

**Med Tech Academy, San Diego - High School juniors**

**April 12, 2013**

**15 students, teacher Lisa Booth**

**9 AM - 11AM**

**Adam Booth, Kirstan Siebach**

**Adam: "Simulating real landslides with math and a computer"**

I first took the students on a ~40 minute walking tour of campus so that they could get a feel for its size and what the important buildings like the dorms, cafeteria, and book store looked like. The students had visited UCLA and USC previously and were surprised that Caltech was so small relative to those schools, but that they frequently heard about it in the media. We then returned to the Buwalda Room in Arms, where I gave a ~20min presentation on landslides - both real landslides and mathematically simulated landslides. I emphasized that landslides span a huge range of sizes and rates, and then played a game where the students guessed the speed of a landslide based on a picture of its deposit and a movie (without any indication of time). The main point was that it's very difficult to tell unless you see it happen in real time. I finished the presentation by showing videos of my own work simulating landslides mathematically. I also got the students some donuts for someone's birthday, which they enjoyed during the presentation.

Things that went well:

- Students really liked seeing the bookstore on the tour, and some bought some small items.
- The 'guess the speed' landslide game seemed to hold their attention.

Recommendations for next time:

- I don't know much about undergraduate life at Caltech and didn't have much to offer on the campus tour. The students would have gotten a lot more info if they were able to go on one of the official student-led tours, but their schedule didn't allow it.
- A physical demonstration (table top scale) of landsliding would probably be fun, in addition to or instead of the videos and numerical modeling I showed.
- I'm not sure the students were very interested in the brief description of careers in the sciences I gave before my landslide presentation - I think it would have sufficed to just tell them what my job is.

**Kirsten Siebach, "Mars Exploration"**

I talked about Mars Exploration, focusing on the Curiosity Rover. First I asked the students what they knew about Mars to get a general sense of what level to start from. These students did not have much of a background and many had not heard of Curiosity (although a minority had, and a couple had seen 7 minutes of terror). I introduced Mars Exploration by talking about the planet itself and why it is interesting/what questions we have, then talking about NASA's goals and the missions that have been sent to Mars (and where), and then focused in on the Curiosity mission. I showed a video clip about the landing (a great condensed

version of the landing sequence, <http://www.youtube.com/watch?v=zervvVw2dnU>), and talked about why we selected Gale crater and how that relates to the global questions I had introduced. Then I used pictures from the mission to tell the story of our travels so far and what we are doing now. The students were pretty quiet, but they were paying attention and had facial reactions and a few questions, which is not that bad for high schoolers. I think the focus on searching for answers worked well and hopefully taught them about how exploration science works. I also think asking questions and getting them to respond was good and that the youtube video was excellent. I'm not sure what I would change- maybe ask a few more questions of them to answer? But with the time we had I think this worked well.