

Landscape ecotoxicology and spatially explicit risk assessment of toxicants

CHAIRS: Andreas Focks, Mikhail Beketov



Monday 12th May 2014, 08:10 – 18:30 (poster) and 17:20 – 18:30 (poster corner), room: exhibition hall

The overarching objective of this session is to bring aspects of spatial and temporal heterogeneity of natural systems into ecotoxicology and risk assessment. It will bring together researchers from academia, industry, and regulatory authorities facing aspects of spatial and temporal dynamics in the assessment of exposure and effects of toxicants. Natural ecosystems are characterised by a high spatial and temporal variability that influences ecological processes and modifies exposure and effects of toxicants on individuals or populations. Ecological as well as chemical processes exhibit different qualities on landscape scales as compared to standardized and one-dimensional test settings, hence the persistence of ecological effects of toxicants in space and time can only be assessed on appropriate spatial and temporal scales. With respect to ecology, processes such as metapopulation dynamics, competition for best habitats, and postcontamination re-colonisation are only observable on a larger spatial scale. Such ecological processes are strongly influencing ERA-relevant effect end-points such as local recovery, and resistance or robustness against effects. Considering the environmental dynamics of chemicals, fluctuating concentrations are a common part of the biotope of organisms in anthropogenic landscapes. Different ways of introduction (e.g. point sources, down-the-drain input or spray-drift/runoff/drainage leaching), followed by degradation and dilution processes as well as simply the spatial distribution of input and reception in a landscape can result in very complex chemical exposure patterns in space and time. A special focus in this session is put upon ecological models that involve a spatial element ranging from a field or ditch scale to a full landscape scale. Many of these models are currently developed to address questions in the risk assessment for chemicals. Model specific issues to be addressed can include how much complexity is needed in a model, how to select a landscape for modelling and how to ensure the landscape selected addresses the situations where it will be applied. The session will also cover how to interpret the results from ecological modelling as part of a regulatory risk assessment. Examples showing how spatial models can be used to address questions that have arisen following higher tier toxicity or exposure data or as an alternative to or aligning with conducting higher tier studies are welcome. We would also like to see how the output from models can be used to directly address protection goals that may be set for groups of organisms of concern. Presentations in this session may report results about ecotoxicological effects and/or chemical exposure patterns gained by the means of model simulations or measurements on mesocosm, field or continental scales. Also aspects of spatial ecology that influence ecotoxicological effects in the environment are highly welcome.

SESSION TYPE: Poster and Poster Corner