



The DEVELOPer *Fall 2015*

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NASA DEVELOP Program Highlights

This fall, 105 participants conducted 26 projects at 13 locations.

DEVELOPers participated in 53 different conferences and meetings so far in 2015.

Individuals from DEVELOP's National Program Office visited Stennis Space Center for its final closeout as it will be transitioning out of the DEVELOP program. Thank you for all your hard work Stennis! ◀◀◀



NASA Ames Research Center

Dr. Venkat Lakshmi, professor of Earth and Ocean Sciences at the University of South Carolina, visited the Ames DEVELOP office to provide helpful advice for the two fall projects.

Nolan Cate, team lead of the Fall Lake Tahoe Water Resources project, presented the summer Sierra Nevada Water Resources project at the 2015 Yosemite Hydroclimate Workshop in October.

Dr. Brian Coltin, computer scientist in the NASA Ames Intelligent Robotics Group, provided invaluable guidance to the Lake Tahoe Water Resources team this term, attending weekly meetings with the group and suggesting ways to make the lake level detection algorithm more robust. The team presented their findings to the Ames Robotics Team at the end of the term.

Andrew Nguyen, Alannah Johansen, and Martha Sayre, members of the Puerto Rico Health project, presented their findings at the UC Berkeley GIS Day event on November 18th, 2015.

The Ames Research Center DEVELOP team presented 3 posters (Navajo Nation Climate II, Sierra Nevada Water Resources, and Mexico Water Resources) at AGU and 2 Ignite Talks (Puerto Rico Health and Lake Tahoe Water Resources).



BLM at Idaho State University GIS TReC

The Southeast Idaho Disasters team took a field trip out to the burn scar of the June 28, 2012 Charlotte Fire that burned 66 structures. The concentration of junipers in and around the Charlotte fire area added to the intensity and heat of this catastrophic wildfire. Juniper skeletons can still be seen littered across 1,038 acres of burned landscape as a reminder of the dangers of living in the wildland urban interface.

New project partners, Idaho Fish and Game and Carabou-Tangree National Park were introduced to DEVELOP and the Southeast Idaho Disasters project. These new partners along with the Bureau of Land Management have provided expert knowledge about juniper species, changing wildfire regimes, and animal habitats that are affected by the encroachment of juniper.

NASA ARSET and the ISU GIS Training and Research Center hosted an ARSET training focused on wildfires. Representatives from agencies from all over Idaho, students from as far as Michigan, and NASA representatives from the east coast converged to share knowledge and experience about how NASA products, GIS, and remote sensing can help understand and combat wildfires.

BLM-ISU

GSFC



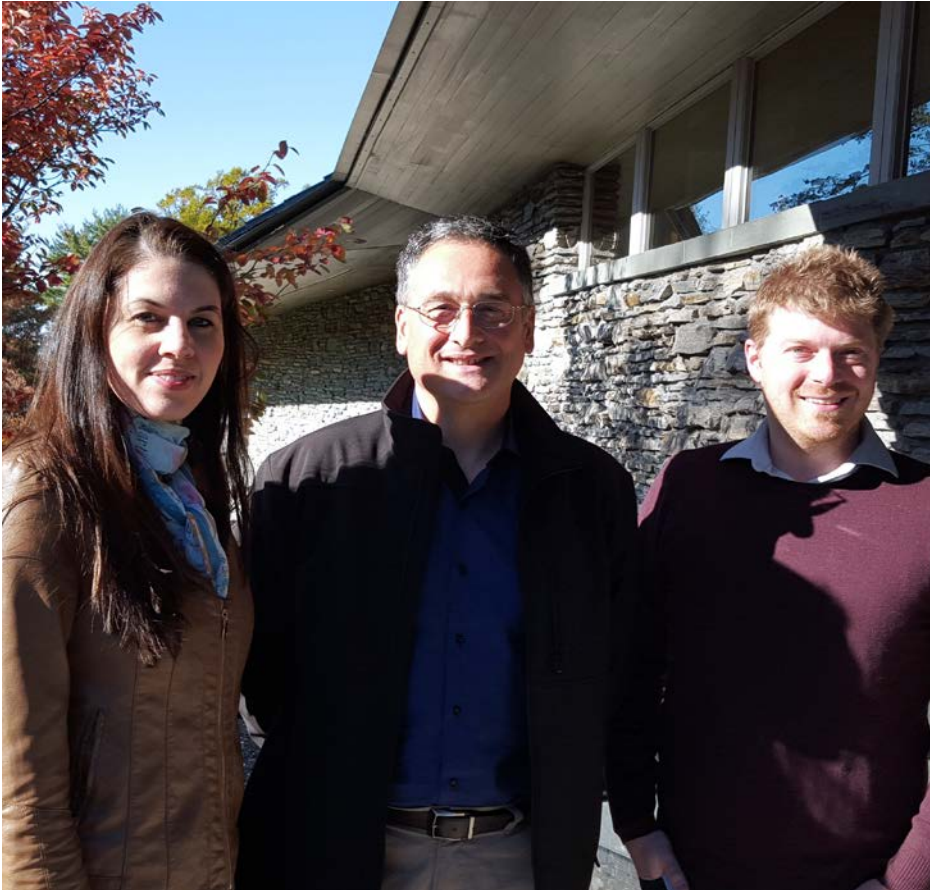
NASA Goddard Space Flight Center

After two terms creating and implementing a landslide hazard assessment model, the Himalayan Disasters III team completed their SLIP product, which automated landslide detection and then refined their tool allowing for greater usability by end-users. The team completed a first round of validation for their product and worked with their science advisor to submit their research to a peer-reviewed journal. Members of the team also traveled to AGU to present their research.

The Montana Ecological Forecasting team refined their methodology completing a consensus map based on three separate Habitat Suitability Models (HSM). Their research will benefit end-users in identifying areas for nesting sites for the northern goshawk (*Accipiter gentilis*) in the Lewis and Clark National Forest (LCNF). Their project also engaged end-users regarding climate forecasts in 2050 on how the environmental envelope will change for goshawk nest sites in the LCNF.

Several participants volunteered and attended Goddard Space Flight Center's 2015 Open House. Over 20,000 people from the community attended making this the biggest Open House in Goddard's history. DEVELOP participants played a big role in making the Open House a success.

Over the course of the term, participants at GSFC participated in many team-building exercises including tours of Goddard facilities, potlucks, and scientific presentations.



International Research Institute for Climate and Society

This term, the IRI node sought to improve the understanding of the vertical profile of the urban heat island effect in southern New Jersey. The team accomplished this by comparing Landsat thermal images to data from probes placed around the Rowan University campus.

IRI

JPL



NASA Jet Propulsion Laboratory

The LA Oceans II team had a busy term! The team spent much of the fall going out and taking measurements of the plumes that are expelled from wastewater pipes. Their data will aid in understanding the environmental impacts in order to help scientists and policy-makers prepare for future diversion events of wastewater treatment.

DEVELOPers went on a tour of the High Bay 1 and 2, which are clean rooms located at JPL. These clean rooms are where SMAP was built and where scientists are currently working on the low-density supersonic decelerator (LDSD), a parachute aimed at slowing payloads heading to mars.

Two DEVELOPers, Nick Rousseau and Raul Garcia, took a weekend trip to mine large cubic crystals of Pink Halite at Searles Lake, Death Valley. The trip was a success as the team brought home one of the largest samples of pink halite collected this year!



NASA Langley Research Center

The Langley Science Directorate Director, Dave Young, and the Head of the Chemistry and Dynamics Branch, Bruce Doddridge, visited the DEVELOP offices to share early career advice with the participants.

The Langley close out took place November 19th. The teams gave oral and poster presentations to Langley Science Directorate scientists and DEVELOP alumni.

Throughout the term, participants toured the 8 ft. High Temperature Wind Tunnel, the Hangar, and the Inflatable Habitat. They also attended several events related to the preview of the 2017 Langley Centennial Celebration.

The Langley participants also took part in Combined Federal Campaign activities, including the 5K run, Cornhole Tournament and the Chili-Cook off.



Mobile County Health Department

The Coastal TX Water Resources II team added a new project partner, Dorina Murgolet from Texas A&M University – Corpus Christi. Her help allowed the team to refine their methodology for analyzing thermal anomalies in the Laguna Madre.

The fall term ended with the MCHD hosting a Gulf Coast Fall Showcase event, which highlighted projects from MCHD and SSC. Members of DEVELOP's National Program Office, as well as representatives from local environmental organizations and members of the community, all attended to make this a spectacular event.

MCHD DEVELOPers participated in a Halloween potluck event. Delicious food and scary costumes were shared among participants during this fun team-bonding event.

LaRC

MCHD



NASA Marshall Space Flight Center at NSSTC

The MSFC node took a tour to the United States Space and Rocket Center where they got to learn about the Saturn V rocket and Huntsville's contributions to the space race. They also explored the Science Fiction, Science Future exhibit where they learned about advances in medicine, A.I., and technology.

At the beginning of the term, the participants spent some time outside of work getting to know each other, celebrating the start of the term and participating in team building activities.

Daryl Ann Winstead (Assistant Center Lead) and Sara Amirazodi participated in the Warner Von Braun Poster Symposium where they presented their projects over the summer, Texas and Arizona Ecological Forecasting and Alto Orinoco Health and Air Quality, respectively. Daryl Ann Winstead won second place.

Leigh Sinclair (Center Lead) attended the HyspIRI Workshop in Pasadena, California where she learned about how to apply the HyspIRI satellite in future DEVELOP projects.



NOAA's National Centers for Environmental Information

During the 2015 fall closeout at NOAA NCEI in Asheville, participants from Wise and UGA joined the NCEI team to present their projects and attended a career panel discussion. The career panelists ranged in education levels, experience, and type of jobs (i.e. academic, government, private company, and contractors).

The NOAA NCEI team did many team building activities in and out of work. They joined a soccer team, went to movies and dinner, had lunch potlucks, and got together to carve pumpkins.

On Wednesday, November 4th, the NCEI team traveled to Johnson City to visit Rob Blevins, CEO of Meteorological Connections, LLC. to learn about how his company provides weather support for crops and water issues. The team then traveled to Wise County to visit the teams and introduce them to Rob Blevins. They were able to discuss projects, meet Mr. Blevins, and spend a little time getting to know the Wise teams.

The team members of the 2015 summer project, "Pacific Water Resources", have submitted the research for publication in the Bulletin of the American Meteorological Society and Eos Transactions. It has also been published as a news article at <https://www.ncdc.noaa.gov/> Additionally, because of the project, Google Earth Engine has ingested the PERSIANN-CDR dataset to use for future projects.

MSFC

NCEI



NASA Stennis Space Center

SSC DEVELOPers participated in a number of team-building activities including: a site tour and tour of the NOAA Marine Fisheries ROV testing facility, SSC steak nights, and the SSC Halloween party.

SSC research was presented at the 2015 Society of American Foresters Annual Meeting, the 10th Southern Forestry and Natural Resource Management GIS Conference, and the 2015 American Geophysical Union Fall Meeting.

Final SSC/MCHD Closeout was a great success, with alumni, friends, past project partners, NPO staff, and SSC senior leadership in attendance.



University of Georgia

The Georgia Water Resources Team acquired valuable knowledge on how to download, process, and analyze GRACE data. This is the first time any team member at UGA has worked with GRACE data, enhancing their study of groundwater storage and risk assessment in southwest Georgia.

The Southeast Ecological Forecasting Team collaborated with Brigitte Haram of the UGA Warnell School of Forestry and Natural Resources to survey aquatic vegetation at Lake Thurmond. Using an SVC GER 1500 Hyperspectral spectroradiometer, they measured the spectral irradiance of topped out and submerged vegetation. They also assisted Brigitte in surveying lake coves to map the occurrence of various species of aquatic vegetation for project partners at the US Army Corps of Engineers.

Antarctica project partner, Dr. Samuel Bowser, sent the Antarctica Climate team photographs from his field site in Western McMurdo Sound, Antarctica on November 6, 2015.

UGA, NCEI, and Wise County participated in a joint Fall Close-out in Asheville, NC.

SSC

UGA



USGS at Colorado State University

The Colorado Agriculture team produced the first species composition map of the Colorado State Forest State Park that provides detailed information on percent canopy cover of the four principal tree species present in the park. Maps used in the past only provided information on the dominant species in each area, and provided no information on mixed forest type canopy composition.

The Colorado Agriculture team had the opportunity to visit their study area in the Colorado State Forest State Park (CSFSP) on a full day field trip in late October. The team learned how to identify the various conifer species that they mapped using Landsat imagery this term. They also took a guided hike through the forest where they viewed bighorn sheep, amongst many other of the species that rely on the habitats of the CSFSP.

The Wyoming Ecological Forecasting team constructed a Species Distribution Model of cheatgrass presence for the 2012 Arapaho wildfire site in the Medicine Bow National Forest, Wyoming. Using Landsat 8, SRTM, and presence/absence field data, the team generated maps of current-day predicted cheatgrass extent. Due to the ruggedness of the terrain and expense of surveying such a large area, the status of cheatgrass encroachment in the majority of the burn area was unknown, and the results of this project provided the project partners with a level of spatial information previously unavailable.

Results of the Species Distribution Models were coupled with MODIS NDVI and EVI time series data to estimate phenological trends in areas with predicted cheatgrass presence. The pairing of spatial and phenological information constituted a new and potentially valuable application of remotely sensed data in the targeted management of invasive plant species.

Both teams would like to thank their project partners and mentors from the term, which often interacted with the teams on a weekly basis. Special thanks to Katherine Haynes (U.S. Forest Service – Laramie District) and Ryan Amundson (Wyoming Game and Fish Department) for their collaboration and project mentors Amanda West (Natural Resource Ecology Lab, Colorado State University) and Tony Vorster (Bioenergy Alliance Network of the Rockies) for their support and guidance throughout the entire term.



Wise County and City of Norton Clerk of Court's Office

Wise County received their first Fellow, Kimberly Berry. She has a B.S. in Geology with minors in GIS and Mathematics. Kim is doing an awesome job of taking care of both the Assistant Center Lead and Geoinformatics Fellow positions.

Wise County has also received a new Science Advisor, Bob VanGundy from University of Virginia's College at Wise. He visits weekly and enjoys talking to teams about their projects and other subjects they're interested in.

DEVELOP participants conducted recruiting activities at the Coalfield Agricultural Fair and Clinch Coalition's Annual High Knob Naturalist Rally. During the events, DEVELOPERS spoke to over 40 people, including teachers, who passed on the information to their students.

The Africa Great Lakes Weather project team was very excited to receive a new project partner for the African Great Lakes project, the Kenya Meteorological Department, with help from NASA SERVIR. This project was done in collaboration with Kristopher Bedka from NASA Langley's Climate Science Branch.

DEVELOPERS from NCEI, Asheville and Rob Blevins, a collaborator from Meteorological Connections, LLC, visited Wise on November 4, 2015. Teams from both the nodes discussed their projects and they also gained some valuable insight and guidance for the projects from Rob. ◀◀◀

Fall 2015 DEVELOPer of the Term



Sam Swanson [NCEI]

Sam Swanson was a remarkable team member during the Fall 2015 term. During the term, Sam demonstrated incredible passion, drive, and desire to improve and learn. This has been evident through his interactions with his team, personnel in the building, and feedback from his team members. Sam demonstrated that he is neither afraid of challenge nor hindered by it. The project had many challenges during the term and Sam worked hard to find solutions. Sam demonstrated an ability to overcome any challenge, including accessing data, determining how to analyze data, reaching out to researchers about methodology, or even teaching his team mates. While he is very bright, Sam also realizes there is much more to learn. Sam makes the effort to learn new things and steps outside his comfort zone when doing so. Sam has all the values and traits of an excellent DEVELOPer. He is committed, passionate, disciplined, intelligent, driven, innovative, compassionate, respectful, and fun. He provided valuable contributions and commitment to the NCEI project and team members.

Sam graduated in 2013 from Montana State University, with a degree in Biological Sciences. His hardest classes, however, were in statistics, a useful tool when handling the large data sets common in ecological research. Determination in his studies earned him a minor in Statistics, and skills he put to good use during this term. Furthermore, his work experience and travels after college have made him passionate about the areas he now studies: as a whitewater professional in California during the greatest drought in the region's history, proper water management techniques became very relevant to his job security. During his time abroad, he also became intimately familiar with two of the world's most spectacular rivers, the Futaleufu in Chile and the Zambezi in southeastern Africa. The former narrowly avoided a large-scale hydro-electric project, while plans are currently forming to flood the latter. Sam's love of these rivers and the regions surrounding them spurred him to learn more about water resources, and he's currently applying to graduate schools to study the subject and its influence on surrounding ecosystems. ◀◀◀

DEVELOPer of the Term *Runners-up*



Alannah Johansen
NASA AMES
RESEARCH CENTER



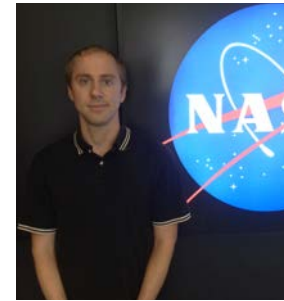
Sara Ramos
BLM AT IDAHO STATE
UNIVERSITY GIS TREC



Amanda Rumsey
NASA GODDARD
SPACE FLIGHT CENTER



Maryam Karimi
INTERNATIONAL
RESEARCH INSTITUTE FOR
CLIMATE AND SOCIETY



Gregory Halverson
NASA JET PROPULSION
LABORATORY



Rebekke Muench
NASA LANGLEY
RESEARCH CENTER



Elaina Gonsoroski
MOBILE COUNTY
HEALTH DEPARTMENT



Maggi Klug
NASA MARSHALL SPACE
FLIGHT CENTER AT NSSTC



J. Michael Brooke
NASA STENNIS
SPACE CENTER



Wenjing Xu
UNIVERSITY OF
GEORGIA



Stephanie Krail
USGS AT COLORADO
STATE UNIVERSITY



Arika Egan
WISE COUNTY AND
CITY OF NORTON CLERK
OF COURT'S OFFICE

Past & Future Events

- August 31 – October 2** Spring 2015 Term application window
- September 8** FY16 Fellows class begins
- September 14** Fall 2015 Term begins
- September 16–17** NASA Health & Air Quality Applications Program Review — Park City, UT
- October 6–8** NASA ARSET Remote Sensing for Wildlife Applications Workshop & Poster Session — Pocatello, ID
- October 19–20** 26th Annual Virginia GIS Conference (VAMLIS) — Charlottesville, VA
- November 20** Fall 2015 Term ends
- November 25** Fall 2015 Earthzine Virtual Poster Session launch
- December 14–18** 2015 AGU Fall Meeting — San Francisco, CA
- January 4 – February 12** Summer 2016 Term application window
- January 25 – April 1** Spring 2016 Term
- June 6 – August 12** Summer 2016 Term



▲ The Ames Research Center team tours Dr. Bendek's lab in search of exoplanets.



▲ NOAA NCEI's November 4th visit to Wise County, Virginia.

Dream Discover DEVELOP