

1 Fire induced shallow landslides triggering

M. C. Rulli (1), R. Rosso (1)

(1) Politecnico di Milano, Piazza Leonardo da Vinci 32, I-20133 Milano, Italy

cristina.rulli@polimi.it renzo.rosso@polimi.it

Forest fires can influence the hydrologic response and shallow landslides susceptibility of upland catchments. Many factors, interacting one with each others, play a role in watershed response altered by forest fire forcing, such as fire intensity, vegetation cover, soil properties, soil moisture content, rainfall intensity and time interval between fire and the rainfall event. Fire can change soil properties, inducing the development of a water repellent layer at or near the soil surface, that reduces soil infiltration capacity, increases overland flow and accelerates surface erosion . These hydrological changes can increase shallow landslides susceptibility.

In order to study the effect of forest fire on shallow landslides triggering, at first the factors that pertain to the triggering of shallow landslides from a basin recently burned have to be examined. Then, via hydro-geomorphologic model, different scenarios have to be studied for analyzing the role played by each factor.

As study area we choose a basin located in Northern Piemonte (Italy) where on 18th July 2005 an intense rainfall event triggered a large shallow landslide. This rainfall event happened after a forest fire burned about 50% of the basin area.

The role of forest fire in shallow landslide triggering was investigated by accurate field surveys and field data measurements concerning hydrological and geological soil properties. They were carried out both in the burned and unburned portion of the study area. The acquired measures have then been used to parameterized an hydro-geomorphologic model aimed to study different shallow landslides triggering scenarios.