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Managing different eruptive scenarios at Phlegraean Fields and Vesuvius

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The two "hottest" areas of Italy from the point of view of forecasting and mitigating volcanic hazard at the moment are the Phlegraean Fields and Vesuvius. At the Phlegraean Fields the bradyseismic crisis continues with noticeable changes in the fumarole regime and bradyseismic movements in the Solfatara area. Depending on the various conceptual models created by the various groups of scientists working in this area, it is possible to foresee different possible future scenarios, also assuming the persistence of magmatic degassing and conductive heat transfer from the magma to the overlying rocks and the absence of external, such as the occurrence of one or more regional earthquakes and the release of fresh magma into the reservoir located 8 km deep.

At Vesuvius, different scenarios are possible for the reactivation of the most famous volcano in the world. The first scenario involves the emplacement, maturation and eruption of magma from a sub-surface magma chamber, following the pattern of the last large explosive eruption which occurred in 1631 with the occurrence of a small-scale Plinian eruption. A disastrous scenario but one that requires fairly long warning times. A further scenario, proposed more recently, involves the ascent of magma along fractures linked to regional tectonic trends and its emplacement through rapidly moving flows with probable opening at the base of the volcanic edifice and much shorter warning times.

How can we manage these different situations in terms of Civil Protection and resilience?