

Supplement of Hydrol. Earth Syst. Sci., 23, 51–71, 2019  
<https://doi.org/10.5194/hess-23-51-2019-supplement>  
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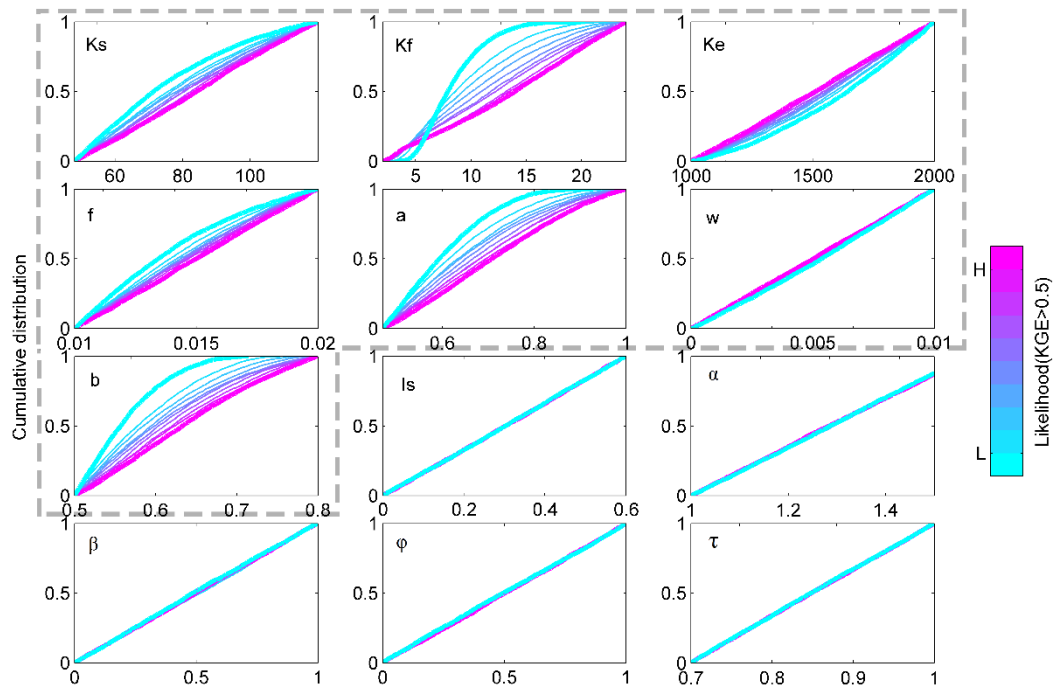
*Supplement of*

## **Storage dynamics, hydrological connectivity and flux ages in a karst catchment: conceptual modelling using stable isotopes**

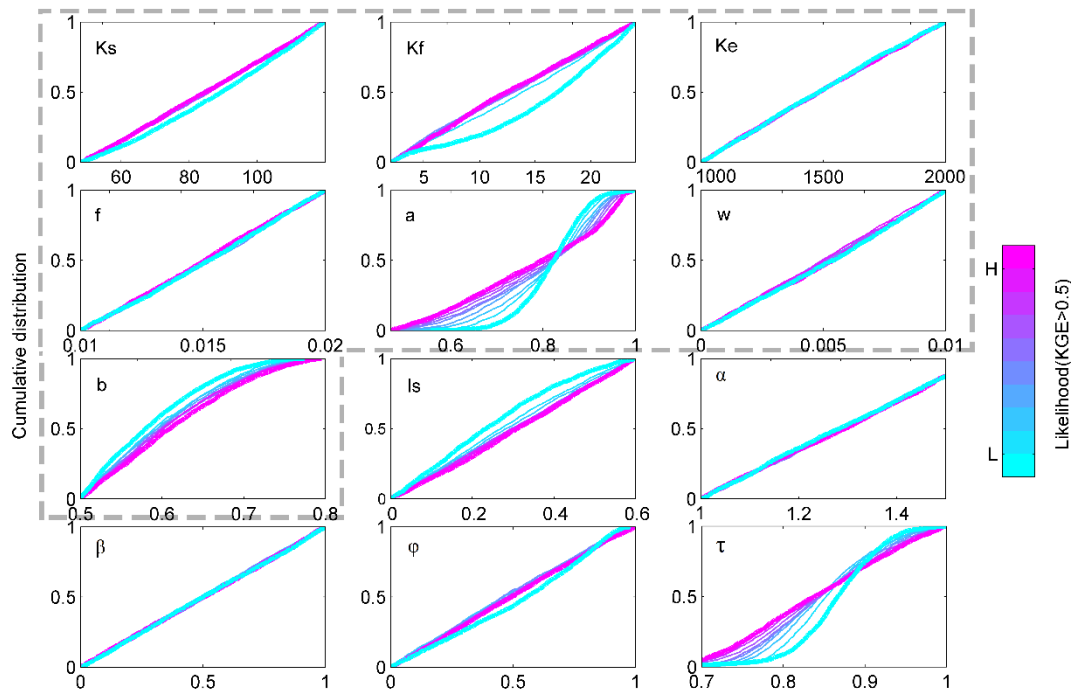
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(a) Sensitive parameters include  $K_s$ ,  $K_f$ ,  $K_e$ ,  $f$ ,  $a$ , and  $b$



(b) Sensitive parameters include  $K_f$ ,  $a$ ,  $b$ ,  $ls$  and  $\tau$

Figure S 1 Sensitivity of 12 calibrated parameters in terms of (a) flow and (b) isotope composition. Targeting the discharge, six parameters (except  $w$ ) among the seven parameters in the flow routing module are sensitive and the parameters in the isotopic module are all insensitive (Fig.S1 (a)). Targeting only isotopic values and both flow discharge and isotopic composition, the sensitive parameters are same, including  $K_f$ ,  $a$ , and  $b$  in the flow routing module, and  $ls$  and  $\tau$  in the tracer module) (Fig.S1 (b) and Fig.5).