



***Report of the OpenTopography
Advisory Committee Meeting, May
5-6, 2014, Arizona State
University, Tempe AZ***

The OpenTopography (OT) advisory committee [Sharon Bywater-Reyes (OT student liaison, University of Montana), Nancy Glenn (OT liaison to NCALM - Boise State University), Steve DeLong (chair - USGS), Doug Yule (California State University Northridge), Noah Finnegan (liaison from NCALM - UC Santa Cruz)] acknowledges the significant progress OT has made since the advisory committee's teleconference in 2013 and last formal meeting in late 2011. In particular:

1. The OT team has been highly efficient and productive since receiving renewal funding. This is evident in the number of datasets, processing capability improvement, technical workshops, collaborations and community outreach activities that have occurred.
2. OT community and technical support is extremely rapid, effective and 'customer'-friendly.
3. The completion of ingestion of NCALM data is a particularly significant contribution to the Earth science community. The availability of these high quality data via the OT system increases the impact of NSF and NCALM data.
4. In addition to responding to the 2011 recommendations, the OT team has shown exceptional judgment in taking advantage of opportunities to partner with nascent NSF funded projects and continues to lead the way in CI development for the Earth sciences. They are demonstrated leaders in meeting Earth science needs using supercomputing infrastructure and CI development. An example of this is the integration of TauDEM hydrological analysis tools into the point cloud processing system using UC SDSC Gordon HPC. In addition, the collaborations with CyberGIS, RCI, SSARA, and XSEDE highlight OT's capabilities and expand OT's impact.
5. OT has made appropriate choices developing service agreements with paying customers, including Pacific Gas and Electric and the State of Indiana. These agreements provide benefits to OT and to the scientific community by facilitating data availability.
6. Making SRTM products available via OT is a significant contribution to the science community.
7. OT continues to make significant and successful efforts to provide outreach, education and resources for the scientific community. The combination of active social media presence, technical workshops, and the increasing volume of educational material available on the OT website is outstanding.

The OT advisory committee has the following recommendations:

1. Establish a working plan for further integration of TLS and SfM data into OT. The OT committee feels there is a significant gap in community resources for classification and analysis of TLS point cloud data. Communication with UNAVCO, other TLS users, and scientists in need of resources, tools and workflows may lead to OT participation in solving these issues. UNAVCO has a mandate to share TLS data that is unmet, and OT may present the best solution to this issue. OT should house these data types, but should work with the community to identify data product levels, standardize data processing and classification to make the data more user-friendly. A potential reference could be NASA's data processing levels.
2. Continue the work towards integration of additional processing tools such as BCAL, GCD, and TopCAT. We encourage OT to integrate new tools that complement existing tools and meet community needs. As tools are introduced, we encourage OT to continue to adapt the user interface for clear and simple usage.
3. OT should ingest embargoed NCALM data as soon as possible after data collection to meet the need of students and PIs to use OT tools for data processing. The OT rep to NCALM will discuss this and other issues with NCALM steering committee. OT staff should continue to collaborate with NCALM staff to make data transfer from NCALM to OT as efficient as possible for the user community.
4. Aggressively pursue data mining and data integration opportunities as they arise in order to continue to lead the way in cyber-enabled Earth science inquiry. We recommend pursuing methods to enable analyses on big data (e.g. the entire OT data repository).
5. OT is well positioned to handle NEON LiDAR and multi-sensor data. We encourage OT to invite a NEON representative to the OT advisory committee. We also suggest that NSF program officers discuss this opportunity.
6. OT should continue to improve the web interface in order to maximize their education & outreach impact. We recommend that the experience of a first-time user be carefully considered when adding new tools, and that new users be directed to an introductory tutorial.
7. We recommend continued effort to produce innovative education and outreach resources. This may include more tutorial videos, hosting webinars, or adding specific suggested workflow documents. OT could collaborate with XSEDE and SDSC summer institute to offer workflow training and/or HPC processing and tool development for LiDAR data.
8. We recommend the OT team continue development of methods for citation of OT data and derivative data products.
9. OT should continue to be proactive in development of a business model for integration of new datasets from public, private and international sources.
10. We recommend OT demonstrate their cyber-enabled science capacity to multiple NSF Directorates and other funding agencies. The impact of OT goes beyond Earth scientists, and OT is well positioned to expand into other

disciplines and can provide tools and guidance and integration with other observational data and big data analyses.

11. We recommend OT continue to reach out to other LiDAR partners, including private industry (e.g. Quantum Spatial) and NOAA / US Interagency Elevation Inventory, etc.
12. We recommend the OT advisory committee be broadened and expanded. Consider NASA JPL (Tom Painter, David Schimel), DOE ORNL (Robert Cook), NEON (?), NOAA (?), CSDMS (Tucker, Gasparini), Cyberinfrastructure (HPC, cloud) or other non NSF/EAR community members.