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The Alpilles experiment was setup in 1996 in the South-East of France in the frame of the Alpilles-ReSeDA program. It aimed at providing a consistent dataset for assessing crop and soil processes from remote sensing data. Compared to other experimental setups (such as HAPEX-MOBILHY, FIFE, EFEDA) the Alpilles experiment was focused on agricultural land and agricultural practices: *-i*) the experiment took place in a small agricultural area characterized by a large diversity of crops, and *-ii*) the experiment lasted for about one year in order to assess the whole crop cycle of different crop types. Beside the objective of characterizing crop production, a large part of this data set may be used for monitoring energy and water exchanges between the soil, the vegetation and the atmosphere (Oliosio et al. 2000). One of the objective of the Alpilles-ReSeDA program was to develop and test procedures for the assimilation of remote sensing data into SVAT models (Soil-Vegetation-Atmosphere Transfer models). As a first step, we proposed a calibration / validation work concerning several SVAT models available in France and in Europe, with the idea of analysing the relationship between their complexity level, their validity and their potential use for assimilating remote sensing data. The SVAT models used in this study range from simple mono-layer energy-balance formulation combined with a simple soil description to complex soil description based on Richards equations and two layer energy balance. Meteorological conditions experienced during the field work were also a specificity of the dataset since a very dry spring occurred which greatly affected wheat and other crops.

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