The Aqui-FR project: the future operational forecast platform for the main regional multilayer aquifers in France.

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The Aqui-FR project aims at taking benefits of existing regional groundwater modelling applications used by stakeholders. The objective is to develop new products that will provide useful information for water resources management. It will be exploited to monitor real time groundwater level and river flow over France, and will produce forecasts of the groundwater resources at time scales varying from the 10-day period, to seasonal and climate projections. Currently, Aqui-FR includes 2 distributed hydrogeological models (Marthe and EauDyssee), covering 13 mono or multilayer sedimentary aquifers and a conceptual model (Eros) covering 25 karstic aquifers in France as presented figure 1. But its modularity will make possible the integration of new models in the future. These different models are assembled within the Open-Palm parallel dynamic coupler, and coupled to a physically-based land surface model (Surfex) that provides the surface water budget.

In this study, we will present a long term hydrogeological reanalysis over the 1958-2017 period that has been performed to assess the full modelling system. This evaluation was carried out in order to identify the potential of the platform to capture extreme events with a special focus on droughts. It will also provide a referential state needed to evaluate future operational forecasts and long term simulation related to climate change. We will also have a preliminary look at the potential of seasonal forecast for drought projections by performing hindcasts for a few selected severe droughts.