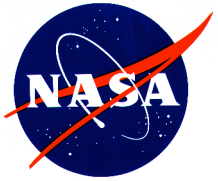


TR&T Update

Mona Kessel

LWS Deputy Program Scientist

Heliophysics Division

TR&T Funding Profile

- $6.0M in 2000
- $5.2M in 2001
- $5.3M in 2002
- $4.3M in 2003
- $6.3M in 2004
- $6.5M in 2005 +

$2.0M for Strategic Capability **In partnership with NSF & AFSOR**

Larger awards to consortia

- **Earth–Moon–Mars Radiation Model**
- **Comprehensive Magnetosphere-Ionosphere Model**
- **A Time-Dependent 3D Model of the Corona and Ambient Solar Wind**

Total: 150 grants, inter-agency transfers, contracts, RTOPs

2003 LWS TR&T Foci

Solar	• The magnetic field topology connecting the photosphere to the corona.
Heliosphere	• The propagation of the background solar wind flow and superimposed disturbances through the heliosphere
Magnetosphere	• The generation and decay of the Earth's radiation belts as a function of geomagnetic and solar wind conditions.
Ionosphere	• The geophysical conditions favoring the development of low- and mid-latitude scintillations in the Earth's ionosphere.
ITM	• The effects of varying solar EUV radiation on the Earth's ionosphere and atmosphere.
Solar-Climate	• The relationship between solar irradiance and cosmogenic proxies for long term solar activity.

Team Approach

- **FY04-05--Implemented teams for each focus topic**
- **LWS Science Center MoU with NCAR**

AGU Special Sessions

- **Dec 2006**
- **May 2007**

Workshop Sep 2007

Team Meetings

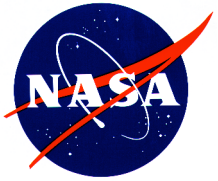
- **Liemohm - GEM Jun 2006**
- **Richmond - NCAR Sep 2006**
- **Fuller-Rowell - NCAR Sep 2006**
- **Zurbuchen - NCAR Nov 2006**
- **Liemohm - AGU Dec 2006**

2004 LWS TR&T Foci

Solar ***Mikic***	• Determine the solar origins of the plasma and magnetic flux observed in an Interplanetary Coronal Mass Ejection.
Solar- Heliosphere ***Zurbuchen***	• Determine the topology and evolution of the open magnetic field of the Sun connecting the photosphere through the corona to the heliosphere.
Solar- Heliosphere ***Desai***	• Relate solar-energetic particles to their origin at the sun and inner heliosphere.
Magnetosphere ***Liemohn***	• Determine the mechanisms responsible for the formation and loss of new radiation belts in the slot region in response to geo-effective solar wind structures.
Thermosphere ***Richmond***	• Quantify the response of thermospheric density and composition to solar and high latitude forcing.
Solar-Climate ***Nathan***	• Quantify the sensitivity of regional and global climate to solar forcing in the full context of the interactive climate system.

2005 LWS TR&T Foci

Heliosphere *Lee*	• Shock acceleration of SEPs by interplanetay CMEs
Heliosphere *Miralles*	• Mechanism for solar wind heating and acceleration
Magnetosphere *Thomsen*	• Solar wind plasma entry and transport in the magnetosphere
Ionosphere *Fuller-Rowell*	• Storm effects on global electrodynamics and middle and low latitude ionosphere
Solar-Climate	• Atmospheric abundance of greenhouse gases and dynamics of upper atmosphere



2006 LWS TR&T Foci

Solar	• Predict Emergence of Solar Active Regions Before they are Visible
Solar-Heliosphere	• Understand how Flares Accelerate Particles near the Sun (i.e., through shocks and/or Reconnection) and how they Contribute to Large SEP Events
Magnetosphere - Ionosphere	• Effects of Ionospheric-Magnetospheric Plasma Redistribution on Storms
ITM	• Investigate the Global Distribution, Sources and Effects of Large Electron Density Gradients at Middle and Low Latitudes
Solar-Climate	• Solar Origins of Irradiance Variations

New Collaborations

Collaborations > Sum of Individual Efforts