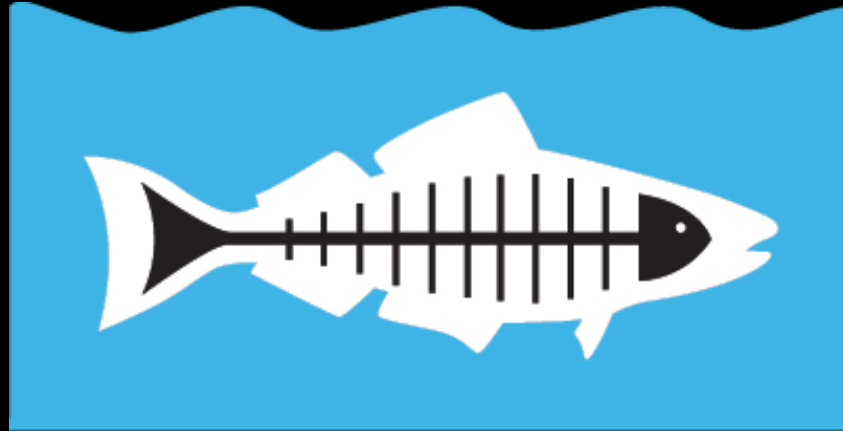


The NowCast System



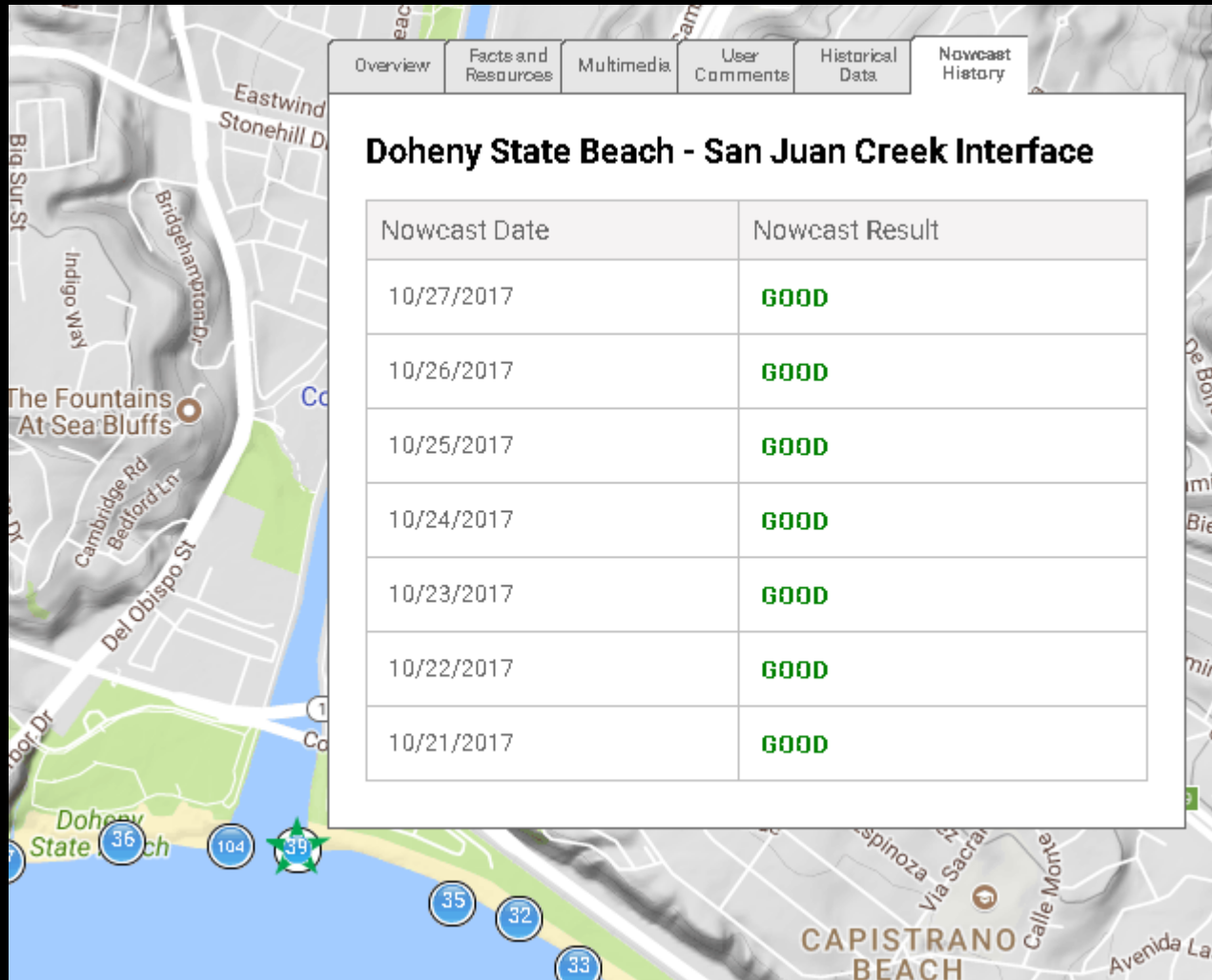
Predicting Water Quality at California Beaches

Why Predict Water Quality?

Monitoring and Public Notification in California




The NowCast System




Overview Facts and Resources Multimedia User Comments Historical Data Nowcast History

Doheny State Beach - San Juan Creek Interface

Nowcast Date	Nowcast Result
10/27/2017	GOOD
10/26/2017	GOOD
10/25/2017	GOOD
10/24/2017	GOOD
10/23/2017	GOOD
10/22/2017	GOOD
10/21/2017	GOOD

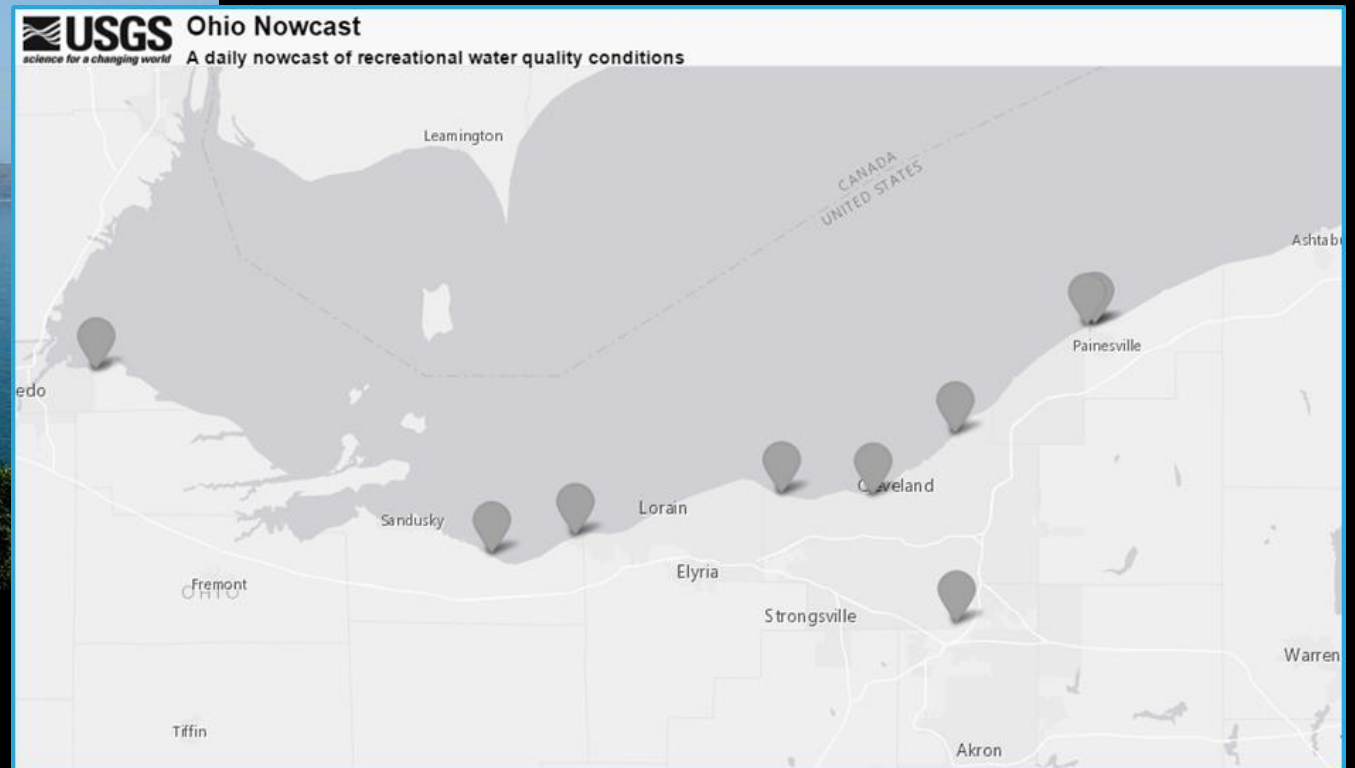
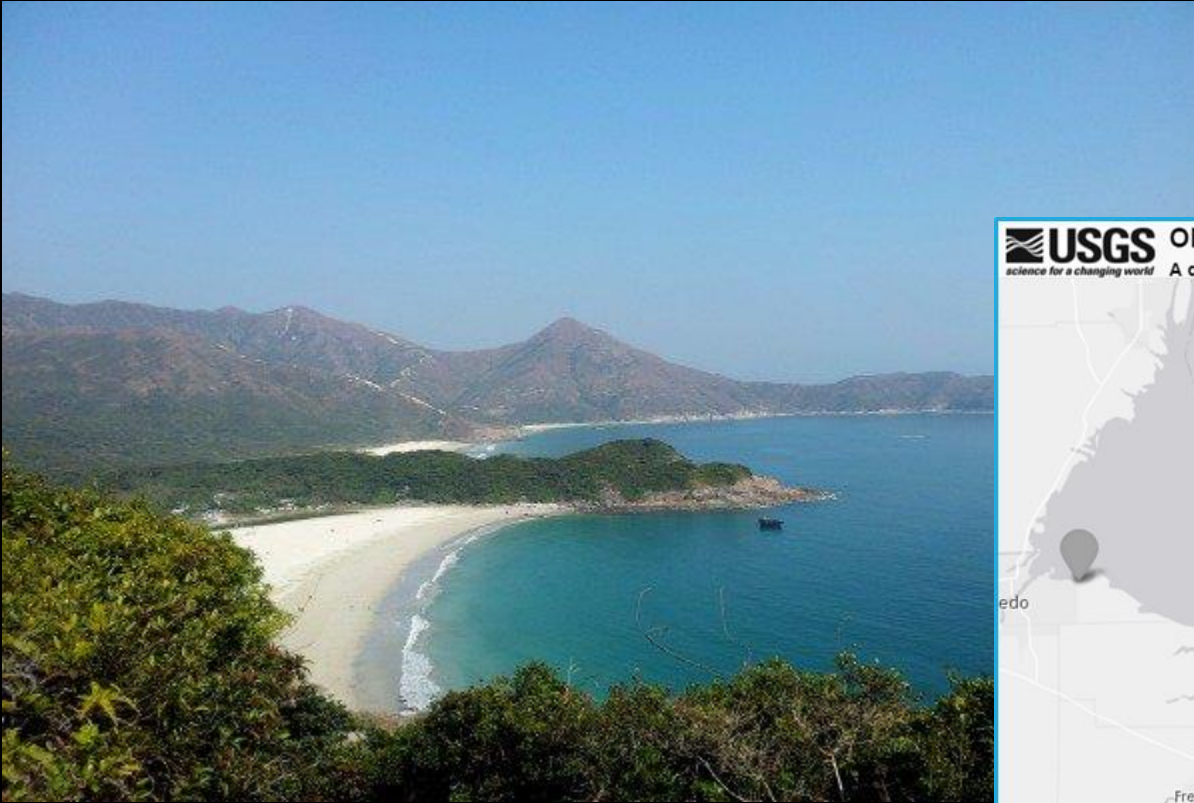
Water Quality Nowcast: **GOOD** 

A predictive model is being tested at this beach. X
GOOD WATER QUALITY is predicted today based on observed conditions this morning. This means that bacteria levels are not likely to exceed the health standards for ocean water contact. [Click here for more information.](#)

Water Quality Nowcast: **POOR** 

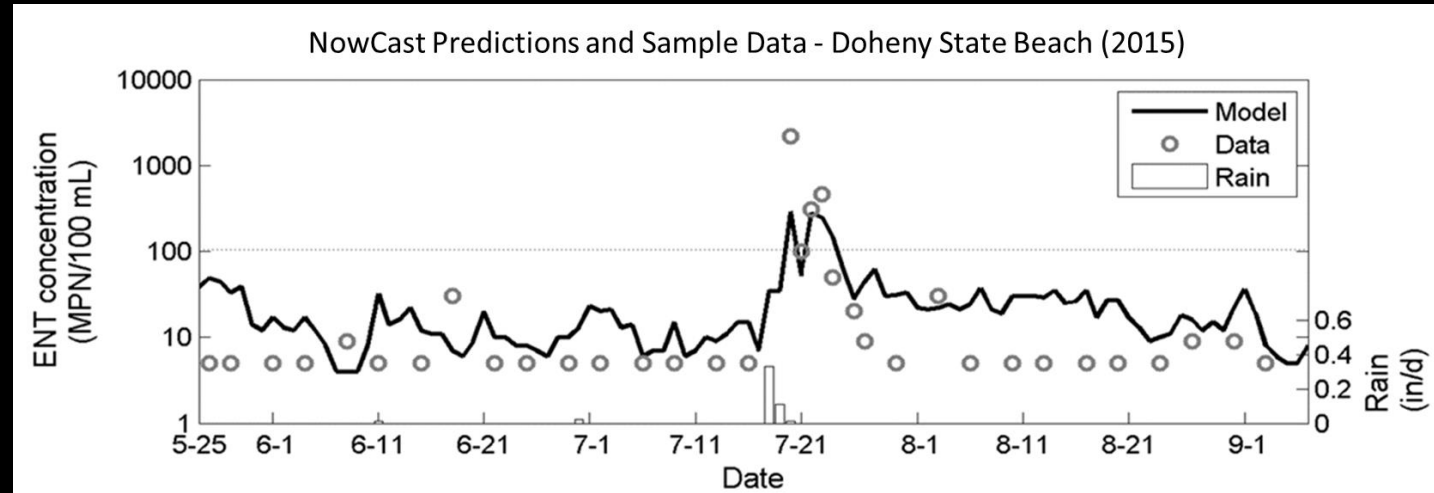
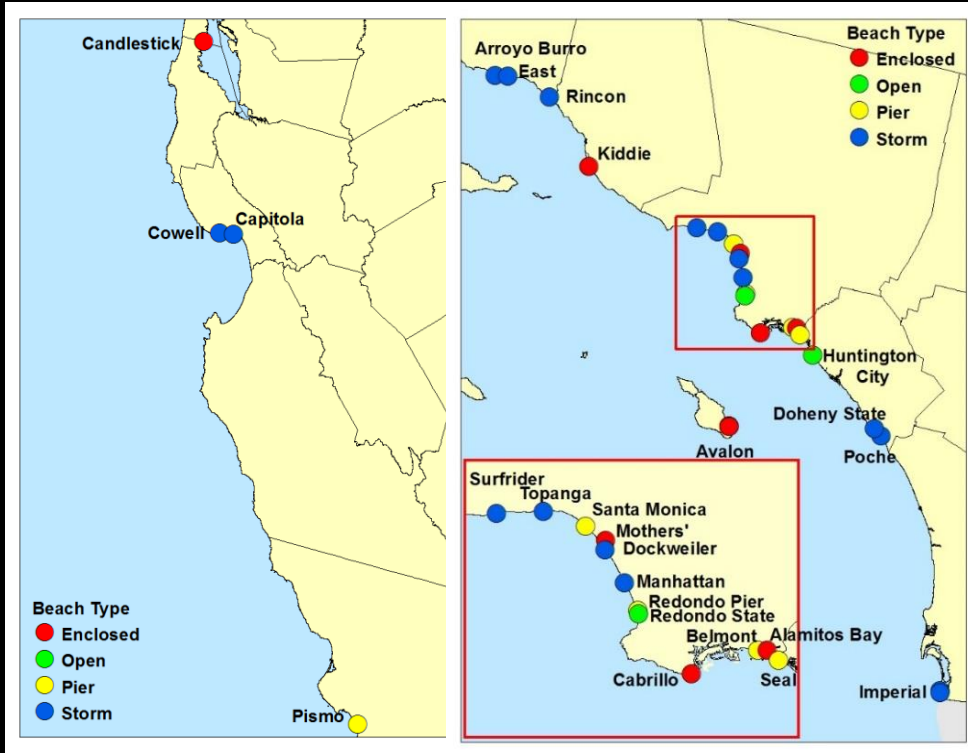
A predictive model is being tested at this beach. X
POOR WATER QUALITY is predicted today based on observed conditions this morning. This means that bacteria levels are likely to be high and exceed the health standards and ocean water contact may cause illness. [Click here for more information.](#)

Background on Predictive Modeling



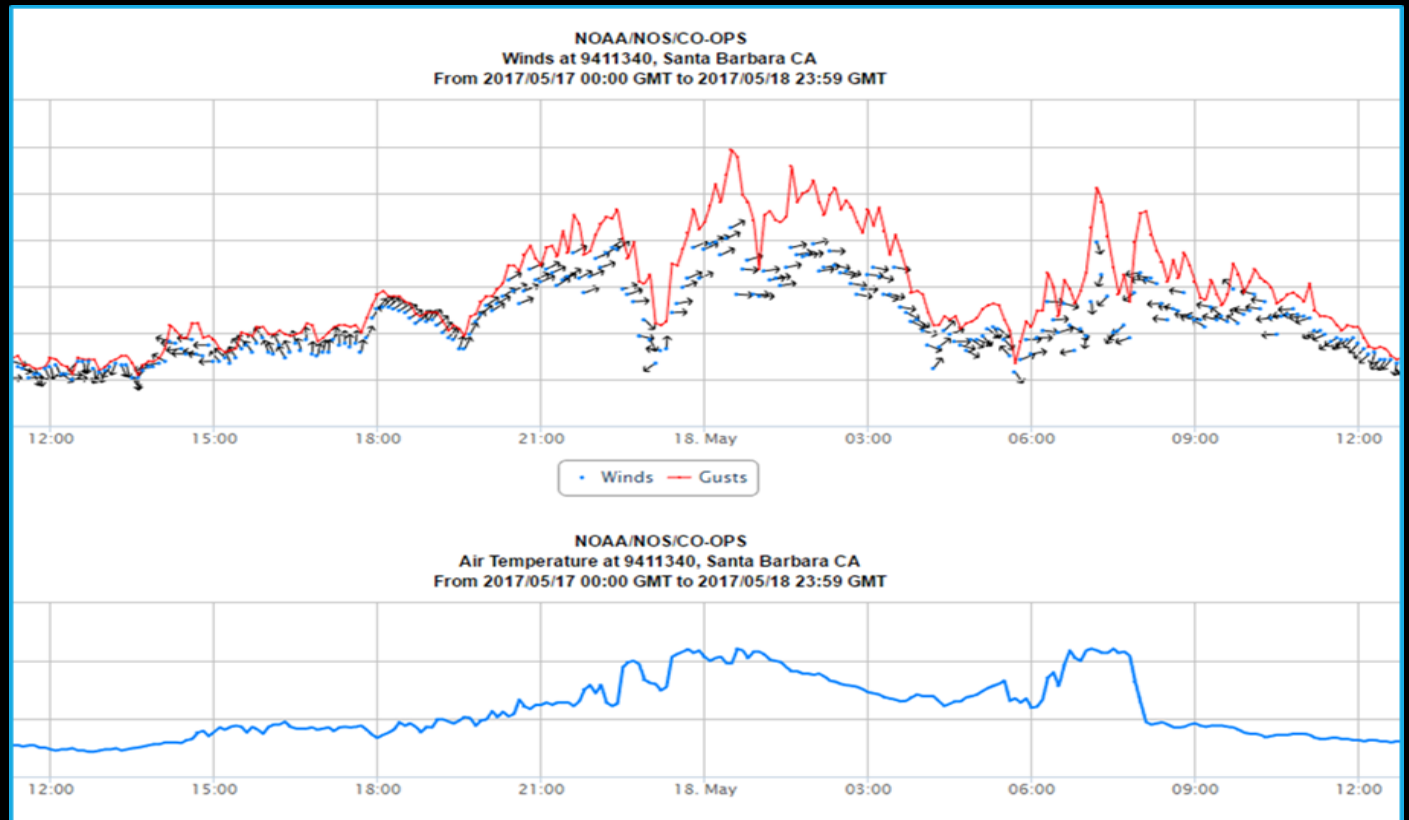
What Goes Into Making Our Predictions?

Research: 2012 - 2015

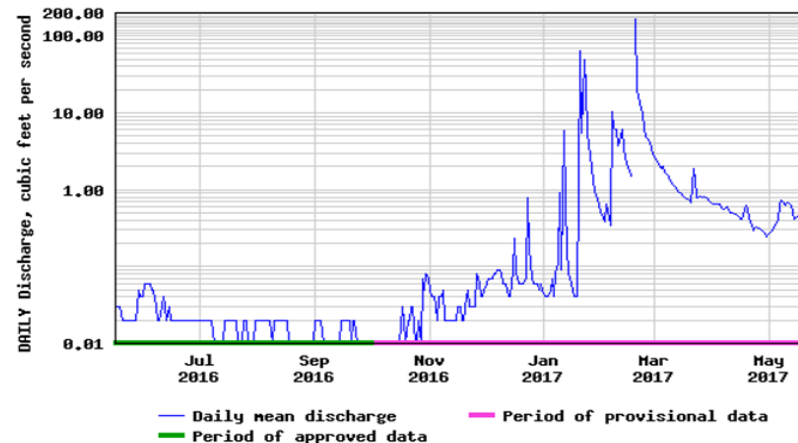


SHORELINE

Hyperion Shoreline - S1 (SMB TMDL: SMB-MC-2) Malibu Crk, Malibu Lagoon County Bch Pt. Zero	Tot > Ec Ent	13,000 280 10	a <input checked="" type="checkbox"/>
Hyperion Shoreline - S2 (SMB TMDL: SMB-1-18) Topanga Cyn, Topanga County Bch Pt. Zero	Tot Ec Ent	1,000 430 87	b <input checked="" type="checkbox"/>
Hyperion Shoreline - S3 (SMB TMDL: SMB-2-04) Pulga Cyn SD, Will Rogers SB Pt. Zero	Tot Ec Ent		<input type="checkbox"/>
Hyperion Shoreline - S4 (SMB TMDL: SMB-2-07) Santa Monica Cyn SD, Santa Monica SB Pt. Zero	Tot < Ec < Ent <	67 67 10	<input type="checkbox"/>
Hyperion Shoreline S5 - (SMB TMDL: SMB-3-03) Santa Monica Pier SD, Santa Monica SB Pt. Zero	Tot Ec Ent	1,500 1,100 53	b <input checked="" type="checkbox"/>
Hyperion Shoreline - S6 (SMB TMDL: SMB-3-04) Pico-Kenter SD, Santa Monica SB Pt. Zero	Tot > Ec Ent	13,000 3,900 2,000	a b c <input checked="" type="checkbox"/>
Hyperion Shoreline - S7 (SMB TMDL: SMB-3-05) Ashland SD, Santa Monica SB Pt. Zero	Tot Ec Ent	67 67 10	<input type="checkbox"/>
Hyperion Shoreline - S8 (SMB TMDL: SMB-3-08)	Tot		



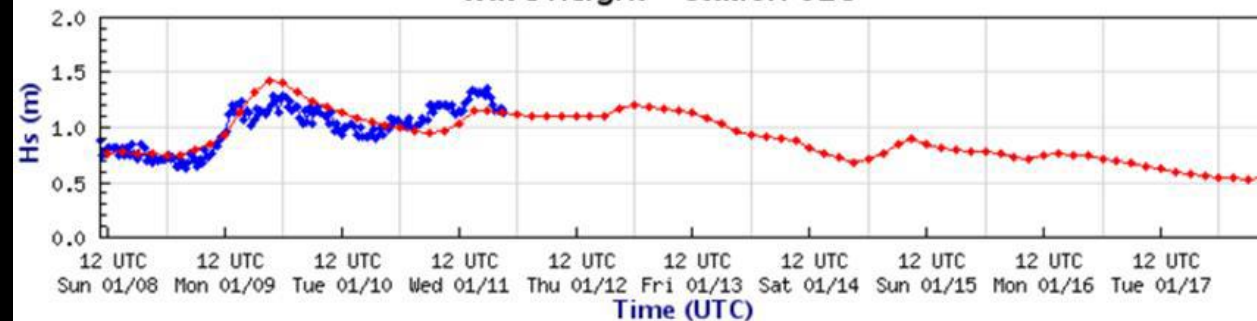
USGS 1119745 MISSION C A ROCKY NOOK PARK A SANTA BARBARA CA



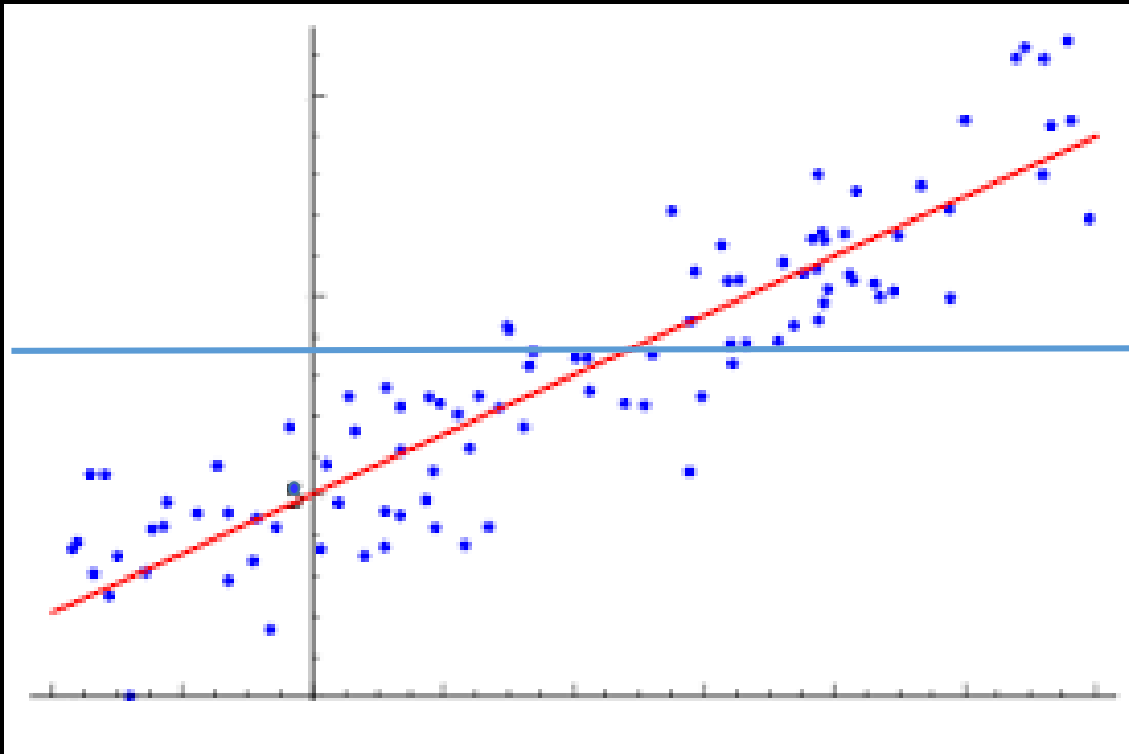
Santa Monica Bay, CA Conditions + Forecast

Observations: CDIP buoy 028
Forecast: NOAA WW3 46221

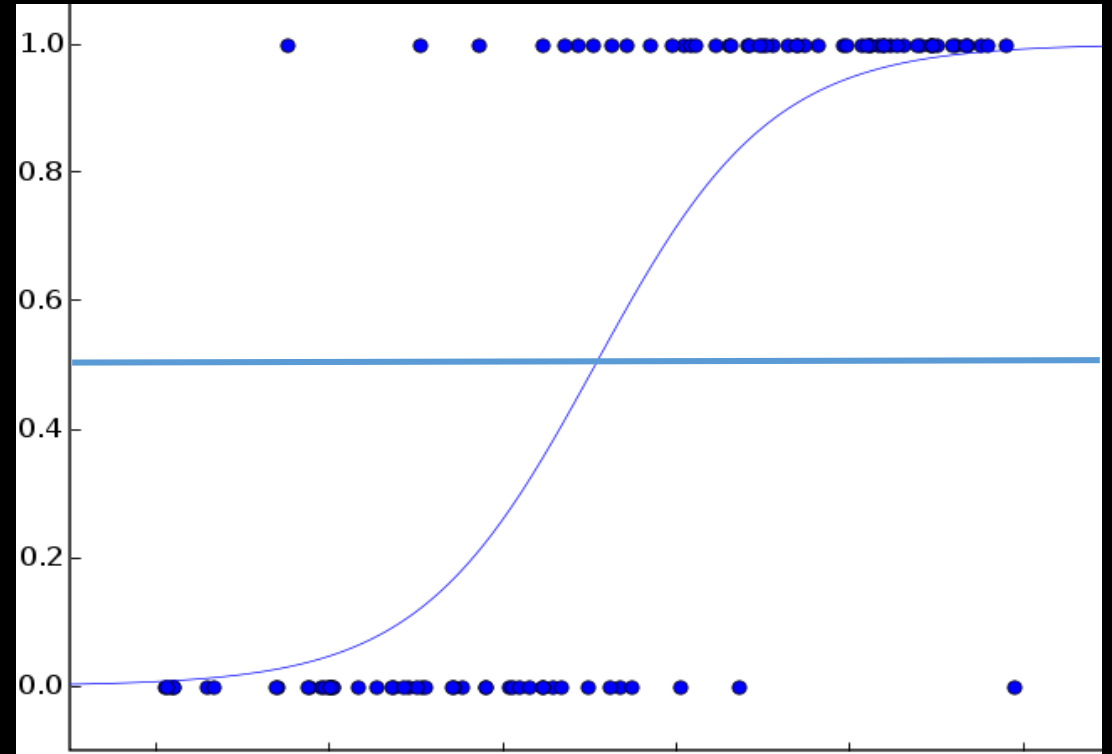
Wave height - Station 028



Modeling Methods

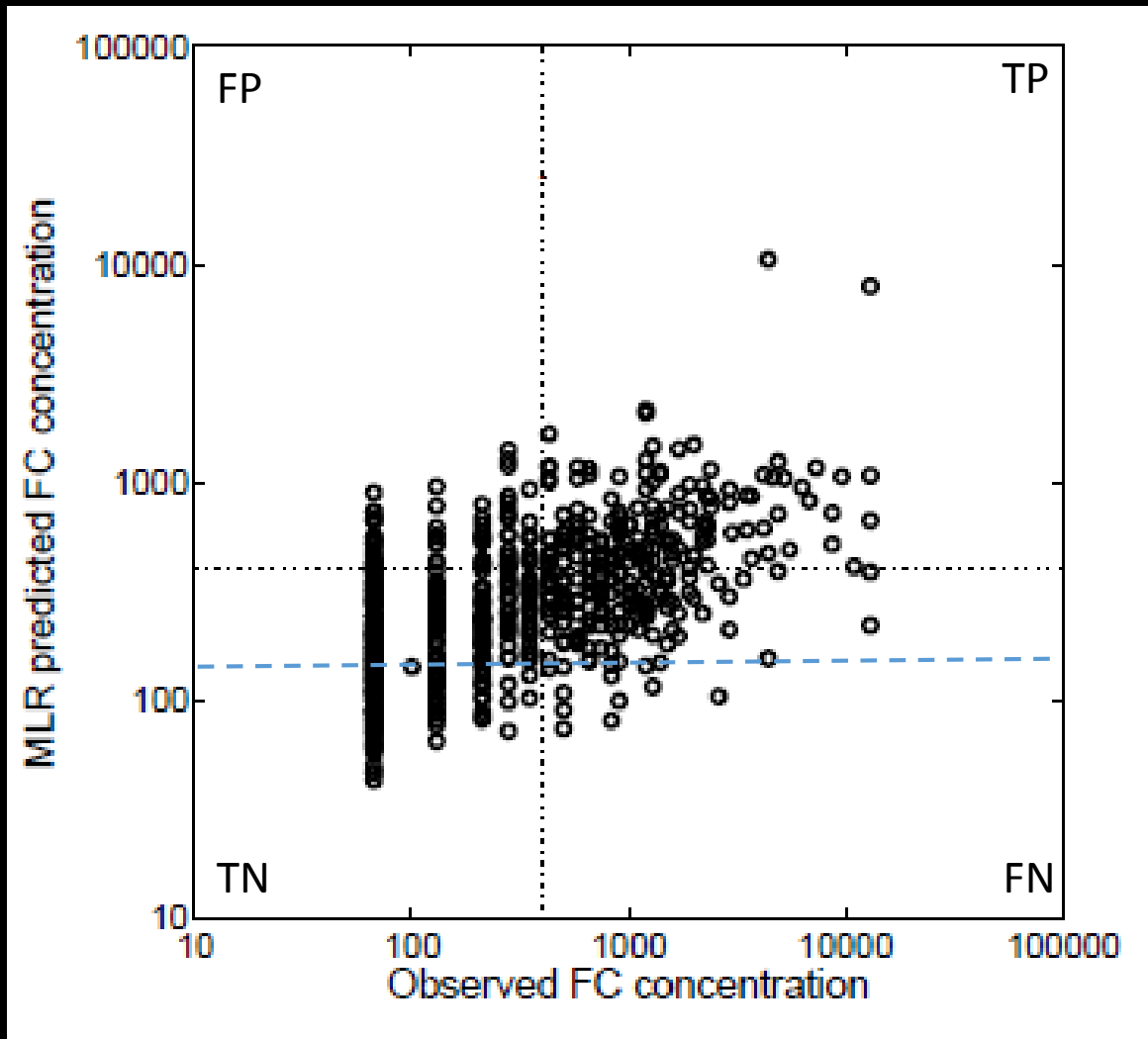


Multiple Linear Regression (MLR)



Binary Logistic Regression (BLR)

Performance Criteria



- Sensitivity:
 - At least 30%
 - At least 10% > Current Method
- Specificity:
 - At least 85%*

Models must achieve this in both the calibration dataset and a separate validation dataset

Daily Predictions Using an Automated System

Running FC model (Cowell):

Variable	Coefficient	value
APD1	-0.130	8.880000
Tider1	0.354	1.165000
lograin4	-0.302	-2.301030
dtemp1	0.041	51.000000
wtemp_B1	-0.111	13.200000
DPD1_max	-0.029	16.670000
logflow1	-0.188	1.227887

Constant: 2.311
PM: 1.008

FC (Predicted): 156 CFU/ 100 mL
Posting Decision: No Post

Finished daily run for 10/31/2017

Predictions:

	TC	FC	ENT
Arroyo Burro	No Post	No Post	Post
Belmont Pier	No Post	No Post	No Post
Cowell	No Prediction	No Post	No Post
Doheny	No Post	No Post	No Post
East	No Post	No Post	No Post
Huntington (Brookhurst)	No Post	No Post	No Post
LB City Beach (5th Place)	No Post	No Post	No Post
Moonlight	No Prediction	No Post	No Post
Redondo Beach Pier	No Post	No Post	No Post
Santa Monica Pier	No Post	No Post	No Post

The screenshot shows a web page for Huntington State Beach. At the top, there are navigation tabs: Overview, Facts and Resources, Multimedia, User Comments, Historical Data, and Nowcast History. The main heading is "Huntington State Beach- projection of Brookhurst" with a sub-note: "Grades based on a 30-day period ending 10/11/2017".

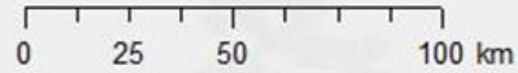
There are two weather-related sections: "Dry Weather" with a large blue letter 'A' and a small image of fish, and "Wet Weather" with the letters 'ns' and a note "No samples taken or available".

A green banner indicates the "Water Quality Nowcast: GOOD" with another fish image. Below this, the "Location" is listed as Huntington Beach, Orange County, CA 92646. The "Current Condition" is shown as "Air: 73.4° F, Clear" and "Wind: 1.0 MPH SW".

At the bottom, there are links for "Get Directions", "Get Updates via RSS", "Add a widget to my site", and "Report an Issue with this Beach". The page is powered by wunderground.com.

Summer 2017 Results

Summer 2017 Beaches



Beach Type

- Open
- Pier
- Storm Drain/River Outlet

Arroyo Burro (AB) East (EB)



Santa Monica Pier (SM)



Redondo Beach Pier (RP)



Belmont Pier (BP)



Long Beach City Beach (LB)



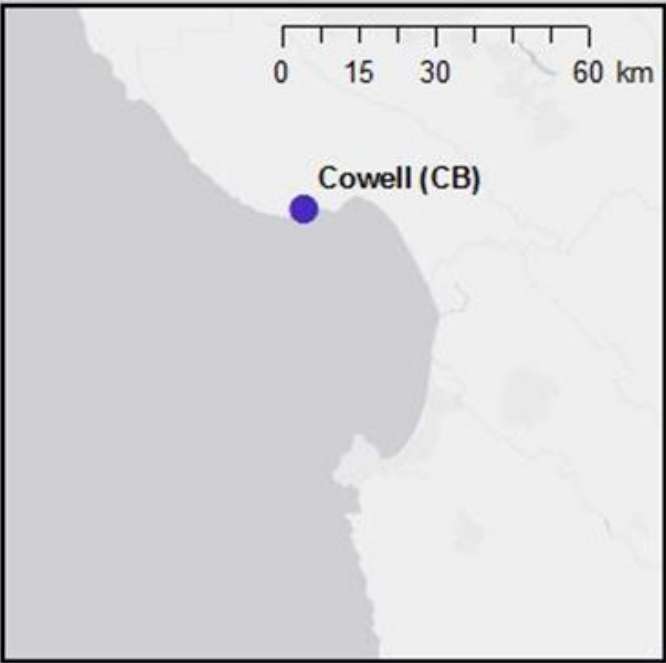
Huntington State (HS)



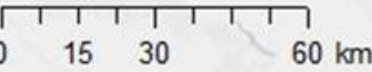
Doheny State (DS)



Moonlight (MB)



Cowell (CB)



Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Cowell Beach – Santa Cruz

Table 1: Cowell Beach - Summer 2017 FIB Sample Data

FIB	FC	ENT
Number of Monitoring Samples	26	26
Exceedances of SSS	11	1
Percentage of Samples Exceeding SSS	42%	4%

Table 2: Cowell Beach

Summer 2017 Overall Model Performance

	NowCast	Current Method
FC – MLR		
Sensitivity	73%	64%
Specificity	67%	73%
ENT - MLR		
Sensitivity	0%	0%
Specificity	92%	96%



Additional Predictions Days Beyond what the Current Method Provides

123

Redondo Beach Pier – Los Angeles

Table 1: Redondo Beach Pier - Summer 2017 FIB Sample Data

FIB	TC	FC	ENT
Number of Monitoring Samples	25	25	25
Exceedances of SSS	0	2	0
Percentage of Samples Exceeding SSS	0%	8%	0%

**Table 2: Redondo Beach Pier
Summer 2017 Overall Model Performance**

	NowCast	Current Method
TC – MLR		
Sensitivity	NA	NA
Specificity	84%	100%
FC – MLR/BLR		
Sensitivity	50%	0%
Specificity	87%	91%
ENT – MLR/BLR		
Sensitivity	NA	NA
Specificity	92%	100%



**Additional Predictions Days Beyond
what the Current Method Provides**

151

East Beach (at Mission Creek) – Santa Barbara

Table 1: East Beach - Summer 2017 FIB Sample Data

FIB	TC	FC	ENT
Number of Monitoring Samples	31	31	31
Exceedances of SSS	2	1	1
Percentage of Samples Exceeding SSS	6%	3%	3%

Table 2: East Beach - Summer 2017 Overall Model Performance

	NowCast	Current Method
TC – MLR		
Sensitivity	100%	0%
Specificity	93%	93%
FC – MLR/BLR		
Sensitivity	0%	0%
Specificity	83%	97%
ENT – MLR/BLR		
Sensitivity	100%	0%
Specificity	83%	97%



Additional Predictions Days Beyond what the Current Method Provides

176

Updates to Our Website and Mobile App

BEACH REPORT CARD



Presented by [Heal the Bay](#)



Beach Grades | Historical Data | Documents | FAQ

[RSS](#) [Print](#) [Email](#) [Link](#)

Select Grades

[West Coast] [State View]

Grade Type: Dry Wet

Los Angeles County

Search Beach

Predefined Searches

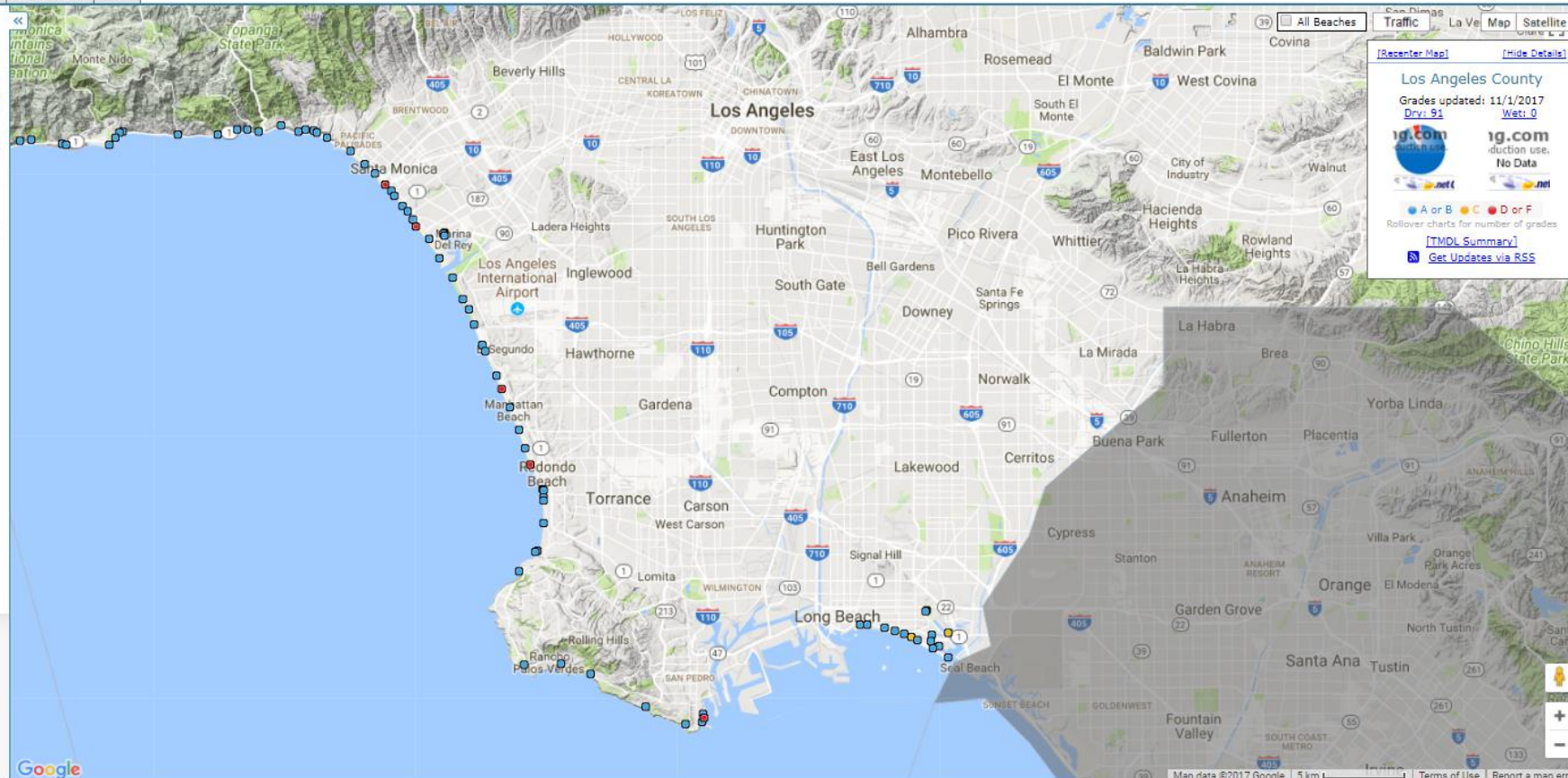
Los Angeles County

Sort By Name

- 1 [Abalone Cove Shoreline Park](#)
Los Angeles County
A+ dry, ns wet
- 2 [Alamitos Bay - 56th Place - on bayside](#)
Los Angeles County
A+ dry, ns wet
- 3 [Alamitos Bay - shore float](#)
Los Angeles County
A+ dry, ns wet
- 4 [Alamitos Bay, 2nd St. Bridge & Bayshore](#)
Los Angeles County
A dry, ns wet
- 5 [Avalon Beach - 100 feet east of the Green Pleasure Pier](#)
Los Angeles County
A+ dry, ns wet

Beaches Key:

- A or B Grade
- C Grade
- D or F Grade
- Beach Closed
- ns - no sample
- Water Quality Nowcast



Los Angeles County
 Grades updated: 11/1/2017
 Dry: 91
 Wet: 0

[ig.com](#)
 reduction use.
 No Data

A or B C D or F
 Rollover charts for number of grades
[TMDL Summary](#)
[Get Updates via RSS](#)

State Alerts

- 1 Closure
 - 0 Rain Advisories
- [Learn More](#)

State Summary

Heal the Bay analyzed data for 479 locations in California this grading period. Grades updated on Fridays.

What's New

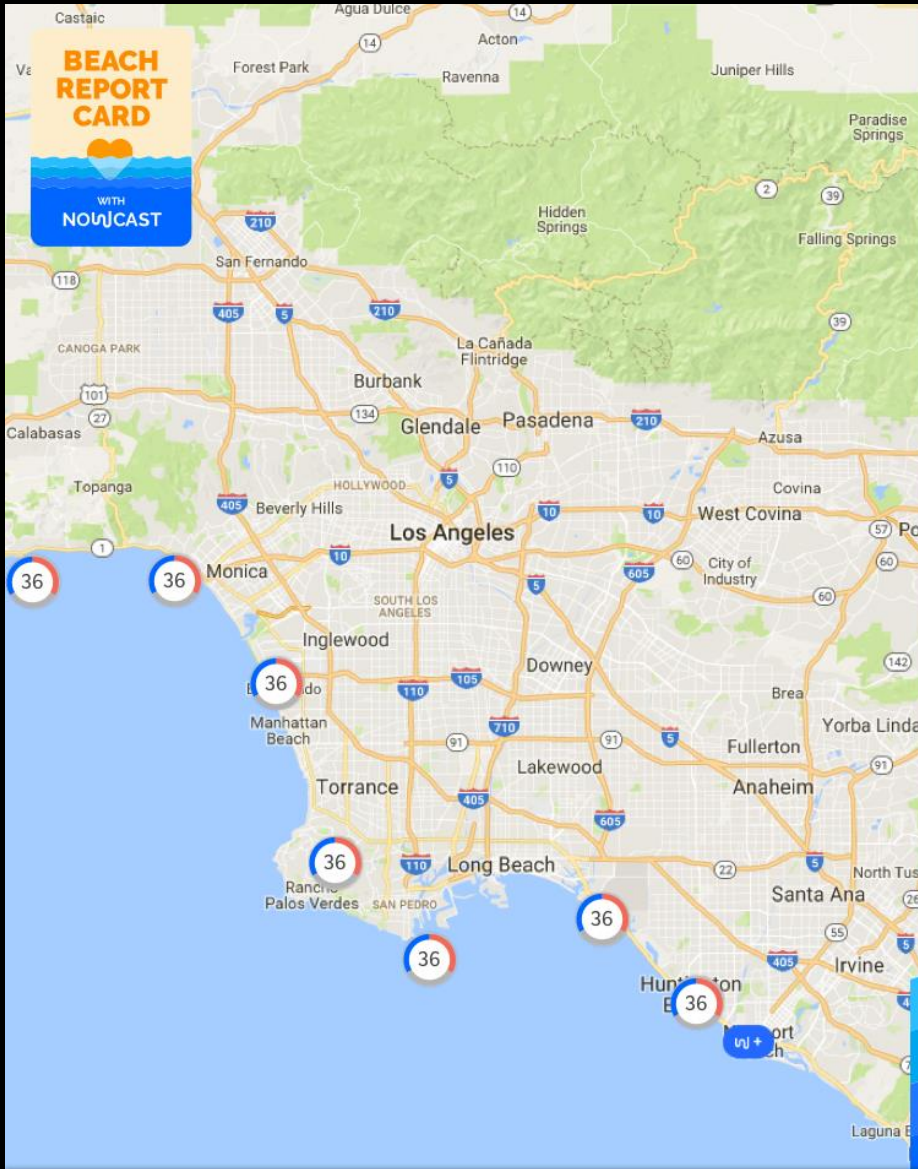
6/15/2017
2016-17 Annual Beach Report Card

- Be Safe at the Beach
- Tips for Clean Beaches
- Volunteer
- Take Action
- Donate
- Connect
- Follow BRC On Twitter
- Water Quality Nowcast

Our Sponsors



Share with Others:



Manhattan Beach



Welcome Beach Lover.

To get started, enter the location of the beach in the search bar. Sentence here about Nowcast. We grade our beaches using an A-F grading system. Use the key below to determine what your chosen beach's water quality is.

Nowcast Good



A

B

C

D

F

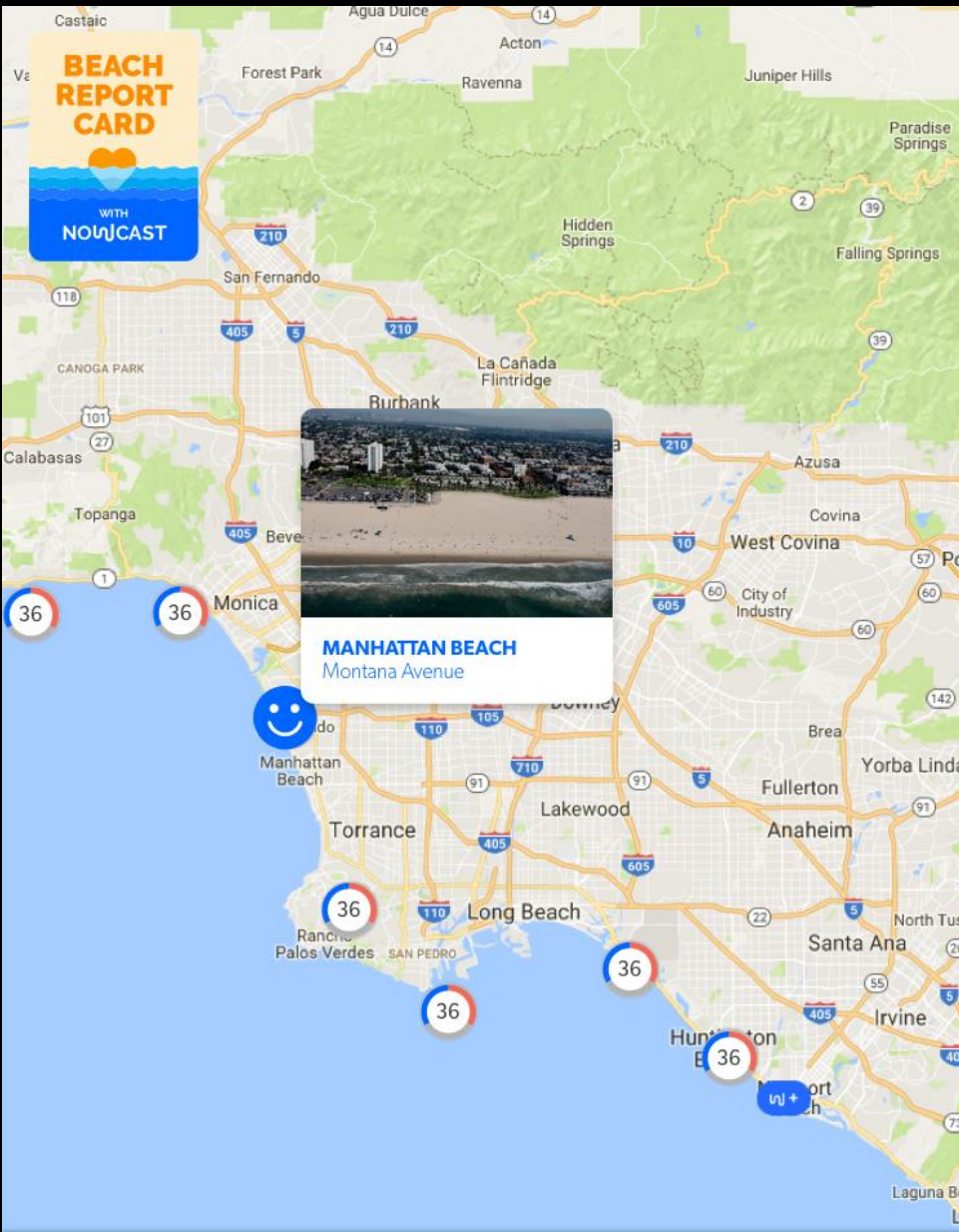
Nowcast Poor



© 2017 Beach Report Card

Eight word news object or alert goes right here. →





Manhattan Beach

Default Nowcast Grades Alerts

MANHATTAN BEACH
Montana Avenue

Grade: **A+**
8 min ago

HERMOSA BEACH
6th Street

Alert: **Oil Spill**
8 min ago

SANTA MONICA BEACH
Montana Avenue

Nowcast: **Good**
8 min ago

Ad Space 300x350

BEACH REPORT CARD
WITH NOWCAST

MANHATTAN BEACH
Montana Avenue

Help

To get started, enter the location of the beach in the search bar. We grade our beaches using an A-F grading system. Use the key below to determine what your chosen beach's water quality is.

- Nowcast Good**
Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd.
- Nowcast Poor**
Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd.
- A Grade**
Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd.
- B Grade**
Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd.
- C Grade**
Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd.
- D Grade**
Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd. Lorem uopsum solor sit eamen catore apreakf ksdasdkfjskd.

© 2017 Beach Report Card | Eight word news object or alert goes right here. →

BEACH REPORT CARD
WITH NOWCAST

Manhattan Beach

Default Nowcast Grades Alerts

21 days ago

MANHATTAN BEACH

Montana Avenue

Grade: D+ Dry

The Beach Report Card grade represents the trend in water quality at this beach over the last 30 days. Grades are based on the most recent bacteria samples taken at this beach. Dry grades are based off samples taken during dry weather only, and Wet grades are based on samples taken during or up to 72 hours after a rain event of greater than 0.1 inches.

Twitter G+ Facebook

HERMOSA BEACH
6th Street
Alert: Oil Spill 8 min ago

© 2017 Beach Report Card | Eight word news object or alert goes right here. →



[← Back to results](#)

MANHATTAN BEACH

Montana Avenue



Nowcast 15 min ago

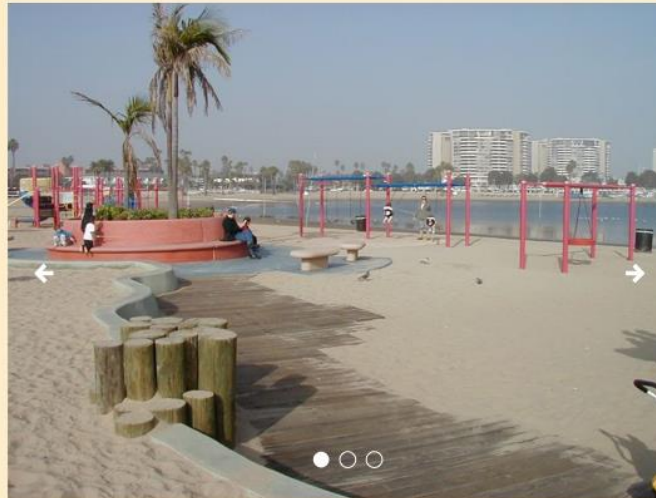
Good

Dry Grade 21 days ago

A+

Wet Grade 18 days ago

D+



The Latest

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut ultrices, velit at faucibus ullamcorper, turpis massa tempor nulla, non volutpat sem elit eget neque.

The Beach Report Card grade represents the trend in water quality at this beach over the last 30 days. Grades are based on the most recent bacteria samples taken at this beach. Dry grades are based on samples taken during dry weather only, and Wet grades are based on samples taken during or up to 72 hours after a rain event of greater than 0.1 inches.

Historical Data



Welcome Beach Lover.

To get started, enter the location of the beach in the search bar. Sentence here about Nowcast. We grade our beaches using an A-F grading system. Use the key below to determine what your chosen beach's water quality is.



Nowcast
Good



Nowcast
Poor



A



B



C

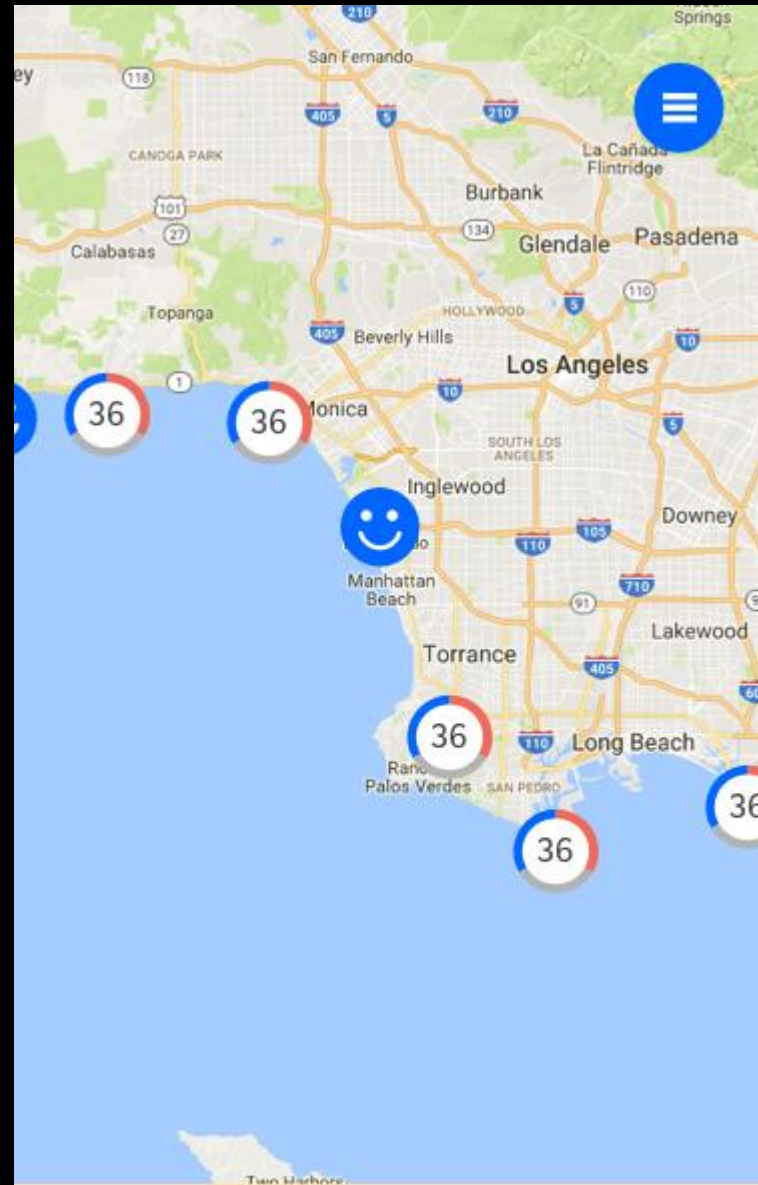


D



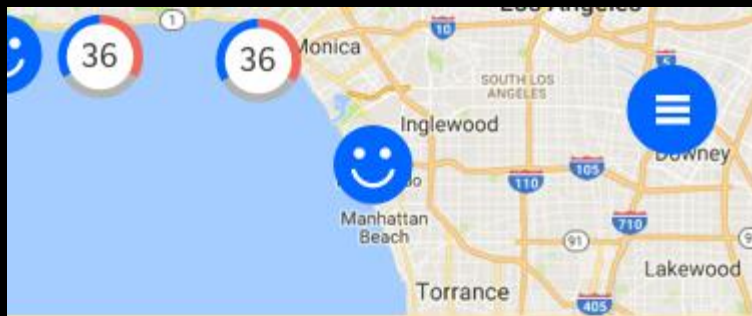
F

Search for your fav beach



Search for your fav beach





Manhattan Beach



Default Nowcast Grades Alerts



MANHATTAN BEACH
Montana Avenue

Grade: **A+**
8 min ago



[← Back to results](#)



MANHATTAN BEACH

Montana Avenue



Nowcast

15 min ago

 **Good**

Dry Grade

21 days ago

 **A+**

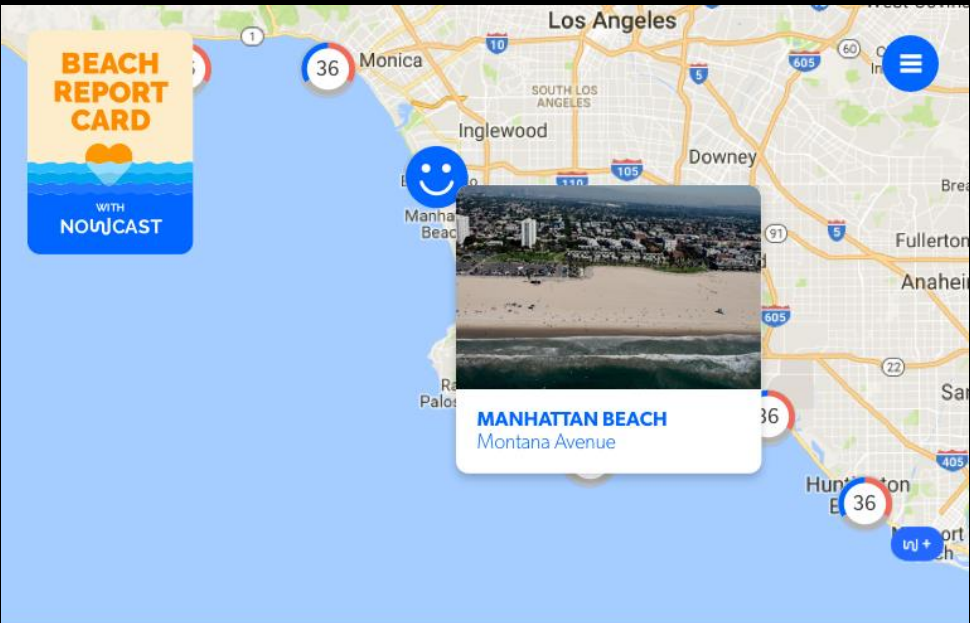
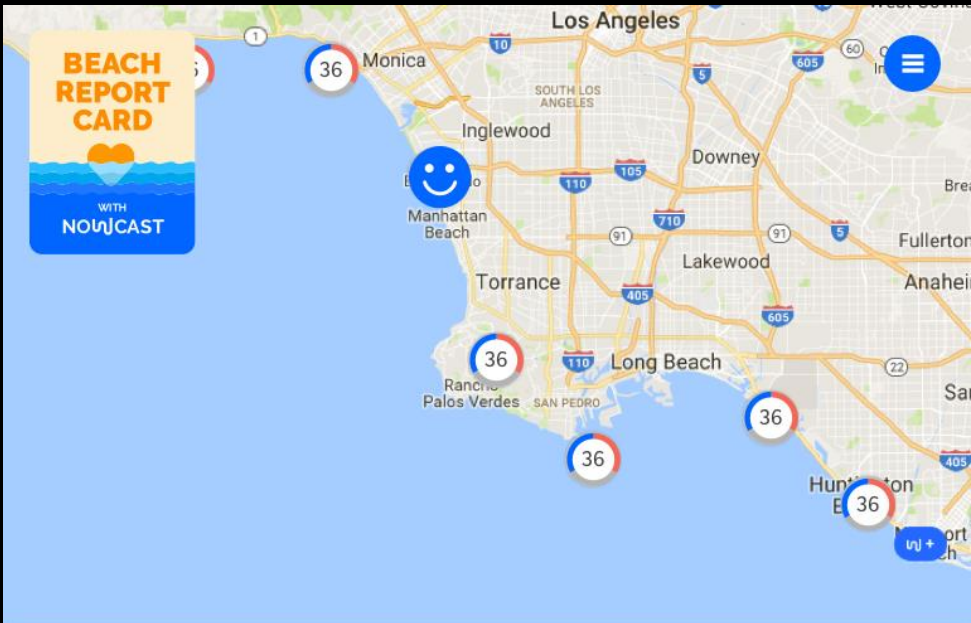
Wet Grade

18 days ago

 **D+**

The Latest

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut ultrices, velit at faucibus



Search for your fav beach

Search for your fav beach

Welcome Beach Lover.

To get started, enter the location of the beach in the search bar. Sentence here about Nowcast. We grade our beaches using an A-F grading system. Use the key below to determine what your chosen beach's water quality is.

W+ Nowcast Good W- Nowcast Poor
😊 A 😬 B 😐 C 😞 D 😫 F

Default Nowcast Grades Alerts

MANHATTAN BEACH Montana Avenue	HERMOSA BEACH 6th Street	HERMOSA BEACH 6th Street	HERMOSA BEACH 6th Street
Grade: A+ 8 min ago	Alert: Oil Spill 8 min ago	Alert: Oil Spill 8 min ago	Alert: Oil Spill 8 min ago

Contact Info

Ryan Searcy

Beach Water Quality Modeler

310-451-1500 x 111

rsearcy@healthebay.org

More Information:

beachreportcard.org

