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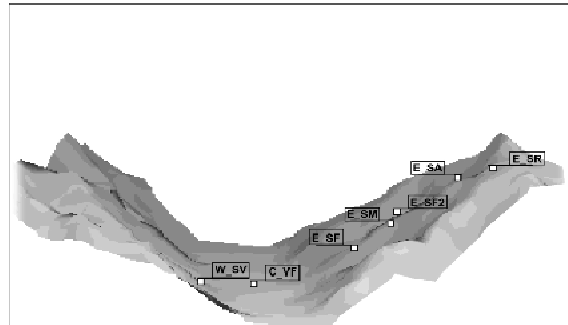
## 1 Introduction

The *MAP-Riviera project* seeks to investigate the turbulent transfer and exchange processes in highly complex topography. For this purpose a detailed field program was realized during the SOP (Special Observation Period) of MAP (the Mesoscale Alpine Programme) in fall 1999 in the Riviera Valley in southern Switzerland (Rotach et al. 2000). Apart from turbulence observations at many sites on a cross-section through the valley and – by means of an instrumented aircraft – in the bulk of the valley atmosphere, the components of atmospheric radiation were also measured at each of the surface sites. Observations are available for a period of approximately three months.

In complex topography such as within a valley both the longwave and shortwave components of atmospheric radiation are influenced by the presence of topography (Whiteman et al 1989a). For solar radiation it is mainly the obstruction through the neighboring ridges and multiple reflection from other slopes, which has to be considered. The observed longwave component within a valley is influenced by longwave emission of radiation from different surfaces within the valley. The situation is further complicated when compared to flat terrain in as the slope angle of the 'receiving' surface plays a crucial role in determining the radiation balance at a given position.

## 2 Observations

During MAP-Riviera surface observations were performed on a cross-section through the Riviera Valley in the Southern Alps. The Riviera Valley is U-shaped, approximately 1.5km wide at the bottom, ranges from 250m up to about 2300m and has slope angles between 30 and 40 degrees. For more details concerning its surface characteristics, see Rotach et al. (2000, 2002).




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