Supplementary Materials

Morgan, B.E.; Chipman, J.W.;Bolger, D.T.; Dietrich, J.T. Spatiotemporal analysis of vegetation cover change in a large ephemeral river: Multi-sensor fusion of unmanned aerial vehicle (UAV) and Landsat imagery. *Remote Sens.* **2021**,1, 5. https://dx.doi.org/10.3390/rs10.

Supplementary methods

Construction of UAV orthomosaics

      The JPEG images from each mission were processed in Agisoft PhotoScan Professional 1.3.0. Blurry and overexposed images were removed before sparse point cloud reconstruction. RGB images were aligned using high accuracy settings (reference pair preselection; 1,000 tie point limit; 40,000 key point limit). Images that were not aligned following multiple realignment attempts were eliminated. Dense point clouds were constructed using medium quality settings and aggressive depth filtering. Digital elevation models (DEMs) were built from the dense cloud using interpolation and the EPSG:32733 (WGS 84/ UTM Zone 33S) projection. DEMS were used to build the orthomosaics with geographic projection and mosaic blending.

      NIR images were aligned using medium accuracy settings with pair preselection disabled (8,000 tie point limit; 40,000 key point limit). For each mission, 8–12 ground control points (GCPs) were identified on the corresponding RGB orthoimage, imported into PhotoScan, and manually identified on the aligned NIR JPEG images. Dense point clouds, DEMs, orthomosaics were subsequently generated for the NIR images using the same settings as above.