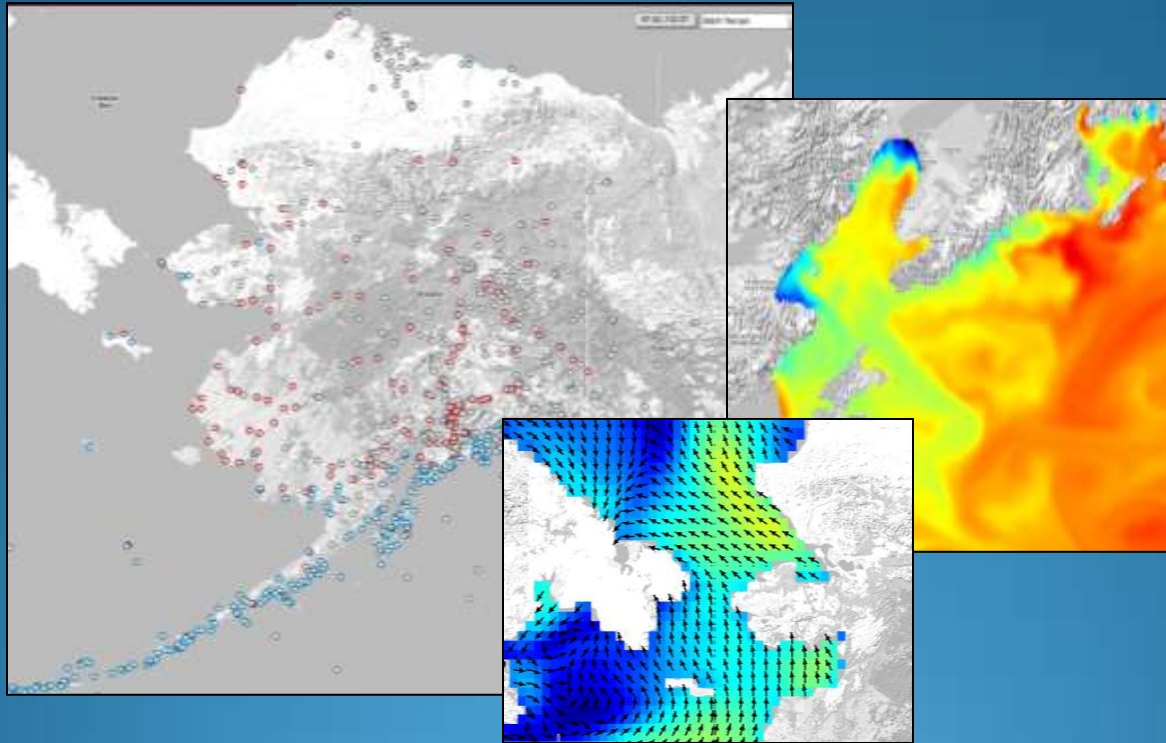


Alaska Ocean Observing System

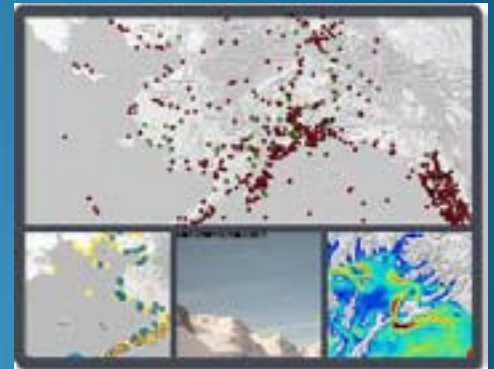
Web-based data & mapping tools



Darcy Dugan
Nov 3, 2011

Outline

- What's AOOS?
- Demonstration of 2 data tools
 - Real Time Sensor Map
 - Model Explorer
- Upcoming Data Integration Project



Who is AOOS?

AOOS Mission

Provide easy access to information about the physical, chemical, and biological states of Alaska's oceans and coastal ecosystems

Develop and maintain a network of ocean and coastal observations

Generate information products and tools for informed decision-making



AOOS Stakeholders

- Mariners, fishermen and subsistence users
- Search and rescue operations
- Scientists
- Coastal security operations
- Resource managers
- Conservation
- Industry
- Educators



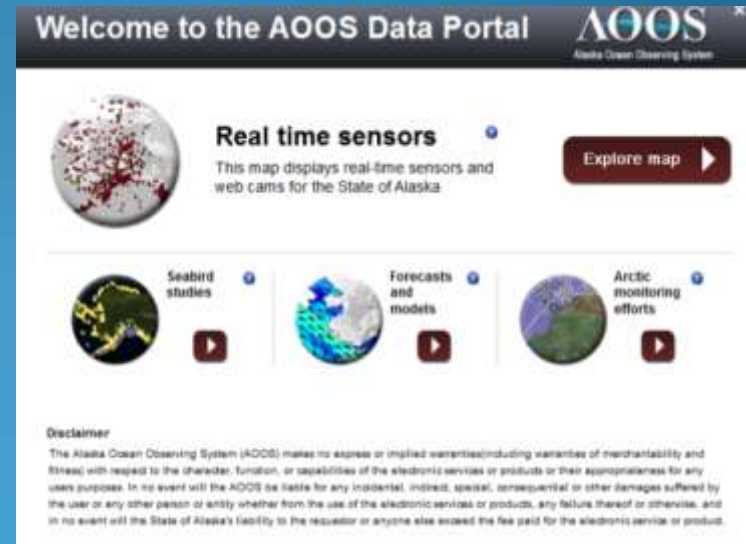
Part of a Nationwide System

Integrated Ocean Observing System – IOOS



Real time Data & Model forecasts

- 1) Real-Time Sensor Map
- 2) Model Explorer

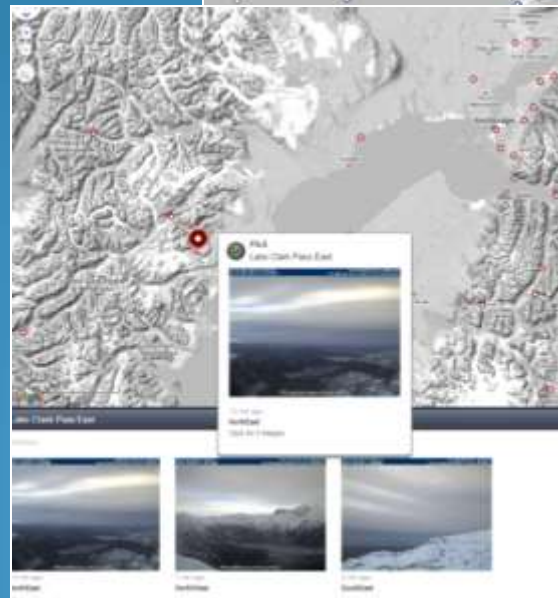
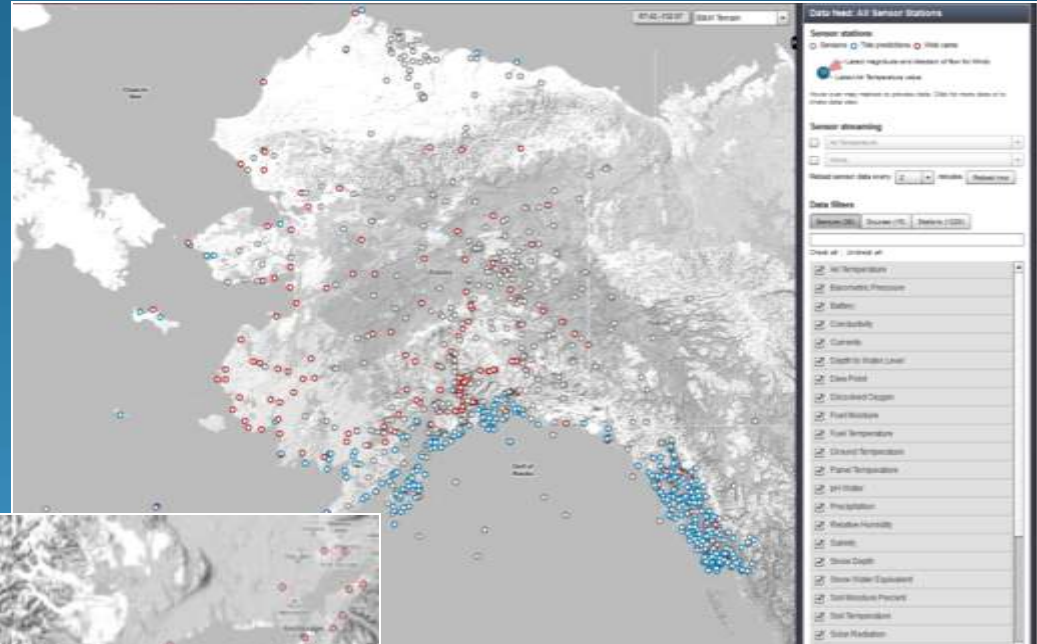


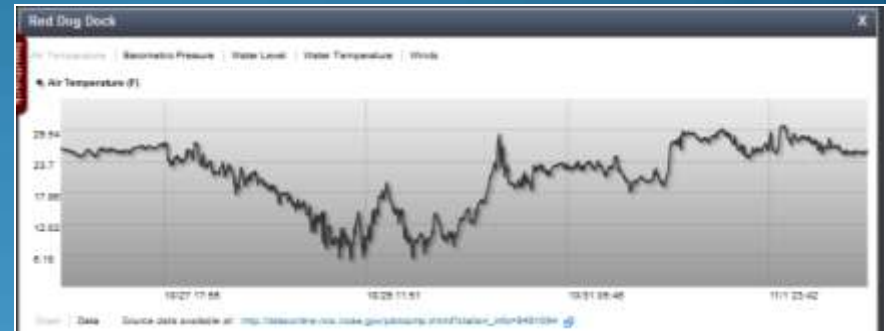
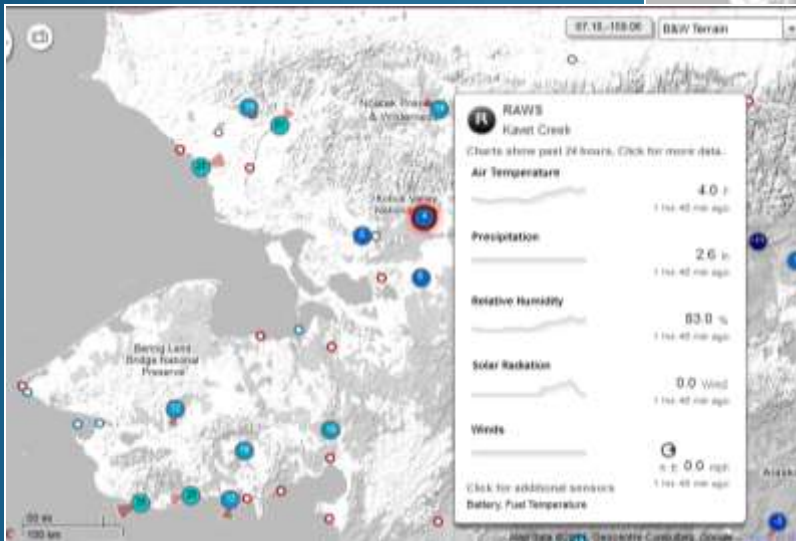
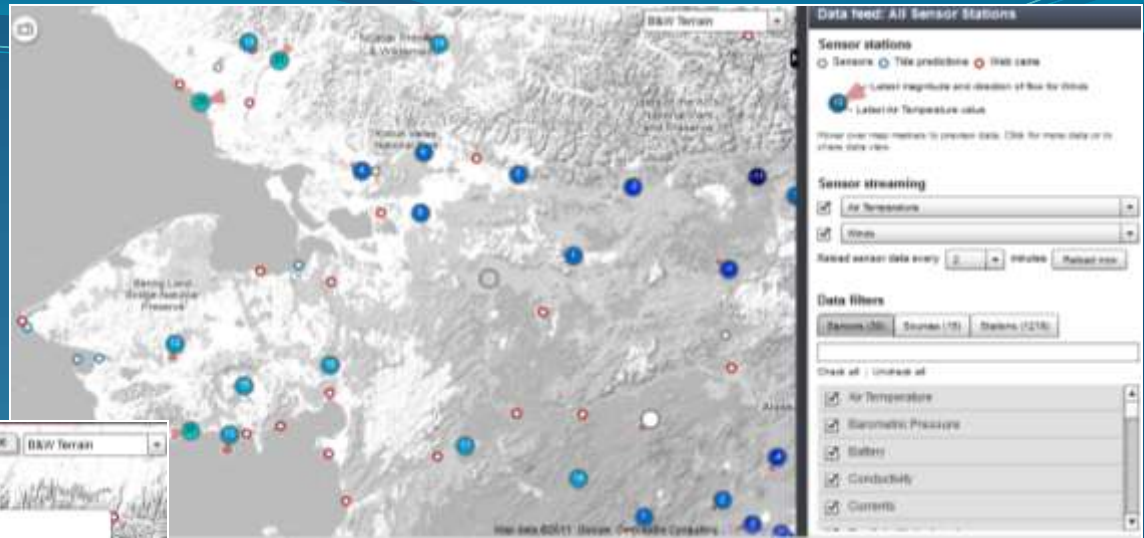
www.aoots.org

Real-Time Sensor Map

Over 4,000 sensors

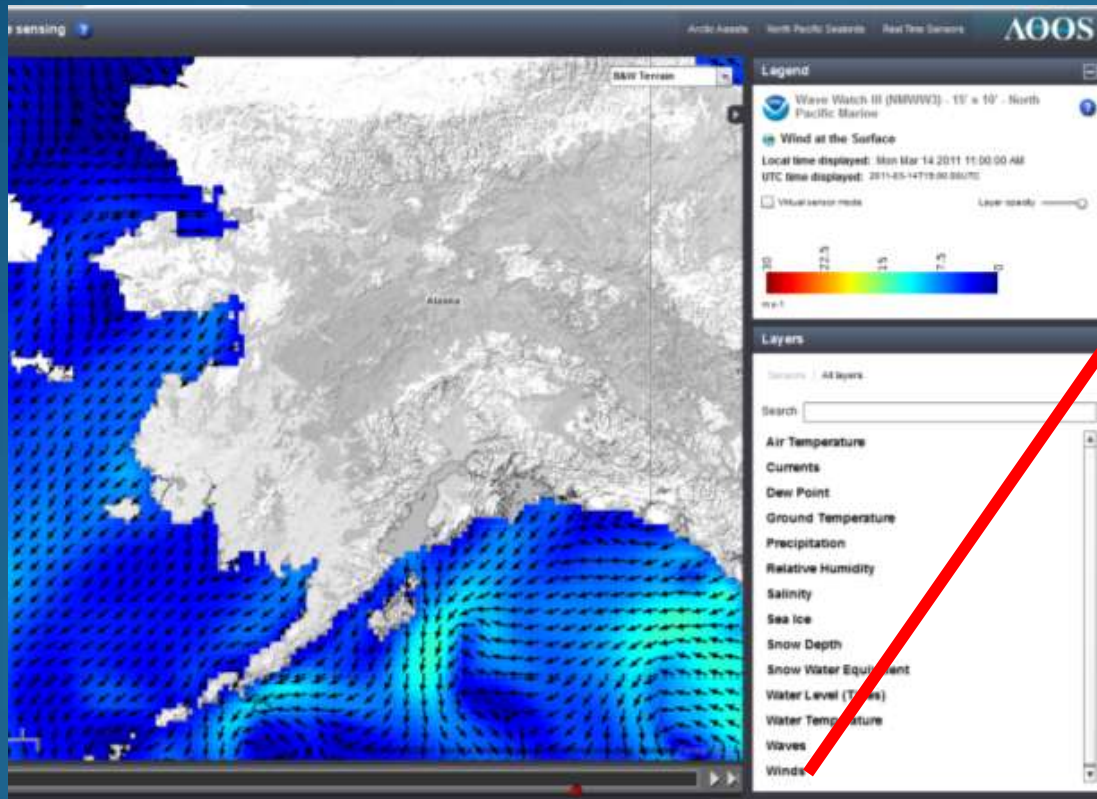
- Air temp
- Barometric Pressure
- Currents
- Water level
- Ground temp
- Precipitation
- Humidity
- Salinity
- Snow depth
- Stream flow
- Stream height
- Tides
- Water temp
- Web cams
- Weather
- Wind
- More....

















- Wind vectors and dot colors reflecting relative conditions
- Multiple graphs appear with mouse over
- Downloadable time series data in one click

Model Explorer



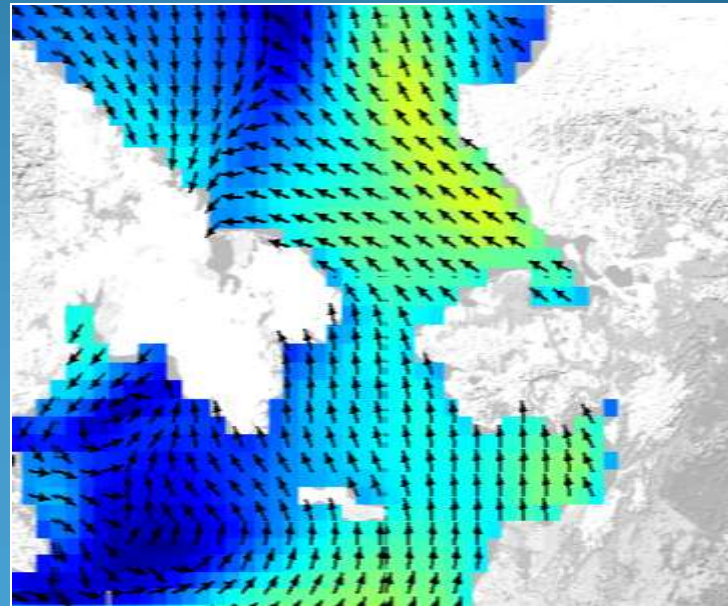
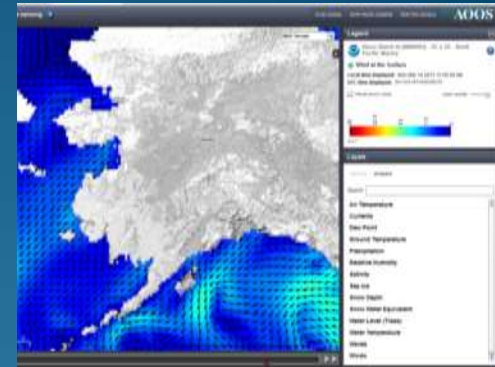
- ### Winds
-  NDFD Aggregate Model - 8 km² - North Pacific Marine ?
 -  Wind at Surface
 -  North American Mesoscale Weather Research and Forecasting (NAM-WRF) - 12 km² - South Central Alaska ?
 -  Wind at 10 Meters
 -  Wave Watch III (NMWW3) - 8° x 4° - North Pacific Marine ?
 -  Wind at the Surface
 -  NDFD Wind Speed Gust - 6 km² - North Pacific Marine ?
 -  Wind Speed Gust at Surface
 -  Weather Research and Forecasting (WRF) - 4 km² - Prince William Sound and Cook Inlet ?
 -  Wind at 10 Meters
 -  Wave Watch III (NMWW3) - 15° x 10° - North Pacific Marine ?
 -  Wind at the Surface



Model Explorer

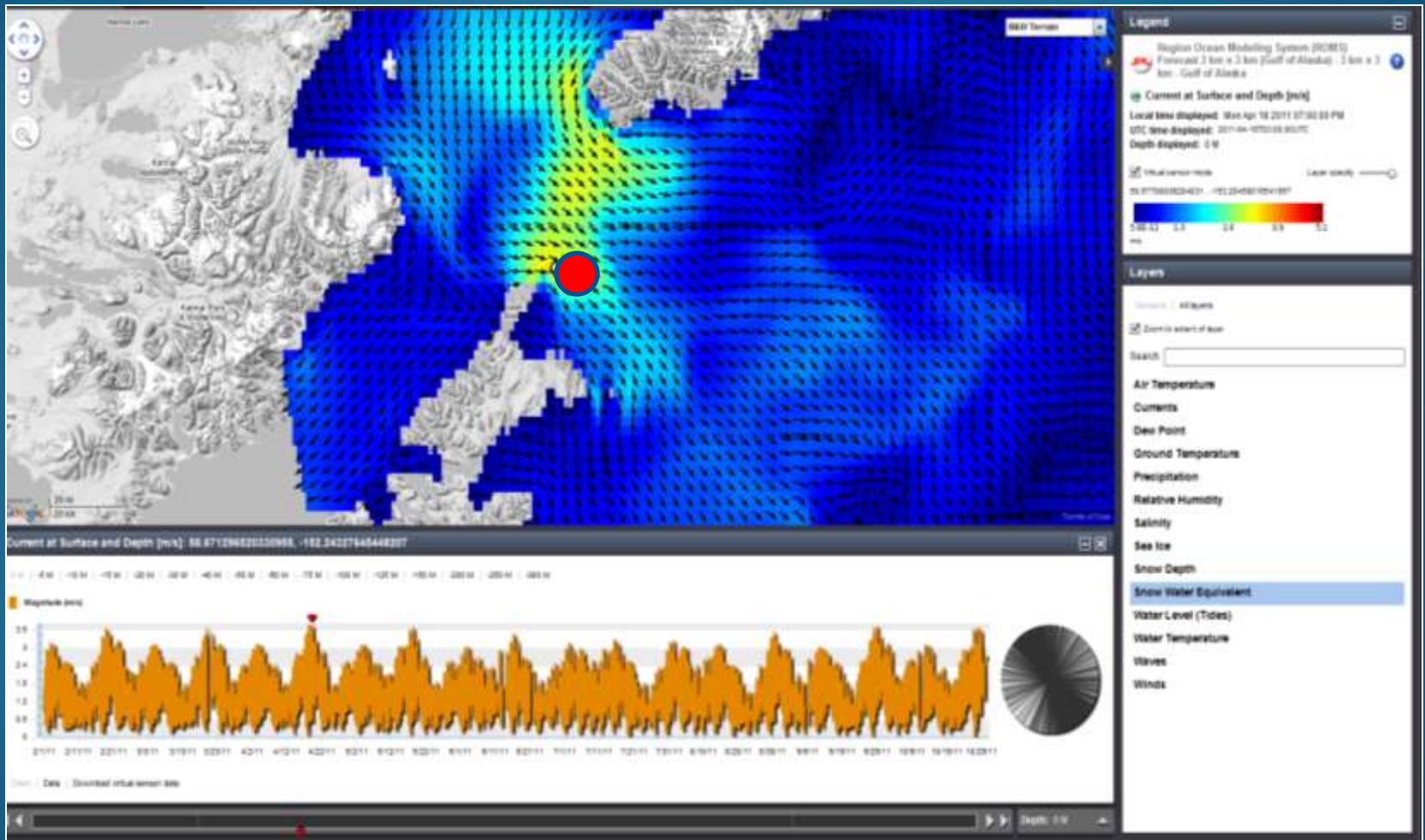
Useful Parameters

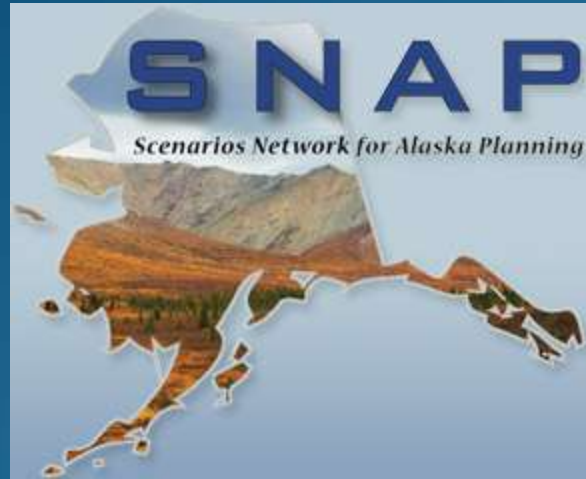
- Air Temp
- Currents
- Dew point
- Ground Temp
- Precipitation
- Relative Humidity
- Salinity
- Sea Ice
- Snow Depth
- Snow Water Equivalent
- Water Level (tides)
- Water Temperature
- Waves



Model Explorer

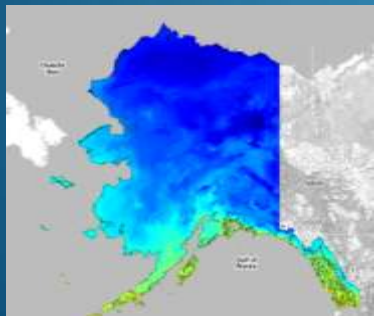
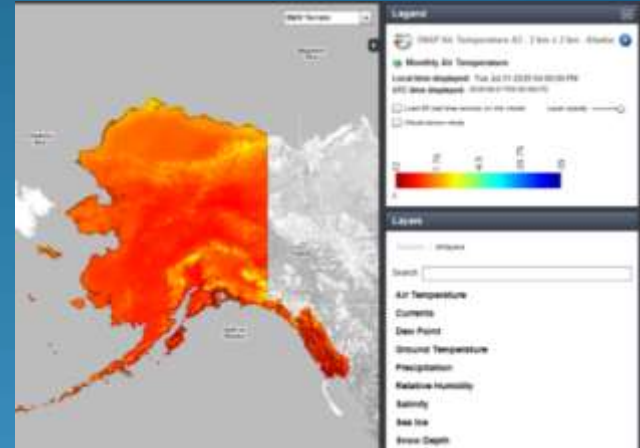
Drop a virtual sensor to investigate a specific location



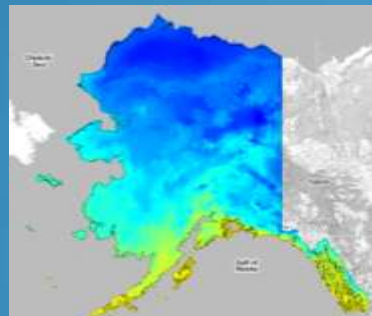


Climate models

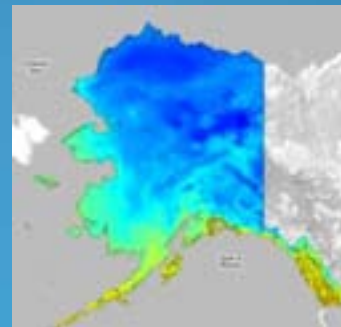
Climate model projections
Monthly from 1960 to 2100



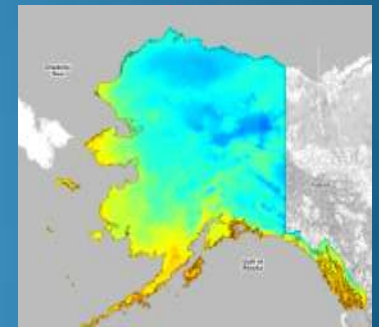
Dec 1970



Dec 2000



Dec 2050



Dec 2095

Watch projected change over time

AOOS Data Portal
Real time sensors
Forecasts and models
Arctic monitoring efforts
Seabird studies
ADRWG Studies

Monthly Air Temperature: 60.75922232687114, -149.32850611787686

Legend

SNAP Air Temperature A2 - 2 km x 2 km - Alaska

Monthly Air Temperature

Local time displayed: Mon Jan 31 2011 03:00:00 PM
UTC time displayed: 2011-02-01T00:00:00Z

Load 80 real time sensors on this model Layer opacity

Virtual sensor mode

Layers

Sensors: All layers

Search:

- Air Temperature
- Currents
- Dew Point
- Ground Temperature
- Precipitation
- Relative Humidity
- Salinity
- Sea Ice
- Snow Depth
- Snow Water Equivalent
- Water Level (Tides)

air_temperature (degree celsius)

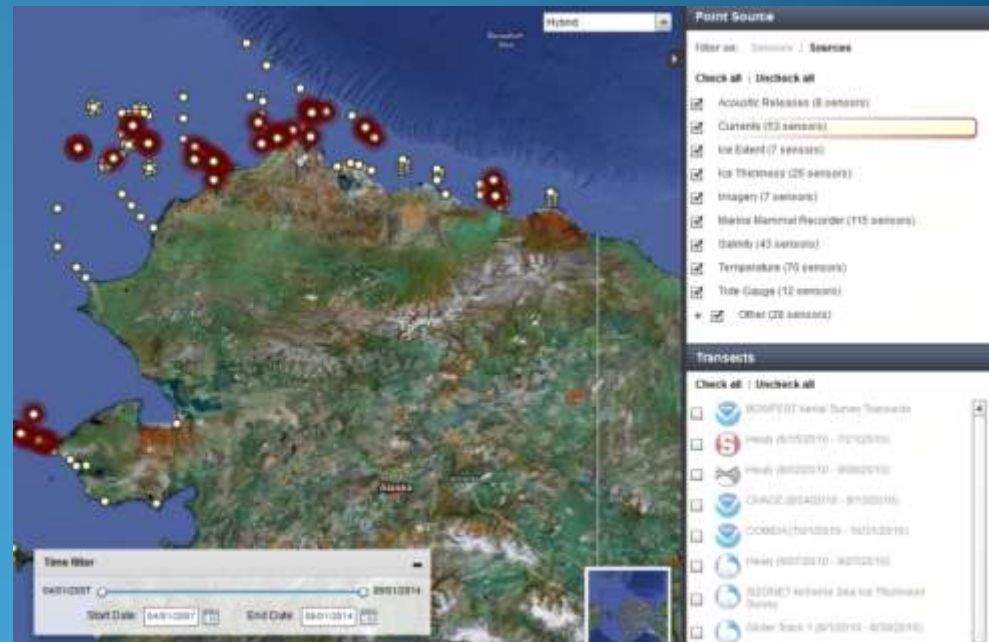
Chart | Data | Download virtual sensor data

Arctic Research Assets Map

Visualizing Where the Instruments Are

Used for Research Planning

- Reduce duplication of effort
- Identify gaps
- Avoid collisions
- Improve collaboration



New Project: Arctic Data Visualization Tool



- Pull together multiple types of coastal & marine data
- Integrate and display them on an interactive interface
- Capacity for changes over time and water column depth
- Geographic focus: Northern Bering & Chukchi

Background

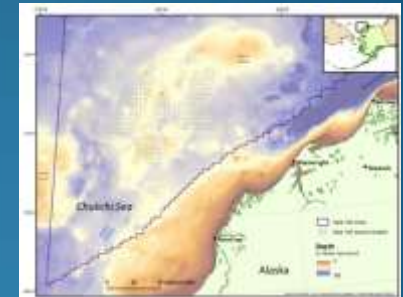
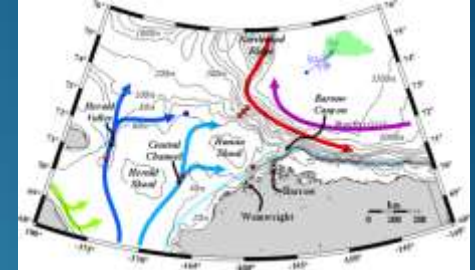
- NOAA funding
- 9 regions applied; 3 were awarded grants
- AK is focusing on data integration instead of actual management plans
- 1.5 year project to begin in 2012
- Tool's applications are intended to be broad
 - Designed to provide guidance for future fisheries management in the Arctic
 - But also applicable to other topics
 - Shipping routes
 - Oil & gas development
 - Climate change strategies
 - Local level planning

Who is the tool designed for?

- Resource managers and planners who make decisions at tribal, local, state, and federal levels
- Stakeholders who provide input into those decisions
- People with interest in specific aspects of the Alaska marine environment, and who want to access data about those interests in a convenient manner

What data will be included?

- Data requirements
 - Spatially explicit
 - Relevant to coastal/marine management
- Examples
 - Marine species ranges and habitat areas
 - Migration patterns
 - Oceanography (currents, upwelling)
 - Climate indicators (temp, precip, storminess)
 - Climate change scenarios (downscaled modeling)
 - Human infrastructure (villages, oil & gas platforms, etc)
 - Socio-economic information
 - Shipping routes
 - **Subsistence areas?**



Project Components

1. Assess what information people want to include
2. Identify synergy with current planning and data collection efforts
3. Identify data tools being used in AK and elsewhere
(how do they work, should we incorporate aspects of them?)
4. Compile the data
5. Evaluate the new tool



Funded Partners:

- AOOS
- UAF's Alaska Center for Climate Assessment & Policy
- UAA's Institute for Social & Economic Research
- The Nature Conservancy

Collaborators/Advisors

- Alaska Native Tribal Health Consortium
- Alaska Sea Grant Program (NOAA)
- NOAA Regional Collaboration Team
- North Pacific Fisheries Management Council
- North Slope Borough
- North Slope Science Initiative
- Northwest Arctic Borough
- State of Alaska Agency Representatives (ADF&G, ADNR, ADEC)
- University of Alaska representatives (Geospatial Information Network of Alaska, School of Fisheries & Ocean Sciences, Department of Political Science)
- US Arctic Research Consortium
- US Coast Guard
- US Fish & Wildlife Service Western and Arctic LCC's
- USGS Alaska Science Center and Regional Climate Science Center
- And others...



Incorporating Subsistence layers

- Increases ability to protect local resources
 - But must be done sensitively
- Inclusion of subsistence layers needs to be guided by the community, based on what they feel comfortable with and want to share

Thanks

www.aos.org



Acknowledgements:
Axiom Consulting & Design

