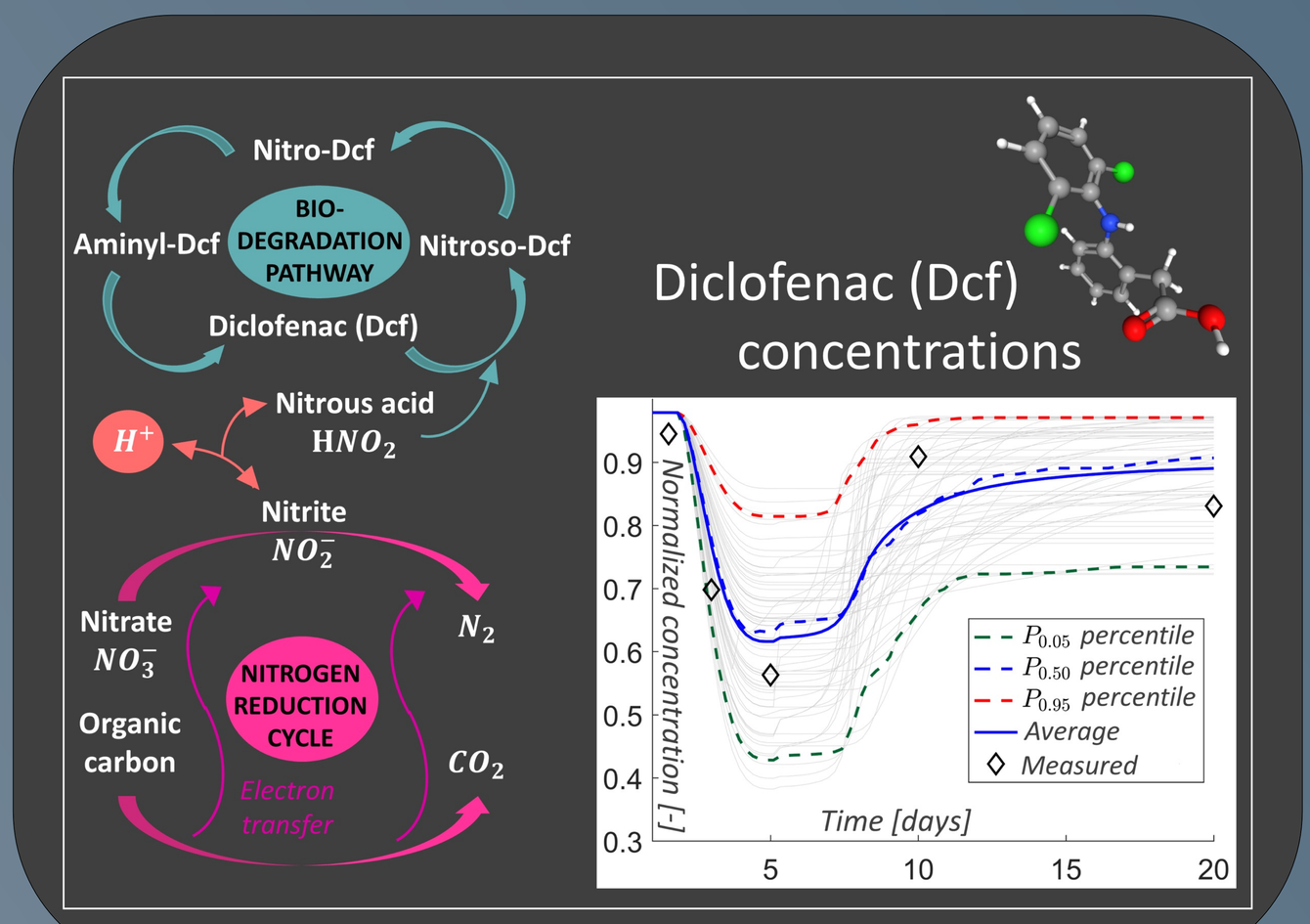
PhDTalks

POLITECNICO MILANO 1863

Dipartimento di Ingegneria Civile e Ambientale

Formulation and probabilistic assessment of Diclofenac fate in a soil-water system under uncertainty



Drinking water resources are threatened by several contaminants. Among these, Diclofenac (Dcf) poses major concerns due to its persistent and bioactive nature. Developing predictive tools to interpret its fate is then key to drive environmental protection actions. The modeling framework presented in this PhD talk is based on conceptualizing the molecular dynamics of Dcf biodegradation in a selected soil-water system. The geochemical model is subject to stochastic calibration through Acceptance-Rejection Sampling. The associated results fully embed uncertainty quantification and show that data scarcity and/or redundant model parametrization might deteriorate the quality of some parameter estimates. The issue is addressed by reducing the complexity of the model. The resulting formulations are framed within a multi-model context where the performance of each (re-calibrated) candidate model is assessed (in a relative sense) through the Kashyap identification criterion. The results suggest that an optimal trade-off in terms of model complexity (i.e., level of parametrization) given data availability can be assessed to satisfactorily interpret the system dynamics.

20th September 2022

17.30 - 19.15 CET

Aula Magna, Politecnico di Milano, Piazza Leonardo da Vinci, 42, 20133 Milano. Hybrid event
https://politecnicomilano.webex.com/meet/chiara1.recalcati

Speaker Laura Ceresa

Laura Ceresa is an Energy Engineer who got graduated at the Politecnico di Milano in late 2018. As PhD candidate of the Politecnico di Milano, she has recently terminated her third year of Doctoral Program in Environmental and Infrastructure Engineering. During her Doctoral studies, she has been dealing with the study of reactive flow and transport in porous media. Her specific focus is groundwater contamination by Pharmaceuticals, a field which is markedly affected by uncertainty and data paucity. As such, her Research Project has been geared towards the development of (mathematical) predictive tools to interpret the fate of Pharmaceuticals in groundwater. To do so, she has been relying on stochastic techniques applied in the context of (computational) Monte Carlo analyses where estimation and predictive uncertainties could be satisfactorily assessed.

PhDTalks is a series of seminars and discussions between PhD students. The events are aimed at providing a place to network and get in contact with many of the projects developed in our department. These events are self-organised by PhD students and speakers are chosen on a voluntary basis. At the end of each event a small refreshment funded by the department is available. If you are interested in presenting during one of these events, please send an email to andrea.opreni@polimi.it if you belong to the ISSG programme or to chiara.recalcati@polimi.it if you are attending the IAI programme.