Tutorial: Topography and bathymetry via laser scanning and multi-spectral imaging - From sensors to applications

Presenters: Dr. Gottfried Mandlburger (University of Stuttgart, Stuttgart, Germany)

Content: In this tutorial the basics of mapping topography and bathymetry from airborne laser scans and multi-spectral imagery are discussed. Special emphasis is laid on modern hybrid sensors providing, both, active laser scanners and passive camera systems on the same platform. Such multi-sensor systems are available for well established topographic LiDAR instruments utilizing IR laser sources, topo-bathymetric laser scanners using green laser radiation to measure submerged topography, and multi-spectral scanners especially for vegetation mapping, but also for recently introduced Single Photon LiDAR sensors. In all cases the laser scanners are usally coupled with RGB, CIR, or even RGBI cameras. The theoretical foundations for jointly processing scans and images for terrain mapping, both, above and below the water surface are first introduced in lecture sessions. The gained knowledge is subsequently applied and deepened in hands-on sessions based on real data using the scientific laser scanning and point cloud software OPALS.

Target group: PhD students/researchers/practitioners

Level: ~~beginner~~/**intermediate**/~~experts~~

Duration: ~~half-day~~/**full-day**