# Phenology -based identification of sand dune vegetation using satellite imagery.

A Dissertation for

Course code and Course Title: ESC-402 Dissertation

Credits: 08

Submitted in partial fulfilment of Master's Degree

M.Sc. Environmental science

by

#### MISS. AARYA, MANOHAR, UMARYE.

21P058001

Under the Supervision of / Mentor

#### DR. SHERYL, O, FERNANDES.

School of Earth Ocean and Atmospheric sciences

M. Sc Environmental Science



**GOA UNIVERSITY** 

Date: April 2023



Seal of the School

**DECLARATION BY STUDENT** 

I hereby declare that the data presented in this Dissertation report entitled, "Phenology -based

identification of sand dune vegetation using satellite imagery" is based on the results of

investigations carried out by me in the M. Sc in Environmental science at the School of Earth

Ocean and Atmospheric sciences, Goa University under the Supervision/Mentorship of Dr.

Sheryl O. Fernandes and the same has not been submitted elsewhere for the award of a degree

or diploma by me. Further, I understand that Goa University or its authorities will be not be

responsible for the correctness of observations / experimental or other findings given the

dissertation.

I hereby authorize the University authorities to upload this dissertation on the dissertation

repository or anywhere else as the UGC regulations demand and make it available to any one

as needed.

Aarya Manohar Umarye

21P058001

M.Sc. Environmental Science

School of Earth, Ocean and

Atmospheric Sciences.

Date: 03 05 2023

Place: Goa University

2

### **COMPLETION CERTIFICATE**

This is to certify that the dissertation report "Phenology -based identification of sand dune vegetation using satellite imagery." is a bonafide work carried out by Ms. Aarya, Manohar, Umarye under my supervision/mentorship in partial fulfilment of the requirements for the award of the degree of M. Sc. Environmental science in the Discipline Environmental Science at the School Of Earth Ocean And Atmospheric Sciences, Goa University.

Dr. Sheryl O. Fernandes

Assistant professor

School Of Earth, Ocean and Atmospheric Sciences

Date: 03/05/2023

Senior Prof. C.U. Rivonkar

Dean

School Of Earth, Ocean and Atmospheric Sciences

Date:

Place: Goa University

Dr. C. U. Rivonker
Senior Professor and Dean,
School of Earth, Ocean
& Atmospheric Sciences,
Goa University,
Goa - 403 206.

## **ACKNOWLEDGEMENT**

My supervisor, Dr. Sheryl O Fernendez, played an indispensable role in this project's success. She not only suggested this topic but also provided me with continuous guidance, feedback, and support, which helped me navigate through various challenges and ultimately achieve my goal. Her unwavering support and encouragement were crucial in keeping me motivated throughout the completion of this dissertation. Mr. Partha Patil's expert assistance was invaluable in this project's successful completion. His insights and expertise in the field provided me with the necessary resources and guidance to carry out my research effectively. His support and encouragement were crucial in helping me navigate the complex aspects of this project. I would also like to express my gratitude to Miss Sitam Naik and Dipesh from the non-teaching staff for their assistance and support. Their help in providing necessary resources and facilities was instrumental in making this project a success. Finally, I would like to extend my heartfelt appreciation to my friends and family for their unwavering support and encouragement throughout this journey. Their constant support, encouragement, and motivation played an essential role in keeping me focused and dedicated to completing this dissertation successfully.