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Patterns of (de-) coupling processes between natural and human water-systems in South India

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There are many clear feedback processes between natural water systems and human water use systems. However, some feedbacks and interlinkages are not obvious at first sight due to the complexity of systems and individual behaviors. The majority of the people in Mysore district, South India, depend on agriculture and they irrigate their fields with rain water and groundwater. The Mysore district is regularly facing severe water scarcity as a result of consecutive drought years, which can possibly be related to increasing climate variability due to Climate Change. For the year 2017, it is expected that agricultural production will reduce by half due to the current water crisis. However, variability of the natural water sources system is only one initiator of the district's water stress; particularly water overexploitation and pollution cause an intensification of water-related problems. Thus, on the one hand, there are the natural water sources (e.g. precipitation, surface moisture recycling, groundwater) which are under change due to changing global and local atmospheric conditions. On the other hand, huge changes occur on the water user side as a result of land use changes, increasing water demand and local water management practices. With this study we intend to find out, how the natural and the human water-systems are interlinked with each other by applying the system dynamics approach combined with agent based modelling. The aim is to understand the structures and patterns of coupling and decoupling processes between water supply and water use.