
# Welcome to CEDAR 2022

- We are committed to providing a safe, open and inclusive workshop environment for everybody. Be kind, respectful, and present in all your interactions.
- All participants are expected to follow the Code of Conduct https://cedarscience.org/code-of-conduct
- You can report any concern using one of the listed options in the Code of Conduct or contact Michelle McCambridge (mmccamb@ucar.edu).

**Enjoy the meeting**

UCAR COMMUNITY PROGRAMS | CPAESS

NSF

# CEDAR Information

## Agenda

https://cedarscience.org/2022-cedar-workshop-agenda

## Sli.do can be used in the plenary session

https://app.sli.do/event/5qywCGUVQ6K8tRUBB85Q9X

## Slack

https://cedarscience.slack.com/ssb/redirect

Use the helpdesk on slack, get information about CEDAR

# CEDAR supports DYNAMIC

- CEDAR community letter in support of the DYNAMIC mission was sent to NASA on June 14, 2022
- The letter was signed by 120 colleagues from 52 institutions, 18 states, and 10 countries
- Many thanks for your enthusiastic support of DYNAMIC!

# CEDAR supports GDC

- CEDAR community has prepared a letter of endorsement of the GDC mission
- By June 19, the letter is signed by 90 colleagues
- Please read and consider signing: https://docs.google.com/document/d/1khh1kVnITd6f-Ffg_2dBXPqrS-sgJ8R2/edit?

# Building DEI Landscape in CEDAR


- Building a safe space: Code of conduct
- Continuing a dialogue: DEI happy hour and workshop
- Supporting those impacted by war and violence
- Anti-racism literacy
- Imposter feelings and stereotype threat
- Microaggression training
- More transparency: Double-blind proposal and review process
- Student and early-career opportunities
- Supporting women and minorities

| | |
|---|---|
| Sunday 15:45 - 16:05 | Active allyship in STEM |
| Sunday 19:00 - 20:00 | Student DEI happy hour |
| Monday 08:55 - 09:15 | Equal Opportunity? The legal inequality of public education & its relationship to the STEM fields |
| Thursday 13:30 - 15:30 | Continuing to evolve: DEI (Diversity, Equity, and Inclusion) in CEDAR |


*****If interested in joining the CEDAR DEI Task Force please contact: Lindsay Goodwin (lindsaygoodw@gmail.com), Mack Jones (mcarthur.jones@nrl.navy.mil, or Julio Urbina (jvu1@psu.edu) to discuss getting involved!*****


# Equitable Letters for Space Physics

**Resources for writing better recommendation and nomination letters with the space physics community**

https://equitableletterssp.github.io/ELSP/

## Our Mission

Encouraging merit-based recommendations and nominations in the space physics community by providing resources and reviews.

## Our People

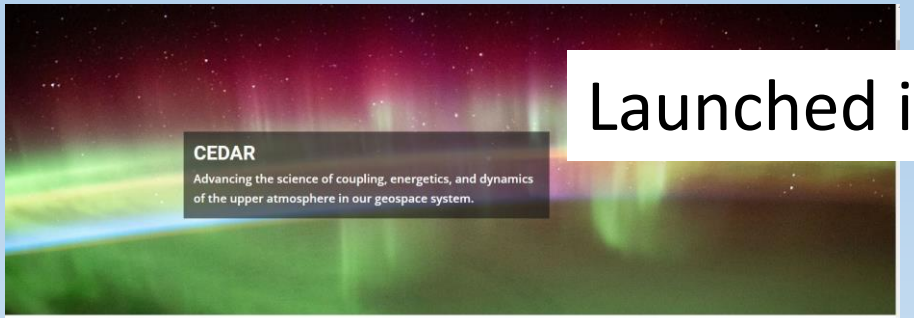
- Dr. Angeline G. Burrell, Ionospheric Researcher (Exec. Dir.)
- Dr. John Coxon, Northumbria University, Magnetospheric Researcher
- Dr. Alexa Halford, NASA Goddard Space Flight Center, Magnetospheric Researcher
- Dr. McArthur Jones Jr., Upper Atmospheric Researcher
- Dr. Kate Zawdie, Ionospheric Researcher

***Please upload/send your letter for review as a text, .docx, or .pdf file to equitable.space.letters@gmail.com. Though we aim for a fast turn-around, nominal review times are 1 month.***

***If you are interested in being a reviewer, please contact us at equitable.space.letters@gmail.com.***

# New CEDAR website - cedarscience.org

Launched in February 2022




We need pictures of your science

## Who We Are

The Coupling, Energetics, and Dynamics of Atmospheric Regions (CEDAR) is a Program fund the National Science Foundation's Atmospheric and Geospace Sciences Division with a miss understand the fundamental properties of the space-atmosphere interaction region; identi

## EDAR Annual Workshop

annual CEDAR workshop, which started as a grassroots initiative in 1986, provides the community an opportunity to self-organize and exchange ideas. With CEDAR's phasis on fostering new ideas, providing a safe space for all participants, and a strong educational component, CEDAR has become the intellectual engine of aeronomy.

workshop includes community organized breakout workshops as well as grand challenge workshops, poster session with a student poster competition, a student day nary ses


## CEDAR Students

Students are a vital part of CEDAR. Two student representatives are on the CEDAR scientific steering committee providing the student perspective and ensuring that student's ideas are heard and acted upon. During the yearly CEDAR workshop CEDAR students organize a student workshop day for and with students. The CEDAR students lead social and networking events at the CEDAR workshop to build a community. Approximately a third of the CEDAR workshop participants are students. Students can apply for travel and housing support to attend the CEDAR workshop, which is supported by NSF. To support students with dependent care responsibility and allow them to fully participate in the CEDAR workshop CEDAR offers dependent care grants.

Resource page is under development & needs community input

## Resources

(This page is under development.)

# Position announcements

# Human Wanted

for hazardous journey, small wages, bitter cold, long months of complete darkness, constant challenges. ~~Safe return doubtful~~, honor and recognition in event of success

9-12 months of deployment to McMurdo, Antarctica as **winter-over**
Job duties: Watching Skies, Running Lasers, Collecting the Best Data
Contacting Professor Xinzhao Chu, CU-Boulder, xinzhao.chu@Colorado.edu

# NSF CEDAR Project

# *A Whole-Atmospheric Perspective on Connections between Intra-Seasonal Variations in the Troposphere and Thermosphere*

P.I., F. Gasperini (OSS)
Co-I., A. Maute (NCAR/HAO)

***Looking for one undergraduate or graduate student for two 2-month experiences at OSS/NCAR during the Summer/Fall 2022 & 2023***

***PROJECT OBJECTIVES***

a. *Provide observational evidence of correlative connections between intra-seasonal variability in the troposphere, mesosphere, and thermosphere.*
b. *Characterize and quantify the intra-seasonal variability in the thermosphere due to global-scale waves excited in the tropical troposphere.*
c. *Identify potential connections with the MJO, QBO, and ENSO.*

VIRGINIA TECH

# PhD Fellowships in Geospace Data Analytics at Virginia Tech

**The Department of Electrical and Computer Engineering at Virginia Tech has funding available for students to enroll in its PhD program and conduct research in the emerging area of geospace data analytics.** Successful applicants will work with faculty in the Center for Space Science and Engineering Research (Space@VT) to conduct fundamental research on space weather specification and forecasting using globally distributed ground- and space-based datasets and numerical simulations. Outstanding candidates with advanced computer programming skills and academic backgrounds in physics or engineering are encouraged to respond. An advertisement with complete application details has been distributed via CEDAR email. **Interested students can contact or look for Dr. Mike Ruohoniemi (mikeruo@vt.edu) to discuss the positions informally at this workshop, from Tuesday onwards.**

# Post-Doctoral Position
# U.S. Naval Research Laboratory

NRL Space Science Division, Washington, DC is looking for a motivated, post-doctoral research associate with an interest in the development and test of space-flight hardware, especially for CubeSat applications

Multiple opportunities in the NRL SSD:

- UV remote sensor development, test and analysis of the ionosphere/thermosphere
- GPS RO sensor development and test
- Miniaturized in situ IT sensor test & development
- Orbital debris detector test & development
- Thermospheric winds research with the NASA ICON MIGHTI team

Positions available through National Research Council (NRC) Research Associateship Program

- Application deadline 1 August (every 3 months)
- Must be US Citizen or US Permanent Resident
- For more info:

http://sites.nationalacademies.org/pga/rap

See Bruce Fritz in person at the Wednesday CEDAR Poster Session (ITIT-12) for more details, or email bruce.fritz@nrl.navy.mil

**Equal Employment Opportunity:**
The United States government does not discriminate in employment on the basis of race, color, religion, sex (including pregnancy and gender identity), national origin, political affiliation, sexual orientation, marital status, disability, genetic information, age, membership in an employee organization, retaliation, parental status, military status or other non-merit factor.

## Opportunity at Naval Research Laboratory (NRL)

https://nrc58.nas.edu/RAPLab10/Opportunity/Opportunity.aspx?LabCode=64&ROPCD=641589&RONum=B7887

**Climate of Earth's Upper Atmosphere**

### Location

Naval Research Laboratory, DC, Space Science

| RO# | Location |
|---|---|
| 64.15.89.B7887 | Washington, DC 203755321 |

### Advisers

| name | email | phone |
|---|---|---|
| Emmert, John T | john.emmert@nrl.navy.mil | 202.767.0467 |
| **McArthur "Mack" Jones Jr.** | mcarthur.jones@nrl.navy.mil | 202-767-6317 |

### Description

The climate of the upper atmosphere (above ~50 km) is studied using a wide variety of contemporary and historical measurements of temperature, composition, and winds. We are interested in the systematic response of the thermosphere and mesosphere to (1) long- and short-term variations in radiative forcing (solar and terrestrial) and in solar wind and magnetospheric energy inputs, (2) anthropogenic composition changes, and (3) the climate and meteorology of the lower atmosphere. This research involves thorough statistical analysis of large and diverse data sets, characterization of significant geophysical variations and mutual biases among the data sets, development of comprehensive empirical models with appropriate physical constraints, assimilation of the data into the models, validation of the models, and comparison with first-principles physics models. A key aspect of the program is the continued development of NRLMSIS, the most comprehensive empirical model of atmospheric temperature and composition and HWM, the only global empirical model of atmospheric winds. These models are used extensively by the scientific and engineering communities in diverse applications such as atmospheric remote sensing, prediction of atmospheric drag on satellites, atmospheric gravity wave research, and ionospheric modeling.

Keywords:
Upper atmosphere; Climate; Thermosphere; Mesosphere; Empirical models; Data analysis; Data assimilation; Space weather;

### Eligibility

Citizenship: Open to U.S. citizens and permanent residents
Level: Open to Postdoctoral applicants

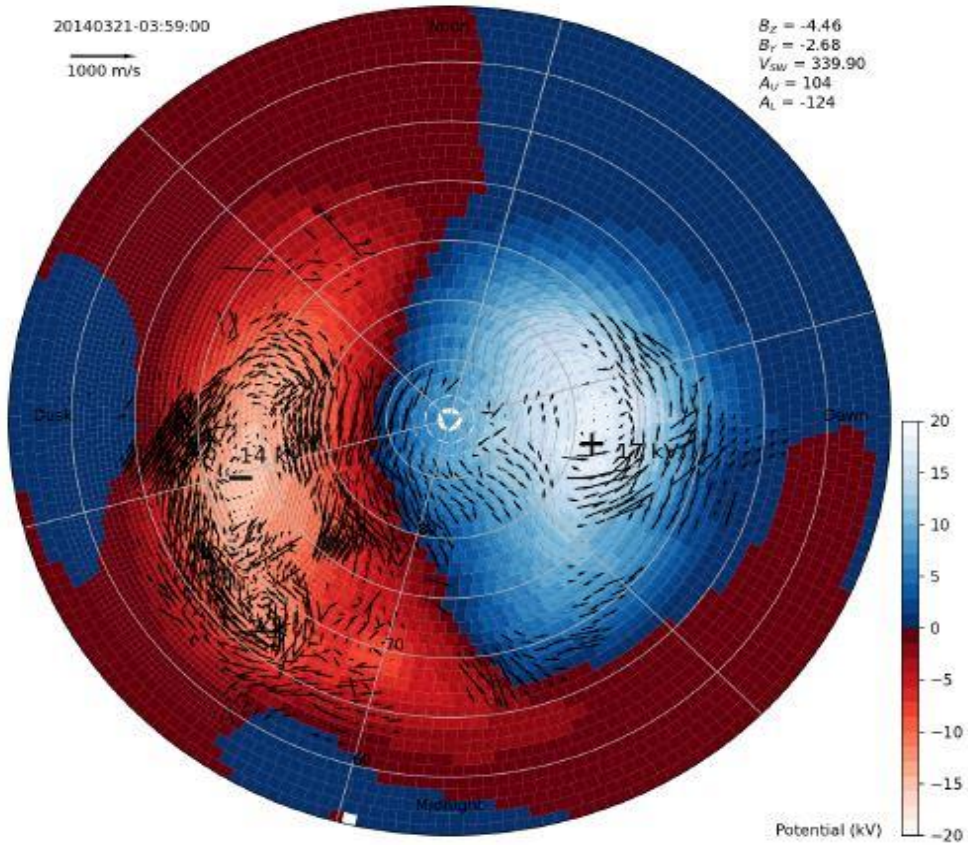
### Stipend

| Base Stipend | Travel Allotment | Supplementation |
|---|---|---|
| $87,198.00 | $3,000.00 | |

# SuperDARN PostDoc at Penn State

Postdoc position in the Department of Meteorology and Atmospheric Science at The Pennsylvania State University. The department operates the SuperDARN radar on Kodiak Island, Alaska, King Salmon, Alaska, McMurdo Station, Antarctica, and South Pole Station, Antarctica. We seek an energetic individual to carry out research using observations from the network. In addition the successful candidate will take part in ongoing hardware and software developments for the radar systems, would be expected to assist with the day-to-day operation of the radars including development of new modes of operation, and assist users of SuperDARN data. The position requires Ph. D. in physics or electrical engineering or related field, a background in data analysis, and will require travel to the radar sites including those in Antarctica. Preference will be given to applicants with experimental experience in radio or radar systems, and background in magnetospheric physics or ionospheric/thermospheric physics.

- Contact Bill Bristow (wab5217@psu.edu)




CENTER FOR

# GEOSPACE STORMS

Transforming the understanding and predictability of space weather

INNOVATE

EMPOWER

DISCOVER

## We are hiring

- Postdoc positions @ JHU/APL (modeling & data analytics)
- Postdoc @ UCLA (Ionosphere/plasmasphere modeling, Prof. Roger Varney)
- Graduate students @
  - VT (Profs. Mike Ruohoniemi & Lenny Smith)
  - Rice U (Prof. Toffoletto)

Contact: slava.merkin@jhuapl.edu

Post Doctoral Fellow - Space Plasmas Data Analyti...

careers.jhuapl.edu

Post Doctoral Fellow - Space Plasmas Theory and S...

careers.jhuapl.edu

JOHNS HOPKINS APPLIED PHYSICS LABORATORY / NATIONAL CENTER FOR ATMOSPHERIC RESEARCH / RICE UNIVERSITY
UNIVERSITY OF CALIFORNIA, LOS ANGELES / SYNTEK TECHNOLOGIES / UNIVERSITY OF NEW HAMPSHIRE / VIRGINIA TECH

# Job Advert:
# Ionosphere-Magnetosphere Coupling

orion SPACE SOLUTIONS

- **Atmospheric & Space Technology Research Associates LLC (formerly 'ASTRA', now 'Orion Space Solutions')**
  Location: Boulder, Colorado area

- **Ionosphere-Magnetosphere Coupling**
  • Use models and data to study the ionosphere, its coupling to the magnetosphere and solar wind, and its effects on space systems.
  • Possible projects: ionospheric electrodynamics, coupling to the magnetosphere and solar wind, SAPS, GICs, polar holes, ionospheric scintillation, thermospheric modelling for satellite drag prediction, data assimilation, machine learning / artificial intelligence technologies, etc.

**Qualifications:** PhD in Ionospheric Physics, Magnetospheric Physics, Atmospheric or Space Sciences, Aerospace Engineering, or related technical field
•Experience: 3+ years beyond PhD

**At the CEDAR Meeting, please reach out to:** **John Noto:** john.noto@orionspace.com
**Federico Gasperini:** federico.gasperini@orionspace.com
**Ryan McGranaghan:** ryan.mcgranaghan@orionspace.com

# Federal Position at NOAA Space Weather Prediction Center

## (application period begins July/August 2022)

### Space Weather Prediction Testbed Lead

**A government Physical Scientist position (GS-13/GS-14) at the NOAA Space Weather Prediction Center in Boulder, CO is expected to be posted this summer. This position will be responsible for shepherding predictive SWx capabilities across the gap between research and operations toward advancing the nations SWx forecasting skill. With a Research-to-Operations (R2O) focus, this scientist will facilitate improvements to the models, observations, and capabilities supporting space weather forecasting through the new Space Weather Prediction Testbed. This is a "permanent" position, meaning it comes with civil service tenure after a one-year probation period. Job application and details will be posted on USAJobs.**

**For more information or questions about the position, please talk to Tzu-Wei Fang during the CEDAR workshop. To get updates regarding the timeline for the posting of this position, please contact Michele Cash michele.cash@noaa.gov**

# Ionospheric Positions in CIRES CU Boulder at NOAA Space Weather Prediction Center

## 1. Space Weather / Ionosphere-Thermosphere Research Scientist

**To advance SWPC's ability to predict the dynamics and response of the ionosphere and atmosphere to space weather as it pertains to impacts on communication, navigation, and satellite drag applications.**

https://jobs.colorado.edu/jobs/JobDetail/?jobId=39319

## 2. Space Weather / Ionosphere Data Scientist

**To evaluate the influence of commercial radio occultation data on the quality of SWPC ionospheric models, products, and services.**

https://jobs.colorado.edu/jobs/JobDetail/?jobId=39768

## For more information or questions, please talk to Tzu-Wei Fang during the CEDAR workshop or contact

**Tim Fuller-Rowell** tim.fuller-rowell@noaa.gov

**Hazel Bain** hazel.bain@noaa.gov

# Today’s program

# Tuesday, June 21, 2022

| Time CDT | Agenda | Presenter / Convener | Room |
|---|---|---|---|
| 8:00 - 9:30 | Plenary (in-person & streamed) | Chair: Julio Urbina | Onyx Ballroom |
| 8:00 - 8:30 | NSF update | Alan Liu, Tai-Yin Huang, TBD | Onyx Ballroom |
| 8:30-8:45 | NASA Heliophysics Division Update | John McCormack (NASA HQ) | Onyx Ballroom |
| 8:45-9:00 | AFOSR update | Julie Moses (AFOSR/RTB) - remote | Onyx Ballroom |
| 9:00 - 9:15 | NOAA's Space Weather Observations Program | Irfan Azeem (Chief of Research to Operations and Project Planning Division) - remote | Onyx Ballroom |
| 9:15-9:30 | LWS Program Analysis Group (LPAG) report | Anthea Coster (MIT, LPAG Co-Chair) | Onyx Ballroom |
| 9:30 - 10:00 | Break | | |
| 10:00 - 12:00 | Grand Challenge-A: Understanding the Electromagnetic Energy Input to Earth's Atmosphere | Alex Chartier (Johns Hopkins U./ Applied Physics Laboratory) | Onyx Ballroom |
| | Upper Atmospheric Response to Geological and Atmospheric Hazards | Sovit Khadka (New Jersey Institute of Technology) | Topaz 3 |
| | Tools and methods for improving space weather nowcast and forecast | Tzu-Wei Fang (Space Weather Prediction Center, NOAA) | Topaz 2 |
| | Understanding Solar eclipse's effects in geospace | Saurav Aryal (LASP) | Topaz 1 |

| | | | |
|---|---|---|---|
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| | Understanding Solar eclipse's effects in geospace | Saurav Aryal (LASP) | Topaz 1 |
| 12:00 - 13:30 | Lunch on your own/ poster judge lunch (Travertine room) | | |
| 12:30 - 13:15 | Townhall: ESA-NASA Lower Thermosphere-Ionosphere (EN-LoTIS) Working Group | John McCormack (NASA HQ) | Onyx Ballroom |
| 13:30 - 15:30 | Grand Challenge-B: Understanding the Electromagnetic Energy Input to Earth's Atmosphere | Alex Chartier (Johns Hopkins U./ Applied Physics Laboratory) | Onyx Ballroom |
| | Dynamics of atmospheric regions as viewed through the recent Eruption at Tonga | Katelynn Greer (LASP) | Topaz 2 |
| | Meteoroids and Space Debris | Sigrid Close (Stanford) | Topaz 1 |
| | Equatorial Ionization Anomaly (EIA) and ionospheric irregularities low and mid latitudes using ground and satellite measurements and modelling studies | Deepak Kumar Karan (LASP) | Topaz 3 |
| 15:30 - 16:00 | Break | | |
| 15:30 - 18:30 | Poster Session | | Topaz Lobby |

# Today’s workshops

# Grand Challenge: Understanding the Electromagnetic Energy Input to Earth's Atmosphere

10:00-12:00 & 13:30-15:30 Onyx ballroom

**Agenda**

15 minute talks with 5 minutes for questions

https://jhuapl.zoomgov.com/j/1615019448?pwd=VFBJaENQV1UxNlNnbklxZ0dRRWc...

Meeting ID: 161 501 9448

Password: 236632

Tuesday 21 June (all times in CDT, GMT-5)

10:00 Yue Deng
10:20 Dan Billett
10:40 Andrei Demekhov
11:00 Gang Lu
11:20 - 12:00 White paper preparation

13:30 Russell Cosgrove
13:50 Sheng Tian
14:10 Rob Pfaff
14:30 Xiaoxin Zhang
14:50 - 15:30 White paper preparation

# Upper Atmospheric Response to Geological and Atmospheric Hazards

10:00-12:00 Topaz 3

**10:00 - 10:10** **Pavel Inchin** (Embry-Riddle Aeronautical University)**:** Upper atmosphere observations and modeling as tools for the investigation of natural hazard-generated acoustic and gravity waves
**10:10 - 10:20** **David Themens** (University of Birmingham, UK)**:** Global Propagation of Ionospheric Traveling Ionospheric Disturbances Associated with the 2022 Tonga Volcanic Eruption
**10:20 - 10:30** **Aa Ercha** (MIT Haystack Observatory)**:** Significant Ionospheric Hole and Equatorial Plasma Bubbles after the 2022 Tonga Volcano Eruption
**10:30 - 10:40** **Claire Gasque** (University of California Berkeley)**:** Rapid Volcanic Modification of the E-Region Dynamo: ICON's First Glimpse of the Tonga Eruption
**10:40 - 10:50** **Jia Yue** (NASA Goddard Space Flight Center)**:** La Soufriere Volcanic Eruptions Launched Gravity Waves into Space
**10:50 - 11:00** **Justin J. Tyska** (The University of Texas at Arlington)**:** Volcano-generated Ionospheric Disturbances: Comparison of GITM-R simulations with GNSS observations
**11:00 - 11:10** **Xing Meng** (JPL/CalTech)**:** Modeling the Co-Seismic Ionospheric Disturbances During the 16 September 2015 Illapel M8.3 Earthquake
**11:10 - 11:20** **Min-Yang Chou** (NASA Goddard Space Flight Center)**:** Ionospheric Conjugate Effect Driven by the 2011 Tohoku Tsunami Induced Gravity Waves
**11:20 - 11:30** **Christopher Heale** (Embry-Riddle Aeronautical University): The upper atmospheric response to severe thunderstorm systems over the summertime continental United States
**11:30 - 11:40** **Olusegun Jonah** (SRI International)**:** Investigating the Ionospheric Perturbation Following the Beirut Explosion Event
**11:40 - 11:50** **Roberto Sabatini** (Embry-Riddle Aeronautical University)**:** Explosions impact on MTI
**11:50 - 12:00** **Kenneth Obenberger** (Air Force Research Laboratory)**:** Clear E Layer Impacts from Conventional Surface Explosions

# Tools and methods for improving space weather nowcast and forecast

10:00-12:00 Topaz 2

**10:00-10:10 The R2O2R Program**
Tzu-Wei Fang (NOAA)
**10:10 - 10:40 Neutral Density**
Richard Linares (Presented by Philip Erickson)
Eftyhia Zesta (Presented by Marcin Pilinski)
Margaret Chen (Join virtually from GEM)
Jeff Thayer (Presented by Eric Sutton)
**10:40 - 11:40 Ionospheric Measurement and Specifications**
Eric Sutton (O2R)
Nathaniel Frissell
Kenneth Obenberger
Jade Morton
Aaron Ridley
Victoriya Makarevich
Erin Lay
**11:40 - 12:00 Ionospheric Irregularity and Scintillation**
Alex Chartier
Eric Sutton (SWQU)

# Understanding Solar eclipse's effects in geospace

10:00-12:00 Topaz 1

**10:00-10:10** Saurav Aryal (UC-LASP), **Introduction to the session**
**10:10-10:25** Nathaniel Frissell
**10:25-10:40** Shunrong Zhang (MIT Haystack Observatory): **Conjugate ionospheric observations at Millstone Hill during the Dec 10 2022 Antarctic solar eclipse**
**10:40-10:55** Joe Huba
**10:55-11:10** Sebastijan Mrak (UC-SWx TREC)
**11:10-11:25** Shibaji Chakraborty: **Coordinated Investigation of Antarctic Total Solar Eclipse (TSE) using SuperDARN HF Radars**
**11:25-11:40** Tong Dang (Zoom): **Magnetosphere-ionosphere-thermosphere response to the 10 June 2021 solar eclipse**
**11:40-11:55** Junjie Chen (Zoom)

# Townhall: ESA-NASA Lower Thermosphere-Ionosphere (EN-LoTIS) Working Group

12:30-13:15 Onyx ballroom

# Grand Challenge-B: Understanding the Electromagnetic Energy Input to Earth's Atmosphere

13:30-15:30 Onyx ballroom

**Agenda**
15 minute talks with 5 minutes for questions
https://jhuapl.zoomgov.com/j/1615019448?pwd=VFBJaENQV1UxNlNnbklxZ0dRRWc...
Meeting ID: 161 501 9448
Password: 236632

Tuesday 21 June (all times in CDT, GMT-5)

13:30 Russell Cosgrove
13:50 Sheng Tian
14:10 Rob Pfaff
14:30 Xiaoxin Zhang
14:50 - 15:30 White paper preparation

# Dynamics of atmospheric regions as viewed through the recent Eruption at Tonga

13:30-15:30 Topaz 2

13:30-13:45 Saurav Aryal (UC-LASP): "Tonga eruption's effects on the thermosphere: GOLD Observations"
13:45-14:00 Shun-Rong Zhang (MIT):
14:00-14:15 Brain Harding (UCB-SSL): "Impacts of the Tonga eruption on the ionospheric dynamo: ICON-MIGHTI an Swarm observations of extreme neutral winds and currents"
14:15-14:30 Corwin Wright (U Bath): "Atmospheric Waves at the Speed Limit"
14:30-14:45 Jia Yue (GSFC & UCA):
14:45-15:00 Min-Yang Chou (UCA):
15:00-15:30 General Discussion

# Meteoroids and Space Debris

13:30-15:30 Topaz 1

**The Zoom link is** https://psu.zoom.us/j/99995976431?pwd=akZNcnh3U09DK1JJN25ESDdMOWVFdz09
**Meeting ID: 999 9597 6431**
**Passcode: 244041**

13:30 - 13:35 Overview & Welcome, Julio Urbina – Penn State/Sigrid Close – Stanford University
13:35 - 14:05 How does Nature Create a Meteor: Evolution from Femtoseconds to Minutes?, Meers Oppenheim – Boston University
14:05 - 14:20 Optical Persistent Trains in Association with Meteor Radio Afterglows (MRAs), Kenneth Obenberger– Air Force Research Laboratory
14:20 - 14:35 Peculiarities of Non-Specular Meteor Radar Echoes, Jorge (Koki) Chau - The Leibniz Institute of Atmospheric Physics (IAP), Meers Oppenheim – Boston University, Kenneth Obenberger– Air Force Research Laboratory
14:35 - 14:50 Space Object Identification with Measurements of Orbit-Driven Waves (SOIMOW), Paul Bernhardt – University of Alaska
14:50 - 15:00 Cost-Effective Spacecraft Drag Sail for Satellite Reentry, Robert Perezalemany – United States Military Academy
15:00 - 15:10 Sporadic Micro-meteoroid Source Radiant Distribution Inferred from the Arecibo 430 MHz Radar Observations, Li, Yanlin; Julio Urbina; Tai-Yin Huang, The Pennsylvania State University, Zhou, Qihou; Miami University
15:10 - 15:25 The Zephyr Meteor Project, Scott Palo et al. – University of Colorado Boulder
15:25 - 15:30 Discussion
15:30 Adjourn

# Equatorial Ionization Anomaly (EIA) and ionospheric irregularities low and mid latitudes using ground and satellite measurements and modelling studies

13:30-15:30 Topaz 1

1. [13:30 - 13:35] - "Welcome and Introduction"
2. [13:35 - 13:50] - **Richard W. Eastes** - “What Controls the Nighttime Equatorial Ionization Anomaly (EIA) Crests’ Latitudes? (in 2020 GOLD Mission Observations)”
3. [13:50 - 14:00] - **Brians Chinonso Amadi** - “Impact of collisions on equatorial plasma bubble (EPB) development during the 02 -06 February, 2022 geomagnetic storm”
4. [14:00 - 14:15] - **Fabiano Rodrigues** - “Low-cost sensors for distributed ionospheric observations: Description and examples of application in low to mid latitude studies"
5. [14:15 - 14:30] - **Ercha Aa** - “Pronounced Suppression and X-Pattern Merging of Equatorial Ionization Anomalies after the 2022 Tonga Volcano Eruption”
6. [14:30 - 14:45] - **Joe Huba** - “SAMI3/HIAMCM simulations of the Tonga event”
7. [14:45 - 14:55] - **Aaron Bukowski** - “Vertical Behavior of TADs/TIDs near the Topside Ionosphere using SAMI3 driven by GITM”
8. [14:55 - 15:05] - **Sevag Derghazarian** - “Lower hybrid waves in high altitude echoes of the inner plasmasphere: Simulations and new experimental results”
9. [15:05 - 15:30] - Discussions and Future Thoughts