

ACADIS

Advanced Cooperative Arctic Data & Information Service

**NSF Review Panel Meeting
for the Advanced Cooperative Arctic Data and
Information Service (ACADIS) project**

**May 6-7, 2014
Boulder, CO**



Tuesday

Agenda

Time	Presentation/Discussion	Participants	Location
Tuesday, May 6th			
8:00am to 8:30am	<i>Coffee and morning refreshments</i>		Center Green Board Room
8:30am to 8:45am	Meeting overview and purpose. Introduction of NSF Review Panel	Marco Tedesco	Center Green Board Room
8:45am to 9:00am	Welcome and Introductions of ACADIS team	Jim Moore	Center Green Board Room
9:00am to 9:30am	Background of CADIS and ACADIS, including ACADIS scope and bounds	Jim Moore	Center Green Board Room
9:30am to 10:00am	ACADIS staff roles and responsibilities and systems and services	Mark Serreze	Center Green Board Room
10:00am to 10:15am	Review of NSF 2013 Panel Review priorities for ACADIS	Karen Andersen	Center Green Board Room
10:15am to 10:30am	<i>Coffee break</i>		
10:30am to 11:00am	ACADIS response to NSF 2013 Review Panel priorities	Don Middleton	Center Green Board Room
11:00am to 11:30am	Project Management processes and procedures for ACADIS	Karen Andersen	Center Green Board Room
11:30am to 11:45pm	Questions from NSF Review Panel	Jim Moore	Center Green Board Room
12:00pm to 1:00pm	<i>Business lunch for NSF Review Panel members</i>		
1:10pm to 2:00pm	Use cases and user testimonials	Mohan Ramamurthy	Center Green Board Room
2:00pm to 2:45pm	ACADIS architecture, workflow and data services	Eric Nienhouse, Lynn Yarmey	Center Green Board Room
2:45pm to 3:00pm	<i>Coffee break</i>		
3:00pm to 3:45pm	Metadata	Don Stott	Center Green Board Room
3:45pm to 4:00pm	Questions from NSF Review Panel and plans for tomorrow	Jim Moore	Center Green Board Room
4:00pm to 5:00pm	NSF Review Panel executive session	NSF Review Panel members	Center Green 2503
5:00pm	adjourn		

Outline of ACADIS Team Briefings

- CADIS/ACADIS Background and framework
- Year 2 Panel report and responses
- Project Management
- User support
- Architecture, workflow and data support services
- Metadata generation and handling
- Support metrics
- ACADIS Gateway, Arctic Data Explorer (ADE) and Rosetta
- Community involvement and strategic initiatives

ACADIS Core Values

- While data systems may change, the data and metadata must live for years to come
- ACADIS is a team; this means we work in an open, collaborative, shared environment
- ACADIS builds and maintains external relationships (community, archives, etc.)
- We listen to the science community
- Our primary responsibility is service to the NSF Arctic science community
- We consider strategic initiatives that improve our service role

Background of CADIS and ACADIS

- Cooperative Arctic Data and Information System (CADIS) plan (from 2008 proposal):
 - Develop a data management strategy for the Arctic Observing Network (AON) system using new tools and accepted standards
 - Serve NSF-funded AON investigators by archiving AON data and metadata
 - Provide a stable archive for long-term stewardship and access

Background of CADIS and ACADIS

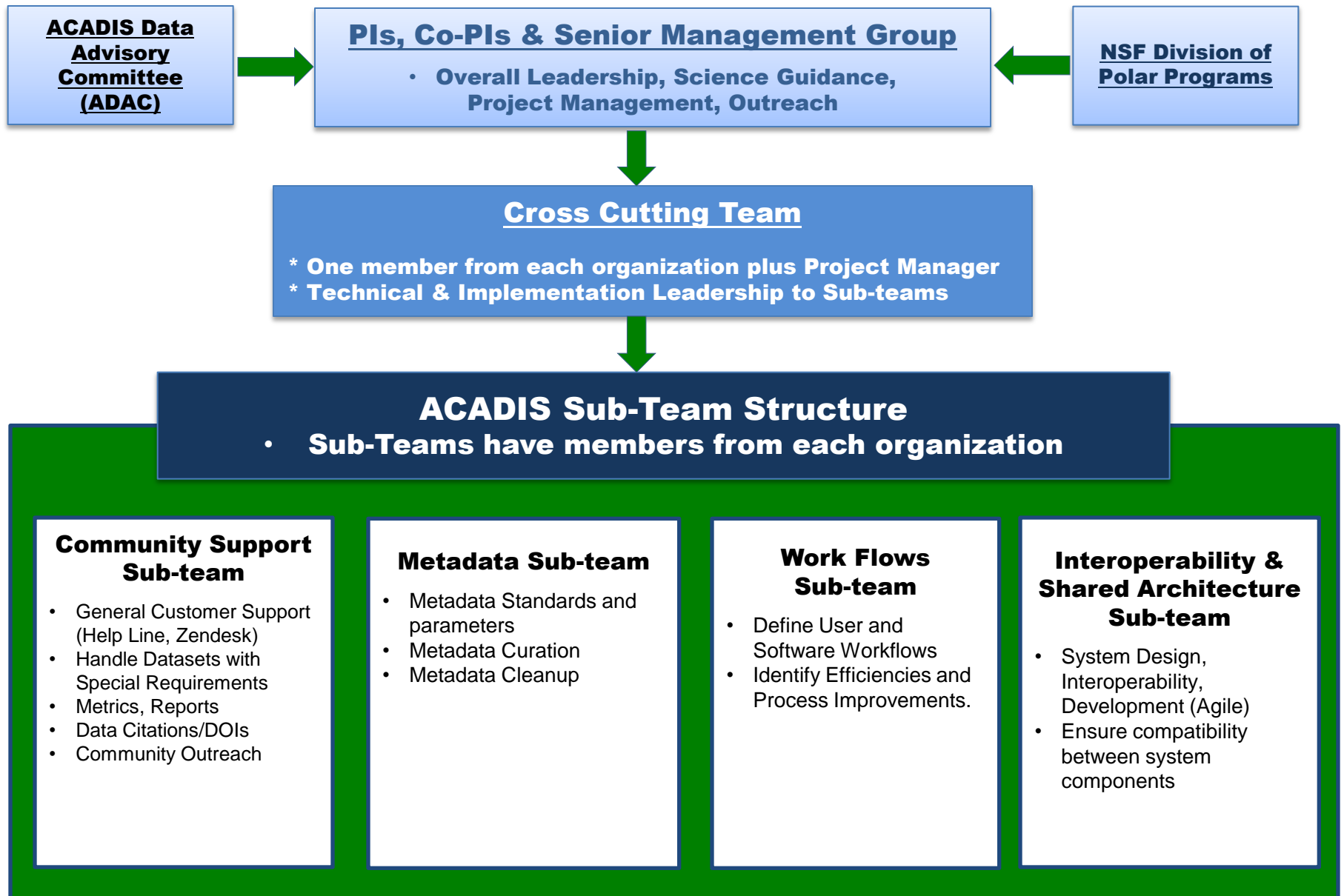
- Encourage a a new level of integration in the disciplinary diverse data to come from the Arctic Observing Network
- Leverage NCAR/UCAR systems engineering infrastructure and special project support with NSIDC scientific expertise and user support for the benefit of Arctic investigators
- Leverage NSF's investment in other observing networks and related data management initiatives

Background of CADIS and ACADIS

Expanded support through ACADIS

- A new mandate
 - Data management services and support for all NSF scientists and projects that collect Arctic data
 - Serve NSF-funded Arctic investigators and broad user communities by archiving metadata and data from field programs, special synthesis projects and single investigators across many disciplines
 - Help the community meet new NSF data managements requirements
- Other changes
 - ACADIS Data Advisory Committee (ADAC)
 - Value-added products
 - Full time Data Curators
 - New data types (e.g. biological, social, terrestrial, ecological)
 - New full-time Project Manager

ACADIS Teams, Responsibilities, & Decision Making



The ACADIS Team

- ACADIS is funded as a collaborative research award with four organizational partners
 - University Corporation for Atmospheric Research (UCAR)
National Center for Atmospheric Research (NCAR) **Earth Observing Laboratory (EOL)**
 - University Corporation for Atmospheric Research (UCAR)
National Center for Atmospheric Research (NCAR)
Computational and Information Systems Laboratory (CISL)
 - University Corporation for Atmospheric Research (UCAR)
Unidata
 - **National Snow and Ice Data Center (NSIDC)**

The ACADIS Team

- PIs
 - Jim Moore (EOL- Lead)
 - Mark Serreze (NSIDC - Science Advisor)
- Co-PIs
 - Don Middleton (CISL)
 - Mohan Ramamurthy (UNIDATA)
 - Lynn Yarmey (NSIDC)
- Project Manager: Karen Andersen (EOL)
- Senior Management Team
 - PIs
 - Co-PIs
 - Project Manager
 - Eric Nienhouse (CISL)
 - Don Stott (EOL)
 - Steve Williams (EOL)
 - Linda Cully (EOL)
- ACADIS taps two dozen people from four organizations

ACADIS Vision

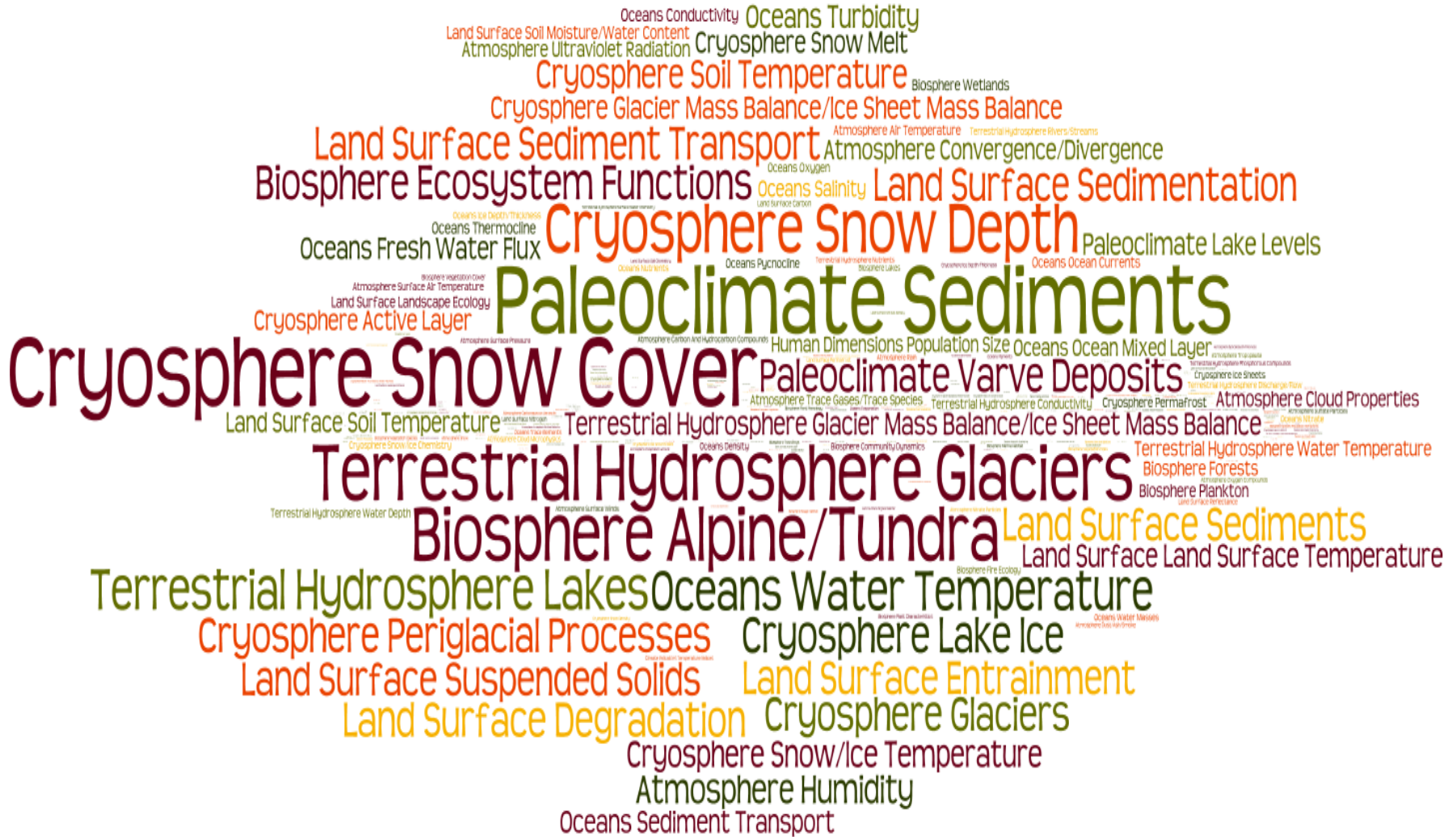
ACADIS provides sustainable data management, data stewardship services and leadership for the NSF Arctic research community through open data sharing, adherence to best practices and standards, capitalizing on appropriate evolving technologies, community support and community engagement. ACADIS leverages other pertinent projects, capitalizing on appropriate emerging technologies and participating in emerging cyberinfrastructure initiatives.

From ACADIS Consolidated Work Plan (July 2013)

Highlights of the ACADIS Vision Statement

- Support the NSF funded Arctic community with data management leadership and support services
- Act as long term archive and open source for the legacy of NSF Arctic research (the data)
- Educate scientists and students on best practices and standards and support them in meeting their responsibilities of data archival
- Implement proven technologies for metadata generation; data archival and access; and metadata and data exchange
- Engage with the community in developing and implementing emerging cyberinfrastructure initiatives

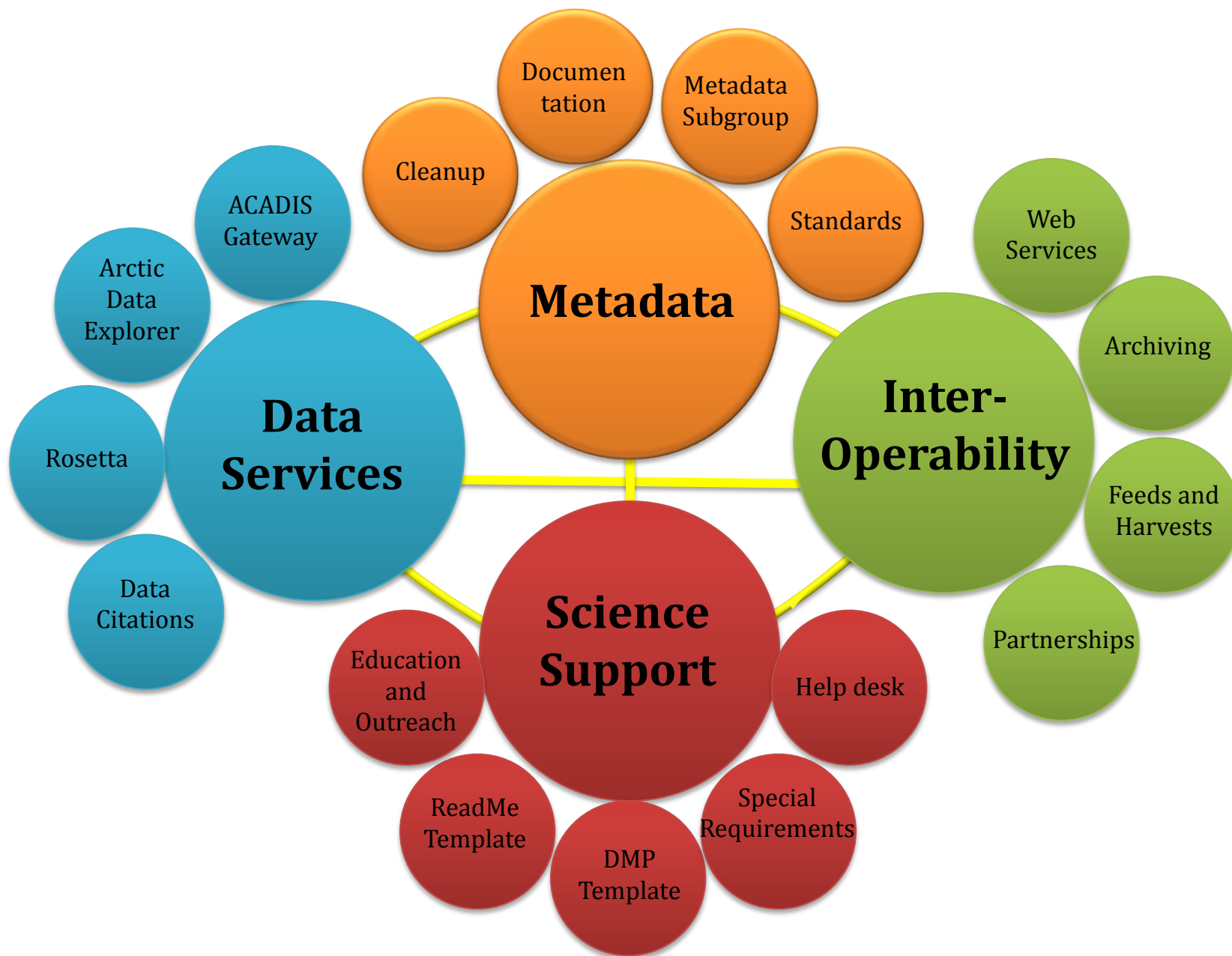
Data Holdings by GCMD Discipline, ACADIS Gateway



ACADIS Roles and Responsibilities

- PIs
 - Jim Moore (EOL- Lead)
 - Mark Serreze (NSIDC - Science Advisor)
- Co-PIs
 - Don Middleton (CISL)
 - Mohan Ramamurthy (UNIDATA)
 - Lynn Yarmey (NSIDC)
- Project Manager: Karen Andersen (EOL)
- Senior Management Team
 - PIs
 - Co-PIs
 - Project Manager
 - Eric Nienhouse (CISL)
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ACADIS Activities and Services



ACADIS Roles and Responsibilities

Project Communications

- Monthly Senior Management Meetings to work through new challenges, ongoing component progress and community support
- Monthly written updates on progress and challenges
- Weekly/bi-weekly technical project management meetings of cognizant technical staff
- Quarterly 'all-hands' meeting for general updates, accomplishments
- Quarterly reporting to NSF
- Basecamp messaging for day-to-day discussions

ACADIS Roles and Responsibilities

Sub Teams

- ACADIS uses sub teams to ensure communication across organizational groups
- Meetings to address priority items are scheduled as-needed
- Sub Teams:
 - Metadata
 - Community support
 - Workflows
 - Interoperability & Shared Architecture
- Cross-cutting Team added as a coordination node across topics

ACADIS Roles and Responsibilities

Project Manager

The Project Manager is responsible for bringing project management tools and techniques to the ongoing community support, development, and infrastructure provided by ACADIS, translating project priorities into milestones and deliverables, and coordinating ACADIS activities and institutions to meet these milestones and deliverables. Implement formal project management processes and procedures

ACADIS Roles and Responsibilities

Software Development

The ACADIS Gateway and the Arctic Data Explorer (ADE) use an Agile Scrum development model

- Projects are divided into succinct work cadences, known as sprints, both efforts use two-week sprints.
- At the end of each sprint, team members assess the progress of a project and plan its next steps; this allows a project's direction to be adjusted or reoriented based on completed work, rather than speculation or predictions.

ACADIS Roles and Responsibilities

Data Curators

- Create projects in the Gateway
- Collaborate with PIs to:
 - Connect collaborative awards, secure datasets by maintaining access permissions
 - Create DOIs, data citations
 - Consult with scientists on data management best practices
 - Ensure that data providers are well-versed in the metadata requirements of ACADIS
 - Review proposal Data Management Plans and offer other data services as needed
- Enhance discoverability of datasets through metadata cleaning
- Keep abreast of data science technologies and trends; work with libraries and other repositories to increase data connections

ACADIS Roles and Responsibilities

Community Support

- First responder to all incoming questions/requests
 - support@aoncadis.org
 - (720) 443-1409
- Manage help desk back end
 - Web-based tool called Zendesk
- Create Community Support metrics/reports
- Make recommendations to ACADIS team on how to better serve the science community
- Assist with data reuse questions

ACADIS Roles and Responsibilities

ACADIS Data Advisory Committee (ADAC)

- Identify major impediments that Arctic scientists in different disciplines encounter regarding data management support, data discovery and use, and advise on prioritization of ACADIS efforts;
- Gain community acceptance of and adoption of data and metadata standards;
- Recommend services to be maintained by ACADIS from project-specific datasets and data portals built by groups of investigators for which funding has ended;
- Advise on priorities in the development of interoperability and distributed data discovery.

ACADIS Roles and Responsibilities

ACADIS Data Advisory Committee (ADAC) Members

Dave Bailey (Chair), University Consortium for Atmospheric Research, Boulder, Colorado

Carin Ashjian, Department of Biology, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts

Larry Hamilton, Sociology Department, University of New Hampshire, Durham, New Hampshire

Andrew (Drew) Slater, National Snow and Ice Data Center, University of Colorado, Boulder

Mary-Louise Timmermans, Department of Geology and Geophysics, Yale University, New Haven, Connecticut

Craig Tweedie, Department of Biological Science, University of Texas at El Paso

Review of NSF 2013 Panel Review Priorities

From the NSF report

- Need coordinated system design and system engineering process
- Need requirements and configuration management at the project level for incorporation of three separate projects
- Evaluation process that led to software engineering practices
- Assign responsibilities for user services including phone number

ACADIS Team translated into these priorities

- [Essential] Self Publishing Interface and Workflow
- [Essential] Improve Search and Arctic Data Explorer Integration
- [Essential] Integrate Rosetta Data Conversion Tool
- Citation and Digital Object Identifier (DOI) Tools
- Use Metrics and Reporting
- Metadata Cleanup and Consistency

ACADIS Response to NSF 2013 Panel Review Priorities

The following represents a roll-up of recommendations from the NSF 2013 Panel Review Recommendations, the ACADIS ADAC, the submitted ACADIS Year 3 Work Plan, and NSF guidance.

ACADIS Response to NSF 2013 Panel Review Priorities

Incorporate Dedicated Project Management Support

- Considered essential by Review Panel in order to coordinate the various ACADIS activities (e.g., Gateway, ADE, and Rosetta development, Community Support), manage high-level community requirements, focus on integration, and minimize redundant development
- Conducted a recruiting process for a Project Manager
- Recruiting team selected Karen Andersen
 - Geographer from UC Santa Barbara, early experience in geographic information systems and remote sensing. Positions with the private sector (GIS startups, EarthWatch – now known as DigitalGlobe, government contractors, an unmanned aircraft systems company), academia (UCSB, Project Manager for the Alexandria Digital Library) and the Federal Government (NASA HQ, Dept. of the Navy)
 - Many years of experience in project management and program management and also experience with outreach, marketing, and business development
 - Currently 100 percent time on ACADIS

ACADIS Response to NSF 2013 Panel Review (cont.)

Develop a concise Year 3 Work Plan

- Completed and provided to NSF last year, provided as part of online 2014 Panel read-ahead materials.

Adjust PI team post-Parsons departure

- Shifted Lynn Yarmey to co-PI status with NSF.

Focus on self-publishing and workflow

- Numerous improvements in publishing interface, harmonizing of user interfaces, and interoperability of components. More details further on.

Provide services for DOI and Data Citation

- Addressed requests for DOI's and citations from PI's – currently manual. Automated DOI assignments will result in several hundred new DOI/citations for ACADIS data collections in the next few weeks.
- Developed core Gateway support for DOI's – a step towards automation in issuing DOI's (policy still needs to be established).

ACADIS Response to NSF 2013 Panel Review (cont.)

Web Services

The Panel noted that the web self-publishing interface was really nice for many usage scenarios, but noted the situation of “do that 17,000 times”.

- The ACADIS team had planned for this as a later development, but requirements derived from deep conversation with technical members of the O-Buoy project prompted us to implement an automated and secure publishing service immediately. While O-Buoy is still engaged in integrating the service into their existing systems and workflow, it has since been used to publish other data saving the scientists' time.
- This work also paved the way for tight and seamless Rosetta integration.

ACADIS Response to NSF 2013 Panel Review (cont.)

Harmonize Federated Search

The last Panel noted that there appeared to be overlapping development in the area of federated search, across the Gateway and the Arctic Data Explorer (ADE).

- The ACADIS team has established the ADE as a stand-alone broader-than-ACADIS data search tool, with stronger and more consistent ties to the Gateway.
- The Gateway will use the ADE OpenSearch service as a mechanism for exposing related datasets when a user locates a collection in the Gateway. In this manner, we maximize reuse of software and avoid duplicate development.

Rosetta Integration

- Phase I of Rosetta integration with the ACADIS Gateway is complete and testing has begun. Details later in the agenda.

ACADIS Response to NSF 2013 Panel Review (cont.)

Use Metrics and Reporting

- Catalog metadata improved to support provider metrics.
- Sub team coordinates project metrics reporting.

Metadata

- Schema improvements.
- Major, comprehensive cleanup of metadata cross-project. More details later in the presentation.

Reporting to NSF

- As agreed with NSF, ACADIS submits quarterly reports as a team exercise (available as read-ahead materials).

Special Requirements Data Collections (SRDC's)

- Gateway team continues to enhance functionality (e.g. large data upload, security) to reduce the number of SRDC's.
- EOL continues to handle new SRDC's as needed.

ACADIS Project Management

Responsibilities of the Project Manager

- Incorporate project management processes and procedures, tools and techniques.
- Development of structured outreach efforts and assist with community support
- Determine priorities and monitor budgets, milestones, risks, and deliverables

Project Management

- Advanced Cooperative Arctic Data and Information Service (ACADIS) project began in July 2011
- As of May 2014, we are near the end of the third year of a proposed four-year grant
- Various staff (PIs, Engineer) on the team contributed to filling project management role from July 2011 to January 2014
- Full time Project Manager for ACADIS was hired; start date was January 27, 2014, it is now early May 2014 – approximately 14 weeks

Project Management Basics



Where is ACADIS right now?

What has been implemented?

Elements of Project Management

▪ **Plan** - Planning for the project and creating the Project Plan is the most critical part of project management. A well-defined plan will prevent many unexpected issues related to costs, schedule, and risks. Lessons learned from previous similar projects, if available, are an integral part of creating a new project plan. Steps to create a project plan may include:

- Collect and document requirements
- Define scope
- Create work breakdown structure
- Estimate cost and determine budgets
- Define and execute subcontracts
- Identify risks and a plan for risk management
- Draft a schedule
- Determine quality control requirements and process
- Draft a communication plan
- Determine technical requirements
- Determine metrics to be collected
- Configuration Management (CM)

Elements of Project Management

Execute - The execution phase of a project involves implementing the plan and completing the work. This may include:

- Develop and manage the project team
- Distribute information
- Purchases if required
- Quality assurance
- Managing stakeholder and sponsor expectations

Monitor - Monitoring a project closely is essential to decreasing risks, staying on track with the project plan and key milestones, and ensuring adequate resources are available to carry out the work. Monitoring elements may include:

- Budget/Performance Metrics [Earned Value Management (EVM), if required]
- Schedule, milestone, and resource risks
- Technical risks
- Verifying and monitoring changes in scope
- Possible changes to the contract

Project Management Elements - Current

Execute – what is currently being done in ACADIS project

- Cross cutting team created
- Defined and documented priorities as a team
- Compared ongoing tasks with priorities and mapped tasks to priorities
- Information distribution using Basecamp, in-person meetings, email, phone calls, Excel spreadsheets
- Testing by others on the outside, e.g., GIS Group, misc. staff, PhD student
- Defined stakeholders using NSF website; created a spreadsheet of PLR projects, tracking outreach

Monitor – what is currently being done in ACADIS project

- Integrated project schedule has been created and is now being used
 - Tasks, milestones, resources, risks
- Budgets monitored monthly based on NCAR budget reports availability
- Technical issues being anticipated with integration of teams
- Metrics being produced and analyzed
- Discussing any potential changes to the plan

Project Management in Year 3

- Basic project management processes and procedures have been put in place and are working smoothly
- Created tighter integration of project teams to flesh out issues and share ideas more readily
- Fully scoped out who the stakeholders actually are (NSF PLR investigators, ~500) and created a spreadsheet to keep records of communication
- Coordinating and documenting all outreach efforts for ACADIS

Project Management - Schedule

Home ACADIS Project ACADIS High Level									
	At Risk	Task Name	Start Date	End Date	Assigned To	Allocation %	% Complete		
1		Program Management	01/27/14	06/30/15	Karen Andersen	75%			
2		ACADIS, all projects							
3		Project Management at CISL	07/01/12	06/30/15	Eric Nienhouse	80%			
4		ACADIS Gateway							
5		Project Management at NSIDC	07/01/12	06/30/15	Lynn Yarmey	40%			
6		Arctic Data Explorer, CS, Data Curation							
7		Project Management at Unidata	07/01/12	06/30/15	Sean Arms	50%			
8		Rosetta							
9		Project Management at EOL	07/01/12	06/30/15	Don Stott	50%			
10		Arctic Field Projects							
11		+ Search Capabilities	07/01/13	05/14/14			94%		
42									
43		+ Integrate ACADIS Components	07/01/13	06/29/15			82%		
79									
80		+ Improve Data Provider Workflow	09/04/13	11/26/14			31%		
91									
92		+ Develop Data Citations	07/01/13	08/01/14			75%		
104									
105		+ Use Metrics and Reporting	08/01/13	12/30/16			81%		
126									
127		+ Metadata Curation	09/01/11	06/30/15			22%		
151									
152		+ Community Support	07/01/13	07/01/15			42%		
164									
165		+ Community Outreach	11/01/13	10/08/14	Karen Andersen				

Project Management - Stakeholders

NSF Org	Program(s)	Start Date	Principal Investigator	State	Organization	Program Manager	Expiration Date	Awarded To Date	PI Email Address	Organization	Investigator	Abstract
PLR	AON IMPLEMENTATION	09/01/2010	Craig Lee	WA	University of Washington	Erica L. Key	08/31/2014	\$2,007,099.00	craig@apl.washington.edu	SEATTLE	WA	Intellectual merit: This aw
PLR	AON IMPLEMENTATION	09/01/2010	Craig Lee	WA	University of Washington	Erica L. Key	08/31/2015	\$3,767,478.00	craig@apl.washington.edu	SEATTLE	WA	Intellectual Merit: This aw
PLR	AON IMPLEMENTATION	08/15/2009	Craig Tweedie	TX	University of Texas at El Paso	Erica L. Key	07/31/2014	\$400,471.00	ctweedie@utep.edu	EIPaso	TX	This award is funded und
PLR	AON IMPLEMENTATION	01/15/2014	Cynthia Nevison	CO	University of Colorado at Boulder	Erica L. Key	12/31/2017	\$20,990.00	NEVISON@colorado.edu	Boulder	CO	This project will support a
PLR	AON IMPLEMENTATION	09/01/2013	David Holland	NY	New York University	Erica L. Key	08/31/2018	\$325,582.00	dnh4@nyu.edu	NEW YORK	NY	This project involves a m
PLR	AON IMPLEMENTATION	09/01/2013	David Simpson	DC	Incorporated Research Institutions for Seis	Erica L. Key	08/31/2018	\$203,680.00	simpson@iris.edu	Washington	DC	The Greenland Ice Sheet
PLR	AON IMPLEMENTATION	08/15/2013	David Turner	OK	University of Oklahoma Norman Campus	Erica L. Key	07/31/2018	\$16,883.00	dave.turner@noaa.gov	NORMAN	OK	In 2010, the observatory a
PLR	AON IMPLEMENTATION	09/15/2012	Dmitri Nechaev	MS	University of Southern Mississippi	Erica L. Key	08/31/2015	\$151,333.00	dmitri.nechaev@usm.edu	HATTIESBUF	MS	This project contributes to
PLR	AON IMPLEMENTATION	01/01/2010	Donald Perovich	NH	Department of Army Cold Regions Resear	Erica L. Key	12/31/2014	\$603,615.00	joneperovich@myfairpoint.net	Hanover	NH	Perovich 0856377 U
PLR	AON IMPLEMENTATION	09/15/2010	Donald Perovich	NH	Department of Army Cold Regions Resear	Erica L. Key	08/31/2015	\$736,861.00	joneperovich@myfairpoint.net	Hanover	NH	
PLR	AON IMPLEMENTATION	09/15/2012	Emily Shroyer	OR	Oregon State University	Erica L. Key	08/31/2014	\$122,708.00	eshroyer@co.oes.oregonstate.edu	Corvallis	OR	The ice-tethered winch (I
PLR	AON IMPLEMENTATION	09/15/2010	Francisco Chavez	CA	Monterey Bay Aquarium Research Institute	Erica L. Key	08/31/2015	\$409,395.00	chfr@mbari.org	MOSS LANDI	CA	Collaborators from five in
PLR	AON IMPLEMENTATION	09/01/2011	George Kling	MI	University of Michigan Ann Arbor	Erica L. Key	08/31/2014	\$303,340.00	gwk@umich.edu	Ann Arbor	MI	Collaborative Research c
PLR	AON IMPLEMENTATION	09/01/2012	Germar Bernhard	CA	Biospherical Instruments Inc	Erica L. Key	08/31/2015	\$429,905.00	bernhard@biospherical.com	San Diego	CA	The purpose of this proje
PLR	AON IMPLEMENTATION	09/15/2012	Gleb Panteleev	AK	University of Alaska Fairbanks Campus	Erica L. Key	08/31/2015	\$56,254.00	gleb@iarc.uaf.edu	Fairbanks	AK	This project contributes to
PLR	AON IMPLEMENTATION	09/15/2010	Glen Liston	CO	Colorado State University	Erica L. Key	08/31/2015	\$409,463.00	glen.liston@colostate.edu	Fort Collins	CO	Intellectual Merit: This aw
PLR	AON IMPLEMENTATION	01/01/2010	Hajo Eicken	AK	University of Alaska Fairbanks Campus	Erica L. Key	12/31/2014	\$1,419,891.00	hajo.eicken@gi.alaska.edu	Fairbanks	AK	Eicken 0856867 Uni
PLR	AON IMPLEMENTATION	09/15/2012	Henry Huntington	AK	Huntington Consulting	Erica L. Key	08/31/2015	\$51,215.00	hph@alaska.net	Eagle River	AK	The project builds on the
PLR	AON IMPLEMENTATION	01/01/2011	Ignatius Rigor	WA	University of Washington	Erica L. Key	12/31/2014	\$143,819.00	ignatius@apl.washington.edu	SEATTLE	WA	The PIs coherently argue
PLR	AON IMPLEMENTATION	08/15/2009	Ignatius Rigor	WA	University of Washington	Erica L. Key	07/31/2014	\$1,000,000.00	ignatius@apl.washington.edu	SEATTLE	WA	This award is funded und
PLR	AON IMPLEMENTATION	09/15/2012	Jacqueline Grebmeier	MD	University of Maryland Center for Environm	Erica L. Key	08/31/2017	\$674,666.00	jgrebmeier@cbl.umces.edu	Cambridge	MD	Several regionally critical
PLR	AON IMPLEMENTATION	09/15/2012	James Anderson	MA	Harvard University	Erica L. Key	08/31/2014	\$1,448,249.00	anderson@huarp.harvard.edu	Cambridge	MA	This proposal directly add
PLR	AON IMPLEMENTATION	01/01/2011	James Morison	WA	University of Washington	Henrietta N. E	08/31/2014	\$473,482.00	morison@apl.washington.edu	SEATTLE	WA	This award supports the
PLR	AON IMPLEMENTATION	08/15/2009	Jeffrey Welker	AK	University of Alaska Anchorage Campus	Erica L. Key	07/31/2014	\$591,914.00	afjmw1@uaa.alaska.edu	ANCHORAGE	AK	This award is funded und
PLR	AON IMPLEMENTATION	02/15/2013	Jeffrey Welker	AK	University of Alaska Anchorage Campus	Erica L. Key	07/31/2014	\$209,997.00	afjmw1@uaa.alaska.edu	ANCHORAGE	AK	The hydrological cycle ha
PLR	AON IMPLEMENTATION	12/31/2013	Jennifer Hutchings	OR	Oregon State University	Erica L. Key	12/31/2014	\$95,546.00	jenny@iarc.uaf.edu	Corvallis	OR	The PIs coherently argue
PLR	AON IMPLEMENTATION	08/15/2009	Jeremy Mathis	AK	University of Alaska Fairbanks Campus	Erica L. Key	07/31/2014	\$195,417.00	jeremy.mathis@noaa.gov	Fairbanks	AK	This award is funded und
PLR	AON IMPLEMENTATION	02/15/2013	Jessica Young	AK	University of Alaska Fairbanks Campus	Erica L. Key	07/31/2014	\$89,500.00	jmcable@alaska.edu	Fairbanks	AK	The hydrological cycle ha
PLR	AON IMPLEMENTATION	09/15/2012	John Langford	VA	Aurora Flight Sciences Corporation	Erica L. Key	08/31/2014	\$600,050.00	jlangford@aurora.aero	Manassas	VA	This proposal directly add
PLR	AON IMPLEMENTATION	09/15/2011	John Lenters	NE	University of Nebraska-Lincoln	Erica L. Key	08/31/2015	\$297,082.00	jlenters2@unl.edu	LINCOLN	NE	The scientific goals and r

Project Management – Outreach Log

DATE	PARTICIPANTS	EVENT NAME	PRIMARY PURPOSE	RESULTS FOR ACADIS
...

Advanced Cooperative Arctic Data & Information Service				
 OUTREACH Conference, Workshop, and Event Participation				
DATE	PARTICIPANTS	EVENT NAME	PRIMARY PURPOSE	RESULTS FOR ACADIS
<i>insert date or dates of event</i>	<i>who from our team?</i>	<i>name of conference or event and website</i>	<i>to give a paper or learn about a topic or booth duty or other?</i>	<i>describe direct results & recorded names of potential contacts</i>
summer 2013	Jim Moore, Don Stott	NSF Polar CI Workshop, Minneapolis, MN	ACADIS was displayed at the AGU: NCAR/UCAR booth and at the Antarctic Arctic Data Coordination (A2DC) booth	Participant. Purpose was management support
Jan 5-10, 2013	Sean Arms, Unidata	93rd AMS Annual Meeting https://ams.confex.com/ams/93Annual/webprogram/Paper222186.html	presented one paper: Arms, S. C., J. O. Ganter, J. Weber, and M. K. Ramamurthy, 2013: A Web-based Tool for Translating and Unstructured Data from Dataloggers into Standard Formats.	Exposing the broader network
02/24/13	Toni	Data Citation Index	learn about UC Boulder's new subscription to the Data Citation Index	Found several possible contacts. Confirmed minimum meeting contexts
07/18/13	Lynn	University of Colorado Boulder Data Librarians Meeting	Invited presentation: 'ACADIS: Select Services and Systems'	Met with local data librarians
7/23/2013	Toni	Cyberinfrastructure, Data Science vs Data Engineering	Don Middleton was presenting. I watched the live feed.	Teams members are on
7/24/2013	Toni	BESSIG	Ted Haberman presentation on metadata standards and rubrics	ACADIS adopted a rubric Gateway datasets.
8/1/2013	Toni	DCERC poster session	NCAR library collaboration, mentoring of new data curators	Building relationships with data curation
Sept 10-12, 2013	Lynn	Workshop on Cyberinfrastructure for Polar Sciences,	invited participant	Met with Wenwen Li (Points and commonality)
9/12/2013	Toni	Sophie from Ruth's class (a couple of days just for this student)	Assist new librarians with ACADIS data as part of their data preservation class assignment. The professor (NSIDC's Ruth Duerr) is part of the ACADIS team and incorporated ACADIS data into a full-semester project.	ACADIS received 5 updated records had been previously

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Project Management – Outreach Statistics

Outreach Log has 40 events on it from June 2013 to May 2014, some entries included participation from more than one ACADIS staff member
Example outreach events include:

National Meetings

- American Meteorological Society (AMS)
- American Geophysical Union (AGU)
- Geological Society of America (GSA)
- American Association for the Advancement of Science (AAAS)
- Ocean Science Meeting (OSM)
- American Association of Geographers (AAG)
- Research Data Access and Preservation Summit (RDAP)

International Meetings

- International Polar Data Forum

Targeted Events

- EarthCube workshops
- Cyberinfrastructure for Polar Science

Domain Science Events

- Ocean sciences, snow remote sensing, Arctic ecology and geology, etc.

Project Management in Year 4

Year 4 for ACADIS Project Management

- User experience in a more mature state based on feedback
- Monitor integrated metrics more closely, promote re-use of data
- More focus on NSF investigators
 - Expand outreach efforts.
 - Send email to ~500 PIs to encourage and monitor ACADIS use
 - Ensure Community Support is appropriately staffed to handle inquiries within 24 hours
- With direction from NSF Program Director, possibly look at broader applications for ACADIS, such as collaboration with Antarctic, NASA, NOAA, DHS, Coast Guard, DoD's Arctic Strategy-November 2013



ACADIS Use Cases and User Testimonials

ACADIS builds and maintains relationships with all stakeholders, including the Principal Investigators and other users of the system.

- We listen to user needs and experiences, and use feedback to develop and improve ACADIS services.
- We seek input from the science community via multiple avenues, listen to their concerns, and strive to address them promptly.
- We continually emphasize service in all our activities.

ACADIS Stakeholder Survey

Objective: Assess community perceptions of ACADIS.

Method: An inquiry **was sent to ~50 PIs** who use ACADIS. This included both experienced users and newcomers to the system. Two reminders were sent.

Response: We received 33 responses

“My understanding is that you have used ACADIS in the past to archive data stemming from one of your [PLR ARC] NSF grants ... I am hoping that you could provide me with a candid testimonial of your experience with ACADIS. This could include your experience with the process of data and metadata upload, the responsiveness of ACADIS support staff, searching for ACADIS data via the ACADIS Gateway, or anything else that comes to mind.”

ACADIS Use Case Categories

- Metadata submission (virtually every user)
- Data submission (most users)
 - Some users submit only metadata but provide links to servers providing their data.
- Data discovery and access (some users)
- Data reuse (still only a small number of users)
- Real-time data submission (one request so far; real-time data is an open issue going forward).

ACADIS Stakeholder Survey

- Responses were candid and generally helpful.
- Most focused on data and metadata submission.
- Few addressed searching for or accessing other PI's data.
- Many respondents offered suggestions for improvement, but acknowledged that they were not well-versed with the ACADIS system and its capabilities.
- **Take away: More outreach, education and training is warranted.**

ACADIS Stakeholder Survey

- In general, ACADIS is viewed very positively.
- A large percentage of users expressed satisfaction with the system.
- Multiple respondents addressed the efficiency, promptness and friendliness of the ACADIS staff. Several staff were mentioned by name.
- Several users had suboptimal experience. We received some very pointed (and constructive) criticisms, many of which have been addressed.

ACADIS Stakeholder Survey – Less Positive Responses

- Some users found the drop-down menus cumbersome or tedious to work with.
- A couple of users encountered technical glitches like timeouts and the resulting loss of data that they were in the process of uploading.
- A few complained about discovery of data from or by other researchers; **there is more work ahead for ACADIS on this front.**
- **Real-time data submission is an unresolved issue. NSF guidance is needed.**

ACADIS Stakeholder Survey – Suggestions

Several users provided suggestions for improving the layout, templates, search, etc. For example:

- Interface - Improving aesthetics, a more intuitive and simpler interface, new pop-up windows, and alphabetical ordering of PIs.
- Submission - A few suggested more standardization of the data submission process.
- DOIs - One user suggested that ACADIS issue DOIs to enhance data discovery, which ACADIS started doing almost two years ago.

ACADIS Testimonials - A Few Selections

“... my experience with ACADIS has been nothing short of excellent. The staff were timely and helpful. The upload was smooth. I have nothing but good things to say, no complaints whatsoever.”

“The data upload was fairly straight forward. The problem that I had was that the system only recognized active grant numbers. Often one wants to archive data collected during a previous grant. It would also be nice to have a category for paleoclimate sediment core data.”

“It's pretty easy, really. ACADIS has good documentation online detailing the steps for uploading data, and they were quite responsive to my questions and in giving me permissions for uploading...As far as finding data on ACADIS, I've had pretty good luck. I find it quite easy to navigate around to find what I'm looking for, and the data itself has always been well documented, and easy to use...You've got a pretty good system going.”

ACADIS Testimonials - A Few Selections

“I have been using ACADIS for a little over 3 years now. Initially the process seemed a bit tedious and redundant when it came to filling out the metadata information. We have so much data from different sites in the Arctic that doing this takes a very long time (months). I'm not sure that there is a way of getting around this at the moment but we have managed to stay on top of things. Not too long ago we were having trouble uploading data and received a very helpful and prompt response from your support staff and we gratefully appreciate it! The site itself is very self explanatory and well organized and have not had any issues with it till this day.”

“First of all, I was very much impressed by the friendly, helpful and prompt assistance from your data center staff. I was in contact with Lynn Yarmey, and she was fantastic. I believe and hope other staff members are just like her.”

ACADIS Testimonials - A Few Selections

“I did notice that the ACADIS staff we worked with (mainly Don Stott, if I remember correctly) were very helpful in getting us up to speed on the process of appropriately documenting and archiving our data. Also, I really appreciated ACADIS posting a data management plan template for proposals and have found that document to be quite helpful.”

“The support staff have been extremely responsive, and never reluctant to offer a little hand-holding when necessary. I recall submitting one archive on a Saturday, having a minor file-naming issue, and sent a message expecting it to be answered Monday. I had my answer in 30 minutes.”

“I have had no trouble finding data via the ACADIS Gateway, but then I always knew the PI's name so that gave me a head start.”

ACADIS Testimonials - A Few Selections

“If suggestions are in order, I might offer this: You don't submit data often enough to completely remember how it worked last time, so how about having a web page in the Gateway where one can ~practice~ submitting data, knowing that whatever you send to that page will be pitched.”

“Lastly, the format for ACADIS is a little stilted...a lot of front-end pull-down menu stuff that rarely fits our needs, but not too bothersome. I have tried to make our data more useful by attaching to the data a clear and extensive pdf on what we collected.”

“My experience with ACADIS was extremely frustrating. I have not actually successfully uploaded anything to the system. I have copied here the exchange I had with the support staff over the issues I had with the system (it reads from the bottom up, as they're progressive replies.) Basically, everything I entered was deleted because the system wouldn't let me enter the correct data for one field and won't save anything without everything being entered completely.” ***ACADIS Comment: We are dealing with this one.***

ACADIS Testimonials - A Few Selections

“ACADIS personnel worked closely with PIs to organize material”

“Voluminous material sent to ACADIS, no word from them in the past 6 months”

“Process seems very cumbersome”

ACADIS Comment – We are dealing with this one

“I submitted last summer an ice-core dataset from an NSF-funded project. The most important aspect of the submission was the fact that ACADIS welcomed my dataset, for I had tried unsuccessfully several other data centers to archive my dataset and to fulfill my obligation as an NSF funded PI to archive project data. The submission process was smooth. I received timely assistance and clear instructions on metadata from ACADIS staff. It was a pleasant experience.”

ACADIS Testimonials - A Few Selections

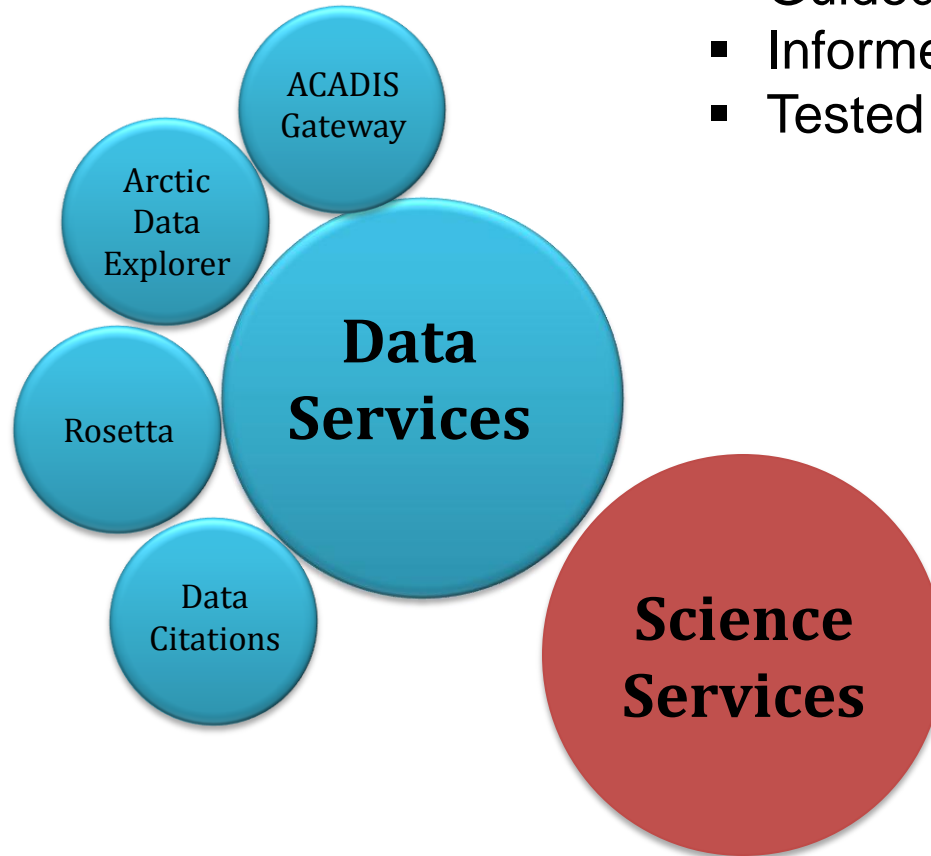
“I was very pleased on how easy it is to work with the website. It is clear, and whenever I had a question a ACADIS Support Staff was quick to answer via email. Please let me know if you want me to elaborate in any way, but overall I would give ACADIS a A+!”

“Once the project was initiated all aspects dealing with coordination and handling and uploading of data went very smoothly and everyone worked very quickly and professionally to complete the project, in my opinion, in record time.”

ACADIS Project Vision Revisited

- Data management for the NSF Arctic community
- Open data access and sharing
- Based on best practices and standards
- Capitalizes on evolving technologies
- Enabled by Community Support services
- Leverages other projects as appropriate

ACADIS Products



- Guided by project vision
- Informed by community support
- Tested by scientific users

ACADIS Products: Science Support

Expert consulting for science project needs

ACADIS Community Support and SRDC services assist scientists in project data preservation and inform engineering direction to sustainably meet scientific data management needs.

- Full life cycle data management consulting.
- Project planning, data preservation and data re-use.
- Help desk system for communication management.
- Direct input to product owners guides development.
- Model enables efficient scaling of resources.



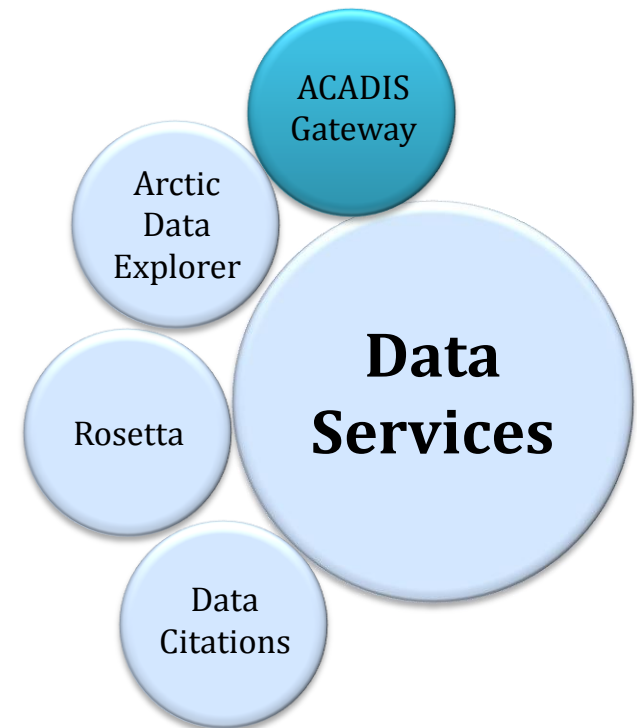
**Science
Support**

ACADIS Products: ACADIS Gateway

Sustainable Arctic research data preservation

The ACADIS Gateway supports NSF PLR ARC researchers with tools and services for preserving, citing and sharing research data.

- Tools for self service data publication.
- Access to provider resources and documentation.
- Web services for workflow automation.
- Feeds for metadata access and sharing.
- Integrated access to Rosetta data translation tool.
- Search and browse of ACADIS Arctic data holdings.
- Support feedback guides product direction.
- OpenSource Apache License 2.0.

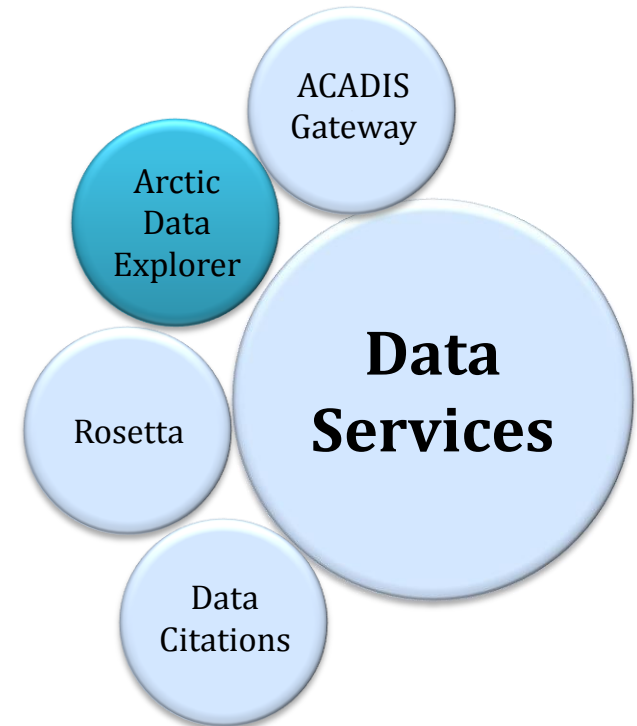


ACADIS Products: Arctic Data Explorer

Efficient access to Arctic data

The Arctic Data Explorer is a broad discovery tool for finding and accessing interdisciplinary Arctic data from diverse investigators, projects, agencies, and nations in repositories scattered around the world

- User centered development.
- Supports emerging discovery standards.
- Usability study driven refinement.
- Built on proven brokering technology.
- Leverages other Arctic data repositories.
- Contributing to/creating open source libraries

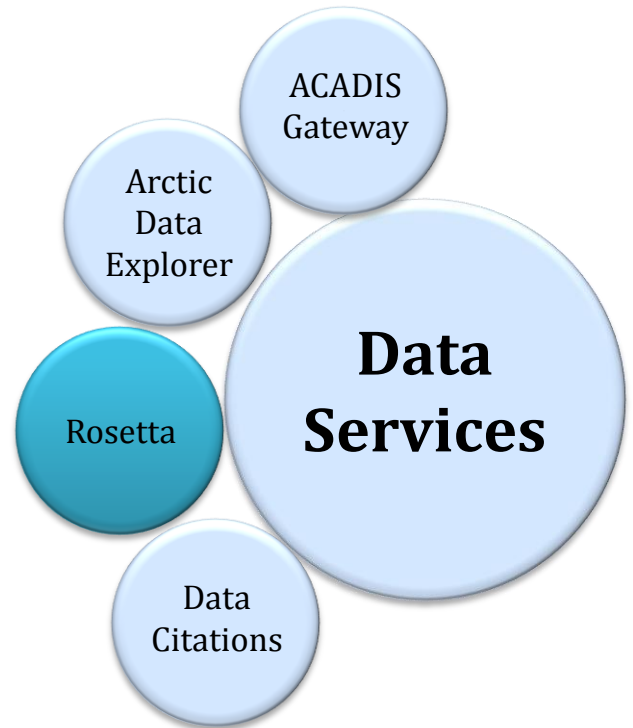


ACADIS Products: Rosetta Data Translator

Enabling science through data sharing

The Rosetta Data Translation tool, is a web-based service that provides an easy, wizard-based interface for data collectors to transform their ASCII output into Climate and Forecast (CF) compliant netCDF files.

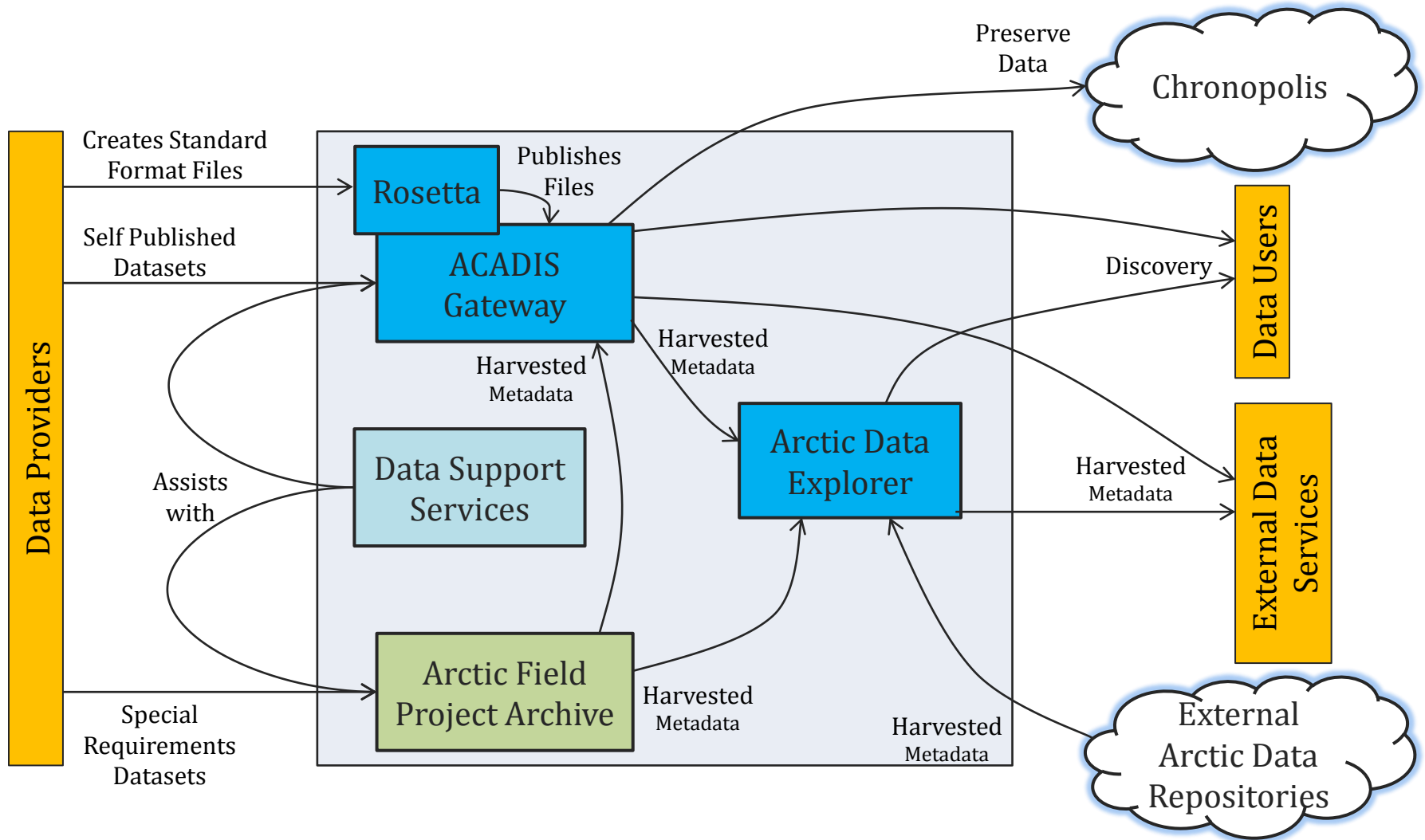
- Web based guided interface
- Leverages years of development behind:
 - Climate and Forecast conventions
 - NetCDF & NetCDF-Java
 - THREDDS Data Server



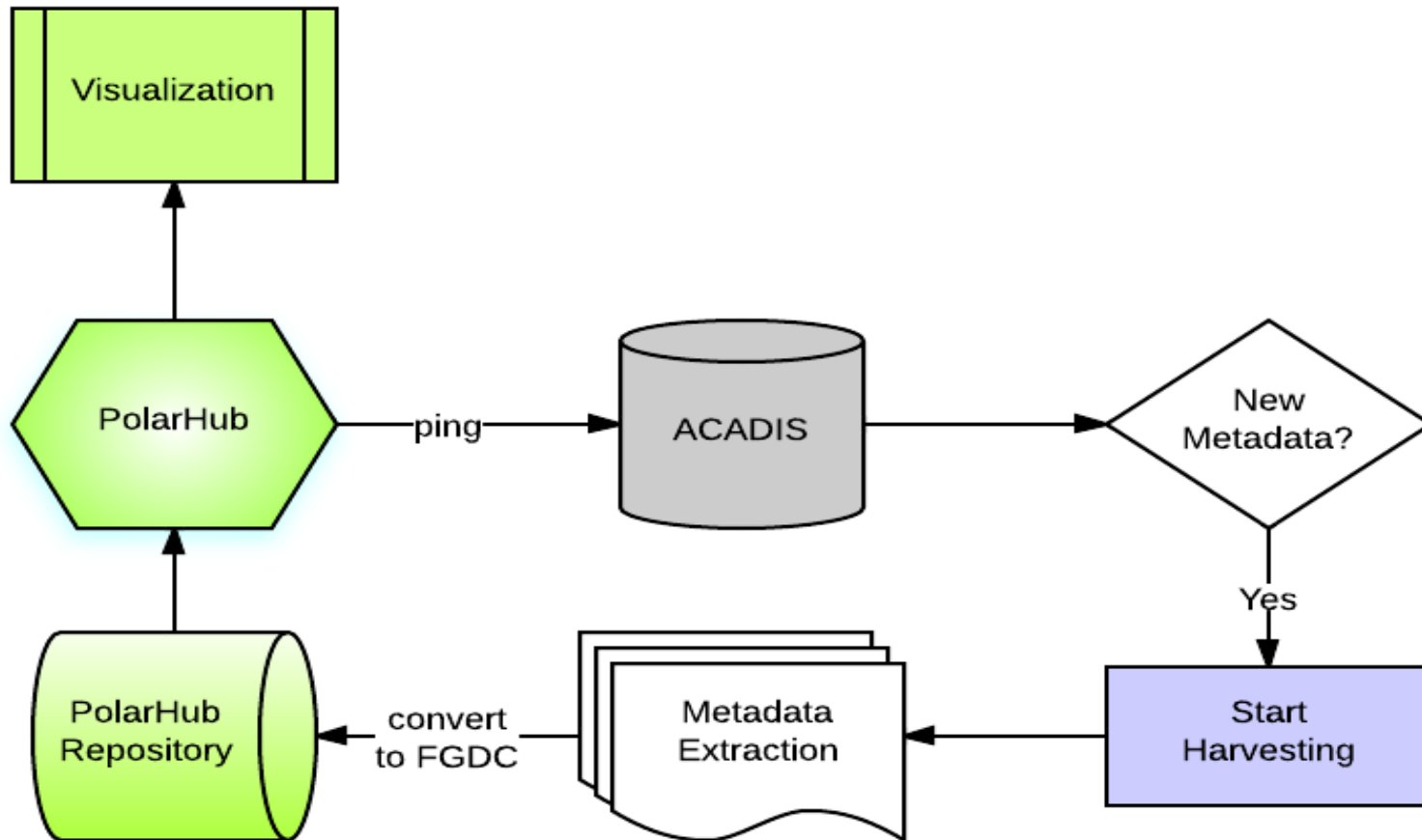
ACADIS Product Development

Use Case	Recent Features and Improvements		
Discover Data	<ul style="list-style-type: none"> • GCMD Topic Browse • Related datasets • Action based homepage • DOI harvest and search 	<ul style="list-style-type: none"> • ADE OpenSearch harvest • Atom feed / recent activity • Relevance ranking • Facets refined from usability 	<ul style="list-style-type: none"> • Spatial & temporal facets • Sort features added • Expand repository harvest • Spatial coverage maps
Publish Data	<ul style="list-style-type: none"> • File upload API • Task based workflow • Bulk file upload UI • Improved metadata validation 	<ul style="list-style-type: none"> • DOI minting tool for curators • Rosetta integration • Admin tools for datasets 	<ul style="list-style-type: none"> • Readme template • Provider documentation
Access Data	<ul style="list-style-type: none"> • Bulk download as zip, wget • REST URL upgrade • Simplified download workflow • Standard data format access 		
Share Metadata	<ul style="list-style-type: none"> • OAI ISO & DIF Templates • OpenSearch, CSW feeds • Polar Hub harvest 	<ul style="list-style-type: none"> • WMO-WIS validation • GCMD data center registration • Feed pagination 	<ul style="list-style-type: none"> • ARMAP connection
Verify Data Published	<ul style="list-style-type: none"> • PI, Author, Award search • Expanded metadata harvest • Notification/Atom feed 		

ACADIS System



NSF/ASU PolarHub – ACADIS Gateway



ACADIS Project Metadata

- Coordinated by the Metadata Subgroup
 - Define minimum metadata for sharing among ACADIS partners
 - The core metadata required for brokered datasets
 - Review metadata standards
 - Conformance of ACADIS metadata with International standards
 - Consult on new metadata/data workflows
 - Identify process and workflow improvements
 - Work with development teams to implement improvements
 - Define a readme documentation template
 - A free text form to gather collection and processing details, platform information, data format and remarks, etc.
 - First step towards data provenance tracking
 - Coordinate metadata cleanup efforts
- Plan for ongoing, sustainable metadata work

Metadata Standards

- ACADIS metadata comply with the Core Metadata for Geographic Datasets of the ISO 19115 standard
- Datasets within Arctic field projects concentrating on biology and ecosystems, such as the Bering Sea Project, meet additional requirements
 - Metadata comply with the Federal Geographic Data Committee (FGDC) Biological Data Profile of the Content Standard for Digital Geospatial Metadata
 - Taxonomies are checked against the Integrated Taxonomic Information System (ITIS) database and expanded if needed
 - FGDC metadata in Extensible Markup Language (XML) are validated using the USGS metadata parser (mp)

Metadata Input Form for Online Self-Publishing

Publish ACADIS Metadata

- Create a new dataset: Enter Metadata
- Edit the metadata for an existing dataset
- Upload files to an existing dataset
- User Help Document

Metadata for Collection

It is strongly recommended that you complete this form in less than 90 minutes.
Note: Required fields are marked with an asterisk (*).

* Title:

* Short Name:

* Description:

Author(s):

* Location Keyword(s):

* Platform Keyword(s):

* Instrument Name(s):

* Science Keywords:

* ISO Topic(s):

* Metadata Contact(s):

* Distribution Format(s):

Begin Date:
Format: YYYY-MM-DD

End Date:
Format: YYYY-MM-DD

* Northernmost Latitude: * Southernmost Latitude:

* Westernmost Longitude: * Easternmost Longitude:

Frequency(ies):

Spatial Type(s):

Resolution(s):

* Progress:

Dataset Language:

Access Restrictions:

Use Constraints:

Readme File Template for Additional Metadata

ACADIS Data Documentation: Template & Guidelines



Please adhere to the following documentation guidelines to ensure complete and consistent documentation files for your ACADIS datasets. Provide a documentation file in this form for each file type included in the dataset, using file names unique to the combination of the dataset and file type (e.g., borehole_sitename_2013_doc.txt). Each updated version of the dataset should be accompanied by updated documentation. Please provide additional detail within your documentation beyond what is outlined in these guidelines as you see fit.

Contact **support (at) aoncadis (dot) org** with any questions or comments regarding these guidelines.

Template

A documentation template file can be downloaded and modified to be specific to your dataset. For your convenience, the template file is provided in Microsoft Word document and ASCII text formats.

Download the template file here: [\[DOC\]](#) [\[TXT\]](#)

Guidelines

Click on the section titles below to expand/collapse each individual section.

▸ 1 Title

▾ 2 Author(s)

- Full name(s) of authors of the dataset, listed in the order, for use in a citation
- Full name(s) of any relevant associated personnel, if applicable
- For each author and associated person:
 - Include complete contact information: e-mail address, telephone number, mailing address and web page
 - Indicate his/her role (i.e. PI, Co-PI, Contributor, Metadata Contact, etc.)
 - Indicate his/her title, if available (e.g. Associate Scientist, Research Associate, Professor)
- Indicate corresponding author for data questions

Data Documentation Template Topics

Guidelines

Click on the section titles below to expand/collapse each individual section.

▶ **1 Title**

▶ **2 Author(s)**

▶ **3 Funding Source and Grant Number**

▶ **4 Dataset Overview**

▶ **5 Platform(s)**

▶ **6 Instrument(s)**

▶ **7 Data Format**

▼ **8 Data Collection, Processing & Methodology**

- Description of:
 - Data collection and processing techniques and software used
 - Derived parameters and methods
 - Quality assurance and quality control procedures

▶ **9 Data Remarks**

▶ **10 References**

ACADIS Project Metadata - Sharing

- ACADIS (Gateway and Arctic Data Explorer) metadata are available through an Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) feed and OpenSearch-ESIP service.
- ACADIS metadata are currently harvested by
 - Arctic Observing Viewer (AOV)
 - World Meteorological Organization (WMO) Information System (WIS)
 - Global Change Master Directory (GCMD)
 - PolarHub

ACADIS Metadata - Harvesting

Data catalogs at the following organizations are in active daily harvest by the ACADIS Arctic Data Explorer

- ACADIS Gateway
- Earth Observing Laboratory (EOL)
- National Snow and Ice Data Center (NSIDC)
- NCAR/Research Data Archive (RDA)
- National Oceanographic Data Center (NODC)
- Norwegian Meteorological Institute (NMI)
- International Council for the Exploration of the Sea (ICES)
- NASA Earth Observing System (EOS) Clearing House (ECHO)

Metadata Harvesting Protocols

Currently harvesting with following protocols:

- THREDDS
 - Thematic Real-Time Environmental Distributed Data Services
- OAI-PMH/DIF
 - Open Archives Initiative - Protocol for Metadata Harvesting/Directory Interchange Format
- ECHO 10
 - NASA-developed Earth Observing System (EOS) Clearing House (ECHO) ver. 10
- CSW/ISO
 - Open Geospatial Consortium Catalog Service for the Web
 - ISO 19115/19139 metadata profile
- OpenSearch – Federation of Earth Science Information Partners (ESIP) specification

ACADIS Metadata - Harvesting (is hard!)

The following repositories could not (yet) be usefully harvested

- TREEBASE
- Polar Data Catalogue
- DataONE/MetaCat
- Dryad
- Geospatial Information Network of Alaska (GINA)
- Southeast Alaska GIS Library

Metadata Cleanup

Metadata being submitted by data providers need to be periodically reviewed for correctness.

- Goal is accurate metadata sufficient for intended uses
- Metadata cleanup is a continuing process
- Reasons for periodic metadata review and cleanup
 - Searching is faster, more efficient and effective with clean metadata
 - Citations and DOIs depend upon accurate metadata
 - Shared metadata is most useful to others when accurately represented
 - Stewardship of datasets for the long term involves less effort when the metadata are complete and accurate
- Review and cleanup of metadata involves equal parts social solution and technological
 - Describing data is a social activity and can't (yet) be well-automated
- Some simple quality checks on metadata can be applied programmatically at the time of submission

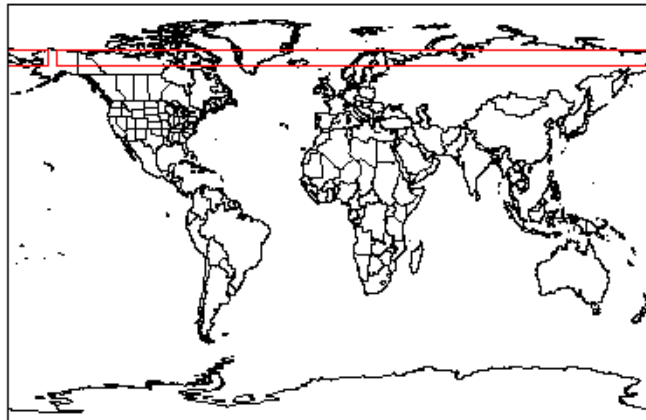
Metadata Cleanup: Example

The bounding box is an area defined by two longitudes and two latitudes, where:

- Latitude is a decimal number between -90.0 and 90.0.
- Longitude is a decimal number between -180.0 and 180.0.

Example below shows longitude values that were likely accidentally reversed when metadata entry form was filled out:

Minimum latitude: 66.000000, Minimum longitude: -150.000000
Maximum latitude: 68.000000, Maximum longitude: -160.000000



Metadata Cleanup

- Although checking for values within a certain range seems easy enough, rigorously applying some sanity checks could exclude valid entries
 - Longitudes converge as latitudes approach the poles
 - A min/max longitude of -150/-160 at a latitude of 66N is likely incorrect, while at 86N may be perfectly reasonable
 - Also, model datasets with Arctic outputs may include inputs from the Southern hemisphere
 - Review is important
- Preferred method for metadata checking and cleanup
 - Hybrid of scripted and manual review
 - Use scripts to check metadata and flag suspect or missing values
 - Manually review the flagged metadata and make improvements as needed
 - Refine validation rules given results of manual review

Metadata Cleanup

- Data curators, software engineers, and student assistants tackled the review, corrections, and backfill of ACADIS metadata database records for projects and datasets.
- Scripts were used to gather metrics on extent of problems and aid in prioritizing the effort
- These items were flagged for further review
 - Extreme brevity of summary description
 - Datasets with default values for spatial and temporal fields
 - Suspected switching of W, E longitudes
 - No authors designated
 - Acronyms used but not spelled out
- Manual review
 - Dataset description
 - Flagged items reviewed and corrected or filled in as needed

Metadata Cleanup Impacts

- Improvement in searching
 - Searches are more effective
 - Searches on harvested metadata should improve
- Speedy keyword searching in the background
 - Used to display “like-minded” recommendations with dataset descriptions

More Like This Dataset: [Acoustic Doppler Current Profiler Data - 2010](#)
[Acoustic Doppler Current Profiler Data - 2011](#)
[Acoustic Doppler Current Profiler Data - 2012](#)
[UAF Moored Acoustic Doppler Current Profiler \(ADCP\) Data](#)
[Buoy, IOEB Doppler Current Profiler \(ADCP\) Data \[Krishfield, R.\]](#)

Metadata Cleanup Impacts

- Recommended changes for default values
 - Dataset bounding box
 - Prefill dataset bounding box with the project bounding box
 - Metadata will start out with the general area defined
 - Data provider can then refine for individual datasets
 - Data Center Contact
 - Default should be support@aoncadis.org, not ACADIS individuals
 - Brokered datasets retain own contacts
 - Use and Access Restrictions
 - Open access becomes norm
 - Editable text field should be removed from metadata form
 - Data curators should identify exceptions to the norm

Questions/Plans for Tomorrow

Time	Presentation/Discussion	Participants	Location
Wednesday, May 7th			
8:00am to 8:30am	<i>Coffee and morning refreshments</i>		Center Green Board Room
8:30am to 8:45am	Any follow-up with the NSF Review Panel	Jim Moore	Center Green Board Room
8:45am to 9:15am	Metrics – community service contacts and website statistics	Eric Nienhouse, Lynn Yarmey	Center Green Board Room
9:15am to 9:45am	Rosetta	Sean Arms, Mohan Ramamurthy	Center Green Board Room
9:45 am to 10:15am	Demo of ADE and ACADIS Gateway	Lynn Yarmey, Eric Nienhouse	Center Green Board Room
10:15am to 10:30am	<i>Coffee break</i>		
10:30am to 11:15am	Polar Community / EarthCube / Cyberinfrastructure collaboration	Don Middleton	Center Green Board Room
11:15am to 12:00pm	Summary of Year 4 plans and future directions	Jim Moore	Center Green Board Room
12:00pm to 1:00pm	<i>Business lunch for NSF Review Panel members</i>		
1:00pm to 3:00pm	NSF Review Panel executive session	NSF Review Panel members	Center Green 12503
3:00pm to 3:15pm	<i>Coffee break</i>		
3:15pm to 4:00pm	Recommendations from the NSF Review Panel to ACADIS team	NSF Review Panel members, invited ACADIS staff	Center Green Board Room
4:00pm to 4:20pm	Final discussion and wrap-up	Jim Moore	Center Green Board Room