Minutes

LOICZ - Workshop on Arctic Governance

at GKSS Research Centre Geesthacht, 3- 4 November 2009

prepared by Malte Busch, Martin Reibiger and Andreas Kannen

Participants:

Andreas Kannen (GKSS Research Centre)
Leslie King (Vancouver Island University)
Helen Fast (Fishery & Oceans Canada)
Ron Bruner (University of Colorado at Boulder)
Malte Busch (GKSS Research Centre)
Martin Reibiger (University of Leipzig)

Preface:

These minutes include those aspects that were discussed by the participants within the frame of a two day workshop. Many of the aspects mentioned in these minutes might sound provoking!

Within a two day workshop time was not sufficient to discuss everything to an end. Therefore this is not a complete list of questions arising. We intend to see the aspects we came across in our discussions about a limited set of case study presentations as an input to a much wider debate in much larger communities.

What we hope to raise here, are aspects from our background in governance analysis that ask for careful further thinking and further constructive debate within the LOICZ community as well as in other scientific communities. The aspects we raise do not only touch social sciences and we are aware, that most of these aspects or theses need to be discussed in much more detail.

Tuesday, 3.11.2009

- **Welcome address by Andreas Kannen**
  - Announcement that Alf Hakon Hoel and Lawson Brigham cannot join the meeting (both of short term health reasons), but are willing to contribute in future;

- **Introduction of participants**

- **Introductory presentation by Andreas Kannen:**
  - Setting the scene: Governance dimensions for coastal social-ecological systems (*see presentation attached*);

- **Workshop Agenda:**
  - Look at governance cases from the Arctic,
  - Discuss the Baseline Approach of Steven Olsen as an analytical tool,
  - Address LOICZ questions in terms of a comparative analysis governance case studies and discuss further cooperation among the participants or with others.

- **Presentation of Helen Fast:**
  - Large Ocean Management Areas: The Beaufort Sea (*see presentation attached*);

- **Discussion originating out of the presentation:**
  - Applying the term "benefit of all" is a difficult task, because every actor wants to stress something else.
  - There are different options to simplify complex interactions:
    - focussing on local level (place-based),
    - integrating top-down and bottom-up approaches,
    - but: how to reform the existing structures which work since 100 years?
  - Place-based thinking is a precondition for the integration of various interests.
  - Scaling up is necessary in some cases.
  - Place-based or community-based initiatives:
    - Actors with various backgrounds and opinions can unite for bigger political topics (e.g. climate change).
    - Whether such initiatives develop depends on the societal structure (social structure, educational level etc.).
  - The case of Alaska: local differences create different results between place-based and national initiatives rising the question of how one can have place-based solutions for national problems or challenges.

- **Presentation of Ron Bruner:**
    - An integrated Assessment of Climate Variability and Change on the North (*see presentation attached*);

- **Presentation of Leslie King:**
    - Wapusk National Park;

- **General discussion originating out of the presentations:**
    - Comments from participants on common issues in the presentations:
        - Continuous funding is problematic and often stops implementation.
        - Environmental and/or industrial change seems to be faster than research can follow with profound analysis. But while the scientific community seems to be rather well informed there is a lack of knowledge (and as a result awareness) concerning environmental and economic change and related governance options within the public.
        - Involvement of local people should be given high priority if they have to learn to do things in a different way than today or in the past.
        - Vertical interplay (of institutions of different administrative levels) seems to be easier than horizontal interplay among various societal groups, but there are other examples demonstrating the opposite. Vertical interplay might work between administrations, the interplay between administrators and other groups in the society seems to be more problematic (and this might interfere with scale).
        - Role of spatial planning within Arctic governance processes: Spatial planners do not seem to be fully aware of their potentially important role concerning climate change adaptation in the Arctic.

    - Comments from participants on dealing with uncertainty:
        - There is not just one (optimal) solution, but many ways to handle change and adapt to it!
        - Main problems have to be split into smaller, more specific ones. Those have to be prioritised. Single questions, with existing ability to examine them, have to be investigated, but this should happen with a multitude of questions at the same time.
        - It is important to recognize that there is no automatic need for detailed information in order to act: In many cases it is obvious that a current trend needs to be stopped or reversed. Research can function as an excuse for not acting (e.g. climate change in the US).
        - Different priorities within the scientific community (some just want to apply models, others are very worried about how their results are used within policy or public debates) need to be taken into account.

- **Presentation of Leslie King:**
    - The IDGEC Approach compared to the Baseline Approach (*see presentation attached*);

- **Discussion originating out of the presentation and the material provided (e.g. LOICZ R & S Report No. 34):**
    - Comments from participants relating to application of a case study approach in governance analysis:
        - The case study approach is a valuable tool to identify specific and local solutions. On this basis it should be assessed what can be learned from other similar cases.
        - By choosing a place-based (case study) approach informal pressure can be created through local experiences which might be transferable.
        - It can be problematic to frame problems only as global (e.g. climate change), because a large amount of details is ignored. Moreover at a global scale it is not allowed to fail. Scaling down problems to local levels allows experiments and to make mistakes without putting a question mark behind the whole topic (bounded rationality).
    - Comments from participants relating to classification/typology approaches and generalisation:
        - A general question arises: Classification and typology are natural scientific needs, but do they fit into a framework for governance analysis? This needs more discussion on a wider basis.
        - It can be very problematic, that the mainstream of science is based on generalisation and looses the context. Context is the reason why there is no best governance system. The best choice completely depends on the context. Similarly, the priority of outcomes depends on the context and it is not always automatically an improved environmental condition. In case of Barrow (Alaska) the first priority was to save people and their houses.
        - Generalisation might not be robust enough to address problems. One has to go deeper than the generalisation in order to come to the core of local outcomes. The task of case study analysis should be to open one's perception to what might be important, which is a main criteria for good (social) science.
        - "Room of contingency" is necessary, expressing that things mean something different in different contexts.
        - It was also stated, that nature might have a privileged position within science, but not necessarily within society.

Wednesday, 4.11.2009

Task of the second day of the workshop was to discuss opinions and experiences of the participants concerning the Baseline Approach (BLA) based on the presentations and discussions from the day before and the material provided (e.g. LOICZ R & S Report No. 34):

- Comments on the BLA from a practitioner's point of view:
  - From a practitioners perspective the BLA provides a structure for self-assessment and therefore is very helpful for this purpose. The BLA was identified as particularly interesting for practitioners, because it allows to directly compare different cases and regions along the structure of the approach.
  - The BLA can provide valuable support and function as a good basis to work with, because it facilitates to measure change through change in behaviour.
  - Problem to prioritising several needed measures can be addressed with the support of the four "orders of outcome" introduced by the BLA. For example this helped to prioritise the work plan on the Beaufort Sea in Eastern Canada.
  - The list of key stakeholders announced within the BLA provides basic, but powerful information, telling practitioners were to start their analysis.
  - Moreover the availability of an official, recognized approach like the BLA facilitates to gather funding. Institutions (like Fishery & Oceans Canada) have something to take to international bodies to ask for financial support.

- Comments from participants on comparative governance analysis in general and the BLA from a scientific perspective:
  - The BLA has up to now only been tested in case studies from Central and South America. Consequently detailed information on those reference cases is currently only available in Spanish. The LOICZ R&S Report No. 34 provides a summary to make this knowledge assessable for practitioners in English, but in depth information on the experiences with its application and the documentation is only partly accessible. The list of cases using this approach should be enhanced to other parts of the world including the Arctic and documentation in English language should be provided for these case studies.
  - Generally the scientific culture still focuses on quantitative measurements. In practice people often believe in numbers despite understanding or questioning them. A common opinion is that it is important and possible to measure aspects or parameters of relevance for policy and governance. But while one can observe some aspects like for example trust, these aspects are not necessarily quantitatively measureable. Multi-party monitoring could be a helpful alternative. The observation of deliberative negotiations could offer for example an indicator for good performance.

- The issue of quantification is a principal problem for governance analysis (and parts of social science in general). To overcome this problem one has to find those people in politics and administration willing to solve a problem and not building up barriers by asking for quantified data (relevance of individual mentality of persons in key positions). Taking into account the comments on the BLA from a practitioner's perspective, BLAs might be a tool that can help in communicating to those people.
- On the other hand a way of describing what we are doing is needed. It must not be numbers, but it must be traceable. Evidence is an important topic to address in this context, although it is probably not quantitative evidence. Here an interactive component might be missing in the BLA concerning what evidence of the effect of different governance elements on ecosystem components exists. To focus on a single unitary element (one goal) is misleading in most cases. How can the interplay between institutions at several scales and with several goals be addressed within or in connection with governance baselines?
- Other questions in this context are: What worked why? Why in this context? Who decided? Therefore, from a scientific perspective specifically the interplay between governance initiatives seems not to be appropriately addressed in the baselines approach (e.g. when in a given area several governance activities directly or indirectly interact or influence each other). To address this properly might need additional conceptual work with the BLA.
- A lot of real world problems are not technical but political in nature. This implies that a chain of measurable as well as intangible constantly evolving processes has to be managed, asking for multiple normative criteria. Adaptive governance might be valuable in such a situation where one has to adapt to changes and constantly reform management structures. But in reality institutions typically try to address every new problem with old structures and old assumptions.
- Details of cases should not be absorbed by generalisation through comparative approaches because potentially good practice examples, understood as good practise for a specific case, have to be addressed without assuming that there is just one way of doing it. This relates to the original goal the comparative approach on governance in LOICZ. The question brought up here is whether comparison based on aggregation of selected parameters is useful or whether other approaches to comparison are necessary.

o Comments on the gap between science and practitioners

- Should research be stronger driven by concerns of policy and less by scientific self-understanding? This type of transition might take place in favourable niches, depending on the open-minded politicians and scientists creating tipping points. An important issue in this context is predisposition: What things mean keeps changing. Information must come at the right time to have an influencing potential. Opinions derived from information can change after the first exposition and

might become key factors later on under changed circumstances or under another administrator.

- Concerning environmental policies it needs to be noted that “green” interests are often expected to be common interest although this might not always be true and environmental protection itself depends on a societal structure enforcing it. Scientists like the picture of the objective person giving value free advice, but this is an elusion. Scientists should try to focus on common goals and be explicit with their normative and value based assumptions.

Further cooperation within the working group:

- The aim should be to set out a group that keeps in touch and communicates with each other and looks out for further case studies. Two criteria to choose favourable case studies could be: Who solved the problem? How was the problem solved?
- A special focus could be the question: How can existing institutions be reformed to make them sustainable? Stronger cooperation with practitioners on this might be very interesting and fruitful.
- Watch out together for future funding and collaboration opportunities.

Setting the Scene: Governance dimensions for coastal Social-Ecological Systems

Andreas Kannen, GKSS Research Centre Geesthacht

The LOICZ Science Plan

The Primary Goal:

To provide knowledge, understanding and prediction needed to allow coastal communities to assess, anticipate and respond to the interaction of global change and the local pressures in determining coastal change.

LOICZ Topic #3

How can comparative analysis help to improve governance of human activities in changing coastal (eco)systems?

1. **How to link overviews of ecosystem condition with assessments of (coastal) governance initiatives?**
2. **What can be learned from comparative analysis, e.g. can we identify enabling or resisting elements/patterns in governance systems?**
3. **How can coastal governance initiatives effectively affect the behavior of societies?**

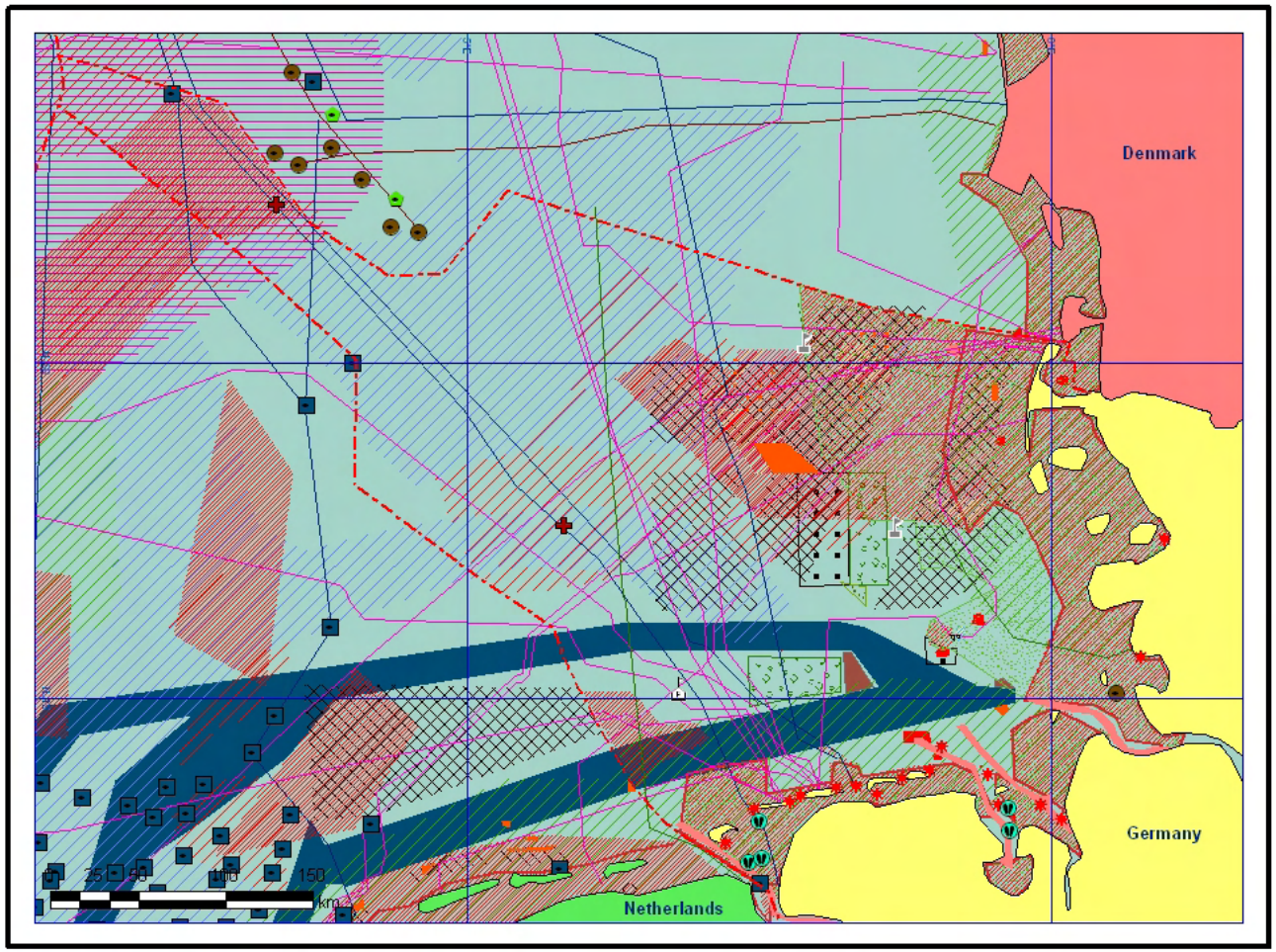
Aims for this workshop:

- examine different governance cases in Arctic coastal regions

- identify common elements of analysis

- discuss the appropriateness of governance baselines in order to assess and compare (Arctic) coastal governance initiatives

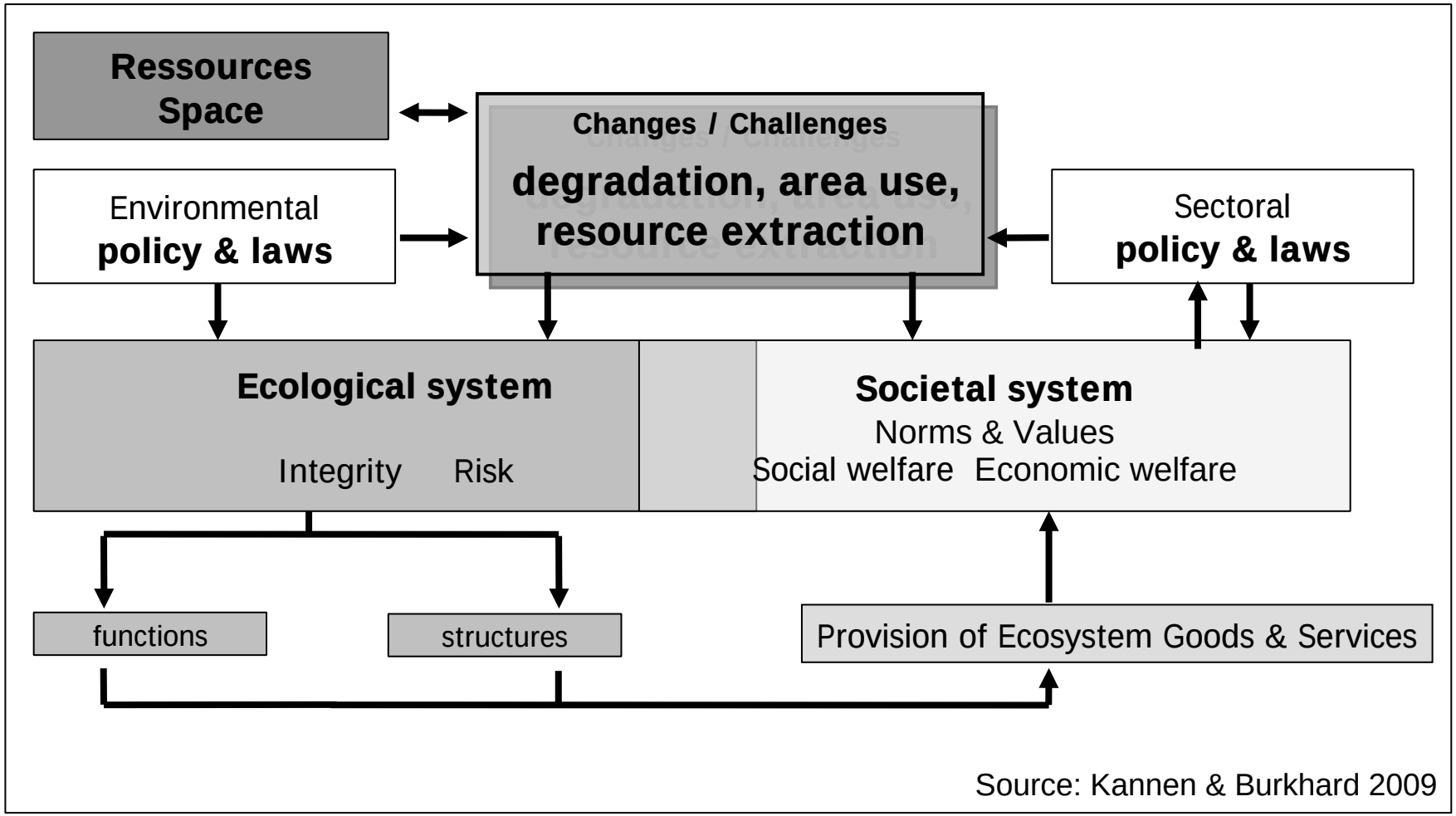
Coastal Governance:
Geographical Scope – many issues within one place



- Shipping
- Sand extraction
- Waste disposal
- Mariculture
- Platforms
- Cable & pipelines
- Military
- Spawning grounds
- Protected areas

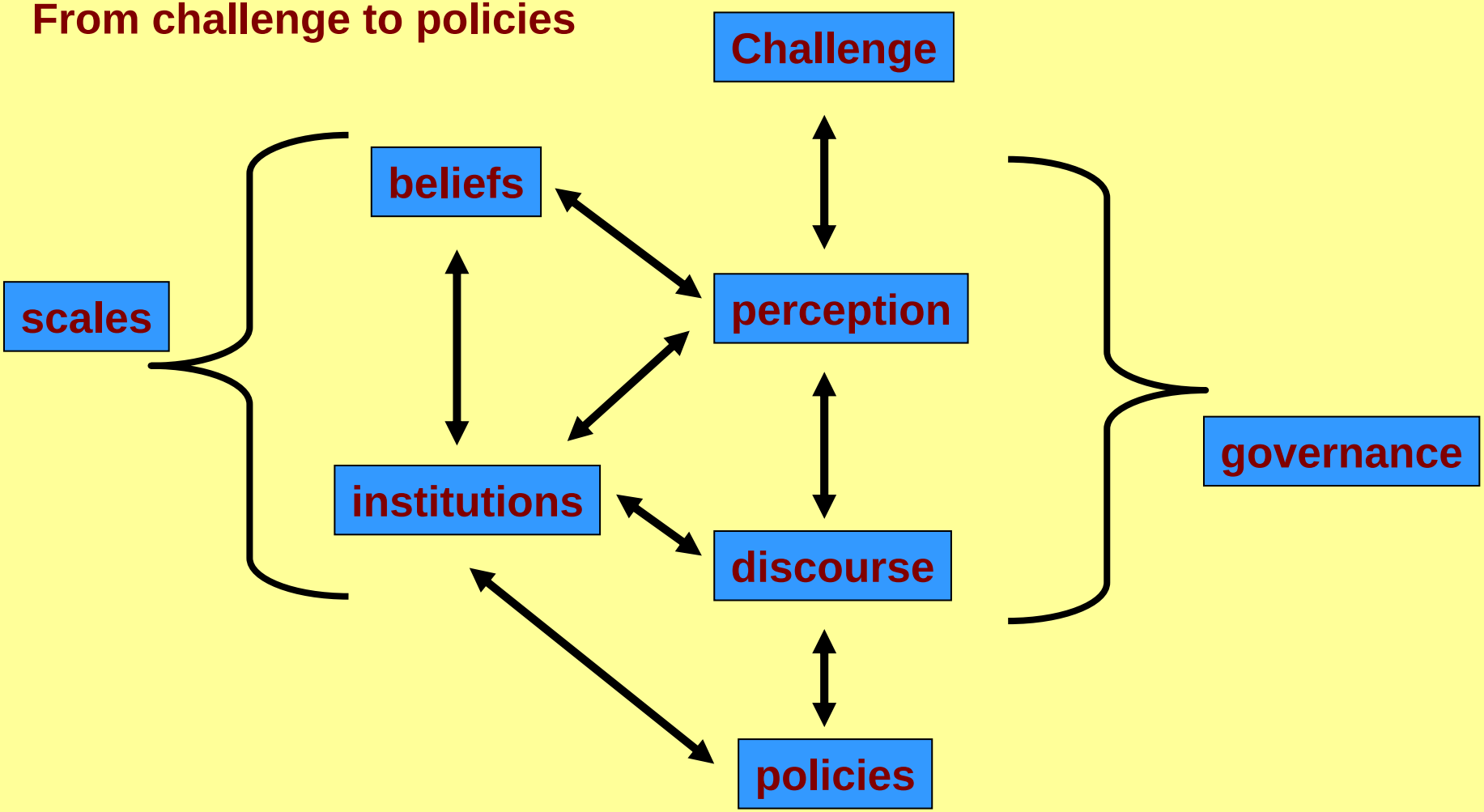
Source: Coastal Futures

Coast and Sea as Social-ecological systems



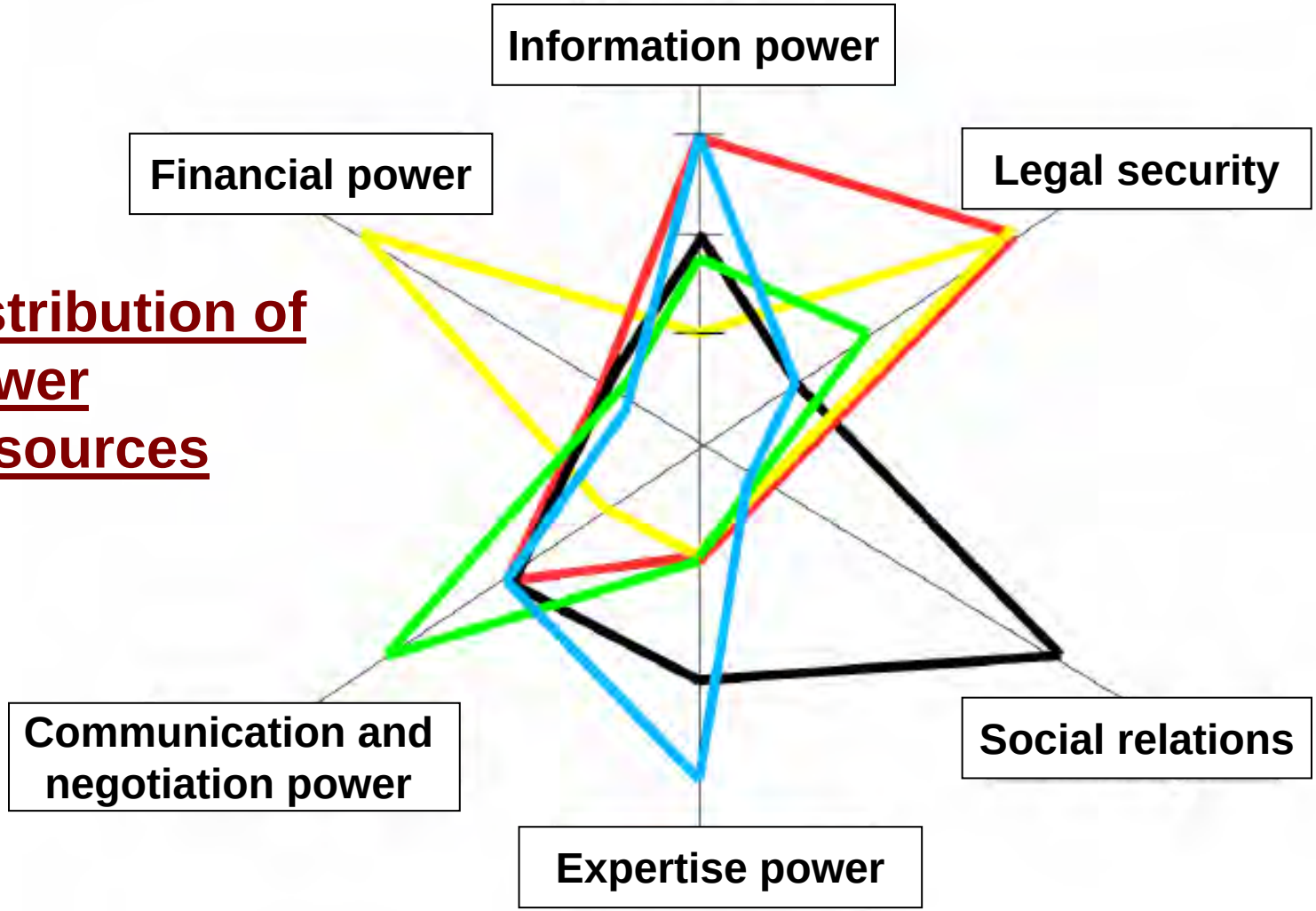
Source: Kannen & Burkhard 2009

From challenge to policies



Source: Kannen 2008

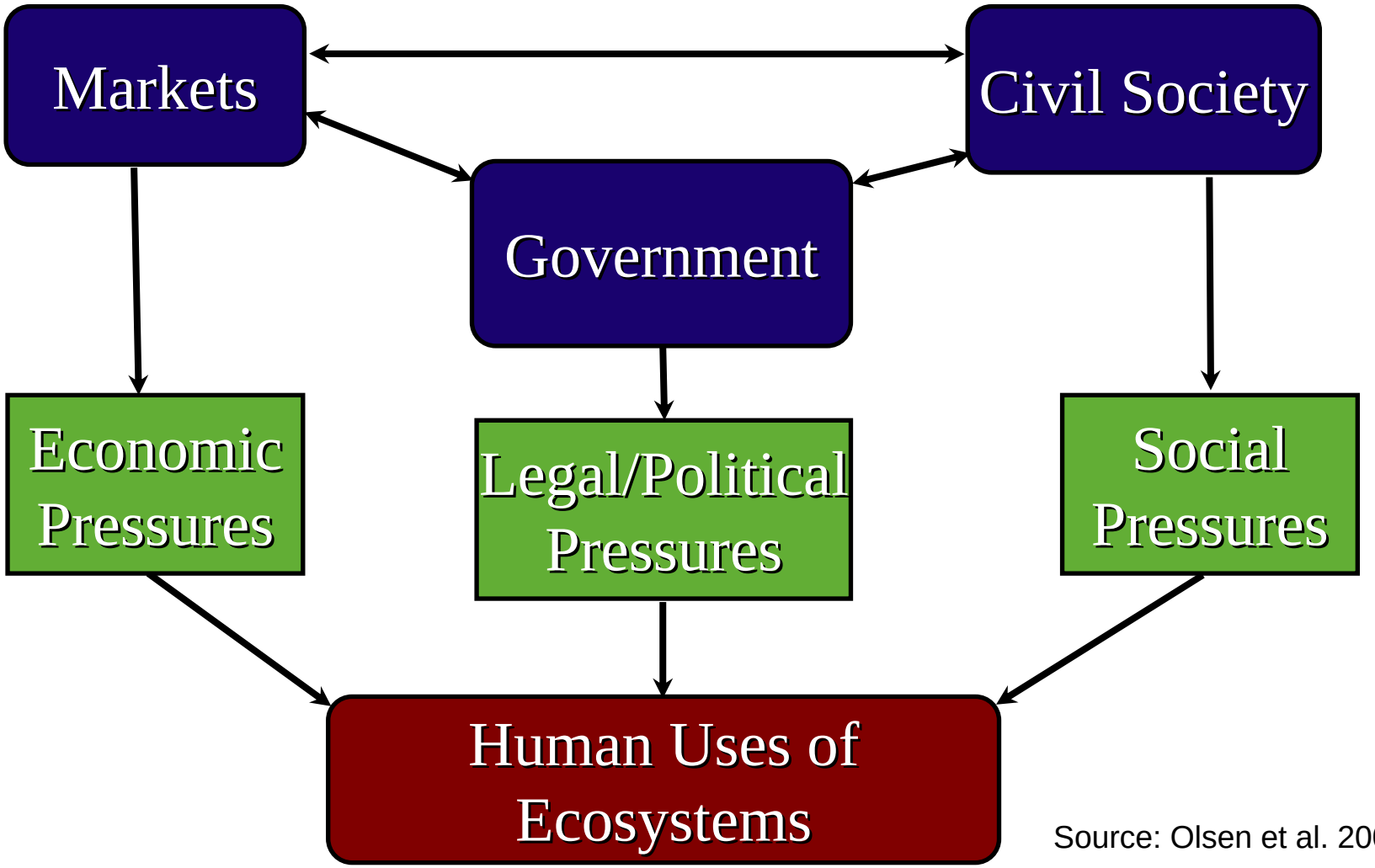
Distribution of Power Resources



Source: Busch 2009

Adapted from Olsen *et al.*, 2006

Sources and Mechanisms of Governance



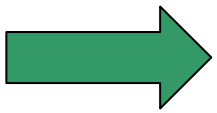
Source: Olsen et al. 2009

Developing Governance baselines

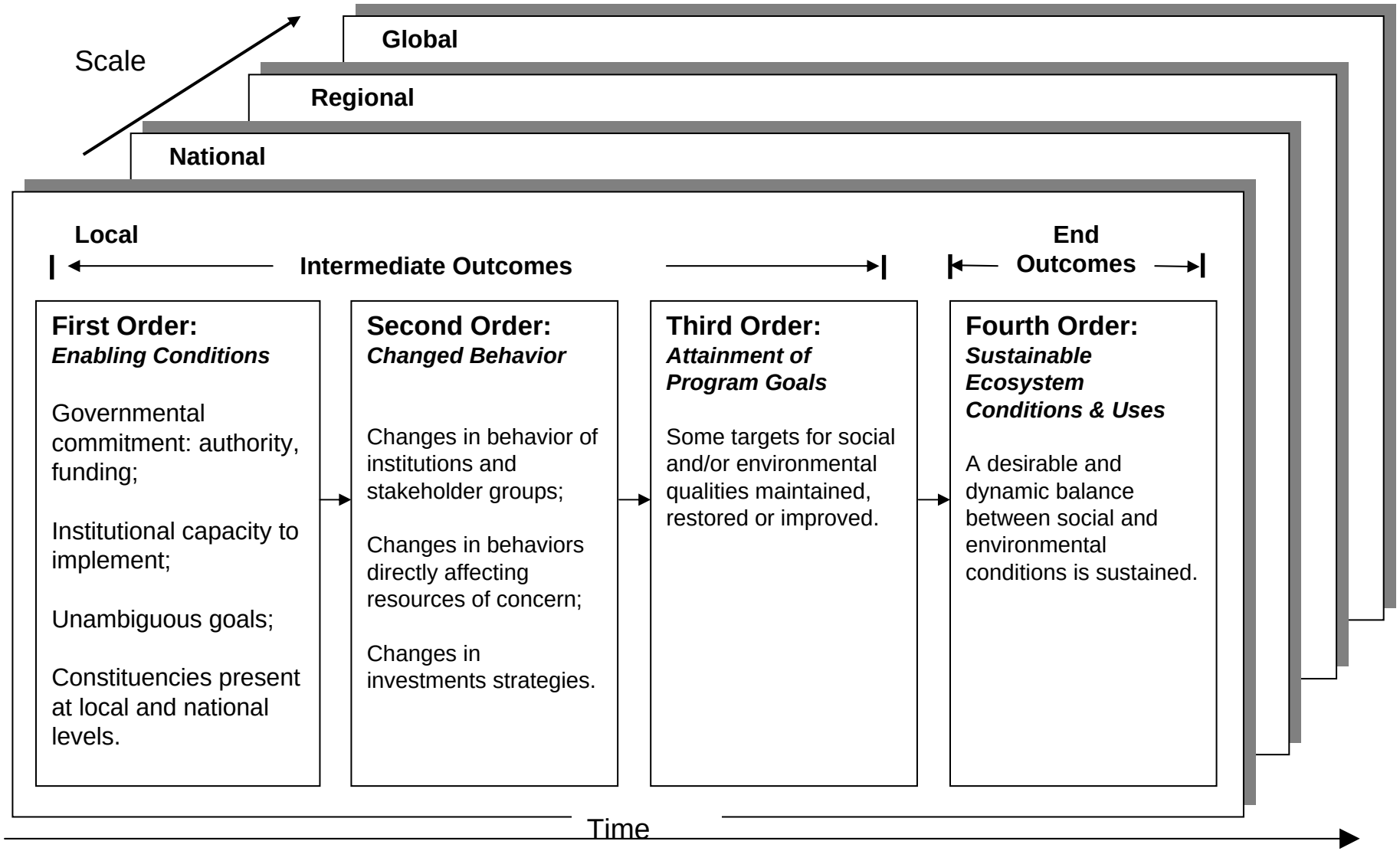
- Examine past & current responses of the governance system to changes in ecosystem conditions
- Reconstruct long-term trends for key variables
- Reveal power, objectives and strategies of each governance mechanism
- Characterize processes, interactions and outcomes of the existing governance system
- Identify challenges for the future and compare existing structures with future demands

Benefits of Governance baselines

- Assesses degree to which enabling conditions are present
- Identifies priorities for capacity building
- Provides a reference point against which to gauge future change
- Serves as basis for “tailoring” good practices to the place



Provides context and history in a specific area



The Four Orders of Outcomes In Ecosystem-based Governance. Adapted from Olsen, 2003

From introduction to presentations to discussions ....

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Zukunft Küste – Coastal Futures


Beaufort Sea Large Ocean Management Area: Case Study

Presented by: Helen Fast
Regional Manager Oceans Programs Division
Central & Arctic Division
Department of Fisheries and Oceans, Canada

LOICZ Arctic Regional Governance Workshop – Nov 3-4, 2009

Canada

Governance in Canada's Arctic

Part 1

Canada

Canada's Arctic

- Small populations
- Limited by complex scientific and socio-economic issues and interests
- Constitutionally protected institutional structures and processes
- Certain issues may need to involve only certain parties

Canada

Land Claims - Overview

- The Government's business is conducted differently in the Arctic than in southern Canada

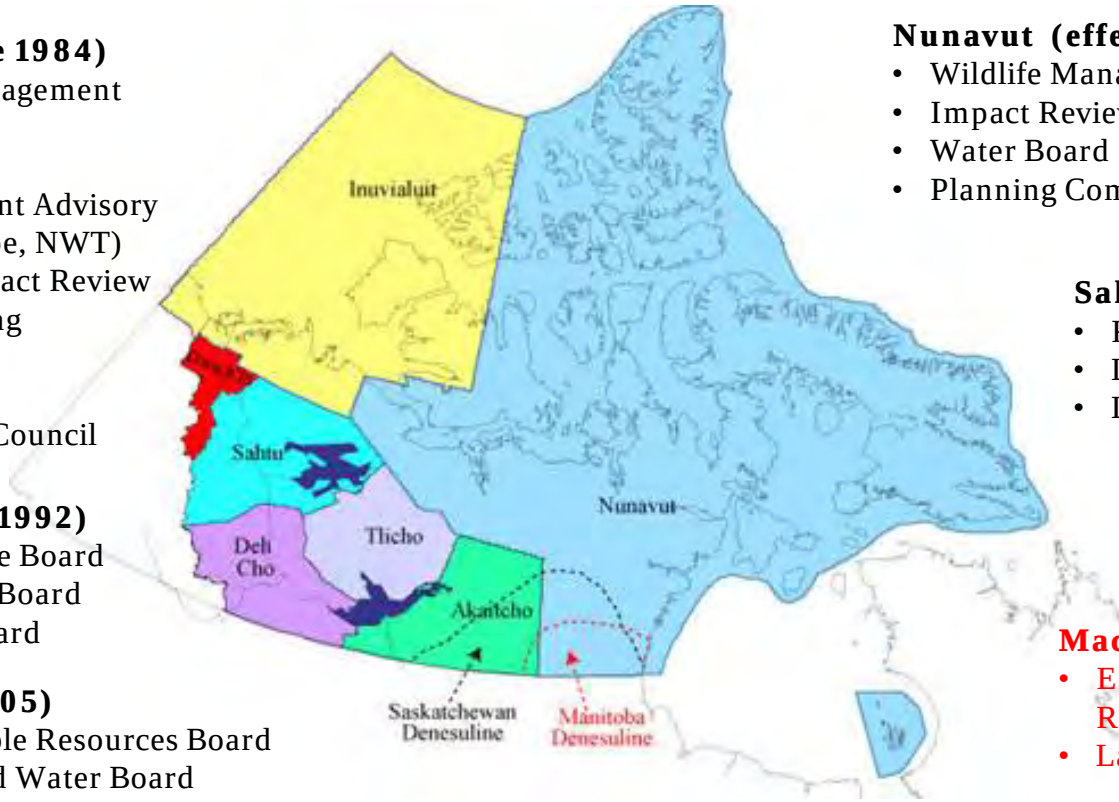
  - Tripartite agreements between federal and territorial governments and Aboriginal organizations cover most of Arctic
  - Legislated co-management boards are established for fisheries and wildlife management, land use planning and environmental assessment

Settled Land Claims Agreements

Inuvialuit (effective 1984)
- Fisheries Joint Management Committee
- Game Council
- Wildlife Management Advisory Council (North Slope, NWT)
- Environmental Impact Review Board and Screening Committee
- NWT Water Board
- Research Advisory Council

Gwich'in (effective 1992)
- Renewable Resource Board
- Land Use Planning Board
- Land and Water Board

Tlicho (effective 2005)
- Wekeezhii Renewable Resources Board
- Wekeezhii Land and Water Board



Nunavut (effective 1993)
- Wildlife Management Board
- Impact Review Board
- Water Board
- Planning Commission

Sahtu (effective 1994)
- Renewable Resources Board
- Land Use Planning Board
- Land and Water Board

Mackenzie Valley
- Environmental Impact Review Board
- Land and Water Board

Canada

Arctic Co-Management
Key Features

- Shared decision-making powers and defined responsibilities
- Obligation to consult – both Canada and territories
- Defined geographic areas
- Inclusive, consensus-based approach requires high-level community and beneficiary engagement

"We are partners not clients"

Canada

Co-Management - Advantages

- Formal, local decision-making process involving Aboriginal groups
- Integrating traditional and local knowledge with scientific knowledge
- “Potential for” decreased need for enforcement activities
  - Work in progress for DFO and partners
- Community “buy-in”
  - Improved cooperation and relationships

Canada

Co-Management - Challenges

- Integrating traditional and local knowledge with scientific knowledge
- Capacity building (both sides)
  - Effective cross-cultural interpersonal skills
- Language – potential for misunderstanding
- Time-consuming and expensive
  - Need adequate implementation funding
- Residual federal responsibilities unclear
- Community expectations
  - DFO presence
- Government litigation
  - Failure to honour agreements (e.g., consultation, local staffing)

Canada

Co-management Lessons Learned

- Need to build trust and relationships first – requires adequate time and more opportunities to dialogue

- Need to establish meaningful engagement processes with communities on issues

- Communities need to play an active part in projects or decision-making processes that affect them – best done through "*direct community engagement*"

Canada

Canada’s Oceans

Part 2

Canada

Canada

Canada's Oceans Act

- Canada's *Oceans Act,* came into force in 1997
- Directed that the Department of Fisheries and Oceans lead implementation of management and planning for Canada's marine and coastal resources
  - Integrated management
  - Marine protected areas
  - Marine environmental quality

Canada

Department of Fisheries & Oceans

- Responsible for marine safety and the management of ocean and freshwater resources
- Responsible for developing and implementing policies and programs to support Canada's scientific, ecological, social and economic interests in oceans and fresh waters
- Helps ensure the safe movement of people and goods through its departmental activities and presence on Canadian waters
- Integrates environmental, economic and social perspectives to ensure Canada's ocean and freshwater resources benefit current and future generations

Canada

Oceans Strategy - 2002

Outlines the government's vision and direction for modern oceans governance. The overarching goal of the strategy is ensuring healthy, safe and prosperous oceans for the benefit of current and future generations of Canadians.

Main objectives of Canada's Oceans Strategy

- Increase understanding and protection of the marine environment
- Support sustainable economic opportunities
- Demonstrate international leadership in oceans management
- commits the Government of Canada to fundamentally change the way we use and manage our oceans by:

  - providing policy direction for an integrated approach to oceans management;
  - calling for coordination of policies and programs within and across governments; and
  - advocating an ecosystem approach to ocean resource management and environmental assessment.

Canada

Canada's Oceans Action Plan (OAP) 2004-2007

- The Oceans Action Plan provided for government-wide action to develop oceans resources sustainably and to protect fragile marine ecosystems.

Canada

Why Action was / is Needed

- There are many challenges facing our oceans:
  - oceans are under increasing pressures
  - growing conflicts among oceans users
  - sustainable economic opportunities are being curtailed
- We need integrated oceans planning to:
  - conserve and protect ecosystems
  - strengthen science-based decision-making
  - provide opportunities for appropriate development
  - bring coherence to fragmented decision-making
  - strengthen relationships with governments / stakeholders
  - avoid or address conflicts among users

Canada

Objectives of OAP

FROM	TO
• Fragmented and vertical management of oceans issues	• Strengthened horizontal management and participatory governance models
• Ad-hoc decision-making on narrowly defined problems	• Integrated planning and science based decisions that balance economic / environment issues
• Disconnected regulatory and policy frameworks	• Integrated policy frameworks
• Traditional regulatory approaches and service delivery	• Emphasis on innovative regulations, partnerships & new technologies
• Science focused on individual species	• Broader ecosystem approach to science

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An Overview of the OAP

The Plan rested on four interconnected pillars that integrate delivery across government:

1. International Leadership, Sovereignty and Security
2. Integrated Oceans Management for Sustainable Development
3. Health of the Oceans
4. Oceans Science and Technology

Phased Approach to Implementation

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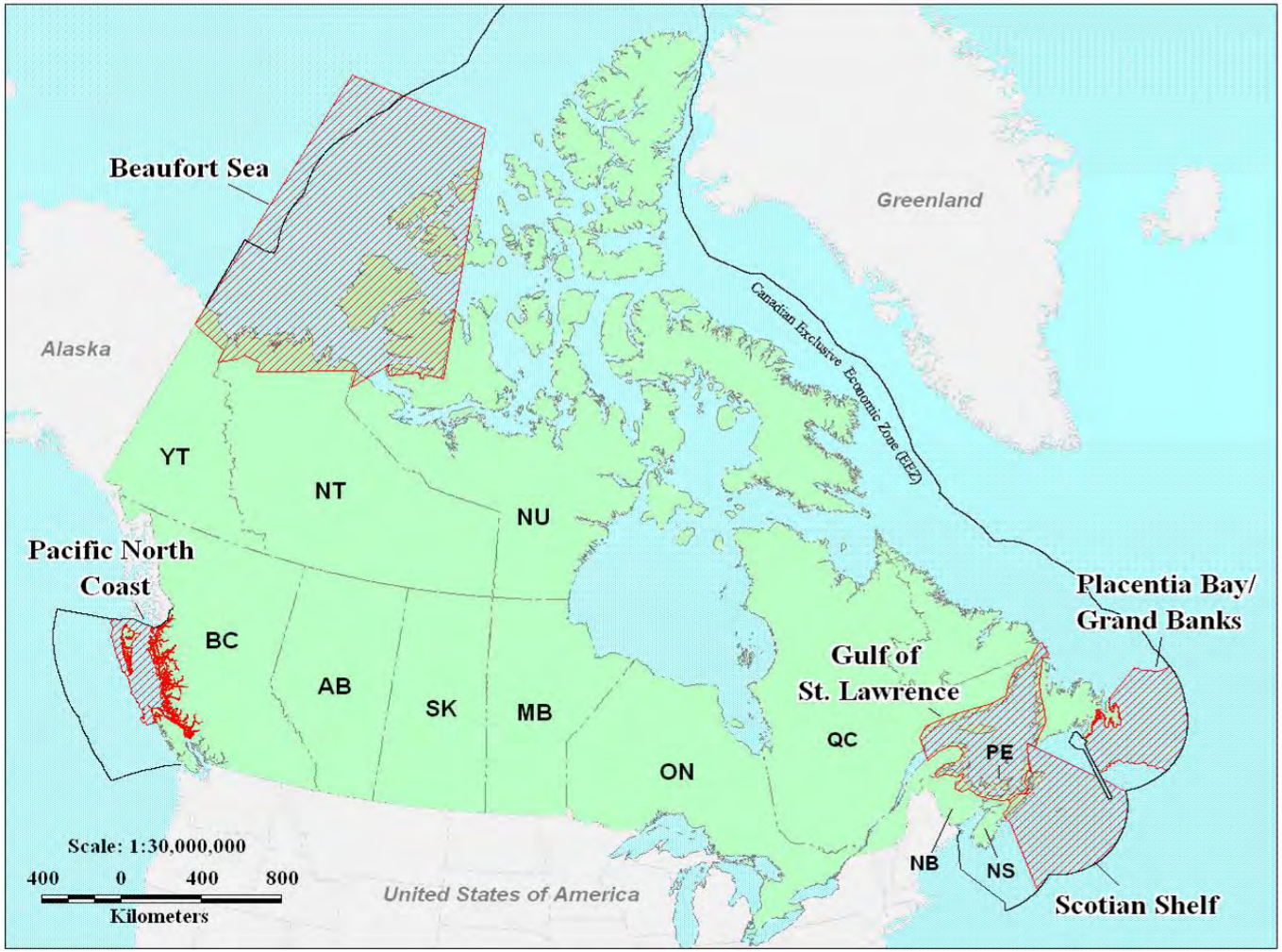
Large Ocean Management Areas



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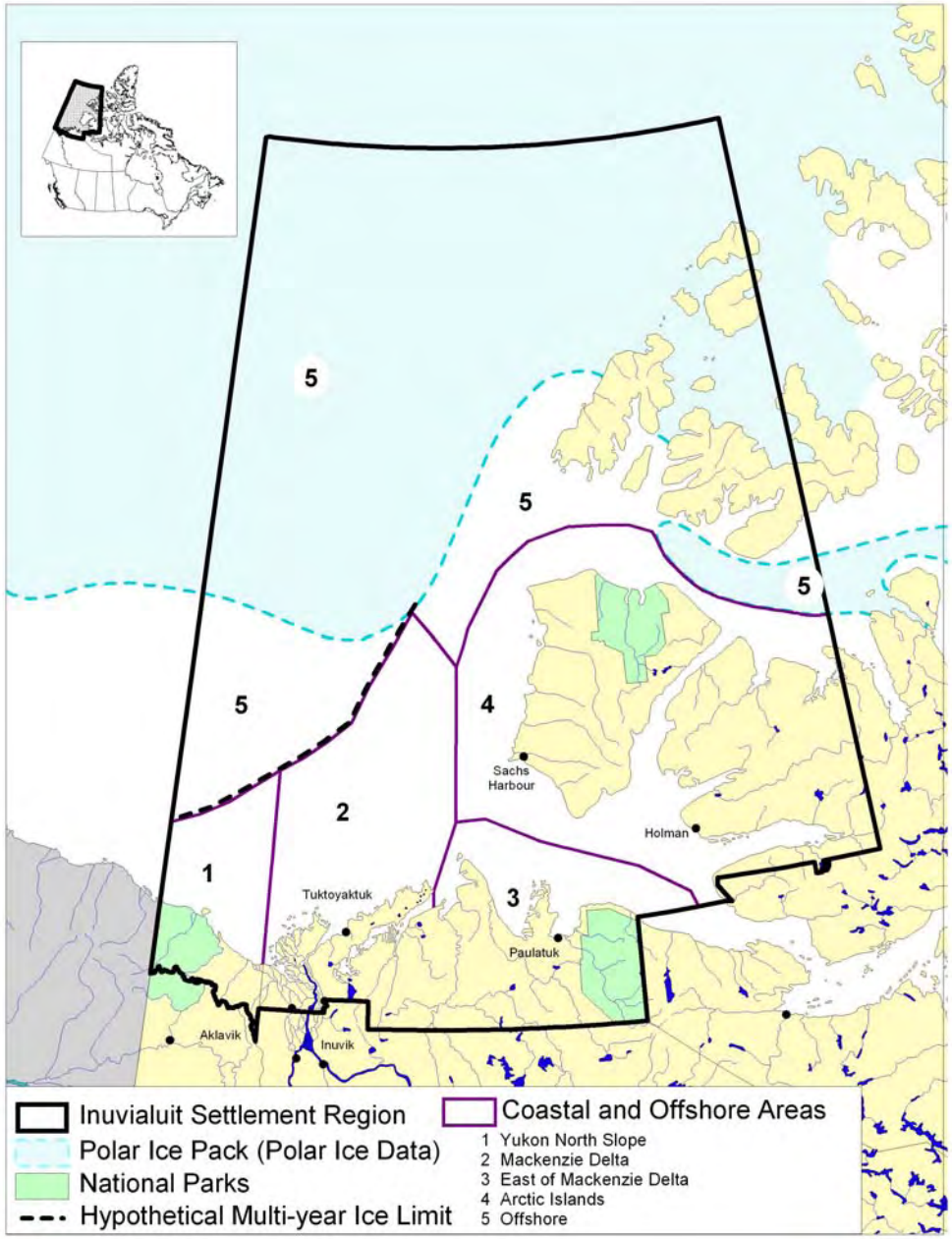
Beaufort Sea LOMA: Part 3

Canada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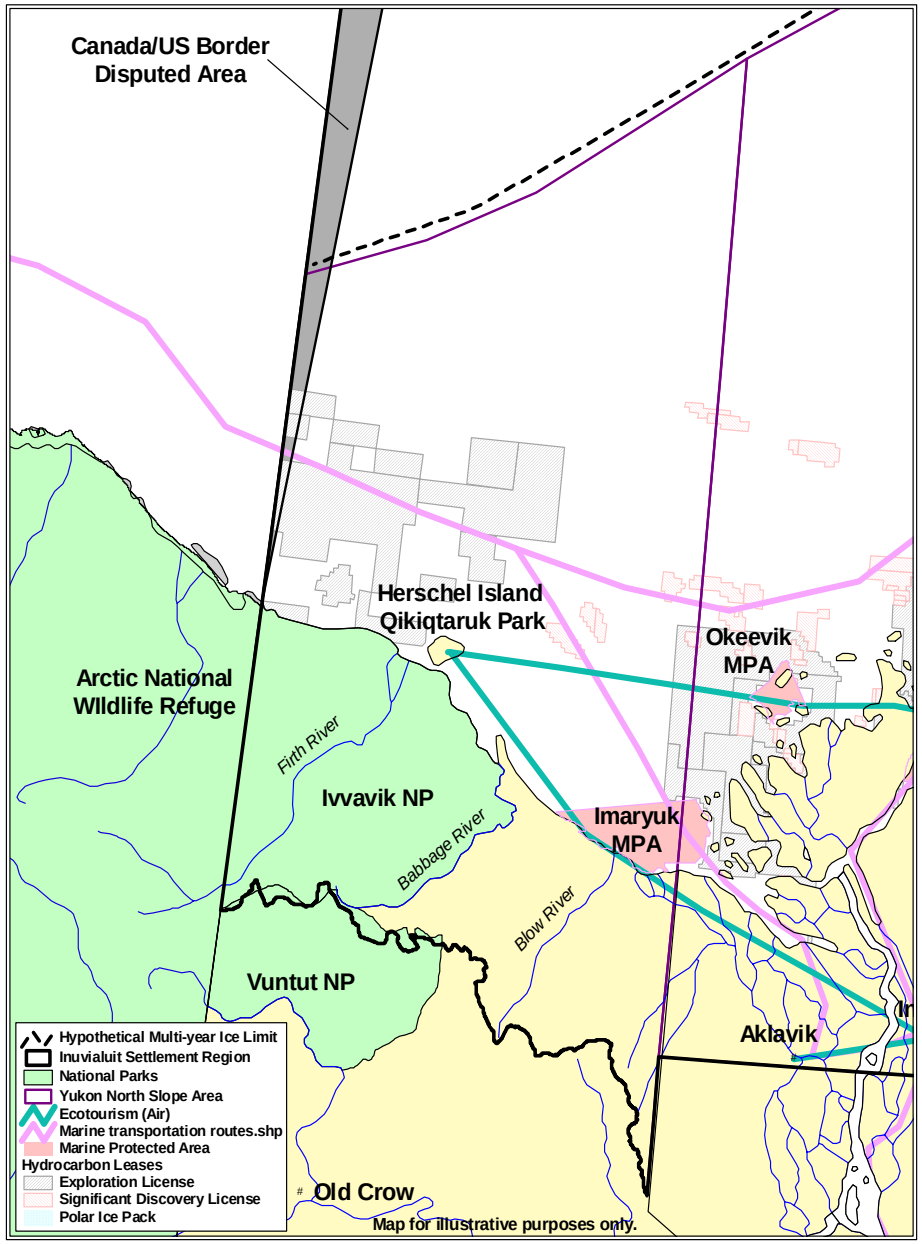
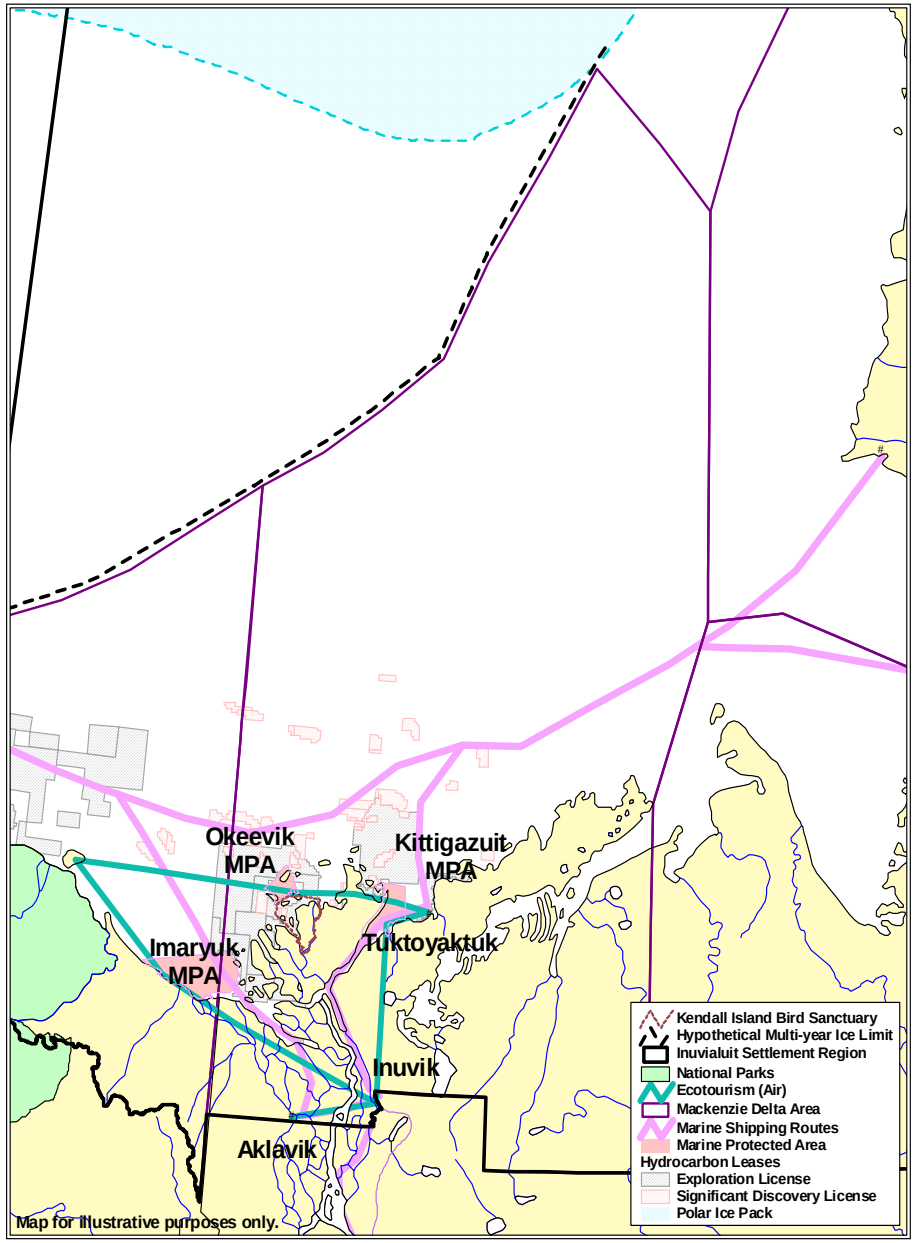
Sachs Harbour
Holman
Tuktoyaktuk
Paulatuk
Aklavik
Inuvik
Inuvialuit Settlement Region
Polar Ice Pack (Polar Ice Data)
National Parks
Hypothetical Multi-year Ice Limit
Coastal and Offshore Areas
1 Yukon North Slope
2 Mackenzie Delta
3 East of Mackenzie Delta
4 Arctic Islands
5 Offshore

Canada


Canada/US Border
Disputed Area
Herschel Island
Qikiqtaruk Park
Okeevik
MPA
Arctic National
WIldlife Refuge
Firth River
Ivvavik NP
Babbage River
Imaryuk
MPA
Blow River
Vuntut NP
Aklavik
Old Crow
Map for illustrative purposes only.
Hypothetical Multi-year Ice Limit
Inuvialuit Settlement Region
National Parks
Yukon North Slope Area
Ecotourism (Air)
Marine transportation routes.shp
Marine Protected Area
Hydrocarbon Leases
Exploration License
Significant Discovery License
Polar Ice Pack

Canada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Kendall Island Bird Sanctuary
Hypothetical Multi-year Ice Limit
Inuvialuit Settlement Region
National Parks
Ecotourism (Air)
Mackenzie Delta Area
Marine Shipping Routes
Marine Protected Area
Hydrocarbon Leases
Exploration License
Significant Discovery License
Polar Ice Pack

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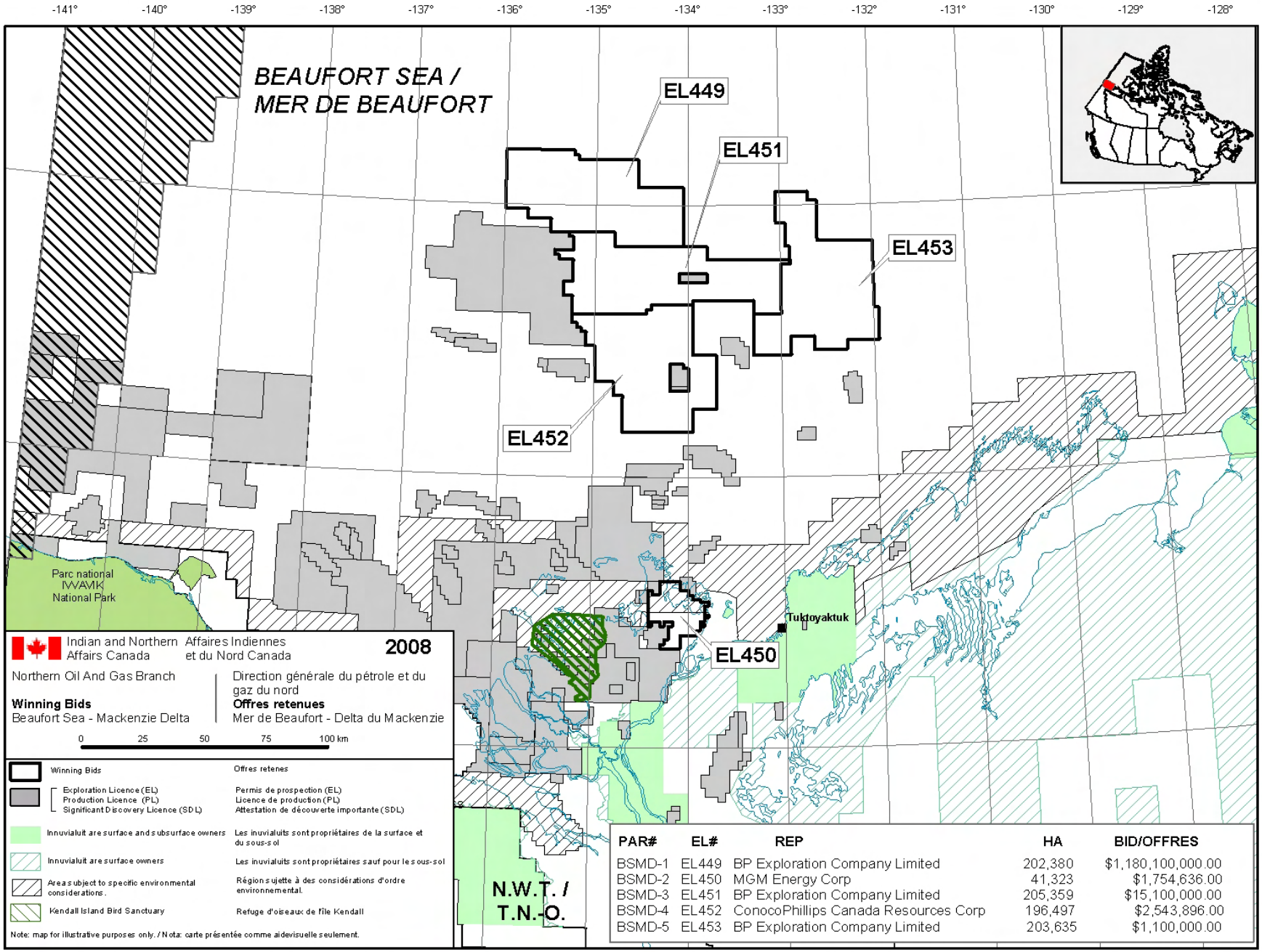
Large Offshore Area

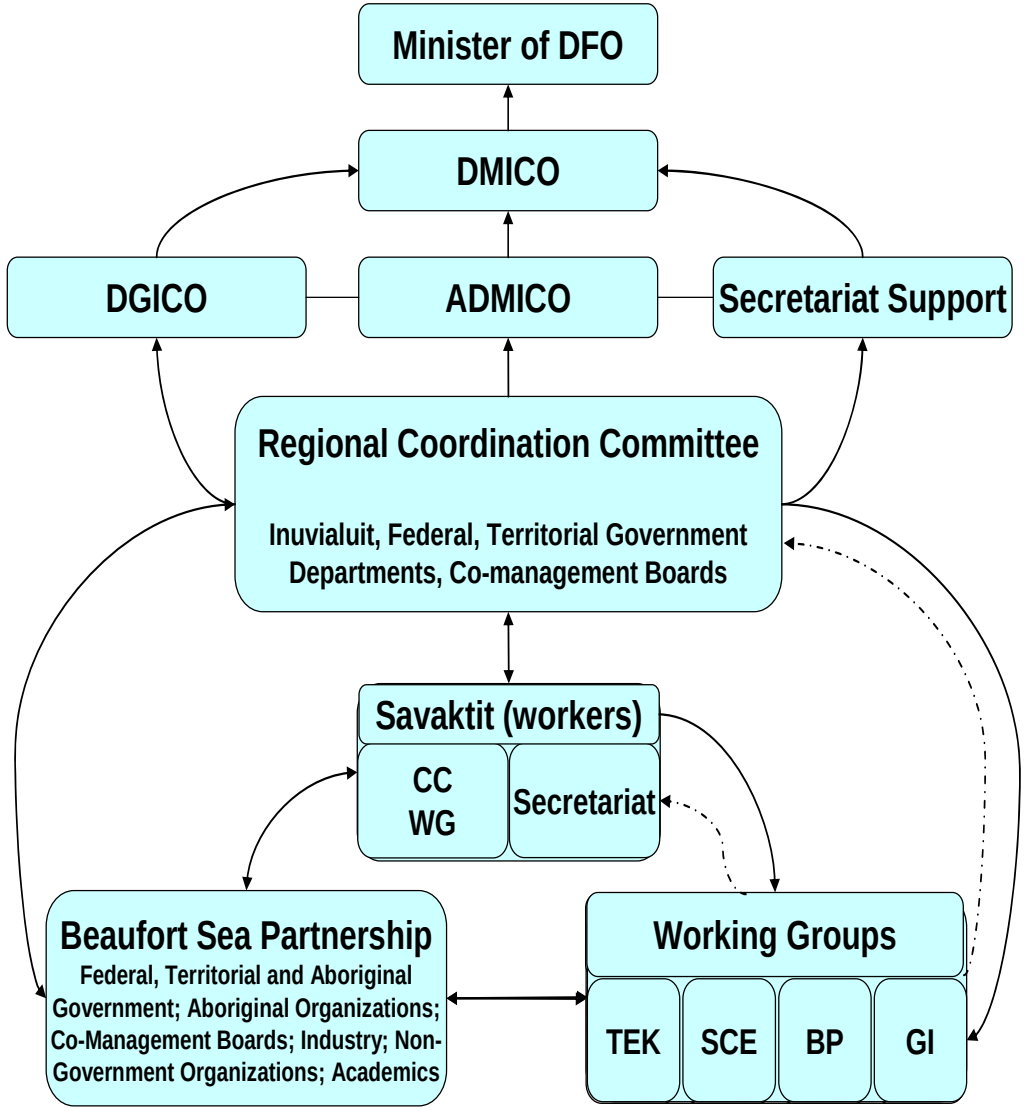
- Subject to permanent ice cover
- Movements of migratory species including beluga whales, bowhead, polar bears and seals
- Shifts in thickness and cover of arctic ice
- Monitoring oceans and currents
- Sea floor mapping
- Future hydrocarbon activity
- Future navigation needs for military, security or scientific purposes, as well as trade and tourism

Canada



PAR#	EL#	REP	HA	BID/OFFRES
BSMD-1	EL449	BP Exploration Company Limited	202,380	$1,180,100,000.00
BSMD-2	EL450	MGM Energy Corp	41,323	$1,754,636.00
BSMD-3	EL451	BP Exploration Company Limited	205,359	$15,100,000.00
BSMD-4	EL452	ConocoPhillips Canada Resources Corp	196,497	$2,543,896.00
BSMD-5	EL453	BP Exploration Company Limited	203,635	$1,100,000.00

BEAUFORT SEA LOMA GOVERNANCE STRUCTURE



OIL AND GAS MANAGEMENT PRIORITES

Oil and gas management framework

- Completion of Beaufort Sea Integrated Management Plan
- Improved community/stakeholder engagement
- Enhanced Rights Issuance Decision Support Tool

Environmental management response

- Prospect of simultaneous EA reviews provide efficiency opportunities
- Environmental protection capacity – spills response, monitoring, etc

Science programs to support oil and gas management

- Essential for informed decision-making and to ensure appropriate mitigation measures are in place. Supports:
  - Regional assessments
  - Land tenure and regulatory decisions
  - Cumulative impacts, long term monitoring

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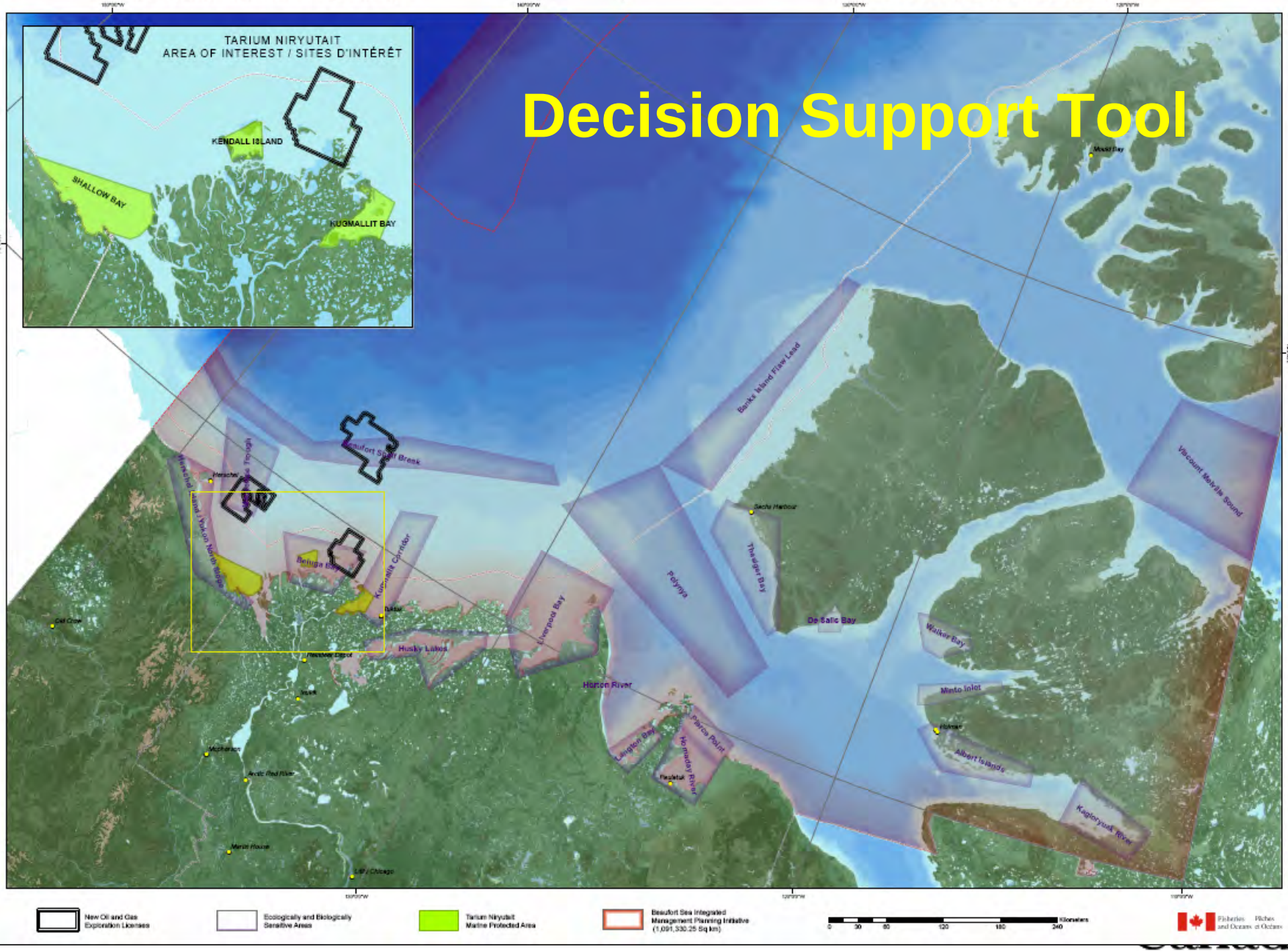
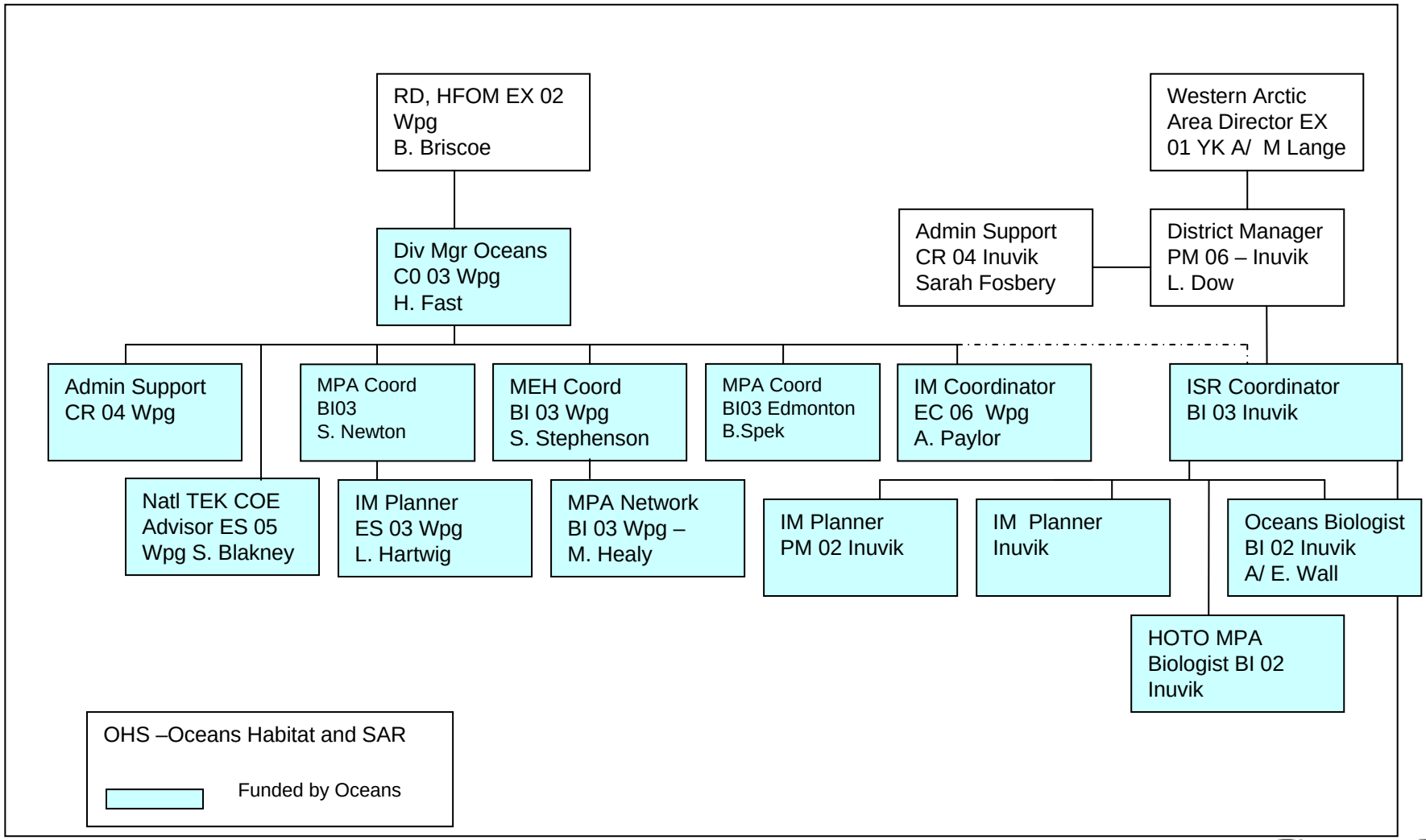

BEAUFORT SEA INTEGRATED MANAGEMENT PLANNING INITIATIVE (BSIMPI)
INITIATIVE DE PLANIFICATION DE LA GESTION INTÉGRÉE DANS LA MER DE BEAUFORT
TARIUM NIRYUTAIT AREA OF INTEREST / SITES D'INTÉRÊT
KENDALL ISLAND
SHALLOW BAY
KUGMALLIT BAY
Decision Support Tool
Banks Island Flaw Lead
Vincent Melville Sound
Sachs Harbour
Thesiger Bay
Polynya
De Salis Bay
Walker Bay
Minto Inlet
Albert Islands
Kugaryuak River
Liverpool Bay
Husky Lakes
Horton River
Pierce Point
Langton Bay
Holmes River
Kugmallit Corridor
Beluga Bay
Tuktoyaktuk
Inuvik
Aklavik
Arctic Red River
Fort McPherson
Fort Chipewyan
Fort Chicago
New Oil and Gas Exploration Licenses
Ecologically and Biologically Sensitive Areas
Tarium Niryutait Marine Protected Area
Beaufort Sea Integrated Management Planning Initiative (1,091,330.25 Sq km)
Kilometers
0 30 60 120 180 240
Fisheries and Oceans / Pêches et Océans

Oceans Staff



Canada

The Plan – Fall 2009

Canada

The Workplans – under revision

Canada

Assessment

Part 4

Canada

The Four Orders

- Sound processes, appropriate participation, technically competent staff and sustained government support MAY NOT BE ENOUGH

Canada

1st order outcomes – enabling – yes for the most part

- Formal commitments required to implement a plan of action directed at the achievement of defined ecosystem conditions
  - Specific goals for target environmental and societal outcomes defined
  - Supportive and informed constituencies present in the community and responsible government agencies
  - Required implementation capacity present within implementing institutions
  - Commitments to provide necessary authorities and resources for implementation in place
- Learning by doing is the principle path to building the capacity and constituencies required to practice ecosystem approach.

Canada

2nd order outcomes – not yet

- Mark the full scale implementation of a formally approved and sustainably funded plan of action: changes in the behavior of governmental institutions; of the relevant groups exploiting or otherwise affecting ecosystem conditions and the behavior of those making financial investments in the system – key is success in generating the funds required to sustain the program over the long term

Canada

3rd order outcomes – not yet

- Marks the achievement of the specific societal and environmental quality goals the prompted the entire effort.

Canada

4th order – sustainable development - not yet

- A desirable and dynamic balance between social and environmental conditions is achieved, and sustained over a long-term period as defined by the goals; and
- Maintaining optimal equilibrium between environment and society

Canada

Lessons Learned

Part 5

Canada

Adaptive Co-Management: BEAUFORT SEA

Ocean Management Research Network

Adaptive Co-Management Working Group
Ocean Management Research Network Conference
Ottawa, Ontario
October 26th, 2007

Canada

Institutional Design for Adaptive co-management

- Make sure to use existing institutions and include all of the key players

Canada

Adaptive Capacity and Resilience

- Acknowledge scientific uncertainty and incorporate local and traditional knowledge
- Use adaptive management approaches to encourage systematic learning
- Encourage systematic learning, be flexible in making management decisions
- Build adaptive capacity at multiple levels
- View building adaptive capacity and resilience as a long-term process

Canada

Conditions of Success and Failure:

- Seek an understanding of local rules and definition of group membership
- Ensure clear objectives, accountability and adequate fiscal support. Engender platforms for negotiation and conflict resolution
- Allow enough time to build mutual trust and respect
- Find ways to overcome bureaucratic rationality

Canada

Conclusions

Part 6

Canada

Canada's Oceans Strategy

- The past five years have demonstrated the value of policy statement for management of Canada's estuarine coastal and marine ecosystems
- There is general agreement among RCC members, the Beaufort Sea Partnership and the working groups that the Integrated Ocean Management Plan will lead to the benefit of all
- Recognition that achieving common objectives is a shared responsibility
- The recent convergence of exploration and environmental protection interests in the Beaufort Sea serves to re-confirm the value of the Ecosystem Overview and Assessment Report completed as a first step toward the LOMA.

Canada

THANK YOU

Other Federal Departments

Canada

Transport Canada (TC)

- Works with industry and the public to regulate, promote and enforce safe and sustainable marine practices.
- Oversees the safety, security and marine infrastructure of small vessels, large commercial vessels and pleasure craft.
- Regulates the safe transport of dangerous goods by water and helps protect the marine environment.

Canada

Environment Canada (EC)

- Preserves and enhances the quality of the natural environment.
- Identifies and protects nationally important wildlife habitat within terrestrial, freshwater and marine ecosystems of Canada.
- Conserves Canada's renewable resources.
- Conserves and protects Canada's water resources.
- Forecasts weather and environmental change.
- Enforces rules relating to boundary waters.
- Coordinates federal environmental policies and programs.
- Responsible authority under the *Species at Risk Act*.

Canada

Parks Canada Agency (PCA)

- Recognized as a national and international protected area leader.
- Protects and presents nationally significant examples of Canada's natural and cultural heritage, and fosters public understanding, appreciation and enjoyment of these special places. This family of protected areas includes national parks, national historic sites and national marine conservation areas.
- Creates and manages a system of national marine conservation areas representative of the marine environments of Canada's Arctic, Atlantic and Pacific oceans, and Great Lakes under the *Canada National Marine Conservation Areas Act*.
- Protects the marine environment within marine components of several terrestrial national parks under the *Canada National Parks Act*.
- Within these protected areas, Parks Canada also has an enforcement role

Canada

Indian and Northern Affairs Canada (INAC)

- Administers Crown land and water resources in the North (through the development and implementation of policies, legislation, regulations and programs offered primarily through their regional offices in the Northwest Territories and Nunavut).
- Responsible for water management under Section 5 of the *Department of Indian Affairs and Northern Development Act*. (This gives INAC provincial-type responsibilities for the North. The federal Crown has ownership of the water and other natural resources in the Northwest Territories and Nunavut.)
- Controls water use and waste disposal into water (through regulatory processes established under the federal *Northwest Territories Waters Act*, *Mackenzie Valley Resource Management Act* and *Nunavut Waters and Nunavut Surface Rights Tribunal Act*). Water use, and waste disposal in or near water, must be licensed by water licensing boards or authorized by regulation. The water boards are mandated to conserve, develop and utilize waters to ensure the best benefit for all Canadians, and for residents of the Northwest Territories and Nunavut in particular.
- Has other water management responsibilities

Canada

Filled by Helen Fast, DFO, Canada
July 22

WORKSHEETS FOR PART I

A1. The Focal Points of this Baseline

Name of the Action Arena. **Beaufort Sea Large Ocean Management Area (LOMA)**	**Map of the Action Arena**
Brief description of the Action Arena One of five priority areas identified by the Government of Canada. for integrated ocean management planning The Beaufort Sea Large Ocean Management Area is approximately 1,100,000 km^2. It is located in the extreme north-western corner of Canada, and includes the marine portion of the Inuvialuit Settlement Region.	

Worksheet A2; The Purpose of This Baseline

Identify the principle purpose for which this governance baseline is being prepared, who has contributed and their affiliation.

1.1	The date of this baseline: October 22, 2009	
1.2	Beaufort Sea Large Ocean Management Area: Canada	Which is the principle purpose?
	A basis for the design of a new initiative	
	A self assessment of an ongoing project or program	**X**
	An external evaluation,	
	A training event.	
	Other (please specify)	

1.3	Contributors to Baseline Preparation	
	Names	Affiliation
	Helen Fast	Fisheries and Oceans Canada

B. The Action Arena

The action arena is the geographically define place that is the subject of this governance baseline. Boundaries should be determined principally by the issues that are to be addressed. In practice the boundaries of the action arena are typically a compromise between administrative boundaries, ecosystem boundaries and the resources available to a project or program

C. The Context of the Baseline

Administrative and political areas included within the Action Arena

Country or Region	Provinces or States	Municipalities / Land Claim
Canada	Northwest Territorios	Inuvialuit Settlement Region

Features of the Action Arena

Variable	Value	Comments
Total Area (in Km^2)		1,110,000 km^2
Land (%)		
Tidal waters (%)		
Wetlands (%)		
Offshore		
Resident population		5630 incl 3280 Inuvialuit and 1,760 Inuvialuit youth Ander the age of 29
Transient population (eg tourists)		low

Comments on the quality of the estimates

Worksheet 3

A. The Trajectory of Change
Timeline for Change
Trace the historical events that in your group's judgment have most directly shaped the issues of concern in the action arena. Note these events as a timeline in the center column of the worksheet. Develop the timeline at a scale larger than the area of primary analysis. This usually means completing this section at the scale of the province (or state) or the nation. The timeline should extend 50 to 100 years and should list both the event and its date. Remember that the purpose of this exercise is to help the group recall together the historical roots of the issues that should be addressed in the next generation of governance. Once the center column timeline is complete, in the left hand column list the driving forces that contributed to these events in the center column. Driving forces are the major reasons underlying ecosystem change in a given period. They span prevailing societal (migration, war, economic trends) and environmental (coastal erosion, drought, climate change) conditions. Now consider the right column. Recall the governance actions—plans, decision points and examples of success or failure in implementation—and add these to the timeline.

Date	Pressures	Changes in state	Response
	Events or forces that are believed to have contributed to changes in the state of the system—a war, a flood, a change in market, political, access etc	Describe the magnitude, condition or change in natural, social and environmental variables – population size, annual fish match, disease outbreak, increased income etc	Actions by the governance system related to the pressures or changes in state (law, regulation, behavior of an institution, subsidies, intensified forms of resource exploitation
1000 AD – 1380's Thule cultural occupation A relatively elaborate hunting culture, with permanent sod-house winter villages and at least the beginnings of social complexity.	Small population primarily restricted to coastal margins, where erosion and subsidence were most active.	Located their sites in low lying areas where they were exponed to coastal subsidence and erosion, did not have the technologies of group hunting of beluga, or using fish nets.	Thule culture retreated from this region to the more viable Thule district in northwest Greenland.
1380's AD to 1800s Inuvialuit culture dominant—closely related to all other Inuit people living across the top of the North American continent	Retreat of the Thule culture. Inuvialuit also had an elaborate hunting culture. However they built their permanent sod-houses in winter villages in upland areas where they were not exponed to subsidence and erosion. Inuvialuit were much better adapted to the riverine environments of the western Canadian Arctic than the Thule. They used fish-netting and used communal kayak-based hunting of beluga whales.	The new fishing and hunting technologies were pivotal in the transition from Thule to Inuvialuit culture	
1789, 1826 – 1850's – Europeans arrive in	Europeans first visited the land of the Inuvialuit. The first fur traders and	Radical cultural change about to happen as	

Date	Pressures	Changes in state	Response
the Western Arctic	explorers arrived in 1789. The British Royal Navy, looking for a Northwest Pasaje, in 1826. By the early 1850s, the Inuvialuit coast lines were well explored European trade goods became widely available through indirect trade. Russian iron goods were in circulation by the late eighteenth century, brought east from Bering Strait by Alaskan Inupiat intermediaries. By the late 1820s this was supplemented by Hudson's Bay Company wares, In 1840, the Hudson's Bay Company established Peel's River Post. During the early 1850s the Inuvialuit began to visit the fort in ever-increasing numbers. One early and beneficial effect of this trade was a suspension of hostilities with the Gwich'in.	a result of European influences. By the 1870s guns were in regular use.	
1860's – 1880's – Hudson's Bay Company, introduction of Christianity	In 1861, the Hudson's Bay Company expanded its operations in the area, opening Fort Anderson on the Anderson River, aimed exclusively at the Inuvialuit trade. In 1866, however, it was abandoned due to declining revenues	The closing of Fort Anderson seems to have caused some real economic disruption to those now accustomed to the Hudson's Bay Company and what it had to offer. The Inuvialuit now began making the annual trek to Peel's River Post. In 1866, the year Fort Anderson closed, Petitot counted 250 *"Anderson Esquimaux"* at Peel's River Post. Group identity seems to have been blurring, and by the winter of 1870, the *"Mackenzie River and Anderson bands"* were reported wintering together, both suffering from disease and *"camped on the ice hunting seals."* The following year they were victims of a smallpox epidemic, and year by year the toll increased. "We are all dying," reported an Inuvialuit chief in the 1870s, "we are getting snuffed out day by day	During the period of Hudson's Bay Company operations at Fort Anderson the Inuvialuit were introduced to Christianity. Despite an extensive economic involvement with the Hudson's Bay Company, several major disease epidemics, and considerable other cultural change, the Inuvialuit were still in many respects very much aloof from the outside world as late as the 1880s. In particular they had been only very rarely visited on their home ground by outsiders.

Date	Pressures	Changes in state	Response
1889 – 1914 whaling ships arrive	The first whaling ship entered western Canadian Arctic waters, part of the American Beaufort Sea whaling fleet based in San Francisco and Seattle. They reported that bowhead whales were "as thick as bees," and by 1894 fifteen whaling ships were wintering at Herschel Island. Smaller numbers wintered as far east as Cape Bathurst and Franklin Bay, and in the 25 years from 1890 to the First World War they took about 1500 bowhead whales from Canadian waters. Along with the whalers came large numbers of Alaskan Inupiat, known as Nunatamiut (*"inland people"*) since many came from interior north Alaska. Most Inuvialuit were considered poor caribou hunters by the whalers, who instead preferred to hire Alaskan caribou hunters to keep their ships supplied while wintering over. The need was so great that during the winter of 1894/95 most of the inhabitants of Point Barrow, Alaska, and nearly 100 people from nearby Point Hope, were employed by the whalers at Herschel Island. Many *"Nunatamiut"* were also fleeing a collapse in the west Alaskan caribou population, a disaster they seemed to bring with them. Relations between the Nunatamiut and the Inuvialuit were not at first smooth. The Nunatamiut were resented for using poison in trapping,	The whalers destroyed the traditional culture of the Inuvialuit and almost obliterated them as a people. With the whalers, the isolation of the Inuvialuit was shattered. The impact of the whalers could be felt in nearly every aspect of life. They were able to import large quantities of inexpensive trade goods, completely outflanking the Hudson's Bay Company with its interior supply routes. Whale boats rapidly came to supplant traditional umiaqs, repeating rifles were in wide use, and even clothing was imported. Alcohol was enthusiastically embraced, and Herschel Island rapidly became a *"hive of debauchery."* At the same time, the animals which supported the traditional economy were being decimated. Bowhead whales, a staple for some Inuvialuit, almost disappeared, and local caribou herds went into a steep decline. Fortunately neither fish nor beluga stocks were seriously threatened, and there was little outright starvation. The worst gift of the whalers was disease. Although the details are poorly documented, the Inuvialuit seem to have suffered a number of epidemics during the 1890s, culminating in two devastating measles outbreaks in 1900 and 1902. Kittigazuit and other villages were abandoned at this time, and police reports indicate that the Inuvialuit population had fallen from an estimated 2500 people in the early nineteenth century to 250 people in 1905, further reduced to 150 by 1910.	More missionaries arrived on the heels of the whalers, mainly Anglicans this time and established permanent missions at Kittigazuit, Herschel Island, Shingle Point, and other locations. The teachings of the missionaries soon had a profound effect on native belief systems, and by 1898 there was a congregation of twenty to thirty people at Herschel Island. Somehow the Inuvialuit survived, and with better medical facilities, some very hard-won natural immunities, and a great deal of Nunatamiut and more exotic inter-marriage the population has rebounded to about 3000 people, probably a few more than lived in the area at the time of European contact a hundred and fifty years ago.

Date	Pressures	Changes in state	Response
1950's – 1970's – 1990'S concerns about contamination of food sources in the northern aquatic environment arise	Concerns about pollution and contamination in the Arctic are not new. Food-chain accumulation of radioactive fallout from nuclear tests became an issue as early as the 1950s and the 1960s, and challenged the notion of Arctic as a pristine environment. In the late 1960s and the 1970s, the contamination of northern aquatic ecosystems by methylmercury became a major concern. Fur markets collapsed in the 1980's; erosion of land-based knowledge. Other factors which had significant influences on the state of the system include impacts of development such as oil and gas exploration and development in the Western Arctic, and mining in Yukon, involvement in the wage economy, climate change, and concerns over the health of the land due to contaminants in country foods.	The total country food harvest declined from about 677,000 kg/yr in the 1960s to 333,000 kg/yr in the 1990s. The Inuvialuit (western Arctic Inuit) population in the region nearly doubled during this time, while the total country food harvest declined by about one-half, so that per capita harvests in the 1990s were about one-third of those in the 1960s. attributes most of this change to the decline of the dog team and the fur trade. Country foods are the most nutritious food available to northerners, providing protein,omega-3 fatty acids, key vitamins and minerals. Imported foods are not only expensive, because they have to be transported into the northern communities, but also often a poor source of quality food. In northern indigenous communities characterized by high unemployment and low income	Accumulating evidence of Arctic ecosystem contamination prompted government research and response, coordinated by an intergovernmental Technical Committee on Contaminants in the Northern Ecosystems and Native Diets. A Northern Contaminants Program (NCP) was established in 1991. It focused on impacts and risks to human health, as well as temporal trends of contaminants of concern in key Arctic species. Benefit-risk communication is now undertaken by the Aboriginal partners and territorial health departments, and considers the amount of country food consumption as well as the benefits of such consumption.
1970's – 1984 – Recognition of Aboriginal Title	The Supreme Court of Canada recognized the existence of aboriginal title in the early 1970s, bringing ownership of nearly half of Canada's land mass under question. A new era of settling aboriginal claims through comprehensive land claims agreements was born, removing the uncertainty and opening the way for development.	The new generation of treaties are referred to as comprehensive agreements because they spell out the nature of the arrangement between the Government of Canada and aboriginal groups, under a large number of headings, including self-government powers, control over social services such as education and health, compensation payments, environmental assessment, land use regulations, and aboriginal ownership of land and resources in parts of the land under the agreement. Aboriginal control over the environment in the land claims areas is mostly in the form of joint jurisdiction, and aboriginal rights and responsibilities are legally specified.	The five Inuvialuit communities, along with the Central Arctic hamlet of Holman on Victoria Island, joined together in a land claim agreement with the Canadian federal government. Called the Inuvialuit Final Agreement, it was signed in 1984 and governs essentially the entire Western Canadian Arctic. For the first time in this century, the Inuvialuit once more govern their own land Each of the comprehensive claims agreements has a section or sections that specify the sharing of jurisdiction for fisheries and wildlife management, creating co-management boards as the

Date	Pressures	Changes in state	Response
		The formalization of power-sharing between the central and local/regional governments is deemed important, for example, by the Report of the Royal Commission on Aboriginal Peoples (RCAP 1996) because it means that indigenous hunting and other resource use rights are recognized by law and are enforceable.	main instruments of resource management. The Inuvialuit Settlement Region covers 906,000 km^2 of which the Inuvialuit own 90,500 Km^2. They have sub-surface rights on 13,000 km^2. Goals of the IFA include the protection and preservation of arctic wildlife, environment and biological productivity through the application of conservation principles and practices. The Inuvialuit must be effectively integrated into all bodies, functions and decisions pertaining to wildlife managmeent and land management in the ISR.
1970'S	A proposal to construct a pipeline from the Mackenzie Delta was tabled in the 1970s. The Federal Government responded by holding an inquiry to assess what impacts would occur with the construction of a pipeline.	The Report of the Mackenzie Valley Pipeline Commission (Berger 1977) recommended that comprehensive land use planning be undertaken to address resource use conflicts identified during the commission's hearings, and further, that part of the area of West Mackenzie Bay should become a beluga sanctuary. The commission also recommended a ten-year moratorium on the construction of the pipeline in order to allow time to settle land claims in the Mackenzie Valley. Approximately 140 oil and gas wells were drilled in the Mackenzie Delta-Beaufort Sea region. It was common to see 100 vessels of all types in Kugmallit Bay, known to be a beluga migration route. The legacy left in the Beaufort Sea offshore	The recommendation for a moratorium coincided with a fall in oil prices. Hydrocarbon exploration activities in the Beaufort Sea were subsequently scaled back and ultimately shut down.

Date	Pressures	Changes in state	Response
		area by these years of exploration activities included eleven Exploration Licences, one Production Licence, and thirty-two Significant Discovery Licences. The area covered by these licences is 10,096 square kilometres.	
1982 – 1990's Emphasis on marine conservation planning	Arctic Offshore Development Committee – Recognized the need for DFO to work closely with the Inuvialuit and other government deptartments and government levels, as well as internationally, on aspects of the beluga population; 1985 – Arctic Marine Conservation Strategy – purpose was to ensure the future health and well-being of arctic marine ecosystems, thereby enabling Canada to fulfill its national responsibilities in the Arctic and provide for the sustained utilization of arctic marine resources, in particular, use by arctic peoples. In 1983 the Task Force on Northern Conservation was established to provide advice to DIAND (Department of Indian and Northern Affairs) concerning the development and implementation of a comprehensive conservation policy for northern Canada.	1985 – Recommended that initiatives that needed to be undertaken to implement marine conservation: an active management role for DFO based on shared decision-making; an emphasis on integrated management; an informed public; protection of meq; international cooperation TFNC The recommendations tabled by the Task Force emphasized the need for marine conservation management and planning initiatives, including a comprehensive network of land and/or water areas subject to special protection, taking into account local knowledge and uses of the area. The IFA which was signed in the following year provided legislative support to those recommendations. Conclusions of TFNC: northern land use planning would be a principal means for implementing its recommendations: • setttling land claims, establishing a Conservation Authority Borad; • bringing unity to the fforts of numerous governments envolved in the north; and • "acceptance and implementation by the Department of Fisheries and Oceans of its legitimate responsibility as the lead agency for arctic marine conservation'	1985 – not implemented 1990 Mackenzie Delta-Beaufort Sea Regional Land Use Planning Commission – developed a land use plan in 1990: "to define the conditions under which conservation and utilization can be assured; to focus attention on the interaction between difference land interests; and to prevent or resolve conflicts in a fair and equitable manner. – DIAND and GNWT. FJMC and WMAC (NWT) developed a regional land use plan in 1988. it reflected continued commitment to the principles of sustainable use of resources, and integrated, community-based, management processes. Went on to guide the development of six community land use plans 1991 FJMC, DFO and IGC developed the Beaufort Sea Beluga Management Plan – "to maintain a thriving population of beluga in the Beaufort Sea and to provide for the optimum sustainable harvest of beluga by Inuvialuit". It addresses management issues including shipping, dredging and anticipates future oil and gas development.

Date	Pressures	Changes in state	Response
Late 1990's – renewed interest in oil and gas exploration	In the late 1990s interest in oil and natural gas exploration in the Mackenzie Delta and Beaufort Sea resurfaced. While the economic potential offered by the resurgence of activity was generally welcomed, the potential for negative environmental effects was of concern to community members who depended on the natural resources in the region for food, and whose culture and traditional way of life depended on their continued use of the land and sea.	The types of environmental impacts likely to occur with renewed exploration and development of hydrocarbon resources in the Mackenzie Delta-Beaufort Sea will be significant. These activities will also potentially bring major employment opportunities for northerners. They include a large increase in ship movement and barge traffic through the region. Dredging activities will also increase. Members of the FJMC and Inuvialuit beneficiaries expressed concern regarding the absence of legally enforceable mechanisms available under the BSBM Plan. The lack of scientific knowledge that could be used to assess the relative sensitivity of marine mammals and their habitat to disturbance by various activities in sensitive beluga habitat areas was identified as another management concern. Industry, meanwhile, was asking for simplification of the maze of legislation and regulation which currently governs management decision-making processes in the region.	Recognizing that a time of major change was imminent, the Inuvialuit Regional Corporation (IRC), the Inuvialuit Game Council (IGC), the Fisheries Joint Management Committee (FJMC), the Department of Fisheries and Oceans (DFO), and industry represented by the Canadian Association of Petroleum Producers (CAPP) met to consider whether the recently passed *Oceans Act* (Canada 1996) could be used to facilitate implementation of a planning process that would balance development and community interests in the months and years to come. In 1999 Inuvialuit leaders and co-management bodies, DFO, and industry agreed to follow the model outlined in the *Oceans Act* and collaborate on the development of integrated management planning for marine and coastal areas in the Inuvialuit Settlement Region. This agreement is called the Beaufort Sea Integrated Management Planning Initiative (BSIMPI).
1982 – 1999 - Growing international pressure to manage marine resources responsibly	1982 - International Convention on the Law of the Sea lays down a comprehensive regime of law and order in the world's oceans and seas establishing rules governing all uses of the oceans and their resources. It enshrines the notion that all problems of ocean space are closely interrelated and need to be addressed as a whole. 1995 – Global Programme of Action for	Canada is a maritime nation, with a coastline of 244,000 km, and a continental shelf covering 3.7 km^2. About seven million Canadians live in coastal communities, and many coastal communities depend on the ocean and its resources for their community's survival. Canada's ocean-based industries generate over $22 billion annually in direct economic activity and contribute over $83 billion to international trade.	Government of Canada enacts the Oceans Act in 1997. The Act promotes a precautionary as well as integrated approach to the conservation, management and exploitation of marine resources in order to protect and preserve the marine environment. The federal department of DFO is appointed the lead agency in the

Date	Pressures	Changes in state	Response
	the Protection of the Marine Environment from Land-based Activities aims at preventing the degradation of the marine environment from land-based activities by facilitating the realization of the duty of States to preserve and protect the marine environment 1997 – Lisbon Principles for sustainable governance of the oceans: responsibility; scale-matching; precaution; adaptive management; full cost allocation; participation 1999 - The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries. Adopted by the FAO Ministerial Meeting on Fisheries. Rome, Italy, 10-11 March provides a comprehensive set of guidelines that include the Precautionary Principle, ecosystem stewardship, dispute resolution, international law, and international trade in fish products.	By the late 1980s, it had become clear that Canada's ocean and coastal resources were not sustainable under the conventional approach of managing single activities and single species. New management approaches, embracing conservation and environmental considerations, were urgently needed.	development and implementation of a national marine management strategy, in close collaboration with other ministers, boards and agencies of the Government of Canada, provincial and territorial governments, affected aboriginal organizations, coastal communities and other persons or bodies established under land claims agreements.
1998 – 2003	Oceans Strategy Policy document produced, and six regions across the country began implementing various ocean management initiatives.	After five years' of program implementation the results were evaluated and assessed in preparation for seeking long-term funding to expand the program. The conclusion was that program benefits were not consistently measurable and "marketable".	Government directed that a more consistent approach to ocean planning and management must be adopted. Some programs were cut, and others expanded. Request for funding under a more guided approach titled Oceans Action Plan was submitted to Treasury Board.
2003	TEN-YEAR HIGH SEAS MARINE PROTECTED AREA STRATEGY: A ten-year strategy to promote the development of a global representative system of high seas marine protected area networks ENDORSE AND PROMOTE		

Date	Pressures	Changes in state	Response
	the World Summit on Sustainable Development (WSSD) Joint Plan of Implementation together with the goal of establishing a global system of effectively managed, representative networks of marine protected areas by 2012 that includes within its scope the world's oceans and seas beyond national jurisdiction, consistent with international law.		
2004 – 2007	Oceans Action Plan approved providing four-year funding for the initiation of Large Ocean Management Areas including the Beaufort Sea Large Ocean Management Area.	DM ICO – Deputy Minister Inter-departmental Committee on Oceans ADM ICO – Assistant Deputy Minister Inter-departmental Committee on Oceans DG ICO – Director General Interdepartmental Committee on Oceans Governance arrangements established for the Beaufort Sea LOMA. 1. Regional Coordinating Committee – members are senior representatives of federal government departments, territorial governments, Aboriginal governments 2. Beaufort Sea Partnership – members include more junior members of the bodies represented on the RCC, as well as environmental groups, community members, industry, and any other interested parties 3. Working Groups – Social Cultural Economic; Biophysical; Traditional Knowledge; and Community Consultations The Integrated Management Plan has been developed and signed off. Detailed work-plans have been developed by the Beaufort Sea Partnership.	At the conclusion of the four-year funding a request was made to Treasury Board for funding of four pillars: integrated management; health of the oceans; ocean management tools; and international leadership, sovereignty and security. Four-year funding was approved for only the health of the oceans.

Date	Pressures	Changes in state	Response
2008-2012	Health of the Oceans	The LOMA work is continuing with the base funding. Increasing effort has been applied to the development of marine protected areas, and more specifically a marine protected area Network.	

B. Eras and the Issues Associated with Each

Name of the Case study	Beaufort Sea Large Ocean Management Area	
Year of Initiation : 2004		Ending Date: ongoing
Funding sources By % contribution to total budget	Federal Government, Fisheries and Oceans – primary Other federal departments and Government bodies provide in-kind by paying for travel to meetings.	
Major Budget categories and allocations	1. Staff Salaries and Wages 2. Travel 3. Contracts	

Issues Addressed and Goals and Major Strategies
Issues are the problems and opportunities upon which an initiative decides to focus. If possible, please write the goals as they were stated officially in the documents of the initiative. Strategies are the means selected to achieve goals.

Issues	Goals	Strategies
1. **GOVERNANCE**		
2. **SOCIAL CULTURAL AND ECONOMIC**		
3. **ECOSYSTEM**		
4. **TRADITIONAL KNOWLEDGE**		

Table 1: Summary of 24 Objectives & RCC Organizations Involved in Implementing the Beaufort Sea Integrated Ocean Management Plan													
	RCC	DFO	EC	FJM	GN	IGC	INAC	IRC	NEB	NRC	PCA	TC	YG
Governance Goal - To achieve effective governance for the sustainable use of the Beaufort Sea / Objectives													
Establish collaborative inter-governmental and inter-departmental structures and processes													
Conduct spatial planning in the LOMA													
Promote an effective regulatory environment													
Promote effective planning and decision making													
Ensure Aboriginal organizations have the capacity to be involved in the IOMP													
Profile the Beaufort Sea LOMA in the circumpolar context													
Establish an inter-governmental Implementation Coordination Office to oversee implementation and renewal of this plan													
Assess and develop an adaptive management response to climate change.													
Social, Cultural and Economic													
	RCC	DFO	EC	FJMC	GNW	IGC	INAC	IRC	NEB	NRCA	PCA	TC	YG
Economic Goal - To foster sustainable economic opportunities and options for Canadians, northerners and coastal communities/ Objectives													
Manage large-scale marine traffic													
Prepare to take advantage of large scale economic opportunities in the coastal and marine environment													

Table 1: Summary of 24 Objectives & RCC Organizations Involved in Implementing the Beaufort Sea Integrated Ocean Management Plan													
	RCC	DFO	EC	FJM	GN	IGC	INAC	IRC	NEB	NRC	PCA	TC	YG
Strengthen and diversify local and northern economy													
Cultural Goal – To maintain and increase peoples' sense of place and preserve cultural identity and spiritual connections as they relate to oceans and coastal areas/ Objectives													
Generate and promote opportunities to practice and share culturally important marine traditions, sites and artifacts													
Promote a vibrant local subsistence economy													
Social Goal – To improve human capacity, health, quality of life and opportunities as they connect to oceans and coastal areas/Objectives													
Engage and support the objectives of the Beaufort Delta Agenda and the MGP Impact Fund													
Improve long-term local and northern career opportunities reliant on ocean based resources													
Increase educational success of the local population													
Increase individual and community mental and physical health and well-being													
Increase community capacity to respond to ocean based challenges and opportunities													
Traditional and Local Knowledge Goal - To promote the value, credibility and use of Traditional Knowledge (TK) and Local Knowledge (LK) to current and future generations / Objectives													
Use TK and LK in resource management, monitoring and identification of sensitive species and areas													
Establish a set of guidelines for the collection, validation and use of TK and LK													
Promote the respect, value and sharing of TK and LK													

Table 1: Summary of 24 Objectives & RCC Organizations Involved in Implementing the Beaufort Sea Integrated Ocean Management Plan													
	RCC	DFO	EC	FJM	GN	IGC	INAC	IRC	NEB	NRC	PCA	TC	YG
Ecosystem Goal - To understand the Beaufort Sea ecosystem, to identify important areas and priority species and to maintain or enhance ecosystem integrity /Objectives													
Minimize threats from human activities within the LOMA													
Protect and conserve representative marine areas and special species within the LOMA													
Determine baseline environmental quality conditions within the LOMA													

First Generation	Second Generation	Third Generation
Grafic and dates	**Gráphic and dates**	**Graphic and dates**

Progress in Terms of the Essential Actions of the Policy Cycle. – Beaufort Sea Large Ocean Management Area

1 = not initiated 2 = underway 3 = completed

Steps	**Essential Actions**	**1**	**2**	**3**
Paso 1 Issue Identification and assessment	A. Identificar y evaluar los principales asuntos ambientales, sociales e institucionales y sus implicaciones. B. Identificar los principales actores y sus intereses. C. Verificar la factibilidad y el liderazgo gubernamental y no gubernamental sobre los asuntos seleccionados. D. Seleccionar los asuntos sobre los cuales enfocará sus esfuerzos la iniciativa de manejo. E. Definir la extensión geográfica de la iniciativa F. Definir las metas de la iniciativa de MC.			**3**
Paso 2 Preparation of the Plan	G. Documentar las condiciones de la línea de base H. Realizar la investigación identificada como prioritaria I. Preparar el plan de manejo y la estructura institucional bajo los cuales será implementado J. Iniciar el desarrollar de la capacidad técnica local. K. Planificar el sostenimiento financiero. L. Probar acciones de implementación a escala piloto M. Realizar un programa de educación pública y concientización.		**2**	
Paso 3: Formal adoption and funding	A. Obtener la aprobación gubernamental de la propuesta. B. Implementar el marco institucional básico del MC y obtener el respaldo gubernamental para los diversos arreglos institucionales. C. Proveer los fondos requeridos para la implementación del programa.		**2**	
  Paso 4 Implementation	A. Modificar las estrategias del programa conforme sea necesario. B. Promover el cumplimiento de las políticas y estrategias del programa. C. Fortalecer el marco institucional y el marco legal del programa. D. Fortalecer el compromiso de la administración y del personal con la estrategia y los resultados. E. Fortalecer la capacidad gerencial, técnica y de manejo financiero del programa. F. Asegurar la construcción y mantenimiento de la infraestructura física. G. Alimentar la participación abierta de quienes respaldan el programa. H. Implementar los procedimientos de la resolución de conflictos. I. Alimentar el poyo político y la presencia del programa en la agenda de grandes temas nacionales. J. Monitorear el desempeño del programa y las tendencias del ecosistema.	**1**		
Paso 5: Self assessment and external evaluation	A. Adaptar el programa a su propia experiencia y a las nuevas y cambiantes condiciones ambientales, políticas y sociales. B. Determinar los propósitos e impactos de la evaluación.	**1**		

Ejercicio C.4: Key stakeholders In the current generation of the initiative – Beaufort Sea Large Ocean Management Area

	Name	Institutional Affiliation	Step 1	2	3	4	5
Government		Atlantic Canada Opportunities Agency					
		Canada Economic Development Agency for Quebec Regions					
		Canadian International Development Agency					
		Canadian Space Agency					
		Department of National Defence					
		Environment Canada					
		Finance Canada					
		Fisheries and Oceans Canada					
		Foreign Affairs and International Trade					
		Indian Affairs and Northern Development					
		Industry Canada					
		Natural Resources Canada					
		National Research Council					
		Parks Canada					
		Privy Council Office					
		Transport Canada					
		Treasury Board of Canada					
		Western Economic Diversification					
		Northwest Territories					

		Yukon Government					
		Inuvialuit Regional Corporation					
		Inuvialuit Game Council					
		Fisheries Joint Management Committee					
		Gwich'in Renewable Resources Board					
		Industry					
		Environmental Non-governmental Organization					
		Academia					
		World Wildlife Fund					
		Canadian Protected Areas & Wilderness Society					
Civil Society		Aklavik representative Fisheries and Oceans Canada Inuvik representative Paulatuk representative Sachs Harbour representative Tuktoyaktuk representative Ulukhaktok representative Canadian Arctic Resources Committee Canadian Parks and Wilderness Society Gwich'in Renewable Resources Board Inuvialuit Land Administration					
Market		Canadian Association of Petroleum Producers through Chevron and Conocophillips Canada					

Ejercicio D.6 Resumen de Resultados

Results of Third Order Desired Environmental Conditions	Results of Second Order Changes in user behavior	Results of First-Order Goals focused on results of third order
		Alliances and active support of various sectors
Desired Changes in Social Conditions	Behavioral Institutions and Funds	Availability Authority
	Changes in investment including infrastructure	institutional arrangements and technical capacity

University of Colorado at Boulder

MONASH University Arts

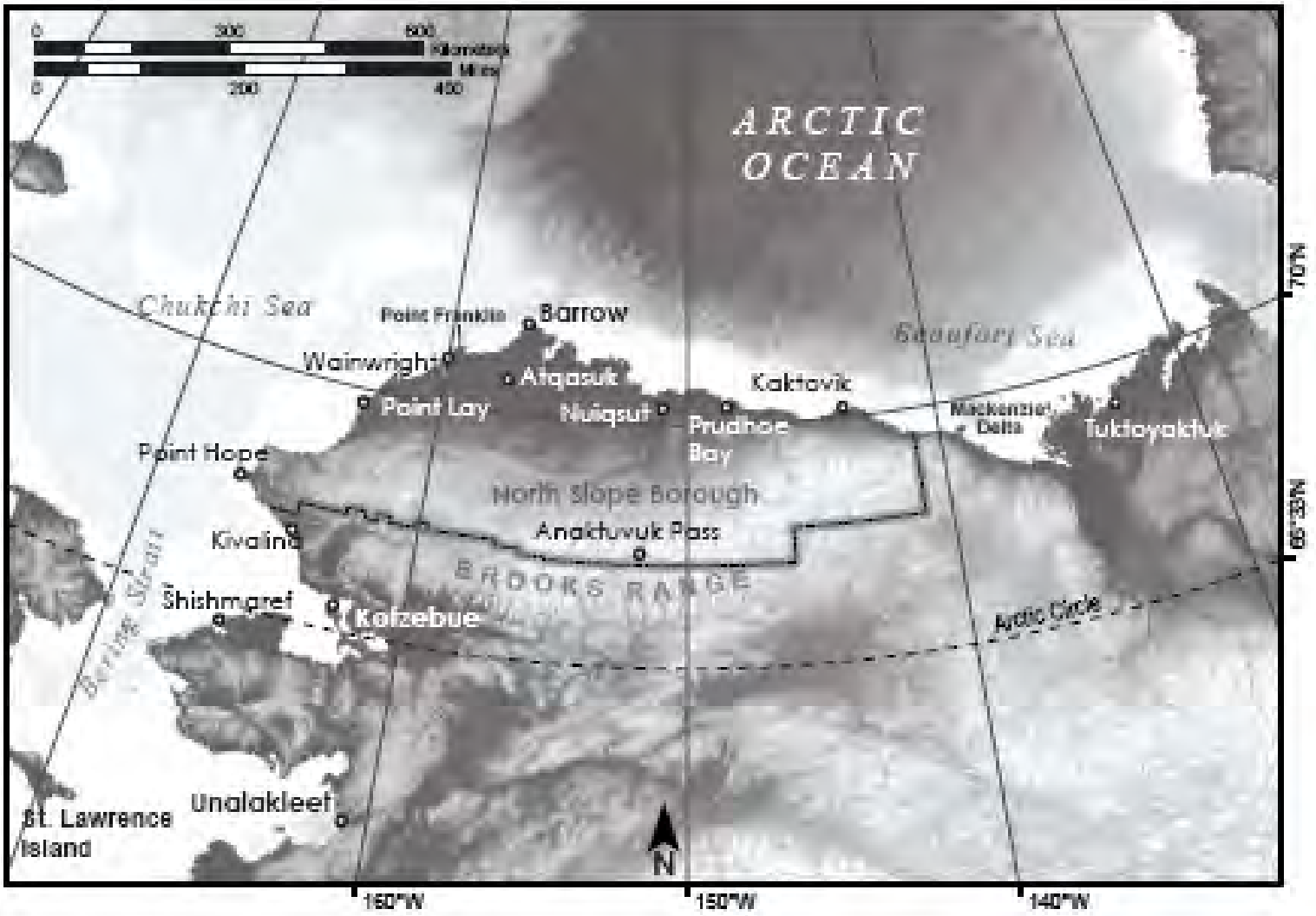
LOICZ Governance Workshop

An Integrated Assessment of Climate Variability and Change on the North Slope Coast of Alaska

Ronald D. Brunner, University of Colorado at Boulder

Based on collaborative research with Amanda Lynch, James Maslanik, and others, funded by the National Science Foundation Office of Polar Programs

Barrow & the North Slope



Our Integrated Assessment

- **Project was centered on Barrow, Alaska**
  - Began there Aug. 2000 & ended Feb. 2008
- **Approach overlapped with Report No. 34**
  - Based on the policy sciences
  - Informed by local community-based initiatives
  - Field-tested aspects of adaptive governance
- **Objective today: Tell the story of project**
  - As experience relevant to improving Handbook

Overview & Cross-References

Our Project	Report No. 34
Focus & Context	2.0 Looking to Past
Efforts to reduce storm damage	3.0 Case Studies
Our Guidance	4.0 Looking to Future
The Outcomes	5.0 Monitoring
Comments on…	Handbook, next steps

Project Focus

- **Goal was to help people of Barrow & NS**
  - Advance common interest re climate change
  - Scientific publications important but secondary
- **Main climate-related problems in Aug. 2000**
  - Growing risk to subsistence hunters & fishers
  - Damage from coastal erosion & flooding
- **Community-based, not ecosystem-based**
  - Nested: Barrow, NS Borough, Arctic, etc.

Project Participants

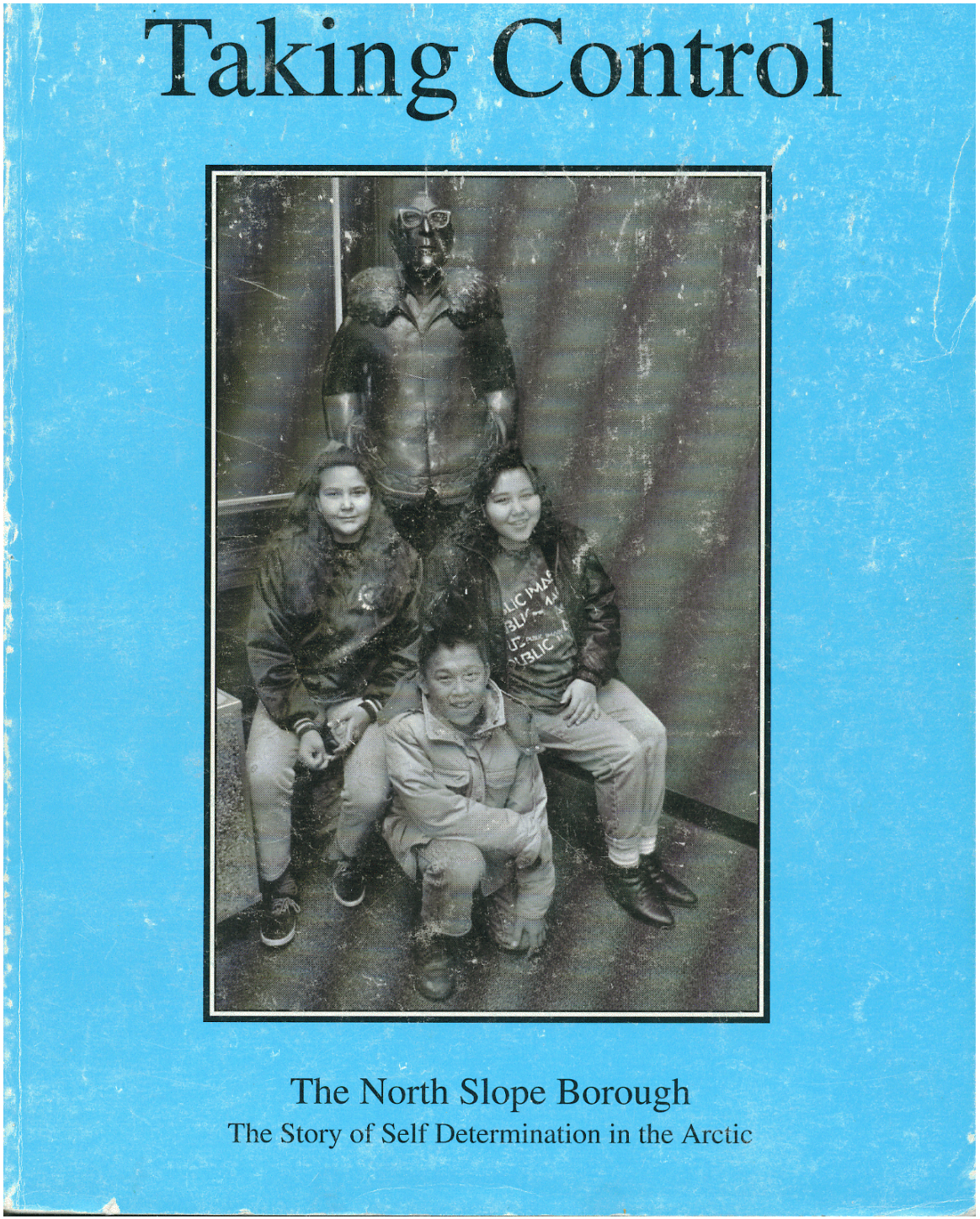
- **People of Barrow, both leaders & others**
  - "Technicals" meeting & many interviews
  - Evening lectures, HS classes, KBRW radio
- **Scientists, mostly UCB, interdisciplinary**
  - Climate, meteorology, policy sciences, engineering, models, stats, maths, GIS, etc.
- **All self-selected, and shared an interest**
  - Storm damage reduction

Eras of Governance

- **First contact 1826, colonialism after 1867**
  - Movement toward self-determination in 1960s
  - Pressure on Native lands & rights, 1958-71
  - Community organization, ASNA, AFN, ICAS
- **Self-determination realized in 1971**
  - NCSA, ASRC, UIC, NSB, ICC, AEWC
- **Outside interests encroaching again**
  - Oil, environ, hunting, transport, military, etc.

Self-determination

Iñupiat told their story in *Taking Control* (NSB 1993)



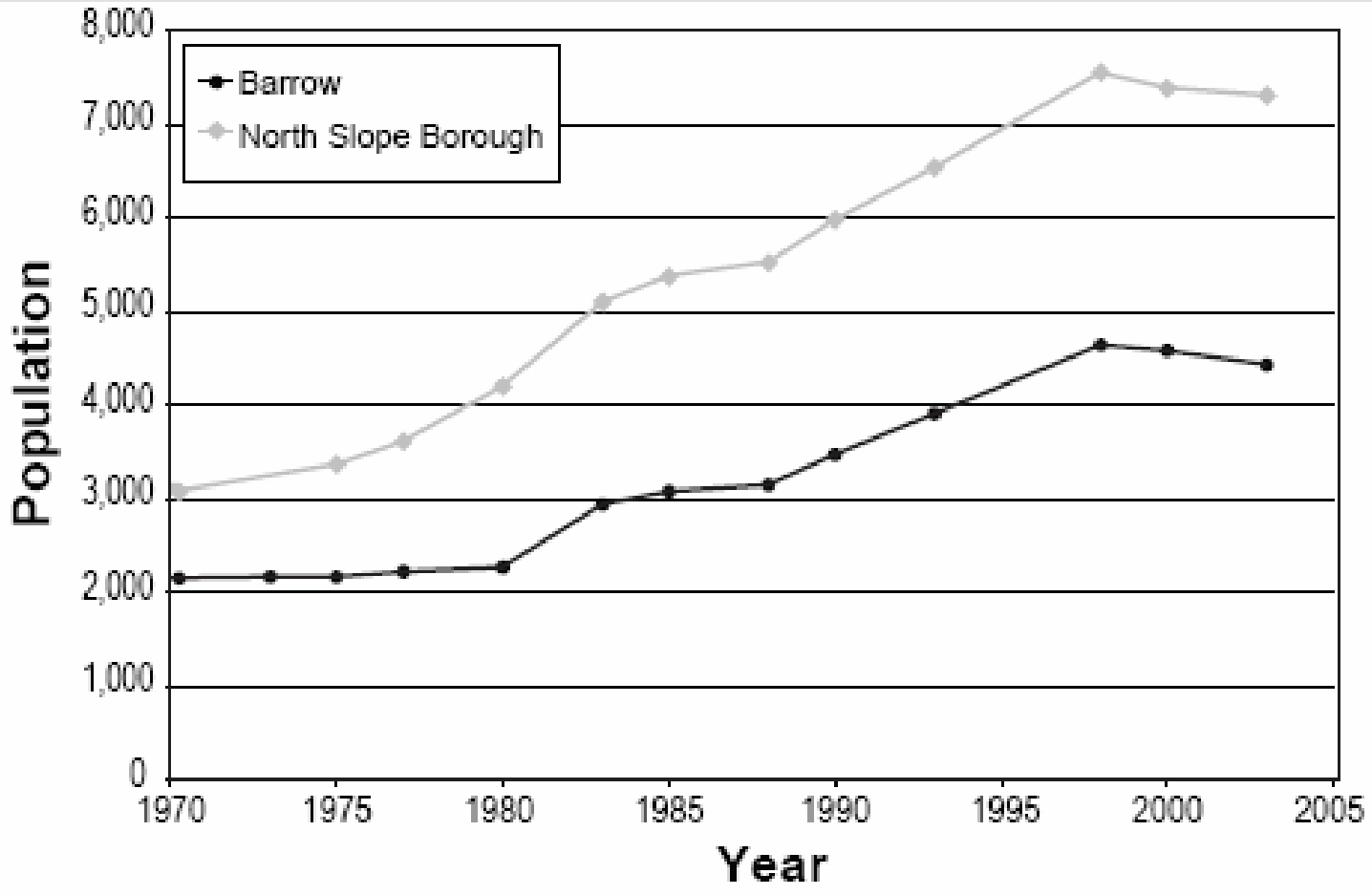
Drivers & Responses

- **Many factors interact**
  - Human decisions are key for policy purposes
  - Each factor is contingent on the context
- **Climate change, for example, as driver**
  - Warming, 1000-1200 AD, then cooling
  - Few storms, ~1965-1985, during development
  - Regional warming attracts outside interests
- **Only narratives communicate the complexity**

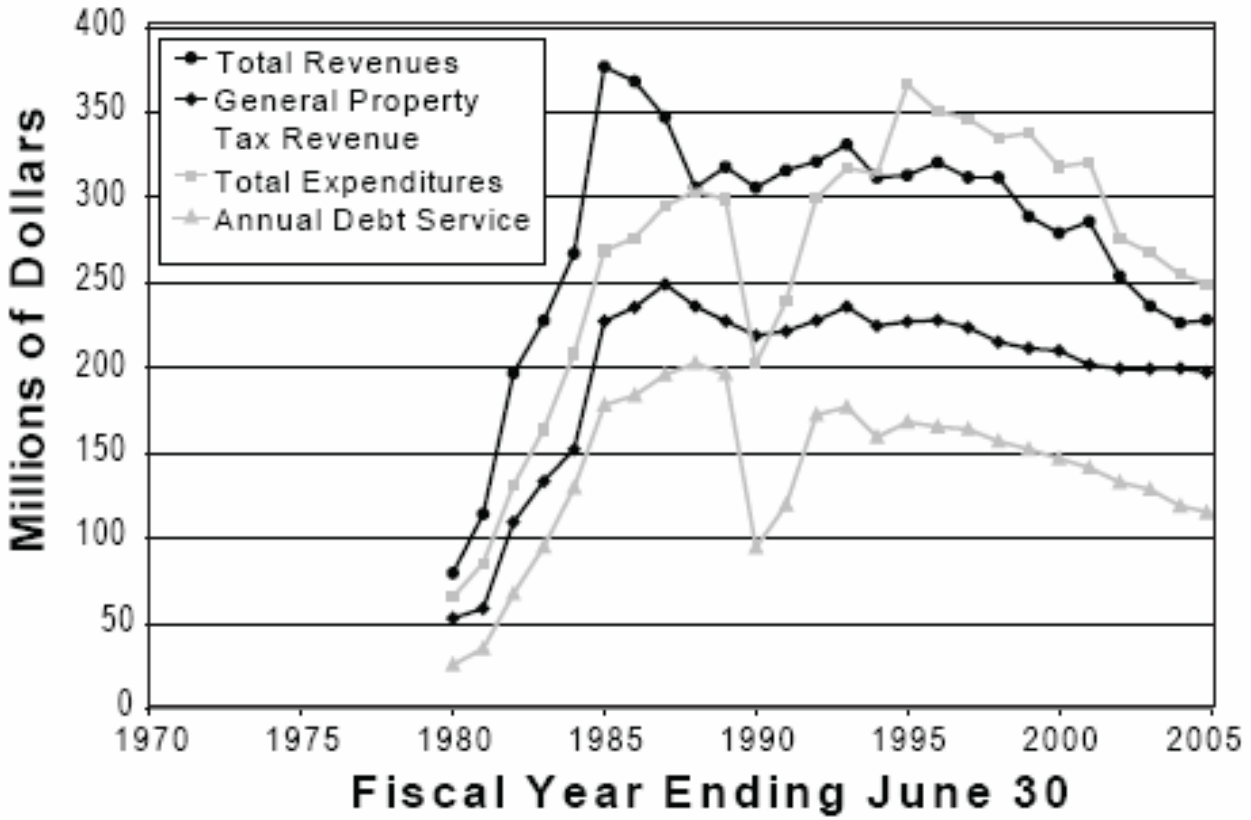
Long-Term Trends

- **Selection criteria**
  - Storm damage reduction – shared interest
  - Natural factors affecting damage
  - Human factors – choices & decisions
  - Ecosystem goods & services in the background
- **Storm damage estimates in $ are unreliable**
  - In-kind estimates more reliable
  - No loss of life so far, but many close calls

Population

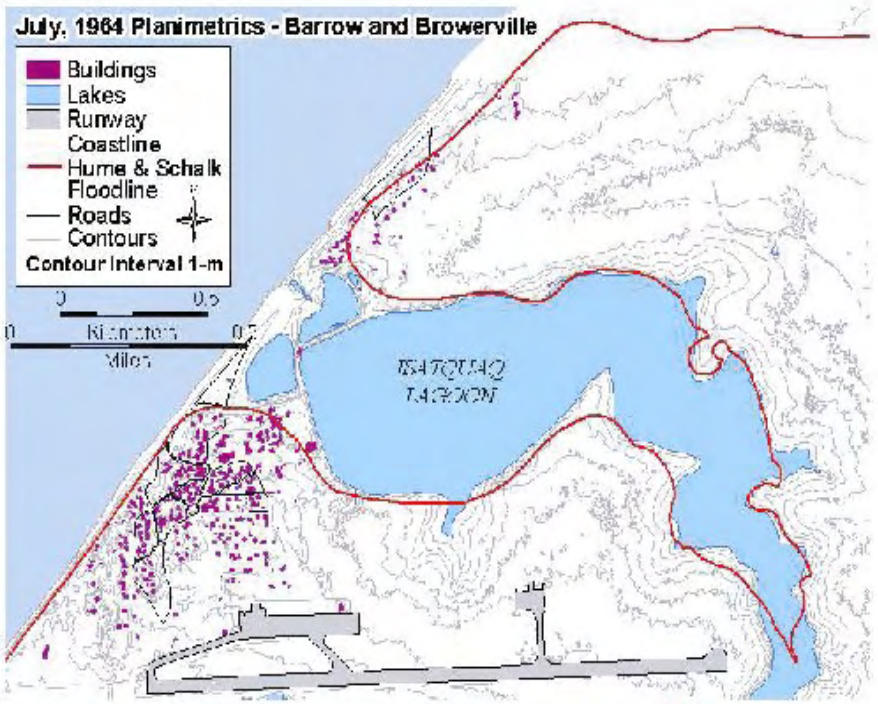

Barrow
North Slope Borough
Population
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1970
1975
1980
1985
1990
1995
2000
2005
Year

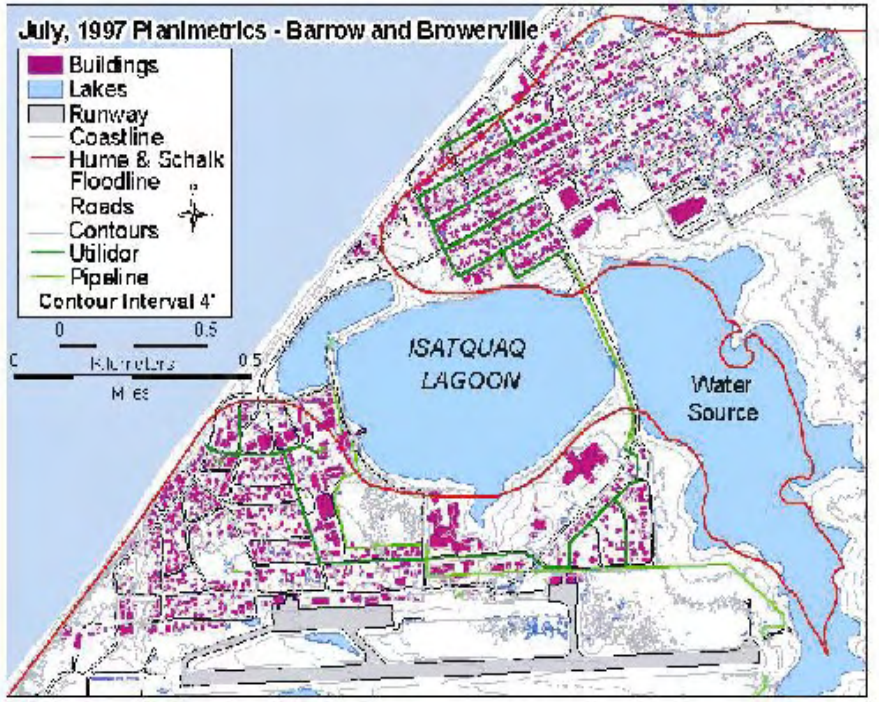
NSB Finances



More Development 1964-1997

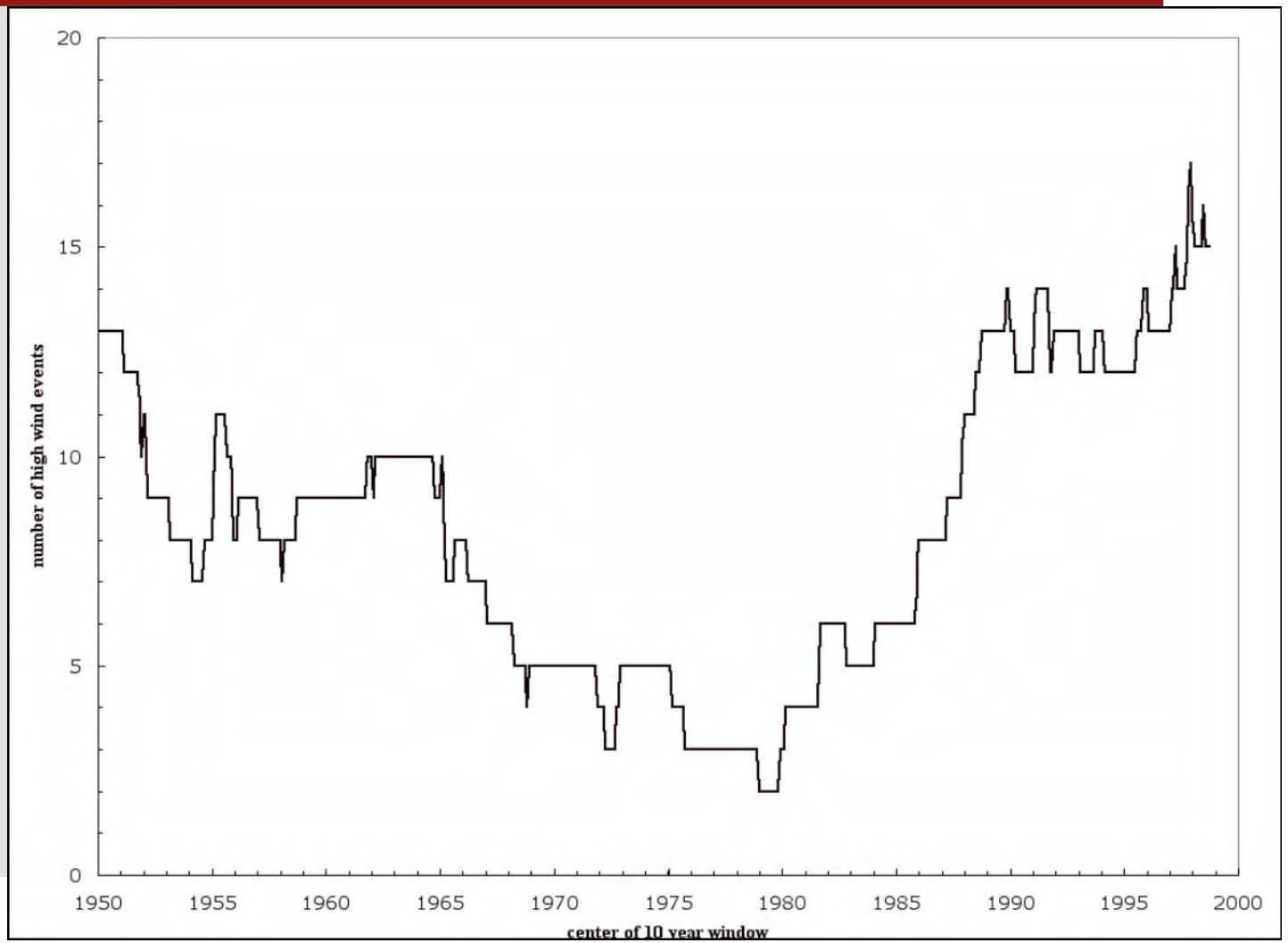
- More people & property (purple) at risk
- Utility corridor (green) a major asset & concern
- It opened in 1984 at cost of $270 million





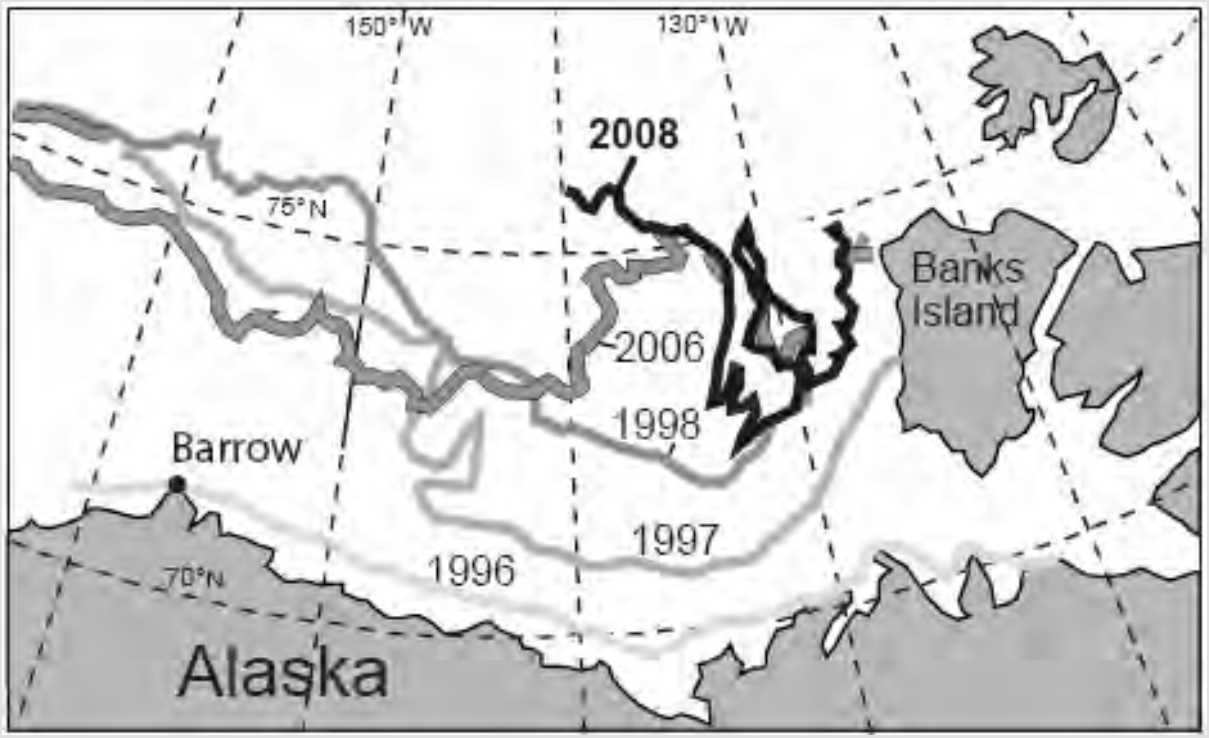
More Big Storms

- Drive erosion & flooding
- Is trend linear or cyclical?
- Variability has Increased



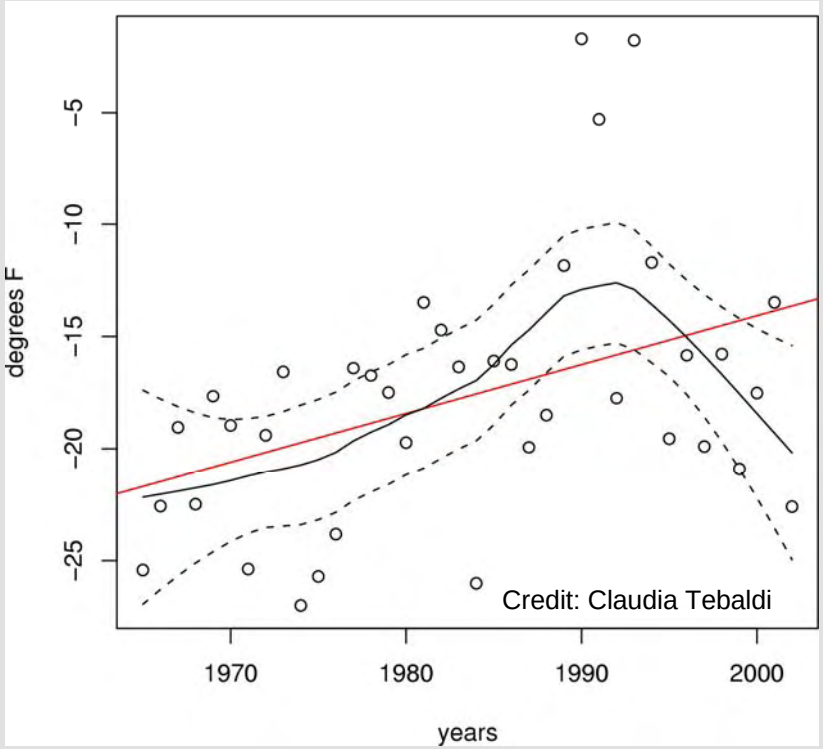
More Fetch

- Sea ice dampens effects of big storms
- Sea-ice retreat large & largest in west
- Exposed to strong westerlies in fall



Rising Temperatures

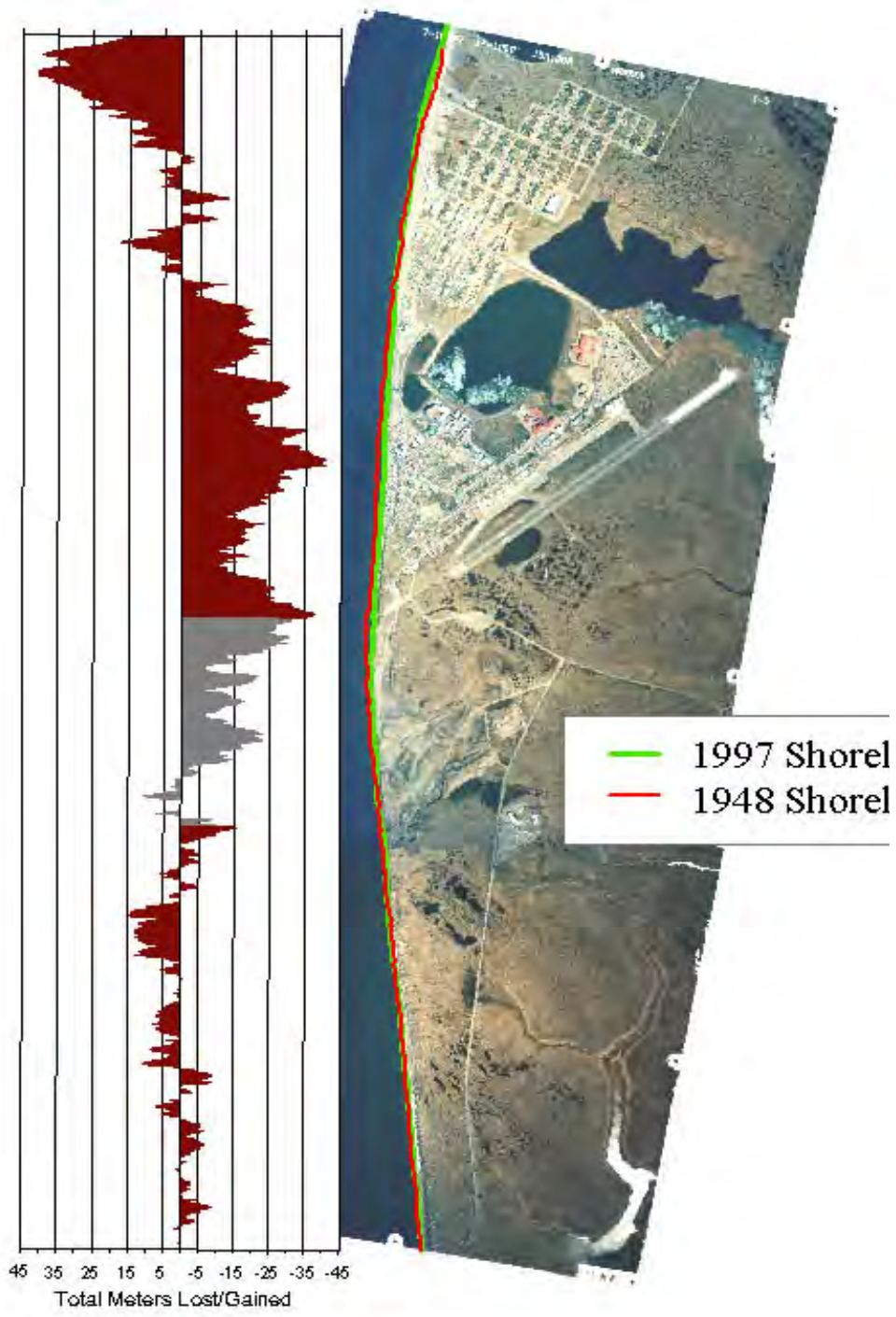
- Affect permafrost thaw
- But declining since 1990s
- Other indicators
  - Fewer very cold days
  - Shorter cold spells
  - Earlier spring thaw



Barrow winter minimum temperatures

Erosion 1948-1997

- Erosion exposes more things of value
- Highest erosion at the bluffs: about 34 m in 50 years
- Erosion is mostly episodic

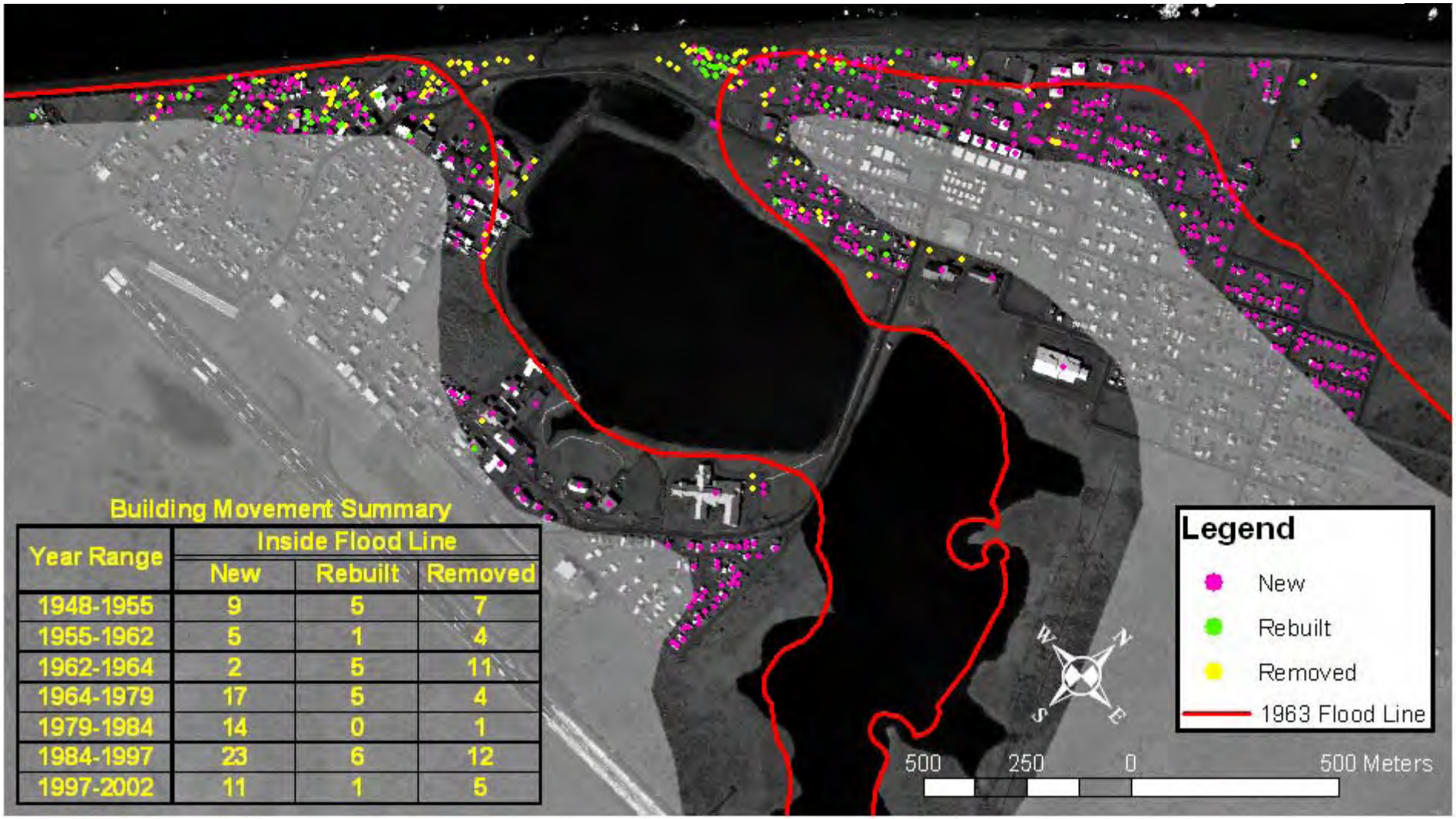


Credit: Leanne Lestak and William Manley

Storm Damage

- **Result of interactions among many factors**
  - Both natural & human factors
  - No single factor tells the story
  - Factors must considered together
- **Interactions manifest in extreme events**
  - Each is unique if described comprehensively
- **Overall uncertainty is compounded**
  - Uncertainty in each factor limits predictability of extreme events in detail or with confidence

Shoreline Buildings
Construction & Destruction, 1948-2002




3 October 1963
Photo by Grace Redding

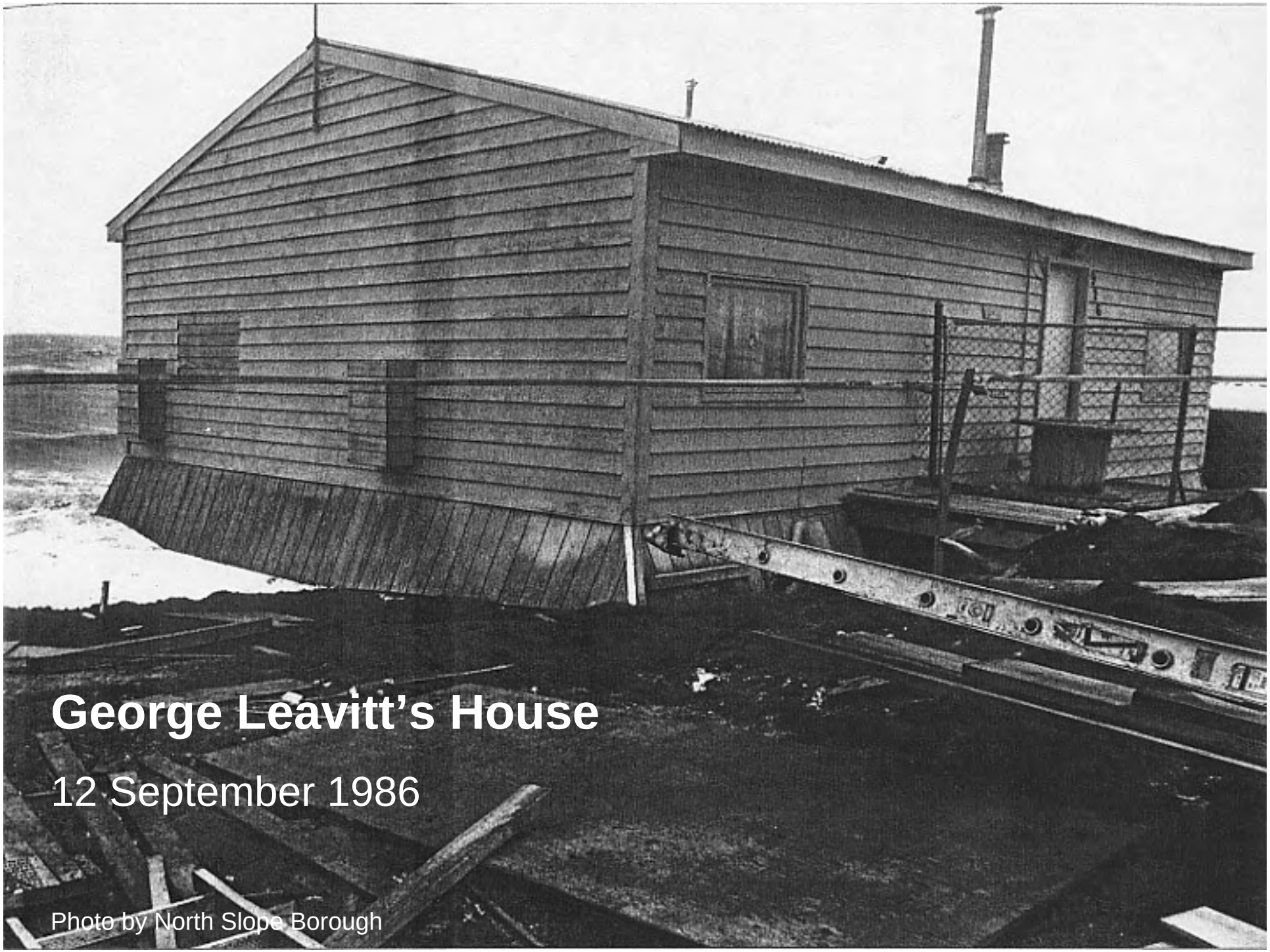
3 October 1963

Photo by Grace Redding


3 October 1963
Photo by Grace Redding

Major Extreme Events

- October 4 to 6, 1954
- October 3, 1963 – the most damaging
- September 12 & 20, 1986
- February 25, 1989
- August 10, 2000
- October 5 & 8, 2002
- July 29, 2003

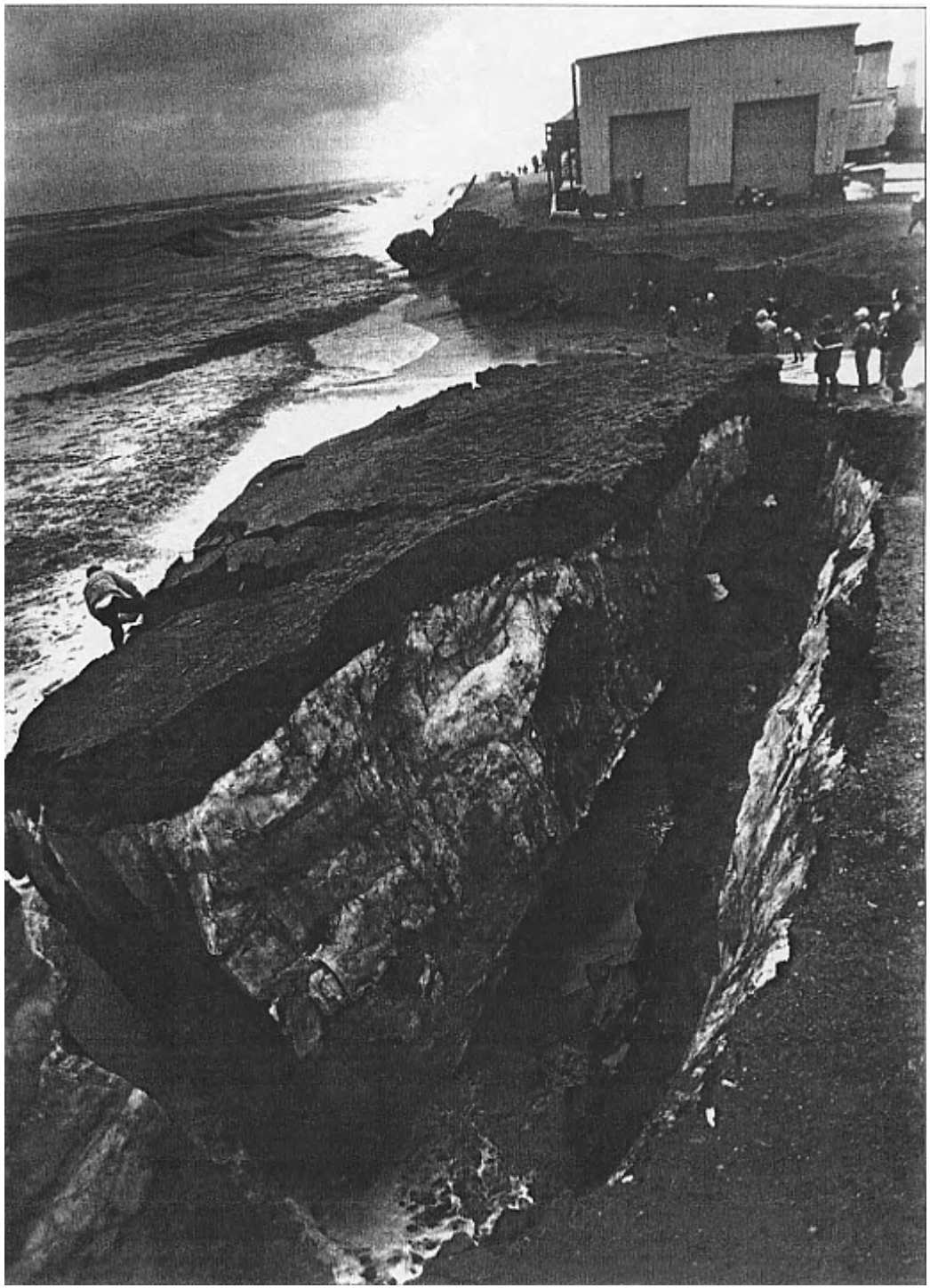


George Leavitt’s House

12 September 1986

Photo by North Slope Borough

Calving of Bluff



12 September 1986

Photo by NSB

Cultural Artifacts

Old Barrow Townsite

Photo by Dora Nelson

Beach Nourishment Program

For storm damage reduction -- Policy Cycle

- **Intelligence**
- **Promotion**
- **Prescription**
- **Invocation & application**
- **Termination**
- **Appraisal**

Dredge Damaged and Sunk
10 August 2000

Photo by State of Alaska

Beach Nourishment Program

- **Appraisals**
  - Ogden-Beeman report Sept 1993
  - NSB Scientific Advisory Com. Rpt Nov 1994
    - > Acknowledged BN commitment
  - CIPM Report to Assembly Aug. 2000
  - US ACE appraisals of materials 1990, 2001
  - Informal appraisals: one likened it to
    - > “throwing buckets of gold coins into the Ocean”

US ACE Joint Feasibility Study

- **NSB Mayor endorsed proposal May 2001**
- **Sought single comprehensive solution**
  - Beach nourishment, about 5 miles
  - Elevated road with concrete revetment
- **Public meeting in Barrow Aug. 2006**
  - Differently informed perspectives
- **Sent back to drawing boards by IRT 2007**
  - Original planned completion in 2012 not likely

Senator Ted Stevens' Efforts

- **To alleviate erosion & flooding in Alaska Native villages, coastal & inland**
  - GAO Report Dec 2003
  - Field hearings in Anchorage, June 2004
  - FY 2005 legislation exempted 9 villages
  - Another field hearings in Anchorage, Oct 2007
- **A missed opportunity to organize villages as a network to clarify shared needs**

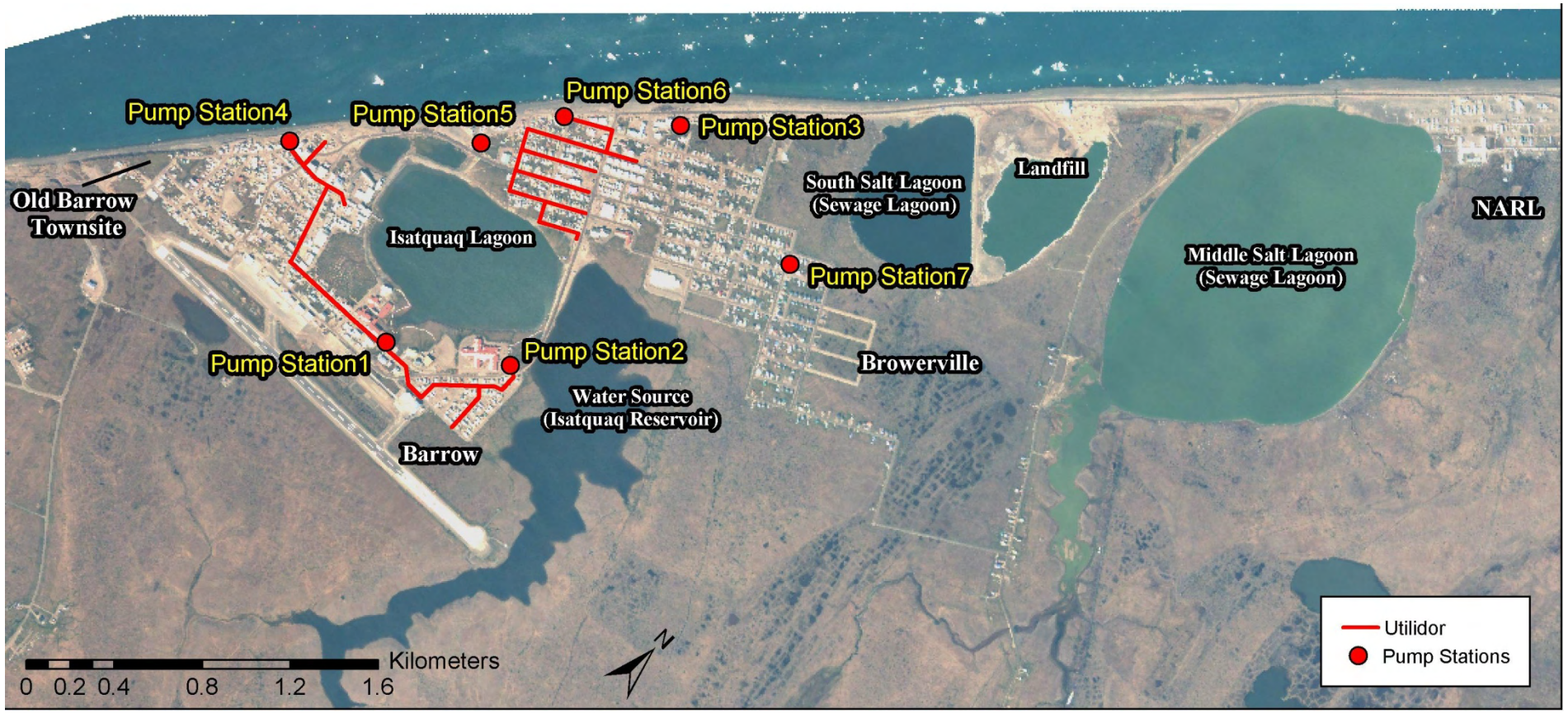
Our Guidance: Prototyping Method

- **Fixed overall goal & took it seriously**
  - To help people of Barrow & NS advance their common interest in response to climate change
- **Selected the initial means**
  - Meet with locals: local knowledge & guidance
  - Use big storms: “boundary objects”
  - Research trends, conditions, projections
- **Remained flexible to adapt means**

Our Main Findings

- **Dependable projections of local climate change were neither feasible nor necessary**
  - More uncertainty in local climate than expected
  - Trend data & case studies sustained interest
- **Local policy had focused narrowly on engineering alternatives, mostly failed**
- **Significant vulnerabilities remained, despite efforts to reduce storm damage**

Vulnerabilities to Big Storms

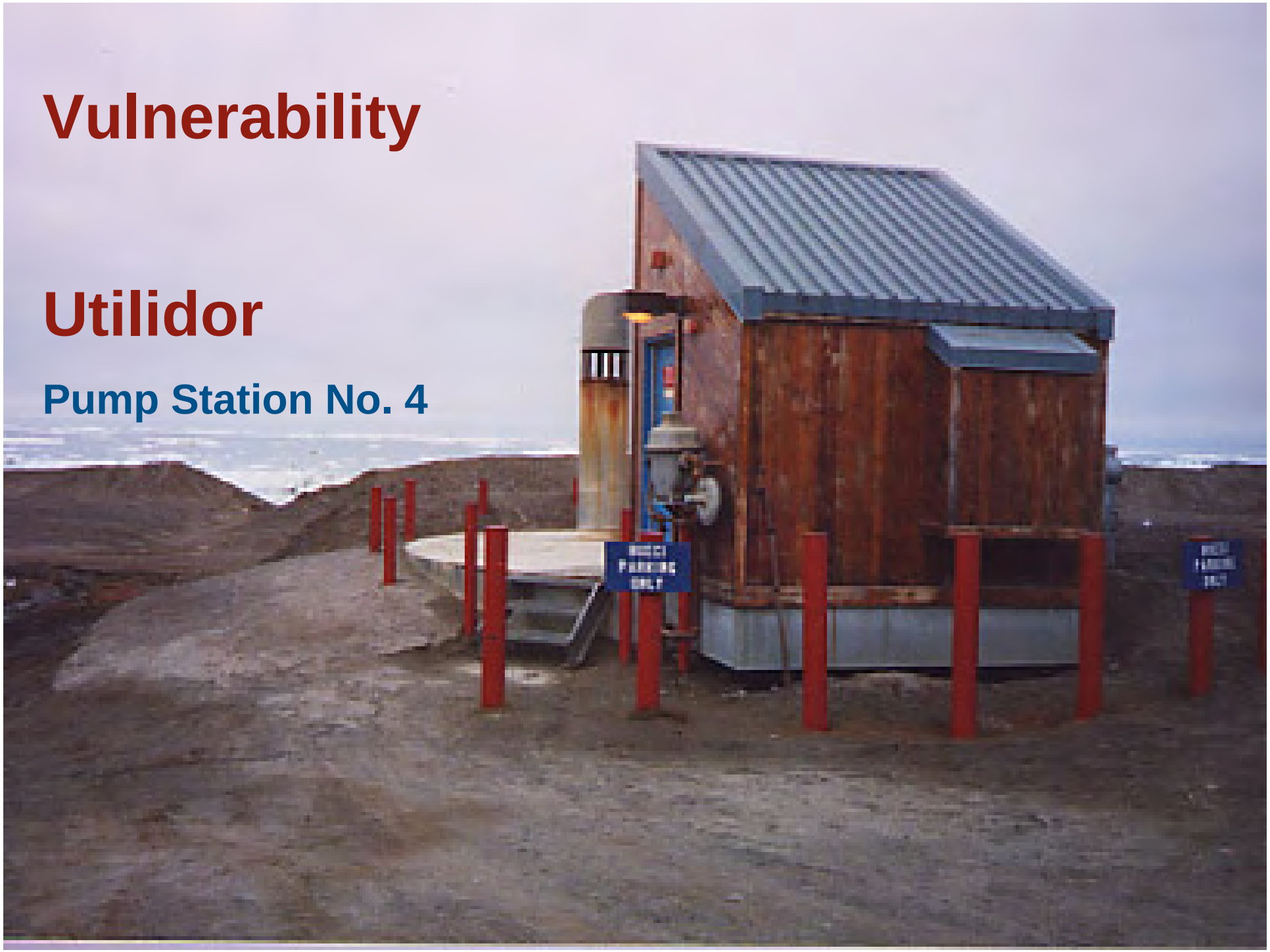


August 2002 QuickBird Satellite Image

Vulnerability

Utilidor

Pump Station No. 4



We Adapted

- **Encouraged distributed approaches**
  - People ready to act on separate vulnerabilities
- **Reported on past policies marginalized**
  - e. g. planning & zoning, selective relocation
- **Shared data with US ACE feasibility study**
- **Sought to build on Sen. Stevens' efforts**
  - Network of Native villages to share what works & advise Stevens on shared problems

Our Outcomes

- **Network strategy accepted but not funded**
- **US ACE used some of our data**
  - Abandoned beach nourishment alternative
  - Dropped enefit/cost analysis for scenarios
- **Storm damage agenda opened up**
  - “Protect utilidor & landfill; everything else can go”
- **Locals used findings in distributed actions**
  - Our story of Oct 1963 storm became a baseline

Outcomes for Barrow & NS

- **Have we served the common interest?**
  - A judgment for people there to make
- **Senior planner for NSB in a signed review**
  - “There are very few, if any, individuals living on the North Slope or in Barrow who have a fraction of understanding of the events and policy implications” of the great storm of 1963.”
- **Distributed policy outcomes helped most**

Distributed Policy Outcomes

- Old landfill site protected & capped
- Inland evacuation route from NARL planned
- Location of new hospital
- Design of new research facility (BARC)
- Emergency management exercise
- Heuristics to identify damaging storms
- Utilidor retrofit considered


Barrow Arctic Research Center

Distributed Policy: Coordination

- **Our project helped coordinate informally**
- **NSB & village All Hazards Mitigation plans**
  - Approved by State, Feds, & NSB Assembly
  - Not comprehensive action plans
  - Distributed action items, prioritized & contingent
- **Missed opportunities**
  - Comparisons: temporary & permanent berms
  - Detailed analysis: planning & zoning ,relocation

Comments: Handbook

- **Satisfactory for those who need one**
  - Others will use their own framework, methods
  - Is a standard framework necessary?
  - Translations are possible, perhaps inevitable
- **Caution: any approach to policy research**
  - Research as alternative to decision & action
  - Goal substitution
  - Absorption of uncertainty

Comments: Next Steps

- **Framing: ecosystem-based governance**
  - Or community-based governance?
  - Affects interests, focus & boundaries, practice
- **Prioritizing: matters of emphasis**
  - Unambiguous targets – common interest goal
  - Standardized formats – uniqueness of locales
  - Comprehensive – distributed approaches
  - Assessing capacity, resilience – improving them

Comments: Larger Context

- **Reform of governance**
  - From established pattern
    - > roots in scientific management or rationalization
  - To adaptive governance
- **Adapt science, policy, & decision making**
  - Factor big problems into many smaller ones
  - Discover what works in practice
  - Scale it up & out to similar communities

Colleagues & Contributors

People of Barrow
Kenneth Toovak, Elder
Jim Maslanik, PI
Amanda Lynch, PI
Matt Beedle
Elizabeth Cassano
Judith Curry
Sheldon Drobot
Cinda Gillian
Klaus Goergen
Anne Jensen
Melinda Koslow
Leanne Lestak
Bill Manley
Christina McAlpin
Jon Pardikes
Linda Mearns
Scott Peckham
Matt Pocernich
Glenn Sheehan
Page Sturtevant
James Syvitski
Claudia Tebaldi
Casey Thornbrugh
Petteri Uotila
Jason Vogel

Beach Nourishment Program

- **Intelligence: Storm damage reduction**
  - BTS/LCMF offshore material samples 1988
  - BTS/LCMF Mitigation Alternatives, April 1989
    - > Rejected armor, seawalls, passive alternatives
    - > Affirmed beach nourishment (BN)
- **Promotion**
  - Only BN and BTS/LCMF seriously considered
  - Relocation, planning & zoning only mentioned

Beach Nourishment Program

- **Prescription: NSB Assembly decisions**
  - $500k to BTS/LCMF for design of dredge & other equipment, Aug. 1991
  - $16m for fabrication of equipment, July 1992
  - Others specific commitments unclear
  - Sources differ on planning & zoning component
  - Requested funds denied for design changes 1992, insurance 1995, & operations 1997

Beach Nourishment Program

- **Invocation & Application**
  - Dredge bid Dec 92, rebid July 93, contract
  - Operations in Barrow began Aug 1996
    - > Clay & rock in material forces modifications
    - > Ops suspended 1997 for modifications
    - > Ops suspended 1998 for financial reasons
  - Only full season of ops in Barrow was 1999
  - Dredge sunk in 10 Aug 2000 storm

Beach Nourishment Program

- **Termination -- the NSB Assembly…**
  - Declined CIPM option to terminate in Nov 97
  - Approved towing to Seattle in Sept 2000
    - for repairs and / or salvage
  - Put dredge up for sale early in 2001
    - Insurance settlement paid $6 million
    - NSB pays deductible of $1 million
  - Remaining funds transferred July 2001

Beach Nourishment Program

Planning	Appraisal
BTS/LCMF Plan 1989	BTS/LCMF Report 1999
Begin ops in Barrow 1991	Began ops in Barrow 1996
Complete ops in 1996	Terminated well short
800k cu yards of material	64k cu yards of material
Unit cost $15.84 / cu yard	Unit cost $80.00 / cu yard
Total cost $14m, capital or capital & operations?	Lowest estimate: $27m of $38m appropriated

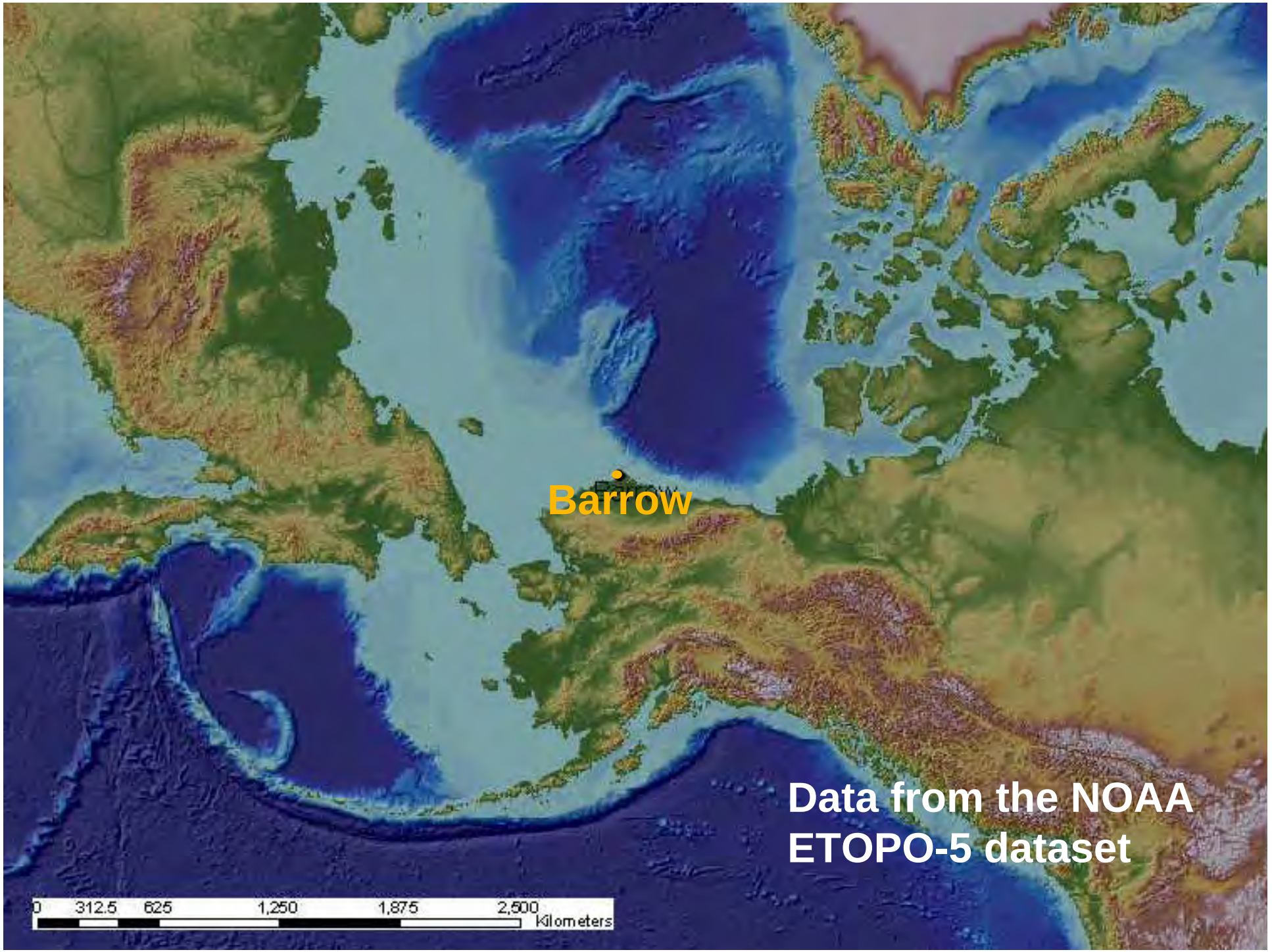
Climate Change in Barrow


3 October 1963
Photo by Grace Redding

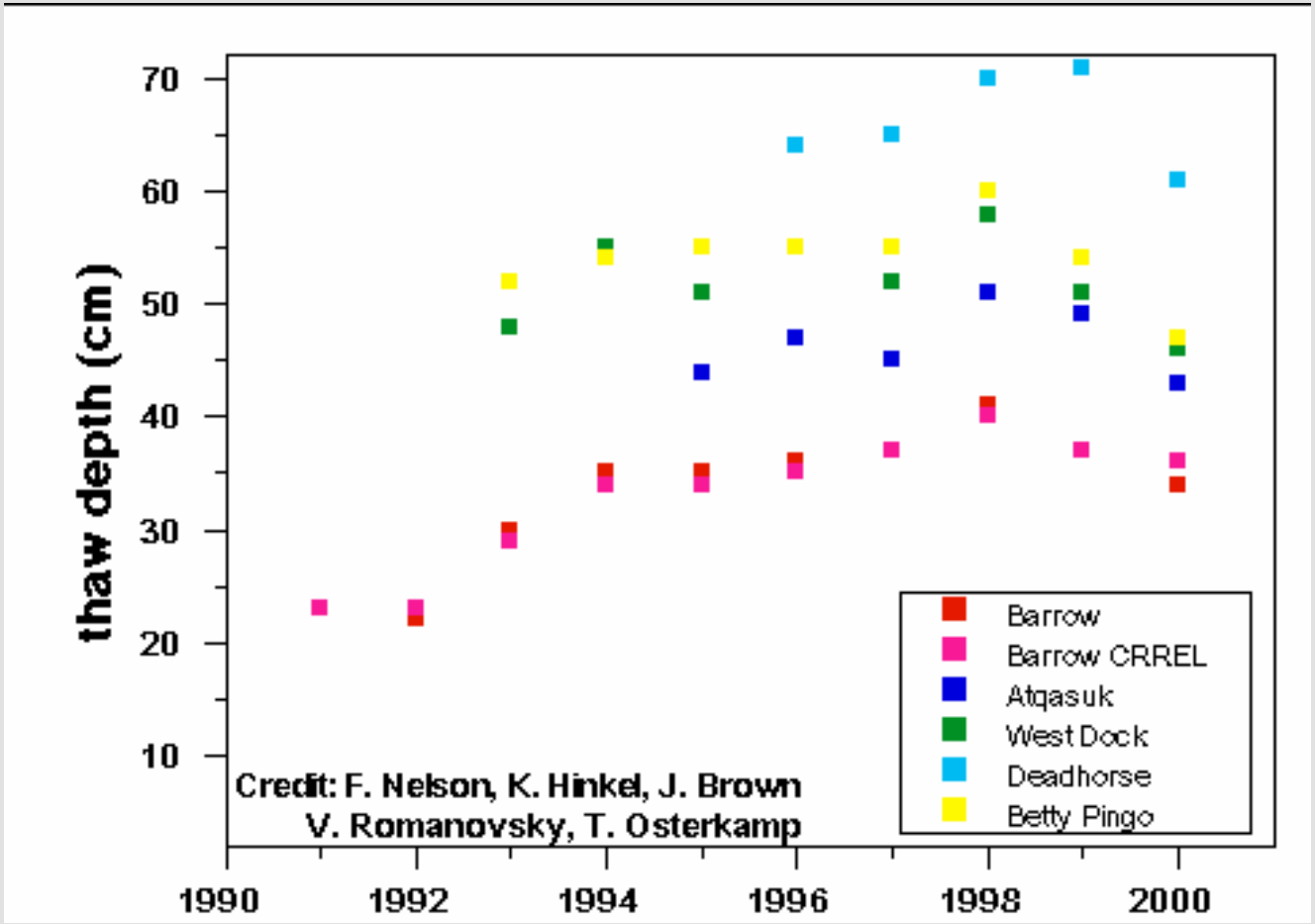
3 October 1963

Photo by Grace Redding

The Rescue of George Leavitt's House
After the September 1986 Storm

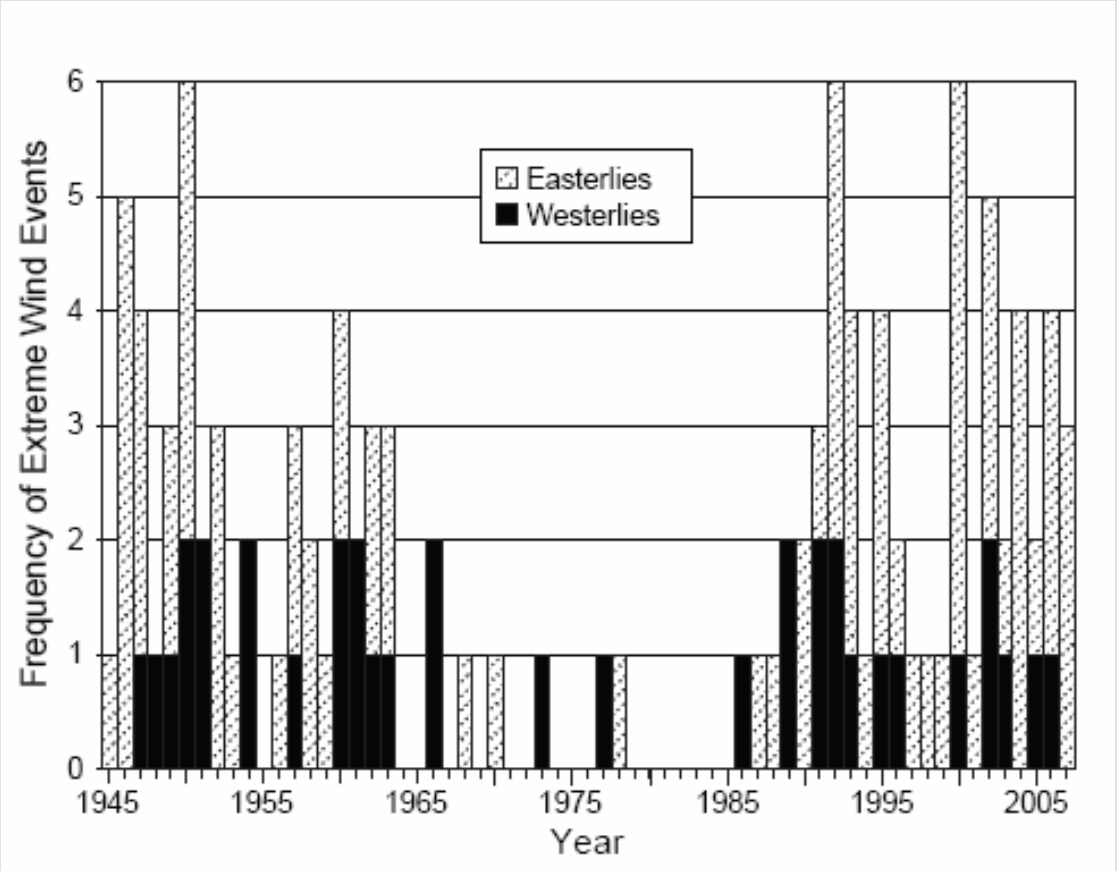

Barrow
Data from the NOAA
ETOPO-5 dataset
0 312.5 625 1,250 1,875 2,500
Kilometers

Permafrost Thaw Depth



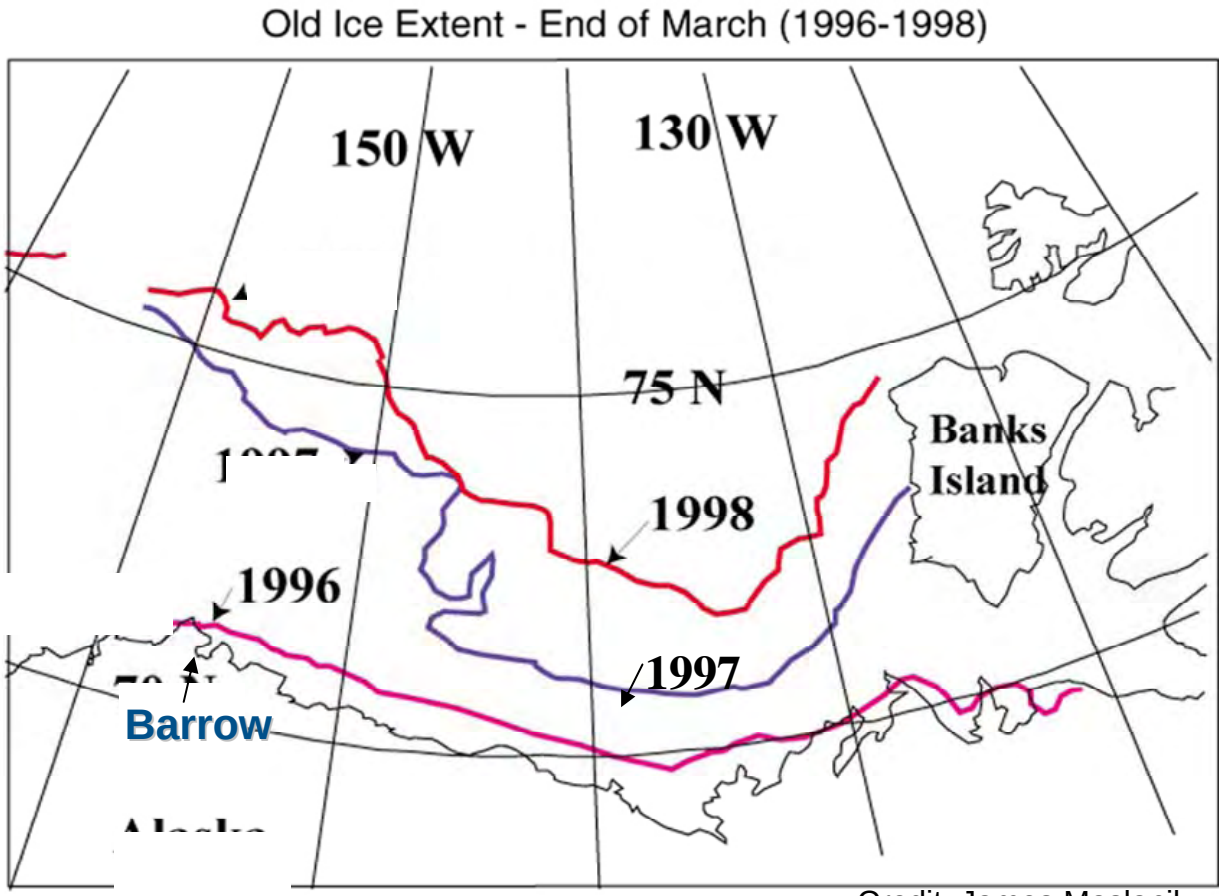
More Big Storms

- Drive erosion & flooding
- Linear or cyclical trend?



More Fetch

- Sea ice dampens effects of big storms
- Sea-ice retreat large & largest in west
- Exposed to strong westerlies in fall



Credit: James Maslanik


Arctic Governance
Workshop
Geesthacht, November 3-4, 2009

Arctic Coastal Zones at Risk

Photo © Ned Rozell

01. - 03. October 2007

Polar Environmental Centre Tromsø

IASC

ŁOICZ

IPA

AMAP

IHDP

Arctic Coastal Zones at risk, Tromso

Governance

- ✓ IDGEC's scientific legacy
  - ✓ Understanding individual institutions
  - ✓ Building out to analyze more complex institutional systems
  - ✓ Considering the role of institutions in coupled human/biophysical systems

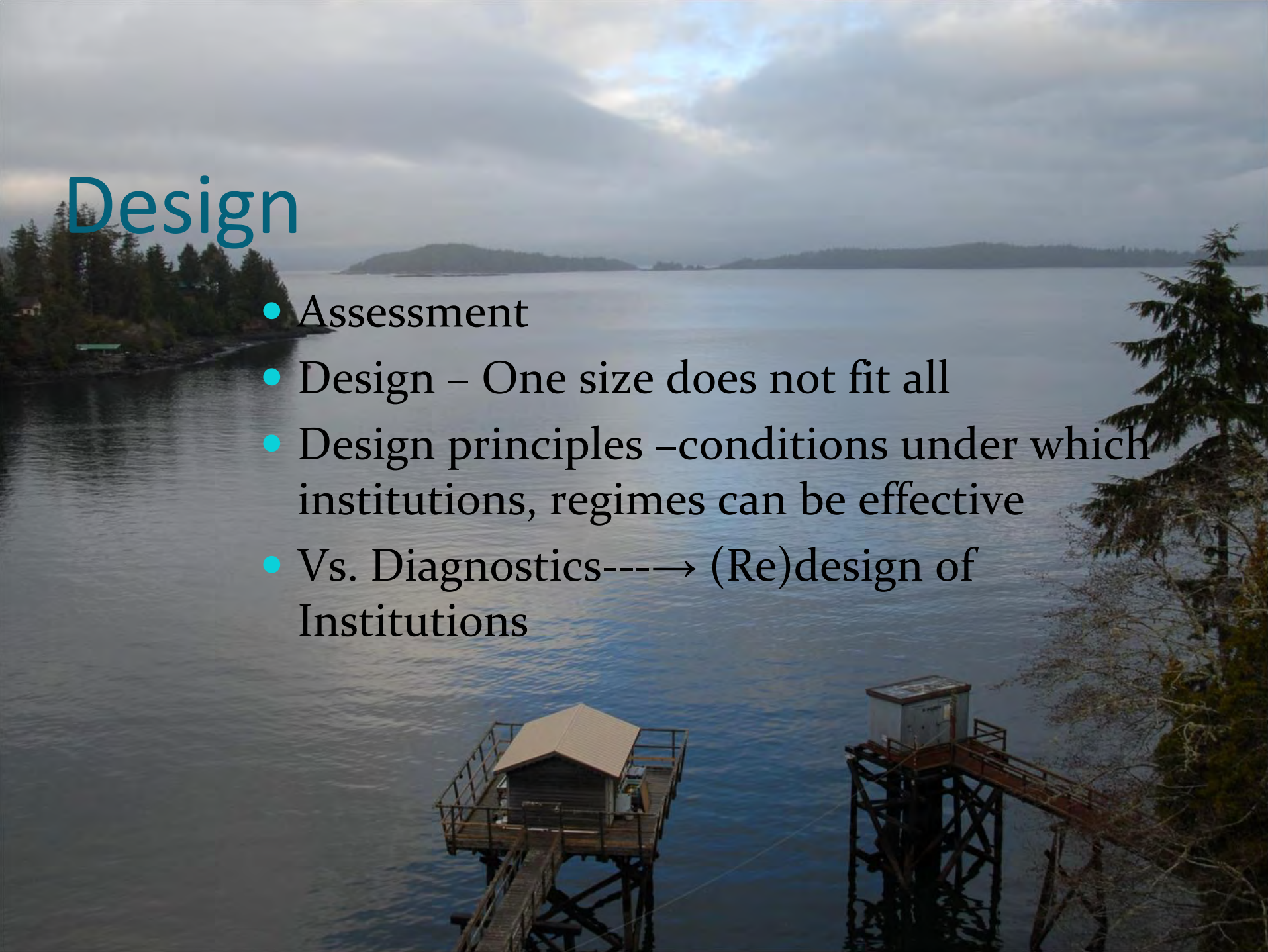
- Institutions, complexes, regimes, governance
- Research Foci: Causality, Performance, Design
- Fit, Interplay, Scale

IDGEC Research Foci

- *Causality: How much of the variance in human/environment relations is attributable to institutions?*
- *Performance: Why are some institutional responses to environmental problems more successful than others?*
- *Design: How can we structure institutions to maximize their performance?*

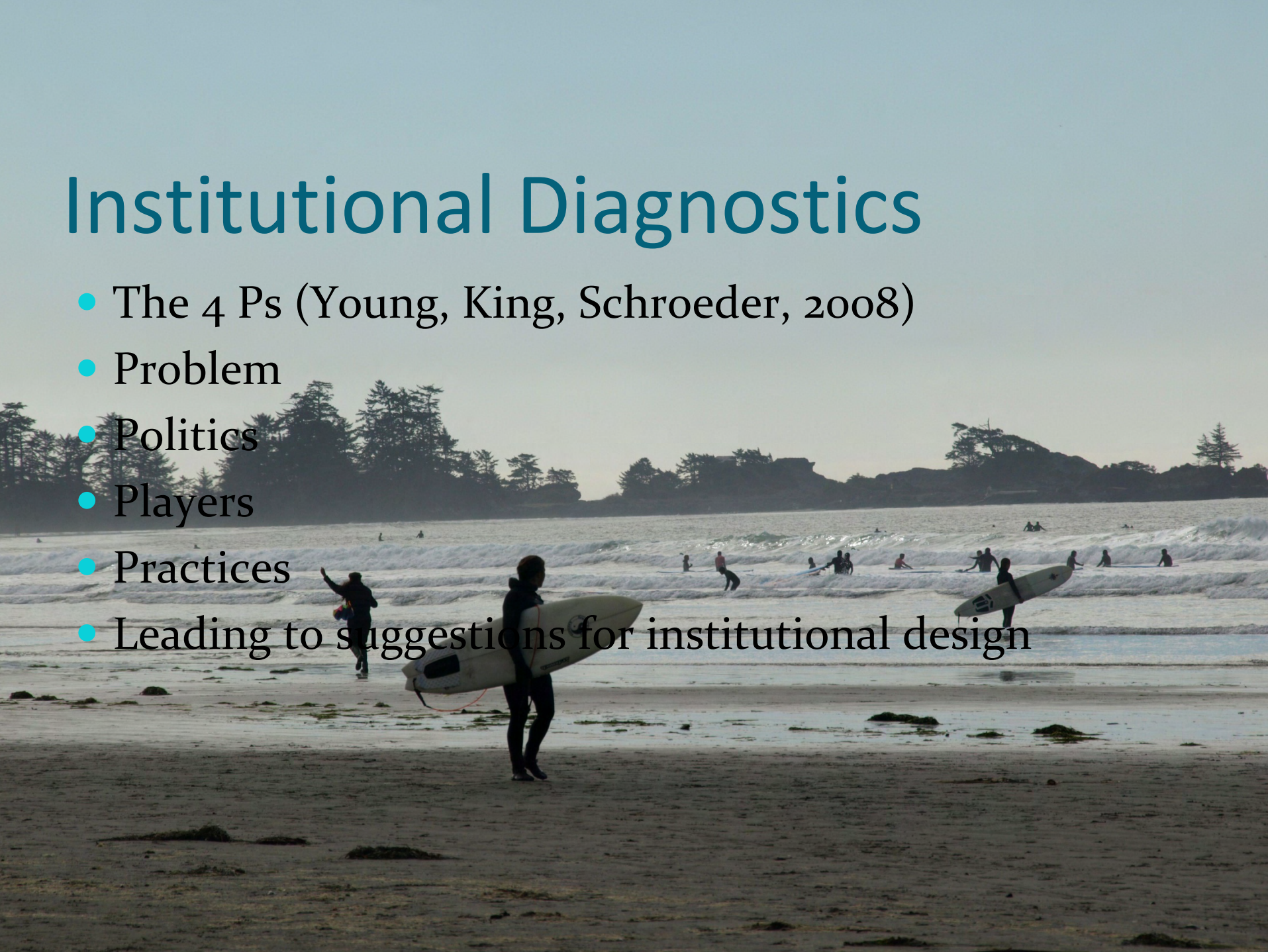
Design

- Assessment
- Design – One size does not fit all
- Design principles –conditions under which institutions, regimes can be effective
- Vs. Diagnostics---→ (Re)design of Institutions



Institutional Diagnostics

- The 4 Ps (Young, King, Schroeder, 2008)
- Problem
- Politics
- Players
- Practices
- Leading to suggestions for institutional design



Problem

- Understood? Agreement re character and potential solutions?
- Coordination or collaboration problem?
- One-off solution or long-term, ongoing solution required?
- Is the problem self-contained or will efforts to solve it impact preexisting institutional arrangements?

Problem (cont)

- Do the actions of governments, individuals, private corporations (or combination) cause or exaccerbate the problem?
- Cumulative or systemic?
- Cause changes that are Abrupt, nasty, and irreversible?

Politics

- Is power or influence among stakeholders concentrated or dispersed?
- Are there coalitions (negotiating blocs) whose interests in the issue area clash or diverge sharply?
- Does the problem fit into some established and widely accepted discourse and lend itself to the use of well-known policy instruments?
- Pervasiveness of corrupt practices or manipulative activities?

Players

- Rational actors? Or influenced by other sources of behaviour? (legitimacy, habit?)
- Unitary actors vs. internal dynamics?
- How large is the group of subjects?
- Homogeneous or Heterogeneous?
- How transparent are the actions of the regime's addressees?

Practices

- Are the parties free to make choices regarding the types of constitutive agreements to employ In addressing specific problems?
- Do prevailing practices permit starting with a core group of committed and like-minded players and expanding the membership of the regime over time?
- Is the principle of common but differentiated roles and responsibilities both acknowledged and in use in the relevant setting?
- Is it permissable to opt for a framework agreement at the outset with the intention of adding substantive amendments or protocols over time as the regime develops?

Practices (cont.)

- Is it permissible to opt for a framework agreement at the outset with the intention of adding substantive amendments or protocols over time as the regime develops?
- Is the regime expected to operate as a stand-alone governance system or will it be embedded in some larger system of institutional and organizational arrangements?

Synthesis with Olsen Framework

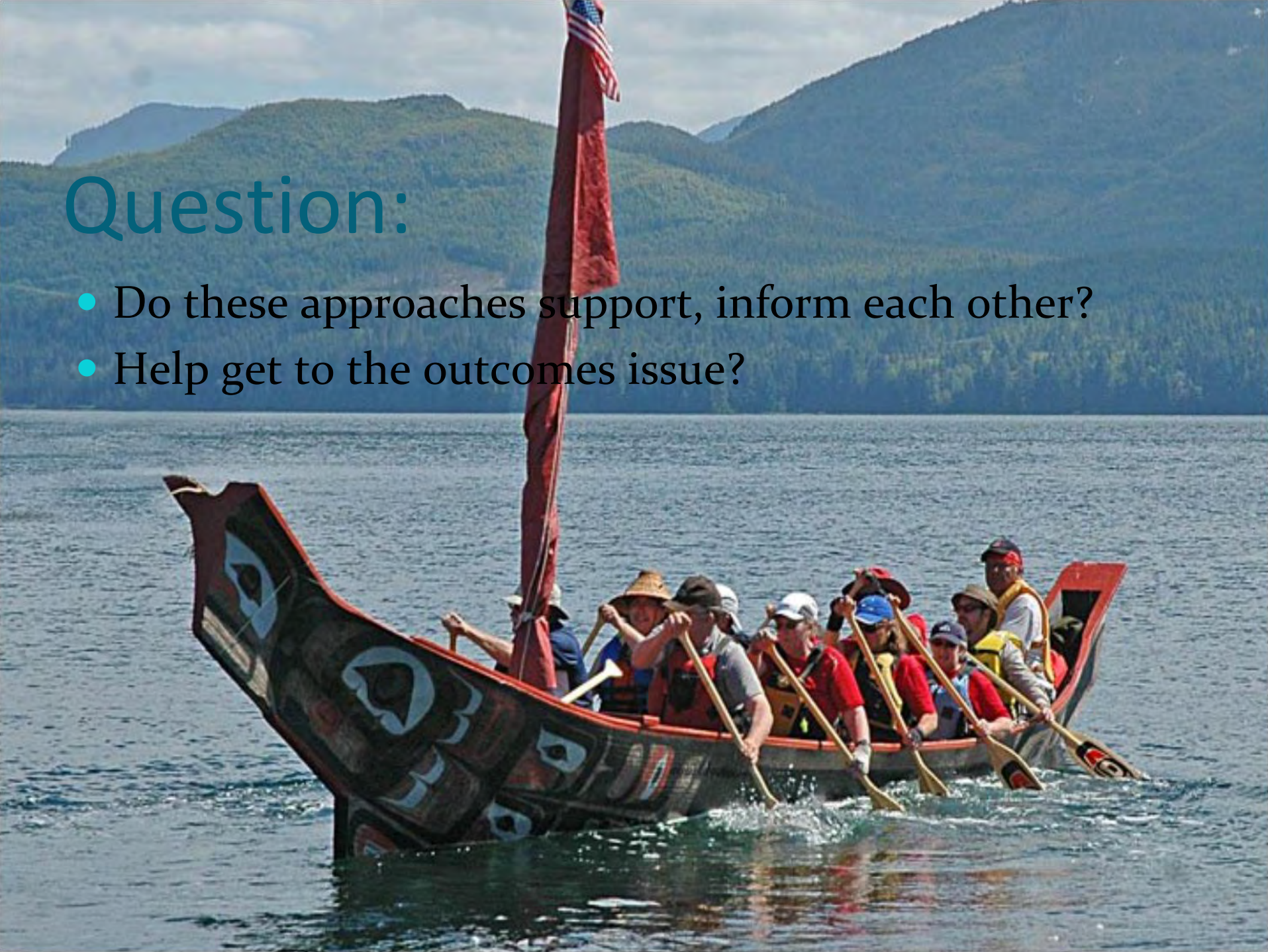
- Governance responses vs. interaction of governance and ecosytem outcomes (socio-ecological system outcomes)
- Features of the area of focus = first step in diagnostics – problem analysis
- Drivers and responses = ditto
- Long-term trends = problem, politics and players
- Eras of governance = ditto – historical view of problem , politics, players, institutional diagnotstics, causality and performance assessment

Synthesis (cont.)

- Case Studies – implications of this approach – regimes data base (capacity for generalization), Ecosystem outcomes of different governance regimes
- Issues, goals and objectives, investment, management- ?
- Outcomes – institutional diagnostics and design – interaction of feedbacks among governance regime and ecosystem outcomes.
- Characteristics of existing governance regime – diagnostics, performance assessment, fit, interplay and scale variables, 4ps-institutional mechanism s – (re)design

Synthesis (cont.)

- Capacity -= players, politics
- Ecosystem change – outcomes= causality, performance
- Impacts of climate change= problem
- Vision statement = design issue?
- Baselining checklist = diagnostics, performance assessment, outcomes. (especially 3rd order)



Question:

- Do these approaches support, inform each other?
- Help get to the outcomes issue?

Let’s talk!