# Anthropogenic Ir and Os in surficial environments

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Automobile catalysts were introduced in the 1970s to alleviate the emission of harmful pollutants from vehicle exhaust. The catalysts use Pt, Pd and Rh as main active components and the finding that these elements are released into the environment during vehicle operation has raised concern over the potential impact of this contamination. While a number of studies have provided some understanding of the environmental relevance of Pt, Pd and Rh, the potential contribution of anthropogenic activities on the occurrence and cycling of other PGEs (i.e. Ir, Os and Ru) has until now received very little attention.

This presentation aims to provide a first description of the impact of anthropogenic activities on the biogeochemical cycles of Ir and Os in surficial environments. Using airborne particles (PM10), peat cores and sediments cores, we show that human activities significantly contribute to the environmental concentrations and fluxes of Ir and Os. A rapid increase in the accumulation of these elements is observed in peat cores following the industrial revolution, with a further increase observed in both sediment cores and peat cores in recent decades. Comparison of Os isotopic composition ($^{187}Os/^{188}Os$) in the peat and sediment cores and in urban airborne particles demonstrates temporal changes in Os sources and supports the contribution of multiple anthropogenic sources to the biogeochemical cycles of Ir and Os. Automobile catalysts and fossil fuel combustion are potential anthropogenic sources of these elements into the environment. This study raises concern over the impact of anthropogenic Ir and Os emissions on the use of these elements as geochemical tracers in surficial environments.