LRD/IRSA G

Indian Society of Remote Sensing
Ahmedabad Chapter

NEWS LETTER

Vol. 4 No. 2 01 April, 1990

Dear Members,

In common parlance, 'fishing in troubled waters' is a serious accusation or a derogatory remark but the proverbial saying afterall seems to have a scientific basis. At least if one goes by the satellite images which have been used by the scientists of Marine Fisheries Project to forecast potential fishing areas on the basis of observed location of thermal fronts (or troubled waters ?). The idea of using sea surface temperature for locating fishing grounds is being used operationally for the first time in the country. This issue features a report on the modus operandi and some results. A short report on aquaculture site mapping having relevance to inland fisheries is also included to apprise you of the state of art.

Talking more about the fisheries as a theme of the newsletter, do you think that we ought to be world leaders in fisheries?. Why not ? For a country sitting atop a vast ocean, with long coastline, dense population, rice economy and a rich tradition of sea faring, it should have been natural. Extend the argument further and world food shortage should have simply disappeared. Unfortunately both have not happened. Lack of information is the main cause for inadequate harvest from underexploited and unexploited areas. Thus the marine fisheries project fulfills an important national requirement. Globally, the entire primary productivity of oceans is close to 300 billion tons while the world gets around 30 million tons of marine fish catch (inland fisheries contributing further one tenth of that). This vast untapped potential indicates a clear green signal for full steam ahead - at least from now till the day of 'greens' and assorted conservationists.

Lined up in this issue is a report on National Drinking Water Mission-a meticulously executed, neat end-to-end type job done with clock work scheduling and down-to-earth practical purposes. A Glimpse of GIS- that 'in thing' completes our scientific news/progress reporting.

On March 31, 1990, curtain was finally rung on the country's most ambitious and multi-faceted remote sensing applications programme - the Indian Remote Sensing Satellite Utilisation Programme (IRS-UP). Between an euphoric beginning of 1984 and a tapered ending of 1990, the programme achieved many things - scientific and otherwise. One of the biggest achievements of the programme was to help light many candles from one candle which shines in the institutional landscape of the country now dotted with flames of remote sensing - steady or flickering notwithstanding. In the next issue of Newsletter, we plan to take a closer look at IRS-UP, not from the angle of horizontal proliferation, but purely in terms of scientific achievements of its various components. So please do send in your inputs.

Lastly certain members like Dr. R.N. Jadhav have suggested the idea of starting a debate on some controversial issue, say, visual vs digital classification. All this to cajole you for a response. So any body firing the first salvo?.

- Editor

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LOCATION OF POTENTIAL FISHING GROUNDS FROM NOAA DATA

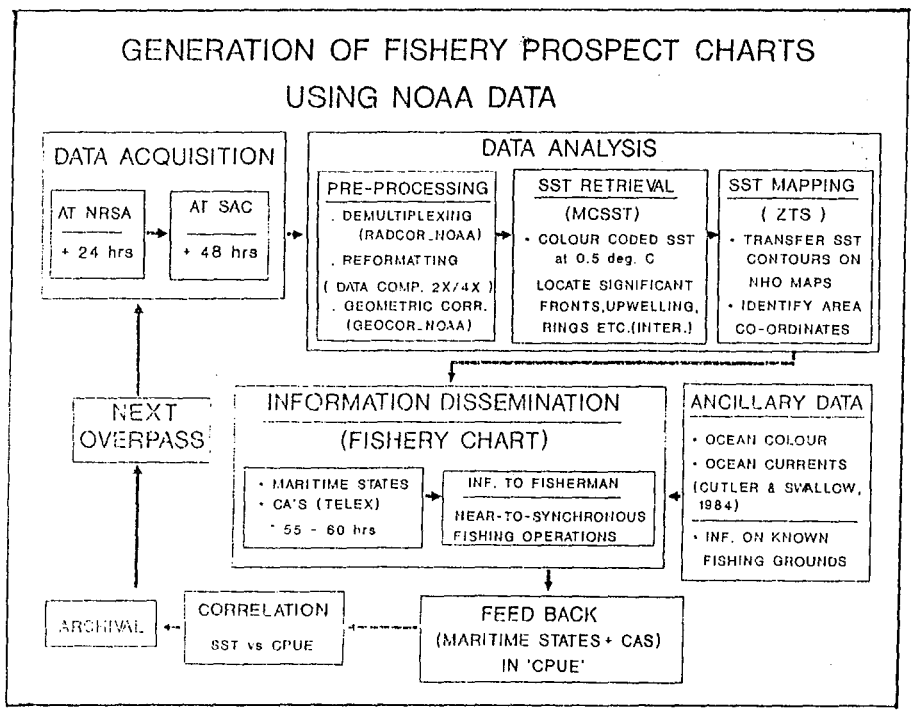
A project on Marine Fisheries under Remote Sensing Applications Mission is in progress with funding from the Department of Agriculture and Co-operation.

During the early part of this year (March-April) a fishery validation exercise was carried out in the Indian waters. Information about the potential fishing grounds based on the mapping of temperature fronts from thermal data of NOAA satellite were telexed to three maritime states. viz. Gujarat, Maharashtra and Andhra Pradesh. Feedback received, in particular, from the Commissionerate of Fisheries, Gujarat State, indicated substantially high catch of squids, prawns and fishes in the areas suggested off Dwarka, Porbander and Veravel. A point noteworthy was that this forecast proved quite useful as it came at a time when the fishing season tradionally being followed was almost over. It was also reported that the fishermen received the forecasts with enthusiasm as they had obtained positive results.

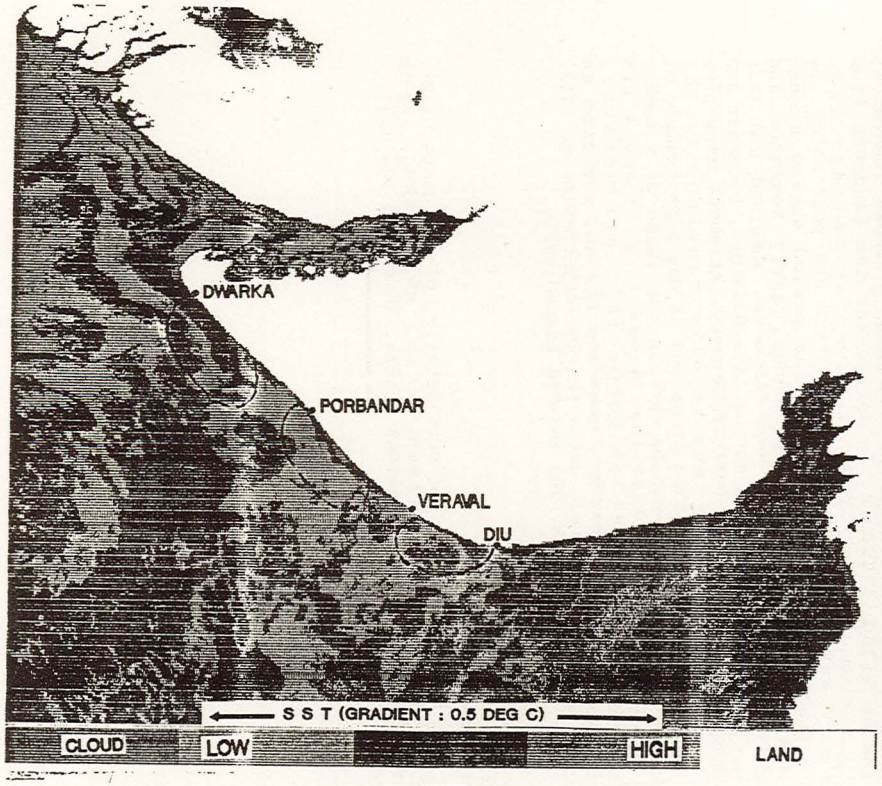
A similar exercise s in progress for the current fishing season and the location of potential fishing grounds is being sent to almost all the maritime states. The very first forecast sent to the Gujarat State for the current fishing season reported a catch of about 350 kg/boat/day and this was reported to be an excellent catch. Techniques have been standarised towards generating the "fishery prospect charts" from NOAA data on a stand-alone image processing system - ISROVISION developed by the Space Applications Centre.

As of today 57 fishery prospect charts for different maritime states have been generated and communicated for follow-up action.

The softwares transferred on ISROVISION system and used are Radcor-NOAA and Geocor-NOAA for image extraction, radiometric correction and geometric correction respectively. SST image at the resolution of 0.5° C and grid size of (2 x 2 km/4 x 4 km) is finally generated using the softwares like SST and COMP. Based on the location of surface thermal fronts in terms of their size, temperature gradient, spatial distribution etc., the potential



APRIL 18, 1989



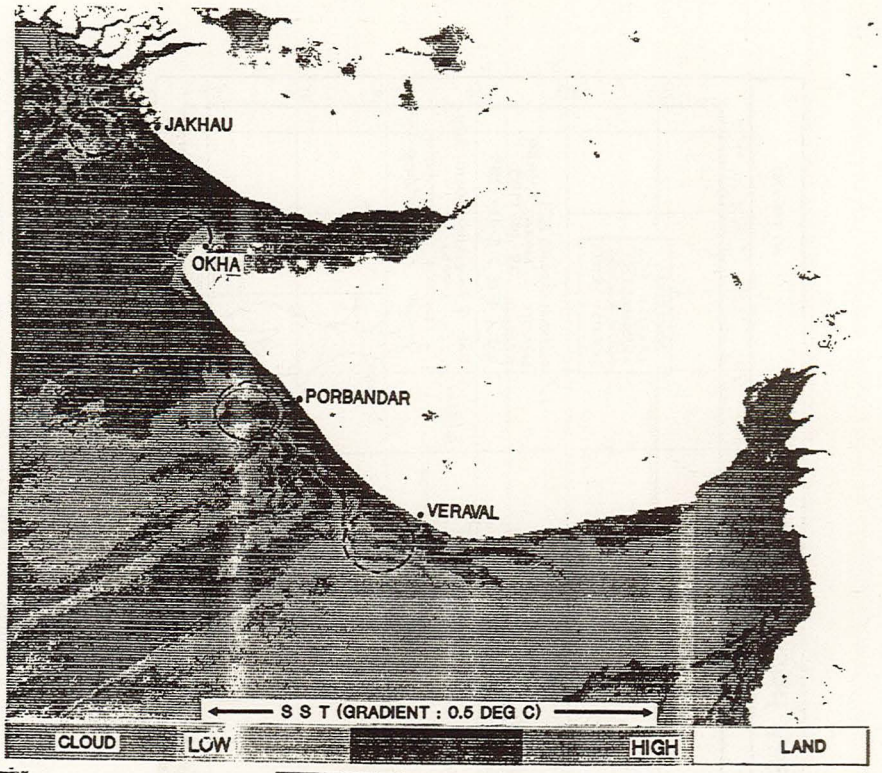
FEEDBACK

CATCH (In Kg/boat) AND ITS COMPOSITION UPTO 35 NM OFF THE GUJARAT COAST (COMMSSIONERATE OF FISHERIES)

LOCATION	CATCH COMPOSITION (IN Kg) SQUIDS & MISC.	PRAWNS & LOBSTERS	RIBBON & CATFISH	ACETAS & DHOMA	TOTAL
DWARKA	1200	65	100	3200	4565
PORBANDAR	800	30	80	2000	2910
VERAVAL & DIU	50	20	90	1200	1360

SATELLITE DATA USED : NOAA-AVHRR (APRIL 18, 1989)
FISHING PERIOD : APRIL 20-25, 1989
RSAM (DOS/MOA)

NOAA SST (OCT'28,1989)

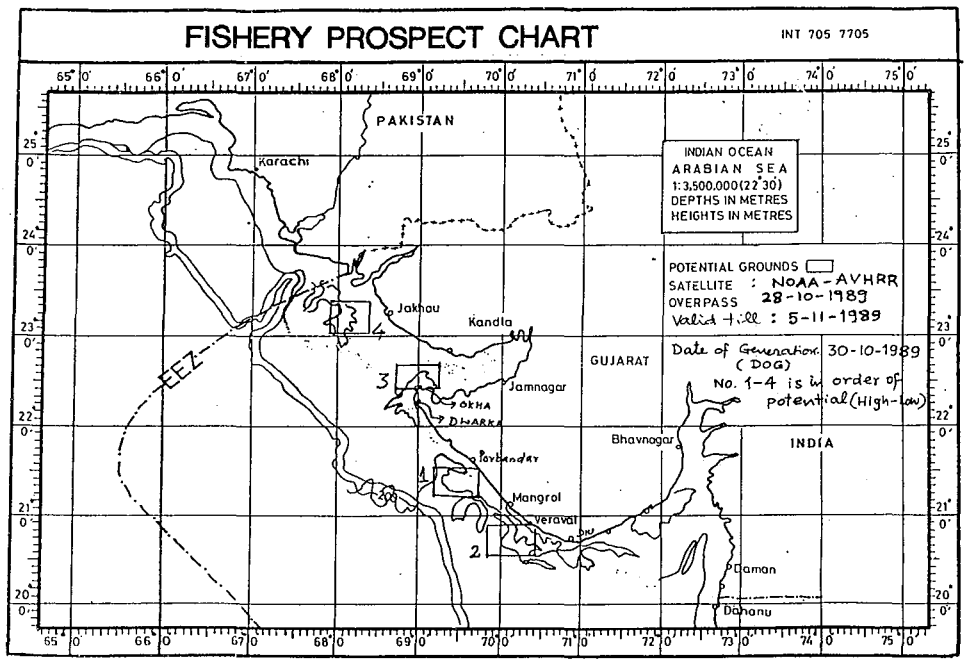


FEEDBACK

CATCH REPORTED BY THE COMMISSIONERATE OF FISHERIES UPTO 35 NM OFF THE GUJARAT COAST

LOCATION	NO. OF TRAWLERS	Avg. CATCH/DAY/ TRAWLER	Avg. CATCH/HAUL	RATING * **
JAKHAU	4	596	99.3	FAIR
OKHA	2	704	117.3	GOOD
PORBANDAR	1*	1675	-	EXCELLANT
VERAVAL	4	1412	235.3	EXCELLANT

SATELLITE DATA USED : NOAA-AVHRR (OCTOBER 28,1989)
PARAMETER DERIVED
& USED : SEA SURFACE TEMPERATURE (SST) IN STEPS OF 0.5 DEG. C (SHOWN AS LOW-HIGH)
FISHING PERIOD : NOVEMBER 1-5,1989
* CANOE FISHING ; ** GIVEN BY FISHERIES DEPARTMENT
RSAM (DOS/MOA)



fishing areas in terms of window size -50 nm x 50 nm across front/s are communicated to almost all the maritime states through telex. This is followed by the detailed fishery prospect chart showing location of fronts and potential sites on a Naval Hydrographic Chart along with a fish catch format for the feedback. Most of the mechanised fishing vessels operated by the fishermen do not have any navigational aids except compass which approximately helps in conducting the follow-up for the forecasts. A validity period of about one week is kept for these forecasts. By and large it is observed that this holds reasonably well for well defined fronts at least for 3 days with slight change in its position but smaller front/s are found to undergo changes.

Mechanism of dissemination of information in particular followed by the Gujarat State is in terms of publishing the forecast details in the local daily published from Rajkot and through display of details at the Fisheries Terminal located at the major harbours.

A detailed feedback has been received from Gujarat, West Bengal, Orissa and a Central Govt. agency - CIFNET located at Cochin. In particular the feedback from Gujarat is given as ratings like excellent, good, fair and poor catch. By and large for the period during second half of September, early November and January good catch was observed and fair catches during late November, December and later part of January. Attempts have also been made to give rankings to the potential areas and as one such example of this can be seen in the image of November 28, 1989 that areas 1, 2, 3 and 4 (in order of potential) off Veravel, Porbander, Okha and Jakhau, reported an average catch (in kg)/day/trawler of 1412, 1675, 703 and 596 respectively.

For more details, please Contact: Dr. A. Narain, Head, MWRD/RSAG, Space Applications Centre, Ahmedabad 380 053).

COASTAL MAPPING FOR BRACKISHWATER AQUACULTURE SITE SELECTION (CMASS)

This project envisages preparation of coastal land use maps on 1:50,000 scale showing wetland and land use features of the adjoining shoreland (upto 1.5 km from the high water line) for selecting brackishwater aquaculture site selection along the coasts of maritime states of W. Bengal, Orissa and Andhra Pradesh. This project is being funded by the Ministry of Agriculture, Govt. of India, and work is being executed at the Space Applications Centre, Ahmedabad.

About 3000 ha area is to be selected around coastal villages for generating income and employment for the rural folk.

The major criteria for selection of site are availability of brackishwater source, nature of substrate, presence or absence of mangroves, shoreline configuration and presence of barren area.

Integration of remote sensing based data along with water quality data and infrastructure will be carried out through GIS for final site selection.

Pre-field maps for all three states (about 85) are already prepared.

(For further information please contact: Dr. S.R. Nayak, MWRD/RSAG, Space Applications Centre, Ahmedabad 380 053).

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NATIONAL DRINKING WATER MISSION

Scientific Source Finding is one of the integral elements of the National Drinking Water Mission (NDWM) which has been launched with the objective of providing safe and sustained water supply to all the villages of the country. Satellite images are providing the basic information needed for the prupose. In carrying out this task, Dept. of Space has, apart from SAC and NRSA, involved many state remote sensing centres.

Objective

To prepare district-wise hydrogeomorphological maps for the entire country (447 districts) on 1:250,000 scale using satellite imagery.

Present status

i. Hydrogeomorphological maps on 1:250,000 scale for 447 districts have been prepared by March 31, 1990.

ii. Preparation of an atlas of hydrogeomrophological maps in A3 size for the entire country is in progress.

iii. Ground water prospective sites were also identified on 1:50,000 scale topographic maps for many mini-mission districts. Also prospective sites were demarcated on 1:50,000 scale for the problem villages in the states of Gujarat, Rajasthan, Sikkim, Bihar, M.P. and J&K.

iv. Sites for rain water harvesting structures (approx. 400) were identified in three mini-mission districts of Gujarat.

Steps taken for technology transfer

i. Technology has been transferred to State Remote Sensing Centres such as Andhra Pradesh, Assam, Bihar, M.P., Orissa, Himachal Pradesh and Tamil Nadu.

ii. Five training courses have been organised by SAC and NRSA. In all 106 participants underwent training.

- First course from October 27 to November 10, 1987 for 14 persons.

- Second course from December 5 to Dec. 9, 1988 for 26 persons.

- Third course from January 16 to February 10, 1989 for 13 persons.

- Fourth course from August 22 to Sept. 8, 1989 for 26 persons.

- Fifth course from Feb. 21 to March 3, 1990 for 25 persons.

iii. On-the-job training at SAC, Ahmedabad and at NRSA, Hyderabad was given to State officials from time to time. In all, 41 participants have undergone on-the-job training.

Feedback

Feedback received from various sources indicates that scientific source finding has resulted in success rates of 90 plus per cent in drilling tubewells in hardrock areas.

For further information, please contant:

Dr. Baldev Sahai
Group Director, RSAG and Mission Incharge (DOS), NDWM, SAC (ISRO),
Ahmedabad 380 053.

Sorry for missing the write up. Since leaving blanks is a bad practice, here is....

AN ODE TO HOPE

The promise was great,
prompt and fluid,
But alas! the jolly young fellow,
was all the time glued,
To the little video screen,
With a battery of unseen.

To us?
Well! he promised a peep,
In that real great treat,
Where themes peel off layer-by-layer,
And the room is filled with info-air,
So hold your breath,
And forget the date,
Whenever it comes,
It's gonna be great!

SEA LEVEL CHANGES ALONG GUJARAT COAST

Prof. S.S. Merh
Department of Geology,
M.S. University of Baroda
Baroda 390 002

L.N. Calla Memorial Lecture, 11th December, 1989 Delivered under the auspices "Indian Society of Remote Sensing, Ahmedabad (Chapter), SAC (ISRO)

The Quaternary period comprising about 2 million years of Earth's geological history, also known as the Great Ice Age, was characterised by strong climatic variations. The beginning of the period synchronized with the first major glacial stage, and in the subsequent times it witnessed a succession of alternating glacial and interglacial stages.

The most important phenomenon related to these climatic variations, observable all over the globe, was that of the world-wide glacio-eustatic sea level changes, and a close relationship, existed between climatic stages and the eustatic sea levels; glacials marked fall of sea levels, while interglacials were the period of high sea levels.

The information pertaining to the sea level changes along the Indian coastline is sporadic and qualititative, and mainly pertaining to the strandline-generated erosional and depositional features.

West coast of India, especially its northern part, provides more information, not only on the various erosional and depositional features related to high or low strandlines, but some dependable radiometric dates are also available.

Different segments of the Gujarat coast have behaved differently during the Quaternary, and from the point of view of sea level record, its three segments, viz. Mainland coast, Saurashtra and the Ranns of Kachchh show interesting diversity. The mainland coast has preserved within its coastal land forms evidences of mainly late Quaternary sea levels.

A sequence of fluctuactions are believed to consist of (1) Early upper Pleistocene trangression + 40 m, (2) late upper Pleistocene regression - 20 m, (3) early Holocene trangression + 8 to + 10 m and (4) regression to the present sea level during Sub-Recent times.

Saurashtra has received the maximum attention, especially on account of the extensive development of miliolite rock which represents biogenic calcareous sands of Quaternary age.

The occurrence of sheet miliolites at different elevations has led many workers to invokes a succession of high strandlines during Quaternary.

Strandline fluctuation along Saurashtra coast has however been conclusively established. Obviously the coastline miliolite occurrences represent

wind blown beach dune complex paleoshore formed during a period of progressive withdrawl of a high sea, to be subsequently submerged under the Holocene rise. The sea must have gone down considerably to generate dunes of great dimensions and in large numbers, extending for several kilometers offshoreward.

In Saurashtra and Kachchh Minesterian sea was the source of the carbonate materials and the Wurm regression caused the aeolian lifting of the sands. Wurm stradline, a fall of only 20 to 30 m was envisaged on the basis of bathymetric features and river valley entrenchments.

The only high strandline is that related to the last (Holocene-Flandrian) transgression. It is relevant to point out that almost all over the Indian coastline, features related to Holocene transgressive strandline occur at elevations upto 10 m above the present sea level.

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EXCERPTS FROM SIXTH ANNUAL REPORT (1989-90)

o Total membership of the Chapter stood at 151 as against 154 last year. 3 life and 5 members have joined the Society this year. 5 life member and 6 members have left the Chapter and the Society, respectively. Members from the rest of Gujarat rose from 25 in 1989 to 35 in current year.

o The council met four times to transact the business of the Chapter. Out of these meetings, one meeting was held at Department of Physics, Gujarat University, Ahmedabad.

o A lecture on Vasundhara Project was organised on October 18, 1989 at Vikram Hall, Space Applications Centre, Ahmedabad. The lecture was delivered by Shri K. Krishnanunni, Director, Resource Analysis Division, Geological Survey of India, Calcutta.

o The Ahmedabad Chapter has been organising an annual Laxminarayan Calla Memorial Lecture. Third Laxminarayan Calla Memorial Lecture was delivered by Prof. S.S. Merh, FNA, Department of Geology, M.S. University of Baroda on Sea Level Changes along Gujarat Coast on December 11, 1989.

o A half-day Panel discussion on Problem of Salinity Ingress along Gujarat Coast was organised at Engineering Staff College, Gandhinagar on January 2, 1990. Shri D,M. Pancholi, Shri P.H. Validya, Shri N.I. Dhebar, Shri B.S.V. Subbaiah, of Water Resources Department, Government of Gujarat and Shri M.H. Kalubarme of the Space Applications Centre, Ahmedabad participated in the discussions.

o Only one issue of the Newsletter was published. All out efforts are required to bring out four issues of the Newsletter in a year on time. We suggest to modify the present structure of the Editorial Board. The new council can consider this matter.

o The sale of the Proceedings of SOARS is satisfactory. The publication of book 'Gujarat from Space' could not be completed in spite of repeated reminders to the authors.

o The extra-ordinary general body meeting was organised on November 10, 1989 at Vikram Hall, Space Applications Centre, AHMEDABAD as per recommendation of AGM held on December 30, 1988. These recommendations were not accepted by the Executive Council of the Society. However, they were placed before the AGM at Indore. We are awaiting the minutes of the AGM of the Society.

o This year greeting cards were printed by the chapter. It was well received.

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ANNUAL GENERAL BODY MEETING

Annual General Body meeting of the Ahmedabad Chapter was held on April 23, 1990 at 1600 hours at Vikram Hall, Space Applications Centre (ISRO), Ahmedabad.

The meeting was presided by Dr. George Joseph, Chairman of the Chapter. The annual report for the year 1989-90 was put up by the Secretary and was approved by the members. Matters like the audited account of year 1988-89, the outcome of the recommendations of Extra General Body Meeting forwarded to ISRS, HQ., and delay in publication of the news letter, were discussed.

The chairman gave assurance to the members that all possible efforts would be put to bring out the news letter in time. He also requested the members to provide full cooperation to the editor.

The house expressed its appreciation and gratitude to Dr. Hariharan for his services as the Chairman of the Chapter.

The charge of the chapter was handed over to the new council.

The Chairman proposed to take up some activities where the application of the remote sensing technique should be taken to the implementation level. He suggested that waste land development activity can be one such area. The house agreed to this suggestion.

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INDIAN SOCIETY OF REMOTE SENSING
(AHMEDABAD CHAPER)

EXECUTIVE COUNCIL 1990-92

1.	Dr. George Joseph	-	Chairman
2.	Shri D.M. Pancholi	-	Vice Chairman
3.	Shri T.P. Singh	-	Secretary
4.	Shri R.N. Shukla	-	Joint Secretary
5.	Dr. R.N. Jadhav	-	Treasurer
6.	Ms. Beena Kumari	-	Member
7.	Shri M.K. Rao	-	Member
8.	Dr. S.D. Naik	-	Member

Errata
In the list of life members published in January 01, 1990 issue of Newsletter, the name of Shri M.H. Rawal was printed as 'Shri M.H. Patel'. The error is regretted.

- Editor

I too did little remote sensing today! With your binocular I could watch all that was happening in our neighbouring flats this afternoon.