



A multidisciplinary approach applied to a shallow hydrothermal field of the Panarea Volcanic Complex for a responsible management

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A poorly studied shallow hydrothermal vent field of the Panarea Volcanic Complex (PVC) was explored, combining specific monitoring technologies, to provide new insights into its morphological, ecological and geochemical features. The investigated site, named “Secca dei Pesci”, was identified as one of the area of the PVC where major tectonic, volcanic and hydrothermal activity have been observed. It is located on the SE margin of the Panarea platform and consists of a central bathymetric low bounded by two approximately circular highs, elevated up to 50 m above the flat platform bottom. Evidence of strong exhalative activity were revealed by multibeam and ROV observations, then water column properties were investigated by CTD and pCO₂ probes and dissolved benthic flux were measured by benthic chamber deployments. Sediment sampling and ROV images analysis allowed the identification of the macrobenthic assemblage living within the vent-areas and in the nearby seafloor. This multidisciplinary approach provides new information on the peculiar environmental conditions of the area and their influences on the associated living communities. Moreover, results of this study improve knowledge on the geochemical dynamics of PVC, helping to understand volcanic hazard and to mitigate the risks of an explosive event. The results of the interdisciplinary monitoring give appropriate information useful to plan a correct management of shallow hydrothermal areas and support future responsible investigation survey to preserve and follow the natural evolution of these sensible systems