



Interactions between soil consumption and archaeological heritage: spatial analysis for hydrogeological risk evaluation and urban sprawl in the Tavoliere di Puglia (southern Italy)

Maria Danese, Dario Gioia, and Nicola Masini
CNR, IBAM, Italy (m.danese@ibam.cnr.it)

The soil consumption is a complex phenomenon because it is due to different causes and it also produces many consequences on landscape and related human activities. In low-relief areas of the Mediterranean regions such as the foredeep of the southern Italian chain, alluvial processes and flooding can play an important role on the amount of available soil, especially if one consider the recent climate changes and the recurrence of extreme events. Moreover the uncontrolled growth of the cities is a cause of soil consumption too. Consequently occurrence of flood events in low-relief areas, erosion processes and urban sprawl have a strong impact on agricultural activities and real estate market, but also in research activities about archaeological heritage, with the risk to loose signs of the past. To consider this phenomenon from a spatial point of view is essential to determine protection policies, but it is nowadays still a problem. In this contribution, we performed a detailed study of the geological and geomorphological features of the drainage network of the Tavoliere di Puglia plain in order to investigate erosional and depositional processes. GIS-supported statistical analysis of the drainage network features allow us to compile a map of the hydrogeological hazard [1]. The map has been used as a basic tool useful to consider areal distribution in soil consumption coming from alluvial processes, erosional phenomena and the urban sprawl of the Tavoliere di Puglia plain (Southern Italy). Moreover, we investigated the relationships between sectors of the Tavoliere di Puglia plain featured by higher hydrogeological risk and archaeological sensibility areas, such as places with existing or with not yet discovered archaeological sites or areas characterized by crop marks [2].

[1] Danese M., Gioia D., Biscione M., Masini N. 2014. Spatial Methods for Archaeological Flood Risk: The Case Study of the Neolithic Sites in the Apulia Region (Southern Italy). Computational Science and Its Applications – ICCSA 2014 Lecture Notes in Computer Science, Volume 579, 2014, pp 423-439, doi: 10.1007/978-3-319-09144-0_29.

[2] Danese M., Masini N., Biscione M., Lasaponara R. 2014. Predictive modeling for preventive Archaeology: Overview and case study. Central European Journal of Geosciences. March 2014, Volume 6, Issue 1, 42-55, doi: 10.2478/s13533-012-0160-5