

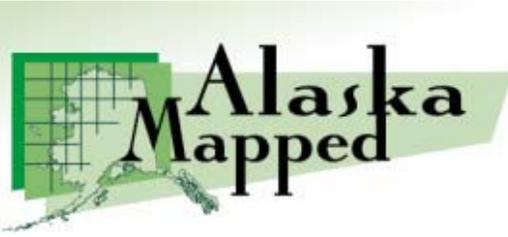
Alaska Statewide Digital Mapping Initiative

Buck Sharpton, PhD
UAF Vice Chancellor for Research
Member SDMI Executive Team



Origins of the Statewide Digital Mapping Initiative

- Underway July 1, 2006 (State FY07)
- Partnership among:
 - Dept of Military and Veterans Affairs
 - Dept of Natural Resources
 - University of Alaska
 - MOU endorsed by Governor Murkowski; renewal endorsed by Governor Palin
- Intended initially to capture \$25M of NASA funds through a State in-kind \$8M
- To date – State: \$2M (FY07) + \$2M (FY08)



The Problems with Current Maps

- Imagery out of date
 - Alaska last photographed in entirety in 1978-1986
 - Film imagery (some has been scanned)
 - About 30% of the state has high-resolution imagery less than 5 years old
- Digital Elevation Models (DEM)
 - Coarse: 30 meter spacing
 - Inaccurate: created by digitizing USGS topographic maps made in the 1950's using poorly controlled air photography

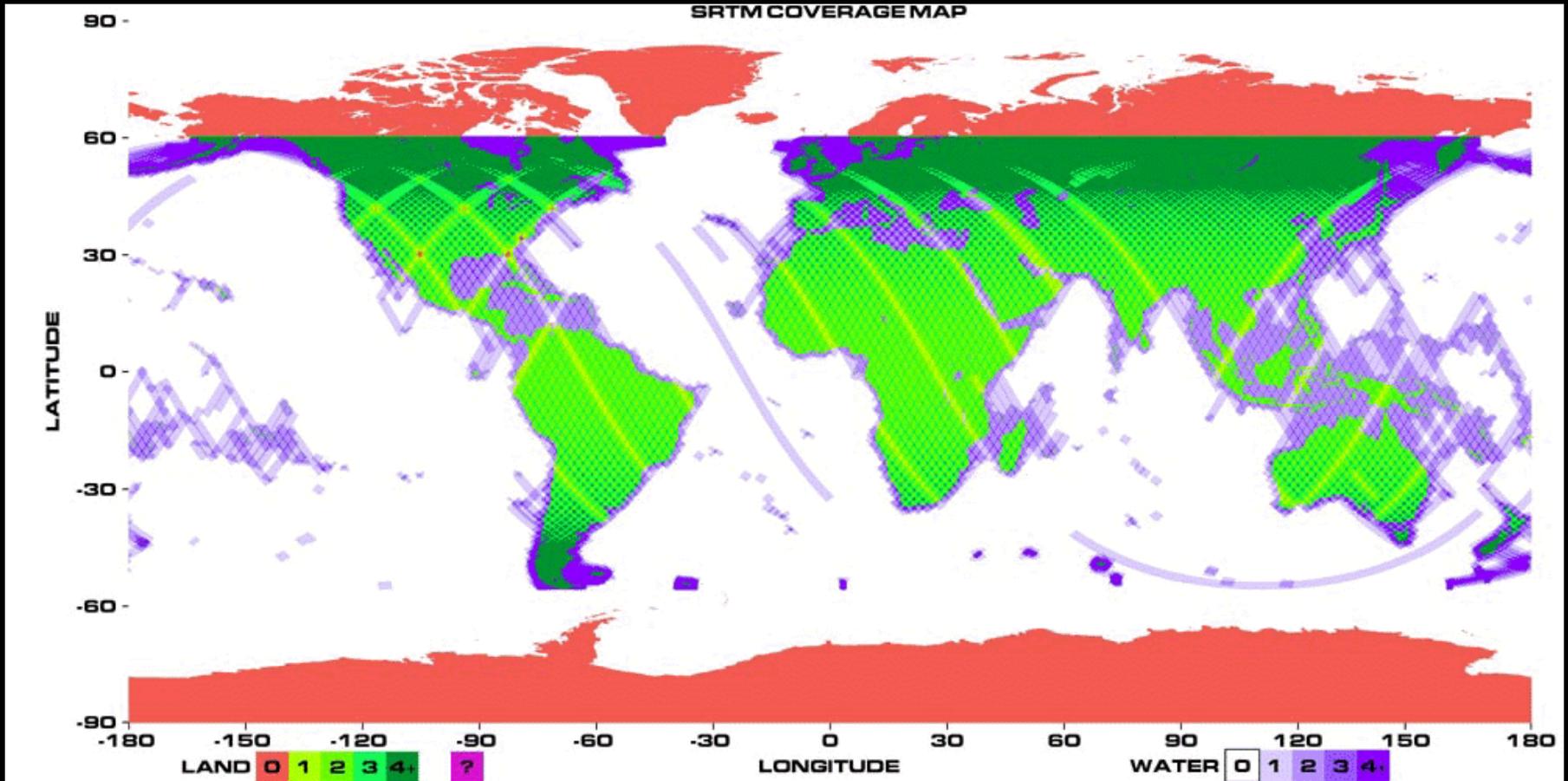
SRTM

SHUTTLE RADAR TOPOGRAPHY MISSION



NIMA

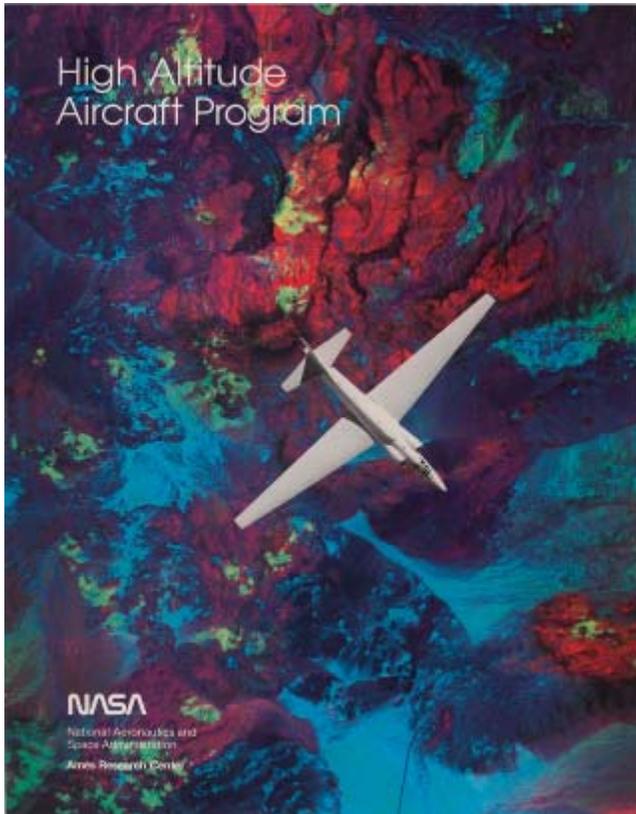
Mapping the World in 3 Dimensions



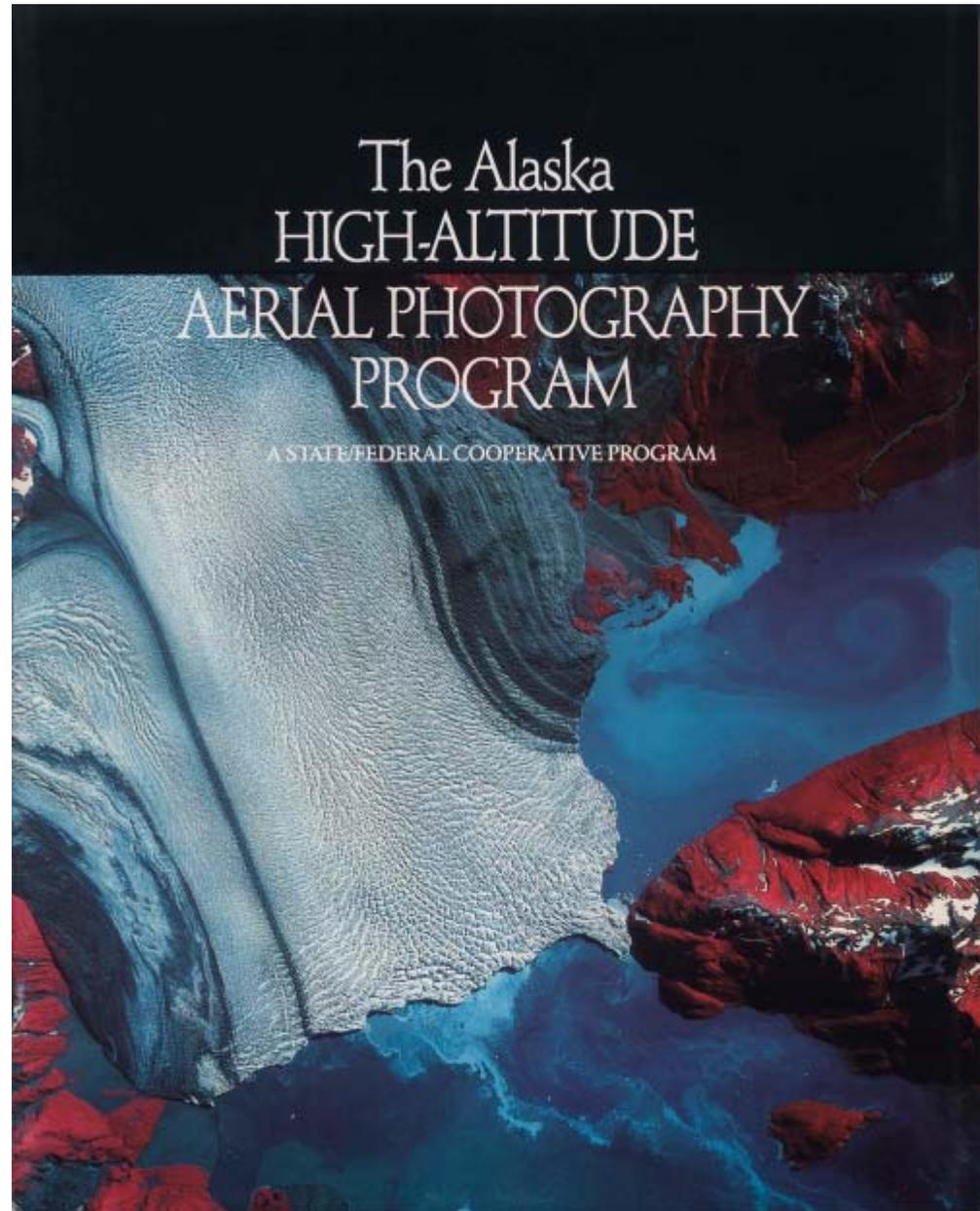
Color swaths indicate the number of times the area was imaged by SRTM

0 ■ 1 ■ 2 ■ 3 ■ 4 ■ ? ■

Alaska High-Altitude Photography Program



Alaska was photographed from high-altitude U-2 and ER-2 aircraft between 1978 and 1986 under a multi-agency, State and Federal partnership led by the USGS.



High Resolution Imagery for Alaska

Existing Inventory 2006 and Contracted 2007 Acquisitions

RUSSIA

Land Ownership

Department of Interior	Other Lands
National Park	Major Military Lands
National Wildlife Refuge	Native Lands
BLM Lands	State Lands
National Wild Rivers	State and Native Land in the Same Section
Department of Agriculture: US Forest Service	Private Lands
National Forest	High Resolution Coverages
	Mapped Areas
	Villages

For more information about this map please contact
 Buck Shapton@Alaska.edu or Tom Heinrich@alaska.edu.
 Map creation: November 2006 Map Projection: Albers Equal Area

Beaufort Sea

Chukchi Sea

Bering Strait

CANADA

Bering Sea

Bristol Bay

Gulf of Alaska

SPECIAL NOTE: The inventory of existing and planned acquisitions of high resolution imagery is ongoing. This map is believed to be largely complete, but at this stage should be considered draft and not fully complete.

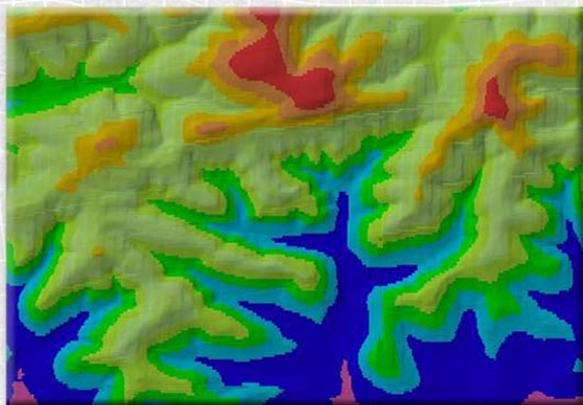


North Pacific Ocean



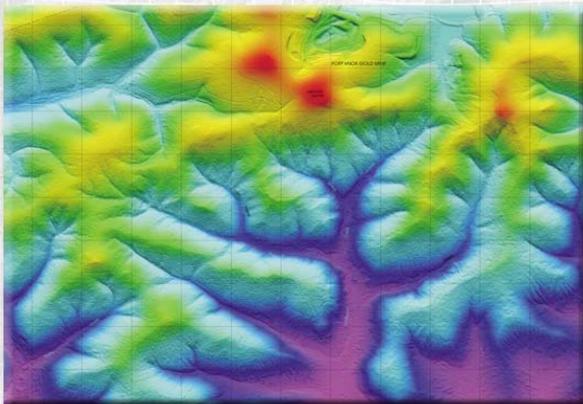
Geographic Information Network of Alaska
 www.gina.alaska.edu

Digital Elevation Models



EXISTING

Elevation data from existing USGS 1:63,360 topographic map.



PROPOSED

Example of proposed elevation data derived from radar technology of 1:25,000 topographic map.

Elevation in meters



- Critical uses
 - Engineering and permitting: transportation, energy, environmental, hydrology
 - Aviation: civilian and military
 - Mapping: the foundation of accurate maps and orthoimages



SDMI Program Goals

- Baseline documentation
 - Climate change impacts
 - Development
- Better map information ⇒ leading to
 - Better decision making
 - Well-informed resource management
 - Cost savings
 - Improved planning and regulatory certainty (risk reduction)
 - More efficient fieldwork
 - Imagery and DEM dollars well-spent



SDMI Program Deliverables

- Statewide Orthoimage – Multi-Scale
 - Best Imagery: ~2m/pixel statewide
- Digital Elevation Model – DEM
 - SRTM Quality
- Public Access via Central Repository
- Web Services via Open Protocols
- Sustained Partnership – Government University and Private Sector

Year 1 Deliverable

Web Mapping Service Engine Provides “Best Available”
Imagery For Region In Client’s View –
Google Maps Interface + Data Downloaded Capability

program overview | contact info

Alaska Mapped Maps

HOME | NEWS | VIEW MAPS | INVENTORY

Search

Make Map

Open View Elsewhere

Show Available Data

Link To This Page

Hybrid Imagery

Alaska

Fairbanks

POWERED BY Google

Center Location: { -147.568 , 64.392 }
Mouse Location: { -146.678 , 65.481 }

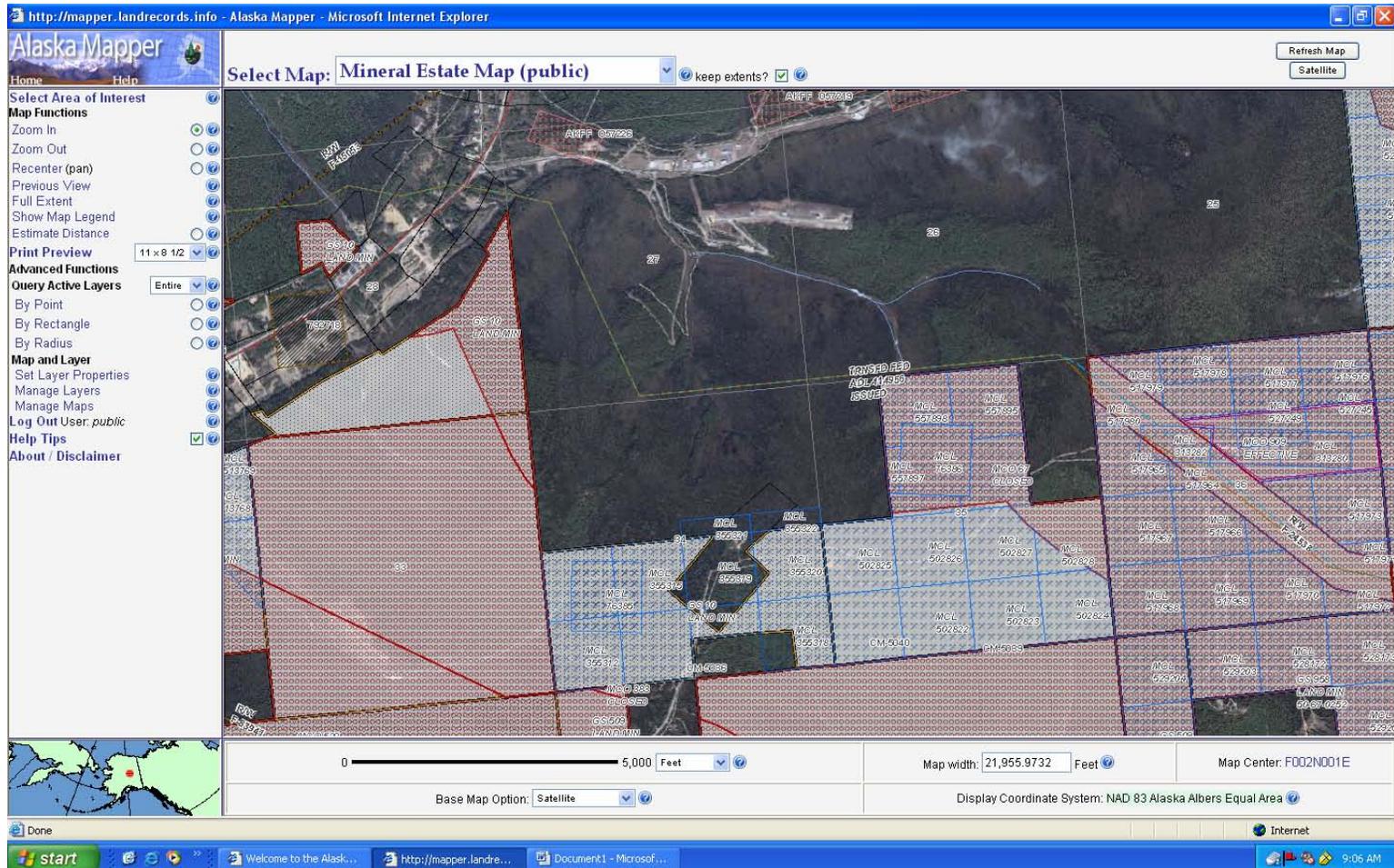
GINA: <http://gina.alaska.edu>, © DigitalGlobe, © GeoEye, Map data ©2007 Tele Atlas - [Terms of Use](#)

Map Usage: Double-Click: Left to zoom-in, Right to zoom-out and center. Left Click-n-Drag to Pan.

AlaskaMapped.Org

Year 1 Deliverable

Integration into State Enterprise Applications - DNR/LRIS:
SDMI WMS Feed of Landsat with State Mining Claims -
Synergistic and Enhanced Contact with State Customers



A Few Additional SDM Web Services Examples: SDMI WMS Feed of National Elevation Data Model Hillshade

The screenshot displays the Alaska Mapper web application interface. The browser address bar shows the URL <http://mapper.landrecords.info>. The application title is "Alaska Mapper" and the current map is "Mineral Estate Map (public)".

Left Panel (Navigation and Tools):

- Home, Help
- Select Area of Interest
- Map Functions:
 - Zoom In
 - Zoom Out
 - Recenter (pan)
 - Previous View
 - Full Extent
 - Show Map Legend
 - Estimate Distance
- Print Preview (11 x 8 1/2)
- Advanced Functions
- Query Active Layers (Entire)
- By Point
- By Rectangle
- By Radius
- Map and Layer
 - Set Layer Properties
 - Manage Layers
 - Manage Maps
- Log Out User: public
- Help Tips
- About / Disclaimer

Main Map Area:

The map displays a hillshade representation of elevation data overlaid on a mineral estate map. The terrain is shaded in green and brown tones, indicating elevation changes. The mineral estate map shows various land parcels with labels such as "MCL", "GS 10 LAND MIN", "AKPF 057220", "RW 144768", "RW 144769", "RW 144770", "RW 144771", "RW 144772", "RW 144773", "RW 144774", "RW 144775", "RW 144776", "RW 144777", "RW 144778", "RW 144779", "RW 144780", "RW 144781", "RW 144782", "RW 144783", "RW 144784", "RW 144785", "RW 144786", "RW 144787", "RW 144788", "RW 144789", "RW 144790", "RW 144791", "RW 144792", "RW 144793", "RW 144794", "RW 144795", "RW 144796", "RW 144797", "RW 144798", "RW 144799", "RW 144800".

Bottom Panel (Map Information):

- Scale bar: 0 to 10,000 Feet
- Map width: 43,911.9464 Feet
- Map Center: F002N001E
- Base Map Option: Hillshade
- Display Coordinate System: NAD 83 Alaska Albers Equal Area

Taskbar:

The Windows taskbar at the bottom shows the Start button, several open applications (Welcome to the Alask..., http://mapper.landre..., Document1 - Microsof...), and the system tray with the Internet icon and the time 9:08 AM.

SDMI WMS Feed of Statewide USGS Topographic Maps

http://mapper.landrecords.info - Alaska Mapper - Microsoft Internet Explorer

Alaska Mapper

Home Help

Select Map: Mineral Estate Map (public) Keep extents?

Refresh Map
Satellite

Select Area of Interest

Map Functions

- Zoom In
- Zoom Out
- Recenter (pan)
- Previous View
- Full Extent
- Show Map Legend
- Estimate Distance

Print Preview 11 x 8 1/2

Advanced Functions

Query Active Layers

- By Point
- By Rectangle
- By Radius

Map and Layer

- Set Layer Properties
- Manage Layers
- Manage Maps
- Log Out User: public
- Help Tips
- About / Disclaimer

0 10,000 Feet

Map width: 43,911.9464 Feet

Map Center: F002N001E

Base Map Option: USGS Topo

Display Coordinate System: NAD 83 Alaska Albers Equal Area

Done

Internet

start

Welcome to the Alask... http://mapper.landre... Document1 - Microsof...

9:08 AM

SDMI NOAA Charts Via WMS

The screenshot displays the Alaska Mapper web application interface. The browser window title is "http://mapper.landrecords.info - Alaska Mapper - Mozilla Firefox". The application header includes "Alaska Mapper" and navigation links for "Home" and "Help". A "Select Map:" dropdown menu is set to "Base Map (public)", with "keep extents?" checked. On the right side of the header, there are "Refresh Map" and "Satellite" buttons.

The left sidebar contains a menu with the following sections and options:

- Select Area of Interest**
- Map Functions**
 - Zoom In
 - Zoom Out
 - Recenter (pan)
 - Previous View
 - Full Extent
 - Show Map Legend
 - Estimate Distance
- Print** (11 x 8 1/2)
- Preview**
- Advanced Functions**
 - Query Active Layers (Entire)
 - By Point
 - By Rectangle
 - By Radius
- Map and Layer**
 - Set Layer Properties
 - Manage Layers
 - Manage Maps
- Log Out** (User: public)
- Help Tips**
- About / Disclaimer**

The main map area shows a NOAA chart titled "NORTH PACIFIC OCEAN (EASTERN PART)". The map covers the eastern coast of Alaska, including the Chukchi Sea, Bering Sea, and Gulf of Alaska. Major cities like Barrow, Prudhoe Bay, Kotzebue, Nome, Fairbanks, Anchorage, and Kodiak are labeled. The map includes depth contours, navigational aids, and various geographical features.

At the bottom of the map area, there is a scale bar showing 0 to 2,000,000 Feet. To the right, it displays "Map width: 10,458,170.034 Feet" and "Map Center:". Below the scale bar, it shows "Base Map Option: NOAA Chart" and "Display Coordinate System: NAD 83 Alaska Albers Equal Area".

The Windows taskbar at the bottom shows the "start" button, several open applications (Inbox - Micr..., Welcome to..., http://mapp..., Microsoft Po...), and the system clock showing 4:36 PM.



SDMI Partnership Examples

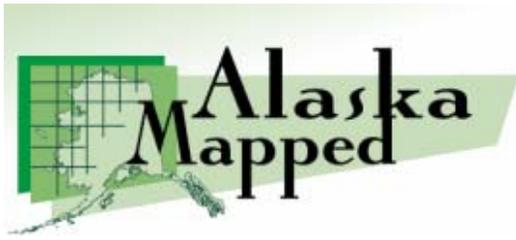
- SDMI is actively pursuing partnerships to extend both SDMI and Alaska partner project dollars

Examples:

- Contributing funding to a detailed DEM (probably LIDAR) for the Kenai Peninsula; lead by Kenai Watershed Forum
- Uplifting data licenses for Y-K Delta to public access in partnership with the US Fish and Wildlife Service
- Uplifting USDA-NRCS licensing for five Y-K Delta, Mat-Su, and Kenai communities

Next Steps for Alaska SDMI – Year 2 Underway

- Planning and Stakeholder Development
 - HDR + I-Cubed Planning Contract
 - \$300k Contract
 - \$175k DMVA (stakeholder work)
- Data Serving and Data Outreach
 - Archive and interfaces at UAF
 - Training and outreach
 - \$509k UAF (data systems and training)
 - \$85k DNR (training and enterprise integration)
- Data Acquisition: License uplifts, Archive and New Data Purchases
 - \$3.1M
- Total State **\$4M** = \$2M FY07 + \$2M FY08
Federal Auth **\$16M** = \$8M FY07 + \$8M FY08



SDMI Year 2 Results, to date

- Planning contract underway
- Twenty+ Memoranda of Endorsement
- Archive and data available through web services rapidly growing
- Funding partnerships executed with USDOI-USFWS, USDA-NRCS, and Kenai Watershed Forum consortium
- Training and documentation being actively delivered