



## **Outlier identification in urban soils and its implications for identification of potential contaminated land**

Chaosheng Zhang

School of Geography and Archaeology, National University of Ireland, Galway, Ireland (Chaosheng.Zhang@nuigalway.ie)

Outliers in urban soil geochemical databases may imply potential contaminated land. Different methodologies which can be easily implemented for the identification of global and spatial outliers were applied for Pb concentrations in urban soils of Galway City in Ireland. Due to its strongly skewed probability feature, a Box-Cox transformation was performed prior to further analyses. The graphic methods of histogram and box-and-whisker plot were effective in identification of global outliers at the original scale of the dataset. Spatial outliers could be identified by a local indicator of spatial association of local Moran's I, cross-validation of kriging, and a geographically weighted regression. The spatial locations of outliers were visualised using a geographical information system. Different methods showed generally consistent results, but differences existed. It is suggested that outliers identified by statistical methods should be confirmed and justified using scientific knowledge before they are properly dealt with.