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Sent: Wednesday, May 02, 2012 1:31 AM  
To: Z-T Lu  
Subject: Re: TANGR2012 workshop - abstract

Dear Lu

I basically see two new (fascinating) application in environmental science.

Oceanography.

Ar-39 dating of water masses will fill the 'age gap' between H-3 & SF6 and C-14. Hence water renewal in the ocean can be assessed on the time scale of centuries - hence the response of water exchange in the oceans in response to human activity over last 200 yrs can directly be addressed. In principle, remains of the impact of the little ice-age on deep water formation should still be detectable.

Groundwater.

Again, Ar-39 will close the age gap between young H-3 active and old (not-modern C-14) groundwaters. This opens at least two new perspectives:

- a. Management of groundwater resources that are renewed on the time range of a few 100 yrs. These resources are crucial even in the light of their low renewal rate, because they are replenished on a scale that is still comparable with the time scale of human activities. Ar-39 will help to define a strategic plan on how to use groundwater resources in a really sustainable manner, as fast renewable groundwater (H-3 active) can be separately from slowly renewable (H-3 dead, Ar-39 active) and stagnant groundwaters ('mining', Ar-39 dead, C-14 active).
- b. Analysis of the impact of climate and environmental change on continents using groundwaters (i.g. combining Ar-39 dating with noble gas analysis to reconstruct the temporal evolution of soil temperature and groundwater recharge on the highly relevant time scale of the last few hundred years (little ice age)).

With best regards.

RoKi