

# NASA Biodiversity & Ecological Forecasting

*Understanding biological diversity and its effects on the Earth system to forecast changes and develop resource management strategies* Spring 2018

## Personnel Changes

After 8 years in the Biodiversity program, **Allison Leidner has transitioned** to the position of Program Manager for Education and Communication in the Earth Science Division. All project communications and publication updates should be relayed to Keith Gaddis, who is transitioning to a Senior Support Scientist role for the Biodiversity and Ecological Forecasting programs.

## Updates Reminder

Please send us manuscripts that have been accepted to journals. The best time to email is after the manuscript has been accepted, but well before it appears online or in print. This allows us to work internally to have your work highlighted when your paper is actually published.

Also, please let us know if you or your collaborators have received recognition from your institution or community for your research. We are not asking for a bi-monthly status update, and do not expect that you will have something to report each time. However, when you have them, these updates help us advertise our program to the public, the administration, and our research community.

## 14th Annual Biodiversity and Ecological Forecasting Team Meeting

The NASA Biodiversity and Ecological Forecasting Team Meeting and one day Marine Biodiversity Observation Network (MBON) All Hands Meeting were held in DC, April 24-27, 2018. Over 150 participants attended, with over 50 oral presentations and two dozen posters featuring the work of NASA funded investigators.

The MBON All Hands, held on April 28, focused on next steps for the three demonstration projects jointly funded by NASA, NOAA, BOEM, NSF, and Shell Oil, which are entering their last year of funding. The interagency community is pursuing efforts to integrate these MBON projects into the U.S. Integrated Ocean Observing System.

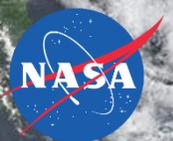
Links to project presentations can be found here:

[https://cce.nasa.gov/biodiversity/meetings/bef\\_spring2018.html](https://cce.nasa.gov/biodiversity/meetings/bef_spring2018.html)



## AVIRIS-NG in India

ISRO completed flights for the AVIRIS-NG in India campaign. They managed to collect 48 of 52 planned sites before the rising monsoon made additional collections difficult. Most of the sites collected have high-quality data. The Indian Ministry of Defence will now review the data and clear it before sending it to JPL for processing.



## Upcoming Applied Remote Sensing Trainings

### Techniques for Wildfire Detection and Monitoring

Dates: July 12 - 19, 2018 (10:00-12:00 and 18:00-20:00 EDT)

<https://arset.gsfc.nasa.gov/land/webinars/adv-wildfire-2018>

### Remote Sensing of Dust, Fires, Smoke, & Air Quality

Date: July 10 - 12, 2018 (08:30 - 17:30 PDT)

Host: Center for Env. Research, Education and Outreach

Location: Washington State University

<https://arset.gsfc.nasa.gov/airquality/workshops/nwaq-2018>

### New web-based tools for analyzing satellite Earth observations and ground-collected data

Date: July 26 (13:00 – 17:00 EST)

Location: NACCB 2018 conference, Toronto

## Conferences and Meetings

### NISAR Forest Applications Workshop

Washington, DC (June 13 - 14)

### EcoStress Launch & Science Team Meeting

Pasadena, CA (June 28-30)

### GEO BON All Hands

Beijing, China (July 9-13)

### N.A. Congress for Conservation Biology

Toronto, Canada (July 21-26, 2018)

*Team Presentations:*

#### Satellites & Citizens: Combining observational capabilities to inform conservation

Monday, July 23, 8:30-10 AM

### International Geoscience and Remote Sensing Symposium (IGARSS)

Valencia, Spain (July 22 - 27, 2018)

### Ecological Society of America

New Orleans (Aug 5-10, 2018)

*Team Presentations:*

#### Advancing Biodiversity & Ecological Science Using NASA Airborne Campaigns

Monday, August 6, 2018: 10:15-11:30 AM

#### Dynamic Resource Conservation Management & Benefits to Decision Support

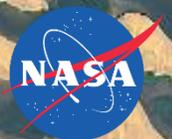
Wednesday, August 8, 2018: 8:00 - 9:30 AM



GRACE-FO successfully launched from Vandenberg Air Force Base on May 22, continuing the legacy of tracking the movement of water across our planet

## Recent Publications From The Program

- Benito, X., S. C. Fritz, M. Steinitz-Kannan, P. M. Tapia, M. A. Kelly, and T. V. Lowell. "Geo-climatic factors drive diatom community distribution in tropical South American freshwaters." *Journal of Ecology* (2018).
- Borowicz, A., P. McDowall, C. Youngflesh, T. Sayre-McCord, G. Clucas, R. Herman, S. Forrest, M. Rider, M. Schwaller, T. Hart, S. Jenouvrier, M. Polito, H. Singh, and H. Lynch. "Multi-modal survey of Adélie penguin mega-colonies reveals the Danger Islands as a seabird hotspot." *Scientific reports* 8, no. 1 (2018): 3926.
- Bowman, J. S., M. T. Kavanaugh, S. C. Doney, and H. W. Ducklow. "Recurrent seascape units identify key ecological processes along the western Antarctic Peninsula." *Global change biology* (2018).
- Byrd, K. B., L. Ballanti, N. Thomas, D. Nguyen, J. R. Holmquist, M. Simard, and L. Windham-Myers. "A remote sensing-based model of tidal marsh aboveground carbon stocks for the conterminous United States." *ISPRS Journal of Photogrammetry and Remote Sensing* 139 (2018): 255-271.
- Clark, M. L., J. Buck-Diaz, and J. Evens. "Mapping of forest alliances with simulated multi-seasonal hyperspectral satellite imagery." *Remote Sensing of Environment* 210 (2018): 490-507.
- Crickenberger, S., and D. S. Wethey. "Annual temperature variation as a time machine to understand the effects of long-term climate change on a poleward range shift." *Global Change Biology* (2018).



## Recent Publications From The Program (continued)

- Day, C., E. Landguth, A. Bearlin, Z. Holden, and A. Whiteley. "Using simulation modeling to inform management of invasive species: A case study of eastern brook trout suppression and eradication." *Biological Conservation* 221 (2018): 10-22.
- Goes, J. I., H. do R. Gomes, K. Al-Hashimi, and A. Buranapratheprat. "Ecological drivers of green Noctiluca blooms in two monsoonally driven ecosystems." Glibert PM, Berdalet E, Burford Metal (eds) *Global ecology and oceanography of harmful algal blooms*. Springer, Cham (2018): 327-336.
- Hohenlohe, P. A., B. K. Hand, K. R. Andrews, and G. Luikart. "Population Genomics Provides Key Insights in Ecology and Evolution." In: . *Population Genomics*. Springer, Cham (2018): 1-28.
- Hu, C., L. Feng, J. Holmes, G. A. Swayze, I. Leifer, C. Melton, O. Garcia, I. MacDonald, M. Hess, F. Muller-Karger, G. Graettinger, and R. Green. "Remote sensing estimation of surface oil volume during the 2010 Deepwater Horizon oil blowout in the Gulf of Mexico: scaling up AVIRIS observations with MODIS measurements." *Journal of Applied Remote Sensing* 12, no. 2 (2018).
- Kavanaugh, M. T., M. J. Church, C. O. Davis, D. M. Karl, R. M. Letelier, and S. Doney. "ALOHA from the Edge: Reconciling three decades of in situ Eulerian observations and geographic variability in the North Pacific Subtropical Gyre." *Frontiers in Marine Science* 5 (2018): 130.
- La Sorte, F. A., D. Fink, and A. Johnston. "Seasonal associations with novel climates for North American migratory bird populations." *Ecology letters* (2018).
- Laidre, K., H. Stern, E. Born, P. Heagerty, S. Atkinson, Ø. Wiig, N. Lunn, E. Regehr, R. McGovern, and M. Dyck. "Changes in winter and spring resource selection by polar bears *Ursus maritimus* in Baffin Bay over two decades of sea-ice loss." *Endangered Species Research* 36 (2018): 1-14.
- Lukacs, P., M. Mitchell, M. Hebblewhite, B. Johnson, H. Johnson, M. Kauffman, K. Proffitt, P. Zager, J. Brodie, and K. Hersey. "Factors influencing elk recruitment across ecotypes in the Western United States." *The Journal of Wildlife Management* (2018).
- Mahoney, P. J., J. K. Young, K. R. Hersey, R. T. Larsen, B. R. McMillan, and D. C. Stoner. "Spatial processes decouple management from objectives in a heterogeneous landscape: predator control as a case study." *Ecological Applications* 28, no. 3 (2018): 786-797.
- McCarthy, M. J., K. R. Radabaugh, R. P. Moyer, and F. E. Muller-Karger. "Enabling efficient, large-scale high-spatial resolution wetland mapping using satellites." *Remote Sensing of Environment* 208 (2018).
- Milligan, B. G., F. I. Archer, A. L. Ferchaud, B. K. Hand, E. M. Kierepka, and R. S. Waples. "Disentangling genetic structure for genetic monitoring of complex populations." *Evolutionary Applications* (2018).
- Monahan, William B., and David M. Theobald. "Climate change adaptation benefits of potential conservation partnerships." *PloS one* 13, no. 2 (2018): e0191468.
- Rognstad, R. L., D. S. Wethey, H. Oliver, and T. J. Hilbish. "Connectivity modeling and graph theory analysis predict recolonization in transient populations." *Journal of Marine Systems* 183 (2018): 13-22.
- Schaffer-Smith, D., J. J. Swenson, M. E. Reiter, and J. E. Isola. "Quantifying shorebird habitat in managed wetlands by modeling shallow water depth dynamics." *Ecological Applications* (2018).
- Schwaller, M. R., H. J. Lynch, A. Tarroux, and B. Prehn. "A continent-wide search for Antarctic petrel breeding sites with satellite remote sensing." *Remote Sensing of Environment* 210 (2018): 444-451.
- Tinoco, B. A., V. E. Santillán, and C. H. Graham. "Land use change has stronger effects on functional diversity than taxonomic diversity in tropical Andean hummingbirds." *Ecology and evolution* 8, no. 6 (2018).

## NASA Biodiversity and Ecological Forecasting

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