❖ CSSTEAP Newsletter ❖

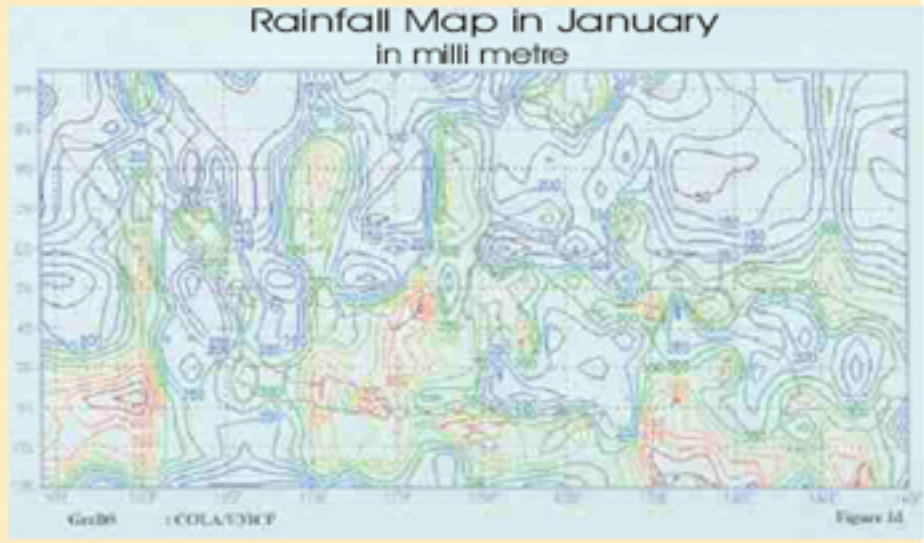
Quarterly Newsletter of Centre for Space Science and Technology Education in Asia and the Pacific (Affiliated to UN)

Volume 6 Issue 2 **June, 2003**

'RAINFALL ESTIMATION OVER INDONESIAN REGION USING ARKIN'S TECHNIQUE'

by Waghu Subektiyo, Indonesia

On the assumption that global geography enriches general circulation of the atmosphere and significantly influences the global distribution and pattern of rainfall, rainfall estimation using relevant technique was applied to meet the requirement. In this study, the 10 days to monthly scale rainfall (FIG.) is estimated using Arkin's technique over a grid of 1.5° x 1.5° covering Indonesian region. The variability of rainfall and cloudiness is also studied over the same region on a grid of 1.5° x 1.5° using 3 hourly GMS (Geostationary Meteorological Satellite) data. The comparison of 10 days and monthly rain maps with ground based and other satellite measurements are carried out for wet season during 1997/1998 over Indonesian region. A good qualitative agreement is found between GMS and ground based rain maps. However, in quantitative terms, correlation between GMS estimation and ground rain measurements is found about 60% in January 1997 and 61% in February 1997 when the boxes with high topography are excluded. A very similar result was found between GMS and other satellite derived rain estimation from NOAA-AVHRR (National Oceanic and Atmospheric Administration-Advanced Very High Resolution Radiometer) and DMSP-SSM/I (Defense Meteorological Satellite Program Special Sensor Microwave/Imager). Further, the average monthly fractional cloud cover maps were generated for each synoptic hours starting from 00:00 to 21:00 UTC for studying diurnal variability of rainfall on a grid of 1.5° x 1.5° over Indonesian region during wet season. It is found that for land areas variability of fractional cloud cover is high. Consistent variability is detected for oceanic regions. The regions with high topography are not able to show any consistent variability, possibly due to inability of Satellite Infra Red based techniques to detect warm rain. Applying Arkin's technique for rainfall estimation comes to the conclusion that the Arkin's method is good for the convective type of rainfall but poor result over the hilly region.



This is a summary of the one year follow up project of M-Tech degree awarded to the student of SATMET (1998) PG Course.
Supervisor : Dr. A.K. Varma, MoG, SAC, Ahmedabad

Inside this issue

THIRD SATMET COURSE

The Third Post Graduate Course on *Satellite Meteorology and Global Climate,* under the aegis of CSSTEAP, (Affiliated to UN) was conducted at Space Applications Centre, Ahmedabad during August 1, 2002 to April 30, 2003. Nineteen participants representing 13 countries of the Asia Pacific region attended the Course.

The candidates learnt a lot during the 3 months Pilot-Project-about formulation of a problem of relevance to their country, specifying and acquiring data, execution, and communication both orally and in writing.

The Pilot Projects could be listed in following broad topics

- Applications to tropical cyclone studies using GMS, TRMM Data
- Monitoring of Climatic parameters like NDVI, Snow cover, Earth Radiation Budget Studies etc.
- Meso-scale studies, El-Nino
- Ocean Process Studies, Regional Climate Models

The topics for one year Project work were identified after several discussions with the participants. The fields of interest of the participants, the needs of the sponsoring organizations and the facilities available in the countries of the participants for supporting the project work were taken into account while deciding the projects.

The Valedictory function of the SATMET III Course was held on April 26, 2003 at New SAC Campus (Bopal), Ahmedabad. Dr. G Madhavan Nair, Director, VSSC was the Guest of Honour. Mr. S K Das Additional Secretary, DOS graced the occasion as Chief Guest. Dr. K N Shankara, Director, SAC; Prof. Karl Harmsen, Director, CSSTEAP; Dr. George Joseph, Satish Dhawan Distinguished Professor, Faculty members, Senior Scientists/Engineers of SAC also attended the function.

Three participants passed with Distinction, fifteen passed in First class and one participant passed in second class. The first two rank holders are from India, while the Sri Lankan participant secured the third rank. Chief guest distributed the Diploma certificates. In his address Mr. Das stressed the need of training in Satellite Technology in general and Satellite Meteorology in particular, for the rapid development of Asia Pacific region. He felt that the organization of these training courses by CSSTEAP is of great significance in the augmentation of national capabilities in the Asia Pacific countries. He called upon all the participants to exploit the advanced technologies and apply the knowledge gained through the course and make valuable contribution to national economy and progress thus furthering the goals of CSSTEAP.

A CD containing the lecture notes of the course and other related activities was brought out. The CD was released by Dr. Madhavan Nair. The Chief Guest also released a printed "Memoir" during the function. The Memoir also contained messages from the dignitaries from different parts of the world.

Dr. K Kasturirangan, Chairman ISRO and Chairman, GB CSSTEAP joined the distinguished gathering during lunch and congratulated all the participants on their successful completion of the first phase of the course.

Valedictory function of 3rd SATMET PG Course

THIRD SPACE SCIENCE COURSE

The third Post Graduate Course on Space and Atmospheric Sciences was conducted at PRL Ahmedbad from August, 2002 to April 2003. A total of 11 participants, five from Mongolia, one from Uzbekistan and five from India attended the course. The valedictory function of the course was held at PRL on April 30, 2003 in K.R. Ramanathan Auditorium. Prof. P.K. Kaw, Director, Institute for Plasma Research (IPR) was the Chief Guest. The function was presided by Prof. V.B. Sheorey, Dean PRL. Dr. K.N. Shankara, Director SAC and other distinguished personalities from SAC as well as from IPR attended the function, apart from a large number of PRL staff.

Prof Karl Harmsen, Director CSSTEAP, in his welcome address presented an overview of the activities of CSSTEAP. The function was formally inaugurated by lighting of lamp by the Chief Guest, Prof. P.K. Kaw, who addressed the gathering. Prof. H.S.S. Sinha gave a brief account of the Space and Atmospheric Science course.

The participants were awarded diplomas by the Chief Guest, Prof. P.K.Kaw. Out of 11 participants, 5 were placed, in first class and the rest six in pass class. None of the participants could qualify for Distinction in this course. Two participants, one from Indian and one from foreign group was invited to share, their views about the course and their experiences at Ahmedabad, especially at PRL, as a part of feedback. Vote of thanks was given by Mr. R.N. Misra. The function concluded with lunch at Hotel Inder Residency.

SEVENTH RS & GIS COURSE

The seventh Post Graduate Course of Remote Sensing and GIS (RS & GIS) of CSSTEAP was conducted at Indian Institute of Remote Sensing, Dehradun, from October1, 2002 to June 27, 2003. Twenty three participants representing thirteen countries of the Asia-Pacific region attended the course. This report pertains to the last module of the course i.e. module- III which started from April, 2003. This module was basically designed for Pilot project, to be extended into a one-year project, to be carried out later in the respective home countries of the participants.

The broad topics of the pilot projects undertaken by the course participants during module-III are - Crop inventory and Cropping pattern change analysis, Agro-meteorology, Evaluation of integrated watershed Development Programs, Land use planning, Snow-melt run-off and Hydrological modeling, Irrigation water requirement assessment, Site suitability assessment for hydropower generation, Decision Support System (DSS) for land slide hazard zonation, Neo-tectonic study, Urban growth analysis and urban utility assessment, Coastal bathymetry, Coastal water productivity assessment, Forest growing stock assessment and Elephant corridor analysis.

The valedictory function of the course was held on June 27, 2003. The Post Graduate diploma certificates were awarded to the course participarts by Dr. R.R. Navalgund, Director, National Remote Sensing Agency, Hyderabad who was the Chief Guest of the Valedictory function. Director and Deputy Director of CSSTEAP also graced the function. The course report was presented by Course Coordinator during the function. To mark the occasion a memoir was also released by the Chief Guest.

7th RS & GIS Course

THE MEETINGS OF GOVERNING BOARD AND ADVISORY COMMITTEE

The eighth meeting of Governing Board (GB) and fifth meeting of Advisory committee (AC) of CSSTEAP were held on May 28, 2003 and May 26, 2003 respectively at Indian Space Research Organisation (ISRO), Head Quarters, Bangalore.
Dr. Victor Kotelnikov of United Nations-OOSA, Vienna Chaired the AC meeting.
Dr. Peter Willmore (University of Birminghum, U.K.), Dr. Sajaak Beerens (ITC, The

AC meeting in progress

Nether Lands); Dr. S.Namasivayam (ACCIMT, Sri Lanka), Mr. Wisinu P.Marsis (LAPAN, Indonesia), Dr. RR Kelkar (DG, IMD, India), Director, CSSTEAP and Course Directors and Co-ordinators of various CSSTEAP Courses and several senior officials of Department of Space, Govt. of India attended the meeting. The committee took a review of centre's technical academic activities since last one year. Various issues like implementation of Board of Studies (BOS) recommendations, plan for research activities at the centre, Ph.D. Programme, Deemed University Status, membership of AC etc. were discussed. The AC appreciated the efforts of the centre for excellent progress made and expressed satisfaction at the achievements and also for support of the host country. The AC also noted, the committed efforts of the centre, in particular its Director, and the host institutions-IIRS, SAC and PRL have made the centre reach such high levels. The AC endorsed the courses and future programmes and technical activities of the centre.

The GB meeting was chaired by Dr. K.Kasturirangan, Chairman Governing Board CSSTEAP and Secretary, Department of Space Govt. of India. . Members of Govering Board of CSSTEAP viz. Mr. Kartar Singh Bhalla (Nauru), H.E. Mr. Jose P Del Rosario Jr. (Philippines), Mr. Z. Bukhbantayev (Kazakstan), Dr. L. Tolbaev (Kyrgz Republic), Ms. Knyne Kalyar (Myanmar), Mr. Dhanajay Jha (Nepal), Mr. W.P. Marosis (Indonesia), Dr. Victor Kotelnikov (UN-OOSA); Dr. S. Namasivayam (Sri Lanka), Dr. Sjaak Beerens (ITC, the Nether Lands), Director, CSSTEAP and higher officials of various centres of Department of Space, Govt. of India, attended the meeting. The GB members ratified the appointment of Dr. P.S. Roy Dean IIRS as the Deputy Director of the Centre. Several important issues like expansion of CSSTEAP in the Asia-Pacific region-steps to be taken, the centre strategy for research and Ph.D. programme, review of seventh GB action items, next Chairman of GB etc. were discussed.

The Chairman, GB outlined a three point agenda for the future strategy of the centre-the first is to consolidate and build on the strong foundation of the past 8 years- with well- instituted mechanisms for the centre to the well-knit and "structured" to benefit from ISRO'S basic expertise and experience; the second is to ensure that, as part of the consolidation, we make the centre broad-based

GBMeeting in Progress

Forth Coming Courses

* Fourth 9 month Post Graduate Course in Satellite Communications at SAC, Ahmedabad from August 1, 2003
* International Training courses on Geo-informatics for Bio- diversity Assessment from August 18 - Sept. 12, 2003 at IIRS, Dehradun.
* Eighth 9 month Post Graduate Course in Remote Sensing & GIS at IIRS, Dehradun from October 1, 2003

CSSTEAP (Affiliated to UN)
Headquarters IIRS Campus,
4, Kalidas Road,
Dehra Dun 248 001, INDIA
Ph. : +91-135-2740737, 2740787
Fax : +91-135-2740785
e-mail : cssteap@iirs.gov.in
Web : www.cssteap.org

with the involvement of as many nations of the Asia-Pacific region to join the centre; the third action would be to embark on obtaining an international funding support for the activities of the centre. He thanked the UN system, in particular UN-OOSA, UN-ESCAP and UNESCO, for their support and co-operation. Chairman GB also thanked all the GB members for their continued support and encouragement provided to the growth of the centre. The Chairman thanked the GB members, ISRO/DOS staff, Director (s) of SAC, NRSA and PRL, and Course Directors, Course Coordinators of all four courses for their dedicated support. UN-OOSA representative, Dr. Victor Kotelnikov, in his remarks congratulated the centre for the excellent progress made and expressed satisfaction with the education programmes of the centre. He also mentioned that CSSTEAP was mainly successful because of the technical and administrative support of ISRO. The GB members expressed satisfaction of the centre and they also extended whole hearted support to the future activities of the centre.

BACKGROUND OF CSSTEAP

In response to the UN General Assambly Resolution (45/72 of 11th December, 1990) endorsing the recommendations of UNISPACE-82 the United Nations Office for Outer Space Affairs (UN-OOSA) prepared a project document (A/AC.105/534) envisaging the establishment of Centres for Space Science & Technology Education in the developing countries. The objective of the Centres is to enhance the capabilities of the member states in different areas of space science & technology that could advance their social and economic development. The first of such centres, named as Centre for Space Science& Technology Education in Asia & the Pacific (CSSTEAP) was established in India in November 1995. Government of India has made available appropriate facilities and expertise to the Centre through the Indian Institute of Remote Sensing (IIRS) Dehradun, Space Application Centre (SAC) & Physical Research Laboratory (PRL) Ahmedabad. The Centre is an education and training institution that is capable of high attainments in the development and transfer of knowledge in the fields of space science & technology. The emphasis of the Centre is on in-depth education, training and application programmes, linkages to global programmes/databases; execution of pilot projects, continuing education and awareness and appraisal programmes. The Centre offers Post Gradutate level & Short courses in the fields of (a) Remote Sensing and Geographic Information Systems, (b) Satellite Communications and GPS, (c) Satellite Meteorology and Global Climate, (d) Space and Atmospheric Sciences. A set of standard curricula developed by the United Nations is adapted for the educational programmes. The Centre is affiliated to the United Nations and its education programmes are recognised by Andhra University, Visakhapatnam, India for awarding M. Tech degree. (after completion of 1 year project).

CSSTEAP welcomes the views and opinions of the readers of the newsletter. Short Communications on space science and technology education which may be relevant to Asia Pacific Region are also welcome. Views expressed in the articles of the newsletter are those of the authors.