Anthropocene signals recorded as Plutonium isotopes and Cesium-137 in Beppu Bay marine sediments, Eastern Kyushu, Japan.

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Above ground nuclear weapon tests conducted between 1945 and 1980, have lead to the distribution of various anthropogenic radionuclides in the environment including Plutonium (Pu). It has been used as a time-marker of mid twentieth century in various geological archives similar to the ^{137}Cs fall out signature. Further, advancement of analytical techniques allows us to measure ^{239}Pu and ^{240}Pu accurately that can fingerprint the Pacific Pu signal that originated from the former Pacific Proving Grounds (PPG) in the Marshall Islands. Here we report the record of Pu isotopes between 1950 to 1990 for the sediments obtained from Beppu Bay, in Eastern Kyushu, Japan. Approximately 8m length of core was taken from 70m water depth and radiocarbon dates suggested the high sedimentation rate (2-3mm/yr) throughout (Kuwae et al., 2013). The record shows a clear Pu increase in 1950, which peaked during the1960s, followed by sharp decline in the section corresponding to the 1970s. A minor increase in the 1980s is also observed in the sediment, namely the sediment follows global fallout trends. However, a constantly higher isotope ratio between ^{239}Pu and ^{240}Pu suggest an additional contribution other than global fallout via ocean current. Further, distinguished higher points provided supportive evidence of close-in-fallout that are previously reported in open ocean environments.

Keywords: Anthropocene, Beppu Bay, Pu

