Final Report on Grant NAS5-97140

(POLAR/CEPPAD Data Analysis)

Background

D.N. Baker is a co-investigator on the Comprehensive Energetic Particle Pitch Angle Distribution (CEPPAD) experiment of POLAR. Dr. Baker has been active in the design and calibration of the CEPPAD sensors and is now heavily involved in the analysis and interpretation of the data. Baker and his team have developed analysis and data display software and continue to support all aspects of the CEPPAD program.

Recent Efforts

Dr. Baker has a team of research associates, graduate students, undergraduate students, and visiting scientists who are involved in analysis of CEPPAD data. This work has led to numerous published papers and scores of invited and contributed talks at scientific meetings (see attachments). The work has focussed very substantially on high-energy electron results, however new emphasis was placed on storm-substorm relationships and on ion measurements as well. By using multi-spacecraft techniques, the CEPPAD data have provided extensive new insights into how particles are accelerated, transported, and lost within the Earth’s magnetosphere. Substantial new understanding of magnetospheric processes and particle acceleration has been obtained in the approach to the solar activity maximum period.

Report on specific activities:

D. N. Baker and his team of Research Associates, postdoctoral fellows, graduate students, undergraduate students, and scientific visitors supported the CEPPAD investigation in four key areas. These were:

1. Dr. Baker and his team performed data reduction and scientific analysis. This work was used to present results at national and international scientific meetings and was also used as a basis for scientific journal publications. The team also performed correlative analysis in support of “space weather” events and satellite anomaly resolution.

2. The CU/LASP team supported ISTP science team meetings and worked with Project Office personnel to communicate POLAR/GGS results to NASA management, educational organizations, and the general public.

3. Dr. Baker and his group developed and distributed data analysis and display tools and shared software with other CEPPAD, GGS, and ISTP colleagues.

4. The CU/LASP team supported ongoing calibration and operational evaluations of the CEPPAD sensor suite with particular emphasis on cross-comparisons with other POLAR and ISTP sensors.

Attachment: Publication, Contributed Talks, Invited presentations
POLAR/CEPPAD References

PUBLICATIONS

1996


1997


**1998**


1999


15 October issue, 1999.


**INVITED TALKS**

1996


1997


Baker, D.N., Space Weather Effects on Satellites, Invited lecture, International Space University Summer School, Rice University, Houston, TX, 18 July 1997.


5
Baker, D.N., Particle linkages to the middle atmosphere, Laboratory for Atmospheric and Space Physics Seminar, Boulder, CO, 30 October 1997.


1998


Baker, D.N., Space Weather effects on spacecraft, International Space University, Cleveland State University, Cleveland, OH, 30 July, 1998.


1999


Baker, D.N., Energetic particle properties in the inner magnetosphere through the 11-year solar cycle, Spring AGU meeting, Boston, MA, May 31-June 4, 1999.


Baker, D.N., STEP – Results, Analysis, and Modeling Phase, SCOSTEP, Conference of Delegates, IUGG Meeting, Birmingham, UK.


CONTRIBUTED TALKS

1996


Turner, N.E., et al., Multi-spacecraft study of electric field penetration into the Earth’s magnetosphere, AGU Chapman Conference on the Magnetotail, Kanazawa, Japan, Nov. 5-9, 1996.


Turner, N.E., et al., Multi-spacecraft study of electric field penetration into the Earth’s magnetosphere, Fall AGU Meeting, San Francisco, CA, 19 December 1996.

1997


Baker, D.N., et al., Coronal mass ejections, magnetic clouds, and relativistic magnetospheric electron events, IAGA 97, Uppsala, Sweden, August 6, 1997.

Turner, N.E., et al., Coordinated ISTP statistical study of electric field coupling between the solar wind and the magnetosphere, IAGA 97, Uppsala, Sweden, August 6, 1997.


Baker, D.N., CMEs, magnetic clouds, and magnetospheric electron acceleration, SAMPEX SWT Meeting, Pertisau, Austria, 30 September 1997.

Baker, D.N., Long-term changes in the outer zone electron population observed with SAMPEX and POLAR, International Workshop on Space Radiation Environment Modeling, Moscow, Russia, 7-9 October 1997.


1998


Peterson, W.K., et al., Imaging the plasma sheet with energetic ions from the POLAR satellite, International Conference on Substorms-4, Lake Hamana, Japan, 9-13 March 1998.


1999


10/13/99
**NASA GSFC ACTIVE CONTRACT REGISTER**

Last Updated: 08/27/2001  
For No. NAS597140

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http://gsfc-aphrodite.gsfc.nasa.gov/acr/acrcontract.cfm 8/28/01
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