Application procedure and Course Fees

Course Fees   *100 €*

Course fees include snacks, lunch, and beverages for the five workshop days. One group dinner on the first day will also be provided.

You can apply for participation at:
http://tiny.cc/ivg89y

Thanks to support from the NSF EarthCube A²HRT RCN, we will provide travel support for up to five early career participants from the US. Everyone is expected to make their own travel and hotel arrangments, but we can provide guidance.

The committee will select 20 participants and inform selected participants by August-16 2019. It is expected that course fees via paypal, credit card or bank transfer are paid by Aug-23. If no payment is received by then, the spot will be offered to other applicants.

Additional information (including hotels) and updates will be posted on the github webpage:
https://github.com/UP-RS-ESP/PointCloudWorkshop-Oct2019

Please write an e-mail with additional questions to: **bodo.bookhagen@uni-potsdam.de**

LECTURERS

Bodo Bookhagen is Professor of Remote Sensing and Earth Surface Processes at the Institute of Geosciences at the University of Potsdam. He applies a combination of remote sensing, field, laboratory, and numerical methods to understand and quantify climatic and geomorphic processes.

Ramón Arrowsmith is Professor of Geology at the School of Earth and Space Exploration at Arizona State University. He is co-founder of the Open Topography project and has lead many workshops on high resolution topography.

Christopher Crosby is a Project Manager for Geodetic Imaging at UNAVCO. He manages terrestrial laser scanning, structure from motion, InSAR, and high-resolution topography programs. He is co-founder of the OpenTopography project and has led many workshops on high-resolution topography.

Fiona Clubb is an Assistant Professor in the Geography Department at Durham. She is co-developer of the LSD TopoTools and works with various DEM analysis techniques.

Aljoscha Rheinwalt is a scientist at the Institute of Geosciences at the University of Potsdam and works with network theory, time series data, and applications to point clouds.

Taylor Smith is a scientist in the Institute of Geosciences at the University of Potsdam and works with accuracy assessments of DEMs and geospatial analytics.

From point clouds and full-waveform data to DEM analysis

Sep-30 to Oct-4 2019 9-5pm

B. Bookhagen   R. Arrowsmith
F. Clubb   C. Crosby
A. Rheinwalt   T. Smith
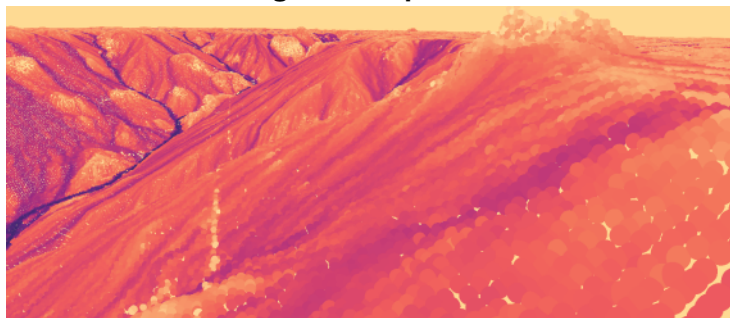
Course Objectives

In the past few years, the density and quality of point cloud data from lidar and photogrammetry has massively increased. This has enabled important new understanding in earth surface process science, but also has challenged our analytical tools and computational workflows.

The generation of high resolution Digital Elevation Models, flow routing on point clouds, and surface roughness estimation has become more accessible and provides important measures of topography at the fine scale at which the processes operate. This workshop presents approaches to analyzing point cloud data and producing useful derived products. It also explores future applications in earth surface processes.

The workshop will progress from point cloud analysis to appropriate filtering and gridding and then geomorphic analysis on grids and point clouds and full-waveform data.

Course Program

Each block with have lectures, computer demonstrations, and moderated discussion. All sessions will be at Potsdam University, Campus Golm. A more detailed and up-to-date program is available at: https://github.com/UP-RS-ESP/PointCloudWorkshop-Oct2019

Monday, Sept 30, 2019
- OpenTopography introduction and production implementations
- Point cloud selection and review of basic processing workflows
- Desktop based (Python driven) computational workflows (I)
- *Evening student presentations*

Tuesday, October 1, 2019
- Desktop based (Python driven) computational workflows (II)
- Flow routing on point clouds using TINs
- *Evening student presentations*

Wednesday, October 2, 2019
- Optimal DEM resolutions from point clouds: caveats and pitfalls
- surface roughness measurements from point clouds

Thursday, October 3, 2019
- Full waveform lidar explanation and exploration with specific applications for geomorphology
- micro-surface roughness
- better characterization of ground (and other) surfaces
- biomass estimation

Friday, October 4, 2019
- Topographic analysis with LSD Topo-Tools: River-profile clustering,
- Ridge-top curvature
- Making appealing maps with GMT

Additional support from