PRODUCTION RATES OF $^{14}$C AND $^{10}$Be IN VACA MUERTA (MESOSIDERITE), CARANCAS AND SOME RECENT FALLS. A. J. T. Jull$^1$, M. D. Giscard$^1$, L. R. McHargue$^1$, K. J. Kim$^2$ and R. C. Reedy$^3$. 1. NSF-Arizona AMS Laboratory, University of Arizona, Tucson, AZ 85721, USA. 2. KIGAM, Daejeon, 305-350, Korea. 3. Planetary Science Institute, Tucson, AZ 85719, USA. E-mail: jull@email.arizona.edu

Introduction: It is important to better understand the production rates of $^{14}$C and other cosmogenic radionuclides, so that we better estimate $^{14}$C terrestrial ages and $^{10}$Be exposure ages.

Meteorites Studied: We analyzed the composition and the amount of $^{14}$C and $^{10}$Be of 7 samples taken at different depth within the piece number 10 of the mesosiderite Vaca Muerta recovered by Wasson et al. [1]. This is a reinvestigation of some earlier work reported in 1993 [2]. Furthermore, we have also measured the amount of $^{14}$C in 6 falls: Carancas, Knyahinya, Nuevo Mercurio, Saratov, Tamdakht (all ordinary chondrites) and the diogenite Tatahouine. Tamdakht and Carancas are recent falls, with less than half a kg of material recovered for Carancas [3], although this seems discrepant from the reports of the crater at this location, implying an impactor of 1.5 to 15 tons [4].

Saturated Activities: $^{14}$C measurements on falls range from $43.3\pm1.3$ dpm/kg and $56.9\pm1.5$ dpm/kg, and show good agreements with the measurements done on Bruderheim and other recent falls. The results are within ±15% error in saturated activity calculated previously by Jull et al. [5,6], which arises from the uncertainty in sample position within the meteoroid.

Vaca Muerta: Elemental concentrations of oxides in Vaca Muerta have been analyzed by ICP-OES at the X-Ray Assay Laboratory of Don Mills, Ontario. $^{14}$C and $^{10}$Be measurements were performed at the NSF-Arizona AMS Laboratory, University of Arizona [5]. The amount of $^{14}$C in the Vaca Muerta samples range between $43.9\pm1.3$ dpm/kg and $20.7\pm1.7$ dpm/kg in the bulk samples. One sample from the surface of the meteorite, which silicate and iron phase have been separated by crushing and separation by a hand-magnet, gave a value of $7.6\pm0.7$ dpm/kg for the iron phase and $32.8\pm1.5$ dpm/kg for the silicates. We estimate that Vaca Muerta’s terrestrial age is <2000 years. $^{14}$C coupled with $^{10}$Be results will allow us to study the production rate as a function of depth and refine our estimate of the age.

Carancas: Carancas has a higher $^{14}$C value of $56.9\pm1.5$ dpm/kg, which is higher than expected for an H chondrite. We measured a value for $^{10}$Be of $17.3\pm0.2$ dpm/kg, resulting in $^{14}$C/$^{10}$Be = $3.3\pm0.1$. These data are not inconsistent with an object with a radius of ~50-75cm, and in agreement with the mass estimate of [4].

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