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Working Group 2: Microwave data

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During this symposium Working Group II had two sessions and one poster session as well as one session in combination with WG V (Geology). The two sessions (attended by 30-35 persons) mainly dealt with image handling and the interpretation of basic radar backscatter measurements. The poster session and the combined session dealt with radar image evaluation and thematic interpretation. So the papers presented showed a large variety.

1 CONCLUSIONS AND RECOMMENDATIONS

Since there exists still an intensive scientific research activity in microwave remote sensing the state of the art is different for the different application areas.

1.1 Agriculture and vegetation

Although the area is still under scientific investigation the subject was well covered by a large number of presentations. Multitemporal observation is effective for crop identification and monitoring. This is enhanced by using 2 incidence angles. Two or three observations, 10 days up to one month apart, are adequate. Multifrequency observation has not demonstrated any quantitative improvement until now. It is recommended to continue the development of suitable models and to study the relation between existing climatological growth models and the available radar data bases for the evaluation of the radar monitoring function.

1.2 Geology

In this area the penetration of decimeter and meter waves in dry sand was confirmed. It was also confirmed that the observation of lineaments is highly influenced by the azimuth direction. In relation to satellite design it is therefore recommended to take advantage of the possibility to use different angles of observation in azimuth.

To reduce the effect of the vegetation cover and to increase penetration depth frequencies in L-band or lower have to be preferred. The incidence angle must be steeper than with Seasat.

1.3 Forestry

The first interesting paper on quantitative measurements and modelling was presented. This work has to be continued and generalized in order to include different trees, better description of trees and seasonal effects.

1.4 Oceanography

Although a lot of work is done in this field there were no presentations on this subject. Specific instrumentation is developed for this application in order to take advantage of the features of the sea surface (altimeter, wind scatterometer and wave mode SAR). Obviously this material is presented on special symposia.

1.5 Cartography and topography

An interesting quantitative evaluation was presented of the capabilities of radar for topography restitution using 2 radar stereo images.

2 REMARKS

1. The combined meeting with Working Group V has demonstrated the usefulness of combined activities and collaboration with other Working Groups. A colloquium of WG II and III is now being considered for January 1988.
2. A gap continues to exist between the fundamental research and the user oriented interpretation work. Pilot experiments mixing the two must be developed.
3. Most of the work presented is done in preparation of radar observation by satellites.
4. Further investigation will be made:
a. to prepare the use of ERS-1 (1990) on oceanography, sea ice and soil monitoring
b. on the complementarity with visible and near infrared. The satellites (Landsat, SPOT) will exist for at least 10, 20 years.
5. Especially in microwave remote sensing methodology seems to be well considered:
a. fundamental research can be conducted with instruments such as Dutscat (backscattering modelling)
b. interpretation can be undertaken with SAR (such as VARAN-S). The quality and the number of instruments must be increased and (inter-)calibration should be obtained.
6. No specific and quantitative results were presented on image and data processing. Preprocessing or focusing is well handled by the payload specialists.

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