

共同研究課題

磁気赤道磁力計ネットワークデータのデータベース化 (2001-05) MAGDAS/CPMN/EMN データのデータベース化 (2006-10)

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1. 研究目的

九州大学は1985年から今日まで、磁気赤道域の地域でキャンペーンベースの地磁気ネットワーク観測を継続実施し、3秒値の高時間分解能データを取得してきた。1995年から2005年までの高時間分解能の膨大なデータは、特殊なカセットテープに圧縮して記録されているために、データ再生しデータベース化するのに時間が掛かり、一般の研究者が自由に利用できる状況には至っていなかった。研究課題「磁気赤道磁力計ネットワークデータのデータベース化」により、磁気赤道域の地磁気ネットワークデータのデータベース化をはかり、CD-ROMなどにより公開することによって、磁気赤道で顕著に現れるDP2、SSC、Pi 2 などのULF 波動のグローバルな発生特性、伝播特性に関わる研究を推進した。1996年から2005年まで、磁気赤道域と210度磁気子午線に沿った環太平洋 (Circum-pan Pacific Magnetometer Network CPMN) 地域での地磁気ネットワーク観測を継続実施し、1秒値の高時間分解能データを取得してきた。2005年からは、新たに準リアルタイムでデータ収集できる MAGnetic Data Acquisition System (MAGDAS) を210度磁気子午線沿いに20観測点、2006-7年度は磁気赤道沿いとその他に19観測点、2008年度はMAGDAS-IIとしてアフリカの96度磁気子午線沿いに10観測点を設置し、全球的なデータ収集を開始した。2010年度からは、更に最新化したMAGDAS磁力計50台を導入し、シベリア、インドネシア、アフリカ地域の30観測点を補強し、残り20台はこれまでの旧MAGDAS/CPMN観測点の機材更新に当てる計画になっている。この2005年以降の高時間分解能の膨大なデータは、現在のところ、現地とのインターネット・電話回線の不具合や磁力計の温度ドリフト等の問題を先ず解決するのが手一杯で、データ補正・校正した後のデータベース化するまでに至らず、一般の研究者が自由に利用できる状況にはない。研究課題「MAGDAS/CPMN/ EMNデータのデータベース化」では、新旧のMAGDAS/CPMNのデー

データベース化をはかり、データベース保管サーバーやホームページにより公開する。宙空領域に顕著に出現するsc/si, sfe, Pc 3-5, Pi 2-3, DP-2などのULF波動のグローバルな発生特性、伝播特性について、また、Sq, EEJ変化を表すEE指数や太陽風速度を表すPc5指数に関わる共同研究を推進する。

2. データベース作成の概要

- (1) 1995年から2004年までの磁気赤道地磁気ネットワークデータの整理と3秒値と1分値のデータベース化をはかった。
- (2) 2005年から2009年までの磁気赤道、環太平洋域に加え新たな210度磁気子午線沿いのMAGDAS/CPMN地磁気ネットワークデータの地磁気3成分毎の絶対値校正と温度補正を行い、3秒平均値と1分平均値のデータベース化をはかった。
- (3) 磁気赤道データベースを公開するために、マスターのCD-ROMを作成した。
- (4) S T E研で、(3)のマスターCD-ROMを焼き増し、関連研究者に配布した。
- (5) これらのデータベースを保存するために、マスターのデータサーバーを作成した。
- (6) 関連研究者に公開する為のMAGDAS/CPMN/EMNデータベースのホームページを開設した。
- (7) 高時間分解のデータを用いた、磁気赤道で顕著に現れるDP2、SSC、Pi 2などのULF波動のグローバルな発生特性、伝播特性に関わる共同解析研究、例えば極域変動電磁場と磁気赤道変動場との相関性や人工衛星データとの比較解析研究を推進した。

3. 共同研究の成果、公表状況

・データは太陽風-地球磁気圏相互作用、電離圏・磁気圏でのダイナミクス、電離圏-熱圏におけるプラズマ中性大気相互作用、ULF波動や巨大地震に伴う異常磁場変化についての国内・国際共同研究に加え、九州大学の大学院生の教育の一貫としても利用されている。地磁気脈動、Sq電流系、衛星磁場との比較、サブストームなど、多種多様の国内外での研究に必要な基礎データとして、データベースが利用されている。2001年以降の研究論文のリストを以下に示す。研究代表者に直接コンタクトがある利用実績は、年に30件程度であるが、1分値デジタルデータはホームページから自由に取得できるようになっているため、実際の利用はこのリストよりはるかに多いと思われる。

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4. ホームページのアドレス

MAGDAS地磁気データベース : <http://magdas.serc.kyushu-u.ac.jp/>

MAGDAS-II地磁気データベース : <http://magdas2.serc.kyushu-u.ac.jp/>

CPMN地磁気データベース :

http://denji102.geo.kyushu-u.ac.jp/denji/obs/cpmn/cpmn_obs_e.html

磁気赤道地磁気データベース :

http://denji102.geo.kyushu-u.ac.jp/denji/obs/equator/eq_obs_e.html