

Alicia Mullins

From: David Pickett [dpickett@swri.edu]
Sent: Wednesday, August 30, 2000 9:20 PM
To: Bret Leslie
Subject: U-Th data
Attachments: Aug 30 2000 Age_data.xls

Bret,

You may not have time to read all this now, but I'll put it all down for your consumption whenever you get a chance.

I received today a table of data from seven samples. An Excel file is attached. The analyst asked that I consider these provisional in that he hasn't double checked everything yet. Observations:

1. Looks like you're right about old calcites; both here are essentially at S.E. It bothers me slightly that they both have 230/234 about 2% above one.
 2. 499 (34 ka) is from north of the ore body, i.e., currently upslope.
 3. The two layers from 305, each 6-7 mm thick, were directly adjacent to each other, but distinct. Their model ages are very close (48 and 46 ka). Plotting (i) 230/232 vs 234/232 and (ii) 234/232 vs 238/232 isochrons through the two points yields about 65 ka (I had to do this graphically). I haven't figured what uncertainty is on the slopes. Of course, we don't know that they're coeval.
 4. 306 is from the same fracture as 305. See page 52 of your notebook # 35. 305 = 793-CAL2 and 306 = 793-CAL3. They were separated in place by about 5-10 cm. The 306 model age is much older (136 ka). Isochrons with the two 305 layers don't work; 230/234 is too high (1.66) and you're out of the closed-system region.
 5. 434 is from the same outcrop area as 305 and 306, but can't be located precisely relative to them. It's model age is only 18 ka. It's the only one with appreciable 232Th, which is a little odd because it has the least non-carbonate. So a small amount of detrital component gave a lot of Th. That kind of relationship supports my suspicion that in most of these samples, the non-carbonate component is authigenic (silica?). The big question remains, "Is that other component coeval with the carbonate?"
- Isochrons of 434 with the two 305 layers give very tight slopes (granted, just three points) and an age of about 50 ka. But there's no reason to think they're coeval.
6. The 234/238 ratios indicate that the U did not arise from bulk dissolution. No surprise there, really.

As for the talk, I'll do some thinking early tomorrow on whether and how to incorporate this new information. Something was definitely going on around 50 ka, as we already had concluded.

David

Sample	NOPI-		Delta 234 U today	238 U ppm	238 U ppm corrected	232 Th ppb	232 Th ppb corrected	232/238 atomic	230/238 atomic	230/234 atomic
n99-1	12-SEP1	cc	4.0	48.2	28.0	1860	1081.7	0.0395	0.0000172	0.312
n99-5	24-SEP1	cc	-0.6	30.2	17.4	964	555.2	0.0327	0.0000173	0.315
n99-26	499-L3-SEP4	cal,sil	1066	86.1	59.9	334	232.4	0.00398	0.0000097	0.0853
n99-28	305-L1-SEP4	cal	233	186	122.3	289	190.1	0.00160	0.0000076	0.112
n99-30	305-L2-SEP4	cal	209	265	170.2	458	294.2	0.00178	0.0000072	0.108
n99-32	306-SEP4	cal, sil	237	436	313.0	527	378.4	0.00124	0.0000154	0.227
n99-33	434-SEP2	cal, sil	109	144	83.3	4300	2488.7	0.0305	0.0000030	0.0499

Sample	232/238 activity	230/238 activity	230/234 activity	234/238 activity	230/232 activity	234/232 activity	238/232 activity	Age (Ky) (provisional)
n99-1	0.0126	1.016	1.012	1.004	80.6	79.7	79.4	too old
n99-5	0.0104	1.021	1.022	0.999	98.2	96.1	96.2	too old
n99-26	0.00127	0.571	0.276	2.069	449.6	1629.0	787.4	34.3 ± 0.2
n99-28	0.000509	0.446	0.362	1.232	876.2	2420.5	1964.6	48.2 ± 0.3
n99-30	0.000566	0.423	0.350	1.209	747.3	2135.3	1766.8	46.3 ± 0.3
n99-32	0.000396	0.910	0.736	1.236	2298.0	3122.3	2525.3	136.1 ± 1.6
n99-33	0.00973	0.179	0.162	1.105	18.4	113.6	102.8	18.4 ± 0.8