

**Environmental Engineering**

**and Earth Sciences**

**EEES Department Seminar**

***Where’s the Dust? Using Surficial Geologic Mapping to Reveal a Sand-blasted Landscape in Eastern Iowa***

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**Abstract:**

Almost 1/3 of the earth’s surface is covered with eolian sediments. In fact, most of the Midwest US is covered by loess. This fine-grained sediment was deposited on the landscape around 27 to 15 thousand years ago and is generally 2-5 m thick in this region. In specific settings, such as the eastern side of the Missouri River valley loess can be over 40 m deep. There is an anomalous gap in loess cover, however. The Iowan Erosion Surface, an area of 25,000 km2, has almost no loess on the landscape, but also contains linear hills with 10 + m of loess. Debate on the cause has been ongoing since the 1890s with explanations ranging from subglacial erosion, fluvial downcutting, or jökulhlaup events. Recent geologic mapping efforts combined with a new comprehensive geochronology dataset has shown that this area was eroding via sand deflation (sandblasting, in other words) and thermokarst thawing between 25 to 15 thousand years ago. The combination helped flatten the topography, which created a transport surface for eolian sand to travel across the uplands for up to one hundred kilometers from its original source. Salting grains then removed loess deposits when encountered. The local topography played a role in shaping the landscape, forming the streamlined hills downwind of where sand was trapped by a narrow valley. The result is a flat, polygenetic landscape where linear, loess-covered hills are surrounded by a broad landscape with clogged drainage networks. The landscape of the Iowan Erosion Surface can serve as a past analogue to modern areas experiencing permafrost melting.

**3:30 PM – 4:30 PM**

**Thursday, February 29, 2024**

**Brackett Hall 438**

***Attendance is mandatory for graduate students enrolled in***

 ***EES 8610, EES 9610, and GEOL 8610.***

***Refreshments following seminar.***