Lée KIEFFER (2020-2024)
Engineer project : 1D hydro-sedimentary modelling of the Rhône River
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1D hydro-sedimentary modelling of the Rhône River from Geneva lake to the Mediterranean Sea
Developed as part of the OSR programs, the Rhone model is a 1D numerical model that allows the simulation of free surface flows and propagation of water and suspended matter flow as well as their deposit or erosion along the entire length of the Rhone river. The model extends over a surface of 545 km from lake Leman to the Mediterranean sea and include the operation of the 21 hydroelectric structure present on its linear. The simulation is based on the real geometry of the Rhone and its tributaries.
This model has allowed the simulation of intense hydro-sedimentary events such as floods or flushing and it's also capable of performing multi-year simulations with strong discharge variations. Knowing the input conditions of the model (hydrograph, water level and suspended matter concentration), it's possible to have at any given point of the model : the discharge, water level and suspended matter concentration as a function of time, the water quantity coming from each tributary, the origin of suspended matter concentration pics as well as the granulometry of the suspended sediments. Eventually, the model should also be capable of predicting the riverbed evolution.