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Stable water isotopes content of snowfalls in Yamal peninsula, west Siberia, Russia

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The use of the stable water isotopic content (SWIC) of buried ice bodies for palaeoclimate reconstructions or estimation of for the input of various water sources in SWIC of run-off water in Polar Regions requires understanding of the initial SWIC of solid precipitation (snow). Overall pattern of the distribution of the SWIC of precipitation is the base for the Global Meteoric Water Line (GMWL) and some of the modern Global Circulation Models (GCM) allow reconstruction of the spatial variability in this content. However, most of GCM consider the feedback of formed snow cover just in terms of albedo. The special models of isotopic composition in precipitations, such as used for Greenland and Antarctica, relate the environmental conditions in a source area with the SWIC at a deposition site normally assuming weak effects of the local deposition site's meteorological conditions on the SWIC of accumulating snow. The local conditions affect the mean SWIC through water vapor exchange between the snow cover and the atmosphere. This is named 'post-depositional change' of SWIC of snow cover but, studied for more than 30 years, the corresponding processes are not yet completely understood and usually considered as having different time scales than the variability of SWIC on event basis.

The mean SWIC values, providing the Local Meteoric Water Lines (LMWL) and GMWL are constructed by separate precipitation events. The SWIC of each event is the result of the atmospheric circulation and of the surface condition during the event. The change in these conditions (for example as the result of climate change) should affect the mean SWIC values. Identification of the dependence of the SWIC and its departure from the LMWL and GMWL on local meteorological conditions can provide a link to the possible long-term change of the Meteoric Water Lines.

The SWIC of each precipitation (snow fall) event was measured for winter period at Bovanenkovo Gas Field (Yamal peninsula, west Siberia, Russia) simultaneously with detailed meteorological information provided by Automatic Weather Station. The observed SWIC varied from -37 to -11 in $\delta^{18}\text{O}$ and from -279 to -61‰ in δD at the studied site. A detailed analysis of the obtained data is planned to be presented.