

Table S3. Water concentrations and oxygen and hydrogen isotope data

Sample		$\mu\text{mols/mg O}_2$	$\delta^{18}\text{O}$ , VSMOW	$\delta\text{D}$ , VSMOW	H <sub>2</sub> O wt%
SCO *			4.97		
SCO			5.37		
U1440B 9G		13.79	5.42	-71.2	0.41
U1440B 9G		11.8	5.36	-66.1	0.47
U1440B 19R-1	14/15	14.63	3.88	-60.7	0.75
U1440B 19R-1	14/15	14.13	4.38		
U1440B 19R-1	14/15	11.36	4.62		
U1440B 19R-1	14/15	10.88	4.70		
U1440B 19R-1	ave.		4.40	-60.7	0.75
U1440B 20R1	53/54	12.51	5.23	-72.9	0.39
U1440B 20R1	53/54	13.41	5.66		
U1440B 20R1	53/54	13.7	5.44		
U1440B 20R1	53/54	13.67	5.65		
U1440B 20R1	ave.		5.50	-72.9	0.39
U1440B 24R1	29/31	13.46	5.12	-66.6	0.29
U1440B 24R1	29/31	13.88	5.14		
U1440B 24R1	29/31	12.3	5.22		
U1440B 24R1	ave.		5.16		
U1440B 31R1	63/68	12.90	5.12	-68.5	0.65
U1440B 31R1	63/68	10.08	5.13		
U1440B 31R1	ave.		5.12	-68.5	0.65
U1440B 30R1	19/21	13.84	5.70	-54.7	1.76
U1439A 21X-U	cc	14.16	5.85	-62.1	1.32
U1439C 5R2	17/20	13.45	5.91	-50.7	1.75
U1442A 11R-1	31/33	15.01	6.15	-62.4	1.71
U1442A 12R1	12/14	14.63	5.92	-59.8	1.60
U1442A 26R1	54/58	13.97	5.66	-56.3	1.77
U1439C 19R4	84/87	14.55	5.73	-58.1	1.88
U1439C 29R4	113/117	13.43	5.80	-77.0	2.01
U1439C 29R4	113/117			-60.5	2.07
U1439C 29R4	ave.		5.80	-68.75	2.04
U1439C 35R-4	106/108	10.09	5.58	-62.8	2.26
U1439C 35R-4	106/108	12.6	5.74		
U1439C 35R-4	ave.		5.66	-62.8	2.26
U1442A 30R4	45/47	14.3	5.75	-51.2	1.82
U1442A 49R2	69/72	10.63	5.10	-53.7	2.65
U1442A 49R2	69/72	10.53	5.61		
U1442A 49R2	69/72	10.47	5.26		
U1442A 49R2	ave.		5.32	-53.7	2.65
U1442A 56R2	24/27	12.83	5.81	-78.1	3.21

\*San Carlos Olivine, nominal  $\delta^{18}\text{O}=5.25\text{‰}$

$\delta^{18}\text{O}$  by laser fluorination after pre-fluorination on single glass chunks with yields shown

$\delta\text{D}$  and H<sub>2</sub>O by TCEA, same chunks as for  $\delta^{18}\text{O}$ , but lightly crushed to size fractions >50  $\mu\text{m}$ <200 $\mu\text{m}$

$\delta\text{D}$  and H<sub>2</sub>O values are ‰