

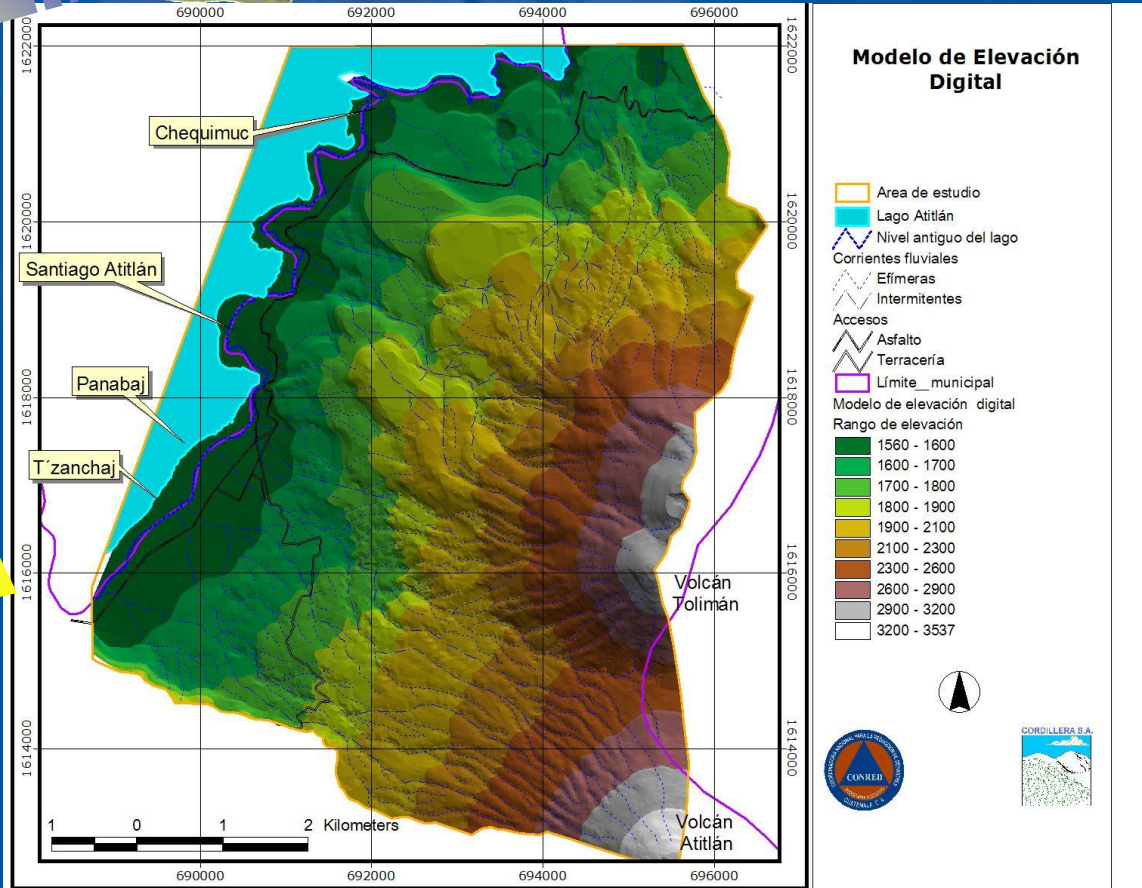
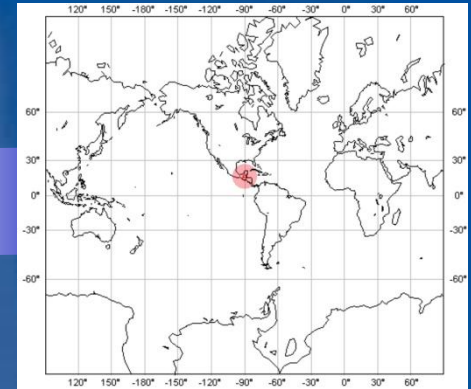
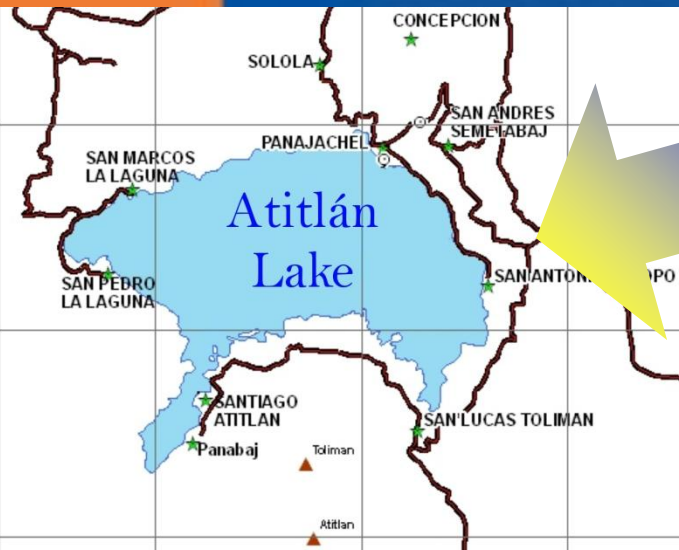
Risk study by landslides and debris flows in Santiago Atitlán

Guatemala

CONRED
Guatemala, Centroamérica



LOCATION OF INTEREST AREA



GENERALITIES

Located at the base of two stratovolcanos (Tolimán and Atitlán), next to the Lake Atitlán

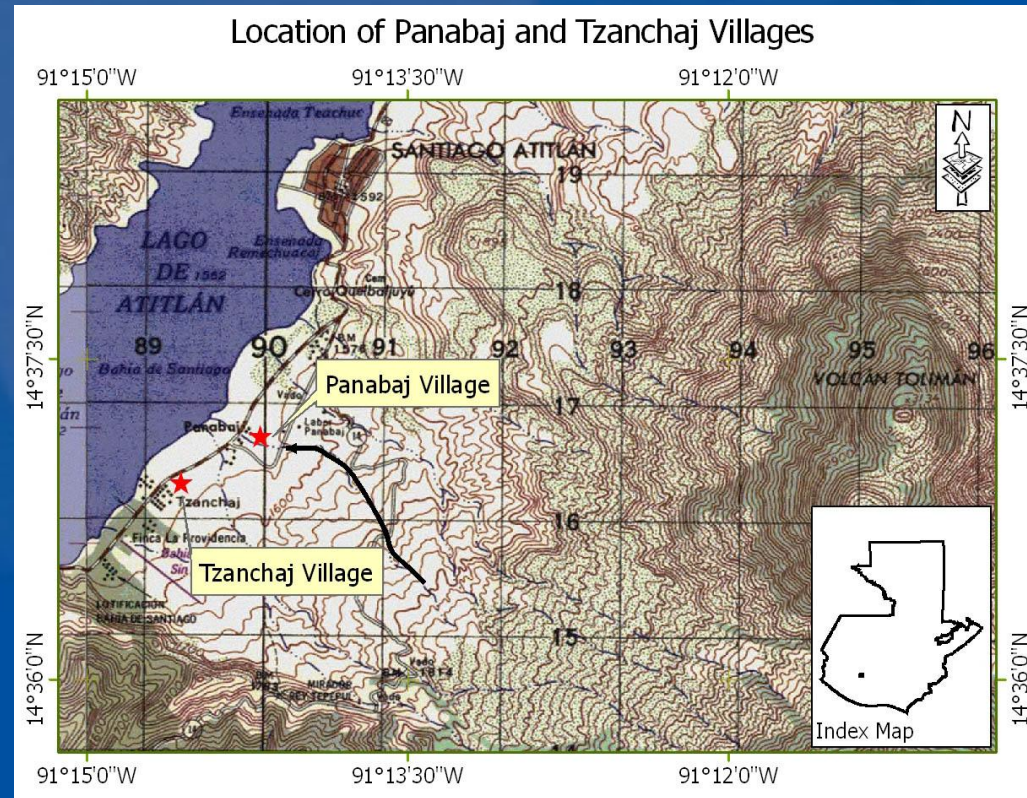
Population density of nearly 277 hab/km² in the town (year 2005)

Population very old (there is evidence of settlement since before the arrival of the spaniards)

Three main comunidades: Panabaj, Tzanchaj, Santiago Atitlán

98% of Indigenous population (Maya tz'utujil)

Communities located preferably in flat areas near to Atitlán Lake



Features of the land

- Soil intercalation materials formed by volcanic (lava flows, ash) with a thick layer of organic soil
- At least 13 watersheds that flows down the volcano on the outskirts of Santiago Atitlan
- Vast areas of alluvial fans where they have developed communities



Example paleocanal in the vicinity Santiago Atitlan



Background disaster

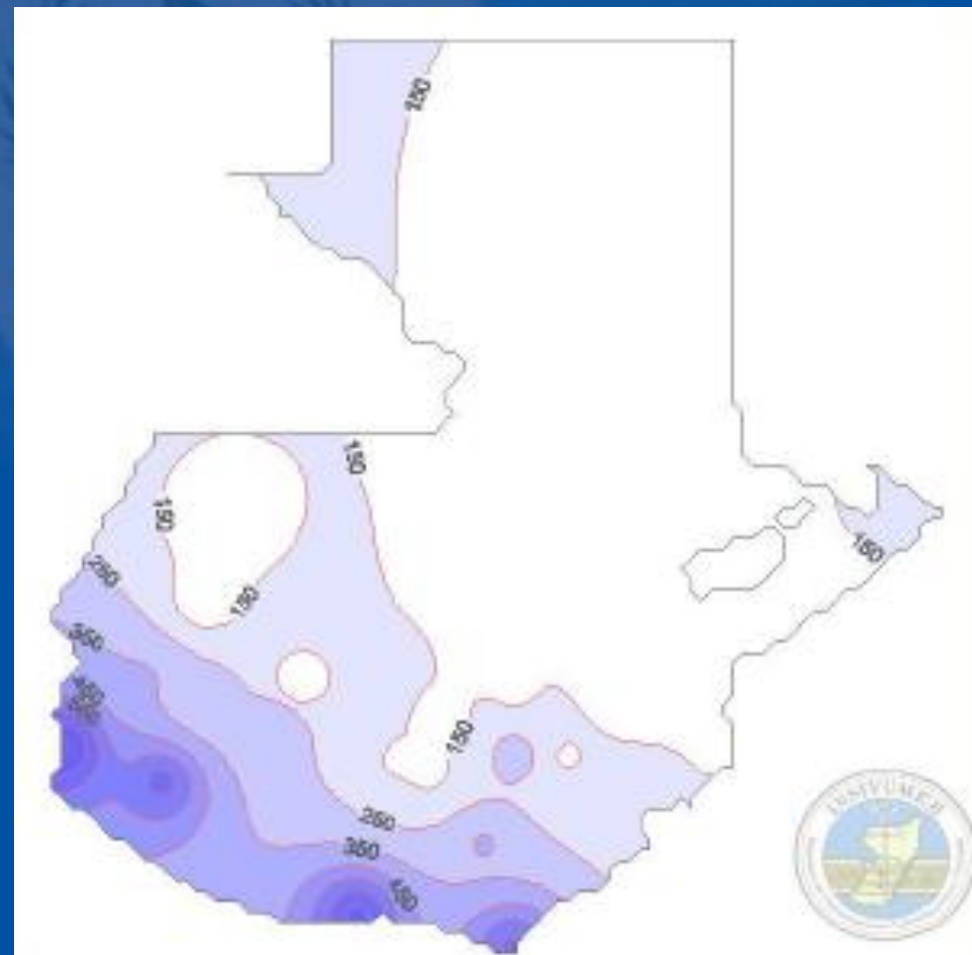
- Evidence of prehistoric flows at the base of volcanoes
- The translation of the names of Indigenous who identified some sectors of the population (Panabaj, Chu'ul, Pachichaj) relate to areas of debris flow deposit
- There are records of some small debris flows in the past 50 years that affected mainly crop areas or areas depopulated



Features Event October 2005

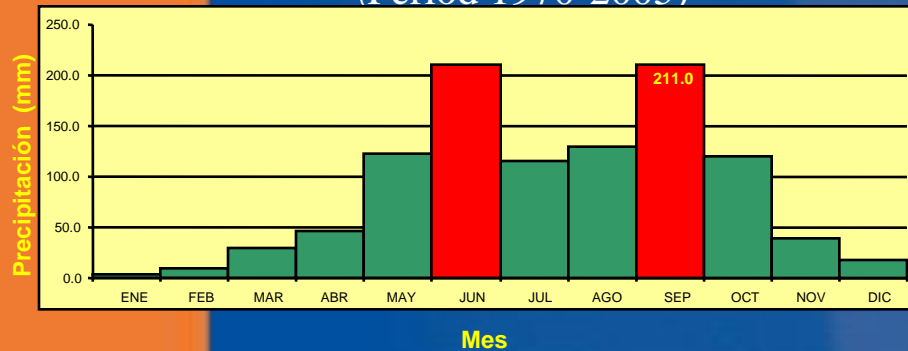
Isoyets rain accumulated in Guatemala
Period 01-10 October 2005
(Source: INSIVUMEH)

- | | |
|-----------------|--|
| 1 Oct | Launches and intermittent rains continued especially in the south coast, with the highest accumulated in the Southeast and Central Pacific Coast |
| 3 Oct | Mist intermittent rains in the highlands of central and western country |
| 4 Oct | Heavy rains on the Pacific Coast, central highlands and western Guatemala. It strengthens the moisture in the Pacific Ocean and influence of a weak tropical wave |
| 5 Oct | In the early morning hours, it triggers a landslide in the top of the slopes of Tolimán volcano and generates a series of debris flows affecting several communities of Santiago Atitlan |
| 5-10 Oct | There is still plenty of moisture in most parts of the country due to weather in the Pacific in Guatemala and El Salvador, keeping rain and cloud important on the Pacific coast and west of the Country |

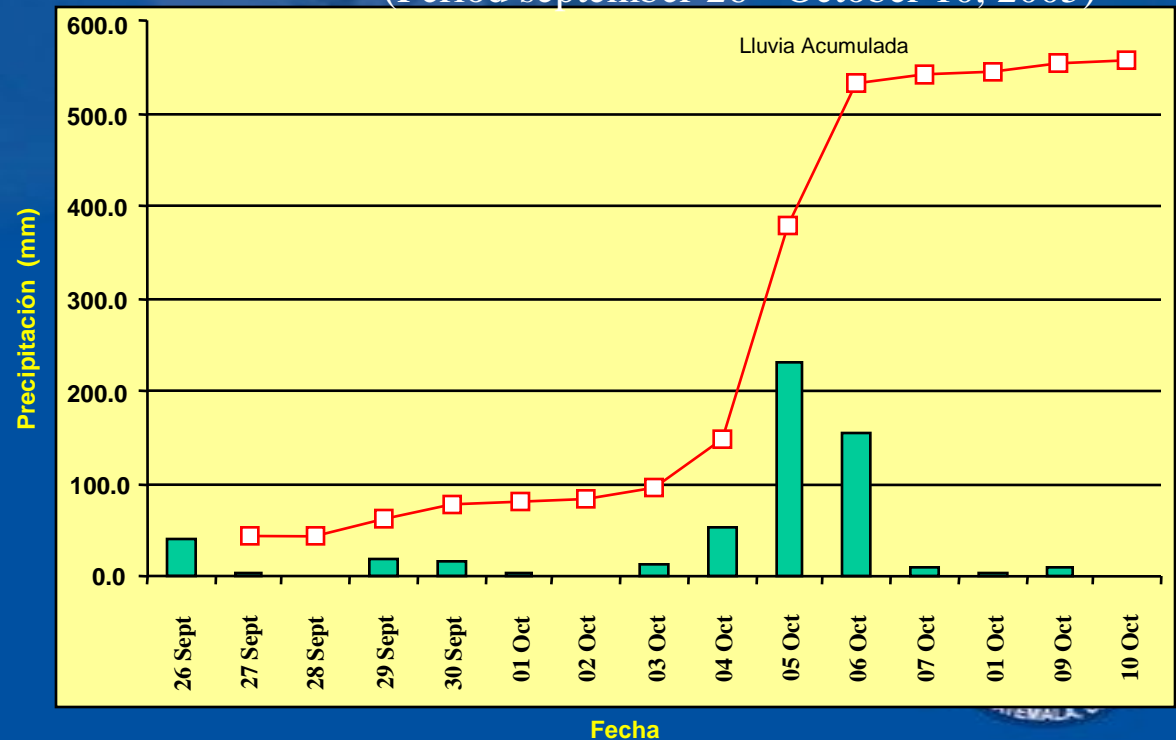


Values of rain in Santiago Atitlán

Average monthly rain Santiago Atitlan
(Period 1970-2005)



Rains in Santiago Atitlan
(Period september 26 - October 10, 2005)



Source: INSIVUMEH

Effects in Santiago Atitlán in October 2005

- Between 300 to 600 missing (almost 100 corpses rescued)
- 345 families in shelters
- Approximately 650 affected families (~ 3000 people)
- Destruction of houses, stretches of roads and building administration of Justice recently opened (approximate cost of the building = \$ 2 million)
- Affect at least 200 ha of crops



Major events generated in Santiago Atitlan

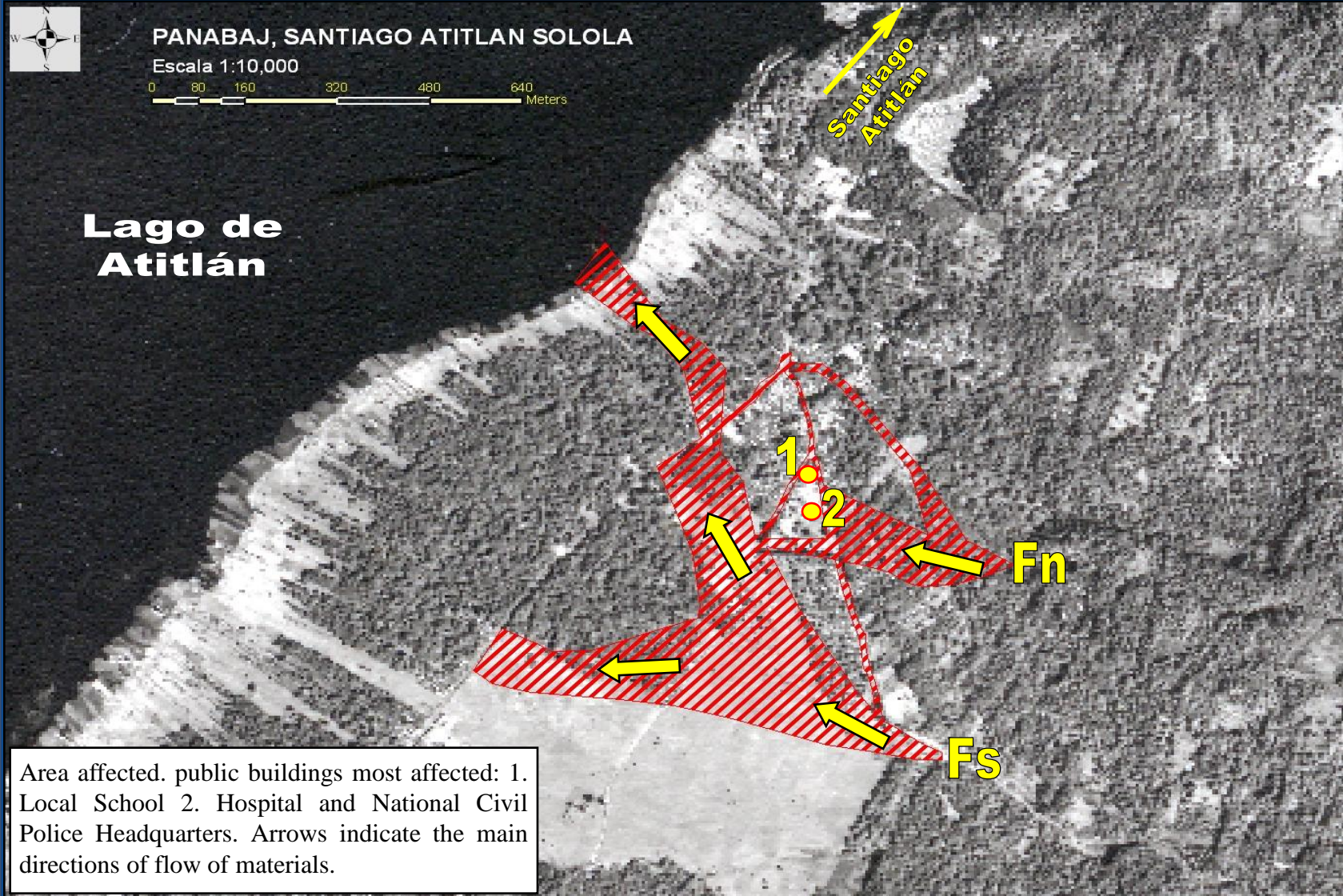


Details of the event

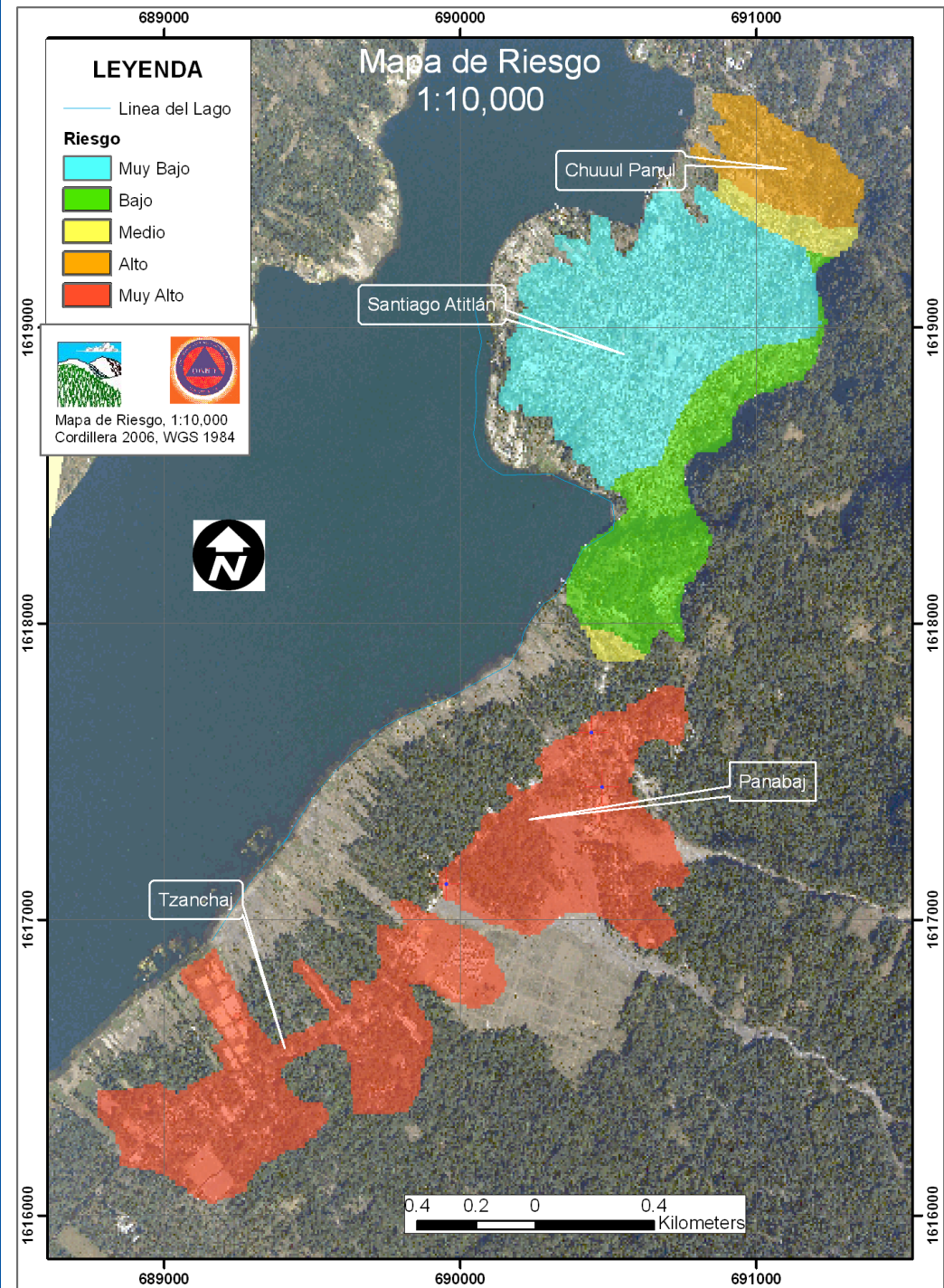
- Moving layer of soil and thick layer of loose volcanic material due to overweight by excess moisture
- Layers of materials and overlapping inclined
- Surveying very inclined on the slopes of volcano
- Communities in very flat area without well-defined channels at the mouth of the creeks
- Streets functioned as a channel flow, increasing the affected area
- Channels natural with a very small section hydraulic



Area affected in Panabaj



Areas of Risk by debris flows in Santiago Atitlan



Progress and Challenges ahead

There have been risk maps of the area and have been identified high-risk areas for debris flows, in what should establish restrictions for new public building and private infrastructure

There have been campaigns signaling high risk areas so that people know and can recognize in the ground

There have been workshops socialization of the results of studies conducted in the area on the risks to which they are exposed communities.

It has begun the process of relocation of affected families to other sites with low risks.



Progress and Challenges ahead

It is necessary to create a Government Decree for the Declaration of High Risk for areas defined as high risk by mudflows and debris in the municipality of Santiago Atitlan (Sololá, Guatemala)

It needs to strengthen local institutions (municipalities, local authorities, Municipal and Local Coordinators for Disaster Reduction, etc.). To contribute in reducing vulnerabilities.

It is urgent to continue with community awareness regarding the risks to which they are exposed in the municipality of Santiago Atitlan.

It is necessary to develop a risk management strategy that serves to formulate an Action Plan containing interventions in the short, medium and long term.

It is necessary to formulate the necessary strategies that contribute to seek consensus solutions on the issue of risks to what is exposed.



THANK YOU

