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An Overview on Forest Fires in the Italian Alps

Forest Fires in the Alps are usually not considered a major concern, unlike in the Mediterranean regions. But, because of the particularly complex orthography, the high population density and the administrative fragmentation, they can be very difficult to suppress and they can cause high damages.

Starting from a national level, and then downscaling to a regional level, this overview want to show how forest fires are connected with forest history, legislation and firefighting organization in the Italian Alps.
Satellite Microwave Detection of Boreal Forest Recovery from the Extreme 2004 Wildfires in Alaska and Canada

The rate of vegetation recovery from boreal wildfire influences terrestrial carbon cycle processes and climate feedbacks by affecting the surface energy budget and land-atmosphere carbon exchange. Previous forest recovery assessments using satellite optical-infrared normalized difference vegetation index (NDVI) and tower CO$_2$ eddy covariance techniques indicate rapid vegetation recovery within 5 to 10 years, but these techniques are not directly sensitive to changes in vegetation biomass. Alternatively, the vegetation optical depth (VOD) parameter from satellite passive microwave remote sensing can detect changes in canopy biomass structure and may provide a useful metric of post-fire vegetation response to inform regional recovery assessments. We analyzed a multi-year (2003-2010) satellite VOD record from the NASA AMSR-E (Advanced Microwave Scanning Radiometer for EOS) sensor to estimate forest recovery trajectories for 14 large boreal fires from 2004 in Alaska and Canada. The VOD record indicated initial post-fire canopy biomass recovery within 3 to 7 years, lagging NDVI recovery by 1 to 5 years. Our results indicate that vegetation biomass recovery from boreal fire disturbance is generally slower than reported from previous assessments based solely on satellite optical-infrared remote sensing, while the VOD parameter enables more comprehensive assessments of boreal forest recovery.
Artificial Amplification of Warming Trends Across the Mountains of the Western United States

Temperature observations across the mountains of the western US suggest that higher elevations are warming faster than lower elevations. This has led to the assumption that elevation-dependent warming is prevalent throughout the region with impacts to snowpack, forests, and alpine tundra. Multiple mechanisms have been postulated to explain elevation-dependent warming including snow-albedo feedbacks, changes in cloud cover, consistent atmospheric decoupling in valley locations, and greater high elevation sensitivity to water vapor radiative influences. Here, I critically evaluate western US observations and show that extreme warming at higher elevations is the result of systematic artifacts and not climatic conditions. Widely used gridded climate products propagate the spurious temperature trend, thereby incorrectly amplifying elevation-dependent warming across the mountains of the western US.
Steve Brown,
R1 Remote Sensing Coordinator

Date: November 6, 2014
Time: 11:00 AM-12:00 PM
Where: The Fire Science Lab
5775 West U.S. HWY 10,
Missoula, MT 59808.

For more information, please contact
missoula_firelab_seminars@fs.fed.us or
visit www.firelab.org

The current state of vegetation mapping in Region 1; From SILC (1993) to VMap (2015), what have we learned in the past 20 years.
A day in the Life of a Fire Behavior Analyst

Ever wish you could be out on the ground watching how fire behaves over the terrain, in different fuels with effects from weather, then use that experience to try and replicate what you saw and predict what will happen tomorrow? Well the Fire Behavior Analyst job is for you. Learn what it’s like to be able to watch Mother Nature at work and try to predict what she’ll do next given ever changing fuels, weather and topography as you spend a day in the life of an FBAN. See the tools used in the field and on the laptop all the while keeping your primary objective, which is the safety of fire personnel out on the fire ground by communicating information about fire behavior and weather to them so they can make safe and effective decisions.
Waste to Wisdom: Improving soil productivity while reducing fire risk

Bioenergy production from forest biomass offers a solution to reduce wildfire hazard fuel levels, decrease insect and disease outbreaks, and reduce the incidence of invasive species while producing a useful source of renewable energy. However, on-site bioenergy production and the subsequent application of biochar to forest sites raise concerns about increasing water repellency, changing nutrient retention and release, or altering belowground processes. I will put the current effort for biomass to bioenergy work into perspective by describing the outcomes of the Coram Experimental Forest bioenergy project from the mid-1970’s, discussing the current state of slash pile use, and illustrate how fast pyrolysis can be used instead of slash pile burning to improve soil productivity. Although the use of biochar shows promise in many areas there are many forest soil impacts that still need to be described. For example, laboratory studies have described changes in soil enzymes responsible for decomposition, infiltration rate, and water holding capacity. Field studies have shown no detrimental effects on tree growth, but all of the impacts of how much, where, when, and what kind of biochar still need to be determined. Biochar applications should be considered on a site specific basis since not all biochars and soils are similar.
Changes in severity distribution after subsequent fires on the North Rim of Grand Canyon National Park

Understanding the distribution of fire severity patches across a landscape is of critical importance to managers and researchers. Of particular interest are those areas that burn multiple times. Understanding the complexity of these “multiple entry, mixed severity” patches is an important component of managing the landscape. We investigated the role that initial fire severity might play on subsequent fire severity (for a given re-burned area) to assess whether high severity patch distribution was impacted by initial burn conditions. In our study area, the North Rim of Grand Canyon National Park, USA, the fire severity patch distribution of one fire had little influence on the fire severity distribution of a subsequent fire and second entry severity patches were distributed on top of the first entry severity patches in a close to random distribution. Of all areas that burned twice between 2000 and 2011 on the North Rim of Grand Canyon National Park, 48% burned with equal severity, 26% burned with a lower severity, and 26% burned with a higher severity in the second fire. The majority of the agreement can be attributed to a similarity in the proportions of each severity class and not to a match in the spatial allocation of the equal severity patches on first and second entry fires. The distribution of high severity patches showed little change when comparing post-first entry and post-second entry distributions. The mean and the standard deviation of the high severity patch size did not change after a second fire entry. The total area of high severity did increase; this was due to both the addition of new patches as well the growth of existing patches. These findings can help to inform land managers about the roles that fire-on-fire events play on the landscape and how those interactions may impact management goals and decisions.