

11th Biannual EISCAT Workshop/Radar School Agenda

Radar School

Friday, 22 August 2003, thru Sunday, 24 August 2003

SRI, G-Building Conference Room

Friday - 22 August 2003

08:00 – 08:30		School registration
08:30 – 10:30 *	Tor Hagfors	Basic physics of incoherent scatter
10:30 – 12:30 *	JP St. Maurice	Basic physics of other scattering mechanisms
12:30 – 13:30	LUNCH	
13:30 – 15:30 *	Mike Sulzer	The ionosphere as a radar target
15:30 – 17:30 *	Francois Forme	Plasma instabilities in the ionosphere

Saturday - 23 August 2003

09:00 – 11:00 *	Gudmund Wannberg	Experiment design
11:00 – 13:00 *	Erhan Kudeki	Radar design and parameters—coherent and incoherent
13:00 – 14:00	LUNCH	
14:00 – 15:00 *	Ray Greenwald	SuperDARN: radar, data fusion and relationship to ISRs
15:00 – 17:00 *	Craig Heinselman	New hardware and software developments

Sunday - 24 August 2003

10:00 – 12:00 *	Tauno Turunen	Modulation schemes
12:00 – 13:30	LUNCH	
13:30 – 15:30 *	John Holt	Analysis techniques

*all tutorials will include a 10 minute break per hour

Note: A social gathering will occur at the British Bankers Club (within walking distance of SRI) after the last class on Sunday, 16:00 – 19:00 pm. All attendees of the school and workshop are welcome. Attendees will be responsible for their own bar and food expenses.

EISCAT Workshop

Monday, 25 August 2003, thru Friday, 29 August 2003

SRI, International Building Main Auditorium

Monday - 25 August 2003

all morning	Meeting registration
07:30 – 08:15	Continental Breakfast
08:15 – 08:30	Welcome and Announcements

Session I - Storms and substorms / space weather

Conveners: Y. Kamide (kamide@stelab.nagoya-u.ac.jp)
John Foster (jcf@haystack.mit.edu)

8:30 – 8:40	Meeting Organizers	Introduction
8:40 – 9:00	Evgeny Mishin	Prompt Ionospheric Response—Sept 1998
9:00 – 9:30	John Foster (Invited)	The Sub-Auroral Polarization Stream
9:30 – 10:00	Jean-Pierre St.-Maurice (Invited)	Speculations from an ionospheric physicist
10:00 – 10:20	Philip Erickson	Stormtime Erosion of the Plasmasphere
10:20 – 10:40	BREAK	
10:40 – 11:00	Mike Rietveld	Ionosonde for Space Weather Needs
11:00 – 11:20	Joseph Salah	Observations of the April 2002 Storm Event
11:20 – 11:50	Ray Greenwald (Invited)	SuperDARN Utilization for Space Weather
11:50 – 12:10	John Foster	Stormtime Redistribution Ionosphere near SAA
12:10 – 12:30	Anita Aikio	Convection during Sequence of Substorms
12:30 – 13:30	LUNCH	

Session II - Thermosphere and mesosphere studies

Conveners: Jürgen Röttger (roettger@linmpi.mpg.de)
Jeff Thayer (thayer@sri.com)

13:30 – 13:35	Jeff Thayer	Opening remarks
13:35 – 14:00	Phillip Chilson (invited)	Polar Mesosphere Summer Echoes: Background and Recent Findings using the EISCAT Observatory
14:00 – 14:15	Cesar La Hoz	First observations of the PMSE Overshoot effect
14:15 – 14:30	Lars Naesheim	First observation of the artificial electron heating induced reduction of PMSE strength at 933 MHz.
14:30 – 14:45	Jürgen Röttger	Challenges of combined Svalbard Radar Observations on 500 MHz and 53.5MHz
14:45 – 15:10	Ryoichi Fujii (Invited)	Coupling of energy and dynamics between the thermosphere, ionosphere and magnetosphere
15:10 – 15:25	Chris Hall	Is the atmosphere shrinking?
15:25 – 15:45	BREAK	
15:45 – 16:00	Sawako Maeda	Effects of the eddy turbulence on the momentum and heat balance of the high-latitude lower thermosphere
16:00 – 16:25	Satonori Nozawa(Invited)	Mean winds and atmospheric tides observed at Tromsø and Poker Flat
16:25 – 16:40	Ludmila Kagan	Method to Observe Winds and Electric Fields in the Ionospheric E Region
16:40 – 16:55	Takehiko Aso	Dynamics of polar atmospheric tides as revealed in the Arctic meteor radar NSMR and its comparison with EISCAT and other radars and models
16:55 – 17:10	Michael David	New Insights into a Thermospheric Wind Influence on the High Latitude F-Region
17:10 – 17:25	Michael David	Mid-Latitude ISR Observations at Millstone Hill Raise Questions About How Modelers Describe the Thermospheric Wind

Tuesday - 26 August 2003

07:30 – 08:30 Continental Breakfast

Session III - Novel radar applications

Conveners: Gudmund Wannberg (Gudmund.Wannberg@eiscat.com)

Craig Heinselman (heinselman@sri.com)

8:30 – 9:00	Asta Pellinen-Wannberg (Invited)	Meteor head echoes – observations and models
9:00 – 9:20	Jorge Chau	Observations of meteor-head echoes using the Jicamarca 50 MHz radar in interferometer mode
9:20 – 9:25	Johan Kero	Search for Meteor Induced Field-Aligned Irregularities with the EISCAT VHF Radar (poster brief)
9:25 – 9:30	Csilla Szasz	Vector Velocity Observations on Meteoroids (poster brief)
9:30 – 9:50	Joyce Porteous	Automated detection of satellite contamination in incoherent scatter radar spectra
9:50 – 10:20	Andy Breen (Invited)	EISCAT interplanetary scintillation measurements in the era of STEREO and Solar Orbiter - an essential too for untangling the three-dimensional solar wind
10:20 – 10:45	BREAK	
10:45 – 11:15	Phillip Chilson (Invited)	Range Imaging (RIM) Studies of Polar Mesosphere Summer Echoes
11:15 – 11:45	Chris Hall (Invited)	ESR for the D-region
11:45 – 12:05	Tauno Turunen	D-layer experiment solutions for incoherent scatter radars
12:05 – 12:10	Tom Grydeland (Invited)	An imaging interferometer capability for the EISCAT Svalbard Radar (poster brief)
12:30 – 13:30	LUNCH	

Session IV - New results and future use of ISRs – Beynon Medal Symposium

Conveners: Cesar La Hoz (cesar@phys.uit.no)

Frank D. Lind (flind@haystack.mit.edu)

13:30 – 13:40	Tony van Eyken	Introduction and history of the Beynon Medal
13:40 – 14:10	John Kelly/ Craig Heinselman (Invited)	‘Beynon Lecture’: The new AMISR
14:10 – 14:15	Tor Hagfors	The Onerous task of being a Beynon Medal Awardee
14:15 – 14:25	Ryoichi Fujii	Beynon Medal award to Tauno Turunen
14:25 – 14:35	Tauno Turunen	Response
14:35 – 14:55	Tony van Eyken	EISCAT, and Incoherent Scatter, in the next solar cycle
14:55 – 15:15	Tom Grydeland (invited)	Using the two antennas of the EISCAT Svalbard Radar as an interferometer for the detection of narrow scattering structures
15:15 – 15:45	BREAK	
15:45 – 16:05	Michael Sulzer (Invited)	Analysis of Arecibo Incoherent Scatter Long Pulse Data Using Linear Regularization Prior to Non-linear Least Squares Fitting
16:05 – 16:20	Cesar La Hoz	A 4-line computer code to evaluate the Incoherent Scattering Spectrum
16:20 – 16:35	Frank Lind	Implementing Software Radar Systems for ISR Data Processing
16:35 – 16:50	Tom Grydeland	Relative phase errors between the real and imaginary part of incoherent scatter signals at base band
16:50 – 17:10	Shun-Rong Zhang (Invited)	The Long Duration ISR Experiment at Millstone Hill

Wednesday - 27 August 2003

07:30 – 08:30 Continental Breakfast

Session V – History of High-Latitude ISRs

Conveners: Asgeir Brekke (asgeir.brekke@phys.uit.no)

John D. Kelly (john.kelly@sri.com)

08:15 – 08:25	Asgeir Brekke	History Intro
08:25 – 08:45	Murray Baron	Chatanika early planning and facility establishment
08:45 – 09:05	Tor Hagfors	The beginning and the planning of EISCAT: What little I remember
09:05 – 09:25	Asgeir Brekke	EISCAT scientist training at Chatanika
09:25 – 09:45	John Kelly	Chatanika to Sondrestrom move
09:45 – 10:20	Jürgen Röttger	The EISCAT Svalbard Radar: History of its development
10:20 – 10:35	Tony van Eyken	EISCAT: experiences of an early user

11:00 – 16:00 *Group Excursion – San Francisco Bay Cruise*

18:00 – 21:00 *Poster Session and Dinner Buffet*

Poster Presentations by:

Aruliah, Anasuya

Coupling

First tristatic studies of meso-scale ion-neutral dynamics and energetics in the high-latitude upper atmosphere using collocated FPIs and EISCAT radar

Ashrafi, Mina

Coupling

A comparison of the characteristic energy of precipitating electrons derived from ground based and DMSP satellite data

Bishop, Rebecca

Other

Sporadic E Structure Associated with Quasi-Periodic Echoes

Blagoveshchenskaya, Nataly

Modification

Ionospheric response on effects induced by turn-on and turn-off of the Tromsø HF Heating facility

Doe, Rick

Structure

Sondrestrom Quiet Time Photoionization Model

Grydeland, Tom
Novel apps
An imaging interferometer capability for the EISCAT Svalbard Radar

Hall, Chris
Thermosphere
A comparison of MLT dynamics - Svalbard-Tromsø

Kero, Johan
Novel apps
Search for Meteor Induced Field-Aligned Irregularities with the EISCAT VHF Radar

Kofman, Wlodek
Other
Additional “space weather data” in the brand new Grenoble EISCAT database

Koustov, Alexander
Plasma physics
Summary on recent STARE/EISCAT velocity comparisons

La Hoz, Cesar
Thermosphere
EISCAT christmas card physics

Lilensten, Jean
Storms
Comparison of EISCAT and ionosonde data: application to a ground based ionospheric segment of the space weatherprogram

Misawa, Hiroaki
Novel apps
Spectrum observation of Jupiter's synchrotron radiation at the frequency from 0.3 to 2.3GHz

Mishin, Evgeny
Modification
On the Onset of HF-induced Airglow at HAARP

Nicolls, Michael
New results
Topside Experiments at the Arecibo Observatory

Nikoukar, Romina
New results
A Two-Step Lag-Profile-Based Approach to the Inversion of the Incoherent Scatter Radar Data

Ogawa, Yasunobu
Coupling
Height distribution of naturally enhanced ion-acoustic lines in the polar topside ionosphere

Oikarinen, Antti
Modification
Possible interaction between heating generated VLF signals and chorus

Oikarinen, Antti
Modification
Ten years of Finnish Heating Experiments: From API to ULF

Porteous, Joyce
Structure
Turbulence in the ionospheric F region

Remick, Karen

Coupling

Multivariate analysis as applied to ion upwelling seen in ISR data

Semeter, Joshua

Structure

Peculiar characteristics of polar cap boundary auroras

Singh, Sunil

Structure

Study of very low frequency (vlf) phenomena at Antarctica (Indian Base Station, Maitri)

Szasz, Csilla

Novel apps

Vector Velocity Observations on Meteoroids

Thayer, Jeff

Thermosphere

Observations of E-region neutral winds in the reference frame of the current

Watermann, Jurgen

Coupling

Field-aligned and ionospheric currents inferred from temporally and spatially coincident Ørsted satellite, ground-based magnetometer and Sondrestrom ISR measurements

Zhang, Shun-rong

Thermosphere

Altitude Dependence of Meridional Winds over Millstone Hill

Thursday - 28 August 2003

07:30 – 08:30 Continental Breakfast

Session VI - Ionosphere-magnetosphere coupling / high-altitude physics

Conveners: Ryoichi Fujii (rfujii@stelab.nagoya-u.ac.jp)

Joshua Semeter (Joshua.Semeter@sri.com)

08:30 – 09:00	Jesper Gjerloev (invited)	Ionospheric and Field-Aligned Currents: Results and Methodology
09:00 – 09:15	Matthias Forster	Magnetospheric plasma drift as simultaneously observed by Cluster (EDI) and ground-based radars (SuperDARN) in magnetically conjugate positions
09:15 – 09:30	Tor Hagfors	Effect of Electrojet Irregularities on DC Current Flow
09:30 – 09:45	Stephan Buchert	Dynamics and Energy Balance in the Exterior Cusp and its Ionospheric Footprint
09:45 – 10:00	Kjellmar Oksavi	Mapping of small-scale current and flow dynamics related to a cusp auroral transient
10:00 – 10:15	Nikolai Ostgaard	Reconnection rate determined from EISCAT VHF radar measurements and IMAGE FUV imaging from space
10:15 – 10:45	BREAK	
10:45 – 11:00	Ashok Gwal	Coordinated study of VLF phenomena at low altitude Indian ground stations for the determination of ionospheric parameters
11:00 – 11:15	Ryoichi Fujii	Dependence of electromagnetic and particle energy input to the ionosphere and the electric field on ionospheric conditions
11:15 – 11:45	Antonius Otto (invited)	Modeling and Observation of Small Scale Discrete Auroral Structure
11:45 – 12:00	Joshua Semeter	Time-dependent current-voltage characteristic derived from ISR measurements of the auroral E-region
12:00 – 12:30	Chuck Carlson (invited)	Properties of Inverted-V versus Alfvén-wave Generated Aurora
12:30 – 13:30	LUNCH	

Session VII - Structure and dynamics of the aurora and polar ionosphere

Conveners: Ian McCrea (ian@eiscat.ag.rl.ac.uk)

Dirk Lummerzheim (lumm@gi.alaska.edu)

13:30 – 13:55	Jouni Joussila (Invited)	EISCAT and Optical Observations of Rayed Auroral Arcs
13:55 – 14:10	Tom Grydeland	Fine-structure of intense field-aligned currents in the ionospheric cusp region detected by EISCAT radar and Oersted satellite observations
14:10 – 14:35	Unni Pia Løvhaug (Invited)	High resolution observations of naturally enhanced ion acoustic echoes and their relation to aurora
14:35 – 14:50	Joyce Porteus	Observations of anomalous spectra as a signature of ionospheric activity
14:50 – 15:05	Ludmila Kagan	Origin of type-2 thermal-ion upflows in the auroral ionosphere
15:05 – 15:20	Shin-ichiro Oyama	Effects of the ion composition ratio on the ion temperature in the polar E-F transition region
15:30 - 15:50	BREAK	
15:50 - 16:05	Kazuhiro Adachi	A comparison between energy parameters of precipitating electrons derived with the EISCAT UHF radar and a multi-wavelengths photometer
16:05 - 16:30	Betty Lanchester (Invited)	The signatures of proton and electron precipitation over Svalbard
16:30 - 16:45	Sophie Cash	Evolving magnetic resonance features at auroral latitudes caused by changes in Ionospheric Alfvén Resonator morphology
16:45 - 17:00	Kjellmar Oksavik	A new technique for monitoring polar cap patches with the EISCAT Svalbard and Mainland radars
17:00 - 17:15	Richard Sims	Plasma structure of the dayside high-latitude ionosphere under IMF $B_z < 0$
17:15 - 17:30	Solomon Kebede	Simulations of EISCAT CP-3 measurements of localized high ion temperature (hot spot) in the F-region associated with ion drift reversal

Friday - 29 August 2003

07:30 – 08:30 Continental Breakfast

Session VIII - Ionospheric modification

Conveners: Mike Rietveld (mike@eiscat.uit.no)

Tim Bell (bell@nova.stanford.edu)

08:30 – 08:35	Meeting Organizers	Introduction
08:35 – 09:00	Elizabeth Gerken (Invited)	Heater-induced Artificial Airglow Observations at HAARP
09:00 – 09:18	Bjorn Gustavsson	Estimate of the electron distribution during HF pumping from optical observations
09:18 – 09:43	Michael Kosch (Invited)	New Heater induced phenomena near the 4 th gyroharmonic
09:43 – 10:01	Cesar La Hoz (presented by T. Hagfors)	An interferometer experiment to determine possible relations between SEE spectra and their angular distribution.
10:01 – 10:19	N. Bakhmet'eva (presented by L. Kagan)	Sunset-to-Sunrise Dynamics of Midlatitude Sporadic E Layers observed with the API technique
10:19 – 10:45	BREAK	
10:45 – 11:10	Terry Robinson (Invited) (presented by R. Dhillon)	Recent studies of artificial and natural ULF waves with the aid of the Tromsø heater: A review.
11:10 – 11:28	Nataly Blagoveshchenskaya	Phenomena in the ionosphere-magnetosphere system induced by injection of powerful HF radio waves into nightside auroral ionosphere
11:28 – 11:46	Ralph Wuerker	Pulsed energy Storage Antennas for Ionospheric Modification
11:46 – 12:04	Ranvir Dhillon	Observations of time dependence and aspect sensitivity to regions of enhanced UHF backscatter associated with heating
12:04 – 12:22	Michael Rietveld	Heating experiments at Tromsø: present research directions and results
12:30 – 13:30	LUNCH	

Session IX - Ionospheric plasma physics and microphysics

Conveners: Thomas Leyser (tbl@irfu.se)

Jorge L. Chau (chau@geo.igp.gob.pe)

13:30 – 14:00	Jean-Pierre St.-Maurice (Invited)	The effect of E region irregularities on auroral transport properties
14:00-14:30	Francois Forme (Invited)	Zakharov equations to explain naturally enhanced ion acoustic lines
14:30-14:50	Anja Stromme	A wave vector study of the threshold parameters for the generation of naturally enhanced ion acoustic line (NEIAL) in incoherent scatter (IS) radar data. Can NEIAL be observed with the Sondrestom IS radar?
14:50-15:10	Evgeny Mishin:	On plasma kinetics and turbulence effects in auroral and subauroral ionosphere

Session X Meeting Wrap-Up and Discussion

Convenor: Tony van Eyken (Tony.van.Eyken@eiscat.com)

15:30 – 16:45	Panel Discussion	Based on the papers presented or otherwise, we ask a panel composed of the session chairs to identify and rank the 9 topics most likely to provide access to the best science between now and the next EISCAT Workshop.
16:45 – 16:50	Meeting summary (organizers)	Invitation to the next EISCAT Workshop in Sweden 2005