



Topographic measurements and glacier flow modelling of a tropical, volcano glacier : Cotopaxi, Ecuador

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Different glacier flow models are used to investigate the dynamics of the Cotopaxi glacier in Ecuador. This glacier is and will be surveyed by IRD-Quito with the principal aim of estimating its total ice mass which could melt and lead to a devastating mud flow in case of a volcanic eruption.

In a first time, the simple topography (a nearly axisymmetric cone) of this volcano glacier can be represented by a simple synthetic geometry. Different ice-flow models are used. The preliminary results give first insights about the present glacier dynamics and its future possible behaviour. Secondly, this first results helped in designing the field measurement protocol for the 2007 campaign:

The surface topography (1997) is already well known (on a 5-m grid), the bedrock topography should be obtained by radar in the 2007 campaign improving the measurements of 2004. Instead of using extrapolated mass balance from the nearby Antisana glacier, a mass balance stake network should be set up on the glacier.

In a next step, this first bedrock data-set should be processed before serving in the ice-flow models.