

LETTER OF INTENT

BETWEEN THE CENTER FOR SPACE SCIENCE AND APPLIED RESEARCH (CSSAR) AND THE NATIONAL INSTITUTE FOR SPACE RESEARCH (INPE) CONCERNING SUPPORT FOR RESEARCH INFRASTRUCTURE FOR THE INTERNATIONAL MERIDIAN CIRCLE PROGRAM (IMCP) AND BRAZILIAN STUDY AND MONITORING OF SPACE WEATHER (EMBRACE) AND JOINT RESEARCH IN SPACE SCIENCE

The Center for Space Science and Applied Research (CSSAR) and the National Institute for Space Research (INPE), hereinafter referred to as "the Parties", seeking to implement the Memorandum of Understanding (MoU) signed on 6 September 2010 by Dr. Wu Ji, Director General of CSSAR and Dr. Gilberto Camara, Director General of INPE;

Recalling that CSSAR and INPE have already formalized in such a MoU their interest in collaborating in areas of mutual interest and of benefit to both institutions, including the installation of research equipment from Brazil to China and from China to Brazil and sharing of the related scientific data and in cooperating in scientific areas of mutual interest;

Intends to support the research infrastructure for both the International Meridian Circle Program - IMCP (previously referred to in the MoU as the International Space Weather Meridian Circle Program - ISWMCP) and the Brazilian Study and Monitoring of Space Weather (EMBRACE), and research in space science as follows:

CSSAR intends to:

- (1) Provide and install a Digital Portable Ionospheric Sounder (normally known as DPS) at INPE's facility in Santa Maria, RS;
- (2) Provide and install, in cooperation with INPE, a Very High Frequency (VHF) Coherent Scatter Radar system at INPE's facility in Santa Maria, RS;
- (3) Provide the components, assembly and installation, in cooperation with INPE, of a Lidar at INPE's facility in Santa Maria, RS;
- (4) Jointly implement studies of gravity waves by the Lidars in Brazil and in the Chinese Meridian Project; and

- (5) Seek all formal authorizations, as necessary, from the relevant national authorities.

INPE intends to:

- (1) Provide and maintain the site for the DPS and VHF Radar at INPE's facility in Santa Maria, RS consisting of the land, security, technical support, administrative and technical staff, and necessary infrastructure (telephone, internet, energy supply, water etc);
- (2) Provide and maintain the site for the Lidar at INPE's facility in Santa Maria, RS consisting of the land, security, technical support, administrative and technical staff, and necessary infrastructure (telephone, internet, energy supply, water etc);
- (3) Operate the DPS, the VHF radar and Lidar and all the sub-systems;
- (4) Build the necessary facilities to shelter the systems, as necessary and mutually agreed;
- (5) Facilitate entry of equipment provided by China for the DPS, VHF Radar and Lidar, and CSSAR technical staff, as necessary, and seek formal authorization by the relevant national authorities, if necessary;
- (6) Seek and propose to CSSAR Brazilian suppliers for components of the DPS, VHF Radar and Lidar, as appropriate and mutually agreed;
- (7) Provide an internet server to facilitate data sharing, as agreed in the MoU between CSSAR and INPE; and
- (8) Jointly implement studies of sporadic sodium layers by the Lidars in Brazil and in the Chinese Meridian Project.

Both Parties will endeavor to implement this Letter of Intent in a timely fashion, promoting technical discussions and meetings, as necessary and mutually agreed. The Parties also agree to continue discussions to develop a joint project of a Very High Frequency (VHF) Incoherent Scatter Radar system, most likely to be installed at INPE's facility in Santa Maria, RS.

INPE and CSSAR appoint the following researchers as points of contact regarding this Letter of Intent.

From CSSAR:

From INPE:

YANG GUOTAO

Hisao Takahashi

Dr. Guotao Yang

Dr. Hisao Takahashi

The specific terms and conditions for the activities resulting from this Lol will be defined in Annexes to the MoU between CSSAR and INPE.

The provisions set forth in this Lol will not create any legally binding obligations between the Parties.

São José dos Campos, March 16th, 2011.

From CSSAR

Chi Wang

From INPE

Gilberto Camara

Chi Wang

Gilberto Camara

Deputy Director General

Director General