

TO tour, January 6, 2011

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Led six 20-minute presentations to groups of 12 students at a time

About 70 6<sup>th</sup> grade students from American Martyrs Catholic School in Manhattan Beach

## Landslide!



The presentation composes of three parts. In the first part, I use two short movies to impress the kids the power of this most common natural hazard. One is a computer-simulated giant landslide in Taiwan that killed 500 people; the other is a real-time recorded landslide in California. These two examples come from very different geologic and climate settings, making the kids to think about what are the mechanisms related to landsliding.

In this second part, I use a chalk talk to guide the kids through different mechanisms related to landsliding. Before I did this, I searched the internet but found no satisfying material about landslides -- most materials are talking about different type of mass movements, not the different mechanisms in general. Based on my past research experience, I summarize the mechanism into four points:

- 1) If bedding is parallel to slope
- 2) Whether slope foot is cut off
- 3) The steepness of slope
- 4) Material properties, such as a layer with lots of fluid

I draw four cross sections to illustrate each point as compared with opposite cases, and ask the kids which side slides more easily. It's important to ask them to think about where they can find an example. In the case like a cut-off slope foot, it's very

common for house or freeway construction, so it's also important to point out to them what we can do to prevent landsliding in such cases.

In the third part, I guide the kids to have simple experiments about how different materials give way to sliding. The experiment is clearly described in the book "365 Science\_Experiments" in experiment 229 "Avalanche!". Previously when Laurie and I were testing this experiment, we found that it's sugar that makes the sliding layer all the time. On the day of the tour, after six rounds of experiments, I found that we got half time sugar and half time flour as the sliding layer. I still believe that sugar should be the primary sliding layer, but here are a few things that may influence the result:

- 1) If the material contains moisture (this may probably changes the property of flour)
- 2) If the poster board has been cleaned properly each time after one round of experiment (our schedule was very tight so the poster boards were roughly cleaned only)
- 3) If the area of each layer is large enough, and if the thickness of the layer is uniform

So if you want to get a less biased result, here are a few things you can do:

- 1) Spend more time (~5-10 min) between rounds to clean up the poster board
- 2) When doing demonstration, emphasize to the kids the area and the thickness of the layers should not be too small

And even if the sliding layer is different from sugar (in my own demonstration, the sliding layer is always sugar), you can still ask them what could be the reason that leads to a different sliding layer.