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ABSTRACT

North-West and South-East of Piedmont (North Italy) were affected by intense rainfall on the 22 and 23 September 1993. The rains primed strong floodwaves along minor streams and major rivers.

The paper firstly describes the analysis of rainfall data collected by the regional meteorological network. The analysis includes rainfall accumulated and intensity values, distribution patterns and a comparison with former periods of intense rainfall.

The floodwave analysis and its comparison with former peak-flood data indicate a 35-years-flood along the Stura di Lanzo and a 75/150-years-flood for the Dora Baltea at Tavagnasco.

The paper then systematically describes the flood-hit areas (Macugnaga, Val Sesia, Dora Baltea, Orco and Soana river valleys, Val Grande di Lanzo, Dora Riparia, Valle Belbo, Valle Bormida, Valli Borbera, Scrivia and Curone). In the lake area (Maggiore and Orta lakes) the rise of water level caused widespread inundations. Landslides were comparatively rare, apart from a number of earthflows over a limited Appennine area; this may well be due to the fact that the landslide rainfall triggering-thresholds were not normally exceeded. The more devastating processes were connected with streams and rivers. Heavy bottom-load, stream and river erosion and debris flow processes swept away more than a hundred bridges; a dozen buildings were destroyed and more than a hundred seriously damaged.

The surveys carried out after the event pointed out how the destructive character of the flood derives from both natural and man-related factors. The main natural factor (in the alpine area at least) seems to be the heavy bottom-load, while the commonest man-related factors seems to be due to a general insufficiency of bridge spans and to the occupation of high-risk flood plains by all type of buildings.

On the 8 and 9 of October a second, minor, flood event caused a further sharp rise in the levels of the Maggiore and Orta lakes and hit the right flank of the Scrivia Valley.

All the elements confirms, once more, how the reduction of flood risk should better be faced with careful landuse planning, rather than by proliferating structural measures (levees, walls *etc.*) which often proved to be uneffective or even dangerous.