ARTIFICIAL INTELLIGENCE AND VOLCANIC DATA MANAGEMENT: A DIALOGUE BETWEEN TECHNIQUE AND ADMINISTRATION

Italy is a country that is particularly exposed to natural hazards, from seismic to hydrogeological to volcanic risk: it is therefore essential to organize and raise awareness of what to do in the event of a disaster, and to channel the topic of digitization and data to support this goal.
The topic of digital in support of risk requires thinking about several issues revolving around the perspective and dialogue between administration and technology.

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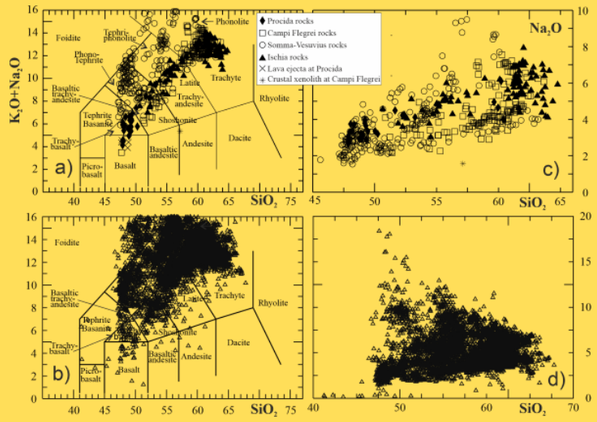
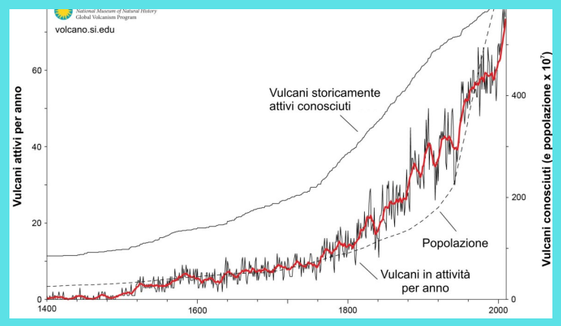
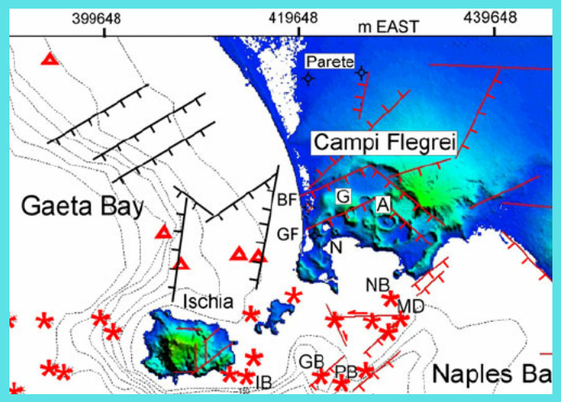
INVESTIGATION PERSPECTIVE

Earthquake, volcanoes, big data against seismic risk for Italian municipalities. Italian municipalities, therefore, have at their disposal a new tool that will enable them to access the most sophisticated technologies for analyzing seismic risk within the territory.







INTRODUCTION

It highlights the importance of framing actions to mitigate the impact of natural hazards on the built environment in a broader context of technological retrofit actions of buildings oriented to the resilience of the urban system, aiming to carry out integrated interventions on the built environment that aim to mas-simize economic, environmental and social benefits starting from the critical factors and potentials of the territorial context.

ANALYSIS

The precautionary principle will certainly help, in many scenarios, as it has been verified but it is perhaps not the panacea capable of solving, always and in any case, all the problems of the risk society, and the theme of the use of technology can serve as a support to the administration but cannot be the only key to the report. Risk is a harbinger of, and indeed almost synonymous with, uncertainty, perhaps a somewhat calculable, and therefore not always irreducible uncertainty, but it is nevertheless still expressive of weak thinking, such that it represents a material (and almost existential) condition in which there can be nothing but liquid truths and principles, that is, relative and perhaps even transitory.

By analyzing the temporal frequency of eruptions in the high and low activity phases of volcanoes in the Naples area (Vesuvius, Ischia and Campi Flegrei), a single statistical model was developed to evaluate their eruptive behavior and potential.

Law, on its side, is increasingly permeated and conformed by science and Tèchne and, on the other side, science and technology do not provide us with values, rules and principles, theoretical and operational, that are somehow absolutely secure and first and foremost stable and enduring over time. A risk-aware administration on the ground, can orient digital tools in its favor, and support volcanic risk forecasting.

METHODOLOGY

One must refer to the specific Emergency Plans developed by the Civil Defense to reduce the risks associated with the hazards detected.
The Vesuvius Emergency Plan has been drawn up, can be consulted on the Campania Region's institutional website, and is updated as scientific knowledge and data evolve. The question arises as to who has responsibility for the data and AI since the technologies are not in the possession of government agency.

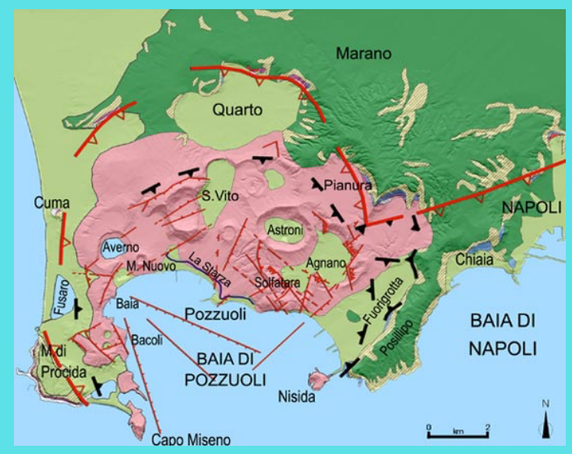
From the jury's point of view, discretionary power is the nervous system of so-called administrative law models, and, quite symmetrically, the control of defects in discretion constitutes the limit, and almost the antidote, that the rule of law opposes to the overweening power of administrative apparatuses. We see everywhere, even in generally highly efficient countries, the emergence of bumpy and contradictory paths, nevertheless always finding ourselves before the same basic dilemma, namely but who has the final say, Politics, or Science and Technology?

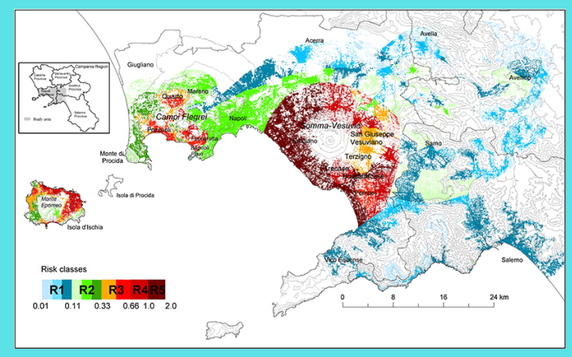
RESULTS

Results of recent studies indicate that based on the existing database, it is possible to obtain an initial, rapid classification of compositional data of Neapolitan volcanic rocks using artificial intelligence. Such classification has the advantage of being rapid and free of operator discretion. Which means that the administration becomes a capture of the technique and AI and loses, positively and negatively, its room for action.

SYNTHESIS REFLECTIONS

The attribution of a rock deposit to a certain eruptive event is very useful information in defining the areal distribution of magmatic products and the magnitude of the eruption itself, the effects on land and climate change as well as on the mobility of living species. However, there is a danger of devolving in all respects to the technique of land-use choice and planning and zoning activities that affect aspects beyond the volcanic topic in the strict sense.





RELATED LITERATURE

Galderisi A., Guida G., & Limongi G. (2021). Emergency and spatial planning towards cooperative approaches. TeMA - Journal of Land Use, Mobility and Environment, 73-92. https://doi.org/10.6093/1970-9870/7417