Electronic supplement/Appendix C: Parameters used for calculating fluid compositions in figure 4 to 6.

	DM [1]	SubdSed[2, 3]	N-MORB	Dcpx/fluid	Dgrt/fluid	Drutile/fluid
Mo	0.0250	5.49 [3]	0.408 [4]	$40/10^{(0.435*\log fO2+0.42*\log NaCl-1.8*1000/T+4.8)}$ *	$12/10^{(0.435*\log fO2+0.42*\log NaCl-1.8*1000/T+4.8)}$ *	$87670/10^{(0.435*\log fO2+0.42*\log NaCl-1.8*1000/T+4.8)}$ *
Ce	0.7720	57.3	12.0 [5]	2.000 [7]	0.400 [7]	2.000 [7]
W	0.0024 [6]	1.69 [3]	0.038 [6]	$60/10^{(0.07*\log fO2-4.7236*1000/T+4.4271)}$ *	$12/10^{(0.07*\log fO2-4.7236*1000/T+4.4271)}$ *	1.250
U	0.0047	1.68	0.0711 [5]	$11/10^{(2.681 + 0.1433\log fO2+0.594Cl(mol))}$ 8	$40/10^{(2.681 + 0.1433\log fO2+0.594Cl(mol))}$ 8	$94/10^{(1.7954 + 0.1433\log fO2+0.594Cl(mol))}$ 8-9
Th	0.0137	6.91	0.1871 [5]	1.190 [8]	0.610 [8]	0.100 [9]
Nb	0.2100	8.94	3.507 [5]	0.172 [7]	0.204 [7]	200.0 [7]
La	0.2340	28.8	3.895 [5]	1.429 [7]	0.204 [7]	1.250 [7]

1 - Depleted mantle - Salters and Stracke (2004)

2 - Subducted sediment - Plank and Langmuir (1998)

3 - Subducted sediment - calculated following Plank and Langmuir (1998) as 76wt% terrigenous sediment (Upper Continental Crust - Rudnick and Gao, 2004)+17wt% of pelagic sediment (calculated as pelagic clay - Li, 1991)+7wt% of mineral bound water (assumed not to contain W and Mo)

4 - Sun et al. (2003)

5 - Hart et al. (1999)

6 - König et al. (2011)

7 - Stalder et al. (1998)

8 - Bali et al. (2011)

9 - Brenan et al. (1994)

8-9 - The fO_2 and salinity dependence of fluid/rutile partition coefficient was estimated based on the U-contents in U-saturated experiments of Brenan et al. (1994) combined with the U-saturated fluid compositions determined for the relevant pressure based on Bali et al. (2011). According to Stalder et al. (1998) fluid/rutile partition coefficients are independent of pressure.

*formula in nominator gives concentrations in molality (see text) which should be recalculated to ppm!

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