

Alaska: Climate Challenges & Resilience

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Presentation Topics

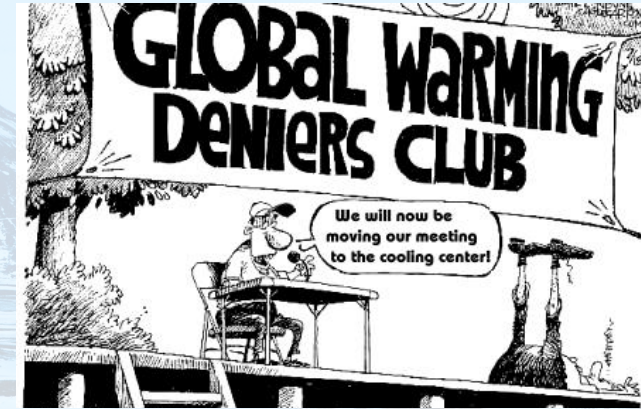
1. Contemporary climate challenges
2. Resilience building: The four questions with an Alaska focus

A wide, flat, icy landscape with snow-covered mountains in the background under a blue sky. The foreground is a vast, flat expanse of ice and snow, with some dark, rocky patches visible. In the middle ground, there are several large, snow-covered mountains with dark, rocky peaks. The sky is a deep blue with some light clouds. The overall scene is a stark, cold, and desolate landscape.

Contemporary Climate Challenges

Federal Dysfunction

- Climate change denial on steroids
- Agency data and websites scrubbed
- Scientists being “let go”
- Yet, resistance is underway...
- Data is being preserved
- Most mitigation and resilience building has always been predominantly locally based in the US anyway



Hundreds of demonstrators gather to protest mass firings by the Trump administration outside the NOAA headquarters on March 3 in Silver Spring, Md. Credit: Chip Somodevilla/Getty Images

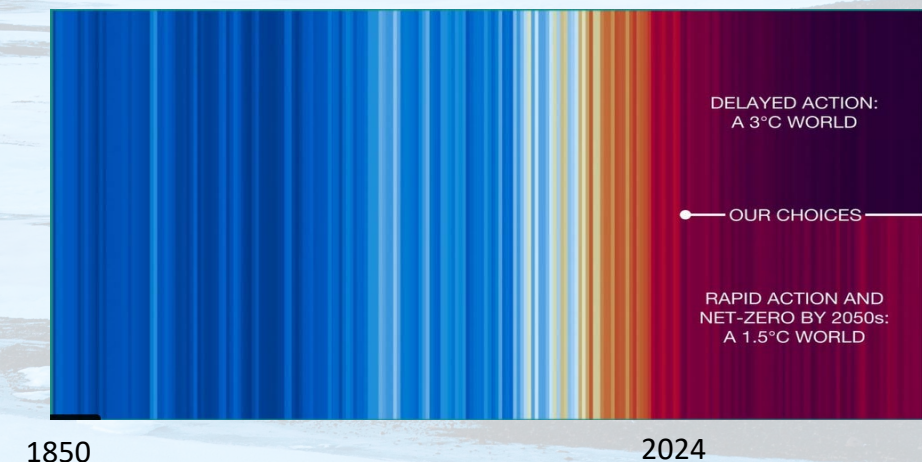


Trump's 'climate' purge deleted a new extreme weather risk tool. We recreated it

The Guardian has recreated a searchable climate future risk tool developed by Fema but then deleted

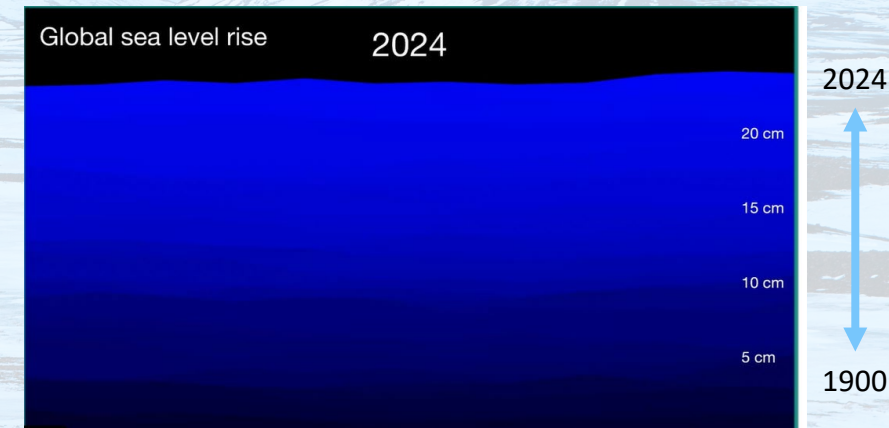
Climate Change Marches On

- The train left the station long ago
- The world has built up more than 250 years of momentum in a carbon-emitting economic and technological paradigm (Joppa, 2025)
- We'll likely exceed 1.5°C



Climate Change Marches On

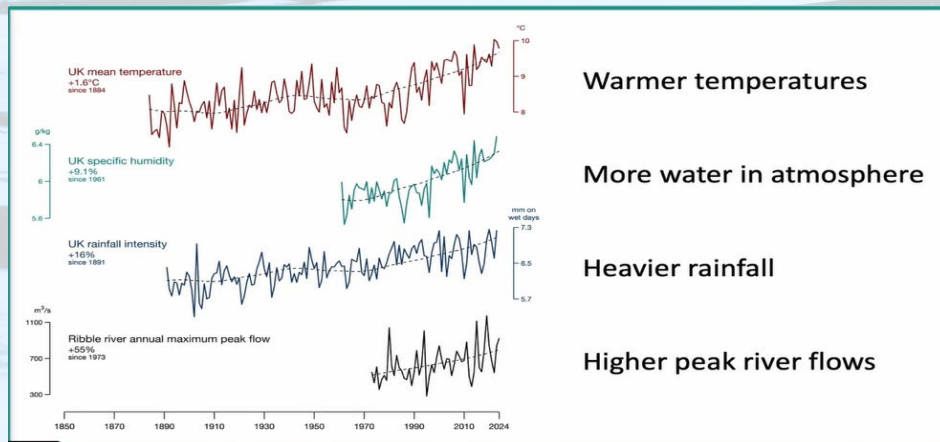
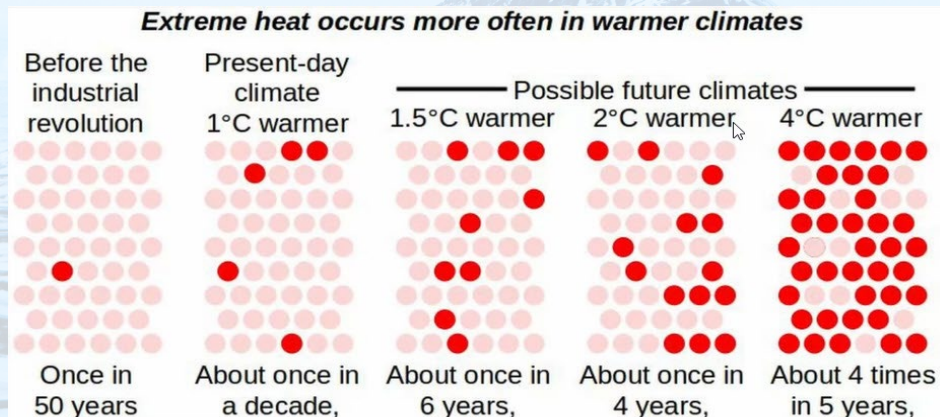
- Loss of Arctic ice has increased Arctic shipping and disrupted wildlife and subsistence
- More loss of ice means higher sea levels, more H₂O in the atmosphere, more supercharged storms



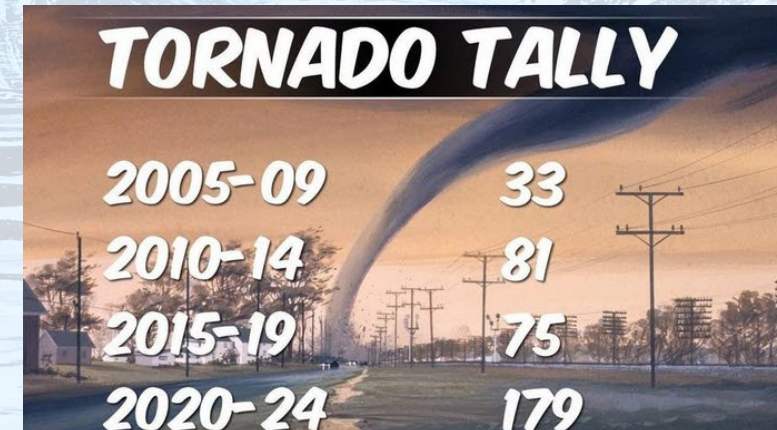
* 8.2 Billion people-2024

Climate Change Marches On

Our extreme events are becoming more extreme



And there are more of them ...



Climate Change Marches On

Alaska Coastal Communities Damaged



Loss of protective sea ice causes erosion

Melting permafrost emits methane
and destabilizes infrastructure

Climate Change Marches On

Climate whiplash: a rapid shift between opposing weather extremes



2023 -2024



2024 -2025

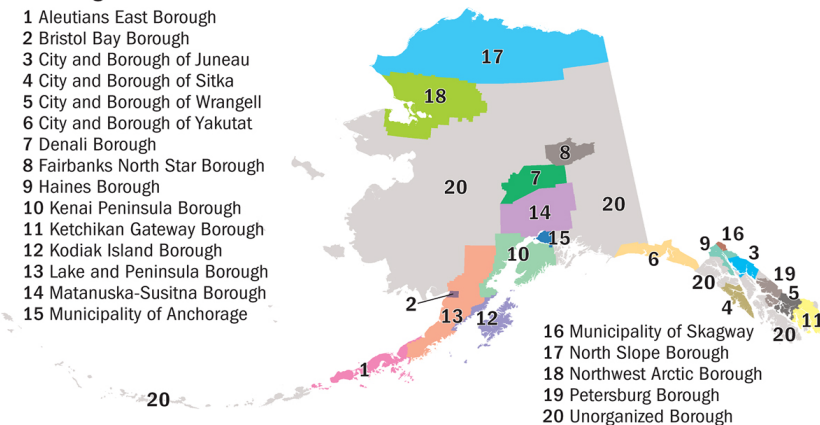
Alaska Challenges

- Many communities,
- Yet few local governments



Boroughs in Alaska

- 1 Aleutians East Borough
- 2 Bristol Bay Borough
- 3 City and Borough of Juneau
- 4 City and Borough of Sitka
- 5 City and Borough of Wrangell
- 6 City and Borough of Yakutat
- 7 Denali Borough
- 8 Fairbanks North Star Borough
- 9 Haines Borough
- 10 Kenai Peninsula Borough
- 11 Ketchikan Gateway Borough
- 12 Kodiak Island Borough
- 13 Lake and Peninsula Borough
- 14 Matanuska-Susitna Borough
- 15 Municipality of Anchorage



KEVIN POWELL / Anchorage Daily News

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The Four Questions

The Four Questions

- How is adaptation conceived?
- How to bolster implementation in practice?
- How to leverage enablers?
- How to overcome factors at the local scale?

How is adaptation conceived?

- Adaptation is the adjustment of organisms to their environment in order to improve their chances at survival

How is adaptation conceived?

- Individuals have always adapted to climate, but such adaptation took centuries to accomplish
- Our climatic challenges have been induced by humans on a planetary scale that is unprecedented as is its speed
- Humanity has never experienced the scale and speed of contemporary climate change
- We are faced with complexity...The need to learn from past and present adaptations, to understand their processes and to use agents of change (states, markets and civil society)

How is adaptation conceived?

- Adaptation is conceived differently in communities with local governments and those without local governments
- Most adaptation efforts by local governments respond to past and contemporary events
 - Tend to be physical
 - Building higher piers, bridges, docks, installing larger culverts;
Installing renewable energy sources: wind, solar, vegetable oil
 - Few local governments have modified their processes and procedures
 - Use of EPP
 - Include climate adaptations in new contracts, purchase orders



How is adaptation conceived?

- We need physical adaptations
- But we also need
 - To understand our changing environment
 - To change our behaviors
- So that we can adapt to our new environment



How is adaptation conceived?

- Communities without local governments tend to focus more on behavioral change and cultural education
- Use of cultural standards to teach Western academic content to a diverse indigenous population, without marginalizing traditional ways of knowing
- Getting out of the ‘traditional’ classroom and learning how to hunt, fish, pick berries, grow food
 - Students learn about the environment and effects of climate change
 - Such learning re-establishes links between humans and their environment
 - Students learn practical aspects of resilience building

How to bolster implementation in practice?

- Education K-12 and beyond
- Regular communication
- Integrate climate challenges and adaptation into all aspects of community life
- Coordinate with other organizations and community leaders
- Equate adaptation actions with fiscal responsibility
- Use the tools that already exist

How to bolster implementation in practice?

Additional issues

- Failing ice cellars
- Subsidence
- Potential damage to high value wetlands
- Accelerated permafrost melt from exposed bluffs
- Air quality, particularly near Prudhoe Bay oilfields
- Protection of endangered and threatened species and their habitats
- Diminished near shore sea ice
- Invasive species resulting from climate change
- Infrastructure at risk due to climate change and environmental factors
- Migratory changes

Findings

Air quality and water quality is generally good throughout the borough.

Quality of life, which includes environmental quality, is an increasingly important criterion in private sector economic investment decisions.

Climate change is affecting in the arctic dramatically.

Needs & Challenges

Ice cellars are failing, creating food security concerns.

Potential air pollution may not be well monitored or within the control of the local government or the North Slope Borough.

Climate change poses a significant challenge to the region – from increased marine traffic, changes in weather patterns, diminishing sea ice, and changing migration routes.

More advanced testing techniques may identify newly recognized contaminants, which may be present in village water sources. Subsidence poses a significant issue to infrastructure in several villages.

COMMUNITY INPUT, FINDINGS, NEEDS, AND CHALLENGES

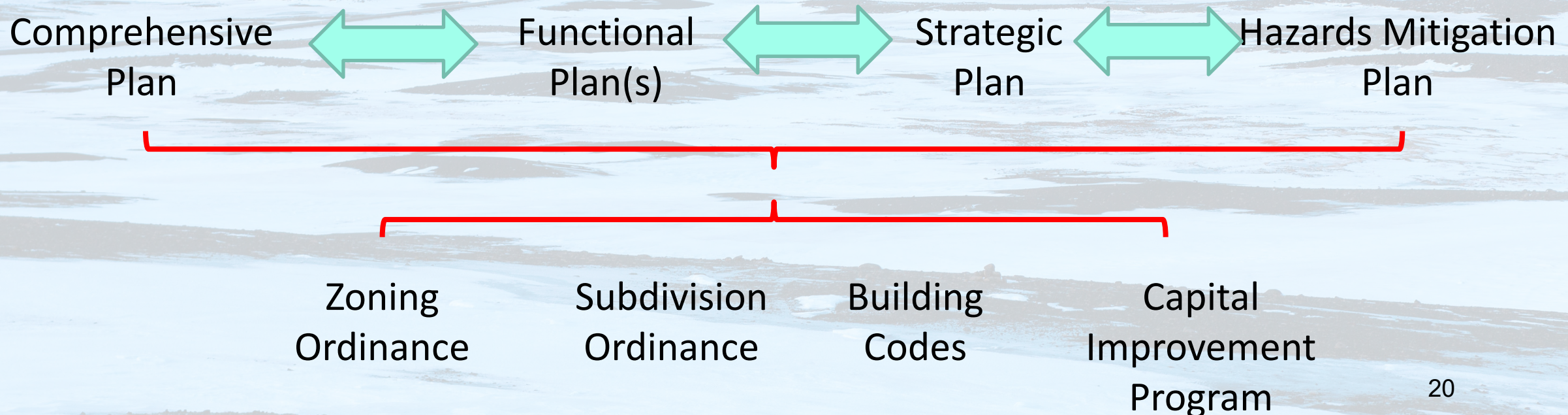
Residents of all villages have continually expressed the natural beauty of the North Slope. It not only provides abundantly for subsistence lifestyle but also is a planning of exorbitant beauty. Outreach for the comprehensive plans have indicated that protecting the natural environmental from climate change and to protect subsistence resources – both land and sea.

Environmental and concerns identified by workshop participants are provided in Chapter 2 and listed below:

- Climate change effects on subsistence and food security
- Climate change increasing extreme weather events/conditions
- Coastal erosion

Make effective use of local government plans

Link all planning documents – Let them speak to one another – and should be implemented through the zoning ordinance, building codes and capital improvement program



How to leverage enablers?

- First of all, we need to find them...
- They are the leaders within the community who are....
 - Trusted by the community, i.e., enablers have trusted relationships
 - Knowledgeable and aware of climate risk in their community
 - Exhibit strong leadership

How to leverage enablers?

- Build community cohesion
- Allow locally led conservation efforts
- Reimage how climate information is delivered and used
- Ensure that climate information is weaved into every aspect of community life
- Ensure that climate information is accessible, actionable, and tailored to user needs

How to overcome constraining factors at local level

- A multidimensional strategy is necessary
 - Recognize that building adaptation is a complex program; many systems involved
- An “All Hands on Deck” sense of urgency
- Identify adequate financial resources via targeted funding mechanisms, public-private partnerships, and streamlined access to adaptation finance for local governments and communities
- Support participatory climate education
- Communicate localized risk
- Sponsor community-led data collection

How to overcome constraining factors at local level

- Empower local leaders—especially those from vulnerable groups
- Build social capital, including both bonding (within-group) and bridging (across-group) ties
- Foster networks of trust and cooperation among community members and between communities and institutions
- Promote experimentation, learning, and flexibility in adaptation planning
- Ensure that local actions are both supported and scalable

References

- (Brullo et al., 2024) The enablers of adaptation: A systematic review
- (Joppa, 2025) Six roadblocks to net zero — and how to get around them
- (Maltby et al., 2023) Barriers and enablers of climate adaptation in fisheries
- (Street et al., 2022) Enabling climate action
- (Serrao-Neumann et al., 2015) Maximising synergies between disaster risk reduction and climate change adaptation
- (Wannewitz et al., 2023) What makes people adapt together?



Thank you!