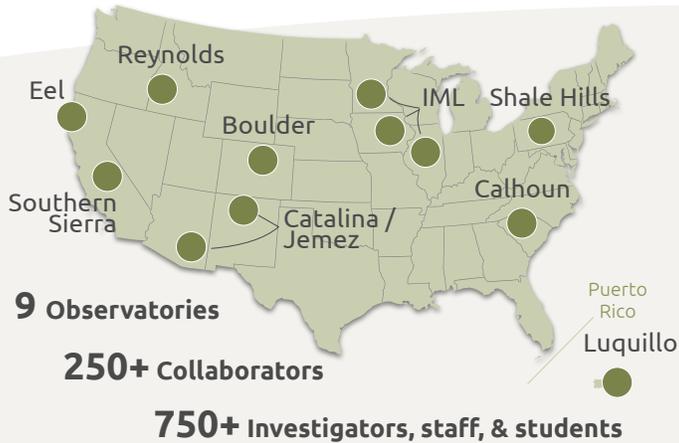
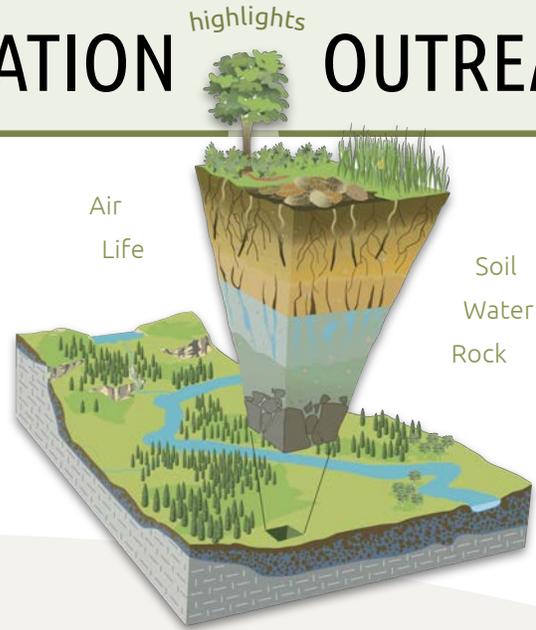


## We all depend on the Critical Zone

### Earth's vital outer skin

It extends from tops of trees to bottom of groundwater

- Where rock, soil, water, air, and living organisms interact.
- Its processes operate on second-to-eon timescales.
- It sustains all terrestrial life; our lives depend on it.



## But it's poorly understood

### Fundamental questions

- How does the Critical Zone form?
- How does it function?
- How will it change over time?

**NSF CZO Program** Serves the scientific community through research, infrastructure, data, & models.  
Promotes interdisciplinary science, incl. hydrology, geochemistry, biology, & more.

## Share awareness of the Critical Zone



### The Earth Scientist Special CZO Issue, Fall 2016

- National Earth Science Teachers Association.
- 600 NESTA subscribers.
- Copies available upon request.
- 8 main articles written or co-written by CZO personnel.

### Educator workshops

- We offer professional development programming
- CZ science and related topics.
  - Grade school to grad school.
  - Informal education too.
  - Hour-long workshops to semester-long courses.

### PBS/WSKG videos



### CZO is partnering with WSKG on short videos

- Will appear on PBS LearningMedia website.
- Focus on rainfall, runoff, evapotranspiration, and the carbon cycle.
- "Explore the Critical Zone" video is complete, watch at [bit.ly/1Chf6aB](http://bit.ly/1Chf6aB)



### Blog "Adventures in the Critical Zone"

- General audience.
- Wide range of topics
- 1000+ pageviews/mo.



### Observatory comics

- A comic about each of the 9 CZOs
- 10-12 panels per comic.
  - K-12 and general audience.
  - Original artwork and text.

## Explore educational resources

### Single location for CZO educational activities

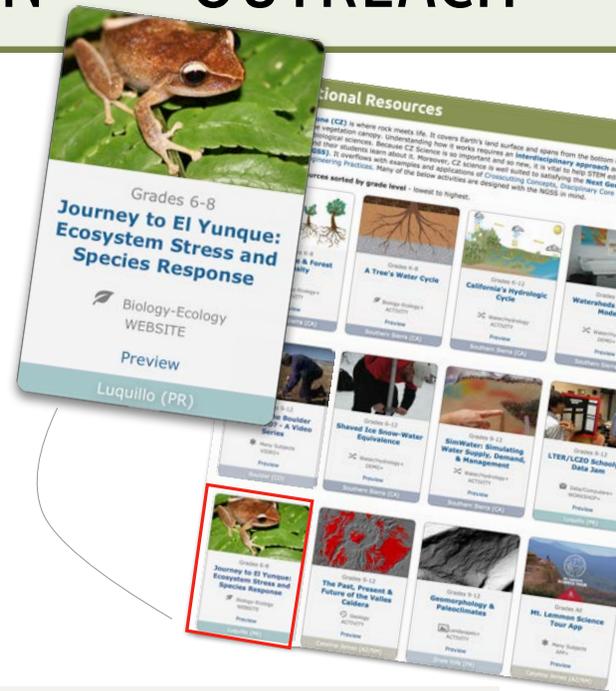
See a collection of educational activities produced by the CZO Network.

- Peer-reviewed, with standardized grade-levels, categories, and descriptions.
- Currently 15 resources but will be expanding to 10's more in 2019.
- Collection is hosted at [CriticalZone.org/national/education](http://CriticalZone.org/national/education).

### Next Generation Science Standards (NGSS)

Many CZO educational resources are aligned to the NGSS.

The interdisciplinary nature of CZO science and its relevance to every terrestrial environment makes it well-suited to satisfying the new science standards. The new standards value inclusion of locally relevant environmental content, and give far more attention to complex systems and climate change than prior standards.



## See how we help train Critical Zone scientists



### Undergrad course: Critical Zone Science

Teaching materials for a 15-week, upper-level undergraduate course

Developed by 7 CZO investigators and collaborators. Hosted by InTeGrate (Science Educ. Resource Center).

- 7 main modules, 4-5 class sessions each.
- Integrates grand challenges facing society.
- Builds interdisciplinary and systems thinking.
- Uses real-world data sets & data visualization techniques.
- Students will understand the interplay of rock, water, air, soil, & life and the profound importance of these issues.

### CZO Virtual Institute

A project focused on cross-CZO, common measurements, and collaboration

- Annual summer Interns program. *Grad students, postgraduates.*
- International Scholars program. *Supporting travel & research.*
- Cross-CZO science workshops. *AGU events, Working groups.*
- Funded by NSF's SAVI project.

### CZO webinars

Online presentations of CZO science

- Topics range widely: ie CZ services, Earth surface processes, CZ science and policy, water scarcity, CZO plans.
- Videos hosted at [CriticalZone.org](http://CriticalZone.org)

### Virtual Field Experiences (VFE)

Online content for 3 Critical Zone Observatory field sites

- Shale Hills, Southern Sierra, & Luquillo CZOs. Hosted at [virtualfieldwork.org](http://virtualfieldwork.org)
- Rich visual documentation of each site, augmented by maps and data.
- Compare the Critical Zone (CZ) at these sites to the CZ in their backyards.
- Create your own VFEs with our tools, promote CZ research.

### CZO email newsletter

- Published monthly
- View past issues and sign up, <https://bit.ly/2KYsRC6>

### In the Trenches

Special issue: "Exploring the Critical Zone, Earth's Outer Skin", Oct 2017

- National Assoc. of Geoscience Teachers.
- 5 main articles written by CZO personnel.
- 2000 NAGT subscribers.

