

**OCMULGEE STRUCTURE, GEORGIA (USA): SEARCHING FOR EVIDENCE OF IMPACT.** P. H. Weatherington<sup>1</sup> and D. T. King, Jr.<sup>2</sup>, <sup>1</sup>Snellbridge Road, East Dublin, GA 31027 [paulsuzy@att.net], <sup>2</sup>Geology Office, Auburn University, Auburn AL 36849 [kingdat@auburn.edu].

**Introduction:** The Big Bend of the Ocmulgee River follows an arcuate course through the south-central Georgia coastal plain. Similarly, the Oconee River, upstream from its confluence with the Ocmulgee, makes a large arcuate bend. This noteworthy subsequent drainage pattern formed by the Ocmulgee and Oconee Rivers of south-central Georgia partially outlines a large, subtle domal feature (Fig. 1). This abstract is a progress report on the work done investigating this domal feature to determine if it has any traces of impact origin.

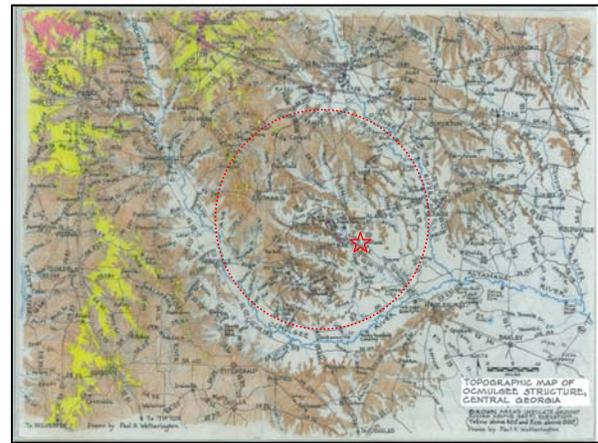
**Stratigraphic uplift:** In the early part of last century, several exploratory wells were drilled in the region of this large domal area. Fig. 2 shows the location and subsurface detail from several of these wells. The subsurface distribution of Eocene limestones (Fig. 2) suggests significant stratigraphic uplift on the order of 100 m or more [1, 2, 3, 4, 5].

In 1920, an exploratory well was drilled at Scotland, Georgia, which gives a view of the subsurface stratigraphy. As seen in the well driller's log given by [1] the Upper Cretaceous guide fossil, *Orbitoides* begins to appear at ~ 117 m (350 ft) depth and continues to occur in the well to a depth of ~ 150 m (450 ft). In this area, the top of upper Eocene would normally occur at ~ 75m (225 ft) depth (using a dip of 1.25m/km (8 ft/mi) given by [2]), and the top of Upper Cretaceous would normally occur at ~ 400 m (1200 ft) at this well's location (using the shallowest dip of 3.15m/km (20 ft/mi) given by [2]). The shallow occurrence of *Orbitoides* suggests a possible ~ 283m (850 ft) stratigraphic uplift in the vicinity of the Scotland well. This well is somewhat centrally located within the Big Bend of the Ocmulgee River, and thus near the center of the large but subtle geological structure that has influenced the course of the Ocmulgee.

**Outcrop and petrographic studies:** This part of the Georgia coastal plain is mapped as a large swath of Neogene undifferentiated sediments with Quaternary alluvium along the main streams and rivers [6]. Therefore, outcrop patterns are not useful in determining the extent of the Ocmulgee dome. Small, locally known outcrops of rock underlying the Neogene undifferentiated cover offer an opportunity to study some of the stratigraphy and petrology. In an attempt to assess whether or not any of the rocks exposed on the surface have been affected by impact shock, samples were obtained from many of the very few, isolated rock outcrops in this part of the coastal plain of Georgia. Unfortunately, samples are not available from the ex-

ploratory wells, which were all drilled over 75 years ago.) The following is a list of outcrops studied to date: El Bethel Church Road (between Milan and Helena, Dodge County); Indian Spring Rock (Brewton Creek, Laurens County); Lowery Firehouse Road (~ 32 km south of Dublin, Laurens County); Mt. Zion Church (~ 5 km south of Milan, Telfair County); Riverview Park and Golf Course (near the Oconee River, Dublin, Laurens County); and Upper Pughes Creek (Laurens County).

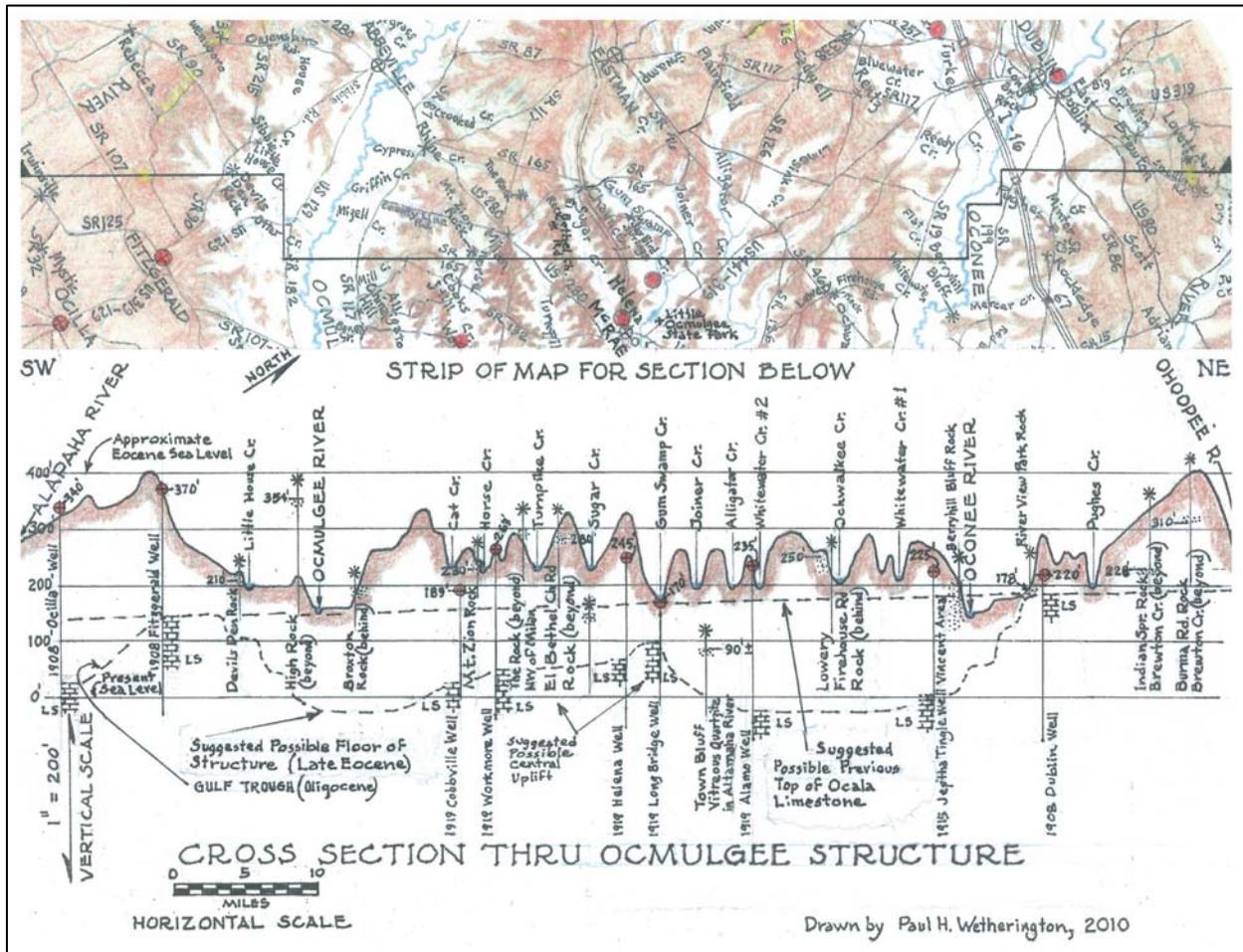
To date, no impact deformation effects have been noted in framework silicate grains from these outcrops.



**Fig. 1.** Location map showing the south-central region of Georgia including the Big Bend of the Ocmulgee River and the large arc of the Oconee River in south-central Georgia. The extent of the subtle dome suggested by these consequent streams is shown as a dotted red circle. The Scotland well site is shown as a red star.

**References:** [1] Prettyman T. M. and Cave H. S. (1923) *Geological Survey of Georgia Bulletin* No. 40 "Petroleum and Natural Gas Possibilities in Georgia." [2] Brantly J. E. (1916) *Geological Survey of Georgia Bulletin* No. 21 "A Report on the Limestones and Marls of the Coastal Plain of Georgia." [3] Hull, J. P. O. and Teas L. P. (1919) *Geological Survey of Georgia* "A Preliminary Report on the Prospect Near Scotland Telfair County Georgia." [4] McCallie S. W. (1908) *USGS Bulletin* No. 15 "A Preliminary Report on the Underground Waters of Georgia." [5] Stephenson L. W. and Veatch J. O. (1915) *USGS Water-supply Paper* 341 "Underground Waters of the Coastal Plain of Georgia." [6] Source of maps strati-

graphy for this research were developed from United States Geological Survey images available on the internet from Microsoft Research Maps (msrmaps.com) and other web sites.



**Fig. 2.** Cross-section through the Ocmulgee structure showing topographic elevations and subsurface stratigraphic relations from exploratory wells, as noted in the text [6]. Vertical scale = 1:2400.