Luncheon – Thursday March 17, 2011

Alaska Geology Society

Abstract

Elevation Modeling in Alaska

Having high-quality digital elevation models (DEMs) is important in trying to solve a variety of geologic and geophysical problems. However, Alaska continues to lag behind the rest of the nation for both standardized orthoimagery and DEMs. The current standard DEM for Alaska, the National Elevation Dataset (NED), is posted at 60 meters, while for the remainder of the nation the standard is 10m, or very often 3m . Through initiatives at the national, state and local level, this deficiency is being slowly remedied.

In the summer of 2010 two collection campaigns were flown as part of the Statewide Digital Mapping Initiative to develop 5m posted DEMs from interferometric synthetic aperture radar (IfSAR). The IfSAR collections were operated by private industry and were funded jointly by the federal and state government. Additionally there have been LIDAR collections in the Kenai and Fairbanks areas and Mat-Su will be collected in the summer of 2011. While these collections have not reached to the more remote areas of Alaska, many of the urban areas, highways and pipeline corridors have been mapped. When complete, data from these collections will publicly available and distributed by the Geographic Information Network of Alaska (GINA) at UAF.

Finally, an initiative is underway at the Alaska Satellite Facility at UAF to develop a high-accuracy, statewide DEM from satellite data. The Advanced Land Observing Satellite (ALOS) was launched in 2006 and has recently completed its fifth year on orbit. One of the instruments on this spacecraft is a stereo imaging system specifically designed for generating elevation models. This sensor, PRISM, relies on three cameras collecting simultaneous forward, nadir and aft views, to allow the development of elevation models from standard photogrammetric techniques. The products from PRISM have been shown to have very high accuracy and complement well the other collections taking place in the state.

Each of these techniques and data collections bring something unique to improving Alaska's elevation model. In the end it will likely be data from these efforts, and more, that will result in a truly statewide DEM. This talk will focus on the many activities, past and present, in the state that are contributing to the development of a higher quality DEM for Alaska.

Presenter Bio

Scott Arko has an M.S. in Physics from Colorado State University and has worked for the Alaska Satellite Facility (ASF) at UAF for the past 10 years. He is currently the Deputy Director of ASF and the manager of the Americas ALOS Data Node. His main areas of interest are developing new markets for ALOS data and investigating low-cost options for large and small scale mapping in Alaska.