Aerial images of a small island in Kobbefjord (SW Greenland) were acquired on 5 July 2017 using a DJI Phantom 3 Standard quadcopter drone. The imagery was acquired during the Mission Arctic citizen science expedition (Carlson et al., 2021). Overlapping images were acquired at 5 second intervals and the drone was manually piloted around the island in an approximate grid pattern. The drone flew at a constant altitude during each flight. The altitude data recorded in the image EXIF header was converted to relative altitude by running a python in Agisoft Metashape. The script was provided by Agisoft (https://github.com/agisoft-llc/metashape-scripts/blob/master/src/read_altitude_from_DJI_meta.py). Next, the contrast limited adaptive histogram equalization (CLAHE) method was used to improve contrast in the shallow, submerged areas around the island. The contrast-enhanced images were processed in Agisoft Metashape using the USGS workflow for coastal image processing (Over et al., 2021). Before processing, two camera groups were created, one for each flight and camera calibration group was created for each group (Tools→Camera Calibration). Following Over et al. (2021), images were aligned using High accuracy, generic and reference pre-selection, and key point and tie point limits of 60000 and 0, respectively. After alignment, the global spatial accuracy of the sparse point cloud was improved by identifying prominent rocks in the intertidal zone that were used as markers in Metashape. The positions of each corresponding marker were extracted from Bing satellite imagery of the area. This technique is similar to that described in Azim et al. (2019) and Rossiter et al. (2019). Four markers were used for this survey. After adding the markers, the reference data for each image was unselected, the four markers were selected, and the georeferencing parameters were recalculated and the camera alignment was optimized. Next, outliers in the sparse point cloud were identified and removed using an iterative gradual selection procedure, which reduced the reprojection error to 0.25. The dense point cloud was then computed using ultra high quality depth maps and mild filtering. The point colors and confidence were also computed. The dense cloud was cleaned by selecting all points with confidence values of 0-2 and then deleting them. Any remaining outliers (sinkers and fliers) were removed manually. The DEM was computed, followed by an orthomosaic. A digital elevation model (DEM) and an orthomosaic were exported at 5 cm resolution. For details, see the processing report that accompanies this dataset.

This dataset includes the following:

- CLAHE-enhanced drone images (128)
- 5 cm resolution digital elevation model in geotiff format (WGS84)
- 5 cm resolution orthomosaic in geotiff format (WGS84)
- Metashape processing report

References

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