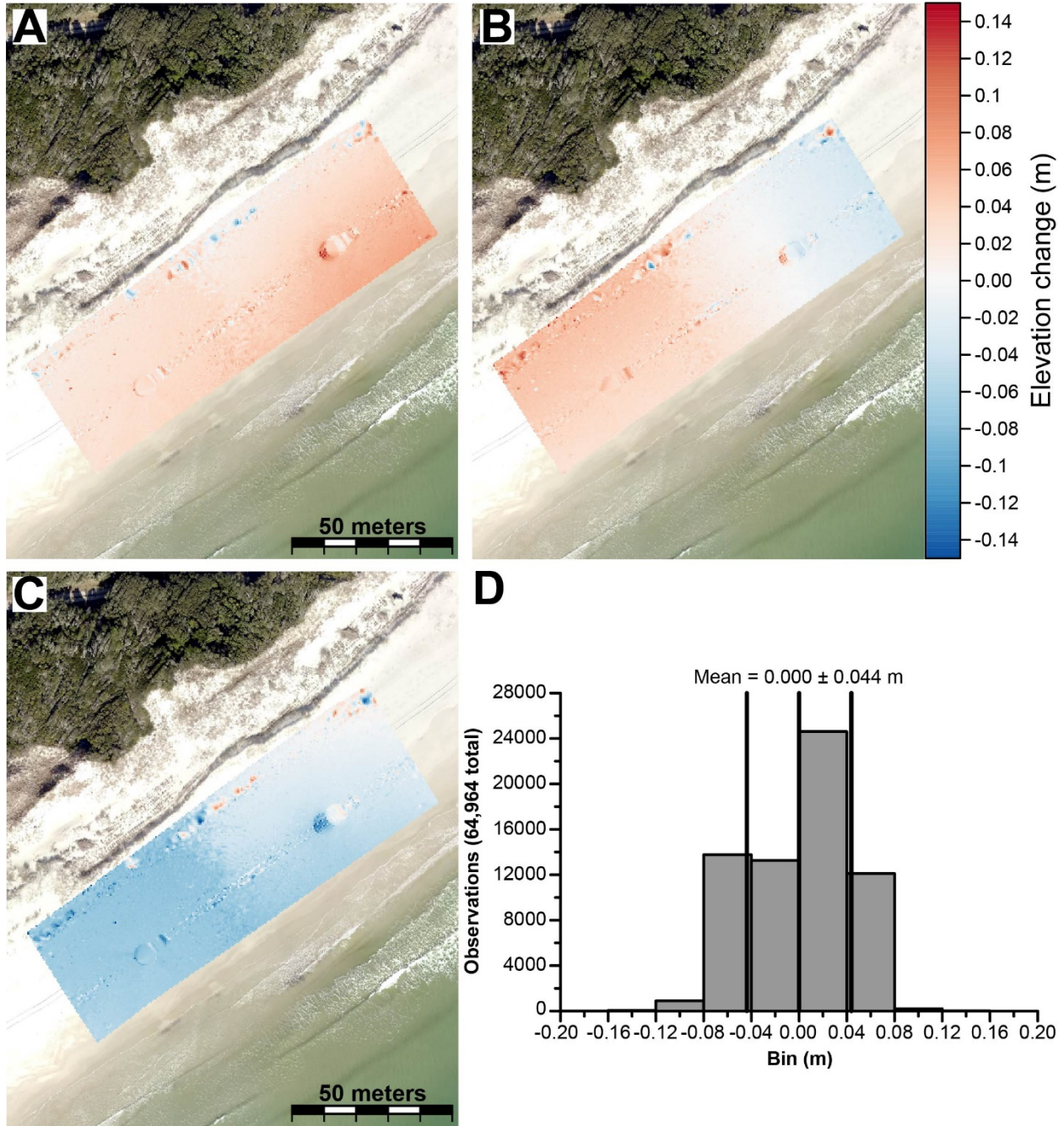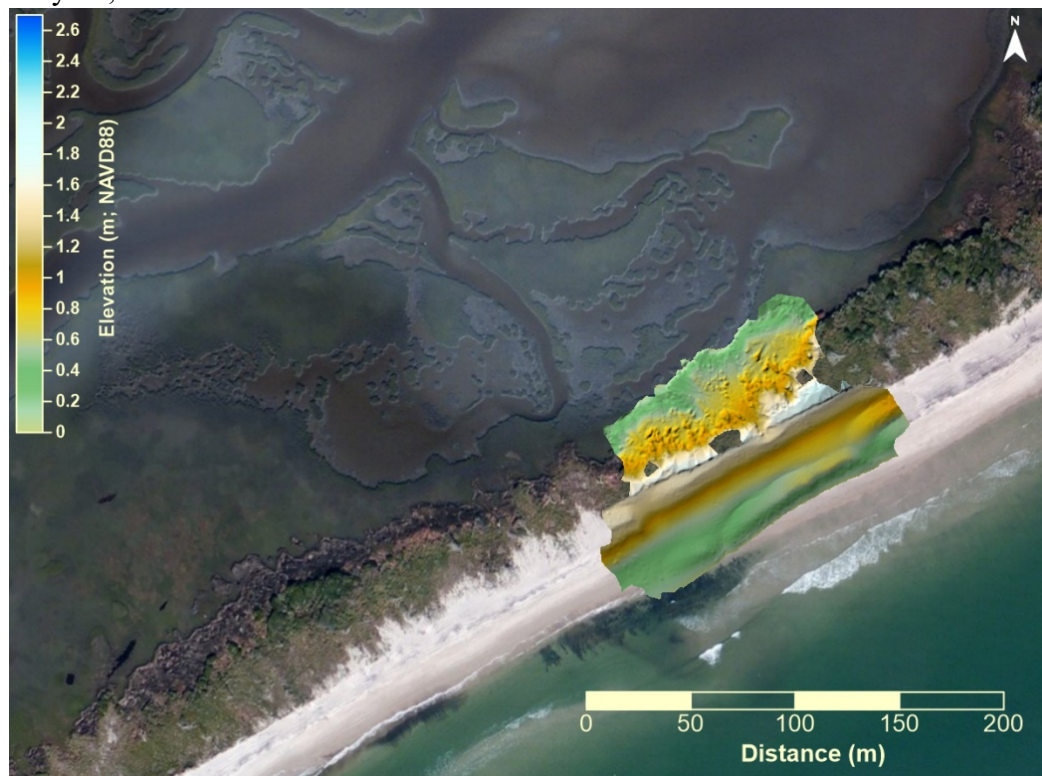**Supplementary Table 1:** Washover fan size through time using a 2010 digital elevation model as a constant basal surface.

Date	Area (m^2)	Volume (m^3)
5/21/2012	3890 ±370	998 ±183
9/12/2012	2997 ±320	885 ±143
10/24/2012	3290 ±393	1116 ±158
11/1/2012	8204 ±618	4531 ±379
12/28/2012	19396 ±924	8484 ±874
2/6/2013	22922 ±828	9314 ±1021
5/7/2013	29321 ±921	15790 ±1300
9/16/2013	30082 ±950	15004 ±1334
11/14/2013	29668 ±1024	14788 ±1320
1/27/2014	30949 ±1035	16678 ±1375
3/26/2014	32173 ±1048	16548 ±1428
5/12/2014	32039 ±1104	17665 ±1425
10/8/2014	31595 ±1073	16208 ±1405
4/1/2015	31065 ±1086	15896 ±1383
7/16/2015	30761 ±1035	15713 ±1367
10/12/2015	37471 ±1244	25927 ±1665

Supplemental Figure 1: We quantified GPS error, laser-scanner instrument error, error with manually levelling the reflectors and associating them with the surveyed points, error associated with editing the point cloud, and error associated with the interpolation algorithms used to create DEMs experimentally by scanning and creating DEMs of the same beach area three times. Each set-up included two scan positions and repositioning and resurveying 8 reflectors. Those three datasets were processed identically, using the same methods outlined above, to create DEMs and vertical error was estimated by subtracting grid cells (A-C). The mean of the 64,959 grid-cell values of the subtractions was ~zero indicating no bias exists (D). Vertical error was defined as 0.043 m, the mean standard deviation of the elevation differences between grid cells.

Supplementary Figure 2: Digital elevation models of the site through time.

May 21, 2012

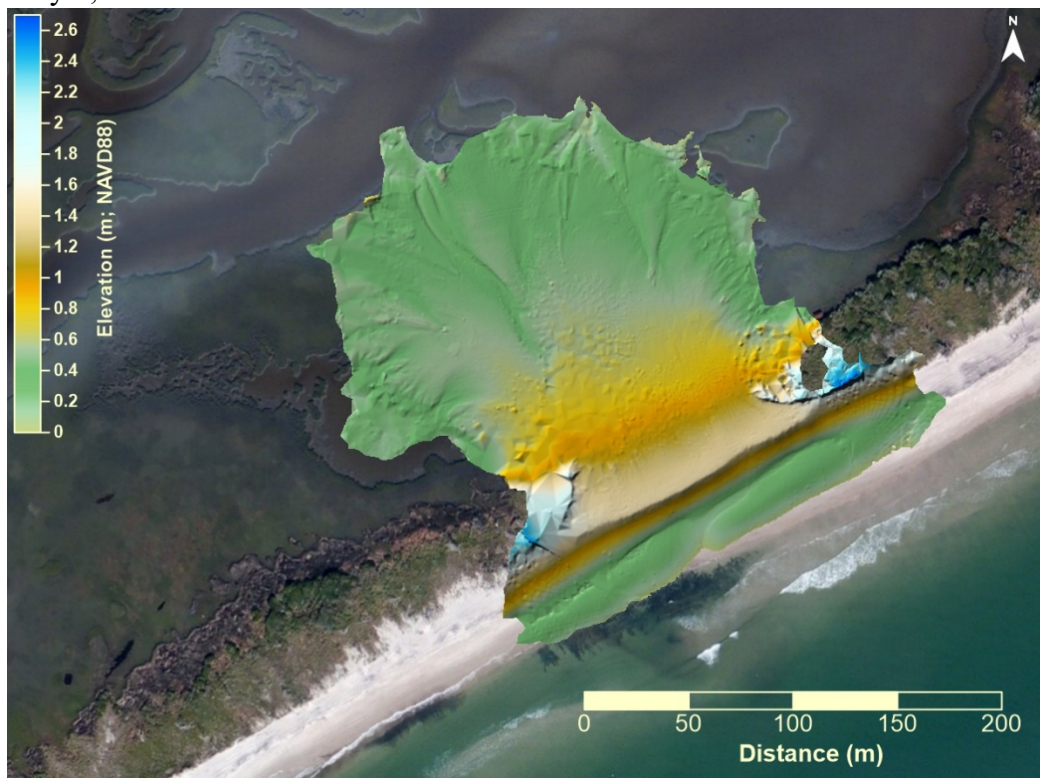September 12, 2012

October 24, 2012
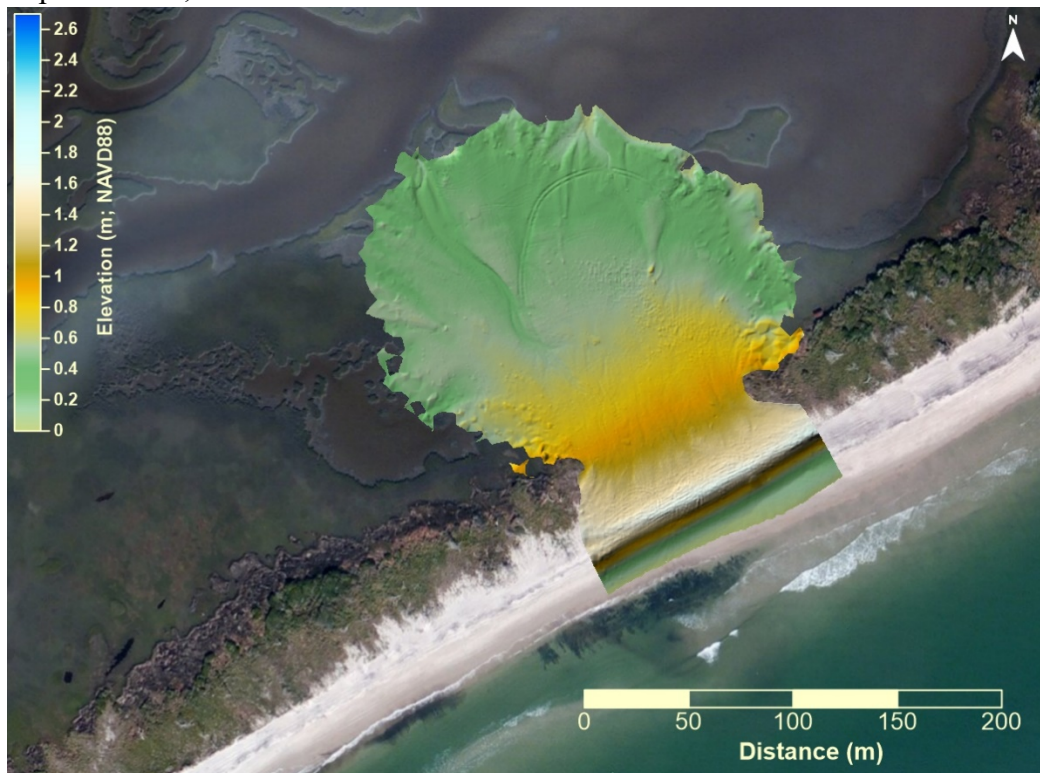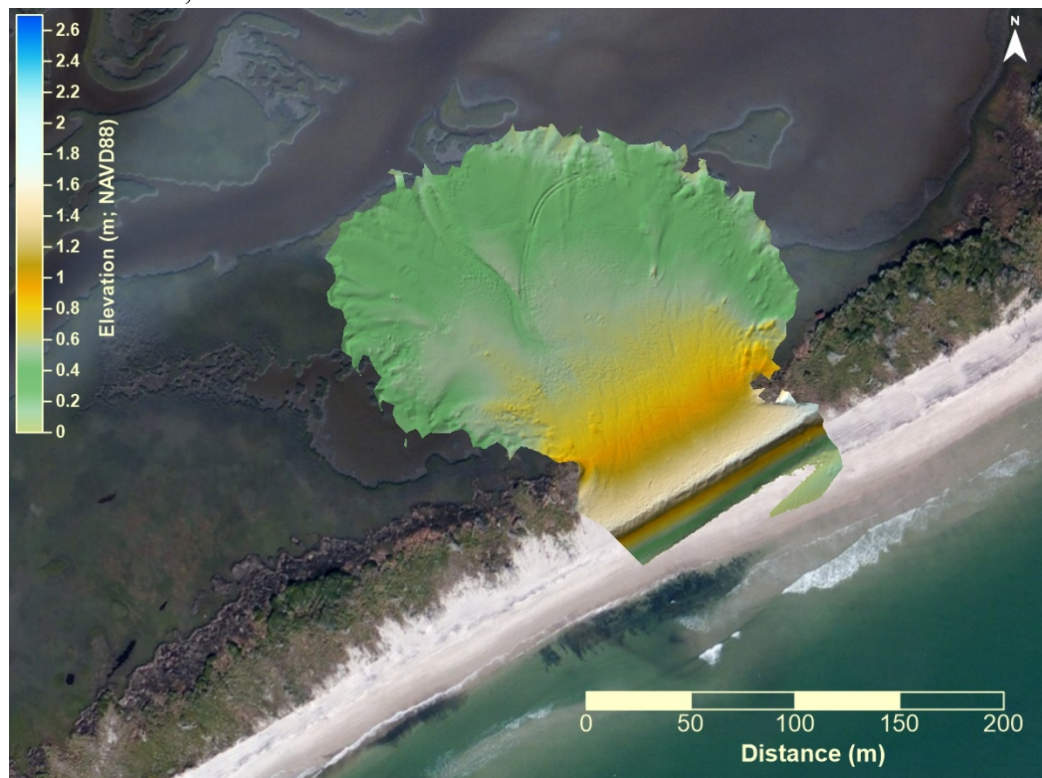

November 1, 2012

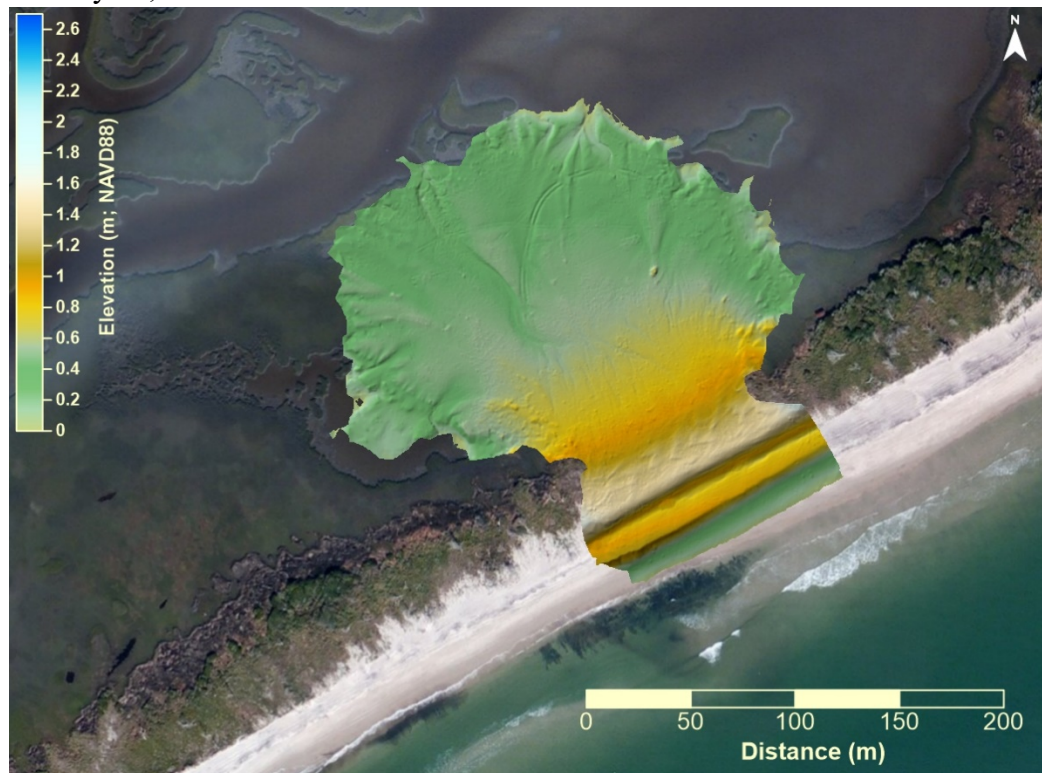December 28, 2012

February 6, 2013
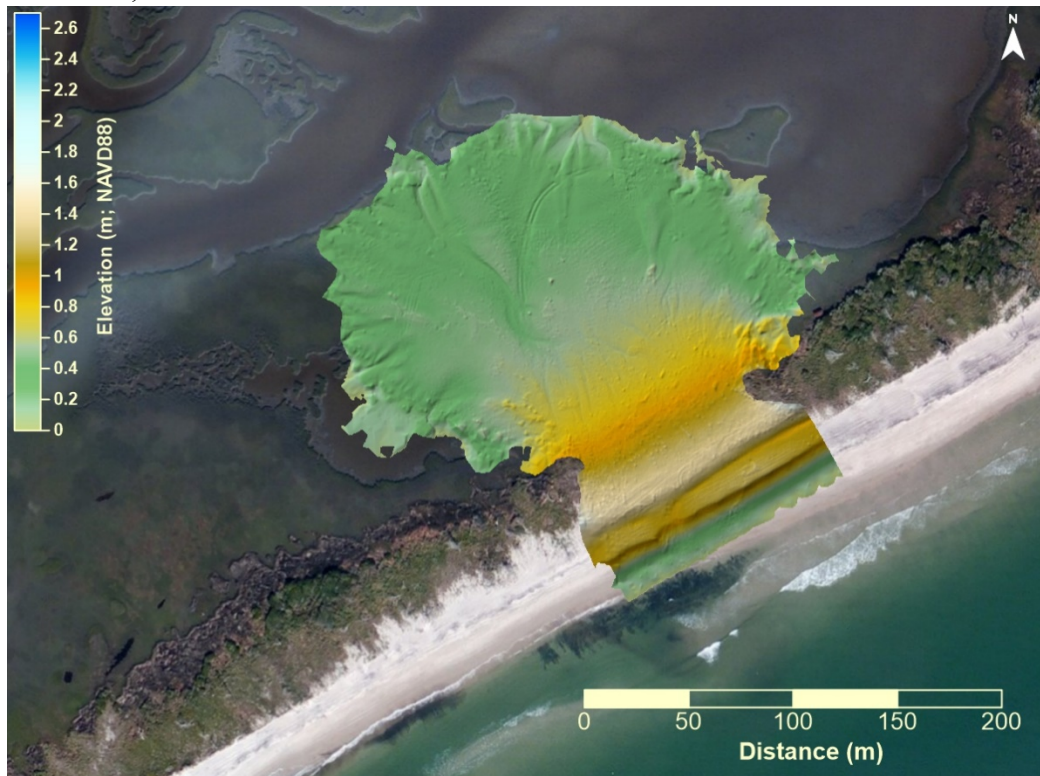
May 7, 2013

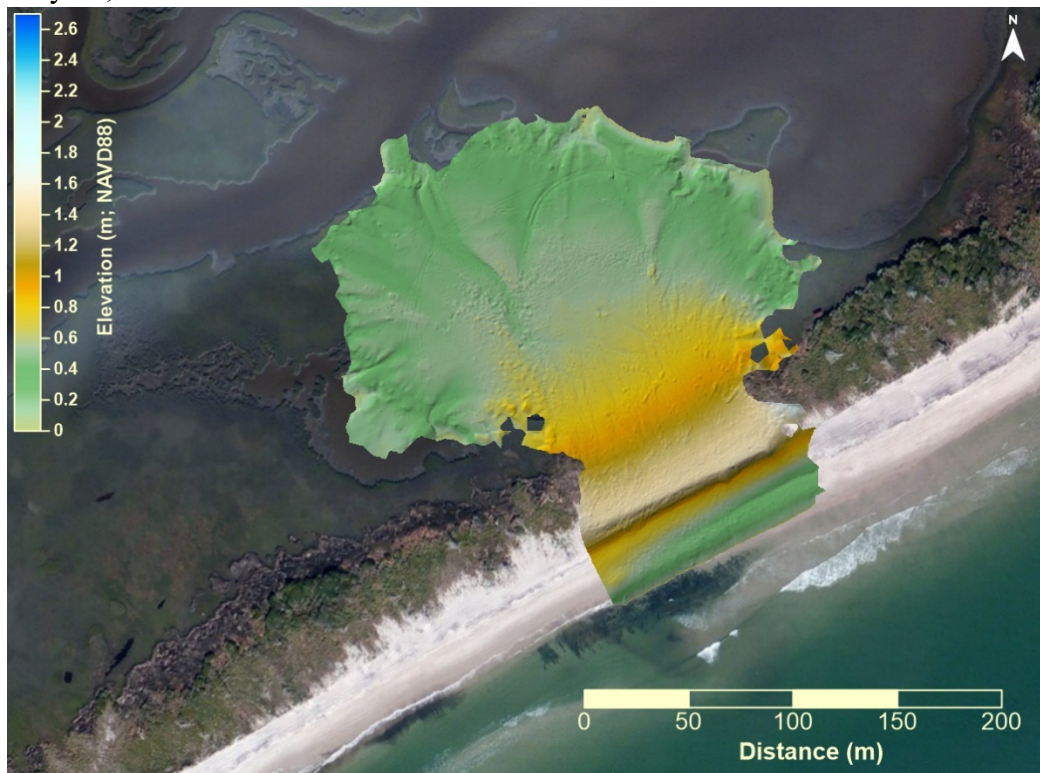September 16, 2013

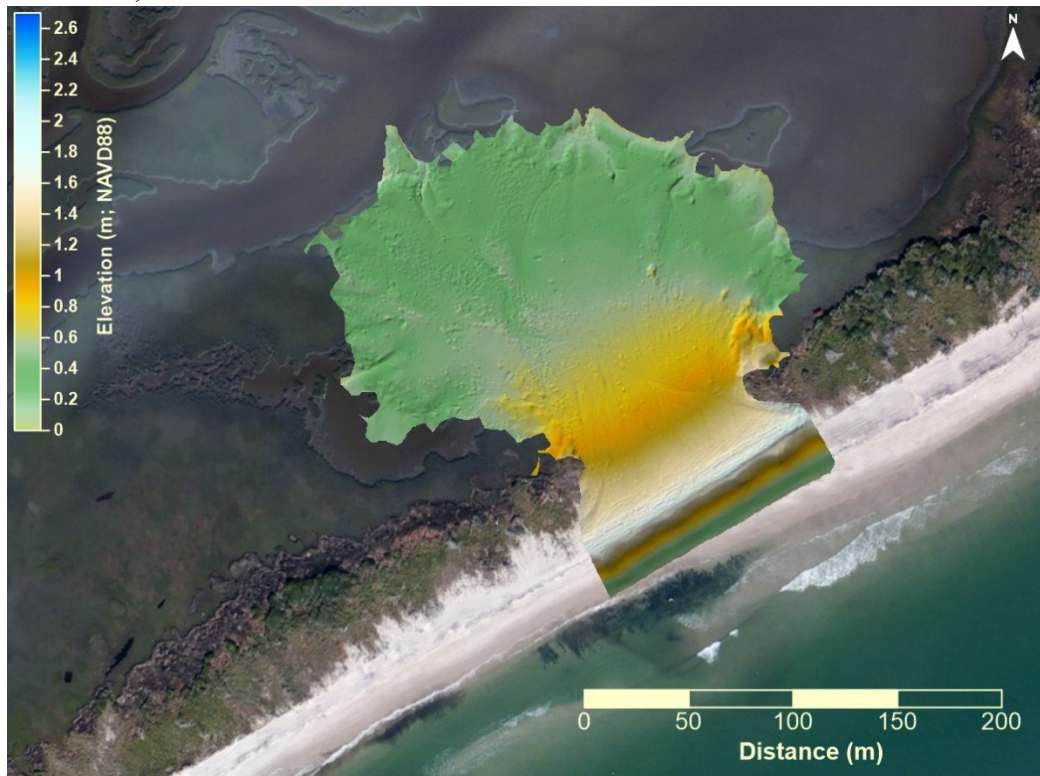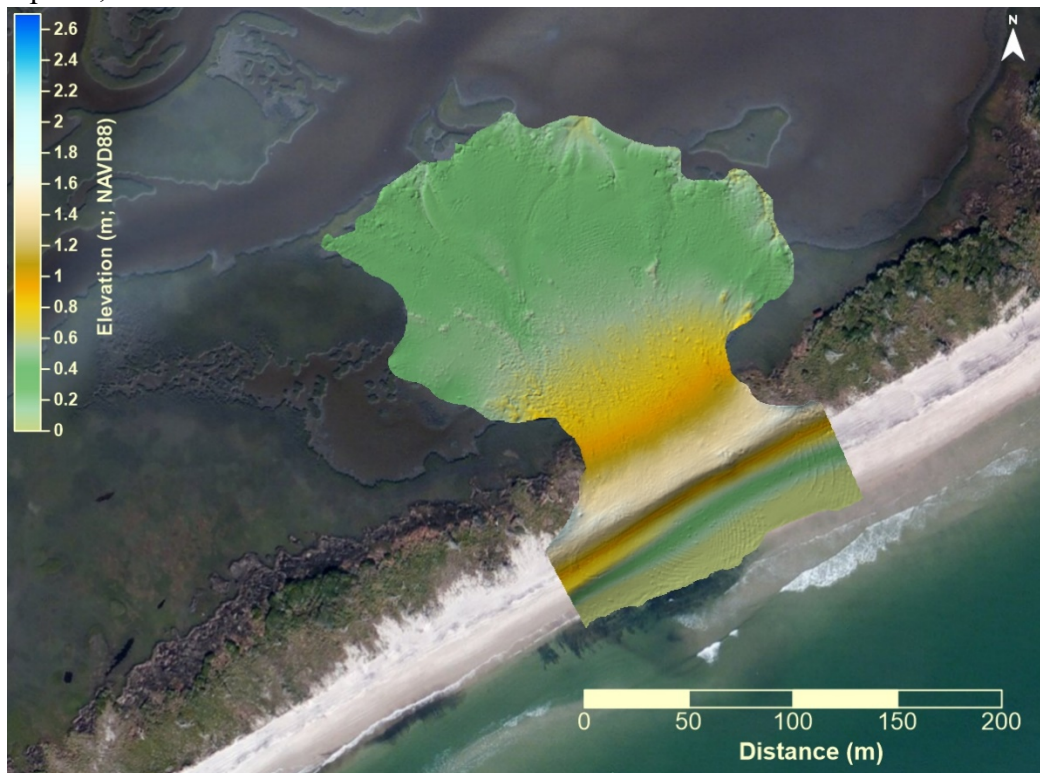November 14, 2013

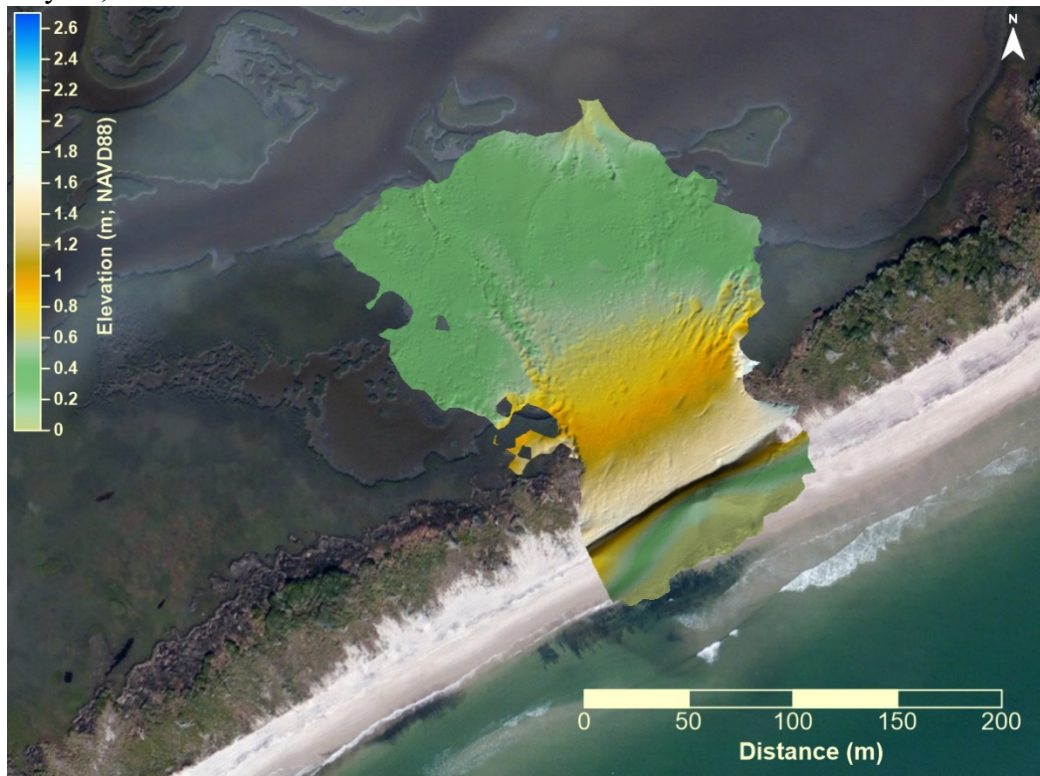January 27, 2014

March 26, 2014

May 12, 2014

October 8, 2014

April 1, 2015

July 16, 2015

October 12, 2015