

COUNTRY REPORT

CONTEXT OF REMOTE SENSING APPLICATION OF 2002 IN VIETNAM

Tran Cong Due

Department for Science and Technology Management in Industry
Ministry of Science and Technology
39 Tran Hung Dao, Hanoi, Vietnam
phone: 84-4- 9344408, Email: tcdue@moste.gov.vn

1. INTRODUCTION

The year 2002 has begun started in Vietnam by a prediction of the coming back of El Nino to the Region. Economically, this year in Vietnam is known as an important lever to overcome the negative impact of the market on the agricultural production system of the country, notably in coffee, rice and various aqua cultural products. At the same time, the Government is encouraging the whole rural society to participate in the land use diversification aiming to a more efficient and more sustainable agriculture. It is also to say that this year Vietnam has to face with serious problems of natural disaster such as forest fire, drought etc. happening mostly in the poorest areas of the country. Under this circumstance a question is raised how to effectively ameliorate the Remote Sensing Application in Vietnam and still more urgently how to re-organize the institutional mechanism of the technology in the country.

2. ACTIVITIES

More than 20 agencies belonging to different Ministries and State Department (Ministry of Agriculture an Rural Development MARD, General Department of Land Administration GDLA, General Department of Geology, State Service of Hydrometeorology, National Centre of Natural Science and Technology NCST, Ministry of Fishery) are working in this field and are organized under different operational and research projects:

1. *Forest Inventory and Protection*: After the Last General Inventory (1999) the new decentralization approach is now in use, i.e., to give the inventory mandate to the Provincial Forest Control and Protection Service in which the Landsat images are indispensably used for 1:50 000 scale forest cover map. This exercise is built up annually from 2002.
2. *Topography Mapping*: Remote Sensing data has become a major data sources for updating topography maps at 1/25 000, 1/50 000 and smaller scales. Topography map updating is one of the important tasks in Vietnam. Annually, the Remote Sensing Center of the General Department of Land Administration (GDLA) carry out a task of updating 1/25 000 or 1/50 000 scales topography maps in different areas. Updating map of scale 1:50000 by remote sensing in the midland and mountainous areas of the North of Vietnam is in focus of year 2001 and next years. In 2001, the project for updating map of scales 1:50000 of the plan of delta Mekong

has been completed. The applied technology for map updating is digital in combination with conventional method. For land management, General Department of Land Administration in cooperation with other Departments have derived land use map at 1/250 000 scale nation-wide and at 1/100 000 and 1/50 000 scales in various regions from satellite imagery. In the General land Inventory Plan of Year 2001, satellite imagery have been used also to make land use maps for provinces. GDLA using PRODIGE system produced more than 1000 space maps of scale 1:25 000 for the Project of un-used land inventory and land potential for aquaculture farming.

3. *Rice Mapping*: this project has been implemented jointly by MARD and Radarsat Int. from Canada in using more 40 acquisitions of Wide Beam and some Standard Beam for the Mekong Delta. The purpose of this project is to test the methodology of multirate SAR data modeling to extract the rice pixels from these data. This project is followed by the supplementary research program of NCST focusing to ameliorate the accuracy of the mapping and to evaluate the influence of the socio-economic factors to the rice distribution in the Mekong Delta.
4. *Disaster Management*: Two projects have been launched in Flood control and Mitigation for the Red River and Mekong Deltas under the leadership of Disaster Mitigation Committee DMC. The specificity is that an operational system for flood alert and mitigation action has been set up by Radarsat Int. for the red River Delta. In April, a catastrophic fire has occurred in Uminh National Park (Mekong Delta) causing enormous loss of the primary Melaleuca forest and deteriorating the rest of the biodiversity left and restored after the American War. For the first time, MODIS data acquired at the receiving station of the NCST have been used to detect this disaster. The Vietnamese Association of Sciences and technology provides funding for this project not only for fire detection but also for NDVI monitoring.
5. *Geology Mapping*: The Department of Geology and Mineral Resources has decided to use remote sensing in combination with other methods as a compulsory procedure to create geological maps at 1/50,000 and 1/25,000 scales.
6. *Development Project Funded by international organizations*: ADB funds a big project for Reforestation of three catchment: song Chu, song Truc Kinh and song Ba in which land use mapping exercise is based essentially on the Landsat ETM data and partially IRS data interpretation. In Biodiversity area, three Reserves and National Park (York Don, Nahang and Babe) have set up their land cover database with Landsat ETM and SPOT 4 data. This exercise has been implemented as a part of subcontract with UNOPS.
7. *Meteorology*: Since 4 year, a receiving station for NOAA AVHRR at the State Service of Meteorology Hanoi has installed to complete other data (GMS) for the weather broadcasting application.
8. *Policy and Institutional Capacity Building*: For the development of the technology in Vietnam, the year 2002 is marked by an important milestone- the Master Plan for Remote Sensing is on preparation. This Mater Plan aims to re-organize, to harmonize and to develop the technology in the country in order to effectively cover the development needs of Vietnam. Four major actions will be taken in the framework of this Plan: Institutional Reform, Application Projects, Infrastructure Development and Software development.

3. INTERNATIONAL COOPERATION

Due to the needs of operational application in different areas of the development, most of Remote Sensing applications are implemented in the framework of international projects as a part of their activities mostly emphasized in land cover mapping, land use planning just for their project areas. There exists no such overall well-structured program in international cooperation in Remote Sensing in Vietnam. Nevertheless, through this punctual collaboration France, Canada, Japan and ESA are the most active partners who contribute enormously to the development of the technology of Remote Sensing in Vietnam. Since 1993, via Globe SAR Program, Vietnam has approached for the first time SAR application in Rice Mapping and Flood monitoring in the two biggest deltas of the country - the Mekong and Red River ones. The General Department for Land Administration GDLA becomes the most important partner in the cooperation with France through two projects of technology transfer PRODIGE and ARPÈGE. Japan is involved in forest mapping in collaboration with the Forest Inventory and Planning Institute FIPI and recently in collaboration with GDLA to develop a system of Natural Resource Management and Environment Monitoring using a Ground Receiving Module. ESA is now collaborating with the National Center of Natural Science and Technology NCST to use ERS -1,2 data for flood mapping and to prepare the application of ENVISAT data in Vietnam after the satellite has been launched.

One important output of this collaboration is to develop human resources at different levels of competences in Remote Sensing. France, Canada, Asian Institute of Technology AIT remain the most important partners in formation and training of Vietnamese specialists.

4. COMMENTS

The current state of Remote Sensing development and application in Vietnam is characterized by a disharmonized structure and steering in spite of the daily and long-term needs of use of the technology in the country. This situation causes many overlapping in investment for data, for equipments and more seriously, for application projects. The competent specialists are concentrated in majority in research centres rather than in ministries and universities. It seems to be paradoxical to conclude that the applied research activities is still absent whereas the Remote Sensing community in Vietnam is working now mostly in the research institutions.

Under this circumstance, the Master Plan on Remote Sensing development of Vietnam will play an important milestone for a sustainable and harmonious development of the technology up to 2010.