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NESTOR: Sediment management module of TELEMAC

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Abstract: Since version V7P1 NESTOR is the new sediment management module of the TELEMAC modelling system. The functionalities of NESTOR were motivated by the sediment management activities at the German Federal waterways. With NESTOR a lot of actions can be defined e.g. dredging and dumping at a specified time, dredging if a water depth is less than a specified value or dumping the just dredged material at a dumping area. The actions will be presented using three applications to show the capabilities of NESTOR.

Application-1: Calibration of a morphodynamic model considering human intervention in the sediment budget (e.g. dredging, dumping and sediment supply).

Application-2: Test model for the prognosis of annual dredging volume dependent on various maintenance depths of a navigation channel.

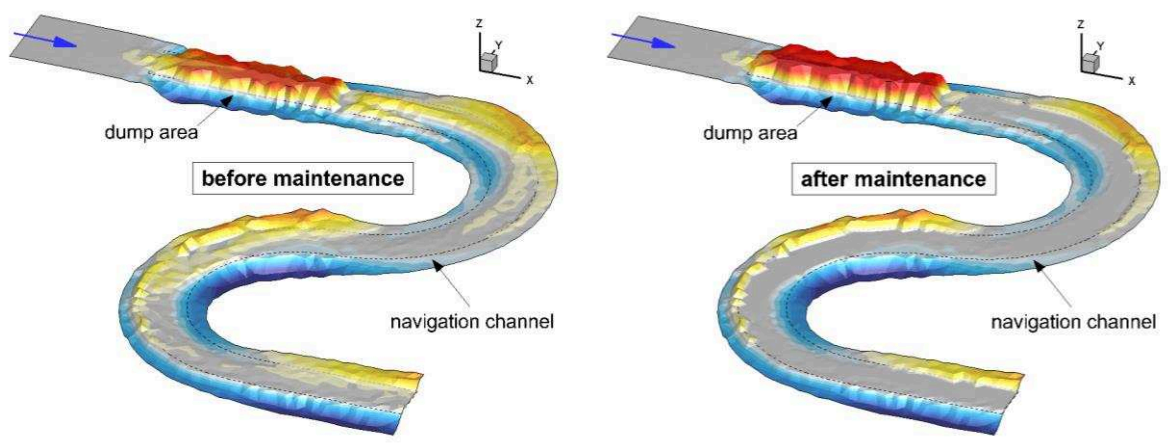


Figure 1: Bottom evolution before (left) and after (right) a maintenance measure at a navigation channel.

Application-3: Iterative determination of the level of a new navigation channel relative to a reference level. The reference level is the water level that belongs to a defined discharge. Because the water level will change due to changes in the bottom geometry the new navigation channel will change the reference level. This leads to an iterative process to find the right level of the new navigation channel. Using NESTOR we are able to go through the whole iterative process in one single simulation.