

Advances in Marine Fishing Methods and Operations along India Coast

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SUMMARY

Fishing operations in India consume large amount of fuel mostly for scouting operations by vessels. The satellite based Potential Fishing Zone (PFZ) advisories have provided an effective solution for making the fishing operations more profitable by reducing search time and hence reducing fuel consumption, which in turn reduces the CO₂ emission to the atmosphere. PFZ advisory have become part of the value chain of the fishing community of India. This paper describes the advantages resulted due to the usage of PFZ advisories that are disseminated to the fishing community of India.

INTRODUCTION

Fishing operations in India consume large amount of fuel mostly for scouting operations by vessels. The satellite based Potential Fishing Zone (PFZ) advisories have provided an effective solution for making the fishing operations more profitable by reducing search time and hence reducing fuel consumption, which in turn reduces the CO₂ emission to the atmosphere. In order to quantify the amount of reduction in the CO₂ emission. About 10 million people in India are dependent on fishing activity for their livelihood. A reliable and timely short-term forecast on the fish aggregation zones helps them. Indian National Centre for Ocean Information Services (INCOIS) provides short term forecasts using Remote Sensing (RS) and Geographic Information System (GIS) Techniques. Satellite derived Chlorophyll and Sea Surface Temperature (SST) information are the basic inputs for generating this information. Features such as oceanic fronts, meandering patterns, eddies, rings and up-welling areas are identified from the satellite images, transferred to navigational charts and provided as PFZ advisories.

Potential Fishing Zones (PFZs) and Tuna Advisories

PFZ advisory have become part of the value chain of the fishing community of India. Several studies have shown that high sea surface temperature (SST) gradient and high chlorophyll concentration in the ocean are the prospective areas for pelagic fish catch. INCOIS provides advisories on PFZ on a daily basis using remotely sensed SST and chlorophyll-a data. INCOIS continued to provide advisories on PFZ generated using the satellite derived Sea Surface Temperature (SST), chlorophyll concentration, water clarity and sea level. The advisories were disseminated in smart map and text form on a daily basis, except during fishing-ban period and during adverse sea-state conditions.

PFZ Dissemination

INCOIS has started providing advisory services through TELEGRAM platform by creating 09 broadcast channels for different coastal states i.e. Gujarat, Maharashtra, Karnataka & Goa, Kerala, Tamil Nadu, Andhra Pradesh, Odisha & West Bengal, Andaman & Nicobar, Lakshadweep. Daily advisory maps, along with textual information, is being broadcasted through these channels. Presently this service is being popularized as a complementary service to the SMS platform.

Android App for Fishermen Feedback

INCOIS designed a mobile app for collecting feedback from fishermen society which can help in improving & fine tuning of advisories. The feedback app facilitates collecting quantitative and geo-referenced fish catch data directly from the fishermen community. The storing facility serves as their electronic trip sheets for subsequent self reference.

Potential Fishing Zone Characterization in the Indian Ocean by Machine Learning Approach

The limitation of this advisory is that it does not give any information about the probable quantity of the fish. In order to overcome this, a hybrid decision tree model was developed for characterizing PFZ in the Indian

Ocean. If SST gradient, persistence of SST gradient and chlorophyll concentration of any PFZ are given as the input variables, this model can classify the corresponding PFZ in terms of low, medium or high category of fish catch. It has been observed that a low SST gradient persistence and high SST gradient indicates possibility of high fish catch.

CONCLUSION

This paper describes the advantages resulted due to the usage of PFZ advisories that are disseminated to the fishing community of India. A quantitative analysis of the benefits in terms of net profit fetched due to the reduction in searching time and higher catch and percentage of success in the fishing operations carried out within PFZ and outside PFZ areas is presented.

REFERENCES

<https://incois.gov.in/portal/index.jsp>