



European Commission's 7<sup>th</sup> Framework Programme  
Grant Agreement No. **226520**

Project acronym: **COMBINE**

Project full title: **Comprehensive Modelling of the Earth System for Better  
Climate Prediction and Projection**

Instrument: Collaborative Project & Large-scale Integrating Project

Theme 6: *Environment*

Area 6.1.1.4: *Future Climate*

ENV.2008.1.1.4.1: *New components in Earth System modelling  
for better climate projections*

Start date of project: 1 May 2009

Duration: 48 Months

**Milestone Reference Number and Title: M2.1 Prototype of improved aerosol-  
cloud-radiation interactions included in ESMS**

**Lead work package for this milestone: WP2**

**Organization name of lead contractor for this milestone: ETHZ and FMI**

**Due date of milestone: 31 October 2010**

**Actual submission date: 31 October 2010**

## **Milestone M2.1”Prototype of improved aerosol-cloud-radiation interactions included in ESMs”**

The Milestone M2.1 has been reached in two parts. First, Deliverable D2.1 “*Implementation of a stochastic treatment of clouds and radiative transfer to the COSMOS ESM to account for the subgrid-scale cloud effects*” has been delivered, and a publication has been written (Räsänen and Järvinen 2010). It is implemented in to the ECHAM5 atmospheric GCM coupled to the MPIOM ocean model. Second, the implementation part of the Deliverable D2.2 “*Implementation and first simulations with improved aerosol-cloud interaction in COSMOS*” has been completed. See D2.1 and D2.2 for further details.

### **Publication:**

Räsänen, P and H Järvinen (2010) Impact of cloud and radiation scheme modifications on climate simulated by the ECHAM5 atmospheric GCM. *Q. J. R. Meteorol. Soc.*, **136**, 1733-1752. doi:10.1002/qj.674.