

Terms of Reference

India-US Task Force

on

Professional Engineer and Scientist Exchange Program

Approved by the India-US Civil Space Joint Working Group (CSJWG) on 12 June 2012

Approved by India-US CSJWG Earth Science Working Group on 15 July 2015

Background

On 8 November 2010, the Prime Minister of the Republic of India and the President of the United States of America expressed their joint intentions to expand cooperation in civil space activities; advance scientific knowledge and human welfare; launch initiatives in climate and weather forecasting for agriculture, navigation, resource mapping, research and development, and capacity building; and, exchange [engineering and scientific professional] visitors between countries to enhance partnerships.¹ In addition, India and the United States (US)² agreed to enhance current understanding of coupled ocean-atmosphere monsoon system over India.³

In pursuance of the India and US Joint Statement,¹ the India-US Civil Space Joint Working Group (CSJWG) held its third meeting in Bengaluru (Bangalore) on 13-14 July 2011. The CSJWG co-chairs are the India Department of Space Indian Space Research Organisation (ISRO), US Department of State (DOS), and US National Aeronautics and Space Administration (NASA). The JWGCSC agreed to expand cooperation in several areas, including collaboration on visits of engineers and scientists in Earth observations and science. The CSJWG established a Professional Engineer and Scientist Exchange Program (PESEP) Task Force, which consists of one representative each from the ISRO Space Application Centre (SAC), ISRO National Remote Sensing Centre (NRSC), ISRO Satellite Centre (ISAC), NASA, US Department of Commerce National Oceanic and Atmospheric Administration (NOAA), and US Department of the Interior United States Geological Survey (USGS). Appendix B lists the members of the PESEP Task Force.

¹ Joint Statement by President Obama and Prime Minister Singh of India, 8 November 2010 (<http://www.whitehouse.gov/the-press-office/2010/11/08/joint-statement-president-obama-and-prime-minister-singh-india>).

² Acronyms are listed in Appendix A.

³ Agreement to Study Seasonal Prediction of Summer Indian Summer Rainfall Between India and US, 8 November 2010 (<http://www.indianembassy.org/prdetail1629/agreement-to-study-seasonal-prediction-of-indian-summer-monsoon-rainfall-between-india-and-us>).

A videoconference occurred on 13 December 2011 under the auspices of the CSJWG and focused on Earth science cooperation. NASA and NRSC, represented by Dr. David Halpern and Dr. V. K. Dadhwal, respectively, were appointed co-chairs of the PESEP Task Force. The PESEP Task Force agreed to jointly develop a draft Terms of Reference (ToR) for approval by the CSJWG.

The India-US CSJWG Earth Science Working Group, at a videoconference on 15 July 2015, approved the Terms of Reference for three additional years.

Purpose

India and the United States would collaborate to improve harmonization of joint studies of Earth observations and science through visits of engineers and scientists. Joint India and US objectives include:

- Defining global and regional integrated Earth science themes
- Understanding Earth observation retrievals and algorithms
- Conducting feasibility studies for Earth observation applications
- Understanding calibration and validation methods for Earth observations from airborne, ground-based and satellite platforms
- Evaluating societal benefits of Earth observations
- Increasing quantity of joint India- and US-authored peer-reviewed publications

Principles

The PESEP Task Force principles include:

- Primary objective is to support visits of personnel from cooperating organisations to each other's institutions. However, where common interests warrant, staff of collaborating organisations as well as visits to associated institutions could also be supported.
- No exchange of funds
 - India would pay all expenses of India engineers and scientists visiting the United States
 - United States would pay all expenses of US engineers and scientists visiting India
- Each visit application would require unanimous approval by the PESEP Task Force
- The host organisation would provide office space, working laboratory and computing facility, archived data sets, and other essential items, as appropriate, to facilitate an efficient, effective, and productive visit
- PESEP Task Force in consultation with their national counterparts would identify major thrust areas and laboratories available for visits to facilitate application and selection process.
- PESEP will process applications as received until a different process becomes necessary.
- Visit length
 - Short visit
 - 7-10 days
 - Present lectures at 3-4 institutions
 - Technical discussions to enable preparation of joint India-US project

- Intermediate Visit
 - 4-6 weeks
 - Participate in joint activity
 - Present lecture summarizing joint activity
- Long visit
 - 3-4 months
 - Participate in joint activity
 - Present lecture summarizing joint activity

Responsibilities

The PESEP Task Force would use reasonable and best efforts to enable India engineers and scientists to visit the United States and US engineers and scientists to visit India.

Visitor activities include:

- Participating in meetings of India and US science working groups and in other meetings, as appropriate
- Utilizing Earth observation data sets to improve the designs of future observing systems
- Collaborating on technical feasibility demonstrations of Earth observing systems
- Participating in joint field calibration experiments, cross-calibration and validation activities, and sharing data and information to enable high quality Earth observation data products
- Quantifying socio-economic benefits of Earth observations
- Conducting joint research to acquire new knowledge of interactive processes in global and regional integrated Earth system science
- Preparing joint publications and presentations
- Preparing trip report 15 days after end of visit; 1-2 pages for short visit, 3-4 pages for intermediate visit, and 8-10 pages for long visit

Duration

The duration of the PESEP ToR is 3 years. Either side may terminate ToR by request to CSJWG. Renewal of ToR may occur by request to CSJWG.

Appendix A: List of Acronyms

CSJWG	Civil Space Joint Working Group
DOS	Department of State
ESD	Earth Science Division
ISAC	ISRO Satellite Centre
ISRO	Indian Space Research Organisation
NASA	National Aeronautics and Space Administration
NESDIS	National Environmental Satellite, Data, and Information Service

NOAA	National Oceanic and Atmospheric Administration
NRSC	National Remote Sensing Centre
OES	Bureau of Oceans and International Environmental and Scientific Affairs
OIIR	Office of International and Interagency Relations
PESEP	Professional Engineer and Scientist Exchange Program
SAC	Space Application Centre
ToR	Terms of Reference
US	United States
USGS	United States Geological Survey

Appendix B: Members of PESEP Task Force

M. Annadurai, ISRO SAC
 T. Cecere, USGS HQ
 V. K. Dadhwal, ISRO NRSC (co-chair)
 D. Halpern, NASA JPL (co-chair)
 M. Kalb, NOAA NESDIS
 T. Misra, ISRO SAC