SWES Colloquium Series 2012-2013

Department of Soil, Water and Environmental Science

Drought-induced tree die-off: An overview and update on patterns, mechanisms, and consequences

Dr. David D. Breshears

(School of Natural Resources and the Environment, and joint with Department of Ecology and Evolutionary Biology, University of Arizona)

Monday - November 5, 2012

3:00 p.m.

Marley 230

Drought-induced tree mortality is emerging as a key potential impact of global change, as will be highlighted in this overview and update of selected recent work. Research in this area is growing rapidly across species, ecosystems and topics that focus on patterns, mechanisms and/or consequences of tree die-off. Particular emphasis will be placed on piñon pine woodlands of the southwestern USA as a model system and using the Biosphere 2 glasshouse, studies indicate warmer temperatures during drought hasten time to mortality. Mechanisms driving of tree mortality are being debated, but interrelationships between carbon metabolism and hydraulic failure, in conjunction with biotic agents such as pests and pathogens, appear to be central. Pervasive consequences of such changes pose fundamental challenges to managing natural resources. Despite remaining uncertainties in many areas of this field, it is becoming increasingly clear that woodlands and forests face substantial risks under projected future climate that will profoundly affect natural resources management.

Refreshments @2:40

School of Earth and Environmental Sciences

ARIZONA | COLLEGE OF AGRICULTURE AND LIFE SCIENCES