

The Department of Geological and Environmental Sciences (GEOS)
and
The Association of Geology and Environmental Students (AGES)

Present GASS...the
GEOS/AGES Seminar Series

Tuesday, February 26 – 5:00 p.m. - PHSC 109

Dr. Susan Riggins

Geological and Environmental Sciences ~ CSU Chico



**"Soil production in the
Critical Zone*: How do
kinetic factors affect
weathering, and Can we
predict soil production
in diverse landscapes?"**

*The Critical Zone comprises the surface of the earth, from groundwater to the canopy of trees (NRC, 2001). Mobile material in the Critical Zone (often called soil or regolith) provides nutrients crucial to ecosystem functioning and moderates the impact of hazardous compounds at many spatial and temporal scales. The conversion of bedrock into soil can control rates of erosion and consequently can control rates of evolution of landscapes in rock-dominated landscapes.

- ✦ First, this talk will explore the role of kinetic factors (temperature and precipitation) on the conversion of bedrock to regolith in two contrasting granitic landscapes: Osborn Mountain, Wind River Range, WY, and Bodmin Moor, Cornwall, U.K. How have the sites evolved chemically and mineralogically and how do these transformations compare given the current difference in mean annual temperature and precipitation?
- ✦ Second, this talk will detail a proposed new function for modeling soil production across diverse landscapes. Existing landscape evolution models treat soil production as a "black box", with soil production dependent solely upon soil thickness. This model improves upon the "black box" by incorporating rock type and precipitation, in addition to soil thickness, to relate soil production rate to spatially and temporally varying environmental conditions.