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Campi Flegrei caldera: physical constraints on models of activity and open problems

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Campi Flegrei is a typical example of the most explosive volcanic areas on the Earth, namely the collapse calderas, the only ones capable to generate global catastrophes. Understanding unrest/eruption mechanisms, precursory phenomena and hazard at calderas is then a very crucial issue for mankind. Due to several recent episodes of large and spectacular ground uplift and general unrest, started in 1969 and, with some oscillations, still lasting, this area has been intensively studied in the last decades. The results of such intensive geophysical and geochemical studies gave rise to several papers, which, focusing on some particular data set, while sometimes presenting important new data and analyses, often supplied specific interpretations lacking of the needed generality to interpret other data sets. This presentation is aimed to underline the most evident physical constraints deducted from the large body of existing data, which must be accounted for by any model of activity at this area. Furthermore, such constraints are used to present a basic general model for Campi Flegrei activity, unrest and hazard, together with the main open problems which need to be afforded by further research at this and other calderas worldwide.