



Seasonal variability of Horizontal to Vertical Spectral Ratio in polar regions

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The Horizontal to Vertical Spectral Ratio method is commonly used in engineering seismology as quick and easy to use tool for estimating resonant frequency of the ground. One of the method's features is its stability over time which allows to compare results calculated using data from different periods of time. This work is focused on checking stability of the HVSR method in arctic regions, where permafrost might occur.

The permafrost is a phenomena that is commonly present in arctic regions and is described as a ground that's temperature is constantly below 0 degree Celsius for more than two years. When the permafrost is not covered with ice there also occurs phenomena called active layer of the permafrost which is an uppermost layer of the ground that freezes during winter season and thaws during summer season. By a geological methods the existence permafrost might be indicated only as existence of the ice in the geological realm. Due to that, for discrimination of depth of permafrost table there are commonly used methods that are sensitive to changes of resistivity or shear wave velocity in first few meters of the ground.

In a previous work there were proven that results of the HVSR vary according to changes of depth of permafrost table which correlates well with changes of temperature of the ground down to 1m. Results of inversion of the H/V curves well correlate with thickness of active layer estimated using Electrical Resistivity Tomography surveys. This work focuses on investigation of variability of horizontal to vertical spectral ratio in different regions of northern hemisphere where permafrost might be present.