

## Providing Authentic Research Experiences for Pre-Service Teachers through UNH's Transforming Earth System Science Education (TESSE) Program

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The University of New Hampshire's Transforming Earth System Science Education (UNH TESSE) project is designed to enrich the education and professional development of in-service and pre-service teachers, who teach or will teach Earth science curricula. As part of this program, pre-service teachers participated in an eight-week summer Research Immersion Experience (RIE). The main goal of the RIE is to provide authentic research experiences in Earth system science for teachers early in their careers in an effort to increase future teachers' comfort and confidence in bringing research endeavors to their students. Moreover, authentic research experiences for teachers will complement teachers' efforts to enhance inquiry-based instruction in their own classrooms.

Eighteen pre-service teachers associated with our four participating institutions - Dillard University (4), Elizabeth City State University (4), Pennsylvania State University (5), and University of New Hampshire (UNH) (5) participated in the research immersion experience. Pre-service teachers were matched with a faculty mentor who advised their independent research activities. Each pre-service teacher was expected to collect and analyze his or her own data to address their research question. Some example topics researched by participants included: processes governing barrier island formation, comparison of formation and track of hurricanes Hugo and Katrina, environmental consequences of Katrina, numerical models of meander formation, climatic impacts on the growth of wetland plants, and the visual estimation of hydrothermal vent properties. Participants culminated their research experience with a public presentation to an audience of scientists and inservice teachers.