Geophysical Research Abstracts,
Vol. 10, EGU2008-A-01871, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-01871
EGU General Assembly 2008

Hydrological response of debris covered glacier to climate change scenarios

E. Bianchi Janetti, D. Bocchiola and R. Rosso

Dept. of Hydraulics, Environmental, Surveying and Road Structures Engineering, Politecnico di Milano, L. Da Vinci Square 32, 20133 Milano, Italy (emabianchij@gmail.com)

We studied the 2.15 Km^2debris covered Venerocolo glacier, a tongue of the Adamello Glacier, the greatest glacierized surface in Italy, covering 18.13 Km^2, in the Retiche Alps of Italy. A two blocks model is set up to reproduce hourly hydrological response of the glacier. First, a field site tuned degree-day model is implemented to calculate snow and ice melt, depending on debris cover thickness. Second, a Nash model is set up for runoff estimation. Two parallel reservoirs are considered, the first one for the surface runoff and the second one for the slower underground runoff. Two ablation seasons are studied. Runoff model tuning is carried out via inverse reservoir routing at the Pantano lake reservoir, at basin outlet. The proposed model is used to simulate long term glacier dynamics based on simple climatic scenarios. Impressive changes in snow water equivalent, glacier depth and the water resources distribution therein are expected.