Comparing Workflow and Point Cloud Outputs of the Trimble SX10 TLS and senseFly eBee Plus Drone

Weber Armin and Lerch Thomas (Switzerland)

SUMMARY

One of the current hot debates in remote sensing is whether photogrammetry- or LIDAR-derived point clouds are superior, in terms of data accuracy, point density and noise.

In 2017, Swiss surveying company Lerch Weber AG conducted a site survey using two of the industry's leading survey instruments, to address exactly this question.

Objective: survey a large, four-hectare gravel pit in the Solothurn canton of Switzerland twice; once using senseFly's high-accuracy eBee Plus drone with VRS, and once using Trimble's SX10 terrestrial laser scanner. These technologies would them be compared in terms of in-field data collection time, in-office data processing, and the absolute accuracy, point density and overall quality of the point clouds they produced.

Results: Lerch Weber AG recorded a large time saving in the field using the UAV versus setting up the SX10 at different on-site locations. The absolute accuracies achieved by the two technologies were similar, with the TSL achieving the most precise results. The TSL achieved a significantly higher point density, however the volume and vertical differences between the TSL and drone point clouds were minor.

Conclusions: TLS and mapping drone technology each have their pro's and cons, suiting different types of needs and project. For surveyors in need of quick, highly efficient results with acceptable levels of absolute accuracy (collected in a safe off-site manner), a high-precision drone solution can be a good choice. For professionals who require the highest absolute accuracy and point density possible, a TLS solution is perhaps the most suitable option.

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