

TO Tour

Dec 12, 2011

Lycee International de Los Angeles (LILA) School, West Valley

Seventeen 4th graders

From Nadaya:

Marion, Erin and I have hosted seventeen 4th grade students from one of the LILA schools. One month before this visit, the teacher taught them (very basically) the concept of plate tectonics and had them built seismometers.

Marion and I spent 2 hours with them in the morning, explaining how rocks are formed and then deformed. We first talked about sedimentary rocks and showed them rocks with depositional figures and also fossils. The children were very excited by those fossils. Then we showed them some slides with earthquake deformation and we used the 2 blocks to explain the different kinds of movement along faults. To conceptualize these notions, we then let them play with the sandbox. They were divided in 2 groups, in order to let each child pour sand in the box and push it to create relief and faults.

Then, Marion talked about volcanoes (where, why, what kind). We always asked them a lot of questions in order to keep their attention. And in the afternoon, the children had a seismo lab tour.

It was a good experience, the children were particularly interested and participatory. I think that the samples and fossils were a very good way to catch their attention and sandbox is probably a good activity for so young students. However, I think that the children have received too much information in a short time, we should probably simplify for the next time.

From Erin:

Gave Seismo Lab tour, 1:15 – 2:30 pm, Caltech

I met the group in the lobby of South Mudd, introduced myself and started with an introduction to the Earthquake Exhibit.

- Showed them what was on the computer monitors (seismograms, earthquake occurrence map...) and pointed out the seismometers in the case.
- Let them jump and make their own 'earthquake' show up on the bottom right monitor hooked up to a seismometer in the cabinet (they had tons of fun with this, though in retrospect I should have had them do that last so they didn't keep trying to jump throughout the rest of the time in the lobby!).

- Navigated to Explore the Earth -> Seismic Waves application on the main screen and let them pick an earthquake to see seismic waves traveling through the earth and along the surface

-paused to explain the difference between P and S waves with an interactive demo: had them get in two lines, with the first line standing shoulder to shoulder (P-wave line) and the second line holding hands (S-wave line). First I had each line separately make a wave, the P-line starting with the end girl lightly pushing her neighbor, and if their shoulders are touching properly, the wave propagates to the end! The S-line wave starts with the first student stooping and pulling the neighbor's hand down, and then standing up again, and as each in line gets pulled down and up again, the S-wave propagates. With long enough lines, you can have both start at the same time and demonstrate that the P-wave goes faster (more directly and effectively passes the energy along).

One kid commented on the P-wave being like the effect of dominos....good visualization.

-I then let the kids pick more earthquakes to show on the monitors, and this time, since they got a sense of the P and S wave differences, pointed out the color coded wavefronts for each, pointing out the P-wave moving faster than the S-wave.

We spent ~ 20 minutes at the Earthquake Exhibit and then moved to the Media Center:

- I introduced the media center as where the media comes to interview scientists, particularly when a notable earthquake occurs

- I showed an example of the early warning system and let the kids practice getting under the desks (stop, drop, and hold) once, and they liked it so much, we did it a second time! I incorporated questions such as 'Why do you need to hold on?' (a kid correctly answered because the desk or chair may move).

-I showed two videos of the Shakeout scenario (in one of the TourVideo folders on the desktop of the main screen), spending some time to explain why/how the intensity of shaking lingers longer in some areas (e.g., in the LA basin)....using the analogy of if you hit the side of a bath tub, the waves may travel quickly and pass through the tub sides (harder, stiffer, not as prone to vibrating....like bedrock), whereas the water inside the tub may slosh back and forth a bit for a while (like sediments within basins may do as they can respond to the wave energy more easily). I pointed out that you'd want to be aware of whether you're living on sediments or bedrock.

- I showed a liquefaction video (one from Japan...in the TourVideos folder on Media center desktop) as an example of what the seismic waves can do to water in sediments

- I then showed a tsunami simulation (the 2004 sumatra one on TO site), discussed tsunamis, and showed a Japan tsunami video

- Then the kids gave presentations they had planned to accompany some home-made mock seismometers that they brought to show and describe! They described the problem-solving process (e.g., how to get the hanging pen to write on the roll of paper effectively).

The kids were extremely enthusiastic, interested, and asked many questions, though I unfortunately can't remember many now!