

Statement of Need

A broad and vigorous space research program in NASA is vital for the advancement of knowledge. Scientists at NASA in collaboration with outside scientists play a key role in conceiving new space missions, providing mission requirements, and achieving research objectives aimed at understanding the Earth, planets and smaller bodies of the Solar System, understanding their origins and evolution, and by extension understanding the structure and evolution of planetary systems elsewhere in the universe.

The SSE science center will focus primarily on scientific research. It is also expected to strengthen cooperative relationships between educational, not for profit, and government scientists located in the Goddard Solar System Exploration Division (SSED, Code 690), and will provide a vehicle to increase the involvement of these communities in the pursuit of NASA goals.

The SSE science center will conduct research collaboratively with organizational elements within the GSFC Solar System Exploration Division (SSED, Code 690). Research may involve theoretical studies, analysis of data from operating and past missions, and simulation and design of future missions. Thus, the Government's "substantial involvement" in the science center will be the contribution of scientific expertise and data as necessary to efficiently and effectively conduct the research described herein. Future research activities will evolve as a function of priorities, budgets, funding opportunities, and success of proposal submissions.

The SSE science center will carry out observational, experimental, and theoretical research in support of NASA strategic science mission objectives to:

- a. Planetary and Solid Earth science: The nature and evolution of surfaces, interiors, atmospheres, ionospheres, and magnetic fields of planets, exo-planets, moons, asteroids and comets and studies of atmospheric trace gases on Earth and other planets.
- b. Heliophysics and Astronomical Science: The physics of the Sun, solar corona, particles, and waves from the Sun and elsewhere in the solar system, the interplanetary medium, their interaction with Earth's magnetosphere, and other Sun Solar System connections; and the study of exo-solar planetary systems, their formation and evolution.
- c. This includes: The development of instrument technology and theoretical techniques required to meet these scientific challenges.

This Cooperative Agreement will allow substantial programmatic involvement in the form of collaboration between GSFC and the Solar System Exploration science center as well as joint development of research objectives.

The primary goal under the resulting cooperative agreement is to establish a focused GSFC/research partnership that:

- a. **Brings together the partner science center and GSFC scientists to implement the NASA strategic goals relevant to SSE science;**
- b. **Enhances the capabilities and strengths of participating organizations in this science;**
- c. **Provides organization and staffing flexibility to adapt to evolving research program needs;**
- d. **Attracts superior scientists necessary to carry out programs which would be outside the capabilities of either partner working alone;**
- e. **Promotes the involvement of minority and women scientists in space science research; and**
- f. **Facilitates access to student talent and provides opportunities for their participation in NASA programs.**