TERRESTRIAL CARBONATES OF METEORITES FROM CHILE, OMAN, NORTHWEST AFRICA AND SAUDI ARABIA. M. D. Giscard, A. J. T. Jull and L. R. Hewitt. NSF-Arizona AMS Laboratory, University of Arizona, Tucson, AZ 85721, USA. E-mail: leclerc@email.arizona.edu

Introduction: We have investigated the use of $\delta^{13}C$ to reconstitute the paleotemperatures in hot deserts. As a first approach, the terrestrial carbonates from meteorites found in hot deserts can be compared to soil carbonates, without a vegetation effect. Therefore, the carbonate stable C isotope composition is a function of the elevation and the atmosphere CO_2 composition [1] only. In this study, all meteorites used were found on the surface; therefore we consider that no confined groundwater took part in the meteorites carbonates formation.

Meteorites studied: We studied 53 meteorites [2] from the Arabian Peninsula (47 from Oman, and 6 from Saudi Arabia), 57 from the Atacama Desert [3,4] and 23 from NWA [5]. The meteorite finds from Oman and Saudi Arabia [2] and the Atacama [3] are discussed in other presentations at this meeting. Approximately 70% of the samples are ordinary chondrites, which have been described as ideal material for weathering studies by [6]. The second most abundant class is lunar, with 18 lunar meteorites from NWA and 5 from Oman. No carbonaceous chondrite has been used in this study because it is likely that their carbon could be recycled in the weathering products, therefore inducing a bias in the carbonate C isotopic composition.

Experimental Method: Terrestrial ages have been determined by ^{14}C measurements after the sample has been leached in H_3PO_4 at 70^0C during at least 12 hours and then rinsed. Ages and $\delta^{13}C$ of the carbonates are determined by measurements on the CO_2 produced during leaching inside a vessel where we beforehand established a vacuum of 10^{-4} to 10^{-5} torr. All the measurements have been done at the NSF Arizona-AMS Laboratory, University of Arizona, according to the method described by [7]. Some $\delta^{13}C$ measurements have shown that the gas produced during leaching contained contaminants. Such results have been discarded.

Terrestrial ages and weathering: A slight correlation between weathering grade and meteorite terrestrial age has been observed in the Oman meteorites but the inconsistencies does not seem to be correlated to climate changes [2].

Meteorite terrestrial ages vs. carbonate ages: Meteorites with terrestrial age between 0 and 10 kyr have carbonates with post-bomb ages, which means that they formed recently and/or have ongoing carbonate formation. Between 10 kyr and 30 kyr, we observe a positive correlation between terrestrial ages and carbonate ages. After 30 kyr, there is a more or less defined plateau in carbonate ages. The significance of this plateau can be discussed in terms of limitations of the ^{14}C dating technique.

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