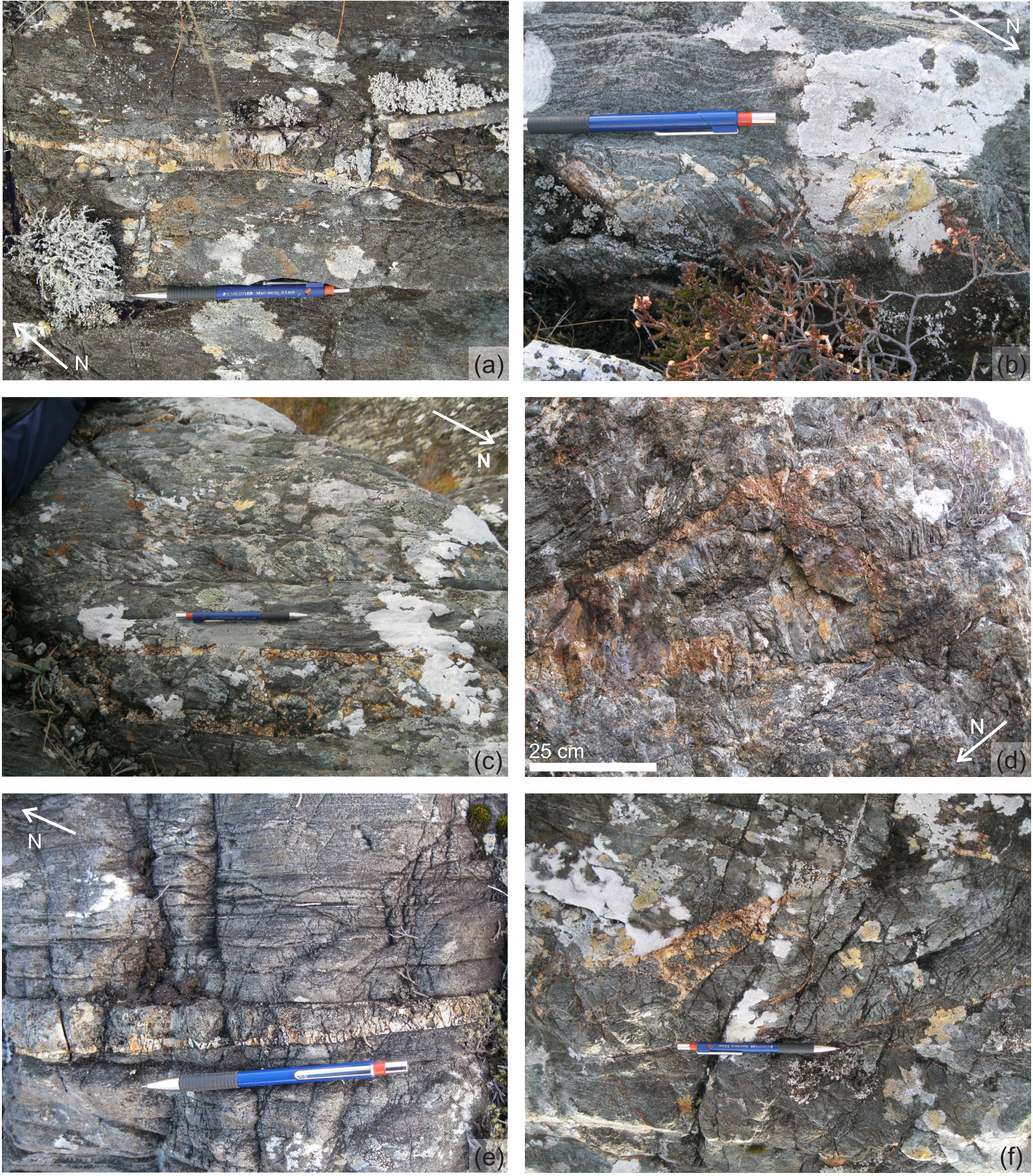
Supplementary Figure 1. Unannotated version of Fig. 4a: the fault vein (emphasised by orange shading) shows lateral steps (one indicated by arrowhead). The pseudotachylyte thickness along the fault varies from 3 - 15 mm, hammer length is 30 cm.



Supplementary Figure 2. Unannotated version of Figure 5: Field-scale geometries of pseudotachylyte (PST) faults in GSZ amphibolites. (**a**) pull-apart rhombochasm forms dilational stepover within pseudotachylyte fault cutting quartz vein in amphibolite (pencil length 15 cm) [57.7007°N 05.6173°W]; (**b**) reactivation of pre-existing shear band, with pseudotachylyte lining boundary (white lines) and internal (blue lines) faults as well as injecting into foliation and locally developing into pseudotachylyte breccias [57.7121°N 05.6228°W]; (**c**) reactivation of shear bands by brittle, pseudotachylyte-bearing faults, with breccia extensively developed in the underlying band [57.7668°N 05.6168°W]; (**d**) large pseudotachylyte fault branching at its tip [57.7007°N 05.6304°W]; (**e**) branching pseudotachylyte fault with injection veins developed off the thicker branch [57.6904°N 05.6066°W]; (**f**) angular, wedge-shaped breccia developed between two non-parallel faults, potentially part of a paired fault zone [57.7070°N 05.6219°W].