JCET Cooperative Agreement NNX15AT34A

Year 2 Quarterly Report # 3

PERIOD COVERED: APRIL 1 – JUNE 30, 2017

Dear GSFC Colleagues,

The new JCET cooperative agreement has completed the third quarter of its second year. This report describes the research of the JCET faculty, funding proposals that have been submitted the second quarter of year two, as well as education and outreach efforts of the Center, changes in personnel and upcoming events.

We are delighted to report also on the ever-strengthening partnerships between JCET, Goddard and the UMBC academic departments that relate to JCET's mission.

With great pleasure, we submit this quarterly report highlighting our ongoing partnership with NASA Goddard Space Flight Center.

Sincerely,

Belay B. Demoz, **JCET Director**, and the JCET team.

Joint Center for Earth Systems Technology, 5523 Research Park DR, #320, Baltimore, MD 21250

HIGHLIGHTS : *A SUMMARY OF NEWSWORTHY JCET ACTIVITY.*

AWARDS

NASA Postdoctoral Fellowship: Reed Espinosa, Daniel Miller

NASA Graduate Fellowship: Lipi Mukherjee

JCET Graduate Fellowship 2017-18: Anin Puthukkudy

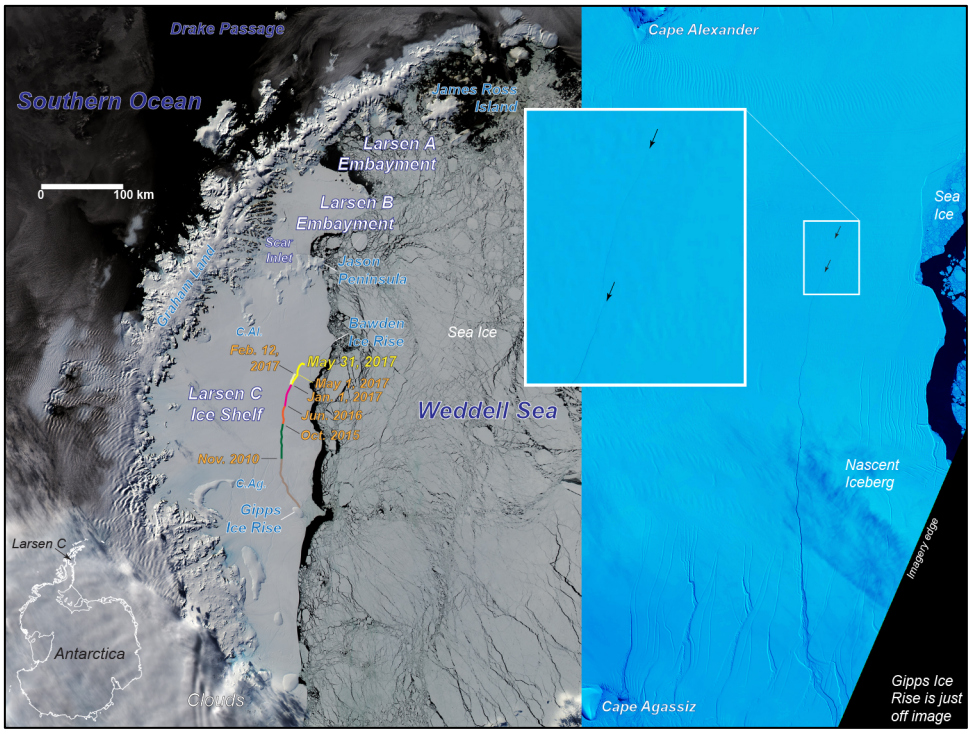
NOTEWORTHY

4/21: Earth Day Symposium

In conjunction with the UMBC Atmospheric Physics Program, JCET contributed to the first annual Earth Day Symposium in the Physics Department at UMBC on Friday, April 21, 2017. The goal of the symposium was to expose graduate students with interests in atmospheric studies to research opportunities in and connected to the Atmospheric Physics program. Fifty-four attendees participated in the event. The symposium began at 9:00 AM in Physics Room 401, and included sessions of short research talks by Atmospheric Physics faculty, JCET, GSCF and externally affiliated scientists, followed by an afternoon poster session for graduate students and professionals to showcase their research. During the day there were various activities, including Physics department lab tours and a weather balloon launch demonstration. Lunch and coffee breaks were provided.

5/19: Drs. Yeakley and Braunschweig (UMBC/GES) visit Goddard

Dr. Alan Yeakley, Chair of the Geography & Environmental Systems Department, and GES faculty member Dr. Suzanne Braunschweig visited Goddard on May 19, 2017. Drs. Yeakley & Braunschweig discussed the GES program and the need for new courses, for example, in air quality. Potential topics for joint research among Goddard, JCET and GES were discussed. The visit was organized by JCET Faculty Tokay, Huemmrich and Remer.



Breaking news…
Aqua MODIS (left) and Sentinel 2-A MSI imagery (right) were acquired on March 10, 2017. The MODIS imagery has been annotated with place names and Project MIDAS Larsen C ice shelf rift locations and dates showing the progression of rift's extension. Two rift tips are indicated with arrows on the higher resolution MSI image (see inset) prior to the main rift's growth during May. The smaller Larsen A and Larsen B ice shelves experienced rapid collapse events in early 1995 and 2002, respectively, and subsequent ice area losses into this decade. The Larsen B embayment has had persistent fast ice since ~March 2011 and this has helped stabilize the small Scar Inlet shelf remnant and a number of tributary glacier fronts. (C. Shuman, A. Luckman, C. Tucker, K. Melocik, 2017)

Dr. Shuman Discusses Massive New Ice Shelf Branch

Christopher Shuman (JCET) et al. report on a host of studies of the disruption of ice shelves in Antarctica. Using airborne and satellite imagery, the effects of increased temperature are manifesting as significant losses in ice area in the region (pictured above).

Drs. Hanuun & Wolfe Explore New Data from CARAFE

The NASA Carbon Airborne Flux Experiment (CARAFE) completed its second set of research flights over the U.S. East Coast in May 2017. CARAFE quantifies the "breathing" of Earth's biosphere by directly measuring the surface flux of carbon dioxide, methane, water and heat over forests, crops, and wetlands. These observations fill critical data gaps and will advance our understanding how the Earth regulates and responds to changes in atmospheric composition and climate. Measurement and analysis efforts are spearheaded by Code 614 and JCET scientists Reem Hannun and Glenn Wolfe.

AirHARP begins first science campaign

Vanderlei Martins (613/Physics/JCET, PI for HARP and AirHARP), reported that on May 22, 2017 the AirHARP instrument began its first aircraft science campaign in Wisconsin as part of the Lake Michigan Ozone Study (LMOS) 2017. This is the first data set being collected with the instrument in preparation for the HARP CubeSat satellite launch currently planned for August 2017. Information about the study can be found at: www-air.larc.nasa.gov/missions/lmos/index.html

Information about HARP can be found here: www.umbc.edu/laco.

Noteworthy talks/presentations:

Tamas Varnai (613/JCET) attended and presented talks at the "Clouds, Their Properties, and Their Climate Feedbacks: What have we learned in the satellite era?" Symposium organized by NASA/GISS. The goal of the symposium was to stimulate discussion on the progress made over the past decades in understanding cloud properties, processes and feedbacks and to explore strategies to tackle the issues that remain unresolved, June 2-5, 2017. https://www.giss.nasa.gov/meetings/clouds_2017/

On May 31 - June 1, 2017 **Nader Abuhassan (614/JCET)**, Bob Swap (614) and others attended the annual science team meeting for the Earth Ventures 1 Tropospheric Emissions: Monitoring Pollution (TEMPO) instrument at the Harvard Smithsonian Astrophysical Observatory in Boston, MA. Abuhassan gave a presentation on the Pandora ground-based instruments (developed and built at GSFC) that will be used for validation.

The Ocean Ecology Laboratory (616) played an important role in the International Ocean Color Science (IOCS) Meeting May 15 - 18th, 2017 in Lisbon, Portugal. The annual NASA Ocean Biology and Biogeochemistry Program meeting (OCRT) was also held in conjunction with IOCS: Ryan Vandermeulen (616/SSAI), **Kevin Turpie (616/JCET),** and Cecile Rousseaux (610.1/USRA) co-chaired a working session on "Quantifying the benefits and challenges of hyperspectral remote sensing: Looking towards the future of spaceborne radiometry".

Dan MacMillan (61A/NVI) made a presentation, "Analysis of Polar Motion Differences between VLBI, GNSS and SLR" co-authored with **Erricos Pavlis (JCET)** at the European Geosciences Union Assembly (EGU) in Vienna, Austria, April 24-28, 2017.

Zhibo Zhang (613/Physics/JCET) presented a Cloud-Precipitation-Center (CPC) Seminar entitled, "Evaluation of marine boundary layer cloud simulations in Community Atmospheric Model using COSP simulator and satellite observations: Convectional sub- grid cloud parameterization scheme vs CLUBB", April 4, 2017.

J. Vanderlei Martins (613/Physics/JCET) presented a MANIAC TALK entitled "From the atom to the atmosphere and beyond", April 5, 2017.

Session contributions at the 3rd International A-Train Symposium 2017 in Pasadena, California, April 19-21, 2017 included "Use A-Train, SEVIRI and WRF to understand the influence of biomass burning smoke aerosols on regional radiative energy budget of SE Atlantic region", **Zhibo Zhang (613/Physics/JCET),** Hongbin Yu (613), Kerry Meyer (613), X. Liu, Z. Lu, S. Platnick (610), L. Oreopoulos (613) and "Aerosol properties in partly cloudy conditions", Alexander Marshak (613) and **Tamas Varnai (613/JCET).**

External interactions (HQ, universities, other Gov't organizations, etc.)

K. Fred Huemmrich (618/JCET) took part in the Oak Ridge National Laboratory Distributed Active Archive Center (ORNL DAAC) User Working Group annual meeting in Oak Ridge, TN, May 11-12, 2017.

On April 28th, 2017, **Ana Prados (614/JCET)** presented on the NASA ARSET training program to UNICEF representatives (Toby Wicks, Nick Rees, and Mark Anthony and others) at UNICEF HQ in New York City. The purpose of the meeting was to coordinate the use of GMAO air quality forecasts by UNICEF to alert parents of children with respiratory diseases of impending poor air quality. UNICEF's contribution to the project includes developing messaging for the air quality forecasts to reach communities in the countries where UNICEF serves.

On May 23 -26, 2017, the NASA Applied Remote Sensing Training Program (ARSET) conducted a hands-on training: "Satellite Remote Sensing of Air Quality: Data, Tools and Applications." The Indian Institute of Tropical Meteorology in Pune, India, hosted the training. Over the course of three-and-a-half-days, 50 participants from 30 organizations and 22 Indian states attended the training. In addition to ARSET materials, invited speakers from the Indian Space Research Organization (ISRO) discussed available Indian satellite data and tools for air quality monitoring, ISRO's capacity building program, and upcoming ISRO's remote sensing missions. A guest speaker from the Indian Meteorological Department (IMD) introduced online tools to access current geostationary observations useful for weather and air quality monitoring. **Brock Blevins (614/JCET)** supported the training. ARSET program is managed by **Ana Prados (614/JCET).**

Valerie Casasanto (610/JCET) attended and presented the ICESat-2 mission at the GLOBE Northeast & Mid-Atlantic Regional Student Research Symposium held at the Palmyra Cove Nature Center, in Palmyra, NJ, May 19-20, 2017. There were approximately 150 attendees present.

The GPM Communication & Outreach Team hosted two sessions of a webinar titled "Status of Global Precipitation Measurement Mission Data Products and Applications" on May 3, 2017. **Amita Mehta (612/JCET)** shared data access and visualization updates. A total of 73 people attended one of the two sessions, representing 13 U.S. states plus the District of Columbia, as well as 20 non-U.S. countries.

Week of May 12th 2017: Women of the Dark Target Aerosol Group including **Lorraine Remer (JCET),** visited Maryvale Elementary School and engaged with thirty 3rd, 4th and 5th grade girls, attending the after-school girls' STEM club.

Christopher Shuman (615/JCET) is quoted in a recent article about a new branch in the huge Antarctic ice crack: https://pri.org/stories/2017-05-05/theres-new-branch-huge-antarctic-ice-crack

K. Fred Huemmrich (618/JCET) was quoted in an article in the Baltimore Sun on the Science March: http://www.baltimoresun.com/news/maryland/bs-md-science-march- walkup-20170420-story.html

Valerie Casasanto (610/JCET) helped set up the ICESat-2 altimeter exhibit at Port Discovery in Baltimore, MD for the annual 'STEM in Spring' Festival on April 13th. **Casasanto** led students and their families through the altimeter exhibit, and hands-on experiments throughout the day. http://www.abc2news.com/news/region/baltimore-city/port-discovery-celebrates-stem-in- spring-week

Valerie Casasanto (610/UMBC) represented the ICESat-2 Mission at the 2017 NASA Earth Day Event at Union Station in Washington D.C. on April 20th, 2017, doing demonstrations on how the laser altimeter will work on the satellite through discussions and the "ICESat-2 Bouncy Ball Photon-Counting Challenge." The ICESat-2 exhibit area saw approximately 200 students and 200 general public visitors.

April 2017: Thorsten Markus (615) gave a hyperwall talk on ICESat-2 and overview of NASA cryospheric research. 20 New Jersey teachers and school board members participated as part of a Goddard Office of Education visit. **Valerie Casasanto (610/UMBC)** provided a hands-on workshop where teachers and board members viewed the SVS visualization of the ocean thermohaline circulation system, https://svs.gsfc.nasa.gov/3658 and performed the hands-on experiments "Motion in the Ocean" using recycled tennis ball tubes.

NEW TASKS:

Task 157
Sponsor Trena Ferrell (610)
JCET Personnel: Christopher Shuman, Associate Research Scientist
The NASA Earth Science Education Collaborative project is working with WGBH (http://www.wgbh.org/about/index.cfm) to help them review the K-12 learning resources that they are producing for NASA SMD. As part of WGBH's process, they are identifying media (e.g., video clips, animations, visualizations, etc) that could support learning related to science concepts in the Next Generation Science Standards. Before WGBH goes further (editing videos, creating the learning resources) they want to utilize Subject Matter Experts (SME) to be sure the basic media pieces are both scientifically accurate and appropriate for the learning concepts identified. Dr. Shuman brings the project a range of skills and experiences in Earth Sciences as a SME.

Task 159
Sponsor Yuekui Yang (613)
JCET Personnel: Pengwang Zhai, Assistant Professor
This task will focus on cloud studies with radiative transfer modeling and using data from NASA satellite observations. The JCET investigator will conduct radiative transfer simulations to study the signature of clouds over different surface types at different wavelengths, which are used for satellite cloud retrievals. The JCET investigator will also analyze satellite data to study global cloud properties.

Task 160
Sponsor Yuikui Yang (613)
JCET Personnel: Meng Gao, Research Associate
This task will focus on cloud studies with radiative transfer modeling and using data from NASA satellite observations. The JCET investigator will conduct radiative transfer simulations to study the signature of clouds over different surface types at different wavelengths, which are used for satellite cloud retrievals. The JCET investigator will also analyze satellite data to study global cloud properties.

Task 161
Sponsor Stephen Merkowitz (61A)
JCET Personnel: Erricos Pavlis, Senior Research Scientist
Magda Kuzmicz-Cieslak, Faculty Research Assistant
Keith Evans, Research Analyst
Maintain the JCET/GSFC Analysis and Combination Center of the ILRS by: (a) maintaining a state-of-the-art Satellite Laser Ranging (SLR) data analysis capability for the primary geodetic satellites to support the IERS and ITRS contributed products of the ILRS, (b) generating weekly, daily and annual analysis products to be submitted to the IERS/ITRF as required by the ILRS, (c) generating quality check (QC) reports for SLR data in support of the ILRS Rapid Response service and Quality Control Board, (d) generating weekly and daily combination ILRS products, (e) developing the infrastructure required to combine SLR products with those from other space geodetic techniques (e.g. VLBI, GPS, DORIS), (f) executing studies for future geodetic SLR missions (including the tracking of future GNSS targets) and (g) generating and evaluating optimized geodetic network designs using simulations based on future system parameters.

Task 162
Sponsor Stephen Merkowitz (61A)
JCET Personnel: Erricos Pavlis, Senior Research Scientist
Magda Kuzmicz-Cieslak, Faculty Research Assistant
Keith Evans, Research Analyst
Support the development of the GEOCON mission concept. Develop simulations and analysis techniques for measuring geodetic system ties using a CubeSat constellation. Modify existing network simulations to incorporate GEOCON observables and perform the simulation analysis.

PROPOSALS: *LISTING OF PROPOSALS AWARDED AND SUBMITTED*

AWARDED

Agency	UMBC Role	Name	Solicitation/Sponsor	Title
NASA-GSFC	Co-I	Bian, Huisheng	NASA Roses-2016 MAP PI Mian Chin	"Aerosol-cloud-radiation interactions in a changing climate: Processes, multidecadal variations, and effects on surface radiation trends"
NASA-LaRC	Co-I	Bian, Huisheng	NASA Roses-2016 MAP PI Hongyu Liu	"Cloud scavenging of aerosols in the NASA GEOS-5 model: Physically based parameterizations, uncertainties, and impacts on aerosol simulations and direct and indirect effects"
NOAA	PI	Strow, Larrabee	NOAA BAA 2017	Calibration and Validation of the CrIS Operational Sensors
University of Maryland Center for Environmental Science	PI	Hoban, Susan	MADE CLEAR mini grants	MADE CLEAR mini grants: Something to CHEW On: (Climate, Health, Ecosystems, Weather)"
BAER	PI	Wang, Yujie	NASA-NNX12AD05A, CFDA No. 43.001	Adapting MODIS MAIAC Algorithm to Geostationary Sensors
NC STate / NASA	Co-I	Turpie, Kevin	NNH15ZDA001N-BIO A.6	From Arboreal to Benthic Communities: the ABCs of Land to Ocean Biodiversity Observations
NASA	PI	Turpie, Kevin	NNH14ZDA001N-A.27 RRNES	DEVELOPMENT OF A HIGHLY ACCURATE LUNAR SPECTRAL IRRADIANCE MEASUREMENT CAPABILITY - THE AIRBORNE LUNAR

				SPECTRAL IRRADIANCE INSTRUMENT (AIR-LUSI)
NOAA	PI	Wolfe, Glenn	NOAA-OAR-CPO-2016-2004413: CFDA #11.431	Emissions and Chemistry of Formaldehyde in Biomass Burning Plumes
NOAA	Co-I	St. Clair, Jason	NOAA-OAR-CPO-2016-2004413: CFDA #11.431	Emissions and Chemistry of Formaldehyde in Biomass Burning Plumes

SUBMITTED

Agency	UMBC Role	Name	Solicitation/Sponsor	Title
NASA	CO-I	Jasper Lewis	NNH17ZDA001N-MEASURES	"A Constrained Global Planetary Boundary Layer Height Product for Comprehensive Earth System Studies".
NASA	CO-I	Chung-Lin Shie	NNH17ZDA001N-MEASURES	Global Ocean and Polar Sea Ice Turbulent and Freshwater Fluxes (GOPSI-TFF)
NASA	CO-I	Belay Demoz	NNH17ZDA001N-MEASURES	Developing a Data Record of Planetary Boundary Layer (PBL) Thermodynamic Profiles at Diurnal Scales
NASA	PI	Jae Lee	NNH17ZDA001N-MEASURES	Development of a Multiyear Sounder-Based Outgoing Longwave Radiation Climate Data Record Using Products Derived from TOVS, AIRS, and CrIS
NASA	PI	Tianle Yuan	NNH17ZDA001N-MEASURES	A Comprehensive Data Record of Marine Low-level and Deep Convective Cloud Systems Using an Object-Oriented Approach
NASA	PI	Bill Olson	NNH17ZDA001N-MEASURES	A Process-Oriented, Atmospheric Heating Data Record Derived from Multiple-Satellite Remote Sensing Observations
NASA	Co-I	Petya Campbell	NNH17ZDA001N-MEASURES	Development of a Multiyear Sounder-Based Outgoing Longwave Radiation Climate Data Record Using Products Derived from TOVS, AIRS, and CrIS
NASA	PI	Petya Campbell	NNH17ZDA001N-LCLUC	Prototyping MuSLI canopy chlorophyll content for assessment of vegetation function and productivity
NSF	PI	Vanderlei Martins	Partnerships for International Research and Education	PIRE: Microphysical Properties of Aerosols and Clouds in the Amazon Basin and its Relationship with Climate

	Co-I Co-I	Lorraine Remer Belay Demoz	(PIRE) PROGRAM SOLICITATION NSF 16-571	
BAER	PI	Yujie Wang	NASA-NNX12AD05A, CFDA No. 43.001	Adapting MODIS MAIAC Algorithm to Geostationary Sensors
NASA	PI	Mustafa Aksoy	A.16 - CryoSpheric Science	Profiling Near-Surface Ice Sheet Properties using the Global Precipitation Measurement (GPM) Radiometer Constellation

MEETINGS AND FIELD WORK ATTENDED: *LISTING OF MEETINGS, TRAVEL*

April 2017 Travel

Traveler	Destination	Travel Begin	Travel End	Trip Purpose
Martins, J. Vanderlei	Logan, UT	4/6/17	4/8/17	Participation in the HARP review.
Strow, Lawrence	PA to Los Angeles, CA	4/16/17	4/20/17	Attend NASA AIRS Science Team Mtg
Delgado, Ruben	Local travel to Annapolis, MD	4/19/17	4/21/17	Attend International Partnership Forum for Offshore Wind Mtg
St. Pe, Alexandra	Local travel to Annapolis, MD	4/19/17	4/21/17	Present research at International Partnership Forum for Offshore Wind Mtg
Brodie, Joseph	Local travel to Annapolis, MD	4/19/17	4/21/17	Attend International Partnership Forum for Offshore Wind Mtg
Pavlis, Erricos	MD to Vienna, Austria	4/20/17	4/28/17	Attend ILRS ASC Mtg, EGU General Assembly, & GGOS BNO Mtg
Turpie, Kevin	MD to Paris, FR	4/23/17	4/27/17	Support for CEOS SIT meeting -GEOSS Water Strategy Report rec. study.
Herman, Jay	MD to California	4/25/17	4/27/17	Planning mtg for Pandora validation of TEMPO satellite data

May 2017 Travel

Traveler	Destination	Travel Begin	Travel End	Trip Purpose
Kruchten, Catherine	MD to NYC/CT	4/27/17	5/1/17	NASA's BEST Prof. Development w/GISS(weekend 4)

Borda, Roberto	MD to Logan, UT	5/1/17	5/5/17	HARP project work.
Hannun, Reem	MD to Wallops Island, VA	5/2/17	5/5/17	Participating in CARAFE field campaign.
Wolfe, Glenn	MD to Wallops Island, VA	5/2/17	5/5/17	CARAFE-CMS Test Flights
Puthukkudy, Anin	MD to Helsinki, Finland	5/4/17	5/15/17	JCET Grad Fellowship AwarAttend workshop "Measurements of atmospheric aerosols: Aerosol physics, sampling and measurement techniques" to be held at Hyytiälä Forestry Field Station, Juupajoki, Finland
Abuhassan, Nader	MD to NASA Langley, VA	5/7/17	5/9/17	Meeting - support of future deployments of the Pandora spectrometers.
Hannun, Reem	MD to Wallops Island, VA	5/7/17	5/13/17	Participating in CARAFE field campaign.
Cieslak, Jan	MD to NASA Langley, VA	5/10/17	5/12/17	Installation of the Air-HARP instrument.
Townsend, Hamilton	MD to Hampton, VA	5/10/17	5/12/17	AirHARP Integration Effort
Huemmrich, Karl	MD to Oak Ridge, TN	5/10/17	5/13/17	To attend the Oak Ridge National Laboratory Distributed Active Archive Center User Working Group meeting.
McBride, Brent	MD to NASA Langley, VA	5/10/17	5/19/17	AirHARP aircraft campaign research support.
Turpie, Kevin	MD to Lisbon, Portugal/Brussels, Belgium	5/11/17	5/25/17	Participate in International Ocean Color Science Mtg in Lisbon and participate on the HyperMAQ steering committee in Brussels, Belgium
Morzfeld, Matthias	Tucson, AZ to Greenbelt, MD	5/14/17	5/16/17	Visitor Travel funded by Dr. Tangborn
Wolfe, Glenn	MD to Wallops, VA	~~5/4/17~~5/15/17	~~5/15/17~~5/17/17	CARAFE CMS deployment.
Borda, Roberto	MD to Logan, UT	5/16/17	5/19/17	HARP project work.
Cieslak, Jan	MD to Hampton, VA	5/17/17	5/18/17	Support of air-HARP mission
Hannun, Reem	MD to Wallops Island, VA	5/17/17	5/20/17	Participation in CARAFE field campaign
Hannun, Reem	MD to Wallops Island, VA	5/21/17	5/26/17	Participation in CARAFE field campaign
Lynch, Heather	NY to Greenbelt, MD	5/21/17	5/23/17	Visitor: Invited by Valerie Casasanto, to present a seminar at NASA Goddard and to meet with members of the ICESat-2 outreach team to collaborate on the mission.

McBride, Brent	MD to Madison, WI	5/21/17	6/1/17	AirHARP research support at external site during the Lake Michigan Ozone Study (LMOS) campaign.
Martins, J. Vanderlei	MD to Madison, WI	5/22/17	5/27/17	Participation in the LMOS experiment.
Pongsuphat, Palkpoon	MD to Madison, WI	5/22/17	5/27/17	Participation in the LMOS aircraft campaign in support of the AIrHARP instrument.
Huemmrich, Karl	MD to Reston, VA	5/23/17	5/24/17	Attend workshop on design of future Landsat instruments with USGS.
Borda, Roberto	MD to Logan, UT	5/23/17	5/26/17	HARP project work.

June 2017 Travel

Traveler	Destination	Travel Begin	Travel End	Trip Purpose
Borda, Roberto	MD to Logan, UT	5/29/17	6/1/17	HARP project work.
Demoz, Belay	MD to Fort Collins, CO	5/29/17	6/2/17	Present at International Symposium of Trophospheric Profiling(ISTP10) & supervise student presentations
Sasser, Christiana	MD to Fort Collins, CO	5/29/17	6/5/17	Present at ISTP10
Tucker, Benjamin	MD to Fort Collins, CO	5/29/17	6/2/17	Present at ISTP10
Abuhassan, Nader	MD to Boston, MA	5/30/17	6/2/17	TEMPO science team mtg at Harvard Smithsonian Astrophysics Center
McBride, Brent	MD to Madison, WI	6/3/17	6/23/17	AirHARP research support at external site during the Lake Michigan Ozone Study (LMOS) campaign.
Turpie, Kevin	MD to San Juan, PR	6/4/17	6/8/17	To present the ABC LOBO project at the 2017 Annual Meeting of the Society of Wetland Scientists.
Varnai, Tamas	MD to NY, NY	6/5/17	6/7/17	Give a presentation at the symposium "Clouds, their Properties, and their Climate Feedbacks: what have we learned in the satellite era?".
Abuhassan, Nader	MD to Los Angeles, CA	6/6/17	6/9/17	Deployment of Pandora spectrometers in support of NASA's SARP campaign
Wolfe, Glenn	MD to Wallops, VA	6/9/17	6/9/17	SARP Integration
Demoz, Belay	MD to Helsinki, Finland	6/10/17	6/17/17	Presenter, organizer and chair of the GRUAN sites committee; A WMO sponsored meeting.
Wolfe, Glenn	MD to Wallops, VA	6/14/17	6/16/17	SARP Test Flights

Remer, Lorraine	Palm Desert, CA to Pasadena, CA	6/18/17	6/20/17	Meet with colleagues at JPL to further PACE research project.
Campbell, Petya	Alexandria, VA to Pecs, Hungary	6/18/17	6/25/17	GOFC-GOLD SECRIN-5 workshop coordination

EDUCATION AND OUTREACH: *LISTING OF OUTREACH, GRADUATE SEMINAR, COURSES TAUGHT AND ADVISEMENT, AND STUDENT ACCOMPLISHMENTS.*

Recent Affiliations: No new affiliations this quarter. Delgado, DeSouza-Machado, Remer, and Varnai were re-affiliated in Physics.

Courses taught by JCET Faculty & Staff in Spring 2017:

PHYS 622: Cloud Physics, **Demoz** (3 credits)
PHYS 640: Computational Physics, **Varnai** (3 credits)
PHYS 112: Basic Physics II, **Hoban** (4 credits)
SOCY 101: Basic Concepts in Sociology, **Evans** (1 credit)

JCET Seminar:

The 2016-17 cohort of eight JCET graduate students explored the science behind the American Physical Society's Statement on Earth's Changing Climate. Guest speakers set the stage by discussing various aspects of Earth science. The presentations and background materials are available at the links given below. The JCET Seminar has become an important component in the professional development of these young scientists. The seminar series is open to the public and is led and organized by Dr. Susan Hoban, Associate Director of JCET. (There will be no seminar during the summer months).

Link to Seminar schedule
Link to Seminar Website

JCET Student Activities:

- Anin Puthhukkudy has been awarded the 2017-18 JCET Graduate fellowship to work with Vanderlei Martins. His project is entitled, "Microphysical Properties of Volcanic Ash."
- Lipi Mukherjee has been awarded a NASA Graduate Student Fellowship for her research with Dr. Pengwang Zhang (Physics/JCET).
- Dan Miller (student of Zhibo Zhang) and Reed Espinosa (student of Vanderlei Martins) have been awarded NPP Fellowships, beginning Fall 2017.
- JCET Graduate Students Brian Carroll, Brent McBride, and Lipi Mukherjee were the primary organizers of the first annual Earth Day Symposium in the UMBC Physics Department.

REPORTED PUBLICATIONS : *LISTING OF REPORTS AND ARTICLES*

DESOUZA-MACHADO, SERGIO G.

Journal Article, Academic Journal (Accepted)

De Souza-Machado, S. G., Tangborn, A. V., Philip, S., Hepplewhite, C. L., Strow, L. L. (2017). Non-Gaussian Analysis of Observations from the Atmospheric Infrared Sounder Compared with ERA and MERRA Reanalyses. *Journal of Applied Meteorology and Climatology, 56*, 1463-1481.

HEPPLEWHITE, CHRISTOPHER L.

Journal Article, Academic Journal (Accepted)

De Souza-Machado, S. G., Tangborn, A. V., Philip, S., Hepplewhite, C. L., Strow, L. L. (2017). Non-Gaussian Analysis of Observations from the Atmospheric Infrared Sounder Compared with ERA and MERRA Reanalyses. *Journal of Applied Meteorology and Climatology, 56*, 1463-1481.

KUZMICZ-CIESLAK, MAGDALENA M.

Conference Proceeding (Published)

Luceri, V., Pavlis, E. C., Kuzmicz-Cieslak, M. H., Bianco, G. (2017). Assessment of the ILRS implementation of ITRF2014. *EGU General Assembly Conference Abstracts* (vol. 19, pp. 15701). http://meetingorganizer.copernicus.org/EGU2017/EGU2017-15701.pdf

Conference Proceeding (Published)

Pavlis, E. C., Sindoni, G., Paolozzi, A., Ciufolini, I., Paris, C., Kuzmicz-Cieslak, M., Gabrielli, A. (2017). *El Nin˜o effects on Earth rotation parameters from LAGEOS and LARES orbital analysis*.

Conference Proceeding (Published)

Pavlis, E. C., Sindoni, G., Paolozzi, A., Ciufolini, I., Paris, C., Kuzmicz-Cieslak, M., Gabrielli, A. (2017). *El Nin˜o effects on Earth rotation parameters from LAGEOS and LARES orbital analysis*.

Conference Proceeding (Published)

Pavlis, E. C., Kuzmicz-Cieslak, M. H., MacMillan, D. S. (2017). Variation Scenarios in System Deployments for the GGOS2020 Space Geodesy Network. *EGU General Assembly Conference Abstracts* (vol. 19, pp. 8482). http://meetingorganizer.copernicus.org/EGU2017/EGU2017-8482.pdf

PAVLIS, ERRICOS C.

Conference Proceeding (Published)

MacMillan, D., Pavlis, E. C. (2017). Analysis of Polar Motion Series Differences Between VLBI, GNSS, and SLR. *EGU General Assembly Conference Abstracts* (vol. 19, pp. 8718). meetingorganizer.copernicus.org/EGU2017/EGU2017-8718.pdf

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Luceri, V., Pavlis, E. C., Kuzmicz-Cieslak, M. H., Bianco, G. (2017). Assessment of the ILRS implementation of ITRF2014. *EGU General Assembly Conference Abstracts* (vol. 19, pp. 15701). http://meetingorganizer.copernicus.org/EGU2017/EGU2017-15701.pdf

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Pavlis, E. C., Sindoni, G., Paolozzi, A., Ciufolini, I., Paris, C., Kuzmicz-Cieslak, M., Gabrielli, A. (2017). *El Nin˜o effects on Earth rotation parameters from LAGEOS and LARES orbital analysis*.

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Pearlman, M. R., Ma, C., Neilan, R., Noll, C., Pavlis, E. C., Saunier, J., Schoene, T., Barzaghi, R., Thaller, D., Bergstrand, S., others (2017). The GGOS Bureau of Networks and Observations: an update on the Space Geodesy Network and the New Implementation Plan for 2017-18. *EGU General Assembly Conference Abstracts* (vol. 19, pp. 10814). meetingorganizer.copernicus.org/EGU2017/EGU2017-10814-1.pdf

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Paolozzi, A., Paris, C., Sindoni, G., Pavlis, E. C., Arnold, D., Ciufolini, I., Neubert, R., Grunwald, L. (2017). *Data efficiency for the satellite LARES*.

TANGBORN, ANDREW V.

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De Souza-Machado, S. G., Tangborn, A. V., Sura, P., Hepplewhite, C. L., Strow, L. L. (2017). Non-Gaussian analysis of observations from the Atmospheric Infrared Sounder compared with ERA and MERRA reanalyses. *Journal of Applied Meteorology and Climatology*. http://journals.ametsoc.org/doi/abs/10.1175/JAMC-D-16-0278.1

VARNAI, TAMAS

Journal Article, Academic Journal (Published)

Marshak, A., Varnai, T., Kostinski, A. (2017). Terrestrial glint seen from deep space: oriented ice crystals detected from the Lagrangian point. *Geophys. Res. Lett., 44*, doi:10.1002/2017GL073248.

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WERNER, FRANK

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Zhang, Z., Werner, F., Cho, H.-M., Wind, G., Platnick, S., Ackerman, A. S., Di Girolamo, L., Marshak, A., Meyer, K. (2017). *A framework for quantifying the impacts of sub-pixel reflectance variance and covariance on cloud optical thickness and effective radius retrievals based on the bi-spectral method* (1st ed., vol. 1810, pp. 030002). AIP Conference Proceedings. http://aip.scitation.org/doi/abs/10.1063/1.4975502

YUAN, TIANLE

Journal Article, Academic Journal (Accepted)

Yuan, T. (in press). On the global character of overlap between low and high clouds. *JGR*.

PERSONNEL CHANGES:

LISTING OF PROMOTIONS:
None this quarter.

HIRES:
None this quarter.

DEPARTURES:

Allen Chu, Leave of Absence ended 6/30/17.