



Contribution ID: 39

Type: not specified

Carbonaceous species and HUmic LIke Substances in Arctic Snow: contribution to the speciation of total carbon and optical properties during OASIS –Barrow 2009 campaign.

Monday, 6 June 2011 10:50 (20 minutes)

Carbonaceous species play critical roles in the interaction of snow with the overlying atmosphere. Elemental or Black Carbon strongly decreases snow albedo, therefore influencing the snow-climate feedback loop. Carbonyls and complex organic molecules such as Humic Like Substances also absorb UV and visible light, therefore influencing photochemistry and light penetration depths in the snowpack. It has been proposed that some of those complex organic molecules, acting as electron donors in photochemical reactions might change the photolysis paths of nitric acid from NO / NO₂ to HONO. Yet, global investigations of the organic matter in arctic snowpack are scarce, and often limited to a few specific species.

During the OASIS campaign in Barrow, 2009, we investigated the global carbonaceous content of continental snowpack. On most samples, analysis included Dissolved Organic Carbon, short chain mono and di-carboxylic acids (ion chromatography), and some aldehydes (LC-fluorimetry). Additional samples were also analyzed for EC and Water Insoluble Organic Carbon. This enables to discuss the contribution of various carbon fraction to the total carbon load of the snowpack, as a function of snowtypes

A small subset of samples was used to isolate HULIS fraction. Their carbon content was measured together with their UV-Vis absorption spectrum. This enables us to calculate spectral mass absorptivities for HULIS in snow and the contribution of HULIS to the total absorbance measured separately on melted snow samples, and to discuss their potential contribution to snow photochemistry.

Please list some keywords

organic matter carbon Barrow

Primary author: VOISIN, D. (UJF-grenoble / CNRS, LGGE, BP 96, 38402 St Martin d'Herès, France)

Co-authors: GRANNAS, A.; DOMINÉ, F.; BEINE, H. J.; JACOBI, H.-W.; JAFFREZO, J. -L.; BARRET, M.; HOUDIER, S.

Presenter: VOISIN, D. (UJF-grenoble / CNRS, LGGE, BP 96, 38402 St Martin d'Herès, France)