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► **To cite this version:**

Sophie Moulin, Laurent Kergoat, G. Dedieu. Coupling of a vegetation model and a SVAT model in the RESEDA experiment. ALPS99 Conference and Workshop, Jan 1999, Méribel, France. 1999. hal-02770384

HAL Id: hal-02770384

<https://hal.inrae.fr/hal-02770384>

Submitted on 4 Jun 2020

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The contribution of POLDER and new generation spaceborne sensors to global change studies
18-22 January 1999, Méribel, France
Remote sensing and vegetation productivity

Coupling of a vegetation model and a SVAT model in the RESEDA experiment

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Workshop, Poster session

The main objective of the RESEDA project consists in using multisensor and multitemporal observations in order to monitor the soil and vegetation (especially the water cycle and the productivity). The assimilation of remote sensing measurements into canopy and soil functioning models is particularly investigated. Through this project, ground, airborne and satellite data have been acquired in different spectral ranges (optical, thermal infrared and microwave) over an agricultural region during a whole growing season.

In this context, we used a vegetation/SVAT model in combination with satellite observations in order to improve the seasonal water content of the soil and the vegetation development description.

A vegetation model (VGT) was used to simulate the growth and development of alfalfa crop. The initial conditions (initial LAI value) were used to take into account the development during the winter period. The radiometric signal was simulated by coupling the VGT model with a reflectance model (SAIL). The VGT model is also linked to a SVAT model which simulates the energy and water exchanges at the soil vegetation atmosphere interfaces. The signal acquired in optical and in thermal infrared was simulated and compared to ground, airborne (POLDER) and satellite observations (HRV). The numerous data acquired during this experiment were used in this calibration step. We will present here some preliminary results in terms of LAI, production and fluxes estimations that were obtained thanks to the models.