

# National Geographic FieldScope:

## An Online Geographic Information System for Education & Citizen Science

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This material is based upon work supported by the National Science Foundation under Grant No. DRL-1010749. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

### What Is FieldScope?

National Geographic FieldScope is a free online geographic information system that extends tools of exploration to citizen scientists, students, educators, and others. FieldScope enables users to enter, map, graph, and analyze data.



### Testbed Partners in Pilot Phase

**FrogWatch USA** (a program of the Association of Zoos and Aquariums) is a citizen science project that invites individuals and families to learn about the wetlands in their communities and help conserve amphibians by reporting the calls of local frogs and toads. Use FieldScope to see where volunteers are reporting data in your community.

**Project BudBurst** (a program of the National Ecological Observatory Network) is a network of volunteers across the United States who monitor plants by collecting important ecological data based on the timing of leaf out, flowering, and fruiting of plants, also known as plant phenophases. Explore the FieldScope map of Project BudBurst data, then consider joining the project.

**Trash Free Potomac Watershed Initiative** (a program of the Alice Ferguson Foundation) is designed to address the trash problem with a watershed-wide approach that challenges regional leaders to work collaboratively, brings together stakeholders, and improve awareness in order to shift behaviors. Use FieldScope to see where different types and amounts of trash have been collected around Washington, D.C.

### Additional Projects Using FieldScope

- Delaware Bay Water Quality
- Chesapeake Bay Water Quality
- Great Lakes Water Quality
- GLOBE Watershed Dynamics
- Yukon Indigenous Observation Network
- Citizens Restoring American Chestnuts
- NatureBridge
- Mid-Atlantic Sustainable Schools
- North American Reporting Center for Amphibian Malformations
- Washington, D.C. Climate & Urban Systems Partnership
- National Park Service BioBlitz projects:
  - Rocky Mountain National Park
  - Saguaro National Park
  - Jean Lafitte National Historical Park and Preserve
  - Biscayne Bay National Park
  - Indiana Dunes National Lakeshore
  - Golden Gate National Recreation Area

### Project Goals

- Develop FieldScope as a GIS-based platform that enables organizations to engage students and members of the public in educational citizen science projects
- Implement successful FieldScope testbeds
- Develop research and evaluation frameworks for impacts on citizen science organizations and participants
- Develop recruiting materials, support systems, and models for providing FieldScope as a service



### Challenges Encountered

In Year 2 of the grant, we tested a draft assessment to be delivered online to FieldScope users. This assessment was designed to measure geographic reasoning, science content knowledge, science process skills, and engagement with local community. The instrument was administered as a pilot to testbed partner participants. This pilot revealed limitations in the instrument, which required us to revise it significantly. We now have new instruments and evaluation frameworks. The pilot assessment allowed us to identify and address weaknesses in our evaluation approach early on.

### Evaluation

The Lawrence Hall of Science (University of California, Berkeley) serves as the evaluator for this project. Evaluation focuses on the following outcomes:

#### Organizational outcomes:

- Meeting organizational goals in citizen science
- Reaching larger and more diverse audiences
- Collecting more and/or better scientific data and making larger contributions to scientific knowledge

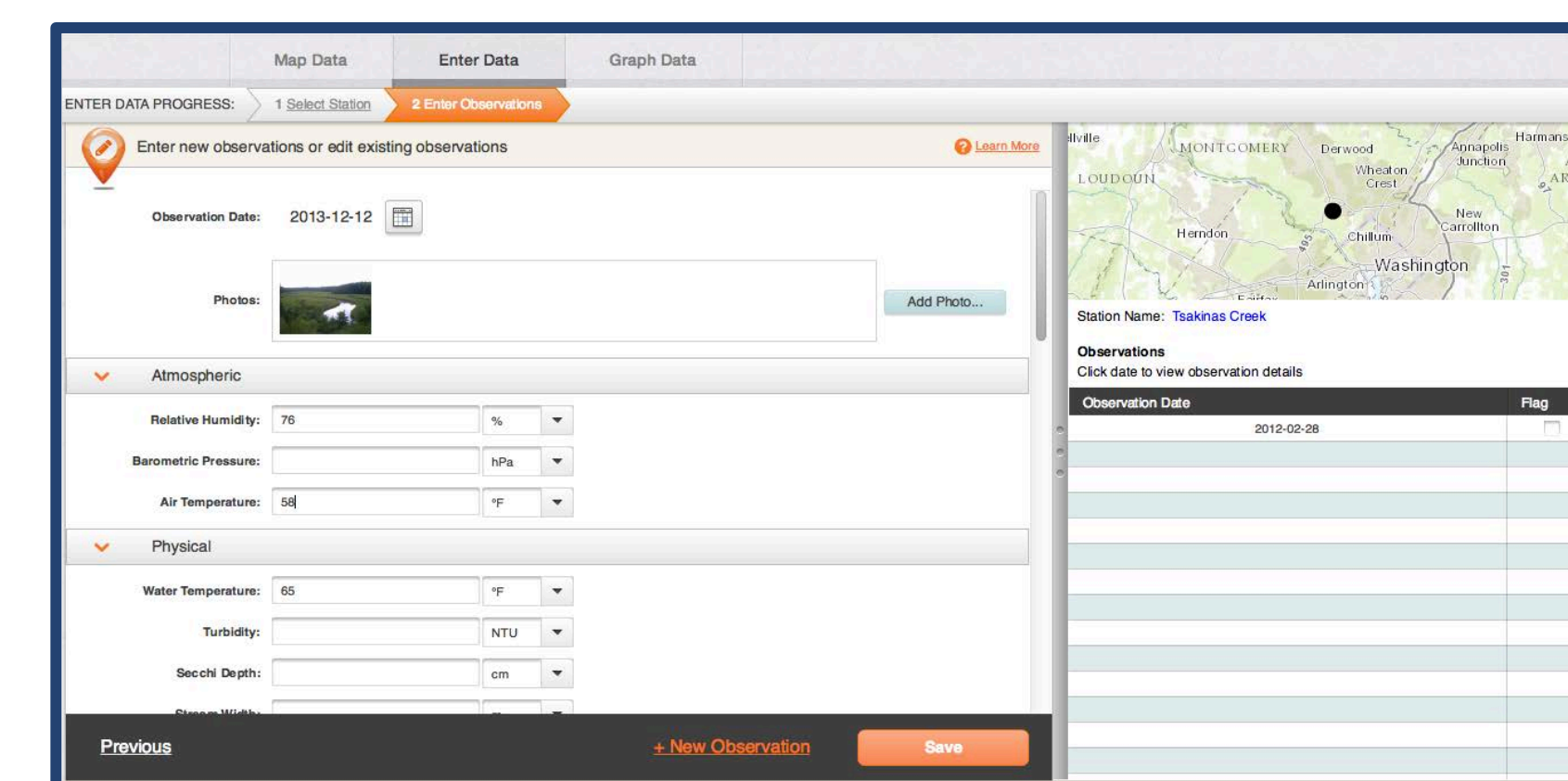
#### Participant outcomes:

- Participant experience with the organization
- Participant self-efficacy, ability, and confidence to collect, analyze, and communicate about scientific data
- Participant learning about specific concepts
- Participant attitudes about the environment and stewardship

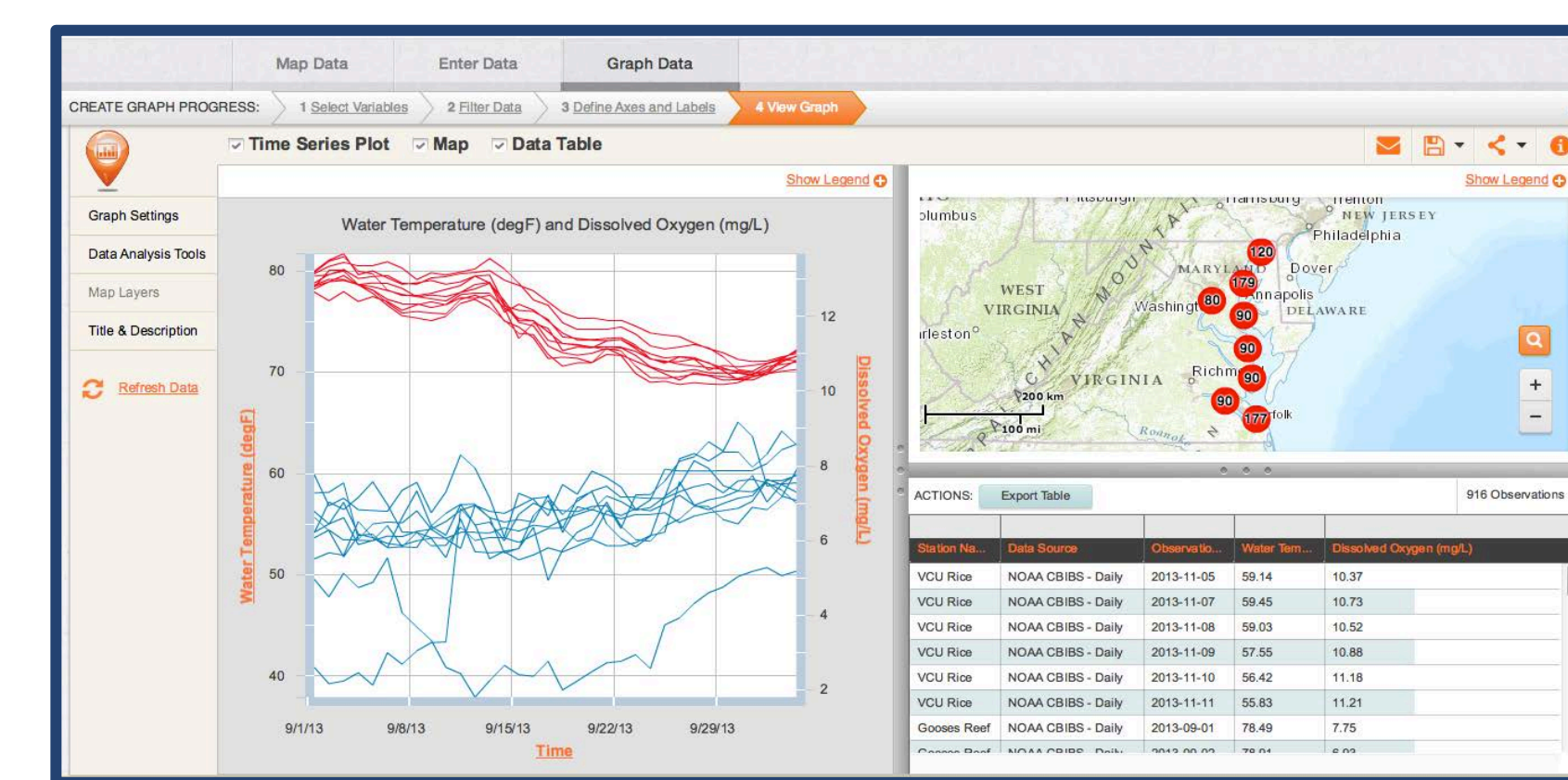
Additionally, the New Media Consortium and the University of Maryland Human-Computer Interaction Lab have provided usability testing and design recommendations.

### What Can You Do with FieldScope?

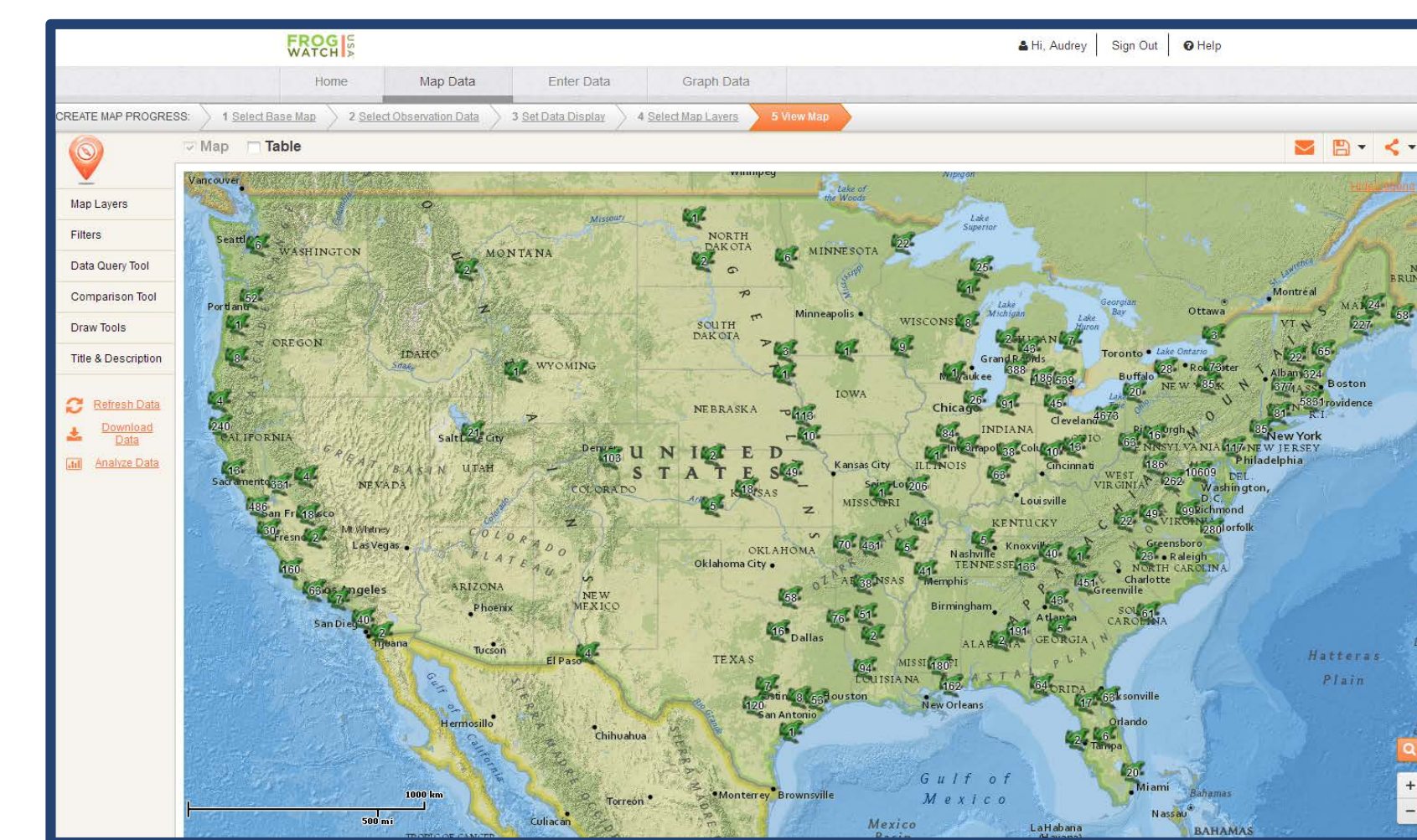
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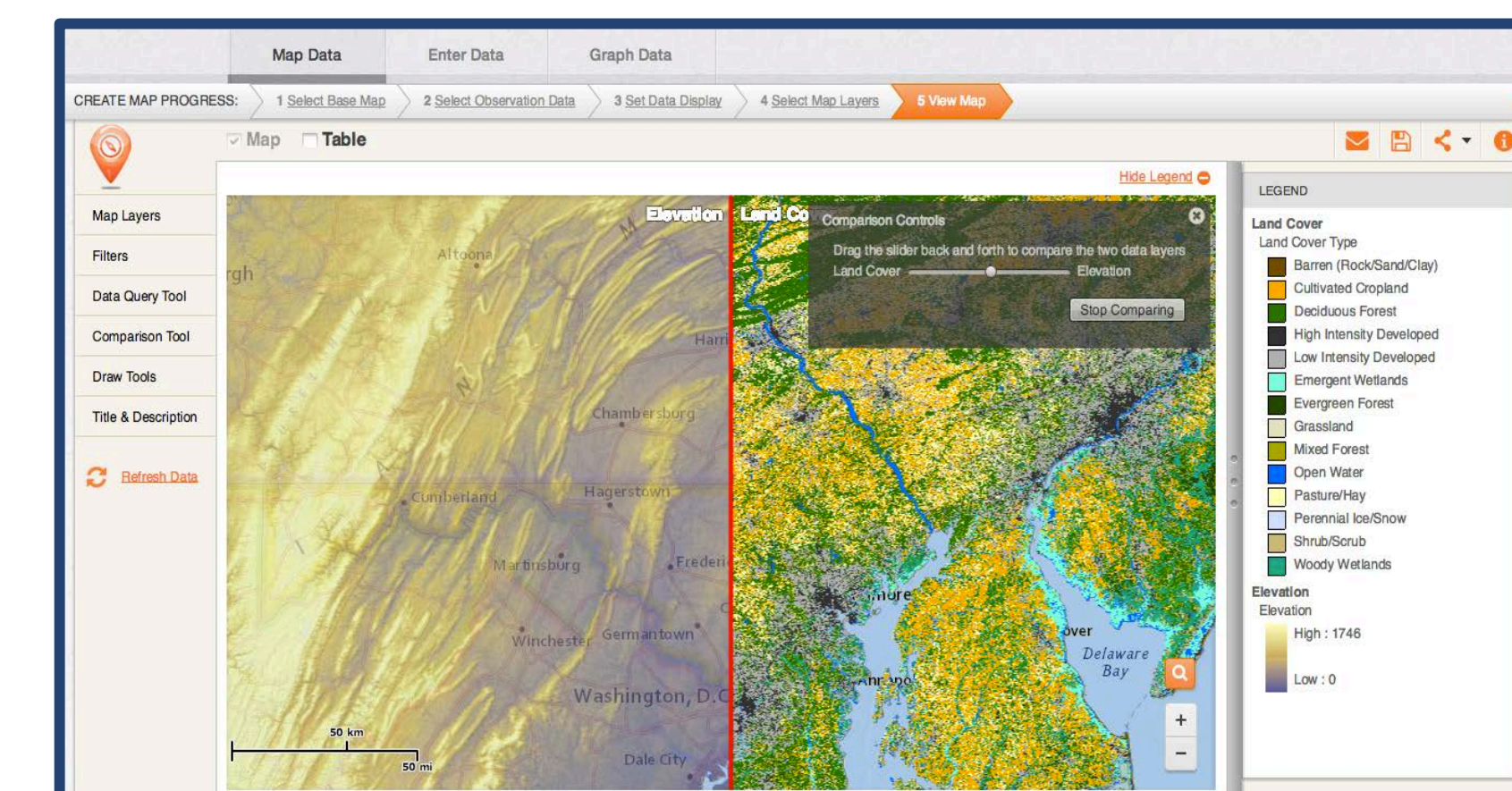
Graph data and visualize trends:



Map data:



Compare and analyze data:



### FieldScope Project Builder Tools

The Project Builder Tools allow organizations to construct new FieldScope projects using web forms. These tools are going through beta testing by several organizations, including:

**Illinois Stream Discovery** (based at the National Great Rivers Research & Education Center): an environmental education project that provides students in grades 5-12 with a unique hands-on opportunity to learn about water quality in their community by monitoring a local stream.

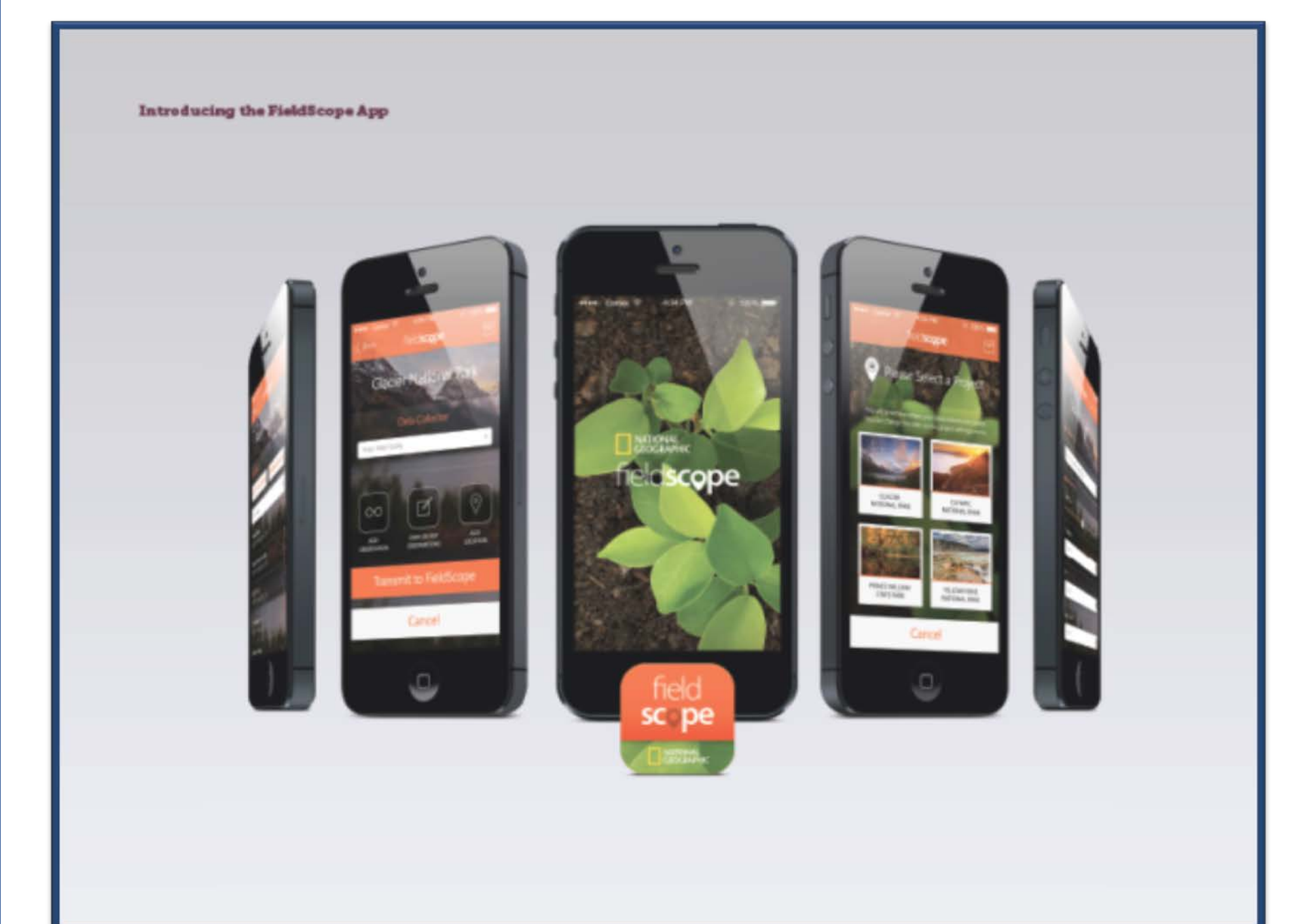
**Globe at Night**: an international citizen science campaign to raise public awareness of the impact of light pollution by inviting citizen scientists to measure their night sky brightness and submit their observations.

**Sharks of San Diego** (based at Ocean Sanctuaries): a collaboration between citizen scientists, scientists, and other like-minded organizations to foster greater understanding, wise ecology, species protection, and good stewardship of the ocean and related habitats.

**Resilient DC**: a collaborative project sponsored by the District of Columbia Department of Health that aims to bring together government and community-based partners to build a more resilient community in the face of natural and manmade disasters.

**Los Angeles River Monitoring**: a project to monitor the Los Angeles River that is currently being established by the University of Southern California and the Natural History Museum of Los Angeles.

### FieldScope App



A free mobile app for iPhones, iPads, and Android devices facilitates data collection. The app has an offline mode so that data can be collected in the field even if a participant does not have access to the internet and can be uploaded later.

### For More Information

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