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4-7 November | Charlotte, North Carolina, USA

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Paper No. 2

Presentation Time: 4:05 PM

GEOCHRONOLOGIC EVIDENCE FOR A POSSIBLE MIS 11 EMERGENT BARRIER/BEACH-RIDGE IN SOUTHEASTERN GEORGIA, USA (Invited Presentation)

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Interpretations of post-Miocene strata in the Southeastern Atlantic Coastal Plain are numerous and often conflicting, depending on the investigative techniques used (lithostratigraphic, geochronologic, geomorphologic). The goals of USGS investigations of post-Miocene strata in the Savannah area of southeast Georgia are to establish a local chronostratigraphic framework and develop a preliminary time frame for landscape evolution. Meteoric beryllium-10 (^{10}Be) and optically-stimulated luminescence (OSL) techniques are being used to estimate deposit age for identifiable barrier/beach-ridges in the area. Strata that underlie the topographically highest (20–25 m) and westernmost identifiable barrier/beach-ridge in the Savannah area are exposed in a borrow pit in Effingham County. About 2 m of eolian sand is separated from underlying near-shore marine to estuarine strata (barrier/beach-ridge deposit) by a <1-m-thick zone-of-mixing. OSL data indicate ages of ≤ 43 ka for the eolian sand and 116 ka for the zone-of-mixing. ^{10}Be data indicate minimum residence times of 33 kyr for the eolian sand, 81 kyr for the zone-of-mixing, and 247 kyr for a well-developed paleosol preserved in the barrier/beach ridge deposit. The combined OSL and ^{10}Be data indicate that at this locality the barrier/beach ridge deposit has a minimum age of about 360 ka. Age data for this barrier/beach-ridge deposit are the first for any Pleistocene near-shore marine/estuarine strata in southeast Georgia that are conclusively older than 80 ka. The 360-ka minimum age and the 20–25-m elevation for the truncated upper surface of barrier/beach-ridge deposit suggest deposition/formation during the MIS 11 (~420–360 ka) global sea-level high stand. The geochronologic and morphostratigraphic data for these and other coastal deposits in Effingham County provide a preliminary regional framework for landscape evolution in this part of the Atlantic Coastal Plain for the ~200 kyr period between about 400 ka and 200 ka.

Session No. 116

T12. A Healthy Dose of Quaternary Geochronology at the Shoreline: Applications of Luminescence and Other Dating Techniques to Resolving the Timing of Coastal, Estuarine, and Lake Shore Processes

Monday, 5 November 2012: 3:45 PM-5:30 PM

201AB (Charlotte Convention Center)

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