



# Geospace Science Update

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NSF AGS



# Outline

- Section Update
  - COVID-19 and DEI
  - Staffing
  - Arecibo
- FY20 Activities
  - Budgets
  - SWQU
- Science Highlights
- Upcoming Opportunities
  - PRF
  - Midscale R1
  - SII
  - DEI
  - Other NSF Wide



# NSF and COVID-19

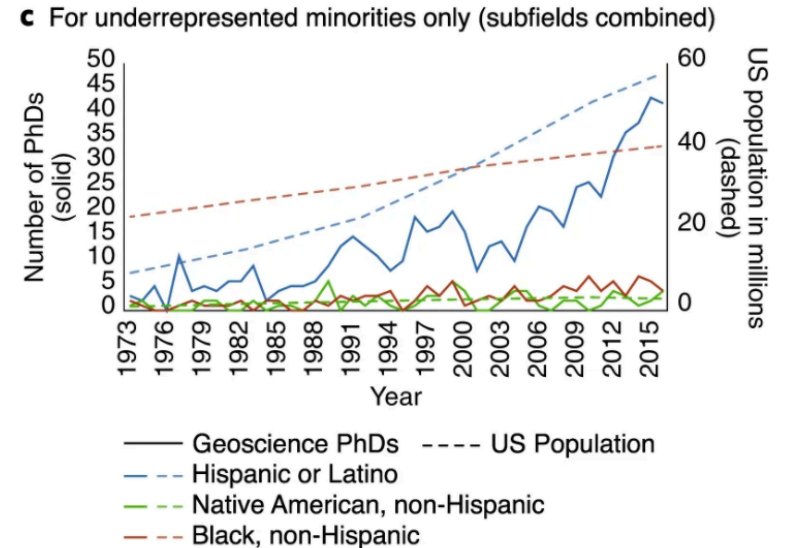
- NSF remains open for business
  - Staff are utilizing telework options to practice social distancing and comply with stay-at-home orders
  - Travel is restricted to essential for preserving life and property through Dec 31
  - Panels and other meetings are using web conferencing technologies
  - New proposals are welcome!!
- [Important Notice No 146](#) has information about NSF implementation of OMB guidance on administrative relief for COVID-19 impacts
  - Google [NSF Coronavirus](#) for website with update info





# Challenging Times

- Current events emphasize the continued presence of racism in our society and the negative effects in our scientific enterprise
- Data show the geosciences is least diverse STEM field with little improvement in last 40 years
- NSF [INCLUDES](#) program and GEO's [GOLD-EN](#) and [GEOPATHs](#) programs are important starting points
- We need to do more to improve diversity, equity, and inclusion in our field



<https://doi.org/10.1038/s41561-018-0116-6>





# Arecibo Update



- Aug 10 Auxiliary Cable failure damaged both the dish and Gregorian Dome
  - Remains offline while stabilization efforts are conducted
  - NSF working closely with AOMT to determine root cause



# AGS and the Geospace Section



AGS Division Director  
Anjuli Bamzai



Section Head  
Michael Wiltberger



Aeronomy  
Alan Liu



Magnetosphere  
Lisa Winter



Solar Terrestrial Research  
Ilia Roussev



Geospace Facilities  
Detailee from OPP  
Robb Moore



Mangala Sharma  
Space Weather



Expert  
John Meriwether



# Quick Facts about FY20

- Overall spending in section was \$55.2M up 8.6% from FY19
  - Reflects significant increase that was invested mainly in the core programs

AER	MAG	STR	SWR	FAC
11.5M	9.7M	9.6M	9.2M	15.1M

- SWR funded several SWQU awards in collaboration with NSF/MPS and NASA
- Additional facts about AER, MAG, STR, SWR grants in 2020
  - 95 new award actions
  - Vast majority of new awards are made as standard grants
  - Section mortgage rate is under control



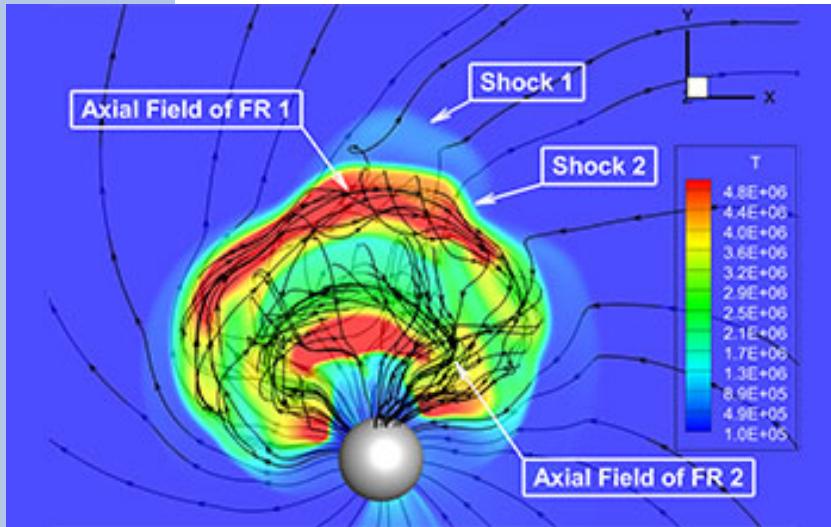


# SWQU Selections

- Partnership between NASA and NSF GEO/MPS Directorates funded 6 awardees efforts to develop next generation space weather models

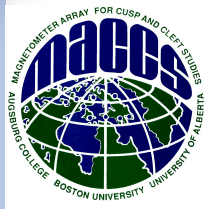
## Awardees

- (NSF+NASA) Improving Space Weather Predictions with Data-Driven Models of the Solar Atmosphere and Inner Heliosphere (PI: N. Pogorelov, U. Alabama at Huntsville)
- (NSF) NextGen Space Weather Modeling Framework Using Data, Physics and Uncertainty Quantification (PI: G. Toth, U. Michigan)
- (NASA) Ensemble Learning for Accurate and Reliable Uncertainty Quantification (PI: E. Camporeale, CU Boulder)
- (NSF) Composable Next Generation Software Framework for Space Weather Data Assimilation and Uncertainty Quantification (PI: R. Linares, MIT)
- (NASA) A Flexible Community-based Upper Atmosphere Ensemble Prediction System (PI: A. Ridley, U. Michigan)
- (NSF) Forecasting Small-Scale Plasma Structures in the Earth's Ionosphere-Thermosphere System (PI: T.-W. Fang; CU Boulder)



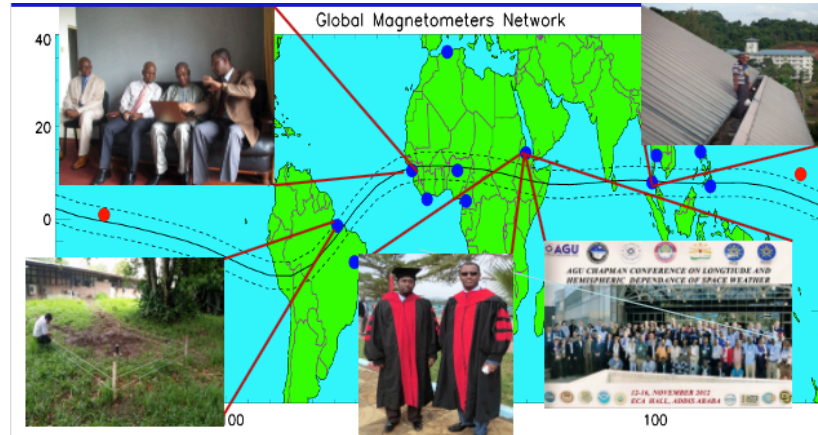


# Magnetometer networks



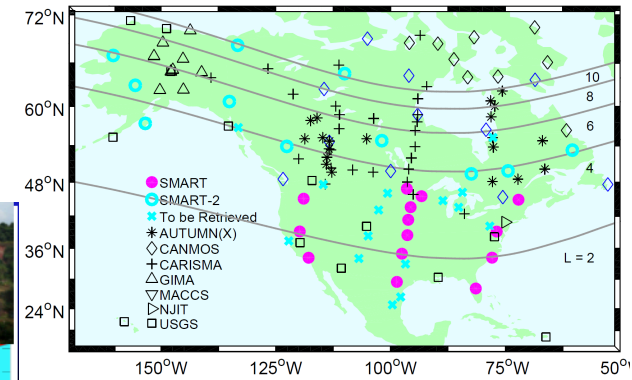
PIs - Moldwin & Engbretson

## AMBER



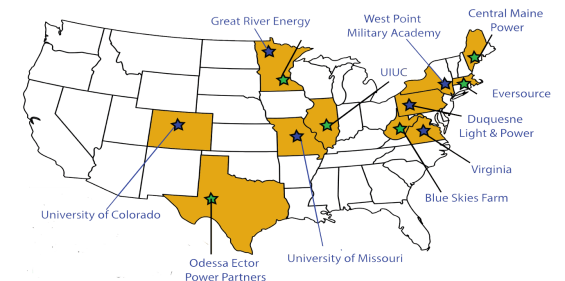
PI - Yizengaw

## SMART



PI - Chi

## MagStar



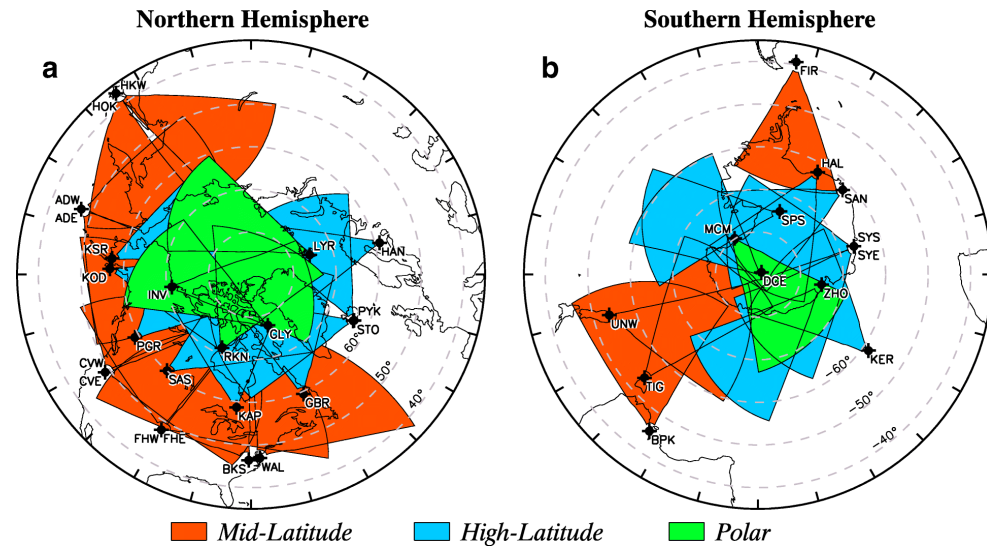
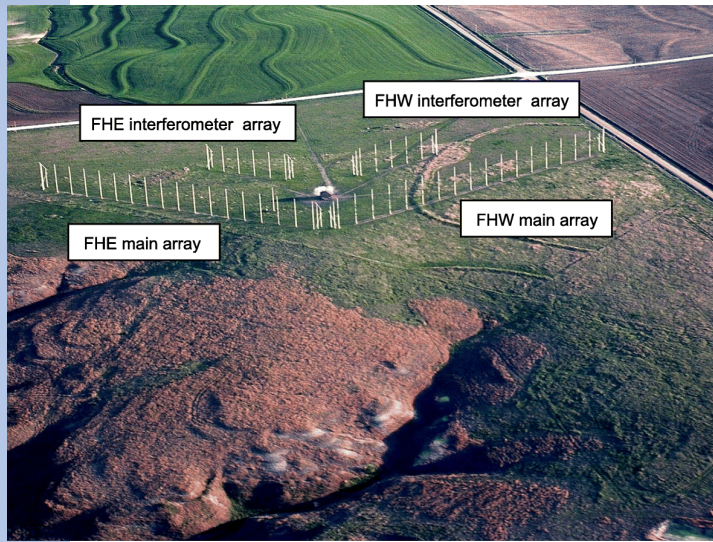
PI - Gannon

- MAG and GFS programs have provided support for multiple magnetometer networks over the past year

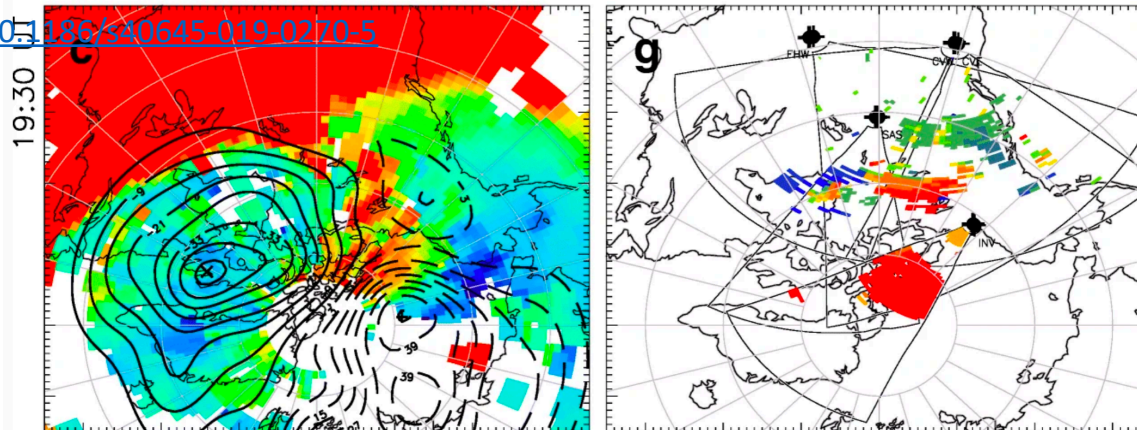




# SuperDARN Renewal

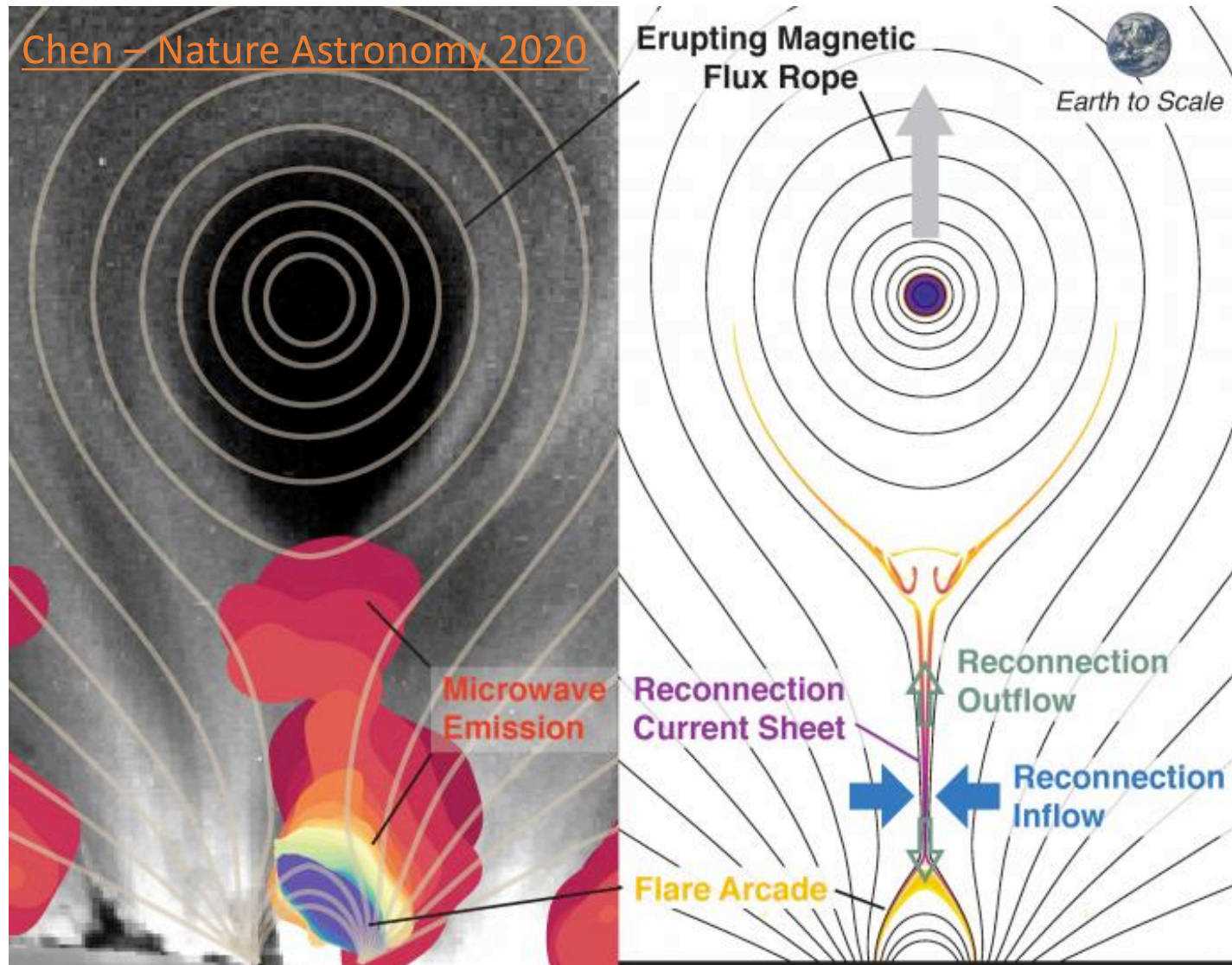


<https://doi.org/10.1186/s40645-019-0270-5>



- NSF awarded 5-year extension (2020-2025) to U.S. SuperDARN consortium: Virginia Tech (PI Ruohoniemi), Dartmouth (Shepherd), Penn State (Bristow) and JHU-APL (Chartier)

# Electron Acceleration in Solar Flares



- Observations from EOVS show that electron acceleration during solar flares is occurring at magnetic bottle at bottom of current sheet





# AGS Postdoctoral Research Fellowships

- After a hiatus the AGS-PRF program has returned to support highly qualified early career investigators independent research efforts
- Solicitation Information
  - Provides two years of support
    - 94K in year 1 and 96K in year 2
  - Award made directly to PI, but need to identify a host institution
  - Graduate student or less than 2 years since PhD to apply
  - No deadlines
  - Google [NSF AGS PRF](#) for more information







# Mid-scale Solicitation

- Mid-scale 1 – NSF 21-505
  - Implementation projects - \$6-20M
  - Design projects - \$600K-20M
  - Preliminary proposals due 1/7/21
  - Google [MSRI1](#) for solicitation
- 2019 Competition Results
  - Received around 250 proposals seeking \$2.5B and 42 were invited to submit
  - 10 Awards totaling \$94M
    - 3 Design projects and 7 implementation projects





# Spectrum Innovation Initiative (SII)

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# Programs for Improving Diversity

- Inclusion across the Nation of Learners of Underrepresented Discoverers in Engineering and Science
  - Broadening participation at scale
  - Enhancing Collaborative infrastructure
  - Supports the [NSF INCLUDES National Network](#)
  - [NSF INCLUDES](#) solicitation has LOI deadline of 10/5/2020
- Improving Undergraduate STEM Education: Pathways into the Earth, Ocean, Polar and Atmospheric & Geospace Sciences
  - Focus addressing critical needs in Geoscience education
  - Pathways for informal networks, undergraduate preparation, graduate opportunities
  - [IUSE:GEOPaths](#) solicitation has a LOI deadline of 11/17/2020





# Programs for Improving Diversity

- Geoscience Opportunities for Leadership in Diversity - Expanding the Network

- Expanding the reach of GOLD efforts through conferences, EAGERS, and RCNs
- GOLD-EN DCL had a submission deadline of 6/26/2020





# NSF Wide Solicitations

- Accelerating Research through International Network-to-Network Collaborations (AccelNet)
  - Support linkage between US and international networks that require coordination on grand research challenges
  - Full proposals due January 4, 2021
- Historically Black Colleges and Universities - Excellence in Research (HBCU- EiR)
  - The program aims to establish stronger connections between researchers at HBCUs and NSF's research programs.
  - LOI – July 22, 2020 and Full Proposals Oct 5, 2020
- Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding Opportunity
  - Provides graduate students opportunity for internship in a non-academic setting





# We need you!



- The heart and soul of the NSF proposal review process is the participation of experts such as yourself
  - Please, please, please agree to contribute ad hoc reviews and join panels
- New solicitations and cross directorate activities are increasing the demand for reviewers
- Thanks to all who have already stepped up!



# Thank you – Questions?

- Happy to provide answers 😊

