Modelling river discharge and sediments fluxes at sub-daily time-step: Insight into the CRUE-SIM project devoted to Mediterranean coastal flash floods

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Context and objectives

The CRUE-SIM (2014-2017) project is focused on the transport of dissolved and sorbed matter during flash floods. It is an interdisciplinary project that brings together atmosphere physicists, hydrologists and oceanographers to study and model flash floods across the Mediterranean region; it integrates water and sediment transport as a consequence of intense rainfall, from the catchment to the sea. The objectives of the project are:

1. the coupling between atmosphere, ocean and sea with continental hydrological and hydrodynamic models
2. the integration of the feedbacks and the forcing continuity from one compartment to the other along the brief but intense events that will be studied

In this poster we present the contribution of SWAT sub-daily modelling within the CRUE-SIM project.

CRUE-SIM modelling approach

- 4 compartments, 4 coupled models:
  - Atmosphere
  - Ocean
  - Soil & Water Management Tool
  - SWAT

- Selection of the flood events:

First results

- SWAT contribution: hourly simulations of discharge, soil water content, and total suspended sediment loads in runoff with SWAT/SWAT-CUP

Conclusions and perspectives

- SWAT is able to simulate the hourly discharge of a highly reactive Mediterranean coastal basin
- The calibration of total suspended sediments during flash floods is in progress: next step!