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Supplement of

Partial melting of zoisite eclogite from the Sanddal area, North-East Greenland Caledonides

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Supplement SI

This supplement includes a set of pseudosections along with compositional isopleths and mineral isomodes modeled for the zoisite eclogite 03-57.

Figures

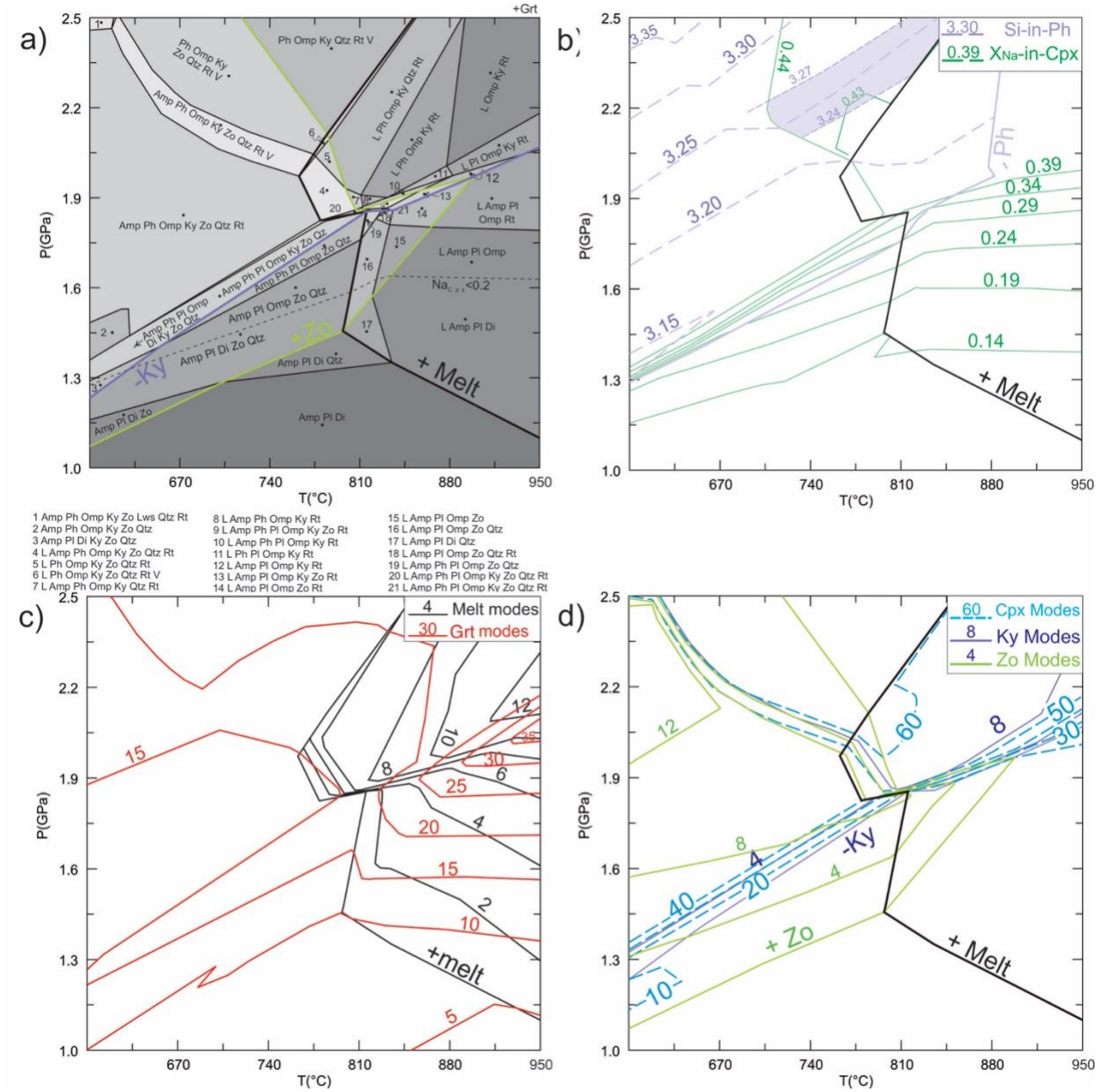
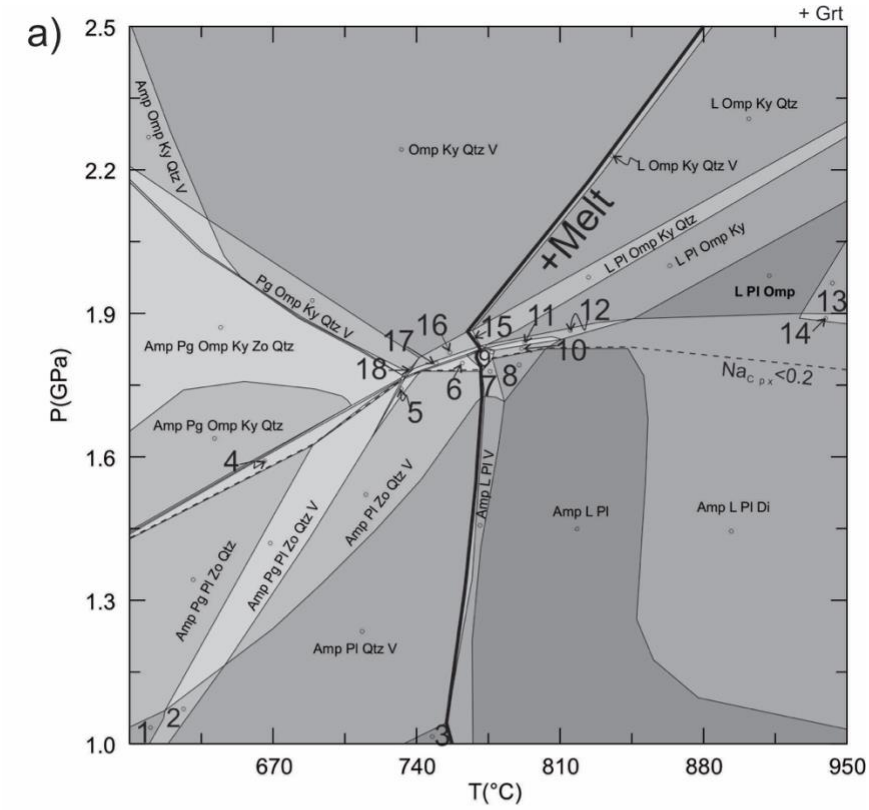


Figure S1. *P-T* pseudosection modeled with an XRF-derived bulk composition of sample 03-57. See text for detailed modeling parameters. a) Calculated *P-T* pseudosection along with mineral assemblages and highlighted phase boundaries of kyanite, zoisite, melt (L). Abbreviations are described in Table 1; V = fluid. Dashed line of Na_{Cpx} indicates Na content in M2 site in clinopyroxene; the line separates the mineral assemblages with calcic pyroxene (diopside, Na_{Cpx}

< 0.20) from those with sodic-calcic pyroxene (omphacite, Na_{Cpx} > 0.20). b) compositional isopleths of Si-in-Ph and X_{Na}-in-Cpx within the modeled *P-T* space. The purple area marks where the highest values of Si-in-Ph and X_{Na}-in-Cpx intersect. Cpx refers to omphacite at this pressure. Note that this intersection is not used to determine the true peak pressure, but to estimate a peak *P* to determine a *P-T* path across which an initial melt, that is reintegrated into bulk composition for a melt-reintegrated pseudosection, is generated. c) isomodes of garnet and melt. d) isomodes of clinopyroxene, kyanite and zoisite.



1 Amp Pg Pl Qtz
2 Amp Pg Pl Qtz V
3 Amp Pl V
4 Amp Pg Pl Omp Zo Qtz
5 Amp Pl Ky Zo Qtz V
6 Amp Pl Omp Zo Qtz V
7 Amp L Pl Zo V
8 Amp L Pl Zo
9 Amp L Pl Omp Zo V
10 Amp L Pl Omp Zo
11 Amp L Pl Omp Ky Zo
12 Amp L Pl Omp Ky
13 L Pl Omp Crn
14 Amp L Pl Omp Crn
15 L Pl Omp Ky Qtz V
16 Pl Omp Ky Qtz V
17 Amp Pl Omp Ky Qtz V
18 Pg Pl Omp Ky Qtz V

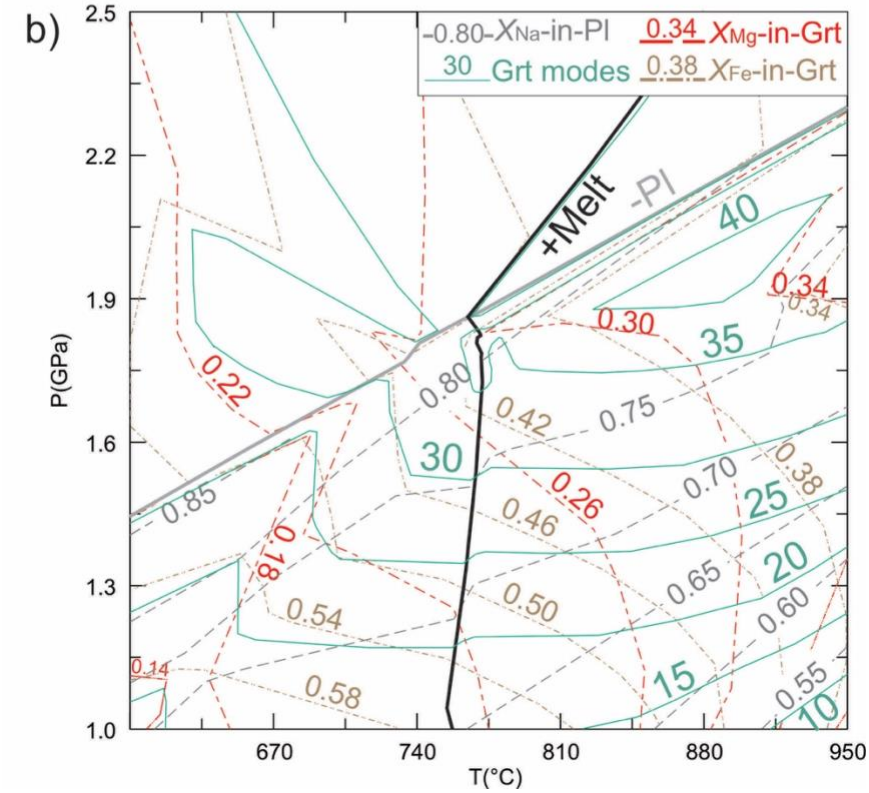
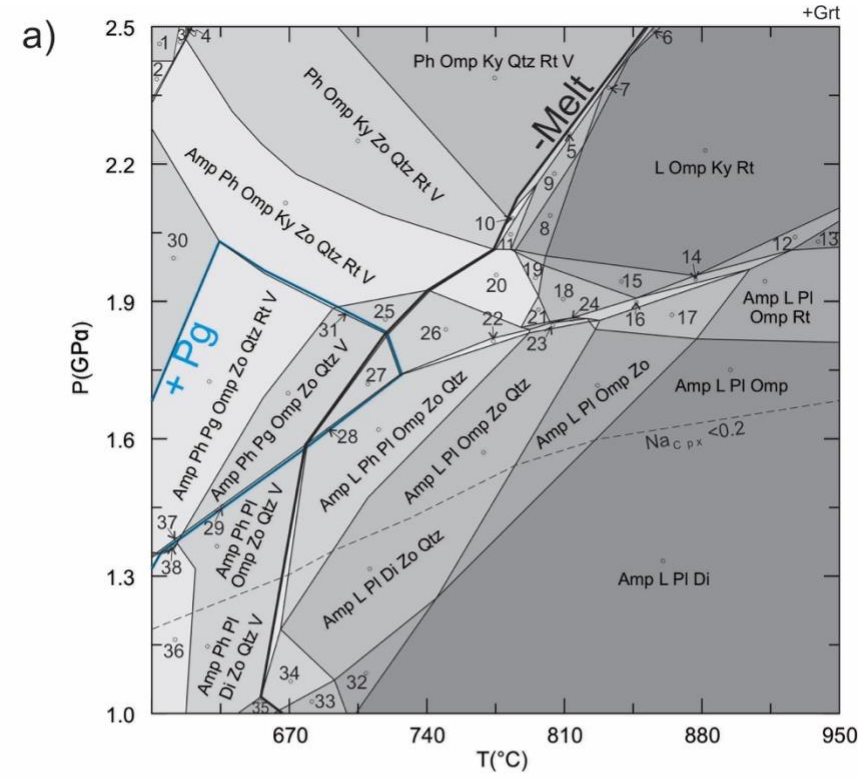


Figure S2. *P-T* pseudosection modeled for a melt domain in zoisite eclogite 03-57. See text for detailed modeling parameters. a) calculated *P-T* pseudosection of the melt domain, with the solidus curve highlighted. The field with observed mineral assemblage of garnet, plagioclase, omphacite and melt are shown with bold fonts at 1.9–2.1 GPa, 850–950 °C. Dashed line of Na_{Cpx} is the same as in Fig. 7. Abbreviations are the same as in Fig. 7. b) Isopleths of X_{Na}-in-feldspar, X_{Fe}-in-garnet and X_{Mg}-in-garnet and isomodes of garnet within the *P-T* space.



1 Amp Ph Omp Ky Lws Qtz Rt
2 Amp Ph Omp Ky Zo Lws Qtz Rt
3 Amp Ph Omp Ky Lws Qtz Rt V
4 Ph Omp Ky Lws Qtz Rt V
5 L Ph Omp Ky Qtz Rt V
6 L Omp Ky Rt V
7 L Omp Ky Qtz Rt
8 L Ph Omp Ky Rt
9 L Ph Omp Ky Qtz Rt
10 L Ph Omp Ky Zo Qtz Rt V
11 L Ph Omp Ky Zo Qtz Rt
12 L Pl Omp Ky Rt
13 L Pl Omp Rt
14 Amp L Pl Omp Ky Rt
15 Amp L Omp Ky Rt
16 Amp L Pl Omp Ky Zo Rt
17 Amp L Pl Omp Zo Rt
18 Amp L Omp Ky Zo Rt
19 Amp L Ph Omp Ky Zo Rt
20 Amp L Ph Omp Ky Zo Qtz Rt
21 Amp L Omp Ky Zo Qtz Rt
22 Amp L Ph Pl Omp Ky Zo Qtz
23 Amp L Pl Omp Ky Zo Qtz
24 Amp L Pl Omp Ky Zo
25 Amp Ph Omp Ky Zo Qtz V
26 Amp L Ph Omp Ky Zo Qtz
27 Amp L Ph Pg Omp Zo Qtz
28 Amp L Ph Pg Pl Omp Zo Qtz
29 Amp Ph Pg Pl Omp Zo Qtz V
30 Amp Ph Omp Zo Qtz Rt V
31 Amp Ph Pg Omp Ky Zo Qtz V
32 Amp L Pl Di Qtz
33 Amp L Pl Di Qtz V
34 Amp L Pl Di Zo Qtz V
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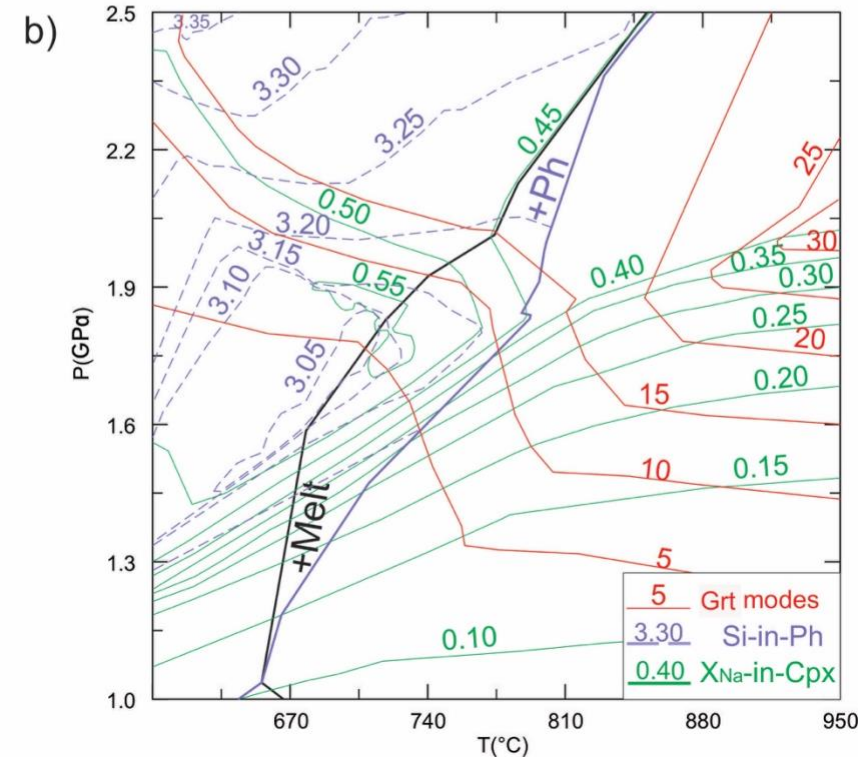

Figure S3. a) Calculated *P-T* phase diagram for a melt-reintegrated composition of the sample 03-57. See text for detailed modeling parameters. The pseudosection is highlighted for the phase boundaries of paragonite and melt, and is saturated with fluid at subsolidus conditions. Dashed line of Na_{Cpx} and mineral abbreviations are the same as in Fig. 7. b) Isopleths of Si-in-Ph and X_{Na}-in-Cpx and isomodes of garnet on the modeled diagram.

Supplement SII

Bulk composition of the eclogite 03-59.

The bulk composition was obtained using wavelength dispersive X-ray fluorescence (XRF) spectrometry at Washington State University (Table S1).

Table S1. XRF-derived bulk rock composition of the zoisite eclogite 03-59. Note: All the measured iron was assumed to be FeO. LOI stands for loss on ignition. – marks unconsidered datasets.

	XRF data
Na_2O	2.08
MgO	3.32
Al_2O_3	27.64
SiO_2	48.17
K_2O	0.14
CaO	14.43
TiO_2	0.122
MnO	0.047
FeO	3.10
P_2O_5	0.035
Total	99.10
LOI (%)	0.48