



## **SWES Colloquium Series 2013-2014**

Department of Soil, Water and Environmental Science

# ***Gigapixel Photography for Laboratory and Field Research***

Traditional photography is a compromise between image detail and area covered. Recent advances in sensors, lenses, file format standards, storage media, and hardware have yielded inexpensive tools that can be used to rapidly collect enormous amounts of image based information. A robotic camera mount and software used to produce very high resolution, zoomable images that facilitate observation across a range of spatial and temporal scales will be described. Examples of images captured in the laboratory and at a field site in southern Arizona will be presented. The growth and movement in *Brassica rapa* over the course of 32 days was captured in the laboratory by taking a set of images every 15 seconds. The resultant time-lapse sequence will be demonstrated and described ([http://timemachine.gigapan.org/wiki/Plant\\_Growth](http://timemachine.gigapan.org/wiki/Plant_Growth)). A modified, solar powered system was deployed at a remote field site in southern Arizona. Images collected every 2 hours over 3 months to capture the response of vegetation to monsoon season rainfall ([http://timemachine.gigapan.org/wiki/Arizona\\_Grasslands](http://timemachine.gigapan.org/wiki/Arizona_Grasslands)) will be described and shown. These examples demonstrate a cost effective technique with great potential for observing time-sequences of both individual plant and ecosystem response at a range of spatial scales.

**Dr. Mary Nichols**

Research Hydraulic Engineer

USDA-ARS Southwest Watershed Research Center

**Monday, October 28, 2013 -- 3:00pm**

**Marley 230**

Refreshments at 2:45