Physical simulation of an active pollutant dispersion in a trapezoidal channel

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Description
Organic, thermal, and chemical pollutions that are injected either on purpose or accidentally in the river hydrosystems are transported under the effect of an average fluid motion by convection, and disseminated in the river hydrosystems by turbulent agitation. These two processes control the pollution in a natural watercourse. The goal of this paper is to study the evolution of an active pollutant dispersion, in this case phenol, in time and space, inside a trapezoidal channel. After presenting the experimental apparatus, designed and manufactured in our laboratory, several types of tests are carried out by injecting the selected pollutant inside the channel, with different concentrations of the phenol solutions. Treatments and analyses of the different tests were conducted, highlighting the evolution of the phenol concentration in time and space, with profiles in the lateral and longitudinal flow directions. A qualitative …