

**Using Archaeofaunas from
Southwest Alaska to Understand
Climate Change**

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Archaeofaunas = “old bones and shells”

- most are from archaeological sites
- some are from paleontological sites

✧ What we're doing

Climate change research studies:

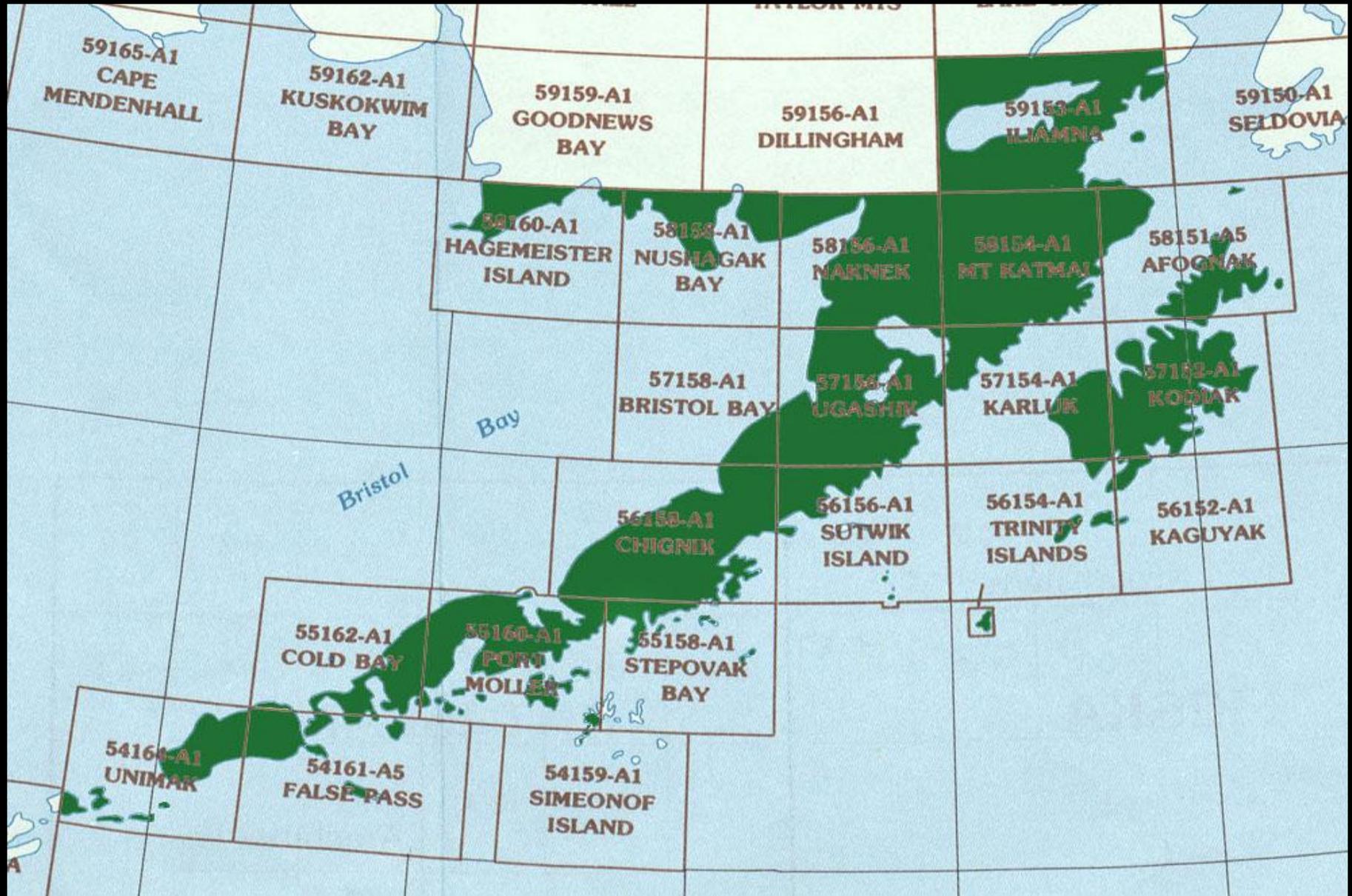
1. Use archaeofaunas to understand how climate has affected Alaskan ecosystems in the past
2. Compile existing data; fill data gaps as needed
3. Use those data to project what the ecosystem effects of climate change might be in the future



Watmough Bight
45-SJ-280
Bone - Level Bag

cm

Our Study Area



Main Time Periods of Interest

Neoglacial ~4700-2500 years ago

Medieval Warm Period AD 950–1250

Little Ice Age AD 1650-1850



NEOTOMA PALEOECOLOGY DATABASE



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What is Neotoma?

Neotoma Paleoecology Database and Community is an online hub for data, research, education, and discussion about paleoenvironments. Anyone with an Internet connection can access Neotoma. The primary philosophy behind Neotoma is data sharing so that users can easily:

- Discover: find information efficiently by searching the database on spatial, temporal, and metadata criteria
- Explore: interactively browse and visualize live data and metadata
- Share: get data and information in a variety of useful formats (e.g., downloads, reports, graphics)



Neotoma cinerea. Photo by Roger W. Barbour.

Neotoma's centralized structure facilitates interdisciplinary, multiproxy analyses and common tool development; discipline-specific data can also be easily accessed. Data currently include North American Pollen (NAPD) and fossil mammals (FAUNMAP). Other proxies (plant macrofossils, beetles, ostracodes, diatoms, etc.) and geographic areas (Europe, Latin America, etc.) will be added in the near future. Data are derived from sites from the last 5 million years.

News Highlights

Pollen Diagramming is here!

The Neotoma Explorer web application has been updated and now... [Read more>>](#)

New paper on age-model uncertainty in late Quaternary pollen cores is out!

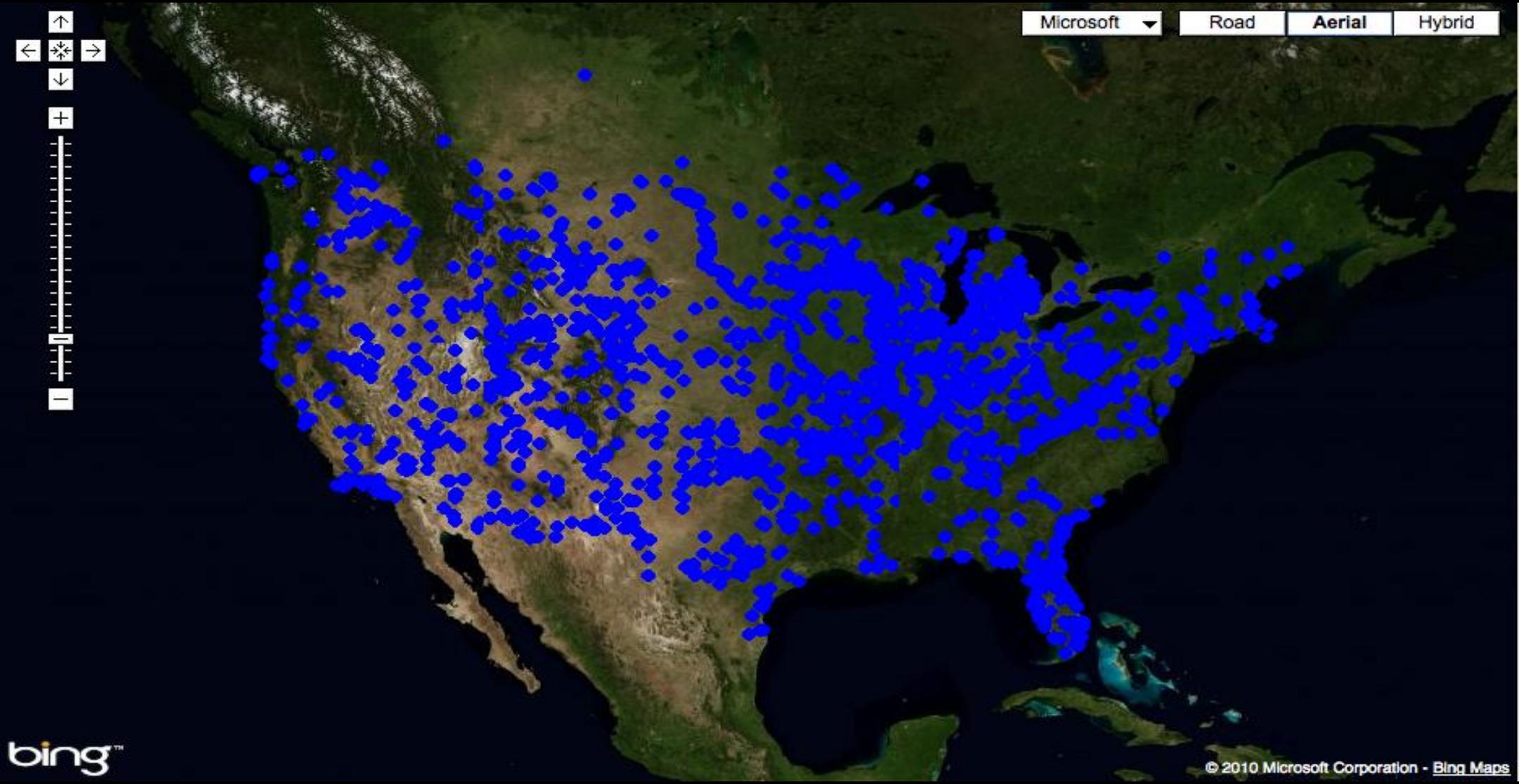
A paper by Jessica Blois, Jack Williams, Eric Grimm, Steve... [Read more>>](#)

Taxonomic Name Resolution and spellchecking for plant names

The Taxonomic Name Resolution Service (TNRS) is a new web... [Read more>>](#)



Microsoft ▼ Road **Aerial** Hybrid

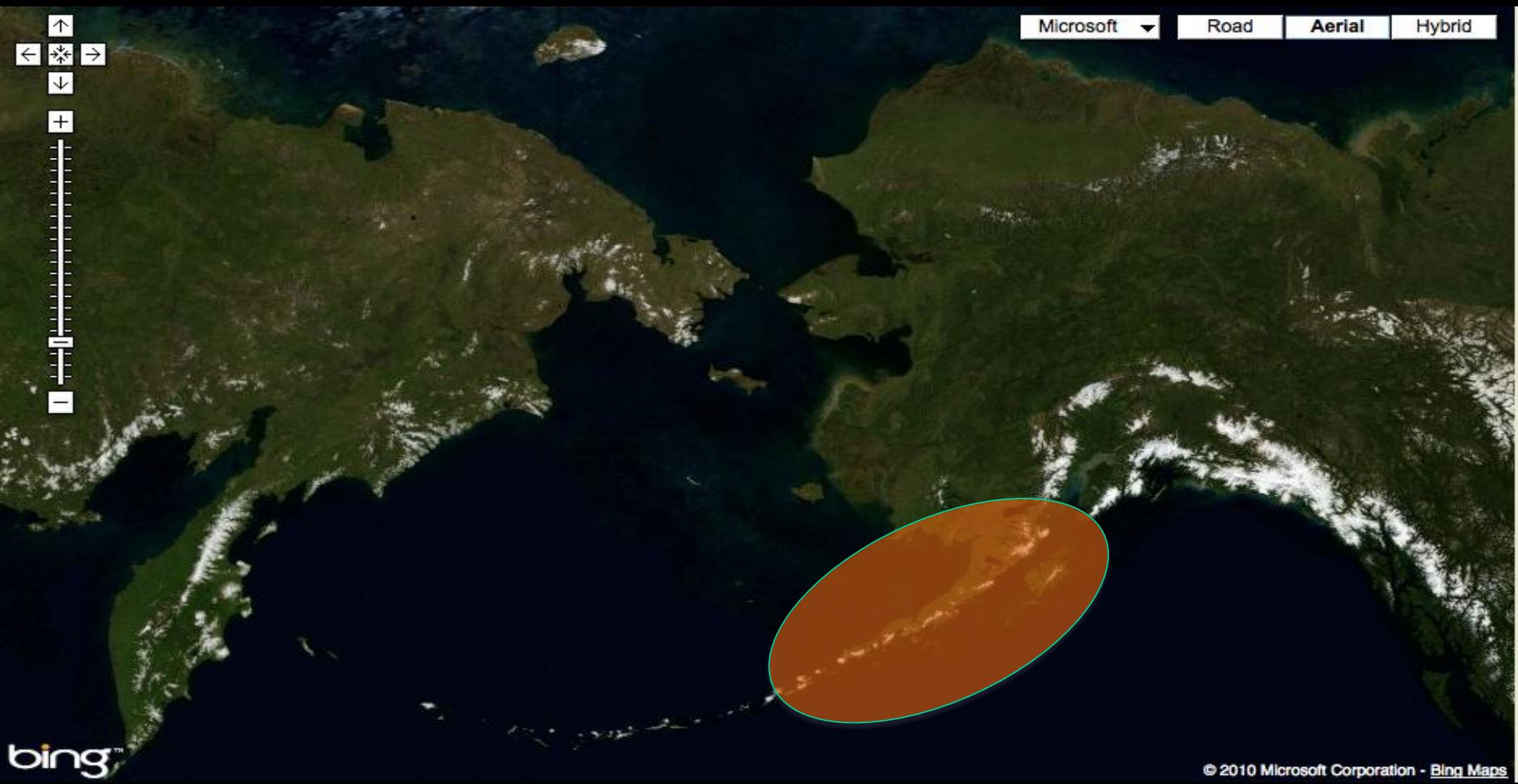


Distribution of Mammoth through time



Microsoft Road Aerial Hybrid





Microsoft ▼

Road

Aerial

Hybrid

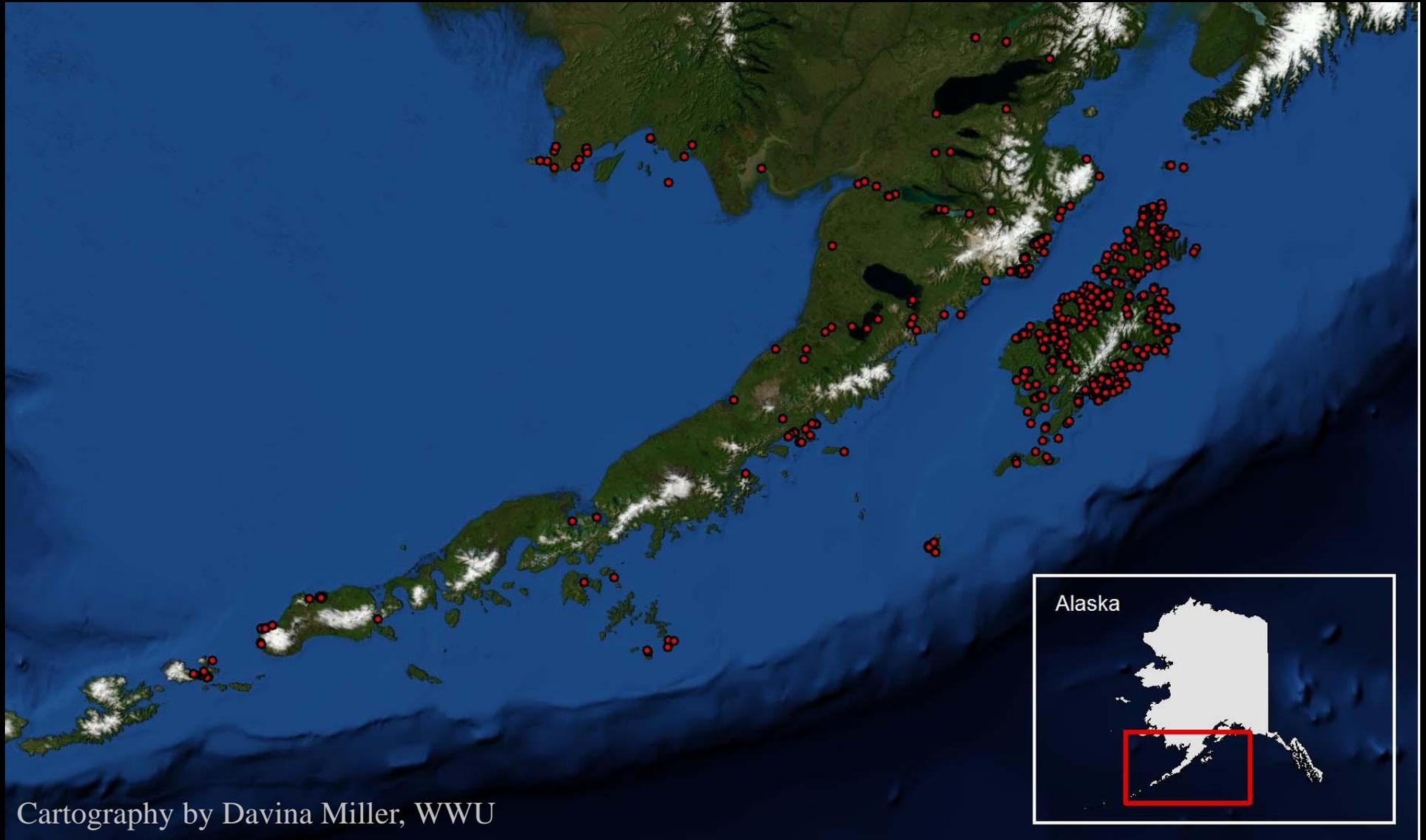
bing™

© 2010 Microsoft Corporation - [Bing Maps](#)

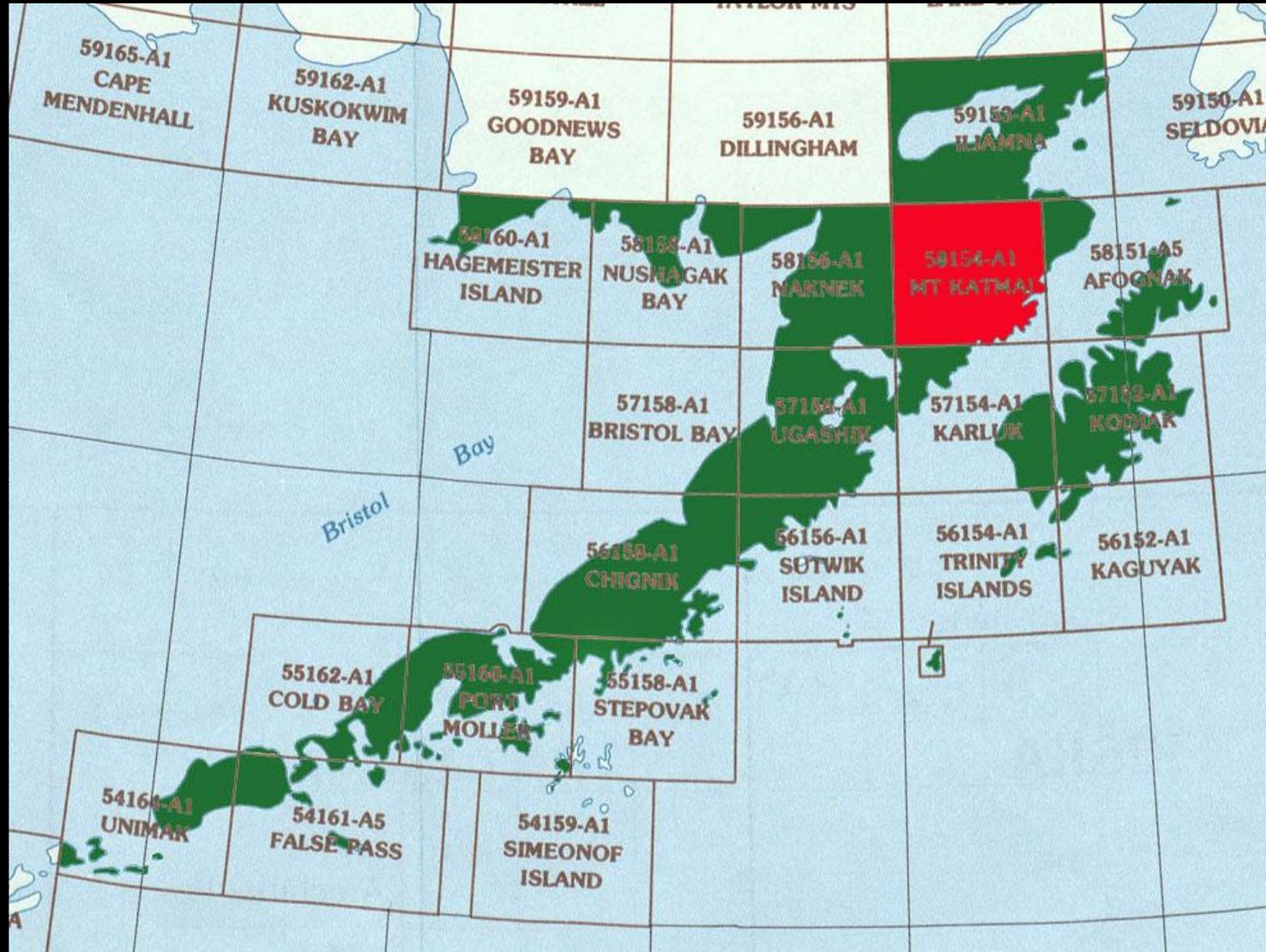
Some Stats on SW Alaska Quads

- N of Quads: 20
- Total N of sites = 3867
 - range: 2 to 1124
- N of sites with faunas = 700
 - range: 0 to 330
- N of sites analyzed = 40

Distribution of Sites with Faunas



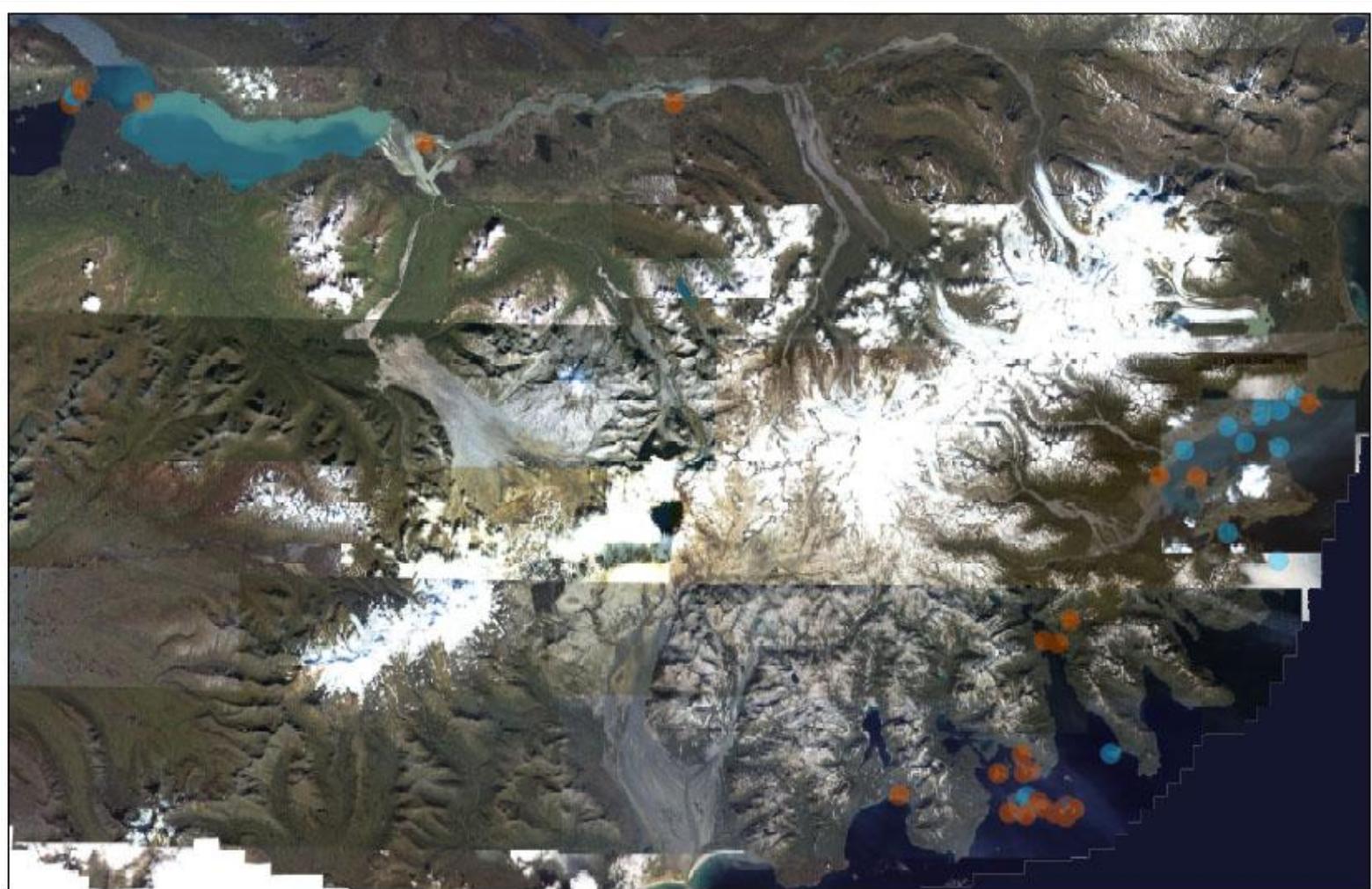
Details for Mt. Katmai Quad (XMK)



Stats on Mt. Katmai Quad (XMK)

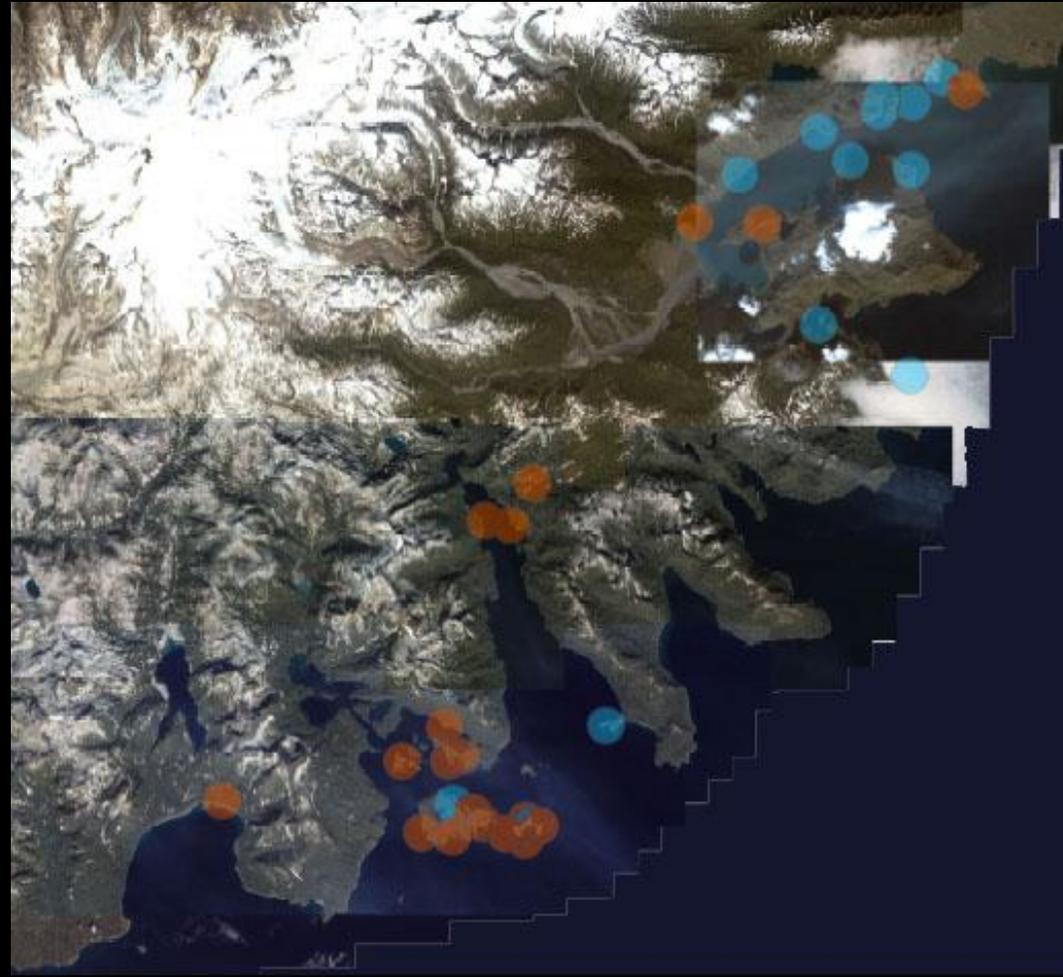
- Total N of sites = 229
- N of sites with faunas = 42 (18.3%)
- N of sites analyzed = 15 (35.7%)

Distribution of Sites in XMK



- Archaeological sites with faunas
- Archaeological sites with detailed faunal data

Distribution of Sites in XMK



Cartography by
Rhea Hood, NPS

- Archaeological sites with faunas
- Archaeological sites with detailed faunal data

✧ What we have to offer

A long-term (3000-7000 years)
record of changes (?) in:

1. Distributions
2. Trophic interactions (isotopes)
3. Population histories (genetics)
4. Harvest pressure
5. Age and growth
6. Maternal strategies

✧LIMITATIONS

1. Sites are often specialized-use sites (winter villages, fish camps, etc.)
2. Varying degrees of survey effort, site visibility, and preservation
3. Not all taxa are recovered, even if present
4. Not all taxa are identified, even if recovered

✧ Which species show up?

Inverts

Butter clam

Mussels

Littleneck

Horse clams

Periwinkles

Barnacles

Cockle

Whale barnacles?

Razor clam

Fish

Herring

Salmon

Halibut

Cod

Starry Flounder

Irish Lords

Greenlings

Ling cod

Pollock

Saffron Cod

Salmon shark

Rockfish

Birds

Auklets

Puffins

Murres

Fulmars

Cormorants

Albatrosses

Shearwaters?

Mammals

Ground Squirrels

Foxes

Dogs

Bears

Harbor seals

Sea lions

Fur seals

Whales

Dolphins

✧ How you can help

Develop research questions that can be answered with bones

1. What species are of particular interest?
2. What characteristics may have changed?
3. What trophic interactions may have changed?