EHaz questions for 1 March 2007
Corey Froese

Questions are organized by topic.

Remote sensing

SFU/UBC
Terry (SFU): InSAR
Colesanti and Wasowski, 2006.
What are permanent scatter targets? On a volcano, what might serve as a permanent scatter target?

General landslide

McGill
Failure triggers
What was the potential role of water in triggering the Frank slide? The monitoring data from the Turtle Mt. shows displacement after heavy precipitation in spring. Also the Frank slide event occurred after heavy precipitation in spring. Could this reflect the influence of cyclic freezing and thawing? Could the physical loading of the limestone with water play a significant role, too?

UNAM
Corey and Froese Part 2:
What is the range of application of all this experiments done in Turtle Mountain? Can they be applied to any mountain in the world or only in places with similar climatic conditions? Can these experiment be use to predict slides or are this slides completely unpredictable. (Alejandro)

Colima
The results of the survey show gradual movement of the rocks at South Peak. What would be the conclusion if they were static; that it was stable or that it could collapse without warning?

McGill
Failure progression
Is there any way to tell in which direction the actual failure propagated, e.g. initial failure at the toe, then propagating "upwards" or vice versa? Would this be reflected in different stress fields (extension vs. compression, respectively) prior to the failure?

Colima
What hazard mitigation options are available e.g. constructing barriers, fastening parts of the hillside in place or dislodging parts of it with controlled explosions?

Monitoring

ASU
What is the overall cost of employing all of these monitoring techniques?
Is this something that could be applied to say 20 or 30 sites, either volcanic or non-volcanic easily without much cost? I imagine that it would cost quite a bit and take a lot or man-power to monitor instabilities such as these. If you were going to try to apply some of these techniques to other areas, which would be the most important and yield the most information given a limited budget?

SFU/UBC
Guillaume (SFU): Tiltmeters
Moreno et al. (Part 2) and slide 23 of ppt.
How do you re-zero the instrument when the deformation of the edifice is beyond the range of the instrument? Could inaccurate re-calibration effect the overall trend/interpretation of the deformation?

Colima
How were sites chosen for tiltmeters (and extensometers) and how critical is the choice? Or are they merely accessible points on the peak? Which instruments show the least accuracy, or pose interpretation problems?

UNAM
Froese and Moreno Part 1:
Which instrument do you use to attain the pore pressures monitoring? (Natalia)

MTU
Method Clarification
Slide 23
Please discuss the several events that are highlighted on slide 23. The fluctuations seem to occur even though the temperature is well above 0°C. What is the explanation of the peaks and troughs recorded by the crack meter? If it is not temperature than what is the cause? (Hans)

ASU
Must all of these different data sets be corrected to account for the effects of the others, and if so, what kind of time constraint does that place on analysis and interpretation?

SFU/UBC
Nathalie/Heather/R-E (Girl Power): Economics
If you had a tenth of the budget, what one or two instruments would be the most cost effective for measuring gravitational collapse potential? Which parameters are the most necessary in monitoring landslide hazard?

ASU
Can the speaker please provide an estimate of how the monitoring technique details at the Frank Slide may differ from those employed to monitor volcanic instability? For example, because you are dealing with limestone instead of andesite, will the microseismic recorders need to be tuned to a different bandwidth?

Risk Perception & the community

MTU
Subject: Communication of Hazards
Slide 12
What kind of relationship and/or involvement do you and your agency have with the local government and local policy making in nearby towns that may fall within the potential run out zone? Since it only took 100 seconds for the Frank slide to devastate an area of 3 km^2, how is the community prepared to react? What is the warning system like? (Randy and Julie)

University at Buffalo
Public awareness and relations
We noticed that several of the papers mentioned vandalism of equipment on Turtle Mountain and the only zoning restrictions are for construction on the slide itself. I was wondering what the general feeling in the town was. What information is given to the population? Does the town welcome the current research that is going on? Are there problems with conflicts of interests? Is there concern about landslide hazard? And, what is being done to communicate to the townspeople and local authorities about the landslide hazard?

MTU
Hazard Prediction
The Turtle Mountain Field Lab instrumentation is based on the idea that small changes will occur before a catastrophic change, but how do you assess the small changes you see? How much change is enough to set off warnings? Is there enough baseline data to determine what threshold of change will trigger hazardous collapse events? (Julie)

Structure

UNAM
Structure (Víctor)
Is there a local system of faults that controls the principal structures? What is the main direction and how is the movement?

University at Buffalo
Structure
Is the headwall of the Frank Slide the original headwall or has there been retrogressive failure or erosion? If it is the original headwall, was it west of the hinge of the anticline? (Slide #9)

McGill
Structural influences
What effect do the two thrust systems have on the given Frank Slide scenario? Is the presence of these faults necessarily a destabilizing factor, or could it compensate some deformation by e.g. antithetic movement along the faults (~ rotation of the middle block)?

Seismicity

University at Buffalo
Seismicity
What are the sources of the microseismicity under the mountain? Why are some microseismic events occurring in the coal mine? And, is it possible to locate the rockfalls using seismic data?"

Extra questions (if there is time)

MTU
Slide#11: Please explain how the "Dry Avalanche Simulation" was conducted. What program was used and how were parameters set?

SFU/UBC
R-E (UBC): LiDAR Sturzenegger et al., Part A:
Using LiDAR, how exactly are the trees & vegetation removed? This paper gives us "automated data processing technique" as an answer to this. How is the computer able to assess accurately the tree cover? My field area in British Columbia is extremely hindered by thick tree cover- ground LiDAR may be an option for my project.

Part B: How often is LiDAR administered on active or dormant volcanoes? Often? Are landslide geohazard scientists actively collaborating/problem solving along side of hazard volcanologists – combing efforts for public safely?

Colima
What is the range of the new short range laser? How small can the crack be, or how close and far can the laser be?

MTU
Slide#19: After the deformation event in 2005 (recorded by extensometers), did the 20mm displacement settle back down? Was this extension followed by contraction or is the 20mm a net change?

Colima
How does the coal mine subsidence potentially affect south peak failure?

MTU
Slide#7: Is it still believed that North Peak presents no hazard? The geological structure was described as stable by John Allan in the '30s, but did that assessment consider the structural integrity as changed by the 1903 slide? I am curious if slope stability is compromised because of the Frank slide, as opposed to the characteristics of the geologic units. The 30 million m^3 of rock now missing could have reduced the general stability of the entire area- is that possible?

Slide#8: The 2 sections marked here (upper and lower) are thought to be moving separately- how was this determined? By the current network monitoring instruments?

What are the current ideas about the possible triggers that caused the Frank slide?

Since the target year for complete installation of the Turtle Mountain Field Laboratory was 2005, are future installations planned or has an optimal amount of instrumentation been installed?