

# SuperDARN Workshop 2007 Program

(June 4-8, 2007, Hotel Abashirikoso, Abashiri, Hokkaido, Japan)

## June 3 (Sunday)

Registration and icebreaker (1900 – 2100)

## June 4 (Monday)

Greetings (0815 – 0820)

*Chair: Takashi Kikuchi*

1. Status reports, hardware developments, data handling

**0820 SuperDARN status report**

M. Lester

**0900 Software status report**

R.J. Barnes

**0920 PolarDARN - Review of Rankin Inlet first year results and progress report on Inuvik radar**

J.-P. St-Maurice, G. Sofko, K. McWilliams, S. Koustov, G. Hussey, D. Andre, J. Wiid, R. Choudhary, and M. Watanabe

**0940 Initial observation with the Hokkaido radar**

N. Nishitani, T. Ogawa, T. Kikuchi, R. Kataoka, K. Hosokawa, Y. Miyoshi, N. Sato, H. Yamagishi, A. S. Yukimatu, and Hokkaido Radar Group

**1000 The construction and calibration of an interferometer antenna at Sanae, Antarctica**

L. Kock, P.J. Cilliers, J.P.S. Rash, L.G. Magnus, and Z. Magogotya

**1020 (break)**

*Chair: Mike Pinnock*

**1045 Imaging receivers for the Kodiak radar**

R. Todd Parris and W. A. Bristow

**1105 The Siberian segment of SuperDARN**

G.A. Zherebtsov, V.I. Kurkin, and O.I. Bergardt

**1125 10 Years radar operations at SANA E - A statistical overview**

E. Mravlag

**1145 A new generic data access system suitable for SuperDARN**

T. Barnes, P. Breen, P. Kirsch, and M. Freeman

**1205 (lunch)**

*Chair: Kile Baker*

**2. Analysis techniques**

**1305 Performance issues with multipulse coding and possible solutions (tutorial)**

R. A. Greenwald, K. Oksavik, and R. J. Barnes

**1345 A comparison of new and conventional ACF and FITACF analysis techniques**

K. Oksavik, R. A. Greenwald, and R. J. Barnes

**1405 Application of arithmetic progression and arithmetic modulus codes to SuperDARN**

M. Balajit and W. A. Bristow

**1425 Range imaging by FDI - heater induced FAI observed by SuperDARN and EISCAT**

A. S. Yukimatu, Y. Ogawa, M. Tsutsumi, K. Nishimura, M. Lester, T. Yeoman, D. Wright, M. Rietveld, and N. Sato

**1445 A statistical database of high-latitude ionospheric convection derived from the SuperDARN Map Potential analysis**

A. Grocott, T.K. Yeoman, M. Lester, and S.E. Milan

**1505 (break)**

*Chair: Gerald Blanchard*

**1530 The application of Multi-Taper Methods (MTM) to radar observations of FLRs and simultaneous discrete oscillations in the solar wind**

J.A.E. Stephenson, A.D.M. Walker, and J.P.S. Rash

**1550 A statistical characterisation for quasi real-time tracking of magnetospheric regions with SuperDARN**

G. Lointier, C. Hanuise, T. Dudok de Wit, X. Vallieres, and J.P. Villain

**1610 An empirical virtual height model for SuperDARN HF radar backscatter**

G. Chisham and M. P. Freeman

*Chair: Mike Ruohoniemi*

3. Convection dynamics

**1630 Steady magnetospheric convection selection criteria: Implications of global SuperDARN convection measurements**

K.A. McWilliams, J.B. Pfeifer, and R.L. McPherron

**1650 Complexity in electric field fluctuations implied by TIGER HF radar observations of F-region Doppler velocity measured at 1-second time resolution**

M. L. Parkinson and P. L. Dyson

**1710 Statistics of velocity fluctuations**

W. A. Bristow

**1730 Investigating turbulent structure of ionospheric plasma velocity using the Halley SuperDARN radar**

G. A. Abel, M. P. Freeman, G. Chisham, and N.W. Watkins

**1750 Measurements of ionospheric electric field fluctuations by FM-CW HF radar in the field of view of the SuperDARN Hokkaido radar**

M. Shinohara, A. Ikeda, K. Nozaki, V. V. Bychkov, B. M. Shevtsov, N. Nishitani, and K. Yumoto

**1810 (Session close)**

Group meetings (night)

**June 5 (Tuesday)**

*Chair: Jean-Paul Villain*

4. Cusp / polar cap processes

- 0815 PolarDARN measurements of lobe cell dynamics during strong By+ conditions**  
G. Sofko, R. Choudhary, G. Hussey, M. Watanabe, K. McWilliams, and J.-P. St-Maurice
- 0835 Auroral and radar signatures associated with IMF transients**  
H. Hu, R. Liu, H. Yang, D. Huang, Z. Hu, M. Lester, and T. Yeoman
- 0855 Multi-instrumentation observations of transpolar arcs in the northern hemisphere**  
A. Goudarzi, M. Lester, and S. Milan
- 0915 A statistical study of the open flux content of the magnetosphere at the time of substorm onset**  
P.D. Boakes, S.E. Milan, G.A. Abel, M.P. Freeman, G. Chisham, M. Lester, and B. Hubert
- 0935 EISCAT high resolution measurements of reversed flow events in the cusp ionosphere**  
Y. Rinne, J. Moen, K. Oksavik, and H. C. Carlson
- 0955 Hokkaido radar observation of cusp flows during a large storm**  
N. Nishitani, T. Ogawa, T. Kikuchi, R. Kataoka, Y. Miyoshi, K. Hosokawa, K. Shiokawa, Y. Otsuka, N. Sato, H. Yamagishi, and A. S. Yukimatu
- 1015 (break)**
- Chair: Y. Kamide*
5. Auroral zone processes
- 1040 Reimei auroral particle / image simultaneous observations (invited)**  
K. Asamura, T. Sakanoi, M. Hirahara, Y. Obuchi, Y. Ebihara, K. Seki, A. Yamazaki, M. Okada, and Y. Kasaba
- 1110 On the motion of the dayside aurora with global plasma convection**  
G. Provan, J. Moen, S. E. Milan, and M. Lester
- 1130 Reversed flow events in the cusp ionosphere: Are they an inverted V signature?**  
J. Moen, Y. Rinne, H. Opgenoorth, R. Fujii, H. C. Carlson, and K. Oksavik
- 1150 Recurrent sub-substorms with period of 1 hour**  
J. Liang, W. W. Liu, H. U. Frey, and E. Spanswick
- 1210 (lunch)**

**1330 Location of the spectral width boundary: A statistical study**

P. Jensen and W. A. Bristow

*Chair: Kjellmar Oksavik*

6. Subauroral region processes

**1350 Dual TIGER radar study of the sub-auroral polarization streams**

R. A. Makarevich

**1410 SuperDARN Hokkaido radar observations of ionospheric convection during magnetic storms**

R. Kataoka, N. Nishitani, T. Kikuchi, T. Ogawa, K. Hosokawa, and Y. Ebihara

**1430 Initial backscatter occurrence statistics from the Hokkaido SuperDARN radar**

K. Hosokawa, N. Nishitani, R. Kataoka, and T. Ogawa

**1450 Possible observation of spatial and temporal structure of the "overshielding" from the SuperDARN Hokkaido radar**

Y. Ebihara, N. Nishitani, T. Kikuchi, T. Ogawa, K. Hosokawa, and M.-C. Fok

**1510 Penetration of storm-time electric field to low latitude**

T. Kikuchi, Y. Ebihara, K. K. Hashimoto, K. Ohtaka, and K. Kitamura

**1530 (break)**

*Chair: Natsuo Sato*

7. Special paper

**1555 Look back on polar ionosphere and mesosphere observations with the SuperDARN radars (invited)**

T. Ogawa

*Chair: Peter Dyson*

8. Neutral processes

**1625 Long duration analyses of planetary wave and tidal activity at mesospheric heights**

J. M. Ruohoniemi, E. R. Talaat, and I. Azeem

**1645 Directional wind measurements of the Southern Ocean using the TIGER and Unwin SuperDARN radars**

R. I. Greenwood, M. L. Parkinson, P. L. Dyson, and H. Ye

**1705 The NICT real-time thermosphere-ionosphere simulator: Initial results**

H. Shinagawa, H. Shimazu, N. Terada, H. Jin, T. Obara, S. Fujita, and T. Tanaka

**1725 Observations of ionospheric variations following the 13 January 2007 earthquake using GPS and Hokkaido HF radar**

Y. Otsuka, Y. Yamaya, N. Nishitani, and T. Ogawa

**1745 (session close)**

Poster session (1930 – 2100)

**P1 Plans for the South African low-latitude HF radar**

L Magnus, L Kock, and P Sutcliffe

**P2 South Pole radar**

R. T. Parris, W. A. Bristow

**P3 A multi-function mid latitude radar for the Australian region**

J. Devlin, P. Dyson, and J. Whittington

**P4 Propagation mode and scatter type identification using Channel Scatter Function analysis of TMS data**

R. I. Greenwood, M. L. Parkinson, and P. L. Dyson

**P5 Operational meteor wind observation based on raw time series analysis**

M. Tsutsumi and A. S. Yukimatu

**P6 A statistical approach for characterizing the SuperDARN autocorrelation function**

G. Lointier, T. Dudok de wit, C. Hanuise, X. Vallieres, and J.-P. Villain

**P7 fitacf, lag-0 power, new ROS and TMS mode**

A. S. Yukimatu

**P8 Changes to astronomical calculations and Magnetic Local Time**

K. B. Baker

**P9 Regional space weather models via ground based data**

J. Wanliss, V. V. Anh, and Z.-G. Yu

**P10 Quick look of the Geospace data with Dagik (Daily Geospace data in kml)**

A. Saito

- P11 SuperDARN and incoherent scatter radars: Effective data assimilation?**  
T. van Eyken and M. Lester
- P12 Comparison of the ionospheric convection estimated from SuperDARN observations with MHD simulation results by using inputs from ACE data**  
M. Kunitake, K. Ohtaka, S. Watari, H. Shinagawa, H. Shimazu, S. Fujita, and T. Tanaka
- P13 Large-scale electric field in the inner magnetosphere during geomagnetic storms**  
A. Shinbori, Y. Nishimura, T. Ono, A. Kumamoto, and T. Kikuchi
- P14 Variations of magnetic field structure associated with storms**  
Y. Tsujii, A. Shinbori, and T. Kikuchi
- P15 Study of sun-aligned arcs observed with OMTIs and SuperDARN**  
C. Yamakawa, K. Hosokawa, T. Kashimoto, K. Shiokawa, T. Ogawa, and T. Shibata
- P16 Estimating possible source of polar cap patches by using OMTIs and SuperDARN**  
T. Kashimoto, K. Hosokawa, C. Yamakawa, K. Shiokawa, T. Ogawa, and T. Shibata
- P17 Analysis of the impulse response function relating the solar wind electric field to the magnetospheric reconnection rate**  
G. Blanchard, S. Sundeen, and K.B. Baker
- P18 Cosmic noise absorption and ionospheric electric field**  
A. C. Kellerman and R. A. Makarevich
- P19 SuperDARN and NICT ground-based observations**  
S. Watari, M. Kunitake, K. Ohtaka, K. Kitamura, T. Hori, and T. Kikuchi
- P20 Three-dimensional Hall-MHD simulation of magnetosphere-ionosphere coupling**  
J. Kondo, T. Ogino, and A. Kageyama
- P21 Life time of the shielding electric field during an isolated southward IMF event as observed by SuperDARN and magnetometer network**  
K. Hashimoto, T. Kikuchi, Y. Ishikawa, and M. Kunitake
- P22 One-to-one correspondence between isolated auroral arcs and Pc 1 geomagnetic pulsations at subauroral latitudes**  
K. Sakaguchi, K. Shiokawa, Y. Miyoshi, A. Ieda, Y. Otsuka, T. Ogawa, M. Connors, and E. Donovan
- P23 New Antarctic Fabry-Perot Spectrometers providing new opportunities for detailed comparison of neutral wind structures with convection mapped by SuperDARN**  
M. Conde, C. Anderson, T. Davies, P. Dyson, and M. Kosch

**P24 Ionospheric signature of flow bursts in the magnetotail:**

**Geotail-SuperDARN conjunction study**

T. Hori, K. Hosokawa, Y. Miyashita, K. Ohtaka, M. Kunitake, S. Watari, T. Kikuchi, Y. Saito, and T. Mukai

**P25 Characteristics of the MSTIDs' long-range propagation: simultaneous observations at auroral and mid-latitudes**

T. Ishida, K. Hosokawa, T. F. Shibata, and N. Nishitani

**P26 A statistical study of decameter E-region backscatter with the TIGER radars**

B. A. Carter and R. A. Makarevich

**P27 TIGER HF radar observations of F-region Doppler velocity measured concurrently at 1- and 6-second time resolution**

M. L. Parkinson, H. Ye, and P. L. Dyson

**P28 Heights of SuperDARN F-region echoes estimated from the analysis of HF radio wave propagation**

A.V. Koustov, D. Andre, E. Turunen, T. Raito, and S. E. Milan

**P29 The Precision Expandable Radar Calibration Sphere (PERCS)**

P. A. Bernhardt

**P30 Neutral density enhancement in the equatorward region of polar cap plasma convection**

S. Watanabe, S. Sato, H. Liu, and H. Luhr

**June 6 (Wednesday)**

*Chair: Hisao Yamagishi*

9. MHD waves

**0815 Cross-beam observations of ULF waves by TIGER (Tasmania and New Zealand) radars**

C. L. Waters, P. V. Ponomarenko, and M. D. Sciffer

**0835 High latitude observation of small scale ULF waves**

C. Gane, D. Wright, and T. Raita



**0855 An analysis of Pc5 pulsation events observed in 2004 with the SuperDARN network**

L. Magnus and A. D. M. Walker

**0915 Evolution of complexity in small-scale solar wind turbulence measured over three solar cycles at 1 AU**

M. L. Parkinson, R. C. Healey, and P. L. Dyson

*Chair: Ermano Amata*

10. Interhemispheric studies / polar outflow

**0935 North-south asymmetry of IMF driven reconfiguration of high latitude convection: A case study**

D. Ambrosino, E. Amata, M. F. Marcucci, I. Coco, W. A. Bristow, and P. Dyson

**0955 Theories and observations of the polar plasma outflow**

S. W. Y. Tam and C. Z. Cheng

**1015 (break)**

*Chair: Shigeto Watanabe*

11. SuperDARN / satellite collaboration

**1040 FORMOSAT-3/COSMIC mission early results (invited)**

C. Z. Cheng, C. Y. Huang, C. H. Lin, S. W. Tam, and J. Y. Liu

**1110 Multi-scale observations of magnetotail flux transport during IMF-northward non-substorm intervals**

A. Grocott, T.K. Yeoman, S.E. Milan, O. Amm, H.U. Frey, R. Nakamura, C.J. Owen, H. Reme, and T. Takada

**1130 Testing the equipotential magnetic field line assumption using SuperDARN and Cluster EDI**

J. B. H. Baker, R. A. Greenwald, and J. M. Ruohoniemi

**1150 Fast earthward flows in the magnetotail and ionospheric convection during weak substorms: Geotail and SuperDARN observations**

Y. Miyashita, K. Hosokawa, T. Hori, M. Fujimoto, I. Shinohara, S. Machida, T. Mukai, Y. Saito, A. S. Yukimatu, and N. Sato

**1210 (lunch)**

## PM Schedule

Group photo

Tour to Rikubetsu

Visit to Hokkaido radar site (1430 – 1530)

SuperDARN world cup (1600 – 1730)

Dinner at Rikubetsu town hall (1800 – 2000)

Visit to Rikubetsu Astronomical Observatory / STELAB Rikubetsu Observatory (2000 – )

Return to Hotel Abashirikoso at night

## June 7 (Thursday)

*Chair: Keisuke Hosokawa*

11. SuperDARN / satellite collaboration (continued)

**0815 Early results of the Solar-B (Hinode) spacecraft program (invited)**

K. Ichimoto and Hinode Team

**0845 Contribution of Geotail results to our understanding of magnetotail dynamics (invited)**

M. Fujimoto

**0915 Japanese geospace exploration mission: The ERG project**

Y. Miyoshi, K. Seki, K. Shiokawa, N. Nishitani, T. Kikuchi, T. Ono, Y. Kasaba, A. Kumamoto, M. Hirahara, T. Takashima, K. Asamura, A. Matsuoka, K. Yumoto, and ERG working group

*Chair: Akinori Saito*

12. Ionospheric irregularities

**0935 On the factors affecting ACF power decay**

P. V. Ponomarenko, M. P. Freeman, C. L. Waters, and F. W. Menk

**0955 Medium-scale traveling ionospheric disturbances observed by the SuperDARN Hokkaido radar and GEONET: A case study**

T. Ogawa, N. Nishitani, Y. Otsuka, T. Tsugawa, and A. Saito

**1015 (break)**

**1040 The generation of F region interchange instabilities at high latitudes under any electric field and ambient gradient conditions**

J.-P. St-Maurice, and M. Gillies

**1100 On the origin of HF backscatter irregularities**

E. Osmundsen, J. Moen, H. C. Carlson, and K. Oksavik

**1120 Comparison of SuperDARN echo occurrence with GPS scintillation events**

I. Coco, E. Amata, M. F. Marcucci, L. Alfonsi, G. de Franceschi, V. Romano, P. Dyson, and M. Lester

**1140 (Session close)**

(Lunch – served as lunchbox and taken inside the bus)

PM schedule

Tour to Shiretoko Peninsula

Bus leaves at 1220 – arrives at Utoro port at 1410

**Boat leaves Utoro Port at 1430 (STRICT!!)**

Boat returns to the port at 1600

Back to the hotel at 1740

Banquet (1830 – 2130)

**June 8 (Friday)**

*Chair: Tadahiko Ogawa*

12. Ionospheric irregularities (continued)

**0815 Spatial relationship of polar cap patches and field-aligned irregularities observed with an all-sky imager at Resolute Bay and PolarDARN Rankin Inlet**

K. Hosokawa, K. Shiokawa, Y. Otsuka, T. Ogawa, J.-P. St-Maurice, G. Sofko, and D. Andre

**0835 Medium-scale traveling ionospheric disturbances observed in the midlatitude ionosphere**

A. Saito, N. Fujita, Y. Otsuka, and T. Tsugawa

**0855 Traveling ionospheric disturbances observed by Millstone Hill IS radar and GPS network in North America**

T. Tsugawa, L. Goncharenko, S.-R. Zhang, A. Coster, W. Rideout, Y. Otsuka, and A. Saito

**0915 Irkutsk incoherent scatter radar: An overview of coherent echo observations**

O. I. Berngardt

**0935 (break)**

*Chair: Mark Lester*

SuperDARN 2008 / Working group reports / PI's report / etc. (1000- )

**1200 lunch - adjourn**