



BIOLOGICAL DIVERSITY & ECOLOGICAL FORECASTING PROGRAMS

17th ANNUAL TEAM MEETING

Keith Gaddis & Woody Turner

Biological Diversity & Ecological Forecasting Programs
NASA Headquarters - Earth Science Division

Meet the Biological Diversity & Ecological Forecasting Team



Keith Gaddis

Program Manager

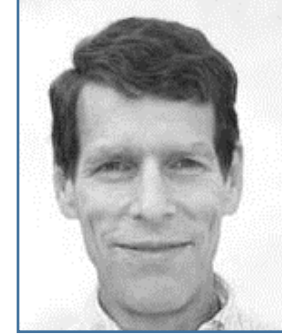
Keith is an ecologist and biogeographer by training with expertise using remote sensing and genetics to address questions in ecology, evolution, and conservation biology. With NASA since 2016, he became a program manager in 2021.



Woody Turner

Program Manager

Woody promotes the linkage of satellite observations and ecological models for decision making for conservation biology and sustainable development. He founded the Ecological Forecasting and Biological Diversity programs at NASA.



Gary Geller

Program Support Scientist

Gary represents NASA activities related to biodiversity and conservation with GEOBON and CEOS. He leads the program advanced planning activities and has supported both programs for 20 years in multiple capacities.



Cindy Schmidt

Associate Program Manager

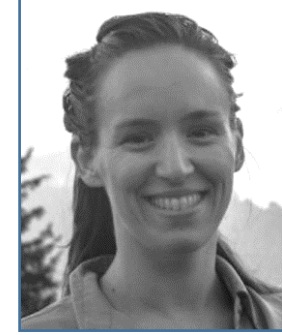
Cindy has over 25 years of experience in using remote sensing and GIS for natural resource management, urban planning and human health risk assessment. She leads training and outreach with underserved communities in the sciences.



Maury Estes

Associate Program Manager

Maury is supporting a portfolio of projects focused on marine environments for the Ecological Forecasting Program and developing unique remote sensing products for water quality modeling applications.



Jessica Burnett

AAAS STPF Fellow

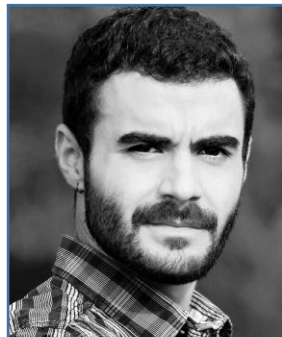
Jessica is an applied ecologist with background in Open Science, Ecological Modelling, Avian and Invasive Ecology, and Scientific Programming. Her work improves the value of wildlife observations data.



Laura Rogers

Associate Program Manager

Laura manages a broad portfolio of efforts across the Applied Sciences Program and leads strategy and budget planning. Her work supports the development of innovative applications from data collected by various satellite missions.



Celio Sousa

Associate Program Manager

Celio is providing decision support tools for African countries who committed themselves to incorporating ecosystem service accounting into decision making through the Gaborone Declaration for Sustainability in Africa.

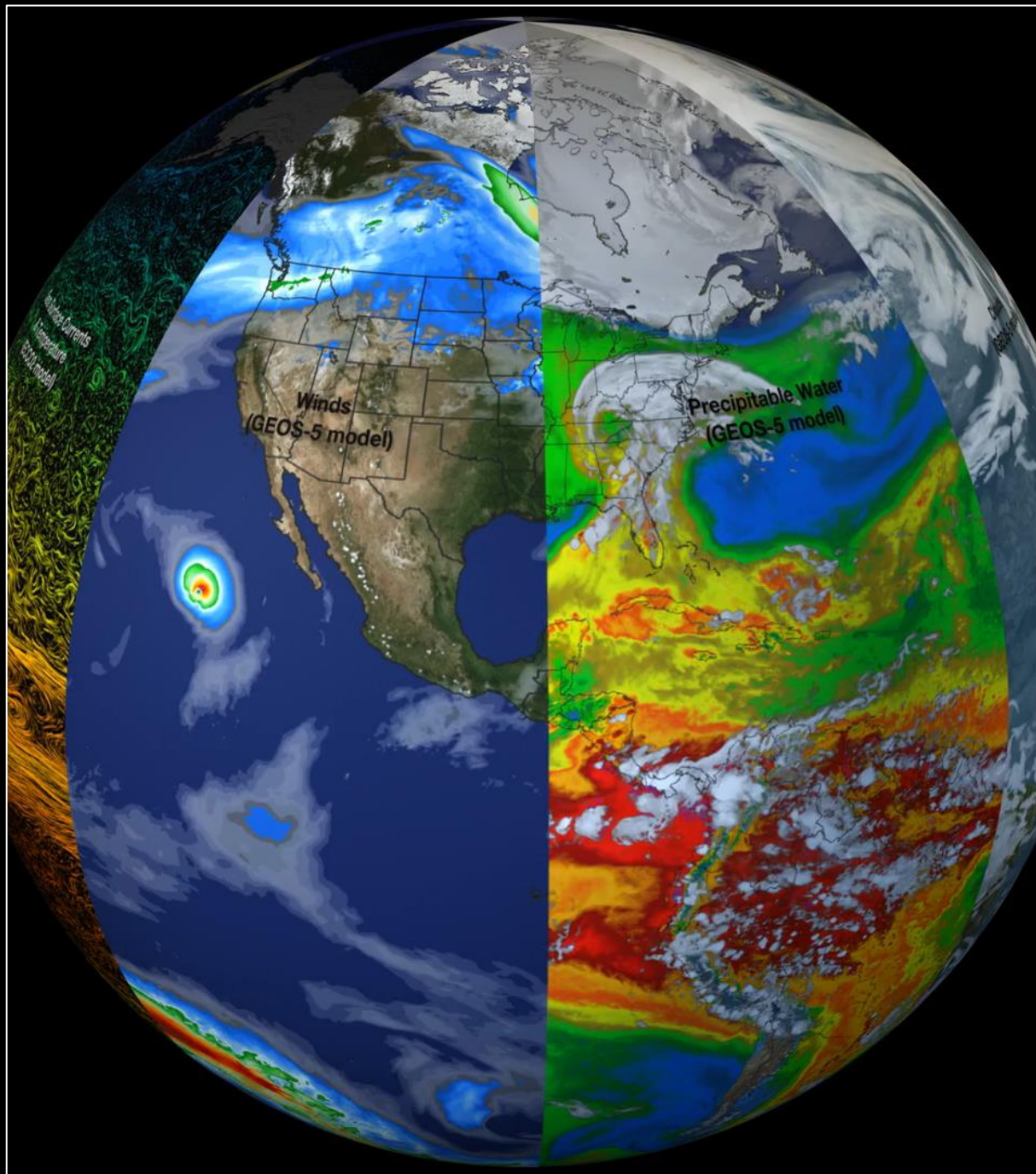


Amanda Koltz

AAAS STPF Fellow

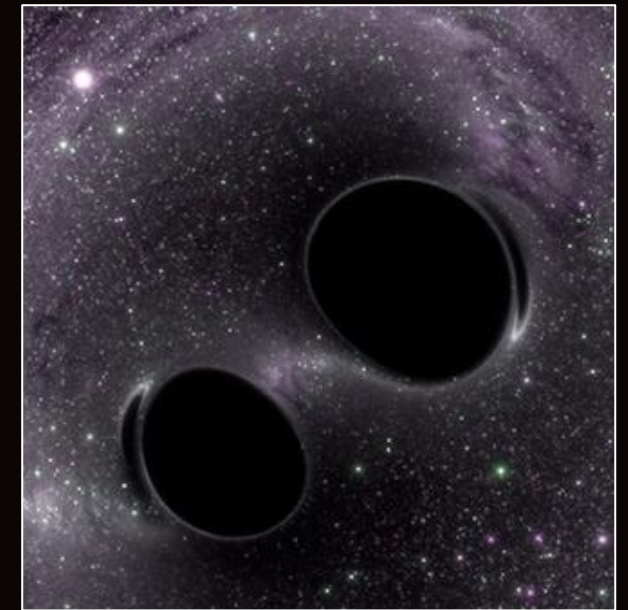
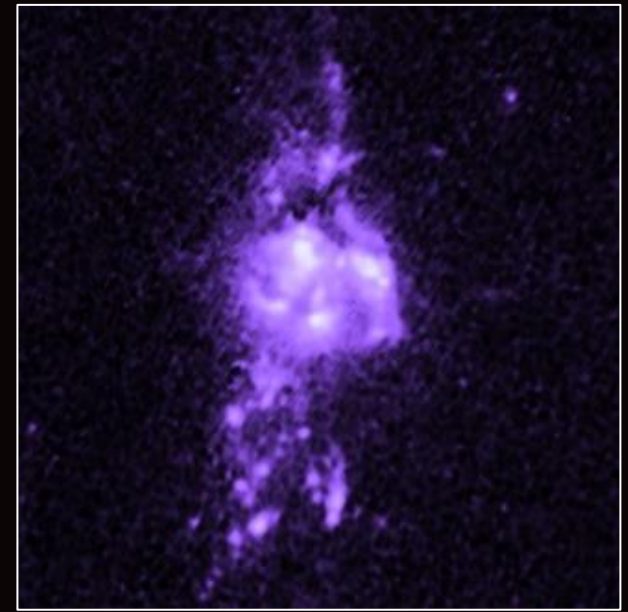
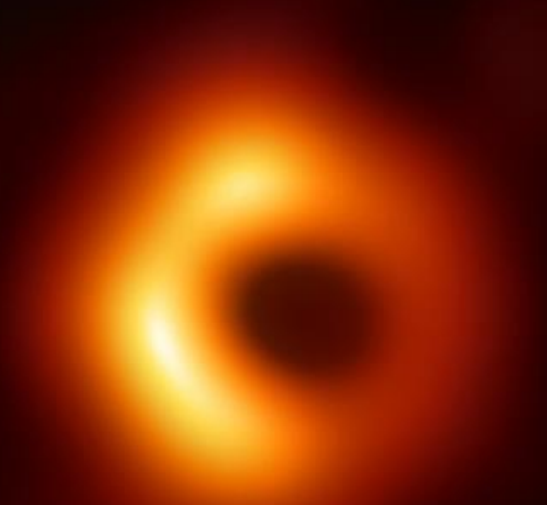
Amanda is a global change ecologist interested in how animals mediate ecosystem responses to environmental change in rapidly changing ecosystems. Her past work examined effects of shifting species interactions in the Arctic.





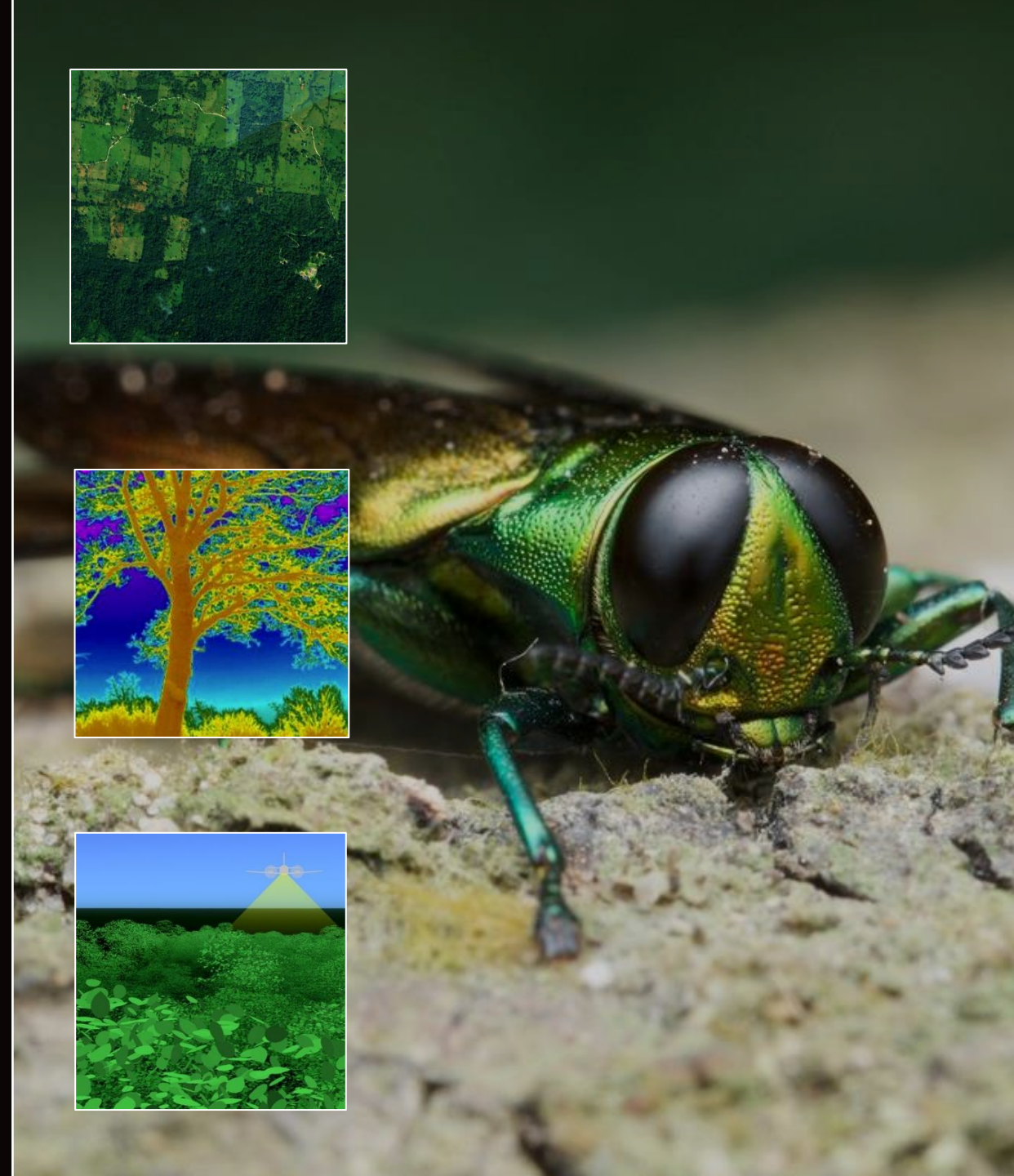
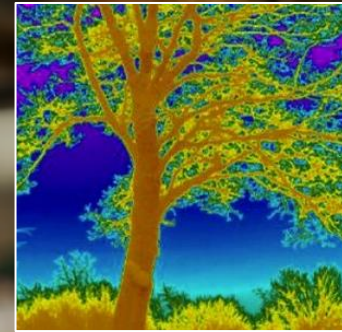
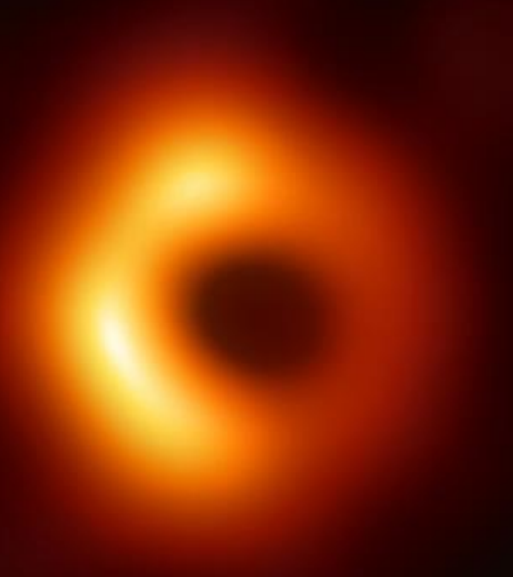
SEEING

THE UNSEEABLE



SEEING

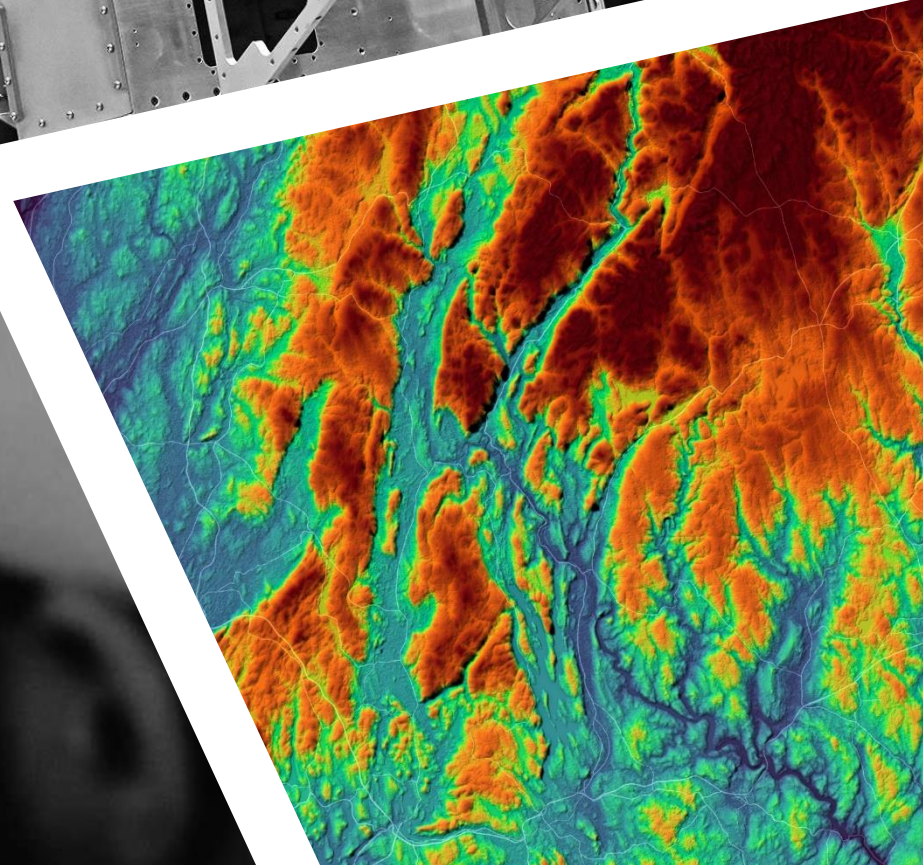
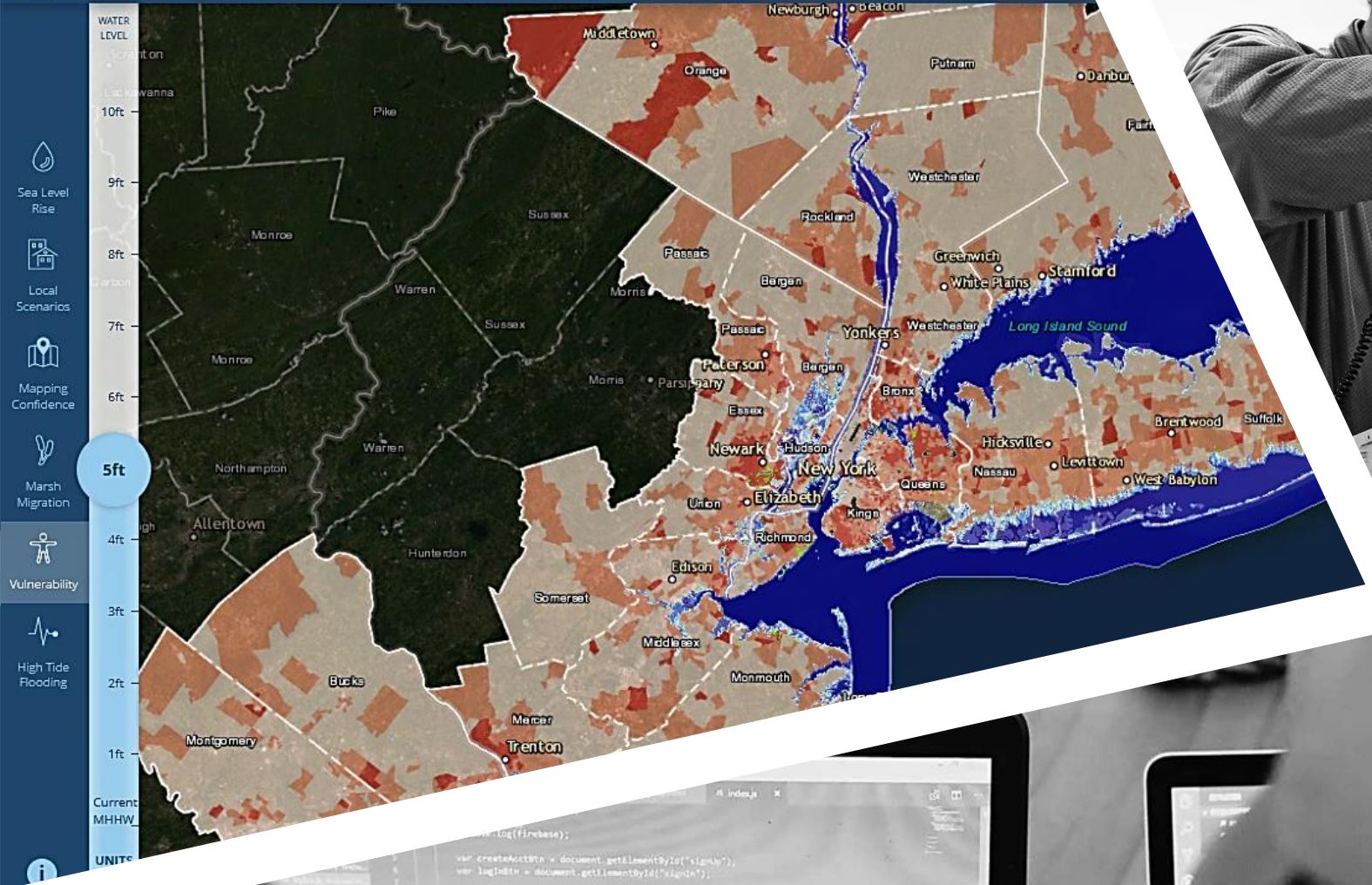
THE UNSEEABLE





Sea Level Rise Viewer

Enter an address or d...







ASK FIRST!











2021

OPERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)

Trash Science & Quantum Computing

RECEIVED: 1/2021 NUMBER OF COPIES: 1 DIVISION ASSIGNED: 08010000 FUND CODE: 7959 DUNS#: 048259584 FILE LOCATION: 10/11/2021 6:00PM

AWARDEE ORGANIZATION CODE (IF KNOWN): 0019034000

NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE: **Grimaldi Enterprise**

ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE: **Grimaldi Enterprise, 333 C St NE, Washington, DC 20002**

ADDRESS OF PRIMARY PLACE OF PERF., INCLUDING 9 DIGIT ZIP CODE: **Grimaldi Enterprise, 333 C St NE, Washington, DC 20002**

IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES NO IF YES, LIST ACRONYM(S)

IS AWARDEE ORGANIZATION (Check All That Apply): SMALL BUSINESS MINORITY BUSINESS WOMAN-OWNED BUSINESS FOR-PROFIT ORGANIZATION IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE

TITLE OF PROPOSED PROJECT: **DumpsterCizing - Helping Gaddis become less of a fatty boy by rifling through his trash**

REQUESTED STARTING DATE: 10/11/2021

REQUESTED AMOUNT: \$ 231,263

PROPOSED DURATION (1-60 MONTHS): 48 months

THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW: BEGINNING INVESTIGATOR DISCLOSURE OF LOBBYING ACTIVITIES PROPRIETARY & PRIVILEGED INFORMATION HISTORIC PLACES VERTEBRATE ANIMALS (ACUC App. Date) PHS Animal Welfare Assurance Number TYPE OF PROPOSAL: **Research**

COLLABORATIVE STATUS: **A collaborative proposal from multiple organizations (PAPPG II.D.3.b)**

PIPO DEPARTMENT: **Trash**

PIPO POSTAL ADDRESS: **Maury, 1250 Constitution Ave NE, Washington, DC 20002**

PIPO FAX NUMBER: **867-5309**

PIPO NAME: **Grimaldi**

High Degree: **1st** Yr of Degree: **2020** Telephone Number: **867-5309** Email Address: **LiamLovesTrash@gmail.com**

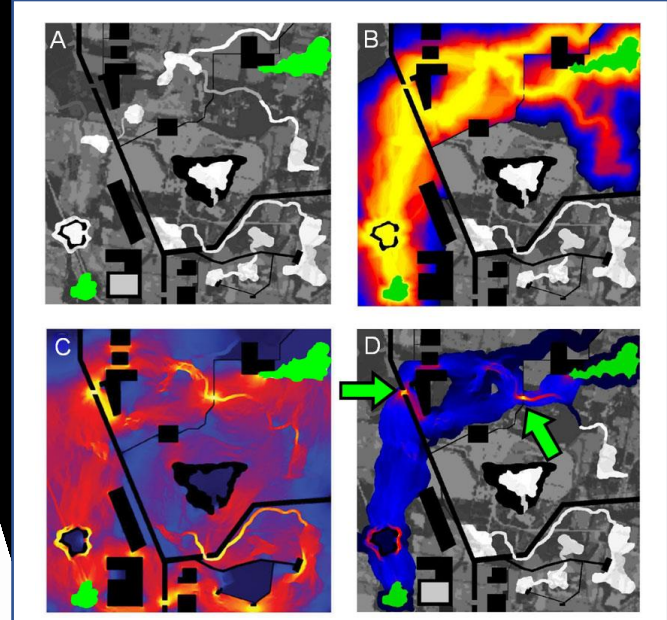
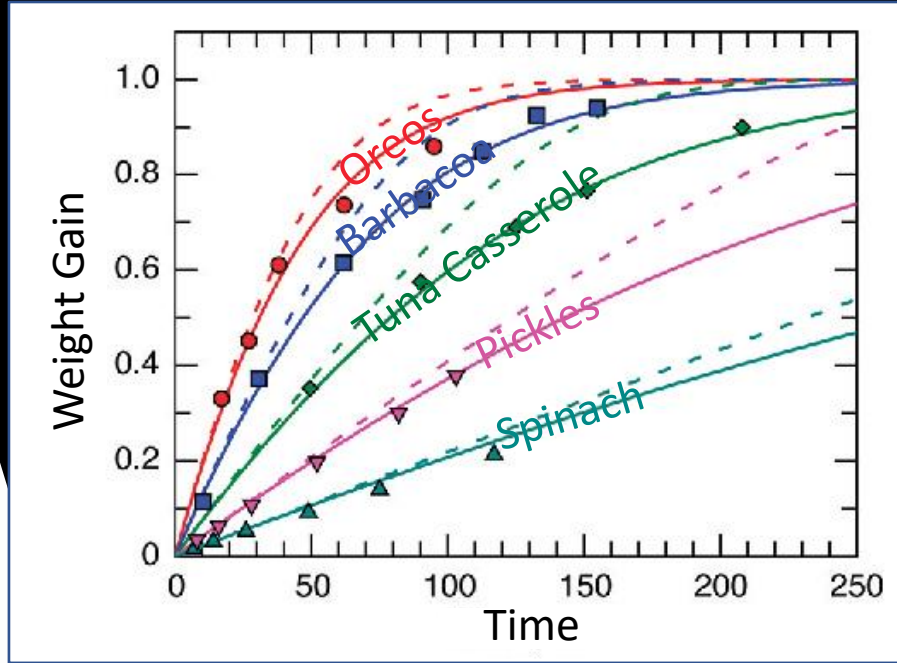
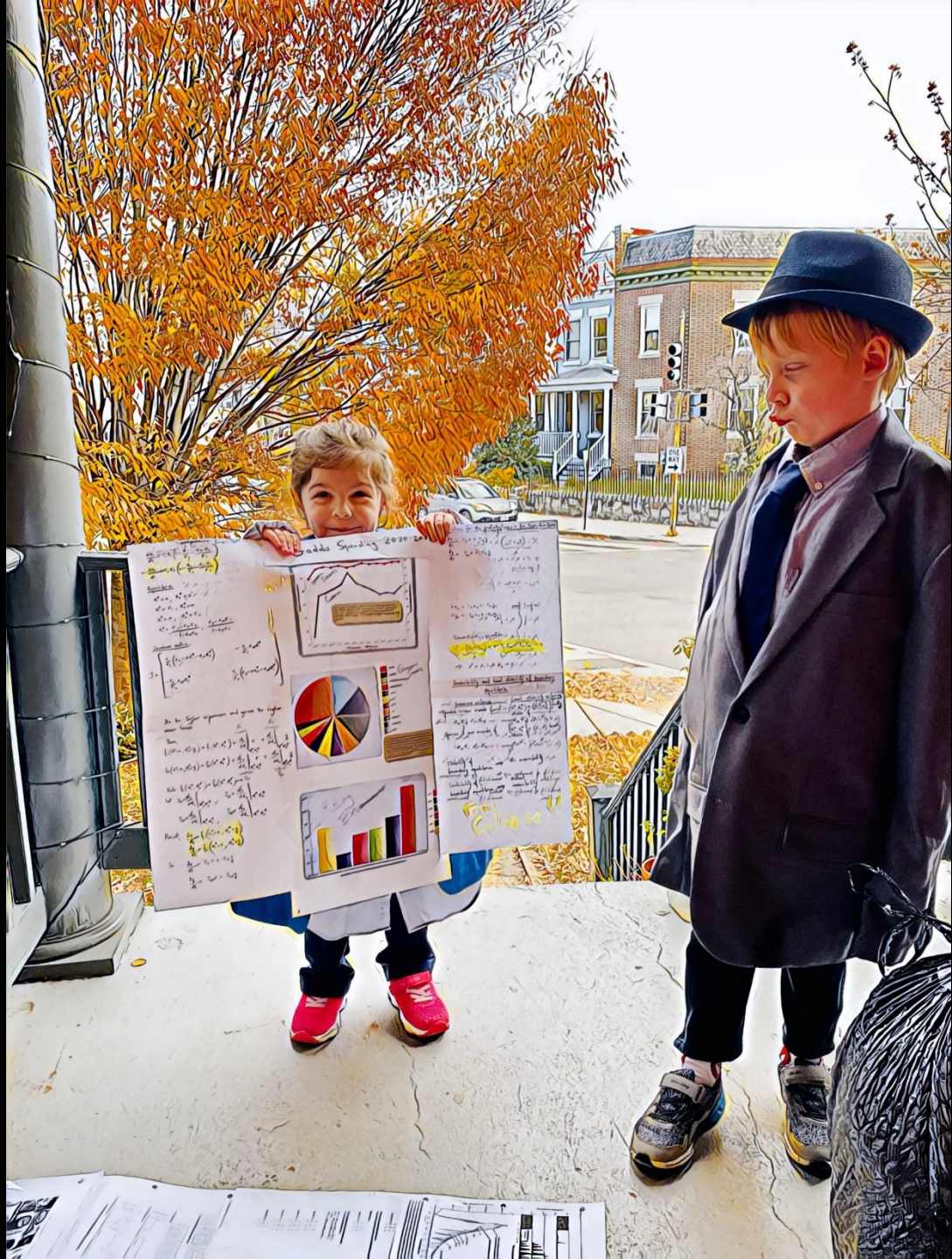


Figure 3.4: Optimal trash access pathway relative to suggested Gaddis jogging paths based on seasons.



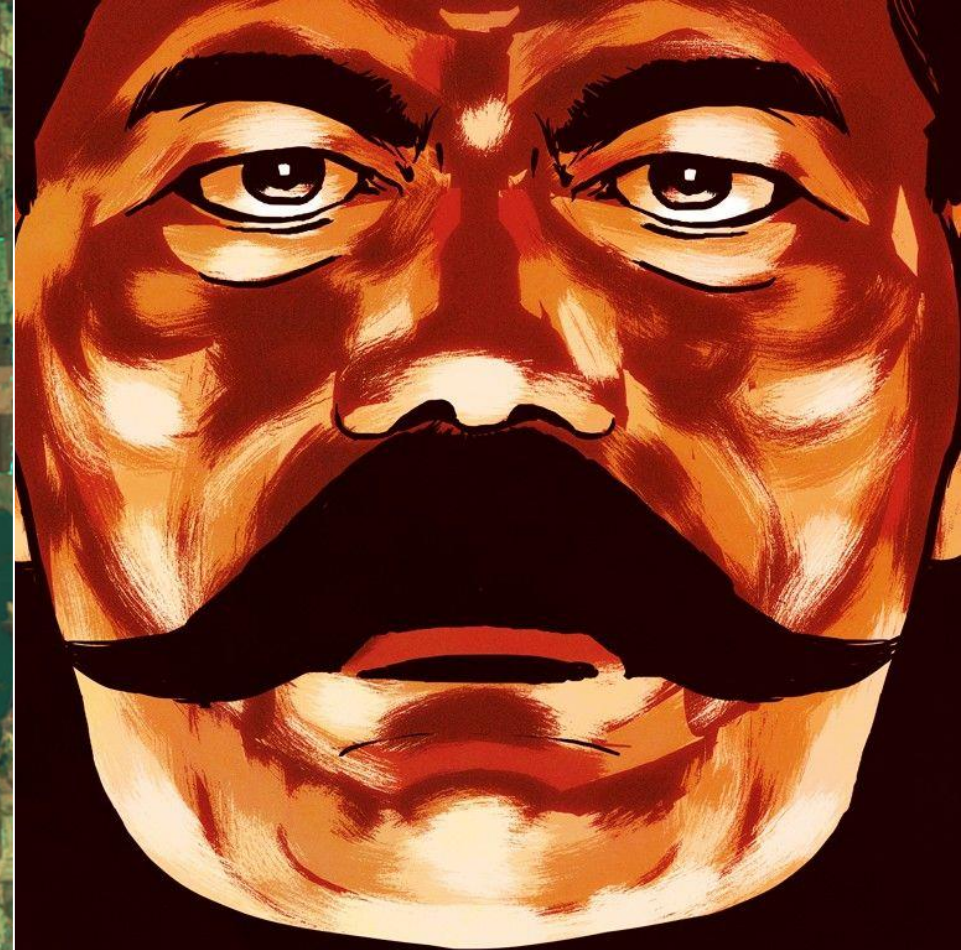












**BIG BROTHER
IS WATCHING
YOU**

7 Tips To Talking With Your Teen

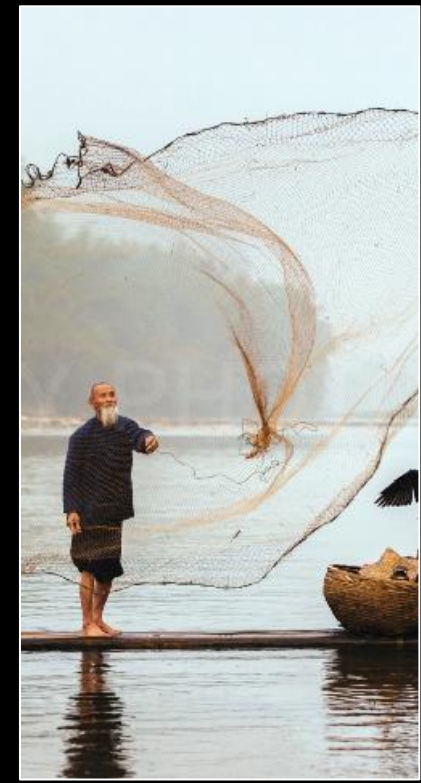


Djeinaba Grumbles, MD | Oct 18, 2021

- 1. Listen.** If you are curious about what's going on in your teen's life, sit back and listen. Even an offhand comment is their way of reaching out, and you're likely to hear more if you stay open and interested.
- 2. Validate their feelings.** Show kids that you empathize by reflecting the comment back: "Wow, that sounds difficult."
- 3. Show trust.** Teens want to be taken seriously. Look for ways to show trust. Letting your kid know you have faith in them will boost their confidence and make them more likely to rise to the occasion.
- 4. Don't be a dictator.** You still get to set the rules but be ready to explain them. While pushing the boundaries is natural for teenagers, hearing your thoughtful explanation will make the rules seem more reasonable.
- 5. Control your emotions.** Think logically when they are upset. Count to ten or take some deep breaths before responding. If you're both too upset to talk, hit pause until you've had a chance to calm down.
- 6. Do things together.** Talking isn't the only way to communicate, and during these years it's great if you can spend time doing things you both enjoy. It's important for kids to know that they can be in proximity to you.
- 7. Ask First.** Don't assume what your teen wants or needs. Ask them if they'd like help using natural conversation breaks to encourage them to say more and understand how you might help. Remember, abrupt prying can cause them to shut down.



Wenting Li





Does your organization welcome change?

Can we help you?

What do and don't you need?

What problems are you facing?

What decisions do you wish you had a better ability to make?

How do you manage uncertainty?

Where do you want to be in 5 years?

What could you improve upon?

What do you need?

What are your biggest projects?

What type of communication works best for you?

What do you care about?

How do you operate?

How are you organized

What do you spend the greatest amount of time on?

What is the greatest nuisance in your operation?

Have you ever used remote sensing?

What questions can I answer for you?

Can we get lunch?

How are you feeling today?

What are your goals?

How adaptable are your organization's objectives?

Where do you wish you could do more?

What are the most and least successful in your business?

What facts are most and least successful in your business?

How often do you evaluate efficiency in your system?



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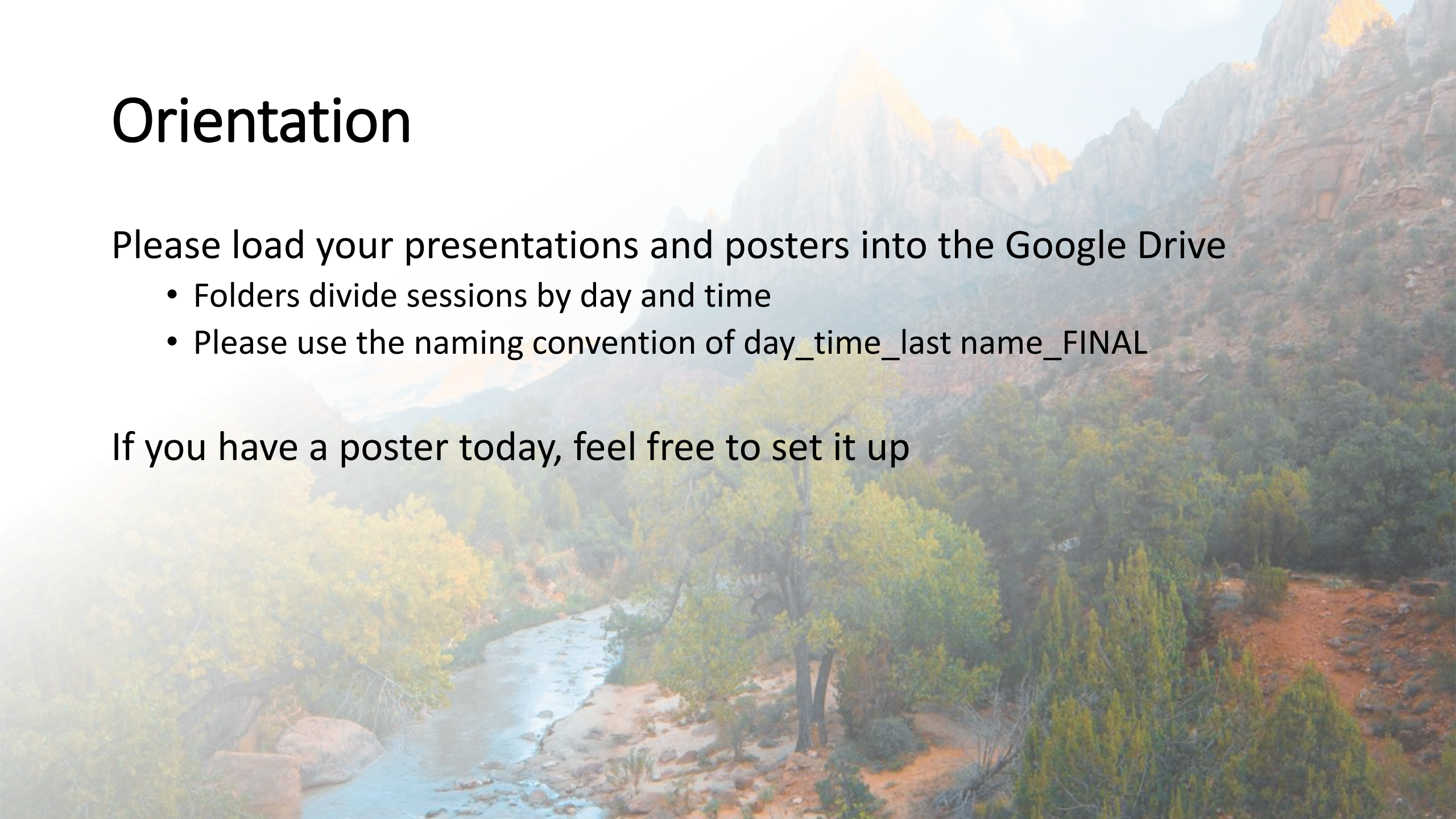
keith.gaddis@nasa.gov

Orientation

Please load your presentations and posters into the Google Drive

- Folders divide sessions by day and time
- Please use the naming convention of day_time_last name_FINAL

If you have a poster today, feel free to set it up



8:45AM **Welcome and Introduction**
Keith Gaddis and Woody Turner/NASA HQ

9:00AM **Project Talks - 5 Presentations (1h 15m)**

- Identifying population tipping points through imagery super-resolution
Heather Lynch/ State University of New York, Stony Brook
- Climate-ready and resilient fisheries: using satellite data to conserve and manage life in the ocean and support sustainable fisheries
Rebecca Lewison/San Diego State University
- Understanding urban centers as ecological traps for avian migrants
Kyle Horton/Colorado State University
- Identifying coral refugia from observationally-weighted climate model ensembles
Peter Kalmus/ NASA Jet Propulsion Laboratory
- EO for climate-ready aquaculture management and siting to improve food security and ocean health in Palau, a small island developing state
Robert Jones/The Nature Conservancy

10:15AM **Break (30 min)**

10:45AM **Project Talks - 4 Presentations (1h)**

- Understanding seed dispersers movements and their consequences across rainforest gradients of structural and phenological diversity
Thomas Smith/UCLA
- Climate-influenced nutrient flows and threats to the biodiversity of the Belize Barrier Reef Reserve System
Emil Cherrington/University of Alabama, Huntsville
- Multiple spatial scales, long-term trends, and synchrony of the dynamic habitat indices and bird populations
Volker Radeloff/University of Wisconsin, Madison
- Scaling forest diversity across space and time in a non-equilibrium world
John Grady/Nat. Great Rivers Research and Education Center

11:45AM **Questions and Discussion**

12:00PM **Lunch (1h 30m)**

1:30PM **Project talks - 4 Presentations (1h)**

- Soilborne plant pathogen dispersal and assessment: Building a remote sensing-based global surveillance system for plant disease
Kaitlin Gold/Cornell University
- Multiscale investigation of microbial biodiversity in trans-Atl. dust plumes
Hosein Foroutan/Virginia Poly. Institute and State University
- Integrating Earth observations, ecohydrologic, and plant hydraulic models for forecasting recruitment failure in semi-arid forests: Decision support for adaptive forest management.
Solomon Dobrowski/University of Montana
- Scientific applications and MODIS to VIIRS continuity of biogeographic Seascape pelagic habitat classifications
Frank Muller-Karger/University of South Florida

2:30PM **Project Talks - 4 Presentations (1h)**

- Mapping changes in forest diversity and disease in NA temperate forests
Jeannine Cavender-Bares/University of Minnesota
- A near-real time integrated mapping and reporting system for critical biodiversity sites under Sustainable Development Goal 15
Eric Sanderson/Wildlife Conservation Society
- MarineVERSE – The Marine Biodiversity and Scaling Project
Sam Purkis/University of Miami
- Opening the Black Box - Integrating wintering ecology into the management of the Ross Sea Region Marine Protected Area
Leo Salas/Point Blue Conservation Science

3:30PM **Break (30m)**

4:00PM **Speed Talks by NASA FINESST Program Awardees**
(3 minutes each, questions afterward at posters)

5:00PM **Poster Session 1**

6:30PM **Adjourn**

- 9:00AM **Breakout Session 1 – Concurrent Sessions (1h)**
- A. A new coral disease forecasting tool for the tropical Pacific
Megan Donohue/University of Hawaii
 - B. Modeling and Decision support tools for the Colombia BON
Mary Blair/AMNH & Victor Gutierrez-Velez/Temple University
- 10:00AM **Break (20 min)**
- 10:20AM **Project Talks - 4 Presentations (1h)**
- Monitoring grassland plant diversity under different management practices
Hamed Gholizadeh/Oklahoma State University
 - Aeroecology, an emerging frontier for modern conservation challenges
Kyle Horton/Colorado State University
 - Projecting the spread of aquatic invasive species
Gordon Luikart/University of Montana, Missoula
 - Understanding the global 3D signature of tree biodiversity
Lola Fatoyinbo/NASA Goddard Space Flight Center
- 11:20AM **Project Talks – 4 Presentations (1h)**
- Cross-scale impacts of SDG 15 achievement:
Patrick Keys/Colorado State University
 - Modeling endangered species' forest habitats
Anna Pidgeon/University of Wisconsin, Madison
 - A Sustainable Forest Management and Information System (SFMIS) tool
Erika Podest/Jet Propulsion Laboratory
 - Applying SDG to the conservation of winter environments
Benjamin Zuckerberg/University of Wisconsin, Madison
- 12:20AM **Lunch - Mentor Lunch / Early Career Lunch (1h 40m)**
- 2:00 PM **Breakouts (1h)**
- A. New Ecological Forecasting PIs
Keith Gaddis, Maury Estes, and Laura Rogers
 - B. Fostering Best Practices in Earth Applications: Meet the Guidebook
Erin Martin and Cindy Schmidt

- 3:00PM **Break (30 min)**
- 3:30PM **A.39 Project Speed Talks (5 min each + 2 min transition)**
- Near-real-time Forecasting and change detection for a fire-prone shrubland
Adam Wilson/State University of New York, Buffalo
 - Integrated biodiversity monitoring system for Colombia's Protected Areas
Mary Blair/American Museum of Natural History
 - Hot spots in the ice: revealing the importance of polynyas
Alice DuVivier/UCAR
 - Predicting the long-distance dispersal of ichthyoplankton
Ruoying He/Fathom Science LLC
 - Act Green: Tigers to lions, jaguars, and American bison
Eric Sanderson/Wildlife Conservation Society
 - Strengthening natural resource management with new PA connectivity tools
Patrick Jantz/Northern Arizona University
 - Movement-track management at the Yukon-to-Yellowstone corridor
Gil Bohrer/Ohio State University
 - Conservation management in the Greater Kruger National Park
David Bunn and Jody Vogeler/Colorado State University
 - Enhancing biodiversity conservation and ecosystem resilience in dry forest
Kristin Brunk/Cornell Lab of Ornithology
 - Decision support for beaver rewilding
Jodi Brandt/Boise State University
 - Archipelago-wide rewilding of Galapagos giant tortoises
James Gibbs and Giorgos Mountrakis/SUNY, Syracuse
 - Informing coral reef resilience-based management through PICOGRAM
Ana Tarano/University of Miami
 - Full annual cycle conservation of migratory birds
Jill Deppe/National Audubon Society
- 5:00PM **Poster Session 2**
- 6:30PM **Adjourn**

8:45AM GEO BON's Next Big Thing: Global Biodiversity Observation System
Gary Geller/Jet Propulsion Laboratory

9:00AM **Project Talks - 5 Presentations (1h 15m)**

- Assessing spatial biodiversity dynamics in kelp forest ecosystems using spaceborne remote sensing
Thomas Bell/Woods Hole Oceanographic Institute
- Designing applications to foster the health of terrestrial and wetland ecosystems in the coastal zone of West Africa
Danielle Wood/Massachusetts Institute of Technology
- BioCube: Integrating remote sensing and in-situ dimensions of biodiversity to understand plant and animal community composition and dynamics at large scales
Ryan Pavlick/Jet Propulsion Laboratory
- Securing Sustainable Seas: Near real-time monitoring and prediction of global fishing fleet behavior
James Watson/Oregon State University
- The Dynamic Habitat Indices from Terra, Aqua, Suomi NPP and JPSS data for biodiversity science and conservation
Volker Radeloff/ University of Wisconsin, Madison

10:15AM **Break (30 min)**

10:45AM **Project Talks - 5 Presentations (1h 15m)**

- The size, trophic and spatial-temporal scaling of environmental selection in pelagic species
Matthew Oliver/University of Delaware
- Maintaining Life on Land (SDG 15) under Scenarios of Land Use and Climate Change in Colombia, Ecuador, and Peru
Andrew Hansen/Montana State University
- Multi-sensor biodiversity framework developed from bioacoustic and space-based sensor platforms
Bryan Pijanowski/Purdue University

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- Adding space-based vegetation structure measurements to a global ecosystem model to simulate tropical forest animal communities and their role in ecosystem function
Christopher Doughty/Northern Arizona University

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- Ocean color remote sensing of zooplankton: detecting swarms of *Calanus* in the western North Atlantic
Catherine Mitchell/Bigelow Laboratory for Ocean Sciences

Catherine Mitchell/Bigelow Laboratory for Ocean Sciences

12:00PM **Lunch (and load afternoon talks) (1h 30m)**

1:30PM **Project Talks - 5 Presentations (1h 15m)**

- Fusing GPS measurements with GEDI and ECOSTRESS to map responses of migratory animals to vegetation canopy structure and water stress
David Stoner/Utah State University
- Modeling edge influence on forest structure
Dongdong Wang/University of Maryland, College Park
- Functional ecology in the SBG era: An assessment of the state of plant trait retrieval from imaging spectroscopy
Alexey Shiklomanov/NASA Goddard Space Flight Center
- The power of GEDI: Investigate the efficacy of spaceborne lidar to model biodiversity and characterize habitat heterogeneity at the continental and global scales
Qiongyu Huang/Smithsonian Institution
- BioSCape
Adam Wilson/SUNY Buffalo or Erin Hester/UC, Merced

Adam Wilson/SUNY Buffalo or Erin Hester/UC, Merced

2:45PM **Break (30 m)**

3:15PM **Plenary Discussion: Program Updates, Issues, and Concerns**

Woody Turner and Keith Gaddis/NASA HQ

4:15PM **Meeting Ends**