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Hydrological modelling of changing catchments: lessons from a common testing experiment

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This communication will present a summary of the outcomes of a workshop session held in Gothenburg (Sweden) during the International Association of Hydrological Sciences (IAHS) General Assembly in 2013 on the topic of modelling of temporally-varying catchments, i.e. catchments that exhibit significant changes in their physical or climate conditions over a period of record. This workshop aimed at contributing to the Panta Rhei IAHS decade by offering a tribune to modellers to debate on hydrological modelling under change.
For this workshop, the participants had been invited to apply a calibration and evaluation protocol to their own hydrological models on a given set of changing catchments and to come to Gothenburg to present their results (Thirel et al., 2015a). It was recognized that this protocol, based on calibration and evaluation over contrasted periods, is an appropriate way of assessing the suitability of hydrological models to handle changing conditions.
Some modellers saw this exercise as an opportunity to confront their models to conditions different from their usual application area, or to use models to better understand hydrological changes. The crucial need for dedicated protocols to evaluate models under change was also stressed by some modellers who proposed complementary testing protocols (Thirel et al., 2015b). It is of utmost importance that studies for which models are applied under extreme conditions (meaning conditions very different from their calibration conditions) are performed using well-defined protocols. Several challenges for future research to improve the hydrological modelling of changing catchments were discussed during the workshop and will be presented.

References

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