The CARICOOS FVCOM Circulation Model

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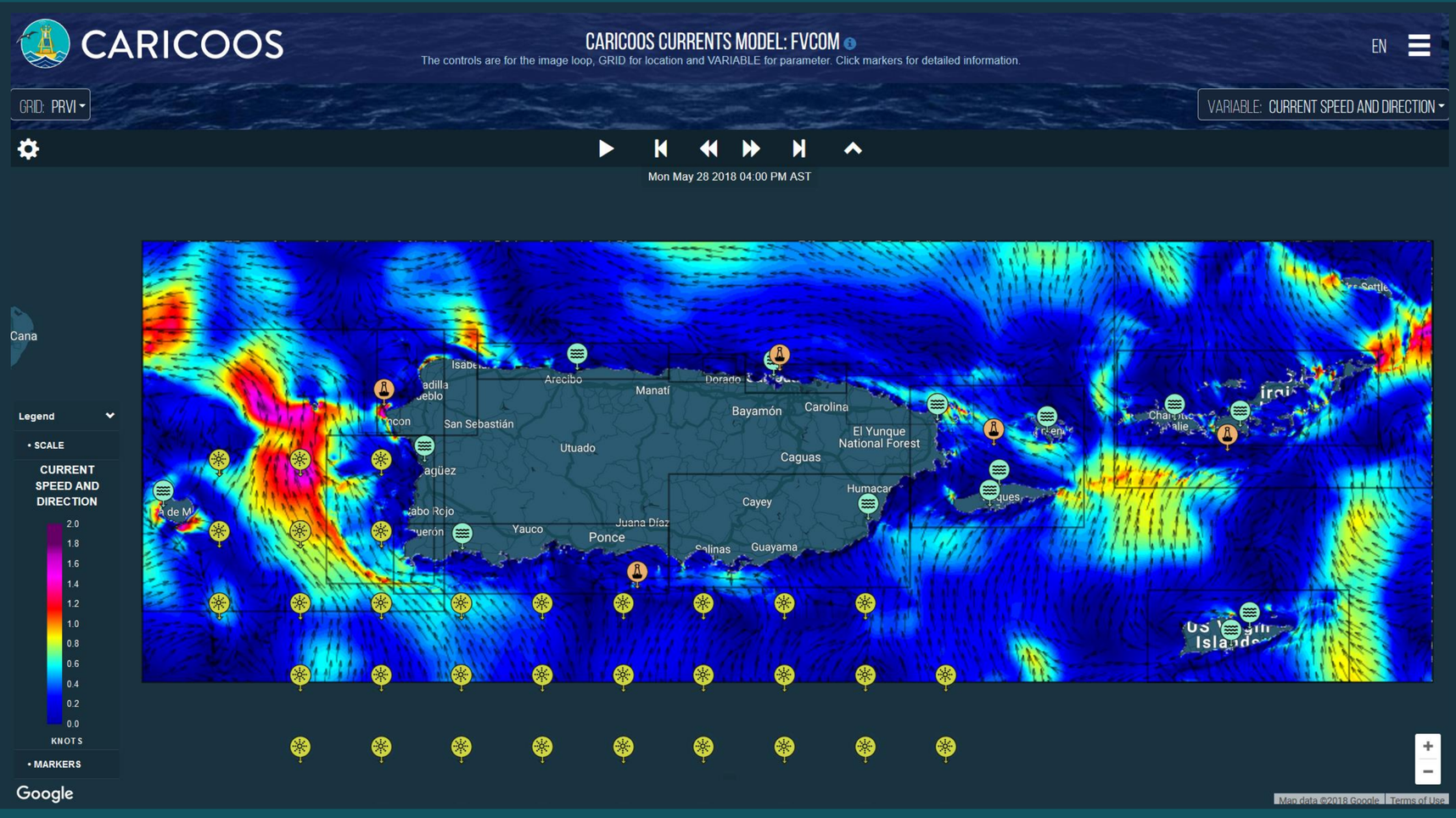
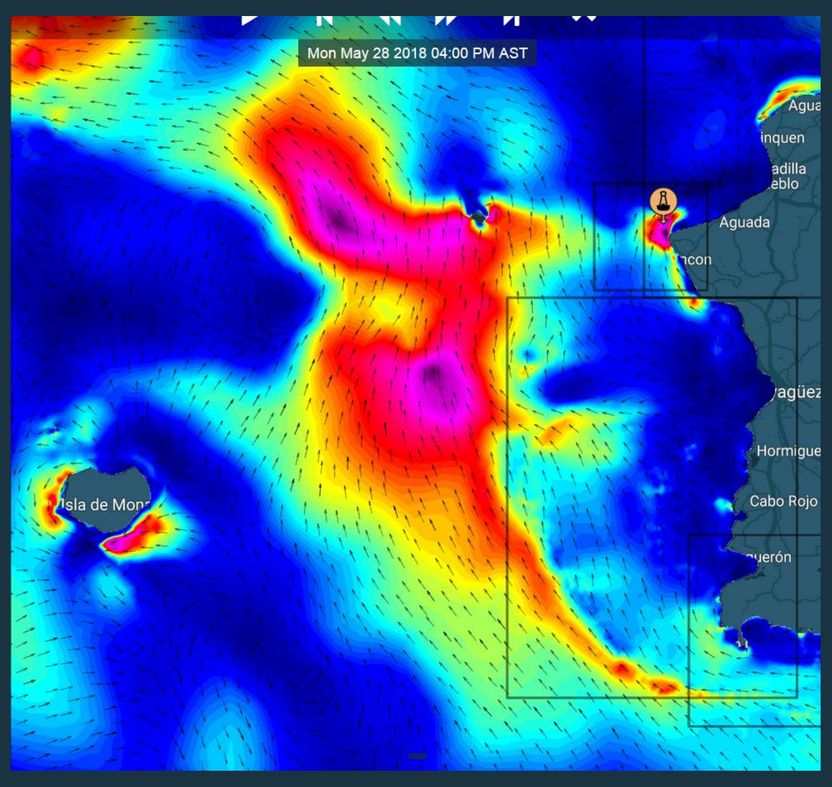
Model Overview

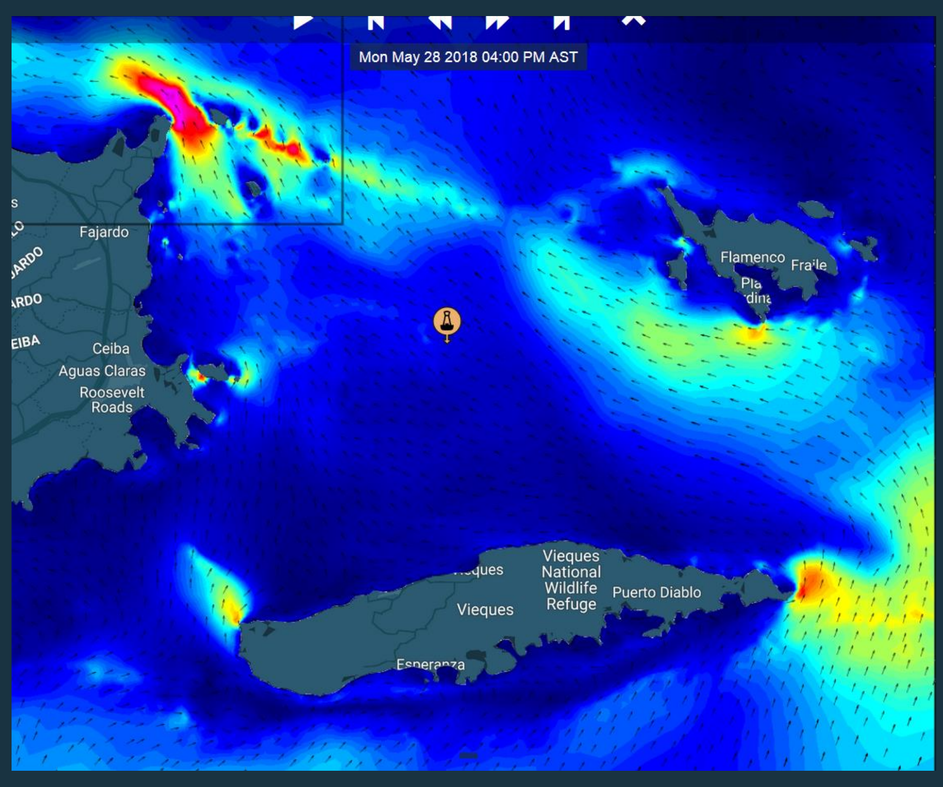
An operational forecast system to simulate ocean currents in the PRVI region has been developed by downscaling from a structured global model of 1/12° of resolution to a regional scale unstructured model ranging from 3 km to 100 m meters. For the global mesoscale HYCOM + NCODA Global 1/12° Analysis is used and downscaled to the high-resolution domain where the computation is performed with FVCOM. The open ocean boundary of the model is forced with linearly added predicted tides and subtidal elevation. The harmonics used to predict tide at the boundary are derived from the Western North Atlantic, Caribbean and Gulf of Mexico ADCIRC Tidal Database (EC2015) (Szpilka et al., 2016). The CARICOOS WRF-NMM operational model provides the model with spatially varying 10 m wind speed, sea level atmospheric pressure, 2 m relative humidity, 2 m air temperature, surface downward longwave radiation and surface net short wave radiation.



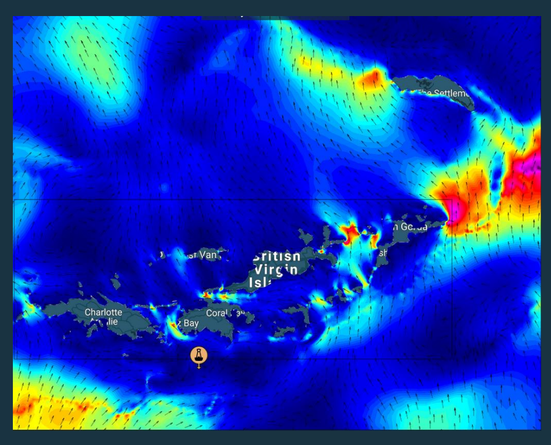
Spatial Output



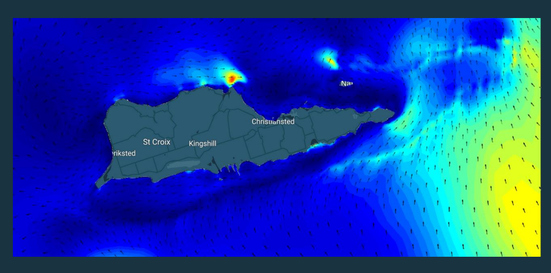
Mona Passage zoom window



Northeast Corridor zoom window

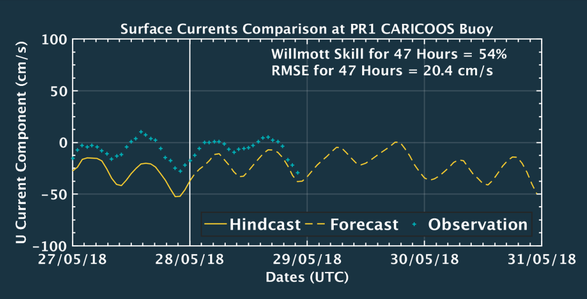


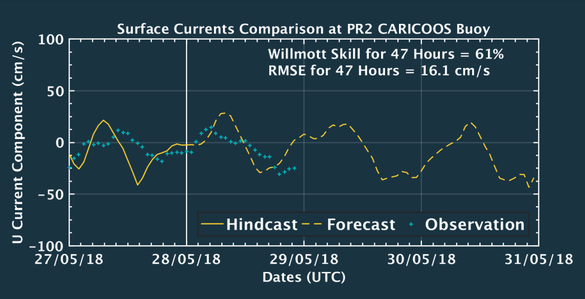
Virgin Islands zoom window

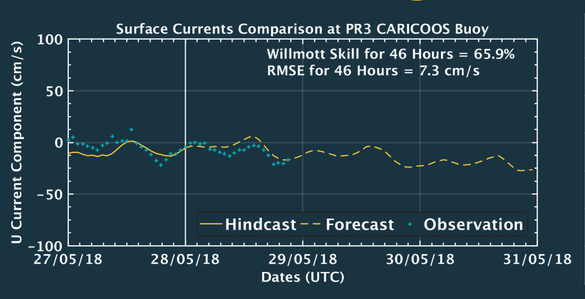


St. Croix zoom window

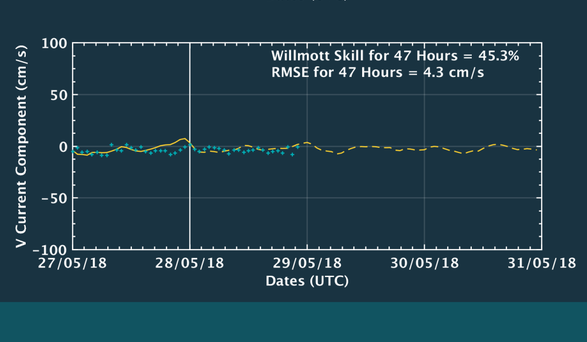
Validation: Real-time and Long-term

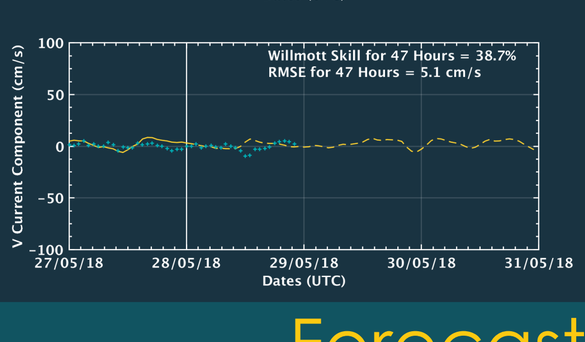


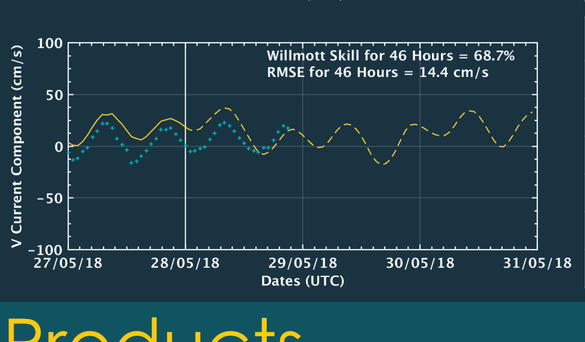




U Current Component FVCOM vs AMSEAS Willmott Skill January 2017 to July 2017		
Station	FVCOM	AMSEAS
Ponce Buoy, PR1	50	41.84
San Juan Buoy, PR2	55.23	40.47
Vieques Buoy, PR3	52.92	25.16
USVI Buoy, VI1	47.08	33.18
Bajo de Sico	70.04	35.46







V Current Component FVCOM vs AMSEAS Willmott Skill January 2017 to July 2017		
Station	FVCOM	AMSEAS
Ponce Buoy, PR1	41.5	26.8
San Juan Buoy, PR2	40.7	21.1
Vieques Buoy, PR3	71.8	37.8
USVI Buoy, VI1	59.0	31.6
Bajo de Sico	63.4	44.7

Forecast Products

In response to stakeholder needs we can provide point forecasts within the CARCOOS FVCOM Circulation Model. Please let us know if you are interested in a custom point forecast for the location of your choosing. An example of the plot can be seen in the figure to the right. Please note that this is an EXPERIMENTAL product.