Geophysical Research Abstracts
Vol. 18, EGU2016-14382, 2016
EGU General Assembly 2016

The interacting effects of fire and drought on the dynamics of Mediterranean ecosystems

Enric Batllori (1,2), Miquel de Cáceres (1,2), Francisco Lloret (1), Lluís Brotons (1,2,3)

(1) CREAF, Centre for Ecological Research and Forestry Applications, Autonomous University of Barcelona, Cerdanyola del Vallès, Catalonia E-08193, Spain, (2) Forest Sciences Centre of Catalonia (CEMFOR-CTFC), Ctra. Sant Llorenç de Morunys km.2, Solsona, Catalonia E-25280, Spain, (3) CSIC, Cerdanyola del Vallés, Catalonia E-08193, Spain

Disturbances (e.g., fire and drought episodes) have been a major force in shaping the structure, composition, and function of Mediterranean ecosystems (MTEs). Despite there is broad understanding of singular impacts of individual disturbances such as fire, possible synergistic interactions among disturbances regimes and their effects on ecosystems' dynamics is not well understood. The response of MTEs vegetation to disturbance regimes is strongly influenced by species capacity to persist through resprouting or by their ability to retain a persistent seed bank. Therefore, variation in plant functional traits associated with responses to disturbance could act as a major ecological filter driving future ecosystem composition and function under global change. We developed a novel modeling framework, explicitly incorporating fuel built-up and major plant post-disturbance recovery strategies (resprouting and seeding), to explore the dynamics of MTEs landscapes under different scenarios of combined regimes of fire and drought recurrence, duration, and intensity. We test how the interaction of short- and long-term system feedbacks may drive the dynamics of the system and its resilience. Preliminary results suggest that interactions among disturbance regimes promote the existence of alternative vegetation states and that the counteracting effects of short- and long-term system's feedbacks may confer increased resilience to the system