Virginia Coast Reserve LTER

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The Virginia Coast Reserve (VCR) is located along the Atlantic side of the Delmarva Peninsula (37.0°- 38.0° N, 75.4°-76.0° W, <20 m a.s.l.) and is representative of the Tidewater region and of coastal barrier ecosystems that comprise much of the Atlantic and Gulf Coasts. It is part of the mid-Atlantic coastal plain that extends from the fall-line 100 km inland to the edge of the continental shelf. The VCR is anextremely dynamic, regularly disturbed landscape along 100 km of the coast that includes an assemblage of 14 barrier islands with forested uplands, tidal marshes, mainland watersheds, and shallow lagoons with extensive mudflats. The 14,000 ha reserve was established in 1970 by The Nature Conservancy and is a Man and the Biosphere Reserve; the islands are uninhabited. The VCR LTER program has gathered long-term data on this system since 1987, with the University of Virginia as the lead institution and 7 other institutions participating. The site has substantial capabilities to support research activities; the first phase of a new research station (Anheuser-Busch Coastal Research Center of the UVA) was completed in 2006, and plans are to at least double its size in the next few years. It has easy access to several major urban centers.

The contemporary landscape of the VCR took form during the late Holocene, although the underlying topographic framework can be traced back to relict drainage basins of the antecedent Pleistocene land surface. Shoreline change on the modern islands is dramatic, typically characterized by lateral accretion and erosion at rates as high as 13 m/yr, and is the highest along the mid-Atlantic seaboard. This extreme rate of shoreline movement creates one of the most dynamic coastal landscapes in the United States. The shallow seaward slope of the VCR landscape (<0.1%), high rates of subsidence, and low sediment supply make this a particularly sensitive location for studying intertidal marsh dynamics in response to sea-level rise. The climate of the VCR is dominated by coastal storms; each year an average of 38 extratropical storms occur with magnitudes sufficient to rework beach sands and to elevate tides above astronomical norms.

The site currently has one flux tower with the footprint of an extensive *Spartina alterniflora* – dominated marsh on the mainland adjacent to agricultural fields. A second tower could be located at Phillips Creek or at Cobb Mill Creek near the ABCRC in marshes surrounded by mainland forests and agricultural fields where research on gas exchange, hydrology and marsh transitions have been ongoing since 1987. These sites are both supported by meterological stations and tide gauges monitored by the VCR LTER.