Geophysical Research Abstracts,
Vol. 10, EGU2008-A-02284, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-02284
EGU General Assembly 2008


# Health risk assessment of the population of Bishkek. Spatio-temporal analysis of cancer clusters

M. Tonini (1), M. Maignan (1), A.Sharshenova (2), V. Shilonosov (2), E.Ten (2), and **M. Kanevski** (1)

(1) Institute of Geomatics and Analysis of Risk (IGAR), University of Lausanne, Switzerland (Mikhail.Kanevski@unil.ch), (2) Scientific and Production Centre for Preventive Medicine (SPCPM) of the Ministry of Health of the Kyrgyz Republic.

The paper deals with the project on the development of environmental health monitoring system (EHMS) based on GIS using medico-demographic, environmental and socio-economic indicators of the city of Bishkek of the Kyrgyz Republic. The EHMS includes high resolution GIS, comprehensive raw information on environmental pollution, detailed medico-demographic and socio-economic data. Analytical work includes variety of tools and models from statistics and spatial statistics, including detection of spatio-temporal clusters and analysis of particular epidemiologic situations. The main objective of the present analysis consists of carrying out epidemiological monitoring of cancer incidence on the urban population. For this purpose, a space-time cancer dataset of the population of Bishkek, the capital of the Kyrgyz Republic, was analyzed. The major task was to evaluate, by means of space-time scan statistics, whether cancer cases were randomly distributed or, vice versa, they were clustered in space and in time. General purpose of scan statistics is to identify clusters that statistically represent an outbreak and require further investigation about the causes. In comparison with other spatial events detection techniques scan statistics has several advantages: it locates clusters in space and in time, does not rely on the hypothesis of spatial stationarity and has a module allowing to detect clusters even if reference population is not available. The statistically significant results achieved by applying this method have proved that cancer diagnosis cases in Bishkek city are clustered. It suggests further epidemiological investigations which are necessary to relate the found

excess with the relevant environmental and socio-economic factors.