

## Reconstructed plutonium fallout from snow and ice samples of Antarctic Plateau

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Atmospheric nuclear tests during the 1940s – 1980s had spread artificial plutonium (Pu) throughout the globe. Antarctic ice sheet has been preserving the past Pu fallout, which varied with time according to the site location and yield of individual nuclear tests. We analyzed two depth profiles of  $^{239}\text{Pu}$ , recovered by applying a semi-quantitative method to snow/ice samples from East Antarctica. Unlike the reconstruction in the Arctic, the  $^{239}\text{Pu}$  records were characterized by large contribution of equatorial and southern hemispheric nuclear tests led by the US in the 1950s and France in the 1970s. While one result from a low snow accumulation area displayed smoothed temporal variation in general accordance with the nuclear test history, another record from a high accumulation area showed the sub-seasonally resolved fluctuation of  $^{239}\text{Pu}$  concentration with multiple rises and falls. The densely resolved record enables in-depth comparison between the fallout record and nuclear test history, which provides insights into the atmospheric dispersion of nuclear test products. If a  $^{239}\text{Pu}$  peak or dip can be precisely dated and widely occur in Antarctica, it can be used as an age marker for the Antarctic ice sheet. We suggest possible candidates for the age-tie layer among observed  $^{239}\text{Pu}$  peaks and dips.