US ERA ARCHIVE DOCUMENT

SCCOOS: Integrating Regional Compliance Monitoring and Ocean Observing Systems

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What factors differentiate Southern California from other regions?

- Beach-related water quality is a high priority
- Observational resources are different from other regions

Development of Collaborative Observational Efforts

- Historical observing systems
- Evolution of NPDES efforts
- Specialized observation efforts
- Integrated ocean observing system

Historical Ocean Observing Systems in Southern California

- CalCOFI (California Cooperative Fisheries Investigations)
 - >50 years
- NOAA Buoys
- CDIP Coastal Wave Prediction
- NPDES Permittee Monitoring (Clean Water Act)
 - Local Monitoring
 - Regional Monitoring / Assessment beginning 1994

Evolution of NPDES Regional Monitoring

- Bight 94 (EMAP affiliation)
 - Goal: State of the Bight
 - Municipal monitoring agencies only
- Agency transition from independent local sampling to regionally coordinated sampling
- Bight 98
 - Beginning of academic collaboration with monitoring agencies
 - Water Quality focus on Stormwater Runoff
- Bight 03
 - Larger role of academic involvement
 - Collaboration of SCCOOS Components to provide complementary observational tools
 - Remote sensing
 - Drifters
 - HF Radar surface current mapping

Focused Observational Programs: Specific Problem Areas

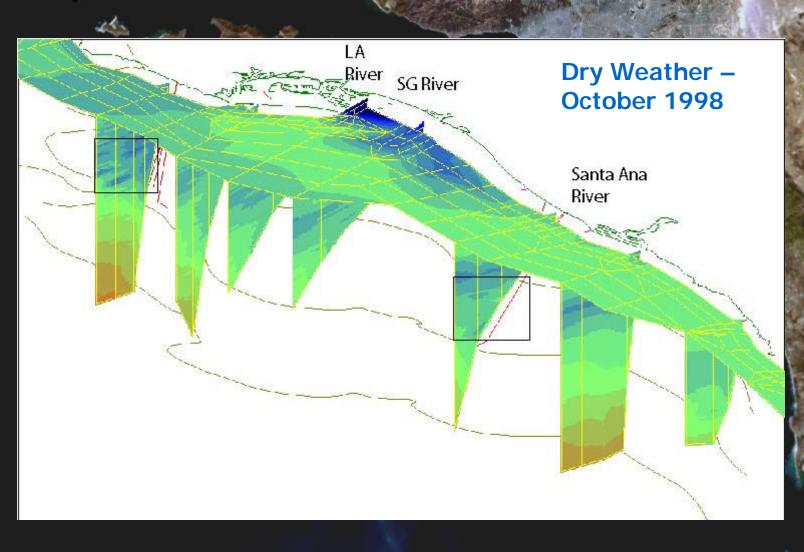


(State, City)

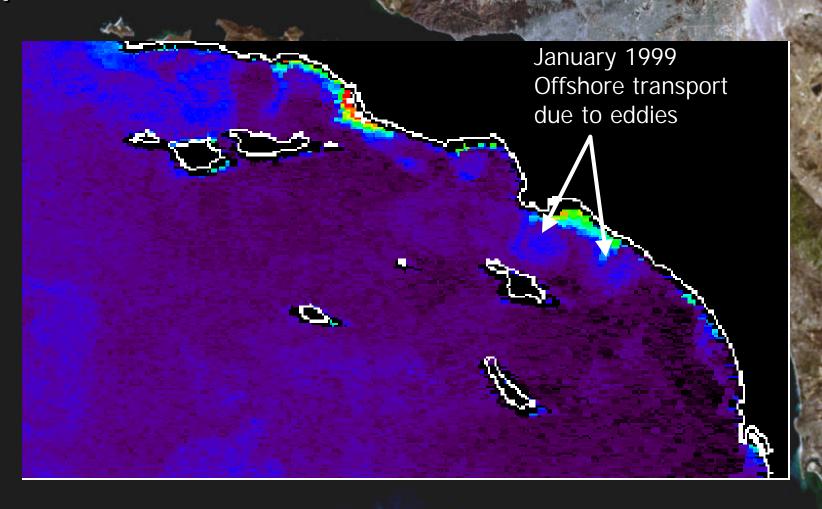
Recent Examples of NPDES Permittee/Academic Collaborations

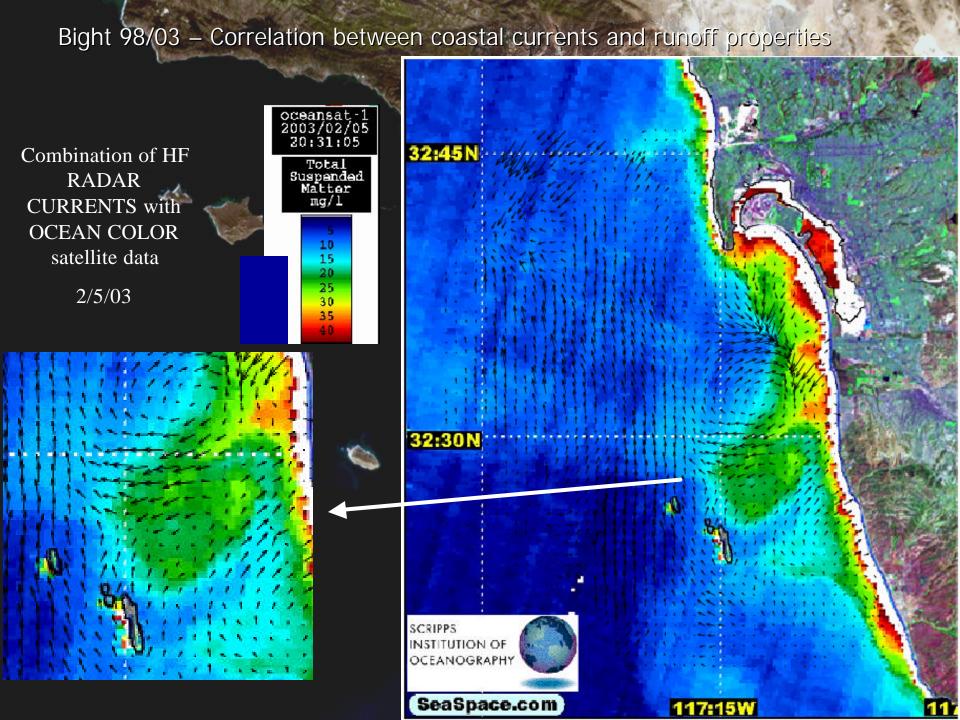
• Bight 98 / Bight 03 Regional Studies

Bight 98 / 03 — Significance and Dispersion of Freshwater Plumes



Bight 98/03 – Complex transport of plumes





Where do we go from here?





MONITORING

OBSERVING

RESEARCH

Monitoring: systematic collection of mission driven environmental

data to determine current conditions, trends, variation

Observing: collection of real-time environmental data for a host

of uses

Research: scientific investigation and scholarly pursuit of

knowledge

Education: presentation of information in a manner that people can

take action



- Existing agency monitoring
- surface current measurements
- satellite and aircraft remote sensing
- physical,bio-optical moorings
- autonomous vehicles
- meteorological measurements
- modeling
- distributed databases
-?

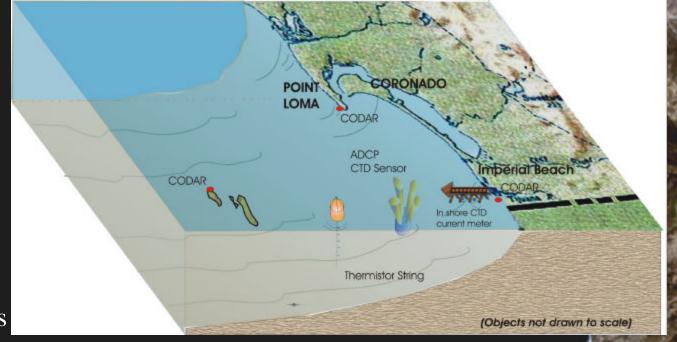
- water quality
- marine life resources
- coastal hazards
- educators
- search and rescue
- spill response
- security
- regional marine science
- •....?

Observing infrastructure

End user needs

Apply real-time sensors to build a system to continuously monitor the coastal ocean

- •Moorings
- •Instrument city piers
- •Bottom mounted sensors
- •HF radar
- •Satellite remote sensing
- •Autonomous vehicles



Couple data to existing monitoring efforts - provides framework for interpretation/understanding

Draft organization structure for SCCOOS

Board of Advisors

Ocean Science Trust

Board of Governors Operating Board SCCOOS Consortium Members/Working Groups

Data Provider User Groups (DPUGs)

Maritime Operations Weather Climate National Security

Public Heatlh H₂0 Quality Natural Hazards Ecosystem Health, Restoration Living Marine Resources

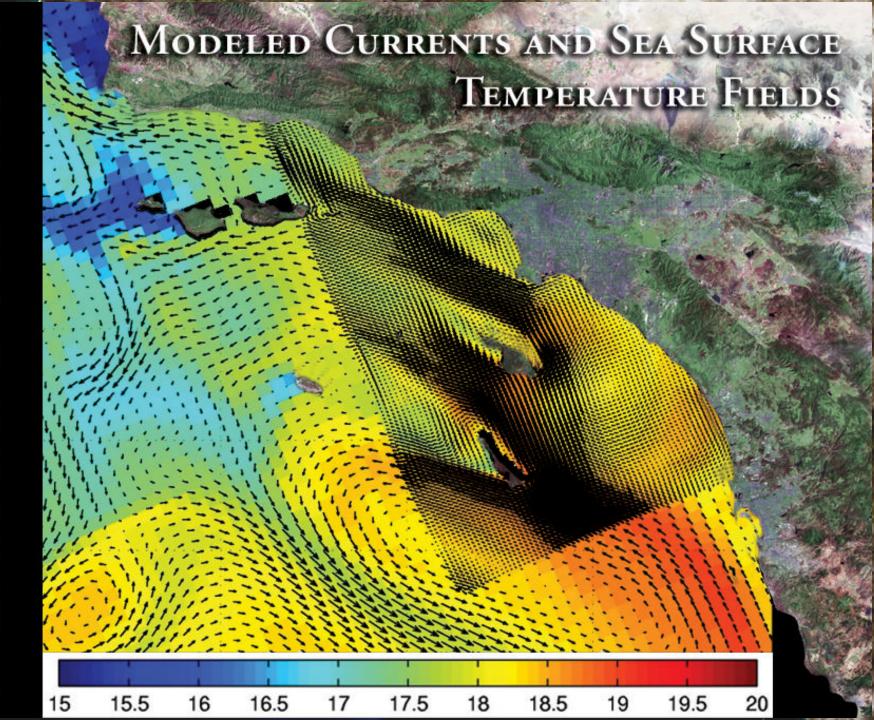


Regional

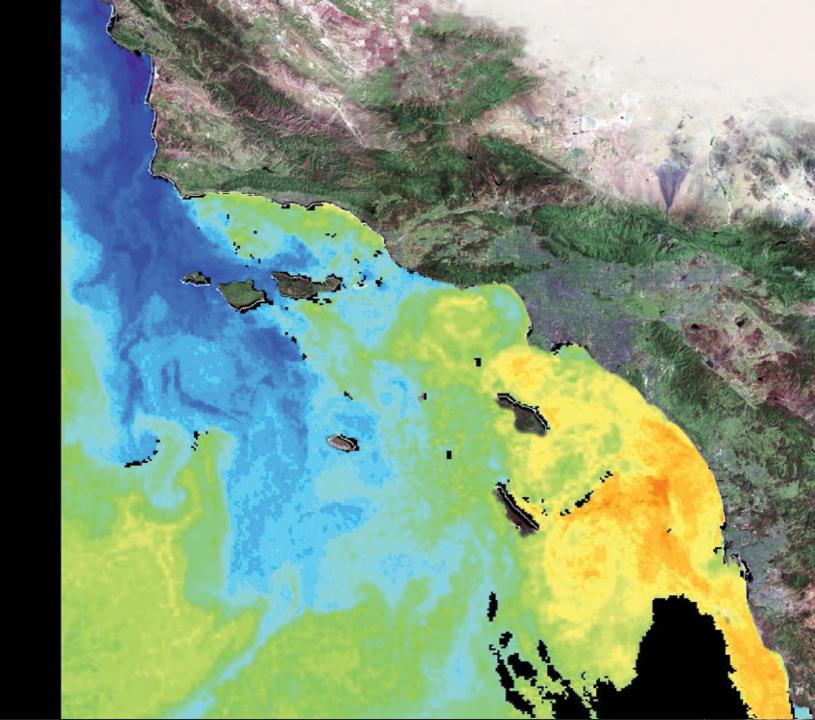
Association



0.12Hz MEASUREMEN 0.04Hz 14 s. 12 s. 10 s. Harvest Buoy Directional Spectrum (click for additional details) 8 10 16 18+ 6 12 14



SATELLITE REMOTE SENSING OCEAN TEMPERATURE FIELDS



EXPERIMIENTAL 300m RESOLUTION CHILOROPHYLL ESTIMATES 2.0 1.5 1.0



Regional Coverage Provided by Nested Array





SITE LOCATIONS FOR HIGH RESOLUTION OCEAN CURRENT MAPPING HF RADAR WITH ~40KM RANGE





Small Arrays: 1. Pt Estero 2. Pt Puchon 4. Pt San Luis 5. Mussel Shoals 6. Pt Sal 7. Pt Arguello 8. Pt Conception 9. Refugio St Beach 10. Coal Oil Pt 11. Rincon Isl 12. Mandalay Station 13. Ventura 14. Oxnard 15. NE Santa Cruz Isl 16. Pt Dume 17. Pt Vicente 18. Pt Fermin 19. Huntington Beach 20. Newport Harbor Entrance 21. San Clemente 22. Avalon 23. Oceanside Pier 24. SD N County 25. La Jolla Pt 26. Sunset Cliffs/Pt Loma 27. Point Loma 28. Border Pk 29. S Coronado 30. Rosorito Beach





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Southern California

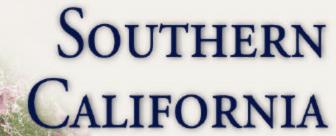


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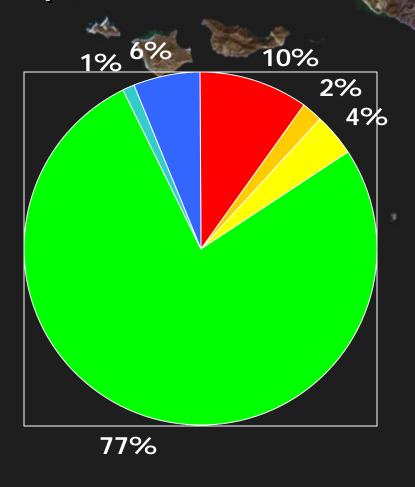
Summary

- Set of observing systems already existing in Southern California
- NPDES Permittees have a significant existing observational program whose costs exceeds all other existing programs
- History of collaboration between the municipal agencies and the academic community
- Implementation of new observing systems that:
 - Complement existing observing programs
 - Provide understanding / interpretation not available from previous observations
- Development of integrated products to serve the user community



- Water Quality / Public Health
- Living Resources
 - Fisheries Management
 - Marine Protected Areas
 - Harmful Algal Blooms
- Shipping and Transportation
- Oil Spills / Search and Rescue
- Beach Dynamics / Sediment Transport
- National Security

Southern California Monitoring Expenditures - Year 1997





Total:

\$31.3M