL.

- *existing data*
The term ‘existing data’ refers specifically to data whose origin is external to the research Project. Existing data can be obtained from any source.
- *FGDC*
The Federal Geographic Data Committee (FGDC) is an interagency committee that promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis. In the context of metadata, FGDC is best known for its 1993 Content Standard for Digital Geospatial Metadata (CSDGM) most often referred to as FGDC metadata. FGDC metadata is still the widely used in the U.S. but has little international following.
- *ISO*
ISO (International Organization for Standardization) is an independent, non-governmental membership organization and the world's largest developer of voluntary International Standards. In the context of metadata, the ISO standards are gradually replacing the FGDC standard as global scale science is requiring data from around the world. ISO’s entry into geospatial metadata was the 19115 standard in 2003. The standard is updated approximately every 5 years with 19115-2 standard issued in 2009 and 19115-1 in 2014.
- *Metadata Specialist*
A Metadata Specialist is a Data Management professional responsible for the preparation, integration, control, and delivery of metadata including metadata repositories.
- *new data*
The term ‘new data’ refers specifically to data whose origin is the research Project. New data can result from observations, lab analysis, instrumentation placed by a project, or other means.
- *quality control (QC)*
Quality control (QC) is a procedure or set of procedures intended to ensure that a data product adheres to a defined set of quality criteria or meets the requirements of the researcher. The procedures must be designed by a person knowledgeable about what constitutes quality in the dataset. Procedure can be visual or automated and can check for missing values, invalid data types, values not in acceptable range, values not represented in a domain, and other criteria as needed.
- *raw data*
‘raw’ data refers to data which are not modified as obtained from their original source except as necessary to allow for their long-term storage in an electronic format. Raw data may exist as discrete values recorded by a field worker, data streamed from instruments, photographs, strip-charts, lab reports, or remotely sensed data. The classification of raw data is also extended to data obtained from an existing external source that has not yet been reviewed. The critical indicator is that the data values are unaltered as collected at the source. Raw data are not usually made available for direct use by researchers. However, raw data are a high priority for stable, long-term storage because they are the original source of data at all other levels.
- *RDMP*
The Research Data Management Plan (RDMP) defines how data will be handled during the research cycle. It is also a record of actions taken by the research team during the research cycle that become the basis for the long-term care and preservation of the data including archival, publication, and distribution.

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