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A European vision for hydrological observations and experimentation

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A Swiss-wide network of hydro(geo)logical observatories

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In recent years, important water-relevant research results have been achieved and numerous emerging issues have been identified. The posed challenges have to be elaborated, and solutions and measures must be developed. In this context, there is a great need to ensure a continuous competence building and to promote an exchange of results, protocols, infrastructure, and equipment as well as hydrological data. Among the different fresh water sources, groundwater is expected to play a key role in a resilient water future. For this reason, hydrogeological observatories are more necessary than ever.

Several existing, long-term hydrogeological observatories within Switzerland are currently being organized into a long-term national hydrogeological observatory network with the support of the Swiss groundwater network (CH-GNet; <https://www.swissgroundwaternetz.ch/en/>). The current hydrogeologic observatories are complementary in terms of elevation, geology, use, and scientific as well as practical objectives. These observatories are managed by research groups or practice partners to ensure long-term operability. The observatories are heavily instrumented for long-term hydraulic and chemical water monitoring and are supplemented by field experiments and investigations. It is envisioned that synergies will be created to promote joint and future experiments by a large number of research groups with different expertise. In addition, these observatories are and will be an important tool to train students. National and international research groups have the opportunity to further develop approaches and improve their knowledge under "real" working conditions, as well as to develop and validate modelling and predictive numerical tools. The hydrogeological observatories are constantly further developed and we are open for any suggestions, remarks, and new partners. In our contribution, we present the already existing observatories, goals and the way forward.