

भारत सरकार  
अन्तरिक्ष विभाग  
राष्ट्रीय वायुमंडलीय अनुसंधान प्रयोगशाला  
पोस्ट बॉक्स नं. 123, एसवीयू कैंपस डाक घर  
तिरुपति-517 502  
साइट : पोस्ट व ग्राम, गादंकी-517 112  
चित्तूर जिला, आंध्र प्रदेश  
दूरभाष: + 91-8585-272024, 272020  
फैक्स: + 91-8585-272018/21



GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE  
NATIONAL ATMOSPHERIC RESEARCH LABORATORY  
P.B. No. 123, SVU Campus P.O  
TIRUPATI-517 502  
Site : P.O & Vill. Gadanki-517 112  
Chittoor Dist., Andhra Pradesh  
Phone : + 91-8585-272024, 272020  
Fax: + 91-8585-272018/21

### CERTIFICATE

This is to certify that the thesis entitled “**Analysis of Southwest Monsoon onset signatures over Indian subcontinent using observations and WRF-ARW model**” submitted by Mr. Biyo Thomas for the partial fulfilment of the award of degree **Master of Science in Space Science and Technology** of Mahatma Gandhi University, Kottayam, Kerala is a record of bonafide work carried out by him under guidance of **Dr. V Yesubabu** at National Atmospheric Research Laboratory (NARL), Gadanki from 6<sup>th</sup> June 2017 to 6<sup>th</sup> Sept 2017.

राजेंद्र प्रसाद

Dr. T. Rajendra Prasad

**Scientist/Engineer-SE**

(Student Project Coordinator)

V. Yesubabu

Dr. V Yesubabu

**Scientist/Engineer-SD**

(Project Guide)

डी. राजेंद्र प्रसाद / T. Rajendra Prasad  
वैज्ञानिक/इंजीनियर 'एसई'/Scientist/Engineer 'SE'  
राष्ट्रीय वायुमंडलीय अनुसंधान प्रयोगशाला  
National Atmospheric Research Laboratory  
अन्तरिक्ष विभाग/ DEPARTMENT OF SPACE  
भारत सरकार/ GOVERNMENT OF INDIA  
गादंकी/ GADANKI-517 112, आंध्रप्रदेश/A.P.

भारत सरकार  
अन्तरिक्ष विभाग  
इसरो उपग्रह केन्द्र  
हवाई पटन मार्ग, विमानपुर डाक घर  
बैंगलूर-560 017



GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE  
**ISRO SATELLITE CENTRE**  
HAL AIRPORT ROAD, VIMANAPURA POST  
BANGALORE - 560 017

DATE : 31/01/2018

## Certificate

This is certify that Reshma T  
of St. Albert's College, Ernakulam has undergone  
Project training in Space Astronomy Group at this Centre  
during the period from 20/11/2017 To 31/01/2018  
COURSE : M.Sc. Space Science And Technology  
PROJECT TITLE : Estimation of CLASS Collimator Blocking Fraction  
PERFORMANCE : Excellent

  
(Prakash K S)

Head, HRD Division, ISAC

  
(Rajendra Huliyal)

Group Head, PPEG, ISAC



**Satellite Meteorology and Oceanography Research and Training**  
**Space Applications Centre (ISRO)**  
**Ahmedabad**

**PARTICIPATION CERTIFICATE**

Name of the Student : Mr Sreerag Sudheendran

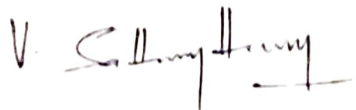
Course Undergoing : M. Sc [Space science & Technology]

Institution : ST. Albert's college, Ernakulam

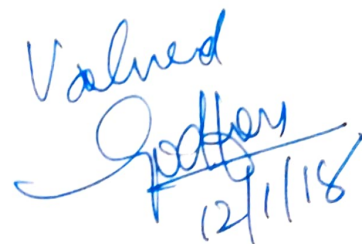
Programme Participated : SMART Research Programme

Topic of Research Work : Diurnal variation of rainfall over the Peninsular  
India and adjoining Seas as observed by  
INSAT-3D satellite

Duration of Participation : 12 June 2017 – 31 August 2017



[V. SATHIYAMOORTHY]  
Scientist – SG & Head,  
MOSDAC Research & Training Division  
SAC, Ahmedabad

  
12/1/18

Date: 28 August 2017

भारत सरकार

अंतरिक्ष विभाग

विक्रम साराभाई अंतरिक्ष केन्द्र

तिरुवनन्तपुरम-695 022

केरल, भारत

फोन : +91-471-2562597

फैक्स : +91-471-2706535

ई-मेल/



Government of India  
Department of Space  
**Vikram Sarabhai Space Centre**

Thiruvananthapuram-695 022

Kerala, INDIA

Telephone : +91-471-2562597

Fax : +91-471-2706535

e-mail: prashant\_hegde@vssc.gov.in

## SPACE PHYSICS LABORATORY

No: SPL/ACTG/PH/2017/38

### CERTIFICATE

This is to certify that the Project Report entitled “**Chemical composition of atmospheric aerosols over a semi-arid region in western India**” submitted by **Pranitha K (Reg. No. 200510)** for the partial fulfillment of the requirement for the award of Degree of Master of Space Science and Technology is an authentic work and has been successfully carried under my guidance at Space Physics Laboratory of Vikram Sarabhai Space Centre, Thiruvananthapuram.

Date: 24-08-2017

  
Dr. Prashant Hegde

**Dr. Prashant Hegde**  
Scientist / Engineer SE  
Space Physics Laboratory  
Vikram Sarabhai Space Centre  
Govt. of India, Dept. of Space  
Thiruvananthapuram-695 022

# CERTIFICATE

This is to certify that dissertation entitled Comparative Analysis of Precipitation Data from a co-located Disdrometer and Automatic Weather Station at a Coastal Urban Station - Cochin, India is a bona fide work of Ms. Aparna T.D., who carried out the dissertation under our supervision. Certified further, that to the best of my knowledge, the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



Prof. (Dr.) K. Mohan Kumar

Director, ACARR



Dr. M.G. Manoj

Research Scientist

Place: Cochin

Date: August 31, 2017

For.



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Fax: + 91-8585-272018/21

## CERTIFICATE

This is to certify that the thesis entitled “Study on the effect of Geomagnetic activity on low-mid latitude Mesosphere” submitted by **Mr. Prabhath H Kurup** for the partial fulfilment of the award of degree **Master of Science in Space Science and Technology** of Mahatma Gandhi University, Kottayam, Kerala is a record of bonafide work carried out by him under guidance of **Dr. V Lakshmi Narayanan** at National Atmospheric Research Laboratory (NARL), Gadanki from 12<sup>th</sup> June 2017 to 12<sup>th</sup> September 2017.

राजेंद्र प्रसाद / T. Rajendra Prasad  
12/9/17

Dr. T. Rajendra Prasad

**Scientist/Engineer-SE**

(Student Projects Coordinator)

टी. राजेंद्र प्रसाद / T. Rajendra Prasad  
वैज्ञानिक/इंजीनियर 'एसई'/Scientist/Engineer 'SE'  
राष्ट्रीय वायुमंडलीय अनुसंधान प्रयोगशाला  
National Atmospheric Research Laboratory  
अन्तरिक्ष विभाग/ DEPARTMENT OF SPACE  
भारत सरकार/ GOVERNMENT OF INDIA  
गादंकी/ GADANKI-517 112, आं.प्र./A.P.

Dr. V. Lakshmi Narayanan

Dr. V. Lakshmi Narayanan

**INSPIRE Faculty**

(Project Guide)

Valued  
12/1/18

## CERTIFICATE

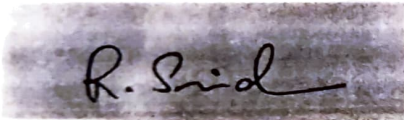
This is to certify that the project work entitled “**Atmospheric and Oceanic behavior during strong and moderate active/ break spells of Indian summer monsoon**” being submitted to the St. Alberts College, Ernakulam by Mr. Asish T Samuel (Register No:200502) in partial fulfillment of the requirements for the Degree of Master of Sciences in Space Science and Technology, comprises of the results of independent and original investigations carried out by the candidate under my supervision.

**Prof. (Dr) . C. A. Babu**  
**Department of Atmospheric Sciences**  
**School of Marine Sciences**  
**Cochin University of Science and Technology**  
**Cochin-16**

**Dr C.A. Babu**  
**Professor**  
**Department of Atmospheric Sciences**  
**Cochin University of Science And Technology**  
**Cochin - 682016**

# BONAFIDE CERTIFICATE

This is to certify that **Ms. FEMI M JOY** has done the project work title “**DETERMINATION OF  $r_0$  FROM FULL DISK H-ALPHA IMAGES** ” under my supervision and guidance from 3<sup>rd</sup> June to 28<sup>th</sup> July 2017 at Kodaikanal Solar Observatory, Indian Institute of Astrophysics ,Kodaikanal.



Dr.R.Sridharan

Scientist D

Indian Institute of Astrophysics

Bengaluru

## **CERTIFICATE**

This is to certify that the project work entitled “DETERMINING THE SUNSPOT AREA AND SUNSPOT NUMBER FOR THE YEARS FROM 1905 TO 1925 USING KODAIKANAL WHITE-LIGHT IMAGES” submitted to the Department of Space Science And Technology of ST. Albert’s college, Ernakulam is a work done by Ms Jayalakshmi VS under my guidance and supervision.

Place: Kodaikanal

Date: 28th July 2017

Seal:



(Signature)

Project Supervisor

Dr. B. Ravindra

Indian Institute of Astrophysics

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चित्तूर जिला। आंध्र प्रदेश  
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## CERTIFICATE

This is to certify that the report entitled” **Study of Martian Thermal Structure Using Mars Global Surveyor (MGS) Radio Occultation Measurements** “ submitted by **Kabesha Kalesh** for the award of the degree of **Master of Space Science and Technology** at Department of Physics, St. Albert’s college, which is affiliated to Mahatma Gandhi University, Kottayam is a record of bonafide work carried out under the guidance of **Dr. S.Sridharan** at National Atmospheric Research Laboratory(NARL), Gadanki from 1<sup>st</sup> June 2017 to 1<sup>st</sup> September 2017.

Project Guide:

**DR. S. Sridharan**  
**Scinetist/Engineer-SF**

Valmed  
Opdhar  
12/1/18

भारत सरकार  
अन्तरिक्ष विभाग  
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Chittoor Dist., Andhra Pradesh  
Phone + 91-8585-272024, 272020  
Fax + 91-8585-272018/21

## Certificate

This is to certify that the thesis entitled "**Martian ionospheric studies by LPW/ MAVEN during deep dip campaigns: Solar Zenith Angle and Longitudinal variations**" submitted by **Ms. Tesna Maria** for the partial fulfilment of the award of degree **Master of Science in Space Science and Technology** of Mahatma Gandhi University, Kottayam, Kerala is a record of bonafide work carried out by her under guidance of **Dr. Narukull Venkateswara Rao** at National Atmospheric Research Laboratory (NARL), Gadanki from 1<sup>st</sup> June 2017 to 31<sup>st</sup> August 2017.

राजेंद्र प्रसाद राजेंद्र प्रसाद  
Dr. T. Rajendra Prasad

Scientist/Engineer-SE

(Student Project Coordinator)

श्री. राजेंद्र प्रसाद / T. Rajendra Prasad  
वैज्ञानिक/इंजीनियर 'एसई'/Scientist/Engineer 'SE'  
राष्ट्रीय वायुमंडलीय अनुसंधान प्रयोगशाला  
National Atmospheric Research Laboratory  
अन्तरिक्ष विभाग/ DEPARTMENT OF SPACE  
भारत सरकार/ GOVERNMENT OF INDIA  
गदंकी/ GADANKI-517 112, आंध्र प्रदेश.

Dr. Narukull Venkateswara Rao

Scientist/Engineer-SD

(Project Guide)

SCIENTIST / ENGINEER  
राष्ट्रीय वायुमंडलीय अनुसंधान प्रयोगशाला/  
National Atmospheric Research Laboratory  
अन्तरिक्ष विभाग/ DEPARTMENT OF SPACE  
भारत सरकार/ GOVERNMENT OF INDIA  
गदंकी/ GADANKI

Valmiki  
12/1/2018

BANGALORE



UNIVERSITY

**Dr Vijayakumar H Doddamani**  
**Professor**  
M.Sc., M.Phil., Ph.D.  
Email: drvkdmmani@gmail.com

Accredited by NAAC with A-Grade  
DEPARTMENT OF PHYSICS  
Jnanabharathi Campus Bengaluru- 560 056


Phone:  
Off: 080-2296 1484 / 1471  
Fax: 080-2321 9295  
Mob: 9448673274

### Certificate

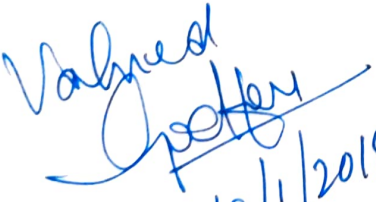
This is to certify that Ms **Lekshmi S** has worked for a research project on the topic "**UV Spectroscopic study of NGC 4151 using IUE Data**" under my guidance from June 10<sup>th</sup> – August 10<sup>th</sup>, 2017. The work undertaken by the candidate is found to be satisfactory.

Place: Bangalore  
Date: 11/08/2017

**Project Investigator**

  
**Prof Vijayakumar H Doddamani**

**Dr VIJAYAKUMAR H DODDAMANI**  
M.Sc., M.Phil., Ph.D  
Professor  
Department of Physics  
Bangalore University  
Bengaluru - 560056

  
12/1/2018

ST. ALBERTS COLLEGE  
ERNAKULAM  
(Affiliated to MG University, Kottayam)  
DEPARTMENT OF PHYSICS



CERTIFICATE

This is to certify that this project titled “**Emission Line studies of Active Galaxies in the UV Region**” is bonafide record of the project work done by **JOYLIN JOSEPH (REG NO: 200506)** during the academic year 2015-2017 in the partial fulfilment of the requirement for the award of the degree of **MASTER OF SCIENCE in SPACE SCIENCE AND TECHNOLOGY**.

Ernakulam

24-08-2017

Internal examiner:

External examiner:

*[Signature]*  
21/1/2018

