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Detection of time-resolved influxes of supernova-produced ^{60}Fe and r-process ^{244}Pu onto Earth over the last 10 Myr

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Live radionuclides that were synthesised and ejected by stellar explosions, dispersed in the interstellar medium and subsequently deposited on Earth provide key insights about the astrophysical history of the solar neighbourhood and heavy element nucleosynthesis. The influx of supernova-produced ^{60}Fe ($t_{1/2}$ = 2.6 Myr) about 2.5 Myr ago was reported several times within the last two decades. The longer-lived pure r-process nuclide ^{244}Pu ($t_{1/2}$ = 81 Myr) was only recently detected owing to the advancement of the single-atom counting technique AMS (accelerator mass spectrometry). The time-structure of both radionuclide influxes could provide direct experimental evidence on interstellar medium dynamics, r-process nucleosynthesis sites and the last r-process event in the solar neighbourhood.

In this contribution, I will present time-resolved profiles of both ^{60}Fe and ^{244}Pu in the large ferromanganese crust VA13/237KD covering the last 10 Myr. The measured profile of ^{60}Fe clearly shows two distinct influxes confirming and refining previous results. The updated timing of the ^{60}Fe arrival can be used to further constrain the location of the progenitor star. A clear detection of r-process ^{244}Pu will be reported. The time-profile of ^{244}Pu will be interpreted with respect to the established ^{60}Fe influxes and an outlook on further r-process radionuclides and geological archives will be given.

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