The CZO program is both individual sites and a network of sites, promoting a system approach to Critical Zone Science.

CZO scientists pursue state-of-the-art science by implementing innovative new techniques and conducting long-term monitoring.

The CZO Program is an infrastructure for research of the CZ Community at large: CZO scientists and NSF encourage community involvement.
How does the Critical Zone... form, operate, and evolve?

CZO seeks to answer fundamental Critical Zone questions and help predict how this zone will change in the future.

EXPLORE OUR RESEARCH >>
CZO Content

864 Publications
509 People
279 News Articles
180 Datasets
164 Events
125 Partners
66 Field Areas
30 Models

12,074 pageviews/month

34,640 Visits/yr.
CZOs are employing common measurements to assess CZ composition, structure and fluxes.

- **Hydromet/eddy flux**
- **Sapflux**
- **Gas flux**
- **Soil moisture, temperature, microbiota**
- **Profile mineralogy geochemistry**
- **Groundwater**
- **Pore water chemistry**
- **Surface water discharge**

Images: Santa Catalina – Jemez CZO
Network Questions

1. What controls critical zone properties and processes?

2. What will be the response of the critical zone structure, and its stores and fluxes, to climate and land-use change?

3. How can improved understanding of the critical zone be used to enhance ecosystem resilience and sustainability, and restore ecosystem function?
Critical zone datasets are very diverse ... difficult to organize (from Sue Brantley)
Critical zone data types (trains) are moving down tracks at different rates
Critical Zone Observatory Network

Education

At Six CZO:
~116 graduate students: ~42 graduated
~65 undergraduate students: ~53 graduated

EAR Postdoctoral Fellowships (EAR-PF), July 18, 2014
Fellowships awarded for CZO research
Future postdoctoral opportunity for cross-site research

Research Experience for Undergraduates/Res. Exp. Teachers (REU/RET)
Christina River Basin & Shale Hills joint REU/RET program

InTeGrating CZO Science: Undergrad courses’ content/materials

Student support to conferences and workshops
CZO National Office, Coming Soon!

Coordination of CZO Network Research and Educational Activities

Outreach to the Critical Zone Community at large and the public on behalf of the network

• Point of contact with science community
• Promoting the program and developing a high-profile public identity
• Developing an education and outreach program of wide coverage
• Representing the CZO program with CZ-related organizations, and at conferences and public events
• Assisting in organizing workshops, short courses, and sessions at meetings
• Managing a quarterly CZO newsletter and a speaker series
How to become involved with CZOs

• Seek a seed grant from one of the CZOs (some have them, some don’t)
• Seek funding from NSF programs: EAR SEP programs and others (include letter of support from the CZO)
• Ask a CZO PI to host one of your grad students or postdocs to collect data or pursue modelling
• Use CZO data posted on the web (and notify the CZO)
• Interact with the National Program office
• Join the CZO student committee (CZEN.org, contact Adrian Harpold @ UC)
• Attend a workshop or the all-hands meeting (hosted by SS CZO, Sept. 2014)
• Pursue cross site comparisons that leverage the CZOs
Looking into the Future

- CZO program welcomes affiliation of new and existing sites or projects
- Potential future CZOs: urban & karst terrains
- CZO Competition in 4 years
- The CZO Program is growing internationally
A growing international network

- US National Critical Zone Observatory program
- European Commission SoilTrEC (Soil Transformations in European Catchments) [http://www.soiltrec.eu/](http://www.soiltrec.eu/)
- French RBV (Réseau des bassins versants– Network of River Basins); CRITEX (Critical Zone Program of Excellence) equipment project [http://rnbv.ipgp.fr/](http://rnbv.ipgp.fr/)
- TERENO (Terrestrial Environmental Observatories in Germany) [http://teodoor.icg.kfa-juelich.de/overview-de](http://teodoor.icg.kfa-juelich.de/overview-de)
- Chinese Critical Zone Observatory program (announced Sept 2012)
CZO International Planning

International CZO Steering Committee
Prof. Steve Banwart, University of Sheffield
Prof. Jerome Gaillardet, Institut de Physique du Globe de Paris
Prof. Susan Trumbore, Max Plank Institute
Prof. Chen Zhu, Indiana University (liaison with NSF of China)
Prof. Donald Sparks, University of Delaware
Dr. Martin Goldhaber, U.S. Geological Survey

Workshop to Advance International Critical Zone Observatory Science

Potential Outcome: Joint call for proposals.
CZOs and Related Study Sites

Public Consultation on Planning an International Critical Zone Program
http://www.czen.org/forum