Geophysical Research Abstracts,
Vol. 10, EGU2008-A-04007, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-04007
EGU General Assembly 2008

Experimental investigations on the inception of meander formation

C. Camporeale (1), **L. Macario** (1), L. Ridolfi (1)

(1) Department of Hydraulics, Politecnico di Torino (carlo.camporeale@polito.it)

Meanders are one of the most original and ubiquitous pattern in fluvial morphology which have always attracted a lot of interest from both applicative and speculative point of view. Historically the pattern formation and evolution of meandering rivers has essentially followed two different, but mutually interconnected approaches: a descriptive approach and a theoretical approach. Despite the considerable amount of studies related to this argument very few laboratory data are available, in particular about the time evolution of some planimetric characteristics of a meandering channel. In our work we show the results of a set of experiments carried out at the laboratory of the Department of Hydraulics of the Polytechnic of Turin. The experiments have been conducted in a 18 m long flume, using a sand bed channel ($d_{50} = 0.95mm$) with different boundary conditions: discharge (0.7 to 2.77 l/s), bed load (0.7 to 3.1 g/s), slope (0.005 to 0.007 m/m) and channel width (0.1 to 0.2 m). For every test, a large amount of pictures has been taken, showing the planimetric evolution of the channel. Each picture has been processed trough an image software to obtain the planimetric coordinates of the meandering channel. Data collected have been elaborated both investigating the temporal evolution of sinuosity, tortuosity and wavelength as well as the analysis of the probability distribution function and autocorrelation function of the curvature series; the results are interesting, both for them quantity and quality and are suitable to valuable comparisons with the most recent and advanced models and theories developed in the last two decades.