

Summary of Workshop 4 at the 5th International workshop on Emerging policy challenges on New SOil contaminants (ENSO_r 2024)

Title: From point measurements to regional assessment: using spatial analysis to map diffuse pollution

Date: 2024-03-14

Number of participants: ± 60 (2 sessions of ± 30 participants)

Organizers: Frederik Priem¹, Ward Swinnen¹, Karolien Vermeiren¹, Ilse Van Keer¹

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In the frame of ENSOr 2024, OVAM extended an invitation to VITO to organize a workshop with the intent to share some of our experiences on the use of statistical and spatial analysis to assess diffuse soil pollution. The workshop started with a small introduction, with particular attention to how spatial sciences can provide answers to some of the key challenges of emerging contaminants and diffuse pollution, both on policy level and in the field.

Two case studies performed by VITO were presented that both focus on the topic of PFAS but using different spatial scales of analysis. The first presentation by Ward Swinnen tackled upscaling of point measurements, by using various spatial interpolation techniques and configurations, to get a more comprehensive view of PFAS soil pollution on a local scale of one larger or several adjacent parcels. Ward also addressed fingerprinting of PFAS pollution by means of visual aids and cluster analysis. The second presentation by Frederik Priem entailed a higher-level study that assessed PFAS soil pollution on the regional level of Flanders. Particular attention was paid here to variations in PFAS soil pollution within and at various distances from different types of suspected areas, which were evaluated using machine learning regression. The slides of these presentations can be found [here](#), and the abstracts [here](#).

At three moments during the workshop, the participants were asked to provide feedback through live polls. [The results of this survey can be found in the slides of the workshop](#). There was also time for a small round of Q&A after each session. A researcher in the audience remarked that she was amazed by a poll result indicating that many other participants rarely apply statistical analysis on the soil data used within their professional activities, making her wonder what could be learned from those data. In response, several soil experts responded by stating that their clients typically don't want to pay for repeated measurements unless strictly required by law. This means that statistical analysis isn't even possible in many cases where only one measurement is legally required unless the soil experts volunteer to generate non-refundable costs. This discussion highlighted the partially conflicting realities and expectations of researchers, regulators, and professionals active in the field. On another note, many soil experts in the audience reacted positively to the models and derived results presented during the workshop. At the same time, they are wary of people with insufficient experience and training using these models, as this may generate incorrect insights and prompt unsuitable actions. The presentations in the session demonstrated the necessity of a careful selection of the appropriate statistical technique to answer specific questions about the soil data. Finally, the results of another poll question indicated that the majority of participants could use maps showing expected PFAS soil concentration to support their professional activities, even if this map only has a moderate accuracy. Moderate accuracy was specified in the poll as estimates that typically deviate one order of magnitude from real values.

Met opmerkingen [FP1]: @OVAM: we're assuming that the slides of each presentation and workshop will be shared with the participants at some point. Please provide the link to these materials here. If the slides won't be shared, you can remove this sentence.

Met opmerkingen [FP2]: @OVAM, are the ENSOr 2024 abstracts published somewhere? If yes, please provide the link here. If not, please remove the second part of the sentence.

Met opmerkingen [FP3]: @OVAM: if the slides will not be shared, please remove this sentence.