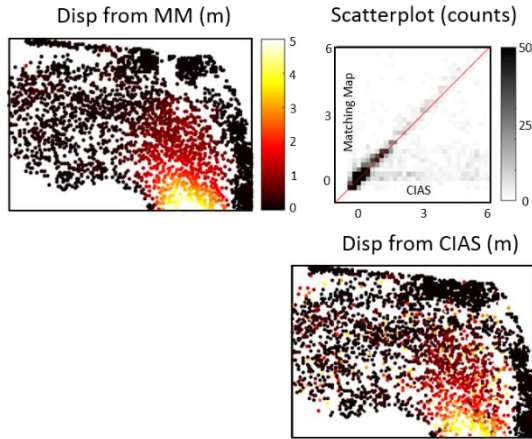


To ensure that our Matching Map Maker utility is reliable, we benchmarked it by comparison with velocity maps calculated using the well-established CIAS (<https://www.mn.uio.no/geo/english/research/projects/icemass/cias/>) and Imcorr (<https://nsidc.org/data/velmap/imcorr.html>) programs. The results below (Fig. 1 and 2) show that our method does not introduce bias nor inconsistencies.

(a) Comparison MM – CIAS: Northward displacement



(b) Comparison MM – CIAS: Eastward displacement

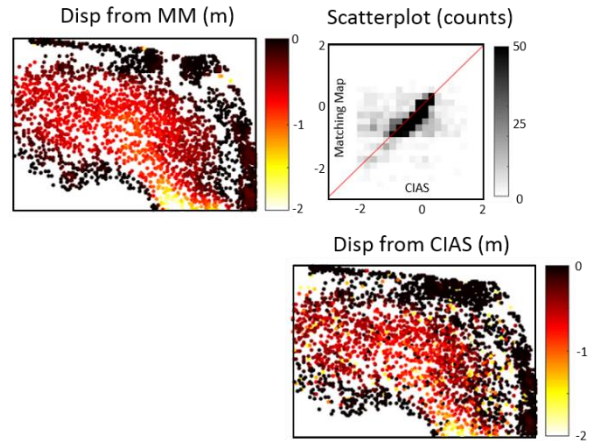
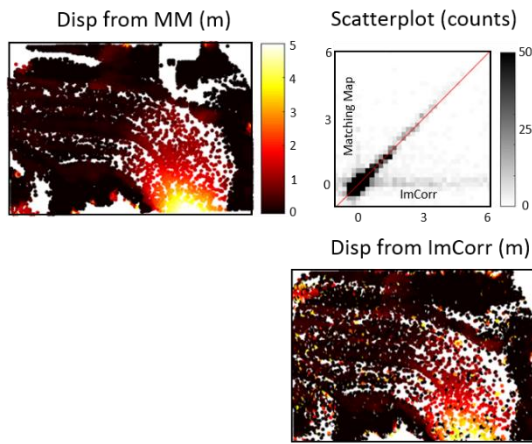


Figure 1: Comparison of estimated displacements derived from the Matching map (top plots) and from the CIAS software (bottom plots). Period of interest: July 13<sup>th</sup> – July 26<sup>th</sup>. (a) Northward displacement, (b) Eastward displacement. The only noticeable differences are due to residual noise in the CIAS results due to the simple set up we applied.

(a) Comparison MM – ImCorr: Northward displacement



(b) Comparison MM – ImCorr: Eastward displacement

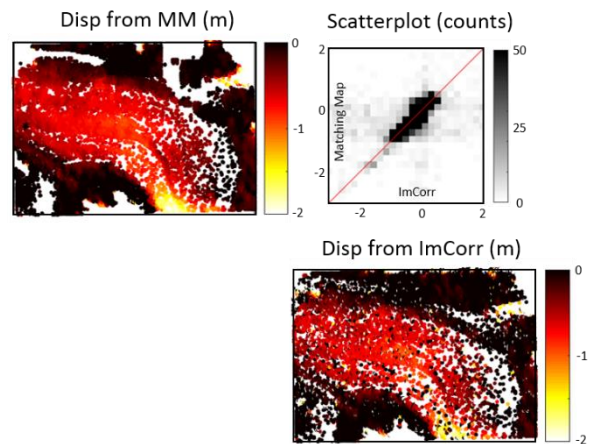


Figure 2: Comparison of estimated displacements derived from the Matching map (top plots) and from the ImCorr software (bottom plots). Period of interest: July 13<sup>th</sup> – July 26<sup>th</sup>. (a) Northward displacement, (b) Eastward displacement. The only noticeable differences are due to residual noise in the ImCorr results due to the simple set up we applied.