

INTRODUCTION

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The Sixth International Symposium on Physical measurements and Signatures in Remote sensing took place from January 17 to 21, 1994, in the Centre de Congrès Henri Oreiller in Val d'Isère (France). It has been sponsored by the Ministère de l'Enseignement Supérieur et de la Recherche and materially organised by the Agence Française de L'Espace (CNES) with the support of :

- National Aeronautics and Space Administration (NASA)
- Centre National de la Recherche Scientifique (CNRS)
- Institut National de la Recherche Agronomique (INRA).

The Symposium has also been sponsored by some scientific societies :

- American Society for Photogrammetry and Remote Sensing (ASPRS)
- Association Québécoise de Télédétection (AQT)
- Canadian Remote Sensing Society (CRSS)
- European Association of Remote Sensing Laboratories (EARSel)
- Remote Sensing Society
- Société Française de Photogrammétrie et de Télédétection (SFPT)

In addition the attendance of scientists of the former Soviet Union has been supported by the International Science Foundation (Washington, DC).

This Symposium follows the five colloquia organised since 1981 on Physical Measurements and Signatures in Remote Sensing. The scientific topics selected are mainly dealing with :

- the analysis of the relationships between the specific properties of a target (vegetative canopy, soil, rocks, water, snow, ice...) and its characterization by different remote sensing techniques (spectral, directional, polarimetric,...responses), active or passive in various wavelength domains (from ultraviolet to microwaves);
- the assessment of factors affecting the spectral response of an object (atmospheric effects, geometry of the measurement, measuring technique...);
- the development of interpretation models.

These kinds of investigations are necessary to lay the foundations for any application of remote sensing techniques and are of interest for the specialists having a wide range of interests: measurement physics, agronomy forestry, geology, hydrology, oceanology, meteorology,... It is the reason why the different sessions were organised on approaches rather than application domains.

The contributed papers were presented during four days in plenary and poster sessions. The morning of the fifth day has been devoted to the presentation of the conclusions on the different scientific topics of the symposium.

As in the preceding meetings, the Symposium sessions were organised in order to facilitate the exchanges and the scientific discussions. To reach this goal, most of the contributions were presented in poster sessions, the plenary sessions being reserved for a limited number of review papers or papers presenting significant new approaches.

Each day of the Symposium included one plenary session followed by one poster session in the morning and again in the afternoon, except for the first day where the morning poster session was suppressed because of the opening ceremony. The contributed papers were selected by the International Scientific Committee (40% of the submitted papers were rejected) and distributed as a function of the 8 scientific topics proposed :

- 1 - Data pre-processing : calibration and intercalibration, algorithm for atmospheric corrections, standardisation of data, topographic effects;
- 2 - High spectral resolution in the solar spectrum : bio-geo-chemical applications, atmospheric effects;
- 3 - Active microwaves : polarimetric and multifrequency physical measurements, interferometry;
- 4 - Passive microwaves : polarimetric and multifrequency physical measurements;
- 5 - Optical domain : Polarimetric and directional effects;
- 6 - Thermal infrared : emissivity-temperature decoupling, modelling the thermal behaviour of natural surfaces;
- 7 - Laser active remote sensing and fluorescence;
- 8 - Use of remote sensing data : assimilation into models, spatial and temporal approaches, synergy between different observation methods.

Plenary and poster presentations corresponding to these different scientific topics were complemented by two evening sessions organised on the following subjects :

- 9 - Future systems and projects for Earth observation;
- 10 - The large international remote sensing programmes : association of physical measurement models and models representing the processes of the biosphere.

The Symposium was coupled with an exhibition of equipment for radiometric and related ground truth measurements. Currently equipment available sold and prototypes (multiband thermal infrared radiometer, portable spectral imaging system, lidar for the remote determination of plant chlorophyll fluorescence) were presented. There was also a presentation of recently published scientific books in the field of remote sensing.

In this book, the contributions presented in both plenary and poster sessions are arranged with respect to the selected scientific topics. For each topic, the first papers are those presented in plenary session. They are followed by the poster papers ranked in the alphabetical order, using the name of the first author. The general conclusions, presented on 21st January in the morning session, are placed at the end of the proceedings.

Through the years, the Symposium on Physical Measurements and Signatures in Remote Sensing has become one of the major international scientific meeting dealing with basic research in remote sensing. The three year interval between two successive meeting enable the different participating teams to make progress and the new results presented offer a good survey of progress in research in the domain of remote sensing applied to the study of Earth resources.

The Symposium organised in January in a winter sport resort is a good way for gathering research scientists in a closed area and to further exchanges and discussions. This Symposium has therefore acquired its own style that is particularly appreciated by the participants. They have insisted on a new symposium being organised within two or three years but with a number of participants limited to 200 to 250 in order to maintain its conviviality.

To conclude this introduction, I want to thank particularly the participants who have contributed to constructive discussions, and the members of the International Scientific Committee who have prepared an attractive scientific programme. But if the Symposium took place in Val d'Isère in excellent conditions, we must thank CNES, NASA, CNRS, INRA, for their material and financial support. It is also due to the efforts made by the members of the Organising Committee, the company Carte Blanche and the team of the Centre de Congrès Henri Oreiller. Many thanks to all of them.