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Report of activities of Working Group II-4  
Sub-Group SAR Processing

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During the ISP International Symposium held in Paris on 12-14 September, 1979, it has been decided to create a subgroup of the group II-4 (Instruments for processing and analysis of Remote Sensing data). The specific purpose of the subgroup was to deal with the instrumentation required for processing and analysis of SAR (Synthetic Aperture Radar) data. The meeting on this subject held during this symposium arrived at the conclusion that although SAR processing exhibits some commonalities with the processing of remote sensing data in general (e.g. with respect to storage, archiving, etc.) its unique features deserve a particular attention. Moreover it has been recognized that other aspects namely acquisition, algorithms and interpretation would possibly affect the required instrumentation. Therefore contracts with other ISP commissions were thought desirable but unfortunately this link has not been established yet.

A two-day session of the ISP SAR processing working has been held at Frascati in December 1979. The Earthnet Frascati centre of the European Space Agency acted as the host and this allowed for the participation of some 80 persons. Needless to say how much the ISP correspondents are grateful to ESA for having made this meeting possible.

About twenty contributions have been presented, encompassing two main areas:

a) System Aspects

e.g. state of the art in digital SAR processing  
impact of algorithms on instrumentation  
design of future SAR processing systems  
advanced optical real time processing

b) Instrumentation

e.g. ground storage of image data  
real time SAR processing breadboard activities  
bit-wise parallel processing

Participants were from Europe, USA, Canada and Japan and fortunately most of the leading bodies in the area of SAR processing were represented.

Major conclusions in view of future activities were related to the possibility of on-board processing, to the development of suitable algorithms to fit new hardware architecture (e.g. parallel processors) and to the instrumentation required by remotely located users to access and receive data archived in data banks.

Proceedings of these meetings are under publication by the European Space Agency.

It turns out that ISP Group II-4 has been appreciated as an appropriate vehicle for exchanging experiences in the challenging area of SAR processing. However, it is felt desirable to consider how to implement efficient links with the groups I-5 (data acquisition and image processing in Remote Sensing) and VII-7 (interpretation of radar imagery) as the required instrumentation is heavily depending on both data acquisition and processing algorithm. In turn, the instrumentation used for processing directly affects the resulting image quality parameters and therefore impacts the interpretation capabilities.

As the activities of groups II-4, I-5 and VII-7 are interrelated, as far as SAR data are concerned we recommend considering the possibility of having one representative of one group attending the relevant meeting organised by the other groups. This would ensure a timely distribution of information among those groups and therefore facilitate this cooperation.