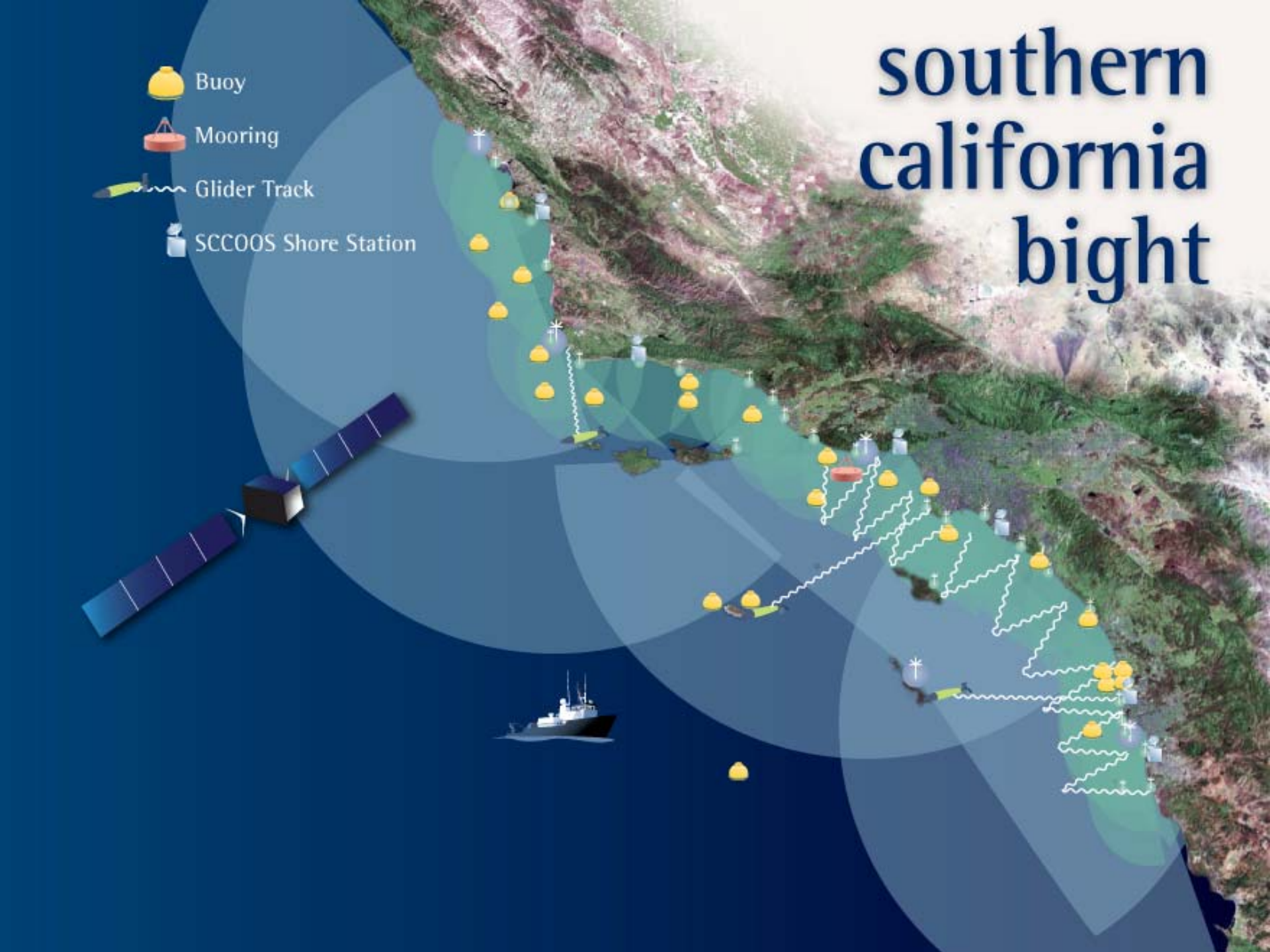
NOAA IOOS Program Office Regional Status Assessment for Southern California Coastal Ocean Observing System (SCCOOS)

June 4, 2008

Eric Terrill


Buoy
Mooring
Glider Track
SCCOOS Shore Station
southern
california
bight

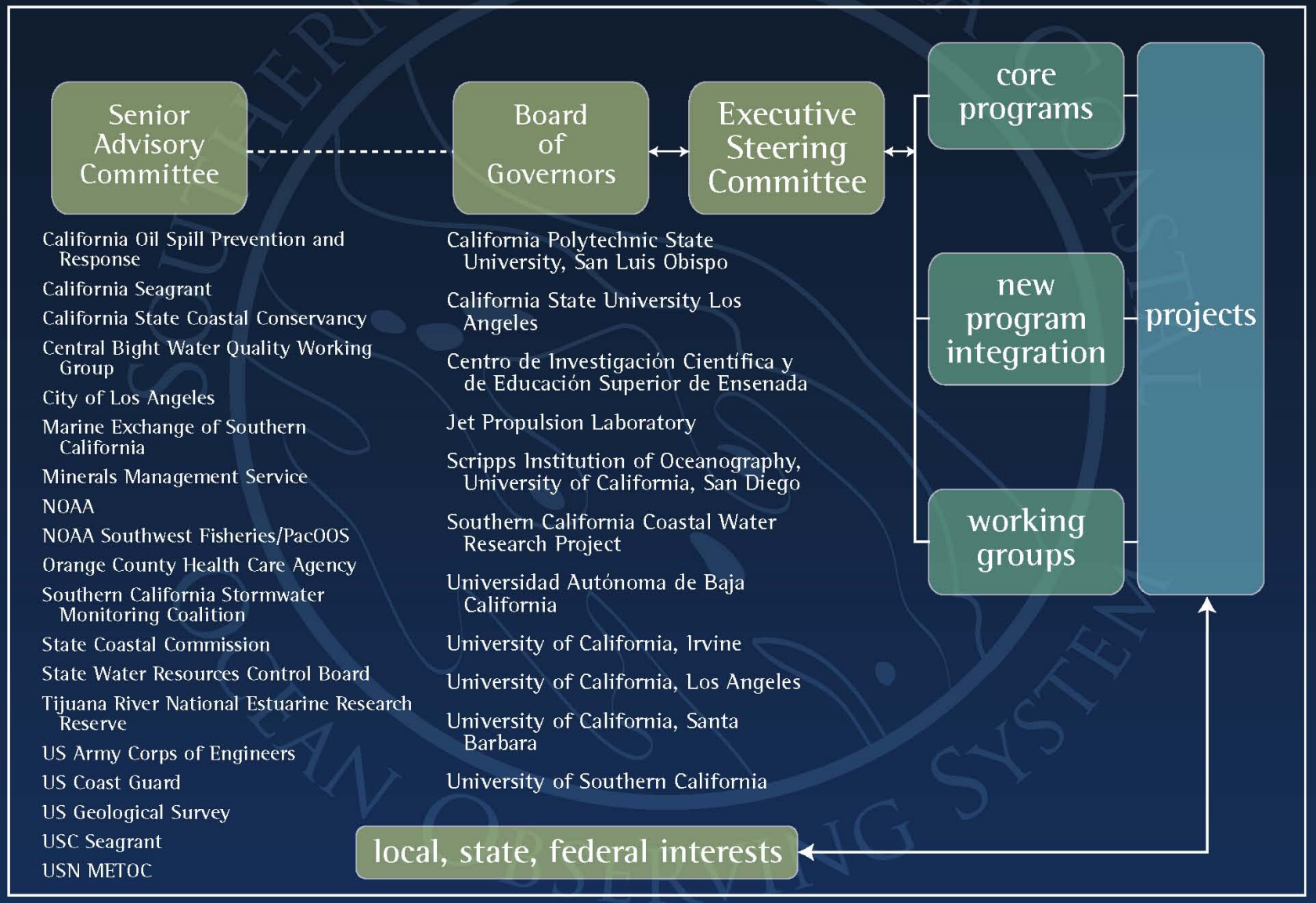
RA Structure and Governance

- Organizational structure – basic premise
  - *Outreach model: Customer-based model*
  - *Fiscal Model: System of individual grants/contracts*
  - *Avoid conflicts of interest – eg. funders not on the board – but desire proactive engagement from users*

RA Structure and Governance

- Organizational structure
  - Consortium formed in 2003 by MOU
  - Bylaws adopted February 2006
  - Board of Governors (11 signatory agencies to MOU)
  - Board Executive Committee (4 members): John Orcutt, SIO, UC San Diego; Donal Manahan, USC; Jim McWilliams, UC Los Angeles; Steve Weisberg, SCCWRP
  - Executive Steering Committee (5 members): Yi Chao, JPL/NASA; Russ Davis, SIO; Burt Jones, USC; Keith Stolzenbach, Institute of the Environment, UCLA Libe Washburn, UC Santa Barbara
  - Senior Advisory Committee (20 members)
  - Manager of Policy and Administration – Stephanie Peck

SCCOOS Regional Association



RA Structure and Governance

- Board membership
  - Signatories to Consortium MOU serve as 11-member Board of Governors
  - Board of Governors meets annually
- Senior Advisory Committee
  - Established in 2006
  - Representatives of 20 federal, state, regional agencies and organizations
  - Reflects user communities of public mission agency users, research institutions, industry, NGO, working groups
  - Has met once per year; moving to twice per year meeting schedule
- Fiscal agent:
  - MPL-JIMO Business Office [JIMO == cooperative institute]

RA Structure and Governance

- RA leadership and roles
  - Board of Governors (BOG) –
    - Creates positions, elected officers and fills advisory seats, including the Chairman of the BOG, and members of the Board Executive Committee, the Executive Steering Committee, the Senior Advisory Committee, and the Chief Operating Officer.
    - The BOG, with the advice of the BEC and ESC, makes decisions concerning SCCOOS management and operation with a commitment to the system's mission and longevity. *The BOG resolves any conflict arising from contract or agreement between consortium members or its representatives.*
  - Board Executive Committee (BEC) - advises BOG in business and administrative matters and acts in the interests of the BOG in time-sensitive situations.
  - Executive Steering Committee (ESC) - advises the BOG on technical matters and strategic planning. The ESC works closely with the COO.

RA Structure and Governance

- RA leadership and roles
  - Senior Advisory Committee
    - Established in 2006 - 20 federal, state, regional agencies and organizations
    - Reflects user communities of public or private mission organizations
    - Has met as a body once per year; moving to twice per year meeting schedule. Typically informal engagement with individuals.
    - The Senior Advisory Committee (SAC) role:
      - *serves in a guidance and advisory role to provide the BOG and ESC with insight and perspective on technical, market, legislative and political matters affecting SCCOOS.*
      - *stakeholders input to existing SCCOOS operations and participate in strategic planning efforts.*
      - *outside source of information and reference that links SCCOOS with the broad stakeholder interests and knowledge within the region*

Stakeholder Engagement

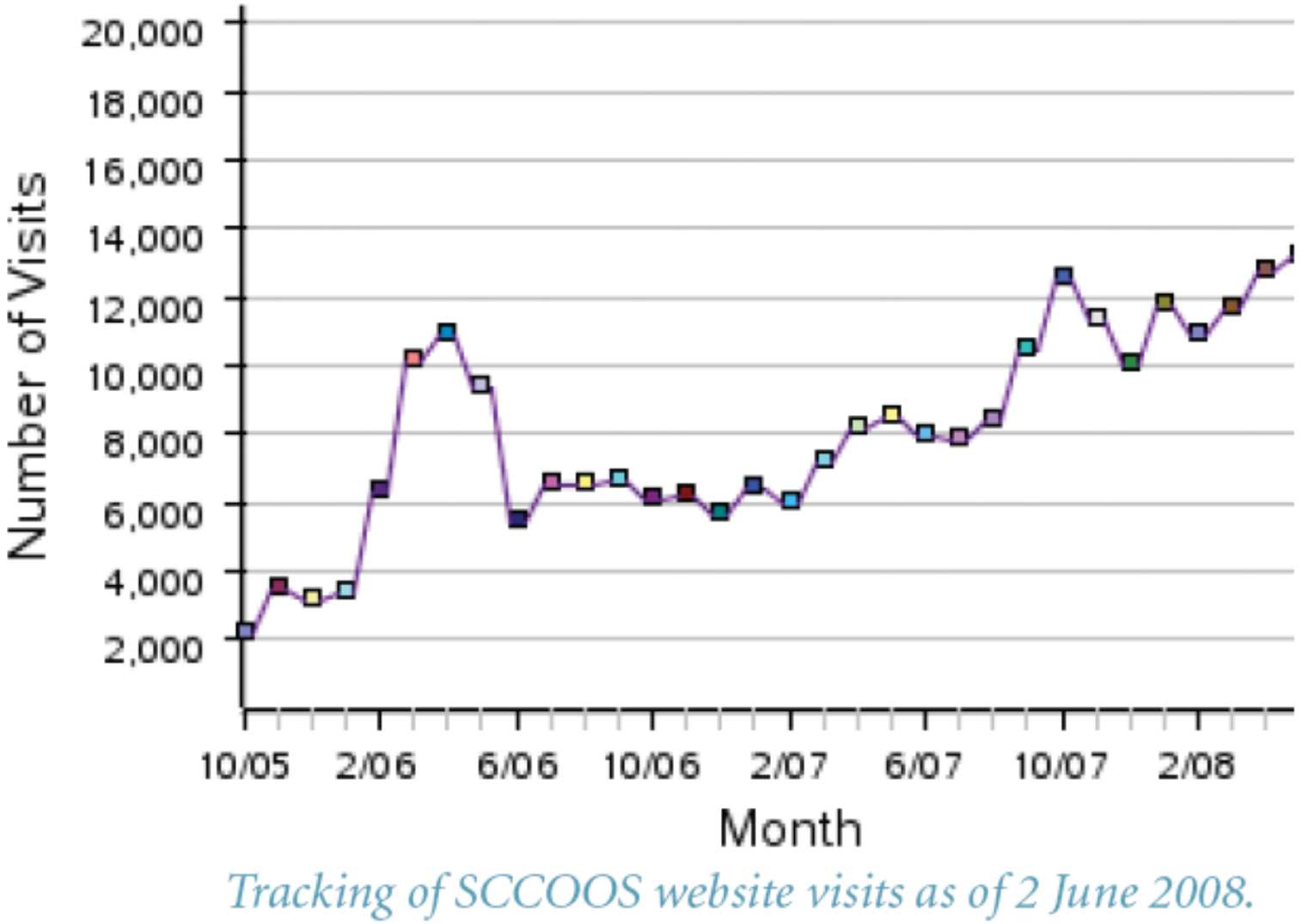
- Stakeholders: coastal resource managers (water quality, climate, fisheries, marine living resources); marine transport; maritime safety; oil spill response; search & rescue; boaters and sailors; beach goers; surfers; fishing community
    - ***Targeted Mission driven agencies***
- Key stakeholder groups or individuals - coastal water quality community; ecosystem and climate change community; beach and coast recreational users, operational users
- Types and frequency of engagement
    - Meetings with, presentations to - stakeholders, working groups, user groups
    - Workshops (targeted and users) - marine monitoring groups, MARINe (Rocky Inter-tidal network), Ocean Observing
    - Participation and presentation in pre-existing conferences and symposiums
    - Product development and evaluation – Product support ***(hard to plan for)***

- Level of involvement:
    - High, *but seems there is always potential for more*

Stakeholder Engagement

- Key issues of importance to regional stakeholders, and how the RA addresses them?
    - water quality including HABs
    - climate and ecosystem variability
    - marine operations & environmental response (search/rescue, oil spill, transport)
    - public use data products
- Quantifiable, tangible expressions of support from stakeholders (Specific examples that demonstrate benefit of the RA to the region)
    - Usage of website:
    - Data product usage:
    - 22 letters of support in last proposal from a variety of users/stakeholders

- Requests for Training
- Complaints when website is down for maintenance



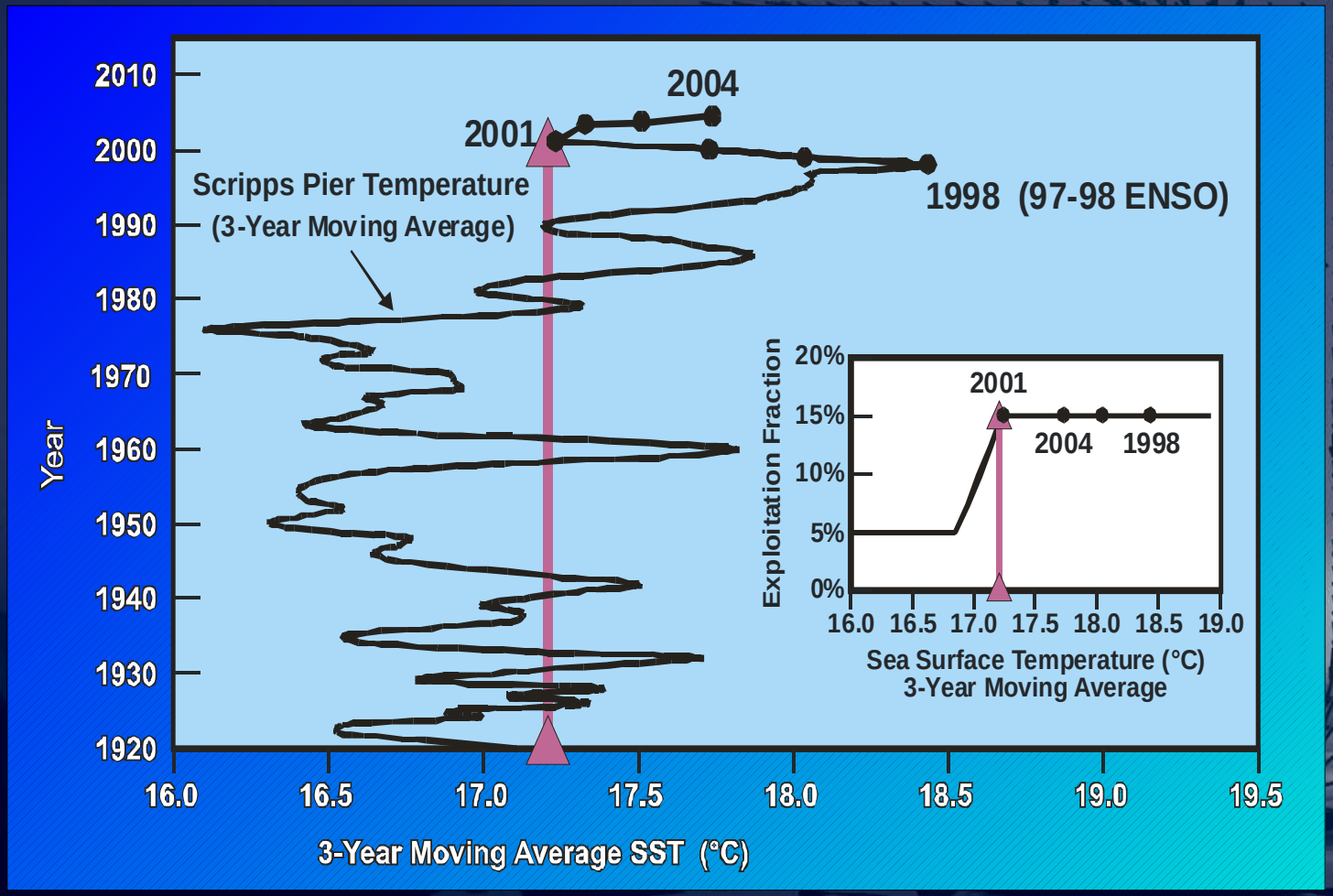
Tracking of SCCOOS website visits as of 2 June 2008.

Visit defined as one use per day. If multiple uses per day, visits Increase by approximately x3. 'Hits' are ~ 500k/month.

Present Data Management Capabilities of www.sccoos.org

- Manual Shore Station data - historical temperature/salinity
- Six Automated Shore Stations
- Shoreline Water Quality data
- Hydrographic Cast Data Access including data from gliders
- Remote Sensing Data Access
- Wind and Precipitation Forecast Interface
- HAB and HAB-related data
- HF radar derived products of surface currents at 1km and 6km resolution available hourly and with de-tided 25 hour averages
- Meteorological Data Interface
- Bathymetry maps
- Observing system products developed to meet California 5th grade science standards and used in educational outreach
- Ocean Model nowcasts/forecasts

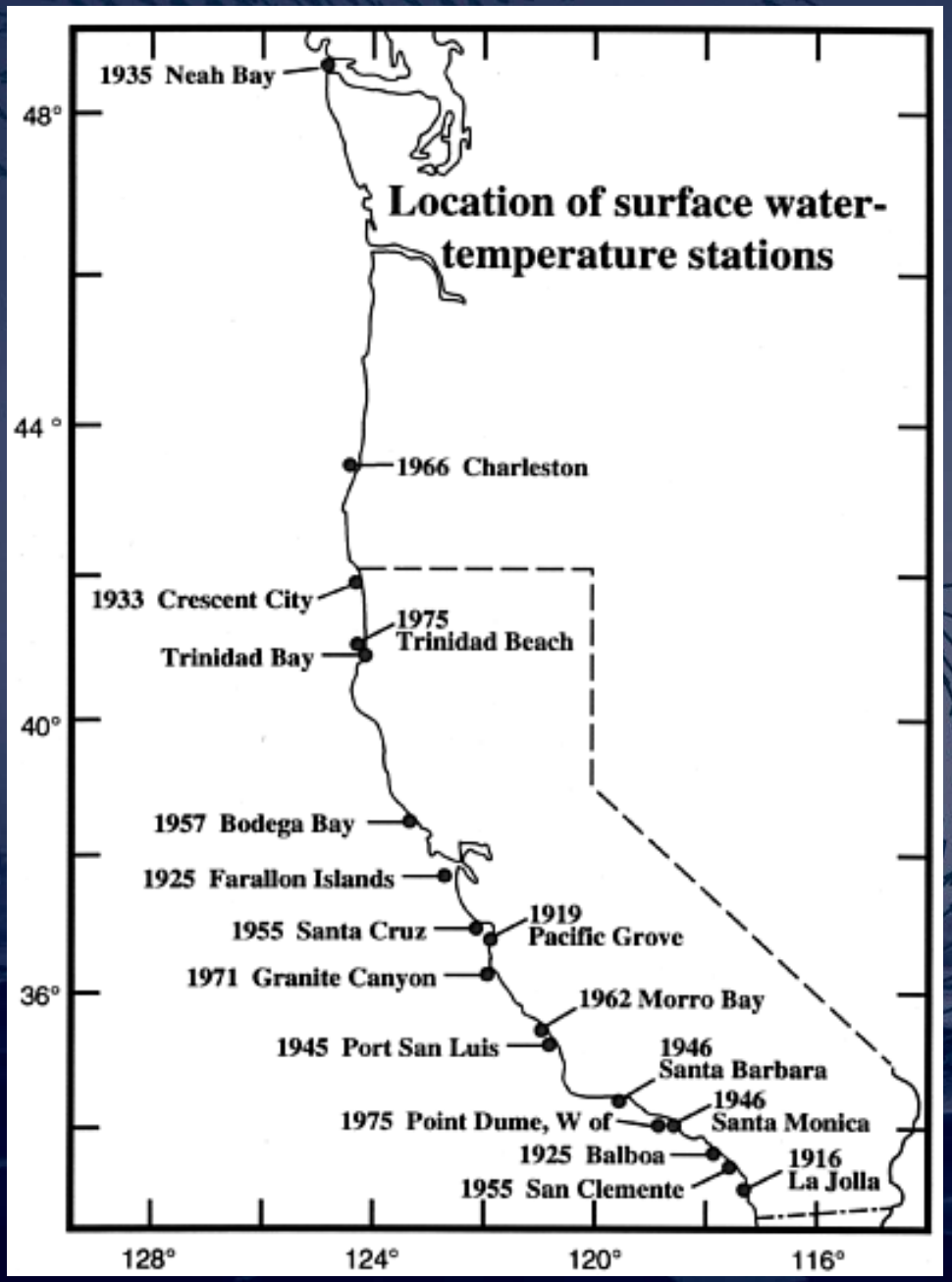
Sardine is the only Federally Managed Stock With an Environmentally-based Harvest Policy



- Policy linked to decadal variability in sardine productivity
- If mean drops to 16.85°C, allocation drops to 5% of the harvestable biomass

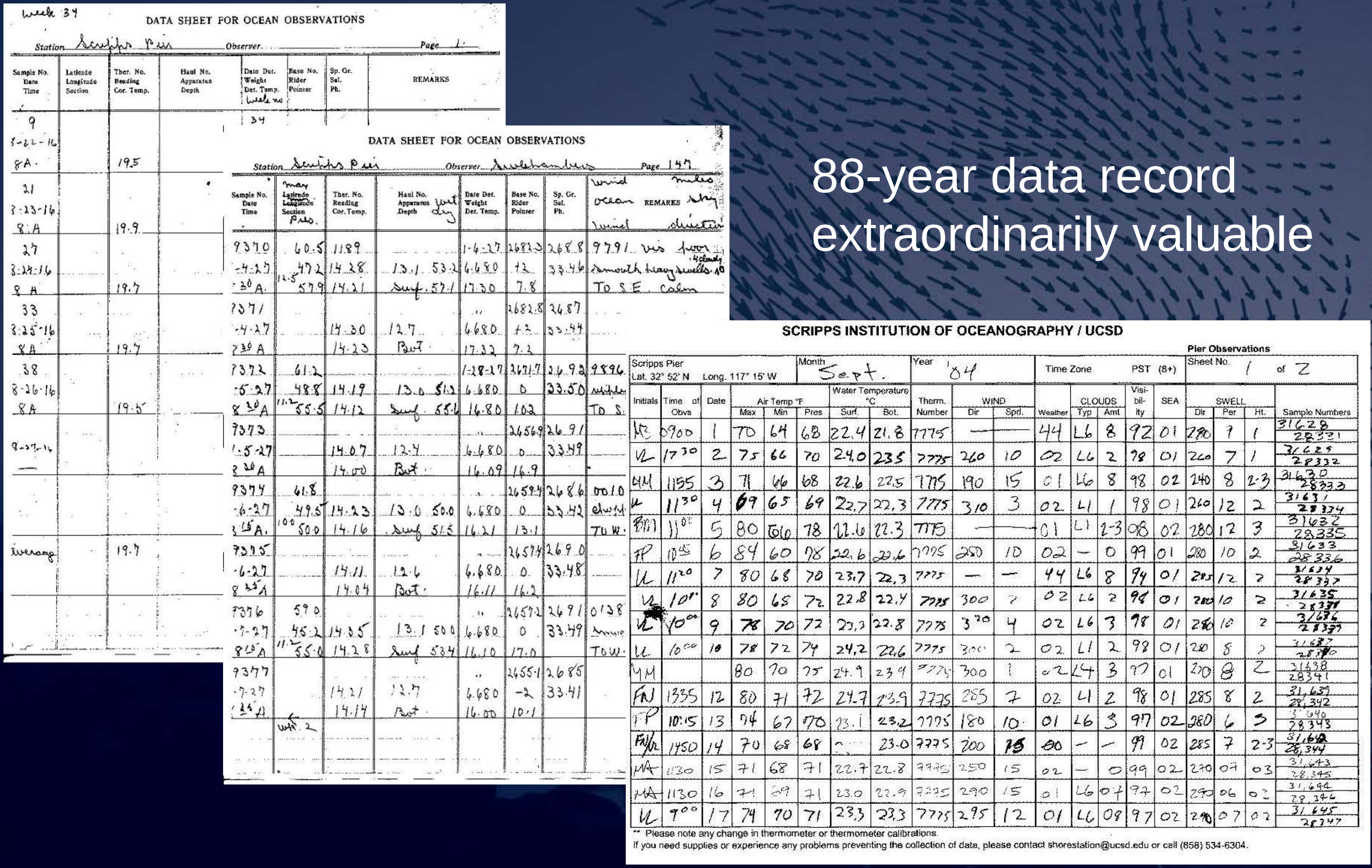
California
Shore Station Program

18 Stations – CA, OR, WA
Volunteers
Temperature
Salinity
Once-per-day



Shore Station Data Sheets

88-year data record extraordinarily valuable



Week 34

DATA SHEET FOR OCEAN OBSERVATIONS

Station Scripps Pier Observer Page 1

Sample No. Date Time	Latitude Longitude Section	Ther. No. Reading Cor. Temp.	Haul No. Apparatus Depth	Date Det. Weight Det. Temp.	Base No. Rider Pointer	Sp. Gr. Sal. Ph.	REMARKS

DATA SHEET FOR OCEAN OBSERVATIONS

Station Scripps Pier Observer Page 147

Sample No. Date Time	Latitude Longitude Section	Ther. No. Reading Cor. Temp.	Haul No. Apparatus Depth	Date Det. Weight Det. Temp.	Base No. Rider Pointer	Sp. Gr. Sal. Ph.	REMARKS

SCRIPPS INSTITUTION OF OCEANOGRAPHY / UCSD

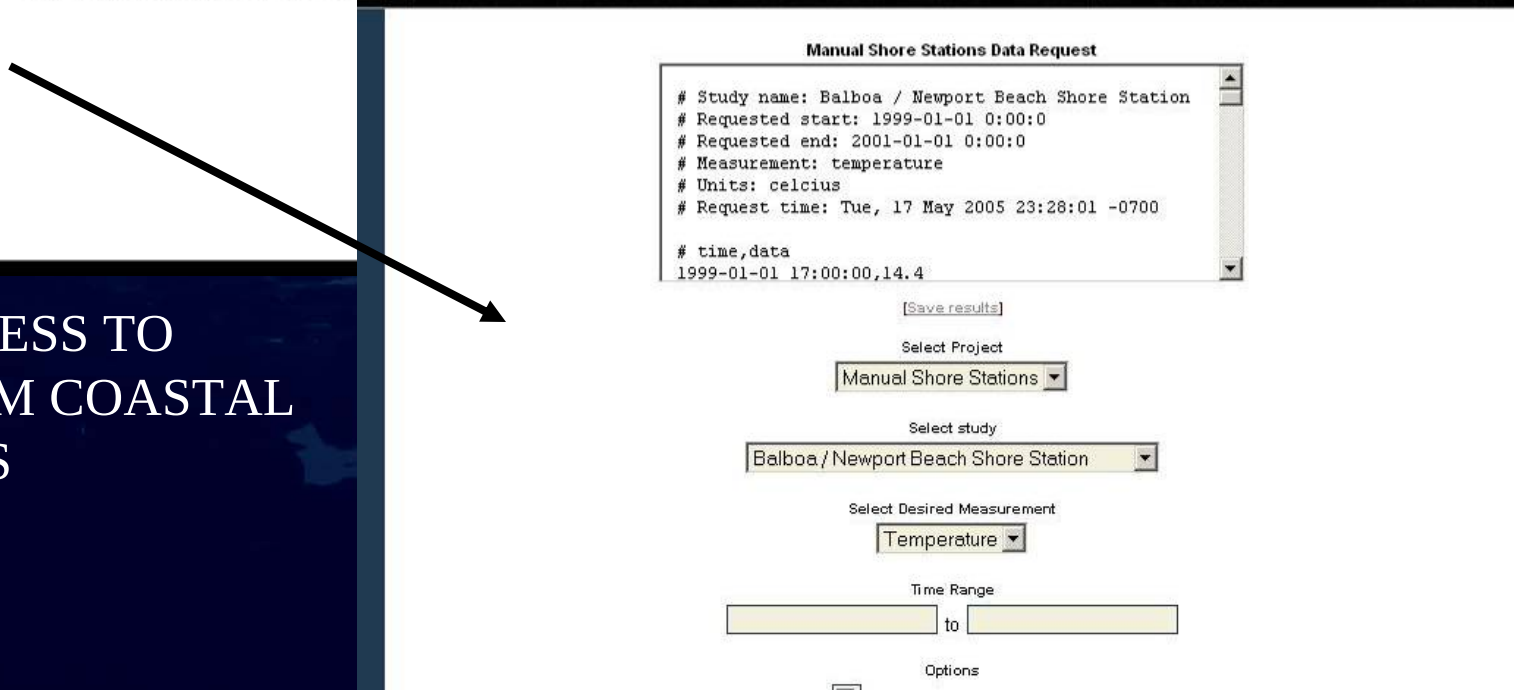
Pier Observations

Scripps Pier Lat. 32° 52' N Long. 117° 15' W | Month Sept. | Year '84 | Time Zone PST (8+) | Sheet No. 1 of 2

Initials	Time of Obvs	Date	Air Temp °F Max	Air Temp °F Min	Air Temp °F Pres	Water Temperature °C Surf.	Water Temperature °C Bot.	Therm. Number	WIND Dir	WIND Spd.	Weather	CLOUDS Typ	CLOUDS Amt	Visi-bil-ity	SEA	SWELL Dir	SWELL Per	SWELL Ht.	Sample Numbers
MC	0900	1	70	64	68	22.4	21.8	7775	—	—	44	L6	8	92	01	280	7	1	31628 28331
VL	17[30]	2	75	66	70	24.0	23.5	7775	260	10	02	L6	2	98	01	260	7	1	31629 28332
MM	1155	3	71	66	68	22.6	22.5	7775	190	15	01	L6	8	98	02	240	8	2-3	31630 28333
VL	11[30]	4	69	65	69	22.7	22.3	7775	310	3	02	L1	1	98	01	260	12	2	31631 28334
BM	11[05]	5	80	66	78	22.6	22.3	7775	—	—	01	L1	2-3	98	02	280	12	3	31632 28335
FP	10[45]	6	84	60	78	22.6	22.6	7775	250	10	02	—	0	99	01	280	10	2	31633 28336
VL	11[20]	7	80	68	70	23.7	22.3	7775	—	—	44	L6	8	94	01	285	12	2	31634 28337
VL	10[15]	8	80	65	72	22.8	22.4	7775	300	2	02	L6	2	98	01	280	10	2	31635 28338
VL	10[00]	9	78	70	72	23.3	22.8	7775	320	4	02	L6	3	98	01	280	10	2	31636 28339
VL	10[00]	10	78	72	74	24.2	22.6	7775	300	2	02	L1	2	98	01	280	8	2	31637 28340
MM			80	70	75	24.9	23.9	7775	300	1	02	L4	3	97	01	270	8	2	31638 28341
FN	1335	12	80	71	72	24.7	23.9	7775	285	7	02	L1	2	98	01	285	8	2	31,639 28,342
FP	10:15	13	74	67	70	23.1	23.2	7775	180	10	01	L6	3	97	02	280	6	3	31640 28343
FN/VL	1450	14	70	68	68	[illegible]	23.0	7775	200	15	00	—	—	99	02	285	7	2-3	31,642 28,344
MA	1130	15	71	68	71	22.7	22.8	7775	250	15	02	—	0	99	02	270	07	03	31,643 28,345
MA	1130	16	71	69	71	23.0	22.9	7775	290	15	01	L6	07	97	02	290	06	02	31,644 28,346
VL	9[00]	17	74	70	71	23.3	23.3	7775	295	12	01	L6	08	97	02	290	07	02	31,645 28347

** Please note any change in thermometer or thermometer calibrations.

If you need supplies or experience any problems preventing the collection of data, please contact shorestation@ucsd.edu or call (858) 534-6304.



DATA ACCESS TO LONG TERM COASTAL DATA SETS

Manual Shore Stations

SIO Pier Shore Station - seafloor

Personnel from Scripps Stephen Birch Aquarium-Museum take daily temperature and salinity samples from the end of the Scripps Pier at the sea surface and a depth of about 5 meters. The proximity of Scripps Pier to the deep waters at the head of La Jolla submarine canyon results in data quite representative of oceanic conditions.

Latitude: 32° 52.00' N
Longitude: 117° 15.05' W

—

Operational since August 1916

—

Measurements Taken

Surface

Temperature
Salinity

Seafloor

Temperature
Salinity

Southern California Regions

Morro Bay
Santa Barbara Channel
Ventura County
Los Angeles
South Channel Islands
Orange County
North San Diego
San Diego / Mexico

Available Products

Automated Shore Stations
Manual Shore Stations
- Overview
- Neah Bay
- Charleston / Coos Bay
- Crescent City
- Trinidad Beach
- Trinidad Bay
- Bodega Bay
- SE Farallon Island
- Santa Cruz
- Pacific Grove
- Granite Canyon
- Morro Bay
- Port San Luis / Avila
- Santa Barbara
- Pt. Dume
- Santa Monica
- Newport Beach
- Santa Catalina Island
- San Clemente
- SIO Pier

Bathymetry
Moorings
Satellite Imagery
Shoreline Water Quality
Surface Current Maps
Surface Winds
Wave Conditions (CDIP)
Cast Data (Ships & Gliders)

~$31M spent annually on marine monitoring programs by EPA NPDES permittees in the Southern California Bight (Schiff et al 2000)

Quarterly sampling stations maintained by agencies in Southern California

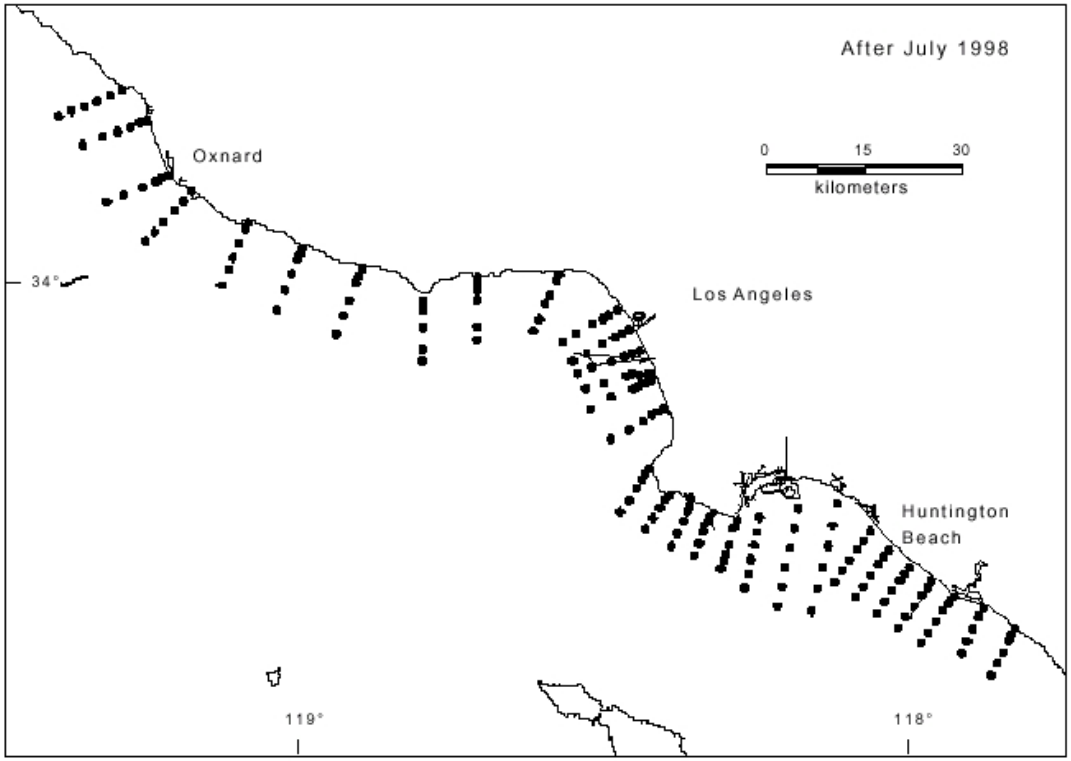
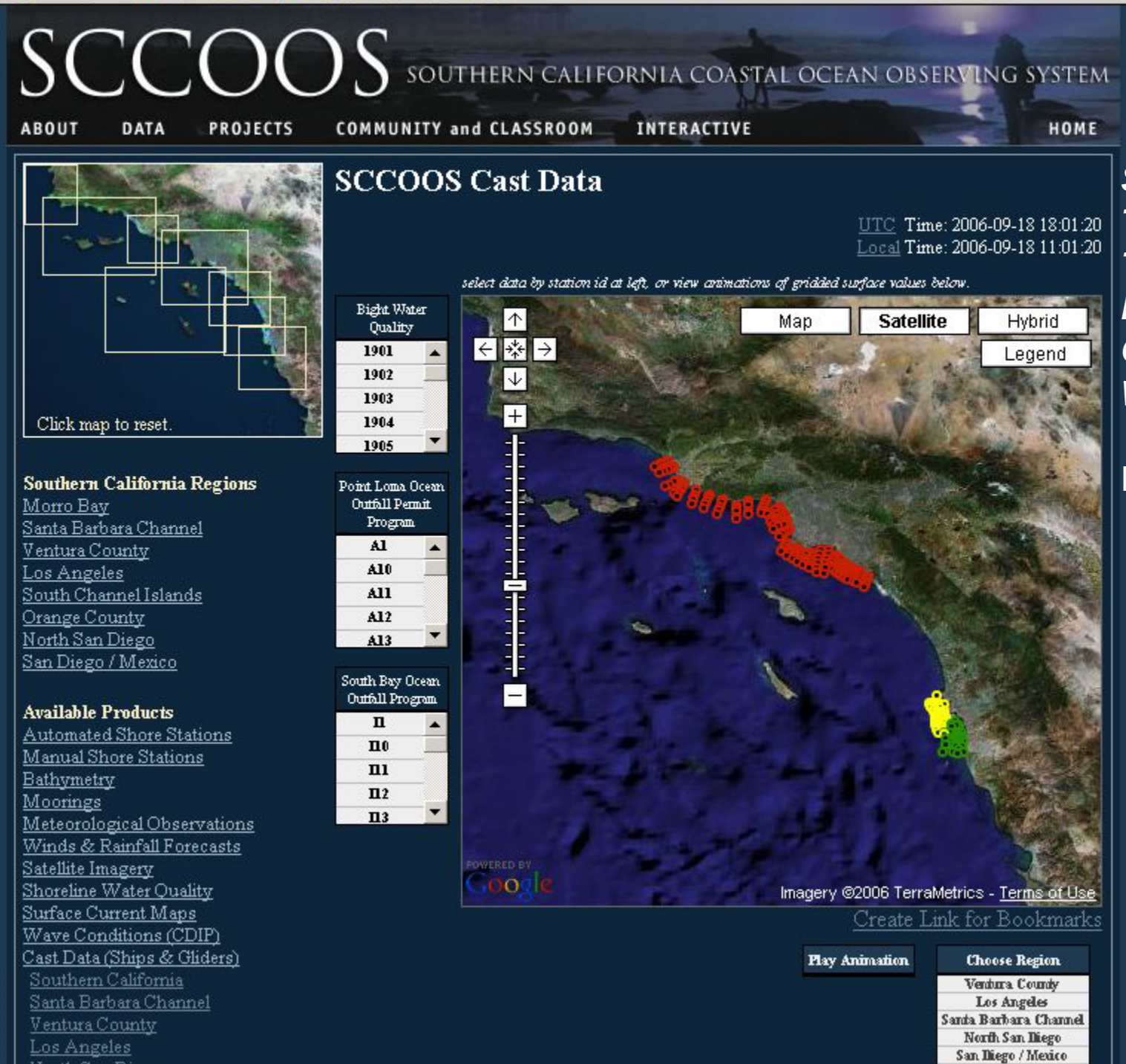


FIGURE V-1. Location of water quality stations before 1998, and after 1998 as part of the Central Bight Cooperative Program.



SCCOOS IS TAKING STEPS TOWARDS MEETING NEEDS OF WQ MANAGERS

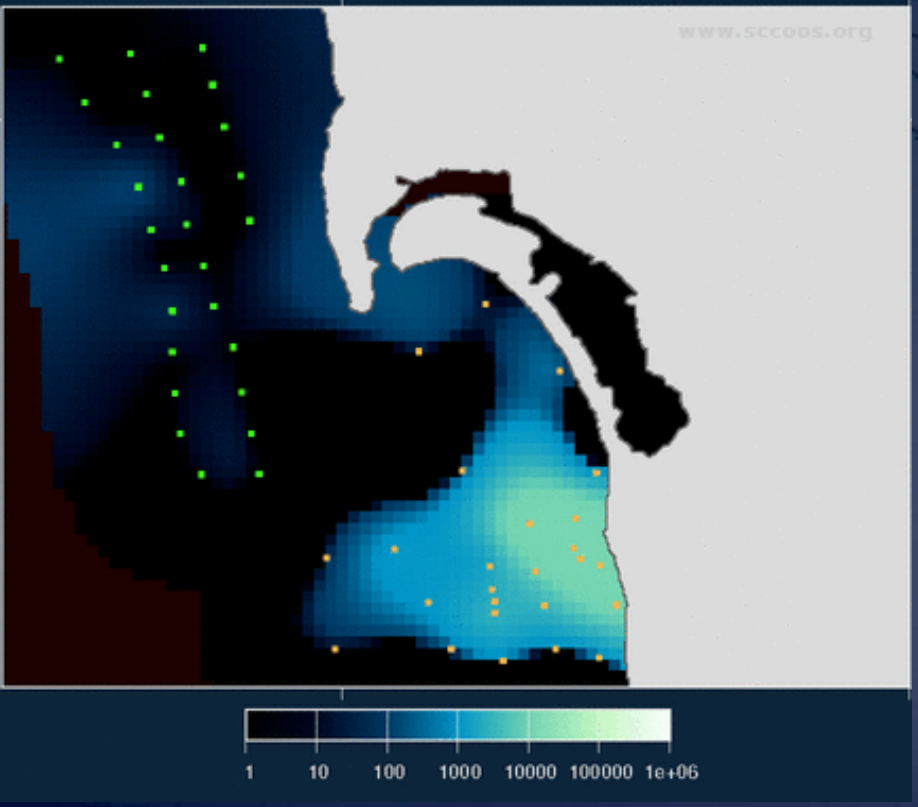
Its manageable:

Ten largest river systems comprise 95% of land-based runoff in southern California

Four largest POTW outfalls comprise 90% of wastewater input

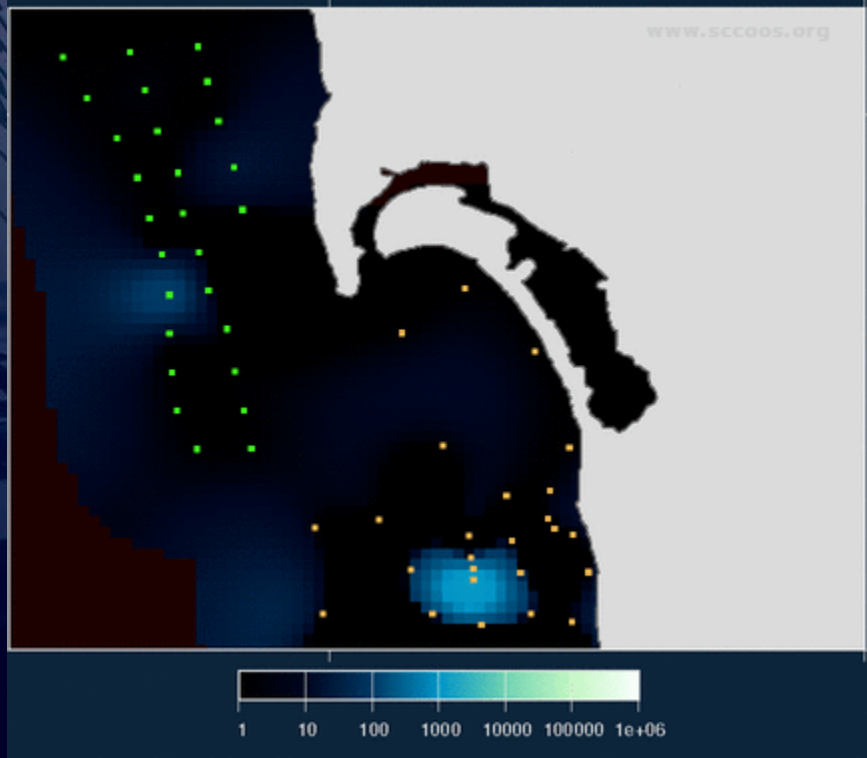
San Diego / Mexico Total Coliforms

in Colony Forming Units per 100 milliliters at 5m depth, 3-21 Jan 2005



San Diego / Mexico Fecal Coliforms

in Colony Forming Units per 100 milliliters at 5m depth, 5-14 Jan 2004



SCCOOS

SOUTHERN CALIFORNIA COASTAL OCEAN OBSERVING SYSTEM

Cast Data

Location 4006

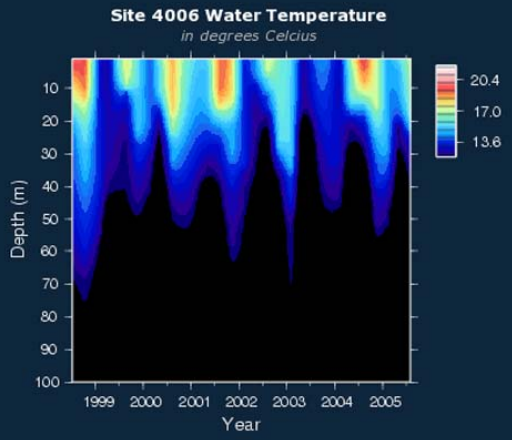
Latitude:	33° 54.75' N
Longitude:	118° 48.32' W

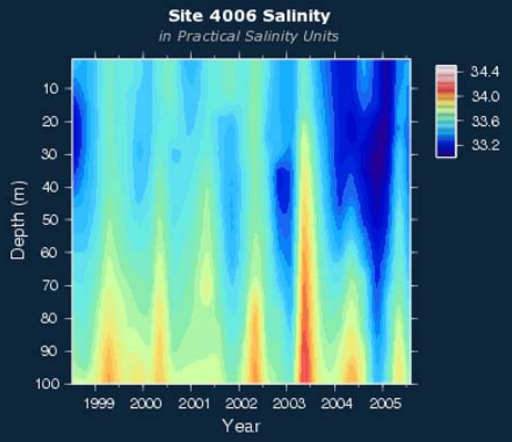
Measurements Taken
temperature
salinity
e. coli

Southern California Regions
Morro Bay
Santa Barbara Channel
Ventura County
Los Angeles
South Channel Islands
Orange County
North San Diego
San Diego / Mexico

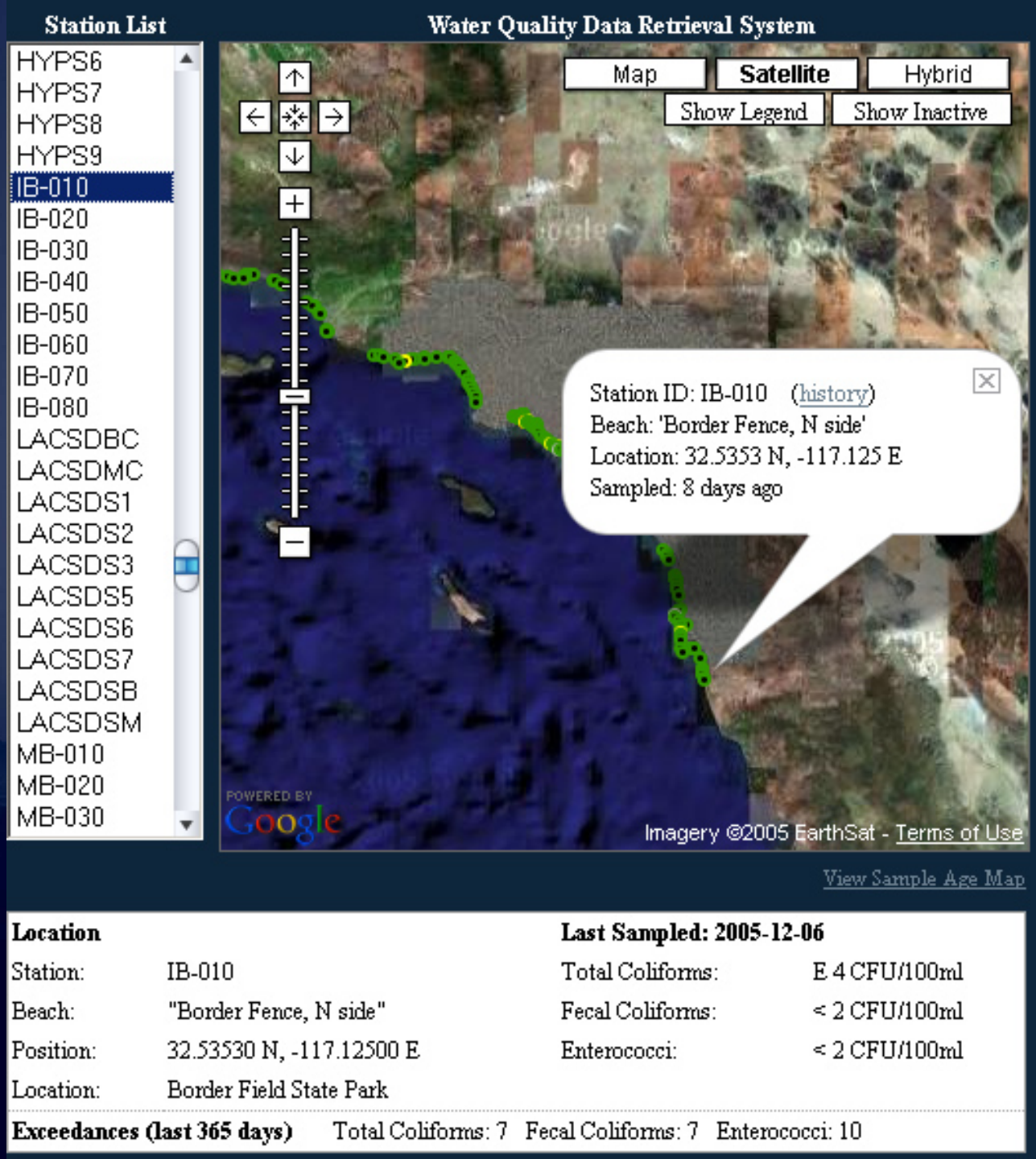
Available Products
Automated Shore Stations
Manual Shore Stations
Bathymetry
Moorings
Satellite Imagery
Shoreline Water Quality
Surface Current Maps
Surface Winds
Wave Conditions (CDIP)
Cast Data (Ships & Gliders)
Southern California
Los Angeles

Grab Raw Data





Water quality data interface using public friendly google maps interface. Partnered with six different County Health Agencies



Southern California Regions

Morro Bay
Santa Barbara Channel
Ventura County
Los Angeles
South Channel Islands
Orange County
North San Diego
San Diego / Mexico

Available Products

Automated Shore Stations
Manual Shore Stations
Bathymetry
Moorings
Satellite Imagery
Shoreline Water Quality
- Overview
- Historic Data Access
- Santa Barbara
- Ventura / Oxnard
- Orange County
- San Diego

Surface Current Maps
Surface Winds
Wave Conditions (CDIP)
Cast Data (Ships & Gliders)

Grab Raw Data

Station List

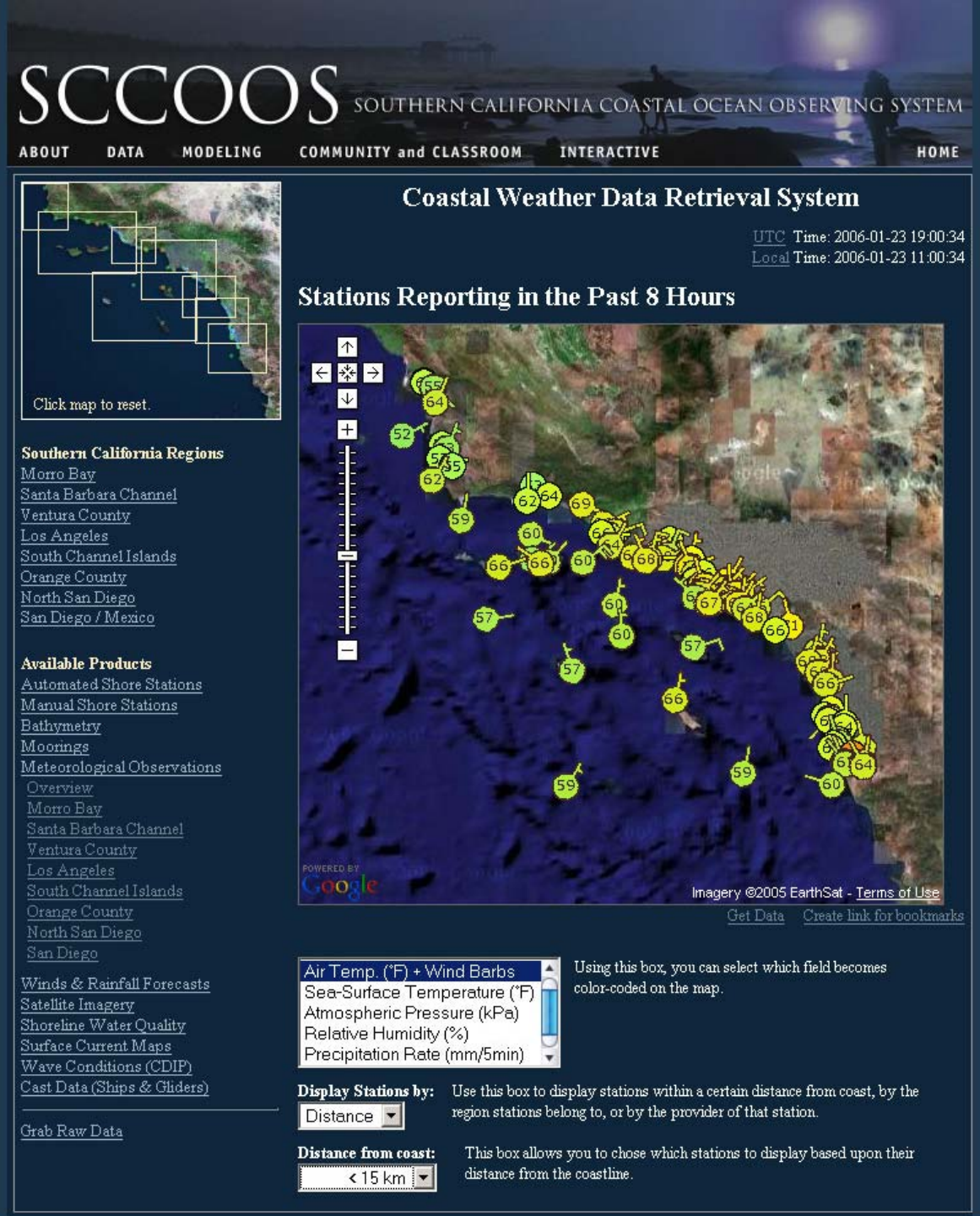
BHH13
BHH15
BHH16
BNB01
BNB02
BNB03
BNB05
BNB07
BNB09
BNB10
BNB11
BNB12
BNB14
BNB15
BNB17
BNB18
BNB20
BNB21
BNB22
BNB23
BNB24E
BNB24M
BNB24N
BNB24W
BNB25

Water Quality Data Retrieval System

View Sample Age Map

Location		**Last Sampled: 2005-10-19**	
Station:	BHH13	Total Coliforms:	w/C -99 CFU/100ml
Beach:	Huntington Harbour	Fecal Coliforms:	= 11000 CFU/100ml
Position:	33.71967 N, -118.06483 E	Enterococci:	= 1000 CFU/100ml
Location:	HARBOUR CHANNEL		

Exceedances (last 365 days) Total Coliforms: 1 Fecal Coliforms: 1 Enterococci: 1



SCCOOS integrates approximately 500 met stations from different organizations.

MADIS interface

Surface Current Mapping

UTC Time: 2008-03-10 16:29:54
Local Time: 2008-03-10 09:29:54

Interface to HFRADAR Derived Surface Currents

« -1 Day -1 Hour +1 Hour +1 Day »

Bookmark View

Currents Styles

Auxillary Layers

Southern California Regions

- Morro Bay
- Santa Barbara Channel
- Ventura County
- Los Angeles
- South Channel Islands
- Orange County
- North San Diego
- San Diego / Mexico

Available Products

- Automated Shore Stations
- Manual Shore Stations
- Bathymetry
- Moorings
- Meteorological Observations
- Winds & Rainfall Forecasts
- Satellite Imagery
- Shoreline Water Quality
- Surface Current Mapping
  - Southern California
  - Morro Bay
  - Santa Barbara
  - Ventura
  - Los Angeles

Done

SCCOOS Ports & Harbors - Los Angeles / Long Beach

San Pedro Wave Buoy

Height 1.27 meters (4.17 feet)
Period 11.76 seconds
Direction 266°
Temperature 14.2° C (57.6° F)
Time 2008-03-13 12:00:00 UTC

Nearby Surface Currents

Location 33.6178, -118.3170
Resolution 6km
Time 2008-03-13 05:00:00 UTC

LEGEND

Currents
- [x] Surface Currents (6K)

Waves

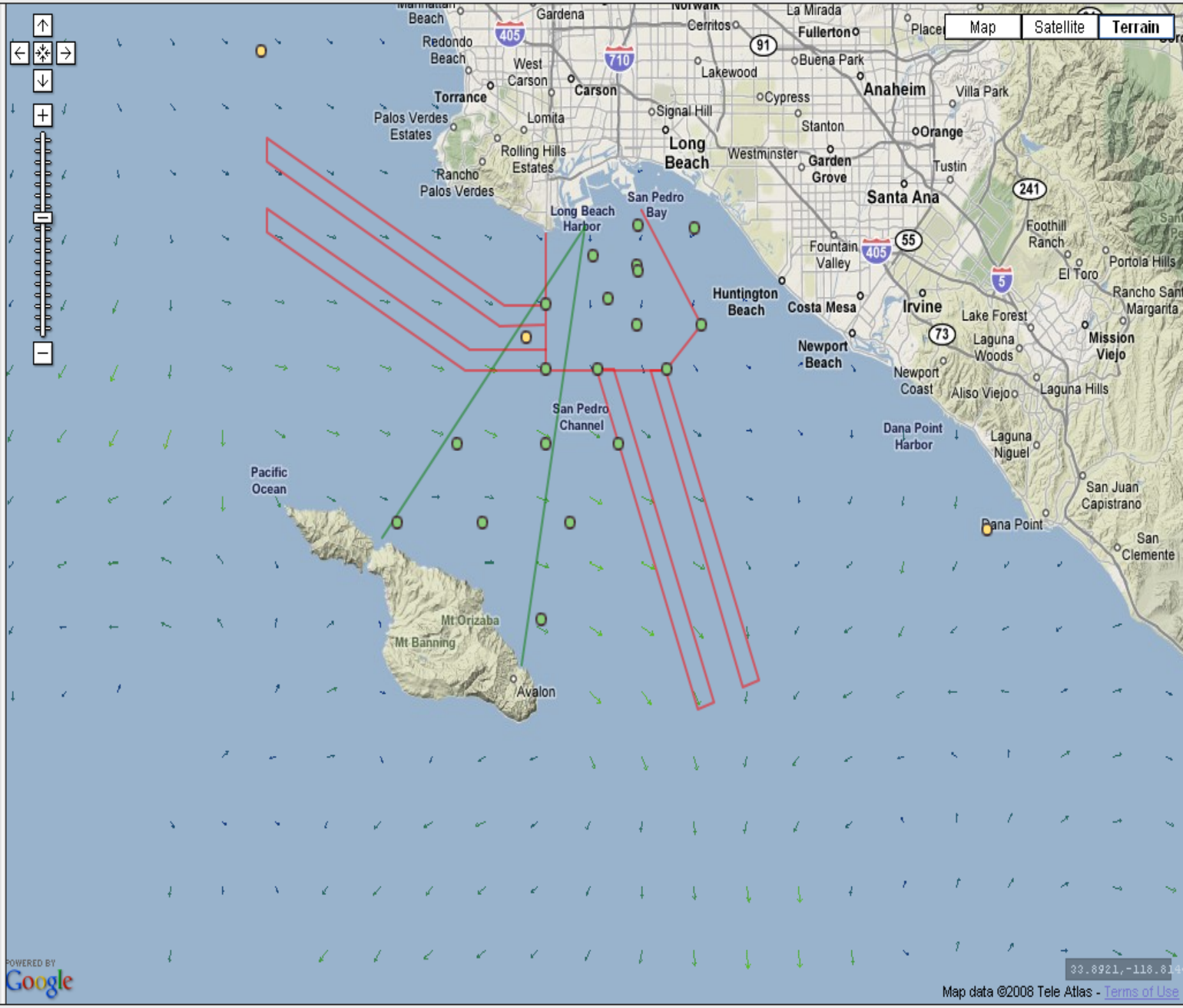
Observations
- [x] CDIP Wave Buoy

Observations

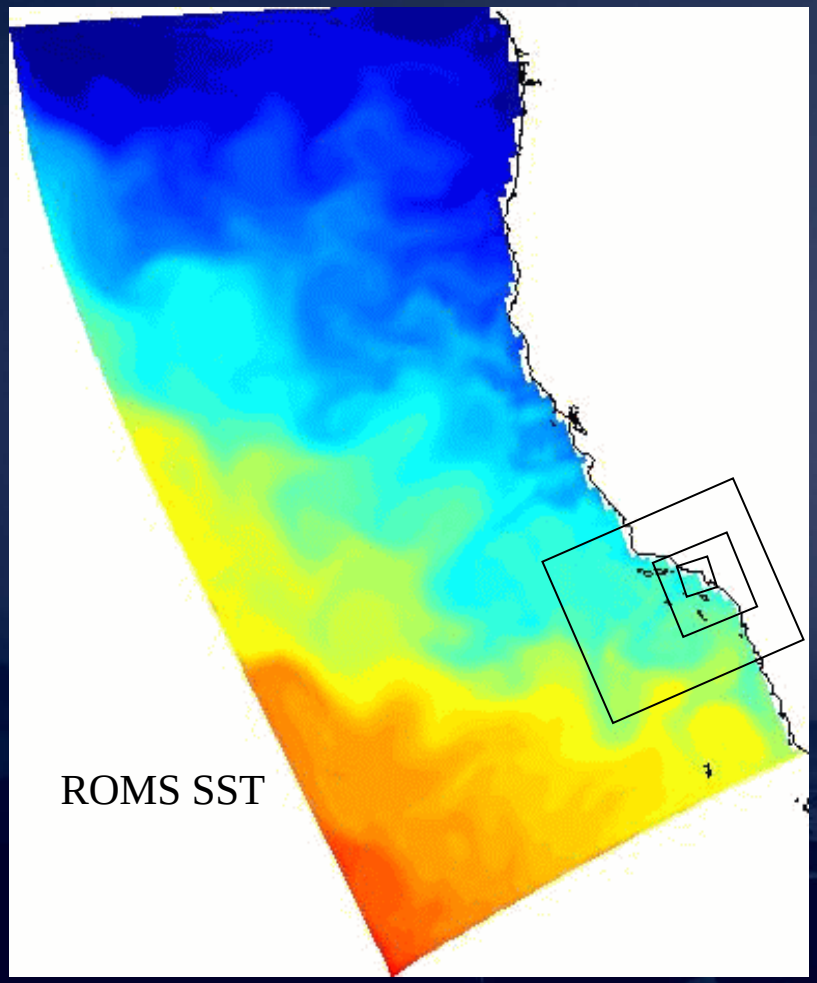
Models
- [x] Model Prediction Points
- [ ] Wave Height
- [ ] Peak Wave Period
- [ ] Average Wave Period
- [ ] Wave Direction

Routes
- [x] Shipping Lanes
- [x] Catalina Ferry Path

Nautical Charts
- NOAA San Pedro Channel (18746_1)
- NOAA San Pedro Bay (18749_1)
- NOAA Anaheim Bay (18749_2)
- NOAA LA/LB Harbors (18751)

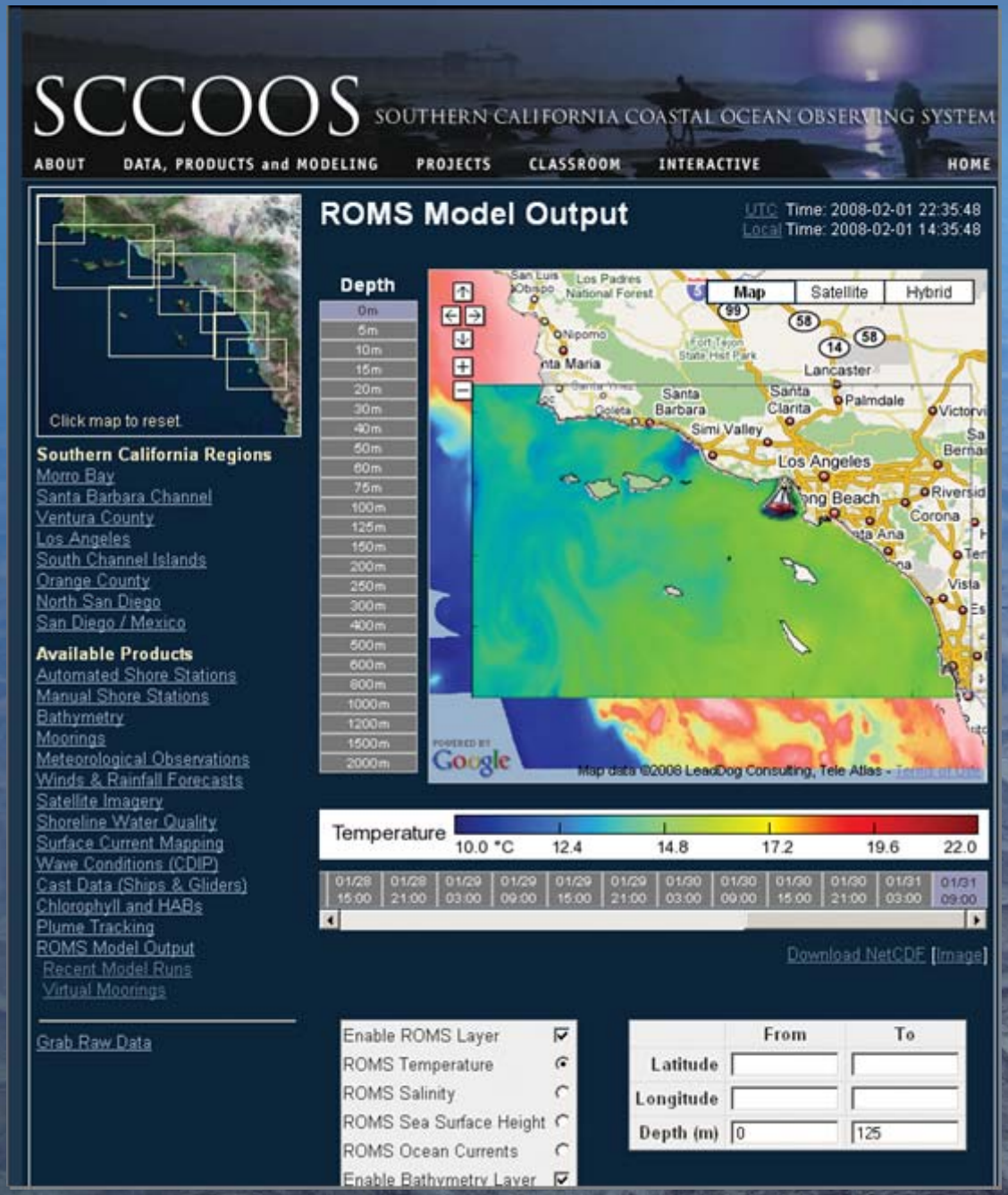


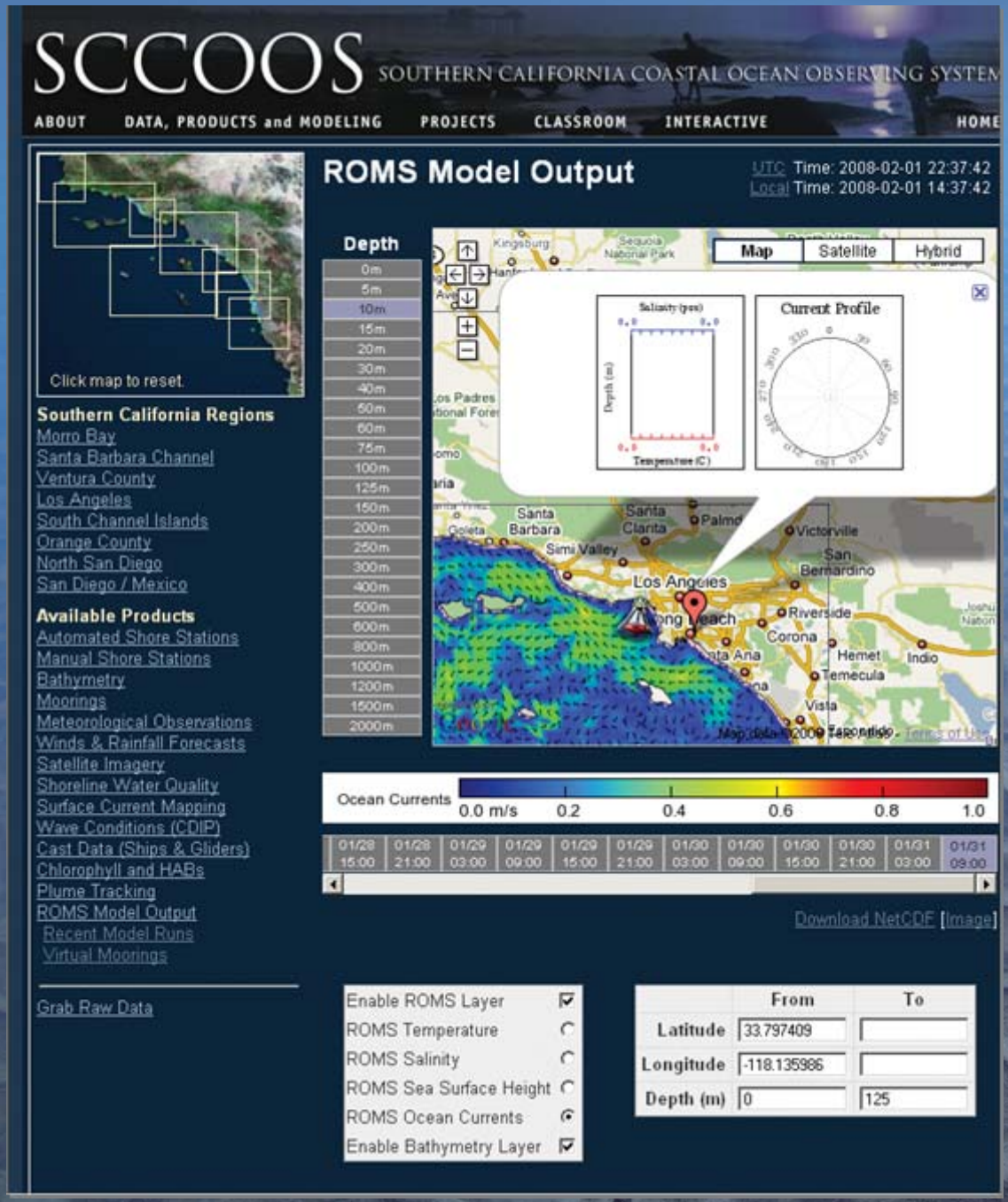
3D Modeling



ROMS SST

- Regional Ocean Modeling System (ROMS)
- US West Coast : 20km resolution
- Southern CA: 1km
- One-Way Nesting From Low to High Resolution Resolution
- Groups working on a state-wide grid


SCCOOS
SOUTHERN CALIFORNIA COASTAL OCEAN OBSERVING SYSTEM
ABOUT
DATA, PRODUCTS and MODELING
PROJECTS
CLASSROOM
INTERACTIVE
HOME
Click map to reset
Southern California Regions
Morro Bay
Santa Barbara Channel
Ventura County
Los Angeles
South Channel Islands
Orange County
North San Diego
San Diego / Mexico
Available Products
Automated Shore Stations
Manual Shore Stations
Bathymetry
Moorings
Meteorological Observations
Winds & Rainfall Forecasts
Satellite Imagery
Shoreline Water Quality
Surface Current Mapping
Wave Conditions (CDIP)
Cast Data (Ships & Gliders)
Chlorophyll and HABs
Plume Tracking
ROMS Model Output
Recent Model Runs
Virtual Moorings
Grab Raw Data
ROMS Model Output
UTC Time: 2008-02-01 22:35:48
Local Time: 2008-02-01 14:35:48
Depth
0m
5m
10m
15m
20m
30m
40m
50m
60m
75m
100m
125m
150m
200m
250m
300m
400m
500m
600m
800m
1000m
1200m
1500m
2000m
Map
Satellite
Hybrid
Lancaster
Palmdale
Santa Barbara
Santa Clarita
Simi Valley
Los Angeles
Corona
Vista
Google
Map data ©2008 LeadDog Consulting, Tele Atlas
Temperature
10.0 °C
12.4
14.8
17.2
19.6
22.0
01/28 15:00
01/28 21:00
01/29 03:00
01/29 09:00
01/29 15:00
01/29 21:00
01/30 03:00
01/30 09:00
01/30 15:00
01/30 21:00
01/31 03:00
01/31 09:00
Download NetCDF [Image]
Enable ROMS Layer
ROMS Temperature
ROMS Salinity
ROMS Sea Surface Height
ROMS Ocean Currents
Enable Bathymetry Layer
From
To
Latitude
Longitude
Depth (m)
0
125


SCCOOS
SOUTHERN CALIFORNIA COASTAL OCEAN OBSERVING SYSTEM
ABOUT
DATA, PRODUCTS and MODELING
PROJECTS
CLASSROOM
INTERACTIVE
HOME
ROMS Model Output
UTC Time: 2008-02-01 22:37:42
Local Time: 2008-02-01 14:37:42
Click map to reset.
Southern California Regions
Morro Bay
Santa Barbara Channel
Ventura County
Los Angeles
South Channel Islands
Orange County
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Recent Model Runs
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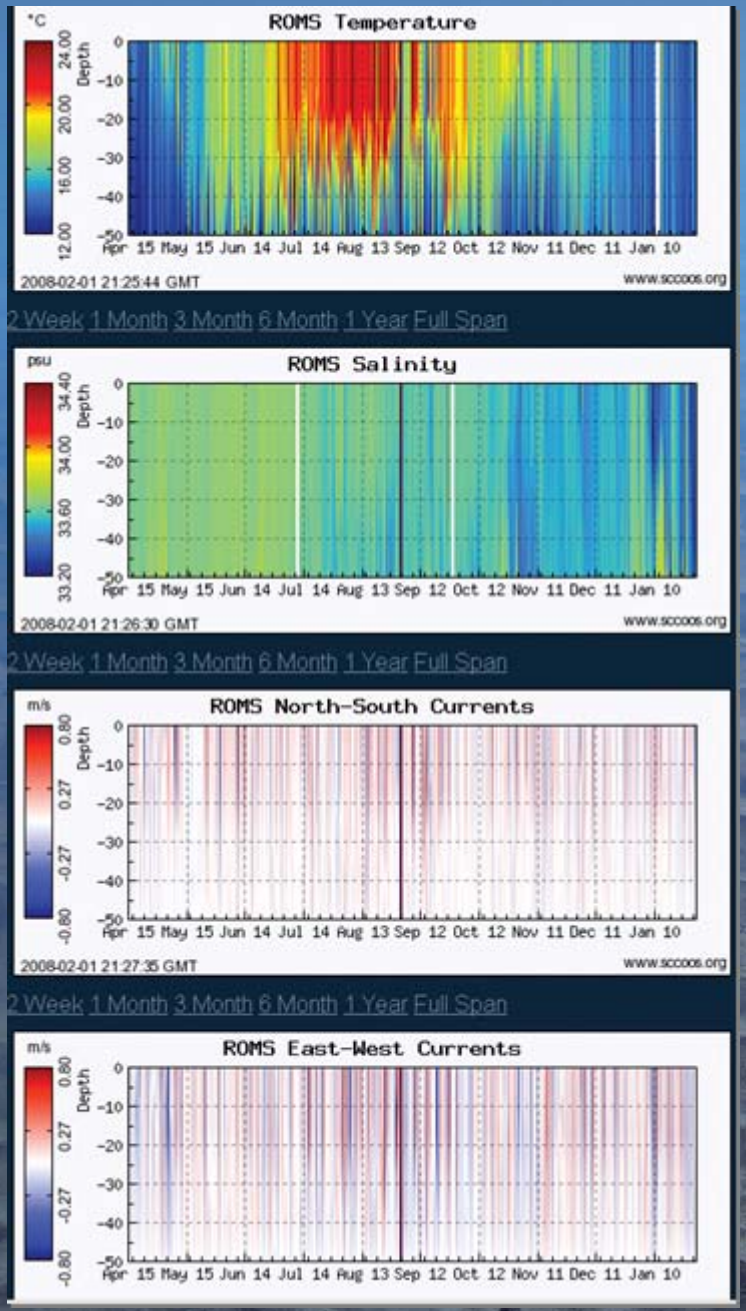
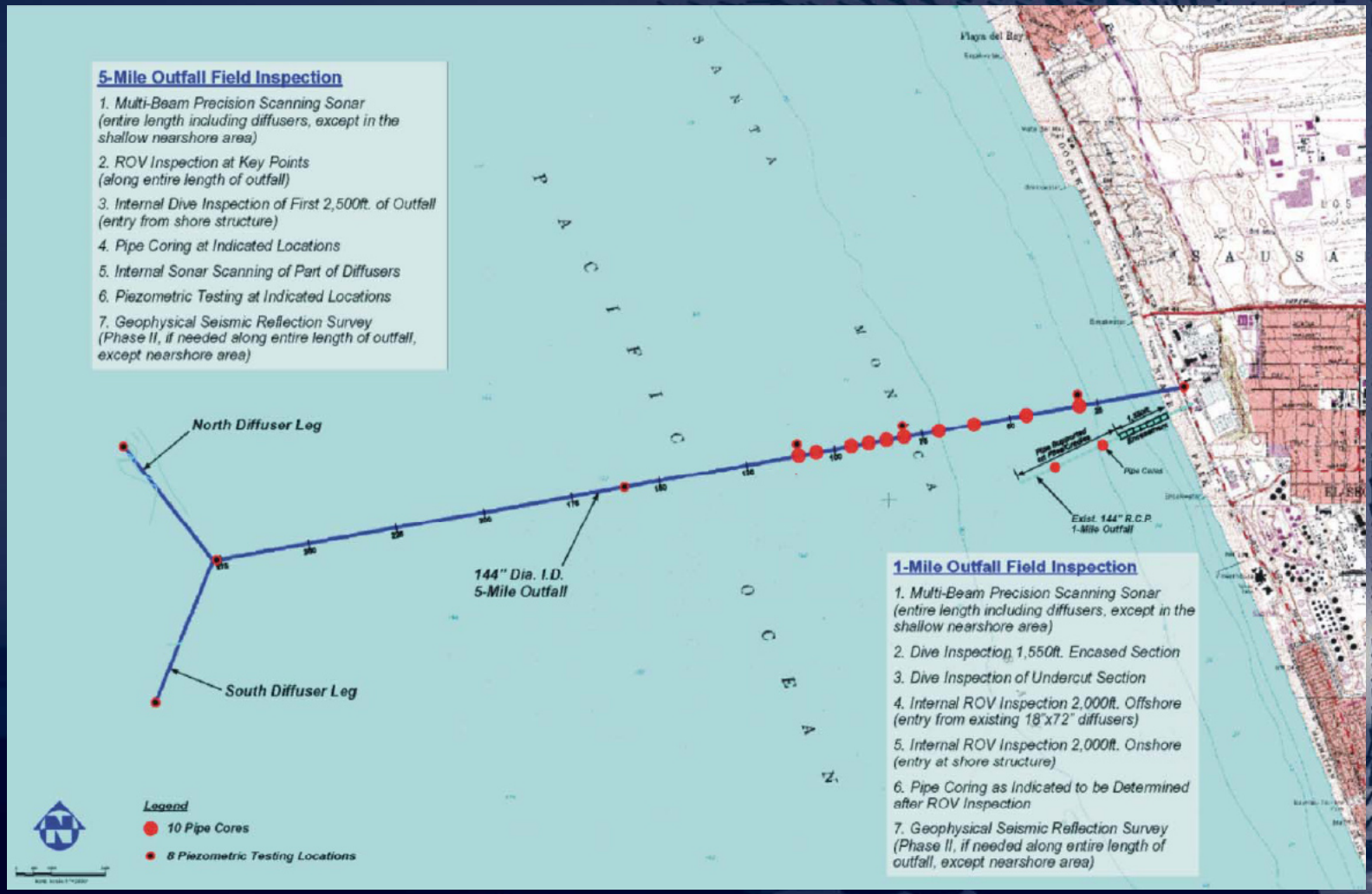
Grab Raw Data
Depth
0m
5m
10m
15m
20m
30m
40m
50m
60m
75m
100m
125m
150m
200m
250m
300m
400m
500m
600m
800m
1000m
1200m
1500m
2000m
Map
Satellite
Hybrid
Salinity (psu)
Current Profile
Depth (m)
Temperature (C)
Santa Barbara
Santa Clarita
Simi Valley
Los Angeles
Victorville
San Bernardino
Riverside
Corona
Hemet
Indio
Temecula
Vista
Ocean Currents
0.0 m/s
0.2
0.4
0.6
0.8
1.0
01/28 15:00
01/28 21:00
01/29 03:00
01/29 09:00
01/29 15:00
01/29 21:00
01/30 03:00
01/30 09:00
01/30 15:00
01/30 21:00
01/31 03:00
01/31 09:00
Download NetCDF [Image]
Enable ROMS Layer
ROMS Temperature
ROMS Salinity
ROMS Sea Surface Height
ROMS Ocean Currents
Enable Bathymetry Layer
From
To
Latitude
33.797409
Longitude
-118.135986
Depth (m)
0
125

Virtual mooring system developed – initial effort directed towards stratification at major discharges.


°C
ROMS Temperature
Depth
24.00
20.00
16.00
12.00
0
-10
-20
-30
-40
-50
Apr 15 May 15 Jun 14 Jul 14 Aug 13 Sep 12 Oct 12 Nov 11 Dec 11 Jan 10
2008-02-01 21:25:44 GMT
www.sccoos.org
2 Week 1 Month 3 Month 6 Month 1 Year Full Span
psu
ROMS Salinity
Depth
34.40
34.00
33.60
33.20
0
-10
-20
-30
-40
-50
Apr 15 May 15 Jun 14 Jul 14 Aug 13 Sep 12 Oct 12 Nov 11 Dec 11 Jan 10
2008-02-01 21:26:30 GMT
www.sccoos.org
2 Week 1 Month 3 Month 6 Month 1 Year Full Span
m/s
ROMS North-South Currents
Depth
0.80
0.27
-0.27
-0.80
0
-10
-20
-30
-40
-50
Apr 15 May 15 Jun 14 Jul 14 Aug 13 Sep 12 Oct 12 Nov 11 Dec 11 Jan 10
2008-02-01 21:27:35 GMT
www.sccoos.org
2 Week 1 Month 3 Month 6 Month 1 Year Full Span
m/s
ROMS East-West Currents
Depth
0.80
0.27
-0.27
-0.80
0
-10
-20
-30
-40
-50
Apr 15 May 15 Jun 14 Jul 14 Aug 13 Sep 12 Oct 12 Nov 11 Dec 11 Jan 10

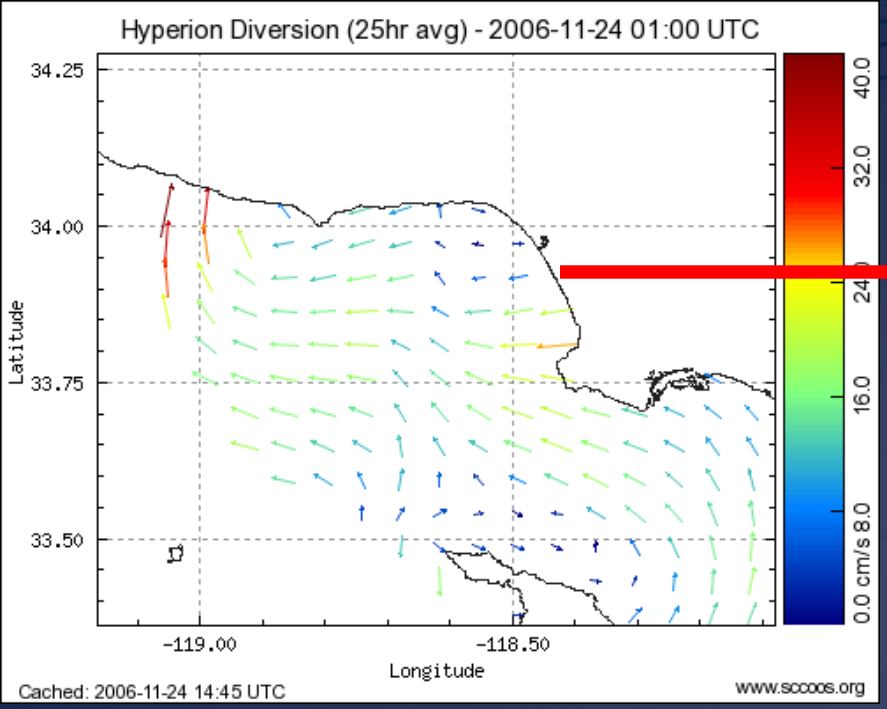
Hyperion Outfall Diversion
November 28-30, 2006



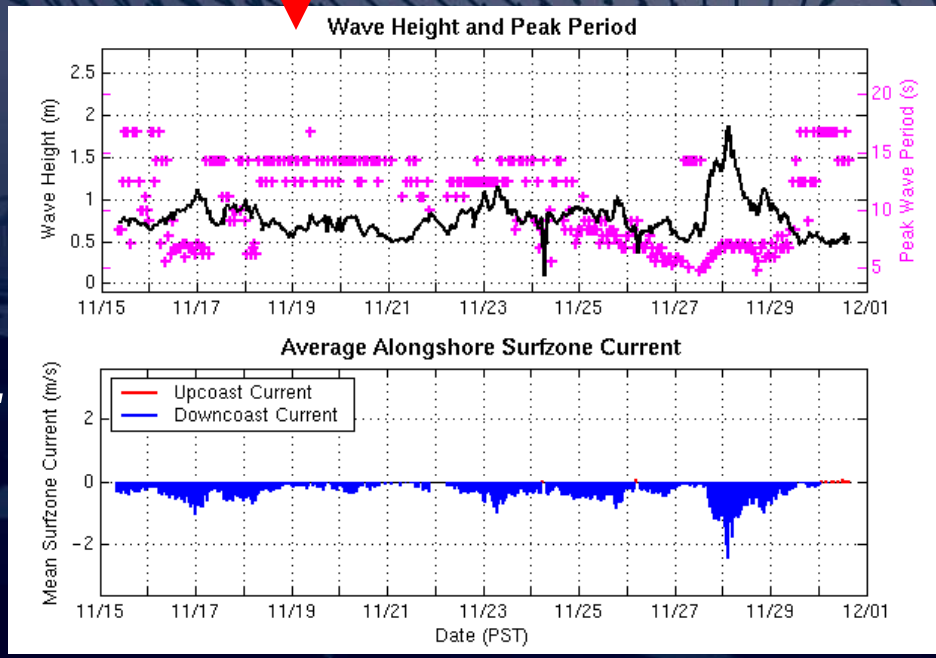
- **Inspection of Hyperion Outfall Pipe (never internally inspected for 50 years). Serves City of Los Angeles. One of the world's largest coastal populations.**
- **Close to a billion gallons of sewage to be diverted to an in-shore/shallow outfall.**
- **Concern of extent of impact and public health risk in the Santa Monica Bay**

SANTA MONICA BAY


Street View
Playa Del Rey
W Manchester Ave
Westchester
Westchester Pkwy
Vista Del Mar
Palisades Del Rey
Pershing Dr
World Way N
World Way S
W 96th St
1
W Imperial Hwy
Main St
Vista Del Mar
El Segundo
E Grand Ave
E El Segundo Blvd
N Sepulveda Blvd
S Sepulveda Blvd
1 mi
1 km
©2007 Google - Imagery ©2007 DigitalGlobe, NASA, Map data

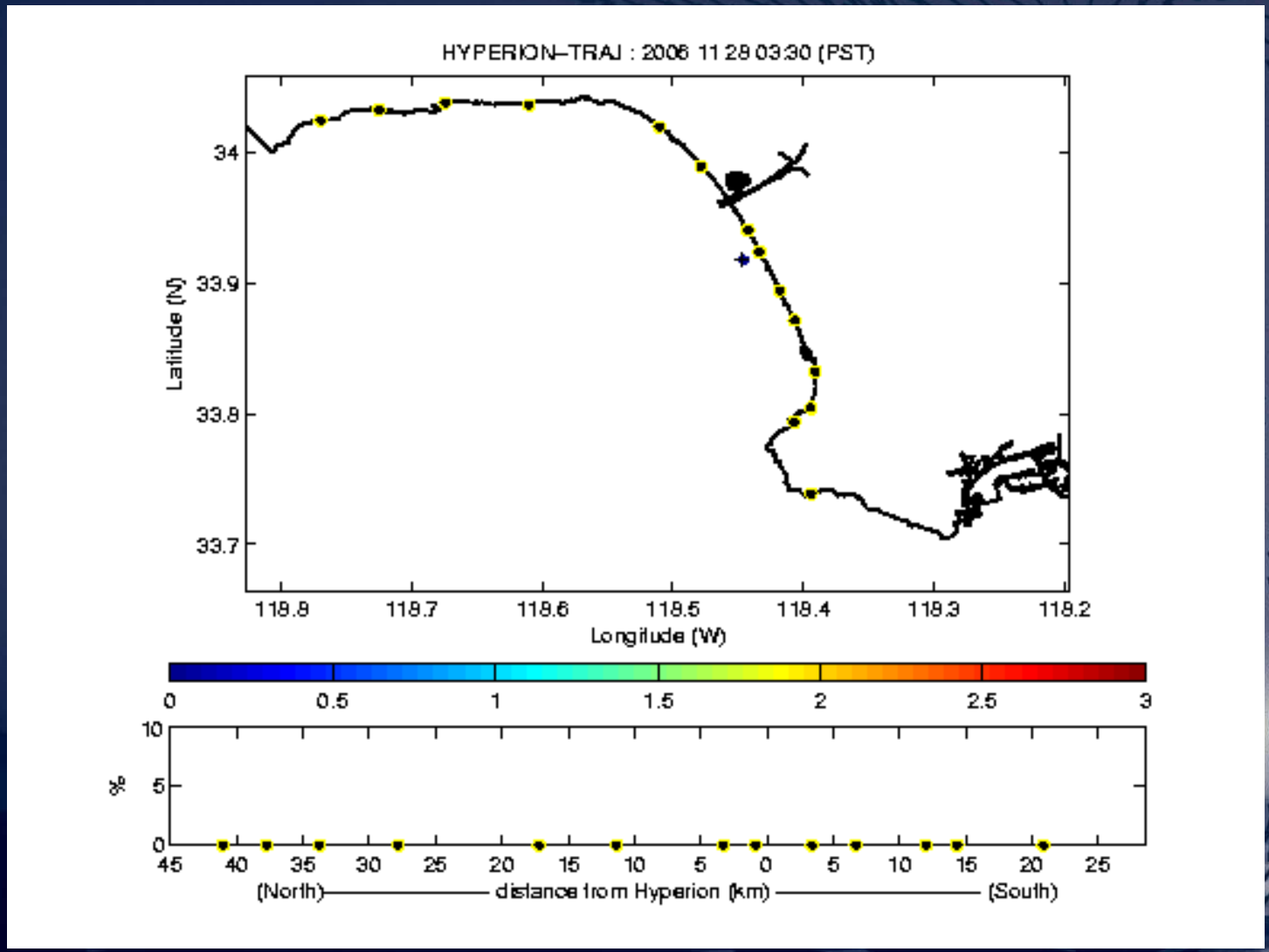


HF radar derived surface current map.



Surf-zone forecast driven by waves.

Both offshore and surfzone circulation required observation.



Realtime trajectory tool implemented at surfacing outfall. Provides indication of beach impact.

SCCOOS: K-12 and Informal Education

SCCOOS has partnered with:

- California Centers for Ocean Science Excellence in Education (CA COSEE)
- Ocean Institute in Dana Point
  - *to develop an 8-week program designed to meet 5th grade Earth Science standards on the water cycle and weather*
  - *program will include new classroom activities, science kits, CD-ROMs, web-based materials, field trips, teacher professional development and will incorporate SCCOOS science and scientists as a link to research being done in the field.*
  - *Transitioned to program to reach ~ 15,000 students*

Current Activities and Funding

- Summary of key activities in the region that are related to or support IOOS, including those not funded by NOAA IOOS
  - Continued development and maturity of RCOOS capabilities that meet local and regional user needs and is in compliance with the standards and protocols for sharing and archiving data in support of IOOS
  - COCMP – State of California
  - Bight Regional Monitoring Programs
  - Active participation in IOOS development and coordination with NFRA, CSC, and Ocean.US through provision of input and participation in meetings, conference calls, and workshops. PACOOS.
  - Active participation in national efforts to develop data, communication, and interoperability standards including standards review team, Quality Assurance of RealTime Data (QARTOD) workshops, IOOS waves working group, IOOS Observations Registry, several marine metadata workshops, and RadioWave Operators Working Group (HR radar operators)
  - Efforts to educate other federal agencies on the utility of IOOS to their particular missions; targeted outreach to US EPA, International Boundary and Water Commission (IBWC), US Coast Guard (USCG), and Department of Defense (DOD), NOAA (eg – HAZMAT, NWS, FISHERIES).

Current Activities and Funding

Cont'd

- Interaction/joint work with other federal agencies
  - Collaborations with USGS, ACOE, USCG, USN, USMC, NAVAIR, NOAA, EPA
  - Specific examples
    - CDIP/Waves integration with SCCOOS - ACOE
    - NPREP oil spill – USCG, NOAA
    - Fisheries – climate products for ecosystem
    - Cross-border transport, NPDES relevant data products – EPA
    - Data interfaces to METOC data – DOD agencies
- How can NOAA IOOS best support you in engaging other Federal agencies?
  - Raise awareness with mission agencies – more top down education
  - Suggest methods for building regional obs and integration into their planning cycles

SCCOOS Support

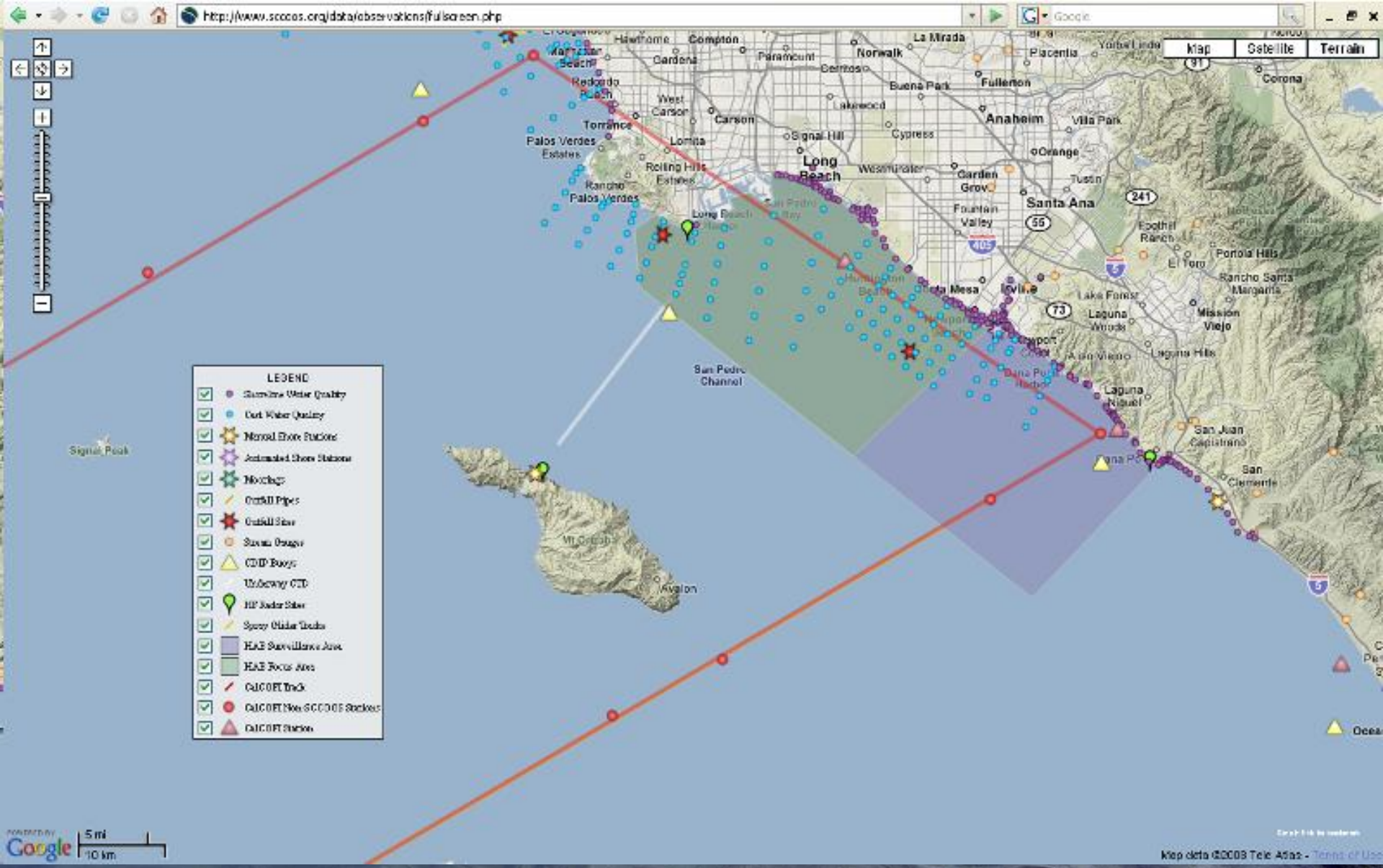
- California State Coastal Conservancy – Coastal Ocean Currents Monitoring Program (COCMP)
  - **Final year of installation phase (nominal 3 year/$11M program). Presently developing O&M strategy.**
- NOAA Regional Coastal Ocean Observing System (RCOOS) and Regional Association (RA) Support.
  - **Approximately $800k/year in 2007 and 2008.**
  - **In contrast: $2M in 2004, $1.6 in 2005, $1.8 in 2006.**
- RA plans/efforts to match IOOS dollars with funding from other sources
  - Encouraged a 50/50 split of O&M for the SCCOOS component of State of CA COCMP in RCOOS funding for FY09
  - Working with the State to develop O&M strategy

FY08 Planned Observational Activities
(NOAA IOOS supported)

- Harmful Algal Bloom shoreline and nutrient surveillance on the entire coast of Southern California
- Continued operation of nearshore egg and larval surveys that complement the offshore CALCOFI survey
- Development of nearshore climatologies and climate relevant indices relevant to ecosystem assessment for fisheries, IEAs, and MPA development
- Continued operations and maintenance of the SCCOOS 1km resolution, realtime ocean nowcast/forecast system

Locations of the primary HAB sampling sites along the Southern California Coast. The sites are indicated by the red balloons numbered 1-5. They correspond to 1) San Luis Obispo 2) Stearn's Wharf, Santa Barbara, 3) Santa Monica Pier, 4) Newport Beach Pier, and 5) La Jolla.

DEVELOPMENT OF AN OCEAN OBSERVING ASSET MAP FOR SOUTHERN CALIFORNIA.



ASSET MAP FOR SOUTHERN CALIFORNIA

http://www.sccoos.org/users.html

navair coamps

SCCOOS

SOUTHERN CALIFORNIA COASTAL OCEAN OBSERVING SYSTEM

ABOUT | DATA, PRODUCTS and MODELING | PROJECTS | CLASSROOM | INTERACTIVE | HOME

SCCOOS USERS

BEACH GOERS & SURFERS

SAILING, FISHING, BOATING

DIVERS

MARINE PROFESSIONALS

Developing tailored displays for routine data users

RA Coordination: Cooperative Agreements

- As we reach the end of the first set of RA coordination grants, provide a summary of overall progress
  - Milestones and status
    - Formation of consortium; MOU signed by 11 institutions
    - Formal governance structure in place
    - Bylaws approved Feb 2006
    - Senior Advisory Committee established Feb 2006
    - SCCOOS and CeNCOOS have a Memorandum of Understanding (MOU) to ensure data interoperability with the State of California
    - Draft Strategic Business Plan in process now
    - Conduct of outreach to wide spectrum of user groups
    - Success Stories - demonstrated usage and benefits to users
    - Requests for Training coming from Agencies

RA Coordination: Cooperative Agreements

- What will change with the new RA grant in FY08?
  - Further develop the SCCOOS website, data products and services being made available to users and the public
  - Data management and prod development from RA grant in short term
  - Use RCOOS as starting point for discussion with users
  - Examine present organization structure and develop improved communications plan
- New directions, partners
  - Launch targeted outreach for new sets of user groups
  - Expect collaborations with OR and WA to be developed as a result of the West Coast Governors' Agreement on Ocean Health
  - Conduct training for users in use of data products and services (SWRCB, USCG, MMS, NWS)
  - Enhance engagement of governing bodies; SAC to meet twice annually
  - Improve internal and external communications
  - Refine targeted products for the region – improve matching of need to sponsor.

- Recent meeting with Senior Advisory Committee held May 27, 2008 - suggestions
  - SAC desires/wants better engagement and their talents are not being well used.
  - There is a need to keep the existing observing system assets operational -- no presently funded observation was deemed useless.
  - SCCOOS appears mature enough to establish training series for existing web-based products directed at management staff.
  - Of the four priority theme areas (water quality/HABS, climate/ecosystems, marine operations, public uses) - designing a system for climate/ecosystems will meet the needs of the majority of the other product theme areas. If SCCOOS needs to consolidate efforts to be competitive with NOAA, this might be a reasonable approach.

K. DATA PRODUCTS

TASKS

	A. Water Quality Management Community	B. Environment & Ecosystem Variability	C. Oil Spill Search & Rescue, Marine Safety	D. Public Uses
BIGHT-WIDE: CLIMATE TRENDS, VARIABILITY & ECOSYSTEM RESPONSE				
Compilation of historic and near real-time (when available) oceanographic and atmospheric time series from the bight, provided in easily accessible summaries.	•	•	•	•
Development of ocean-state indices using model-based reanalysis and data-based approaches to describe bight-wide upwelling, stratification, nutrients, and other subsurface fields.	•	•		•
Development of dynamic and environmental indices that include a measure of how strong and how numerous eddies, plumes, and associated fronts are in the Southern California Bight.	•	•	•	•
Descriptions of ocean advection, the connectivity of different populations, and their transport and dispersion by ocean currents — Product: Bight-wide circulation response patterns.	•	•	•	•
Ecosystem surveillance using nearshore egg and larva surveys to complement CALCOFI — Product: delivery of data to Fisheries and synthesis of trends.	•	•		•
SHORELINE WAVES AND CURRENTS				
Realtime, Bight-wide wave height conditions at 10m isobath (landfall) with 200m along-coast resolution.	•	•	•	•
Realtime estimates of surfzone currents north/south longshore currents along entire coast.	•	•	•	•
Historical time records of shoreline wave conditions, surfzone currents.	•	•		•

K. DATA PRODUCTS

TASKS

TRAJECTORIES AND PLUME LOCATIONS	A. Water Quality Management Community	B. Environment & Ecosystem Variability	C. Oil Spill, Search & Rescue, Marine Safety	D. Public Uses
Determine the regional influence of a stormwater/river discharge on the coastline. Product — Time series of maps of shoreline discharges directed toward assessment of public health concerns. Integration of these maps with existing microbial sampling conducted by public health agencies.	•	•		•
Assessment of land inputs and their impacts to state-identified Critical Coastal Areas, including Marine Protected Areas and Areas of Special Biological Significance. Product — Trajectory synthesis to estimate exposure of sensitive areas to land inputs.	•	•		•
Characterization and tracking of offshore outfall plumes, including the extent of detectable limits. Product — maps of the plume.	•	•		•
Tracking and forecasting the transport of discharged oil:				
Realtime current and meteorological data to NOAA HAZMAT			•	•
Trajectory estimate for the water			•	•
Statistical trajectory synthesis for risk assessment and spill scenario analysis.			•	•
Trajectories of surface objects for purposes of search and rescue:				
Realtime current and meteorological data to USCG, local safety offices for SAROPS tools and search coordination.	•	•		•

K. DATA PRODUCTS

TASKS

	A. Water Quality Management Community	B. Environment & Ecosystem Variability	C. Oil Spill, Search & Rescue, Marine Safety	D. Public Uses
HARMFUL ALGAL BLOOMS				
Web-based distribution of algal bloom relevant ocean observations and background public information. E.g., pier sensors, ocean color satellite images, bloom indices as they develop.	•	•		•
Bight-wide HAB surveillance results updated weekly.	•	•		•
Development of HAB relevant indices based upon inputs (nutrient) or ocean processes:				
Bight wide nutrient budgets that considers anthropogenic, horizontal, and vertical fluxes to aid in the identification of anthropogenic forcing of HAB formation.	•	•		•

RA Future Development

- RA views on function and performance metrics
  - Two models:
    - Data throughput
    - Successful usage
      - Need to differentiate between ‘use’ and success
      - Two classes of users:
        - Operational (now data)
        - Management (long term synthesis of trends)
- Objectives of the RA and plans for the near-term FY08-12
  - Serve as the regional entity in which local and regional observations are implemented, coordinated, integrated, and communicated
  - Provide coastal resource managers with science-based, mission-driven, and publicly available data and information products and decision support tools
  - Develop, evaluate, and optimize products designed for short-term decision making and long-term environmental assessments
  - Determine strategies for continuing to build a sustainable regional ocean observing system given current fiscal and programmatic climate
  - Integrate better with the state
  - Work with NOAA on HABs and IEA DIF usage
  - Provide product transition where possible

RA Future Development

Summary of top five priorities for development of RCOOS capabilities with cost estimates

SCCOOS OBSERVING SYSTEM COMPONENTS 5-YEAR COSTING ($k)					
	FY09	**FY10**	**FY11**	**FY12**	**FY13**
REGIONAL OBSERVING ACTIVITIES					
BIGHT-WIDE SAMPLING					
HF Radar	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000
Gliders	$ 400	$ 500	$ 500	$ 700	$ 800
Underway CTD	$ 120	$ 120	$ 240	$ 240	$ 360
Egg, larval Hydrographic Stations	$ 200	$ 200	$ 200	$ 200	$ 200
Automated Shore Stations	$ 125	$ 150	$ 175	$ 200	$ 225
Offshore Wave Observations	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000
LOCAL OBSERVING ACTIVITIES					
DISCHARGE PLUME SURVEYS					
Glider tracking	$ 150	$ 300	$ 300	$ 500	$ 500
REMUS tracking	$ 150	$ 300	$ 300	$ 300	$ 450
Drifters	$ 150	$ 150	$ 200	$ 200	$ 200
HARMFUL ALGAL BLOOMS					
HAB Surveillance Surveilance	$ 250	$ 250	$ 300	$ 300	$ 350
HAB Glider Operations	$ 150	$ 300	$ 300	$ 500	$ 500
Nearshore Moorings	$ 250	$ 500	$ 500	$ 750	$ 1,000
DATA MANAGEMENT, SYNTHESIS, MODELING					
DATA MANAGEMENT					
Manage SCCOOS data feeds, data delivery (users/feds), IOOS DMAC, www.sccoos.org	$ 500	$ 500	$ 750	$ 750	$ 1,000
DATA SYNTHESIS					
Ocean data synthesis through development of climatology and climate relevant indices, hindcast reanalyses	$ 350	$ 500	$ 500	$ 500	$ 500
MODELING					
O&M of MM5/WRF real-time operation atmospheric model at 1-km	$ 120	$ 120	$ 120	$ 120	$ 120
Maintain and operate ROMS in assimilation mode and open or partially assimilating mode	$ 400	$ 500	$ 500	$ 500	$ 500
Surfzone Waves and Currents	$ 400	$ 400	$ 400	$ 400	$ 400
TOTALS	**$ 6,315**	**$ 7,390**	**$ 7,885**	**$ 8,760**	**$ 9,705**

- *Bightwide system that provides Nowcast, forecast, and hindcast reanalysis at appropriate scales.*
- *Focused / Management Specific Projects.*
- *Sustained Operations.*
- *Event Response capability.*
- *Seamless data system across regional and federal systems.*

RA Views on Regional and National IOOS

- RA needs with regard to the integration of regional and national planning efforts
  - Need local IOOS presence
  - DIF ‘swat team’ for 2-way communication
  - Clarification on how to communicate DIF benefits at local level – appearance between DIF mission and data
  - Good to see increasing IOOS thrust across NOAA cross-cutting issues
  - PACOOS – recent board meeting indicated potential to use that venue as the avenue for connecting with management
- RA expectations for development of the “national backbone” of observations
  - Provide on-ramp for national integration of regional obs
  - remote sensing
  - Pan-regional observations

Cross-regional Coordination

- Discuss existing and potential coordination with other IOOS RAs
  - Regional and West Coast RAs collaboration - Regular, ongoing coordination with CeNCOOS, IEA Workshop, West Coast Governors Agreement
  - Effective coordination through NFRA and IOOS Regional Coordination Workshops
  - Product transitions
  - State coherence

Best Practices and Lessons Learned

- Describe problems encountered to date and their resolutions
  - Expectation management
  - Data management intensive work - we continue to leverage as much staff time as possible
  - Manage usage of system

- What are some “good ideas” or best practices that you can share with other RAs?
  - Careful balance between national standards, and on-the-ground delivery of utility

Parting Thoughts

- What support or information do you need from NOAA that you are not currently receiving?
  - How best to direct limited time to balance national responsiveness and local users.
  - Technical review teams.
  - Written assessment of region to provide back to the regional stakeholders.
- Is there input you would like to give to us, but don’t have a venue?
  - Formation of IOOS office has solved much of this.

www.sccoos.org

OBSERVING SYSTEM COMPONENTS

TASKS

	A. Water Quality Management Community	B. Environment & Ecosystem Variability	C. Oil Spill, Search & Rescue, Marine Safety	D. Public Uses
REGIONAL OBSERVING ACTIVITIES				
BIGHT-WIDE SAMPLING				
Maintain and operate auto-shore stations	•	•		•
Implement underway CTD - San Pedro to Catalina	•	•		•
Provide realtime & historical trends of surfzone waveheights & currents bightwide	•	•	•	•
Conduct nearshore egg & larval surveys for in-shore CalCOFI stations		•		
Maintain existing lines of long-line glider tracks at northern & southern SCCOOS boundaries	•	•		
Maintain and operate HF radar	•	•	•	•
LOCAL OBSERVING ACTIVITIES				
DISCHARGE PLUME SURVEYS				
Maintain and operate auto-shore stations	•	•		•
Track discharge plumes using REMUS; engineer model operation and validate stratification at discharge sites	•	•		•
Deploy drifters (surface and deep drogued) to verify plume models, track plumes	•	•	•	•
HARMFUL ALGAL BLOOMS				
Conduct HAB surveillance shoreline sampling	•	•		•
Implement in-shore glider track	•	•		•
Implement Santa Monica Bay Mooring and HAB speciation technology (FlowCAM)	•	•		•
DATA MANAGEMENT, SYNTHESIS, MODELING, and FORECASTING				
DATA MANAGEMENT				
Manage SCCOOS data feeds, data delivery (users/feds), IOOS DMAC, www.sccoos.org	•	•	•	•
Develop and run training workshops	•	•	•	•
DATA SYNTHESIS				
Climatology Development 1. Assemble and develop coastal climatology of ocean state variables 2. Develop climate relevant indices for ecosystem assessment 3. Trajectory synthesis to establish connectivity between regions	•	•	•	•
MODELING				
Develop O&M of MM5/WRF real-time operation atmospheric model at 1-km			•	•
Maintain & operate ROMS at 1-km over the southern California Bight	•		•	•
Develop & run a finer resolution ROMS at 200-m resolution, San Diego coast; deliver the output to SCCOOS			•	
Develop and run a finer resolution ROMS at 200-m resolution, SM and SP bays; deliver the output to SCCOOS			•	
Develop retrospective bight-scale hindcast, and assimilation technique		•		