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Recent lahars at Volcán de Colima volcano (Mexico) and related hazard

L. Capra (1), N. Davila (2), J.C. Gavilanes (3), **G. Norini** (4), N. Varley (5)

(1)Centro de Geociencias, Campus Juriquilla, UNAM, 76230 Queretaro, México. (2)Posgrado en Geografía, UNAM, CU, 40510 Coyoacán, México D.F., México. (3)Centro Universitario de Investigaciones en Ciencias del Ambiente Universidad de Colima, Km. 9 Carretera Colima-Coquimatlán, Coquimatlán 28400, Colima, México. (4)Instituto Nazionale di Geofisica e Vulcanologia, Sez. Catania, Piazza Roma 2, 95123 Catania, Italy (norini@ct.ingv.it). (5)Facultad de Ciencias, Universidad de Colima, Av. 25 de Julio #965, Col. San Sebastián. Apdo. Postal 25, Colima, Col. CP 28045, México.

Volcán de Colima is the most active volcano in Mexico, and represents a high risk for more than 500,000 people. In 1998 the volcano renewed its activity, with the extrusion of a lava dome and subsequent lava and block and ash flows. Although pyroclastic products did not directly affect villages around the volcano, several lahars did. We used LIDAR topographic coverage, ASTER and LANDSAT images for the recognition of morphological changes in the drainage system and lahar detection. For lahar delineation we applied principal components analysis and canonical classification in order to perform a supervised image classification based on the ISODATA cluster algorithm. LAHARZ (objective delineation of distal debris flow hazard zones) has been used and tested using two topographic datasets with different resolutions, which provided evidences of an important limitation of the program being dependent upon the resolution of the topography. Finally a hazard map for lahars is presented, showing that morphological changes produced by products of the intense explosive activity deviated the drainage system. As a result, certain populated areas previously affected by lahars now are located outside of the high risk zone.