

SPECIAL PROJECT PROGRESS REPORT

Progress Reports should be 2 to 10 pages in length, depending on importance of the project. All the following mandatory information needs to be provided.

Reporting year 2009

Project Title: Landsurface-Atmosphere Interaction

Computer Project Account: spdelsai

Principal Investigator(s): Prof. Dr. J. Egger

Affiliation: Meteorologisches Institut, Universität München

Name of ECMWF scientist(s) collaborating to the project (if applicable)

Start date of the project: 2002

Expected end date: 2011

Computer resources allocated/used for the current year and the previous one (if applicable)

Please answer for all project resources

		Previous year		Current year	
		Allocated	Used	Allocated	Used
High Performance Computing Facility	(units)	150	0	150	0
Data storage capacity	(Gbytes)	10	0	10	0

Summary of project objectives

(10 lines max)

Our group is focusing on aspects of the atmosphere's interaction with the underlying surface. The aim is to better understand such processes as they appear in nature and their representation in numerical models. The simulation of precipitation in summer still remains a problem and challenge in numerical weather prediction. One of the leading processes in the generation of convective rainfall resides in the interaction of soil moisture resp. evapotranspiration and moist convection. We are engaged in a project which deals with the hydrologic cycle. Within this project a sophisticated soil/hydrology/vegetation model will be coupled to a mesoscale meteorological model (MM5). Simulations using different types of parameterisations relevant for rainfall prediction will be performed and compared. Together with observations we will try to better identify and quantify the mechanisms in the soil-atmosphere interaction.

Summary of problems encountered (if any)

(20 lines max)

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Summary of results of the current year (from July of previous year to June of current year)

This section should comprise 1 to 8 pages and can be replaced by a short summary plus an existing scientific report on the project

A substantial part of our investigation area reaches into the Alps. For our research partners we have to provide high-resolution fields of simulated precipitation. So we conducted a thorough study of the small-scale precipitation variability in the Alps where we compared an observed climatology to climate-mode and semi-idealized numerical simulations. To do so we used ECMWF's ERA40 reanalysis data sets as a highly valuable or even indispensable prerequisite. For details please refer to the respective publications mentioned below.

List of publications/reports from the project with complete references

- Wastl, C., G. Zängl, 2008: Analysis of mountain valley precipitation differences in the Alps. Meteorol. Zeitschrift, 17, 311-321

- Zängl, G., D. Aulehner, C. Wastl, A. Pfeiffer, 2008: Small-scale precipitation variability in the Alps: Climatology in comparison with semi-idealized numerical simulations. Quart. J. Roy. Met. Soc., 134, 1865-1880

Summary of plans for the continuation of the project

(10 lines max)

The coupling of the mesoscale model MM5 used by our group to the soil/hydrology/vegetation model of our project partners has run through a phase of extensive mutual adjustments. The substantial progress in the fully interactive mode achieved by these measures will enable us to perform an extensive set of simulations in the near future to assess the additional gain of the joint model.