Space weather, socioeconomic factors, water quality and suicide in northwestern Russia

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Temporal variations in suicide occurrence in the town of Kirovsk (Kola peninsula, Murmansk region) earlier have been associated with geomagnetic disturbances (Kasatkina et al., GRA, V. 13, EGU20111630). Data on a total of 908 suicides were analyzed for the period from 1948 to 2010. The largest number of suicides occurred in 1949 (70.3 persons per 100 thousand people) and the smallest one occurred in 1985 (15.2). We have identified three maxima in the seasonal distribution of the number of suicides (March-May ($P<0.001$), July ($P<0.01$), October ($P<0.001$)), which coincide with maxima in the distribution of the most intense (Ap>150 nT) magnetic storms. Here we carried out the comparison of suicide occurrence temporal variations for three different towns of Murmansk region (Kirovsk, Apatity and Monchegorsk) depending on their drinking water content. Among Arctic regions, Kola peninsula is the most densely populated and industrially developed. The largest apatite-nepheline enterprise in Europe and Russia – "Apatit" is located close to the towns Kirovsk (67.6N, 33.7E) and Apatity (67.6N, 33.4E). The largest Russian nickel-copper plant "Severonikel" is located in the town of Monchegorsk (67.9N, 32.9E). In spite of some similarities of the suicide temporal trends, one can detect some differences. These differences, as we supposed, are connected to different content in drinking water of such metals as copper (Cu) and aluminum (Al). These elements may influence the incidence of mental disorders such as schizophrenia, senile dementia and Wilson's disease.