



Contribution ID: 399

Type: Oral Presentation

## How Harry Vereecken's work contributes to reach the 2030 global sustainable development goals.

*Monday, 31 May 2021 18:15 (15 minutes)*

For more than 35 years, Harry Vereecken developed vadose science research, aiming primarily to improve the understanding and prediction of water and contaminant transport processes, supporting sustainable soil and water management. This research is key in the current sustainable development agenda, where multiple objectives are directly related to good and healthy status of soil and water systems. In this contribution, examples are given showing how combined methodologies based on pedotransfer functions, hydrogeophysics and modeling of the soil-water-crop continuum are implemented to generate information supporting sustainable soil and water management strategies. A first example deals with the evaluation of the impact of agricultural policies on groundwater quality in Belgium. In this example, long term groundwater pressures with nitrate on deep unconfined groundwater systems are simulated, allowing to evaluate the reaction time of the system for adapted agricultural policies. These policies were designed to reduce nitrate pressures on groundwater systems from the agricultural sector. In this study, the Belgian soil map, the Belgian geological map, soil physical analysis, Harry's pedotransfer functions, and the WAVE model were used to perform the simulation study. The WAVE model (Vancllooster et al., 1996) was a revision of the SWATNIT model, developed earlier by Harry and co-workers in 1991 (Vereecken et al., 1991). A second example deals with the increase of food security in Benin. Benin inland valleys are currently underexploited and present unique opportunities to increase food production. Yet, the exploitation of these inland valleys requires a better understanding of the hydraulic behavior of these inland valley systems. In this example, it is shown how a combined approach, based on classical soil physical sampling, pedotransfer functions, and remote sensing is used to assess the infiltration characteristics of an experimental inland valley, supporting the design of an appropriate hydrological model of Benin inland valley systems. In both examples, approaches and methods inspired by Harry's works were used.

### References

Vereecken H., M. Swerts and M. Vancllooster, 1991. Description of the SWATNIT model. In : Soil and Groundwater Research Report II, Nitrate in soils. Commission of the European Communities, DGXII, 4th Environmental Research Programme: 262-266.

Vancllooster M., P. Viaene, K. Christiaens and S. Ducheyne, 1996. WAVE: a mathematical model for simulating water and agrochemicals in the soil and vadose environment. Reference and user's manual (release 2.1), Institute for Land and Water Management, Katholieke Universiteit Leuven, Leuven, Belgium

### Time Block Preference

Time Block C (18:00-21:00 CET)

### References

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