



Worldwide Universities Network-Critical Zone Exploration Network Meeting
hosted by the Earth and Environmental Systems Institute
September 9-10, 2009
The Pennsylvania State University

Arrival at Pennsylvania State University (September 8)

Day 1 Activities (September 9)

- 8-8:30 **Breakfast and registration (117 EES Building)**
- 8:30-8:45 **Introduction**--Tim White, Steve Banwart, Katerina Michaelides)
- 8:45-9:15 **Introduction to Critical Zone science** (Sue Brantley)
- 9:15-9:45 **Introduction to SoilCritZone, SoilTrEC** (Steve Banwart)
- 9:45-10:15 **Introduction to Susquehanna Shale Hills Observatory** (Chris Duffy)
- 10:15-10:30 **Introduction to Shale Climosequence** (Tim White)
- 10:30-10:45 *Coffee Break – Question and Answer session*
- 10:45-12:15 **Science at Susquehanna Shale Hills Observatory (SSHO)**
- 10:45-11:00 Rudy Slingerland, geomorphology
 - 11:00-11:15 Kamini Singha, hydrogeology
 - 11:15-11:30 Lixin Jin, soil geochemistry
 - 11:30-11:45 Dave Eissenstat, plant physiology/ecology
 - 11:45-12:00 Henry Lin, hydrogeology
 - 12:00-12:15 Brian Bills, cyberinfrastructure
- 12:15-1:00 **Lunch – Introduction to the new CZEN.org** (Chuck Anderson)
- 1:00 - 6:30 **Geology of the Rose Hill Shale and visit to SSHO**
- Joe Hay's vista – regional overview
 - Greenwood Furnace State Park – Rose Hill Shale and mining
 - SSHO
- 6:30 -9 **Barbecue and poster session at Civil Engineering Lodge**

Day 2 Activities (September 10)

- 8-8:30 **Breakfast (117 EES Building)**
- 8:30 – 9:30 **Willem Vervoort (Sydney)**-- Australian CZ driven by coherence between water and carbon
Dan Richter (Duke)-- Forest-Soil-Regolith Investigations at the Calhoun Experimental Forest
Brian Reynolds (Bangor)-- Overview of research at the Plynilimon experimental catchments
Katerina Michaelides (Bristol)-- Tracing sediment movement using Rare Earth Elements
- 9:30 – 9:45 *Coffee break*
- 9:45 – 10:45 **Erika Marin-Spiotta (Wisconsin)**-- Soil organic matter dynamics in contrasting tropical environments
Rong Ji (Nanjing)--Using 14C-tracer to study transformation of organic substances in soil
Jianming Xu (Zhejiang)-- Environmental Soil Science at the Interfaces in the Earth's Critical Zone
Peng Wang (UCSD)--Effects of spatio-temporal variability of precipitation on contaminant migration in vadose zone
- 10:45 – 11:00 *Coffee break*
- 11-12 **Megan Andrews (Sheffield)**--Quantifying the impact of plant, fungi, and CO2 evolution on mineral weathering at the mesocosmscale
Achim Schmalenberger (Sheffield)- Mycorrhizal weathering - mineralogy controls oxalic acid release in symbiotic Paxillus Involutus
Steeve Bonneville (Leeds)- Quantification and Mechanism of Weathering at the mycorrhiza-mineral interface
- Noon-1 **Lunchtime Talk – Craig Rasmussen** - Climatic and regolith constraints on weathering and mass flux in granitic terrain
- 1:00 - 1:30 **Free time**
- 1:30 – 3:00 **Café discussions**
- **Question 1:** What are the strengths and weaknesses of the environmental gradient approach?
 - **Question 2:** What opportunities exist to build existing research or bid for new research to expand globally within the gradient approach? Specifically are there existing funded sites that can be included now?
- 3:00 - 3:30 **Coffee break**
- 3:30 - 4:30 **Café discussions**
- **Question 3:** What are some specific next steps that might be taken? Can WUN spearhead a unified approach to obtain funding to build CZEN globally?
- 4:30 – 5:00 **Wrap up**
- 5:00 - 5:30 Relaxation
- 5:30 **Depart for banquet at Mt. Nittany Inn & Elk Creek Cafe**

Poster Session: Wednesday September 9

- Achim Schmalenberger - The role of sulfonate desulfurizing *Polaromonas sp.* in sulfate limited soils
- Megan Andrews - Biological weathering of silicates: Evaluating tree and fungal interactions with minerals in the laboratory and field
- Ashlee Dere – Nutrient fluxes in abandoned mine soils reclaimed with poultry manure
- Beth Herndon - Impact of aeolian deposition on Mn cycling in soils
- Jennifer Williams – Sodium depletion in loess derived soils
- Veronica Prush and Ryan Mathur – Major element and copper isotopic geochemical analysis of Marcellus Shale and associated soils
- Jane Wubbels and Dave Eissenstat- Ecological Studies at Shale Hills Critical Zone Observatory
- Lin Ma - Regolith production rates calculated with Uranium-series isotopes at Shale Hills Critical Zone Observatory: implications on chemical weathering, element transport and landscape evolution in a shale-bedrock catchment
- Aaron Regburg - Toward Quantifying the Kinetics of Biogeochemical Metal Reduction with Electrical Geophysical Methods
- Lixin Jin - Using soil and water chemistry to understand mineral weathering kinetics and soil formation at Shale Hills Critical Zone Observatory
- Henry Lin – Hydropedologic investigations in the Shale Hills Critical Zone Observatory
- Xianzeng Niu – Development of a Global Geochemical Database for CZEN Applications
- Tiffany Yesavage - Iron Transformations in the Shale Hills Watershed of Central PA.