Geophysical Research Abstracts, Vol. 7, 05463, 2005
SRef-ID: 1607-7962/gra/EGU05-A-05463

Dynamics of cyclic step patterns

N. Balmforth
University of British Columbia

Sequences of slowly propagating steps have been observed in steep streams and laboratory flumes, and are thought to arise from the interaction of the flow and the deformable bed beneath. More precisely, these "cyclic steps" have been rationalized as resulting from the linear instability of a uniform flow and bed, which causes small disturbances to amplify and ultimately develop into nonlinear wavetrains. This presentation will focus on the nonlinear dynamics of these wavetrains, specifically exploring what decides the final the spacing. Cyclic steps usually appear in the same physical regime where roll waves are also expected to occur, and some consideration will be given to how steps and roll waves interact with one another.