



## **Measurements of Mass, Momentum and Energy fluxes over an ice/snow covered lake**

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A better understanding of the interactions between ice and snow and the atmosphere requires improved measurements of energy, mass and momentum fluxes, which continue to have a high degree of uncertainty. In this communication, observed near surface fluxes of momentum, heat and mass ( $H_2O$  and  $CO_2$ ) over a boreal lake during a freezing period (winter 2015/2016) will be analysed and compared with observations over ice free lakes.

Continuously measurements of near surface fluxes of momentum, heat and mass ( $H_2O$  and  $CO_2$ ) are obtained with a new eddy covariance (EC) system, the Campbell Scientific's IRGASON Integrated Open-Path  $CO_2/H_2O$  Gas Analyzer and 3D Sonic Anemometer, over lake Vanajavesi in Finland. The measurement site is located in a tip of narrow peninsula on the lake (61.133935°N ; 24.259119°E), offering very good conditions for eddy covariance flux measurements. The EC system was installed at 2.5m height above the lake surface and was oriented against the prevailing wind direction in the site.