Geologic Map of Great Smoky Mountains National Park

North Carolina and Tennessee

National Park Service
U.S. Department of the Interior

Geologic Resources Inventory
Natural Resource Stewardship and Science

West Layout

NPS Boundary

Point Geologic Units

- PZp - Pegmatite (Paleozoic)
- PZZd - Metadiorite, metadiabase, and altered rocks (dikes and sills) (Paleozoic and Neoproterozoic)
- Zwl - Wilhite Formation, limestone and shale (Neoproterozoic)
- Zal - Anakeesta Formation, metadolomite (Neoproterozoic)
- Ya - Amphibolite (Mesoproterozoic)
- Yu - Ultramafic rocks (Mesoproterozoic)

Infrastructure

- point of interest
- trails
- roads

Geologic Cross Section Lines

Faults

- thrust fault, known or certain
- thrust fault, concealed
- normal fault, known or certain
- normal fault, concealed
- right-lateral strike-slip fault, known or certain
- left-lateral strike-slip fault, concealed
- normal left-lateral strike-slip fault, known or certain
- normal left-lateral strike-slip fault, concealed
- unknown offset/displacement, known or certain
- unknown offset/displacement, concealed
- thrust right-lateral strike-slip fault, known or certain
- thrust right-lateral strike-slip fault, concealed

Linear Geologic Units

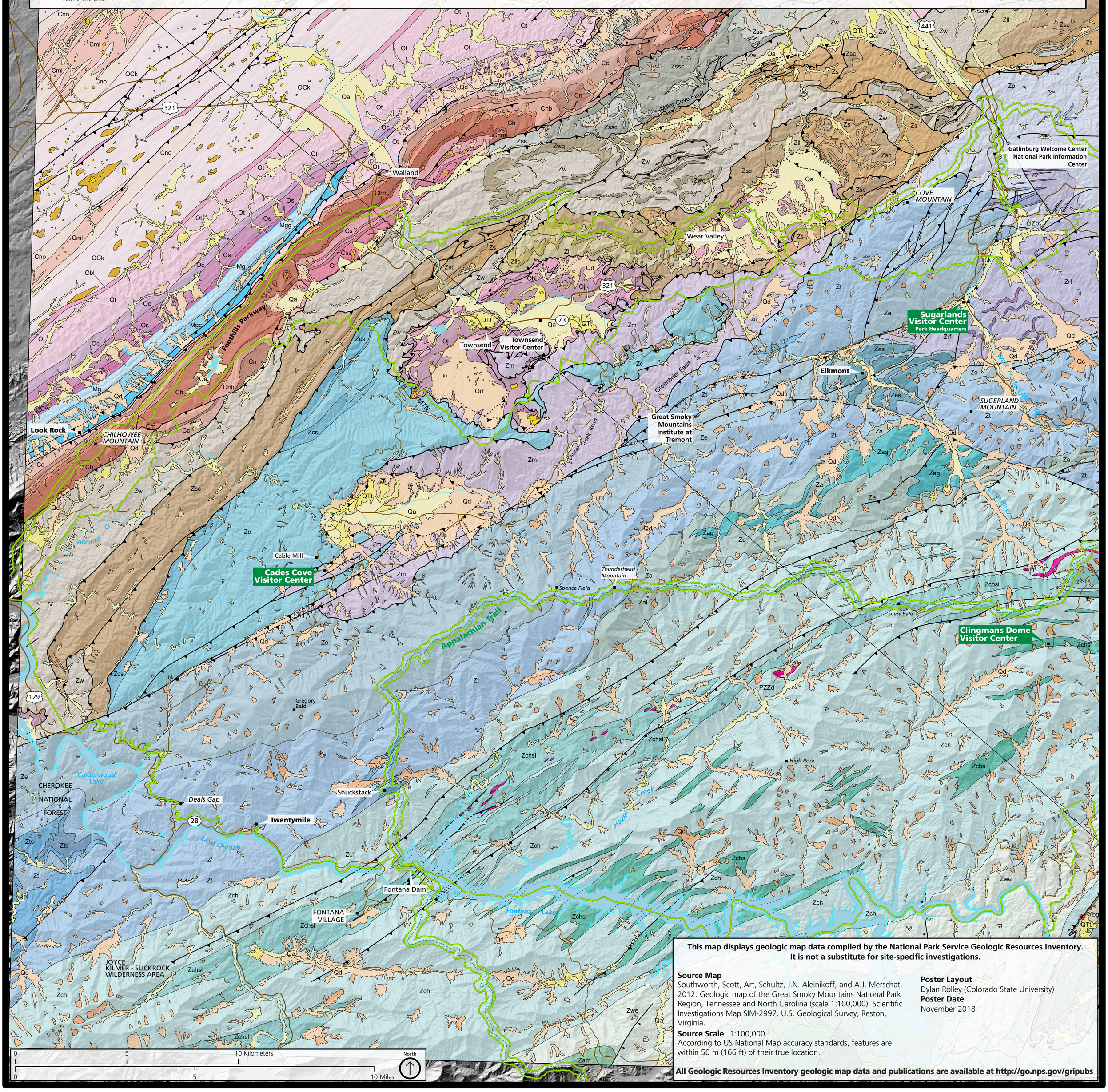
- MDc - Chattanooga Shale (Lower Mississippian? and Upper Devonian), known or certain
- MDc - Chattanooga Shale (Lower Mississippian? and Upper Devonian), concealed

Geologic Contacts

- known or certain
- concealed
- map boundary
- water or shoreline

Geologic Units

- Qa Allu`vium (Holocene)
- Qdf Debris flows (Holocene)
- Qc Colluvium (Holocene and Pleistocene)
- QTt Terrace deposits (Tertiary to Holocene)
- QTs Sinkholes (Tertiary to Holocene)
- QTr Residuum overlying carbonate rock (Tertiary to Holocene)
- Qd Debris fans (Pleistocene)
- Mgg Greasy Cove and Grainger Formations, undifferentiated (Upper and Lower Mississippian)
- Mgc Greasy Cove Formation (Upper and Lower Mississippian)
- Mg Grainger Formation (Lower Mississippian)
- PZp Pegmatite (Paleozoic)
- Ob Bays Formation (Middle Ordovician)
- Os Sevier Formation (Middle Ordovician)
- Oc Chota Formation (Middle Ordovician)
- Oo Ottosee Shale (Middle Ordovician)
- Ot Tellico Formation (Middle Ordovician)
- Ocm Chapman Ridge Marble (Middle Ordovician)
- Ocr Chapman Ridge Sandstone (Middle Ordovician)
- Obl Blockhouse Shale (Middle Ordovician)
- Olh Lenoir Limestone (Middle Ordovician)
- Oj Jonesboro Limestone (Lower Ordovician)
- OCk Knox Group (Lower Ordovician and Upper Cambrian)
- Cno Nolichucky Shale (Upper and Middle Cambrian)
- Cml Maryville Limestone (Upper and Middle Cambrian)
- Crg Rogersville Shale (Upper and Middle Cambrian)
- Crt Rutledge Limestone (Upper and Middle Cambrian)
- Cpr Pumpkin Valley Shale and Rome Formation (Upper and Middle Cambrian)
- Cr Rome Formation (Middle Cambrian)
- Cs Shady Dolomite (Lower Cambrian)
- Css Shady Dolomite, shaly dolomite and dolomitic shale (Lower Cambrian)
- Ccu Upper part of Chilhowee Group, undifferentiated (Lower Cambrian)
- Chm Helenmode Formation (Lower Cambrian)
- Ch Hesse Quartzite (Lower Cambrian)
- Cm Murray Shale (Lower Cambrian)
- Cnb Nebo Quartzite (Lower Cambrian)
- Cn Nichols Shale (Lower Cambrian)
- Cc Cochran Formation (Lower Cambrian)
- PZZd Metadiorite, metadiabase, and altered rocks (dikes and sills) (Paleozoic and Neoproterozoic)
- PZZud Metamorphosed dunite and peridotite (early Paleozoic and Neoproterozoic)
- PZZa Amphibolite (early Paleozoic and Neoproterozoic)
- CZct Cartoogechaye terrane (Cambrian and Neoproterozoic)
- CZo Otto Formation of the Dahlonega gold belt (Cambrian and Neoproterozoic)
- Zss Sandsuck Formation (Neoproterozoic)
- Zssc Sandsuck Formation, conglomerate (Neoproterozoic)
- Zw Wilhite Formation (Neoproterozoic)
- Zwq Wilhite Formation, quartzite and conglomerate (Neoproterozoic)
- Zwl Wilhite Formation, limestone and shale (Neoproterozoic)
- Zwlc Wilhite Formation, carbonate rocks and clastic rocks (Neoproterozoic)
- Zs Shields Formation (Neoproterozoic)
- Zsl Shields Formation, limestone and siltstone (Neoproterozoic)
- Zsc Shields Formation, conglomerate (Neoproterozoic)
- Zll Licklog Formation (Neoproterozoic)
- Zlls Licklog Formation, conglomeritic sandstone (Neoproterozoic)
- Znt Tusquitee Quartzite and Nantahala Formation (Neoproterozoic)
- Zd Dean Formation (Neoproterozoic)
- Zam Ammons Formation (Neoproterozoic)
- Zgb Grassy Branch Formation (Neoproterozoic)
- Zwe Wehutty Formation (Neoproterozoic)
- Zch Copperhill Formation (Neoproterozoic)
- Zchs Copperhill Formation, quartz-muscovite schist and phyllite (Neoproterozoic)
- Zchsl Copperhill Formation, slaty metasiltstone (Neoproterozoic)
- Za Anakeesta Formation (Neoproterozoic)
- Zag Anakeesta Formation, metagraywacke and metasiltstone (Neoproterozoic)
- Zas Anakeesta Formation, metasandstone and siliceous metasiltstone (Neoproterozoic)
- Zac Anakeesta Formation, chloritoid slate (Neoproterozoic)
- Zc Cades Sandstone (Neoproterozoic)
- Zcs Cades Sandstone, dark metasiltstone (Neoproterozoic)
- Zcc Cades Sandstone, boulder conglomerate (Neoproterozoic)
- Zt Thunderhead Sandstone (Neoproterozoic)
- Zts Thunderhead Sandstone, dark metasiltstone and slate (Neoproterozoic)
- Ztb Thunderhead Sandstone, boulder conglomerate (Neoproterozoic)
- Ze Elkmont Sandstone (Neoproterozoic)
- Zes Elkmont Sandstone, coarse metasandstone and metaconglomerate (Neoproterozoic)
- Zsb Snowbird Group, undivided (Neoproterozoic)
- Zr Rich Butt Sandstone (Neoproterozoic)
- Zrs Rich Butt Sandstone, slate and metasiltstone (Neoproterozoic)
- Zm Metcalf Phyllite (Neoproterozoic)
- Zp Pigeon Siltstone (Neoproterozoic)
- Zps Pigeon Siltstone, metasandstone (Neoproterozoic)
- Zrf Roaring Fork Sandstone (Neoproterozoic)
- Zrfs Roaring Fork Sandstone, metasandstone (Neoproterozoic)
- Zl Longarm Quartzite (Neoproterozoic)
- Zwb Wading Branch Formation (Neoproterozoic)
- Ybg Biotitic porphyritic metagranitoid (Mesoproterozoic)
- Tgd Metagranodiorite (Mesoproterozoic)
- Ypg Megacrystic metagranite (Mesoproterozoic)
- Ymp Mylonitic monzogranite (Mesoproterozoic)
- Yg Metamonzogranite (Mesoproterozoic)
- Ysg Spring Creek Metagranitoid (Mesoproterozoic)
- Ym Migmatitic biotite gneiss (Mesoproterozoic)
- Yh Hornblende-biotite gneiss (Mesoproterozoic)
- Ya Amphibolite (Mesoproterozoic)
- Yu Ultramafic rocks (Mesoproterozoic)



0 5 10 Kilometers
0 5 10 Miles
North

This map displays geologic map data compiled by the National Park Service Geologic Resources Inventory. It is not a substitute for site-specific investigations.

Source Map
Southworth, Scott, Art, Schultz, J.N. Aleinikoff, and A.J. Merschat. 2012. Geologic map of the Great Smoky Mountains National Park Region, Tennessee and North Carolina (scale 1:100,000). Scientific Investigations Map SIM-2997. U.S. Geological Survey, Reston, Virginia.

Source Scale 1:100,000
According to US National Map accuracy standards, features are within 50 m (166 ft) of their true location.

Poster Layout
Dylan Rolley (Colorado State University)

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All Geologic Resources Inventory geologic map data and publications are available at http://go.nps.gov/gripubs