Visualization and mapping ICP Vegetation moss survey results in Croatia

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Abstract:
Since 2005 Croatia participates in a moss survey in the framework of the International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops with heavy metals in Europe (UNECE ICP Vegetation) http://icpvegetation.ceh.ac.uk. In accordance with the sampling strategy of the European moss survey programme moss samples were collected during summer 2006 (on 95 locations) and summer/autumn 2010 (on 121 locations). Samples were collected on a nearly regular network 23 x 23 km with additional samples around big urban/industrial areas. All samples were prepared for analytical measurements and analyzed by instrumental epithermal neutron activation analysis (in Moscow) and by atomic absorption spectrometry and atomic emission spectrometry with inductively coupled plasma (in Skopje). A total of 41 chemical elements were determined. Results from 2006 were analyzed and presented according to ICP Vegetation standards while results from 2010 are still in processing. For the more accurate analysis of air pollution distribution over Croatia several visualization and mapping methods of spatial distribution of elements concentrations and trends have been investigated and used, like: elementary gridding and kriging interpolation. The results of this investigation using different grid size are presented in this paper. To identify and characterize different pollution sources and overall pollution distribution principal component analysis was used. The distribution patterns of the factor scores have been also designed and mapped.

Keywords: biomonitoring, air pollution, spatial visualization, mapping, Croatia