Hurricane Sandy's impact on eastern Fire Island

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Hurricane Sandy's ocean waves and storm surge have caused large over washes and three breaches through Fire Island at the eastern end of Great South Bay in the areas of Old Inlet, Smith Point and Moriches Inlet. To document the size and scope of the breaches, Rich Giannotti and I flew over the area in Rich's J-3 Cub on November 3rd and collected video and still photographs of the area. The series of snap shots from the videos shown below give a pretty clear picture of the areas effected by the storm.

To give some background, the first photo below is one I took in April 2005 showing the Old Inlet area including the dock, board walk and Pelican Island which has the Pattersquash Gun Club. The remnants of Old Inlet itself is the v-shaped cut to the left of the picture. John Boyle Island is off to the right and Ridge Island is to the left.

The breach at Old Inlet occurred just to the west of the Old Inlet board walk across the dune and well east of the historic Old Inlet. The next two photos were taken last Saturday and are close up shots from the south and southeast of the new inlet in which you can see the breach, the Old Inlet dock, no longer attached to the island, Pelican Island in the background, and several new sand islands to the north and west. All the photos we took were during flood tide. The new channel sweeps in from the east and hugs the east side of the breach before most of the flow turns west, south of the new sand islands. The last in this series of photos, taken from nearly directly overhead, clearly shows the relationship between the breach channel and the familiar land mark of the dock. The board walk and bath house do not appear to be there anymore.

From the appearance of the breach and the location of the new sand islands, it is clear that the water broke through from the ocean into the bay. This is not always the case. Although I have not seen the data from the ocean side, the evidence is that hurricane Sandy's strong winds, predominantly from the east, caused a large setup against Fire Island so that the sea level on the ocean side of the island was higher than that in the bay. When the waves eroded the dunes and finally over-topped the island, the sea level difference was enough to drive the ocean water into the bay and carry the sand with it.

In addition to the new Old Inlet breach there was considerable over wash to the east of Smith Point. (Smith Point seemed to have survived rather well this time.) The first photo below was taken from over Smith Point Park looking east showing the over wash south of Pattersquash Island and again a little farther east at Coast Guard Cut. There is a small breach at Coast Guard Cut, one of the narrowest points along this stretch of the island, shown in the next photo. You can see the tracks of heavy equipment and it appears that workers were in the process of closing this breach. The next photo shows the breach in the distance just east of the rip-rapped Moriches Inlet and the last photo shows an over head shot of this breach in which one can see an old groin and that the breach has cut the road.

What effects this breach will have on Great South Bay will need some careful analysis and thinking. It has already been noticed that the tide range at Bellport has increased and that high tide occurs noticeably earlier, relative to Fire Island Inlet, than in the past. We have been measuring conditions in Great South Bay for nearly a decade as part of Stony Brook's Great South Bay Observatory program. One of the components of that system is a meteorological and oceanographic buoy deployed about two miles south of the West Sayville Marina. That buoy telemeters its data in real time to a server at the university (http://po.msrc.sunysb.edu/GSB) and from that site you can see that the salinity of the Bay has started to increase, by about one part per thousand at this point. There is no particular ecological significance to the salinity increase, but it does show that there is greater exchange of water between the Bay and the ocean. We will be recovering several of our sensors deployed around the Bay in the next few weeks and they will tell us more about the changes brought about by the new breach. And I will send an update at that time.