

HAPEX-Sahel: a large-scale study of land-atmosphere interactions in the semi-arid tropics

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Abstract. The Hydrologic Atmospheric Pilot Experiment in the Sahel (HAPEX-Sahel) was carried out in Niger, West Africa, during 1991 - 1992, with an intensive observation period (IOP) in August - October 1992. It aims at improving the parameterization of land surface atmosphere interactions at the Global Circulation Model (GCM) gridbox scale. The experiment combines remote sensing and ground based measurements with hydrological and meteorological modelling to develop aggregation techniques for use in large scale estimates of the hydrological and meteorological behaviour of large areas in the Sahel. The experimental strategy consisted of a period of intensive measurements during the transition period of the rainy to the dry season, backed up by a series of long term measurements in a 1° by 1° square in Niger. Three "supersites" were instrumented with a variety of hydrological and (micro) meteorological equipment to provide detailed information on the surface energy exchange at the local scale. Boundary layer measurements and aircraft measurements were used to provide information at scales of 100 - 500 km². All relevant remote sensing images were obtained for this period. This programme of measurements is now being analyzed and an extensive modelling programme is under way to aggregate the information at all scales up to the GCM grid box scale. The experimental strategy and some preliminary results of the IOP are described.

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