Kootenai River, ID
Topo-bathymetric LiDAR and Hyperspectral Imagery

In the fall of 2017, Quantum Spatial collected and processed topo-bathymetric LiDAR and hyperspectral imagery for a 54-mile stretch of the Kootenai River in Idaho. Funded by the United States Geological Survey (USGS) 3D Elevation Program (3DEP), the project was a complex, collaborative effort among USGS, University of Wyoming, ITRES, and Quantum Spatial to evaluate the commercial applicability of new remote sensing methodologies to accurately model river systems. The project contributed to USGS’s 3DEP/3D Nation and the Inland Bathymetry Research Project.

Complexity & Innovation

• Tested new remote sensing methodologies to discover and model fluvial processes
• Integrated multiple remote sensing instruments on a single airborne platform, validated data using robust ground and water-borne surveying
• Coordinated complex schedules among partners on a tight timeline
• Simultaneous project management for three primary workflows with multiple subtasks
• Assessed value of full waveform data from the topo-bathymetric sensor

Future Value

• Establish topo-bathymetric LiDAR as an efficient and cost-effective method for future inland riverine mapping
• Improve flood hazard preparedness with topo-bathymetric LiDAR and hyperspectral mapping
• Better understand river ecology, flow dynamics, and connectivity to better manage and restore fish habitat
• Quantify sediment transport and river morphology dynamics
• Increase accuracy of predictive models to guide future planning and development
• Inspire follow-on studies using similar methodologies and approach