8ICEG Invited Lecture

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Helmholtz Centre for Environmental Research – UFZ

Head of Department Environmental Informatics

Full Professor for Applied Environmental Systems Analysis
at Technische Universität Dresden

Invited Lecture Title

Workflows in Environmental Geotechnics: Status-Quo and Perspectives
【09:35 - 10:05, Monday 29th Oct. 2018】

Biography

Prof. Kolditz is the head of the Department of Environmental Informatics at the Helmholtz Center for Environmental Research (UFZ). He holds a Chair in Applied Environmental System Analysis at the Technische Universität in Dresden. His research interests are related to environmental fluid mechanics, numerical methods and software engineering with applications in geotechnics, hydrology and energy storage. Prof. Kolditz is the lead scientist of the OpenGeoSys project (www.opengeosys.org), an open source scientific software platform for the numerical simulation of thermo-hydro-mechanical-chemical processes in porous media, in use worldwide. He studied theoretical mechanics and applied mathematics at the University of Kharkov, got a PhD in natural sciences from the Academy of Science of the GDR (in 1990) and earned his habilitation in engineering sciences from Hannover University (in 1996), where he became group leader at the Institute of Fluid Mechanics. Until 2001 he was full professor for Geohydrology and Hydroinformatics at Tübingen University and director of the international Master course in Applied Environmental Geosciences. Since 2007 he is the speaker of the Helmholtz graduate school for environmental research HIGRADE. Prof. Kolditz is Editor-in-Chief of two international journals *Geothermal Energy* (open access) and *Environmental Earth Sciences* (ISI). Prof. Kolditz is the leading scientist of the Sino-German network initiative "Research Centre for Environmental Information Science-RCEIS" dedicated to the development of comprehensive data integration and knowledge platforms in China (funded by the Helmholtz Association, in cooperation with the Chinese Academy of Sciences, Institute for Geographical Sciences and Natural Resources Research) and of the joint priority project "Managing Water Resources in Urban Catchments - Chaohu" linked to the Mega-Water Project (funded by the German Federal Ministry of Education and Research, in cooperation with the Tongji University). Prof. Kolditz was awarded a professorship under the CAS President's International Fellowship (PIFI) in 2015.

Abstract

Environmental systems are complex. For unravelling this complexity both observation and modelling concepts are being developed and applied - unfortunately operating independent of each other in most cases. Developing and establishing continuous workflows in environmental systems analysis integrating observation as well as modelling aspects will help overcoming this deficit. In this paper we present basic concepts of technical workflow developments in geosciences and show examples from different applications in geo-technics. Continuous workflows combine data integration, numerical simulation and data analysis to support the modeling process. Parts of the workflow concept are also demonstrated during the OpenGeoSys training course as a co-event to the conference. The training course is dealing with geothermal systems and salt mechanics.