



## **Update frequency effects on estimation of soil hydraulic properties from EnKF data assimilation**

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Soil hydraulic properties can be inferred from a combination of soil water monitoring and modelling. Data assimilation methods, DA, use monitored data periodically as they become available to update modeling results and model parameters. The correction is based in the idea that both measurements and modelling results are uncertain. Among various DA methods, the Ensemble Kalman Filter, EnKF, is one of the most widely employed. It has an extended use in soil water flow modelling based on Richards equation, and one of its latest versions is applied to joint both states and soil hydraulic parameters simultaneously. The objective of this contribution is to analyze the effect of the data assimilation update frequency on soil hydraulic properties retrieval. Combination of four different climates and two soil textures have been considered to capture broad parameter and state variable ranges.

Results do not supports the idea that updating information with high frequency is better than doing so with lower frequency. Moreover, the statistics of the parameter retrieval performance suggest that, on average, updating every seven or more days is better than doing so with a higher frequency. This appears to be an important information for the low budget soil water monitoring design and maintaining. It seems to be useful to build synthetic examples of the type considered in this work, as a part of soil water monitoring design to assess the update frequency effects