HLWYM HEmails

From: David Pickett [dpickett@gargol.cnwra.swri.edu]
Sent: Monday, September 03, 2001 11:17 AM
To: Murphy, William
Subject: RE: revelation

Bill,

In the Nopal waters, the Th is greater than calculated solubility limits. I had more or less guessed that this was a colloidal effect; this point was made in the MRS waters paper. At NAWG in Strasbourg, Jordi Bruno told me that the concentrations were consistent with the solubility limit of an amorphous Th phase, so colloids needn't be invoked. I can't recall if he gave me a reference.

I think the water data are more pertinent to Th mobility than the caliche data. For the caliches, one could always question if the Th were in the water or is detrital. I don't think the caliche alone can answer this--my point is that one cannot unequivocally ascribe any Th/U variation one might see in coeval samples to varying detrital component. This is the necessary assumption involved in constructing isochrons from coeval materials (e.g., total rock and leachate). And for caliches with much higher Th/U, this often isn't a bad assumption. For Nopal, where the water and caliches have similar Th/U, the Th/U variation could just as easily be variation in initial conditions in the chemical precipitate.

Keep in mind, by "Th/U" here I mean 232Th/238U variation, not 230Th/238U (which is time dependent).

David

> -----Original Message-----
> From: Murphy, William [mailto:WMurphy@csuchico.edu]
> Sent: Sunday, September 02, 2001 8:42 AM
> To: 'David Pickett '
> Subject: RE: revelation
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>
> David,
>
> If I understand your observation correctly, an important point is that
> the Th/U ratio in the BH-12 water is high, as high as in the caliche.
> Does this observation bear on Th transport in the Nopal (Yucca
> Mountain) environment
> or on 4+ metal (e.g., Pu4+) tranport in general?
>
> Bill
>
> -----Original Message-----
> From: David Pickett
> To: 'Murphy, William'; Bret Leslie (bleslie)
> Sent: 8/31/01 4:11 PM
> Subject: revelation
>
> Bill & Bret,
>
> I've just realized that one thing I've been testing--"isochron"
> behavior--is
> pointless for most samples.

>
> Larry Mack (Austin) did a leach on one of the caliches in two ways:
> spiking
> the leachant before and after leaching. We're testing Th readsorption
> during leaching. I've been playing around with "isochron" plots that
> correct for the 230Th associated with 232Th, i.e., "detrital" Th.
> However,
> 232Th/238U (activity) for the total rock is 0.00127, and in fact most
> of the caliches are between 0.0003 and 0.0097. Our measured BH-12 and
> adit waters are 0.0005 to 0.019! The ranges are similar. Any
> projection through data to zero 232Th assumes that the residue
> 232Th/238U and 230Th/232Th are "constant" because they are usually
> quite different from the total rock and residue. This is not the case
> here. We really have no constraint, so these corrections don't tell
> us much.
>
> Oops, I have to get home. More later. The bottom line is that I
> don't have to explain away some of the "isochron" data. I see the
> leachates as more of a check on possible variation in ages among
> components. Also, I see this as possibly of interest to carbonate
> U-series types.
>
> David
>

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From: David Pickett

Created By: dpickett@gargol.cnwra.swri.edu

Recipients:
"Murphy, William" <WMurphy@csuchico.edu>
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Options
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Return Notification: No
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