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GEOMORPHOLOGICAL HAZARDS IN THE MUGELLO VALLEY (TUSCANY, ITALY) (****)

Abstract: GARZONIO C.A., MORETTI S., RODOLFI G. & ZANCHI C. - *Geomorphological hazards in the Mugello Valley (Tuscany, Italy).*

This work synthesises the results obtained from a series of researches carried out during the last decade in the Mugello valley, highly representative of a particular environmental situation very frequent in the inter-apenninic areas of peninsular Italy.

After a description of the climatic, geological, historical and social-economic characteristics of the area, the authors analyse and evaluate the different aspects of geomorphological hazards (soil erosion, mass movements, river dynamics) partly dependent on the recent development of the agricultural and industrial economy.

KEY WORDS: Soil erosion, Mass movements, Flood hazard, Mugello valley, Tuscany (Italy).

Riassunto: GARZONIO C.A., MORETTI S., RODOLFI G. & ZANCHI C. - *Rischi geomorfologici nel Mugello (Toscana).*

Il lavoro sintetizza i risultati ottenuti nel corso di una serie di ricerche effettuate nell'ultimo decennio nella valle del Mugello, altamente rappresentativa di una particolare situazione ambientale molto frequente nelle aree interappenniniche dell'Italia peninsulare.

Dopo una descrizione delle caratteristiche climatiche, geologiche, storiche e socio-economiche del comprensorio, vengono analizzate e valutate le varie espressioni del rischio geomorfologico (erosione del suolo, movimenti di massa, dinamica fluviale) in parte connesse con i recenti sviluppi della economica agricola ed industriale.

TERMINI CHIAVE: Erosione del suolo, Movimenti di massa, Rischio di esondazione, Mugello, Toscana.

INTRODUCTION

The depression of the Mugello, situated at about 30 km to the North of Florence in the direction of Bologna, coincides with the mid-upper part of the watershed of the Sieve R., the most important affluent of the River Arno. The basin lies between two parallel ridges of the Apennine system, with direction NW-SE: one which coincides with the Tyrrhenian-Adriatic watershed, and another which separates it from the adjacent Florence basin. The Calvana Mountains and the massif of the Mt. Falterona close this depression to the N and the S respectively. This depression, like other nearby ones, was formed during the extensive phase of the Apennine orogeny and, during the Villafranchian, was the site of a large deep lake.

Its geographical position as an intermontane basin situated in the centre of the peninsula of Italy, at an equal distance from both the Tyrrhenian and the Adriatic coasts, has had a considerable influence on the local climate. Even though it falls within the temperate climatic zone with a dry season (cfsa, according to Köppen) or the Mediterranean climate category, it also has some characteristics of a continental climate. The rigours of the climate and its isolated position with respect to the main road network conditioned the choice of agricultural crops and their commercialization respectively, thus relegating the Mugello area to an unfavourable economic situation for many years. Up to the 1950s the only productive activity was agriculture and this was regulated by the mezzadria contract (the farmworker and the landowner divided the produce) and it was carried out using rudimentary techniques based on the use of animals. Therefore, as a result, the farmland was divided up into many small plots with mainly mixed crops, grass and tree crops. A dense network of irrigation systems (surface channelling, drainage) assured sufficient control of the waters and consequently slope stability.

The industrial boom in the 1960s affected the adjoining Florence basin first: many farmers left their agriculture and their homes to go and work in industry where they earned more. They moved away to the neighbouring towns; this exodus was to leave the countryside virtually uninhabited. After a few years industries began to spring up in the

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