



FALL 2017 **DEVELOPER** NEWSLETTER

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PROGRAM HIGHLIGHTS



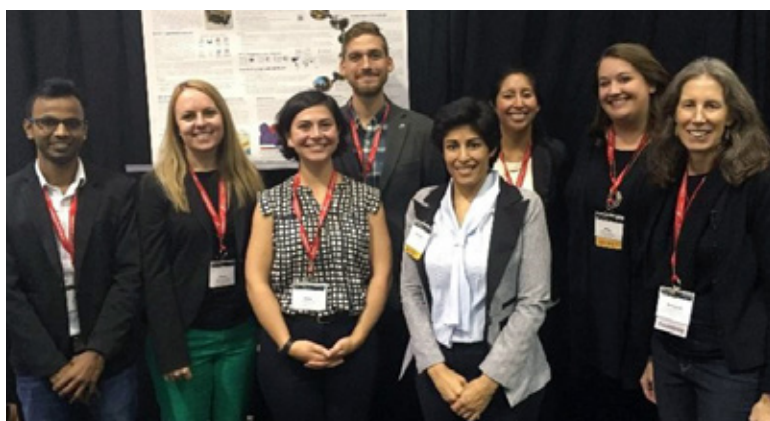
103 DEVELOPers



18 Projects



12 Locations



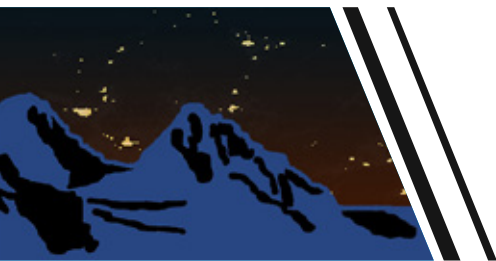
- DEVELOPer sent a team of national representatives to the Pecora 20 conference in Sioux Falls, SD, Nov. 13-17th. The team highlighted the use of NASA Earth observations to address topics such as wildfire risk and landscape disturbance, invasive species, air quality, and automating flood probability maps. The conference provided an excellent opportunity to network with and learn about the EO community, as well as to highlight DEVELOPer's feasibility studies in a variety of application areas.

- On October 12th, Dr. Kent Ross, DEVELOPer's Lead Science Advisor, received NASA's Silver Achievement Medal for mentoring the next generation of scientists and leaders in the use of NASA's Earth science data and technology to enhance decision-making for societal benefit.



▲ The 2018 Spring term will be the first for the newest DEVELOPer node, located at Boston University. A collaboration with the US Geological Survey's Woods Hole Coastal and Marine Science Center, the Massachusetts - Boston node will be opening with Acting Center Lead Kim Johnson and Science Advisor Cédric Fichot.





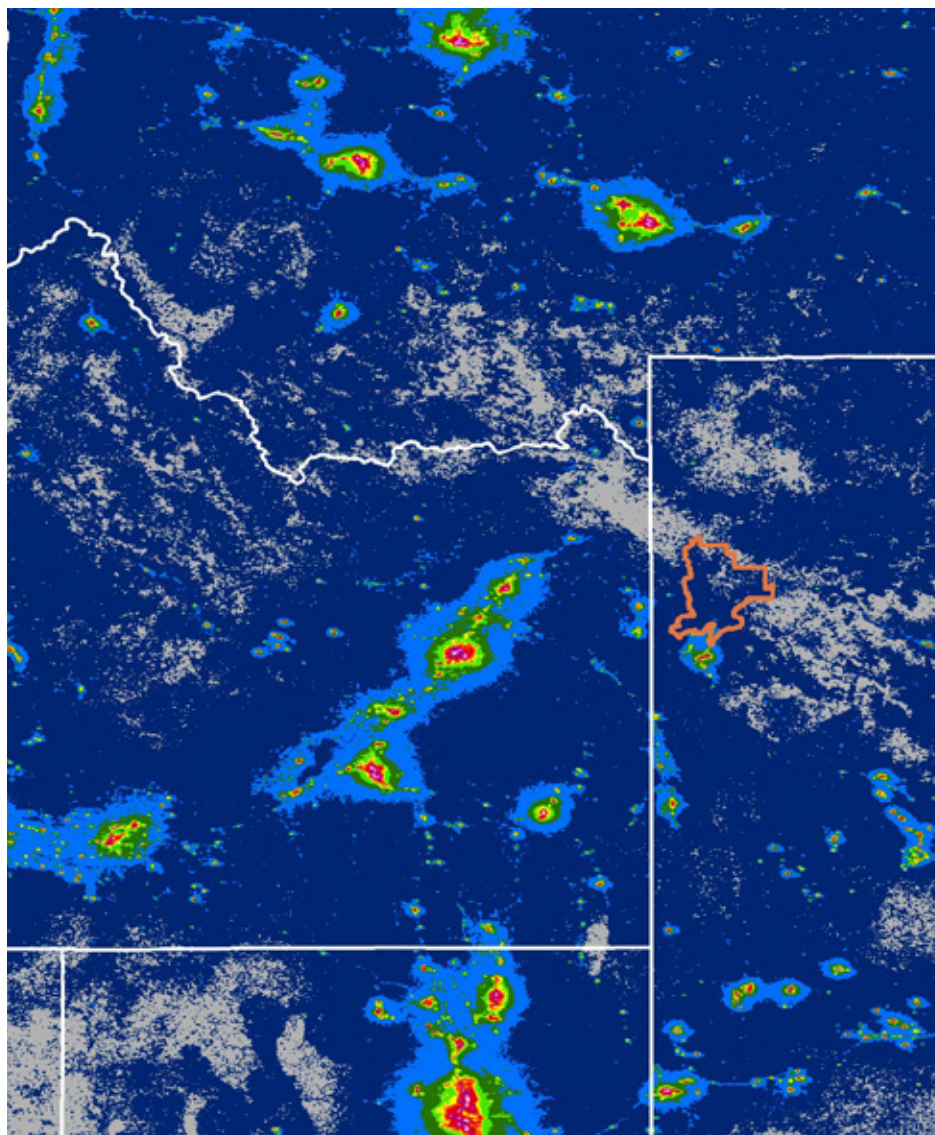
WYOMING

CROSS-CUTTING

Detecting Changes in Nighttime Sky Brightness over the Grand Tetons with the Suomi NPP VIIRS Sensor



By Austin Counts



Mean radiance over six months (2014). Hotspots signify a higher ratio of artificial sky brightness to natural sky brightness.

Gazing up at the night sky is perhaps one of the most age-old traditions of human civilization, appearing in famous early literature such as the *Iliad* and the *Odyssey*. “Seeing the stars at night is the fundamental source of curiosity and wonder. It is one of the ways that we feel humble, and we see the vastness of the universe and the importance of the precious planet Earth,” said Sharolyn Anderson, research scientist for the National Park Service. The view of the Milky Way Galaxy from Earth has aesthetic value and is also an invaluable tool—inspiring philosophy and enabling astronomy and navigation throughout human history.

Across the world, the stars in the night sky have shaped what we think and know about our own solar system and molded life on Earth. Much like the early cartographers and explorers, many animals depend on an unobstructed night sky for navigation during long-distance migrations. However, in today’s modern age, this view of the Milky Way is fading from the grasp of most of the U.S. population.

When most Americans think of pollution, artificial light emitted from large cities and parking lots is rarely foremost in mind. However, this artificial light can disperse throughout the night sky up to 200 kilometers away from its source, and can negatively affect our ability to view delicate structures of the night sky, such as the



Milky Way. Despite artificial light pollution's low profile recognition to the public, light radiating from cities across the United States may be experienced by more U.S. citizens than any other known pollutant. This sky glow has left 97% of the U.S. population unable to see the Milky Way Galaxy at night. Artificial light pollution has also been linked to obesity, depression, insomnia, cancer, and other health problems due to the disruption of circadian rhythms and melatonin production.

The Wyoming Cross-Cutting II project teamed up with the National Park Service (NPS) Intermountain Region, the NPS Natural Sounds and Night Skies Division, and Wyoming Stargazing in order to measure the amount of radiant artificial light, or sky glow, over Grand Teton National Park. Currently, sky glow measurements taken in the park are obtained using handheld light meters, which makes large scale *in situ* data difficult to obtain, leaving most of the night sky over the park unaccounted for. By utilizing NASA's Suomi NPP VIIRS sensor, the Wyoming Cross-Cutting II team was able to measure the mean artificial sky glow found at zenith—the area located directly overhead of an observer—in Grand Teton using the Skyglow Estimation Toolbox (SET).

All this work has paid off. The Wyoming Cross-Cutting II team was awarded grand prize in the summer 2017 VPS competition, and Project Lead Veronica Warda also received recognition as the DEVELOP Ambassador of the Term. "My

"Seeing the stars at night is the fundamental source of curiosity and wonder. It is one of the ways that we feel humble, and we see the vastness of the universe and the importance of the precious planet Earth."

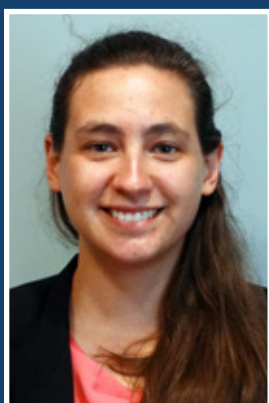
-Sharolyn Anderson, research scientist for the National Park Service

teammates were so hardworking and dedicated; there is no way that the project would have been as successful without them. Each member of the team brought a specific set of skills to the table that complemented the skills of the other members, allowing us to get more done as a team than I would have thought possible," said Warda.

The Wyoming Cross-Cutting II project has been expanded upon during the fall 2017 term, continuing the collaboration with the National Park Service and Wyoming Stargazing to detect sky glow at various angles.



Members of the Wyoming Cross-Cutting II team at the VA-Wise node at the SW Virginia Technology Council Awards Banquet and Gala.



DEVELOP PROJECT LEAD
SPOTLIGHT

VERONICA WARDA

"I want to emphasize that it was not only the skills that each member previously had that made the project successful, but the attitude each member brought with them. My team members were enthusiastic about learning new things and creative in the solutions to problems they had never encountered before...they worked hard to use the skills they had to further the project and even harder to develop new skills."

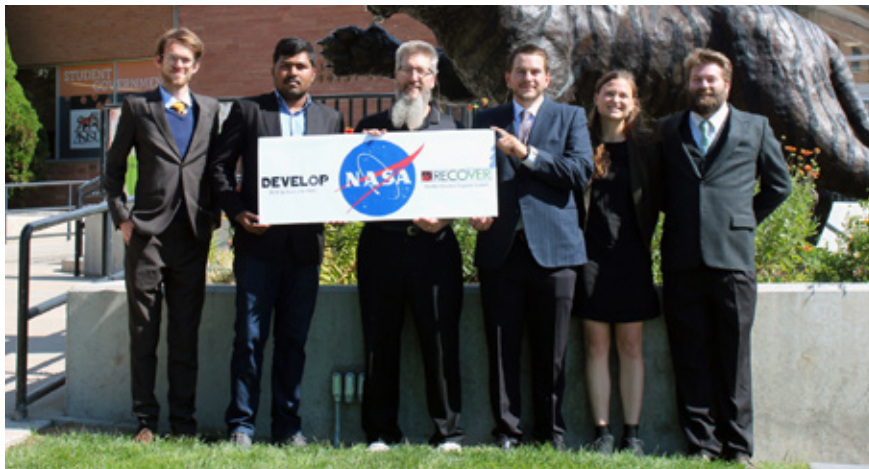
ID

Idaho - Pocatello

Center Lead: Brandon Crawford; Assistant Center Lead & Communications Fellow: Leah Kucera

Fall 2017 Participants: Dane Coats, Jacob Ramthun, Rituraj Yadav

The Idaho DEVELOP node started fresh this fall with four new DEVELOPers and one transfer from the Jet Propulsion Laboratory. While working on a continuation of the summer's Southern Idaho Disasters project, our team has overcome interesting challenges and grown together. Despite ongoing construction sounds and distractions during the initial weeks of the project, we started in earnest processing Landsat 5 and 8 images along with MODIS data to create and analyze NDVI layers. Instead of hand-processing all the data, the team developed a series of Python codes to automatically run through NDVI files and produce useful outputs for project partners.



Our team also bonded outside of the office through a variety of activities. We enjoyed a weekend camping adventure in southwest Montana, the occasional themed potluck with other

researchers at Idaho State University's GIS Training and Resources Center (TReC), as well as weekly "Wacke Wednesday" seminars sponsored by the geology department.

MSFC

Alabama - Marshall

Center Lead: Maggi Klug; Assistant Center Lead: Helen Baldwin; Project Coordination Fellow: Mercedes Bartkovich

Fall 2017 Participants: Nicholas McVey, Emily Kinkle, Dashiell Cruz



The North Alabama Ecological Forecasting team at Marshall developed a close connection with their project, as their study area was located less than 8 minutes away. The team had multiple in-person meetings with their project partner, the Land Trust of North Alabama, and was able to explore some of the 60+ miles of trail managed by the trust. The team used Landsat imagery to examine how urbanization is impacting critical habitat for sensitive species in Limestone and Madison Counties. They used their urbanization classification to analyze trends over the past decade, and then used those trends to predict where and which

habitats are at the greatest risk for future degradation and in need of protection in order to maintain the area's high biodiversity. The team's hard work culminated with a presentation on research findings to the MSFC NASA and University of Alabama in Huntsville communities during the fall 2017 close-out event. In addition to exploring trails, teambuilding was also facilitated through themed potlucks and a field trip to the US Space and Rocket Center. Our resident Fellow, Mercedes Bartkovich, also had the chance to present spring 2017's Mississippi River Basin Disasters II project at the Pecora 20 conference in South Dakota.

JPL

California - JPL

Center Lead: Erika Higa; Assistant Center Lead & Geoinformatics Fellow: Kate Cavanaugh; Project Coordination Fellow: Nick Rousseau

Fall 2017 Participants: Natalie Queally, Alexandra Matacchieri, Kelsey Foster, Lael Wakamatsu, Ariana Nickmeyer, Carlos Reyes-Andrade



Early in the term, JPL DEVELOPers participated in a 2-day Software Carpentry Workshop led by special guest Ryan Avery, a DEVELOP alumni from the Langley node. Avery and current and former Geoinformatics Fellows Kate Cavanaugh and Erika Higa helped participants gain hands-on learning experience on Python, Bash, and GDAL.

The Santa Monica Mountains Ecological Forecasting II team benefitted from being located close to their study area, and were able to meet their project partner in person. The team got a better understanding of the oak woodlands die-offs from a guided visit in the field. The San Francisco Bay-Delta Water Resources

II team also had a great field opportunity, and were able to collect water and vegetation samples in the Bay-Delta while visiting project partners. Natalie Queally presented the Santa Monica Mountains project at the HyspIRI Science Applications Workshop at the California Institute of Technology, and her talk was attended by Woody Turner, NASA's Program Manager for Ecological Forecasting! The node also participated in the Los Angeles County GIS Day, promoting the fall projects and networking with other GIS professionals. At the end of the term, the node hosted one of its largest close-out events with a large attendance of project partners, mentors, and family members.

NC

North Carolina - Asheville

Center Lead: Alec Courtright; Assistant Center Lead & Communications Fellow: Jonathan O'Brien

Fall 2017 Participants: Andrew Shannon, Lilian Yang, Aaron Mackey, Rachel Wegener, Laurel Mahoney, Shannan Hurley

The DEVELOP teams at the NOAA National Centers for Environmental Information (NCEI) node continued to lead the way in demonstrating how NASA Earth observations and NOAA climate data can be combined to create meaningful results.

The Hawaii and US Affiliated Pacific Islands Disasters team examined the weather system as a whole over the Pacific Ocean in an effort to predict future severe weather patterns. This work is especially important due to the environmentally precarious nature of these islands, and the wealth of physical and cultural beauty that is dependent on their survival. Meanwhile, the Northeast Cross-Cutting team used NASA MODIS

data and NOAA temperature data to derive a new set of temperature indices providing vital information that can be used by temperature-sensitive industries to predict future conditions and their impact in the Northeastern United States.

These teams benefitted greatly by having access to world-class weather scientists and NOAA NCEI's in-house communications team, who were always more than willing to offer their time and resources. But it wasn't all science. Even with the mountains of work and 10-week time frame, the DEVELOPers at NCEI were still able to squeeze in plenty of bonding with hiking, potlucks, movies, happy hours, and team lunches.



VA

Virginia - Wise

Center Lead: Eric White; Assistant Center Lead & Impact Analysis Fellow: Brooke Colley; ACL & Communications Fellow: Austin Counts

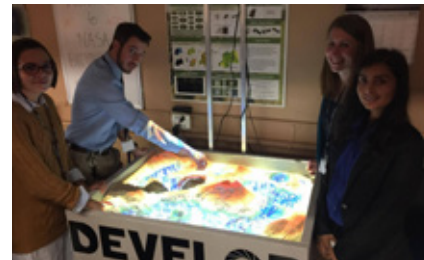
Fall 2017 Participants: Margaret Mulhern, Man Giri, Ian Brastow, Manda Au, Audrey White, Zhu Wang

New leadership Eric White, Austin Counts, and Brooke Colley have set the pace for the node. With each having been a former DEVELOPer at the VA node, they all bring ample experience along with an appreciation for the charms and vibrant culture of southwest Virginia. The VA node has participated in several local events, ranging from the Virginia Tech College of Natural Resources and Environment Career Fair to The University of Virginia's College at Wise's Girl's Day in STEM-H.

Though each participant was starting fresh with DEVELOP, they all worked tirelessly during the term. The Yellowstone Ecological Forecasting team partnered with Yellowstone National Park to monitor early-

season invasive species within park boundaries. Their project examined the historical spread of invasive species and predicted future invasive extent under changing climatic conditions, with the end goal of improving current park management practices.

The node also had the opportunity to embrace the new Urban Development application area. The Colorado Plateau Urban Development team expanded on project work from the Wyoming Cross-Cutting I and II teams, expanding their methods mapping out encroaching light pollution. Their project was presented by Margaret Mulhern at the Colorado Plateau Dark Sky Cooperative Stakeholder Workshop on November 16th and 17th in Salt Lake City, Utah.



AZ

Arizona - Phoenix

Center Lead: Lance Watkins; Assistant Center Lead & Impact Analysis Fellow: Liz Dyer

Fall 2017 Participants: Yalin Qu, Mario Chavez, Dean Blumenfeld



This term the Arizona node welcomed their first Fellow, Elizabeth Dyer and received their first in-person visit from Dr. Kent Ross from the DEVELOP National Program Office! The Phoenix Health and Air Quality II team worked to provide the City of Phoenix Public Transit Department with information

enabling them to better prioritize the construction of shade structures at currently unshaded bus stops across the city. During this project, the team gained experience performing field work using Kestrel and Onset HOBO data loggers to collect air and land surface temperature measurements at a variety of selected

unshaded bus stops across Phoenix.

Participants also had the opportunity to work with new types of data, including results from a recent LiDAR flight over the city. While determining how to manipulate LiDAR data, the team learned to use ArcPro, and the node established new connections with the Arizona State University Map & Geospatial Hub. At the end of the term, representatives from the City of Phoenix Public Transit Department visited Arizona State University to attend the 2017 close-out, where the participants presented the results of their project to project partners. Center Lead, Lance Watkins, was able to present on DEVELOP's capacity-building at the Applied Sciences Health and Air Quality Annual conference.

GSFC

Maryland - Goddard

Center Lead: Victor Lenske; Assistant Center Lead & Project Coordination Fellow: Sara Lubkin

Fall 2017 Participants: Gia Mancini, Douglas Gardiner, Luisa Silva, Aaron Warga, Alison Thieme, Helen Plattner

The Goddard node had an extremely rewarding term full of discovery and professional development. Assistant Center Lead Sara Lubkin presented her continuing work from the summer 2015 Virginia Water project along with Dr. Kimberly Reece of the Virginia Institute of Marine Science (VIMS) at the 9th US Symposium on Harmful Algae. Showcasing the work of the GSFC summer 2017 Niger Water Resources team, Alison Thieme was awarded a runner-up prize for the AGU Data Visualization and Storytelling Competition. She received \$1,000 and complimentary registration to AGU's 2017 Fall Meeting.

The Western Europe Health and Air Quality Team combined NASA



Earth observations with the Global Mosquito Alert Consortium's citizen science data to create a methodology and habitat suitability map that will aid in monitoring vector-borne disease outbreaks. They collaborated with international organizations in Spain, Italy, The Netherlands, and Belgium, as well as The Wilson

Center and the Institute for Global Environmental Strategies.

Highlighting the use of citizen science data, the team was interviewed for a Facebook Live event showcasing the use of the new GLOBE Observer Mosquito Habitat Mapper. The team also presented in a joint Museum Alliance/Solar System Ambassadors Webinar where they discussed the real-world applications of NASA data for anticipating and responding to disease outbreaks. In addition to enjoying multiple themed potlucks, DEVELOPers toured Goddard's Clean Room (the largest in the world!), Space Environment Simulator, and mission control centers for NASA's Earth Observing System and the Hubble Space Telescope!

CO

Colorado - Fort Collins

Center Lead: Tim Mayer; Assistant Center Lead & Geoinformatics Fellow: Daniel Carver

Fall 2017 Participants: Kaitlin Walker, Julia Sullivan, Caroline Martin, Kristin Davis, Kevin Gallagher, Clark Gary Olds, Jillian LaRore, Jenny Mehren



The Fort Collins node had an exciting fall term. Both the Intermountain West Ecological Forecasting and Colorado River Basin Water Resource II project teams offered the opportunity for participants to expand their knowledge of modeling via fun and exciting programs such as Google Earth Engine, R, and SAHM. This term, the node focused on

creating an environment fostering open communication between advisors, mentors, teams, and individual participants. We hope to continue this mindset into the next term and beyond!

The node also had the opportunity to attend several conferences, including the Colorado State University Geospatial Centroid GIS DAY in Fort Collins, the 14th Biennial Conference of Science & Management on the Colorado Plateau & Southwest Region in Flagstaff, AZ, Pecora 20 in Sioux Falls, SD, and Bioenergy Alliance Network of the Rockies Annual Meeting, also right at home in Fort Collins.

In addition, the node hosted several events, including technical writing seminars with mentors and advisors to strengthen participant's writing skills, as well as a

weekly node discussion on modeling and statistics called "Chalk Talks." Lastly, the DEVELOP participants also attended weekly "Geospatial Brown Bag" lunch events at the Colorado State University Geospatial Centroid covering a broad array of exciting cutting-edge topics in geospatial science.



ARC

California - Ames

Center Lead: Jenna Williams; Assistant Center Lead & Geoinformatics Fellow: John Dilger

Fall 2017 Participants: Peter Norton, Heather Myers, Anna McGarrigle, Andrea Ferrer



The NASA DEVELOP Ames Research Center node sent the Lassen Volcanic National Park Disasters II team nearly 300 miles northeast to Fall River Mills, CA, to present their project to the Burney-Hat Creek Community Forest & Watershed Group. The Burney-Hat Group is a Collaborative Forest Landscape Restoration Program bringing together stakeholders from the USFS, NPS, Sierra Institute for Community and Environment, and private timber interests—all of whom hold the shared goal of forest restoration and health. The team stayed at the

NPS headquarters in the small town of Mineral, CA, which is home to only 123 people (closer to 50 year-round!). Steve Buckley, a NPS ecologist and project partner, took the team throughout the park and forest explaining the varied geology, forest fire impacts, and mountain meadow encroachment.

DEVELOPERS at Ames Research Center in San Francisco met with Dave Thau, Manager of Developer Relations for Google Earth Engine, on November 9th. After a brief tour around the Google Campus, the Lassen Volcanic National Park Disasters II team sat down and talked about all things GEE. The discussion revolved around how GEE has been utilized throughout the project and DEVELOP at-large, as well as strategies and tips for improving coding skills.

The node also participated in the 20th annual NASA Ames Chili Cook-Off, bringing home the gold for best

vegetarian chili! Center Lead Jenna Williams and Geoinformatics Fellow John Dilger formed Chili-al Pursuit, batching up over 12 gallons of ABQ Green Chili from a recipe courtesy of Jenna's mom. Other game-night themed team names included The chiliMongers of Catan, Barrel of Green Monkeys, and NASA Meat Bowl.



AL

Alabama - Mobile

Center Lead: Farnaz Bayat; Assistant Center Lead & Impact Analysis Fellow: Danielle Quick

Fall 2017 Participants: Dionne Blanks, Chad Austin, Gregory Leenig

During the fall term, the Coastal Alabama Water Resources II team used NASA Earth observations to evaluate water quality in the Mobile Bay and Mississippi Sound to assist the Alabama Coastal Foundation, The Nature Conservancy, Alabama Chapter, and the Mississippi – Alabama Sea Grant Consortium—enhancing future oyster habitat suitability and fisheries management.

The Mobile Bay and Mississippi Sound comprise the majority of coastal estuaries along the Alabama and

Mississippi Gulf Coast. These bodies of water provide salinity conditions needed to sustain diverse wildlife species and coastal habitat. The project quantified water quality via a time series analysis of turbidity, salinity, and sea surface temperature from September 2003 to May 2007. The team also incorporated the results from the summer 2017 Coastal Alabama Oceans project to evaluate overall changes in water quality from 2003 to present.

The team will present the results of the project at the Mobile Bay National



Estuary Program Science Advisory Committee meeting on January 24, 2018. Additionally, the project results were presented at the 2017 fall AGU NASA In-Booth Flash Talk on December 12th in New Orleans.

LaRC

Virginia - Langley

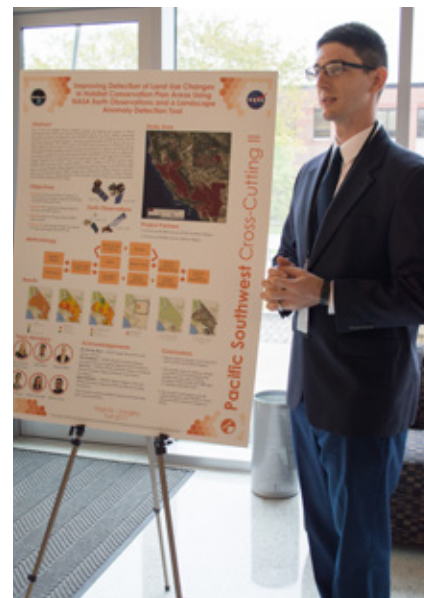
Center Lead: Emily Gotschalk

Fall 2017 Participants: Kim Johnson, Emily Doerner, Jarell Perez, Michaela Britt, Justin Herbst, Zachery Stout, James Ficklin, Andrew Bonifas, Sarah Phillips, Nicholas Gulston, Roger Johnson

Fall 2017 at NASA Langley Research Center brought exciting and engaging opportunities for DEVELOPerS. The highlight of the term was the Langley Open House, where NASA opened its doors to over 20,000 people! DEVELOPerS had a chance to share stories about their work and their experience with the program to guests, and enjoyed



all of the festivities on center that day. Engagement with the NASA community extended beyond the Open House, including advising, projects, and other activities on center through tours of the Vertical Spin Tunnel and Model Shop, air quality data collection at Shenandoah National Park, and the opportunity to participate in the opening of the Katherine G. Johnson Computational Research Facility. As Langley is looking towards its next 100 years, the node is also preparing for an exciting future of new projects and partners through collaborations developed from our participation in the Groundwork USA National Assembly and GEO Week 2017.



GA

Georgia - Athens

Center Lead: Caren Remillard; Assistant Center Lead: Christopher Cameron; Communications Fellow: Austin Stone

Fall 2017 Participants: Suravi Shrestha, Maria Luisa Escobar Pardo, Emad Ahmed, Marie Bouffard, Nicholas Morgan, Amanda Aragon, Sonia Linton, Seyed Navid Hashemi Tonekaboni, David Rickless

The Georgia - Athens node had another rewarding fall term filled with presentations, professional development activities, and partner interactions!

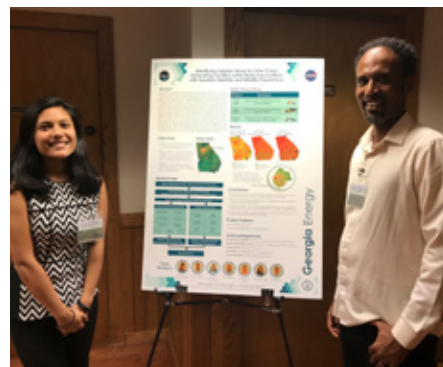
The Southeast Ecological Forecasting project was converted into a journal manuscript and submitted for publication. Participants and partners from multiple terms collaborated to prepare the article for submission, and all are looking forward to writing future publications together.

The node also was kept busy with conferences and presentations! The Georgia Energy team presented their project at the Gopher Tortoise Council Meeting, and will also be presenting at the upcoming AAG conference. The Eastern India Ecological Forecasting

project was presented at AGU, and all of the fall DEVELOPer projects were featured as a part of the University of Georgia's GIS Day.

The Atlanta Water Resources project was also featured in the Atlanta Journal Constitution newspaper. Project partners were quoted on the value of the project for their decision-making in prioritizing focus areas for green infrastructure and conservation efforts.

Finally, the GA, VA and NC nodes congregated at The Collider for the DEVELOPer Southeast Fall Showcase. Science advisors, project partners, participants, and NOAA scientists all had the opportunity to network, share their projects, and discuss future collaborations.



DEVELOPers OF THE TERM



JUSTIN HERBST embodied a new level of engagement and capacity building for Langley this term. As an active-duty member of the Air Force specializing in geospatial intelligence, Justin joined DEVELOP to learn more about science-based remote sensing and GIS to supplement his work with the Air Force. What is unique about Justin's time with DEVELOP is that all of his time occurred during his "weekends" from his Air Force work! Beyond his technical growth, Justin brought a strong sense of enthusiasm for learning, understanding of partner needs, and a willingness to support the larger NASA community. Overall, Justin represents the DEVELOP archetype of going above and beyond, and demonstrates how you can gain so much from even a brief time with the program.

ABHISHEK KUMAR has worked with the UGA DEVELOP node for five consecutive terms. As an international student pursuing his PhD in Geography, he offers a unique perspective and is well-equipped for training participants to use remote sensing data. He has demonstrated the ability to work with a diverse team of students, learn new complex methods, master new software, produce results, and apply them to environmental issues. More importantly though, he has transformed into a leader that we all admire. The personal growth he has experienced over the past four terms is remarkable, and he now stands ready to take on greater responsibility in research and leadership.



FALL 2017 NOMINEES

Manda Au
Virginia - Wise

Peter Norton
California - Ames

Yalin Qu
Arizona - Phoenix

Dionne Blanks
Alabama - Mobile

Laurel Mahoney
North Carolina - Asheville

Jacob Ramthun
Idaho - Pocatello

Kelsey Foster
California - JPL

Emily Kinkle
Alabama - Marshall

Julia Sullivan
Colorado - Fort Collins

Luisa Silva
Maryland - Goddard



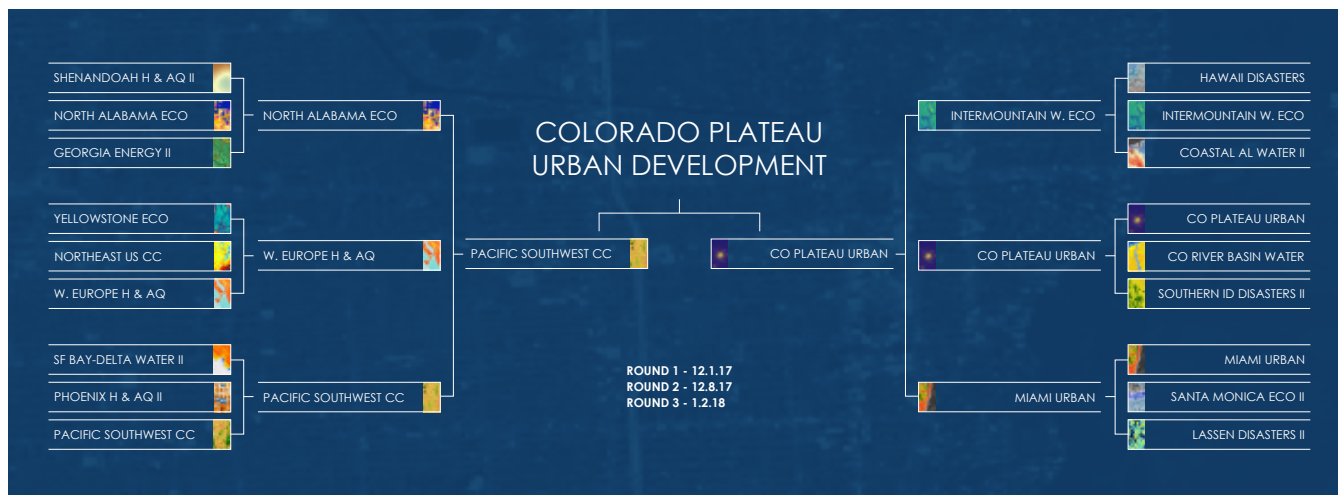
AMBASSADOR OF THE TERM

JULIA MARRS

Julia Marrs has been a DEVELOP Campus Ambassador at Boston University since early 2016. Her professionalism and outstanding commitment to DEVELOP and the Ambassador program has played a large role in student recruitment. Julia has also helped establish DEVELOP's newest node in Boston, Massachusetts. In early fall, Julia worked to create and distribute fliers aimed at informing students and professors at BU of DEVELOP opportunities. Julia also helped conduct participant interviews with some of the very students she had initially reached out to during her time as an ambassador.

VIRTUAL POSTER SESSION

COMPETITION NEW BRACKET FORMAT

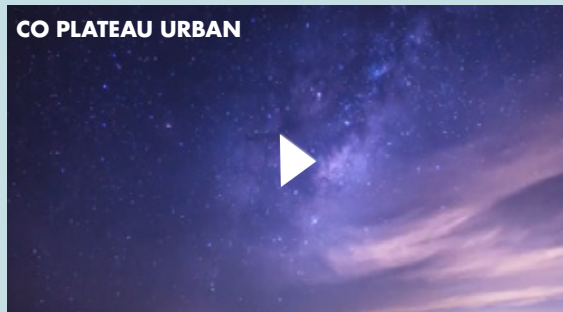


FALL 2017 FINALISTS:

DEVELOP has converted to a new format for the project videos! Teams will now go head to head to determine who will be the term's virtual poster session champion.

The 2017 fall term VPS finalists included two Virginia teams: **Pacific Southwest Cross-Cutting II** from Langley and **Colorado Plateau Urban Development** from Wise, with Wise County taking home the grand prize. Congratulations!

Watch the fall 2017 project videos online on the NASA DEVELOP YouTube channel, [here!](#)



DEVELOP ALUMNI MAPATHON



Who: DEVELOPerS and Alumni from multiple nodes, including Langley, Mobile, and JPL, volunteered remotely across the United States.

When: November 13-17, 2017

What: Mapathon participants used Openstreetmap to trace and record buildings, waterways, and roads for disaster relief efforts in Bangladesh supporting the Red Cross.

This fall, DEVELOP hosted its second Mapathon event of the year. During the 10th week of the term, alumni and current participants were invited to help map flood-prone urbanized areas in Chittagong, Bangladesh. This event was jointly hosted by the Communications and Impact Analysis Fellows through the Once a DEVELOPer, Always a DEVELOPER Facebook group and Openstreetmaps.

During the event, participants aided the MissingMaps program with mapping

Chittagong's buildings, roads, and waterways. These vulnerable areas have seen an increase in flooding due to exposure to extreme weather events, such as cyclones, which can carry 30 mph winds and torrential rainfall.

Requested by the Netherlands Red Cross through the HOT Tasking Manager, this high-priority project was initiated to create viable disaster response maps pinpointing the most vulnerable households for use in future disaster relief situations--effectively leveraging DEVELOP's resources.



DEVELOP ALUMNI SPOTLIGHT

SEAN MCCARTNEY

Sean McCartney, former Center Lead at NASA's Goddard Space Flight Center, first joined DEVELOP during the summer of 2015. Since his time with the program, Sean has continued work using NASA Earth observations through NASA's Food Security Office at Goddard. Sean was able to leverage the knowledge, networking opportunities, and professional skills gained during his time with DEVELOP to excel in his new role as the Food Security Coordinator. Sean leaves the DEVELOPerS with this small bit of advice: "Follow your passion; listen to others; be humble; work hard; and don't forget we are standing on the shoulders of giants."

UPCOMING EVENTS

- January 2** VPS winner announced
- January 8** Summer application opens
- January 22** Spring term begins
- February 16** Summer applications due
- March 30** Spring term ends
- June 4** Summer term begins

ADDITIONAL UPDATES

The DEVELOP webstore provides embroidered gear year-round. Order individually or as a node at <http://tinyurl.com/gS6oq8h>. Orders are processed monthly!

Our Ambassadors work hard to create innovative methods for expanding DEVELOP's reach to a diverse audience. Ambassadors are renewable, semester-long volunteer positions for enthusiastic, creative former participants who want to play an integral role in recruitment. Interested? Contact the DEVELOP [Communications team](#).

HAVE A JOB OPENING? Contact DEVELOP.Communications@gmail.com to get the word out! Or, post the opportunity to DEVELOP's LinkedIn group and the Once a DEVELOPer, Always a DEVELOPer Facebook page. Both are private groups just for alumni—if you're not yet a member, join today!

Dream. Discover. DEVELOP.

FOLLOW US #NASADEVELOP



DEVELOP will be celebrating its 20th anniversary in 2018. Multiple events will be held to recognize this milestone, so be sure to watch DEVELOP's social media pages in the coming year!



BRAND NEW: images, maps, and more!



DEVELOP National Program: Public outreach; **Once a DEVELOPer, Always a DEVELOPer:** job posts (anyone can post!)



VPS and Promotional Videos



Articles & events: tweet to @NASA_DEVELOP or #NASADEVELOP (we'll tweet back!)



Job posts, skills & tips, important events.



Email us! We love to hear from you.