TOOLS SELECTION

An introduction to geospatial tools for vulnerability assessment and climate adaptation planning

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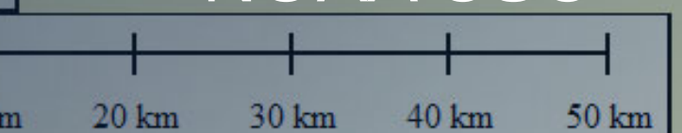
EBM Tools Network
NOAA CSC



What is a Tool?

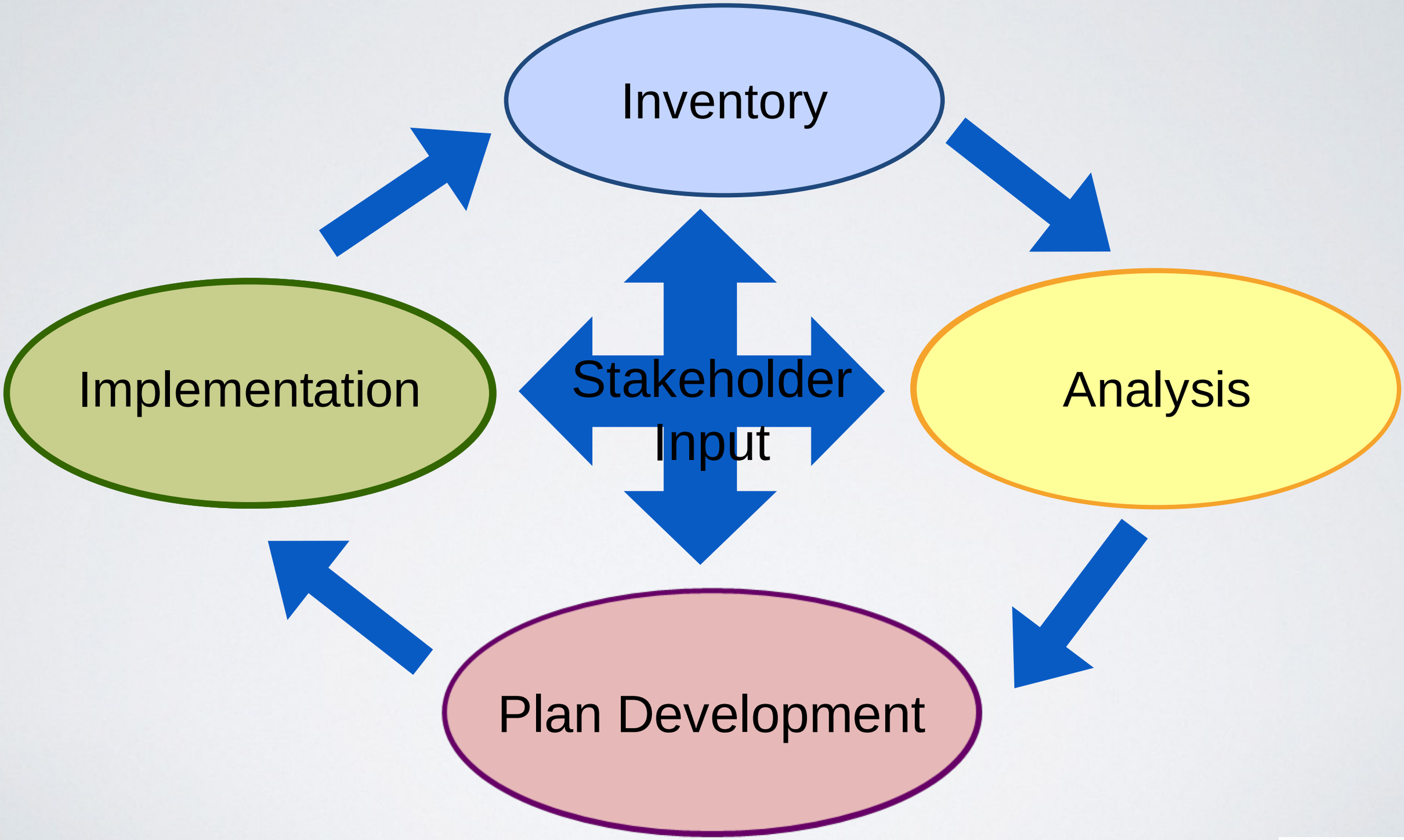
- Documented guidance – how do I do this?
- Data portal – get the information I need
- An interaction device - civic engagement to get the feedback I need
- Model – represent this process
- Decision support system – integrate many data and models to represent a system

ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

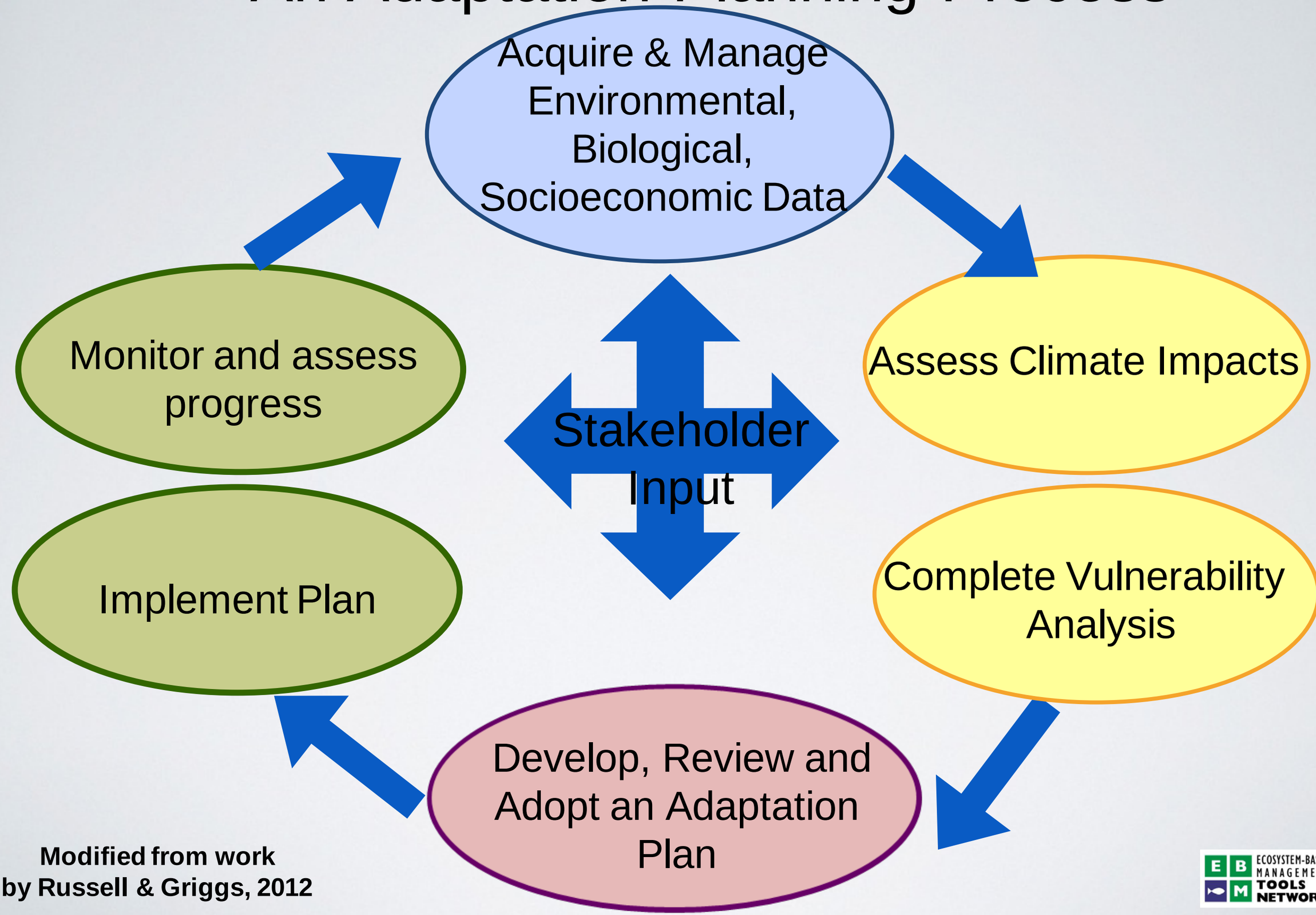
Roles for Tools

- The complexity of this work cannot be accomplished without them
- Gathering & managing information
- Conducting advanced spatial analyses and modeling
- Visualization
- Facilitating work across sectors and ecosystems
- Scenario “what if” testing

A Simplified Planning Process



An Adaptation Planning Process



Modified from work by Russell & Griggs, 2012

ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

An Adaptation Planning Process

Acquire & Manage

Data acquisition & management tools

Socioeconomic Data

Assess Climate Impacts

Modeling & analysis tools

Complete Vulnerability Analysis

Decision support tools

Implement Plan

Monitor and assess

Monitoring & assessment tools

Stakeholder engagement tools

Modified from work by Russell & Griggs, 2012

ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

The Problem with Tools…

Complicated and Confusing

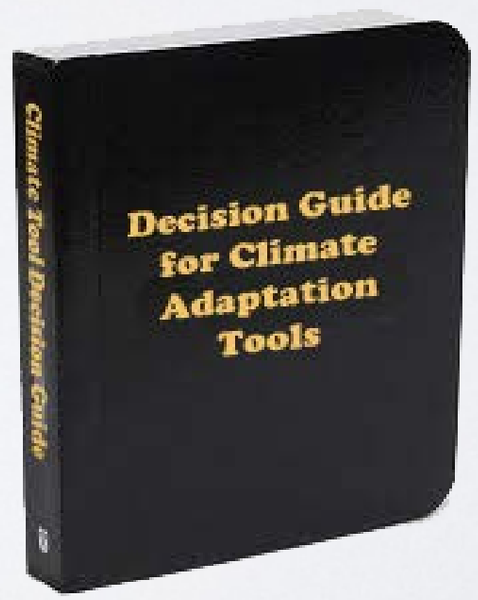
Require considerable capacity

Tend to drive a top down, “Predict-and-Plan” process

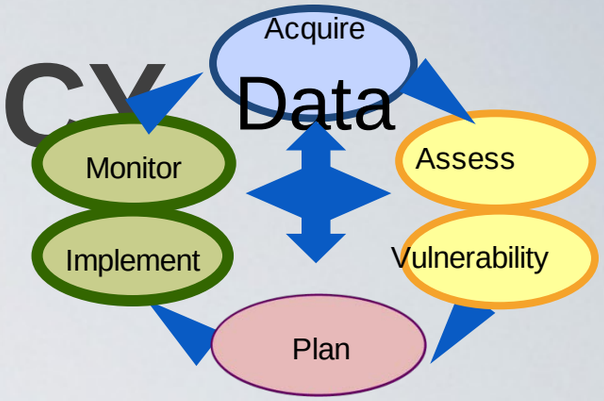
EBM ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

WAYS TO THINK ABOUT TOOLS

- Type
- Function
- How it assists planning process
- Sectors addressed

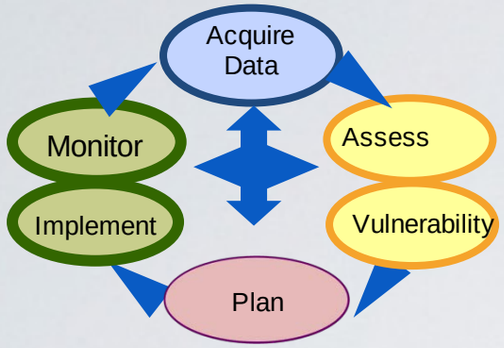


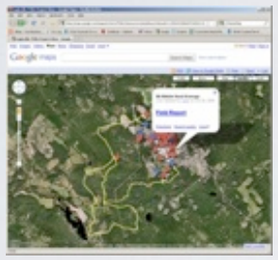
HOW TOOLS AFFECT THE POLICY CYCLE

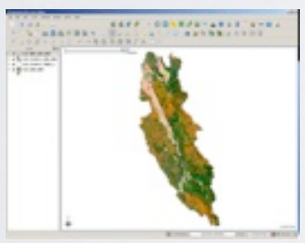


	Stakeholder Engagement	Scoping	Assess			Plan	Implement	Monitor
			Impact	Vulnerability	Risk			
CanVis								
SLR Viewer*								
Our Coast, Our Future*								
SimCLIM*								
SLAMM								
CommunityViz								
NatureServe Vista*								
HAZUS								
SoVI								
CCVI								
InVEST*								

TYPES OF TOOLS



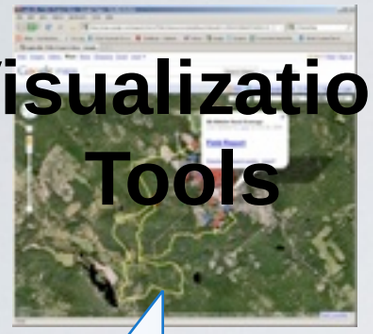


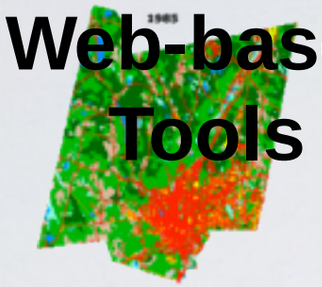


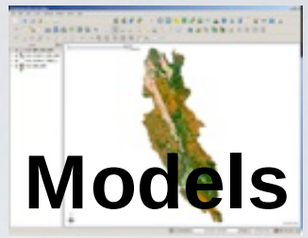
- Process
- Visualization
- Web-based
- Desktop GIS
- Toolkits

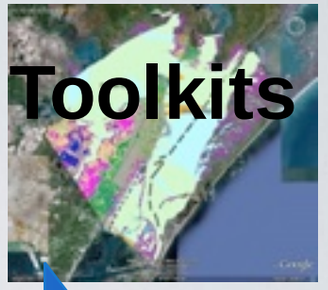
Considered for Guide

Factors to Consider:









FUNCTIONALITY

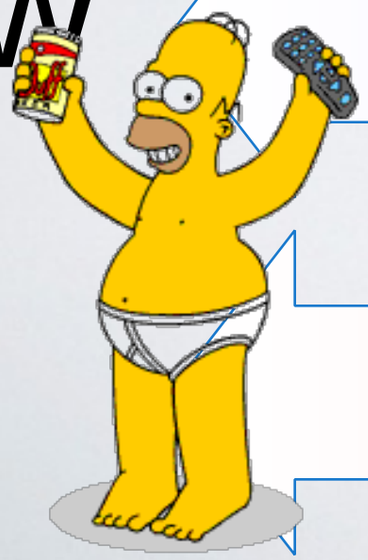
L O W

H I G H

LEARNING CURVE

COST

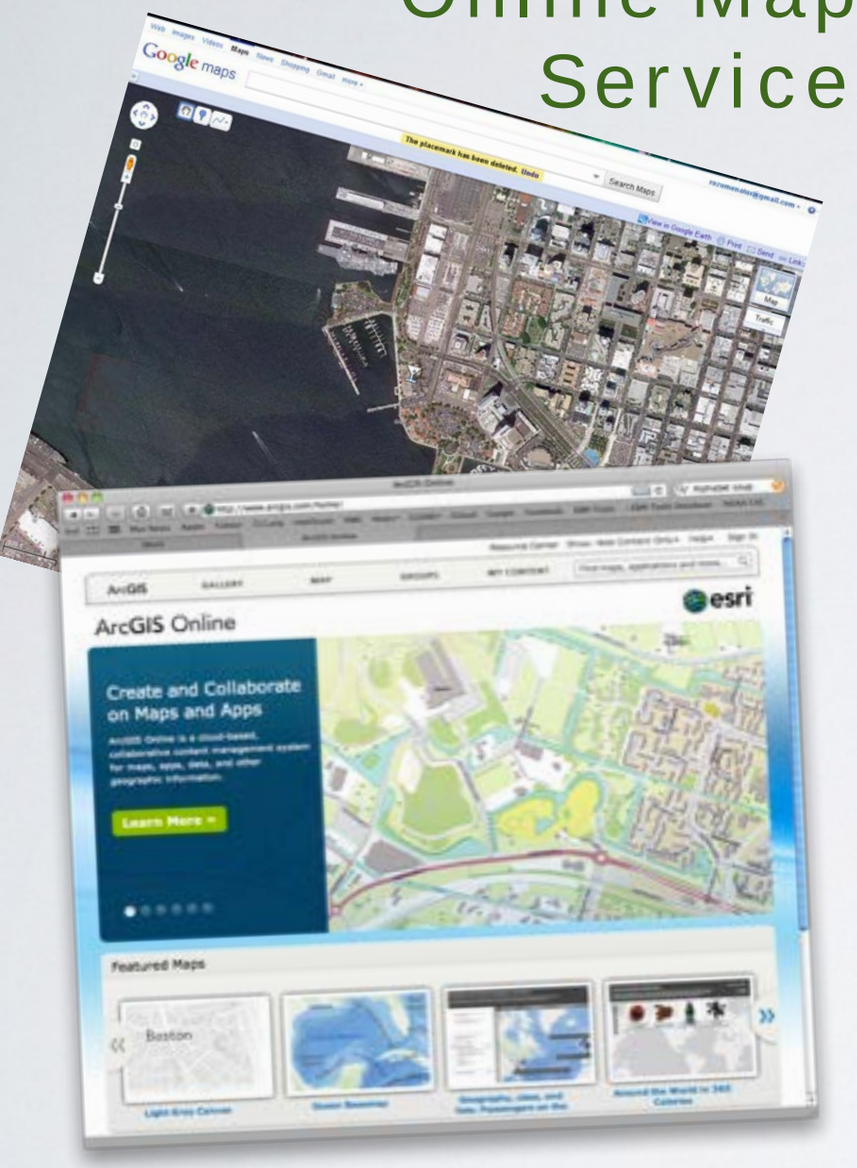
SKILLS NEEDED



ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

Starting Simple: Online Mapping and “Mashups”

Online Mapping Services



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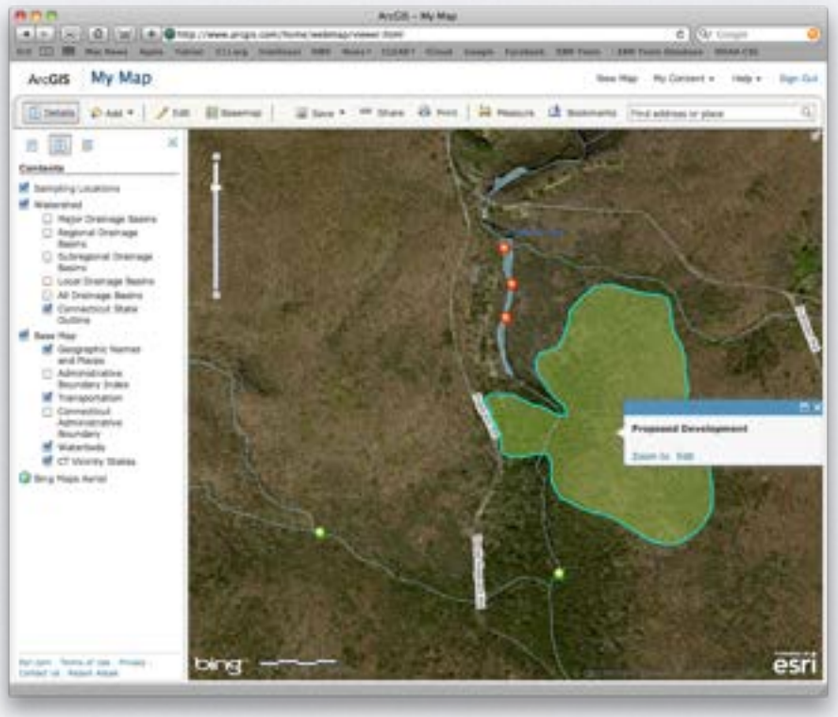
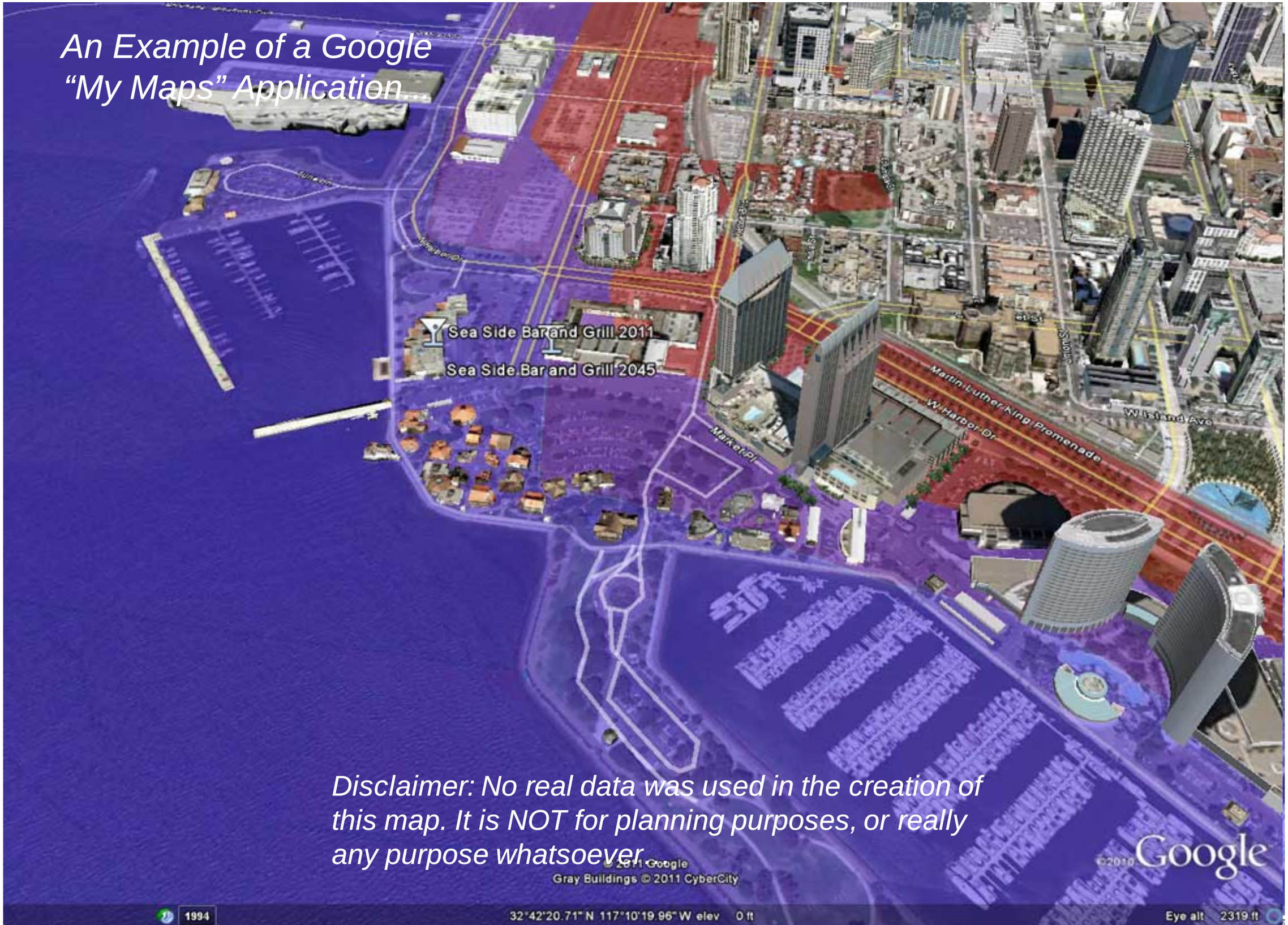
Your Data

New “Mashup” Map

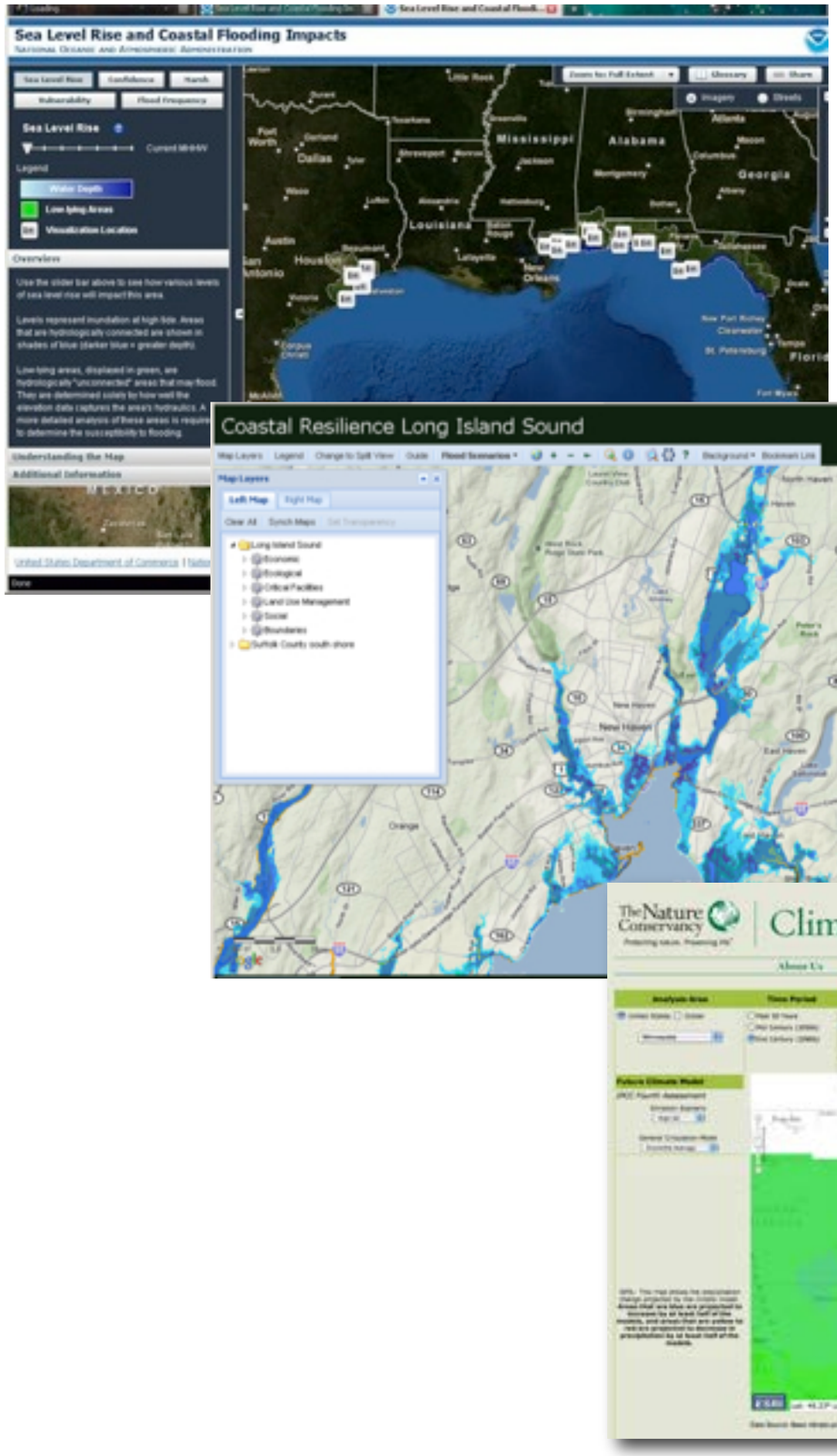


EBM ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

Starting Simple: Online Mapping and “Mashups”



Web-based Tools



SLR and Coastal Flooding Impact Viewer

(NOAA CSC)

Geographic Focus: National

Coastal Resilience

(The Nature Conservancy & Partners)

Geographic Focus: Regional/Local (LIS, GOM, Florida Keys, Ventura area in CA)

Climate Wizard

(The Nature Conservancy)

Geographic Focus: National/Global

Pros & Cons of Web-Based Tools

Pros

✓ Easy to start: its all been done for you

✓ Usually easy to use: good interfaces and limited options

Cons

✓ Often limited to pre-run packaged analyses

✓ Usually limited to its data, can't integrate local data

✓ Often can't readily save and download data and your results for further work

Implementation Tool

Process Tool

So you want to do more yourself?

ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

GIS-based Decision Support Tools

communityviz®


Community Planning

A planning tool that allows communities to develop and compare alternate scenarios.


Urban Planning

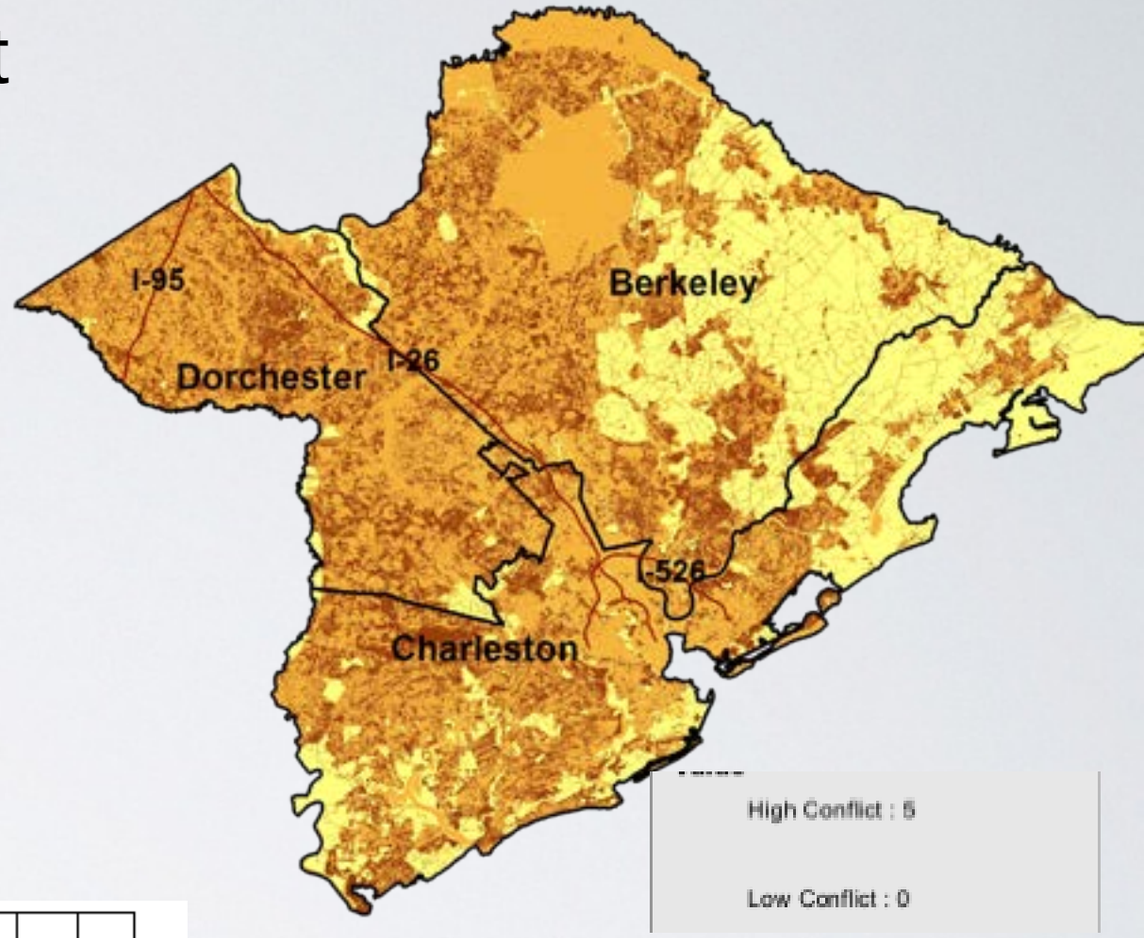

Conservation


Parks

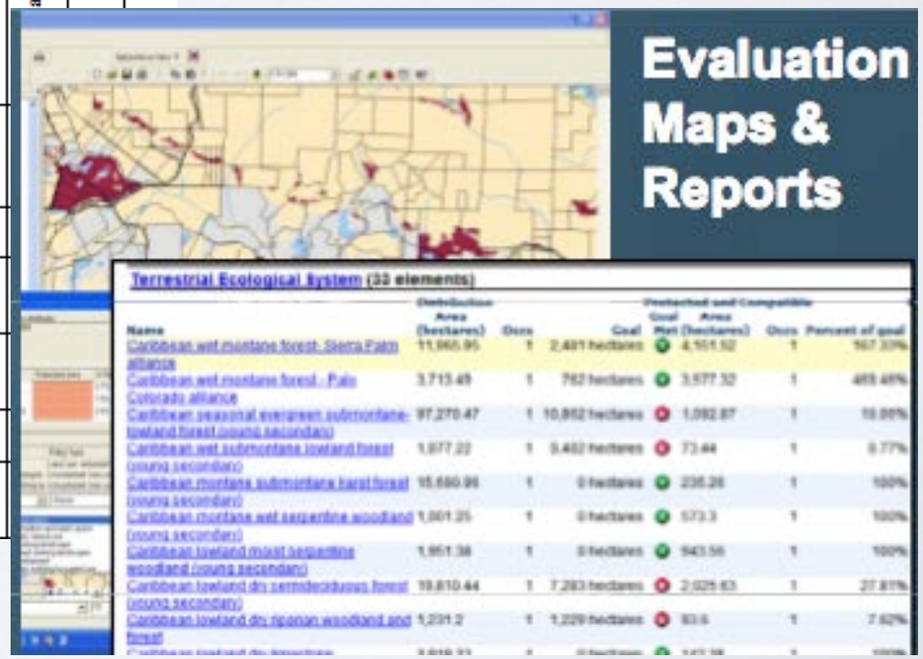

Transportation

NatureServe Vista

- Map natural system, including habitat types, incidence of species, current land use
- Identify conservation goals and targets for success
- Assess Current Conditions, Future Use, Mitigation Scenario against these goals



Conservation Element	Urban/ Suburban	Rural Residential (with minimal	Rural Residential (with maximum	Agriculture	Timber Forest	Recreational Parks	Natural Areas (park)	Conservation Management	Habitat Restoration	Mines	Active Landfills	Local Roads (paved)	Local Roads (dirt)	State/ Inter-state Roads	Transmission Corridors	Flooding (50-100 yr)	Storm Surge	Wind	Sea Level Rise	ake
Nonriverine Swamp and Wet Hardwood Forest	3	3	3	3	3	3	2	1	1	3	3	3	3	3	3	1	2	1	3	
Floodplain Forest	3	3	3	3	3	3	2	1	1	3	3	3	3	3	3	1	2	1	3	
Salt and Brackish Marsh	3	3	3	3	3	3	2	1	1	3	3	3	3	3	2	1	2	2	2	
Fresh – Oligohaline Tidal Marsh	3	3	3	3	3	3	2	1	1	3	3	3	3	3	2	1	2	2	2	
Tidal Wooded Swamp	3	3	3	3	3	3	2	1	1	3	3	3	3	3	3	1	2	2	3	
Dry and Mesic Oak and Mixed Forest	3	2	3	3	3	3	2	1	1	3	3	3	2	3	3	2	3	2	3	



For the Serious DIY: Toolkits

I built my toolkit in just one weekend!

- Planning projects have diverse needs and issues
- Generally not a single, one-size-fits-all tool available
- Still, there are many tools that can address parts of your needs, SO….

Linking groups of tools through an interactive process gives the flexibility to address an almost unlimited number of issues, with existing tools.

ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

Toolkit Structure

Planning Process/Stakeholder Engagement

Development Tools

-Planning
-Energy
-Infrastructure
-Forestry

Integration Tool

(Vista, CommViz)

Data and Modeling Tools

-Geophysical Processes
-Ecosystem Processes
-Socioeconomic models
-Biodiversity
-Ecosystem Svcs

Conservation Planning Tools

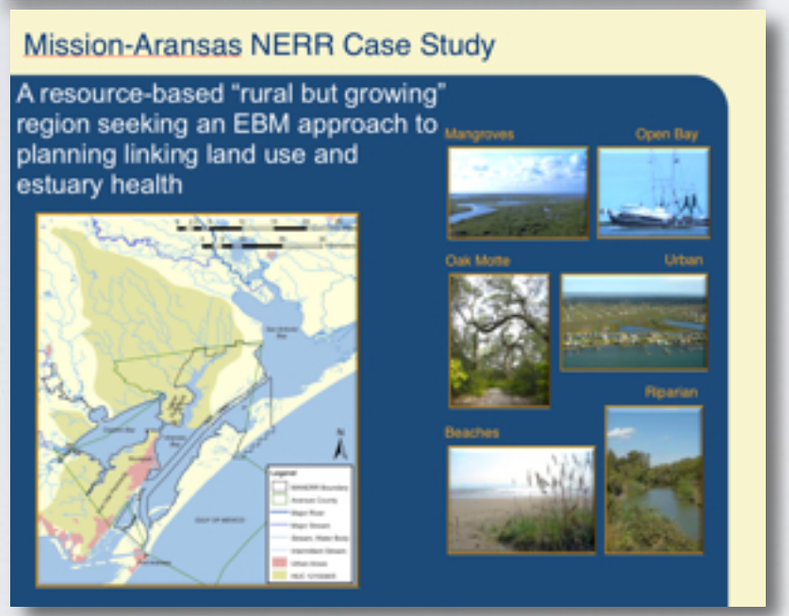
-Mitigation
-Land Allocation/Optimization

EB EM ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

Integrated Planning for Resilient Communities

Berkeley-Charleston-Dorchester, SC

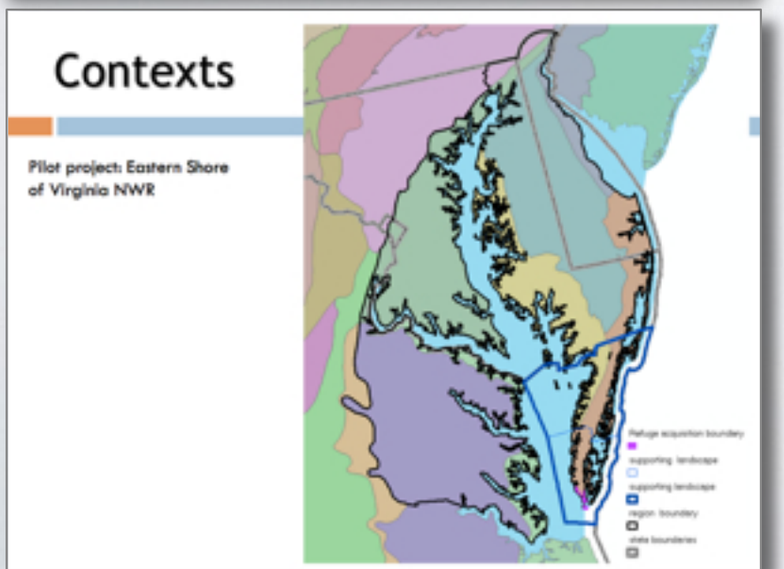
Function:
Supports integrated hazard- and ecosystem-based land use planning



Integrated Land-Sea Toolkit

Mission-Aransas NERR, TX

Function:
DST to assess the effects of urbanization on water quality and biodiversity



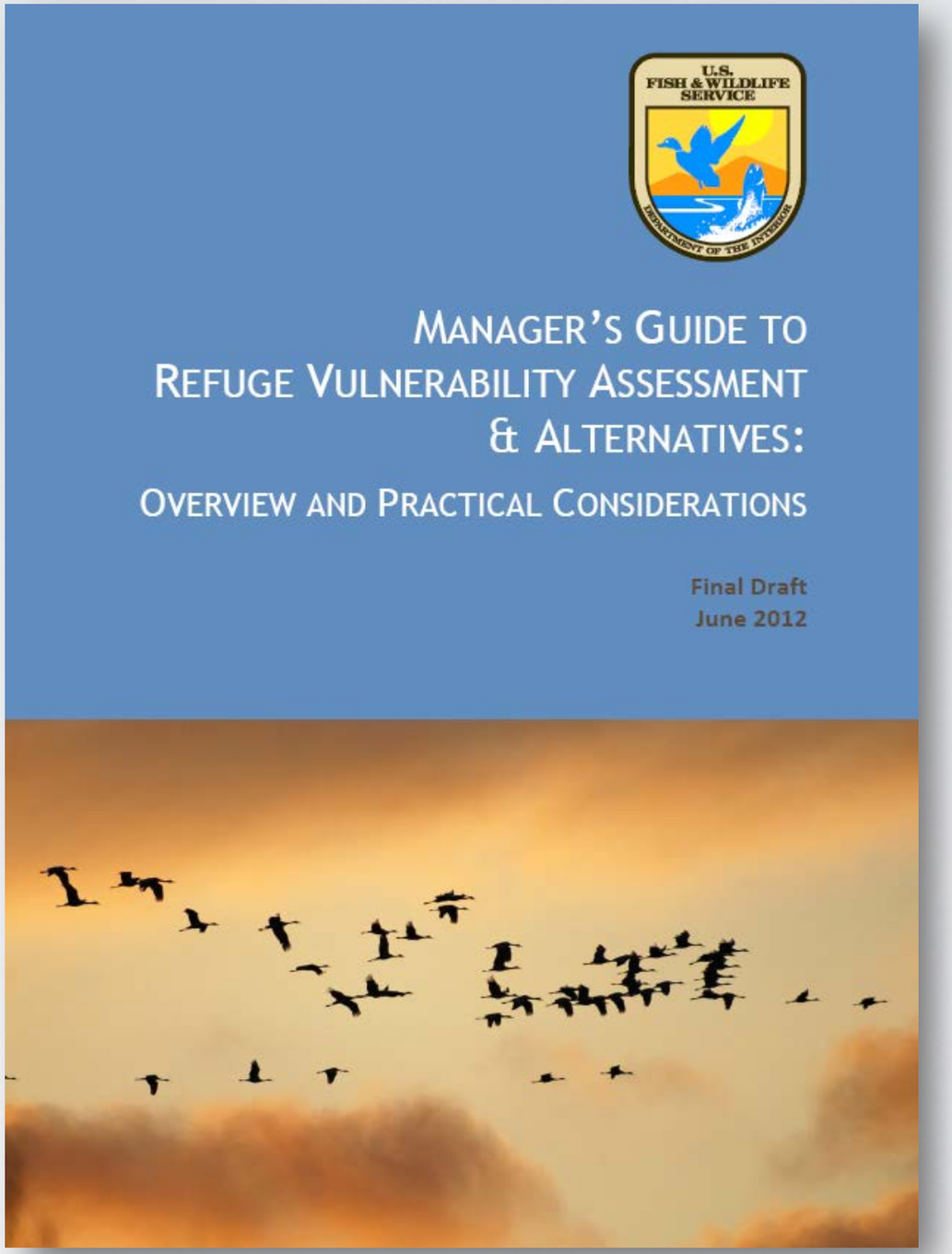
Refuge Vulnerability Assessment & Alternatives Toolkit

VA, NV, CA

Function:
Cumulative effects assessment for wildlife refuges and evaluate management scenarios

ECOSYSTEM-BASED MANAGEMENT TOOLS NETWORK

RVAA Guidance



http:// www.fws.gov/refuges/whm/pdfs/RefugeVulnerabilityAssessmentTechnical Guide.pdf

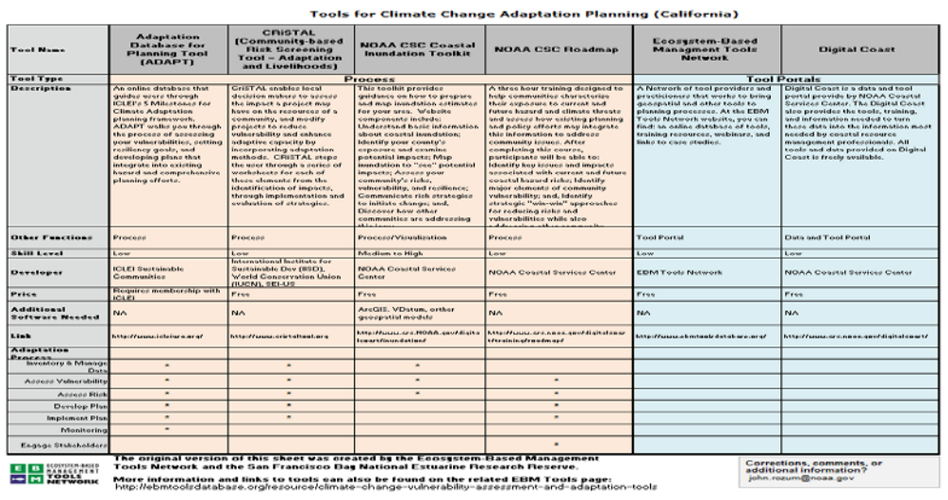
Things to consider…

- Know what kind of analyses you need to guide you in the planning process.
- Make sure the tool is integrated into your planning process.
- Know the tools limitations.
- Understand data and technical needs of the tools.
  - Assess staff capacity to run and maintain.
  - Do you need an external service provider?
- Ask lots of questions first. Seek out advice from those with experience using tool.
- Maintain a healthy skepticism.

Tool Resources

ebmtools.org

http://www.csc.noaa.gov/digitalcoast/



Tools for Climate Change Adaptation Planning (California)

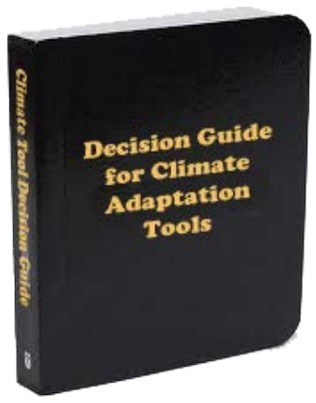
Tool Name	Adaptation Database for Planning Tool (ADAPT)	CRiSTAL (Community-based Risk Screening Tool – Adaptation and Livelihoods)	NOAA CSC Coastal Inundation Toolkit	NOAA CSC Roadmap	Ecosystem-Based Management Tools Network	Digital Coast
Tool Type	Process				Tool Portals	
Description	An online database that guides users through ICLEI's 5 Milestones for Climate Adaptation planning framework. ADAPT walks you through the process of assessing your vulnerabilities, setting resilience goals, and developing plans that integrate into existing hazard and comprehensive planning efforts.	CRiSTAL enables local decision makers to assess the impact a project may have on the resources of a community, and modify projects to reduce vulnerability and enhance adaptive capacity by incorporating adaptation methods. CRiSTAL steps the user through a series of worksheets for each of these elements from the identification of impacts, through implementation and evaluation of strategies.	This toolkit provides guidance on how to prepare and map inundation estimates for your area. Website components include: Understand basic information about coastal inundation; Identify your county's exposure and examine potential impacts; Map inundation to "see" potential impacts; Assess your community's risks, vulnerability, and resilience; Communicate risk strategies to initiate change; and, Discover how other communities are addressing	A three hour training designed to help communities characterize their exposure to current and future hazard and climate threats and assess how existing planning and policy efforts may integrate this information to address community issues. After completing this course, participants will be able to: Identify key issues and impacts associated with current and future coastal hazard risks; Identify major elements of community vulnerability; and, Identify strategic "win-win" approaches for reducing risks and vulnerabilities while also	A Network of tool providers and practitioners that works to bring geospatial and other tools to planning processes. At the EBM Tools Network website, you can find: an online database of tools, training resources, webinars, and links to case studies.	Digital Coast is a data and tool portal provide by NOAA Coastal Service Center. The Digital Coast also provides the tools, training, and information needed to turn these data into the information most needed by coastal resource management professionals. All tools and data provided on Digital Coast is freely available.
Other Functions	Process	Process	Process/Visualization	Process	Tool Portal	Data and Tool Portal
Skill Level	Low	Low	Medium to High	Low	Low	Low
Developer	ICLEI Sustainable Communities	International Institute for Sustainable Dev (IISD), World Conservation Union (IUCN), SEI-US	NOAA Coastal Services Center	NOAA Coastal Services Center	EBM Tools Network	NOAA Coastal Services Center
Price	Requires membership with ICLEI	Free	Free	Free	Free	Free
Additional Software Needed	NA	NA	ArcGIS, VDatum, other geospatial models	NA	NA	NA
Link	http://www.icleiusa.org/	http://www.cristahub.org	http://www.csc.noaa.gov/digitalcoast/tools/inundationtoolset	http://www.csc.noaa.gov/digitalcoast/tools/roadmap	http://www.ebmtoolsdatabase.org/	http://www.csc.noaa.gov/digitalcoast/
Adaptation Process						
Inventory & Manage Data	*	*	*			
Assess Vulnerability	*	*	*	*		
Assess Risk	*	*	*	*		
Develop Plan	*	*		*		
Implement Plan	*	*		*		
Monitoring	*					
Engage Stakeholders				*		

The original version of this sheet was created by the Ecosystem-Based Management Tools Network and the San Francisco Bay National Estuarine Research Reserve.

More information and links to tools can also be found on the related EBM Tools page: http://ebmtools.databasin.org/resource/climate-change-vulnerability-assessment-and-adaptation-tools

Corrections, comments, or additional information? john.roberts@noaa.gov

Climate Tools Matrix



Climate Tools Decision Guide (Coming in 2013)