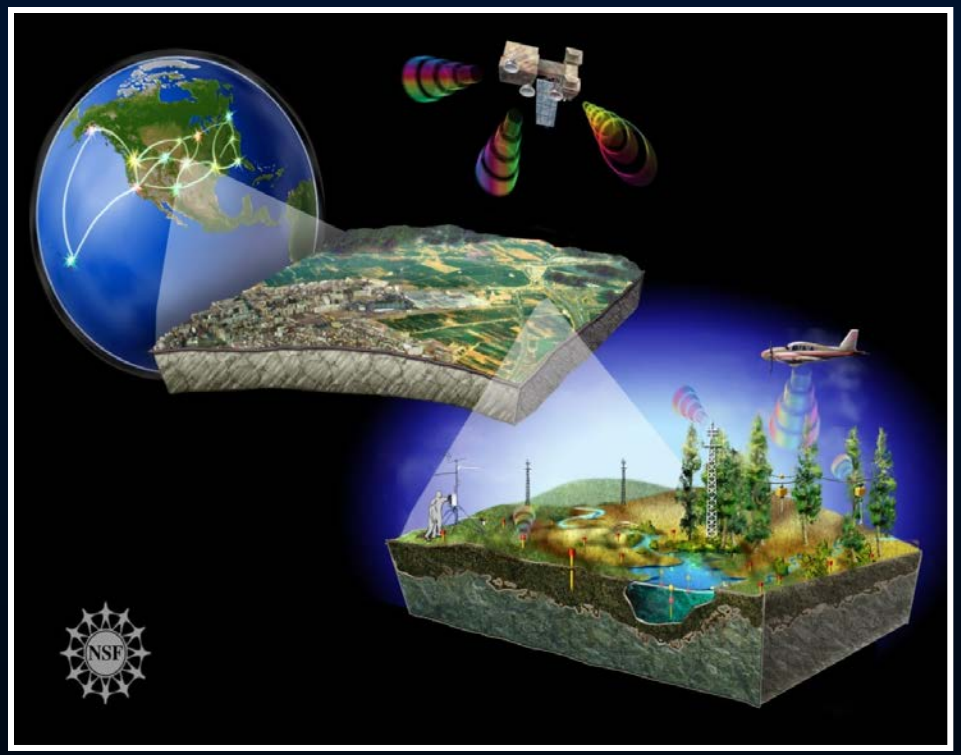
BIO AC:
NEON: Current Status

Transformational research observatory and experimental facility



Joann Roskoski
BIO OAD
March 2014

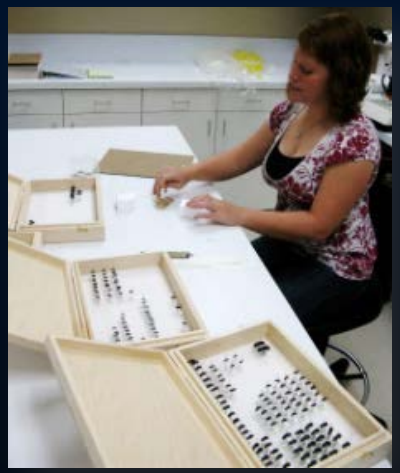
Understand the biosphere and predict changes resulting from climate change, landuse change, and invasive species on regional to continental scales.

National Ecological Observatory Network, Inc.

3 Airborne Instrument Packages

NEON Headquarters: Boulder, Co

CAL/VAL and QA/QC Labs, Fabrication, Maintenance & Repair Facilities, Education/Outreach Portals/Tools



Biological Components:

Field collections of samples/data, Laboratory analyses, Sample Archives

Data Collected on plants, animals, microbes (~ 3 TB data/yr)

Sensor/Instrument Packages: (~12,000 sensors generating ~30 TB data/yr)

» 60 Fundamental Instrument Units (tower, instrumentation hut, sensor nets)
- 20 Permanent
- 40 Relocatable

» 30 Stream Sensor Nets and 6 Lake Buoys

» 10 Experimental Stream Systems

» 10 Mobile Labs

New Senior Staff

Dr. Scott Ollinger
NEON's First Observatory Director

Javier Marti - Project Manager

Leading NEON's Construction Activities

Charlene Laus – Chief Financial Officer, NEON Inc.

Construction Achievements

- Civil Construction - 24 of 106 locations complete
- Sensor Deployment - 3 locations in 2 domains
- Biological Sampling - 5 of 106 locations
- Airborne Observatory Platform (AOP) #3 - pathfinder flight in July.
  - 4 Domains have been remotely surveyed.
  - Joint remote survey mission with NASA competed
- Domain Field Offices - 9 of 20 operating with Domain Managers hired

Civil Construction

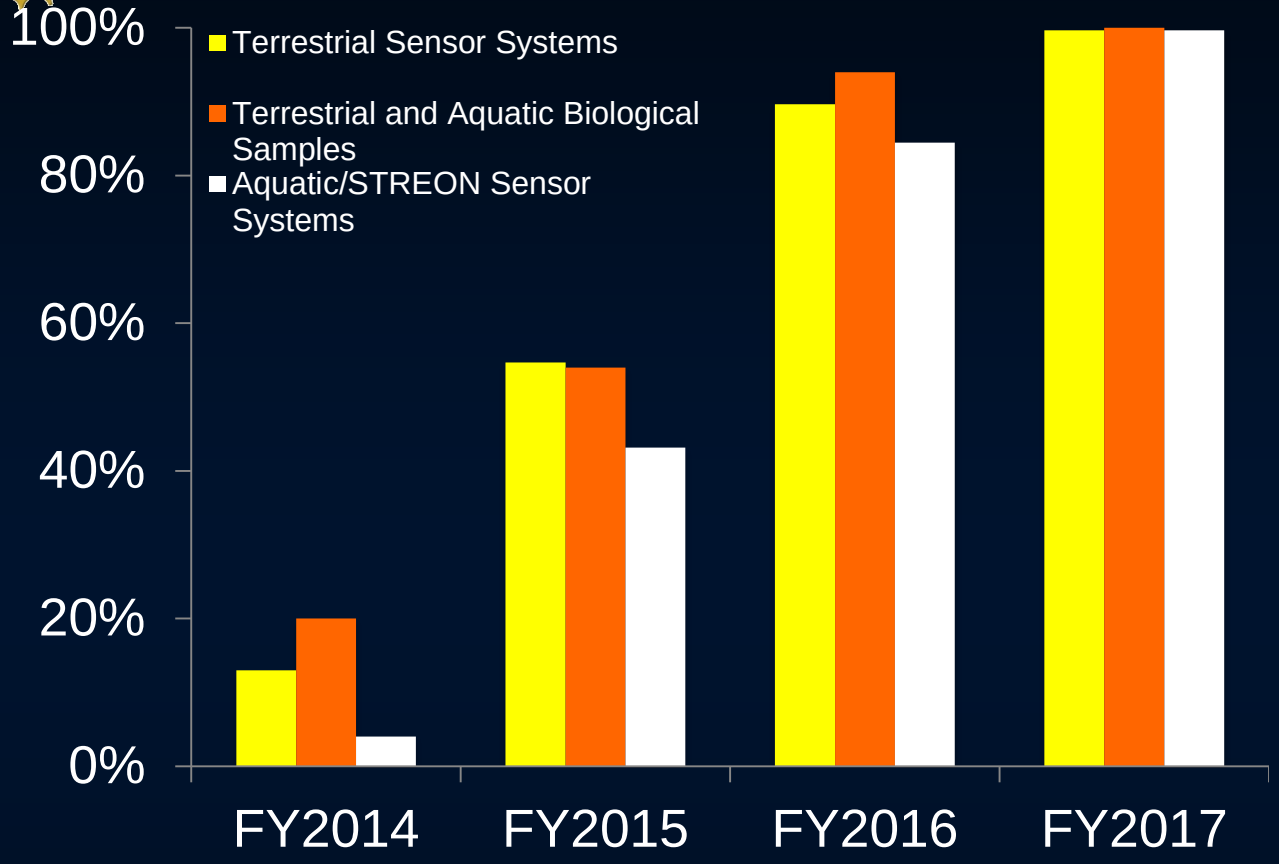
Sensor Deployment

Biological Sampling

NEON in the next 12 months

- Civil Construction - 27 locations
- Domain Facilities - 8 additional operating, 17 total of 20
- Sensor Systems - 9 terrestrial and 4 aquatic deployed
- Biological Sampling - 6 new locations for a total of 11
- NEON Provisional Data - Meteorological, biological and remote sensing
- AOP - 2 verification flights, 2 Domains remotely sensed, and High Park burn study re-surveyed.
- Initial Operations begin
- Community Workshops on use of early NEON data in research

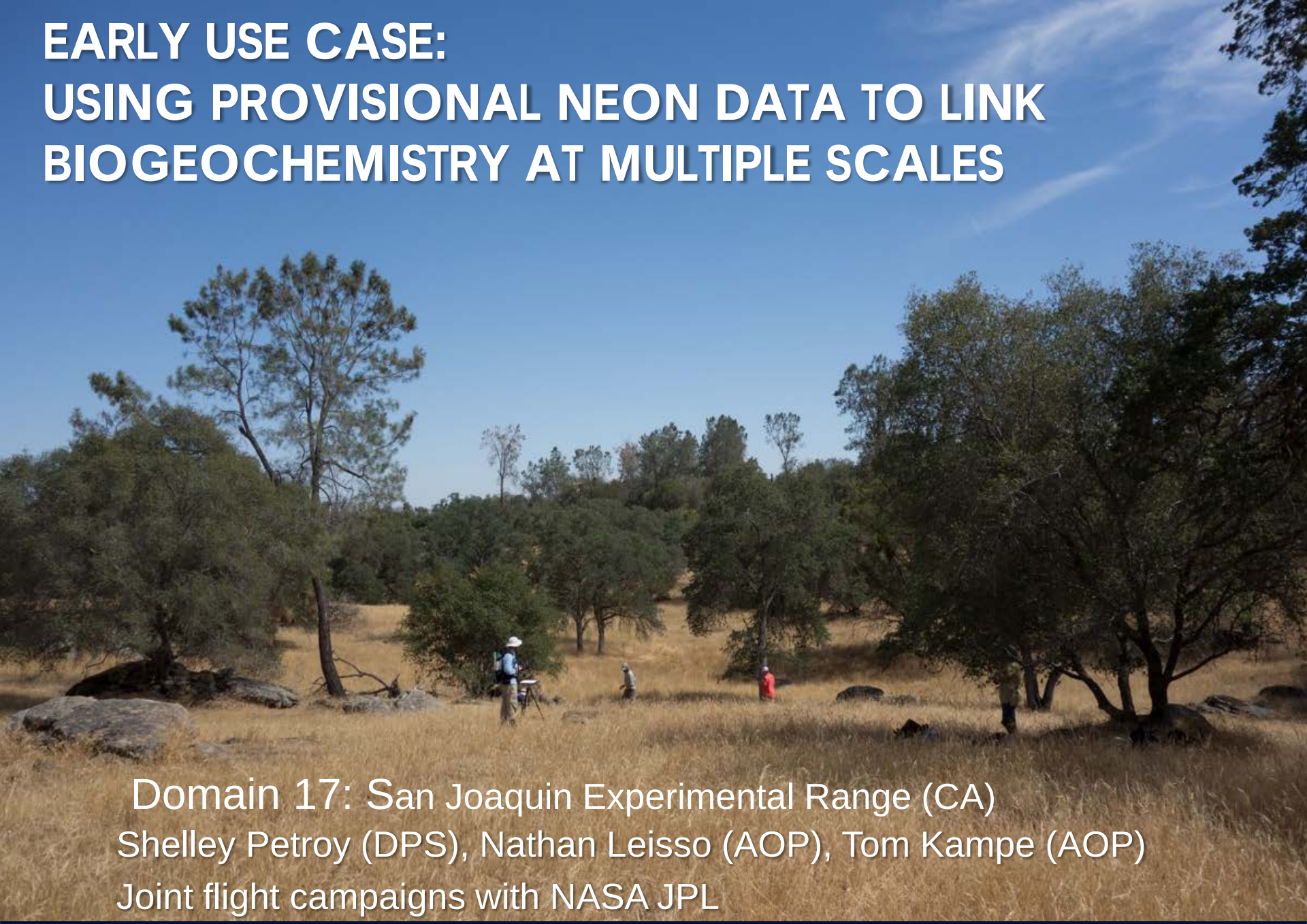
Observatory Construction



Terrestrial Sensor Systems

Aquatic and Terrestrial Biological Sampling

EARLY USE CASE:
USING PROVISIONAL NEON DATA TO LINK BIOGEOCHEMISTRY AT MULTIPLE SCALES



Domain 17: San Joaquin Experimental Range (CA)

Shelley Petroy (DPS), Nathan Leisso (AOP), Tom Kampe (AOP)

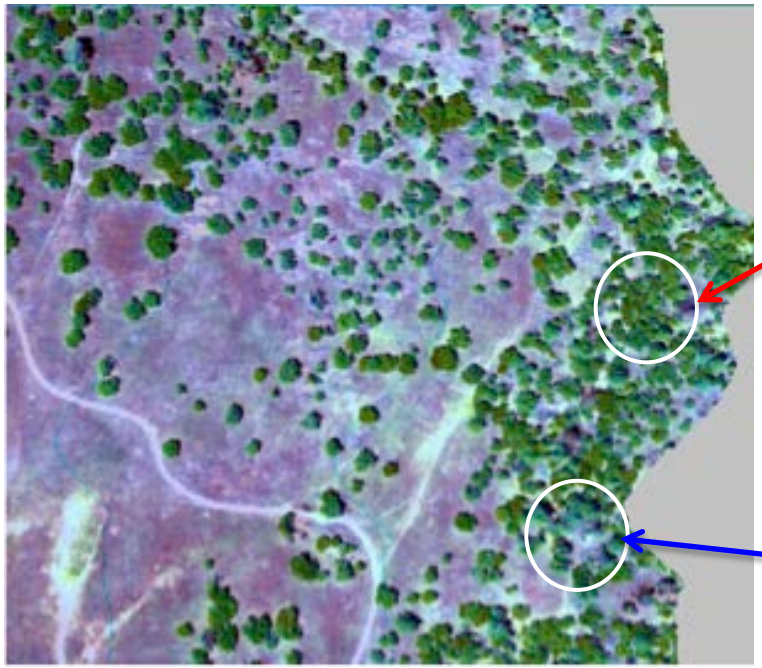
Joint flight campaigns with NASA JPL

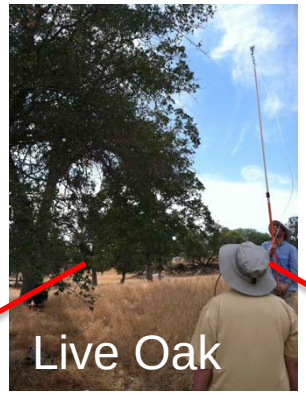
Nitrogen Concentrations in Individual Trees and at Regional Levels

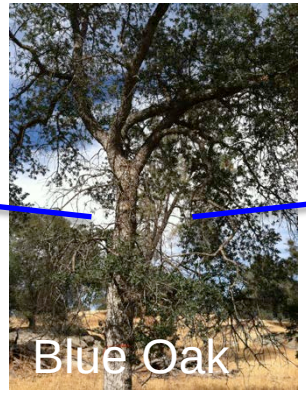
Blue and Live Oaks have different canopy structures and can be visibly identified using LIDAR and NEON's high resolution camera

High resolution spectrometer data are overlain with an index of nitrogen concentration to develop correlations between visible imagery and biogeochemistry

High resolution visible image







Index of Nitrogen Concentration