# Dissolved platinum in major rivers of East Asia

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Dissolved platinum concentrations of eleven large pristine river systems in East Asia (~200 samples) were determined to better constrain the oceanic platinum budget. Most samples had concentrations less than 1.4 pM, and relatively high concentrations up to 5.8 pM were measured in only approximately 6% of the samples. Principal component analysis was carried out using Pt, major elements (Na, K, Mg, Ca, $HCO_3^-$, $Cl^-$, $SO_4^{2-}$, Si), Sr, and $^{87}Sr/^{86}Sr$ of the dissolved load to derive the potential sources of Pt. The Pt in the main (<1.4 pM) group was best clustered with Mg, $HCO_3^-$, Ca, Sr, and $SO_4^{2-}$, interpreted as weathering of carbonates and associated gypsum. The Pt in the outlier group was best clustered with Si, K, $^{87}Sr/^{86}Sr$, Ca, and $HCO_3^-$, interpreted as weathering of silicates. The median Pt concentrations of the individual river systems had only a small range, from 0.18 pM (Duman) to 0.63 (Huang He), and the difference in Pt yield mainly resulted from the difference in runoff. The rivers draining the eastern Tibetan Plateau – the Salween, Mekong, Chang Jiang (Yangtze), Hong (Red), and Huang He (Yellow) – had relatively higher Pt yield than the rivers of the Russian Far East – the Amur, Lena, Yana, Indigirka, and Kolyma. The discharge-weighted mean Pt concentration was 0.36 pM for the eleven river systems of East Asia. If this value is extrapolated globally, the estimated riverine flux of dissolved Pt to the ocean is $13\times10^3$ mol $y^{-1}$. Based on this riverine flux, the estimated oceanic residence time of Pt is $3\times10^4$ years.