Introduction

The Megha-Tropiques mission is a joint project of India and France, through their space agencies ISRO and CNES, but also through their scientists and research laboratoires. It has been conceited in the 90's, but is more and more justified by what is discovered each year on the links between global climate change and the tropical systems at various scales, from mesoscale complexes to large scale circulations. Meteorological satellites, which have been operational for more than 20 years now, begin to be able to detect fluctuations and trends of observable climatic elements up to this time scale. Recent results –still to be assessed- suggest that both cloud cover (ISCCP) and radiative budget (ERBE et al.) showed noticeable changes in the tropics during this period, which could be linked to an increasing activity of the large scale circulations (Hadley and Walker Cells). The water cycle and the characteristics of the tropical convective systems is likely to be affected by these changes, but the present knowledge of the processes and their scale interactions is still unsufficient to perform proper predictions with models. Tentative predictions are however performed; some seem to show for example an increasing probability of wet monsoon seasons over the Indian subcontinent, but the degree of confidence of such predictions is still low.

Megha-Tropiques, with its capacity to observe water vapour, clouds and precipitations, and the related radiative fluxes, with a better repetition time than previous satellites, offers the opportunity to improve our knowledge of processes and scale interactions. In order to exploit the full potential of the mission, a dedicated processing of the data should be undertaken along the following lines:
- synergetic exploitation of the three Megha-Tropiques instruments and the operational geostationary satellites,
- combined use of the high frequency channels of Madras and Saphir towards documentation of cloud properties and precipitation over the continents,
- calibration and validation through comparisons with other low orbit satellites carrying new generation instruments flying in the same time-frame that Megha-Tropiques
- eventual use in combination with specific satellite constellations (Global Precipitation Mission)
- in general, multi parameters retrievals from multi sources data has to be foreseen, using techniques such as neural networks.

All these aspects were considered in the scientific meeting which took place in Paris in July 2001. The exchanges between the scientists of France and India were very fruitful, both through the presentations, the working groups and more informal encounters. We hope that the present publication of extended abstracts will showcase these high-quality exchanges for the reader. We further hope that this example will foster the cooperation between our groups and encourage other scientists to join our effort. We are happy to announce the on-line availability of these abstracts on the Megha-Tropiques web sites in India and France.