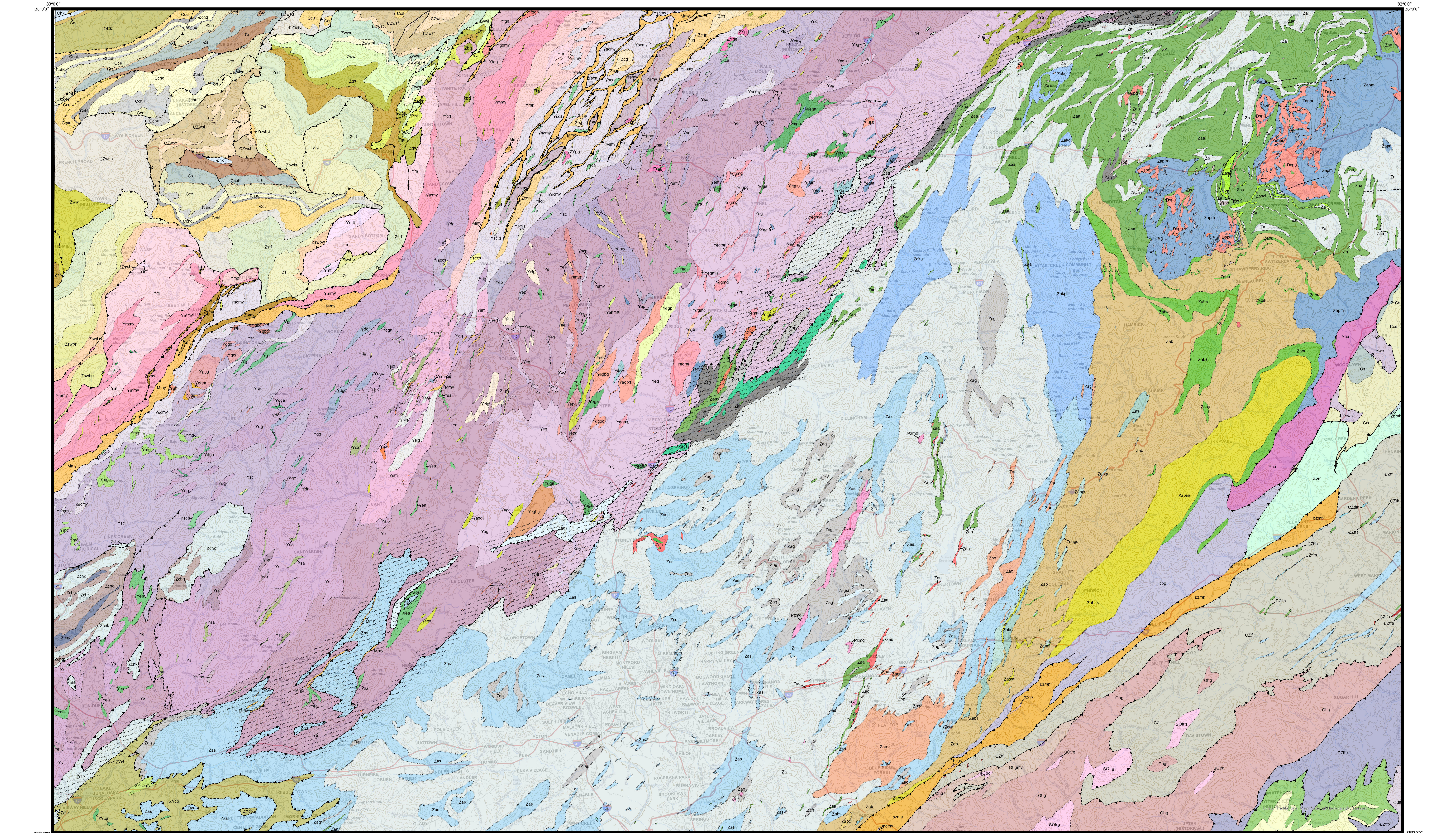


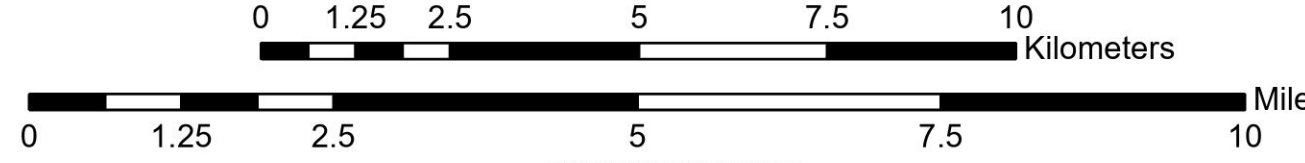


BEDROCK GEOLOGIC MAP COMPILATION OF THE ASHEVILLE 1:100,000 QUADRANGLE, NORTH CAROLINA AND TENNESSEE

By Bart Cattanaach, Ashley Lynn, Brennan Trantham, Jesse Hill, Tommy Douglas, Carl Merschat, and G. Nicholas Bozdog

Bedrock mapping from 1972 to 2024. Map preparation, digital cartography, and editing done by Brennan Trantham, Bart Cattanaach, Ashley Lynn, and Jesse Hill.

SCALE 1:100,000



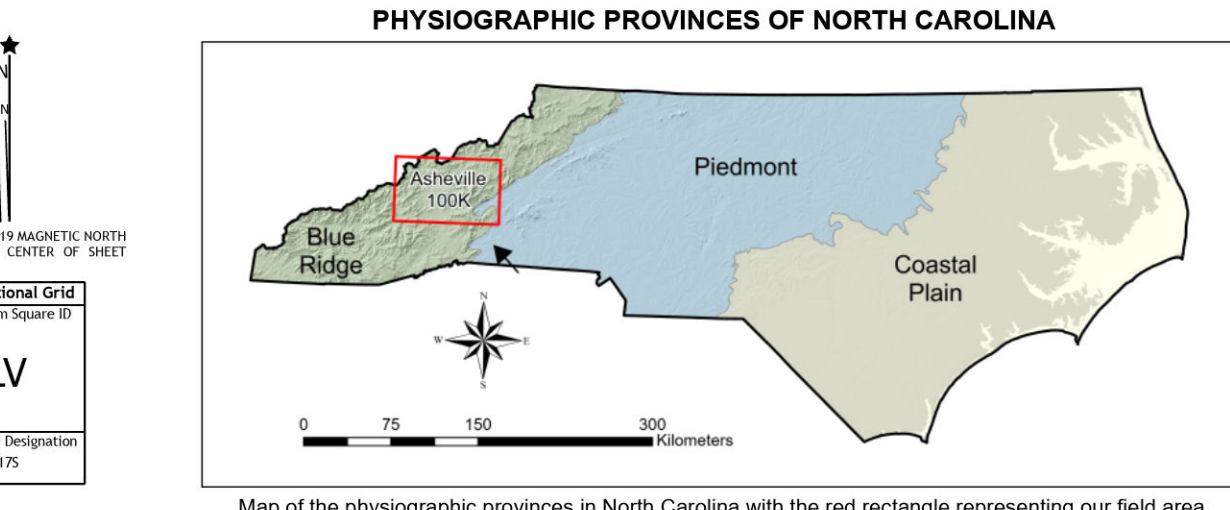
CARTOGRAPHIC INTERVAL: 100 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This product was prepared in accordance with the National Geologic Mapping Program (USGS) standards.

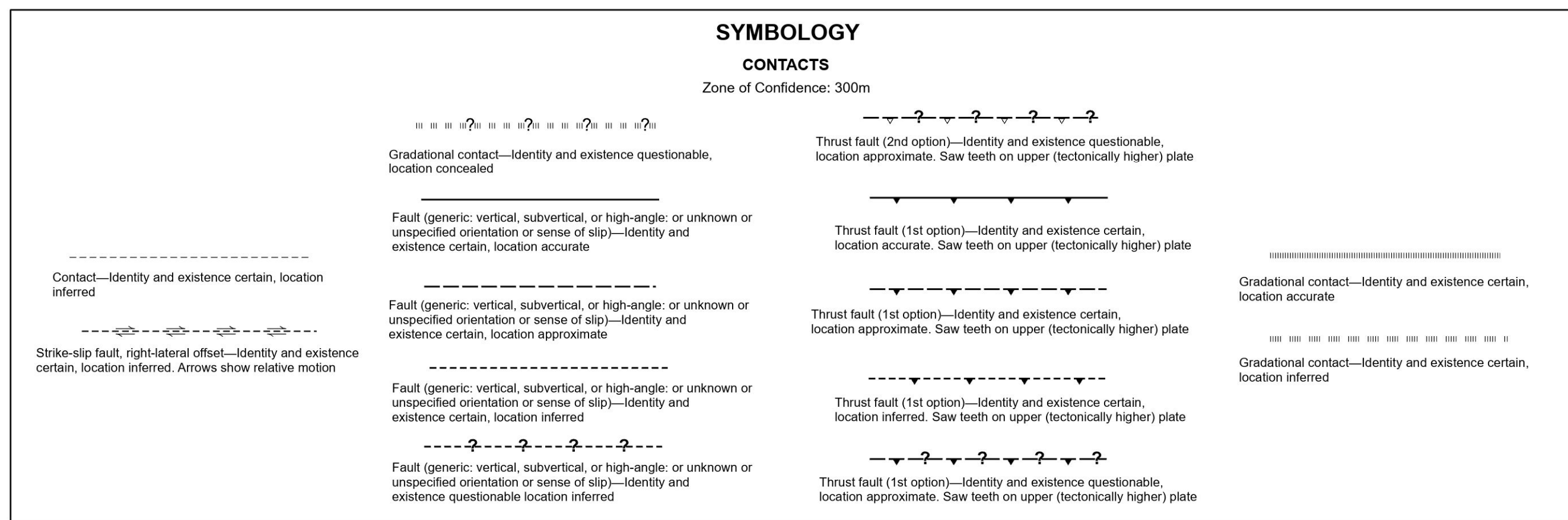
Base map was created from a combination of files from USGS and NCDOT.

Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program under STATEMAP (Award 2023, G23AC0464).

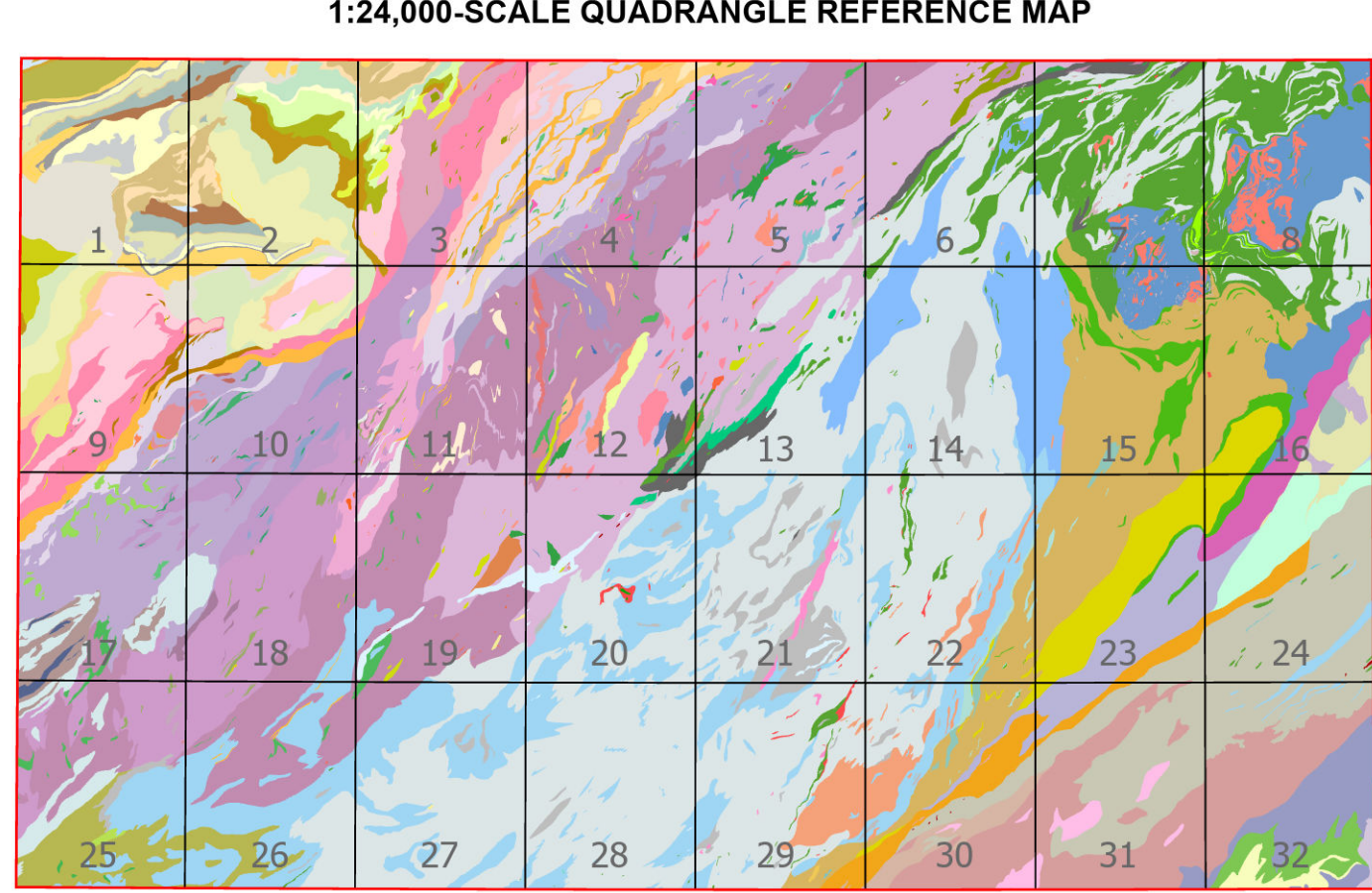
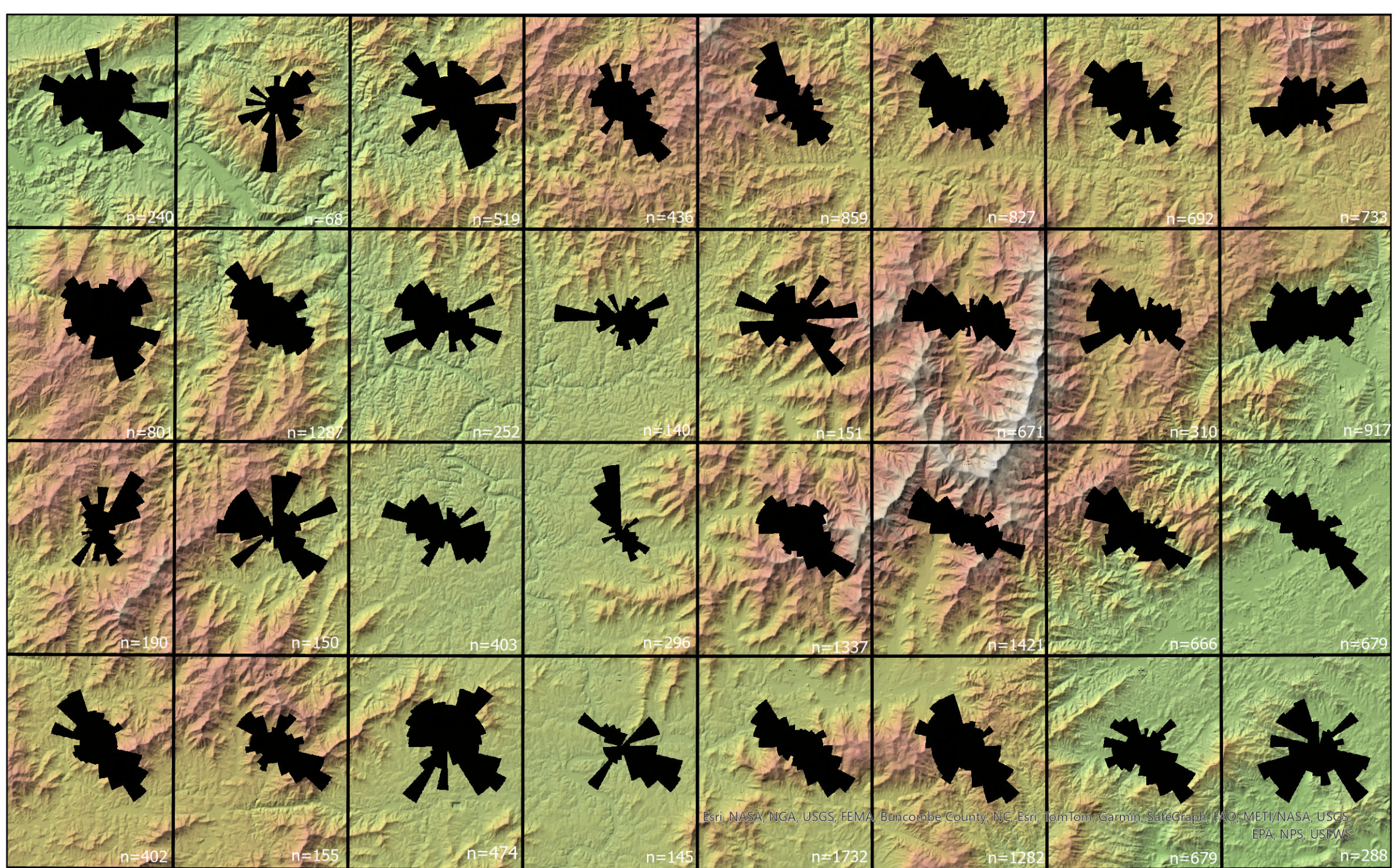
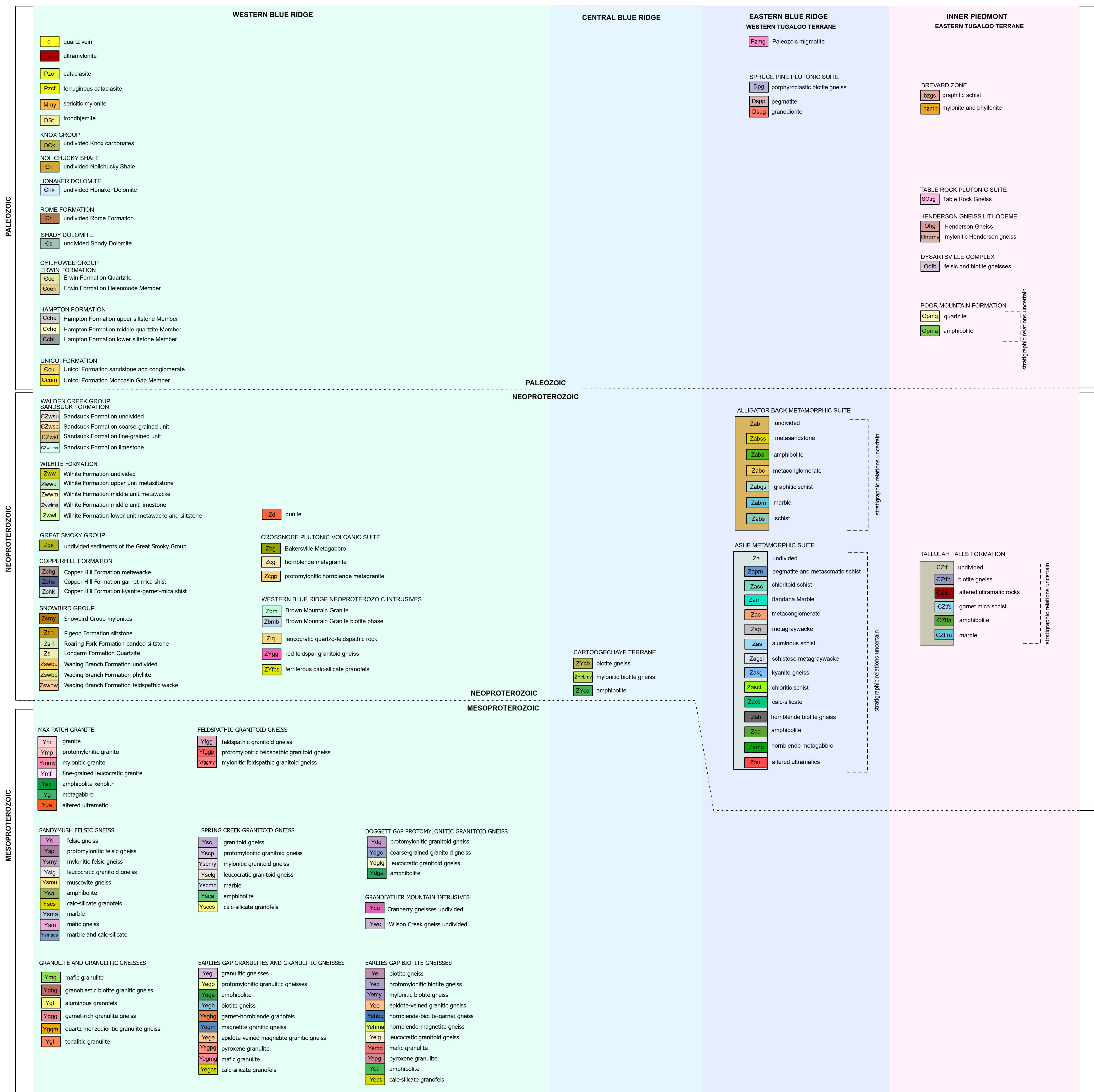
This map and explanatory information is submitted for publication with the understanding that the United States Government is authorized to reproduce and distribute reprints for government purposes. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.



Map of the physiographic provinces in North Carolina with the red rectangle representing our field area.



CORRELATION OF MAP UNITS



Numbers are associated with alphabetized references below.

REFERENCES

- Adams, M.G., 1985, The tectonostratigraphic evolution of part of the Blue Ridge thrust complex, Northwestern North Carolina. Ph.D. dissertation, University of North Carolina, 193 p.
- Adams, M.G., Cattanaach, B.L., Benton, J.R., Trantham, B.T., Lynn, A.S., 2024, Bedrock Geologic Map of the Burnsville 7.5-minute Quadrangle, Yancey and Mitchell Counties, North Carolina. North Carolina Geological Survey Draft Manuscript Map, in color.
- Beggs, F.J., 2003, Geologic map of the northern half of the Marshall quadrangle, North Carolina. Unpublished manuscript map and report in files of North Carolina Geological Survey, scale 1:24,000.
- Bowles, J.W., 2000, The Crabtree-Pearlman Fault zone: Investigating a new control on the macroscopic brittle-ductile transformation through mapping and related structural studies. M.S. thesis, University of North Carolina Chapel Hill, scale 1:24,000. Georeferenced and digitized by NCGS.
- Bremer, B.R., 1969, Structural and Stratigraphic Relationships of Ortho- and Paragneisses Southwest of Marion, North Carolina. M.A. thesis, University of Tennessee, 1999. <http://trace.tennessee.edu/etd/handle/10367/347>
- Brown, D.A., 1962, Geology of the Spruce Pine district, Avery, Mitchell, and Yancey Counties, North Carolina. (No. 1122A) U.S. Geological Survey.
- Burr, J.L., 2002, Geologic map of the Enka quadrangle, North Carolina. Unpublished manuscript map and report in files of North Carolina Geological Survey, scale 1:24,000.
- Burr, J.L., 2000, Geologic map of the east half of the Enka quadrangle, North Carolina. Unpublished manuscript map and report in files of North Carolina Geological Survey, scale 1:24,000.
- Carter, M.W., 1996, Bedrock Geologic Map of the Hot Springs 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Open-File Report 1996-05, scale 1:24,000.
- Carter, M.W., and Wiener, L.S., 1999, Bedrock geologic map and mineral resources summary of the Fries Creek 7.5-minute quadrangle, North Carolina. North Carolina Geological Survey, Geologic Map Series B, scale 1:24,000.
- Carter, M.W., Williams, S.T., and Merschat, C.E., 2001, Bedrock Geologic Map of the White Rock 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Open-File Report 2001-04, scale 1:24,000.
- Cattanaach, B.L., and Merschat, C.E., 2006, Bedrock Geologic Map of the Olen 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Open-File Report 2006-02, scale 1:24,000.
- Cattanaach, B.L., Bozdog, G.N., and Wooten, R.M., 2014, Bedrock Geologic Map of the Black Mountain 7.5-minute quadrangle, Buncombe, McDowell and Henderson Counties, North Carolina. North Carolina Geological Survey, Open-File Report 2014-03, scale 1:24,000.
- Cattanaach, B.L., Bozdog, G.N., and Hill, S.J., 2020, Bedrock Geologic Map of the Marion West 7.5-minute Quadrangle, McDowell County, North Carolina. North Carolina Geological Survey, Open-File Report 2020-05, scale 1:24,000.
- Cattanaach, B.L., Bozdog, G.N., Isard, S.J., and Tibbitts, M., 2022, Bedrock Geologic Map of the Cato 7.5-minute Quadrangle, Yancey, McDowell, and Mitchell Counties, North Carolina. North Carolina Geological Survey, Open-File Report 2022-06, scale 1:24,000.
- Cattanaach, B.L., Bozdog, G.N., Isard, S.J., and Wooten, R.M., 2018, Bedrock Geologic Map of the Mount Mitchell 7.5-minute Quadrangle, Buncombe and Yancey Counties, North Carolina. North Carolina Geological Survey, Open-File Report 2018-10, scale 1:24,000.
- Cattanaach, B.L., Bozdog, G.N., Isard, S.J., and Wooten, R.M., 2019, Bedrock Geologic Map of the Old Fort 7.5-minute Quadrangle, McDowell and Yancey Counties, North Carolina. North Carolina Geological Survey, Open-File Report 2019-04, scale 1:24,000.
- Cattanaach, B.L., Bozdog, G.N., Isard, S.J., and Wooten, R.M., 2020, Bedrock Geologic Map of the Moffitt Hill 7.5-minute Quadrangle, McDowell, Rutherford, and Buncombe Counties, North Carolina. North Carolina Geological Survey, Open-File Report 2020-05, scale 1:24,000.
- Cattanaach, B.L., Bozdog, G.N., Wooten, R.M., and Isard, S.J., 2016, Bedrock Geologic Map of the Montreat 7.5-minute quadrangle, Buncombe, Yancey, and McDowell Counties, North Carolina. North Carolina Geological Survey, Open-File Report 2016-06, scale 1:24,000.
- Cattanaach, B.L., Merschat, C.E., and Carter, M.W., 2007, Bedrock Geologic Map of the Spring Creek 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Geologic Map Series GMS-12, scale 1:24,000.
- Cattanaach, B.L., Wooten, R.M., Bozdog, G.N., and Bullard, A.R., 2013, Bedrock Geologic Map of the Craggy Pinnacle 7.5-minute Quadrangle, North Carolina. North Carolina Geological Survey, Open-File Report 2013-05, scale 1:24,000.
- Langille, J., Palmer, M., Cattanaach, B.L., Benton, J.R., Trantham, B.T., Lynn, A.S., 2024, Bedrock Geologic Map of the Spruce Pine 7.5-minute Quadrangle, Mitchell County, North Carolina. North Carolina Geological Survey Draft Manuscript Map, in color.
- Langille, J.M., Palmer, M., and Green, G., 2020, Evidence for Cenozoic tectonic rejuvenation associated with the Laurel Creek Lineament in the Spruce Pine 7.5-minute quadrangle, western North Carolina, USA. Journal of Maps, 16(1), scale 1:24,000. Georeferenced and digitized by NCGS.
- Langille, J.M., Stachowicz, L., & Smith, F., 2020, Southwest extension of distal transposition along the Burnsville fault into the Cyle 7.5-minute quadrangle, western North Carolina, USA. Journal of Maps, 16(2), 226-244.
- Merschat, C.E., 1977, Geologic map and mineral resources summary of the Mars Hill quadrangle, North Carolina. North Carolina Geological Survey, Geologic Map - 7.5-minute quadrangle maps and mineral resource summary, GM 197-SE, scale 1:24,000.
- Merschat, C.E., 1993, Geologic Map and Mineral Resources Summary of the Barnardsville Quadrangle, North Carolina. North Carolina Geological Survey.
- Merschat, C.E., 1997, Bedrock Geologic Map of the Bald Creek 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Open-File Report 1997-05, scale 1:24,000.
- Merschat, C.E., and Cattanaach, B.L., 2005, Bedrock Geologic Map of the Leicester 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Open-File Report 2005-03, scale 1:24,000.
- Merschat, C.E., and Cattanaach, B.L., 2008, Bedrock geologic map of the western half of the Asheville 1:100,000-scale quadrangle, North Carolina and Tennessee. North Carolina Geological Survey, Geologic Map Series GMS-13, scale 1:100,000.
- Merschat, C.E., and Wiener, L.S., 1988, Geologic map of the Sandhamp and Canton quadrangles, North Carolina. North Carolina Geological Survey, Bulletin 90, scale 1:24,000.
- Merschat, C.E., Carter, M.W., and Hewitt, L.K., 2000, Bedrock Geologic Map of the Sams Gap 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Open-File Report 2000-06, scale 1:24,000.
- Merschat, C.E., Cattanaach, B.L., and Carter, M.W., 2007, Bedrock Geologic Map of the Lemon Gap 7.5-Minute Quadrangle, North Carolina. North Carolina Geological Survey, Geologic Map Series GMS-14, scale 1:24,000.
- Miller, J.W., and Fryer, K.H., 2008, Bedrock Geologic Map of the Asheville 7.5 Minute Quadrangle, North Carolina. North Carolina Geological Survey, Geologic Map Series GMS-14, scale 1:24,000.
- Peterson, V.L., 2002, Geologic map of the southern half of the Marshall quadrangle, North Carolina. Unpublished manuscript map and report in files of North Carolina Geological Survey, scale 1:24,000.
- Waters, C.L., 1989, Mapping and related studies of pre-Alleghenian tectonic features within the Blue Ridge thrust complex of western North Carolina. M.S. thesis, University of North Carolina, 87 pp, scale 1:24,000. Georeferenced and digitized by NCGS.
- Waters-Tarney, C.L., Cattanaach, B.L., Benton, J.R., Trantham, B.T., Lynn, A.S., 2024, Bedrock Geologic Map of the McAville 7.5-minute Quadrangle, Yancey and Mitchell Counties, North Carolina. North Carolina Geological Survey Draft Manuscript Map, in color.
- Whitwell, J.S., 1975, Geologic Map and Mineral Resource Summary of the Southeast 14 Marion Quadrangle, North Carolina. North Carolina Geological Survey, GM 210-SE and WE 210-SE.

Figure 1: Correlation of map units. Background colors denote small-scale tectonic elements. Expanded descriptions in Open File Report pamphlet.