

Landscape changes and natural hazards affecting the Pincio hill (Rome, Italy) in historical times

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This work focuses on preliminary results achieved by means of a research project carried out by ISPRA in collaboration with Soprintendenza Capitolina (the Cultural Heritage Capitoline Superintendence), aimed at defining an interpretative model of natural and anthropic evolution of the Pincio Hill (Rome, Italy) during the last 2,500 years. The study area is located in the NE sector of the city of Rome and includes the Pincio hill Cultural Heritage site and the surrounding area of the Tiber River flood plain. The Pincio Hill is a very interesting case of interplay among: i) natural landscape setting; ii) historical urban transformations; iii) human activity and recurrence of natural hazard events impacting heavily on the territory since ancient times. During the last decades, designs of new areas to be allocated for underground parking jointly with new archaeological excavations surveys have allowed the acquisition of a large amount of new data. The study has been carried out through a new reinterpretation of recently drilled boreholes stratigraphic logs and the conspicuous related archaeological literature. The main outcome of the research activities are summarized as below. Concerning the top of the hill, latest archaeological excavations brought to the light traces of ancient structures and settlements dating from the Archaic period until the fourth century AD, highlighting the fact the character of strong agricultural and landscape appeal that have involved the western sector of the Pincio hill since the ancient times, without evidence of relevant alterations of the original landscape. In the slope sector, the information coming from geotechnical survey allowed the reconstruction of isochronous surfaces inside of landfills, divided according to their age. The profile of the slope below the landfill from the Roman period seems very steep and irregular, in strong contrast to the medieval one and the current one, characterized by multiple succession of terraces. In particular, the big thickness of landfill aged fifteenth-sixteenth century could be related to the effects of the changes made after the abandonment of the Middle Age, when the area experienced an agricultural function. At the foot of the hill, below a thickness of about 10 m of landfills, alluvial fine grained deposits with layers of peat have been recognized. These deposits are indicative of a low energy depositional environment of flood-plain, whose top layer at about 5 m a.s.l. identifies the paleo-superficie existing during the Archaic age. The stratigraphic and geomorphological elements were widely recognized; suggesting an intense morphodynamics process who has acted over the centuries. These dynamics have systematically interact with human activities, and are potentially still nowadays active although with different frequencies. The research activity has been mainly focused on the harmonization of historical and environmental data acquired in GIS environment and aimed at analyzing the past and recent transformations. Only through a synoptic reading of the geological, geomorphological, historical, archaeological, architectural and urban evolution is possible to provide a clear and reliable interpretation model of the hill. The so obtained model is a fundamental prerequisite for future works, both concerning maintenance and transformation.