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*Supplement of*

## **ICESat laser altimetry over small mountain glaciers**

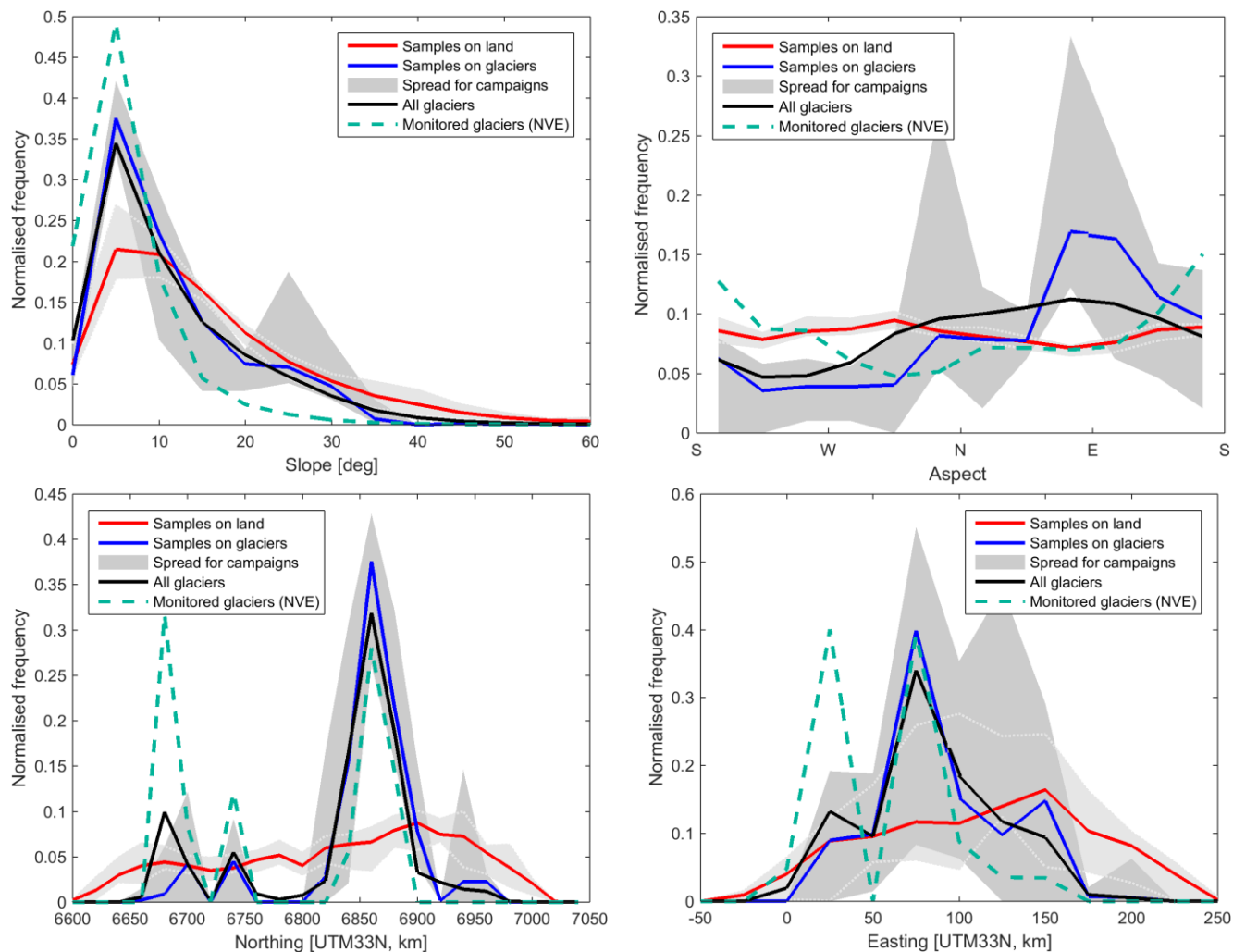
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**Table S1.** Number of ICESat footprints included in the analyses. The applied corrections ( $c_{tile}$ ,  $c_{date}$ ,  $c_{glac}$ ) considerably reduce elevation differences (dh) between ICESat and reference DEM.

|   | <i>ice</i>       | <i>ice border</i> | <i>land</i>        | <b>total</b>       |
|---|------------------|-------------------|--------------------|--------------------|
| All, unfiltered   | 3'752            | 1'365             | 164'510            | 169'627            |
| Filtered, total   | 3'272            | 1'144             | 120'896            | 125'312            |
| Filtered, Autumns 03-09<br>(03-08)                          | 1'268<br>(1'233) | 438<br>(436)      | 48'854<br>(48'089) | 50'560<br>(49'758) |
| thereof,  dh uncorrected  <10m                              | 1'006<br>(79%)   | 316<br>(72%)      | 46'035<br>(94%)    | 47'357<br>(94%)    |
| thereof,<br> dh $c_{tile}$ , $c_{date}$ , $c_{glac}$   <10m | 1'190<br>(94%)   | 349<br>(80%)      | 46'299<br>(95%)    | 47'838<br>(95%)    |
| Filtered, Winters 03-09                                     | 1'341            | 521               | 55'461             | 57'323             |
| Filtered, Junes 04-06                                       | 663              | 185               | 16'581             | 17'429             |



**Figure S1.** Representativeness of 2003-2008 ICESat autumn campaign samples in terms of footprint slope, aspect, and spatial distribution (easting/northing), compared to the entire glacierised surface in southern Norway, and to monitored glacierised surface (in-situ mass balance program by NVE). The grey spread encompasses the distributions of single ICESat autumn campaigns; where it is wide, the difference between individual campaigns is largest.