

RECURRENCE RATES OF LARGE EARTHQUAKES IN THE SOUTH CAROLINA COASTAL PLAIN FROM PALEOLIQUEFACTION DATA

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In regions of hidden faults, study of secondary effects provides a means of evaluation of the characteristics of prehistoric earthquakes. A study of paleoliquefaction features preserved in the South Carolina Coastal Plain (SCCP) has provided evidence of at least seven large earthquakes in the past 6000 years, (before which time water table conditions were not conducive to the formation of sand blows). Over fifteen years of study of more than 50 sand blows by different investigators has led to the establishment of criteria for recognizing earthquake induced sand blows, and determining if the radiocarbon ages of organic samples represent the minimum-, contemporary- or maximum age estimates of the causative earthquake. The calibrated ages (+ or - one sigma) of various samples from the same or different sand blows were compared and statistically similar ages were assigned to a particular earthquake episode. The spatial extent of sand blows associated with a particular episode was used to assess the magnitude of the prehistoric earthquake. The dates and magnitudes of prehistoric earthquakes were used to obtain recurrence rates of large events in the SCCP. The results of this study reveal that the paleoliquefaction record is not complete between about 2000 years and 6000 yr B.P. due to fluctuating water table. After 2000 yr B.P. earthquakes with M 7+ occur every ~ 500 years in the SCCP.