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Multidisciplinary studies at the Lusi eruption site, Java , Indonesia

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Lusi (Java, Indonesia) is the largest erupting sediment-hosted hydrothermal system on Earth. Multidisciplinary studies aimed at understanding the dynamics and mechanisms of the Lusi mud eruption employed wide-ranging and extensive methods such as geophysical, geochemical, remote sensing, clasts petrography and numerical modeling. Converging results from all these studies reveal that the Lusi system is and has been connected with the neighboring volcanic complex even before its inception in 2006. Results provided substantial evidence supporting a hydrothermal scenario for the initiation of this system. The data reveal that the deep (>4km) migration of magma and hydrothermal fluids into the organic-rich sedimentary basin baked the organics present in the source rocks triggering methamorphic reactions and generating substantial overpressure at depth. The depicted scenario does not represent an anomaly, since identical modern and palaeo systems are observed in other sedimentary basins neighboring volcanic structures.