Towards beach water quality nowcasts using precipitation data from weather radar
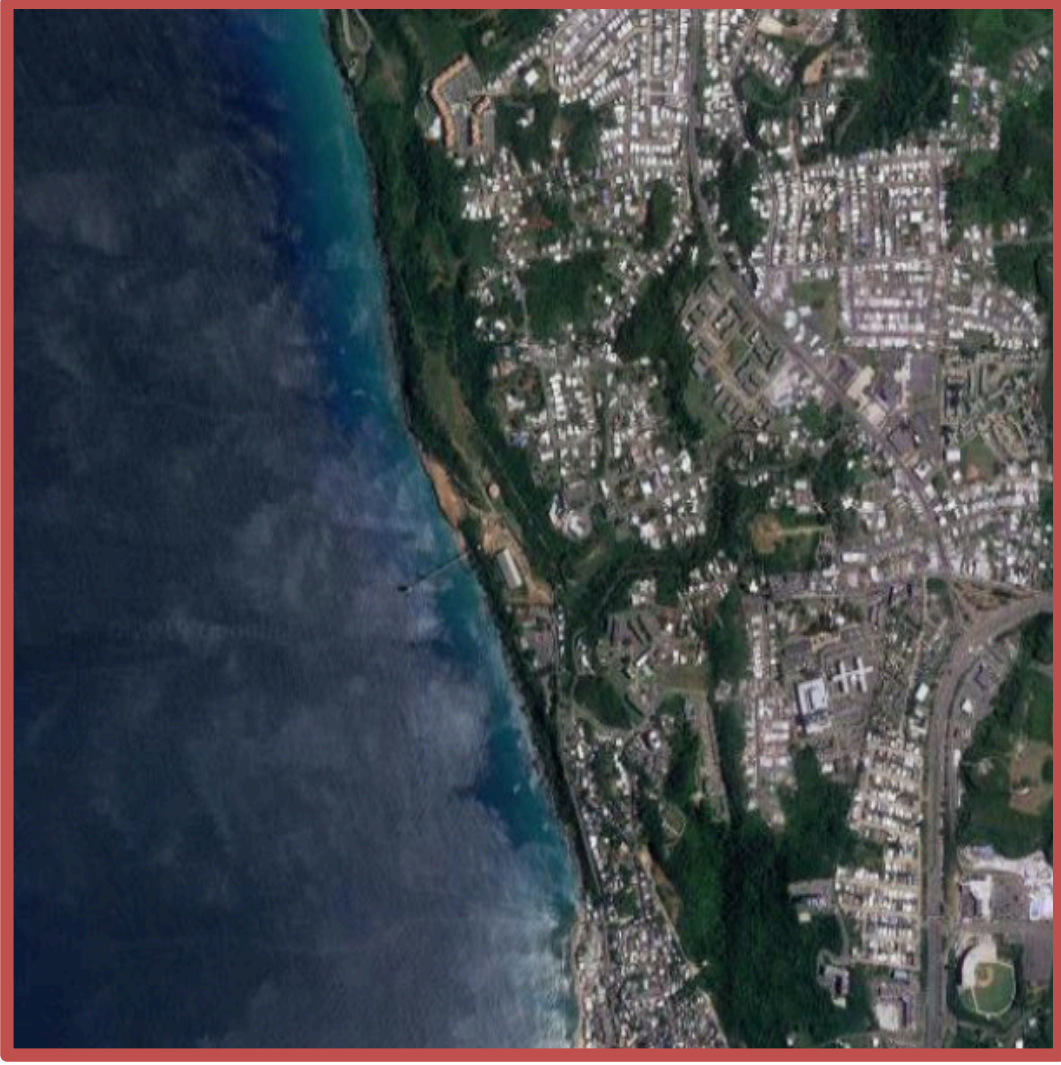
Jesiniel Nieves-Ortiz[1,3,4], Priscila Vargas-Babilonia[2,3,4] and Sylvia Rodríguez-Abudo[3,4]

[1]Department of Computer Science and Engineering, University of Puerto Rico at Mayagüez [2]Department of Civil Engineering and Surveying, University of Puerto Rico at Mayagüez
[4]Caribbean Coastal Ocean Observing System, University of Puerto Rico at Mayagüez
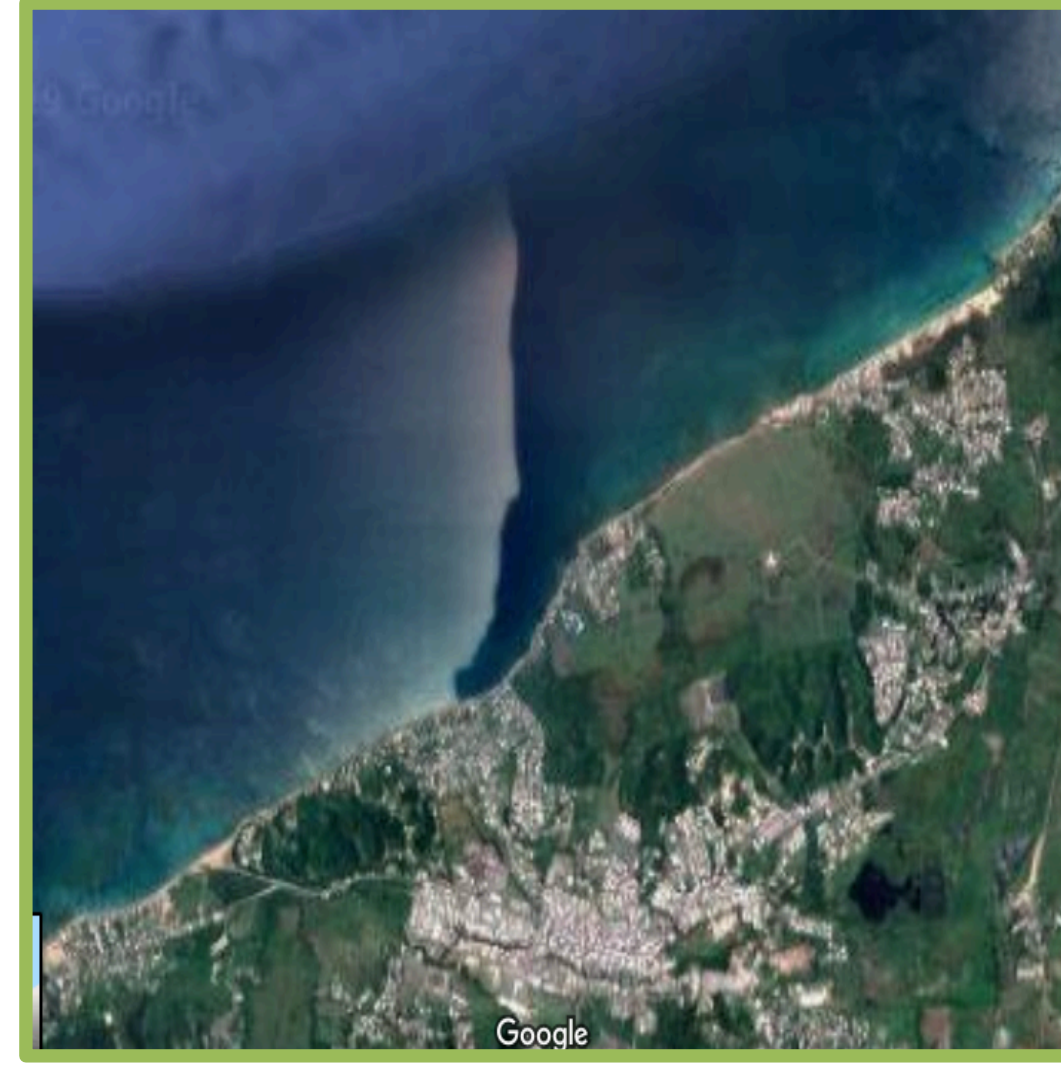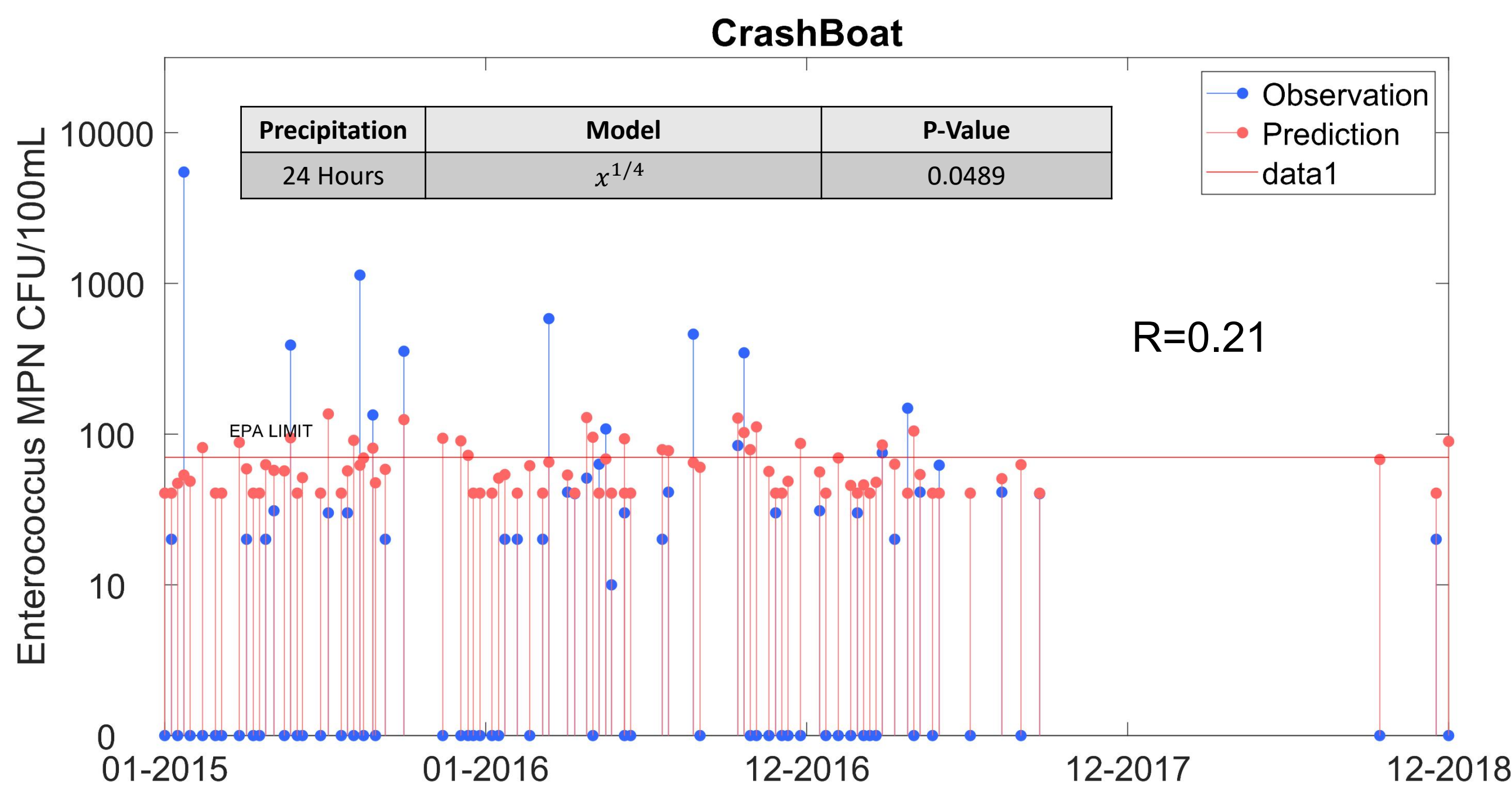
CARICOOS

STUDY SITES

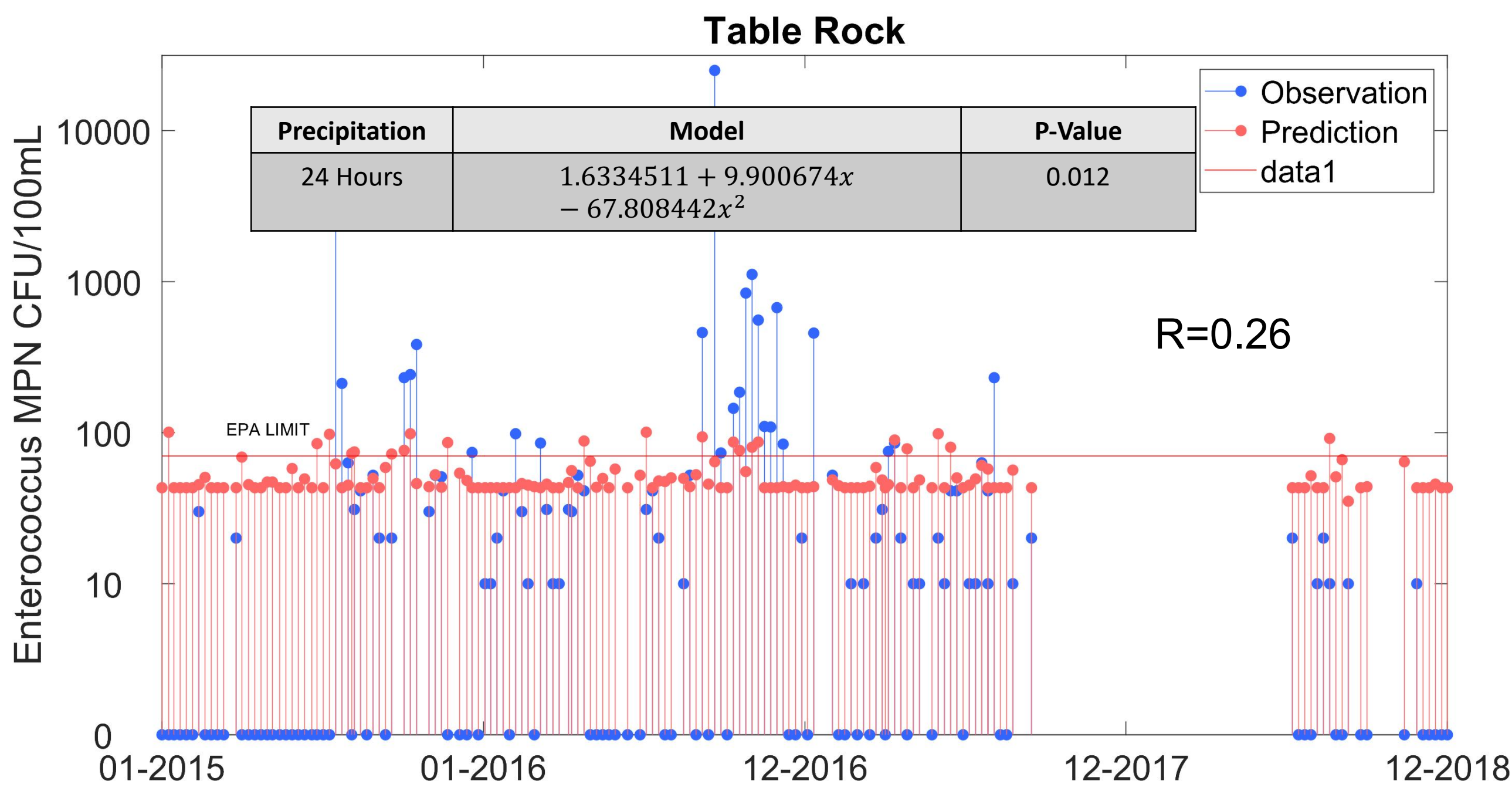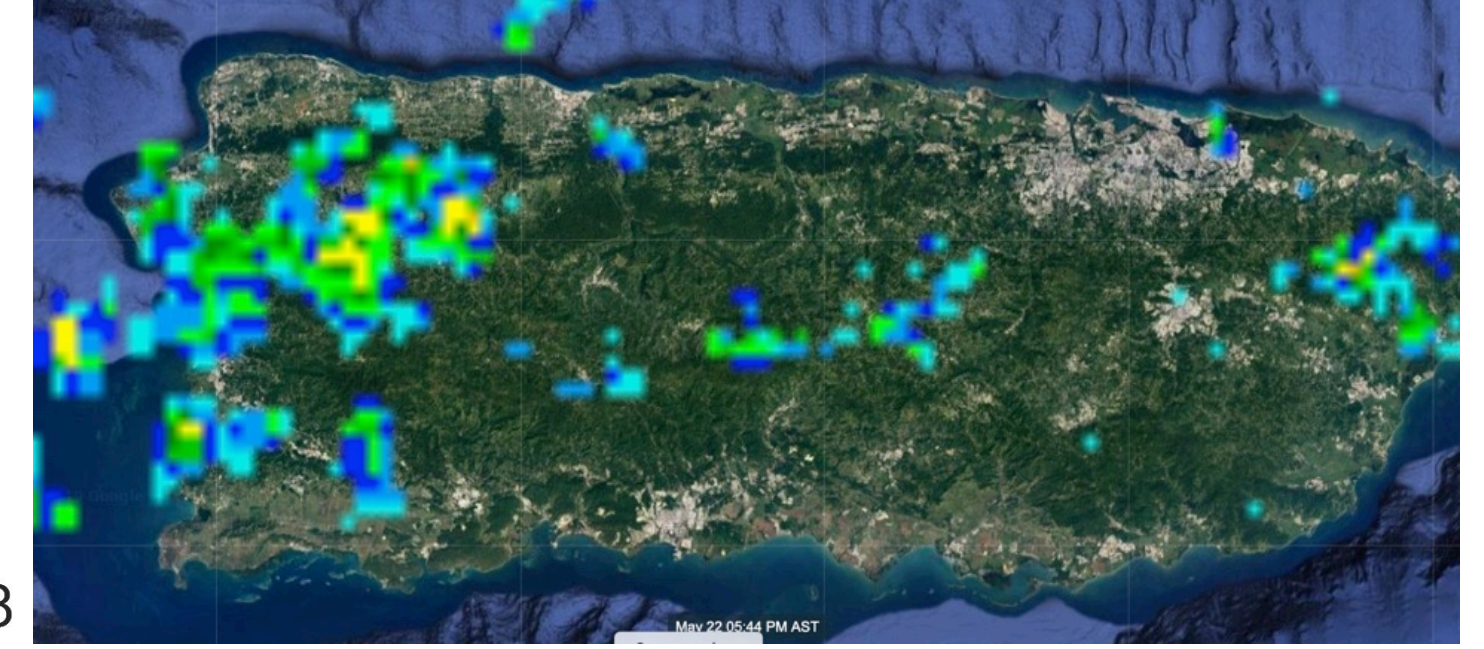Crashboat, Aguadilla   Jobos, Isabela   Table Rock, Aguada   PR West Coast

RESULTS

CrashBoat

Precipitation	Model	P-Value
24 Hours	$x^{1/4}$	0.0489

- Observation
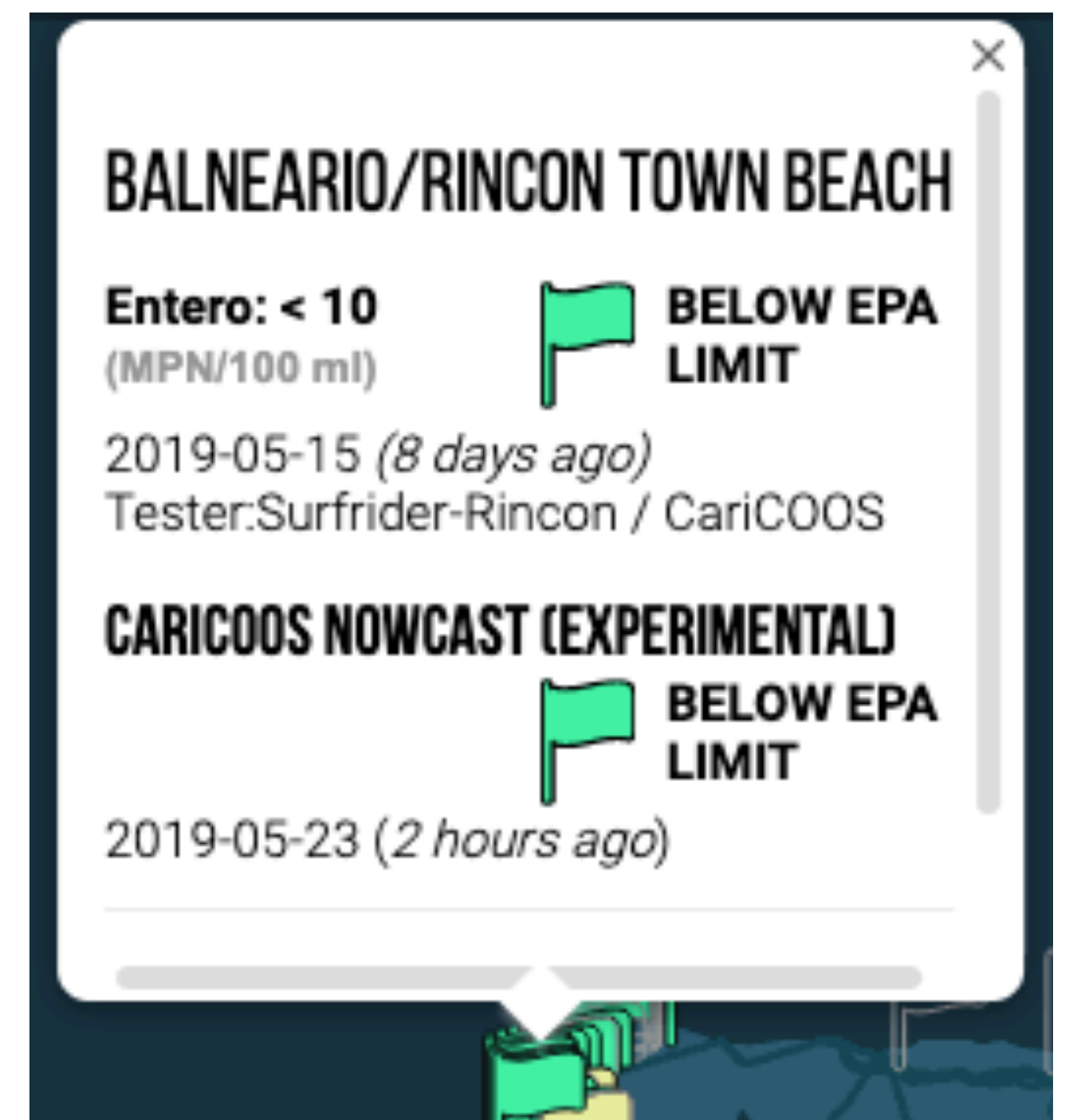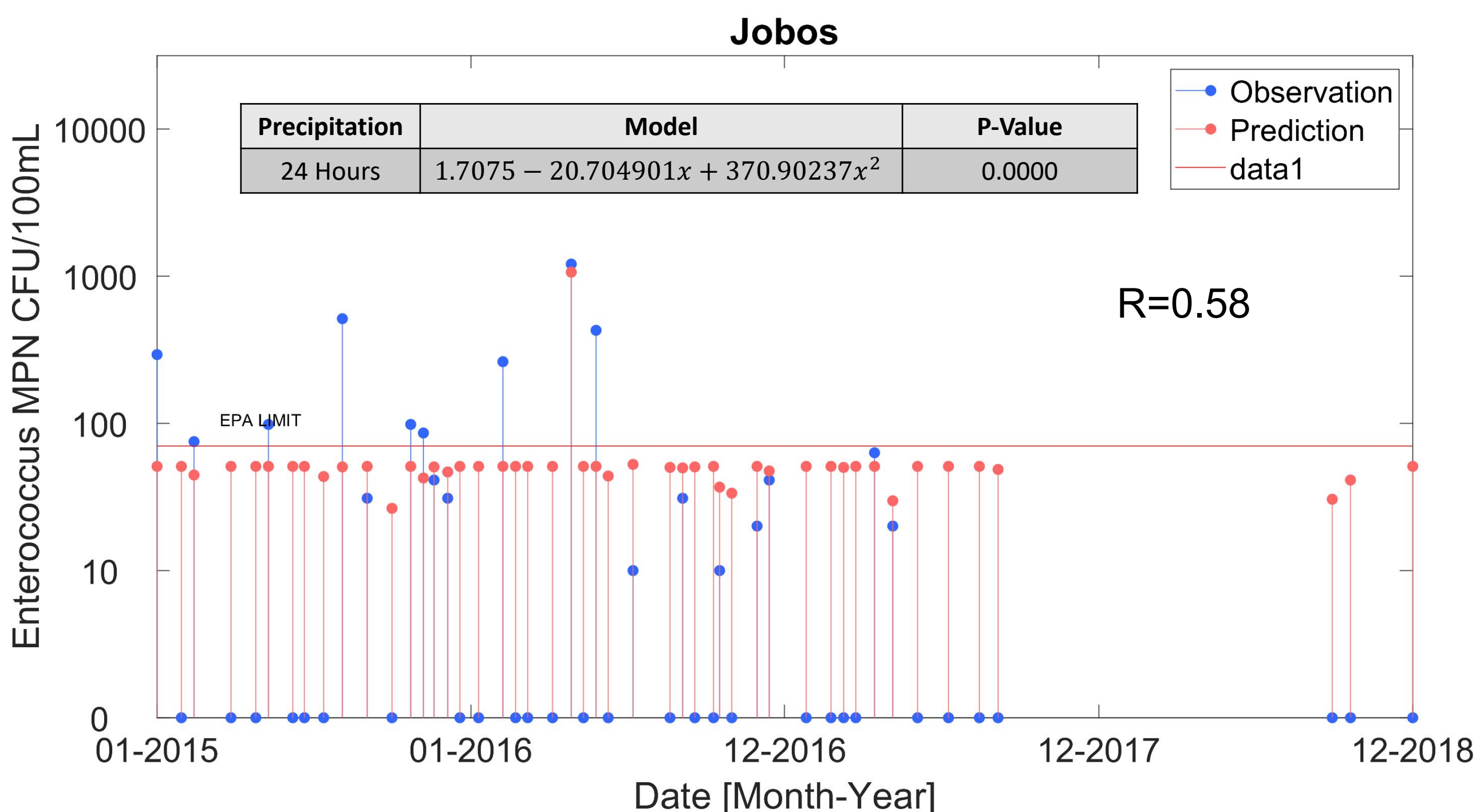- Prediction
- data1

EPA LIMIT

R=0.21

Enterococcus MPN CFU/100mL

Data from NOAA Weather Radar (2015-2018) was gathered and analyzed for potential correlations with instances of elevated bacteria concentration. Radar data was averaged over a 10-km area, while precipitation estimates were analyzed for averaged of 2, 6, 12, and 24 hours.

Table Rock

Precipitation	Model	P-Value
24 Hours	$1.6334511 + 9.900674x - 67.808442x^2$	0.012

- Observation
- Prediction
- data1

EPA LIMIT

R=0.26

Enterococcus MPN CFU/100mL

Our three new models will be implemented as **operational nowcasts** of beach water quality. These will join the other two existing nowcasts at Rincón Public Beach and Playa Santa, Guánica. Additional models will be developed for other regions within the next funding cycle.

Jobos

Precipitation	Model	P-Value
24 Hours	$1.7075 - 20.704901x + 370.90237x^2$	0.0000

- Observation
- Prediction
- data1

EPA LIMIT

R=0.58

Enterococcus MPN CFU/100mL

Date [Month-Year]

BALNEARIO/RINCON TOWN BEACH

Entero: < 10
(MPN/100 ml)

BELOW EPA LIMIT

2019-05-15 *(8 days ago)*
Tester:Surfrider-Rincon / CariCOOS

CARICOOS NOWCAST (EXPERIMENTAL)

BELOW EPA LIMIT

2019-05-23 *(2 hours ago)*

COASTAL BOUNDARY LAYERS LABORATORY