

*Supplement of*

## **Surface velocity of the Northeast Greenland Ice Stream (NEGIS): Assessment of interior velocities derived from satellite data by GPS**

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### **Supplementary title page (1 page)**

### **Supplementary figures (3 pages)**

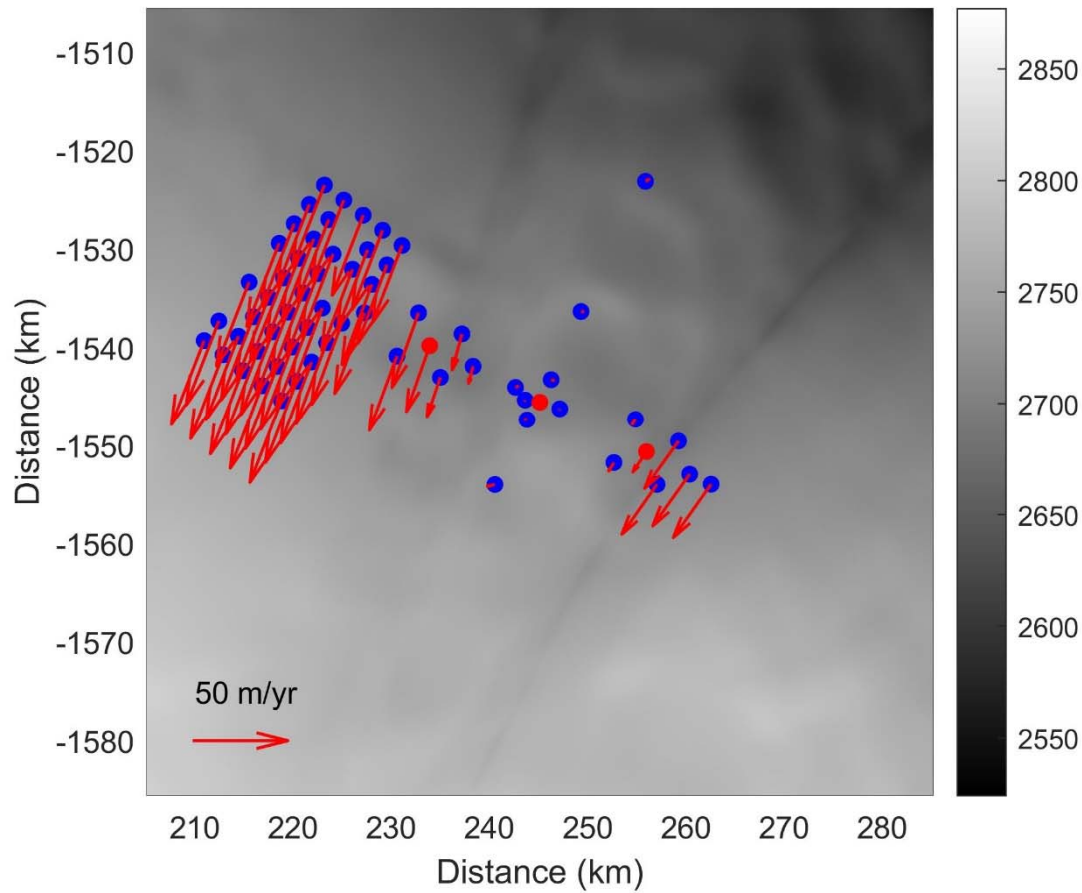
Figure S1, Figure S2, Figure S3.

### **Supplementary tables (separate files)**

Table S1. GPS derived positions and surface velocities of 63 strain net stakes.

Table S2. Complete list of 165 assessed velocity products.

### Supplementary Figure S1.

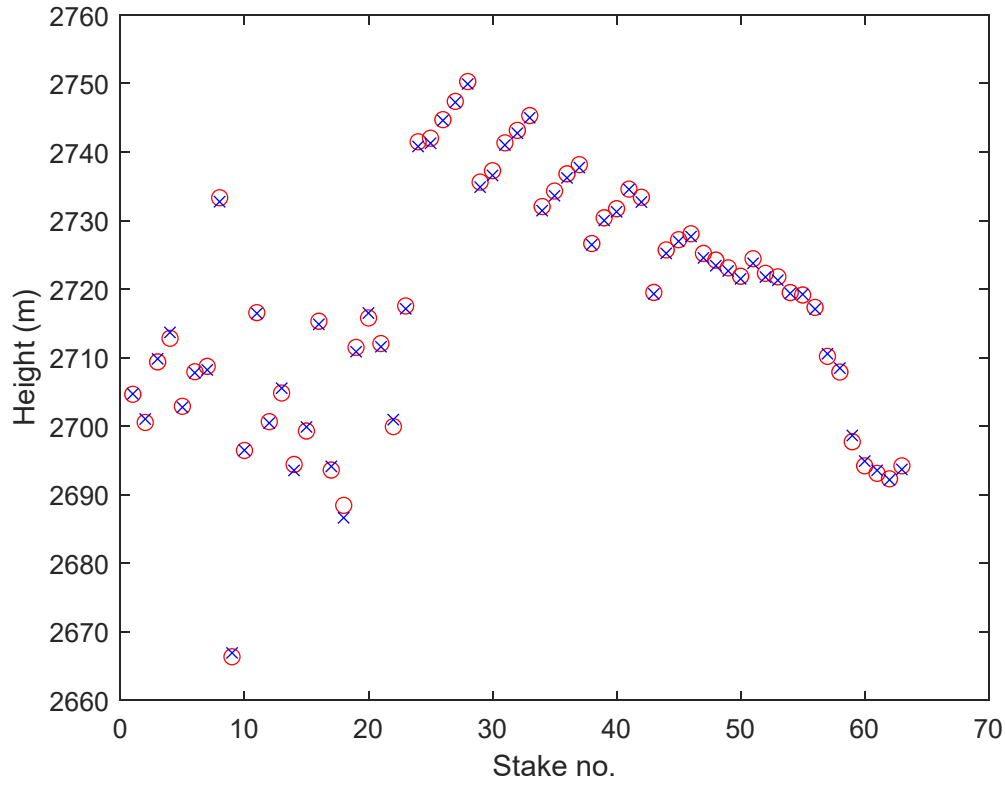


**Figure S1.** GPS derived surface velocities measured relative to central stake at the EastGRIP site (75°38'N, 35°60'W) (red arrows) and marked at all 63 stakes of the strain net (blue dots). The background shows the ArcticDEM (in meters above sea level) (Porter et al., 2018) in a 80 km x 80 km area around the EastGRIP site (red dot in the center). At three GPS stakes, strain rates along the direction of the flow are calculated, see Fig. 3 with the three stakes marked as red dots: 1) in the center (stake no. 1, stake id="EG-C-000"), 2) in the northern shear margin (stake no. 15, stake id="EG-N-021"), and 3) in the southern shear margin (stake no. 22, stake id="EG-S-022").

### References

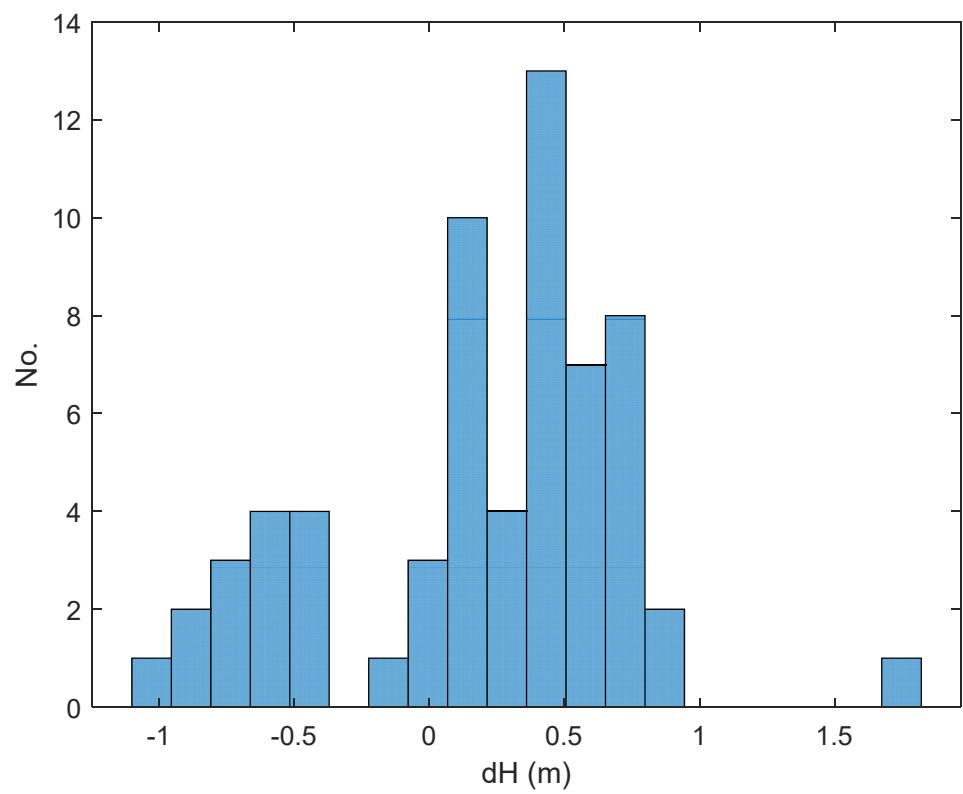
Porter, C., Morin, P., Howat, I., Noh, M.-J., Bates, B., Peterman, K., Keesey, S., Schlenk, M., Gardiner, J., Tomko, K., Willis, M., Kelleher, C., Cloutier, M., Husby, E., Foga, S., Nakamura, H., Platson, M., Wethington, M. Jr., Williamson, C., Bauer, G., Enos, J., Arnold, G., Kramer, W., Becker, P., Doshi, A., D'Souza, C., Cummins, P., Laurier, F., Bojesen, M.: ArcticDEM. <https://doi.org/10.7910/DVN/OHHUKH>, Harvard Dataverse, V1, 2018 [Date Accessed 2017-06-07].

### Supplementary Figure S2.



**Figure S2.** Comparison between GPS derived surface height (red circles) and ArcticDEM height at the same locations (Porter et al., 2018) (blue asterisks) at all 63 poles. The GPS surface height is the average height of all GPS observations at each pole. Notice that the GPS poles are observed annually from 2015 to 2019, with some poles established in 2016, 2017 and the last 40 poles in 2018. The ArcticDEM has a timestamp of 2017, but the precise date is not provided (Porter et al., 2018). The outlier at stake no. 18, stake id=“EG-S-011”(see Fig. S3), is located in an exceptionally narrow and deep trough at the southern shear margin (Fig. 3a).

**Supplementary Figure S3.**



**Figure S3.** Histogram of the differences between observed GPS surface heights and the ArcticDEM (Porter et al., 2018). The heights are accurate at all poles within 1m, except for one outlier at stake id="EG-S-011" located in an exceptionally deep and narrow trough in the southern shear margin (Fig 3a).