

What is the Critical Zone?



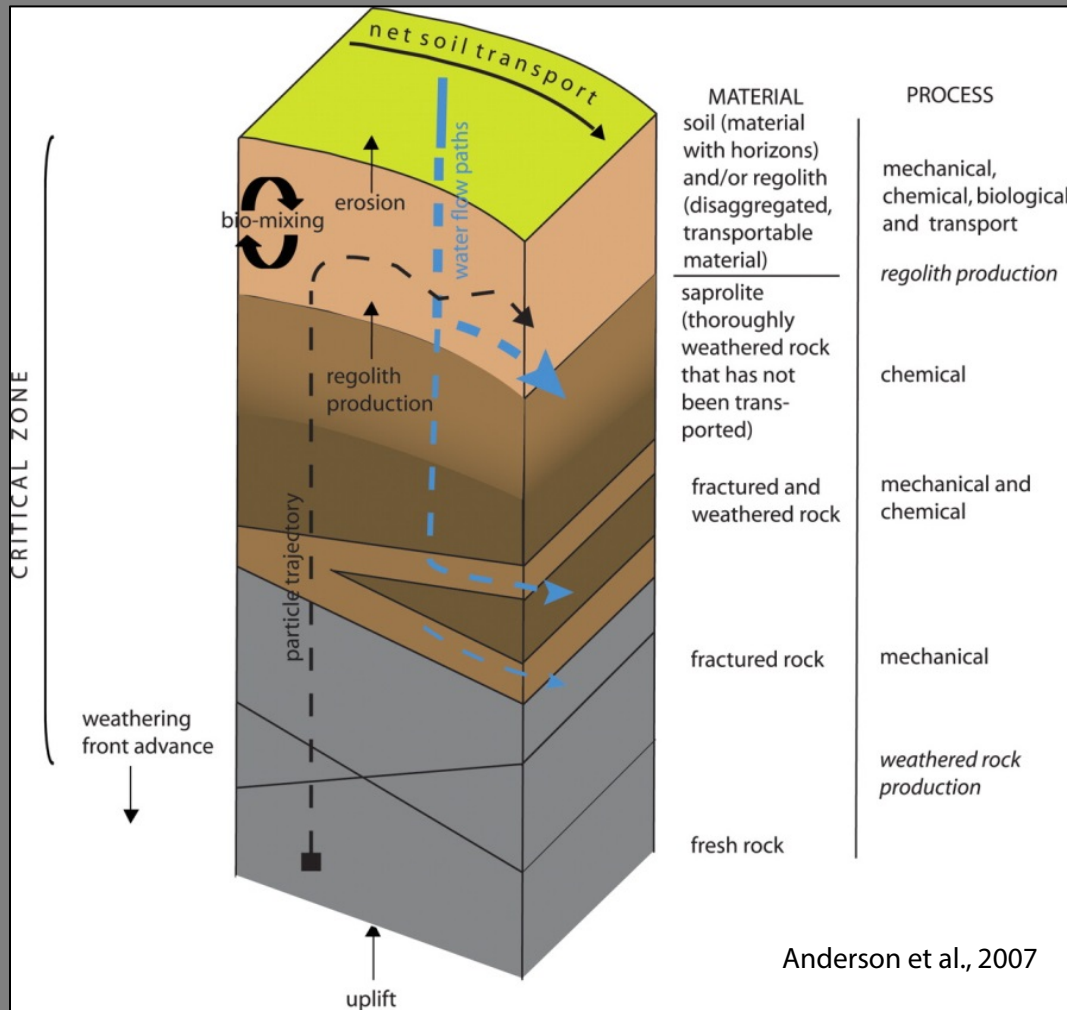
The critical zone extends from the top of the tree canopy to the deepest penetration of groundwater

The critical zone is the region of the Earth where life interacts with the hydrosphere, lithosphere, and atmosphere

Therefore, understanding the functioning of the critical zone and how it evolves is of “critical” importance

Critical Zone Science examines the interactions between these spheres at a range of spatial and temporal scales

The fundamental architecture of the Critical Zones is governed by the transformation of bedrock to regolith



What are the primary processes and rate laws that set the physical characteristics of the Critical Zone?

How does the architecture of the critical zone change in response to climatic, base level, and land use perturbations?

The Critical Zone Observatory Program provides a natural laboratory to study the effects of lithology, climate, and tectonics on surface and near-surface processes

National Critical Zone Ob: x

criticalzone.org

SWITCH OBSERVATORY ▼

CZO | CRITICAL ZONE OBSERVATORIES
U.S. NSF NATIONAL PROGRAM

About | News | Events | Opportunities | Contact

Research | Infrastructure | Data | Models | Publications | People | Education/Outreach

WE STUDY THE CRITICAL ZONE
Our ten U.S. environmental observatories study Earth's outer skin - where water, atmosphere, ecosystems, soil & rock interact.

WATCH A SHORT VIDEO >>

REYNOLDS
EEL
BOULDER
IML
SHALE HILLS
CHRISTINA
SOUTHERN SIERRA
CATALINA / JEMEZ
CALHOUN
LUQUILLO

NSF Supported by the National Science Foundation

Each CZO was funded by individual proposal, therefore each CZO has different goals and strengths

National Critical Zone Ob: x

criticalzone.org

SWITCH OBSERVATORY ▼

CZO | **CRITICAL ZONE OBSERVATORIES**
U.S. NSF NATIONAL PROGRAM

About | News | Events | Opportunities | Contact

Research | Infrastructure | Data | Models | Publications | People | Education/Outreach

WE STUDY THE CRITICAL ZONE
Our ten U.S. environmental observatories study Earth's outer skin - where water, atmosphere, ecosystems, soil & rock interact.

WATCH A SHORT VIDEO >>

REYNOLDS
EEL
BOULDER
IML
SHALE HILLS
CHRISTINA
SOUTHERN SIERRA
CATALINA / JEMEZ
CALHOUN
LUQUILLO

Supported by the
National Science Foundation

Each CZO is comprised of an interdisciplinary group of PIs, including ecologists, hydrologists, pedologists, atmospheric scientists, and geologists (geochemists, geomorphologists, geophysicists)

Proposed CC Array locations could provide tectonic and climatic environments that are not represented by the currently funded CZOs

National Critical Zone Ob: x
criticalzone.org

SWITCH OBSERVATORY ▼

CZO | CRITICAL ZONE OBSERVATORIES
U.S. NSF NATIONAL PROGRAM

About | News | Events | Opportunities | Contact

Research | Infrastructure | Data | Models | Publications | People | Education/Outreach

WE STUDY THE CRITICAL ZONE
Our ten U.S. environmental observatories study Earth's outer skin - where water, atmosphere, ecosystems, soil & rock interact.

WATCH A SHORT VIDEO >>

REYNOLDS
EEL
BOULDER
IML
SHALE HILLS
CHRISTINA
SOUTHERN SIERRA
CATALINA / JEMEZ
CALHOUN
LUQUILLO

Supported by the
National Science Foundation

Proposed CC Array locations include a variety of plate boundary interactions, uplift rates, and permafrost environments in the far northern boundaries, which are missing from our developing understanding of how Earth's critical zone behaves