

## **Evaluating global atmospheric transport of plutonium with dust aerosols**

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Resuspended desert dust aerosols can contain traces of plutonium (Pu) derived predominantly from nuclear weapons tests. To evaluate relationships between Pu activity and mineral dust concentrations (utilizing Al and Ca as dust proxies), high-volume aerosol samples were collected from four sites: Izaña, Canary Islands (1989 - 1996) (IZT); Barbados (2005 - 2006) (BAT); Gosan, South Korea (2005 - 2006) (GOS); and Mauna Loa Observatory, Hawaii (2005 - 2006) (MLO). IZT and BAT receive dust from Africa while GOS and MLO receive Asian desert dust.

Pu activities in the aerosol samples were determined by alpha spectrometry following a series of filter pre-treatments and chemical separations. Concentrations of other elements were determined by a variety of techniques.

Pu activity levels with respect to dust mass (Bq/ $\mu$ g) for all sites had the following rank order: GOS > MLO > BAT > IZT. The Pu/dust ratios at IZT, BAT, and MLO were consistent with re-entrained global fallout; however, the data suggests that GOS is the recipient of resuspended Pu at concentrations above background levels, possibly from newly eroding Asian drylands.

These results contribute to the understanding of the global cycling of Pu and can be utilized in future environmental change studies employing Pu as a geochemical tracer.