Geophysical Research Abstracts, Vol. 10, EGU2008-A-05447, 2008 SRef-ID: 1607-7962/gra/EGU2008-A-05447 EGU General Assembly 2008 © Author(s) 2008



A coalgebraic Approach of Runoff Classification

M. Hauhs (1)

Ecological Modelling, University of Bayreuth, Germany

Colagebra is a formalism recently developed in computer science. It provides a natural characterisation of infinite processes for which only their output can be observed and corresponding states remain hidden behind an interface. Coalgebraic abstractions and theorems have been applied to catchment runoff, where they provide a new opportunity to assess the biological aspects of catchment hydrology. To this end one needs to distinguish three temporal scales. At short time scales (< days) streams characterising input such as radiation, rainfall and the corresponding output data are non-interactive and often complex. Patterns in these input streams are the basis for classifying the corresponding biota response as adaptive. At intermediate scales rainfall streams are non-interactive and relative simple. At this scale random input signals allow identifying signatures of internal biological interaction in runoff data. Finally at longer and regional scales a catchment may interact with its abiotic environment. These long-term and large-scale patterns in runoff signals demonstrate how climate and vegetation interact and resonate at regional and decadal scales. The key ideas of the new method of runoff classification will be discussed along with some short examples from the respective scales.