Project acronym: AMIMA

Project title: Atmospheric Mercury Isotope Monitoring in the Arctic

Project leader: Jeroen Sonke, CNRS, Toulouse, France

Discipline: Earth Sciences & Environment

Station(s): Villum Research Station (Greenland)

Mercury is toxic to both wildlife and humans and is transported to arctic ecosystems via air, rivers and oceans. During recent ERC, CNRS, and H2020 projects we have made new and critical observations on arctic mercury cycling, including the first seasonal observations on russian river inputs, on open Arctic Ocean mercury speciation and distibution and on tundra uptake of atmospheric mercury. These results are stimulating a rethink of arctic mercury cycling and the development of a new generation of numerical models that help understand how arctic warming affects mercury cycling and exposure. One key observation, the elevated summertime atmospheric elemental Hg levels, remains ill-understood.

The main objective of this ERA-PLANET project is to make novel observations of the mercury isotope signatures of the summertime peak at Villum Research Station, in order to understand its origin (terrestrial, marine, sea ice). In addition we will revisit seasonal atmospheric reactive mercury (HgII) dynamics by intercomparing novel sampling methods (cation exchange membranes) to current mercury monitoring instruments (Tekran). The new observations should help better parameterize coupled 3D models of the arctic mercury cycle.