Climate-Informed Coastal and Marine Spatial Planning

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Mitigation is what we do to decrease the potential of climate change itself.

Adaptation is insurance given a non-zero probability that climate change will have an adverse affect on our investments.
1. State of Adaptation Program
   finding out how people are fishing

2. Climate Adaptation Knowledge Exchange
   (CAKE; www.cakex.org)
   connecting fishermen

3. Awareness to Action
   teaching others to fish

4. Adaptation Consultation
   fishing for you
Adaptation Consultation

- Designed to help partners at any stage in the planning process
- Specifically tailored to each partners’ needs – vulnerability assessments, adaptation planning, implementation support, etc.

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<th>Monitoring</th>
<th>Adaptation Marketplace</th>
<th>Mapping and spatial tools</th>
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www.adaptationmarketplace.org
Coastal and Marine Spatial Planning (CMSP)

A science-based tool that improves collaboration and coordination among all coastal and ocean interests, and can be used to better inform and guide decision-making.

Regional Planning Bodies

- Northeast
- Mid-Atlantic
- South Atlantic
- Great Lakes
- Caribbean
- Gulf of Mexico
- West Coast
- Pacific Islands
- Alaska/Arctic
Benefits of CMSP

- Forward-looking
- Comprehensive
- Addresses multiple, cumulative, and potentially conflicting existing and emerging uses
- *End Product: a dynamic plan to balance and sustain the needs and values of the myriad users of marine resources in a region*
A Changing Climate

Changes in air and water temperatures

- Sea level rise, Lake level change
- Changes in precipitation patterns

Altered oceanic and atmospheric circulation

Changes in water chemistry (pH and salinity)
Why build climate change into CMSP?

- It has the potential to affect EVERYTHING
  - Changes in species distribution or migration patterns
  - Changes in timing of seasonal events
  - Changes in species’ population dynamics
  - Changes in shoreline and habitat location/type
  - Changes in human use
Climate-Informed CMSP

A dynamic planning process that integrates the full suite of climatic changes and effects, along with the different uses, values, and needs, into planning for resilient coastal and marine environments.
Objective
Improve understanding of how, when, and where to integrate climate change into CMSP

Case Study Examples

Guidance and Support

Climate-Informed CMSP Guide

The Harder Foundation
How is climate change currently being integrated into CMSP?

• Built into the entire process
• Addressed only in part
• Addressed as an isolated issue
• Existing coastal/marine plans adjusted to include it
• Status quo: do not explicitly consider climate change
• Addressed only in part
• Addressed as an isolated issue
• Existing coastal/marine plans adjusted to include it
How it CAN be done

• Adjust existing data and maps to reflect potential change(s) over time
• Create new data, maps, and conservation targets to reflect climate-specific concerns
• Adjust evaluation and prioritization of management options
• Adjust regulatory limits and requirements
Using variable time horizons - UK SMP Revised Guidance

Near term

Medium term

Long term
Using climate information to help prioritize use

Importance to Conservation
Using climate information to help prioritize use

**Importance to Fisheries**

- Rising Ocean Temperatures, Acidification
- Closure of rapidly changing regions, especially those lacking management plans, e.g., Arctic Management Area
Other considerations for Climate-Informed CMSP

- Making the land-water connection real
- Incorporating traditional knowledge, uses, and values
- Monitoring and adaptive management
- Stakeholder engagement
Objective: Facilitate the integration of climate change into marine and coastal activities in the Marine Planning Partnership (MaPP) region of British Columbia.

Key Subregions: North Coast, Central Coast, North Vancouver Island, Haida Gwaii
• Provide recommendations for incorporating climate change into subregional marine use plans
• Develop vulnerability and resilience maps
• Develop climate-smart EBM indicators
  • Physical & Chemical Factors: Temp, Precip, Water chemistry (pH, salinity, O₂)
  • Biological & Ecological Factors: Primary productivity; Abundance, biomass and phenology; Areal extent of seagrass beds, mussel beds, and nearshore vegetation
• Integrate climate change into regional EBM monitoring framework
Objective: Provide guidance for climate-informed CMSP design, implementation, and monitoring at a number of scales

- Tools
- Case studies
- Maps, spatial data
- Legal and policy frameworks
- Climate-Informed CMSP Checklists and Worksheets
Climate-Informed CMSP Checklist

Structure:

- Assess climate impacts
- Assess vulnerabilities
- Assess future conditions and scenarios
- Create climate-informed goals and objectives
- Create climate-informed conservation targets
- Evaluate and prioritize management options
- Adjust regulatory limits and requirements
Climate-Informed CMSP in the Great Lakes

Existing Uses and Conflicts

- Fishing (subsistence, recreational, commercial)
- Recreational Boating
- Tourism
- Shipping
- Energy Production
- Aquaculture
- Agriculture
- Drinking Water
- Military training
- Submerged tribal lands
- Undersea cables
- Mining
Four things to remember about climate adaptation overall:

1. Failing to include climate change in your work means your work is vulnerable

2. Adaptation is not rocket science (but it does require a thoughtful approach)

3. Be creative!

4. Context matters: YOU are an expert on your region/species/processes/mandate
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Awareness to Action

- Bring partners from awareness about climate impacts and adaptation to implementation
  - Federal and state agencies
  - Tribes
  - Conservation organizations
  - Community groups
  - Foundations

EcoAdapt's Climate Adaptation Starter Kit

EcoAdapt's Climate Adaptation Starter Kit includes our top list of resources, tools, and adaptation examples to get you started. It is not intended to be fully comprehensive, but to provide a compilation of what we have found most practical and useful for planning, developing, and implementing climate adaptation.

The Climate Adaptation Starter Kit is divided into six parts:

1. **Vulnerability Assessment** - resources for climate change vulnerability, risk and impact assessment.
2. **Adaptation Frameworks** - processes to guide the development of climate change adaptation strategies.
3. **Adaptation Portals and Tools** - a sampling of climate adaptation portals, tools, and resources.
4. **Examples of Adaptation Projects** - climate change adaptation case studies.
5. **Getting Started** - where to begin, working with what you already have, and avoiding maladaptation.
6. **Evaluation and Monitoring** - on how adaptation programs are succeeding.
Survey and assess adaptation efforts
Develop case studies
- Climate Adaptation Knowledge Exchange (www.cakex.org)
- Adaptation Nation (climate-adaptation.blogspot.com)
- The State of Marine and Coastal Adaptation in North America
- The State of Climate Change Adaptation in the Great Lakes Region
- The State of Adaptation in the United States

“Climate change can be controversial but adaptation is something we all should be engaged in. It behooves each of us to consider the next steps on how to deal with this issue. [This] effort is a call to action to overcome the stubbornness and ennui towards climate change.”

- Louisiana Coastal Manager
# Climate Adaptation Knowledge Exchange

## Why Make a CAKE?
- Everything we do is vulnerable to climate change but few people know what to do about it.
- Adaptation is a rapidly developing field.
- We are spending more time **reinventing**, not enough **innovating**.

## Why Join CAKE?
- **Explore** projects, people, and resources on the map:
  - Map, text, and keyword searches.
- **Publish and promote** your work on climate adaptation.
- **Get advice** from adaptation experts.
- **Request information** from your colleagues (advice, connections, training).

## Sponsors, Partners, and Contributors:
- Kresge Foundation, Wilburforce Foundation, Data Basin, EBM Tools Network, Model Forest Policy Program, Northern Institute of Applied Climate Science, NCAnet, Integrated Data Management Network, USGS, and many more!

[www.CAKEx.org](http://www.CAKEx.org)
Opportunities for Engagement

• Read/Request State of Adaptation surveys and synthesis products
  – Southeast U.S. water resources
  – U.S. marine fisheries

• Check out our Adaptation Starter Kit at www.EcoAdapt.org

• Join CAKE and submit your content (www.CAKEx.org)

• Request an Awareness to Action training or Adaptation Consultation

• Join us at the next National Adaptation Forum in 2015!
Questions?

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