Geophysical Research Abstracts
Vol. 21, EGU2019-16258, 2019
EGU General Assembly 2019

Assessment of pesticide leaching under changing climate conditions

Lisa Brückner and Steffen Birk
Institute of Earth Sciences, NAWI Graz Geocenter, University of Graz, Austria

Pesticide leaching into groundwater may be affected by changing climate directly and indirectly. Increased temperatures, changes in precipitation intensity, amounts and seasonality are thought to be the main direct climate drivers for changing pesticide fate and transport behaviour. Although it is well understood, in which range possible factors will influence pesticide fate and transport behaviour under changing climate conditions, only few studies have investigated these impacts quantitatively (Steffens et al., Sci Total Environ 2015). Increased temperatures for example enhance degradation, increase volatilisation, weaker sorption (for most compounds) of pesticide and fasten diffusion. More intense precipitation events for example may lead to more by-pass flow, which might increase pesticide leaching. In contrast, a drier soil for example has lower hydraulic conductivities, leading to slower substance transport, but degradation rates are lower too.
This study aims to assess pesticide leaching into groundwater under changing climate conditions for a region in south-eastern Austria. For this purpose, a one-dimensional pesticide fate and transport model is used. The simulations focus on different representative pesticides, with varying properties, different common soil types and different climate scenarios, rather than indirect effects, such as changing cropping patterns, crop growth or pesticide applications. This work thus contributes to a better understanding of the impacts of climate change on pesticide leaching.