

# Letter of Intent (LoI) for Academic & Scientific Cooperation

between

**The National Institute for Space Research**

**and The Institute for Scientific Research at Boston College**

**THE NATIONAL INSTITUTE FOR SPACE RESEARCH (INPE)** is an internationally recognized institute for space and atmospheric research and space technology. INPE is a research unit of the Brazilian Ministry of Science, Technology and Innovation (MCTI), whose main goals are fostering scientific research and technological applications and qualifying personnel in the fields of space and atmospheric sciences, space engineering, space technology and space applications.

**THE INSTITUTE FOR SCIENTIFIC RESEARCH AT BOSTON COLLEGE (ISR/BC)** is a world-class center of research and academic excellence in the fields of solar and space science and spacecraft environmental interactions. As an organized research institute at Boston College, ISR supports the research mission of Boston College to conduct national and international significant research that advances insight and understanding, enriches culture, and addresses pressing social needs. Through our research and workshops, ISR also fosters the intellectual development of young scientists from around the world.

**Recognizing** that **INPE**, through its Aeronomy Division (DAE) of the Space and Atmospheric Science Coordination (CEA), and the **Institute for Scientific Research (ISR) at the University of Boston**, hereinafter referred to as **the PARTIES**, share certain common interests and priorities, in addition to promoting and furthering education and learning in their respective countries;

**Considering** that both Parties have expressed interest in establishing a closer relationship between them for the purpose of exploring cooperative opportunities in the areas of common interest; and

**Acknowledging** that the exploration of cooperative opportunities in areas of common interest may result in the Parties agreeing to work together in a particular area and/or on a specific project which may require the establishment of specific formal cooperation agreements to regulate the terms and conditions for their development,

the Parties have expressed the intention:

**to exchange academic information and materials,**

in the following **areas** of science related to African Meridian B-field Education and Research (AMBER) magnetometer array deployments to study the dynamics and structure of the inner-magnetospheric plasma density and its fundamental electrodynamics that govern equatorial ionospheric motion, which include, but are not limited to:

- the processes governing electrodynamics of the equatorial ionosphere as a function of latitude (or L-shell), local time, longitude, magnetic activity, and season;
- ultra low frequency (ULF) pulsation strength and its connection with equatorial electrojet (EEJ) strength at low/mid-latitude regions;
- deployment of two AMBER magnetometers which will be provided by BC/ISR and hosted by INPE at facilities located in Belém (ANATEL) and Petrolina (UPE);
- deployment of one digital ionosonde VIPIR at São Gabriel da Cachoeira (AM), which will be provided by BC/ISR and hosted by INPE at the Brazilian Air Force Base at that site.

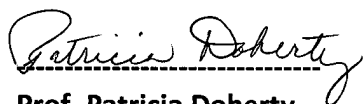
Other areas of interest for joint research and cooperation may be identified at a later stage by INPE and ISR/BC.

Both Parties will use their best efforts to advance the above mentioned collaboration and shall work together towards the establishment of a Memorandum of Understanding (MoU) that will define the specific terms and conditions for the intended cooperation. Both Parties will endeavor to negotiate and establish this MoU in a timely fashion.

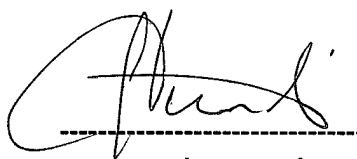
Each Party assigns focal points of contact who will be responsible for coordinating and overseeing the planning and execution of the cooperation activities that may derive from this Lol and for any other matters related to it. INPE and ISR/BC designate, respectively, the researchers **Eurico Rodrigues de Paula** and **Endawoke Yizengaw /Cesar E. Valladares** as their focal points for this Lol.

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

Signed and in witness of:



**Prof. Patricia Doherty**  
**Director of the Institute for Scientific Research**  
**BOSTON COLLEGE**



**Dr. Leonel Fernando Perondi**  
**General Director**  
**INPE**

Date: Sept 22, 2014

Date: Aug 15, 2014