



Geographia Polonica
2015, Volume 88, Issue 2, pp. 197-199



INSTITUTE OF GEOGRAPHY AND SPATIAL ORGANIZATION
POLISH ACADEMY OF SCIENCES
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CITIES ON VOLCANOES 8 CONFERENCE YOGYAKARTA, INDONESIA, 9-13 SEPTEMBER 2014

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On 9-13 September 2014, the eighth international conference “Cities on Volcanoes” (CoV8) entitled *Living in Harmony with Volcano: Bridging the will of nature to society* took place. The conference was held on the campuses of the oldest and largest university in Indonesia, which is the Yogyakarta University in Java. The idea of this series of conferences is to show the relationship between volcanoes which have caused damage in the surrounding areas in the past and the present, and the life of towns located at the foot of a volcano. The “Cities on Volcanoes” conference initiative has been an extremely successful event for the International Association for Volcanology and Chemistry of the Earth’s Interior (IAVCEI). CoV8 was hosted by one of IAVCEI’s research commissions, the Cities and Volcanoes Commission (CaV), which anyone can join. The CoV conferences began with a meeting called “Volcanoes in Towns” which started in 1995 in Rome, Italy, and was then followed

by the first official “Cities on Volcanoes” conference, again organised in Rome and Naples, Italy, in 1998. Subsequent CoV meetings were then held in Auckland, New Zealand in 2001, in Hilo, Hawaii, USA in 2003, Quito, Ecuador in 2006, Shimabara, Japan in 2007, Tenerife, Spain in 2010, and Colima, Mexico in 2012. The next, ninth, conference will be held in the Andes, Chile in 2016.

The choice of Yogyakarta as host for the conference was connected with its location at the foot of Merapi Volcano (2980 m a.s.l.), which is active as often as several times a year. The relations between Merapi Volcano and the adjacent Yogyakarta city are typical for Java Island, where 120 million inhabitants (half of the population of Indonesia) struggle to live in harmony with over 30 active volcanoes. This proximity has proved fatal to more than 140,000 people in the past 500 years. The volcanic hazard prone areas in Indonesia typically have fertile land, an abundant

amount of water and beautiful scenery. As a result people are attracted to live and conduct activities in volcanic hazard areas. Currently there are approximately 5 million people who live and/or conduct their daily activities in designated volcanic hazard areas. The Yogyakarta University was chosen as the home of the Conference venue, not only due to the presence of Merapi Volcano, but also due to Yogyakarta's long history as one of the major centres for Javanese culture, education and as a tourism destination.

The aim of the Cities on Volcanoes meeting is to gather ideas, proposals, methods, and research findings from volcanic experts around the world, and to define efficient monitoring and hazard mitigation methods in the field of volcanology that can improve volcanic hazard mitigation in Indonesia and other countries.

The Conference had three sets of thematic sessions focused on volcanology, living in harmony and lessons learned from volcanic crises. In addition there were two plenary sessions and one panel discussion session. There was also an Indonesian session which was dedicated to stakeholders, educators, psychologists, religious and informal leaders to share their experiences, knowledge and local wisdom in facing volcanic disaster. The following activities were held in addition to the main sessions: Poster session, Pre-conference Workshops (Volcano Seismo-Acoustic Practicum Workshop, Reviewing Hazard Mapping Techniques, WOVODat: A volcano monitoring database), Post-conference Workshops (Wet Volcanoes Workshop, DOMERAPI) and Intra-Conference Meetings (Lahars Workshop – from Hazard Assessment to Risk Mitigation, Tourism & Volcanoes: Risk Management – Health & Safety Issues in Volcanic Regions, Asia-Pacific Region Earthquake and Volcanic Hazard Mapping Project (G-EVER), Outreach Exchange).

Various problems concerning volcanoes were shown during the Pre-Conference Fieldtrips: (to Dieng Volcanic Complex – Central Java, to Bromo-Tengger Caldera – East Java, to Kelud Volcano – East Java,

to Tondano Caldera – North Sulawesi and Sangehe Islands), Intra-Conference Fieldtrip (Merapi 2010 Pyroclastic Deposits), and Post-Conference Fieldtrips (Merapi summit, Rinjani Caldera, Krakatau). The participants in the Intra-Conference Fieldtrip observed the range and thickness of pyroclastic materials, which were deposited during the Merapi eruption in 2010, and transported down the slopes to the foot of the volcano as lahars. These volcanic mudflows locally caused great damage to densely populated and arable areas. The participants visited one of the totally destroyed villages, which was then re-built and now represents a modern settlement. In many places masonry dams were observed which retained lahars in order to protect areas located lower down; the sedimentological features of the deposited sediments were analysed. A visit to the Museum of Merapi Volcano located on the southern foothills of the volcano was an unforgettable experience for the participants. For scientific and teaching purposes the museum displays numerous photographs, geological specimens and models of the volcano showing its formation, functioning and the hazard it presents to the surrounding areas. It is very popular among foreign tourists. The Intra-Conference Fieldtrip finished with visiting Prambanan – the largest Hindu temple (apart from India), which is about one thousand years old and is located on the Merapi foothills. The temple had undergone conservation works after numerous incidents of damage also caused by earthquakes.

During the Post-Conference Fieldtrip a group of participants (including the author) together with guides were taken by car to the pass between Merapi Volcano and Merbabu Volcano (1700 m a.s.l.) and walked up to the Seismological Station at a height 2700 m a.s.l. located at the edge of the former caldera. After a spectacular sunrise, the participants obtained permission to go up to the steep top of the Merapi Volcano where they observed the 1 km wide crater covered with sulphur coating. From Merapi summit six other volcanoes were visible above the cloud cover. The summit was visited by a large number of Indonesian tourists.

An interesting problem, which was not included in the conference topics, is the location of the timberline on the slopes of active volcanoes. In case of Java's volcanoes, the altitudinal limit of the timberline is not influenced by thermal conditions and slope exposure but is connected with the area covered by young

volcanic ash, the direction of volcanic gas movement, the location of hardened lava flows, lahar paths and locally with the range of landslides. This is why the timberline on the cones of Java's active volcanoes, including Merapi Volcano, occurs within a wide altitudinal range.

