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Imaging the architecture of the Critical Zone along an altitudinal gradient in the Rocky Mountains Front Range of Colorado, USA

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Boulder Creek Critical Zone Observatory functions as a nucleus for different scientific disciplines to study the development of the Critical Zone (CZ) along an altitudinal gradient. Three catchments represent different landscape types along this gradient. Green Lakes Valley is a typical alpine tundra area at around to 3600 m a.s.l., whereas Gordon Gulch (2700 m a.s.l.) represents a subalpine area. The lower montane area is represented by the watershed of Betasso (1900 m a.s.l.).

We present results from all three catchments using various shallow geophysical methods together with intense soil-geomorphological studies. The three study sites enormously differ in their geomorphological, hydrological, biological and pedological parameters within the Critical Zone of which we present the major differences along the altitudinal gradient which include variations in thickness, composition and layering of the sediments and soils within the CZ.