Geophysical Research Abstracts
Vol. 21, EGU2019-17917, 2019
EGU General Assembly 2019

The Climate Land Energy Water systems (CLEWs) Framework: From mapping to models to research agenda's

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CLEWs stands for "Climate-, Land-, Energy- and Water- systems". It is a framework that focuses on the identification and assessment of interactions between resource systems in order to understand how these relate and depend on each other, where pressure points exist, and how to minimize trade-offs and potentiate synergies. It takes inspiration from global integrated assessment models made popular in the Limits to Growth study that tried to assess the integrated nature of development. And applies this with appropriate local detail. CLEWs considers a strong modelling component and it was first introduced by the International Atomic Energy Agency in 2009 and later by a multi-United Nations agency application to Mauritius. Following this a global model was developed. Under the water convention, the UNECE Nexus approach was developed and applied to the Alazani, Sava, Drina, Syr Darya, and recently to the North West Saharan Aquifer System. A national program to enhance policy coherence was developed by UNDESA, UNDP and the IAEA, and recently by the UNECA. Further, a ream of one-off reports and studies using the CLEWs approach have been developed for countries in Africa and Latin America. CLEWs is transitioning to an open source project. And is part of the 'Open Tools, Integrated Modelling and Upskilling for Sustainable Development' (OpTIMUS) community of practice. It has featured in COP, CSD side events, a ream of regional and national training events and forms a key track of a global summer school. This paper summarises key applications, findings, insights and recommendations for future development. It explores methodological aspects of the modelling approaches followed in the different studies and, when applicable, how stakeholders and other actors of decision are included in nexus assessment efforts. The contribution and role of the CLEWS framework to the sectoral and cross-sectoral planning towards the sustainable planning of resources is also explored.