Terrestrial ages of meteorites from hot and cold deserts determined from cosmogenic radionuclides

A J Timothy Jull
Department of Geosciences, University of Arizona, Tucson, AZ 85721 USA

Many cosmogenic nuclides can be detected using accelerator mass spectrometry (AMS). Determinations of several of these nuclides can give us important information on the terrestrial ages and exposure times of meteorites.

It is well-established that terrestrial-age determinations on meteorites using ^{14}C, ^{10}Be, ^{26}Al and other nuclides (e.g. ^{36}Cl and ^{41}Ca) give us unique information about the residence time since the meteorites fell to Earth (e.g. Jull 2006). Results from these studies have pointed to possible changes in meteorite infall rate; allowed us to quantify the weathering of meteorites as a function of their terrestrial age and to understand the effects of long-term storage, such as the adsorption of elements from soil. The recent spectacular example of an airburst of a large meteoroid in Feb 2013 over central Russia speaks to the important need to better understand past infall rates and statistics.

In this paper, we will discuss several approaches to understand the terrestrial-age distributions of meteorites and how we interpret these results from such diverse regions as North America, Arabia, North Africa, Australia and Antarctica.