

HELIOPHYSICS SUMMER PROGRAM 2018



Picture from the Welcome Event at GIC². June 4th, 2018.

Gremio - The term *gremio* (Spanish word from the Latin *gremium*) or *guild*, was a way to design a specific kind of professional group or community during the medieval period. There was a specific *gremio* for each kind of professional in the cities, and these groups physically organized such cities. Thus, even today, it is easy to identify cities in the Old World with streets dedicated to notary officers, shoemakers or watchmakers. The main goals of the *gremios* or *guilds* were to develop the skills in the apprentices, to train them to be highly qualified professionals, to transfer techniques and knowledge to the apprentices, to prepare the apprentices to be the future *maestros*, and to create a collaborative network between the peers. Each professional was identified by the *gremio* that he/she belonged to.

Today, our science and technology is benefiting by the global interaction and integration between researchers and other professionals at academic institutions, in the private sector and in governments. However, the rapid and unforeseen advances in knowledge and technology create new challenges to society.

Now, our community has been called to prepare the nation to reduce the vulnerability to space weather events. As we see it, as a part of the research community, our main commitment is to advance understanding of the nature of space weather and its effects; to develop the resources and tools to develop the most reliable forecast and predictions; and to prepare the next generation of professionals in our science to continue in such commitments.

Our goal here is to develop a program able to re-connect with the next generation of professionals in our field, to aid mentors in the transfer of knowledge and good scientific conduct, and to create a collaborative network of future scientists. In summary, we seek to create in the Heliophysics Science Division (HSD) a ***Helio-gremio***.

This document summarizes the activities during the period 2017/18 that ends with the 10 weeks period of the summer student program. We are very grateful to all mentors in our division for the outstanding mentorship, the support from the HSD, Office of education, CCMC and CUA administrative team. We specially are thankful to Anna Chulaki and Barbara Thompson for the energy, ideas and teamwork.

Greenbelt, August 21st 2018

Teresa Nieves, Silvina Guidoni, Lizz Bowlen
Bob Robinson, Jeff Brosius

2018 Heliophysics Summer Student Program



<u>Students</u>	<u>Mentors</u>	<u>Students</u>	<u>Mentors</u>
Jake Wilson	Barbara Thompson	Vernon K. Roark	Anna Chulaki
Carina Alden	Nicholeen Viall-Kepko	Austin Skipper	"
Matthew F. Koloner	"	Ryan D. Skoletsy	"
Andrea H. Michael	Robert Candey	Milagros Soto Mendez	"
Coleman Jr., Robert Earl	John cooper	Ryan K. Hughes	Troy D. Cline
Scott Candey	Georgia A. de Nolfo	Devin J. Hoover	Diego Janches
Kaylan Husband	"	Marcus Nash	Sarah L. Jones
John G. Mitchell	"	Andrew M. Leisner	Karin Muglach
Tyler J. McCabe	Lynn B. Wilson	Eliana Krakovsky	Chigomezoyo Ngwira
Nolan W. Smyth		Kehinde G. Owoeye,	"
Ragini Balachandran	Li-Jen Chen	Kathryn Wolfinger	Douglas E. Rowland
Shannon C. Hill	Mei-Ching Fok	Sophia A. Zaccarine	"
Sophia A. Charles	Shing F. Fung F	Juan Figueroa	Rick Mullinix
Andrew Zheng	"		
William Fung	Alex Glocer		
Jacob M. Miller	"		
James K. Pfaff	Kang, Suk-Bin		
Dorian E. Baldwin-Bott	Robert G. Michell		
Fanaye Moore	"		
Adriana Dropulic	Maria Samara		
Ajani B. Smith-Washington	Menelaos Sarantos		
Lee R. Chevres Fernandez	Deirdre E. Wendel		
Rachel Broemmelsiek	Anna Chulaki		
M. Crawford	"		
S. Josie Garcia-Stalker	"		
Reid J. Gomillion,	Chiu Wiegand, Rick Mullinix		
Keyan R. Gootkin	Anna Chulaki		
Beryl Hovis-Afflerbach	"		
Sujay S. Kazi	"		
Patrick G. LaChapelle	"		

<u>Others</u>
Holly R. Gilbert
Douglas M. Rabin
Teresa Nieves-Chinchilla
Silvina Guidoni
Lizz Bowlen
Robert Robinson
Jeff W. Brosius

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BASIC ANNUAL TIMEFRAME (Orange= extended program; Blue=core program)

Date	Action	Documentation
October	Mentors post required student research options on OSSI.	Instructions to sign up as mentor/ post research opportunities.
February	SESI Team solicits intern applications through university contacts, science newsletters, etc.	University Contact .csv files, SESI University Email
Feb-March	Students apply through OSSI.	
Late Feb-March	Mentors interview choice candidates by phone, over Skype, or in person.	
Mid/Late March	SESI Team sends initial request for program participation confirmation to intern candidates.	Funding letter
Mid/Late April	Interns agree to participation in the summer program. Email to mentors to agree rates	
Early May	SESI Team emails Letter 1 to the accepted students.	Letter 1
Mid-May	SESI Team emails Letter 2 packet to students with maps, forms, logistics, transportation help, calendar, etc. The students should return the Emergency Contact Form.	Letter 2, Emergency Contact Forms, GSFC Map, CUA Map, Example Time Sheet
First Week of June	<ul style="list-style-type: none"> • Intern Orientation Day! • NASA GSFC Orientation • CUA/ SESI Orientation • Lunch with Mentors and SESI Team • CUA HR/Payroll filing 	Presentation slides, SESI Program Calendar, I-9s and HR forms
June-July	<ul style="list-style-type: none"> • One lecture per week with Heliophysics scientists • NASA GSFC lectures • Optional Goddard Center tour • At least 2 recreational weekend activities organized by the SESI Team. 	June 13, Code 674. June 20, Director of the Heliophysics Science Division. July 2, Code 671. July 11, Code 672. July 18, Code 673.
Late July-August	<ul style="list-style-type: none"> • Interns give research presentations to mentors, peers, and other scientists. • Heliophysics Division Poster Tour • Poster session is held one week before the program's end. 	
End of Program	<ul style="list-style-type: none"> • Student peer presentation poll • SESI Program evaluation survey • End of Program email sent by SESI Team 	Survey Monkey Poll, SESI Questionnaire, End of Program Letter, Best Presentation Certificate

CRUISE PHASE (during the year)

We are focused on the mentor activities providing support and guidance.

EXTENDED PROGRAM (Previous to the program)

Email to the division to promote the program.

Email 1 to students: Welcome and first instructions.

Funding letter to the Office of Education for those students are coming through the CUA.

Email 2 to students: Welcome package with general information about GSFC, HSD, the program and instructions about the first day of the program. For those students coming through CUA, the package includes the hiring information.

Calendar development, coordinated with OSSI and CCMC.

CORE PROGRAM (10 weeks: 06/04 – 08/10, 2018)

Here are listed the exclusive activities in the HSD that enrich the center educational activities (*see calendar below*).

Week 1: June 4 – 8

M. Jun. 4. 8:00 am, Support for students at visitor center. 11:45 am, Meet students at B8 and walk to B21. 12:00 – 1:00, Orientation at the library GiC² (lunch provided). Group picture.

Week 2: June 11 – 15

June 13. Space Weather Laboratory (Code 674), Lecture, B21 rm183A. "Ion Neutral Mass Spectrometer (INMS): Feeding Data-Hungry Scientists?" (Dr. Sarah Jones), "A Brief Introduction to the Solar Wind (and other things)" (Dr. Aleida Higginson), and "Space weather in a technology dependent society" (Dr. Chigomezoyo Ngwira).

Week 3: June 18 – 22

June 20. Director of the Heliophysics Science Division, Dr. Holly Gilbert (670), Lecture, B21 rm183A. Dr. Gilbert gave an overview of the Heliophysics Division and answered interns' questions about her

career path. The interns introduced themselves to Dr. Gilbert, named their mentors, and described the research they are currently doing.

Week 4: June 25 – 29

Hike organized, but cancelled three times for storms/flooding and park closures.

Week 5: July 2 – 6

July 2. Solar Physics Laboratory (Code 671), Lecture, B21 rm183A. "What is solar activity and why predict it?" (Dr. Dean Pesnell), "Why is the Solar Corona So Hot?" (Dr. James Klimchuk), and "What are photospheric flows and how do we track them?" (Dr. Raphael Attie).

Jul. 9. Picnic at the Pavilion.

Week 6: July 9 – 13

Jul. 11. Heliospheric Physics Laboratory (Code 672) Lecture, B21 rm183A. "Exploring Earth's Radiation Belts with CubeSats - the Newest Generation of Spacecraft" (Dr. Lauren Blum and Dr. Quintin Schiller).

Week 7: July 16 – 20

Jul. 18. Geospace Physics Laboratory (Code 673), Lecture, B21 rm183A. "What do we mean by "Geospace"?" (Dr. William R. Paterson).

Week 8: July 23 – 27

Jul. 23. 9 am. HSD summer interns visit NOAA^(*).

Jul. 25. 10 am. NOAA summer interns visit GSFC during the Jamboree event.

Jul. 27: Poster practice (B21, CCMC & rm 242). CCMC students practice from 1-2 pm in the CCMC lab, and regular students from 3-4:30 pm. (List of abstracts, see *next pages*). A guideline document was prepared by Barbara Thompson.

Group Picture (B21 Main entrance, front page of this report).

Week 9: July 30 – August 3

Aug. 1: Summer interns Poster Session (OSSI activity).

^(*) During the activity one student had an incident reported to the division.

Week 10: August 6 – 10

Aug. 6: Students presentations (B21, rm183A).

1. Sujay Kazi (MIT) - "Analysis of ISS SpaceCube Experiment Mini (ISEM) Upsets"
Mentor: Yihua Zheng, Anna Chulaki, Code 674
2. Beryl Hovis-Afflerbach (HS) - "The Dynamic Behavior of Erupting Solar Prominences"
Mentor: Barbara Thompson, Code 671
3. "Josie" Garcia-Stalker (Brigham Young University, Idaho) and Milagros Soto Mendez (Embry-Riddle Aeronautical University) - "Testing and Prototyping New Space Weather Tools for Magnetic Field Analysis"
Mentor: Yaireska Collado-Vega, Anna Chulaki, Code 674
4. Eliana Krakovsky (University of Maryland) - "Impacts on the ionosphere composition"
Mentor: Chigomezyo Ngwira, Code 674

T., Aug. 7: Graduate Student Panel: All About Grad School. Convener: Barbara Thompson (see next page).

W., Aug. 8: Students presentations (B21, rm183A).

1. Austin Skipper (University of Washington) and Keyan Gootkin (Washington and Lee University) - "eUCLID: the Universal CME model Input Dataset"
Mentor: Leila Mays, Code 674*
2. Juan Figueroa (University of Puerto Rico in Bayamon) and Reid Gomillion (Virginia Polytechnic Institute and State University) - "Web Implementation of Space Weather Prediction Center CME Analysis Tool (SWPC_CAT)"
Mentor: Richard Mullinix, Code 587
3. Andrea Michael (University of Pittsburgh) - "Heliophysics Sonification User Interface in HTML5 and JavaScript"
Mentor: Robert Candey, Code 672
4. Jake Wilson (HS) - "Machine Learning on Solar Eruptive Events: Determining Key Physical Properties from Multi-Instrumental Observations"
Mentor: Barbara Thompson, Code 671
5. Colleen Baldwin (American University) - "Statistical Study of Magnetic Islands Formed During Solar Storms"
Mentor: Silvina Guidoni, Code 674
6. Andrew Leisner (University of Maryland) - "Evolution of Coronal Bright Points"
Mentor: Karin Muglach, Code 674

*Interns also on the project, but did not present: Rachel Broemmelsiek (University of Maryland, College Park) and M. Crawford (Baltimore City Community College).

NOAA EXCHANGE ACTIVITY

Monday, July 23 2018

Visit to NOAA Center for Weather & Climate prediction

Contacts: Genene Fisher, PhD, Executive Officer; 301-683-1323 office; 301-452-7366 cell; genene.fisher@noaa.gov Ashley Burrell; Program Analyst; 301.683.3822 ashley.burrell@noaa.gov; ashley.burrell@cyberdatainc.com.

Time (Approximate)	Location	Event	POC
8:30 am	Lobby	Check In	Ashley Burrell, NCEP
9:00 am (30 min)	Media Center	NCEP 101	Bill Lapenta, NCEP Director
9:30 am (30 min)	Media Center	CPC Briefing	Dave DeWitt, CPC Director
10:00 am (30 min)	Media Center	EMC Briefing	Ivanka Stajner, Director (Acting) EMC
10:30 am (20 min)	4 th Floor Ops Center	OPC Tour	LT Joe Phillips, OPC
10:50 am (20 min)	4 th Floor Ops Center	WPC Tour	Kathy Gilbert, WPC Deputy Director
11:10 am (20 min)	4 th Floor Ops Center	SAB Tour	Juan Velasco and Jay Hanna, SAB
11:30 am	Lobby	Depart	

National Centers for Environmental Prediction (NCEP); Climate Prediction Center (CPC); Environmental Modeling Center (EMC); Ocean Prediction Center (OPC); Satellite Analysis Branch (SAB)



(HSD summer students at NOAA lobby)

Wednesday, July 25 2018

NOAA interns visit Goddard Space Flight Center (GSFC)



(NOAA Interns at GSFC main gate)

Jamboree Activity

<https://science.gsfc.nasa.gov/600/internal/scijamboree2018.html>

Calendar (Brown color indicates HSD activities; Blue color indicates OSSI activities.)

June 2018

Event Key
 -OSSI Events
 -SESI Events
 -Optional Events
 (Sign up as required!)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Sunday
27	28	29	30	31	1	2
3	4 First Day at NASA! GSFC Orientation 9:00am – noon B8 Auditorium SW Bootcamp Begins	5 LGBTQAC Summer Hot Dog Party (RSVP req) 11:30am – 4pm Picnic Pavilion	6	7	8	9
10	11	12 Visitor's Center Tour 1pm – 3pm GSFC Visitor's Center	13 Code 671 Lecture 1:00 – 2:00pm 1B3A	14	15	16
17	18	19 Visitor's Center Tour 1pm – 3pm GSFC Visitor's Center	20 670 Lecture with Dr. Holly Gilbert 10:00 – 11:00am 1B3A	21	22	23
24	25 GSFC Orientation (High School Interns) 9:00am – noon B8 Auditorium	26	27	28 Presenting Technical Information with Dr. Aprille Ericsson 8:00 – 2:00pm B8 Auditorium	29	30

*Dates and times are subject to change. Please continue to reference the OSSI calendar for updates.

July 2018

Event Key
 -OSSI Events
 -SESI Events
 -Optional Events
 (Sign up as required!)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Sunday
1	2 Code 671 Lecture 11:00am – noon 1B3A	3 Visitor's Center Tour 1pm – 3pm GSFC Visitor's Center	4	5 Counterintelligence Awareness Training Bldg TBD, 12:30-1:30pm	6	7
8	9 Engineering Colloquium "Visions of the Future: Graphic Design for NASA, Star Trek, and Beyond" B3 Auditorium, 10 – 11am Intern Picnic 11:00 to 2:30pm Picnic Pavilion	10	11 Intern Project Lifecycle Time/Place TBD Code 672 Lecture 1:00 – 2:00pm, 1B3A	12 High School Intern Career Counseling/ NASA Pathways Presentation 1:00 – 3:00pm B3 Auditorium	13	14
15	16 Intern Lecture with Dr. John Mather 1:00 – 2:30pm B8 Auditorium	17	18 Hubble Telescope Story and Ops Open House, 10am – 3pm B3 Auditorium & Lobby Code 673 Lecture 1:00 – 2:00pm, 1B3A	19 Intern Project Showcase Time/Place TBD	20	21
22	23	24 Intern Project Showcase Time/Place TBD	25 Science Jamboree 10am – 3pm B2B Auditorium	26	27	28
29	30	31 Poster Session Set-up 11am – 2pm B2B Atrium	1	2	3	4

*Dates and times are subject to change. Please continue to reference the OSSI calendar for updates.

August 2018

Event Key
 -OSSI Events
 -SESI Events
 -Optional Events
 (Sign up as required!)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Sunday
29	30	31	1 Summer Intern Poster Session 11am – 4pm B2B Atrium Visitor's Center Tour 1pm – 3pm GSFC Visitor's Center	2 Summer Intern Poster Session 11am – 4pm B2B Atrium	3 Visitor's Center Tour 1pm – 3pm GSFC Visitor's Center	4
5	6 SESI Presentations 12:30 – 3:30pm 1B3A	7 Grad Student Panel for Interns Time TBD 1B3A	8 Summer Intern Closing Ceremony 9am – 10am B8 Auditorium SESI Presentations 12:30 – 3:30pm 1B3A	9	10 Career Fair 9:00am – 11:00am B8 Auditorium	11

*Dates and times are subject to change. Please continue to reference the OSSI calendar for updates.

List of Projects

<u>STUDENT</u>	<u>MENTOR</u>	<u>Code</u>	<u>Title of the Project</u>
Jake Wilson	Barbara Thompson	6710	Machine Learning Applications in Heliophysics Summer Internship SESI
Carina Alden	Nicholeen Viall-Kepko	6710	Coronal Heating and the Origin of the Solar Wind
Matthew F. Koloner	"	6710	Coronal Heating and the Origin of the Solar Wind-2 (High School)
Andrea H. Michael	Robert Candey	6720	SESI - Heliophysics sonification user interface in HTML5 and Javascript- UnderGrad
Coleman Jr., Robert Earl	John cooper	6720	MOO: Radiation Environment Data Model for the Inner Solar System
Scott Candey	Georgia A. de Nolfo	6720	Novel Techniques for Neutron Imaging Spectroscopy
Kaylan Husband	"	6720	UVI - BurstCube Hardware Development : A CubeSat for Gravitational Wave Astronomy
John G. Mitchell	"	6720	Novel Techniques for Neutron Imaging Spectroscopy
Tyler J. McCabe	Lynn B. Wilson	6720	Particle Energization at Heliospheric Shocks
Nolan W. Smyth		6720	Particle Energization at Heliospheric Shocks
Ragini Balachandran	Li-Jen Chen	6730	First impact on Earth's dayside magnetosphere during super magnetic storms
Shannon C. Hill	Mei-Ching Fok	6730	Understanding the Dynamics of Energetic Particles in the Earth's Magnetosphere
Sophia A. Charles	Shing F. Fung F	6730	Characterizing Magnetospheric States
Andrew Zheng	"	6730	Characterizing Magnetospheric States
William Fung	Alex Glocer	6730	Developing Physical Models for Understanding the Space Enviroment
Jacob M. Miller	"	6730	Developing Physical Models for Understanding the Space Enviroment
James K. Pfaff	Kang, Suk-Bin	6730	Charged particle injection to the Earth's Radiation Belts
Dorian E. Baldwin-Bott	Robert G. Michell	6730	Analysis of optical and radar measurements for studying meteors -- HIGH SCHOOL
Fanaye Moore	"	6730	Forest biodiversity studies from airborne hyper-spectral imagery--UNDERGRADUATE
Adriana Dropulic	Maria Samara	6730	Space Plasma Environment Studies : Analysis of charged particle measurements
Ajani B. Smith-Washington	Menelaos Sarantos	6730	MOO: NASA MOO-Howard University Program, Searching for ion emissions from the Lunar Atmosphere
Lee R. Chevres Fernandez	Wendel, Deirdre Ellen	6730	Survey of Whistler Mode Waves Associated with Dipolarization Fronts and Magnetic Reconnection
Rachel Broemmelsiek	Chulaki, Anna	6740	MC3I: Space Weather Forecasting Summer Internship
M. Crawford	"	6740	MC3I: Space Weather Forecasting Summer Internship
S. Josie Garcia-Stalker	"	6740	SESI: Space Weather Forecasting Summer Internship
Reid J. Gomillion,	"	6740	Space Weather Related Web Interface Development Summer Internship
Keyan R. Gootkin	"	6740	SESI: Space Weather Forecasting Summer Internship
Beryl Hovis-Afflerbach	"	6740	SESI: Space Weather Forecasting Summer Internship
Sujay S. Kazi	"	6740	SESI: Space Weather Forecasting Summer Internship
Patrick G. LaChapelle	"	6740	MC3I: Space Weather Forecasting Summer Internship
Vernon K. Roark	Chigomeziyo Ngwira	6740	Space Weather Effects on the Geospace Environment Summer Internship
Austin Skipper	"	6740	SESI: Space Weather Forecasting Summer Internship

Ryan D. Skoletsy	“	6740	MC3I: Space Weather Forecasting Summer Internship
Milagros Soto Mendez	“	6740	SESI: Space Weather Forecasting Summer Internship
Ryan K. Hughes	Troy D. Cline	6740	STEAM Innovation Lab Research Assistant
Devin J. Hoover	Diego Janches	6740	Research on Meteor Science
Marcus Nash	Sarah L. Jones	6740	DSU: Ion Neutral Mass Spectrometer prototyping, testing and calibrating--2
Andrew M. Leisner	Karin Muglach	6740	Study of coronal bright points
Eliana Krakovsky	Chigomezoyo Ngwira	6740	SESI: Geomagnetic storm impact on magnetosphere and ionosphere
Kehinde G. Owoeye,	“	6740	SESI: Geomagnetic storm impact on magnetosphere and ionosphere
Kathryn Wolfinger	Doug E. Rowland	6740	Sounding rocket systems, aerospace, and electrical engineering-2
Sophia A. Zaccarine	“	6740	Sounding rocket systems, aerospace, and electrical engineering-2

Graduate Student Panel: All About Grad School



Convener: Barbara Thompson.

Panel: Emily Mason

Merrill Roberts

Christina Kay

James Mason

Alex Reustle

Lindsey Schiller

Tuesday, 7 August 2018

3:00pm

Building 21 Room 183A

What's Grad School Like? Is it an option for me? If you've considered going on to get your master's or doctoral degree, there are a lot of unknowns. Some have trouble even deciding which questions to ask.

This panel consists of current graduate students and recent graduates, to discuss topics like applying, choosing a school, financial support, choosing a thesis topic/adviser, writing a thesis, and job prospects after graduating. All are welcome to attend.

Topics include:

Financial:

- What funding opportunities are available? (most undergrads don't realize that you can get funding to go to grad school)
- What's a typical grad student budget like?
- Can I afford it?? How do I get help if I need it?
- What's provided, what isn't?

Research:

- How did you choose an adviser? A thesis topic? Any advice?
- How do typical projects proceed?
- What kind of projects make up a thesis project?

Applying:

- Preparing for GREs

- Deciding which places to apply to, and which programs to apply to.
- What factors do schools consider when you submit an application?
- What things are different between grad schools in the U.S. and grad schools abroad?

Life:

- What's it like committing to school for another half decade??
- What other benefits (in addition to education) are there to going to grad school?
- What factors do you want to consider outside of academic things? Things like living in a small town vs. a big city, being near family, extracurricular activities?
- Did you ever consider quitting? What made you stay?

Most importantly:

WHAT DO YOU WISH PEOPLE HAD TOLD YOU WHEN YOU WERE DECIDING WHETHER TO GO TO GRAD SCHOOL?

List of Nuggets

Presentations

On June 13, 2018, Dr. Sarah Jones (674), Dr. Aleida Higginson (670), and Dr. Chigomezyo Ngwira (674) gave presentations to an audience of more than twenty Heliophysics summer interns at NASA Goddard Space Flight Center. These speakers represented the Space Weather Laboratory with the following presentations: "Ion Neutral Mass Spectrometer (INMS): Feeding Data-Hungry Scientists?" (Dr. Jones), "A Brief Introduction to the Solar Wind (and other things)" (Dr. Higginson), and "Space weather in a technology dependent society" (Ngwira).

On June 20, the Director of the Heliophysics Science Division, Dr. Holly Gilbert (670), gave a presentation to the Heliophysics summer interns as part of the lecture series organized by the SESI team - Teresa Nieves-Chinchilla (672/CUA), Silvina Guidoni (674/American University), and Lizz Bowlen (670/CUA). Dr. Gilbert gave an overview of the Heliophysics Division and answered interns' questions about her career path. The interns introduced themselves to Dr. Gilbert, named their mentors, and described the research they are currently doing.

On July 2, 2018, Dr. Dean Pesnell (671), Dr. James Klimchuk (671), and Dr. Raphael Attie (671) gave presentations to an audience of more than twenty-five Heliophysics summer interns, as part of the lecture series organized by the SESI team - Teresa Nieves-Chinchilla (672/CUA), Silvina Guidoni (674/American University), and Lizz Bowlen (670/CUA). These speakers represented the Solar Physics Laboratory (671) with the following presentations: "What is solar activity and why predict it?" (Dr. Pesnell), "Why is the Solar Corona So Hot?" (Dr. Klimchuk), and "What are photospheric flows and how do we track them?" (Dr. Attie).

On July 11, Dr. Lauren Blum (672) and Dr. Quintin Schiller (672) gave a joint presentation to an audience of more than twenty Heliophysics summer interns, as part of the lecture series organized by the SESI team - Teresa Nieves-Chinchilla (672/CUA), Silvina Guidoni (674/American University), and Lizz Bowlen (670/CUA). These speakers represented the Heliospheric Physics Laboratory (672) with the following presentation: "Exploring Earth's Radiation Belts with CubeSats - the Newest Generation of Spacecraft".

On July 18, Dr. William R. Paterson (673) gave a presentation to an audience of more than twenty Heliophysics summer interns, as part of the lecture series organized by the SESI team - Teresa Nieves-Chinchilla (672/CUA), Silvina Guidoni (674/American University), and Lizz Bowlen (670/CUA). Dr. Paterson represented the Geospace Physics Laboratory (673) with the following presentation: "What do we mean by "Geospace"?"

Education and outreach

On July 23, fourteen Heliophysics summer interns visited the NOAA Center for Weather & Climate Prediction as part of an intern exchange organized by the SESI team - Teresa Nieves-Chinchilla (672/CUA), Silvina Guidoni (674/American University), and Lizz Bowlen (670/CUA). They had lectures from Bill Lapenta (NCEP Director), Dave DeWitt (CPC Director), and Ivanka Stajner (Director -Acting- EMC), as well as tours to the Ocean Prediction Center, Weather Prediction Center, and Satellite Analysis Branch from LT Joe Phillips, Kathy Gilbert (WPC Deputy Director), and Juan Velasco and Jay Hanna, respectively.



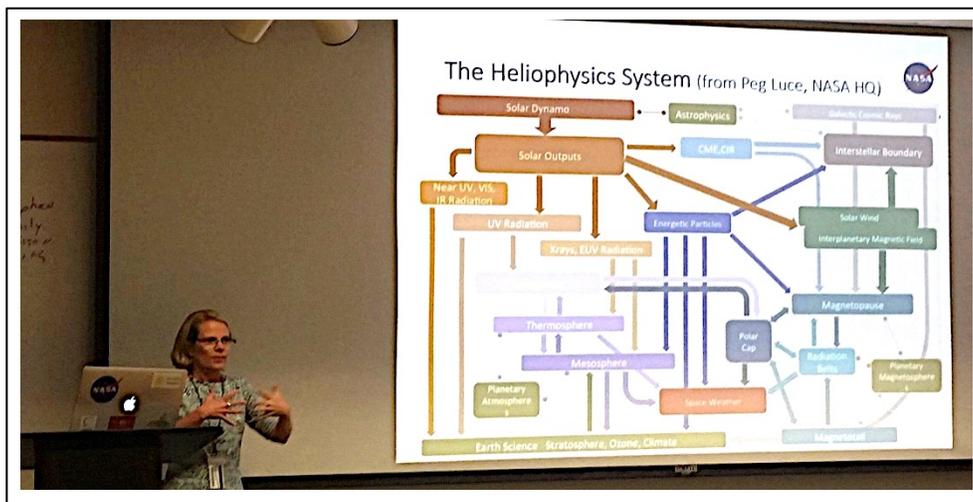
On July 27, Heliophysics interns and their mentors gathered for a group picture. Afterwards, several interns practiced their presentations for this week's NASA Goddard's intern poster sessions, where they will showcase their work over the past 6-10 weeks. The poster practice session was led by Dr. Barbara Thompson (671). [Picture pag. 2 included]

Pictures & Memories

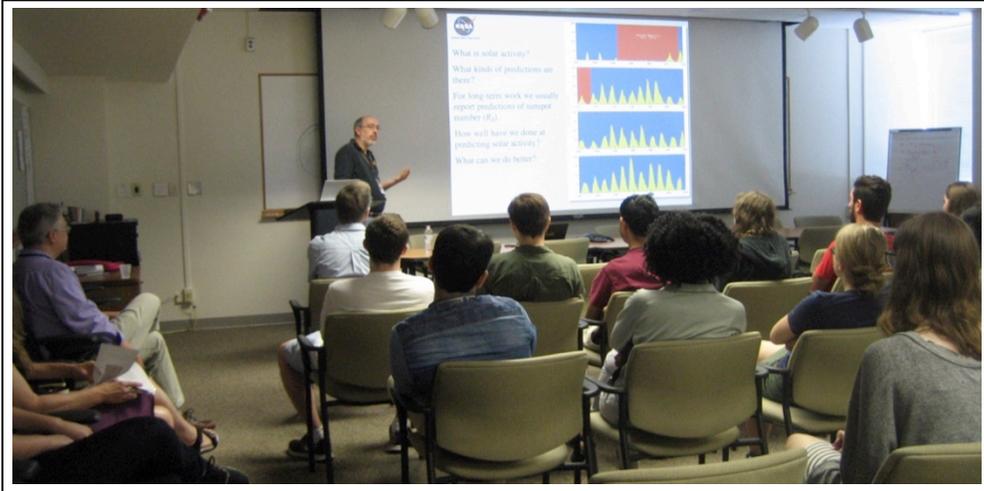
Welcome Orientation



Some of the Lectures



Dr. Holly Gilbert (HSD Director)



671 Lab Lecture



672 Lab Lecture

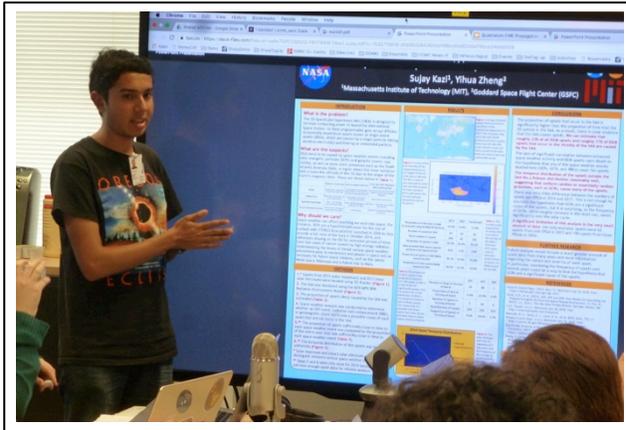


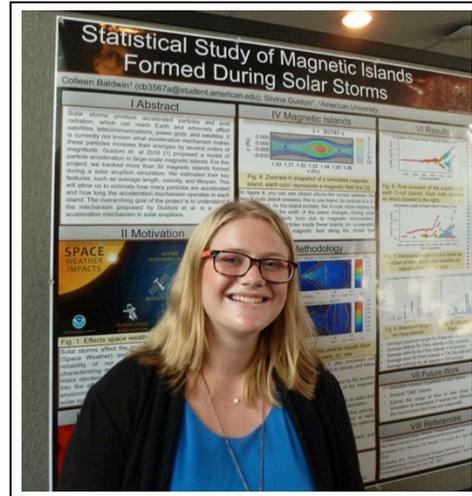
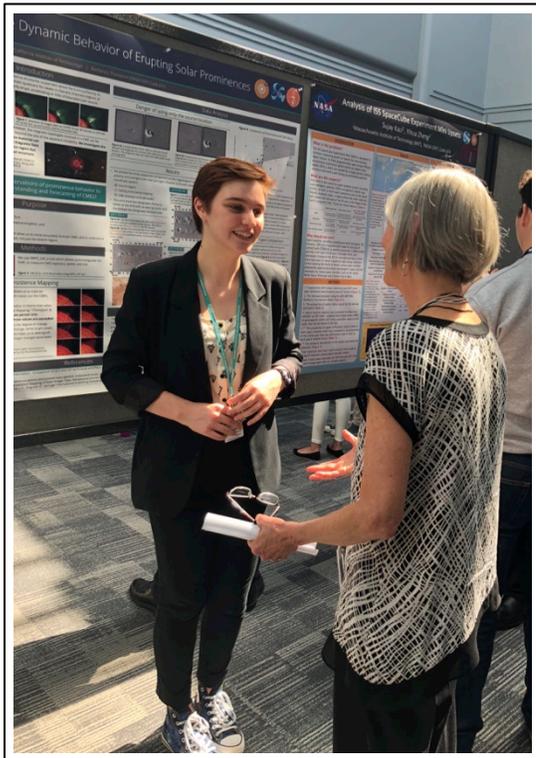
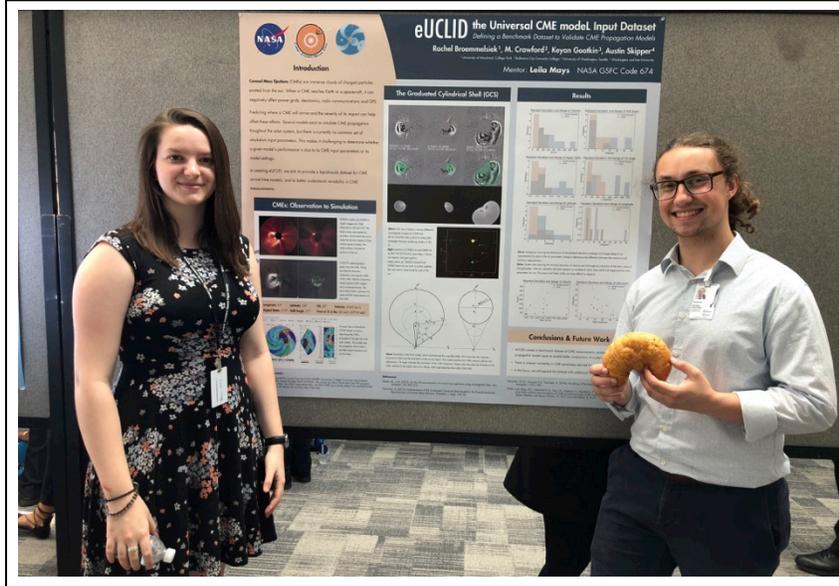
673 Lab Lecture

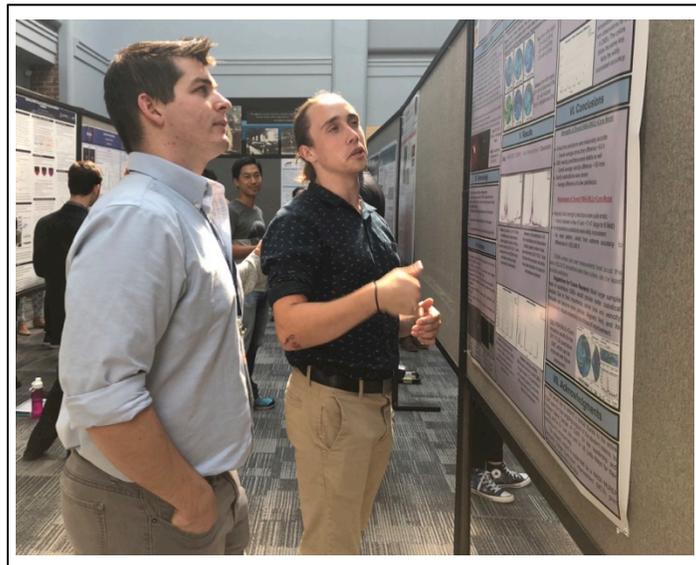
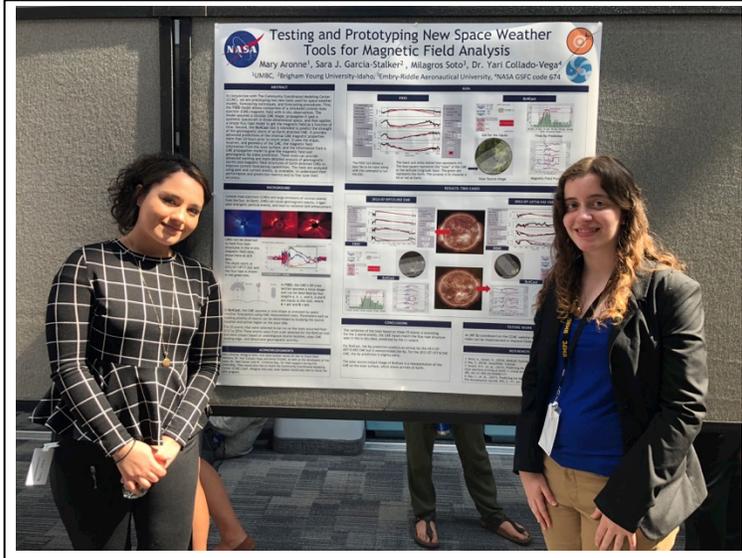
Picnic

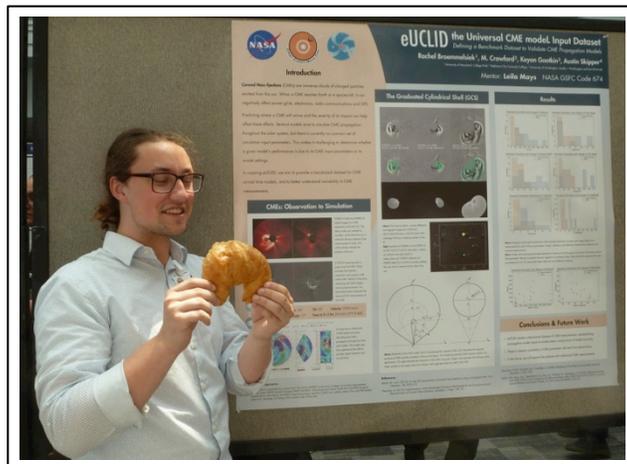
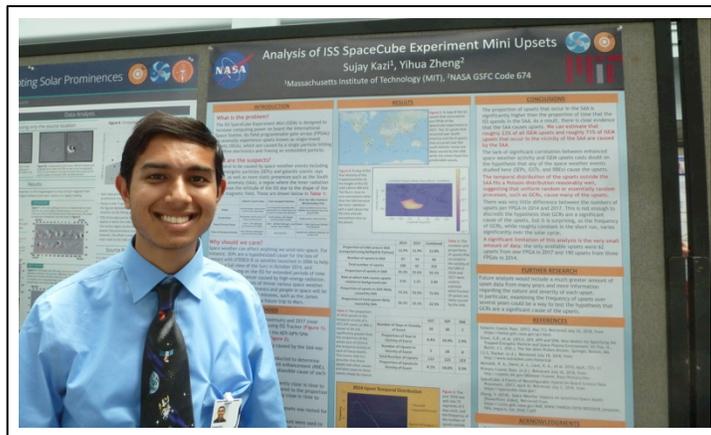
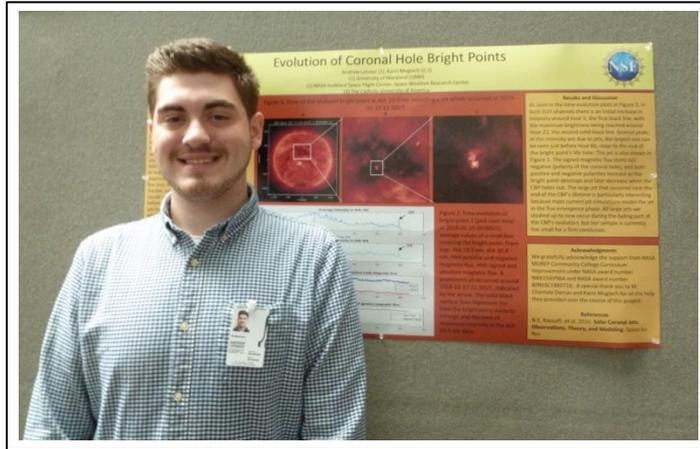


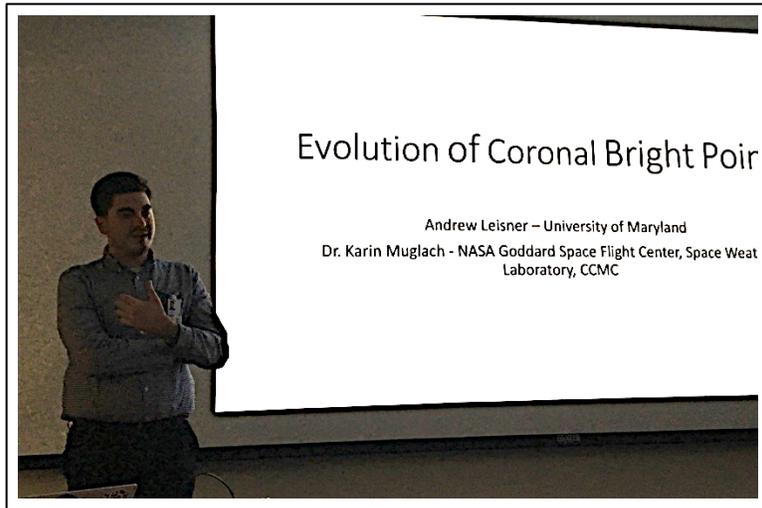
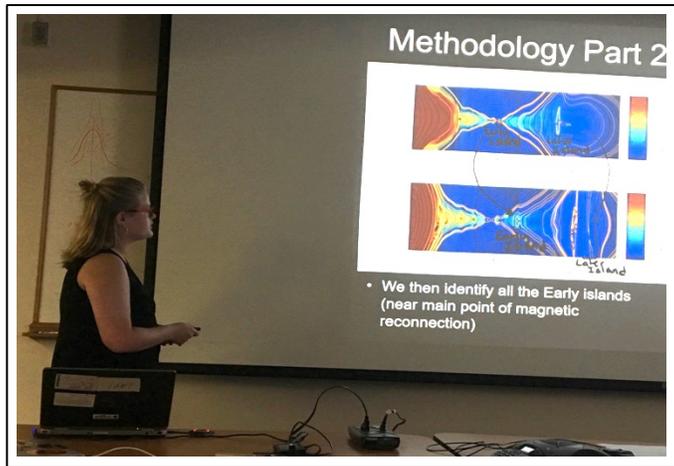
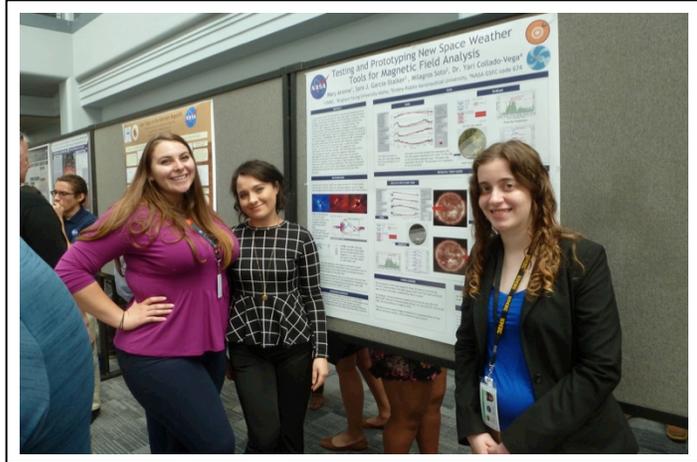
Some of the presentations, poster practice and poster activity

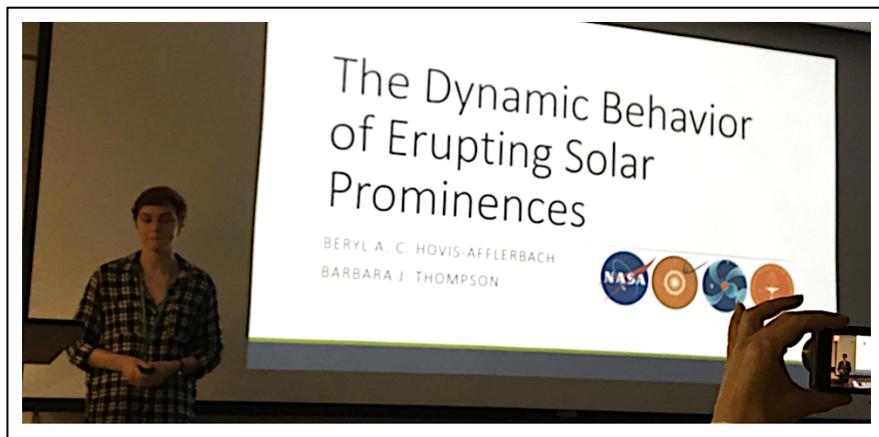


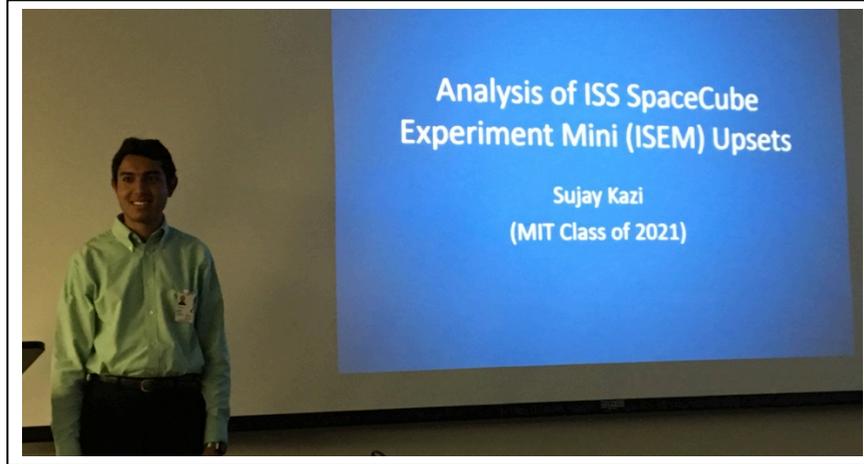












(Some pictures credit to Karin Muglach, Anna Chulaki and CCMC team. Thanks!!!)