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## Simulation of soil moisture and evapotranspiration in a soil profile during the 1999 MAP-Riviera Campaign

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**Abstract.** Detailed plot-scale observations of basic hydrometeorological variables represent valuable data for assessing the quality of the soil moisture module and evapotranspiration scheme in hydrological models. This study presents the validation of soil moisture and evapotranspiration (ET) simulation during the special observing period (R-SOP) of the Riviera Project (July–November 1999), a sub-project of the Mesoscale Alpine Programme (MAP). The location investigated was a sandy soil plot at the edge of a corn field. The hydrological model PREVAH was driven using three meteorological data sets: hourly data from an experimental tower in the Riviera Valley (southern Switzerland), hourly data interpolated for the Riviera site during the R-SOP period from permanent automatic stations (MeteoSwiss network) and interpolated daily data (1980–2000). The quality of the interpolated meteorological data was evaluated with respect to data collected at an experimental tower. The interpolated data proved fairly representative for the location under investigation. The hydrological simulations were compared with recorded observations of soil moisture and latent heat flux (LE). The simulation of soil moisture was accurate in case of all three meteorological data sets. The results of ET simulations with three simple parameterisations showed high correlation to LE derived using the Bowen ratio and measured through eddy correlation. The quantitative agreement between observed and simulated LE was poorer because of the presence of a fully developed wind valley system during periods of good weather. This wind system claims part of the available energy and therefore reduces the amount of energy available for LE. The 21-year simulation at daily time step shows that the R-SOP period in 1999 was warm and wet compared to the last 21 years.

**Keywords:** MAP-Riviera Project, soil moisture, evapotranspiration, hydrological modelling, model evaluation

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