

## Supplemental material

S1. Electron microprobe analyses of olivine and spinels of 1NU18 dunite, which represents the discordant dunite.

Elements	Olivine	Olivine	Olivine	Olivine	Spinel	Spinel	Spinel	Spinel
Na <sub>2</sub> O	0.01	0	0	0	0.02	0.02	0	0.01
MgO	51.22	50.97	51.22	51.27	13.01	12.31	12.68	13.61
Al <sub>2</sub> O <sub>3</sub>	0	0	0	0	17.46	14.53	16.06	20.84
SiO <sub>2</sub>	41.77	41.98	41.73	41.9	0.04	0.03	0.04	0.08
P <sub>2</sub> O <sub>5</sub>	0	0	0	0.01	0	0.03	0	0
K <sub>2</sub> O	0	0	0.01	0	0	0	0	0
CaO	0.03	0.02	0.04	0.07	0	0.01	0	0.04
TiO <sub>2</sub>	0	0.04	0.02	0.03	0.18	0.17	0.18	0.08
MnO	0.17	0.19	0.16	0.12	0.28	0.32	0.3	0.25
FeO	6.29	6.48	6.41	6.35	15.35	15.61	15.21	14.62
Cr <sub>2</sub> O <sub>3</sub>	0.01	0	0.06	0	52.72	56.53	55.37	50.55
Total	99.5	99.68	99.65	99.76	99.06	99.55	99.85	100.07
Na	0	0	0	0	0.009	0.01	0	0.004
Mg	1.847	1.835	1.846	1.844	4.915	4.705	4.79	5
Al	0	0	0	0	5.217	4.39	4.796	6.054
Si	1.01	1.014	1.009	1.011	0.01	0.006	0.011	0.019
P	0	0	0	0	0	0.006	0	0
K	0	0	0	0	0	0	0	0.001
Ca	0.001	0.001	0.001	0.002	0	0.004	0	0.011
Ti	0	0.001	0	0.001	0.035	0.032	0.034	0.015
Mn	0.003	0.004	0.003	0.002	0.06	0.069	0.064	0.051
Fe	0.127	0.131	0.13	0.128	3.254	3.348	3.223	3.013
Cr	0	0	0.001	0	10.567	11.461	11.092	9.851
Total	2.99	2.985	2.99	2.988	24.067	24.032	24.011	24.017
	(O = 4)	(O = 4)	(O = 4)	(O = 4)	(O = 32)	(O = 32)	(O = 32)	(O = 32)
Mg#	93.57	93.34	93.42	93.51	60.17	58.38	59.78	62.4
Cr#					66.95	72.3	69.81	61.94

S2. Mineral chemistry data of 1M1 lherzolite xenolith which is a xenolith in the discordant dunite channel.

Elements	Olivine	Olivine	Olivine	Olivine	Spinel	Spinel	Cpx	Cpx
Na <sub>2</sub> O	0.01	0.01	0	0	0	0	0.19	0.16
MgO	48.51	48.41	48.31	48.45	11.57	11.58	16.62	16.69
Al <sub>2</sub> O <sub>3</sub>	0	0	0	0	23.43	23.32	2.56	2.55
SiO <sub>2</sub>	40.88	40.82	40.73	40.53	0.07	0.12	52.61	52.99
P <sub>2</sub> O <sub>5</sub>	0	0.01	0	0	0.01	0.07	0	0
K <sub>2</sub> O	0	0	0	0.01	0	0	0	0.01
CaO	0.03	0.01	0.03	0.01	0.01	0	24.05	23.94
TiO <sub>2</sub>	0.01	0	0.06	0.06	0.17	0.11	0.04	0.14
Cr <sub>2</sub> O <sub>3</sub>	0	0.03	0	0.04	41.8	42.87	1.16	0.27
MnO	0.17	0.12	0.1	0.07	0.38	0.24	0.07	0.03
FeO	9.11	9.58	9.5	9.7	18.6	18.47	2.13	2.4
NiO	0.45	0.47	0.37	0.39	0.07	0.12	0.02	0.01
Total	99.17	99.46	99.1	99.26	96.09	96.89	99.45	99.19
Na	0	0.001	0	0	0	0	0.013	0.011
Mg	1.783	1.778	1.779	1.784	0.554	0.55	0.908	0.912
Al	0	0	0	0	0.886	0.875	0.111	0.110
Si	1.008	1.005	1.006	1.001	0.002	0.004	1.928	1.942
P	0	0	0	0	0	0.001	0.000	0.000
K	0	0	0	0	0	0	0.000	0.000
Ca	0.001	0	0.001	0	0	0	0.944	0.940
Ti	0	0	0.001	0.001	0.004	0.003	0.001	0.004
Cr	0	0.001	0	0.001	1.061	1.079	0.034	0.008
Mn	0.004	0.002	0.002	0.001	0.01	0.006	0.002	0.001
Fe	0.188	0.197	0.196	0.2	0.499	0.492	0.065	0.074
Ni	0.009	0.009	0.007	0.008	0.002	0.003	0.001	0.000
Total cation	2.992 (4 oxygen)	2.994 (4 oxygen)	2.993 (4 oxygen)	2.997 (4 oxygen)	3.018 (4 oxygen)	3.013 (4 oxygen)	4.006 (6 oxygen)	4.001 (6 oxygen)
Mg#	90.5	90	90	89.9	52.6	52.8	93.3	92.5
Cr#					54.5	55.2		



S3. Photomicrograph of an orthopyroxene porphyroblast showing 10 spots for Electron Microprobe Analysis (in S4). This grain is adjacent and similar to the one containing the relict grains.

S4. Electron Probe Micro Analyses of points, 1 to 10 across an enstatite grain (S3). The analyzed grain is on the opposite side of the high pressure relict bearing enstatite. The enstatite – ferrosilite solid solution is calculated from 1 – 10 and they are respectively – En<sub>91.35</sub> Fs<sub>8.65</sub> (1), En<sub>90.6</sub> Fs<sub>9.4</sub> (2), En<sub>90.5</sub> Fs<sub>9.5</sub> (3), En<sub>90.7</sub> Fs<sub>9.3</sub> (4), En<sub>90.7</sub> Fs<sub>9.3</sub> (5), En<sub>89.9</sub> Fs<sub>10.1</sub> (6), En<sub>91.1</sub> Fs<sub>8.9</sub> (7), En<sub>90.6</sub> Fs<sub>9.4</sub> (8), En<sub>90.2</sub> Fs<sub>9.8</sub> (9), En<sub>90.6</sub> Fs<sub>9.4</sub> (10).

Oxides	1	2	3	4	5	6	7	8	9	10
Na <sub>2</sub> O	0	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.04	0.21
MgO	31.78	33.1	33.01	31.59	31.38	33.1	32.19	33.32	33.26	33.3
Al <sub>2</sub> O <sub>3</sub>	1.87	2.01	1.99	2.11	2.03	1.93	1.9	1.95	1.96	1.7
SiO <sub>2</sub>	56.01	56.29	56.22	55.69	55.72	55.87	55.86	55.72	55.85	56.19
P <sub>2</sub> O <sub>5</sub>	0	0	0.01	0.02	0.06	0	0.01	0.01	0	0
K <sub>2</sub> O	0	0	0	0.02	0	0.01	0	0.02	0.04	0.08
CaO	3.1	0.73	0.79	3.15	3.67	0.73	2.14	0.67	0.61	0.59
TiO <sub>2</sub>	0.03	0.02	0	0	0.05	0.01	0.01	0.05	0.08	0.06
Cr <sub>2</sub> O <sub>3</sub>	0.49	0.52	0.58	0.52	0.67	0.7	0.71	0.59	0.66	0.43
MnO	0.15	0.18	0.14	0.11	0.14	0.15	0.26	0.17	0.21	0.2
FeO	5.36	6.13	6.16	5.81	5.74	6.61	5.6	6.2	6.4	6.12
NiO	0.07	0.08	0.02	0.07	0.16	0.05	0.1	0.08	0.1	0.16
Total	98.86	99.07	98.94	99.11	99.66	99.18	98.79	98.8	99.22	99.03
Na	0	0	0.001	0	0.003	0.001	0.001	0.001	0.003	0.014
Mg	1.659	1.719	1.716	1.65	1.633	1.723	1.682	1.738	1.73	1.732
Al	0.077	0.083	0.082	0.087	0.083	0.08	0.079	0.08	0.081	0.07
Si	1.962	1.961	1.961	1.951	1.946	1.951	1.958	1.949	1.948	1.961
P	0	0	0	0.001	0.002	0	0	0	0	0
K	0	0	0	0.001	0	0	0	0.001	0.002	0.004
Ca	0.116	0.027	0.03	0.118	0.137	0.027	0.08	0.025	0.023	0.022
Ti	0.001	0	0	0	0.001	0	0	0.001	0.002	0.001
Cr	0.014	0.014	0.016	0.014	0.018	0.019	0.02	0.016	0.018	0.012
Mn	0.004	0.005	0.004	0.003	0.004	0.005	0.008	0.005	0.006	0.006
Fe	0.157	0.179	0.18	0.17	0.168	0.193	0.164	0.181	0.187	0.179
Ni	0.002	0.002	0.001	0.002	0.005	0.001	0.003	0.002	0.003	0.004
Total (O = 6)	3.992	3.991	3.99	3.998	4	4	3.993	4.002	4.002	4.005
Mg#	91.35	90.6	90.5	90.7	90.7	89.9	91.1	90.6	90.2	90.6

S5. Mineral chemistry data of 1NU27 lherzolite. The rock body occurs as xenolith in the discordant dunite channel.

Elements	Olivine	Olivine	Olivine	Olivine	Spinel	Spinel	Cpx	Cpx	Opx	Opx
Na <sub>2</sub> O	0	0	0	0.016	0	0.031	0.01	0.02	0	0
MgO	49.25	49.27	50.148	50.239	10.5	10.978	17.6	17.94	34.09	34.04
Al <sub>2</sub> O <sub>3</sub>	0	0.01	0	0.003	15.16	15.276	1	0.8	0.91	0.95
SiO <sub>2</sub>	41.63	41.05	41.159	40.807	0.05	0.013	54.34	55.12	57.98	57.74
P <sub>2</sub> O <sub>5</sub>	0.03	0	-	-	0.02	-	0.01	0	0	0
K <sub>2</sub> O	0	0	0.001	0	0	0	0	0	0	0
CaO	0.01	0.01	0	0	0.02	0	24.8	24.06	0.65	0.65
TiO <sub>2</sub>	0.02	0.03	0.008	0	0.05	0.031	0.04	0	0	0
Cr <sub>2</sub> O <sub>3</sub>	0.04	0	0.006	0	53.47	48.166	0.68	0.5	0.37	0.29
MnO	0.19	0.17	0.117	0.108	0.27	0.346	0.08	0.1	0.11	0.17
FeO	9.05	9.04	9.067	8.663	19.28	20.438	1.65	1.64	5.93	5.74
Total	100.24	99.58	100.506	99.836	98.82	95.279	100.22	100.17	100.04	99.58
Na	0	0	0	0	0	0.002	0	0.001	0	0
Mg	1.784	1.799	1.815	1.828	0.511	0.555	0.951	0.965	1.746	1.751
Al	0	0	0	0	0.583	0.61	0.043	0.034	0.037	0.039
Si	1.012	1.005	0.999	0.996	0.002	0	1.969	1.99	1.993	1.992
P	0.001	0	-	-	0	-	0	0	0	0
K	0	0	0	0	0	0	0	0	0	0
Ca	0	0	0	0	0	0	0.962	0.93	0.024	0.024
Ti	0	0.001	0	0	0.001	0	0.001	0	0	0
Cr	0.001	0	0	0	1.381	1.291	0.019	0.014	0.01	0.008
Mn	0.004	0.003	0.002	0.002	0.007	0.01	0.003	0.003	0.003	0.005
Fe	0.184	0.185	0.184	0.177	0.527	0.579	0.05	0.049	0.17	0.166
Total	2.986	2.994	3	3.003	3.012	3.047	3.999	3.987	3.984	3.984
	(O = 4)	(O = 4)	(O = 4)	(O = 4)	(O = 4)	(O = 4)	(O = 6)	(O = 6)	(O = 6)	(O = 6)
Mg#	90.65	90.67	90.8	91.2	49.23	48.9	95	95.17	91.13	91.34
Cr#					70.3	67.9				