



Effects of wildfire on hydrology, erosion processes and ecology on karst environment: case of the island of Hvar (Croatia)

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Wildfire hazard increased over last decades at the whole Dinaric karst region of Croatia. Wildfire can have significant effect on some hydrological and landscape parameters. Destruction of the forested ecosystem of a basin has direct and strong consequences for its behavior. At the same time wildfires can affect ecohydrological processes indirectly, but profoundly, altering the physical and chemical properties of the soil, converting organic ground cover to soluble ash, modifying the microclimate etc. Analyses of effects of wildfire on hydrology, erosion processes and ecology on the karstic island of Hvar is given. The island of Hvar is typical karst island with area of 297 km², and coastline length of 270 km. A Mediterranean biome's climate has a mild, rainy season that coincides with winter. Hot, dry periods influences this biome's plant type characteristically made up of woody shrubs adapted to withstand drought. Mostly these shrubs are evergreen and typically have small, thick, waxy leaves designed to retain moisture. Practically many of these plants develop on thin, rocky degraded soils and contain highly flammable oils. A highly degree of division into parcels, physically delimited by very developed network of dry stonewalls, represented the most important feature of the whole Dinaric karst region, as well as the island of Hvar landscape. Classification of different shapes of stonewalls is given. Terracing by stonewalls is

very effective measure against erosion. The influence on ecological and geomorphological processes is discussed. Stonewalls are of fundamental importance as a habitat for a very diverse Mediterranean flora and fauna. Wildfires have devastating effects on animals with limited mobility. Main reasons for this are: their poor dispersal ability; their habitats on vegetation and in litter; particularly their sensitivity to low humidity and shade. Changes of the biotic and abiotic factors above the ground lead to changes down through the MSS to deep karstic aquatic and terrestrial habitats. Massive stone clearing means entirely disappearance of stonewalls. This process could be very dangerous from ecological and hydrogeological point of view. It should be stressed that some scientists consider that many plants and animals actually need frequent fires to survive.