

SPARRSO NEWSLETTER

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Research / Mapping Activities

Estimation of Aman Crop Area - 2006

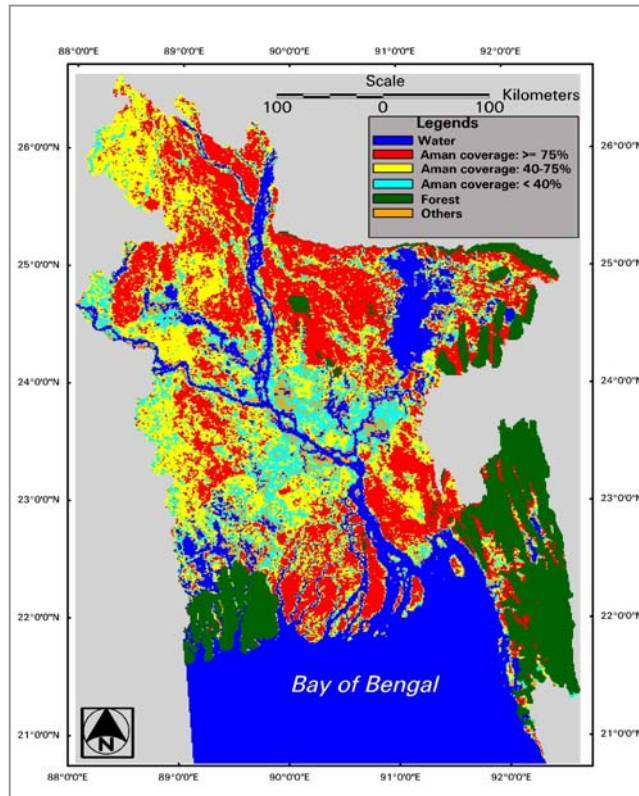


Fig. 1: The picture shows the predicted Aman crop yield in 2006-2007.

Bangladesh is the most densely populated country in the world and the population of this country is still increasing at an alarming rate. So, optimal utilization of agricultural land is essential for the benefit of the country. Real and near real-time information collected through remote sensing is sufficiently reliable and highly useful for agricultural management. It helps to take timely decisions on food situation through the monitoring of the development of agricultural crops.

Bangladesh Space Research and Remote Sensing Organization (SPARRSO) receives National Oceanic and Atmospheric Administration (NOAA) Advanced Very High Resolution Radiometer (AVHRR) real-time image on regular basis. The data received on the month of October and the beginning of November is suitable to study the growth of Aman crop. During the pick growth period of Aman rice (at the mid of October), the sky is usually covered by clouds, so the images received on that period hardly fulfil the requirements of the study. Therefore, NOAA (AVHRR) image on 03 November 2006 was used to estimate Aman crop area for the year 2006-2007.

A Normalized Difference Vegetation Index (NDVI) was calculated to determine the coverage of vegetation (%) of the selected image. The algorithm developed by SPARRSO was applied to compute the coverage. The area of Aman rice was 53.60 lakh hectares of the country (Fig. 1). The result was disseminated to the concerned Ministries.

Study on the Morphological Changes of the Old Brahmaputra

Bangladesh is a country with its well-distributed river network standing on alluvial deposit, which is the result of deltaic activity of the Ganges and the Brahmaputra. These main rivers, their tributaries and distributaries control its hydrological and morphological behavior. The morphological process in an alluvial river is very complex. Because of the large number of variables and its interrelationship involved in the process, it is extremely difficult to predict precisely the behavior on an alluvial river at a particular time and location. Recently a graduate research work titled "Study the Morphological Changes of the part of old Brahmaputra River using Remote Sensing and Geographic Information System (GIS)" has been conducted

under joint supervision by SPARRSO and Shahjalal University of Science and Technology

Estimation of Solar Radiation Using NOAA-AVHRR Satellite Data

The amount of solar radiant energy incident on the earth's surface is a factor of increasing importance not only in renewable energy technology but also in agricultural, weather, climate and environmental monitoring and predictions. But the measurement of solar radiation at ground level using standard instruments is expensive and hence rarely available in developing countries. A valid alternative of the ground measurements is to estimate solar radiation using meteorological satellite data.

This study is intended to develop a simple statistical model for the determination of global solar radiation for Bangladesh from the visible channel data of the NOAA- AVHRR satellite images. Performance of the model will be tested by comparing the satellite estimated radiation values with the concurrent ground measured pyranometer data. In the first phase of the work a model was developed and tested by estimating hourly global solar radiation for two months (month-1: 28 Jan-28 Feb, month-2:19 April-18 May, 2005) by taking data from a single satellite (NOAA-17). For both the months good correlation between the estimated and observed values were obtained. Relative deviation between the computed and measured values for month-1 was between 1.8% and 8.5% and for month-2 it was between 1.4% and 21%. The non-systematic Root Mean Square Error (RMSE) for month-1 and month-2 were 4.8% and 11.6% respectively and the systematic error or Mean Bias Error (MBE) for the same two months were +1.7% and +6.8% respectively. Validation was also done by estimating hourly irradiation at an independent station taking regression coefficients from other stations. In this case RMSE and MBE are 13% and -0.08% respectively.

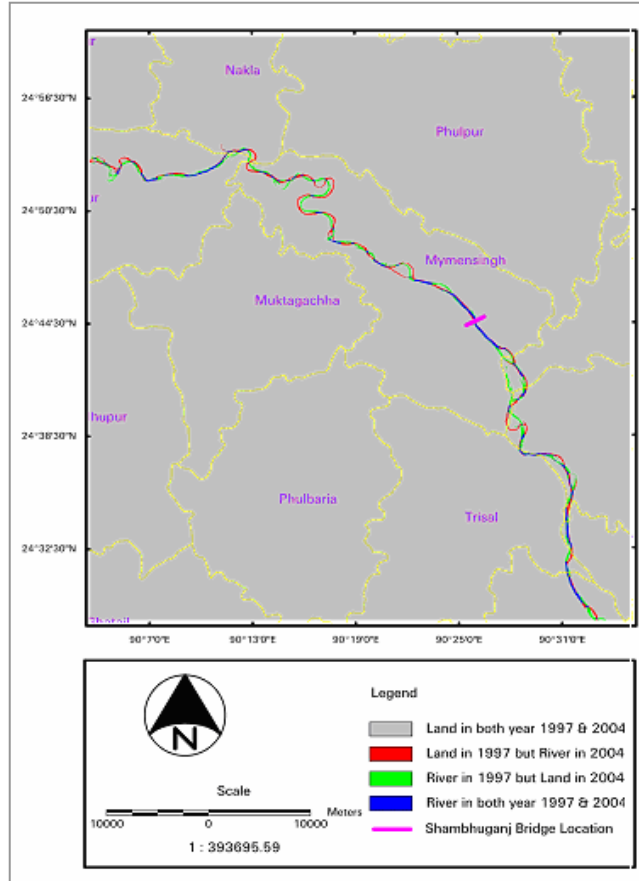


Fig. 2: Change detection of the Old Brahmaputra

(SUST), Sylhet. The part of the old Brahmaputra River in the district of Mymensingh and partially under the district of Tangail, Jamalpur, Sherpur, and Netrokona was considered as the study area. Digital analysis of Landsat imagery of 1997 and 2004 shows a significant change in the northeastern part of Mymensingh Sadar Upazila. A very minute change of the river courses has been noticed near the China Bangladesh Friendship Bridge (Shambhuganj Bridge). The study also revealed that the transportation of sediment from the upstream is the major contributing factor of these morphological changes.

The work for the second phase is going on. In this phase, daily global solar radiation will be estimated by taking multiple observation of the satellite. Then in the third phase, possible application of the satellite based estimation in the environmental aspect will be studied to search for a valid alternative solar radiation measurement.

Japanese Ambassador Visited SPARRSO

Japanese Ambassador His Excellency Masayuki Inoue visited SPARRSO on 01 October 2006 to promote cooperation between Japan and Bangladesh in the space programme and to exchange views of the future cooperation in the space activities among the Asia-Pacific Countries. Yusuke Ozawa (Third Secretary, Embassy of Japan, Dhaka), Kyoichi Ito, Tetsuo Yamashita, Remote Sensing Technology Centre of Japan (RESTEC), Ms. Mika Ochiai, Asia Pacific Regional Space Agency Forum (APRSAF) and Naoki Saito, Director, Japan Aerospace Exploration Agency (JAXA) were in the Japanese delegation. A long discussion was made on the execution and financial support for the proposed “Environment, Disaster and Resource Monitoring System (EDREMOS)” Project. The mission ended with a positive indication for providing assistance in this regard. Finally they invited representatives of SPARRSO to attend the seminar organized by APRSAF to be held at Indonesia and subsequently at Bangalore, India. The meeting concluded with a good attitude on showing cooperation between Japan and Bangladesh in space programme.

Abdul Halim Howlader, Chairman (In-charge), K.H. Masud Siddiqui, Member (Application), Md. Obaidul Quader, Chief Scientific Officer (CSO), Dr. Jinnahatul Islam, Principal Scientific Officer (PSO) and A.Z.Md. Zahedul Islam, Senior Scientific Officer (SSO) were present in the meeting.

Supervision of Internship Training for M.S. Student

SPARRSO has a long standing special relationship with various universities for enhancing as well as sharing research and training activities. To disseminate remote sensing and GIS technology, SPARRSO scientists conduct short training programme and act as supervisor/co-supervisor on assigned scientific research topics of the student of different educational institute of the country. S.M. Zafor Iqbal, M.S. student of Environmental Science Discipline of Khulna University has accomplished his Internship training course under supervision and guidance of S.M. Humayun Kabir, Scientific Officer of SPARRSO.

Subsequently another three M.S. students from Environmental Science Discipline of Khulna University – Md. Ahasanul Hoque, Md. Israfil and K.M. Abdul Halim have completed their Internship training course under joint supervision of Dr. Hafizur Rahman, Senior Scientific Officer, S.M. Humayun Kabir, Scientific Officer and Dr. Mahmudur Rahman, Scientific Officer of SPARRSO.

New Secretary of SPARRSO



Babul Chandra Roy joined as Secretary of SPARRSO on 10 December 2006. Before joining here he was the Deputy Commissioner of Lalmonirhat District.

New Financial Adviser of SPARRSO



Md. Saraf Uddin Ahmed joined as Financial Adviser of SPARRSO on 10 December 2006. Before joining here he was the Deputy Secretary of the Ministry of Land to the Govt. of the People's Republic of Bangladesh. He is a

Member of Bangladesh Civil Service (Administration) cadre.

Seminar Talk at SPARRSO

A.Z.Md. Zahedul Islam, Senior Scientific Officer, SPARRSO, presented a seminar talk on 'Regional Cooperation Mechanisms on Space Information for Drought Disaster Reduction' at SPARRSO Committee Room on 08 November 2006.

Md. Shahjahan Ali, Assistant Professor, Department of Applied Physics, Electronics and Communication Engineering, Islamic University, Kushtia, a Ph. D. student in SPARRSO presented a paper on 'Estimation of Solar Radiation on the Surface of Bangladesh using Satellite Data', at SPARRSO, Dhaka on 12 October 2006.

Abdul Halim Howlader, Chairman (In-charge), SPARRSO presided over the seminars. Scientists, Engineers and other officials were present in the seminars.

Participation of Training / Conference / Workshop

Md. Abdus Salam, SO, participated in the "International Seminar and Exhibition on Space Technology and Applications" held at Institute of Space Technology (IST), Islamabad, Islamic Republic of Pakistan from 11-15 September 2006.

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Ms. Mehrunnessa, PSO, participated in the Workshop on "Regional Climate Model (PRECIS)" – organized by SAARC Meteorological Research Centre (SMRC), Dhaka from 17-19 December 2006.

Dr. M. A. Shahid, PSO, participated in the workshop on "Research on Adaptation to Climate Change in Bangladesh: launch of Research Projects" held at LGED Conference Room, Dhaka on 13 August 2006.

Abul Kalam, PSO, participated in the "International Day for Disaster Reduction (IDDR) – 2006", organized by Disaster Management Bureau, Dhaka, 11 October 2006.

Md. Atiar Rahman, PSO, participated in the Inaugural Ceremony of the "12th Governing Board Meeting" of SAARC Meteorological Research Centre (SMRC), Dhaka, 12 September 2006.

Md. Abul Hossain, Information Officer has been successfully completed a training course on "Globalization and Bangladesh" - organized by Academy for Planning and Development, Ministry of Planning, Nilkhet, Dhaka from 26 November – 03 December 2006.

SPARRSO Internal Publication Committee:

| | | |
|----------------------|-----|----------|
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The SPARRSO Newsletter is published quarterly. We welcome comments, questions and suggestions from our honourable readers.

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