



Introduction

The term Global Navigation Satellite Systems (GNSS) refers to a satellite constellation used to provide geospatial position, navigation and timing. Global Positioning System (GPS) of the US, the GLObal'naya NAvigatsionnaya Sputnikovaya Sistema (GLONASS) of Russia, Galileo of Europe, Compass/BeiDou Navigation Satellite System (CNSS) of China and NAVigation with Indian Constellation (NAVIC) of India are examples of Global/Regional - Navigation Satellite Systems (NSS). Atmospheric delay in the ionosphere and neutral atmosphere are major error sources of GNSS measurements. Ionospheric errors are mostly eliminated by observing at two or more frequencies. But the tropospheric delay is a valuable meteorological information. Space-based GNSS observations from low Earth orbiting satellites by means of radio occultation provides foremost information about the atmospheric temperature and humidity profiles. Ground based GNSS receivers are used to measure atmospheric humidity by estimating tropospheric delay. ISRO launched GNSS RO instruments on-board Oceansat-2 and Megha-Tropiques satellites which provided valuable meteorological data that are available for researchers through MOSDAC website. There is a big potential for further advancing the use of GNSS data in weather forecasting and climate monitoring. Estimation of atmospheric parameters from GNSS observations and the subsequent use of those in meteorology is called GNSS Meteorology.

Training on Emerging Trends in GNSS Meteorology

Under the SMART programme, a four days training programme on 'Emerging Trends in GNSS Meteorology' is planned at Space Applications Centre, Ahmedabad. The proposed training programme is designed to impart knowledge on advanced concepts and latest progress in GNSS Meteorology to students, researchers, early career scientists, faculty members, etc. This training programme will cover latest developments and emerging trends in GNSS Meteorology, ISRO NSS missions, parameter retrieval and potential applications. Advance concepts on GNSS reflectometry, RO applications for planetary studies will also be covered.

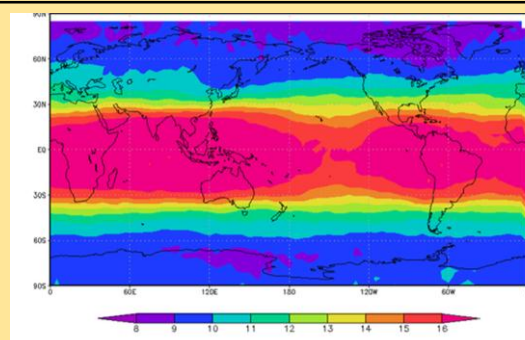
Details of the Training Programme

Course Date	27-30 August 2019
No. of participants	20
Target Group	Students, researchers, faculty members, early career scientists and officials of Government of India recognized Universities/Institutes/Departments.
Pre-requisite	Working knowledge of Linux, Python and Fortran are required.
Last date to apply	Filled-in application must reach on or before 25 July 2019.

Training programme consists of lectures in the forenoon by eminent scientists of SAC followed by hands-on familiarisation with satellite data in the afternoon. Outstation students/researchers may be provided paid accommodation at SAC guest house on sharing basis. No fee will be charged for attending the training. No TA/DA will be provided. Participation certificate will be provided after the completion of training. Selected applicants will be intimated by email.

Interested may send the filled-in application form to:

Dr. V Sathiyamoorthy
 Head, MRTD/MRG, Room No. 6112
 Space Applications Centre (ISRO)
 Bopal, Ahmedabad - 380058
 Phone: 079-26916112 Fax: 079-26916127
 Email: sathya@sac.isro.gov.in



Morphology of global tropopause height (km) prepared using GPS-RO derived Refractivity

Affix recent
passport
size photo &
get it
attested

Space Applications Centre, Ahmedabad
Application for SMART Training Programme
Emerging Trends in GNSS Meteorology

(Please type or write in CAPITAL Letters)

Name Dr./Mr./Ms/.....

Date of Birth (DD/MM/YYYY)

Gender

Correspondence Address (official)

Pin code

Email

Mobile

Designation

Educational Qualification

Permanent address with Pin code

How this training programme will be useful
to your studies/research/work?

Signature of the applicant with date

Recommendation from Head of the
Department or Institution with seal

Last date to receive the completed application is 25 July 2019