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Biogenic Ice Nuclei Studies Proposed for the BEACHON Project.

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Key to improving the predictability of earth system behavior over the time scale of months to a decade is an improved understanding of the coupling between water, energy and biogeochemical cycles in a multi-scale modeling framework. Credible predictions at these time scales require coordinated modeling, observations and process studies that explicitly address the coupled water, energy and biogeochemical cycles at multiple temporal and spatial scales. This capability is particularly important for semi-arid landscapes where biogeochemical cycles are limited by water and nutrients and are threatened by drying associated with climate change. Water-limited landscapes cover half of the earths land surface and include some of the fastest growing population centers. Trace gases and aerosols emitted by a water-limited biosphere are key points of interaction between the atmosphere and biosphere. A new project, called BEACHON (Bio-hydro-atmosphere interactions of Energy, Aerosols, Carbon, H2O, Organics & Nitrogen) has recently been initiated to study these interacting cycles. A key element of this study will be the linkage between biogenic ice nuclei and the water and carbon cycles. Both laboratory and field studies are proposed to address this linkage. At the conference, progress to date will be reported, including plans for a long term field study.