GLOBAL CHANGE PATTERNS AND TRENDS IN EARTH'S MOUNTAIN FORESTS: ECOLOGICAL RISKS, MANAGEMENT CHALLENGES AND OPPORTUNITIES

CRAIG C. ALLEN craig_allen@usgs.gov

USGS, New Mexico Landscapes Field Station, USA

ABSTRACT

Many mountain tree species and forest landscapes globally are noticeably adjusting in diverse ways to warming climate conditions, ranging from better growth at some cooler & wetter high-elevation sites to amplified forest stress and tree mortality from drought, insects, and fires at many hotter & drier low-elevation sites. These are natural forest responses to changing environmental drivers, and as these climatic and land-use drivers increasingly move outside our historic experience, forest management increasingly will need to anticipate, adapt to, and begin actively managing for an uncertain and likely less stable "Future Range of Variability". To sustain biodiverse and economically productive mountain forests will require lots of societal learning involving interactions among scientists, land managers, policy-makers, and the public. While our mountain forests face increasing risks from accelerating global change pressures, there are many hopeful opportunities and options if we act with urgency, work collaboratively, continue to learn, and expect surprises.