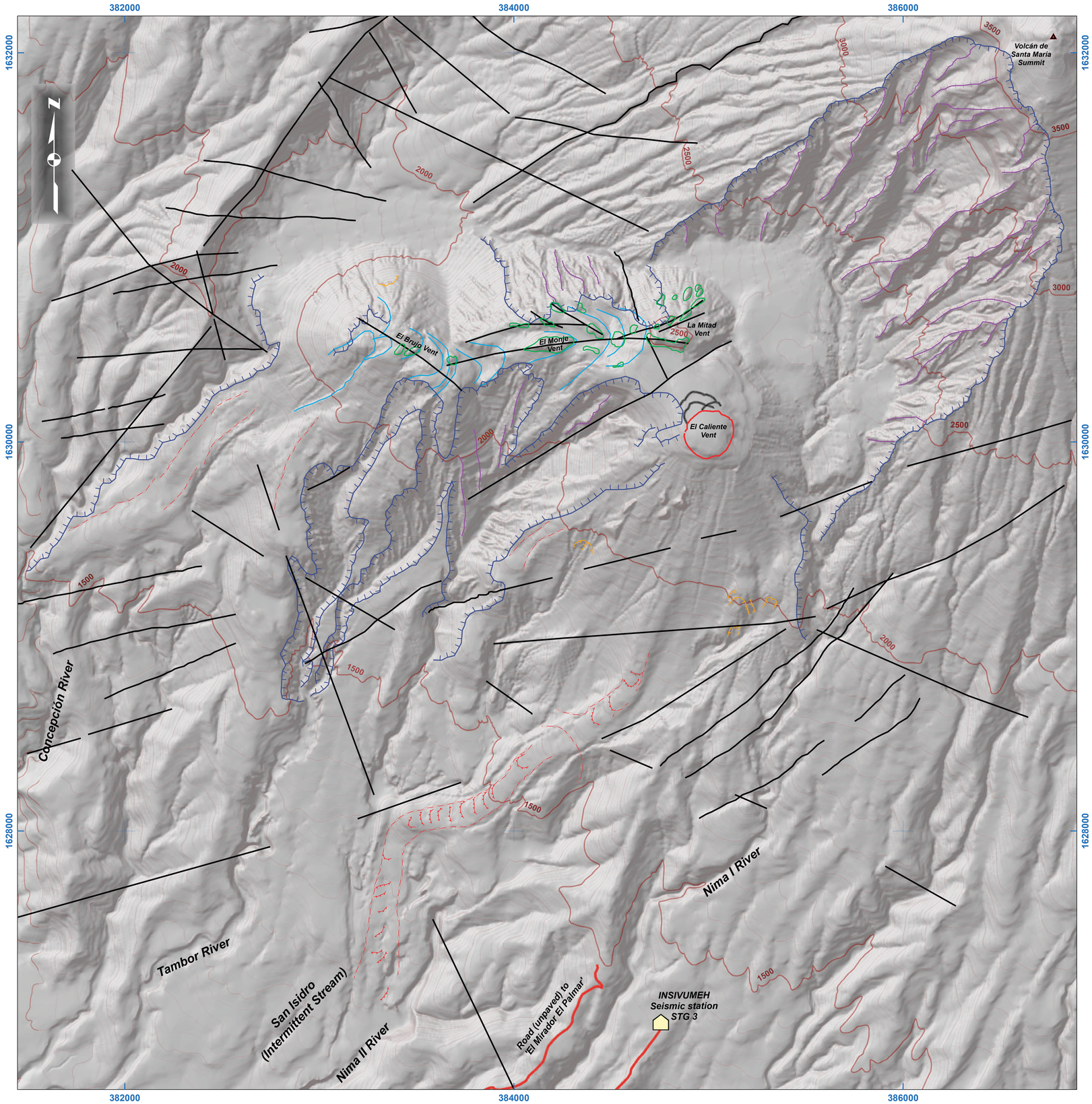
Santiaguito Dome Structural Map 2006

Rüdiger Escobar Wolf, Otoniel Matias Gomez and William I. Rose
Department of Geological and Mining Engineering and Sciences
Michigan Tech University. June, 2008.

MichiganTech



Structural units

Active vent:
Approximate boundary of lava vent that was actively erupting (explosively and effusively) during the time of the geologic mapping (2006).

Crater rim:
Arcuate structures that correspond to the rims of craters that may be active or inactive (i. e. older craters). They may be partially covered with younger products (e. g. tephra and bombs at El Caliente vent) and are similar to arcuate collapse features.

Arcuate collapse feature:
Located on uphill side of dome, usually above a vent for an exogenous flow. These are common on volcanic domes and apparently originate from collapse of walls on one side of the active vent. There is no wall on the downhill side because the flow overflows it or carries it away.

Spines:
Steep sided protrusion which is typical of endogenous domes, where viscous lava is extruded to form vertical pinnacles or slabs. These features frequenty are destroyed partly or completely during cooling because of thermal fracturing and rockfalls, which forms a broad talus blanket. The areas mapped here as spines correspond to single spines, partial (remnant) spines, or groups of tightly clustered spines.

Lava flow levee:
Levees formed on the edges of some lava flows that move over intermediate slopes. These levees tend to bound and contain the lava flow and form effective channel walls.

Pressure ridges or ogives:
These are common features on viscous lava flows, which may be many meters high and tens of meters apart. They form perpendicular to the direction of flow movement.

Lava flow/dome collapse scar:
Scar associated with sudden collapse or slide of an active lava flow or dome, due mainly to flow on steep slopes. This process happens frequently during flow, but varies greatly in intensity. Small collapses give rise to rockfalls while larger collapses may generate block and ash flows with dangerous pyroclastic surges.

Erosional Scarp:
This is a scarp created by erosion of the surrounding terrain. Such scarps are abundant in the map region because of the heavy precipitation and steep slopes, which cause rapid erosion. The scarps form by migration of steep slopes as erosion occurs on one side while the other side preserves old topographic forms. They are prominent surrounding the 1902 explosion crater.

Erosional ridge:
A ridge left by differential erosion, where the ridge is underlain by resistant rock. It may be related to a dike, other magmatic intrusions, or thick lava flows.

Lineaments:
Linear features that emerge from photogeologic interpretation criteria, defined by alignments of topographic and or geomorphic features, are presented here without field evidence. They could be related to faults or joints.

Geospatial reference:
Coordinate system: Guatemala Transverse Mercator (GTM).
Projection parameters: False Easting 500000. False Northing 0. Central Meridian -90.5. Scale Factor 0.9998. Latitude of Origin 0. Datum: WGS 1984.
Elevation contours: Labeled contours interval 500 m. Primary intermediate contour interval 50 m. Secondary intermediate contour Interval 10 m. Elevation values in meters above sea level.

Sources of information:
Compiled from high resolution (0.5 m pixel) aerial orthophotos 1860-II-14 and 1860-II-19, aquired between November 2005 and April 2006 by the Instituto Geográfico Nacional de Guatemala (IGN).The maps published by Rose (1972), was also used to identify structures. Unpublished field notes by the authors were used as well. Elevation data (contours) published by Japanese International Cooperation Agency and IGN (JICA et al 2003), generated by photogrametric methods of aerial photography aquired in 2001.

References:
Japanese International Development Agency (JICA), Instituto Geográfico Nacional (IGN), Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología (INSIVUMEH) and Secretaría de Planificación y Programación de la Presidencia (SEGEPLAN). 2003. Estudio del establecimiento de los mapas básicos y mapas de amenaza para el sistema de información geográfica de la República de Guatemala. Final report.
Rose, W I. 1972. Santiaguito Volcanic Dome, Guatemala. Geological society of America Bulletin, v. 83, p. 1413-1434.

Scale:

0 — 0.5 — 1 — 1.5 — 2 Km

NOTE: The electronic image file for this map is formatted for printing at a 1 : 7,500 scale for a paper printing size A0 (841 mm X 1189 mm).

Escobar Wolf, R., Matías Gomez, R.O., and Rose, W.I., 2010, Santiaguito Dome Structural Map: Geological Society of America Digital Map and Chart Series 8, doi: 10.1130/2010.DMCH008.

Contact information: Comments or questions can be directed to Rüdiger Escobar Wolf. Email address: rpescoba@mtu.edu