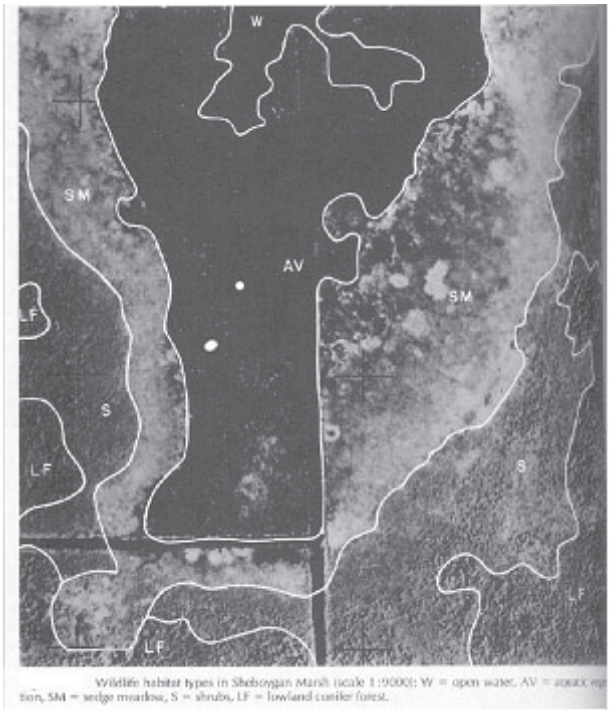
(a) 1:2,400 (b) 1:800

(b) is a 3 times enlargement of the lower left portion.

This shows a large group of small white whales that have congregated for the purpose of calving. At the image sacle shown above it is possible to determine the number of characterstic of individual whales and to determine and major their lengths. At the scale of 1:2000 the average adult length was measured as 4 m and the average calf length was measured as 2 m . Bachelor group of 8 and 6 males can be seen.

Wild Life habitat types in Sheboyghan March.



Wildlife habitat types in Sheboygan Marsh (scale 1:9000): W = open water, AV = aquatic vegetation, SM = sedge meadow, S = shrubs, LF = lowland conifer forest.

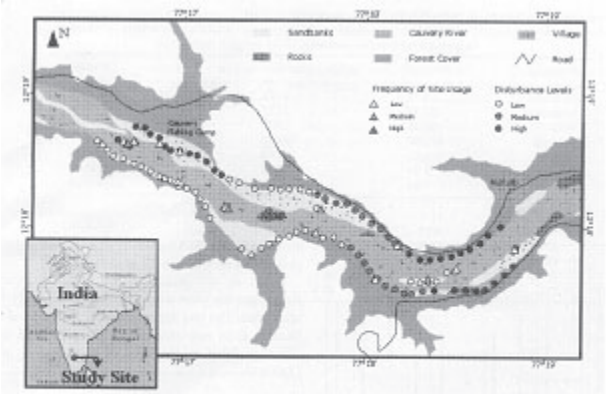
It can be seen that near about 100 spots in AV region.

Poaching of offers is higher in regions along the northern border if India. There have also been reports of poaching of offers in the palni hills Tamil Nadu offer skin is used for used for making drams, the meat is eaten and the oil extracted from it is used for preparing traditional medicine. In the study site Cauvery wildlife sanctuary (CWS) poaching of offers had not been recorded for almost a decade.

Map of the study area showing sites with varying intensities of disturbance levels and corresponding frequencies of offer visited to the area recorded. Disturbance level value <0.01 was considered low disturbance , >0.5 disturbance consider highest and value between low and high are considered medium. offer visit frequencies were ascribed as low (<0.2) , medium (0.2-0.4) and high >0.4

Geographical data about rare and threatened species distribution are used in four major ways : to report the places where a particular species occur, to list the species which occur at a particular place , especially their ecological needs and to identify critical habitants in their holding of threatened species

Geographical data of rare and threatened species provide their distribution habited requirement, range limit. It will useful in identifying potentially sensitive ecosystems and in suggesting critical area or other area of special concern to conservation agencies.



Map of the study area showing sites with varying intensities of disturbance levels and corresponding frequencies of otter visits to the areas. 'Low', 'medium' and 'high' were subjectively decided based on the perceived effects from field observations. Disturbance level value ≤ 0.01 was considered low disturbance, while disturbance levels were those >0.5 (highest being 1.63); medium disturbance levels were values between low and high. Similarly, otter visit frequencies were ascribed as low (< 0.2), medium (0.2–0.4) and high (> 0.4); values for visit frequency ranged from 0 to 0.67 (least) Map of India from Wikipedia[38].

Conclusion

- Large quantities can be stored, maintained and retrieved at a greater speed and low cost.
- Remote sensing has proved to be a very effective means for developing and integrated GIS which could meet the challenges of managing forest.
- The potential of remote sensing in providing accurate and timely information on essential habitant variables such as Shelter, food and water is clearly tremendous 10 & 11. The improvement in spectral spatial, resolutions and better digital processing of remove sensed data over past 30 years has kept pace with the information needs of the wildlife habitant suitability analysis in time and space.

The GIS too has developed with greater facility

of large area, multiple spatial and non spatial data integration and analysis GIS software like Arc/Info achieve etc., coupled with user - friendly multiple module image, Processing software like ERDAs image etc. have provided many opportunities to look at data and information from different angles. As more and more user - friendly software has spatial data processing are developing there is need for larger capacity hardware device ERDAs image and LWIS software, which combine both image processing and spatial data handling. The future software will future reduce this devide, thus scoring the user from import and export of data files from one software to the other and with all these development, the role of remote sensing and GIS in wildlike evaluation and management will be even greater.

About Author

Mrs. G. S. Ingawale is working as a senior lecturer in V.P.M's Polytechnic, Thane. She has done her M.Sc. in organic chemistry from Mumbai University. She has about 5 years of industrial experience in R & D at Cipla Pharmaceuticals, Mumbai. She has presented technical papers in many national conferences. She has also written a book on "Advanced Chemistry". She is a life member of ISTE.

Indian Agricultural Scenario & Precision Farming

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Abstract

"Agriculture is the backbone of the Indian economy and the villages are the life lines of growth of India". The phenomenal increase in population of both man and animal in the last century and fast growing industrialization and urbanization in last few decades have overstrained the natural resource base, which are getting degraded much faster than ever before. Thus, the attention of whole world is focused on how to increase production to feed the burgeoning population. Belying all predictions made to the contrary, India could achieve unprecedented increase in the food grain production as a result of expansion of irrigation and technological advancement in agriculture. While it has been a satisfying experience, Indian agriculture would need a new vision to make rapid progress in the ensuing millennium.

The term "precision farming" means carefully tailoring the soil and crop management to fit the different conditions found in each field. It is also referred to as "prescription farming", "site specific farming" or "variable rate technology". This paper highlights definitions, need, and philosophy, principles involved in precision farming. Also the status, economical feasibility & opportunities of precision farming in India are discussed.

Introduction

"Agriculture is the backbone of the Indian economy and the villages are the life lines of growth of India."

Ever since the man appeared on the earth, he has been harnessing the natural resources to meet his basic requirements. Reference to soil, water and air as basic resources, their management and means to keep them pure are mentioned in the Vedas, Upanishads and in ancient Hindu literature. The phenomenal increase in population of both man and animal in the last century and fast growing industrialization and urbanization in last few decades have overstrained the natural resource base, which are getting degraded much faster than ever before. Thus, the attention of whole world is focused on how to increase production to feed the burgeoning population and the question uppermost in every ones mind is "Can we produce enough food in a sustainable manner without damage to the natural resource base?"

Belying all predictions made to the contrary, India could achieve unprecedented increase in the food grain production as a result of expansion of irrigation and technological advancement in agriculture. While it has been a satisfying experience, Indian agriculture would need a new vision to make rapid progress in the ensuing millennium. To achieve the required growth will not be easy as some of the existing production systems are based on unsustainable use of the resources. The signs of fatigue in the natural resources have already appeared which is a cause for serious concern to the planners, decision-makers and researchers alike. Precision farming is the application of technologies and principles to manage spatial and temporal variability associated with all aspects of agricultural production for improving production and environmental quality.

Precision Farming

The term "Precision Farming" means carefully tailoring the soil and crop management to fit the different conditions found in each field. It is defined as the application of technologies and principles to manage spatial and temporal variability associated with all aspects of agricultural production. It is also referred to as "prescription farming", "site specific farming" or "variable rate technology". Consideration of in-field variations in soil fertility and crop conditions and matching the agricultural inputs like seed, fertilizer, irrigation, insecticide,

pesticide, etc. in order to optimize the input or maximizing the crop yield from a given quantum of input, is referred to as precision farming or precision agriculture or precision crop management.

Precision farming is an agricultural system that has the potential of dramatically changing agriculture in this 21st century. Precision farming lends it self to most agricultural applications and can be implemented at whatever levels are required. Precision farming is based on information technology, which enables the producer to collect information and data for better decision-making. Precision farming is a pro-active approach that reduces some of the risk and variables common to agriculture. Precision farming is more environmentally sound and is integral part in sustaining natural resources. To better understand the need for an accurate definition of precision farming lets look at how precision farming is being considered. Precision farming is considered a concept, management strategy, and even a philosophy. It is said, "Precision farming is a phrase that captures the imagination of many concerned with the production of food, feed, and fiber". The concept of precision farming offers the promise of increasing productivity while decreasing production cost and minimizing environmental impacts. Precision farming conjures up images of farmers overcoming the elements with computerized machinery that is precisely controlled via satellites and local sensors and using planning software that accurately predicts crop development. This image has been called the future of agriculture. **(Michael Rasher)**

Philosophy

Precision farming is the ability to manage land by the square meter instead of the square mile. Precision farming is changing the farmers and rancher's relationship with the land. "Through the ages agriculture production systems have benefited from the incorporation of technological advances primarily developed for other industries. The industrial age brought mechanization and synthesized fertilizers, the technological age offered genetic engineering and now the information age brings the potential for Precision Agriculture."

The Need for Precision Farming

The 'Green revolution' of 1960's has made our country self sufficient in food production. In 1947, the country produced a little over six million tonnes of wheat, in 1999; our farmers harvested over 72 million tonnes, taking the country to the second position in wheat production in the world. The production of food grains in five decades, has increased more than three fold, the yield during this period has increased more than two folds. All this has been possible due to high input application, like increase in fertilization, irrigation, pesticides, higher use of HYV's, increase in cropping intensity and increase in mechanization of agriculture.

Fatigue of Green Revolution

Green revolution of course contributed a lot. However, even with the spectacular growth in the agriculture, the productivity levels of many major crops are far below than expectation. We have not achieved even the lowest level of potential productivity of Indian high yielding varieties, whereas the world's highest productive country have crop yield levels significantly higher than the upper limit of the potential of Indian HYV's. Even the crop yields of India's agriculturally rich state like Punjab is far below than the average yield of many high productive countries (Ray et al., 2001).

Natural Resource Degradation

The green revolution is also associated with negative ecological/environmentalconsequences. The status of Indian environment shows that, in India, about 182 million hector of the country's total geographical area of 328.7 million ha is affected by land degradation of this 141.33 million hector are due to water erosion, 11.50 million hector due to wind erosion and 12.63 and 13.24 million ha are due to water logging and chemical deterioration respectively. On the other end, India shares 17 percent of world's population, 1 percent of gross world product, 4 percent of world carbon emission, 3.6 percent of CO2 emission intensity and 2 per cent of world forest area. One of the major reasons for this status of environment is the population growth of 2.2 per cent in 1970 – 2000. The Indian status on environment is, though not alarming when compared to developed countries, gives an early warning.

In this context, there is a need to convert this green revolution into an evergreen revolution, which will be triggered by farming systems approach that can help to produce more from the available land, water and labour resources, without either ecological or social harm. Since precision farming, proposes to prescribe tailor made management practices, it can

help to serve this purpose.

Basic Components of Precision Farming

Precision farming basically depends on measurement and understanding of variability; the main components of precision farming system must address the variability. Precision farming technology enabled, information based and decision focused, the components include, (the enabling technologies) Remote Sensing (RS), Geographical Information System (GIS), Global Positioning System (GPS), Soil Testing, Yield Monitors and Variable Rate Technology.

Precision farming requires the requisition, management, analysis and output of large amount of spatial and temporal data. Mobile computing systems were needed to function on the go in farming operations because desktop systems in the farm office were not sufficient. Because precision farming is concerned with spatial and temporal variability and it is information based and decision focused. It is the spatial analysis capabilities of GIS that enable precision agriculture. GPS, DGPS has greatly enabled precision farming and of great importance to precision farming, particularly for guidance and digital evaluation modeling position accuracies at the centimeter level are possible in DGPS receivers. Accurate guidance and navigation systems will allow for farming operations at height and under unfavorable weather conditions even.

In India, we have all these technologies available and they can be implemented through agricultural training centers by giving training to agriculture officers in these technologies.

Status of Precision Farming in India

Hence, the first thing that comes to mind is that, this system is not for developing countries, especially India, where the farmers are poor, farming is mostly subsistent and the land holding size is small. But, this is far from the truth as this approach has a large potential for improving the agricultural production in developing world. Imagine this situation where a farmer goes to his field with a GPS (Global Positioning System)-guided tractor. The GPS senses the exact location of tractor within the field. It sends signals to the computer fixed on to the tractor, which has a Geographical Information System (GIS), storing the soil nutrient requirement map in it. The GIS, in consultation with a Decision Support System would decide what is the exact requirement of fertilizers for that location. It then commands a variable rate fertilizer applicator, which is again attached with the tractor, to apply the exact dosage at the precise location of farm. But, this is what precision farming means to large growers in the highly developed parts of the globe. To make it clearer, Precision Farming is the system of matching of resource application and agronomic practices with soil attributes and crop requirements since they vary across a field.

Tata Kisan Kendra

The concept of precision farming being implemented by the TKKs has the potential to catapult rural India from the bullock-cart age into the new era of satellites and IT. TCL's extension services, brought to farmers through the TKKs, use remote-sensing technology to analyze soil, inform about crop health, pest attacks and coverage of various crops predicting the final output. This helps farmers adapt quickly to changing conditions. The result: healthier crops, higher yields and enhanced incomes for farmers.

Government organization

Precision Agriculture models are not complete, unless the parameters related to empowerment of the farmers; especially small and marginal farmers are integrated. Now it is the turn of good news to the Indian farming community. Some of the research institutes such as Space Applications Center (ISRO), M.S. Swaminathan Research Foundation, Chennai, Indian Agricultural Research Institute, New Delhi, and Project Directorate of Cropping Systems Research, Modipuram, had started working in this direction and in soon it will help the Indian farmers harvest the fruits of frontier technologies without compromising on the quality of land. According to the Exim Bank officials, though the research and development on Precision farming is currently at a nascent stage in the country, the efforts being put on by the four research institutes were expected to turn the green revolution into an evergreen revolution. In this context, ISRO has also initiated Gram sat project in Orissa. In the line of JDCP, the Gramsat project aims at empowering the people especially the poor and marginalized, by awareness building and access to information and services. Towards this, a network of one-way video and two-way audio forecasting the yield of mono and multiple crops is being done at NRSA.

Acreage estimates and crop inventory is being done during Kharif and Rabi seasons for Rice, which is the major crop grown in our India. Other crops like Banana, Chilies, Cotton, Maize, Sugarcane and Tobacco are also being inventoried. Satellite data can also delineate different crops that are growing the same area, and an inventory of each of the crops can be done.

Economical Feasibility

Unlike some new technologies, there is no clear answer as to whether or not precision farming is economical beneficial in Indian agriculture conditions?

1. On the one hand there are depletions of ecological foundations of the agro-ecosystems, as reflected in terms of increasing land degradation, depletion of water resources and rising trends of floods, drought and crop pests and diseases. On the other hand, there is imperative socio-economic need to have enhanced productivity per units of land, water and time.

2. At present, 3 hector of rain fed areas produce cereal grain equivalent to that produced in 1 hector have irrigated. Out of 142 million hector net sown areas, 92 million hector are under rain-fed agriculture in the county.

3. From equity point of view, even the record agricultural production of more than 200 Mt is unable to address food security issue. A close to 60 Mt food grains in the storehouses of Food Corporation of India (FCI) is beyond the affordability and access to the poor and marginalized in many pockets of the country.

4. Globally, there are challenges arising from the Globalization especially the impact of WTO regime on small and marginalized farmers.

5. Some other unforeseen challenges could be anticipated global warming scenario and its possible impact on diverse agro-ecosystems in terms of alterations in traditional crop belts, micro-level perturbations in hydrologic cycle and more uncertain crop-weather interactions etc.

Obstacles

There are many obstacles to adoption of precision farming in developing countries in general and India in particular. Some are common to those in other regions but the others are specific to Indian conditions are as follows.

- Culture and perceptions of the users
- Small farm size
- Lack of success stories
- Heterogeneity of cropping systems and market imperfections
- Land ownership, infrastructure and institutional constraints
- Lack of local technical expertise
- Knowledge and technical gaps
- Data availability, quality and costs

Prospects & Opportunities

Precision farming, though in many cases a proven technology is still mostly restricted to developed (American and European) countries. Except for a few (Wang, 2001), there is not much literature to show the scope of its implementation in India.

We feel that, one of the major problems is the small field size. In India more than 57.8 per cent of operational holdings have size less than 1 ha. However, in the major agricultural states of Punjab, Rajastan, Haryana and Gujarat there are more than 20 per cent of agricultural lands have operational holding size of more than 4 ha. These are individual field sizes. However, when we consider contiguous field with same crop the field sizes are large. Using aerial data, has found that in Patiala district of Punjab, more than 50 per cent of contiguous field sizes are larger than 15 ha. These contiguous fields can be considered a single field for the purpose of implementation of precision farming.

There is a scope of implementing precision farming for major food-grain crops such as rice, wheat, especially in the states of Punjab and Haryana. However many horticultural crops in India, which are high profit making crops, offer wide scope for precision farming.

Despite the many obstacles listed earlier, business opportunities for precision farming technologies including GIS, GPS, RS and yield monitor systems are immense in many developing countries. The scope for funding new hardware, software and consulting industries related to precision farming gradually widening. Punjab and Haryana

states in India, where farm mechanization is more common than in others, may be the first to adopt precision farming on a large scale.

Successful implementation of precision farming depends on numerous factors, including the extent to which conditions within a field are known and manage, the adequacy of input recommendation and the degree of application control. The enabling technologies of precision farming can be grouped in to five major categories: Computers, Global Positioning System (GPS), Geographic Information System (GIS), and Remote Sensing (RS) and Application control. (AC)

Aspects of precision farming encompass a broad array of topics including variability of the soil resource base, weather, plant genetics, crop diversity, machinery performance and most physical, chemical and biological inputs used in crop production. Precision farming must fit the needs and capabilities of the farmer and must be profitable.

Conclusion

The development and adoption of precision farming in India is a slow process. The small size of farms and fields in most of Indian agriculture limits economic gains from currently available precision farming technology, while the population density, and public concerns for the environment, food safety and animal welfare means that those potential benefits of precision farming are being given more attention. Precision farming in many developing countries including India is in its infancy but there are numerous opportunities for adoption. We may believe that progressive Indian farmers, with guidance from the public and private sectors, and agricultural associations, will adopt it in a limited scalen agriculture is as the technology shows potential for raising yields and economic returns on fields with significant variability, and for minimizing environmental degradation. Although it is recognized that agriculture is a major polluter of the environment in many developing countries, farmers will not adopt precision farming unless it brings in more or at least similar profit as compared to traditional practice. The support from governments and the private sector during the initial stages of adoption is, therefore vital. It must be remembered that not all elements of precision farming are relevant for each and every farm. For instance, introduction of variable rate applicators is not always necessary or the most appropriate level of spatial management in Indian farms. Likewise, not all farms are suitable to implement precision farming. Some growers are likely to adopt it partially, adopting certain elements but not others. Precision farming cannot be convincing if only environmental benefits are emphasized. On the other hand, its adoption would be improved if it can be shown to reduce the risk. We must be cautious, however, is not overselling the technologies without providing adequate product support. The adoption of precision farming also depends on product reliability, the support provided by manufacturers and the ability to show the benefits. Effective coordination among the public and private sectors and growers is, therefore, essential for implementing new strategies to achieve fruitful success.

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Mr. Sharadkumar Shah is presently working as a professor and head of H.A.S. Dept., Parshvanath College of Engg., Thane. He has done his M.Sc. and B.Sc. in chemistry from Bombay University. He has also completed his PGDBM, and DMLT from Bombay. He has a vast teaching experience of 17 years. He has got many awards for papers at international conferences and has delivered seminars on chemistry and staff recruitment in many colleges in Mumbai. He has also presented many papers at national and international conferences. He is a fellow of many renowned chemical societies and also a life member of ISTE, IPA, etc. He has written books on chemistry. His areas of interest include farming, reading, teaching, research, etc.

POSTER PRESENTATIONS

Improving Efficiency of utilities by using GIS

Mrs. N. V. Vader[1] and Mrs. S. S. Kulkarni[2]

1. Head E. P. S. Deptt.

2. Senior Lecturer, E. P. S. Deptt.

Abstract

Electricity is universally accepted as an essential commodity for human beings. It plays an important role in overall growth and development of a nation.

Efficient functioning of utility is essential to sustain the growth of power sector and economy. After passing of electricity act 2003 by the Parliament, Electricity utilities in India underwent unbundling such as GENCO, TRANSCO, and DISCO. At the time of passing this act the utilities were facing severe problems because of lack of modernization and were also incurring huge losses due to which their survival was difficult.

In addition to restructuring initiatives, it is required that some latest and modern systems be utilized for improving efficiency of power sectors. GIS is a competent and effective tool for managing transmission and distribution activities. GIS can be effectively used for transmission line route alignment and managing electricity distribution facilities. It has the ability to improve upon traditional practices and hence today it has become an important aspect in power delivery

GIS is a computer-based tool for the storage, manipulation, and analysis of geographically referenced information. It is a system of hardware and software used for performing multiple functions related to geographic data.

It has unique visualization and geographic analysis benefits offered by maps. Therefore it is valuable in planning strategies for Transmission and distribution system.

About Author

Mrs. N. V. Vader has done her graduation in Electrical Engineering from Karnataka university with First class in 1984. She has a vast teaching experience of nearly 20 years. She has developed four electrical laboratories in V. P. M.'s Polytechnic, Thane. Under her leadership Electrical Department of V. P. M.'s polytechnic, has got a grant of Rs. 5 Lakhs from AICTE for Laboratory development. She is actively involved in various activities of the Maharashtra State Board of Technical Examinations. She has participated in various seminars and conferences. She has published many technical papers in national seminars. She is a life member of ISTE and RENET. Presently, she is working as the head of the department of Electrical Power Systems in V. P. M.'s Polytechnic, Thane.

Mrs. S. S. Kulkarni is a graduate in Electrical Engineering from V. J. T. I., Mumbai. Recently she has completed her post graduation in Electrical Power from V. J. T. I. with distinction. She has many papers on her name in various journals and she has delivered guest lectures on High Voltage Engineering and Electromagnetics in many Engineering Colleges. She has received a national award for best M. Tech. Thesis in Electrical Engineering for academic year 2005-06, from ISTE. She is involved in various activities of Maharashtra State Board of Technical Examinations. She is a life member of ISTE and RENET. She has a teaching experience of nearly 14 years.

An Algebraic Approach to Automated Geospatial Information Fusion

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Abstract

This paper presents a new technique for information fusion. Unlike most previous work on information fusion, this paper explores the use of instance-level (extensional) information within the fusion process. This paper proposes an algorithm that can be used automatically to infer the schema-level structure necessary for information fusion from instance-level information. The approach is illustrated using the example of geospatial land cover data. The method is then extended to operated under uncertainty, such as in cases where the data is inaccurate or imprecise. The paper describes the implementation of the fusion method within a software prototype. Finally, the paper discusses several key topics for future research, including applications of this work to spatial data mining and the semantic web.

Keywords: *Interoperability, Qualitative Spatial Reasoning, Geospatial Ontology, Uncertainty, Knowledge Representation*

About Author

Mrs. Nirmala Kamble is a Lecturer, Electronics and Telecommunication Department, Thakur Polytechnic, Kandivali(E).
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STUDENTS' ABSTRACTS

Prize Winning Entries
of
Paper Presentation Competition
held on 5th Aug 2006
at
V.P.M.'s Polytechnic, Thane
on topic
Geo-informatics & Remote Sensing

Organised by
I. S. T. E. Student Chapter V.P.M.'s Polytechnic, Thane

Supported by:
Additional Ambernath Manufacturers Association

A Comparative Study of Vegetation Indices

-A case study of Mumbai city

Michelle Viswanathan and Hrishikesh Samant

Department of Geology, St. Xavier's College, Mumbai.

Abastact

In this study an attempt was made to determine the areas under vegetation in the city of Mumbai. The different vegetation indices (VI) RATIO, NDVI, PV1, PV3, AWDVI were compared. The VI images were run through a Principal Component Analysis. The data used for the study was IRS 1C LISS 3 remote sensing data from December 2003. It was found that Sanjay Gandhi National Park shows high vegetation in all the indices. From the image histograms, NDVI was found to have a higher contrast. From the statistical data obtained after Principal Component Analysis, it was found that PVI1 has a high correlation with Component 1. PVI3 had a high correlation with Component 2. Two areas of Mumbai were studied in the VI images, the IIT Powai Gymkhana and Kanheru caves, wherein the VI values for dense vegetation cover and rock/soil and grass was compared. It was found that NDVI and RATIO show a higher separation in values, while PVI3 shows the lowest separation in values.

GPRS Technology Overview

Anushree Shenoy

Abstract

Wireless wide area cellular network solutions have around for many years. Widespread adoption has been slow due to issues with coverage, cost and performance and secure remote access to business networks. The deployment of the Global System for Mobile Communication (GSM)-based General Packet Radio Service (GPRS) has the potential to change this situation and to provide connectivity "anytime and anywhere."

GPRS is a packet based radio service that enables "always on" connections, eliminating repetitive and time-consuming dialup connections. It will also provide real throughput in access of 40kbps,about the same speed as an excellent landline analog modem connections.

This paper reviews the underlying GSM circuit switched technology, then discusses the packet – data capabilities added by GPRS.

This paper also identifies some GPRS solutions that will be helpful in business environments, including notebook computer solutions, method for accessing business networks.

Keywords:

Global System For Mobile Communications (GSM)

General Packet Radio Service (GPRS)

Code Division Multiple Access (CDMA)

Time Division Multiple Access (TDMA)

Personal Digital Communications (PDC)

GPS Scenario in Indian Conditions

Ms. Neha Rastogi

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Introduction

Level-e solution is in the process of launching a pan-India service for GPS enable movement tracking, be it transport vehicles on highways or delivery trucks within a city limit. The innovation is on the indigenous hardware-software combination. This lowers the overall cost compared to full kit imports from other countries.

Types

There are three types of solutions development. The first one is a "within city limit" solution. This is targeted at the delivery trucks for the FMCG sector etc. The solution is based on GPS-GSM solution. This is targeted at the truck transport sector where the fleet operates on national highways.

Description

The indigenously developed units will be mounted of on vehicles. The GPS system gets the current longitude-latitude coordinates. It is passed on either as a DSTMF signal on RF or as a SMS message through GSM. In case of RF it is hopped to the server and is converted from audio to a coordinate signal recognizable by the server and thus plotted on the GIS maps. In case of GSM, the SMS is received by the server receiver and converted back to coordinated before the date is fed to the GIS maps. For in –city solution a vector map is used so that buildings and lanes can be seen in 3D. We are stressing on the GPS-RF system as in this system we do not need any GSM operator to roll out the solution. Also this is a cheaper alternative. For example the GPS-GSM solution need a tie-up with a GSM operator for reduced subscription rates, bulk SMS times etc. to lower operating costs. On the other hand we should focus on GPS-GSM systems as at least on GSM Operator has already taken a lead in that area of solution development. We also know that the first one to roll out will have the large customer base since there exist a significant first mover advantage in this market.

To implement such a system we need the following resources to be put in place:

- GPS module
- RF Controller
- GSM Module
- GIS software
- Maps
- Application Architecture