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## First hazard map of Cotopaxi Volcano's Eastern Zone

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Cotopaxi Volcano (78.43W, 0.68S, 5897 m asl), located 60 km SE of Quito, Ecuador, is an active stratovolcano of the Eastern Cordillera. Since April, 2015, Instituto Geofísico's (IG) monitoring data revealed unrest that led to volcanic reactivation. On August 14th, 2015 an eruptive phase began with several phreatic explosions that generated ash plumes up to 8km acl, alerting the population and emergency agencies. Cotopaxi's northern and southern area hazard maps have been developed since the 80's, however the eastern area had not been properly studied. Historical records show that the 1744, 1768 and 1877 eruptions generated major lahars that affected also the eastern drainages. Those flows descended via the Tambo and Tamboyacu rivers, crossed the Eastern Cordillera entering into the lowlands of the Jatunyacu and Napo rivers, wreaking havoc on human settlements in the area. Ettinger and others in 2007 conducted a first survey, briefly described the deposits and suggested an approach to risk management. The imperative need to generate a hazard map, led us to perform ash dispersion simulations and several debris flow modeling programs, using similar input parameters as those used in the northern and southern affection zones, trying to reply the 1877 eruptive scenario. However, the low relief of the zone pushed the flow models to their limits, showing that they were not completely effective in flat terrains. These topographical features and the flow dynamics of eastern lahars forced us to use flood models and river terrace identification to generate a map that accurately reflects the most susceptible areas. We will present here the first hazard map of Cotopaxi Volcano's Eastern Zone generated by the combination of several numerical models, fieldwork, historical records describing lahars, floods and other phenomena.