

Foreword

The workshop “Spatialisation of crop models” was held in Toulouse, France, in January 2002. Organised by the Institut National de la Recherche Agronomique (INRA), this seminar brought together about 100 researchers from various French research organisations such as INRA, CNES, IRD, CEA and METEO-FRANCE and universities, and from abroad. The major scientific fields represented were agronomy, soil science, meteorology, climatology, statistics, economics and earth observation. The objective of the workshop was to give an overview of the main issues arising from the use of crop models on a scale different from the homogeneous field, for example a heterogeneous field, a watershed or a region. The following main issues were discussed:

- spatialising input data, whether environmental or technical data;
- developing computer tools, and interfacing models and GIS;
- data assimilation and model interfacing;
- evaluation.

Some presentations gave a review of the research in the field, while in others specific examples illustrating some aspect of crop model spatialisation were given. In this special issue, we gather a series of articles from the workshop. The first article by Faivre et al. is a synthesis of the problems involved in scale change in the specific case of crop models.

This report summarises the main points involved in the spatialisation of crop models and identifies the associated questions. It thus gives an overview of the problems discussed during the workshop, and is illustrated by examples presented during the workshop or extracted from the literature. The following papers are more specific. The two following articles address the problem of spatialisation of input data that describe the cropping system. The investigation by Mignolet et al. shows the characterisation of land-use over a region. It proposes a methodology for reconstituting and spatialising cropping system dynamics. The results show a major spatial and temporal diversity of cropping systems, both in the cropping sequences and in the management techniques. Biarnès et al. study a specific management practice, weed control, and show that its spatial distribution is determined by three levels of organisation, namely, the field, the farm and the cooperative. They discuss the possibility of using this knowledge to spatialise weed control practices. The last article by Pellenq and Boulet describes satellite data assimilation. It presents a methodology for testing to what extent the assimilation of satellite data into models can improve their description of the functioning of the continental surface.

Delphine Leenhardt