Unmanned Aerial Systems Enhance Earth Observation Applications

ASL Environmental Sciences has been working on a project under the Earth Observation Application Development Program (EOADP), administered by the Canadian Space Agency (CSA), to explore the potential complementary uses of unmanned aerial systems (UAS) and spaceborne imagery to enhance Earth Observation (EO) applications.

ASL has teamed up with PAL Aerospace and the Hyperspectral–LiDAR Research Group (HLRG) at the University of Victoria to investigate the benefits of using imagery acquired by drones to support reclamation and remediation efforts on disturbances caused by industrial activities, such as seismic lines, access roads, pipelines, and transmission lines.

Building on our deep knowledge of and long expertise in EO applications, ASL has been working with various stakeholders and end-users from government, industry, and academia to understand the problems and obstacles that hinder their daily operations. From our previous EOADP project, where we developed methodologies to extract accurate land cover information from the integration of optical and RADAR imagery, we know that current spaceborne sensors do not have the spatial resolution to accurately characterize land vegetation within narrow linear features such as pipeline corridors and seismic lines.

This project will develop a concept utilizing both spaceborne EO and UAS technologies and include a cost–benefit analysis of mapping and monitoring scenarios for vegetation within narrow linear features. We will demonstrate the benefits through data products that complement and enhance spaceborne EO applications.

Photo credit: HLRG UVic
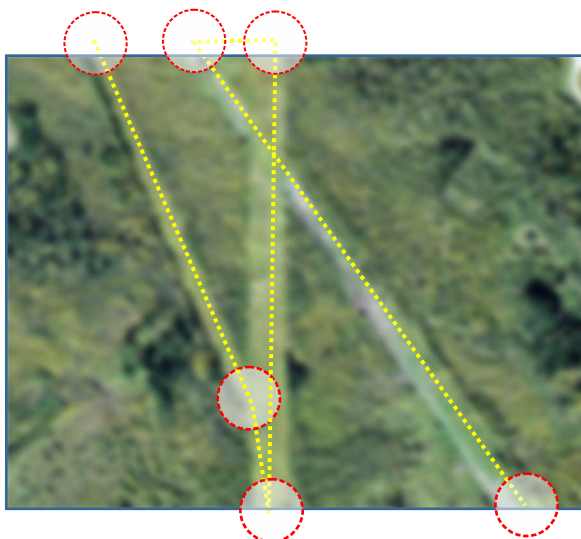
Coarse satellite image showing
UAS flight paths of linear corridors.
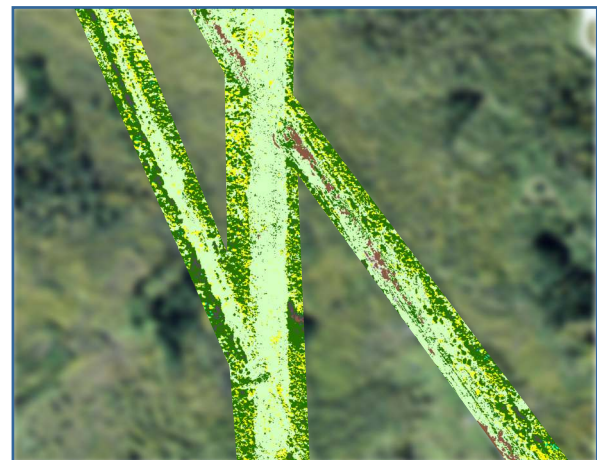
Linear corridor details
provided by UAS survey.