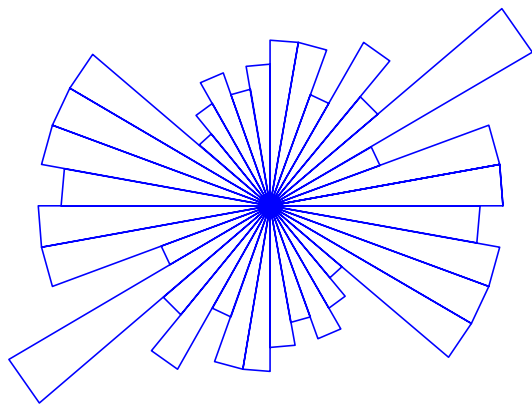
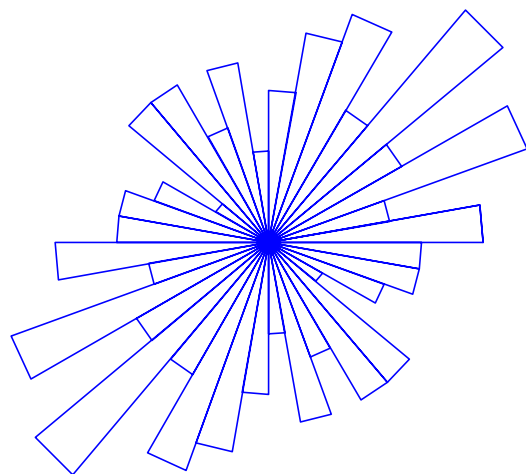


Trocolite

12-
10-
8-
6-
4-
2-
0-
-2-
-4-
-6-
-8-
-10-
-12-

**Anorthosite layer**

10-
8-
6-
4-
2-
0-
-2-
-4-
-6-
-8-
-10-

**Anorthosite autoliths**

18-
16-
14-
12-
10-
8-
6-
4-
2-
0-
-2-
-4-
-6-
-8-
-10-
-12-
-14-
-16-
-18-

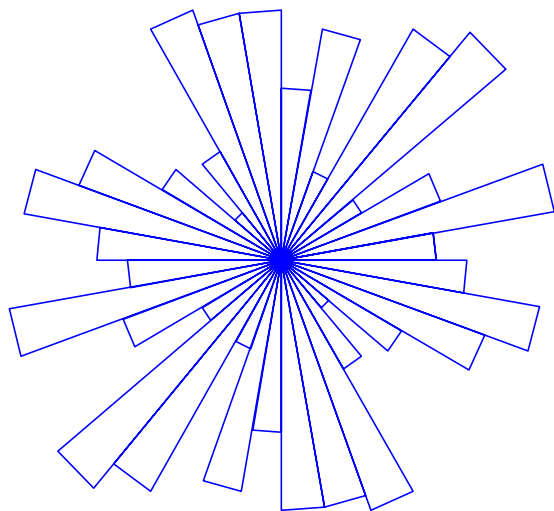


Fig. S1 Strength of lineation of the trocolite, anorthosite layer and anorthosite autoliths perpendicular to the overall layering visualised as rose diagram. Data was collected using CSDCorrections 1.5 by Higgins (2000).

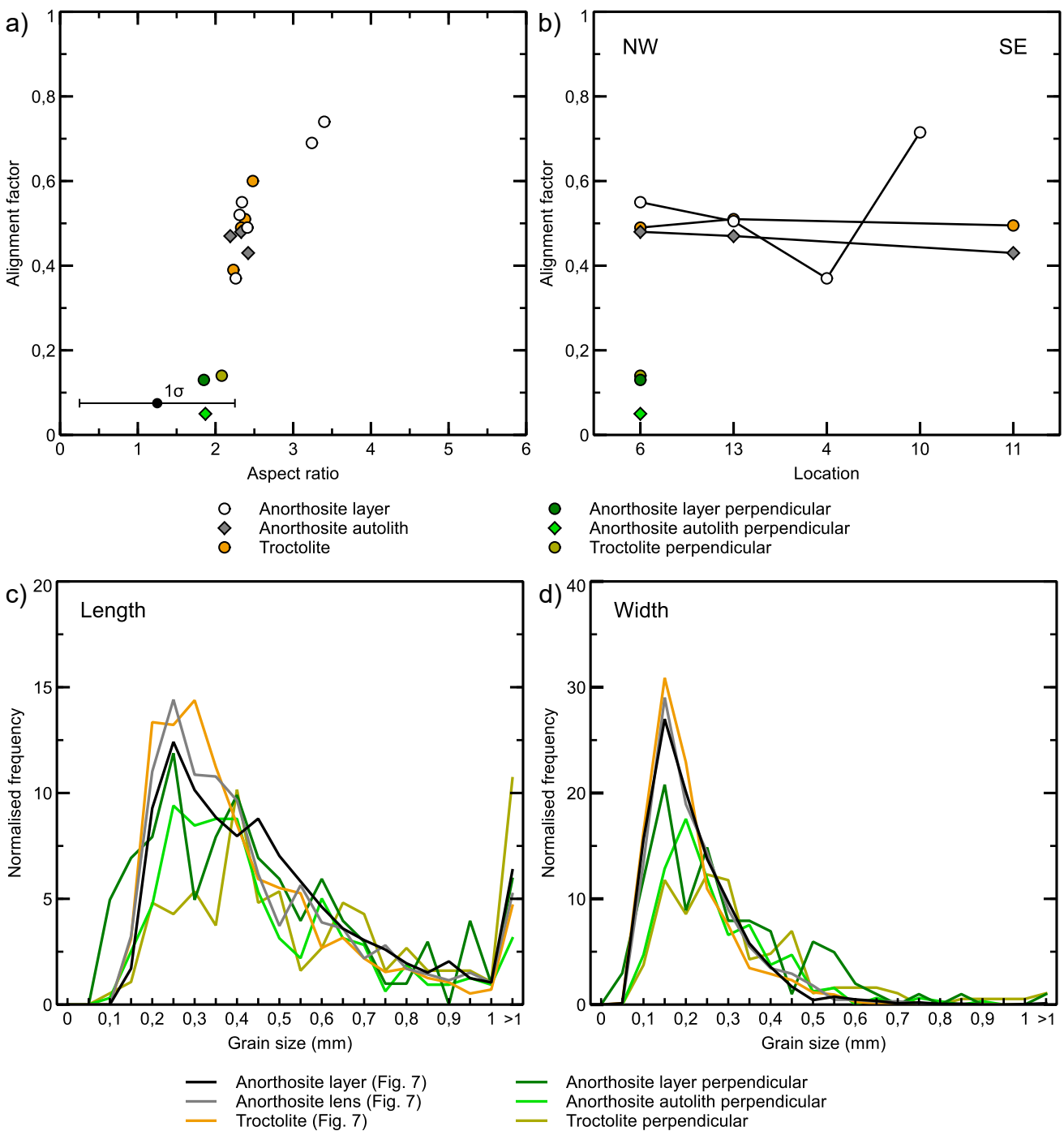


Fig. S2 **a** Alignment factor against aspect ratio, for the anorthosite layer, autoliths and troctolite, including plagioclase crystals perpendicular to the foliation (location 6). **b** Development of alignment factor of plagioclase along strike. Normalised frequency plot for **c** long and **d** short axes of plagioclase primocrysts in the anorthosite layer, autoliths and troctolite (see Fig. 7) and respective plagioclase crystals perpendicular to the foliation (location 6).

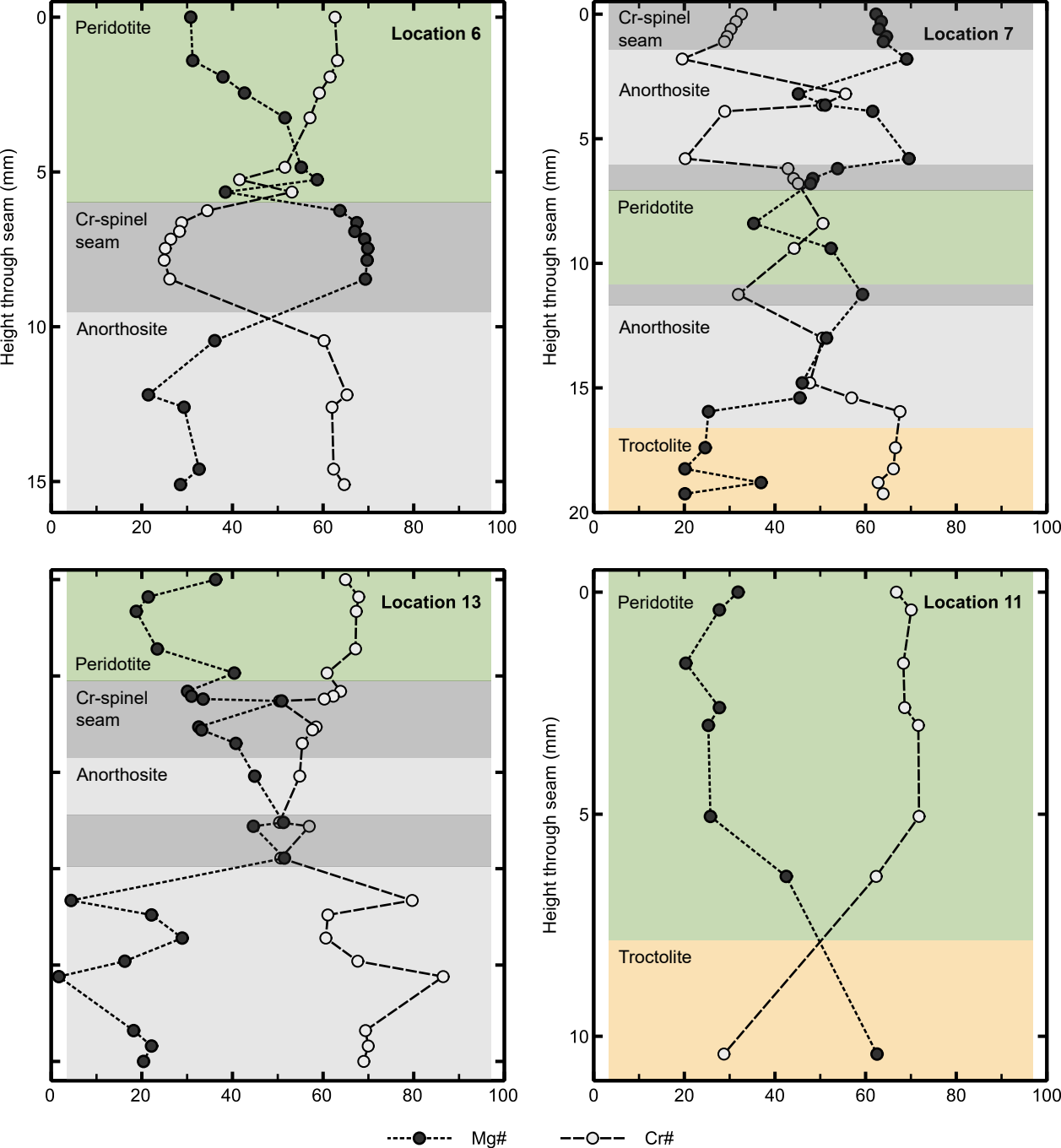


Fig. S3 Traverses across the Unit 7-8 boundary package showing Mg# (atomic ratio $\text{Mg}/(\text{Mg}+\text{Fe}^{2+})$) and Cr# (atomic ratio $\text{Cr}/(\text{Cr}+\text{Al})$) vs height.

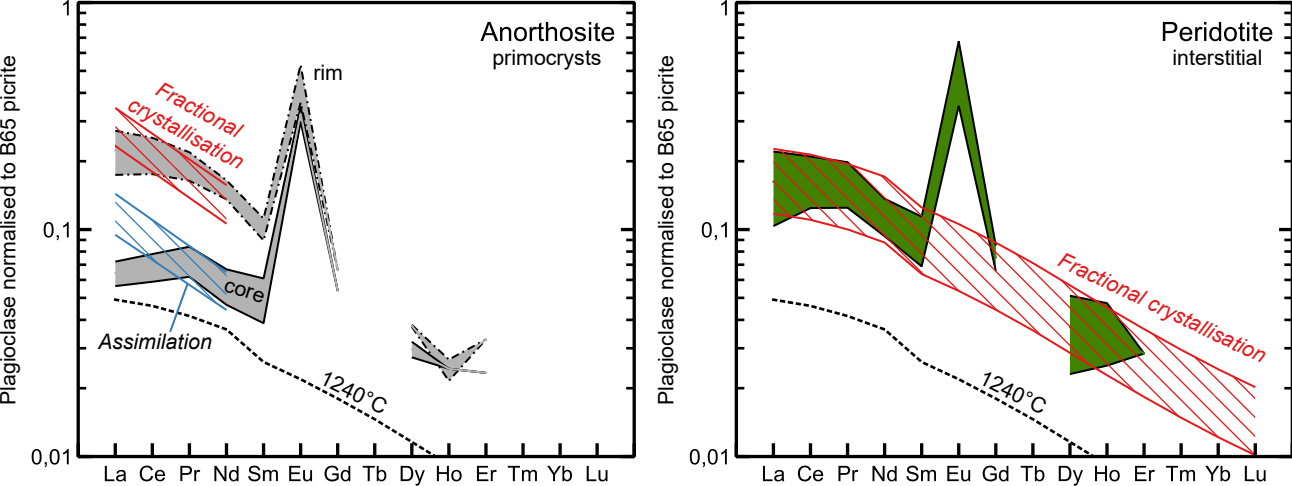


Fig. S4 Model of liquids in equilibrium REE element patterns of plagioclase (Fig. 12) normalised to the postulated parental magma B65 (Upton et al. 2002). Whole-rock data for the anorthosite are taken from O'Driscoll et al. (2009a). Dashed lines depict calculated partition coefficients for plagioclase in equilibrium with B65 at 1240°C (Sun et al. 2017). Theoretical partition coefficients were calculated using the spread sheet provided by Sun et al. (2017) inserting pressures of 0.015 GPa (Holness 1999) and measured plagioclase major composition. Plagioclase cores in the anorthosite layer crystallised from hybrid melt consisting of 40-50% picrite mixed with 50-60% of 20-30% partially molten troctolite. REE-rich rims grew successively from a differentiated melt (40-70% fractional crystallisation). Elevated REE pattern in interstitial plagioclase in peridotite crystallised from a differentiated picrite (60-80% fractional crystallisation).