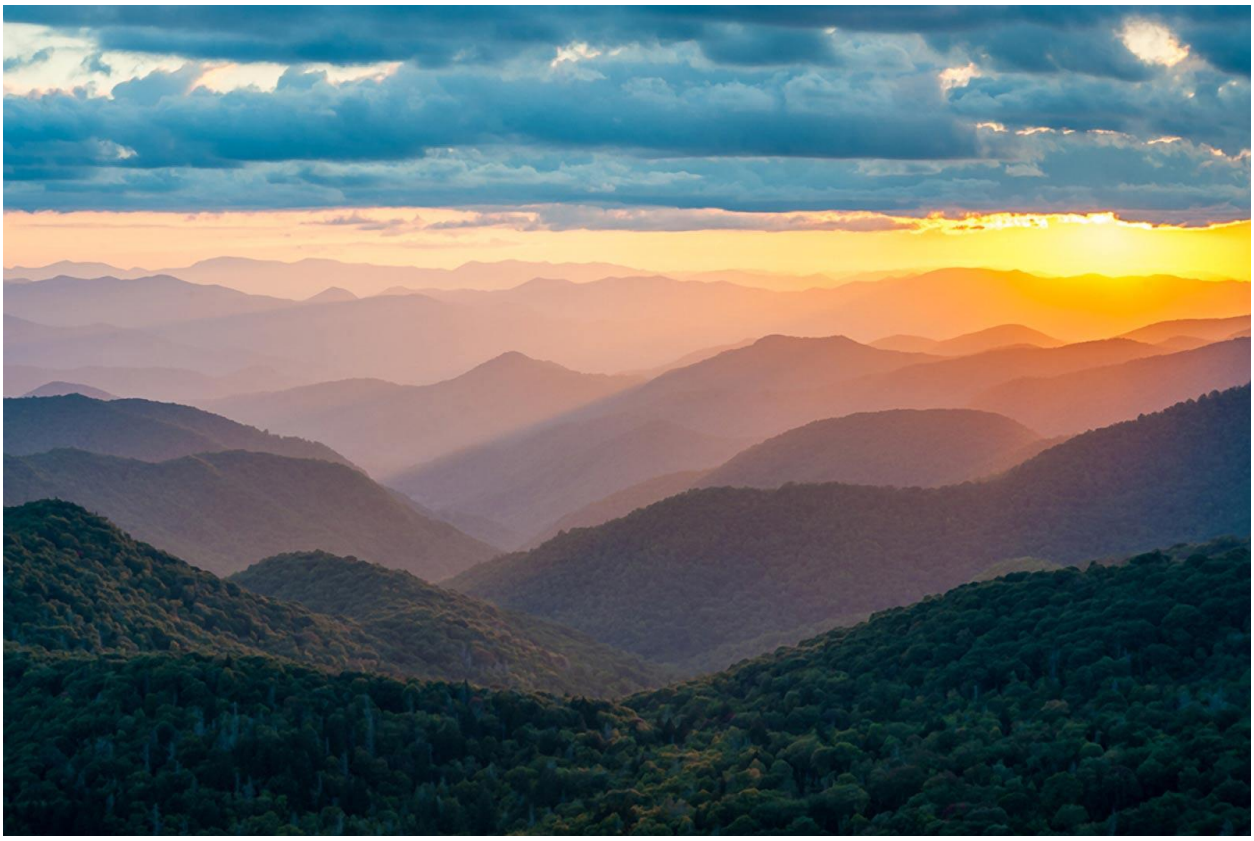
SuperDARN Workshop 2025
Program



June 2-6, 2025

Roanoke, VA

Space @ Virginia Tech
Center for Space Science and Engineering Research

Start	End	Presenter *Authors*	Title
2025/06/01 (Sunday)			
4:00pm	11:00pm	Welcome reception with heavy hors d'oeuvres and (cash) bar Location: aka	
2025/06/02 (Monday)			
Session: Welcome and Reports **9:00 – 10:30am** Chair: Dr. Jo Baker			
9:00am	9:10am	Organizing Committee	Opening Welcome
9:10am	9:20am	Chisham, G.	Introduction by the Chair of the SuperDARN PI Executive Council
9:20am	9:50am	Chisham, G.	Review of the Status of SuperDARN in 2025
9:50am	10:00am	Thomas, E.G.	Scheduling Working Group Report
10:00am	10:10am	Sterne, K.T.	Data Analysis Working Group Report
10:10am	10:20am	Fuli, M.	Data Distribution Working Group Report
10:20am	10:30am	Kunduri, B.	Data Visualization Working Group Report
10:30am	11:00am	**Coffee Break**	
Session: In Memoriam: Dieter Andre and Kathryn McWilliams **11:00am – Noon** Chair: Dr. Mike Ruohoniemi			
		Hussey G.C, Greenwald, R.A.	Reflections on Dieter Andre
		Billet D., Ponomarenko P., Hussey G.C.	Reflections on Kathryn McWilliams
12:00pm	1:30pm	**Lunch Break**	
Session: Technical Developments & Operations **1:30pm – 3:15pm** Chair: Dr. William Bristow			

1:30pm	1:50pm	Chisham, G.	A proposal for a SuperDARN refractive index task force
1:50pm	2:10pm	Thomas, E.G.	On the need for a new working group to consistently and transparently handle external data requests
2:10pm	2:30pm	Galeschuk, D.	On the acceleration of pyDARNio DMAP operations using Rust
2:30pm	2:50pm	Ponomarenko, P.	Utilizing elevation angle for improved SuperDARN velocity and geolocation estimates
2:50pm	3:10pm	Kolkman, T.	Improved Receive Path Amplification Circuitry
3:15pm	3:45pm	**Coffee Break**	
Session: Technical Developments & Operations **3:45pm – 5:15pm** Chair: Kevin Sterne			
3:45pm	4:05pm	Galeschuk, D.	Borealis Update - v1.0 New Capabilities and Enhancements
4:05pm	4:25pm	Hussey, G.C.	On the improvement of simultaneous full field-of-view operations
4:25pm	4:45pm	Ruohoniemi, J.M.	Enhanced operations at Blackstone with USRP-based electronics
4:45pm	5:05pm	Thomas, E.G.	Conversion of Iceland radars to USRP-based electronics and first results
Dinner on your own			
7:00pm	8:00pm	**Scheduling Working Group Meeting** **Crystal Ballroom (D-E)**	
8:00pm	9:00pm	**Data Visualization Working Group Meeting** **Crystal Ballroom (D-E)**	
7:00pm	…	**PI Meeting** **Buck Mountain Room**	
2025/06/03 (Tuesday)			

Session: Geomagnetic Storms & Modeling **9:00am – 10:30am** Chair: Dr. Jiaojiao Zhang			
9:00am	9:20am	Merkin, V.G.	**Invited talk:** Understanding stormtime geospace as a complex system: Recent progress from the Center for Geospace Storms
9:20am	9:40am	Sibeck, D.G.	Dynamics of the Subsolar Magnetosheath
9:40am	10:00am	Foster, J.C.	Multi-Instrument Observations of Stormtime Mid-Latitude Geospace Phenomena
10:00am	10:20am	Kunduri, B.S.R.	An examination of HF radar observations during a super geomagnetic storm
10:30am	11:00am	**Coffee Break**	
Session: Geomagnetic Storms & Modeling **11:00am – Noon** Chair: Dr. Angeline Burrell			
11:00am	11:20am	Lin, D.	MAGE simulation of the effects of subauroral polarization streams (SAPS) on the global thermosphere and ionosphere during geomagnetic storms
11:20am	11:40am	Zhang, J.J.	Observation of Subauroral Polarization Streams Cutoff during Super Geomagnetic Storm
11:40am	Noon	Feng, J.Y.	Rapid Lower Ionospheric Responses to the April 2023 Geomagnetic Storm as Observed by VLF Transmitter Signals
12:00pm	1:30pm	**Lunch Break**	
Session: Convection (Kathryn McWilliams Session) **1:30pm – 3:15pm** Chair: Dr. Gareth Chisham			
1:30pm	1:50pm	Billett, D	New observations and insights from four-second resolution convection maps
1:50pm	2:10pm	Ponomarenko, P.	Determination of Heppner-Maynard boundary: ongoing problems and potential solutions
2:10pm	2:30pm	Bristow, W.A.	Convection Velocity Covariance Estimated from SuperDARN Observations

2:30pm	2:50pm	Nishimura, Y.	High-Time Resolution Ionospheric Convection Associated with Nightside Auroral Intensifications
2:50pm	3:10pm	Hussey, G.C.	TBD
3:15pm	3:45pm	**Coffee Break**	
Session: MI Coupling **3:45pm – 5:15pm** Chair: Dr. Evan Thomas			
3:45pm	4:05pm	Lyons, L.	**Invited talk:** SuperDARN: Observations Demonstrating Meso-scale Coupling from the Polar Cap to Major Auroral Oval Disturbances
4:05pm	4:25pm	Burrell, A.G.	Developing an Empirical Model of Auroral Boundaries
4:25pm	4:45pm	Zou, Y.	Hemispheric symmetry and asymmetry of poleward moving radar auroral forms (PMRAFs) and associated polar cap patches during a geomagnetic storm
4:45pm	5:05pm	Lin, D	Magnetospheric Inputs of Poynting Flux to and Its Effects in the Ionosphere
Dinner on your own			
7:00pm	9:00pm	**Data Analysis Working Group Meeting** **Crystal Ballroom (D-E)**	
		Other WG meeting	
2025/06/04 (Wednesday)			
Session: TIDs & Neutral Atmosphere **9:00am – 10:30am** Chair: Dr. Gareth Perry			
9:00am	9:20am	Frissell, N.A.	**Invited talk:** MSTID Response to Weak Polar Vortex Events as Observed by SuperDARN Radars in the Northern and Southern Hemispheres

9:20am	9:40am	Erickson, P. J.	Recent Studies of Multiscale Cold Plasma Dynamics and TIDs at Subauroral Latitudes
9:40am	10:00am	Wang, W.	Study of Continental-scale Poleward Medium-Scale Traveling Ionospheric Disturbance Observed at Middle latitudes
10:00am	10:20am	Shi, X	Multi-Scale Traveling Ionospheric Disturbances Generated by High-Latitude Ultra-Low-Frequency Waves in Numerical Simulations
10:30am	11:00am	**Coffee Break**	
Session: Multi-Instrument & Collaboration **11:00am – Noon** Chair: Dr. Dave Sibeck			
11:00am	11:20am	Gallardo-Lacourt, B.	**Invited talk:** Exploring the prospects for a vivid collaborative science between the GDC mission and the Ground-Based community
11:20am	11:40am	Hussey, G.C.	Phase and Amplitude Calibration of ICEBEAR and SuperDARN Receiver Arrays Using Aircraft Echoes
11:40am	Noon	Nishitani, N.	Initial results of the Fall 2023 SuperDARN-Arase conjunction campaign: subauroral polarization streams wave structure (SAPSWS)
12:00pm		**Box lunch on buses and excursion to Blacksburg or Cascades hiking**	
4:00pm	8:00pm	**Dinner at Lane Stadium, South Club Room**	
2025/06/05 (Thursday)			
Session: Ionospheric Physics and Irregularites **9:00am – 10:30am** Chair: Dr. Dan Billet			
9:00am	9:20am	Erickson, P. J.	**Invited talk:** Incoherent scatter radar: An invaluable tool in the field of space and plasma physics

9:20am	9:40am	Nishitani, N.	Statistics of dusk scatter echoes including ULF waves
9:40am	10:00am	Emmons, D.J.	GNSS Radio Occultation Measurements of Sporadic-E Layers
10:00am	10:20am	Anderson, T. S.	Artificial field-aligned irregularity generation at HAARP and upcoming bistatic coherent imaging campaign
10:30am	11:00am	**Coffee Break**	
Session: Ionospheric Physics and Irregularities **11:00am – Noon** Chair: Dr. Nozomu Nishitani			
11:00am	11:20am	Zhang, J. J.	Auroral Activity Observed from Unusual Latitudes in China and Its Underlying Significance
11:20am	11:40am	Perry, G. W.	Remote sensing of the ionospheric impact of the April 2024 total solar eclipse
11:40am	Noon	Zayed, G.	Modeling HF Absorption and Signal Variability Through the D, E, and F Layers Using GRAPE Receiver Observations and PHaRLAP Ray Tracing
12:00pm	1:30pm	**Lunch Break**	
Session: Novel Observations & Techniques **1:30pm – 3:15pm** Chair: Dr. Pasha Ponomarenko			
1:30pm	1:50pm	Bailey, S.	Space@VT Overview
1:50pm	2:10pm	Thomas, E. G.	Multi-frequency sounding experiments with SuperDARN radars: Recent results and future directions
2:10pm	2:30pm	Nishitani, N.	SuperDARN HOP radars observation of Ionospheric convection associated with low-latitude auroras
2:30pm	2:50pm	Beser, K.	Automatic detection of polar cap patches in SuperDARN observations

2:50pm	3:10pm	Troyer, R.	Using oblique, bistatic receptions of SuperDARN signals to measure HF propagation in the auroral and polar cap regions
3:15pm	3:45pm	**Coffee Break**	
3:45pm	5:15pm	**Poster Session, Crystal Ballroom Foyer (see poster listing below)**	
6:00pm	10:00pm	**Dinner Banquet Crystal Ballroom**	
2025/06/06 (Friday)			
Session: Open Session **9:00am – 10:00am** Chair: Dr. Bharat Kunduri			
9:00am	9:20am	TBD	
9:20am	9:40am	Greenwald, R.	
9:40am	10:00am	Professor Rabiu	
Session: Planning & Summary **10:00am – 10:40am**			
10:00am	10:20am	TBD	Proposal for SuperDARN 2026
10:20am	10:40am	Chisham, G.	Closing summary by the Chair of the SuperDARN PI Executive Council
11:30am	1:00pm	**Lunch Break Crystal Ballroom**	
1:00pm	10pm	**Optional tour to Blackstone radar site (dinner not included with registration)**	

Posters

Number	Author	Title
1	Billett, D	The 2022 Starlink Geomagnetic Storms: Global Thermospheric Response to a High-Latitude Ionospheric Driver
2	van Wyk, D.J.	Enhanced Capabilities of SANSA's SuperDARN Radar: Dual-Channel, Interferometry, and Expanded Space Weather Observations
3	Chisham, G.	Using vorticity to characterise meso-scale ionospheric flow variations
4	Burrell, A.G.	Automated Identification of Auroral Luminosity Boundaries using pyIntensityFeatures
5	Frissell, N.A.	First Observations Linking Large-Scale Traveling Ionospheric Disturbances to Polar Vortex Strength
6	Burrell, A.G.	Equitable Letters for Space and Physics
7	Shi, X.	Solar flare-induced gradient drift instability observed by SuperDARN HF radars
8	Romanek, V.	An examination of the impact of Strong Thermal Emission Velocity Enhancement (STEVE) on mid-latitude ionosphere
9	Sterne, K.T.	Remote Transmitter Monitoring Project
10	Wanner, T.	A SuperDARN-Based Validation Method for the REMIX Ionospheric Model by Assessing ExB Convection Patterns
11	Sengupta, S.	Probabilistic Regional Forecasting of Geomagnetically Induced Currents (GICs) using a Refined Machine Learning-Based Classifier
12	Pitzl, A.	Analysis of Phase Code Modulation on Optimizing Data Resolution at the Blackstone SuperDARN Site
13	Conti, C.M.	Preliminary Analysis of the Effect of Earth's Magnetic Field on HF Propagation
14	Ruohoniemi, J.M.	
15	Zayed, G.	Investigating Ionospheric D-Layer HF Absorption and Signal Strength Variability Using Great Radio Amateur Propagation Experiment Receivers
16	Zayed, G.	Leveraging GNU Radio and SDR for RF System Prototyping and Front-End Adaptation: A Case Study and Discussion of Design Principles
17	Haralambous, H.	Monitoring plasma drifts over Europe using Digisondes