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Interaction between land-use change and fire regime and its impact on eco-hydrological response in the Mediterranean basin

Nadia Ursino (1) and Nunzio Romano (2)

(1) Universita' di Padova, Istituto di Idraulica, ICEA, Padova, Italy (nadia@idra.unipd.it), (2) University of Naples Federico II Division of Agricultural, Forest and Biosystems Engineering, Portici (Naples) - Italy (nunzio.romano@unina.it)

In the last decades the average number of forest fires throughout the Mediterranean basin is increased significantly making the territory more vulnerable to extreme hydrological events. At the same time, as a result of improved economic conditions, a widespread abandonment of agricultural regions determined an expansion of the wooded area. As cropland is progressively abandoned, other species invade and consequently the control over the territory diminishes.
The increase in fuel for fire and the loss of inhabitants with sense of responsibility are linked here to the modified fire regime following an eco-hydrologically driven predator-prey modeling approach where fire is conceptualized as the predator and the forest species as prey.
This research extends upon a previous study that demonstrated how climate, vegetation composition, and soil properties may drive the fire frequency and intensity toward different characterization, and provides a quantitative estimate of the interrelation between climate, fire, land cover composition and changes in land-use. Outcomes of this research may have useful implications when evaluating hydrological ecosystem services provision and potential hazards in agro-forestry systems, such as efficient allocation of available water resources, flood, protection from soil erosion, etc.