PREPARATION OF OBSERVING SYSTEM EXPERIMENT (OSSE)

- Parameters, initial fields, long timeseries of meteorological forcing

Control Model Run (TERRA-ML+Routing)
- Long enough to skip spin-up

$\chi^\text{truth}, y^\text{truth}$

PREPARATION OF ENSEMBLES/PERTURBATION

- Apply Sampling to obtain ensembles of 1D and 2D random fields (gaussian noise)

$\chi^\text{truth}, y^\text{truth}$

- 1D random timeseries
- 2D random fields

Calculate ensembles of the initial field of $x^a$ and $\bar{g}$ and of the timeseries $y$ and $\bar{f}$

ANALYSIS (EnKF)

DO $e=1,m$

- $\chi^b, B^b, y^b, y^b, R^b, t \in [0,n]$ (TERRA-ML+ROUTING)

- $\chi^b, B^b, H(x^b), H(y^b), t \in [0,n]$ (CALL ANALYSIS with specified EnKF algorithm (e.g. Square Root Algorithm))

- $\chi^a, x^a, A^a, B^a, t \in [0,n]$ (TERRA-ML+ROUTING)

Fig. X: Flow charts of the preparation of the OSSE and data assimilation