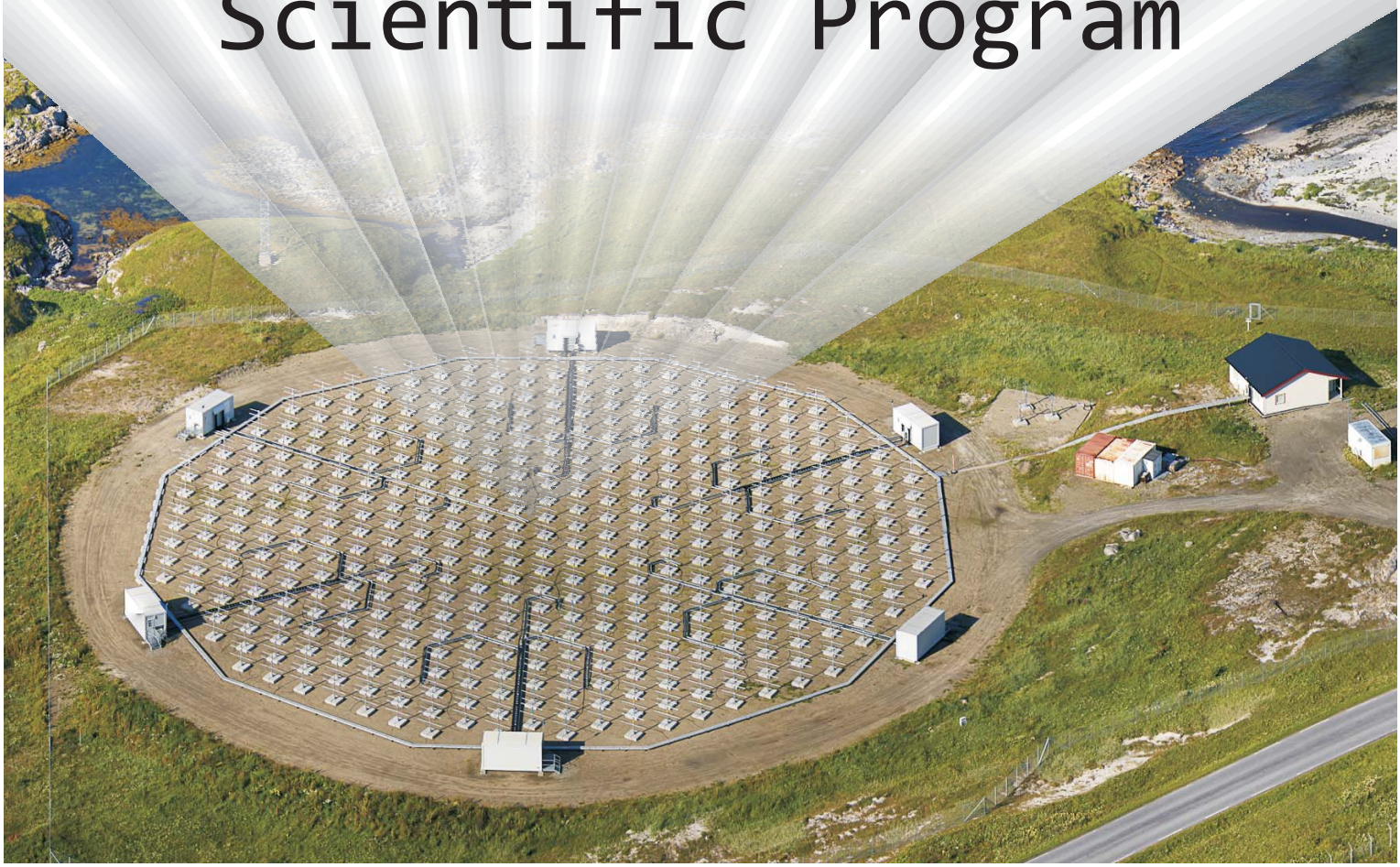
MST 13

13th International Workshop
on Technical and Scientific Aspects of MST Radar
March 19-23 2012 Kühlungsborn

Scientific Program



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LEIBNIZ-INSTITUTE OF ATMOSPHERIC PHYSICS IAP

SCOSTEP
Scientific Committee On Solar-TErrestrial Physics

13th MST radar workshop

March 19 – 23, 2012 Kühlungsborn, Germany

Conference Committees

Scientific Steering Committee

Werner Singer (Co-chair, Germany)
David Hooper (United Kingdom)
Iain M. Reid (Australia)
Toshitaka Tsuda (Japan)
Wayne K. Hocking (Co-chair, Canada)
Erhan Kudeki (USA)
Phillip Chilson (USA)

Scientific Organizing Committee

Werner Singer (Germany)
Madhu Chandra (Germany)
Phillip Chilson (USA)
Wayne K. Hocking (Canada)
Volker Lehmann (Germany)
Markus Rapp (Germany)
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Local Organizing Committee

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Ralph Latteck
Werner Singer
Peter Schubert
Gunter Stober

from the Leibniz Institute of Atmospheric Physics, Kühlungsborn, Germany

13th MST radar workshop

March 19 – 23, 2012 Kühlungsborn, Germany

General Information

Symposium Site

The symposium will take place at:

Upstalsboom Hotelresidenz & SPA Kühlungsborn
Meeting rooms Kühlung I - III
Ostseeallee 21
D – 18225 Ostseebad Kühlungsborn
Fon: +49(0)38293-4299-0 (switchboard)
E-Mail: `hotelresidenz@upstalsboom.de`
`http://www.upstalsboom.de/hotelresidenz/kuehlungsborn`

Registration desk

The registration desk is located in the entrance hall.
Opening hours are as follows:

Sunday,	March 18:	15:00 – 19:00
Monday,	March 19:	7:30 – 18:00
Tuesday,	March 20:	8:00 – 18:00
Wednesday,	March 21:	8:00 – 13:00
Thursday,	March 22:	8:00 – 18:00
Friday,	March 23:	8:00 – 16:00

Participants receiving **travel support** are asked to contact the staff at the registration desk.
If you have any questions do not hesitate to contact the staff at the registration desk.

Internet connection

Wireless LAN is available for the participants of the symposium. The login information will be available at the hotel reception.

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INSTRUCTIONS FOR AUTHORS

Oral Presentations

- **Oral papers will be presented from a central computer system. Therefore you must submit your file(s) to the registration desk at least one day before the presentation ! Note: You cannot use your own laptop etc. for presentation.**
- The time allocated for **tutorial papers** is 40 minutes, including discussion.
- The time allocated for **invited papers** is 22 minutes and for **contributed papers** is 15 minutes, including discussion.

Poster Presentations

- Posters can be mounted before the first session and during the coffee or lunch break.
- The space available on the poster presentation boards is 115cm x 140cm (height x width).

Deutsche Forschungsgemeinschaft
(German Science Foundation)

Leibniz Institute
of Atmospheric Physics
Kühlungsborn

Scientific Committee
on Solar Terrestrial Physics

Monday, March 19, am

Session 2: New instruments, signal processing, and quality control **Chair: I. M. Reid**

07:30 Registration

09:00 Opening session

09:30 Mo-01 Radar Atmospheric Imaging Techniques: An Overview
P. Chilson (**Tutorial lecture**)

10:15 Mo-02 EISCAT-3D: Volumetric imaging radar in Northern Scandinavia for studies of the atmospheric and geospace environment **(invited)**
E. Turunen

10:30 Coffee break

11:00 Mo-03 Atmospheric radar reception using LOFAR technology **(invited)**
D. McKay-Bukowski

11:22 Mo-04 MAARSY - The new MST radar on Andøya: system description and first results **(invited)**
R. Latteck, W. Singer, M. Rapp, T. Renkwitz, G. Stober, M. Zecha

11:44 Mo-05 The program of the Antarctic Syowa MST/IS radar (PANSY) **(invited)**
K. Sato, M. Tsutsumi, T. Sato, T. Nakamura, A. Saito, Y. Tomikawa, K. Nishimura, H. Yamagishi, T. Yamanouchi

12:06 Mo-06 New Equipment and Data Processing Techniques at the University of Adelaide Field Site
I. Reid, B. Dolman, J. Younger, J. Lautenbach, A. MacKinnon

12:21 Mo-07 HCOPAR: Hainan VHF Coherent Scatter Phased Array Radar System Description and First Results
J. Yan, J. Röttger, S. Shang, J. Shi, H. Liu, C. Wang, J. Wu

12:36 Mo-08 Colorado Software Defined Radar: Hardware, Results, Reconfigurabity and Deployment
C. Vaudrin, S. Palo

12:51 poster remarks session 2

13:00 Lunch

Monday, March 19, pm

Session 2: New instruments, signal processing, and quality control **Chair: I. M. Reid**

14:00 Mo-09 Development of 53 MHz Multi-Mode Radar for Atmospheric Probing
P. Srinivasulu, P. Yasodha, P. Kamaraj, M. Rao, S. Reddy, A. Jayaraman, **P. Leena**

14:15 Mo-10 Small Modular 449 MHz Wind Profiling Radar - First Results
B. Dolman, I. Reid, R. Vincent, A. MacKinnon, R. Mayo, G. Jonas, J. Woithe

14:30 Mo-11 Introduction to the Kunming atmospheric radar facility (KARF) and the initial results
J. Chen, **L. Zhao**, N. Li, J. Wu, J. Xu

14:45 Mo-12 The transceiver-based approach to phased array radars - applications and advantages
B. Vandepeer, P. Aryal, A. Murphy, D. O'Connor, B. Fuller

15:00 Mo-13 Boundary layer measurements by the MARA MST radar using a local bistatic technique.
S. Kirkwood, I. Wolf, D. Mikhaylova

15:15 Mo-14 De-noising of atmospheric radar signals using Spectral based sub-space method
V. Sureshbabu, **V. Anandan**, T. Tsuda, J. Furumoto

15:30 Mo-15 Quasi-coherent bistatic radar - implementation and observations
B. Vandepeer, A. Murphy, D. O'Connor, B. Fuller

15:45 Mo-16 RASS optimisation for mid-latitude summers
A. MacKinnon, **B. Dolman**, L. Pederick, I. Reid

16:00 Coffee break and poster viewing

Session 2: New instruments, signal processing, and quality control **Chair: I. M. Reid**

17:00 Mo-17 An FPGA-Based Wind Profiler Controller and Signal Processor
C. Martin, E. Loew, C. Burghart, W. Brown, B. Lindseth

17:15 Mo-18 Adaptive beamforming technique for accurate vertical wind measurements with multi-channel MST radar
K. Nishimura, T. Nakamura, T. Sato, **K. Sato**

17:30 Mo-19 3D-measurement results by MAARSY using radar interferometry methods
M. Zecha, R. Latteck, M. Rapp, W. Singer, G. Stober, T. Renkwitz

17:45 Mo-20 Adaptive suppression of aircraft clutter with the PANSY radar training system
T. Hashimoto, K. Nishimura, K. Sato, T. Sato

18:00 Mo-21 Development of digital radar receiver using software-defined radio technique
M. Yamamoto, H. Hashiguchi, N. Abdul Aziz, Y. Wakisaka, M. Yamamoto

18:15 Mo-22 New Developments and Innovations in VHF Radar
R. Mayo, B. Dolman, G. Jonas, I. Reid, J. Woithe

18:30 Mo-23 Renovation of the Aberystwyth MST radar: Evaluation
D. Hooper, J. Bradford, L. Dean, J. Eastment, M. Hess, E. Hibbett, J. Jacobs, R. Mayo

18:45 discussion session 2

Tuesday, March 20, am

Session 5: Meteorology and forecasting/nowcasting **Chair: W. K. Hocking**

08:30 Tu-01 Observation of turbulence and clouds in the tropics by the Equatorial Atmosphere Radar **(invited)**
M. Yamamoto, H. Hashiguchi, M. Yamamoto, S. Fukao

08:52 Tu-02 Comparison of wind profiler radar measurements with Doppler Wind Lidar profiles measurements at the Lindenberg GRUAN site
R. Leinweber, S. Emeis, B. Stiller, S. Lolli, M. Mauder, L. Thobois, V. Lehmann

09:07 Tu-03 Climatological characteristics of tropospheric- and lower stratospheric- turbulence over Kiruna, Sweden
T. Rao, **S. Kirkwood**

09:22 Tu-04 Vertical flow in atmospheric boundary layer observed by a lower troposphere radar under clear air condition
T. Nakajo, K. Sasaki, Y. Ogura, Y. Saito, H. Hashiguchi, M. Yamanaka, S. Fukao

09:37 Tu-05 Response of tropical lower atmosphere to annular solar eclipse of 15 January, 2010
G. Dutta, P. Kumar, M. Ratnam, S. Mohammad, M. Kumar, P. Rao, H. Basha

09:52 Tu-06 Further investigation on stratospheric air intrusion in to the troposphere during the episode of tropical cyclone: Numerical simulation and MST radar observations
S. Das, S. Sijikumar, K. Uma

10:07 Tu-07 Meso highs and Meso lows observed over the Indian region during Deep convective conditions
N. Reddy, K. Rao

10:22 poster remarks session 5

10:30 Coffee break

11:00 Tu-08 Impact of Meso-Network Observations on prediction of Extreme Rain Events of the Indian Summer Monsoon during PRWONAM
K. Rao, R. Jacob, **N. Reddy**

11:15 Tu-09 Ground-Based Wind Profiler Radar and Lidar Measurements of Marine Boundary Layer evolution over PALAU in Pacific Ocean
U. Krishna, K. Reddy, R. Shirooka

11:30 Tu-10 Measurement of vertical air velocity and hydrometeor in stratiform precipitation by the Equatorial Atmosphere Radar and polarization lidar
M. Yamamoto, T. Mega, Y. Shibata, M. Abo, H. Hashiguchi, T. Shimomai, Y. Shibagaki, N. Nishi, M. Yamamoto, M. Yamanaka, S. Fukao, T. Manik

11:45 Tu-11 Study of radar bright band and freezing level height
R. Jaiswal, R. Sonia, V. Neela, M. Rasheed, Z. Leena, V. Sowmya

12:00 Tu-12 Single- Compared to Dual-Frequency DSD Retrievals During TWP-ICE
B. Dolman, C. Williams

12:15 Tu-13 Case-study of tropopause fold observation by MARA MST radar at Wasa, Antarctica - comparison with ECMWF and WRF model data.

M. Mihalikova, S. Kirkwood, J. Arnault, D. Mikhaylova

12:30 discussion-1 session 5

13:00 Lunch

Tuesday, March 20, pm

Session 5: Meteorology and forecasting/nowcasting **Chair: W. K. Hocking**

14:00 Tu-14 Higher application of wind profilers to forecasting/nowcasting severe convections and to aviation weather services **(invited)**
M. Ishihara

14:22 Tu-15 Incorporation of O-QNet windprofiler data into numerical forecast models
W. Hocking, P. Taylor, F. Fabry, J. Drummond

14:37 Tu-16 A VHF profiler network study: Upper level divergence and the SW Ontario tornadoes of Aug 2011.
M. Corkum, P. Taylor, Z. Wang, S. Sharma

14:52 Tu-17 Objectives and tasks of the EUMETNET Composite Observing System (EUCOS) **(invited)**
S. Klink, S. Hafner, T. Kleinert

15:14 Tu-18 The challenge of providing continuous high-quality measurements with an operational radar wind profiler network
R. Leinweber, **V. Lehmann**

15:29 Tu-19 The usefulness of model-comparison statistics for wind-profiling radar operators **(invited)**
D. Hooper

16:00 Coffee break and poster viewing

Session 5: Meteorology and forecasting/nowcasting **Chair: W. K. Hocking**

17:00 Tu-20 Australian Government Bureau of Meteorology Next Generation Wind Profiler Network
D. McIntosh

17:15 Tu-21 Monitoring and data assimilation of Wind Profiler **(invited)**
C. Gaffard, D. Simonin, C. Parrett, R. Marriott, D. Klugmann, D. Hooper

17:37 Tu-22 Water vapor analyses in mixed-phase clouds
E. Campos

17:52 Tu-23 Diurnal wind variations in the lower-tropospheric wind over Japan as revealed with wind profilers and analysis/reanalysis data sets
T. Sakazaki, M. Fujiwara

18:07 Tu-24 Diurnal wind variations in the upper-tropospheric and lower stratospheric wind over Japan as revealed with MU radar and five reanalysis data sets
T. Sakazaki, M. Fujiwara, H. Hashiguchi

18:22 discussion-2 session 5

Wednesday, March 21, am

Session 1: Scattering, calibration and microscale processes — Chair: A. Muschinski

08:30 We-01 VHF/UHF Radio-Wave Backscatter from Corrugated Sheets in the Stably Stratified Atmosphere **(invited)**
A. Muschinski

09:00 We-02 An Investigation of Clear-air Scatter at Radio and Acoustic Frequencies
P. Chilson, C. Wainwright, C. Wilson, T. Bonin, P. Stepanian, D. Russell, A. Frei-Pearson, R. Palmer, E. Fedorovich, D. Scipion

09:15 We-03 Quantifying Atmospheric Turbulence: A validation of the spectral width method with MST radar, boundary layer wind profiler, and aircraft measurements.
C. Lee

09:30 We-04 Small scale turbulence and instabilities observed simultaneously by radiosondes and the MU radar
R. Wilson, H. Luce, H. Hashiguchi, F. Dalaudier, S. Fukao, T. Nakajo, Y. Shibagaki, M. Yabuki, J. Furumoto

09:45 We-05 VHF Radar Scatter Microstructure Measured by Combined Spatial and Frequency Domain Interferometry: A developing approach **(invited)**
J. Röttger

10:07 We-06 Momentum Flux Determination using the Multi-Beam Poker Flat Incoherent Scatter Radar **(invited)**
M. Nicolls, D. Fritts, D. Janches, C. Heinselman

10:30 Coffee break

11:00 We-07 Performance improvement in momentum flux computation time using EV based post beam steering technique derived winds
V. Anandan, K. Shridhar, V. Sureshbabu

11:15 We-08 Validation of the receiving pattern of the MAARSY phased antenna array
T. Renkwitz, R. Latteck, W. Singer, G. Stober

11:30 discussion session 1

Session 4: Plasma irregularities — Chair: E. Kudeki

11:45 We-09 Radar investigations of mesospheric clouds subjected to artificial electron heating- observations and theory. **(invited)**
O. Havnes, C. La Hoz, A. Biebricher, M. Kassa, J. Gumbel

12:07 We-10 Active modification of the D-region ionosphere **(invited)**
A. Kero

Wednesday, March 21, pm

Session 4: Plasma irregularities **Chair: E. Kudeki**

12:29 We-11 ESRAD Radar observations of PMSE during the PHOCUS rocket campaign at ESRANGE on 21 July 2011 07 UTC: preliminary results of coherent radar imaging.
J. Arnault, S. Kirkwood

12:44 We-12 In-situ measurements of small-scale structures in neutrals and plasma species during ECOMA-2010
B. Strelnikov, A. Szewczyk, M. Rapp

12:59 poster remarks session 3 and 4

13:00 Lunch

14:00 Field trip to Warnemünde

Thursday, March 22, am

Session 4: Plasma irregularities — Chair: E. Kudeki

08:30 Th-01 Overview of VHF radar observations of equatorial mesosphere and ionosphere **(invited)**
E. Kudeki, G. Lehmacher, P. Reyes, M. Milla, J. Chau, K. Kuyeng, L. Gezer

08:52 Th-02 Aperture synthesis radar imaging in coherent scatter radars: Results and lessons from Jicamarca **(invited)**
J. Chau, D. Hysell, M. Urco

09:14 Th-03 PMSE - a comparison between ESRAD in Arctic Sweden and MARA at Wasa, Antarctica.
S. Kirkwood, E. Belova, P. Dalin, M. Mihalikova, D. Mikhaylova, H. Nilsson, K. Satheesan, I. Wolf

09:29 Th-04 Spectral characteristics of incoherent scatter radar observations from the D-region
I. Strelnikova, M. Rapp

09:44 discussion session 4

10:00 Th-05 Chemistry of meteor trail formation **(invited)**
J. Plane, W. Feng, D. Janches

10:22 poster remarks session 3

10:30 Coffee break

Session 3: Meteors studied with MST radar — Chair: P. Chilson

11:00 Th-06 60 years of meteor radar at Adelaide **(invited)**
I. Reid

11:22 Th-07 The MU radar meteor head echo analysis technique and the 2009-2010 observation programme **(invited)**
J. Kero, C. Szasz, T. Nakamura, D. Meisel, T. Terasawa, Y. Fujiwara, M. Ueda, K. Nishimura, J. Watanabe

11:44 Th-08 Atmospheric Density and the Height Distribution of Meteor Radar Detections
J. Younger, I. Reid, R. Vincent, D. Murphy

11:59 Th-09 The Effect of Aerosol Absorption on Meteor Decay Times at Different Wavelengths
J. Younger, I. Reid, R. Vincent, D. Murphy

12:14 Th-10 New insights into the ambipolar diffusion of meteor trails
K. Kumar, K. Subrahmanyam

12:29 Th-11 Radar observations of the Perseid meteor shower activity and meteoroid stream structure from the Gadanki MST radar
Y. Ganji, K. Reddy

12:44 discussion session 3

13:00 Lunch

Thursday, March 22, pm

Session 6: Middle Atmosphere Dynamics and Structure **Chair: W. Singer**

14:00 Th-12 Re-examination of observed gravity wave characteristics by using a high-resolution GCM **(invited)**
K. Sato

14:22 Th-13 Satellite observations of gravity wave momentum flux and interpretation by global ray-tracing modeling **(invited)**
P. Preusse, M. Ern, S. Kalisch

14:44 Th-14 Characteristics of high frequency gravity waves observed using simultaneous high resolution radiosonde and MST radar observations
P. Leena, M. Ratnam, B. Murthy

15:00 Th-15 Frequency dependence of gravity wave momentum flux estimates in the lower atmosphere: First observations using MST radar wind data at Gadanki
P. Vinay Kumar, M. Ajay Kumar, P. Rao, S. Mohammad, G. Dutta

15:15 Th-16 The Wave-Driven Circulation and Variability of the Wintertime Arctic Middle Atmosphere
R. Collins, A. Chandran, V. Harvey, K. Mizutani, M. Gerding, G. Baumgarten, A. Stromme, R. Garcia, D. Marsh

15:30 Th-17 Seasonal characteristics of Kelvin-waves in the mesosphere and lower thermosphere (MLT) region over an equatorial station Thumba using SKiYMET meteor wind radar
S. Das, S. Suheela, A. Krishna

15:45 Th-18 Winds, tides and waves in the mesosphere and lower thermosphere over Bear Lake Observatory (42N 111W)
K. Day, M. Taylor, V. Howells, N. Mitchell

16:00 Coffee break and poster viewing

Session 6: Middle Atmosphere Dynamics and Structure — Chair: W. Singer

17:00 Th-19 Annual and interannual variations of mesospheric gravity waves from radar, satellites and models
P. Hoffmann, M. Ern, E. Becker, P. Preusse, M. Rapp

17:15 Th-20 Simultaneous observations of small-scale structures in Mesosphere Lower Thermosphere winds and temperature using Meteor radar and OH day-glow photometer over Thumba (8.50 N, 770 E)
K. Kumar, K. Subrahmanyam, C. Vineeth, T. Pant

17:30 Th-21 High-latitude Observations of Atmospheric Gravity Waves in the Mesopause Region
D. Pautet, M. Taylor, Y. Zhao, W. Pendleton Jr, P. Hoffmann, W. Singer

17:45 Th-22 Comparison of mesospheric gravity wave momentum fluxes derived by MF Doppler radar and meteor radar measurements at 69°N
M. Placke, P. Hoffmann, M. Rapp, W. Singer, R. Latteck

18:00 Th-23 Main characteristics of polar mesosphere summer echoes observed with the MST radar ESRAD, Kiruna, Sweden during 1997- 2011
E. Belova, M. Smirnova, S. Kirkwood

18:15 Th-24 First three - dimensional observations of polar mesosphere winter echoes: Resolving space - time ambiguity
M. Rapp, R. Latteck, G. Stober, P. Hoffmann, W. Singer, M. Zecha

19:30 Conference dinner

Friday, March 23, am

Session 6: Middle Atmosphere Dynamics and Structure — Chair: M. Rapp

08:30 Fr-01 Atmospheric processes and variability up to the lower thermosphere - Numerical studies with HAMMONIA
H. Schmidt (**Tutorial lecture**)

09:10 Fr-02 Long-term variability and trends of mean winds in the mesosphere and lower thermosphere within ±22°
V. Narukull, T. Tsuda, D. Riggin, S. Gurubaran

09:25 Fr-03 Eureka meteor radar temperatures compared with Aura and SABER
C. Meek, A. Manson, W. Hocking

09:40 Fr-04 Recent advances in radar turbulence studies with emphasis on in-situ comparisons **(invited)**
W. Hocking, A. Dehghan

10:02 Fr-05 Solar diurnal tides in the middle atmosphere: Interactions with the zonal-mean flow, planetary waves and gravity waves **(invited)**
U. Achatz, F. Senf, N. Grieger, T. Kessemeier

10:30 Coffee break

11:00 Fr-06 Climatology of the 8-hour solar tide over Central Europe, Collm (51.3°N; 13.0°E)
C. Jacobi, T. Fytterer

11:15 Fr-07 Characteristics of the 'Hiccup' during the fall transition
V. Matthias, T. Shepherd, C. McLandress, P. Hoffmann, M. Rapp

11:30 Fr-08 Long-term variability of 16 day planetary wave in the equatorial mesosphere and lower thermosphere in relation with QBO and SSW events
S. Sundararaman, S. Sundarajan, G. Subaramanian

11:45 Fr-09 Studying mesospheric dynamics from PMSE backscatter using velocity azimuth displays (VAD)
G. Stober, M. Rapp, R. Latteck, W. Singer, M. Zecha

12:00 Fr-10 Planetary wave activity during the summer months of 2007 over Gadanki
M. Ajay Kumar, **G. Dutta**

12:15 Fr-11 Mesosphere vertical velocity and tilts.
C. Meek, A. Manson

12:30 Fr-12 Radar and lidar observations in the summer mesosphere at Davis, Antarctica **(invited)**
F. Lübken, J. Höffner, B. Kaifler, T. Viehl, R. Morris

13:00 Lunch

Friday, March 23, pm

Session 6: Middle Atmosphere Dynamics and Structure — Chair: M. Rapp

14:00 Fr-13 Semi-diurnal tidal coupling at low-latitudes during sudden stratospheric warming events
S. Sridharan, **S. Sathishkumar**, S. Gurubaran

14:15 Fr-14 Diurnal and Seasonal Variability of D-Region Electron Densities at 69°N
W. Singer, M. Friedrich, R. Latteck

14:30 Fr-15 Coordinated observations of mesospheric gravity waves with airglow imager, lidar, and radar
S. Suzuki, T. Nakamura, M. Ejiri, M. Tsutsumi, K. Shoikawa, T. Kawahara

14:45 Fr-16 PMSE observations with the EISCAT VHF and UHF-radars: Ice particles and their effect on ambient electron densities
Q. Li, M. Rapp

15:00 Fr-17 Investigations on the variability of the tropical mesospheric echoes, winds, waves and associated momentum fluxes
S. Eswaraiah, M. Ratnam, B. Murthy, S. Rao

15:15 discussion session 6

15:30 final discussion and closing

16:00 Coffee break and poster viewing

List of Posters

Poster Session on Monday, Tuesday, Thursday and Friday

All Session

P-01 'Sky noise' temperature recorded by the UK MST radar at 46.5 MHz
I. Astin, B. Goudar, D. Hooper

P-02 Detecting low earth orbit (LEO) satellites using UK-based atmospheric radars
J. Eastment, **D. Hooper**, D. Ladd, C. Walden

P-03 Observation of horizontal wind velocities in presence of convective system using multi receiver phased array MST radar system
V. Anandan, V. Sureshbabu, R. Vijayabhaskara

P-04 Comparison of Calibrated Cn2 Measurements and Determination of Kinetic Energy Dissipation Rates from a Relatively High-Density VHF Windprofiler Network in Canada
N. Swarnalingam, **W. Hocking**

P-05 Rain kinetic energy measurement with a UHF wind profiler: application to soil erosion survey of a tropical volcanic island
B. Campistron, A. Réchou

P-06 A new field campaign for tropospheric turbulence studies with the MU radar and intensive insitu observations with RS92G Vaisala radiosondes.
H. Luce, **R. Wilson**, F. Dalaudier, N. Nishi, S. Fukao, M. Yabuki, H. Hashiguchi, J. Furumoto, Y. Shibagaki, T. Nakajo

P-07 Structure and dynamics of air inhomogeneities in the environment of a cirriform cloud from balloon and high-resolution radar measurements
H. Luce, S. Fukao, **M. Yamamoto**, H. Hashiguchi, T. Mega, T. Tajiri, M. Nakazato

P-08 Renovation of the Aberystwyth MST radar: Technical issues
R. Mayo, J. Bradford, L. Dean, J. Eastment, M. Hess, E. Hibbett, D. Hooper, J. Jacobs

P-09 Development and Validation of L-band Active Array Lower Atmospheric Radar Wind Profilers at NARL
P. Srinivasulu, P. Yasodha, P. Kamaraj, T. Rao, S. Reddy, A. Jayaraman, **P. Leena**

P-10 Aspect sensitivity of clear-air measured by coherent radar imaging
J. Chen, J. Furumoto

P-11 Development of turbulence detection and prediction techniques with wind profiler radar for aviation safety
H. Hashiguchi, **K. Higashi**, S. Kawamura, A. Adachi, Y. Kajiwara, K. Bessho, M. Kurosu, M. Yamamoto

P-12 Extraction of horizontal wind velocities from a multi receiver phased array radar system using post beam steering technique and efficiency of various beamforming methods
V. Anandan, V. Sureshbabu, T. Tsuda, J. Furumoto

P-13 Performance analysis of optimum tilt angle with necessary beam configuration to minimize error in measurement of horizontal wind velocities derived by Post Beam Steering technique
V. Sureshbabu, **V. Anandan**, T. Tsuda, J. Furumoto

P-14 Improved performance in Horizontal wind estimation from a multi receiver phased array atmospheric radar system using Spaced Antenna Drift Technique and signal processing approaches
K. Shridhar, **V. Anandan**, T. Tsuda, J. Furumoto

P-15 An inter-comparison of wind velocities in different observation approaches and signal processing techniques using multi receiver phased array MU radar system
K. Shridhar, V. Sureshbabu, **V. Anandan**, T. Tsuda, J. Furumoto

P-16 Good resolution at high power without pulse-coding
W. Hocking, A. Hocking

P-17 A Mini VHF BLR and the known FCA Wind Magnitude Underestimation
B. Dolman, I. Reid, A. MacKinnon

P-18 Conjuring a Gaussian: A new signal processing approach for turbulent Doppler spectra.
C. Lee

P-19 The NCAR 449 MHz Modular Wind Profiler - Prototype and future plans
S. Cohn, W. Brown, B. Lindseth, **C. Martin**

P-20 Advanced Capabilities and applications of the new Digisonde DPS-4D at Juliusruh
J. Mielich

P-21 Separating sky and ground wave in indirect phase height measurements
D. Keuer, J. Trautner

P-23 Implementation, Calibration, and Testing of Range Imaging on the Lindenberg 482-MHz Radar Wind Profiler
P. Chilson, V. Lehmann

P-24 A Model Study on the Measurement Error of Wind Profiling Radar Observations in the Atmospheric Boundary Layer
M. Matsuda, T. Tsuda, K. Higashi, J. Furumoto

P-25 Accuracy of Meteor Shower Velocity Estimates Obtained from the Fresnel Transform Method
J. Younger, I. Reid, R. Vincent, D. Murphy

P-26 The Diffusion of Multiple Ionic Species in Meteor Trails
J. Younger, I. Reid, R. Vincent

P-27 The Role of Sputtering in the Formation of Meteor Trails
J. Younger, I. Reid, R. Vincent

P-28 Estimation of absolute meteor fluxes from specular meteor observations
C. Baumann, G. Stober, R. Latteck, W. Singer

P-29 Interferometric measurements of meteor-head echoes with MAARSY
C. Schult, G. Stober, R. Latteck, W. Singer, M. Rapp

P-30 The errors of meteor radar data
S. Kolomiyets

P-31 Occurrence of mid-latitude field-aligned irregularities observed with VHF coherent scatter ionospheric radar in South Korea
T. Yang, Y. Kwak, J. Lee, Y. Park

P-32 Predicting the occurrence of visual noctilucent clouds
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P-54 Sodankylä-Leicester Ionospheric Coupling Experiment - Selected First Results
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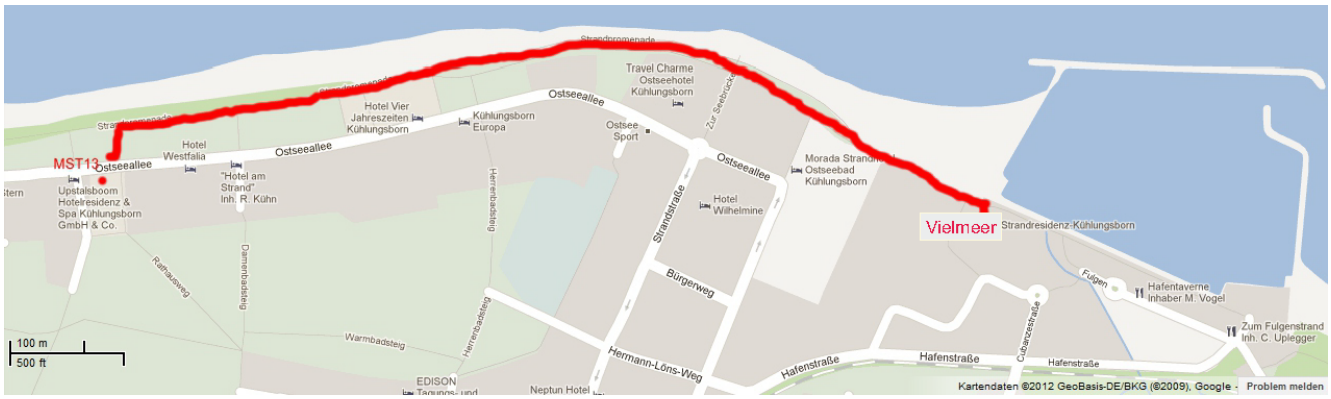
Social Events

Ice breaker party

An ice breaker party is scheduled for Sunday (18 March) at 18:30 in the restaurant "Vielmeer" at the Marina.



Field trip

A field trip is scheduled for Wednesday (21 March) afternoon. Our field trip will start at 14:00 LT at the conference Hotel Upstalsboom. From there we are going by bus to the city harbor of Rostock. At the harbor we will go onboard on a boat of the blue fleet having a guided tour through the Rostock harbor and finally heading towards Warnemünde. Onboard you will get served a piece of traditional German fruit cake and coffee.

The guided boat tour will take us approximately one hour before we arrive at the Warnemünde passenger peer close to the old stream. From there we are going to have a guided city tour through the old fisherman harbor of Warnemünde, which will last approximately one hour. After this sight-seeing tour everyone will have some time to discover the old stream on its own.

At 18:00 LT we will meet again close to the bridge over the old stream (the place where we arrived from our boat tour) to have dinner at a restaurant serving traditional German food. At Wenzels Prager Bierstuben you can choose between three different meals (meat, fish, vegetarian), which will be already prepared when we arrive at the restaurant. So please login to your MST 13 account and select your preferred meal.

At 20:30 LT we plan to go back to Kühlungsborn. The busses for our return will be parked close to the restaurant.

Conference dinner

The conference dinner is scheduled for Thursday, 22 March, 19:30.

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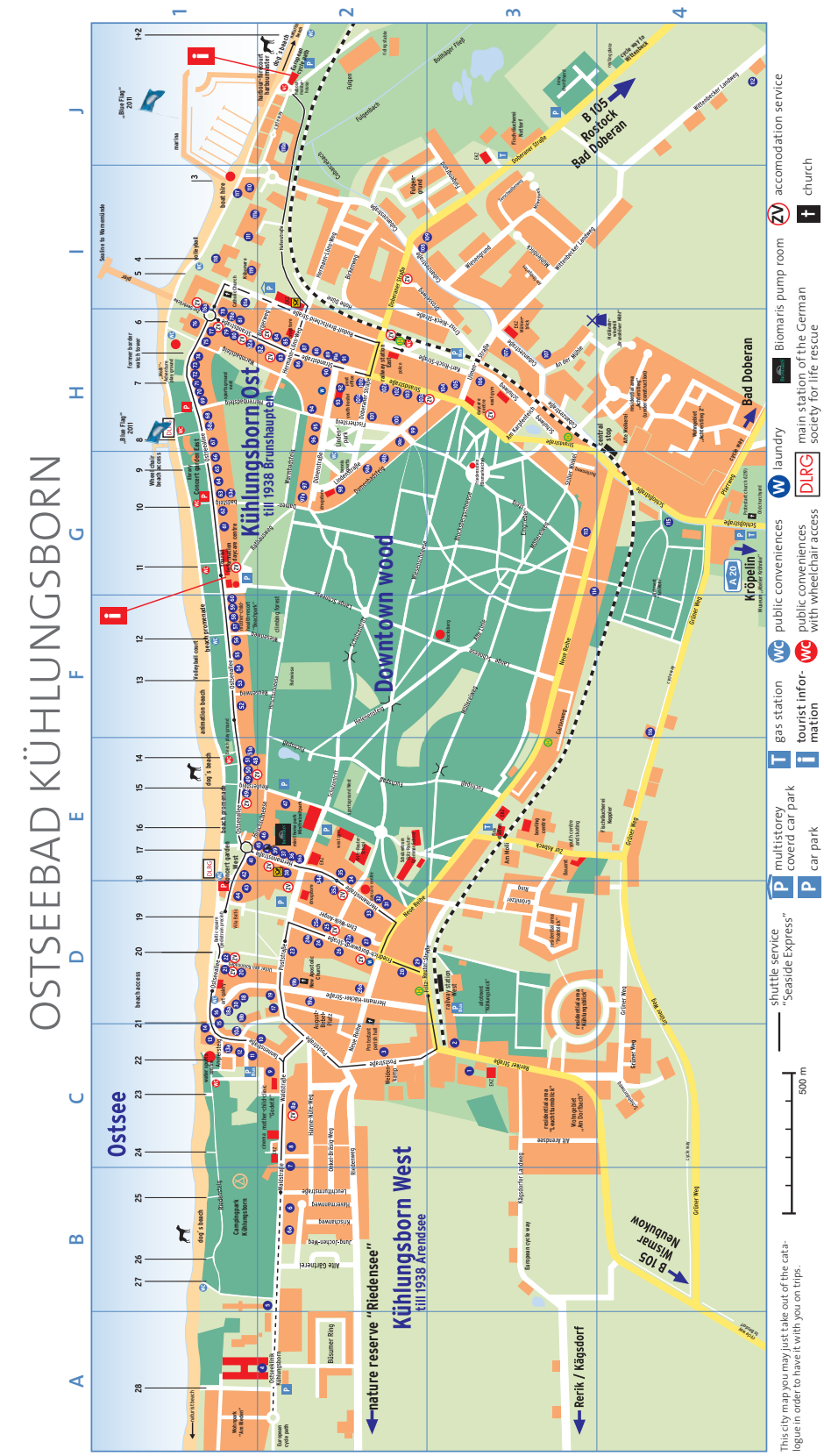
OSTSEEBAD KÜHLUNGSBORN
Ostsee
Kühlungsborn Ost
till 1938 Brunshaupten
Kühlungsborn West
till 1938 Arendsee
Downtown wood
Bad Doberan
B 105
Rostock
Bad Doberan
B 105
Wismar
Neubukow
nature reserve "Riedensee"
Rerik / Kägsdorf
Kröpelin
A 20
shuttle service "Seaside Express"
multistorey coverd car park
car park
gas station
tourist information
public conveniences
public conveniences with wheelchair access
laundry
Biomaris pump room
main station of the German society for life rescue
accomodation service
church
500 m
This city map you may just take out of the catalogue in order to have it with you on trips.

Time Table MST13, 19-23 March 2012

Start	min	Monday, 19.3.	Start	min	Tuesday, 20.3.	Start	min	Wednesday, 21.3.	Start	min	Thursday, 22.3.	Start	min	Friday, 23.3.
			08:30	22	**149 - Yamamoto, M.**	08:30	30	**106 - Muschinski, A.**	08:30	22	**197 - Kudeki, E.**	08:30	40	**196 - Schmidt, H.**
			08:52	15	140 - Leinweber, R.	09:00	15	157 - Chilson, P.	08:52	22	**191 - Chau, J.**			
09:00	30	opening remarks	09:07	15	174 - Rao, T.	09:15	15	103 - Lee, C.				09:10	15	060 - Narukull, V.
09:30	45	**156 - Chilson, P.**	09:22	15	075 - Nakajo, T.	09:30	15	071 - Wilson, R.	09:14	15	019 - Kirkwood, S.	09:25	15	127 - Meek, C.
			09:37	15	040 - Dutta, G.	09:45	22	**038 - Röttger, J.**	09:29	15	137 - Strelnikova, I.	09:40	22	**203 - Hocking, W.**
			09:52	15	050 - Das, S.				09:44	16	discussion session 4			
10:15	22	**178 - Turunen, E.**	10:07	15	062 - Reddy, N.	10:07	22	**189 - Nicolls, M.**	10:00	22	**194 - Plane, J.**	10:02	22	**139 - Achatz, U.**
10:37			10:22	08	poster information	10:29			10:22	08	poster information	10:24		
10:37		coffee break	10:30		coffee break	10:30		coffee break	10:30		coffee break	10:30		coffee break
11:00	22	**195 - McKay-Bukowski, D.**	11:00	15	105 - Rao, K.	11:00	15	055 - Anandan, V.	11:00	22	**177 - Reid, I.**	11:00	15	011 - Jacobi, C.
11:22	22	**142 - Latteck, R.**	11:15	15	092 - Krishna, U.	11:15	15	130 - Renkwitz, T.	11:22	22	**136 - Kero, J.**	11:15	15	125 - Matthias, V.
11:44	22	**023 - Sato, K.**	11:30	15	151 - Yamamoto, M.	11:30	15	discussion & poster				11:30	15	046 - Sundararaman, S.
			11:45	15	012 - Jaiswal, R.	11:45	22	**161 - Havnes, O.**	11:44	15	078 - Younger, J.	11:45	15	133 - Stober, G.
12:06	15	111 - Reid, I.	12:00	15	077 - Dolman, B.	12:07	22	**182 - Kero, A.**	11:59	15	079 - Younger, J.	12:00	15	101 - Ajay Kumar, M.
12:21	15	116 - Yan, J.	12:15	15	024 - Mihalikova, M.	12:29	15	031 - Arnault, J.	12:14	15	089 - Kumar, K.	12:15	15	128 - Meek, C.
12:36	15	020 - Vaudrin, C.	12:30	30	discussion-1 session 5	12:44	15	154 - Strelnikov, B.	12:29	15	013 - Ganji, Y.	12:30	30	**184 - Lübken, F.**
12:51	09	poster information				12:59	01	poster session 3 & 4	12:44	16	discussion session 3			
13:00		lunch break	13:00		lunch break	13:00		lunch break	13:00		lunch break	13:00		lunch break
14:00	15	015 - Srinivasulu, P.	14:00	22	**170 - Ishihara, M.**			Field trip	14:00	22	**146 - Sato, K.**	14:00	15	042 - Sridharan, S.
14:15	15	110 - Dolman, B.	14:22	15	068 - Hocking, W.			to Warnemünde				14:15	15	04 - Singer, W.
14:30	15	047 - Chen, J.	14:37	15	070 - Corkum, M.				14:22	22	**145 - Preusse, P.**	14:30	15	190 - Suzuki, S.
14:45	15	200 - Vandepeer, B.	14:52	22	**188 - Klink, S.**				14:44	16	09 - Leena, P.	14:45	15	135 - Li, Q.
15:00	15	018 - Kirkwood, S.	15:14	15	138 - Leinweber, R.				15:00	15	100 - Vinay Kumar, P.	15:00	15	010 - Eswaraiah, S.
15:15	15	039 - Anandan, V.	15:29	22	**152 - Hooper, D.**				15:15	15	114 - Collins, R.	15:15	15	discussion session 6
15:30	15	199 - Vandepeer, B.	15:51	09					15:30	15	051 - Das, S.	15:30	30	final discussion & closing
15:45	15	169 - MacKinnon, A.							15:45	15	043 - Day, K.			
16:00		coffee & poster	16:00		coffee & poster				16:00		coffee & poster	16:00		coffee & poster
17:00	15	082 - Martin, C.	17:00	15	017 - McIntosh, D.				17:00	15	124 - Hoffmann, P.			
17:15	15	061 - Nishimura, K.	17:15	22	**141 - Gaffard, C.**				17:15	15	091 - Kumar, K.			
17:30	15	181 - Zecha, M.	17:37	15	143 - Campos, E.				17:30	15	193 - Pautet, D.			
17:45	15	022 - Hashimoto, T.	17:52	15	027 - Sakazaki, T.				17:45	15	126 - Placke, M.			
18:00	15	153 - Yamamoto, M.	18:07	15	028 - Sakazaki, T.				18:00	15	132 - Belova, E.			
18:15	15	119 - Mayo, R.	18:22	20	discussion-2 session 5				18:15	15	118 - Rapp, M.			
18:30	15	08 - Hooper, D.	18:42						18:30	60				
18:45		discussion session 2							19:30		conference dinner			

Legend:

session 2 - new instruments	session 5	session 1 - scattering	session 3 - meteor studies	session 6
last minute change	meteorology & forecasting	session 4 - plasma irregularities	conference dinner	middle atmosphere

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