

Following the flow of pollutants in the nearshore: SD South Bay Dye Exchange Study



Nearshore Dye Plumes



Tijuana River Estuary Pollution Plumes



Tijuana River Estuary Pollution Plumes



Also:
South Bay Ocean Outfall (SBOO)
San Antonio de los Buenos (Punta
Bandera MX)

Transport & Dilution: Surfzone & Inner-shelf



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HB06 Experiment: Huntington Beach Fall 2006

IB09 Experiment: Imperial Beach Fall 2009

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IB09 Experiment: Imperial Beach Fall 2009

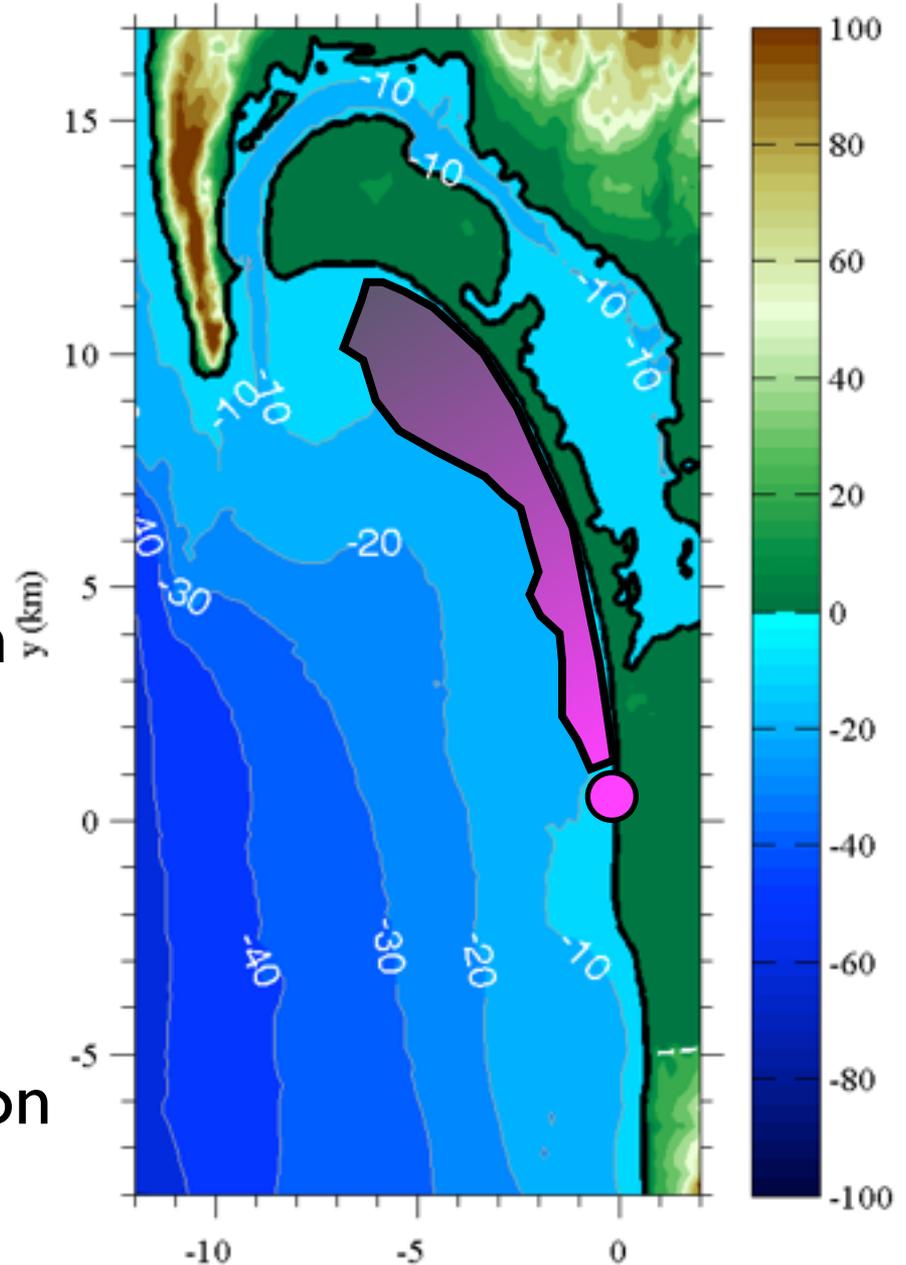


NSF Funded Study on Long Distance Releases (SBDEX)



Fall 2015: 3 dye releases each tracked for 48 hrs to study long distance (10 km) dye transport and dilution

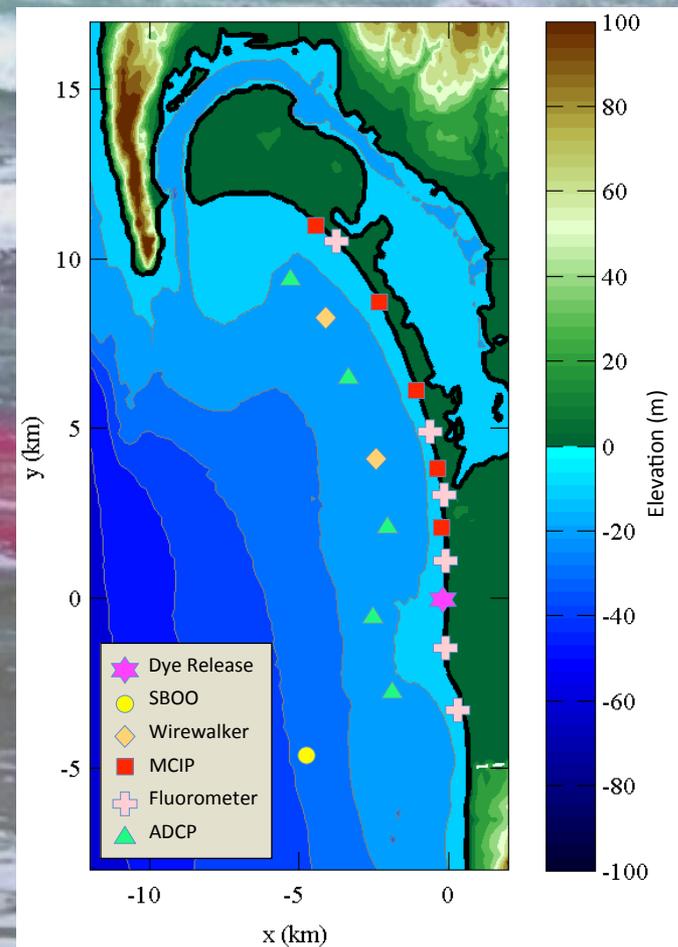
What kinds of instrumentation are we planning to deploy?



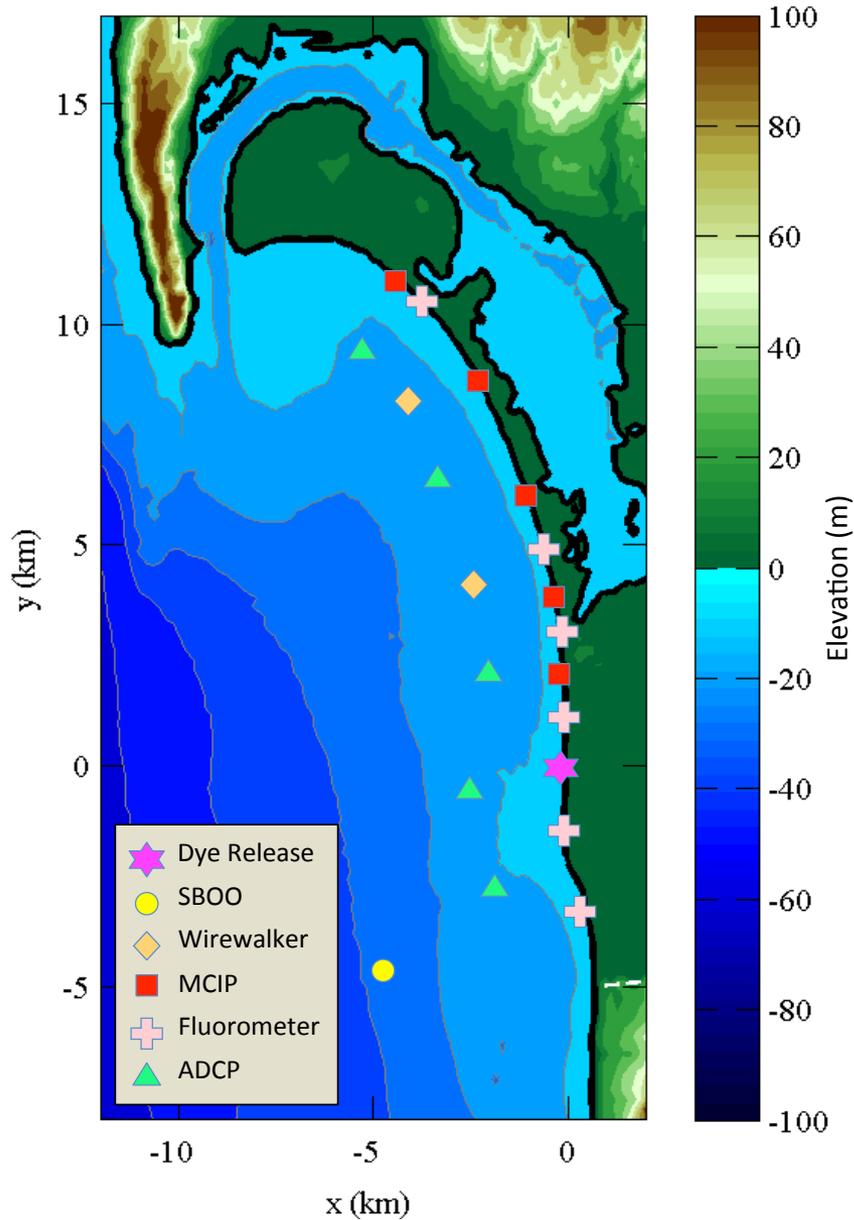
1) Release Rhodamine WT dye near the shoreline
Rhodamine WT is non-toxic, EPA and FDA approved
Dye released for 6-8 hrs similar to IB09 study
Dye to be tracked with various method for 48 hrs



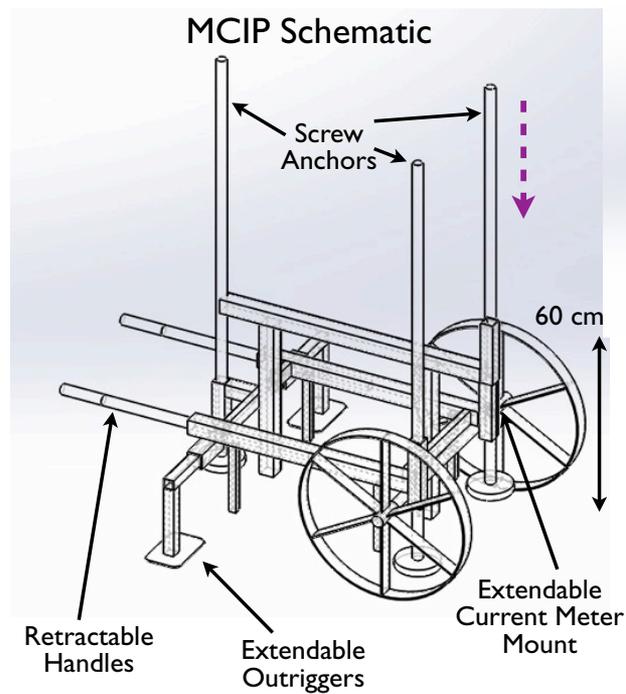
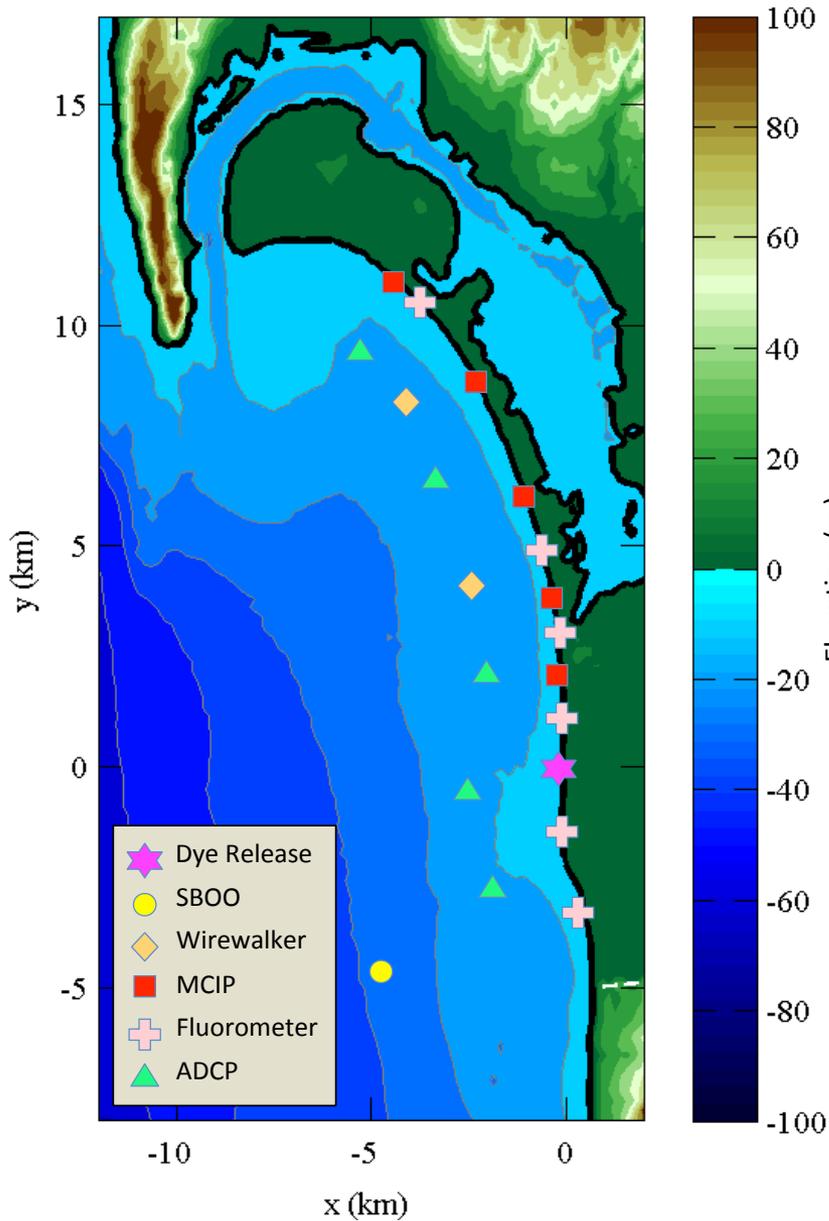
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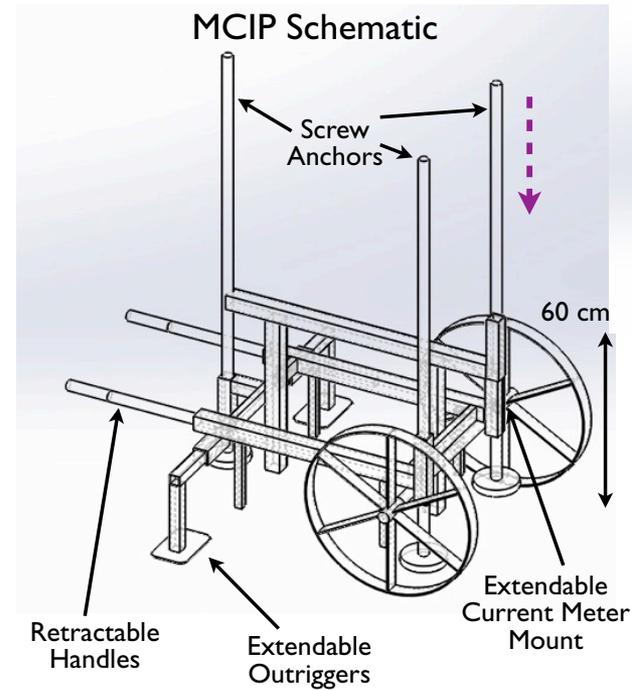
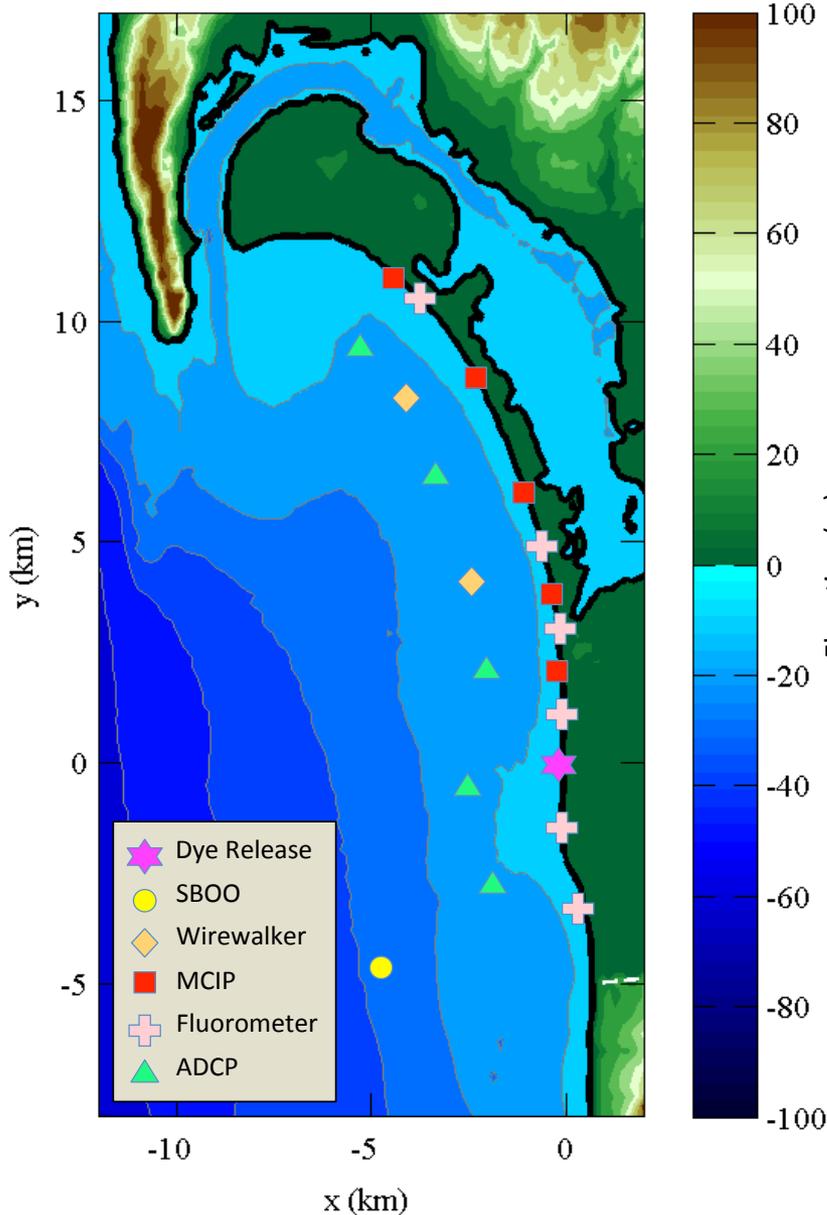
2) Shoreline Dye Sampling with MCIP carts or fluorometers



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Potentially Deployed on property of:

*Border Field State Park, TJNERR, City of IB,
Navy SSTC South, Silver Strand State Park,
Navy SSTC North, City of Coronado*

2) Shoreline Dye Sampling with MCIP carts or fluorometers



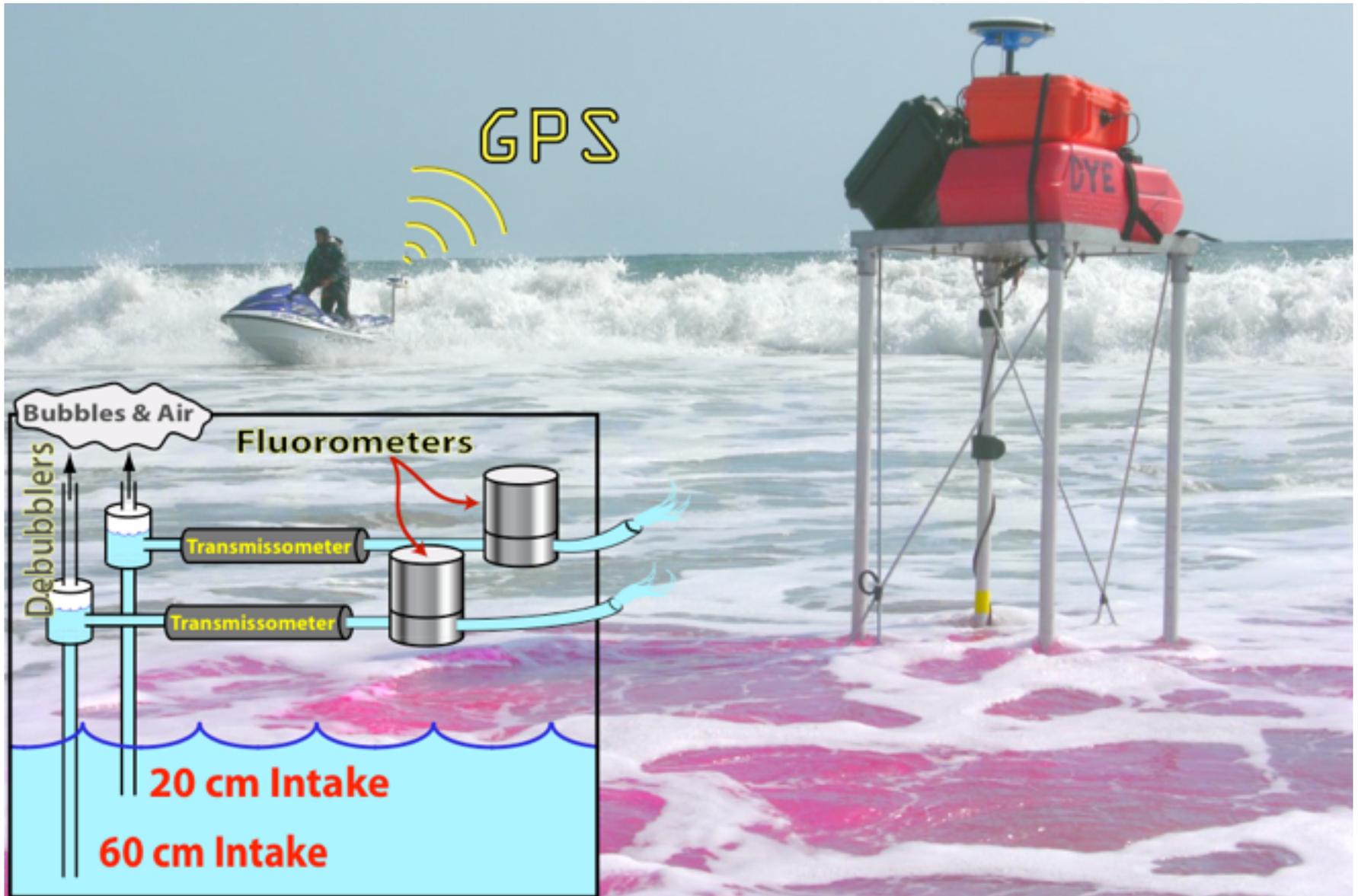
2) Shoreline Dye Sampling with MCIP carts or fluorometers



Potentially Deployed at:
*Border Field State Park, TJNERR, City of IB,
Navy SSTC South & North
Silver Strand State Park, City of Coronado*



3) Jetski Dye Sampling Platform



Jetski Dye Sampling: Small Waves @ HB

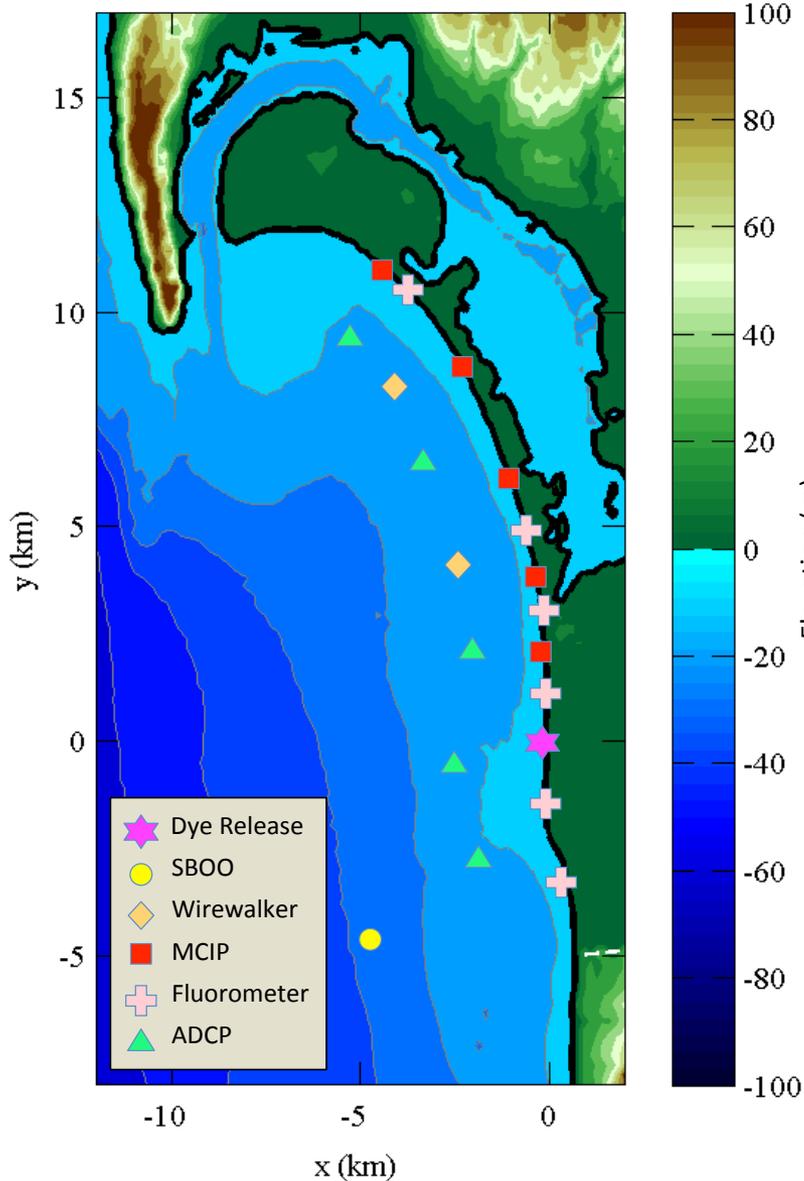
Operator drives repeated cross-shore transects



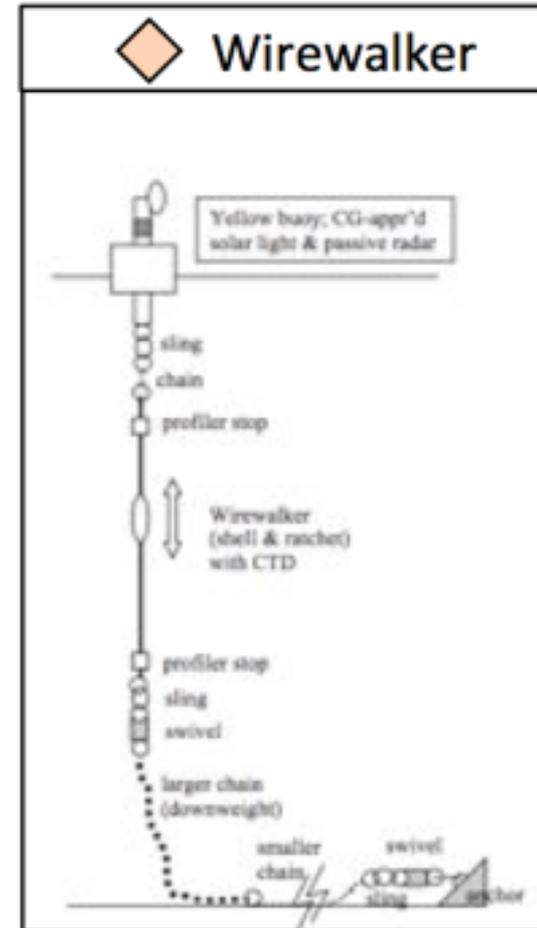
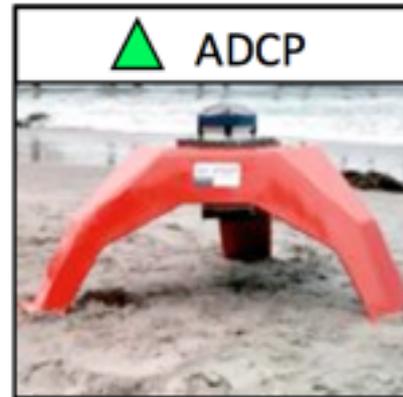
4) Small Boat Sampling in $> 20'$ depth



5) Moorings and bottom instruments in 50' depth



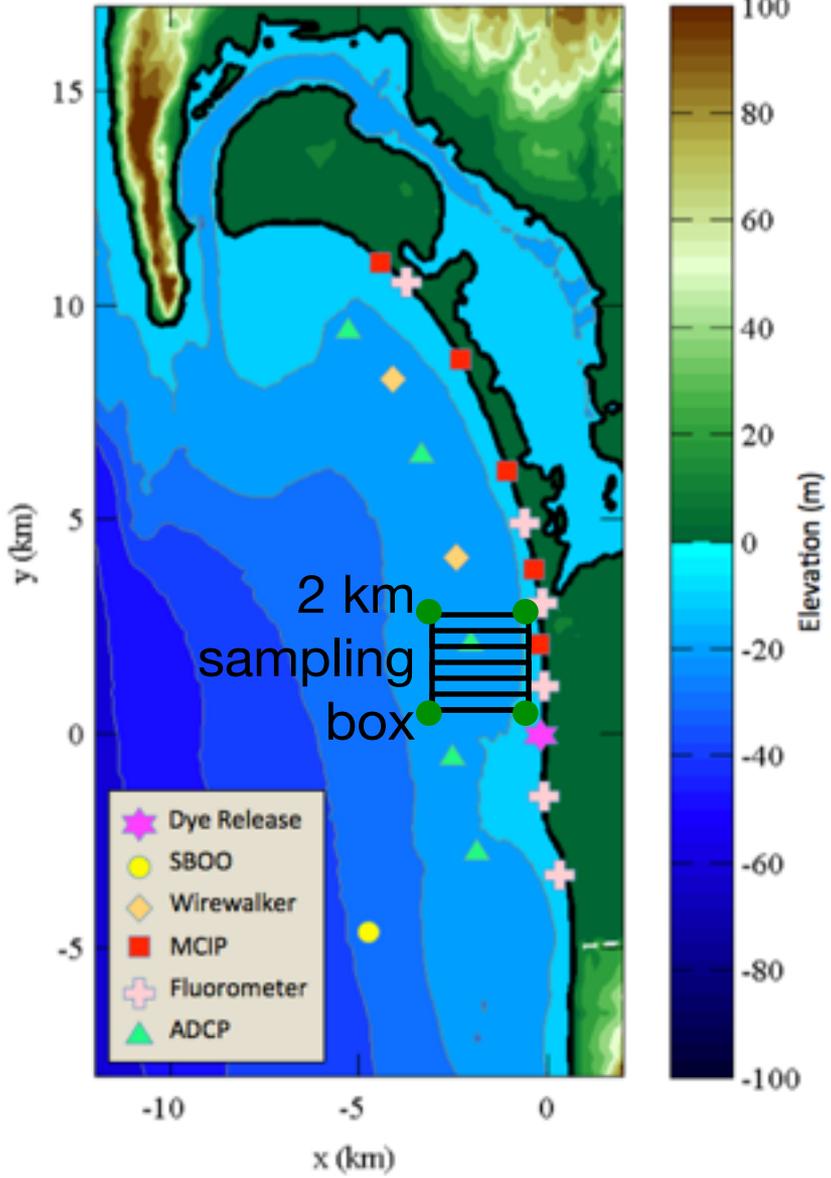
5 Bottom Mounted ADCPs
2 Wirewalker Moorings



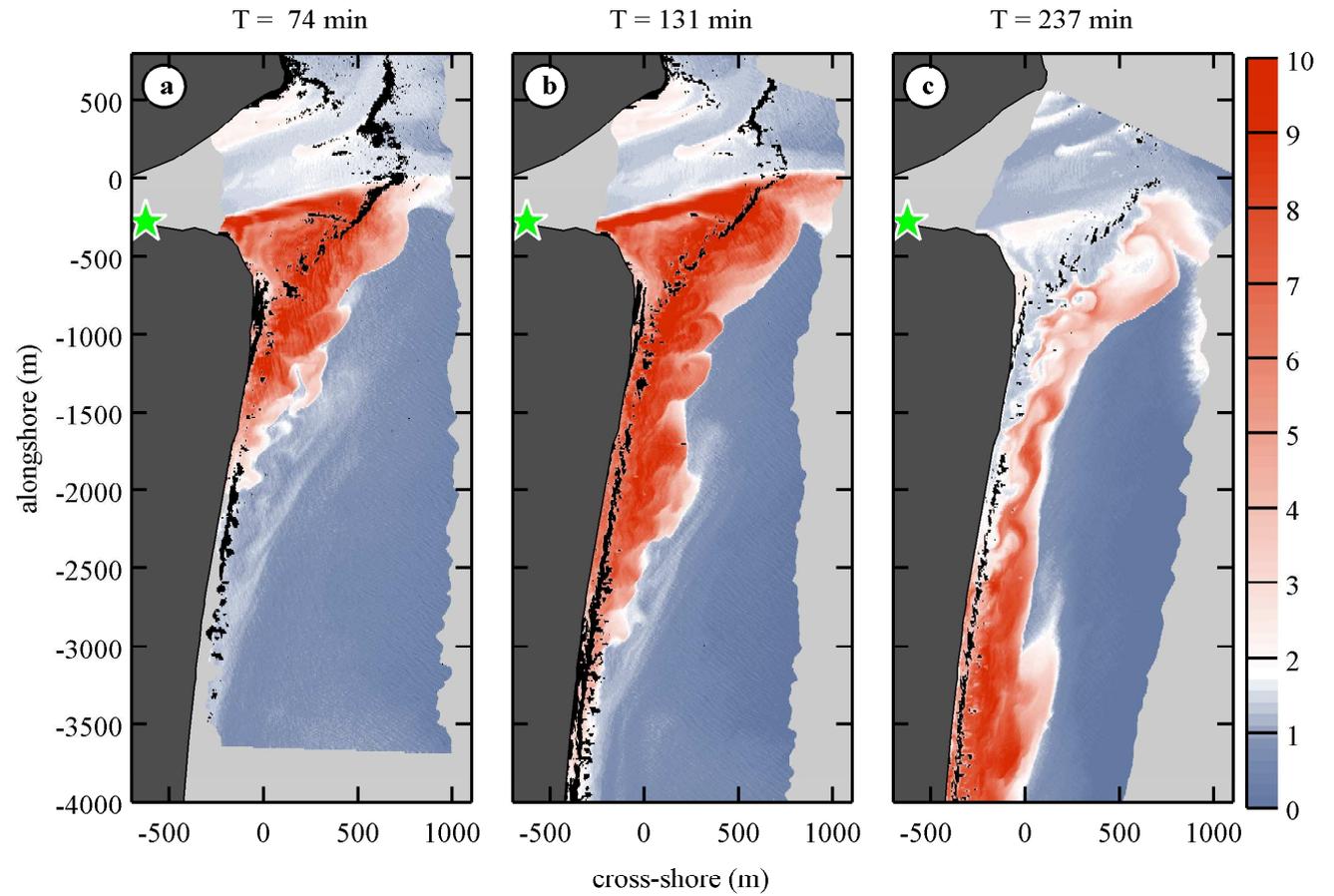
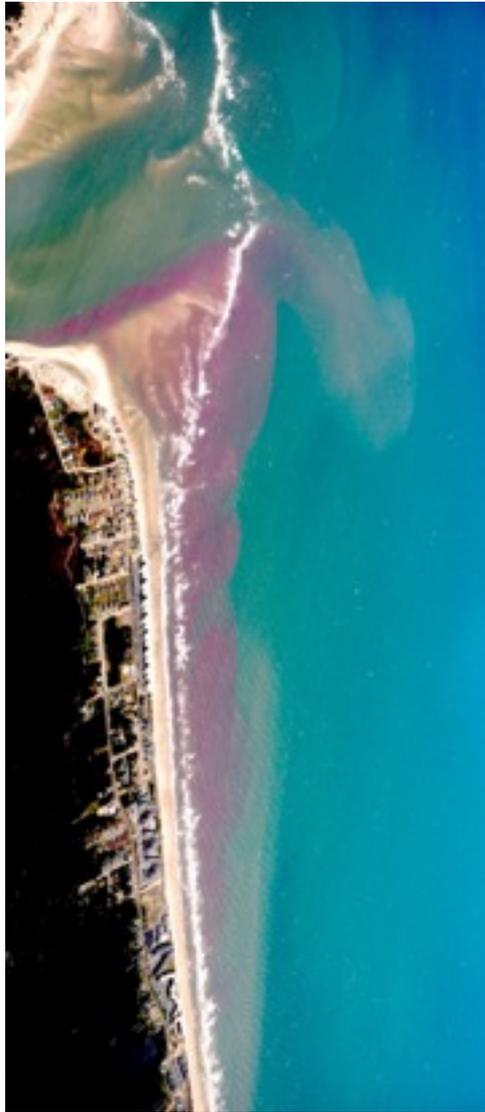
6) Autonomous Underwater Vehicle - REMUS

REMUS – Remote Environmental Monitoring UnitS

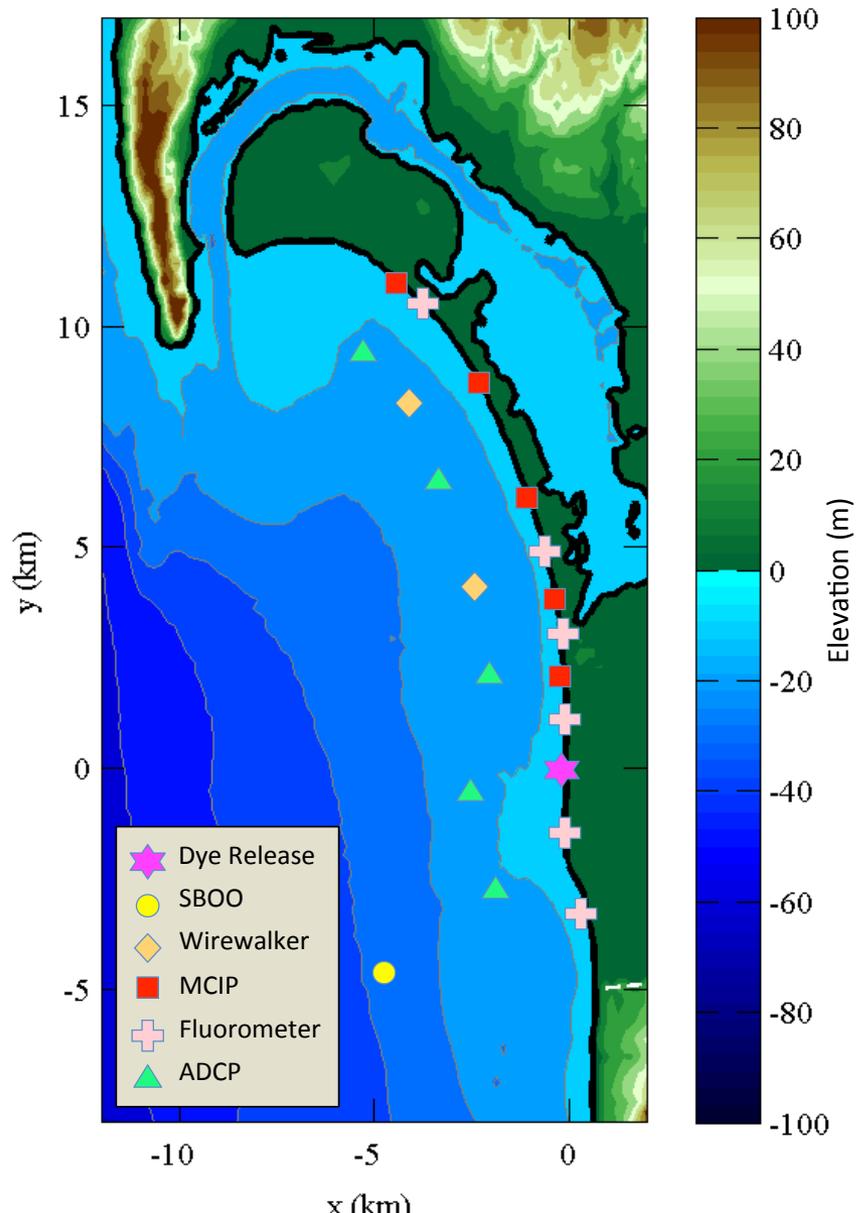
- includes ADCP, CTD, fluorometer
- runs up to 8 hr missions
- navigation is via small acoustic transponders



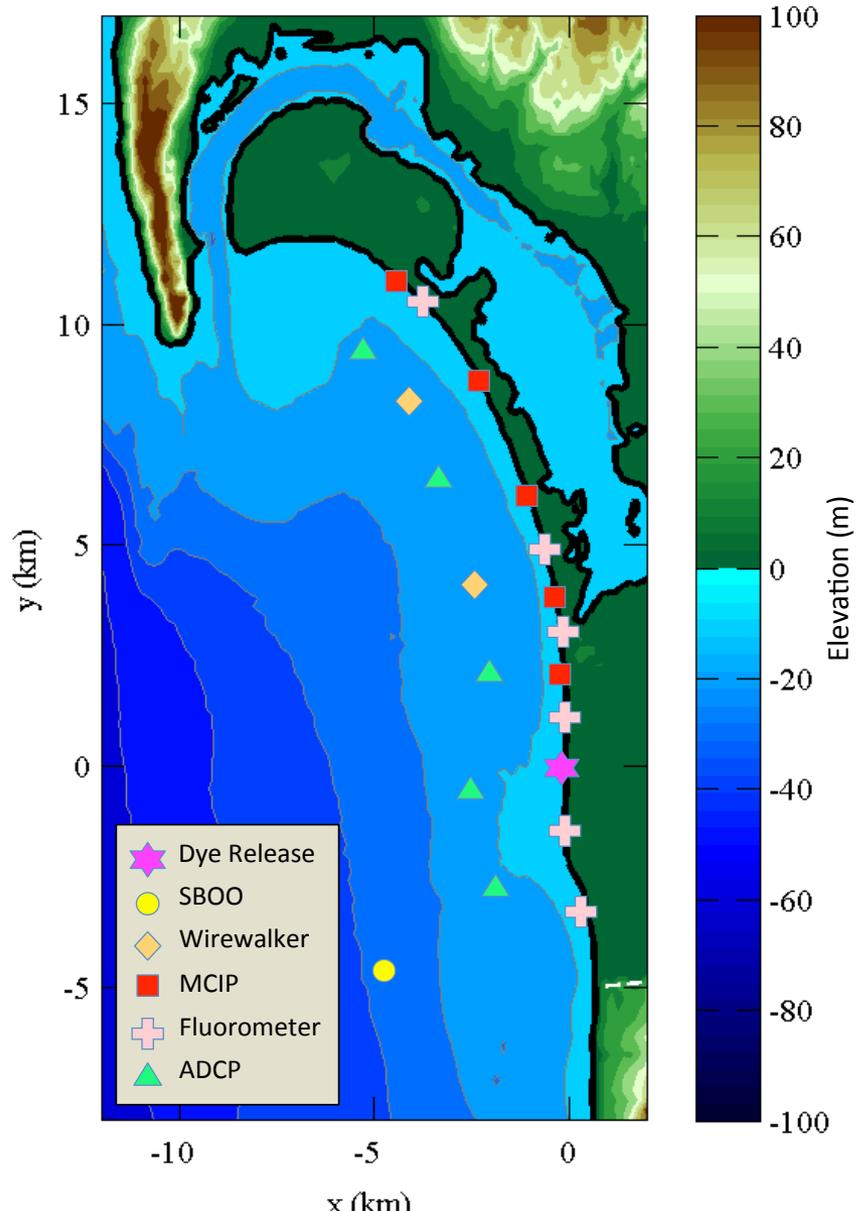
7) Aerial Based Inner-shelf Dye Concentration Observations



Sample Dye Experiment Plan Fall 2015: 48 hrs duration

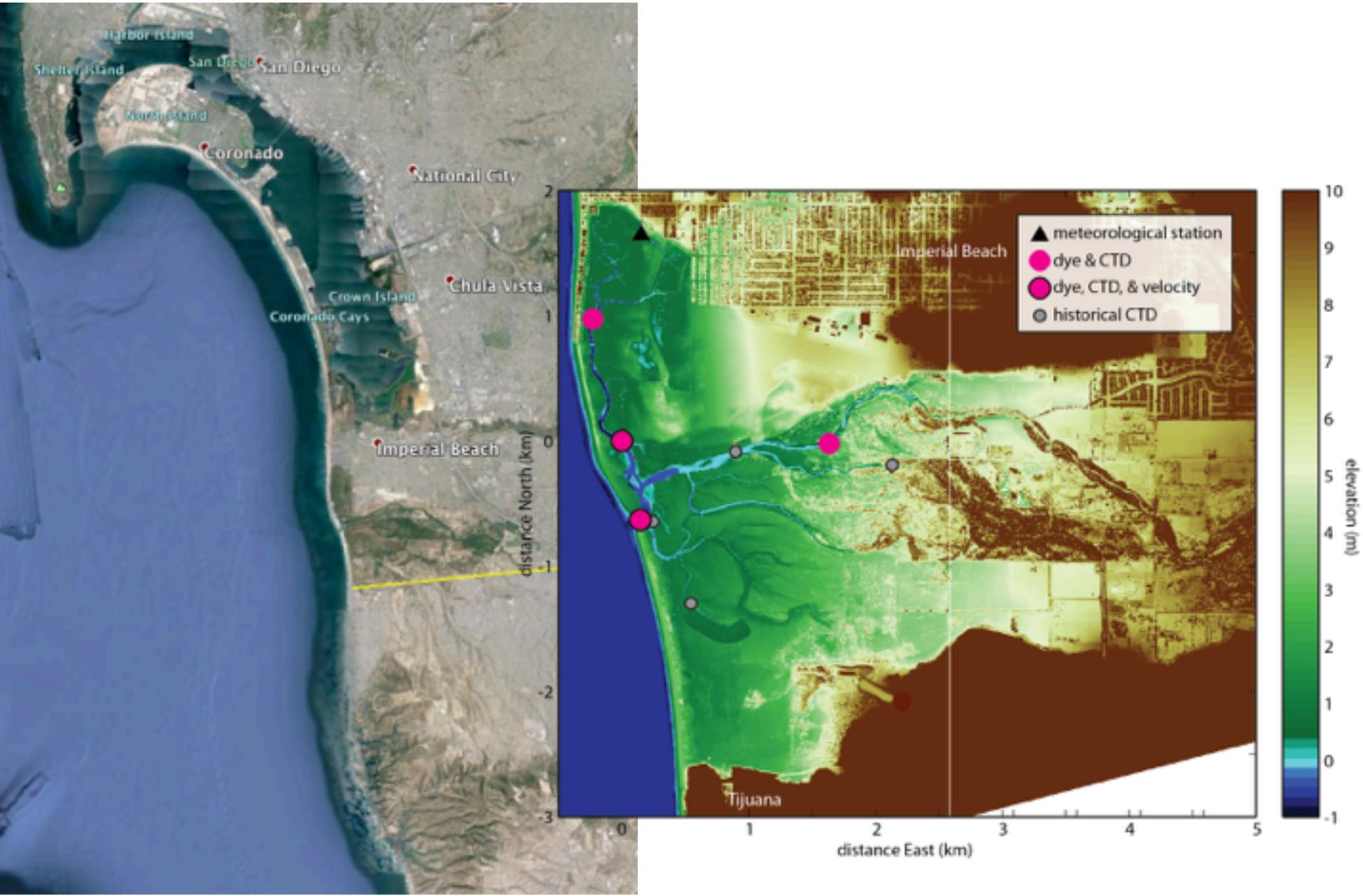


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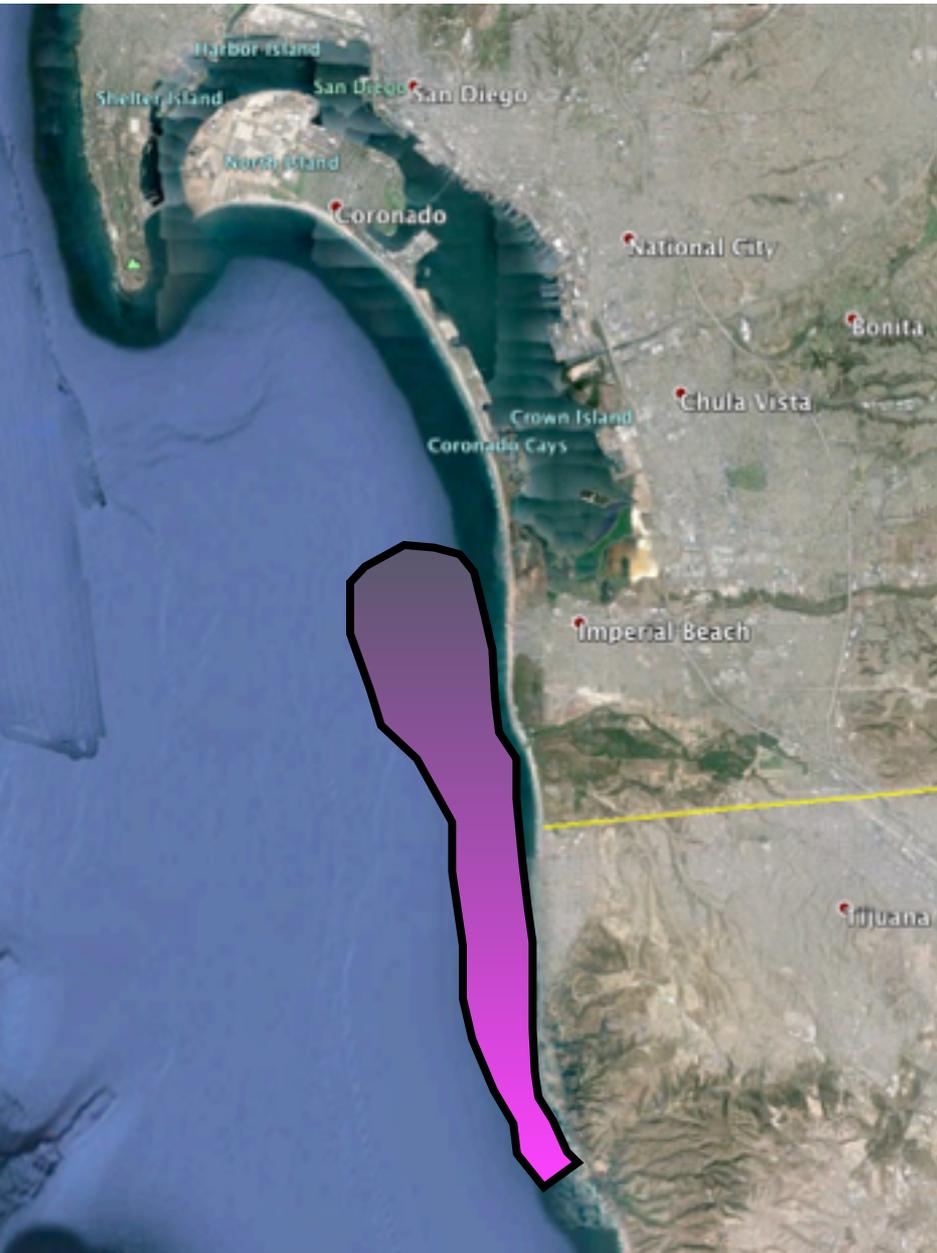


*Border Fields, TJNERR IB, SSTC South,
Silver Strand, SSTC North, Coronado*

Dye Exchange w/ the Tijuana River Estuary? Measure it!



Contamination from Punta Bandera? Cross-border Dye Releases on a big south swell?

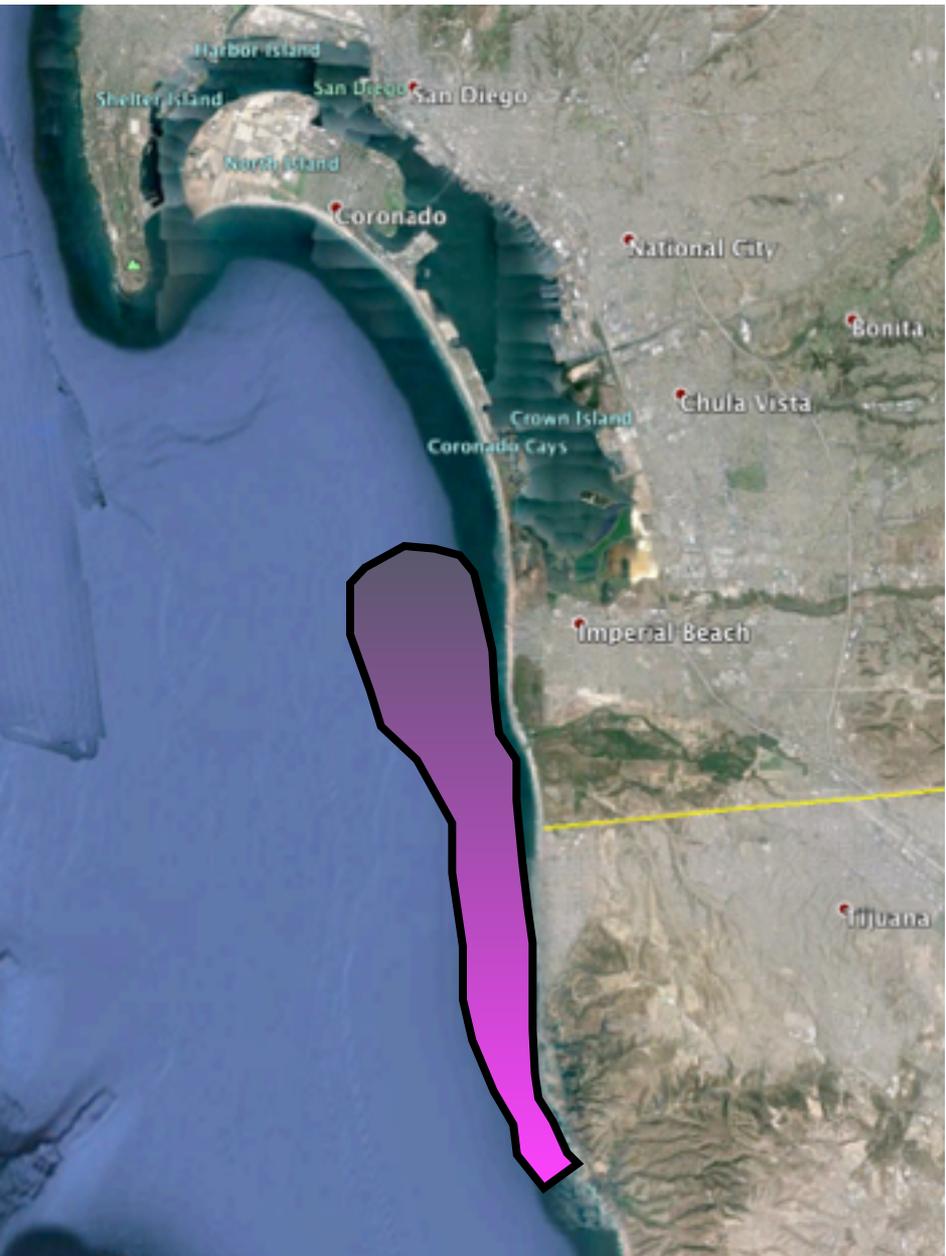


Discussions with Margarita Diaz director of Director of Proyecto Fronterizo de Educacion Ambiental A.C. and Tijuana Waterkeeper

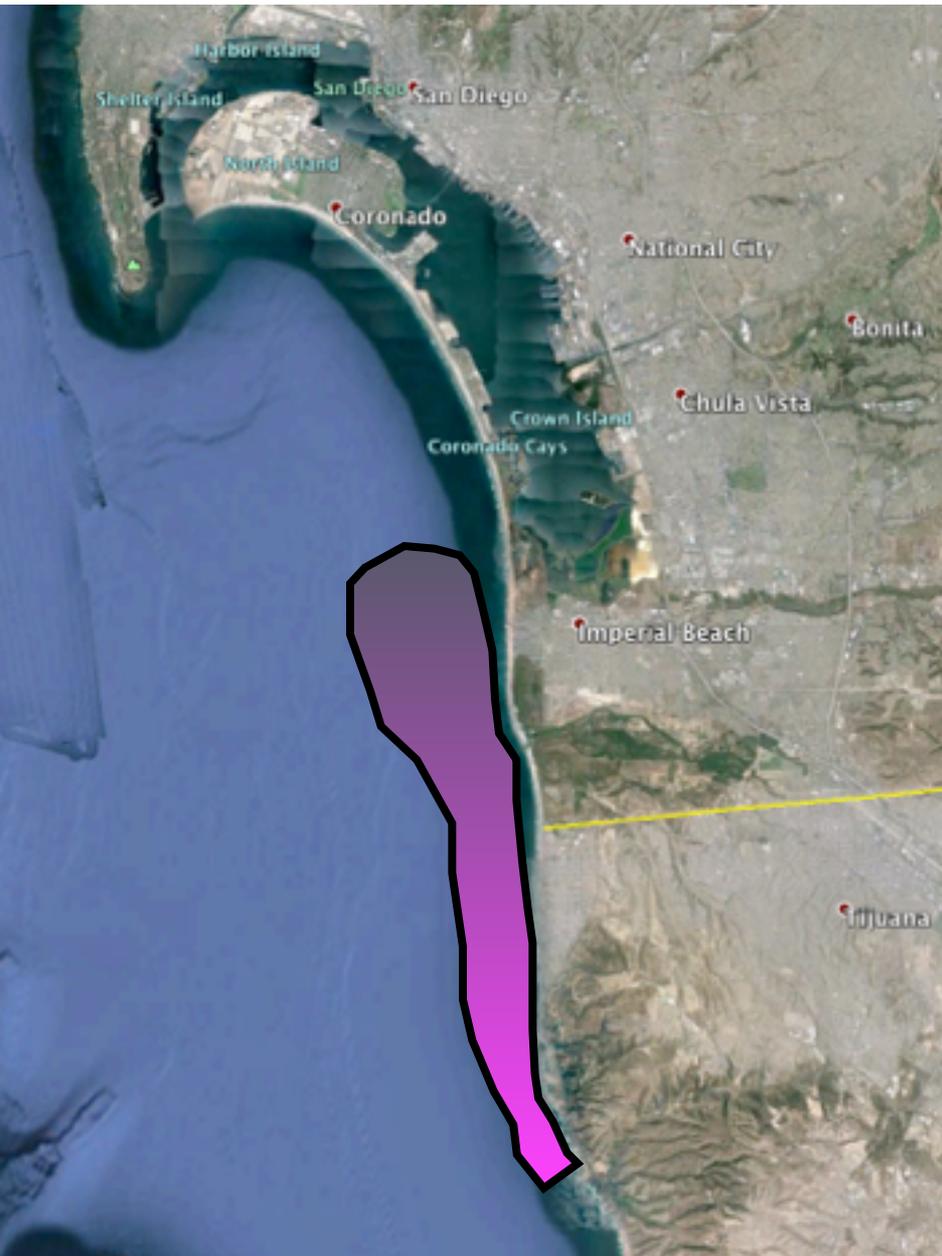
Also w/ David Rivas from CICESE (Ensenada) and with WiLDCOAST

However, *many* logistical hurdles

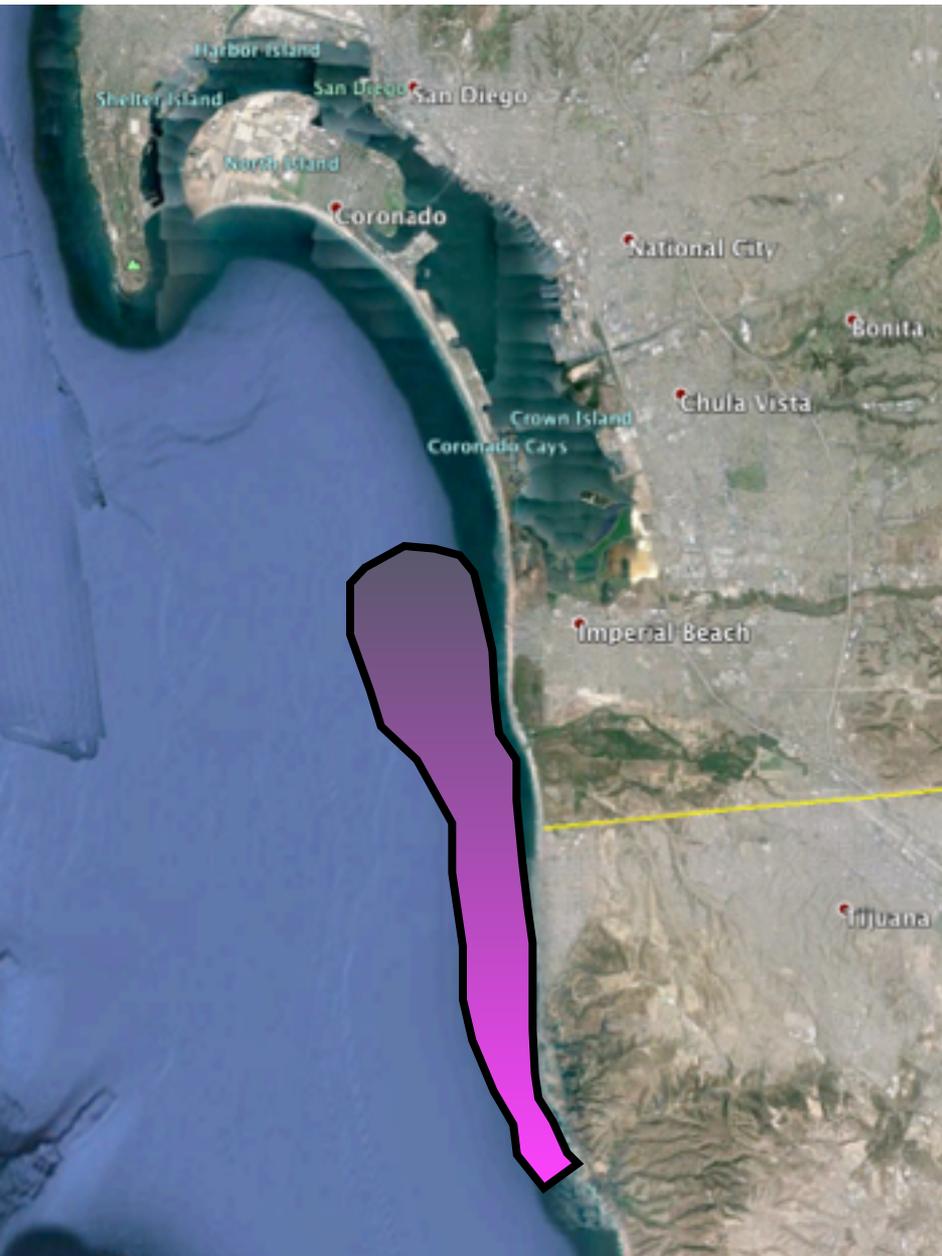
Use observations to build predictive models. (long-term goal)



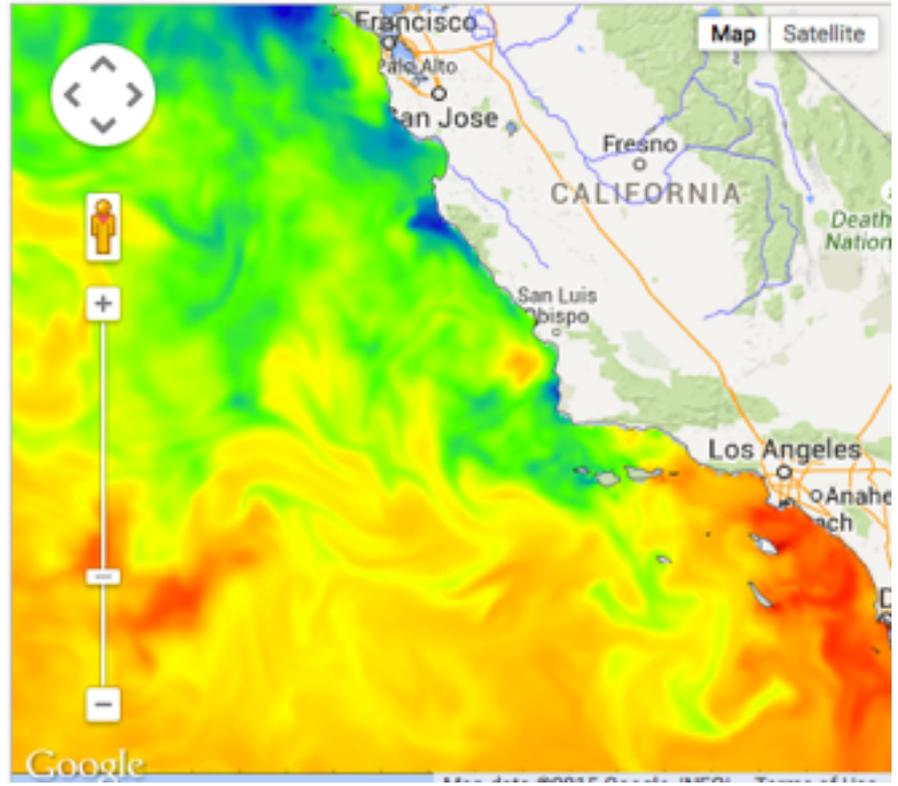
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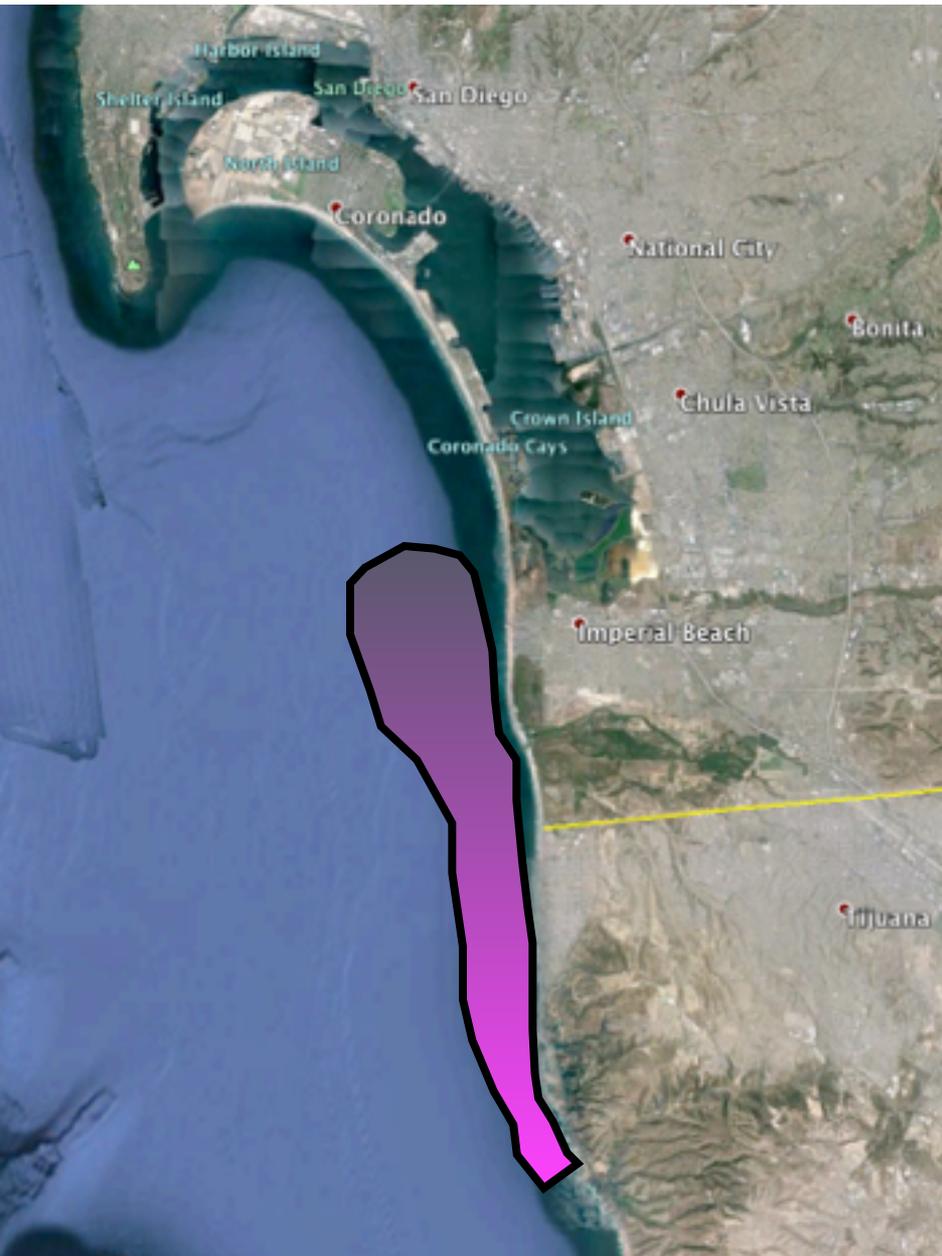
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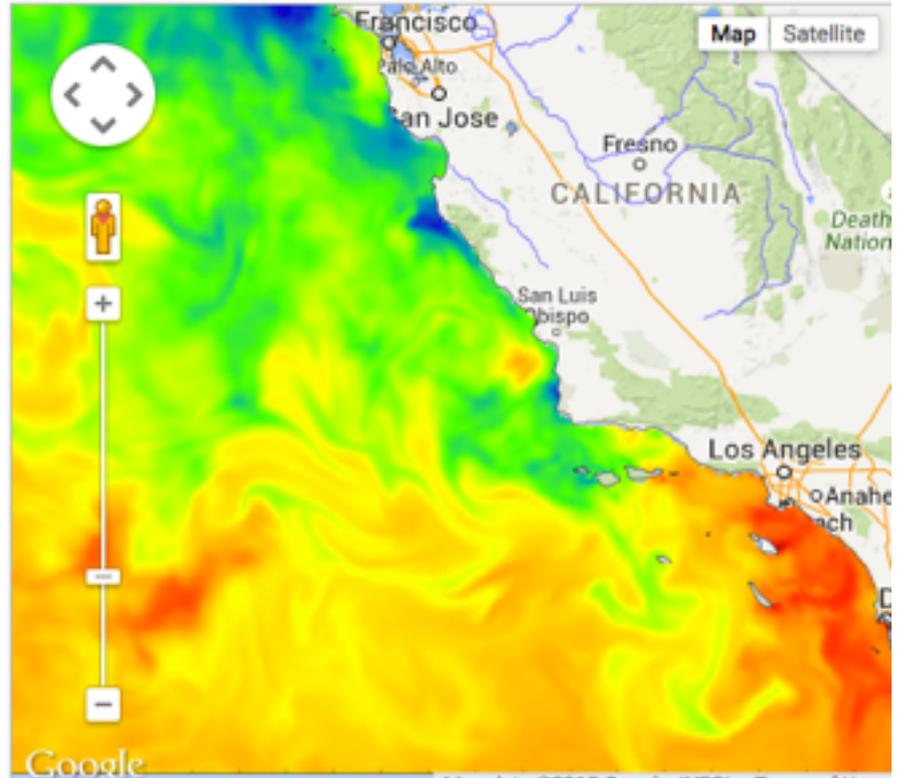
Ocean Temp from large-scale model (SCCOOS)



Use observations to build predictive models. (long-term goal)



Ocean Temp from large-scale model (SCCOOS)



same for this regional scale (Pt. Loma to Rosario)

Questions?





under certain wind and tidal conditions, getting up to us."

David Schlesinger

Director of the San Diego Metropolitan Wastewater Department

San Diego

THE SAN DIEGO UNION-TRIBUNE • SATURDAY, MAY 6, 2000

LANE BELL



Caught in comedy errors

...mply wasn't a good day for ...-standing but plans in Al...-re. First, the best time to at...-a residential break-in is not...-on a Saturday morning when...-4 people are at home. The two...-s were spotted removing prop...-from a home on Day Mead...-Drive.
Then sheriff's deputies pulled...-over being summoned by the...-owner, the intruders took...-a man. A short distance later...-sight up and one jumped over...-over into a backyard. It turned...-to be the home of an old-duty...-officer — who took the de...-sper suspect into custody. The...-man thumped into the garage...-with her house and closed under...-s. Apparently, he didn't notice...-the car he hid under was...-red black and white and...-red with lights. It also be...-longed to a California Highway...-of office, who works outlying...-of the county.

One's more

...-make natives worse, report...-sheriff's investigator Dan...-re, the two men had been us...-a truck reported stolen a few...-earlier. And in the truck, he...-s was less than ten other re...-d burglaries in which the men...-now suspects.

In the grapevine

...-George W. Bush made...-d-shaking remarks at the huge...-de Mayo celebration at the...-oak Country Hotel yesterday...-planned a congratulatory kiss...-me fairly in the audience — Na...-Cooks. Yesterday was her...-birthday. She's Congresswoman...-Cummings' son's grandmother...-low, Cunningham was in

Plume of pollution sent by Mexico, images show

Satellite shots depict sewage flowing north from treatment plant

By Leslie Wolf Branscomb
STAFF WRITER

New scientific research using satellite images indicates that sewage drifting up the coast from a Mexican sewage treatment plant may be a significant source of pollution on the county's southernmost beaches.

The color-enhanced images show a red plume drifting up the coast from the Mexican plant 5.6 miles south of the border that is in addition to the known discharge of untreated sewage from the mouth of the Tijuana River in Imperial Beach.

The federal government has spent more than \$250 million on a sewage treatment plant north of the border in an effort to contain at least some of the sewage flowing into the United States via the Tijuana River. Yet, bacteria levels in the water off the coast at times remain alarmingly high.

Late last year, the U.S. Environmental Protection Agency funded a small study in which satellite pictures, radar and thermal imaging were used to try to obtain an accurate picture of where the pollution originates.

The report, prepared by Ocean Imaging of Solana Beach, was commissioned by the San Diego Metropolitan Wastewater Department using \$9,877 from the EPA.

Selected satellite photos from 1999 show what appears to be a large flow entering the ocean at Punta los Hornos, near Mexico's San Antonio de los Hornos sewer treatment plant, and moving northward along the coast.

"The data shows conclusively that the plume from Punta los Hornos is, under certain wind and tidal conditions, getting up to us," said David Schlesinger, director of the San Diego Metropolitan Wastewater Department.

