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Merapi volcano 2010 crisis: a case study for implementing the FP7 MIAVITA European project

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Merapi volcano is one of the targets of FP7 EC funded MIAVITA project (Mitigate and Assess risk from Volcanic Impact on Terrain and human Activities). In EU countries, volcanic risks assessment and management are tackled through scientific knowledge and monitoring, although there is still a need for integration between all risk management components. For international cooperation partner countries (ICPCs), the risk management depends on local situations but is often less favourable. Therefore, following UN International Strategy for Disaster Reduction recommendations and starting from shared existing knowledge and practices, the MIAVITA project aims at developing tools and integrated cost effective methodologies to mitigate risks from various hazards on active volcanoes (prevention, crisis management and resilience). Such methodology has been designed for ICPCs contexts but will be helpful for European stakeholders to improve their experience in volcanic risk management. The project multidisciplinary team gathers civil protection agencies (French – DDSC and Italian – DPCI), scientific teams in earth sciences – BRGM (F), INGV (I), IST (P), University of Cambridge (UK), NILU (N), social sciences – CNRS (F), soil and agriculture – Hohenheim University (D), Information Technologies and telecommunications – INESC-ID (P) and an IT private company – KELL (I). In close partnership with organizations in charge of volcanic risk management in Cape Verde (INMG), Cameroon (MINIMIDT), Indonesia (CVGHM) and Philippines (PHIVOLCS), the scientific work focuses on:
1) Risk assessment methodology based on a multi-risk approach developed at Mt Cameroon by BRGM in cooperation with Cameroonian institutions
2) Cost efficient monitoring tools (satellite, gas analysis and volcano-seismology)
3) Improvement in terms of vulnerability assessment (people, buildings and biosphere)
4) Socio-economic surveys to enhance community resilience
5) Integrated information system (data organisation and transfers, communications) taking advantage of GEONET-Cast initiative.
The 2010 Merapi eruption gives us the opportunity to achieve them, through sharing/transfer of know-how, through scientific and technological developments, and through dissemination/training. Monitoring implementation have been tested in real time conditions and proved to be efficient for the decision-making. A new methodology for risk mapping was developed at Merapi volcano by BPPTK/CVGHM. It is based on structured expert elicitation of hazard, vulnerability, exposure and coping capacity criteria. Surveys among stakeholders revealed that the 2010 disaster (more than 350 fatalities) was not due to a mismanagement, but rather to the high vulnerability of the local population who refused to evacuate for both cultural (local beliefs, trust to the local key-keeper of the volcano) and socio-economic reasons (need to feed their cattle, fear to be burglarized, etc.). Post-eruption impact studies provided rarely available empirical damage data that can be used to build upon existing vulnerability relationships for the built and agricultural environment. Ash deposits will be used for soil analysis.