

Research / Mapping Activities

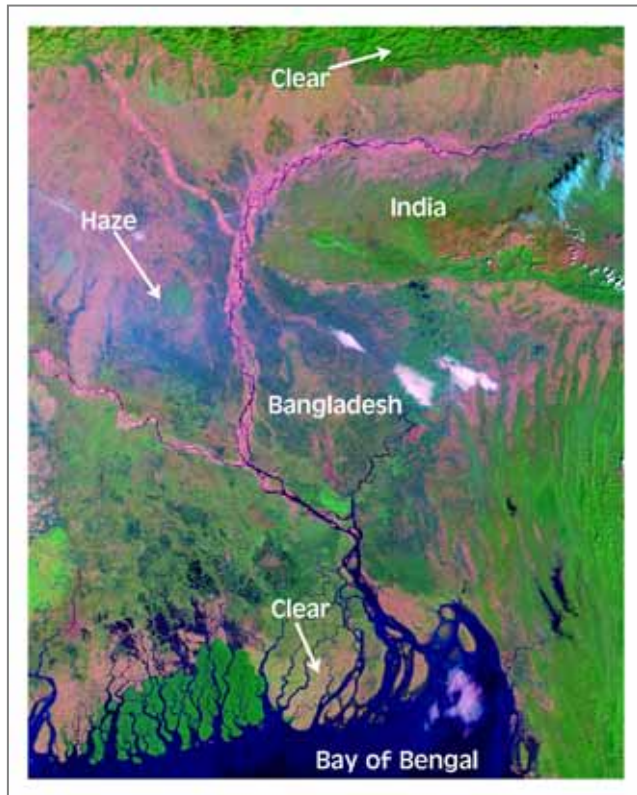
Haze over Northern Bangladesh

Fig. 1: Terra Modis image shows haze over northern Bangladesh on the 5th February, 2006.

The haze detected on the satellite image (Fig. 1) might be the result of fires set for agricultural purpose and pollution from densely populated cities. Four big cities: Mumbai, Delhi, Kolkata and Dhaka are located in this region. In normal conditions, the air near the ground is warmer than the air above it. Warm air rises and carries pollution from fires or cities. The pollution disappears when it is mixed with cooler air high above the ground. During the Himalayan winter, cold air rushes down the mountains onto the plain. This makes the air near the ground cooler than the air above it, essentially trapping a pocket of cold air and doesn't disperse as it

would under normal conditions. As a result haze builds until the inversion. Persistent of haze over a landscape for a shorter period has no significant implication on human health and property. If it persists for a longer period it should be monitored and tracked. Satellite remote sensing provides a unique opportunity for this purpose.

The image captured by Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Aqua satellite on 5 February 2006 (Fig. 1) shows greyish haze follow the course of the Ganges and the Brahmaputra River. The plumes appear to combine along their watery counterparts.

River Course Shifting and Ox-bow Lake Creation

An ox-bow lake forms when a wide meander from a stream on a river is cut-off. They are called ox-bow lakes because of the distinctive curved shape of formation. Ox-bow lakes are seen in many parts of the World, i.e. alongside the Mississippi River in West Tennessee (USA), the Songhna River in the northeast China.

A time series analysis of Landsat image shows the formation of an ox-bow lake from the Bagkhali River. On the Landsat TM image of 1988 a snake-like shape of Bagkhali is seen across the flood plain before reaching the Bay of Bengal (Fig. 2). Landsat TM image of 1990 shows an ox-bow lake is just created due to lateral erosion of the concave bank and deposition on the convex bank of the meandering river. Subsequently, a new straighter river channel was created and an abandoned meander loop was formed. Deposition had sealed off the cut-off from river channel. Finally, the recent Landsat TM image of 2005 shows a complete separation of the lake from the river. The length of the Bagkhali River is shorter now and it has implication on river navigation system.

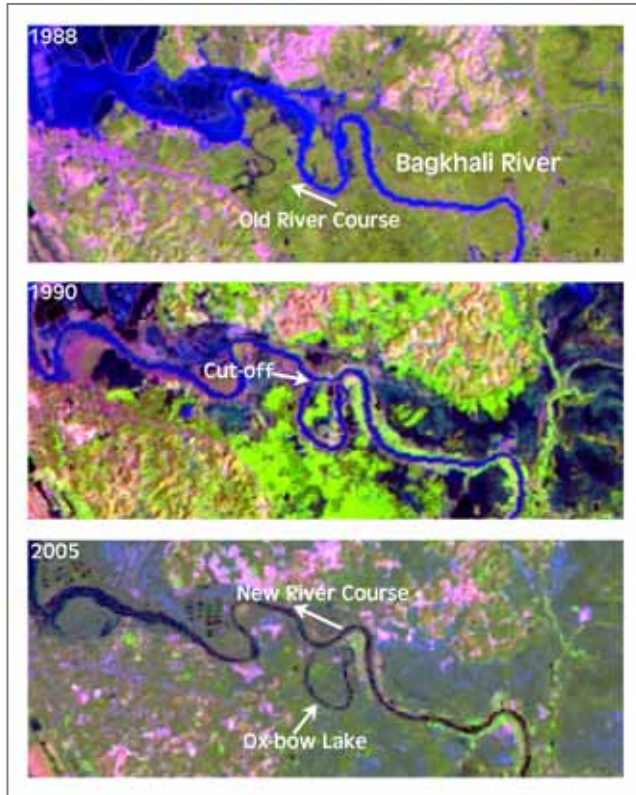


Fig.2: Landsat TM image shows river course shifting and ox-bow lake creation.

News

Sixth Governing Body Meeting of the Inter - Islamic Network (ISNET)

Inter-Islamic Network on Space Sciences and Technology (ISNET) is a non-political and non-profit making agency. It is an independent, autonomous and self-governing institution under the umbrella of the OIC (Organization of Islamic Conference) Standing Committee on Scientific and Technological Cooperation (COMSTECH). ISNET is engaged in fostering collaboration for the development of science and technology among the member countries. SPARRSO is closely associated with it.

ISNET organized an International Seminar and Exhibition on Space Technology & Applications under the sponsorship of Islamic Development

Bank (IDB) and COMSTECH, in collaboration with Pakistan Space & Upper Atmospheric Research Commission (SUPARCO) from 11-15 September, 2006 in Islamabad, Pakistan. Sixteen participants from OIC countries (Azerbaijan, Bangladesh, Indonesia, Iran, Iraq, Jordan and Sudan) and number of participants from various international and national organizations attended the seminar & exhibition. Apart from the participants from OIC countries a number of participants from China and France are also attended the seminar. Sixth Governing Body Meeting of ISNET was held on the 15 September 2006 at the Institute of Space Technology (IST) back to back with the International Seminar & Exhibition. Representatives from Bangladesh, Indonesia, Iraq, Pakistan, Sudan and COMSTECH as well as some invited observers from other participating countries attended the meeting. The meeting was chaired by the president of ISNET and Chairman SUPARCO Maj Gen Raza Hussain. The Governing Body discussed several issues and decided to approach several relevant institutions to share their knowledge and expertise. ISNET could provide an effective role in the field of Space Sciences, Space Technology and their Peaceful Applications in order to improve the socio-economic conditions of the grass-root people of the Islamic countries. Two scientists from SPARRSO attended the Seminar and one of them represented the Governing Body meeting.

Defence Secretary's Visit to SPARRSO

Mr. Abu Md. Maniruzzaman Khan, Secretary, Ministry of Defence visited Bangladesh Space Research and Remote Sensing Organization (SPARRSO), Dhaka on 14 August 2006. Mr. Abdul Halim Howlader, Chairman (In-Charge) and other senior officials showed him different laboratories of the Organization. Finally, SPARRSO Chairman has made a presentation on SPARRSO activities related to the application of remote sensing technique.



Defence Secretary visiting SPARRSO laboratory

Taylor and Francis Best Letter Award 2006



Dr. M. Mahmudur Rahman, Scientific Officer of SPARRSO with two co-authors (Prof. Elmar Csaplovics, Dresden University of Technology, Germany and Prof Barbara Koch, Albert-Ludwigs University, Freiburg, Germany)

awarded “the best letter award” for the following article published in “International Journal of Remote Sensing” during the previous calendar year (2005-2006):

An efficient regression strategy for extracting forest biomass information from satellite sensor data. Vol. **26(7)**, pp 1511-1519.

The award winner received a certificate and one year’s free subscription to “International Journal of Remote Sensing”. Further information on this award is available on the website:

<http://www.rspso.org/about-rspso/honours-and-awards/>

SPARRSO Scientist awarded M.Tech.



Mr. S. M. Humayun Kabir, Scientific Officer of SPARRSO has recently been awarded Master of Technology (*M.Tech.*) degree from Faculty of Engineering, Andhra University of India. He secured ‘First class with Distinction.’ The title of

his dissertation is “Integrated Use of Satellite Remote Sensing and GIS in Optimal Land Use Planning for Agricultural Development”. The study was supervised by Dr. Hafizur Rahman, Senior Scientific Officer of SPARRSO. The co-supervisor of his dissertation was Dr. S. K. Saha, Head, Agriculture and Soils Division, Indian Institute of Remote Sensing (IIRS), Dehradun, India. The findings of his thesis will enhance the knowledge on the application of remote sensing and GIS for natural resources evaluation and management.

Supervision of Graduate Research Work

As a part of the commitment of SPARRSO to disseminate remote sensing technology, the scientists of SPARRSO impart training to the University students and serve as external supervisors to different academic institutions. A graduate research student of the Shah Jalal University of Science & Technology (SUST), Sylhet has completed her graduate research work under the supervision of Mr. M. A. Salam, SPARRSO scientist. The title of her thesis was ‘Study on the Morphological Changes of Part of The Old Brahmaputra River Using Remote Sensing and Geographic Information System’.

Leave Preparatory to Retirement (LPR)

Dr. Dewan Abdul Quadir, Chief Scientific Officer of SPARRSO has gone to LPR with effect from 6th July 2006. He joined SPARRSO



on 9 February 1980 as Senior Scientific Officer. He served SPARRSO for more than 26 years. During this time, Dr. Quadir made noteworthy contribution in the research and development of SPARRSO, which are

being used for disaster monitoring, tropical cyclone and flood study, agricultural crop monitoring and assessment of crop production, coastal zone, forestry, digital cartography such as Enumeration Area Mapping etc. Dr. Quadir has over 100 publications in the national and international journals, proceedings and reports. Prior to his LPR, he served as Head of Synoptic Division of SAARC Meteorological Research Centre (SMRC) for 6 years on deputation.

Participation in Training/ Seminar/ Conference

Md. Mozammel Haque Sarkar, Senior Engineer is attending “Master Programme in Space Technology and Applications (MASA)” – organized by APSCO, Beihang University, China, 10 July 2006 - 10 April 2007.

Md. Raquib Azam, Principal Scientific Officer attended a short-term training course on “Reception Stations of FengYun Satellite Data Broadcasting System (FengYun CAST),” Beijing, China, 24 – 26 July 2006.

Md. Shahjahan Ali, SO, participated International Training course on “Photogrammetry and Remote Sensing”, - organized by Remote Sensing Application Division, SUPARCO, Karachi, Pakistan, 21 August – 01 September, 2006.

M. A. Shahid, participated in the inception workshop on “National Capacity Self-Assessment for Global Environmental Management” held at BIAM Multi-purpose Hall on 30th July 2006, Dhaka.

Presentation

Ismail, A. M. Inter Planetary Expeditions, UK (Owner and Chief Engineer) presented a seminar on International Space University (ISU) at SPARRSO Committee Room on 07th September 2006. Mr. Abdul Halim Howlader, Chairman (In-charge) of SPARRSO presided over the Seminar. Scientists, Engineers and other officials were present at the seminar.

Rahman, M. M. 2006. “Human Induced Land Cover Change and Carbon Emission: Test Case from South-eastern Bangladesh” a poster presented at the First International Conference on Carbon Management at Urban and Regional Levels: Connecting Development Decisions to Global Issues, Mexico City, 4 – 8 September 2006.

Islam, J. – Applications of Modern Technology in Tree Plantation, published in ‘*The Daily Dinkal*’, Dhaka, 01 September 2006.

Publication

Rahman, M. M. 2006. Tropical Forest Biomass Estimation and Mapping using *K*-nearest Neighbour (kNN) Method, published in: S. Nayak, S. K. Pathan and J. K. Garg (Eds.). *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Vol XXXVI, Part IV, Goa, pp 860-865.

Salam, M. A. and Rahman. H. 2006. Application of Geospatial Technology for Land Evaluation and Suitability Analysis for Aman Rice Crops in Bangladesh, published in the CD Proceeding of ‘*International Seminar and Exhibition on Space Technology and Application*’, Institute of Space Technology (IST) Islamabad, Islamic Republic of Pakistan, 11-15 September, 2006.

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