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GEMAS: Mercury in European agricultural and grazing land soils – sources and environmental risk

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Agricultural (Ap, Ap-horizon, 0-20 cm) and grasing land soil samples (Gr, 0-10 cm) were collected from a large part of Europe (33 countries, 5.6 million km2) at an average density of 1 sample site/2500 km2. The resulting more than 2 x 2000 soil samples were air dried, sieved to <2 mm and analysed for their Hg concentrations following an aqua regia extraction. Median concentrations for Hg are 0.030 mg/kg (range: <0.003 – 1.56 mg/kg) for the Ap samples and 0.035 mg/kg (range:<0.003 – 3.12 mg/kg) for the Gr samples. Only 5 Ap and 10 Gr samples returned Hg concentrations above 0.5 mg/kg. In the geochemical maps the continental-scale distribution of the element is clearly dominated by geology. Climate plays also an important role, Hg accumulates in those areas of northern Europe where a wet and cold climate favors the build-up of organic material. Typical anthropogenic sources like coal fired power plants, chlor-alkaline factories, metal smelters and urban agglomerations are hardly visible at the continental scale but can have a major impact at the local scale.