



Geologic record of Hurricane impacts on the New Jersey coast

Daria Nikitina (1), Benjamin Horton (2), Nicole Khan (3), Jennifer Clear (2), Timothy Shaw (2), Mihaela Enache (4), Dorina Frizzera (4), Nick Procopio (4), and Marina Potapova (5)

(1) Geology and Astronomy, West Chester University, Pennsylvania, USA (dnikitina@wcupa.edu), (2) Department of Marine and Coastal Sciences, Rutgers University, New Jersey, USA, (3) USGS Coastal and Marine Geology, Florida, USA, (4) NJDEP Office of Science, New Jersey, USA, (5) Department of Biodiversity, The Academy of Natural Sciences of Drexel University, Pennsylvania, USA

Hurricanes along the US Atlantic coast have caused significant damage and loss of human life over the last century. Recent studies suggest that intense-hurricane activity is closely related to changes of sea surface temperatures and therefore the risk of hurricane strikes may increase in the future. A clear understanding of the role of recent warming on tropical cyclone activity is limited by the shortness of the instrumental record. However, the sediment preserved beneath coastal wetlands is an archive of when hurricanes impacted the coast.

We present two complimenting approaches that help to extend pre-historic record and assess frequency and intensity of hurricane landfalls along the New Jersey coast; dating overwash deposits and hurricane-induced salt-marsh erosion documented at multiple sites. The stratigraphic investigation of estuarine salt marshes in the southern New Jersey documented seven distinctive erosion events that correlate among different sites. Radiocarbon dates suggest the prehistoric events occurred in AD 558-673, AD 429-966, AD 558-673, AD 1278-1438, AD 1526-1558 or AD 1630-1643 (Nikitina et al., 2014). Younger sequences correspond with historical land-falling hurricanes in AD 1903 and AD 1821 or AD 1788. Four events correlate well with barrier overwash deposits documented along the New Jersey coast (Donnelley et al., 2001 and 2004). The stratigraphic sequence of salt High resolution sedimentary-based reconstructions of past intense-hurricane landfalls indicate that significant variability in the frequency of intense hurricanes occurred over the last 2000 years.