



# Reflections on Laser Scanning at the Coast

Anyone involved with laser scanning will probably relate to much of what we are going to discuss in this article. Our graduate work involved studying seacliff erosion using LIDAR in San Diego (see <http://lidarweb.ucsd.edu/coastalstudy>). Essentially, our office was the beaches of Southern California. Certainly, not a bad place to spend our hours during graduate school! As we performed scans, we would invariably get lots of questions from people on the beach curious as to what we were doing, particularly given the fact that we were hauling this robot-like machine up and down the beach. Most people had very intelligent questions about the technology and about the coastal processes, in general. We even had some people who had technological expertise and probably could have built their own scanner with their expertise in lasers and optics. However, once in a while we came across a few gems, which always brought smiles to our tanned faces. We will share some of my favorites with you:

- Is that the Mars Rover?
- When will the aliens arrive?  
Are you communicating with the mothership?
- Hey Ma, I'm on TV!
- Do you have a concession stand in there? I'll take a taco!
- Hi Wall-E!



The self-contained rig developed to determine seacliff erosion near San Diego.

- How much did that cost? [we would then be reluctant to tell them how expensive the equipment was and then they would rephrase the question.] No, not that, I mean the wagon!
- Can you beam me up Scotty?
- That looks suspiciously like a robot, is it?
- I was wondering if you were going to travel around the world in that thing, are you?
- Is that a submarine?
- I don't need a computa, I can use my hand as a laser!

We could go on and on with the list of entertaining questions we received, but those are some of the favorites! However, we had some other interesting experiences while out on the beach. There was one regular beach goer, Gary, who walked the beach daily and would let us know if he saw any new collapses occur, so we could scan immediately after the collapse. Every time he saw a collapse, he would take a guess on the failure volume of liberated material and it became a bit of a game. After analyzing the data, we would tell him what we calculated using the LIDAR technology and software and



The final product from all the hard work!

watch him smile, as his estimates were often fairly close. We gave him the title of “the Human LIDAR.”

Several undergraduate and graduate students also helped on the project, mainly to get out of the office for one day to hang out (we mean scan) on the beach. They inevitably learned a thing or two about the local geology and LIDAR technology while working with our team. A mix of exciting technology with a day on the beach! How could that not be fun. However, most of them, after the first day of helping to pull the 150lb wagon loaded with heavy equipment through the soft sand, claimed they were worn out the next day and not as excited to return to the field with us. They were frustrated after having their shoes full of water from dragging the wagon through the unexpected waves of the incoming tide. There were others who were still tired after being in the field hauling the wagon, but were so excited about the work, data, and results, that the exhaustion did not matter much. Some students came compared with food and water, while others thought they would be okay with a bag of Doritos and Mountain Dew picked up at a convenience store on the way to the

site. You will notice the most important piece of equipment on the wagon is the snack lunch in the brown paper bag!

So what is my point in this article? Other than the fun stories, I think it

“As we performed scans, we would invariably get lots of questions from people on the beach...”

shows a lot of the state of laser scanning and the difficulties people have adopting the technology. I guess if it was easy then everyone would be doing it! A lot of people find it cool, interesting, and fun. But for many people, that appreciation is at a superficial level right now. Many people do not get involved with laser scanning because of the initial costs and steep learning curve involved with using laser scanning and processing data. It can

be very exhausting to learn how to use the data and software, deal with computer hardware limitations for large datasets, and turn it into a finished product. However, the good news is once you get past those initial hurdles, your possibilities with laser scanning are endless!

So where does the answer lie to get people past the initial hurdles? Is it in hardware or software developments? Of course. Is it in having more training resources available? Definitely. We also think a lot has to do with preparation before getting involved with laser scanning. If someone knows that it will require dedication and effort on their part, they will be more prepared and patient with the “bugs” in working with this state-of-the-art technology. Right now, several people see that fast, quality results can be generated using LIDAR by an expert and then tend to get frustrated when they do not achieve those same results on their initial attempts. Amateurs need to move past the easy “junk food” and into a more satisfying, nourishing lunch that is gained through years of field effort and data processing. Although, at this point, I probably should not admit that my lunch generally consisted of a peanut butter and jelly sandwich! ■