

Guest Speaker*The Nebraska Sand Hill Biocomplexity Project*

David Wedin, Mount Associate Professor, School of Natural Resource Sciences,
University of Nebraska

Wednesday, August 11 – Banquet**Starlite Ballroom**

ABSTRACT: Today, the 58,000 km² Nebraska Sand Hills are stable and covered by native grassland interspersed with wetlands and lakes. The starting point for the Sand Hills Biocomplexity project was the recent observation by UNL geoscientists that many of these dunes were destabilized (lost their grass cover) and active as recently as 900 years ago. How do short- and long-term climate change interact with ecological, hydrological and bioatmospheric processes to destabilize this massive sand dune system, or, on the other hand, restabilize large areas of moving sand? What role do the numerous interdunal wetlands and lakes of the region play in stabilizing this system? An interdisciplinary team (15 faculty from SNR, Geosciences, Agronomy, and Biosystems Engineering) posed these questions to NSF in 2000 and received \$100,000 in Biocomplexity Incubation funds, as well as >\$75,000 in UNL seed money funds, to develop a research program. In September, 2003, the team was awarded a \$1,800,000 biocomplexity grant from NSF (<http://sandhills-biocomplexity.unl.edu/>).

The research project has three main components: 1) geological and paleoecological studies will reconstruct Sand Hills climate and dynamics during the late Holocene; 2) a large-scale manipulative experiment will examine the effects of grassland destabilization on the coupled budgets of energy and water that drive both ground-water recharge and canopy-atmosphere interactions; 3) mesoscale climate modeling of the coupled climate – vegetation – hydrologic system will test whether the processes and feedbacks that we hypothesize govern the stability of the Sand Hills can account for patterns observed in both the geologic and satellite-based record.