Sixth International Meeting
International Geoscience Programme Project 495
Quaternary Land-Ocean Interactions: Driving Mechanisms and Coastal Responses
25th October – 31th October 2009
Myrtle Beach, South Carolina USA 2009

The details regarding the deadlines for pre-registration, abstract submission etc. can be found on the IGCP Project 495 website
(http://www.geography.dur.ac.uk/projects/igcp495/Home/tabid/333/Default.asp)

and

the Burroughs and Chapin Center for Marine and Wetland Studies website
https://bcmw.coastal.edu/news-events/cmws-events/igcp-495-conference-held-cmws

Conference Programme

ICGP 495 Symposium: "Driving Mechanisms and Coastal Response Across Range of Time and Spatial Scale" and IGCP 495 Business Meeting
(Registration $250; includes Conference Ice Breaker and Conference Dinner-but does not include hotel accommodations in Myrtle Beach-See below)

Sunday, October 25, 2009: Arrival Myrtle Beach, South Carolina USA,

1300 - 1400	*Registration*
1400 - 1700	*Afternoon poster/technical session*
1800 - 1900	*Ice-breaker reception*

Monday, October 26, 2009:

0830 - 12:00	*Scientific oral and poster sessions (coffee break @1030)*
1330 – 1630	*Scientific oral and poster sessions (coffee break @1500)*
1800 - 2000	*Reception Ripley's Aquarium, Myrtle Beach, SC*

Tuesday, October 27, 2009:

0830 - 12:00	*Scientific oral and poster sessions (coffee break @1030)*
1330 –1630	*Scientific oral and poster sessions (coffee break @1500)*
1630 – 1800	*IGCP 495 Business Meeting*
1900 - 2100	*Conference Dinner*
	Program: Tribute to Orson Van de Plassche

Wednesday, October 28-Saturday October 31, 2009 Optional Conference Field Excursion

OPTIONAL FIELD EXCURSION:

"The Carolina coast: driving mechanisms of coastal change over different time scales"
($350/person includes transportation/lunches and housing (Oct. 28, 29 and 30 double occupancy))

Two recent large multi-institutional research programs have focused on the coastal systems of South Carolina and North Carolina. These have been cooperative efforts between the US Geological Survey and numerous universities and state agencies in the region. Collectively, these programs have completed extensive mapping of the geologic framework of the coastal zone and inner shelf across a broad section of the Carolinas. Coastal erosion and process studies have built upon this framework to better understand the dynamics and response of this region possessing a wide range of morphological styles and driving forces (wave and tidal regime). The excursion will emphasize examples of Pleistocene and Holocene evolution of coastal features e.g. barriers, spits, estuaries, lagoons, and coastal systems, and an opportunity to review recent research advances relating to the overall theme of the project. The excursion will be co-organized by Coastal Carolina University, US Geological Survey-Woods Hole, East Carolina University, Dalhousie University and South Carolina Sea Grant.

Excursion Itinerary:

Wednesday, October 28*-South Carolina Grand Strand (Overnight in North Myrtle Beach, SC)*

- *Debordieu Beach- Coastal Erosion Issues*
- *Murrells Inlet-Geologic Framework of the Grand Strand*
- *Myrtle Beach-Long Bay Process Studies*
- *Myrtle Beach-Grand Strand Nourishment Projects*
- *Arcadia Shores-Welding Barrier/Swashes*

Thursday, October 29 -*South Carolina Grand Strand (Overnight Ocracoke Island, NC)*

- *Waties Island-Mid-Holocene Cored Barrier*
- *Transit to Southern North Carolina (4 hr bus ride)*
- *Ferry Ride to Outer Banks of North Carolina*

Friday, October 30- *North Carolina Outer Banks (Overnight Kill Devil Hills, NC)*

- *Ocracoke Island*
- *Cape Hatteras*
- *Buxton Beach*
- *Isabel Inlet site, Oregon Inlet*

Saturday, October 31- *North Carolina Outer Banks*

- *South Nags Head,*
- *Sand Point (one of the sea-level study areas),*
- *East Lake Pit where the late Pleistocene tidal flats are exposed,*
- *Duck. There are probably a few other sites that could be taken in as well, time permitting (Run Hill, Kitty Hawk Beach ridges, etc.).*

- *Participants may depart from Duck NC (Norfolk, VA) or return to Conway.*

Conference Logistics

Technical Session:

A one-page extended abstract should be submitted by July 15 to be considered for presentation at the conference. Abstract should be submitted via e-mail to ptgayes@coastal.edu. Abstracts and conference proceedings will be compiled in English.

Conference Registration:

There is a registration fee of $250 US/participant. This covers the cost of conference ice breaker, Conference Dinner, coffee breaks, and meeting facilities and materials.This does not include accomodation at the hotel in Myrtle Beach-See Below.

The registration fee can be settled by credit card or check. Checks should be made payable to Coastal Carolina University (Please reference IGCP 495). The registration deadline is August 1, 2009.

Registration can be completed via website: www.coastal.edu/cmws/IGCP495

or by contacting

Ms. Julie Quinn
Burroughs and Chapin Center for Marine and Wetland Studies
Coastal Carolina University
P.O. Box 261954
Conway, South Carolina 29528
jquinn@coastal.edu
1-843-349-4015

Conference Accomodations.

The conference will be held at the Marriott Resort at Grande Dunes in Myrtle Beach, South Carolina. A block of rooms has been reserved at the Marriott which has provided a favorable conference rate of $105/evening. The conference ice breaker reception and conference dinner will also be held at the Marriott. The Center for Marine and Wetland Studies Board of Visitors will also host a reception at the Ripley's Aquarium in Myrtle Beach, South Carolina

Reservations and billing for rooms can be set up directly with the Marriott Grande Dunes. Please reference the ICGP confernece to secure the conference rate.

Potential for IGCP Travel Support*: You may also be interested to note that UNESCO provide a limited amount of funding to support attendance at this conference from delegates from poorer countries who would otherwise not be able to attend. Please note that this support rarely covers the full cost of conference attendance but can provide support with flights and/or registration.*

If you wish to apply under this scheme, please e-mail Antony Long A.J.Long@Durham.ac.uk providing:
a) the case for support;
b) a budget detailing in full the amount of funding sought and commitments from other sources;
c) a short CV.

Applications are to be received by ***July 15th, 2009*** *and a decision will be taken within 2 - 3 days.*

Conference Field Trip – October 28-31, 2009

The conference field trip will traverse a broad area of coastal South Carolina and North Carolina. The excursions will focus on results of the recent US Geological Survey/South Carolina Sea Grant "Coastal Erosion Study" that is summarized in http://pubs.usgs.gov/of/2008/1206/ *and the North Carolina Regional Coastal Erosion Studies that are summarized at* http://woodshole.er.usgs.gov/project-pages/northcarolina/

***The Four Day Conference Field Trip costs $350/person which includes*: accommodations (double occupancy), transportation (vans/ferries), guidebook and lunches). The trip begins in Myrtle Beach and ends at the US Army Corps of Engineers Field Research Facility at Duck, NC. Participants may chose to start their return trip home from Norfolk, Virginia or return to Conway on Nov. 1.**

Registration for the field excursion can be completed via website
www.coastal.edu/cmws/igcp495
or by contacting Ms. Julie Quinn (jquinn@coastal.edu) or by phone at 1-843-349-4019

The field excursion will start in Myrtle Beach, South Carolina and end in Duck, NC. Excursion participants should consider making arrangement to depart from Norfolk, Virginia which is the closest airport to Duck, North Carolina (1.5 hour drive). Transportation will be provided to Norfolk as well as to return to Myrtle Beach, South Carolina (6.5 hour drive).

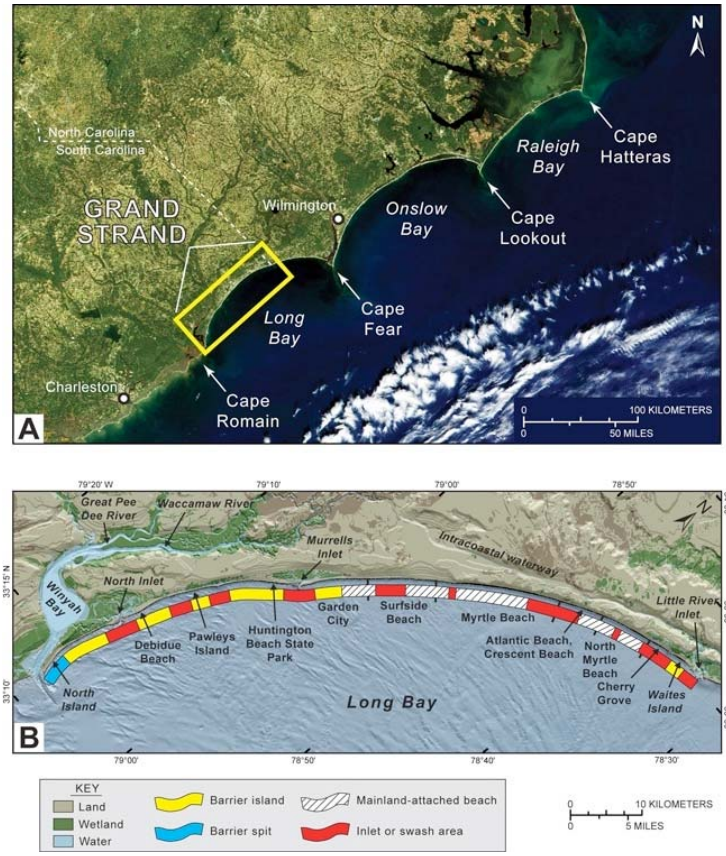
The Northern South Carolina Coast: October 28-29, 2009

The northern South Carolina is a sediment starved region dominated by a long stetch of headland coast centered on the city of Myrtle Beach.

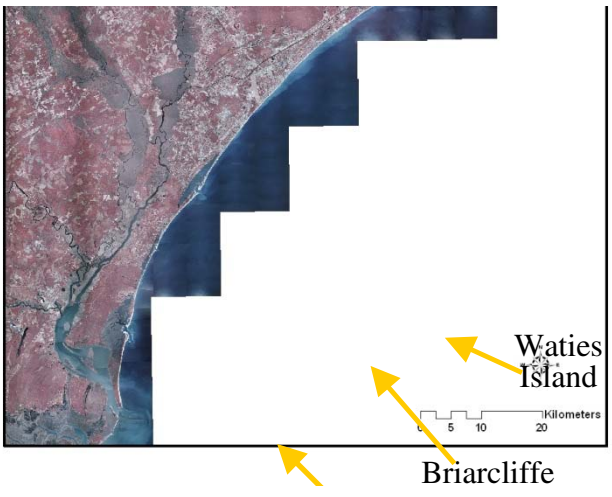
The area has been rapidly developed as a major beachfront tourist destination along the Southeast US coastline. This expansion in economic importance to the state was a driving force behind the study and effort to better understand and manage the coastal resources.

The South Carolina Cooperative Study implemented a phased approach to regionally characterizing the coastal system through:

1. *Establishing the regional geologic framework*
2. *Charcterizing coastal behavior on a range of spatial and temporal scales*
3. *Focused process studies seeking to model and predict coastal response to driving forces.*



The "Grand Strand" of Long Bay South Carolina and North Carolina. (A) Satellite image showing the location of the Grand Strand study area on the North and South Carolina coasts (published by permission of the National Aeronautics and Space Administration–Visible Earth program accessed July 1, 2007 online at http://visibleearth.nasa.gov/).**(B)** Map showing physiographic and geographic features on the Grand Strand. Types of coastal landforms are indicated by the color-coded bands parallel to the coast. *From Barnhardt et al., 2009* Coastal Change Along the Shore of Northeastern South Carolina: The South Carolina Coastal Erosion Study U.S. Geological Survey Open-File Report 2008-1206



South Carolina Grand Strand

Field Trip Stops:

The field trip will make a series of stops to highlight results of the Coastal Erosion Study including:

Debordieu Beach, Murrells Inlet, Myrtle Beach, Briarcliffe Arces and Waties Island

Stop 1: Debordieu Beach

Debordieu Beach is a part of the large barrier island chain that extends southward from the Myrtle Beach area headland across most of South Carolina. Approximately one-third of the South Carolina coast from Debordieu to near the City of Charleston, a distance of ~100 km, is a comprised of coastal reserves and conservation areas including the Santee Delta, Cape Romaine and Bulls Bay area. The Debordieu community is the southern end of South Carolina's Grand Strand; a heavily developed and popular oceanfront destination.

The southern portion of Debordieu possesses one of the highest erosion rates in the area that has increasingly impacted the exclusive beachfront community. For the last twenty years, the State of South Carolina's Beachfront Management regulations defined a long term policy of retreat of coastal development in the face of eroding beaches and rising seas. This policy has faced legal challenges all the way to the US Supreme Court and to date resulted in only one structure retreating from the coast. To a large extent this is due to an interim strategy of massive beach nourishment projects rebuilding the states eroding beaches.

The Debordieu site is very well suited to discuss the conflicts and ongoing evolution of the State's efforts to better manage/regulate its beach and oceanfront resources. It is these driving forces that provided the impetus for the South Carolina Coastal Erosion study to provide a better understanding of this coastal system.

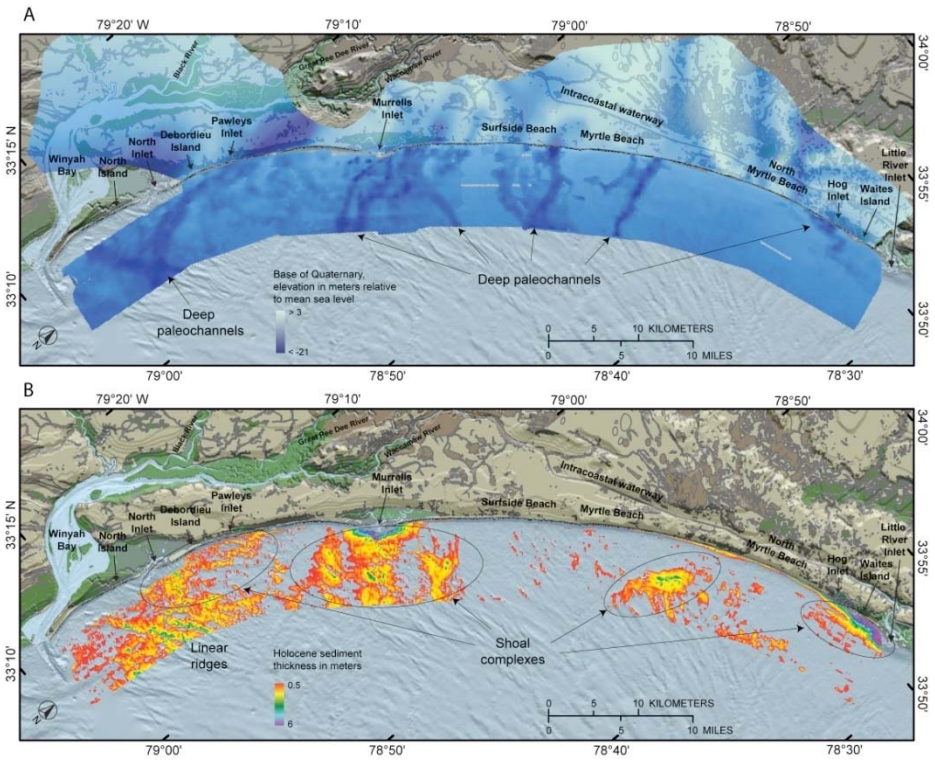
pre-Hurricane Hugo
(Courtesy of W. Eiser SC OCRM)

u Beach

Post-Hurricane Hugo
(Courtesy of W. Eiser SC OCRM)

Stop 2: Murrells Inlet

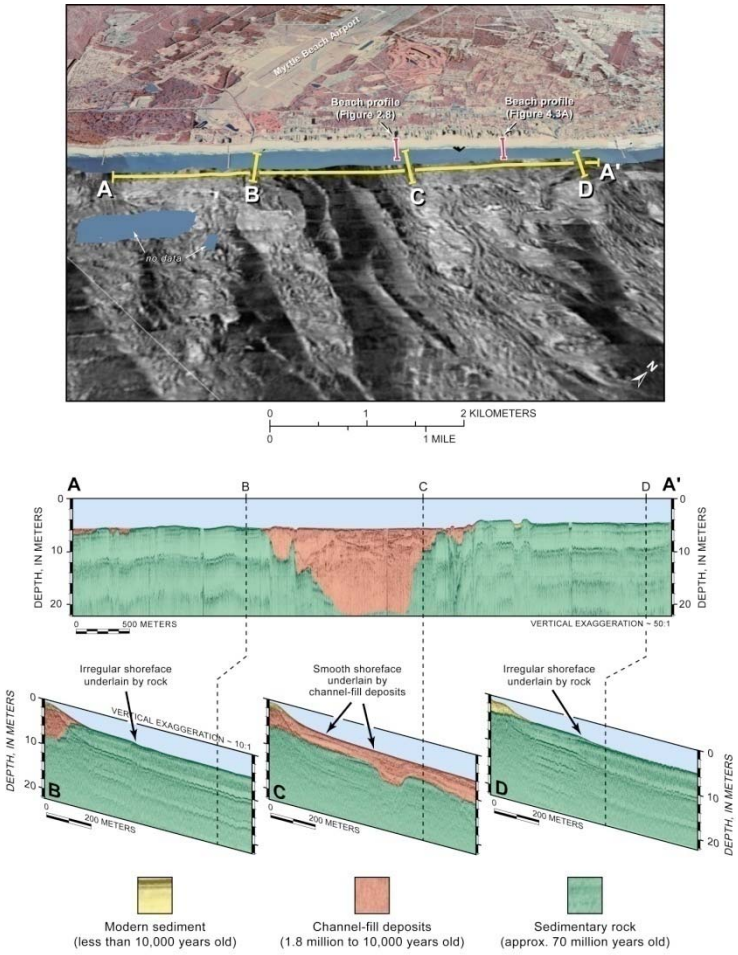
The sequential deposition of barrier island systems during successive sea level highstands has strongly influenced the regional morphology and paleodrainage systems. The resultant shift of the paleodrainage to the south over the last ~million years has left the Myrtle Beach area as one of the longest headland areas along the non-glaciated section of the US east coast. Barrier island chains extend south of Myrtle Beach into the Georgia Bight and North of Myrtle Beach into the Cape and Outer Banks areas of North Carolina. This has also left the region with very limited unconsolidated surfical sediment from the beach to the mid-shelf region where indurated and rocky outcroppings are common. The Murrells Inlet stop will be used to discuss the regional geologic framework and Quaternary Coastal evolution of the area.



A) Map showing topography on top of Cretaceous and Tertiary sedimentary rocks (base of Quaternary elevation) beneath the Grand Strand. Elongate depressions (shown in the darkest blue colors) crossing this generally low-relief surface represent paleochannels incised by fluvial systems since the Late Pliocene (about 2.1 million years ago). The largest paleochannels were produced by the Pee Dee River, which has occupied multiple courses across the region during the geologic past (see Figure 3.9). Modified from Putney and others (2004) and Baldwin and others (2007). >, higher than; <, deeper than. **B)** Map showing thickness of Holocene inner-shelf sediments, which generally increase in abundance from north to south. Over large areas Holocene sediments are less than 0.5 m (1.6 m) thick or absent. The largest accumulations (up to 6 m or 20 ft thick) generally form shoal complexes that extend seaward from tidal inlets. A notable exception is a north-south oriented, shore-oblique shoal offshore of Myrtle Beach. Modified from Baldwin and others (2007). The background shaded-relief imagery was constructed by using the NOAA-NGDC coastal relief model and USGS hydrography data. *From Barnhardt et al., 2009,* Coastal Change Along the Shore of Northeastern South Carolina: The South Carolina Coastal Erosion Study U.S. Geological Survey Open-File Report 2008-1206

Stop 3. Myrtle Beach

The central Grand Strand area is home to the city of Myrtle Beach. This is one of the longer stretches of headland coast along the southeast US coast. It's morphology and behavior is strongly imprinted by the longer term evolution of the landform over successive sea level cycles and associated migration of the Pee Dee River system. The coast and inner shelf here are sediment starved and interaction between geologic framework and modern processes exerts a strong control on coastal behavior. The state of South Carolina is heavily committed to beach nourishment as a primary means of combating coastal erosion in front of the increasingly massive and static coastal development. The excursion will visit several locations within the Myrtle Beach area to highlight the long and short term influence of geologic framework on modern conditions and behavior as well as recent beach nourishment manipulations. In addition, the USGS-SC cooperative has greatly advanced efforts to characterize and model Long Bay hydrodynamics as short term drivers for the modern system and results will be highlighted in the conference and field trip.



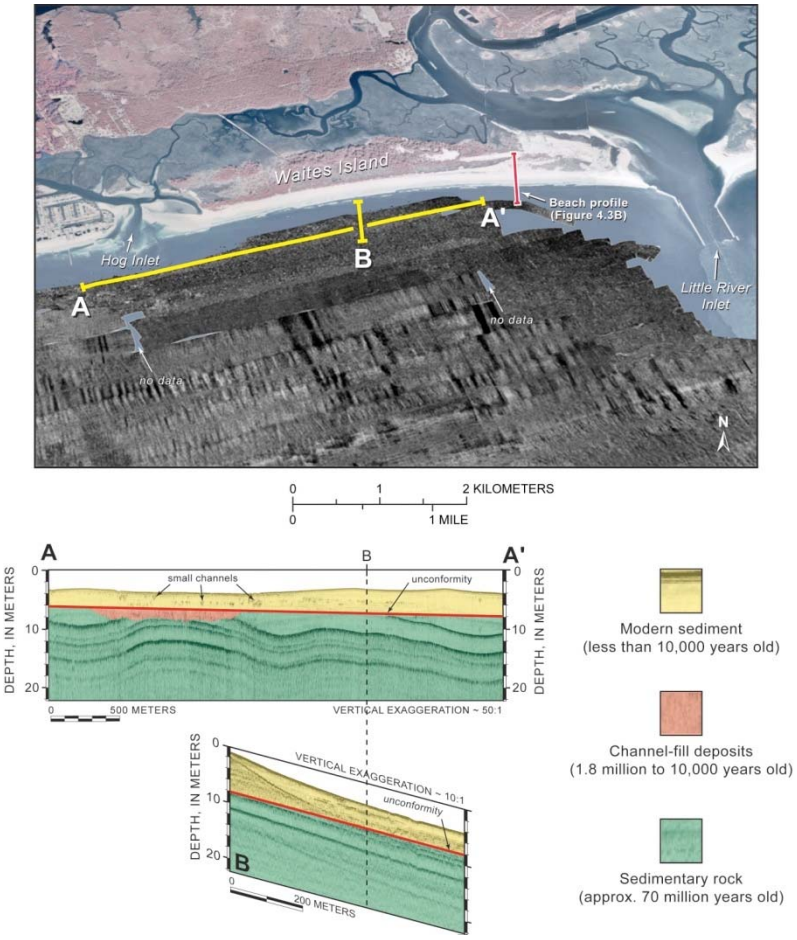
Shoreface geology along the central Grand Strand at Myrtle Beach. (TOP) Perspective view showing a complex pattern of acoustic backscatter on the shallow seafloor. High backscatter (light shades) generally indicates coarse sand, gravel, and rock. Low backscatter (darker shades) generally indicates sandy or muddy sediment. (A-D) Interpreted subbottom profiles showing the geologic framework underlying the shoreface.

*From Barnhardt et al., 2009***,** Coastal Change Along the Shore of Northeastern South Carolina: The South Carolina Coastal Erosion Study U.S. Geological Survey Open-File Report 2008-1206

Stop 4 Waties Island

Waties Island is an undeveloped barrier island at the North Carolina/South Carolina border; the first of a chain of barrier islands that extend northwards from the headlands of Myrtle Beach into southern North Carolina.

The island has experienced periods of regression and seaward progradation from an initial mid-Holocene core located on the landward side of the present island and subsequent transgression to its prsent position. The excursion will tour the island to discuss this long term behavior and more recent changes.



Shoreface geology along the northern Grand Strand at Waites Island. (TOP) Perspective view showing a complex pattern of acoustic backscatter on the shallow seafloor. High backscatter (light shades) generally indicates coarse sand, gravel, and rock. Low backscatter (darker shades) generally indicates sandy or muddy sediment. (A-B) Interpreted subbottom profiles showing the geologic framework underlying the shoreface.

From Barnhardt et al., 2009, Coastal Change Along the Shore of Northeastern South Carolina: The South Carolina Coastal Erosion Study U.S. Geological Survey Open-File Report 2008-1206

The North Carolina Coast. October 30-31

The field excursion will make a series of stops along the North Carolina coast to highlight the USGS/North Carolina cooperative and associated studies. (*http://woodshole.er.usgs.gov/project-pages/northcarolina/*)

Wave energy increases and tidal range decreases considerably to the north from central South Carolina with the associated changes in coastal morphology and behavior.

The NC Cooperative program has completed a similar reconstruction of the regional geologic framework and this to modern coastal behavior. Because of the relative extent and importance of the large estuarine sound systems of North Carolina considerable effort has been focused in these systems. After visiting some location on the landward edge of southern Pamlico Sound we will take an extended ferry ride to North Carolina's outer banks.

Field Excursion Wrap Up: The field excursion will end at the US Army Corps of Engineers Field Research Facility at Duck, North Carolina which has been the focus of extensive process studies of beaches and coastal systems for several decades.
Participants should consider opting to depart from Norfolk, Virginia which will be the closest airport from Duck, NC (1.5 hour drive). Transportation will for those wishing to depart from Norfolk, Va. As well as provided back to Conway, SC (6.5 hour drive).