

**RESEARCH INTERESTS:**

Wave Signature and Propagation using Lomb-Scargle Periodogram Analysis, COSMIC-1/FORMOSAT-3 Data Analysis, MLS-Aura Temperature Analysis, Saber-Timed Temperature and VMR Data Analysis, Spectral Airglow Temperature Imager (SATI), Temperature and Emission Rate Data Analysis, Sudden Stratospheric Warmings (SSW), Millstone Hill ISR and Madrigal Data Base, Equatorial and Midlatitude Spread-F, Digisonde and VIPIR (binary) Data Analysis, Rocket (raw telemetry) Data Processing, Radio Wave Propagation, Pattern Recognition Algorithms, Automated Event Identification Algorithms.

**EDUCATION:**

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| <b>University of Texas at Dallas, Richardson, Texas</b><br>Doctorate of Philosophy in Physics (Space Science) | <b>Dec 2009</b>  |
| <b>University of Texas at Dallas, Richardson, Texas</b><br>Masters of Science in Physics (Space Science)      | <b>Dec 2006</b>  |
| <b>Ryerson University, Toronto, Canada</b><br>Bachelor of Engineering, Electrical and Computer Engineering    | <b>June 2004</b> |

**RELEVANT WORK EXPERIENCE:****Center for Research in Earth and Space Science (CRESS), York University, Toronto, Canada****Research Associate** **May 2014-Till Date**

- Analyzing COSMIC-1/FORMOSAT-3 Satellite data to determine the global variation and the planetary wave analysis of the electron density over the northern hemisphere latitude bands. (supervisor: Dr. Marianna Shepherd).
- Analyze SATI (Spectral Airglow Temperature Imager) data and Millstone Hill Radar data for temperature measurements of the upper atmosphere to determine effects of SSW events.
- Analyze SABER/TIMED and MLS/AURA Satellite data for temperature measurements of the mesosphere.
- Determining wave signatures and propagation in the ionosphere using periodogram analysis.

**Atmospheric and Space Technology Research Associates (ASTRA), Boulder, USA****Consultant** **March 2014-April 2015**

- Provided scientific and software development assistance to ASTRA to support ASTRA's Digisonde and other Data Analysis development (supervisor: Dr. Geoff Crowley).

**Cooperative Institute for Research in Environmental Sciences (CIRES), Boulder, USA  
National Geographic Data Center/NOAA****Postdoctoral Researcher** **Feb 2010-April 2012**

- Designed algorithms to automatically identify spread F under a variety of geophysical conditions for seven monitoring stations in North and Central America. (supervisor: Dr. Terry Bullett)
- Performed statistical analysis of midlatitude spread F and equatorial spread F for more than fifteen years of digisonde data.
- Assisted with field-work in setting up and repairing digisonde antennas.

**University of Texas at Dallas, Department of Physics, Richardson, USA  
William B. Hanson Center for Space Sciences**

**Research Assistant**

**May 2005-2009**

- Performed theoretical and experimental research using ground-based and *in-situ* data. Presented research results at national and international conferences (advisor: Dr. Greg D. Earle).
- **Ground-based:** Developed Matlab routines to identify spread F events using a large set of ionosonde data. Determined solar cycle and seasonal variations of MSF.
- ***In-situ:*** Analyzed rocket data.
- Calibrated electric field channels for sounding rocket experiment.
- Tested boom-hinge deployment system for electric field system.
- Familiarity with the vacuum chamber system.

**Teaching Assistant**

**Jan 2005-April 2007**

- Helped students with problems in Electromagnetism & Waves course.
- Mentored undergraduate student in scientific programming.

**Research Assistant**

**Sep 2004-Dec 2004**

- **Experiments:** Prepared carbon nanotube samples and measured actuation of fibers and films.

**Ryerson University, Electrical Engineering Department, Toronto, Canada**

**Research Assistant**

**May 2003-April 2004**

- **Image Processing:** Researched on Hough Transform algorithms from IEEE publications to develop a program to detect license plates.
- **Bio Medical Research:** Researched ECG Publications from IEEE to assist in development of software.

**Research Assistant**

**May 2002-Aug 2002**

- Wrote algorithms in Matlab to mathematically replicate circuit equations.

**PUBLICATIONS:**

- **Bhaneja, P.**, and Shepherd, M., Global Variation and planetary wave analysis of electron density in Northern-Hemisphere latitude bands using COSMIC-1/FORMOSAT-3 satellite data for seven years from 2009-2015, *In preparation*.
- **Bhaneja, P.**, Earle, G.D., and T.W. Bullett, Digisonde observations of Midlatitude Spread F, *Under Revision*.
- **Bhaneja, P.**, and T.W. Bullett, Detection of fof2 using digisonde and Vipir instruments, *In preparation*.
- Earle, G.D., **P. Bhaneja**, P.A. Roddy, C.M. Swenson, A. Barjatya, R.L. Bishop, T.W., Bullett, R. Redmon, K. Groves, R. Cosgrove, and Sharon, L. Vadas, A Rocket Study of Midlatitude Spread F at Wallops Island, Virginia, *J. Geophys. Res.*, 115, A12339, doi:10.1029/2010JA015503, 2010.
- **Bhaneja, P.**, G.D. Earle, R.L. Bishop, T.W. Bullett, R. Redmon, and J. Mabie, A Statistical Study of Midlatitude Spread F at Wallops Island, Virginia, *J. Geophys. Res.*, 114, A04301, doi:10.1029/2008JA013212.

**CONFERENCE PRESENTATIONS:**

- **Bhaneja, P.**, and T.W. Bullett, Detection of Spread-F and foF2 Values using Digisonde and VIPIR Instruments, Low-latitude Ionospheric Sensor Network (LISN) conference, Sao Paulo Brazil, November 2011.

- **Bhaneja, P.**, and T.W. Bullett, Comparison of Solar Cycle and Seasonal Variations of Midlatitude Spread-F using Ionosonde Data from Four Sites, International Union of Radio Science (URSI) conference, Boulder, January 2011.
- **Bhaneja, P.**, G.D. Earle, R.L. Bishop, P.A. Roddy, C.M. Swenson, and A. Barjatya, Rocket Studies of Midlatitude Spread F, American Geophysical Union (AGU) conference, Dec 2008.
- **Bhaneja, P.**, G.D. Earle, R.L. Bishop, and P.A. Roddy, Rocket and Ionosonde Studies of Midlatitude Spread F, CEDAR (Coupling, Energetics and Dynamics of Atmospheric Regions) workshop, June 2008.
- **Bhaneja, P.**, G.D. Earle, R.L. Bishop, and P.A. Roddy, Rocket and Ionosonde Studies of Midlatitude Spread F, Space Weather Workshop, May 2008.
- **Bhaneja, P.**, G.D. Earle, and R.L. Bishop, A Statistical study of Midlatitude Spread F at Wallops Island, Virginia, CEDAR, June 2007.
- **Bhaneja, P.**, G.D. Earle, and R.L. Bishop, Midlatitude Spread F, CEDAR, June 2006.

#### COMMUNITY INVOLVEMENT:

- Reviewed papers for Journal of Geophysics Research, Radio Science and Annales Geophysicae.
- Member of Innovative Grant Proposal review committee at CIRES.
- Member of Outstanding Performance Awards committee at CIRES.
- A team leader for the Women in Physics summer camp (2005-2007).

#### AWARDS:

##### Graduate Student Fellowship

University of Texas at Dallas, Physics Department, Richardson, USA

**2004 – 2009**

##### Aileen Clark Lambie Scholarship

Ryerson University, Women in Engineering Department, Toronto, Canada

**November 2003**

#### TECHNICAL SKILLS:

##### Operating Systems

Windows, UNIX (IBM AIX)

##### Programming Languages

Pascal, C, C++, VC++, FORTRAN,

##### Software Tools

Matlab, Octave, LabVIEW, IDL, Satellite Tool Kit

Dear Sir/Madam:

Thank you very much for your time. I am seeking a job position for a Research Associate or a Scientific Programmer.

My name is Preeti Bhaneja and I have a PhD in Physics (space science) which I obtained from University of Texas at Dallas in December 2009. I worked as a postdoctoral researcher at the National Geophysical Data Center at NOAA from February 2010 – April 2012. I was affiliated with the Cooperative Institute for Research in Environmental Sciences (CIRES) group at University of Boulder, Colorado. I am currently working part-time at York University in Toronto, Canada as a research associate in atmospheric science. I also remotely provided data analysis and assistance at ASTRA in Boulder, Colorado.

In my current research position, I am analyzing COSMIC-1 satellite data to find the electron density variations in the northern hemisphere latitude bands and the planetary wave patterns in these data. I have also been working on wave analysis and studying wave signatures and propagation from the atmosphere to the ionosphere using periodogram analysis. I also worked with Spectral Airglow Temperature Imager (SATI) installed at the Polar Environment Atmospheric Research Laboratory (PEARL) at Eureka. I am also analyzing SABER-TIMED and MLS-AURA satellite data sets to find temperature and emission variations during Sudden Stratospheric Warming (SSW) events as well as Millstone Hill Radar to find temperature in the upper atmosphere. I have had an opportunity to write algorithms for different ground and satellite data sets and analyze them. At Astra, I worked on digisonde, topside sounder and skymap plots.

During my Phd and the postdoctoral research at NOAA I have worked with digisonde (radar) data. I have been involved substantially with statistical analysis of more than 15 years of data for different stations around North and Central America. My paper on this is currently under review in JGR. I have designed algorithms for edge detection and pattern recognition for a geophysical condition using radar data. My first paper in Journal of Geophysical Research (JGR) was based on this study with data from only one station. Bhaneja, P., et al., A statistical study of midlatitude spread F at Wallops Island, Virginia, *J. Geophys. Res.*, 114, A04301, doi:10.1029/2008JA013212.

I have also worked with rocket data which involved working with raw telemetry data in pulse code modulation format and then converting it to telemetry volts form and then rotating it into geographic coordinates using a direction cosine matrix. My paper in JGR was based on the geophysical condition with rocket data and its comparisons with various ground based data. Earle G., and Bhaneja, P., et al., A comprehensive rocket and radar study of midlatitude spread F, *J. Geophys. Res.*, 115, A12339, doi:10.1029/2010JA015503, 2010.

I have coding experience in Matlab, Octave, and FORTRAN, and I had upgraded my ionosonde data extraction algorithms to operate in real-time for users. My goal is to extend my work into scientific modeling and provide the results online for the use of the scientific community. I am skilled in writing bash scripts in the UNIX/LINUX environment and in running complex scientific codes in a real-time environment. I have also analyzed data in the NETCDF format.

In addition to my research experiences, I have also worked on-site in assisting with antenna installation and repairs at Boulder and Puerto Rico. During my graduate time at graduate school, I also got a chance to assist in research involving vacuum chambers.

I have attended quite a few conferences and presented posters and talks. I have also been a reviewer for Radio Science and Annales Geophysicae. In addition, I have also been a part of review committee at CIRES for granting proposals and awards.

I am an independent thinker and worker, and have worked under minimum supervision during my postdoctoral work here at NOAA. I also have good time management skills and I am an efficient team worker. My quality of work shows that I am accurate and detail oriented and have effective analytical skills. I have attached my detailed bio sketch for your kind perusal. I look forward to hearing from you about a possible opportunity to discuss this further. I want to also add here that I am a Canadian citizen.

Sincerely  
Preeti Bhaneja