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The Ørsted Satellite Project

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Introduction.. The Ørsted satellite had no easy way to its success. The satellite was first targeted for a launch in 1995 paid for by NASA on a Delta-II rocket scheduled to launch a large American ARGOS satellite. Unfortunately, the 2700 kg heavy ARGOS satellite had grave technical difficulties. Hence the 60 kg small Ørsted satellite had to be put on the shelf to await launch. The green light came on in late 1998 and Ørsted was shipped to the Vandenberg Air Force base in California. The first launch count-down took place on 15 January 1999 but was aborted due to high winds. Then followed a lengthy series of launch attempts until finally, at 11:29:55 on 23 February, 1999, on the 11'th count down, we finally succeeded. The large Delta rocket, majestically, lifted-off from its ramp and standing on a column of fire and smoke it reached for the sky and disappeared from sight with its precious payload of the ARGOS, the Ørsted, and the South-African Sunsat satellites. At 14:20, after almost 3 hours of nerve-racking waiting, as the satellite had to be separated from the launcher and pass over Denmark, we received at the ground station at DMI the first radio signals from the small satellite. Ørsted was in its planned orbit and alive. Denmark was now represented in Space with its first national satellite.

The Ørsted satellite is still in operation, now in its 9'th year. In spite of its high age most of the satellite instrumentation and systems are still functional. The aging has reduced the power delivered from its solar panels and has diminished the efficiency of the batteries needed for satellite operation in the Earth's shadow. One of the instruments, the so-called Star Imager, needed for precise information on the satellite attitude has been worn-out by the hard radiation environment. However, great care is exercised to nurse the satellite and the remaining instruments. Hence the Ørsted satellite still supplies valuable data from its measurements in space. Now the Ørsted satellite is also theme for a DVD video and accompanying book written by Charlotte Autzen (in Danish) for educational uses. An updated publications list is included below.

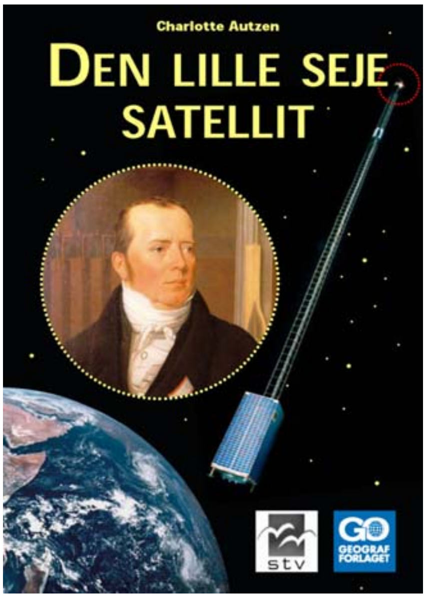


Figure 1. Cover of book on the Ørsted satellite. Portrait of H.C. Ørsted.

Ørsted satellite and instruments. The main instrumentation onboard Ørsted is a set of two magnetometers. One is a "Compact Spherical Coil" (CSC) vector magnetometer combined with a "Star Imager" (SIM) stellar compass. Both are constructed at the Danish Technical University (DTU) and are satellite instruments of "world-class" with unsurpassed precision and stability. The absolute magnitude of the geomagnetic field is measured by an Overhauser (OVH) scalar magnetometer supplied by CNES, France.

The high-energy radiation in space, particularly in the Earth's radiation belts, is detected by a "Charged Particle Detector" (CPD) instrument constructed at DMI. In addition to a standard GPS (TANS) receiver for positioning and timing information, the satellite carries a TurboRogue GPS high precision receiver supplied from NASA to be used for profiling of atmospheric temperature and humidity and for mapping of the electron contents in the upper atmosphere.

A particularly ingenious construction is the 8 m foldable mast made of three glass-fibre longerons with interleaved wires and spacers. During assembly, tests and launch the mast including canisters for the two magnetometer systems are folded into the satellite body. The long mast keeps the sensitive magnetic instruments at a safe distance from possible disturbing stray fields from materials and current loops in the satellite body. For supply of electrical power the satellite has solar panels on all sides except the bottom side, which carry the telemetry antennas always facing the Earth. A rechargeable NiCd battery provides power during eclipse. The basic parameters are listed in Table 1.

Table 1. Ørsted satellite specifications

Satellite mass	60.7 kg
Body dimensions	72x45x34 cm
Foldable mast	6+2 m
Average power	37 W
Data storage cap.	12 hrs
Telemetry	S-band 2.2 GHz
Apogee height	865 km
Perigee height	649 km
Inclination	96.48 deg.
Orbital period	100 min

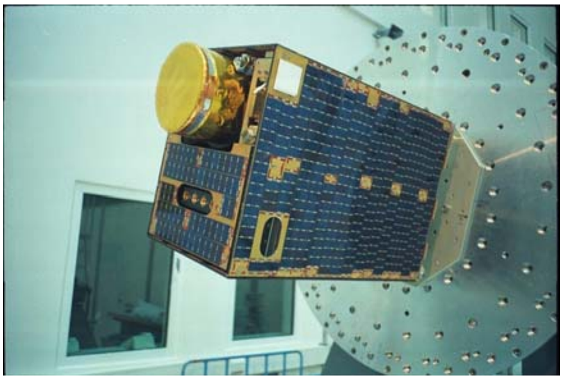


Figure 2. Ørsted satellite at test. (Photo: P.L. Thomsen)

Main field modelling. The primary task for the Ørsted satellite is the delivery of high-precision data for modelling the Earths magnetic field, which at the Ørsted orbit varies between around 20.000 nT and 60,000 nT (1 nanoTesla=10^{-9} Vs/m^2). First occasion for this application was the new "International Geomagnetic Reference Field" (IGRF) model for epoch 2000. The IGRF models are updated every 5 years. They are used for numerous technical and practical tasks all over the world. Ørsted succeeded to deliver the data in spite of the strongly delayed launch, and the IGRF2000 model issued on time was mainly based on Ørsteds measurements. In later modelling the Ørsted magnetic data are supplemented by data from the German CHAMP satellite launched in July 2000. This satellite also carries Danish magnetic instruments similar to those on Ørsted.

The models for the Earth's magnetic field are continuously refined with the most recent data. For scientific uses an "Ørsted Initial Field Model" (OIFM) was developed to provide modelling with an accuracy (RMS deviation between model and data) of around 5 nT. More recent an "Ørsted Secular Variation Model" (OSVM), which includes coefficients for the temporal development (secular variation) of the main field, has been published. The accuracy of this model is around 3 nT. Using specialized processing of Ørsted (and CHAMP) data has enabled an estimate of localized magnetic anomalies with an accuracy of around 1-2 nT.

Comparing these accurate models with models based on the data obtained 20 years earlier from Magsat (1979-80) - the only satellite prior to Ørsted providing high-precision magnetic data - makes it possible to calculate the global change in the Earth's magnetic field. The results are illustrated in figure 3. The two upper diagrams present in colour code on a scale ranging from 20.000 to 60.000 nT the global distribution of the magnetic field strength in years 2000 (Ørsted) and 1980 (Magsat), respectively. The strong fields in the Polar Regions and the weak field particularly in the South-Atlantic region are noticeable.

The bottom diagram presents on a more sensitive scale ranging from -2000 to +2000 nT the increases and decreases in field strength developed during the 20 years interval between the observations. On the average the Earth's magnetic field has decreased by around 2% between the two missions. In some regions, among others in the so-called Bermuda Triangle, the field has decreased by over 6% during just 20 years.

The main field models provide terms to calculate the variations in field strength with distance from the centre of the Earth. The material in the "Mantle" 3000 km downward from the surface is viscous mineral, magma. This medium is poorly conductive for electrical currents and has such a high temperature (above the Curie temperature) that the material is non-magnetic. In this case the field model can be extrapolated all the way down to the core of fluid metal (Iron and Nickel) to provide the distribution of field strengths at the "Core-Mantle Boundary" (CMB).

Comparing Ørsted and Magsat models for the CMB fields provides an estimate of the changes during the 20 years interval. The changes can be converted into material motions, which may reach magnitudes of typically 20 km/year in vortex-like patterns. These vortex patterns can be interpreted to represent the projection to the CMB of rotating cylinders in the fluid core material. Such data-based models combined with the most recent theories for self-magnetizing dynamos have given completely new insight in the processes acting in the interior of the Earth that create its variable magnetic field. Using realistic models it has now been possible to reconstruct the changes involved in magnetic field reversals where the northern and southern magnetic poles exchange their positions. On the average such reversals have occurred every 250.000 years. The most recent field reversal occurred 780.000 years ago as the magnetic field first weakened and then almost completely disappeared to finally recover in the opposite direction.

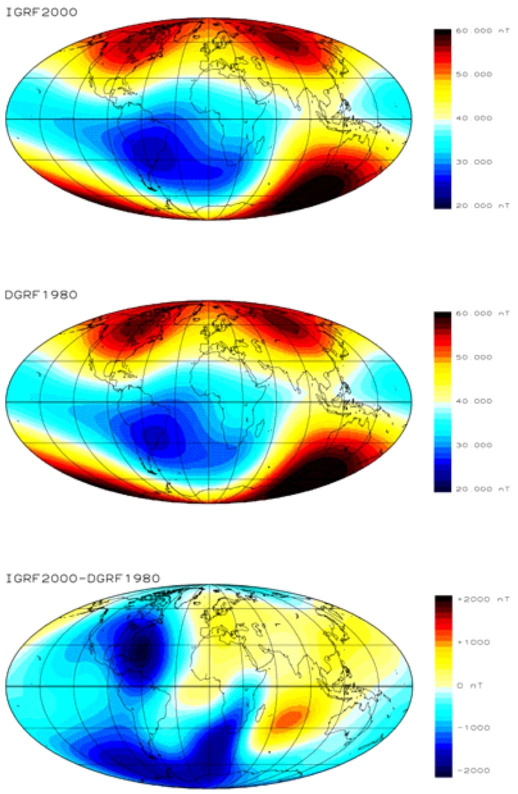


Figure 3. Top: Ørsted-based IGRF2000 field model. **Middle:** Magsat-based DGRF1980 model. **Bottom:** Magnetic field change 1980-2000.

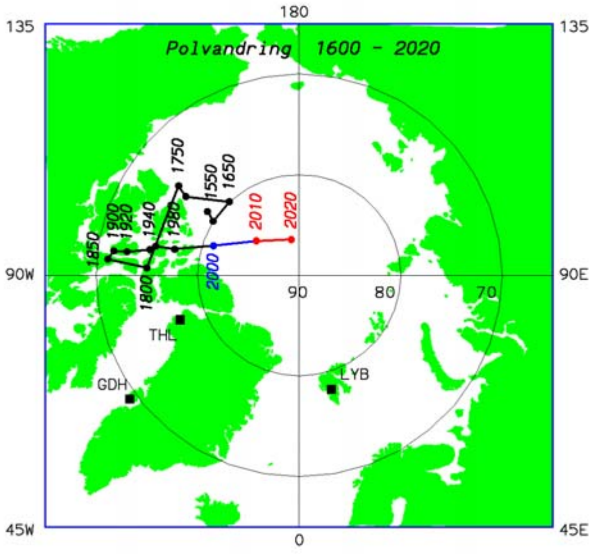


Figure 4. Varying position of the northern magnetic pole since 1550

On a smaller scale such changes of the dynamo processes are responsible for the secular variations in the global distribution of the strength of magnetic fields and for the changes in the position of the geomagnetic poles. Figure 4 displays the variable position of the northern magnetic pole through almost 500 years. The most recent positions have been determined from Magsat data (1980) and Ørsted data (2000) and from extrapolation using the new field models (2010-2020). Such changes affect the compass north direction everywhere. In Thule, for instance, the present temporal change in magnetic declination is around 1 degree/year.

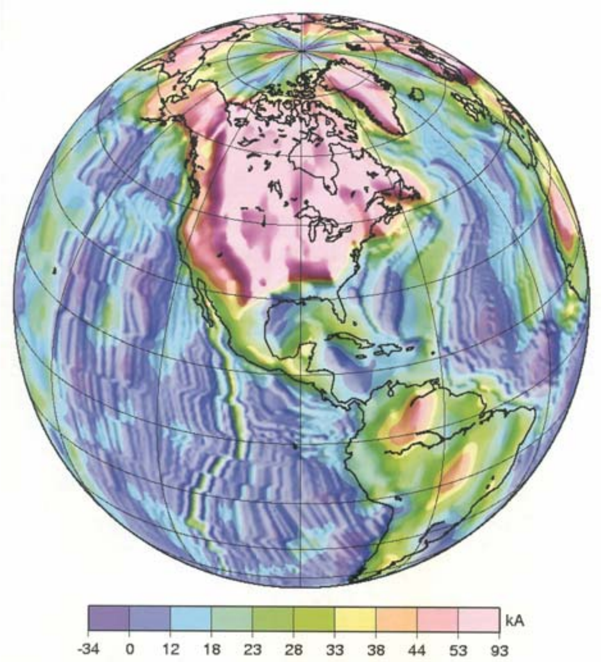


Figure 5. Model of remnant and induceret magnetism in the Crust. (Cover page, Geophys. Res. Lett., 29 (15), 2002. M. Purucker)

Crustal magnetism. The highly accurate satellite-based models of the main field has enabled the precise determination of the magnetism in the Crust, the outermost solid layer of the Earth, which has a thickness of around 30-50 km. Figure 5 displays in colour code the results of the global mapping of the crustal magnetism. The dark red colour indicates mountainous regions where the crust is thick. In the oceans the crust is generally much thinner. The striped structure is the combined result of the drift of the continental plates and magnetic field reversals. As the plates drift apart they leave an open rift from which fresh magma emerge. As the magma cools off to temperatures below the Curie point it then becomes magnetized in a direction depending on the actual magnetic field polarity, which may reverse from time to time.

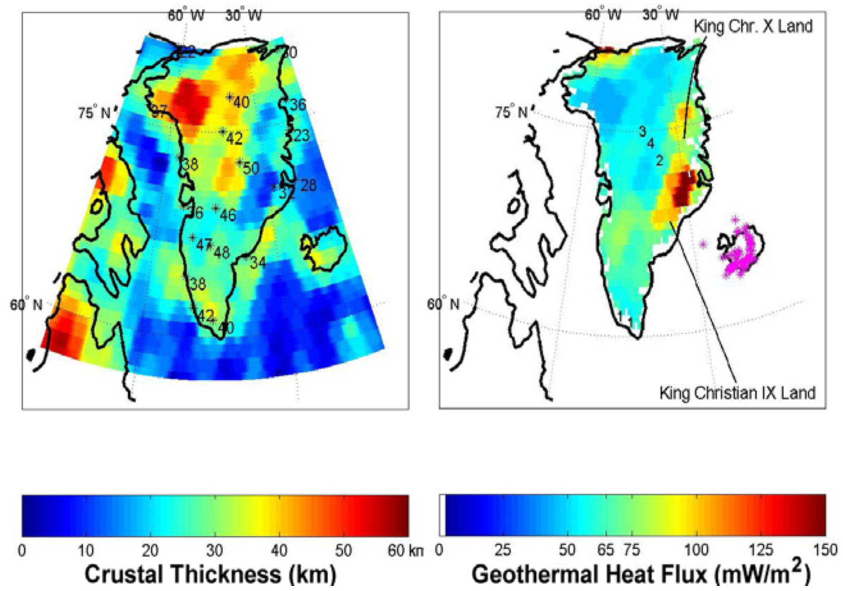


Figure 6. Crustal thickness and geothermal heat flux in Greenland calculated from modelling based on Ørsted geomagnetic observations. C. Fox Maule.

Another use of the precise modelling of the crustal magnetism is the modelling of the heat flux from the Earth's interior to the surface. The level of crustal magnetism is used to calculate the depth to the layer where the temperature exceeds the Curie temperature, which for most magnetic minerals is in the range from 500 to 600 degrees, above which the material is non-magnetic. With an estimate of this depth it is now possible to calculate the heat flux from the interior to the surface, which could be the bottom side of the ice caps in Antarctica and Greenland. Figure 6 presents an analysis of the crustal thickness and the derived heat flux beneath the ice cap in Greenland. The analysis is the result of geomagnetic modelling based on measurements from the Ørsted satellite.

Modelling of the heat flux to the bottom of ice caps is extremely important for the interpretation of ice cores drilled at various places in Greenland and in Antarctica. The analysis of ice cores provides us detailed information on the climatic conditions and atmospheric composition in the past. Such information is vital for predictions of the future climatic developments. In some locations the heat flux is strong enough to melt the bottom ice. The overlying ice cap is no longer firmly attached to the bed rock and may thus become extremely unstable to break off and slide away.

Radiation belts. The geomagnetic observations and the detection of high-energy particle radiation have helped us to understand the properties of the Earth's radiation belts. In these regions, the so-called Van Allen belts, high-energy electrons and ions may move around but they are still kept in place by the geomagnetic field. In regions where the magnetic field is weak these high-energy particles may approach the Earth and thus be detected by the Ørsted satellite in its rather low orbit (c.f., Table 1). This hard radiation may penetrate into the electronic units and cause damage on sensitive satellite systems like memory circuits. Figure 7 presents in colour code the global distribution of high-energy radiation at the satellite orbit and also the occurrences of memory bit errors detected by the satellite computer (EDAC events). These events are particularly frequent within the above-mentioned South-Atlantic anomaly, where the geomagnetic field is weak. Such EDAC events also occur in places like the polar regions, where the geomagnetic field is open toward the outer space and thus gives access to high energy particles from external sources like, for instance, the active Sun.

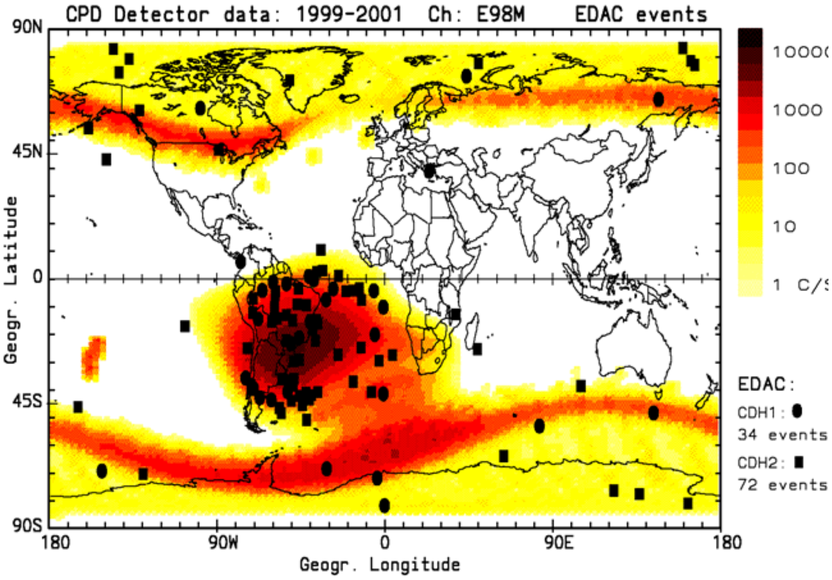


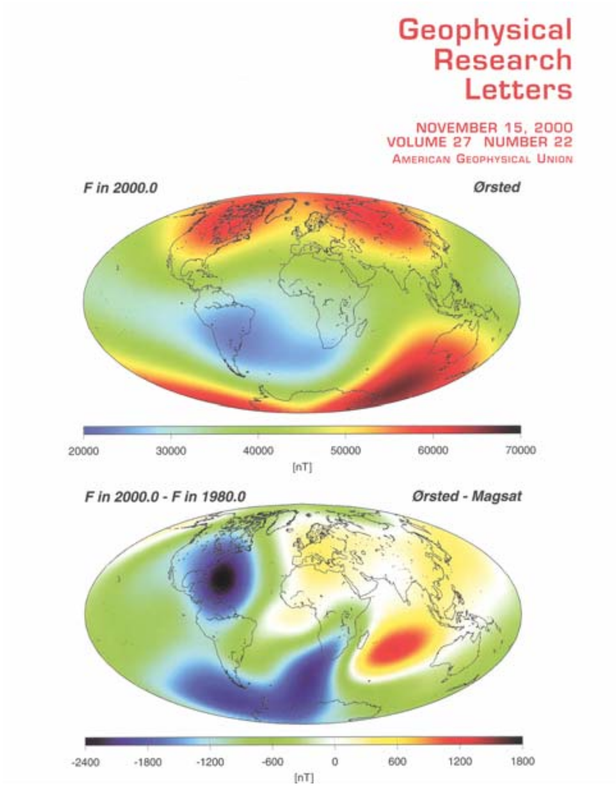
Figure 7. Ørsted detection of high-energy radiation (colour code) and occurrences of computer memory bit flips (dots).

Summary. The results from the Ørsted satellite mission can be summarized in the following points:
- The precise magnetic measurements conducted from the Ørsted satellite have provided basis for International Geomagnetic Reference Field models, which are used for many technical and scientific tasks, among other, to develop models for the internal geo-dynamo and its secular variations, to provide mapping of magnetic anomalies in the crust, and to estimate geothermal heat flux to the bottom of ice caps.
- The accurate magnetic measurements made at high time resolution have provided detailed mapping of electric currents in Space and have been used to study the coupling of the solar wind to the Earth's magnetosphere.
- The detection of high-energy particles from Ørsted has helped us to understand the properties of the radiation belts and the effects of high-energy radiation on satellite-borne computer circuits.
- The precise detection of the phases and amplitudes of GPS signals have helped the development of satellite-based methods to measure the atmospheric temperature and humidity profiles, which are essential parameters in meteorology.
- Ørsted has provided basis for more than 200 scientific publications in international journals and for more than 400 talks or posters presented at international scientific conferences.

The construction of the satellite and the analysis of data have been accomplished through a close collaboration between three universities (Danish Technical University, University of Copenhagen, Ålborg University), eight private companies (Terma A/S, CRI, Copenhagen Optical Company, DDC International, Innovision, Per Udsen Co., Rescom, and Ticra), two institutes (DNSC and DMI). The international collaboration has included the large Space Agencies, NASA, ESA, CNES and DLR, and more than 40 universities and research institutes all over the world. This successful collaboration is perhaps the most brilliant accomplishment in the Ørsted satellite project.

Ørsteds many unique results

1. Frontpage illustrations in international science journals



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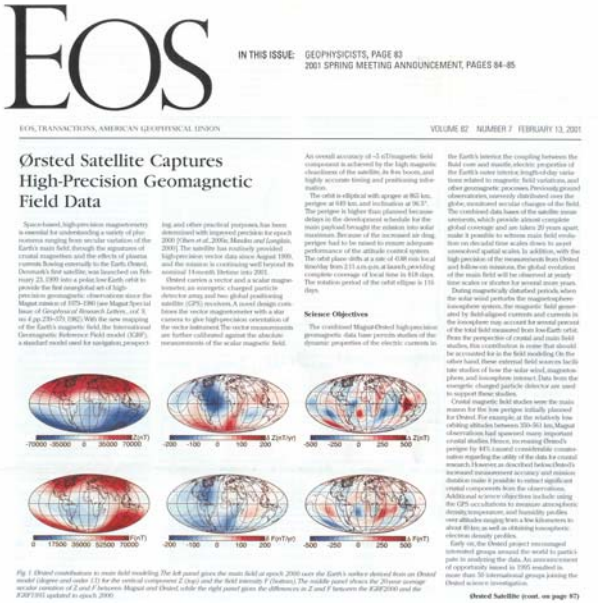

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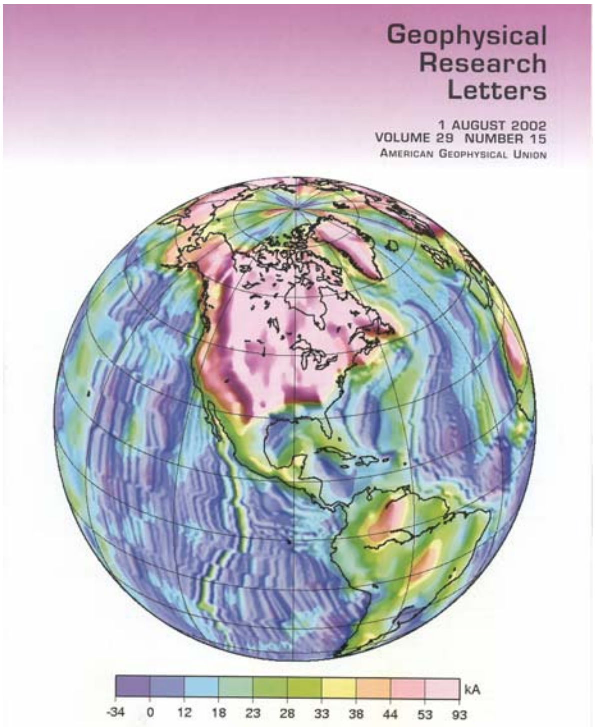
Ørsted Satellite Captures High-Precision Geomagnetic Field Data

Science Objectives



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2. Ørsted-based geomagnetic models

International Geomagnetic Reference Model IGRF2000

Degree/order of main field	**13**
Deg/order of secular variations	**8**
Deg/order of external field	**0**

References: Olsen, Sabaka and Tøffner-Clausen, Earth, Planets and Space, 52, 1175-1182, 2000

Ørsted Initial Field Model (OIFM)

Degree/order of main field	**19**
Deg/order of secular variations	**8**
Deg/order of external field	**0**

References: Olsen et al., Geoph. Res. Lett., Vol.27, No. 22, p. 3607 - 3610, Nov. 15, 2000.

Ørsted Main and Secular Variation Model (OSVM)

Degree/order of main field	**29**
Deg/order of secular variations	**13**
Deg/order of external field	**0**

References: Olsen, Geophys. J. Int., 149, 454-462, 2002.
Lowes & Olsen, Proceedings of the OIST-4 meeting, 2003

CHAMP-Oersted (CO2) Model

Degree/order of main field	**29**
Deg/order of secular variations	**13**
Deg/order of external field	**2**

References: Holme et al., Proceedings of the First CHAMP Science Meeting, CNES 2001., Holme et al., First CHAMP Mission Results, Springer 2003.

Comprehensive Model CM3e_J-2

Degree/order of main field	**65**
Deg/order of secular variations	**13**
Deg/order of external field	**special handling**

References: Sabaka et al, Geophys. J. Int., 151, 32-68, 2002.

International Decade Earth Magnetic Model (IDEMM)

Degree/order of main field	**49**
Deg/order of secular variations	**16**
Deg/order of external field	**2**

Reference: Olsen, N., R.Holme, H. Luehr, AGU 2004.

CHAMP, Oersted, SAC-C model (CHAOS)

Degree/order of main field	**50**
Deg/order of secular variations	**16**
Secular acceleration	**16**
Deg/order of external field	**special handling**

Reference: Olsen,N., H. Lühr, Terence J. Sabaka, M. Mandea, M. Rother, L. Tøffner-Clausen, S. Choi,. in *Geophys. J. Int., 2005.*

International Geomagnetisk Reference Model IGRF2005

Degree/order of main field	**32**
Deg/order of secular variations	**16**
Secular acceleration	**8**
Deg/order of external field	**2**

References: Olsen, Sabaka and Lowes, IAGA Toulouse 2005.

3. Ørsted Publications (1999-2007)

Outreach and education publications (2003-07)

Charlotte Autzen: "Den lille seje satellit", Bog (48 s.) og DVD (40 min.) ed. C. Autzen and P. Stauning, *Geografforlaget*. 2004.

***P**. Stauning*, Ørsted, the Danish Miracle in Space, *Nordic Space*, 15, (2), 2007.

P. Stauning: "Magnetiske poler på Ilmarch – polvending under opsejling". *Geologisk Nyt*, no. 5, 2004.

***P. Stauning**:* "Rumvejr. Hvad er det?" *Vejret* no. 4, 2004.

P. Stauning: "Tillykke Ørsted – med seks utrolige år i rummet". *Vejret* no. 2, 2005.

***P. Stauning**:* "Ørstedsatellitten – 6 års succes i rummet". *Dansk Rumfart*, nr. 63, 2005

***P. Stauning**:* "Ørsted Resultater fra 5 år i Rummet". *DMI Technical Report* #04-12-2004 (ISSN 0906-897X) (49 pages, in Danish), Copenhagen 2004.

Ørsted Scientific (reviewed) Publications

Publications 2007

Ford, S. F., F. W. Menk, P. Stauning, K. Yumoto, and E. Zesta, A satellite-ground study of low-latitude Pi2 pulsations, *Ann. Geophysicae*, 2007.

Han, D.-S., H-G. Yang, Z-T. Chen, T. Iyemori, and P. Stauning, Detailed analysis on a preliminary reverse impulse (PRI) event observed above the dayside ionosphere near the dip equator, *J. Geophys. Res., 112*, 2007.

Publications 2006

Anderson, B.J., H. Korth, and **P. Stauning**, Statistical Birkeland current distribution from magnetic field observations by the Iridium constellation and Oersted, *Ann. Geophysicae*, AG/2006321, 2007. Geophys., 2006.

Gaya-Piqué L.R., Ravat D., De Santis A., Torta J.M., New model alternatives for improving the representation of the core magnetic field of Antarctica, *Antarctic Science*, 18(1), 101-109, 2006.

Lukianova, R. and F. Christiansen, Modeling of the global distribution of ionospheric electric fields based on realistic maps of field-aligned currents, *J. Geophys. Res., 111*, doi:10.1029/2005JA011465, 2006.

Olsen, N., H. Lühr, T.J. Sabaka, M. Mandea, M. Rother, L. Tøffner-Clausen, and S. Choi, CHAOS – A model of Earth's magnetic field derived from CHAMP, Ørsted, and SAC-C magnetic satellite data, Geophys. J. Int, 142, 2006.

Primdahl, F., Torben Risbo, José M.G. Merayo and Peter Brauer, In-Flight Spacecraft Magnetic Field Monitoring Using Scalar/Vector Gradiometry, Meas. Sci. Technol., 17, 2006.

Publications 2005.

Cabrera, J., M. Cyamukungu, P. Stauning, A. Leonov, P. Leleux, J. Lemaire, and G. Gr´egoire, Fluxes of energetic protons and electrons measured on board the Oersted satellite, Annales Geophysicae, 23, 2975–2982, 2005.

Duka B., Gaya-Piqué L.R., De Santis A., Bushati S., Chiappini M., Dominici G., A geomagnetic Reference Model for Albania, Southern Italy and Ionian Sea from 1990 to 2005, *Annals of Geophysics*, 47, 5, 1609-1615, 2005.

Fox Maule, C., Purucker, M., Olsen, N., and K. Mosegaard, Heat flux anomalies in Antarctica revealed by satellite magnetic data, Science (and Science Express), 309, 464-467, July 15, 2005 (and June 9, 2005).

Gaya-Piqué L.R., De Santis A., Torta J.M., Use of Champ magnetic data to improve the Antarctic Geomagnetic Reference Model, *Earth Observation with CHAMP*, (eds) Reigber C. Et al., Springer Berlin Germany, pp. 317-322, 2005

Han, D.-S., Longitudinal structure of low-latitude Pi2 pulsations obtained from the ground and Oersted observations, Ph.D. thesis of Kyoto University, March 2005.

International Association of Geomagnetism and Aeronomy (IAGA), Division V, Working Group VMOD: Geomagnetic Field Modeling, 2005. The 10th-Generation International Geomagnetic Reference Field. *Geophys. J. Int*. 161, 561-565.

Jackson, A., Constable, C.G., Walker, M.R., and R.L.Parker, Models of Earth's main magnetic field incorporating flux and radial vorticity constraints, Geophys. J. Int., 2005.

Jung, H., Estimation Problems for Satellite Orbit and Attitude Determination and for GPS-Based Remote Ionospheric Sensing, Ph.D. Thesis, Field of Aerospace Engineering, Cornell University, 2005

Kim, H. R., R.R.B. von Frese, A. V. Golynsky, P. T. Taylor and J. W. Kim, "Crustal magnetization of Maud Rise in Antarctic and Southwest Indian Oceans," Earth, Planets and Space, 57, 717-726, 2005

Lagergaard, A.M.S., Electric Currents in the Polar Magnetosphere" Ph.D. dissertation October 2005. Copenhagen University.

Lesur, V., S. Macmillan and A. Thomson, 2005. A magnetic field model with daily variations of the magnetospheric field and its induced counterpart in 2001. Geophys. J. Int. 160, 79-88.

Lesur, V., S. Macmillan and A. Thomson, 2005. The BGS magnetic field candidate models for the 10th generation IGRF. *Earth, Planets and Space*, 57, 1157-1164.

Lukianova, R., and F. Christiansen, Modeling of the global distribution of ionospheric electric fields based on realistic maps of field-aligned currents, J. Geophys. Res., 111, A03213, doi:10.1029/2005JA011465.

Macmillan, S. and Maus, S., 2005. Introducing the 10th Generation International Geomagnetic Reference Field,. *Earth, Planets and Space*, *57*, 1135-1140.

Mandea, M., and Purucker, M., Observing, Modeling, and Interpreting Magnetic Fields of the Solid Earth, Surveys in Geophysics, http://dx.doi.org/10.1007/s10712-005-3857, 2005.

Maus, S. and S. Macmillan, 2005. 10th Generation International Geomagnetic Reference Field Released. *EOS Transactions, AGU, Volume 86*, Issue 16, p. 159.

Maus, S., S. Macmillan, T. Chernova, S. Choi, D. Dater, V. Golovkov, V. Lesur, F. Lowes, H. Lühr, W. Mai, S. McLean, N. Olsen, M. Rother, T. Sabaka, A. Thomson, T. Zvereva and International Association of Geomagnetism, Aeronomy (IAGA), Division V, Working Group VMOD, 2005. The 10th generation international geomagnetic reference field. *Phys. Earth Planet Int.*, 151, 320-322.

Olsen,N., H. Lühr, Terence J. Sabaka, M. Mandea, M. Rother, L. Tøffner-Clausen, S. Choi, CHAOS – A Model of Earth's Magnetic Field derived from CHAMP, Ørsted, and SAC-C magnetic satellite data, accepted for publ. in *Geophys. J. Int.*

Purucker, M., Lithospheric studies using gradients from close encounters of Ørsted, CHAMP, and SAC-C, *Earth Planets Space*, **57**, 1.7, 2005.

Purucker, M. and Ishihara, T., Magnetic images of the Sumatran region crust, *EOS, Transactions of the American Geohysical Union, 86* (10), 8 March, 101-102, 2005.

Stampe Lagergaard, A. M., Electric Currents in the Polar Magnetosphere, Ph.D. dissertation, DNSC, Copenhagen 2005.

Stauning, P., F. Christiansen, J. Watermann, and O. Rasmussen: Detection of intense fine-scale field-aligned current structures in the cusp region from the Ørsted satellite, in: *Earth Observation with CHAMP, Results from Three Years in Orbit*, C. Reigber et al., Eds., p. 381 Springer-Verlag, 2005.

Stauning, P., F. Christiansen, J. Watermann, and O. Rasmussen: On the modelling of field-aligned currents from magnetic observations by polar orbiting satellites, in: *Earth Observation with CHAMP, Results from Three Years in Orbit*, C. Reigber et al., Eds., p. 371, Springer-Verlag, 2005.

Watermann, J., H. Lühr, K. Schlegel, P. Stauning, J.P. Thayer, F. Christiansen, and P.T. Newell: The low-altitude cusp: Multi-point observations during the February 2002 SIRCUS campaign in: Earth *Observation with CHAMP, Results from Three Years in Orbit*, C. Reigber et al., Eds., p. 375, Springer-Verlag, 2005.

Winch, D. E., Turner, J., Ivers, D.J., Analysis of satellite magnetic data, *Exploration Geophysics*, *36*, 317-321, 2005.

Publications 2004.

Han, D., T. Iyemori, M. Nose, H. McCreadie, Y. Gao, F. Yang, S. Yamashita, and P. Stauning, A comparative analysis of low-latitude Pi2 pulsations observed by Oersted and ground stations, J. Geophys. Res., 109, A10209,doi:10.1029/2004JA010576, 2004.

K. Hosokawa, S. Yamasita, P. Stauning, N. Sato, A.S. Yukimatu, and T. Iyemori, Origin of the SuperDARN broad Doppler spectra: First observational evidence from Oersted satellite magnetometer, *Annales Geophysicae* 22, pp. 159-168, 2004.

Kim, H. R., R.R.B. von Frese, P. T. Taylor, A. Golynsky and J. W. Kim, "Application of satellite magnetic observations for estimating near-surface magnetic anomalies", Earth, Planets and Space, 56. 955-966, 2004.

Lesur, V., S. Macmillan and A. Thomson, 2004. Alternative parameterisations of the external magnetic field and its induced counterpart for 2001 and 2002 using Ørsted, Champ and observatory data. in: : *Second CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies*, eds., C. Reigber, H. Luehr, P. Schwintzer, Springer-Verlag, Berlin, 2004.

Macmillan, S., Maus, S., Bondar, T., Chambodut, A., Golovkov, V., Holme, R., Langlais, B., Lesur, V., Lowes, F., Lühr, H., Mai, W., Mandea, M., Olsen, N., Rother, M., Sabaka, T., Thomson, A., Wardinski, I., Ninth Generation International Geomagnetic Reference Field Released. EOS Transactions, AGU, Volume 84, Issue 46, p. 503-503, 2003.

Millegan, P.R., R. Franklin, and D. Ravat, A new generation of Magnetic Anomaly Grid Database of Australia (MAGDA) - use of independent data increases the accuracy of long wavelength components of continental-scale merges, Preview, 113, 25-29, 2004.

Sabaka, T., Olsen, N., and Purucker, M., Extending Comprehensive Models of the Earth's Magnetic Field with Oersted and CHAMP data, Geophys. J. Int.,159, 521-547, Nov. 2004.

Stauning, P., F. Christiansen, and J. Watermann, Detection of intense fine-scale field-aligned currents in the Cusp region from the Ørsted satellite, in: *Second CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies*, eds., C. Reigber, H. Luehr, P. Schwintzer, Springer-Verlag, Berlin, 2004.

Stauning, P., F. Christiansen, and J. Watermann, On the modelling of field-aligned currents from magnetic observations by polar orbiting satellites, in: *Second CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies*, eds., C. Reigber, H. Luehr, P. Schwintzer, Springer-Verlag, Berlin, 2004.

Voorhies, C. V., A Geomagnetic Estimate of Mean Paleointensity, EOS, Trans. AGU, 85, (47), Fall Meeting Suppl. GP11C-0843, F635-6, 2004

Voorhies, C.V., Narrow-scale flow and a weak field by the top of Earth's core: Evidence from Ørsted, Magsat, and secular variation, J. Geophys. Res., 109, B3, B03106, 10.1029/2003 JB002833, 2004.

Voorhies, C.V., Correction to Ibid, JGR, 109, B03106 doi:10.1029/2003JB002833, 2004

Publications 2003.

Cain, J.C., D.T. Mozzoni, B.B. Ferguson, and O. Ajayi, Geomagnetic Secular Variation 1995-2000, J. Geophys. Res., 108 (B3), 2161, doi:10.1029/2001JB001218, 2003.

Christensen, T., N. Østergaard, T.J. Rosenberg, D.L. Detrick, G.A. Germany, and **P. Stauning**, Conjugate High-Intensity Energetic Electron Precipitation at High Latitude, *Annales Geophysicae, 21*, 1443-1455, 2003.

Hemant, K. and S. Maus, A comparison of global lithospheric models derived from satellite data. In: First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, eds. C. Reigber, H. Lühr and P. Schwintzer, Springer-Verlag Heidelberg, 2003.

Holme, R., N. Olsen, M. Rother and H. Lühr,: CO2. A CHAMP magnetic field model. In: Chr. Reigber, H. Lühr and P. Schwintzer (eds.): Proceedings of the First CHAMP Science Meeting, Springer Verlag, 2003.

Ivers, D. J., R J Stening, J P R Turner & D E Winch, Equatorial electrojet from Ørsted scalar magnetic field observations, J Geophys Res, 108, (A2), 1061 doi 10.1029/2002JA009310, 2003.

Langlais, B., M. Mandea, and P. Ultré-Guérard, High-resolution magnetic field modeling: application to MAGSAT and Ørsted data, Phys. Earth Plan. Int., 135, pp. 77-91, 2003.

Larsen, G.B,. et al., GPS atmosphere and ionosphere profiling methods used on Ørsted data and application on Champ data. In: First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, eds. C. Reigber, H. Lühr and P. Schwintzer, Springer-Verlag Heidelberg, 2003.

Macmillan, S., and A. Thomson, An examination of observatory biases during the Magsat and Ørsted epochs, Phys. Earth Planet Int., 135, pp 97-105, 2003.

Neubert, T., and F. Christiansen, Small-Scale, Field-Aligned Currents st the Top-Side Ionosphre, Geophys. Res. Lett., 20, DOI: 10.1029/2003GL017808, October 2003.

Olsen, N., L. Tøffner-Clausen, T.J. Sabaka, P. Brauer, J.M.G. Merayo, J.L. Jørgensen, J.-M. Léger, O.V. Nielsen, F. Primdahl, and T. Risbo, Calibration of the Ørsted Vector Magnetometer, Earth, Planets and Space, 55, 11-18, 2003.

Olsen, N., S. Vennerstrøm, and Eigil Friis-Christensen, Monitoring magnetospheric contributions using ground-based and satellite magnetic data. In: First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, eds. C. Reigber, H. Lühr and P. Schwintzer, Springer-Verlag Heidelberg, 2003.

Purucker, M.E., and N. Olsen, Improving the definition of cratonic boundaries utilizing the lithospheric magnetic field derived from CHAMP observations. In: First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, eds. C. Reigber, H. Lühr and P. Schwintzer, Springer-Verlag Heidelberg, 2003.

Ravat, D., and P.S. Millegan, (editors, special Grav/Mag section) Geophysics from Space, The Leading Edge, 22 (8), August issue, 2003.

Ravat, D., T.G. Hildenbrand, and W. Roest, New way of processing near-surface magnetic data: The utility of the Comprehensive Magnetic Field Model, The Leading Edge, 22, 784-785, 2003.

Risbo, T. et al., Ørsted Pre-Flight Magnetometer Calibration Mission, Measurement Science and Technology, 14, 674-688, 2003.

Stauning, P., F. Christiansen, J. Watermann, T. Christensen, O. Rasmussen, Mapping of field-aligned current patterns during northward IMF, in: First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, eds. C. Reigber, H. Lühr and P. Schwintzer, Springer-Verlag Heidelberg, 2003.

Taylor, P., J.J. Frawley, H.R. Kim, R.R.B. von Frese, and J.W. Kim, Comparing Magsat, Ørsted and Champ crustal magnetic anomaly data over the Kursk magnetic anomaly, Russia. In: First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, eds. C. Reigber, H. Lühr and P. Schwintzer, Springer-Verlag Heidelberg, pp. 302-308, 2003.

von Frese, R.R.B., H. R. Kim, P. T. Taylor, and J. W. Kim, CHAMP, Ørsted, and Magsat magnetic anomalies of the Antarctic lithosphere, in: Reigber, Ch., H. Luehr and P. Schwintzer (ed.s), First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, Springer-Verlag, Heidelberg, 2003.

Wardinski, I., and Holme, R., Decadal and Subdecadal Secular Variation of Main Geomagnetic Field, in: Reigber, Ch., H. Luehr and P. Schwintzer (ed.s), First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, Springer-Verlag, Heidelberg, 2003.

Watermann, J., F. Christiansen, V. Popov, P. Stauning, and O. Rasmussen, Field-aligned currents inferred from low-altitude Earth-orbiting satellites and ionospheric currents inferred from ground-based magnetometers - do they render consistent results? In: First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies, eds. C. Reigber, H. Lühr and P. Schwintzer, Springer-Verlag Heidelberg, 2003.

Publications 2002.

Bankey, V., and 17 others, Digital data grids for the magnetic anomaly map of North America, *U.S. Geological Survey Open-File Report 02-414* (http://pubs.usgs.gov/of/2002/ofr-02-414/), 2002.

Brauer, P., J.M.G. Merayo, T. Risbo, and F. Primdahl, Magnetic Calibration of Vector Magnetometers: Linearity, Thermal Effects and Stability. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, (in: "Ground and In-Flight Space Magnetometer Calibration Techniques", ed.'s: A. Balogh and F. Primdahl, ESA SP-490, 2002).

Cain, J. C., O. Ajayi, B. B. Ferguson, and D. T. Mozzoni, Forecasting the geomagnetic field at 2005 using Ørsted and observatory data, Geophys. Res. Lett., 2001GL013636, 2002.

Cain, J.C., D.T. Mozzoni, B.B. Ferguson, and O. Ajayi, Geomagnetic Secular Variation 1995-2000, J. Geophys. Res., 201JB001218, 2002.

Christiansen, F., V.O. Papitashvili, and T. Neubert, Seasonal Variations of High Latitude Field-Aligned Current Systems Infered from Ørsted and MAGSAT Observations, J. Geophys. Res., Space Physics, 107, 10.1029, 2002.

De Santis, A., J.M. Torta, L.R. Gaya-Pique, The First Antarctic geomagnetic Reference Model (ARM), *Geoph. Res. Lett., 29*, No.8, 10.1029/2002GL014675, 2002.

Holme, R., and N. Olsen, Modeling of Geomagnetic Field Moves Into a New Era, European Geologist, 13, 39-42, 2002.

Hosokawa, K., S. Yamasita, P. Stauning, N. Sato, A.S. Yukimatu, and T. Iyemori, Origin of the SuperDARN broad Doppler spectra: First observational evidence from Oersted satellite magnetometer, accepted for publication in Annales Geophysicae, 2002.

Hulot, G., C. Eymin, B. Langlais, M. Mandea, and N. Olsen, Small-Scale Structure of the Geodynamo Inferred from Ørsted and Magsat Satellite Data, Nature, 416, pp. 620-623, 2002.

Ivers, D.J., R.J. Stening, J. Turner and D.E. Winch, The Equatorial Electrojet from Ørsted scalar magnetic field observations. J. Geophys. Res. (Space), (to appear), 2002.

Jadhav, G., M. Rajaram, and R. Rajaram, A Detailed Study of Equatorial Electrojet Phenomenon Using Ørsted Satellite Observations, J. Geophys. Res., J. Geophys. Res.,107, 2001/JA000183, 2002.

Jadhav, G., M. Rajaram, and R. Rajaram, Main Field Control of the Equatorial Electrojet: A Preliminary Study from the Ørsted data. J. of Geodynamics, 33/1-2, 157-171, Feb. 2002.

Jung, H. and M.L. Psiaki, "Tests of Magnetometer/Sun-Sensor Orbit Determination Using Flight Data," Journal of Guidance, Control, and Dynamics. Vol. 25, No. 3, pp. 582-590, May-June 2002.

Kim, H.R., 2002, Antarctic Lithospheric Anomalies From Ørsted Satellite and Near-Surface Magnetic Observations, PhD Dissertation, The Ohio State University, Columbus.

Korte. M., C. Constable, and R. Parker, Revised magnetic power spectrum of the oceanic crust, J Geophys. Res., 107(B9), 2205, 2001JB001389.

Kotze, P.B., Modelling and Analysis of Ørsted Total Field Data over Southern Africa, Geophys. Res. Lett., Vol. 29, No. 15, 10.1029/2001GL013868, 2002.

Langlais, B., M. Mandea, and P. Ultre-Guerard, High-resolution magnetic field modeling: application to Magsat and Ørsted data, Phys. Earth Planet. Inter., in press, 2002.

Mandea, M., and B. Langlais, Observatory Crustal Magnetic Biases during MAGSAT and Ørsted Satellite Missions, Geophys. Res. Lett., Vol. 29, No. 15, 10.1029/2001-GL013693, 2002.

Merayo, J. M.G., Peter Brauer, F. Primdahl, P. S. Joergensen, T. Risbo, and J. Cain, The Spinning Astrid-2 Satellite Used for Modeling the Earth's Magnetic Field, IEEE Trans. Geoscience Electronics and Remote Sensing, Vol. 40, 898-909, 2002.

Merayo, J.M.G., P. Brauer, F. Primdahl, and J.R. Petersen, Absolute Calibration and Alignment of Vector Magnetometers in the Earth's Field. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, in: "Ground and In-Flight Space Magnetometer Calibration Techniques", ed.'s: A. Balogh and F. Primdahl, ESA SP-490, 2002.

Moretto, T., N. Olsen, P. Ritter, and G. Lu, Monitoring the Auroral Electrojets with Low Altitude Polar Orbiting Satellites, in review for Ann. Geophysicae, 2002.

Nakano, S., T. Iyemori, and S. Yamashita, Net field-aligned currents controlled by the polar ionospheric conductivity, J. Geophys. Res., 107, 2001JA900177, 2002.

Olsen, N., A Model of the Geomagnetic Field and its Secular Variation for Epoch 2000, Geophys. J. Int. 149, 454-462, 2002.

Olsen, N., E. Friis-Christensen, and T. Moretto, New Approaches to Explore and Earth's Magnetic Field, J. of Geodynamics, 33, 29-41, 2002.

Olsen, N., T. Risbo, P. Brauer, J.M.G. Merayo, F. Primdahl, and T. Sabaka, In-flight Calibration Methods Used for the Ørsted Mission. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, in: "Ground and In-Flight Space Magnetometer Calibration Techniques", eds: A. Balogh and F. Primdahl, ESA SP-490, 2002.

Papitashvili, V.O., F. Christiansen, and T. Neubert, A New Model of Field-Aligned Currents Derived from High-Precision Satellite Magnetic Field Data, Geophys. Res. Lett., 29, No. 14, 10.1029, 2002.

Primdahl, F., P. Brauer, J.M.G. Merayo, J.R. Petersen, and T. Risbo, Determining the Direction of a Geometrical/Optical Reference Axis in the Coordinate System of a Tri-Axial Magnetic Sensor. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, (in: "*Ground and In-Flight Space Magnetometer Calibration Techniques*", ed.'s: A. Balogh and F. Primdahl, ESA SP-490, 2002).

Purucker, M., B. Langlais, N. Olsen, G. Hulot, and M. Mandea, The Southern Edge of Cratonic North America: Evidence from New Magnetic Satellite Observations, Geophys. Res. Lett., 29, 2002.

Ravat, D. and M. Purucker, Unraveling the Magnetic Mystery of the Earth's Lithosphere: The Background and the Role of the CHAMP Mission, In: C. Reigber, H. Luehr, P. Schwintzer (Eds.), *First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies*, Springer-Verlag, Heidelberg, pp. 251-260, 2002.

Ravat, D. B. Wang, E. Wildermuth, P.T. Taylor, Gradients in the interpretation of Satellite-altitude Magnetic Data: An Example from Central Africa, *J. Geodynamics*, 33, 131-142, 2002.

Ravat, D., K.A. Whaler, M. Pilkington, T. Sabaka, and M. Purucker, Compatibility of high-altitude aeromagnetic and satellite-altitude magnetic anomalies over Canada, *Geophysics*, 67, 546-554, 2002.

Risbo, T., P. Brauer, J.M.G. Merayo, and F. Primdahl, Ørsted Calibration Mission: The Thin Shell Method and Spherical Harmonic Analysis. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, (in: "Ground and In-Flight Space Magnetometer Calibration Techniques", ed.'s: A. Balogh and F. Primdahl, ESA SP-490, 2002).

Stauning, P., Field-aligned ionospheric current systems observed from the Magsat and Ørsted satellites during northward IMF, Geophys. Res. Lett., 2001GL013961, 2002.

Vennerstrøm, S., T. Moretto, N. Olsen, E. Friis-Christensen , A.M. Stampe, and J. Watermann, Field-Aligned Currents in the Dayside Cusp and Polar Cap Region during Northward IMF, J. Geophys. Res., 2002.

Watermann, J., P. Stauning, O. Rasmussen, V.O. Papitashvili, V. Popov, and J.P. Thayer, Observation of field-aligned and ionospheric currents during Space Weather Month, Sep. 1999, *Adv. Space Res*., *30 (10)*, pp 2203-2208, 2002.

Yamashita, S. and T. Iyemori, Seasonal and local-time dependences of the inter-hemispheric field-aligned currents deduced from the Oersted satellite and the ground geomagnetic observations, J. Geophys. Res.,VOL. 107, NO. A11, 1372, doi:10.1029/2002JA009414, 2002.

Yamashita, S., T. Iyemori, S. Nakano, T. Kamei, and T. Araki, Anti-sunward net Birkeland current system deduced from the Oersted satellite observation, J. Geophys. Res.,107, No.9, 10.1029/2001JA900160, 2002.

Publications 2001

Cain, J.C., O. Ajayi, B.B. Ferguson, D.T. Mossoni, Forecasting the Geomagnetic Field at 2005 Using Ørsted and Observatory Data, Geophys. Res. Lett., accepted, 2001.

Escudero A., Schlesier A.C., Rius A., Flores A., Rubek F., Larsen, G.B., Syndergaard S., and Høeg P., Ionospheric tomography using Ørsted GPS measurements - Preliminary results, Phys Chem Earth (A), 26, 173-176, 2001.

Jadhav, G., M. Rajaram, and R. Rajaram, Modification of Daytime Compressional Waves by the Ionosphere: First Results from Ørsted, Geophys. Res. Lett., Vol. 28, No.1, p.103, 2001.

Jung, H., and M.L. Psiaki Test of Magnetometer/Sun-Sensor Orbit Determination Using Flight Data, J. of Guidance, Control, and Dynamics, accepted, 2001. (Also in Proceedings of the 2001 AIAA Guidance, Navigation, and Control Conference).

Kim, H.R., R.R.B. von Frese, J.W. Kim, P.T. Taylor, and T. Neubert, Ørsted verifies regional magnetic anomalies of the Antarctic lithosphere, Geophys. Res. Lett., accepted, 2001.

Kotze, P.B., Spherical Cap Modelling of Ørsted Magnetic Field Vectors over Southern Africa, Earth, Planets and Space, 53, 357-361, 2001.

Mandea, M. and B. Langlais, Observatory crustal magnetic during Magsat and Ørsted satellite missions, Geophys. Res. Lett., accepted, 2001.

Mandea, M., and B. Langlais, Improved Detection of Observatory Crustal Magnetic Biases Using Ørsted, Geophys. Res. Lett., accepted, 2001.

Merayo, J.M.G., F. Primdahl, P. Brauer, T. Risbo, N. Olsen, and T. Sabaka, The Orthogonalization of Magnetic Systems. Sensors & Actuators A, Vol. 89, p. 185-196, 2001.

Neubert, T., M. Mandea, G. Hulot, R. von Frese, F. Primdahl, J.L. Jørgensen, E. Friis-Christensen, P. Stauning, N. Olsen, and T. Risbo, Ørsted Satellite Captures High-Precision Geomagnetic Field Data, EOS, Vol. 82, No. 7, p. 81, 87, and 88, Feb. 13, 2001.

Papitashvili, V.O., F. Christiansen, and T. Neubert, Field-Aligned Currents during IMF ~ 0 Derived from Ørsted and Magsat data, Geophys. Res. Lett., Vol. 28, No. 15, p. 3055, 2001.

Purucker, M., B. Langlais, N. Olsen, G. Hulot, and M. Mandea, The Southern Edge of Cratonic North America: Evidence from New Satellite Observations, Geophys. Res. Lett., 2001.

Rastogi, R. G., D E Winch & M E James, Longitudinal effects in geomagnetic disturbances at mid-latitudes, *Earth Planets Space*, 53, 969-979, 2001.

Sabaka, T., N. Olsen, and R.A. Langel, A comprehensive model of the quiet-time, near-Earth magnetic field: Phase 3, Geophys. J., submitted, 2001.

Stauning, P., F. Primdahl, J. Watermann og O. Rasmussen, IMF By-related Cusp currents observed from the Ørsted satellite and from ground, Geophys. Res. Lett., vol. 28, p. 99, 1. jan., 2001.

Watermann, J., P. Stauning, O. Rasmussen, V.O. Papitashvili, V.A. Popov, and J.P. Thayer, Observation of Field-Aligned and Ionospheric Currents during Space Weather Month, September 1999, Adv. Space Res., in press, 2001.

Yamashita, S., T. Iyemori, S. Nakano, T. Kamei, and T. Araki, Anti-Sunward Net Birkeland Current System Deduced from the Ørsted Satellite Observation, J. Geophys. Res., submitted, 2001.

Publications 2000

Cain, J.C., O. Ajayi, D. Mozzoni, and C. Musat, Combined Ørsted and observatory model for 1995-2000, *Geophys. Res. Lett*., 2000.

Golovkov, V. P., T.N. Bondar, and I.A. Burdelnaya, Spatial-temporal modelling of the geomagnetic field for 1980-2000 period and a candidate IGRF secular variation model for 2000-2005, Earth, Planets and Space, 52, 1125-1135, 2000.

Holme, R., Modelling of Attitude Error in Vector Magnetic Data: Application to Ørsted Data. *Earth, Planets and Space*, 52, 1187-1197, 2000.

Ivers, D.J., R.J. Stening, J. Turner, and D.E. Winch, Ørsted and Magsat Scalar Anomaly Fields, *Earth, Planets and Space*, 52, 1213-1225, 2000.

Langlais, B., and M. Mandea, An IGRF Candidate Main Geomagnetic Field Model for Epoch 2000 and a Secular Variation Model for 2000-2005. Earth, Planets and Space, 52, 1137-1144, 2000.

Lowes, F.J., An Estimate of the Errors of the IGRF/DGRF Fields 1945-2000. Earth, Planets and Space, 52, 1207-1211, 2000.

Lowes, F.J., The Working of the IGRF 2000 Task Force. Earth, Planets and Space, 52, 1171-1174, 2000.

Lowes, F.J., T. Bondar, V.P. Golovkov, B. Langlais, S. Macmillan, and M. Mandea, Evaluation of the Candidate Main Field Model for IGRF 2000 Derived from Preliminary Ørsted Data. Earth, Planets and Space, 52, 1183-1186, 2000.

Macmillan, S., An Evaluation of Candidate Geomagnetic Field Models for IGRF 2000, Earth, Planets and Space, 52, 1149-1162, 2000.

Macmillan, S., and J.M. Quinn, The 2000 Revision of the Joint UK/US Geomagnetic Field Models and an IGRF2000 Candidate Model, Earth, Planets and Space, 52, 1149-1162, 2000.

Mandea, M., and S. Macmillan, International Geomagnetic Reference Field - the Eighth Generation. Earth, Planets and Space, 52, 1119-1124, 2000.

Mandea, M., and B. Langlais, Use of Ørsted Scalar Data in Evaluating the Pre-Ørsted Main Field Candidate Models for the IGRF 2000. Earth, Planets and Space, vol.52, pp. 1167-1170, 2000.

Merayo, J.M.G, P. Brauer, F. Primdahl, J.R. Petersen and O.V. Nielsen, Scalar Calibration of Vector Magnetometers, Meas. Sci. Technol.,Vol. 11, 120-132, 2000. (Selected "Featured Article" by MS&T).

Olsen, N., T. Sabaka, and L. Tøffner-Clausen Determination of the IGRF 2000 Model, Earth, Planets and Space, 52, 1175-1182, 2000.

Olsen, N., R. Holme, G. Hulot, T. Sabaka, T. Neubert, L. Tøffner-Clausen, F. Primdahl, J. Jørgensen, J.-M. Leger, D. Barraclough, J. Bloxham, J. Cain, C. Constable, V. Golovkov, A. Jackson, P. Kotze, B. Langlais, S. Macmillan, M. Mandea, J. Merayo, L. Newitt, M. Purucker, T. Risbo, M. Stampe, A. Thomson, and C. Voorhies, Ørsted Initial Field Model. Geophys. Res. Lett., 27, 3607, 2000.

Papitashvili, V.O., C.R. Clauer, F. Christiansen, V.A. Pilipenko, V.A. Popov, O. Rasmussen, V.P. Suchdeo, and J.F. Watermann, Geomagnetic disturbances at high latitudes during very low solar wind density event, Geophys. Res. Lett., 27, 12, pp. 3785-3788, 2000.

Primdahl, F., Resonance Magnetometers, in: Pavel Ripka (ed.), "Magnetic Sensors and Magnetometers", Chapter 7, 25 pp., ARTECH HOUSE INC., Norwood, Massachusetts 02026, USA, December, 2000.

Primdahl, F., P. Brauer, J.M.G. Merayo, J.R. Petersen, and T. Risbo, Determining the Direction of a Geometrical/Optical Reference Axis in the Coordinate System of a Tri-Axial Magnetic Sensor. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, in: "Ground and In-Flight Space Magnetometer Calibration Techniques", eds: A. Balogh and F. Primdahl, ESA SP-490, 2002.

Purucker, M.E. and J. Dyment, Satellite magnetic anomalies related to seafloor spreading in the South Atlantic Ocean, Geophys. Res. Lett., 27, 2765-2768, 2000.

Risbo, T., P. Brauer, J.M.G. Merayo, and F. Primdahl, Ørsted Calibration Mission: The Thin Shell Method and Spherical Harmonic Analysis. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, in: "Ground and In-Flight Space Magnetometer Calibration Techniques", eds: A. Balogh and F. Primdahl, ESA SP-490, 2002.

Stauning, P., and F. Primdahl, First detection of global dawn-dusk ionospheric current intensities using Ampère's integral law on Ørsted satellite orbits, Geophys. Res. Lett., 27, 3273-3276, 15 Oct. 2000.

Thomson, A.W.P., Improving the Modelling of the Geomagnetic Main-Field: Isolating the Average Ionospheric Field in Satellite Data. Earth, Planets and Space, 52, 1199-1206, 2000.

Thomson, A.W.P., Geomagnetic Main Field Models, Rept. RAS Discussion Meeting, London, Astronomy & Geophysics, 41, 3.32-3.33, 2000.

Yamashita, S., T. Iyemori, S. Nakano, T. Araki, and T. Kamei, Birkeland Current Effects at Mid- and Low- Latitudes Observed by the Ørsted Satellite, Geophys. Res. Lett., submitted, 2000.

Zheng, Y., K.A. Lynch, and M. Bohm, Magnetic Field Data Analysis of 4 Free-Flyer Magnetometers. Workshop on Calibration of Space-Borne Magnetometers, TU-Braunschweig, March 9, 1999, in: "Ground and In-Flight Space Magnetometer Calibration Techniques", eds: A. Balogh and F. Primdahl, ESA SP-490, 2002.

Publications 1999 and earlier.

Duret, D., J. Bonzom, M. Brochier, M Frances, J.-M. Leger, R. Ordru, C.Salvi, T. Thomas, and A. Perret, Overhauser Magnetometer for the Danish Oersted Satellite, IEEE Trans. Mag., MAG-31, 3197-3199, 1995.

Brauer, P., J.M.G. Merayo, O.V. Nielsen, F. Primdahl and J.R. Petersen, Transverse Field Effect in Fluxgate Sensors, Sensors and Actuators A, Physical, Vol. 59, 70-74, 1997.

Langlais B., Ultré-Guérard P., Vernin C., Mandea M., Cohen Y. and Hulot G., Ørsted: IPGP commissioning of the OVH magnetometer, Technical report CNES, OERS_RP_0000_0031_IPG. 1999.

Nielsen, O.V., J.R. Petersen, F. Primdahl, P. Brauer, B. Hernando, A. Fernandez, J.M.G. Merayo, and P. Ripka, Development, Construction and Analysis of the "ØRSTED" Fluxgate Magnetometer, Meas. Sci. Technol.,Vol. 6, 1099-1115, 1995.

Nielsen, O.V., P. Brauer, F. Primdahl, T. Risbo, J.L. Jørgensen, C. Boe, C. Deyerle and S. Bauereisen, A High-precision Triaxial Fluxgate Sensor for Space Applications: Layout and Choice of Materials, Sensors and Actuators A Physical, Vol. *59*, 168-176, 1997.

Primdahl, F., "Scalar Magnetometers for Space Applications", in Geophysical Monograph Volume 103, "Measurement Techniques in Space Plasmas: Fields", edited by J. E. Borowsky, R. Pfaff and D. Young, pp 85-99, 1998.

4. Ørsted Conference Proceedings and Reports

Proceedings and Reports 2006:

Stauning, P., J. Watermann, and O. Troshichev, Transpolar ionospheric currents derived from Ørsted and from ground, in: *Proceedings from the 1'st SWARM International Science Meeting*, Nantes, 2006.

Watermann, J., P. Stauning, F. Christiansen, and J.P. Thayer, Field-aligned and ionospheric currents inferred from temporally and spatially coincident Ørsted satellite and ground-based magnetometer and Sondrestrom ISR measurements, in *Proceedings from the 1'st SWARM International Science Meeting*, Nantes, 2006.

Proceedings and Reports 2005:

Lesur, V., S. Macmillan and A. Thomson, 2005. Alternative parameterisations of the external magnetic field and its induced counterpart for 2001 and 2002 using Ørsted, Champ and observatory data. Earth Observation with CHAMP Results from Three Years in Orbit. Springer-Verlag, 2005.

Proceedings and Reports 2004:

Proceedings and Reports 2003:

4'th Oersted International Science Team Meeting, Copenhagen 23-27 September 2002. Conference Proceedings: Editors: ***Stauning, P.,*** H. Lühr, P. Ultré-Guérard, J. LaBrecque, M. Purucker, F. Primdahl, J.L. Jørgensen, F. Christiansen, P. Høeg, K.B. Lauritsen, ISSN-0905-3263., 2003.

Proceedings articles herein:

Cain, J.C., D. Mozzoni, and B. Ferguson, Where do we stand on geomagnetic modeling.

Chambodut, A., J. Schwarte, B. Langlais, H. Lühr, and M. Mandea, The selection of data in field modeling.

Christiansen, F., and V. Papitashvili, Storm time field-aligned currents detected by Oersted and CHAMP.

Iyemori, T., S. Yamashita, and S. Nakano, Noon-midnight current systems.

Kim, H.R., R.R.B. von Frese, P.T. Taylor, J.W. Kim, and C.H. Park, Utility of satellite magnetic observations for estimating near-surface magnetic anomalies.

Kotzé, P.B., Secular variation characteristics over Southern Africa as revealed by observatory and satellite data.

Lowes, F.J,, and N. Olsen, A realistic estimate of the variances of the Ørsted OSVM (Ørsted 10b/01) spherical harmonic field model.

Macmillan, S., V. Lesur, Use of observatory data in geomagnetic field models and derivation of a crustal total intensity map.

Neubert, T., F. Sedgemore, F. Christiansen, and J. Watermann, Current filamentation observed with Ørsted.

Papitashvili, V.O., and F. Christiansen, Quiet, moderate, and storm-time high-latitude field-aligned currents from Ørsted and CHAMP magnetic field observations.

Purucker, M., T. Sabaka, N. Olsen, and S. Maus, How have Ørsted, CHAMP, and SAC-C improved our knowledge of the oceanic regions.

Purucker, M., and N. Olsen, Modeling of the Earth's magnetic field and its variations with Oersted, CHAMP, and Oersted-2/SAC-C.

Risbo, T., J.L. Jørgensen, and F. Primdahl, Ørsted calibration mission: Status and overview.

Sabaka, T., and N. Olsen, Comprehensive modelling of the Earth's magnetic field: Current status and future prospects.

Stauning, P., Detection of currents in space by Ørsted, SAC-C and CHAMP geomagnetic missions.

Stauning, P., F. Primdahl, F. Christiansen, and J. Watermann, Detection of fine-scale field-aligned current structures from Ørsted.

Stauning, P, J. Watermann, G.B. Larsen, and M.B. Sørensen, Oersted GPS-based detection of ionospheric structures and their comparison with other ground and satellite based observations and with models.

Taylor, P.T., H.R. Kim, R.R.B. von Frese, L.V. Potts, and J.J. Frawley, Satellite-altitude geopotential study of the Kursk magnetic anomaly (KMA).

Thomson, A., Satellite data selection and weighting for core field modelling in the presence of estimated external fields.

von Frese, R.R.B., Advances in crustal and subcrustal studies from new generation satellite geopotential field missions.

von Frese, R.R.B., and H.R. Kim, Satellite magnetic anomalies for lithospheric exploration.

Wardinski, I. and R. Holme, Modelling secular variation of main geomagnetic field.

Yamashita, S., and T. Iyemori, The inter-hemispheric field-aligned currents.

Proceedings and Reports 2002:

Papitashvili, V. O., C. R. Clauer, F. Christiansen, Y. Kamide, V. G. Petrov, O. Rasmussen, and J. F. Watermann, Near-conjugate magnetic substorms at very high latitudes observed by Greenland and Antarctic ground magnetometers and Ørsted satellite, Sixth International Conference on Substorms, Ed. R. M. Winglee, Univ. of Washington - Seattle, ISBN 0-9711740-3-2, pp. 110-114, 2002.

Proceedings and Reports 2001:

Cyamukungu, M., P. Stauning, G. Gregoire, J. Lemaire, The Charged Particle Detector (CPD). Electron and Proton Spectra. Prodex-ESA-SSTC Contr.no. 170724 Report, January 2001.

Proceedings and Reports 2000:

Moretto, T., E. Friis-Christensen, J.W.Gjerløv, N.Olsen and F.Primdahl, The Near-Earth Magnetic Satellite Missions, Ørsted and SAC-C/Ørsted-2, in Relation to the Cluster Mission, Proceedings of the Cluster-II Workshop Multiscale/Multipoint Plasma Measurements, 22-24 September 1999, Imperial College, London, ESA SP-449, 363-366, 2000.

3'rd Oersted International Science Team Meeting, Grasse, France, 2-4 May, 2000. Conference Proceedings: Editors: ***Neubert, T***., and ***P. Ultre-Guerard***, ISSN-0906-897x., 2000.

Proceedings articles herein:

Bondar,T.N., I.A., Burdelnaja, V.P. Golovkov, T.I. Zvereva, Main geomagnetic field model and space-time structure of external internal and induced geomagnetic variations derived from satellite magnetic survey.

Cain, J.C., O. Ajayi, D. Mozzoni, and C. Musat, Comparing an Ørsted-Observatory magnetic field model with the IGRFs.

Cerisier, J.-C., C. Senior, and A. Marchaudon, Plasma convection and currents parallel to the earth magnetic field at the Ørsted orbit.

Christensen, T., P. Stauning, F. Christiansen, and J. Thayer, Event study of high-energy electron precipitation by comparison of Ørsted data and ground-based observations.

Cohen, Y., V. Doumouya, B. Langlais, and P.Ultré-Guérard, Monitoring and reducing the magnetic contribution of the equatorial electrojet to Ørsted data.

Constable, C. and S. Constable, Observing geomagnetic induction in magnetic satellite measurements.

Cyamukungu, M., Gh. Grégoire, P. Stauning and J. Lemaire, The charged particle detector (CPD): Data Analysis Methodology.

Friis-Christensen, E., T. Moretto, and N. Olsen, Direct Estimation of Average Field-Aligned Current Patterns From High-Precision Magnetic Satellite Data .

Gjerloev, J.W., R. Fujii, M. Sugino, and Y. Ogawa, The Ørsted-EISCAT Conjunction Study

Grammatica, N., M. Menvielle, and P. Tarits, Study of the diurnal variation at a global scale.

Holme, R., Modelling of attitude error in Ørsted vector data.

Hulot, G., A., A. Chulliat, A. Pais, B. Langlais, and M. Mandea, Core surface flows derived from Ørsted data, tests and first estimates.

Høeg, P., H.-H. Benzon, J. Grove-Rasmussen, G. B. Larsen, K. B. Lauritsen, M. D. Meincke, L. Olsen, F. Rubek, A. Schlesier, S. Syndergaard and M. B. Sørensen, Atmosphere and ionosphere profiling results from the Ørsted mission.

Jadhav, G., M. Rajaram and R. Rajaram, Identification of external current variations in Ørsted data.

Kotzé, P.B., Modelling and Analysis of Ørsted Magnetic Field Data over southern Africa.

Langlais, B., M. Mandea, G. Hulot, A. Chuilliat, P. Ultre-Guerard and Y. Cohen, From Magsat to Ørsted: Comparison of the 1980 and 1999 main magnetic field models.

Lowes, F., The explanation of some covariances in the Ørsted model (9/99).

Larsen, G.B., X. Zhang, P. Høeg, S. Syndergaard , M.B. Sørensen, J. Grove-Rasmussen, S. Fukao, K. Igarashi, and S. Kawamura, Comparison of electron density profiles from Ørsted GPS occultation data and ground-based radar observations.

Macmillan, S. and A. Thomson, Main field modelling at BGS using Ørsted satellite data.

Menvielle, M., About the meaning of longitude sector indices.

Moretto, T. and N. Olsen, Investigating the Auroral Electrojet with Ørsted data.

Moretto, T., F. Christiansen, and N. Olsen, Detection of ionospheric and field-aligned current patterns - A comparison of different methods.

Newitt, L.R., The use of Ørsted data in regional magnetic field modeling.

Neubert, T. Ørsted Commissioning, Status and Future.

Olsen, N., ØRSTED-2/SAC-C

Papitashvili, V., F. Christiansen, and T. Neubert, Field-aligned currents patterns from Ørsted observations.

Paris, J. and M. Menvielle, Derivation and dissemination of the longitude sector indices.

Purucker, M.E, Evidence for a new current system at the geomagnetic poles in summer (or) the longest magnetic anomaly in the world explained: The Pacific margin of early paleozoic Gondwana.

Schlesier, A.C., A. Rius, A. Escudero, F. Rubek, G.B. Larsen, S. Syndergaard and P.Høeg,, Ionosphere tomography using Ørsted GPS occultation data and comparisons with ground-based radar observations.

Stampe, A.M., S. Vennerstrøm, N. Olsen, Contamination of models by ionospheric polar cap currents: A study in data selection.

Stauning, P., F. Primdahl, J. Watermann, O. Rasmussen, Correlation of field-aligned currents derived from Ørsted magnetometer data and polar dayside ionospheric convection patterns.

Stauning, P., P. Davidsen, and M. Cyamukungu, Ørsted CPD High-energy particle observations and radiation effects in Ørsted instruments and systems.

Tarits, P., Preliminary investigation of the Ørsted data for induction studies.

Taylor, P., R. R. B. von Frese and H. R. Kim, Results of a comparison between Ørsted and Magsat anomaly fields over the Kursk magnetic anomaly.

Toeffner-Clausen, L. Ørsted data products.

von Frese, R.R.B., H. R. Kim, T. E. Leftwich and J. W. Kim, Ørsted magnetometer constraints on the crustal structure of the Greenland-Scotland Ridge.

Watermann, J.W., O. Rasmussen, P. Stauning, V. Papitashvili and J. Thayer, Observations of field-aligned and ionospheric currents during space weather month, September 1999.

Yamashita, S., T. Iyemori, S. Nakano, M. Takeda, T. Kamei, A. Saito, T. Araki and M.Sugiura, Middle latitude field-aligned current effects observed by Ørsted and a comparison with the Magsat and DE-2 observations.

5. Ørsted Conference Presentations

Conferences 2007

Stauning, P., J. Watermann, and O. Troshichev, Transpolar ionospheric currents derived from Ørsted and from ground, EGU2007 Conference, Vienna, April 2007.

Conferences 2006

Stauning, P., O. Troshichev, A. Janzhura,The unified Polar Cap (PC) index. Calculation procedures, quality control and interpretation, EGU2007 Conference, Vienna, April 2007.

Thomson, A. and V. Lesur, 2006. Data selection as a complementary approach to comprehensive geomagnetic field modelling. European Geophysical Union meeting, Vienna, April 2006.

Conferences 2005

Fall meeting of meeting American Geophysical Union (AGU), San Francisco, USA., 2005.

Gaya-Pique, L.R., D. Ravat, A. De Santis, and J. Torta, 2005, New Model Alternatives for Improving the Representation of the Core Magnetic Field of Antarctica

Hemant, K., E. Thebault, M. Mandea, D. Ravat, S. Maus, 2005, Merging airborne, marine and ground-based magnetic anomaly maps with satellite derived lithospheric field models.

Kim, H. R., R. R. B. von Frese, A. V. Golynsky, P. T. Taylor, J. W. Kim, “Modeling Antarctic magnetic crustal thickness using Oersted, CHAMP and ADMAP data.

International Plasma physics Experiment in Laboratory and Space (IPELS2005) Conference, Tromsø, Norway, 3-7. July, 2005.

Stauning, P., Oersted satellite measurements - small scale features in the field-aligned currents in the ionosphere.

IAGA 2005 Scientific Assembly meeting, Toulouse, France, July 18-29, 2005

Finn, C.A., M. Pilkington, W. Miles, I. Hernandez, A. Cuevas, J. Velez, R. Kucks, V. Bankey, D. Daniels, and D. Ravat, 2005, The North American Magnetic Anomaly Map.

Kim, H., Gaya-Piqu, L; von Frese, R; Golynsky, A; Taylor, P; Kim, J., “Antarctic Lithospheric Magnetic Anomaly Attributes.

Milligan, P.R., R. Franklin, and D. Ravat, 2005, Fourth edition Magnetic Anomaly Map of Australia, derived from a new-generation Magnetic Anomaly Grid Database of Australia (MAGDA).

Stauning, P., Modelling high-latitude FAC on different scales.

Stauning, P., The Oersted satellite mission through a solar cycle.

EGU General Assembly, Vienna, April 2005

Lagergaard, A.M.S., S Vennerstrøm and E. Friis-Christensen, Observed and simulated field-aligned currents during northward IMF.

Lesur, V., 2005. Introducing a versatile and localized system of representation of the geomagnetic field. Abstract, IAGA Assembly, Toulouse, July 2005.

Lesur, V., A. Thomson and S. Macmillan, Evidence of IMF driven geomagnetic fields in the near-Earth environment.

Stauning, P., Modelling of polar field-aligned current systems.

Stauning, P., Properties of IMF By-related Cusp currents.

Lesur, V., A. Thomson and S. Macmillan, Evidence of IMF driven geomagnetic fields in the near-Earth environment

Thomson, A. and V. Lesur, 2005. A comparison of satellite data filtering techniques to improve global magnetic field models.

Conferences 2004

Fall meeting of American Geophysical Union (AGU), San Francisco, USA, 2004.

Kim, H. R., R. R. B. von Frese, A. V. Golynsky, P. T. Taylor, J. W. Kim, “Crustal magnetization model of Maud Rise in the Southwest Indian Ocean.

Kim, H. R., R. R. B. von Frese, A. V. Golynsky, P. T. Taylor, J. W. Kim, Modeling Antarctic magnetic crustal thickness using Oersted, CHAMP and ADMAP data.

Ravat, D., Constructing full spectrum potential-field anomalies for enhanced geodynamical analysis through integration of surveys from different platforms.

von Frese, R.R.B., H. R. Kim, L. R. Gaya-Pique, P. T. Taylor, A. V. Golynsky, J. W. Kim, “Estimating Antarctic near-surface magnetic anomalies from Ørsted and CHAMP satellite magnetometer observations.

3nd CHAMP and GRACE Joint Scientific Meeting, Potsdam, Germany, , 5-9 July, 2004.

Kim. H. R., R. R. B. von Frese, P. T. Taylor, L. R. Gaya-Pique and J. W. Kim, “Near-Surface magnetic predictions using CHAMP and ØRSTED magnetometer data over Antarctica.

Stauning, P., IMF By-related cusp currents on different scales.

35’te COSPAR Scientific Assembly, Paris, France, 18-25 July, 2004

Stauning, P., and J. Watermann, Modelling of high-latitude magnetosphere-ionosphere field-aligned coupling currents and their atmospheric effects,.

Stauning, P., Peter Davidsen, and Mathias Cyamukungu, Detection of radiation-induced anomalies in the memory circuits of the Ørsted Leo satellite, 35’te COSPAR Scientific Assembly, Paris, France, 18-25 July, 2004.

Spring meeting of Joint Canadian Geosciences Union (CGU) & American Geophysical Union (AGU), Montreal, Canada, 2004.

Kim, H. R. R. R. B. von Frese, P. T. Taylor, “Magnetic satellite explorations of lithospheric anomalies over Kursk, Bangui, and Antarctic: from Magsat to CHAMP.

Leftwich, T.E., R. R. B. von Frese, H.R. Kim, P. T. Taylor, J.W. Kim, Satellite Geopotential Anomaly Constraints for the Crust of the Greenland-Iceland Region.

Voorhies, C. V., A Geomagnetic Estimate of Mean Paleointensity.

Voorhies, C.V. , Magnetic Probing of Core Geodynamics

EGU Conference, Nice, France, 25 April – 2 May, 2004

Kim, H. R., R. R. B. von Frese, P. T. Taylor, L. R. Gaya-Pique and J. W. Kim, CHAMP, ØRSTED and Magsat magnetic anomalies of the Antarctic crust.

Korhonen, J.V., C. Reeves, M. Ghidella, S. Maus, S. McLean, D. Ravat, 2004. World digital magnetic anomaly map, a progress report. Geophys. Res. Abstracts, European Geophysical Society, Nice, France, 25 - 30 April 2004, Abstract EGU04-J-06251.

Stauning, P., Field-aligned currents from satellite magnetic observations.

Stauning, P., and J. Watermann, Fine-scale field-aligned current structures in the cusp region, EGU Assembly, Nice, France.

Other Conferences, 2004.

Korhonen J.V., C. Reeves, M. Ghidella, S. Maus, S. McLean, D. Ravat, 2004. World Digital Magnetic Anomaly Map, a status report. Abstracts of The 26th Nordic Geological Winter Meeting, January 6-9, 2004 Uppsala, Sweden (electronic).

Korhonen J., C. Reeves, M. Ghidella, S. Maus, S. McLean, D. Ravat , 2004. World Digital Magnetic Anomaly Map. Abstracts of the 32 IGC, Florence, Italy. 20-28 August 2004, Part 1, 779.

Korhonen J., M. Ghidella, S. Maus, S. McLean, D. Ravat, C. Reeves, E. Thebault, 2004. El Mapa Digital de Anomalias Magneticas del Mundo. Libro de Resumenes, XXII Reunion Cientifica de la Asociacion Argentina de Geofisicos y Geodestas, 6 al 10 de septiembre de 2004. pp 211-213.

Korhonen J.V., Reeves C., Ghidella M., Maus S., McLean S., Ravat D. 2004. World Digital Magnetic Anomaly Map - presenting lithospheric contribution to the Earth's total magnetic field. pp 45-46 in Ehlers, C., Eklund, O., Korja, A., Kruuna, A., Lahtinen, R. and Pesonen L. J. (Eds). Lithosphere 2004; Third symposium on the structure, composition and evolution of the lithosphere in Finland. Programme and extended abstracts, Turku, Finland, November 10-11, 2004. Institute of Seismology, University of Helsinki, Report S-45. 131 Pages.

Ravat, D., 2004, Utility of satellite-derived potential-field data in regional geologic studis, 1st meeting of the Asia Oceania Geoscience Society, Singapore, 5 July- 9 July, 2004, AOGS abstracts CD-ROM, abstract # 57-OSE-A1575.

Milligan, P., D. Ravat, and R. Franklin, 2004, A new generation magnetic anomaly grid database of Australia (MAGDA) - use of independent data increases the accuracy of long wavelength components of continental-scale merges, Paper presented to the ASEG-PESA 17th Geophysical Conference and Exhibition, Darling Harbour, Sydney, Australia, 15-19 August 2004, Preview, 93

Conferences 2003

AGU Meeting in San Francisco December 8-12, 2003

Christiansen, F., V.O. Papitashvili, IMF-dependent maps of the high-latitude field-aligned currents de-rived from Ørsted and CHAMP high-precision magnetic field measurements.

Papitashvili, V., and D. Weimer, New terminology for the high-latitude field-aligned current systems.

Champ Second Science Meeting, Potsdam, 1-4 September 2003

Christiansen, F., and T. Neubert, Small-scale, field-aligned currents at the top-side ionosphere.

Christiansen, F., and V. Papitashvili, Modelling of high-latitude geomagnetic field disturbances at satellite altitudes for various IMF conditions.

Høeg, P., Applications of GPS radio occultation for weather prediction and climate research.

Langlais, B., M. Purucker, and S. Vennerstrøm, Polar lithospheric field from multiple satellite observations.

Lesur, V., S. Macmillan, and A. Thomson, Alternative parameterisation of the external magnetic field and its induced counterpart for 2001 and 2002 using Ørsted , CHAMP and observatory data.

Maule, C. F., M. Purucker, N. Olsen, and K. Mosegaard, Magnetic crustal thicknesses in Greenland from CHAMP and ØRSTED data.

Olsen, N., Temporal Variations of the Geomagnetic Field.

Sabaka, T.J., and N. Olsen, The lithospheric field from the latest comprehensive model.

Stauning, P., *F. Christiansen, J. Watermann, and O. Rasmussen*, Comparison of different methods and models to detect field-aligned currents from magnetic observations by polar orbiting satellites.

Stauning, P., F. Christiansen, J. Watermann, and O. Rasmussen, Detection of intense fine-scale field-aligned current structures in the cusp region from the Ørsted satellite and from ground.

Wardinski, I., and R. Holme, New insights into the secular variation between MAGSAT and CHAMP/ØRSTED.

Watermann, J, *P. Stauning, F. Christiansen, O. Rasmussen, H. Lühr, K. Schlegel, J.P. Thayer, and P.T. Newell,* The low-altitude cusp seen from various perspectives: Multi-instrument observations during the February 2002 SIRCUS campaign.

IUGG/IAGA Meeting in Sapporo, June 30 - July 11, 2003

Anderson, J.B., F. Christiansen, C.L. Waters, and V. Papitashvili, Intercomparison of Iridium Derived Magnetic Perturbation Maps with Oersted Observations.

Atanasiu, L.-N. E., and M. Mandea, Analysis of the Regional Magnetic Field and Its Secular Variations over the Romanian Territory.

Chambodut, A., M. Mandea, and B. Langlais, Geomagnetic Field Models for Epochs 1995 and 2000.

Cohen, Y., V. Doumouya, and M. Hamoudi, Influence of the Equatorial Electrojet on Main Field Models.

Gaya-Pique, L.R., A. De Santis, and J.M. Torta, Improvement of the Antarctic Geomagnetic Reference Model by Using New Sets of.

Golovkov, V.P., T.N. Bondar, S.V. Yakovleva, Space-Time Model for Obtaining Candidate Models for DGRF95, and IGRF SV 00.

Hulot, G., Core Dynamics Revealed by Space Magnetic Observations.

Hoeg, P., G.B. Larsen, M.B. Sorensen, J.G. Rasmussen, GPS Profiling of Tropospheric Temperature and Water Vapor from the Oersted Satellite.

Iyemori, T., S. Nakano, and S. Yamashita, Net Field-Aligned Current Systems and Their Effects on the Ground.

Kim, H. R., R. R. B. von Frese, A. V. Golynsky, P. T. Taylor, J. W. Kim, Magnetization modeling of the Maud Rise crust in the Southwest Indian Ocean.

Kim, H. R., R. R. B. von Frese, P. T. Taylor, J. W. Kim, Utility of satellite magnetic observations for estimating near-surface magnetic anomalies.

Kotze, P.B., Ørsted/CHAMP-based Spherical Cap Model for Southern Africa.

Kursinski, E.R., C. Ao, G.A. Hajj, R. Mastaler, S. Syndergaard, D. Wu, and D. Hankins, The Global Structure of Atmospheric Water Vapor as Derived from GPS Occultations.

Langlais, B., Magnetic Field Secular Variation: The Satellite Perspective.

Langlais, B., M. Purucker, and S. Vennerstrøm, Polar Lithospheric Field from Multiple Satellite Observations.

Lowes, F.J., Realistic Estimates of the Variances of Spherical Harmonic Geomagnetic Field Models Derived from Satellite Data.

Macmillan, S., A. Thomson, and V. Lesur, Improved Separation of Sources Using Satellite and Ground-Based Data and Daily Dipole Estimates.

Macmillan, S., V.B.F. Lesur, and A.W.P. Thomson, BGS Candidate Models for DGRF1995 and DGRF2000 and a Secular Variation Model for 2000.0 to 2005.0

Olsen, N., and T. Sabaka, DGRF Candidates Based on Observations from Oersted, CHAMP and SAC-C.

Papitashvili, V., and F. Christiansen, Modeling of High-Latitude Geomagnetic Field Disturbances at Satellite Altitudes for Various IMF Conditions

Rajaram, M., and A.P. Sashidharan, Depth of the Magnetic Crust in the Indian Subcontinent.

Rajaram, R., M. Rajaram, and G. Jadhav, Development of Satellite Based Index of the Equatorial Electrojet.

Ravat, D., and T.G. Hildenbrand, 2003, Utility of Comprehensive Magnetic Field Model in Studying the Earth's Lithosphere.

Sabaka, T.J., and N. Olsen, A Comparison of Magnetic Fields from the Latest Comprehensive Model and Other Earth Models, Particularly of Core and Lithospheric Origin.

Stauning, P., D. Weimer, V. Papitashvili, and F. Christiansen, Modelling of Polar Field-Aligned Current Systems.

Stauning, P., F. Primdahl, F. Christiansen, and J. Watermann, Fine-Structure and Dynamics of Field-Aligend Currents in the Ionosphereic Cusp Region.

Tarits, P., Using Satellite Magnetic Data for Probing the Electrical Structure of the Earth.

Tsuda, T., Application of GPS Occultations for Studies of Atmospheric Waves in the Middle Atmosphere and Ionosphere.

Turner, J., *D. Ivers, and D. Winch*, Mix and Match, Multiple Satellite Derived, Global and Australian Regional Main Field Models.

Wardinski, I., and R. Holme, New Insights into the Secular Variation between MAGSAT and CHAMP/Oersted.

Watermann, J., O. Rasmussen, F. Christiansen, P. Stauning, and J.P. Thayer, Field-Aligned and Ionospheric Currents Inferred from Temporally and Spatially Coincident Oersted Satellite, Ground-Based Magnetometer and Sondrestrom Incoherent Scatter Radar Measurements.

Whaler, K.A., and M.E. Purucker, Global Models of the Lithospheric Magnetic Field from Satellite Data.

Yamashita, S., and T. Iyemori, Seasonal Asymetry of the Ionospheric Dynamo Process between Southern and Northern Hemisphere as Observed by the Oersted Satellite.

Yamashita, S., and T. Iyemori, Seasonal and Local-Time Dependence of the Inter-Hemispheric Field-Aligned Currents Deduced from the Oersted Satellite and the Ground Geomagnetic Observations.

EGS-AGU-EUG Meeting in Nice, April 6-11, 2003

Bondar, T., V. Golovkov and S. Yakovleva, Secular variations around 2000 obtained from satellite and observatory data

Christiansen, F. and V. O. Papitashvili, Modeling high-latitude field-aligned currents from high-precision magnetic satellite survey data: comparisons between models and observations

Friis-Christensen, E., Magnetometry missions during the international decade of geopotential field research: results, opportunities, and challenges.

Lesur, V., A. Thomson and S. Macmillan, A geomagnetic field model for year 2001 with daily estimations of dipole terms.

Lowes, F.J. *and N. Olsen*, Realistic estimates of the variances of spherical harmonic geomagnetic field models derived from satellite data.

Lu, G., A.D. Richmond, S. Vennerstrom, N. Olsen, H. Luehr, and M. Rother, , Exploring the external geomagnetic field using space- and ground-based magnetometers.

Maute, A., A. Richmond, T. Sabaka, N. Olsen, Comparison of ionospheric dynamo currents and magnetic perturbations modeled by the tiegcm with cm3e model results.

Olsen, N. and R. Holme, Secular variation and secular acceleration determined from Ørsted satellite data.

Purucker, M., Intercalibration of the magnetometers on sac-c with those on CHAMP and Oersted.

Sabaka, T. and N. Olsen, The present state of geomagnetic comprehensive models and their applications.

Stauning, P., F. Primdahl, F. Christiansen, J. Watermann, Detection of high-latitude fine-scale field-aligned current structures from Ørsted, EGS-AGU Conference, Nice, 6-11 April, 2003.

Stauning, P., J. Watermann, GPS-based detection of high-latitude ionospheric structures from satellites and their comparison with other ground and satellite based observations and with models, Nice, 6-11 April, 2003.

Stauning, P., D. Weimer, V. Papitashvili, and F. Christiansen, Detection of currents in space by Oersted, SAC-C and CHAMP geomagnetic missions, Nice, 6-11 April, 2003.

Conferences 2002.

Modeling of the Earth's magnetic field and its variations with Ørsted, Champ, and Ørsted-2/sac-C: Current status and future prospects, Workshop, Copenhagen 26-27 September 2002.

Bloxham, J., Geodynamo Modelling and Geomagnetic Field Modelling: A two-way street.

Constable, C., Comprehensive magnetic field modeling: Two applications.

Jackson, A., New analysis of old satellite data

Mandea, M., A compilation of existing geomagnetic field models, external field models, and a bibliography.

Maus, S. , Isolating crustal anomalies and other smaller scale features from satellite magnetic data: advantages and drawbacks of along-track filtering, cross-correlation, and line-leveling techniques.

Purucker, M., Intercalibration of the scalar and vector magnetometers on SAC-C with those on CHAMP and Ørsted.

Purucker, M., Modeling of lithospheric fields.

Sabaka, T., (The CM User Group), The utility and availability of the comprehensive magnetic field model.

Vennerstrøm, S., Ionospheric contributions to satellite based internal field modeling: New selection criteria?

von Frese, R. R. B. and H. Kim, Satellite magnetic anomalies for lithospheric exploration.

4'th Oersted International Science Team Meeting, Copenhagen 23-27 September 2002.

Cain, J.C., D. Mozzoni, and B. Ferguson, Where do we stand on geomagnetic modeling.

Chambodut, A., J. Schwarte, B. Langlais, H. Lühr, and M. Mandea, The selection of data in field modeling.

Christiansen, F., and V. Papitashvili, Storm time field-aligned currents detected by Oersted and CHAMP.

Iyemori, T., S. Yamashita, and S. Nakano, Noon-midnight current systems.

Kim, H.R., R.R.B. von Frese, P.T. Taylor, J.W. Kim, and C.H. Park, Utility of satellite magnetic observations for estimating near-surface magnetic anomalies.

Kotzé, P.B., Secular variation characteristics over Southern Africa as revealed by observatory and satellite data.

Lowes, F.J,, and N. Olsen, A realistic estimate of the variances of the Ørsted OSVM (Ørsted 10b/01) spherical harmonic field model.

Macmillan, S., V. Lesur, Use of observatory data in geomagnetic field models and derivation of a crustal total intensity map.

Neubert, T., F. Sedgemore, F. Christiansen, and J. Watermann, Current filamentation observed with Ørsted.

Papitashvili, V.O., and F. Christiansen, Quiet, moderate, and storm-time high-latitude field-aligned currents from Ørsted and CHAMP magnetic field observations.

Purucker, M., T. Sabaka, N. Olsen, and S. Maus, How have Ørsted, CHAMP, and SAC-C improved our knowledge of the oceanic regions.

Purucker, M., and N. Olsen, Modeling of the Earth's magnetic field and its variations with Oersted, CHAMP, and Oersted-2/SAC-C.

Risbo, T., J.L. Jørgensen, and F. Primdahl, Ørsted calibration mission: Status and overview.

Sabaka, T., and N. Olsen, Comprehensive modelling of the Earth's magnetic field: Current status and future prospects.

Stauning, P., Detection of currents in space by Ørsted, SAC-C and CHAMP geomagnetic missions.

Stauning, P., F. Primdahl, F. Christiansen, and J. Watermann, Detection of fine-scale field-aligned current structures from Ørsted.

Stauning, P, J. Watermann, G.B. Larsen, and M.B. Sørensen, Oersted GPS-based detection of ionospheric structures and their comparison with other ground and satellite based observations and with models.

Taylor, P.T., H.R. Kim, R.R.B. von Frese, L.V. Potts, and J.J. Frawley, Satellite-altitude geopotential study of the Kursk magnetic anomaly (KMA).

Thomson, A., Satellite data selection and weighting for core field modelling in the presence of estimated external fields.

von Frese, R.R.B., Advances in crustal and subcrustal studies from new generation satellite geopotential field missions.

von Frese, R.R.B., and H.R. Kim, Satellite magnetic anomalies for lithospheric exploration.

Wardinski, I. and R. Holme, Modelling secular variation of main geomagnetic field.

Yamashita, S., and T. Iyemori, The inter-hemispheric field-aligned currents.

AGU Virtual Session, Washington, 28-31 May, 2002.

Jadhav, G et al., Multisatellite observations of the Equatorial Electrojet.

Olsen, N. et al., Monitoring magnetospheric contributions using data from Ørsted, CHAMP and Ørsted-2/SAC-C.

DeSantis, A. et al., An online observatory and satellite-based model for the geomagnetic field in Antarctica and its secular variation.

Purucker, M., Mini-constellation observations used as a test bed for Swarm.

Christiansen, F. and V. Papitashvili, Evaluation of an IMF-Dependent FAC Experimental model through comparisons with high-latitude magnetic field perturbation from satellite.

Olsen, N. et al., A magnetic field model derived from Ørsted, CHAMP, and Ørsted-2/SAC-C observations.

Langlais, B., Use of multi-satellite datasets to model the lithospheric magnetic field in polar areas.

Moretto, T. et al., Investigating ionospheric current systems with Ørsted, CHAMP, and Ørsted-2 magnetic field measurements.

Ghidella, M. et al., Low altitude magnetic anomaly compilation in Argentina: its comparison with satellite data.

McCreadie, *H.*, The equatorial electrojet as seen from satellites.

Connors, M., Nonlinear optimization for low altitude satellite data inversion.

Webers, W., How important is downward field continuation when satellite magnetic field data are studied?

Vennerstroem, S. et al., Multi-satellite observations of FACs in the day-side cusp and polar cap.

Stampe, M. et al. Night-side current systems in the polar region during quiet geomagnetic conditions.

EGS Meeting, Nice, April 2002.

Merayo, J.M.G., Brauer, P., Primdahl, F., and Risbo, T., The Astrid-2 Satellite Magnetometer Used for Earth's Magnetic Main Field Modelling.

Christiansen, F., and V.O. Papitashvili, Storm Time Field-Aligned Currents Detected by the Ørsted and CHAMP Satellites.

Olsen, N., F. Christiansen, T. Moretto, and M. Rother, Investigation of External Current Systems with Low Altitude, Polar Orbiting Satellites (Solicited).

Papitashvili, V.O., F. Christiansen, and T. Neubert Modeling of Field-Aligend Currents Parameterized by the Interplanetary Magnetic Field.

Stauning, P., Modelling of the electrojet over Northern Europe during large geomagnetic storms.

Stauning, P., T. Christensen, F. Christiansen, J. Watermann, and O. Rasmussen, Modeling of polar cap ionospheric horizontal and field-aligned currents during northward IMF.

Watermann, J., F. Christiansen, P. Stauning, and O. Rasmussen Magnetic local time and latitude dependence of the field-aligned/ionospheric current ratio - Ørsted satellite and Greenland magnetometer observations.

Champ First Science Meeting. Potsdam 22-25 Jan 2002.

Cerisier, J.-C, and A. Marchaudon, Currents parallel to the Earth magnetic field at the Champ orbit: application to the electrodynamics of the ionosphere.

Christiansen, F., et al., Modeling field-aligned currents derived from high-precision satellite magnetic field data.

Grove-Rasmussen, J., Comparison of DMI retrieval of Champ occultation data with ECMWF.

Hemant, K. and S. Maus, A comparison of global lithospheric models derived from satellite data.

Hulot, G., et al., Small-scale structure of the geodynamo ínferred from Oersted and Magsat data.

Jackson, A., New views of the core magnetic field from Champ and other satellites.

Larsen, G.B,. et al., GPS atmosphere and ionosphere profiling methods used on Ørsted data and application on Champ data.

Lesur, V. and A. Thomson, A comparison of Champ and Oersted main and external field models for 2001.

Martinec, Z. Two-dimensional spatio-temporal electromagnetic induction along a satellite trajectory.

Mozzoni, D., et al., Combined modelling of Ørsted and Champ magnetic field data with help from observatory secular change.

Olsen, N., et al., Monitoring the magnetic signature of the magnetospheric ring-current with Oersted, Champ and Oersted-2/SAC-C.

Stampe, A.M., et al., Current systems in the polar region during quiet geomagnetic conditions- Multi-satellite observations.

Stauning, P. et al., Detection of fine-scale field-aligned current structures from Oersted.

Stauning, P., et al., Mapping of field-aligned current patters during northward IMF.

Tarits, P., Preliminary investigation of the Champ magnetic data for induction studies.

Taylor, P., et al., Comparing Magsat, Ørsted and Champ crustal magnetic anomaly data over the Kursk magnetic anomaly, Russia.

Vennerstrøm, S., et al., Multi-satellite observations of currents in the day-side cusp and polar cap.

von Frese, R.R.B., et al., Champ, Ørsted and Magsat magnetic anomalies of the Antarctic lithosphere.

Wardinski, I. and R. Holme, Decadal and subdecadal secular variation of main geomagnetic field.

Watermann, J., et al., Field-aligned currents inferred from low-altitude Earth-orbiting satellites and ionospheric currents inferred from ground-based magnetometers - do they render consistent results?

Conferences 2001.

AGU Meeting in San Francisco, December 10-14, 2001.

Christiansen, F., et al., Storm Time Field-Aligned Currents Detected by the Ørsted Satellite.

Stauning, P., et al.,Observations of Field-Aligned Currents and Particle Precipitation Patterns During Events of Strongly Northward IMF.

Watermann, J., et al., Are Field-Aligned Currents Inferred From the Ørsted Satellite Consistent With Ionospheric Currents Inferred from Greenland Ground-Based Magnetometers?

SunSpa Euroconference, Napoli, 24-29 September, 2001.

Stauning, P., and J. Watermann, High-voltage power-line disturbances and electrojet modelling during large geomagnetic storms.

IAGA-IASPEI Joint Scientific Assembly, Hanoi, Vietnam, 19-31 August, 2001.

Papitashvili, V.O., et al., Maps of field-aligned currents for various IMF conditions derived from Ørsted magnetic field observations.

EGS Meeting, Nice, April 25-30, 2001.

Stauning, P and F. Primdahl, Detection of global dawn-dusk ionospheric current intensities by using Ampère's integral law on Ørsted satellite orbits.

Stauning, P., et al., IMF By-related Cusp currents observed from the Ørsted satellite and from ground.

Stauning, P., Investigations of high-latitude ionospheric disturbances detected from Ørsted and other satellites and from ground.

Conferences 2000.

ESA Utilization Workshop, ESTEC, 12 December 2000.

Stauning, P., et al., High-Energy Particle Radiation Effects in the Instruments and Memory Circuits of Low-altitude Satellites

AGU Fall, Meeting, San Francisco, 15-19 December 2000.

Bloxham, J. Insights into the Geodynamo from Ørsted Magnetic Field Observations and Numerical Modelling.

Christensen, T., et al., Ørsted and Ground-Based Observations of High-Energy Electron Precipitation.

Christiansen, F., and T. Neubert, Performance and Status of the Ørsted Geomagnetic Satellite Mission.

Constable, S.C., and C.G.Constable Global Electromagnetic Induction from Satellite Magnetic Field Observations.

Doumouya, V., and Y. Cohen Correction of Satellite Magnetic Data from the EEJ Contribution Using Ground Based Data and an Empirical EEJ Model.

Friis-Christensen, E., et al., Maps of High-Latitude Field-Aligned Currents as Derived from High-Precision Magnetic Satellite Data.

Kim, H.R., et al., Ørsted Lithospheric Anomaly Components

Macmillan, S., and A.W. Thomson Aspects of Main-Field and Secular Variation Models Derived from Ørsted and Contemporary Ground-Based Data.

Mandea, M., et al., Main Field, Secular Variation, and Core Flows. Improvement Brought by the Ørsted Satellite Mission.

Merayo, J.M.G., et al., The Ørsted Satellite High-Precision Magnetic Vector Measurements

Mozzoni, D.T., et al., A Model of the Geomagnetic Field from 1995 - 2000.

Olsen, N., et al., Combined Interpretation of Internal and External Magnetic Sources Using Observatory and Satellite Data.

Olsen, N., A Model of the Main Field and its Secular Variation for Epoch 2000 Estimated from Ørsted Data.

Papitashvili, V.O., et al., Quiet Time Field-Aligned Currents Detected by Ørsted Satellite.

Parker, R.L., and C.G. Constable, Spatial Resolution of Ørsted Vector Magnetic Observations.

Purucker, M., et al., Magnetic Fields of High Degree Measured by Ørsted and their Interpretation.

Schlesier, A., et al., Ionosphere Tomography using Ørsted GPS Occultation Data and Comparisons with Ground-Based Radar Observations.

Stampe, A.M., et al.,Field-aligned Currents Associated with the Auroral Electrojets.

Stauning, P., et al., Observations from ground and from satellites of polar ionospheric effects of the 14 July 2000 solar storm event.

Syndergaard, S., et al., Validation of Ørsted-GPS Occultation Data in the Lower Atmosphere.

Vennerstrøm, S., et al., Cusp Currents Observed with Ørsted

Voorhies, C.V.. The Radius of Earth's Core from Ørsted, Magsat, or SV.

Walker, M.R., et al., Magnetic Field Model forCore-Motion Studies

S-RAMP conference, Sapporo, 2-6 October 2-6, 2000.

Neubert, T., et al., Field-aligned Current Distributions Observed from Ørsted.

Stauning, P., et al., Correlation of radiation effects in Ørsted satellite instruments and systems with high-energy particle observations.

Stauning, P., et al., Statistical and case studies of DPY currents based on Ørsted satellite and polar ground-based observations.

Yamashita S., et al., An Effect of Anti-sunward Current System Observed by the Ørsted satellite.

SEDI 2000 meeting, Exter, UK, 30 July-4 August, 2000.

Thomson, A., and S. Macmillan, Geomagnetic models derived from ground-based observations and satellites.

COSPAR Meeting ,Warsaw, Poland, 16-23 July, 2000.

Stauning, P., Observations of Field-Aligned Currents and High-Energy Particle Radiation Associated with Small-Scale High-Latitude Disturbances.

Stauning, P., and P. Davidsen Detection of Radiation-Induced Anomalies in the Memory Circuits of the Ørsted Satellite Using EDAC.

Stauning, P., et al., IMF Dependence of Ionospheric and Field-Aligned DPY Currents.

Stauning, P., et al., Morphology of Ionospheric and Field-Aligned DPY Currents as Detected by Ground-Based Instruments and from the Ørsted Satellite.

Stauning, P., et al., Magnetospheric Structure and Polar Ionospheric Convection during Northward IMF Conditions.

Watermann, J., et al., Observations of Field-Aligned and Ionospheric Currents During Space Weather Month, Sept. 99.

SCAR Meeting, Washington, 10-14 July, 2000.

Papitashvili, V.O., et al., Field-Aligned Currents Distributions Observed from Ørsted and Magsat.

PIERS 2000, Cambridge, Massachusetts, 5-14 July, 2000.

Syndergaard, S., et al., Results from the Ørsted-GPS Occultation Experiment,

GEM workshop, Snowmass, USA, 19-23 June, 2000.

Watermann, J., et al., Magnetic Field Measurements from the Ørsted Satellite and from Greenland Ground Stations: Do Field-Aligned and Ionospheric Electric Currents Match?

Danish Physical Society, 8-9 June, 2000.

Christensen, T., et al., High-energy Electron Precipitation Study Using Ørsted Satellite and Ground-based Data,

AGU Meeting, Washington, 30 May-3 June, 2000.

Cain, J.C., et al., Virtues and Problems of the IGRF2000

Langlais, B., et al., From Magsat to Ørsted: Comparison of the 1980 and 1999 Main Magnetic Fields.

Papitashvili, V., et al., Parameterization of Field-Aligned Currents Detected at the Ørsted Satellite by the IMF Strength and Direction

Ørsted Science Team Konference, Grasse, 2-4 Maj, 2000.

Bloxham, J., Ørsted magnetic field observations and geodynamo modelling.

Cain, J.C., et al., Combined Ørsted and observatory model for 1996-2000.

Cerisier, J.-C., The SuperDARN network of HF radars.

Cerisier, J.-C., and C. Senior, Currents parallel to the earth magnetic field at the Ørsted orbit.

Christensen, T., et al., Event study of high-energy electron precipitation by comparison of Ørsted data and ground-based observations.

Cohen, Y., et al., Monitoring and reducing the magnetic contribution of the equatorial electrojet to Ørsted data.

Cohen, Y., et al., Monitoring and reducing the magnetic contribution of the equatorial electrojet to Ørsted data.

Constable, C. and S. Constable, Observing geomagnetic induction in magnetic satellite measurements.

Cyamukungu, M., et al., The charged particle detector (CPD): Data Analysis Methodology.

Fedorova, N., et al., Long wavelength magnetic anomalies produced by lithosphere according to airborne and satellite data.

Friis-Christensen, E., SWARM - A necessary continuation of high-precision magnetic measurements.

Friis-Christensen, E. and T. Moretto Direct Estimation of Average Field-Aligned Current Patterns From High-Precision Magnetic Satellite Data .

Gjerloev, J.W., et al., The Ørsted-EISCAT Conjunction Study

Golovkov, V.P., et al., Main geomagnetic field model and space-time structure of external internal and induced geomagnetic variations derived from satellite magnetic survey.

Grammatica, N., et al., Study of the diurnal variation at a global scale.

Holme, R., Modelling of attitude error in Ørsted vector data.

Hulot, G., A., et al., Core surface flows derived from Ørsted data, tests and first estimates.

Høeg, P., et al., Atmosphere and ionosphere profiling results from the Ørsted mission.

Jadhav, G., et al., Identification of external current variations in Ørsted data.

Kotzé, P.B., Modelling and Analysis of Ørsted Magnetic Field Data over southern Africa.

Langlais, B., et al., From Magsat to Ørsted: Comparison of the 1980 and 1999 main magnetic field models.

Larsen, G.B., et al., Comparison of electron density profiles from Ørsted GPS occultation data and ground-based radar observations.

Lowes, F., The explanation of some covariances in the Ørsted model (9/99).

Lühr, H. and Richard Holme The Champ satellite: A progress report.

Macmillan, S. and A. Thomson, Main field modelling at BGS using Ørsted data.

Menvielle, M., About the meaning of longitude sector indices.

Moretto, T. and N. Olsen Investigating the Auroral Electrojet with Ørsted data.

Moretto, T., F. Christiansen, and N. Olsen, Detection of ionospheric and field-aligned current patterns - A comparison of different methods.

Newitt, L.R., The use of Ørsted data in regional magnetic field modeling.

Neubert, T. Ørsted Commissioning, Status and Future.

Olsen, N., ØRSTED-2/SAC-C

Papitashvili, V., et al., Field-aligned currents patterns from Ørsted observations.

Paris, J. and M. Menvielle, Derivation and dissemination of the longitude sector indices.

Primdahl, F. The Ørsted Science Instruments.

Purucker, M.E, Evidence for a new current system at the geomagnetic poles in summer.

Rasmussen, O., et al., Ground-based geomagnetic data to support the Ørsted mission.

Schlesier, A.C., et al., Ionosphere tomography using Ørsted GPS occultation data and comparisons with ground-based radar observations.

Stampe, A.M., et al., Contamination of models by ionospheric polar cap currents: A study in data selection.

Stauning, P., et al., Correlation of field-aligned currents derived from Ørsted magnetometer data and polar dayside ionospheric convection patterns.

Stauning, P., et al., Ørsted CPD High-energy particle observations and radiation effects in Ørsted instruments and systems.

Tarits, P., Preliminary investigation of the Ørsted data for induction studies.

Tarits, P., et al., AMPERE and French contribution to the 'Decade of Geopotential Research'.

Taylor, P., et al., Results of a comparison between Ørsted and Magsat anomaly fields over the region of Kursk magnetic anomaly.

Toeffner-Clausen, L. Ørsted data products.

von Frese, R.R.B., et al., Ørsted magnetometer constraints on the crustal structure of the Greenland-Scotland Ridge.

Watermann, J.W., et al., Observations field-aligned and ionospheric currents during space weather month, September 1999.

Yamashita, S., et al., Middle latitude field-aligned current effects observed by Ørsted and a comparison with the Magsat and DE-2 observations.

EGS Meeting, Nice, 25-29 April, 2000.

Christiansen, F. and V.O. Papitashvili, High-latitude Field-aligned Currents from Ørsted Observations for Various IMF Conditions.

Cohen, Y., et al., Estimating ABD Reducing the Effect of the Equatorial Electrojet.

Neubert, T., et al., The Ørsted Geomagnetic Satellite: Mission Status and First Results.

Stauning, P., et al., Polar ionospheric convection patterns and magnetic field morphology during northward IMF conditions.

Stauning, P., et al., Morphology of Ionospheric and Field-aligned DPY Currents as Detected by Ground-based Instruments and from the Ørsted Satellite.

Stauning, P., Structure of Field-aligned Currents and High-energy Particle Radiation Associated with Small-scale High-latitude Ionospheric Disturbances.

Stauning, P., and P. Davidsen, Observations of Radiation-induced Anomalies in the Memory Circuits of the Ørsted Satellite.

Watermann, J., et al., Storm-time Observations of Field-aligned and Ionospheric Currents Limited in Space and Time.

Royal Astronomical Society, London, 10 March, 2000.

Stauning, P., The Ørsted Satellite. A Real Danish Fairy Tale,

Thomson, A.W.P., Geomagnetic Main Field Models.

Conferences 1999.

AGU Meeting, San Francisco, December 1999.

Kursinski, E. and R, Hajj, G, Status Report on the Oersted and SUNSAT GPS Occultation Experiments.

Langlais, B., et al., The Earth's magnetic field in 1999: preliminary results from the Ørsted Satellite.

Neubert, T., et al., The Ørsted Geomagnetic Satellite: Mission Status and First Results.

Popov, V.A., et al., Geomagnetic Disturbances and Equivalent Ionospheric Currents over Greenland and Antarctica during Very Low Solar Wind Density Event.

URSI General Assembly, Toronto, 13-21 August, 1999.

Syndergaard, S., et al., Improved Method for Measuring the Satellite to Satellite TEC in the Ionosphere.

IUGG99 Conference, Birmingham, UK, 19-30 July, 1999.

Cain, J., and D. Mozzoni, Fine Tuning Global Models Based on Satellite Magnetic Observations.

Cain, J., and D. Mozzoni, How Can Global Spherical Harmonics Assist in Map Constructions?

Christensen, T., et al., High-Engergy Electron Precipitation and Field-aligned Currents in the Cusp Region Measured from Ørsted Satellite and Correlated Ground-based Observations of Ionospheric Convection and Absorption.

Christiansen, F., et al., High-Latitude Ionospheric Convection and Field-aligned Currents Detected from Ground Magnetometers and from the Ørsted Satellite during Northward IMF Conditions.

Cohen, Y., et al., Monitoring the Equatorial Electrojet Activity using Ground Stations During the Oersted Mission, 1999.

Cohen, Y., et al., Preliminary Results from the Danish Satellite OERSTED, a Report from the IPGP Group, 1999

Mortensen, M. D., Vertical Resolution of GPS Occultation Data from OERSTED/SUNSAT.

Golovkov, V.P.,et al., Spherical Cap Harmonics Analysis of Geomagnetic Variations over High Latitudes

Mozzoni, D., and J. Cain, Adjusting SHC Coefficients to N # 15 for Epoch 2000.

Neubert, T., et al., The Ørsted Geomagnetic Satellite Mission. Instrumentation and Data Handling. Presentation of Initial Results.

Papitashvili, V., et al., Comparisions of Magnetic Fields Measured by Ørsted Satellite with Modeled High-Latitude Field-aligned Current Systems.

Stauning, P., et al., Comparison of the Cusp/Cleft DPY Current Obtained from the Ørsted Satellite and from Ground-Based Instruments.

EGS Meeting, Haag, 19-23 April, 1999

Christensen, T., et al., Correlated Measurements of High-energy Electrons Precipitation and Field-aligned Currents from Ørsted Satellite and Convection and Absorption Observations from Ground.

Christiansen, F., et al., Polar Convection Patterns Detected from Ground and Field-aligned Currents Systems Detected from Ørsted and other Satellites during Northward IMF Conditions.

Neubert, T., et al., Ørsted Geomagnetic Satellite Mission. Instrumentation and Data Handling. Presentation of Initial Results.

Stauning, P., et al., Correlated Observations of DPY Current Systems from the Ørsted Satellite and from Ground-based Instrumentation.

Stauning, P., et al. On the Detection of Field-aligned Current Systems associated with Small-Scale High-Latitude Convection Disturbances.