

$\delta^{13}\text{C}/^{12}\text{C}$ measurements of aerosol particles in Preila

Andrius Garbaras

Institute of Physics, Vilnius, Lithuania

Summary

It is shown that far from the source regions, carbonaceous aerosols bear their isotopic characteristics and isotopic tool appears to be a promising tracer of the bulk atmospheric particulate carbon. Combining with other aerosol parameters, it is possible to differentiate between not only marine and continental material but also between continental natural and anthropogenic matter among aerosols. Particularly, combustion of the vegetation induces a large isotopic separation between the two stable carbon isotopes and, consequently, the aerosol which is emitted is characteristically depleted in ^{13}C .

Aerosol particles (PM_{2.5}) were collected on quartz filters at the Air pollution research station in Preila, Lithuania, during winter and spring 2008. Simultaneously aerosol black carbon concentration was measured by aethalometer.

Filters were analysed using elemental analyser (Flash EA1112) – stable isotope mass spectrometer (ThermoFinnigan delta plus advantage) for $\delta^{13}\text{C}/^{12}\text{C}$ isotopic ratio. Measurement results were interpreted using calculated air mass backward trajectories.

In our first results it is appreciable difference in carbon isotopic ratio between air masses coming from North Atlantic and from Poland.

1. Cachier, H. (1989). Isotopic characterization of carbonaceous aerosols. *Aerosol Sci. Technol.* **10**, 379-385
2. Widory, D.; Roy, S.; Moulec, Y.; Goupil, G.; Cochere, A.; Guerrot, C. (2004). *Atmospheric Environment* **38**, 953–961.