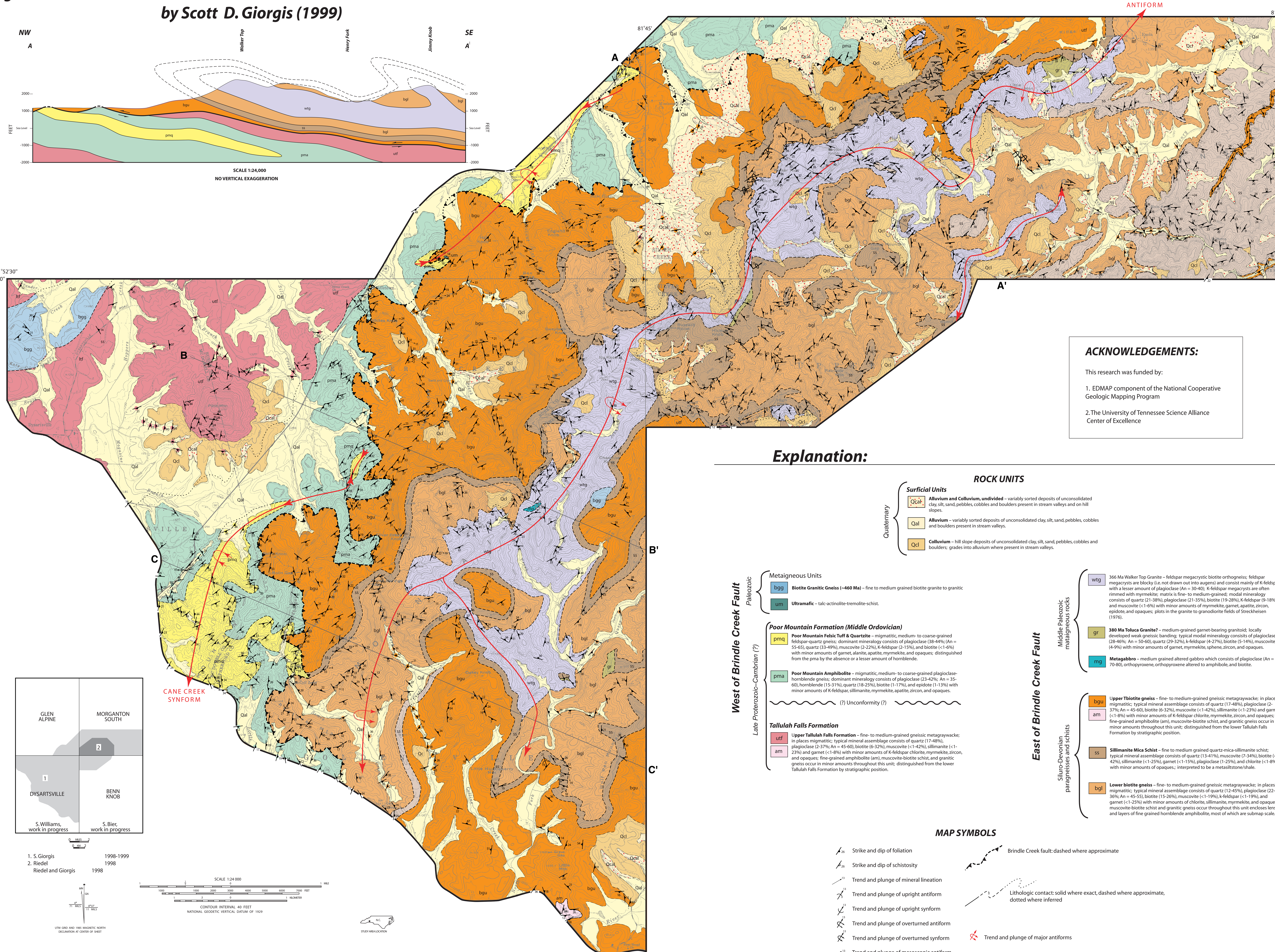
Plate I. Geologic map of the northwestern South Mountains near Morganton, North Carolina.

by Scott D. Giorgis (1999)



1. S. Giorgis 1998-1999
2. Riedel 1998
Riedel and Giorgis 1998

ACKNOWLEDGEMENTS:

This research was funded by:

1. EDMAP component of the National Cooperative Geologic Mapping Program

2. The University of Tennessee Science Alliance Center of Excellence

Explanation:

ROCK UNITS

Quaternary

Surficial Units

Qcal — **Alluvium and Colluvium, undivided** – variably sorted deposits of unconsolidated clay, silt, sand, pebbles, cobbles and boulders present in stream valleys and on hill slopes.

Qal — **Alluvium** – variably sorted deposits of unconsolidated clay, silt, sand, pebbles, cobbles and boulders present in stream valleys.

Qcl — **Colluvium** – hill slope deposits of unconsolidated clay, silt, sand, pebbles, cobbles and boulders; grades into alluvium where present in stream valleys.

West of Brindle Creek Fault

Paleozoic

Metaigneous Units

bgg — **Biotite Granitic Gneiss (~460 Ma)** – fine to medium grained biotite granite to granitic

um — **Ultramafic** – talc-actinolite-tremolite-schist.

Late Proterozoic–Cambrian (?)

Poor Mountain Formation (Middle Ordovician)

pmq — **Poor Mountain Felsic Tuff & Quartzite** – migmatitic, medium- to coarse-grained feldspar-quartz gneiss; dominant mineralogy consists of plagioclase (38-44%; (An = 55-65), quartz (33-49%), muscovite (2-22%), K-feldspar (2-15%), and biotite (<1-6%) with minor amounts of garnet, alanite, apatite, myrmekite, and opaques; distinguished from the pma by the absence or a lesser amount of hornblende.

pma — **Poor Mountain Amphibolite** – migmatitic, medium- to coarse-grained plagioclase-hornblende gneiss; dominant mineralogy consists of plagioclase (23-42%; An = 35-60), hornblende (15-31%), quartz (18-25%), biotite (1-17%), and epidote (1-13%) with minor amounts of K-feldspar, sillimanite, myrmekite, apatite, zircon, and opaques.

(?) Unconformity (?)

Tallulah Falls Formation

utf, am — **Upper Tallulah Falls Formation** – fine- to medium-grained gneissic metagraywacke; in places migmatitic; typical mineral assemblage consists of quartz (17-48%), plagioclase (2-37%; An = 45-60), biotite (6-32%), muscovite (<1-42%), sillimanite (<1-23%) and garnet (<1-8%) with minor amounts of K-feldspar chlorite, myrmekite, zircon, and opaques; fine-grained amphibolite (am), muscovite-biotite schist, and granitic gneiss occur in minor amounts throughout this unit; distinguished from the lower Tallulah Falls Formation by stratigraphic position.

East of Brindle Creek Fault

Middle Paleozoic mataigneous rocks

wtg — 366 Ma Walker Top Granite – feldspar megacrystic biotite orthogneiss; feldspar megacrysts are blocky (i.e. not drawn out into augens) and consist mainly of K-feldspar with a lesser amount of plagioclase (An = 30-40); K-feldspar megacrysts are often rimmed with myrmekite; matrix is fine- to medium-grained; modal mineralogy consists of quartz (21-38%), plagioclase (21-35%), biotite (19-28%), K-feldspar (9-18%), and muscovite (<1-6%) with minor amounts of myrmekite, garnet, apatite, zircon, epidote, and opaques; plots in the granite to granodiorite fields of Streckheisen (1976).

gr — **380 Ma Toluca Granite?** – medium-grained garnet-bearing granitoid; locally developed weak gneissic banding; typical modal mineralogy consisits of plagioclase (28-46%; An = 50-60), quartz (29-32%), k-feldspar (4-27%), biotite (5-14%), muscovite (4-9%) with minor amounts of garnet, myrmekite, sphene, zircon, and opaques.

mg — **Metagabbro** – medium grained altered gabbro which consists of plagioclase (An = 70-80), orthopyroxene, orthopyroxene altered to amphibole, and biotite.

Siluro-Devonian paragneisses and schists

bgu, am — U**pper Tbiotite gneiss** – fine- to medium-grained gneissic metagraywacke; in places migmatitic; typical mineral assemblage consists of quartz (17-48%), plagioclase (2-37%; An = 45-60), biotite (6-32%), muscovite (<1-42%), sillimanite (<1-23%) and garnet (<1-8%) with minor amounts of K-feldspar chlorite, myrmekite, zircon, and opaques; fine-grained amphibolite (am), muscovite-biotite schist, and granitic gneiss occur in minor amounts throughout this unit; distinguished from the lower Tallulah Falls Formation by stratigraphic position.

ss — **Sillimanite Mica Schist** – fine to medium grained quartz-mica-sillimanite schist; typical mineral assemblage consists of quartz (13-41%), muscovite (7-34%), biotite (<1-42%), sillimanite (<1-25%), garnet (<1-15%), plagioclase (1-25%), and chlorite (<1-8%) with minor amounts of opaques.; interpreted to be a metasiltstone/shale.

bgl — **Lower biotite gneiss** – fine- to medium-grained gneissic metagraywacke; in places migmatitic; typical mineral assemblage consists of quartz (12-45%), plagioclase (22-36%; An = 45-55), biotite (15-26%), muscovite (<1-19%), k-feldspar (<1-19%), and garnet (<1-25%) with minor amounts of chlorite, sillimanite, myrmekite, and opaques; muscovite-biotite schist and granitic gneiss occur throughout this unit encloses lenses and layers of fine grained hornblende amphibolite, most of which are submap scale.

MAP SYMBOLS

- Strike and dip of foliation
- Strike and dip of schistosity
- Trend and plunge of mineral lineation
- Trend and plunge of upright antiform
- Trend and plunge of upright synform
- Trend and plunge of overturned antiform
- Trend and plunge of overturned synform
- Trend and plunge of mesoscopic antiform
- Trend and plunge of mesoscopic synform
- Brindle Creek fault: dashed where approximate
- Lithologic contact: solid where exact, dashed where approximate, dotted where inferred
- Trend and plunge of major antiforms
- Trend and plunge of the Cane Creek synform