



SuperDARN Workshop 2010

Monday 31 May - Friday 4 June

Hermanus, South Africa



PROGRAMME

SD2010 Sessions Summary

Session	Times	No.	Topic
Mon am	09:30 - 11:00	1	Welcome + Status Report
	11:20 - 12:50	4	New Radars + Invited
Mon pm	14:00 - 15:20	4	Technical Developments (1)
	15:40 - 17:00	4	Technical Developments (2)
Tue am	09:00 - 10:40	5	Solar Wind – Magnetosphere Interaction
	11:00 - 12:40	5	Magneto-Iono-Thermosphere Coupling
Tue pm	14:00 - 15:20	4	Plasma Flow in the High Lat. Ionosphere
	15:40 - 16:40	3	Other (1) TEC Measurements
	17:00 - 19:00	19	Posters
Wed am	09:00 - 10:40	5	Wave Processes (1)
	11:00 - 12:40	5	Wave Processes (2)
Thu am	09:00 - 11:00	6	Sub-Auroral Processes
	11:20 - 13:00	5	Auroral Processes and Substorms
Thu pm	14:00 - 15:20	4	Plasma Instabilities
	15:40 - 17:00	4	Other (2) Ground Scatter + Modelling
Fri am	09:00 - 10:00	3	Other (3) VLF + Cosmic Rays
	10:30 - 11:45	4	WG + PI Reports

SUNDAY 30 MAY

(at Hermanus Magnetic Observatory)

17:00-18:00 **Registration**

18:00-20:00 **Ice-Breaker**

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MONDAY 31 MAY

(at Overstrand Civic Centre)

08:30-09:30 **Registration and Coffee**

09:30-11:00 **Welcome & Status Report**

Chair: Peter Sutcliffe

09:30 Welcome and Announcements

Peter Sutcliffe

09:40 Introduction to the Hermanus Magnetic Observatory
and Space Physics Research in South Africa

Lee-Anne McKinnell

10:00 SuperDARN Radars Status - Overview

Mark Lester

11:00-11:20 **Tea / Coffee Break**

11:20-12:50 **New Radars & Invited Review**

Chair: Jon Rash

11:20 The McMurdo Station SuperDARN

Bill Bristow

11:40 A New SuperDARN Radar in the Falkland Islands

Mervyn Freeman

12:00 Initial Results from the First MSI SuperDARN Radar Build

Mike Ruohoniemi

12:20 The Radiation Belt Storm Probes Mission: Contribution to
Radiation Belt Effects on Space Systems Research

Nicola Fox

12:50-14:00 **Lunch Break**

MONDAY 31 MAY (continued)

- 14:00-15:20 Technical Developments (1) Chair: Erhard Mravlag**
- 14:00 Status of the SuperDARN Data System, Web-Site and Analysis Software *Rob Barnes*
- 14:20 Next Generation Radar Operating System *Rob Barnes*
- 14:40 SuperDARN Interferometry: How much do we know about it? Part 1: Data Analysis *Pasha Ponomarenko*
- 15:00 Update on TIGER-3 Hardware Development *Jim Whittington*
- 15:20-15:40 Tea / Coffee Break**
- 15:40-17:00 Technical Developments (2) Chair: Bill Bristow**
- 15:40 Detailed Comparison of TTFD and Log Periodic Antennas *Eddie Custovic*
- 16:00 Comparison of Different Antenna Types at the Sanae Radar *Erhard Mravlag*
- 16:20 Using SuperDARN Frequency Shifting to Estimate the Refractive Index in the Scattering Region *Robert Gillies*
- 16:40 2-D Electric Field Modulation with Pulsating Aurora Observed with a New SuperDARN High Temporal Resolution Technique *Sessai Yukimatu*
- 17:00-19:00 Working Groups & PIs Meetings**

TUESDAY 1 JUNE

09:00-10:40 **Solar Wind-Magnetosphere Interactions**

Chair: James Wild

- 09:00 Magnetopause Reconnection Rate and Cold Plasma Density:
a Study using SuperDARN *Mark Lester*
- 09:20 The Effects of the Sudden Storm Commencement Associated
with Geomagnetic Storms on Ionospheric Properties Detected
by the SuperDARN Radar Network *Jean-Pierre St.-Maurice*
- 09:40 Comparison of Cross Polar Cap Potential between SuperDARN,
DMSP and AMIE over a Solar Cycle *Elsayed Talaat*
- 10:00 An Information Theory Approach to the Dynamical Changes
of the Polar Cap Potential *Igino Coco*
- 10:20 Magnetospheric Convection from Cluster EDI Measurements
Mapped to the High-Latitude Ionosphere *Matthias Foerster*

10:40-11:00 **Tea / Coffee Break**

11:00-12:40 **Magnetosphere-Ionosphere-Thermosphere Coupling**

Chair: Joseph Baker

- 11:00 CME Geoeffectiveness Deduced from SuperDARN,
Thermospheric and Magnetic Data *Christian Hanuise*
- 11:20 Nighttime MSTIDs Propagating Northward Observed by the
SuperDARN Hokkaido HF Radar and GEONET *Nozomu Nishitani*
- 11:40 Observations of High-Frequency Mesospheric Gravity Waves
at Multiple SuperDARN Radar Sites *Elsayed Talaat*
- 12:00 Study on the Impact of Sudden Stratosphere Warming in the
Upper Mesosphere - Lower Thermosphere Regions using
SuperDARN Radar and Satellite Measurements *Nkanyiso Mbatha*
- 12:20 VLF Waves as Instigators and Diagnostics of Magnetosphere-
Ionosphere Coupling *Andrew Collier*

12:40-14:00 **Lunch Break**

TUESDAY 1 JUNE (continued)

14:00-15:20 Plasma Flow in the High-Latitude Ionosphere

Chair: Elsayed Talaat

- 14:00 Statistical Model of High-Latitude Convection: Yet Another... *Simon Shepherd*
- 14:20 Convection Surrounding Meso-scale Ionospheric Flow Channels and their Impact on Large Scale Polar Cap Convection *Yvonne Rinne*
- 14:40 A Case Study of How High-Density Plasma Drifts Across the Polar Cap *Kjellmar Oksavik*
- 15:00 On the Non-Gaussian Nature of Ionospheric Vorticity *Mervyn Freeman*

15:20-15:40 Tea / Coffee Break

15:40-16:40 Other (1) TEC Measurements

Chair: Pieter Kotzé

- 15:40 The Variability of the Total Electron Content (TEC) at Planetary Wave Period due to Influence from Below *Sibusiso Mthembu*
- 16:00 Regional TEC Mapping with the Aid of South African GPS Receiver Network *John Habarulema*
- 16:20 Investigation of Phase Scintillation over a High Latitude Antarctic Station *Chigomezayo Ngwira*

17:00-19:00 Poster Session

(with Cheese and Wine)

WEDNESDAY 2 JUNE

09:00-10:40 **Wave Processes (1)** *Chair: Lindsay Magnus*

- 09:00 ULF Waves Observed by TIGER SuperDARN Radars *Colin Waters*
- 09:20 An Extended Period of ULF Pulsations During High Solar Wind Beta *Lasse Clausen*
- 09:40 Identification of Solar Wind MHD Waves Triggering Field Line Resonances observed by SuperDARN Radars *David Walker*
- 10:00 Multi- Instrument Observations of Coherent ULF Pulsations Entering the Magnetosphere *Judy Stephenson*
- 10:20 Multi-Platform Observations of Field Line Resonances *Elsayed Talaat*

10:40-11:00 **Tea / Coffee Break**

11:00-12:40 **Wave Processes (2)** *Chair: David Walker*

- 11:00 What are the Key Parameters of Pc 5 Excitation? *Tsutomu Nagatsuma*
- 11:20 Cross-Beam SuperDARN Observations and Modelling of Pi2 *Colin Waters*
- 11:40 Notes on Ionospheric Specification via HF Ground Scatter Observations *Elsayed Talaat*
- 12:00 Investigation of Persistent Non-Linear Wave-Tide Interaction in the Mesosphere *Elsayed Talaat*
- 12:20 ACF Amplitude Pulsations *Lindsay Magnus*

12:40-14:00 **Lunch Break**

14:00-17:00 **Excursion**

17:00-21:00 **Braai (Barbeque) at Yacht Club**

THURSDAY 3 JUNE

09:00-11:00 Sub-Auroral Processes

Chair: Kile Baker

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| 09:00 | Study of Mid-Latitude Ionosphere Convection During Quiet and Disturbed Periods using the SuperDARN Hokkaido Radar | <i>Nozomu Nishitani</i> |
| 09:20 | The Dynamics of Mid-Latitude Ionospheric Convection | <i>Lasse Clausen</i> |
| 09:40 | Extended Local-Time Measurements of Plasma Convection in the Subauroral Ionosphere | <i>Raymond Greenwald</i> |
| 10:00 | Statistical Analysis of Mid-Latitude Ionospheric Backscatter | <i>Alvaro Ribeiro</i> |
| 10:20 | Mesosphere Summer Echoes Observed with the SuperDARN Hokkaido Radar in Combination with VHF and MF Radars | <i>Tadahiko Ogawa</i> |
| 10:40 | Characteristics of Recurrent / Propagating SAPS / SAID Structures Observed by the SuperDARN Hokkaido Radar | <i>Nozomu Nishitani</i> |

11:00-11:20 Tea / Coffee Break

11:20-13:00 Auroral Processes and Substorms

Chair: Pasha Ponomarenko

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| 11:20 | Geomagnetic Storm Phases in Ionospheric HF Backscatter | <i>Thomas Kane</i> |
| 11:40 | On the Spatio-temporal Evolution of the Ionospheric Backscatter During Disturbed Periods as Observed by the TIGER Bruny Island HF Radar | <i>Vickal Kumar</i> |
| 12:00 | Ionospheric Impacts of Substorm Onset Seen by Mid-Latitude SuperDARN Radars | <i>Joseph Baker</i> |
| 12:20 | Substorm Associated Convection in the Northern and Southern Auroral Ionospheres | <i>Adrian Grocott</i> |
| 12:40 | Midnight Sector Observations of Auroral Omega Bands | <i>James Wild</i> |

13:00-14:00 Lunch Break

FRIDAY 4 JUNE

09:00-10:00 Other (3) VLF + Cosmic Rays

Chair: Roman Makarevich

09:00 Correlation Between WWLLN Detected Lightning and Fractional Hop Whistlers in the Magnetosphere

Brett Delport

09:20 Effect of Lightning on the Energy and Flux of Precipitating Electrons in Earth's Radiation Belts

Marlie van Zyl

09:40 On the Simultaneity of Forbush Decreases

Ogbonnaya Okike

10:00-10:30 Tea / Coffee Break

10:30-11:45 Working Group Reports

Chair: Mervyn Freeman

10:30 Data WG Report

WG Spokesperson

10:40 Scheduling WG Report

WG Spokesperson

10:50 Software WG Report

Rob Barnes

11:00 PIs Report

Mark Lester

11:30 SuperDARN 2011

Simon Shepherd

11:40 Closure

Peter Sutcliffe

11:45 End of Workshop

POSTERS

(Poster Session Tuesday 1 June 17:00-19:00)

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| P 1 | SPEAR – An Update and Future Plans | <i>Lisa Baddeley</i> |
| P 2 | Simultaneous Observations of Large Scale Pc5 ULF Wave Event Observed by the IMAGE Magnetometer Array and SuperDARN and EISCAT Radars | <i>Lisa Baddeley</i> |
| P 3 | The Spectral Structure of Pc3 Pulsations | <i>Peter Sutcliffe</i> |
| P 4 | CLUSTER and CHAMP Satellite Observations During the Magnetic Storm of 21-22 October 2001 | <i>Pieter Kotzé</i> |
| P 5 | Observations of Geomagnetic Storms over a Solar Cycle: Storm Time Signatures in Radar Backscatter | <i>James Hutchinson</i> |
| P 6 | The Relationship Between Solar Wind Driving of Ionospheric Convection and the Open Flux | <i>Elsayed Talaat</i> |
| P 7 | Determination and Temporal Evolution of Open-Closed Field Line Boundary Using SuperDARN | <i>Azizul Hoque</i> |
| P 8 | The Changes Caused by Magnetospheric Electric Field on High-Latitude Ionosphere during Magnetosphere-Ionosphere Coupling | <i>Kenneth Maphaha</i> |
| P 9 | Evidence of Sub-corotation in DMSP Plasma Drift Measurements | <i>Simon Shepherd</i> |
| P 10 | Lightning-induced Perturbations in F-region Drifts | <i>Vickal Kumar</i> |
| P 11 | The Flow Angle Dependence of the E-region Irregularity Phase Velocity: Utilising Multi-point Plasma Flow Measurements on the same Magnetic Field Lines | <i>Brett Carter</i> |
| P 12 | Development of CDF Conversion Scheme for SD fitacf files by ERG-Science Center: A new data analysis platform powered by the THEMIS tool | <i>Tomoaki Hori</i> |
| P 13 | A New Approach to Extracting Doppler Velocities from RAWACF Files | <i>Alvaro Ribeiro</i> |
| P 14 | FPGA Implementation of Timing Control and Radar Server for the TIGER 3 Radar | <i>Jim Whittington</i> |
| P 15 | Modelling and Testing of Frequency Up-scaled Model of the TTFD Antenna | <i>Eddie Custovic</i> |
| P 16 | Wire Antennas for Sanae | <i>Keith Browne</i> |
| P 17 | SuperDARN Interferometry: How much do we know about it? Part 2: Phase Tests | <i>Jan Wiid</i> |
| P 18 | The Variability of the Peak Height of the Ionospheric F2 Layer over South Africa | <i>Makhangela Mbambo</i> |
| P 19 | Multi-Instrument Geospace Observations in Antarctica in Support of ICESTAR/IPY | <i>Ben Opperman</i> |