

# Ocean Ecosystem Health Workgroup and Portal

CA Water Quality Monitoring Council

May 28, 2014

# Outline

- Assumptions and guiding principles
- Portal development roadmap
- Case studies
- CA Wetland Monitoring Workgroup used as model

# Assumptions and Principles

- Organize around decisions and core motivating questions
- Identify and directly engage target audiences/users
- Meet technical and institutional challenges together
- Develop and implement portals in phases
- Identify a global point of entry to organize access

# Organize Around Decisions/Questions

- Data warehouses vs. organized portals
- Need to
  - Prioritize key datasets
  - Improve resolution, credibility
  - Relieve users of job of sorting and evaluating
- Technical tools alone not enough



# Organize Around Decisions

Decision category	Management decision or activity	Ocean information needed for decisions
<b>Public health: CA Dept. Public Health</b>	Open/close commercial shellfish growing and harvesting / recreational shellfishing to assure that shellfish are safe for human consumption.	Do domoic acid and PSP toxin concentrations in shellfish exceed safe limits?
	Issue public health advisories and warnings	Is there a threat to human health?
		What areas are at risk and how long will the risk persist?
<b>Marine wildlife health: CA F&amp;W, marine wildlife rescue organizations</b>	Determine potential HAB impacts on living marine resources and ecosystems	Are animal mortalities due to HABs?
	Focus watch efforts and recovery resources for rapid response to strandings	What is the probability of HAB formation in a specific location and time? What is current location, spatial extent, and future movement of bloom? When will the HAB dissipate?
	When to release wildlife back to environment	What are current phytoplankton levels and community composition? Are toxic species present? What is current location, spatial extent, and future movement of bloom? When will the HAB dissipate?

# Identify and Engage Audiences

- Independently designed portals much less effective
  - Lesson learned by Council and others
- Data, information must be delivered in ways directly useful to specific users/audiences
  - Anthropological perspective
- Link to existing and/or pending decisions essential
  - Information in a vacuum not interesting or useful
- Three audience categories
  - High-level policy makers and stakeholders
  - Agency and NGO managers
  - Scientists

# Combine Technical/Institutional

- Simple access to broad universe of data/information not enough
- Answering core questions requires coordination /integration across institutional boundaries and barriers (silos)
  - Priorities, goals, values, scale, standards can all differ
  - Common motivation, payoff often lacking
  - Resources to surmount “energy” threshold often missing

# Apply Phased Development

- Need to understand taxonomy of portals
  - Data catalogues
    - Collection of data sets, links
    - Simple search function
  - Data portals
    - Thematic organization linked to decisions, concerns
    - Simple interactivity, metadata, data policies/standards
    - Structured participation
  - Analysis and assessment portals
    - Targeted data integration, assessment tools
    - Run more complex comparisons, stream real-time information



# Four Generic Phases

1. Access to program description and loosely organized data, information
2. Access to management questions and related validated data, information
3. Coordinated indicators, methods, QA/QC, assessment endpoints, reporting
4. Automated assessment and real-time data presentation

Programmatic and portal aspects to each phase

# Identify Global Point of Entry

- Problem
  - Huge range of data, information sources for each issue
  - Portals often emphasize search/access capacity but ignore data resolution and QA/QC
  - User has responsibility for searching across platforms, assessing reliability, and creating information
- Solution
  - Single, global point of entry to priority, authoritative data and information

# Flexible Entry Points

- Workgroups should decide structure, presentation, data access/integration, external links
- However, apply three key design principles
  - Allow for future adaptation and expansion
  - Avoid attractive dead ends that close off future options
  - Tune presentation to needs of multiple audiences

# Portal Development Roadmap

- Identified ten priority issues
- Defined strategic approach
- Suggested management/governance structure
- Presented three case studies

# Ten Priority Issues

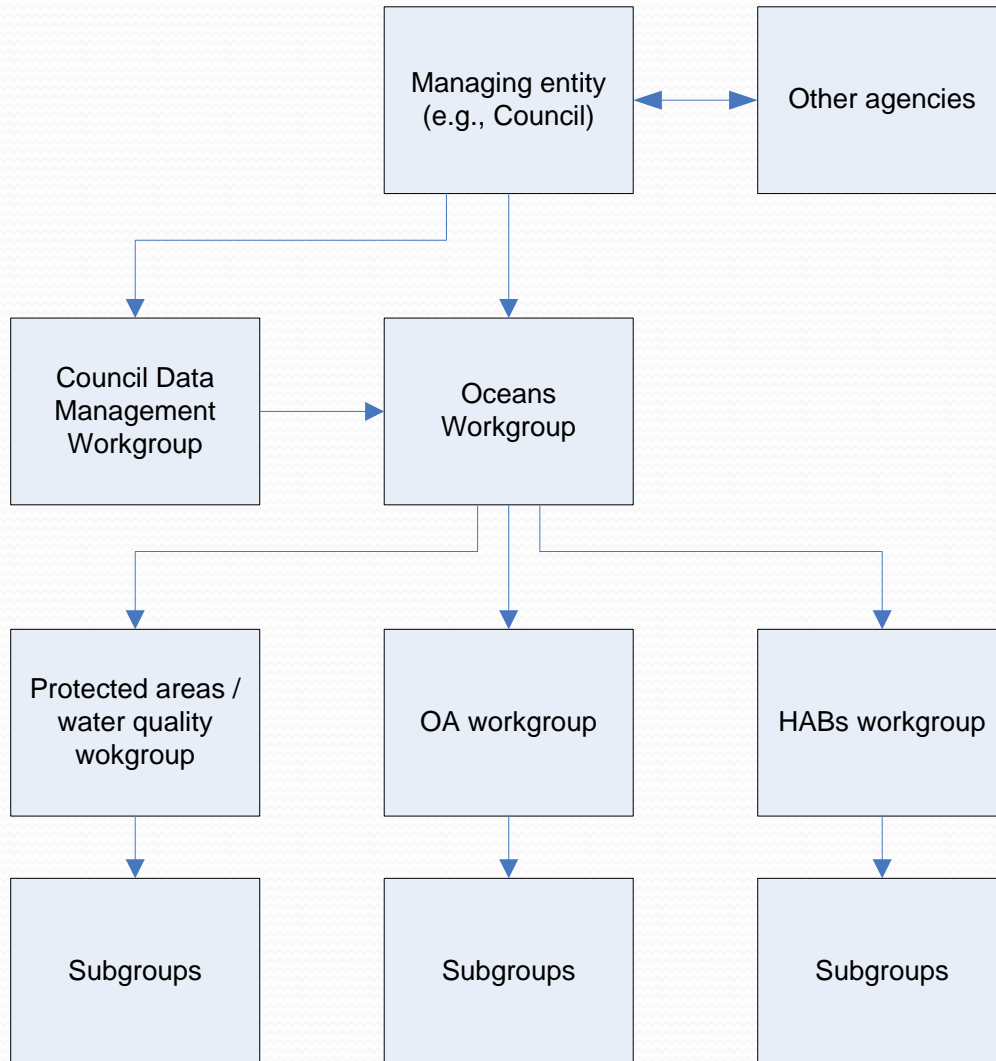
Protected areas & water quality	Seafood consumption
Ocean acidification	Anadromous fishes
Harmful algal blooms	Oil spills
Marine debris	Facility siting
Swimming safety	Fisheries

- All have web-based information system of some sort
- None include capabilities defined by scoping group for effective decision making
- Authoritative information available to support portal development for all issues
- Many evaluated by Council in 2008; 5 included in OPC's 2011 evaluation of observing systems

# Strategic Approach

- Adopts Council's strategic emphasis on workgroups
  - Bring key audiences together with monitoring & assessment specialists
  - Venue for identifying priorities/questions, highlighting information, addressing institutional hurdles
- Workgroups require programmatic support
  - Governance, relationships, funding
  - IT infrastructure, data policies/standards
  - Standardization, coordination, reporting, assessment

# Generic Governance



- Use Council's existing process
- Separate workgroups within overall governance structure
- Common accountability and coordination
- Workgroups are locus for collaboration, coordination, surmounting institutional boundaries

# Three Case Studies

- Three highest priorities
  - Protected areas & water quality
  - Harmful algal blooms
  - Ocean acidification
- Differ in terms of
  - Management/regulatory maturity
  - Monitoring and database coordination
  - Access
  - Availability of integrated assessment tools



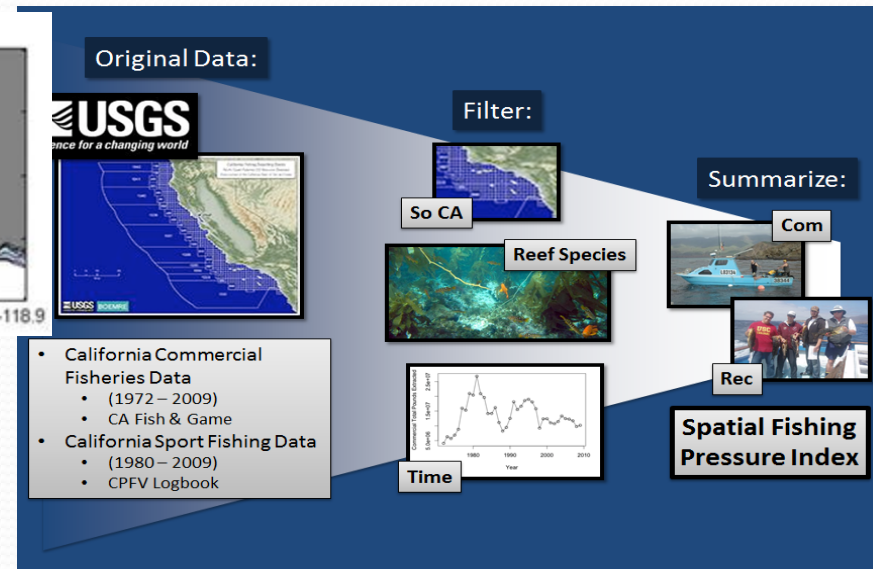
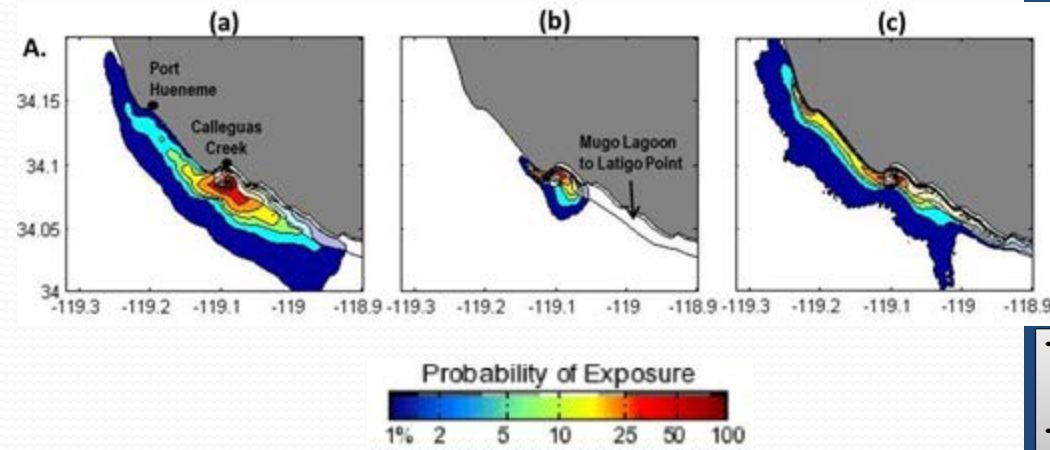


# Protected Areas & Water Quality

- OPC evaluation of discharges is basis for portal design
- Separate monitoring/databases for water quality, MPAs, ASBSs
- Regionally coordinated monitoring and data access
- Protocols identify authoritative data
- Some assessment tools exist, others being developed
- Structural differences reflect differing goals
- OPC priority provides impetus
- S CA pilot integrated assessment is framework

# Protected Area Opportunities

- Improve regional coordination, raise visibility
- Wider access to data/info, integrated assessment tools
- Promote coordinated methods and regional assessments, including on living resources
- ID/prioritize data gaps (small POTWs, loads, plumes)



# Protected Area Workgroup

<b>Management agencies</b>	Fish catch (CA Dept. Fish & Wildlife)
State Water Board	Oceanographic data (OOSes)
CA Dept. Fish & Wildlife	<b>Conservation, public interest</b>
Regional Water Boards	Heal the Bay
NOAA Fisheries	CA Waterkeeper organizations
Ocean Protection Council	Comm/rec fishing organizations
<b>Monitoring/assessment entities</b>	<b>Data management/portal design</b>
MPA Monitoring Enterprise/OST	Council data management group
MS <sub>4</sub> monitoring (CASQA)	Ocean Science Trust
POTW monitoring (CASA)	SCCWRP
Regional monitoring (SCCWRP, Reef Check)	

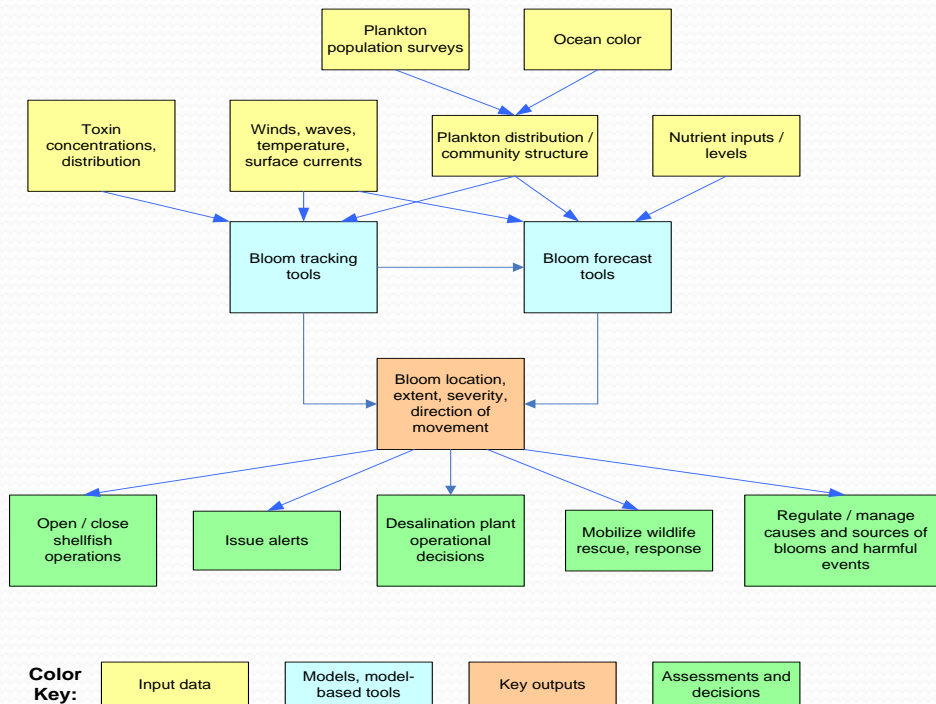
# Harmful Algal Blooms

- OPC evaluation is basis for portal design
- Well known human, wildlife health impacts
- Statewide monitoring network; some web access
- Emerging collaborative effort, e.g., NOAA remote sensing
- National NOAA HAB program provides context and some guidance
- S CA pilot to develop 3D biological-geochemical model



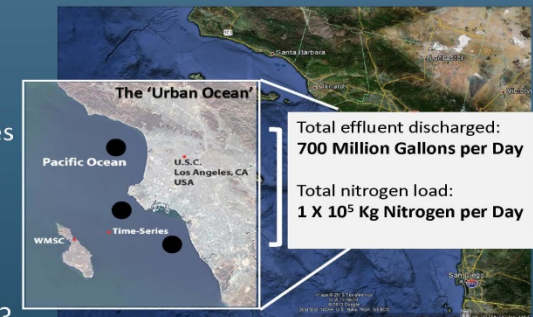
# HAB Opportunities

- Improve linkages to programmatic, water quality, oceanographic data
- Raise visibility to improve program support
- Improve coordination, validation of key monitoring (e.g., nutrients)
- Strengthen link to other ecosystem issues; fill related data gaps
- Improve predictive and tracking capability



Southern California: An ideal place to study anthropogenic versus natural nutrient sources

- Are the relative magnitudes of anthropogenic and natural nutrient sources similar?
- Are anthropogenic nutrients enhancing primary production, algal blooms and HABs?



# HAB Workgroup

<b>Management agencies</b>	Researchers & modelers
CA Dept. Public Health	<b>Conservation, public interest</b>
State Water Board	Heal the Bay
Ocean Protection Council	CA Waterkeeper organizations
<b>Monitoring/assessment entities</b>	Commercial/rec shellfish orgs.
CA Dept. Public Health	<b>Data management/portal design</b>
Wildlife rescue groups	Council data management group
MS4 monitoring (CASQA)	Ocean Science Trust
POTW monitoring (CASA)	SCCWRP
Regional monitoring (SCCWRP, CCLEAN)	HABMAP
Oceanographic data (OOSes)	

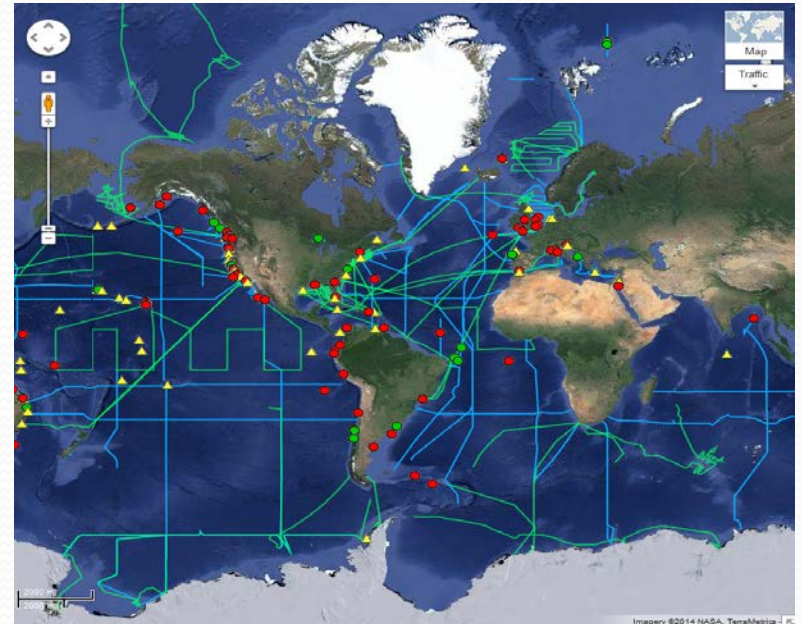
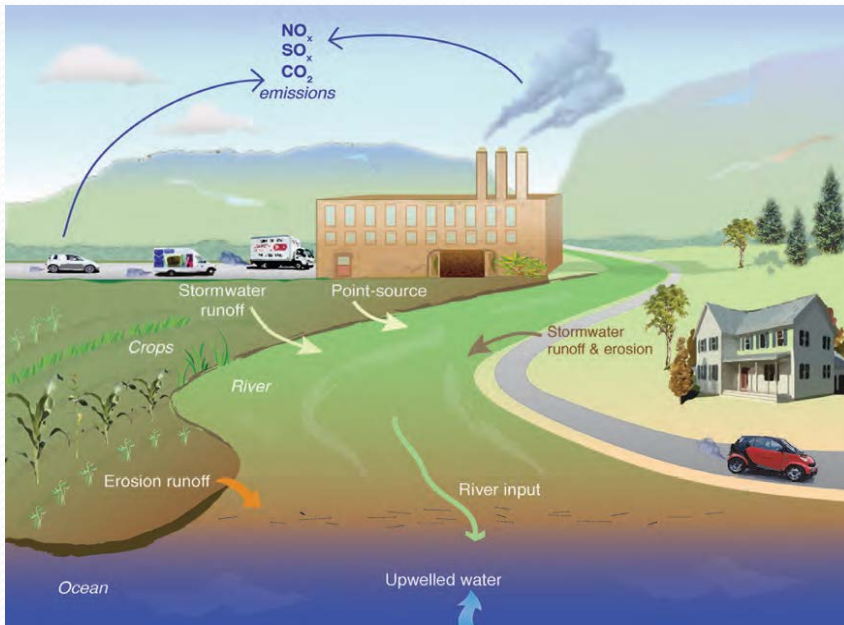


# Ocean Acidification

- Emerging state priority, likely large implications
- WCGAOH priority provides impetus
- NOAA OA Program and plan provides guidance
- Int'l R&D programs provide context
- No existing regulatory/management frameworks
- Authoritative data and information readily available
- Developing methods provide basis for coordination

# OA Opportunities

- Identify common questions to guide research, monitoring
- Support development of standardized methods
- Catalyze development, integration of monitoring networks & assessment frameworks





# OA Workgroup

<b>Management agencies</b>	<b>Conservation, public interest</b>
State Water Board	Heal the Bay
NOAA (e.g., PMEL)	CA Waterkeeper organizations
Ocean Protection Council	Commercial/rec shellfish orgs.
<b>Monitoring/assessment entities</b>	<b>Data management/portal design</b>
Oceanographic data (OOSes, CalCOFI..)	Council data management group
Methods development (C-CAN)	Ocean Science Trust
MS4 monitoring (CASQA)	SCCWRP
POTW monitoring (CASA)	OOSes
Researchers & modelers	