

# GEOLOGIC SHADED RELIEF MAP OF VENEZUELA: SHEET 1 OF 2

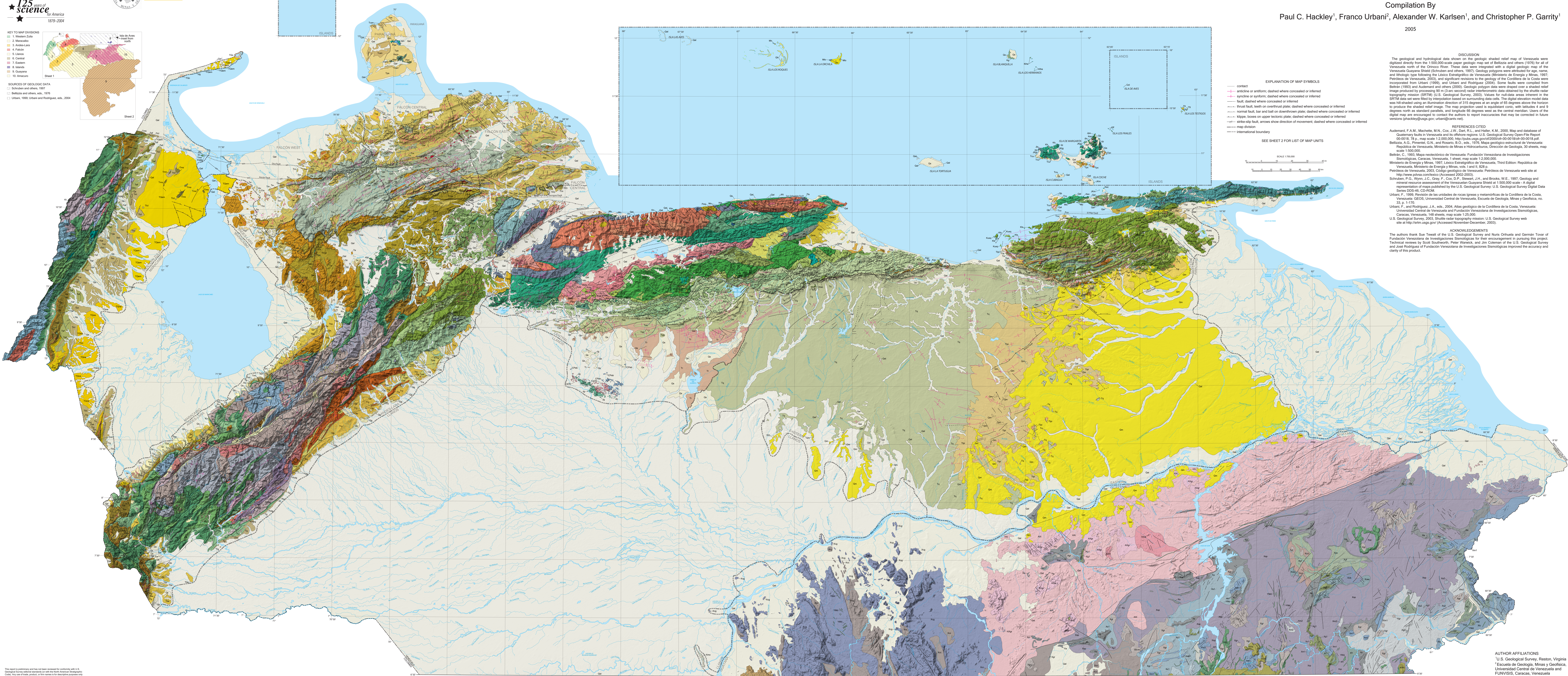
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**KEY TO MAP DIVISIONS**

- 1. Western Zulia
- 2. Maracaibo
- 3. Andes Lara
- 4. Falcon
- 5. Llanos
- 6. Central
- 7. Eastern
- 8. Guayana
- 9. Amazonas

**SOURCES OF GEOLOGIC DATA**

- 1. Schuchman and others, 1997
- 2. Bellizze and others, eds., 1976
- 3. Urbani, 1999; Urbani and Rodriguez, eds., 2004



**DISCUSSION**

The geological and hydrological data shown on the geologic shaded relief map of Venezuela were digitized directly from the 1:500,000-scale paper geologic map set of Bellizze and others (1976) for all of Venezuela north of the Orinoco River. These data were integrated with a digital geologic map of the Venezuelan Guayana Shield (Schuchman and others, 1997). Geologic polygons were attributed for age, name, and lithologic type following the Lexico Estratigráfico de Venezuela (Ministerio de Energía y Minas, 1997; Petróleos de Venezuela, 2003), and significant revisions to the geology of the Cordillera de la Costa were incorporated from Urbani (1999), and Urbani and Rodriguez (2004). Some faults were compiled from Bellizze (1983) and Audemard and others (2000). Geologic polygon data were draped over a shaded relief image produced by processing 90 m (3 arc second) radar interferometric data obtained by the shuttle radar topography mission (SRTM) (U.S. Geological Survey, 2003). Values for null-data areas inherent in the SRTM data set were filled by interpolation based on surrounding data cells. The digital elevation model data was hill-shaded using an illumination direction of 315 degrees at an angle of 65 degrees above the horizon to produce the shaded relief image. The map projection used is equidistant conic, with latitudes 4 and 9 degrees north as standard parallels, and longitude 58 degrees west as the central meridian. Users of the digital map are encouraged to contact the authors to report inaccuracies that may be corrected in future versions (phackley@usgs.gov; urbani@cam.ac.uk).

**REFERENCES CITED**

Audemard, F.A.M., Machette, M.N., Cox, J.V., Hart, R.L., and Heller, K.M., 2000. Map and database of Quaternary faults in Venezuela and its offshore regions: U.S. Geological Survey Open-File Report 00-018, 78 p., map scale 1:2,000,000. <http://pubs.usgs.gov/of/2000/of-00-018/of-00-018.pdf>

Bellizze, A.G., Pimentel, G.N., and Rosario, B.O., eds., 1976. Mapa geológico estructural de Venezuela: República de Venezuela, Ministerio de Minas e Hidrocarburos, Dirección de Geología, 30 sheets, map scale 1:500,000.

Bellizze, C., 1983. Mapa neotectónico de Venezuela: Fundación Venezolana de Investigaciones Sismológicas, Caracas, Venezuela, 1 sheet, map scale 1:2,000,000.

Ministerio de Energía y Minas, 1997. Lexico Estratigráfico de Venezuela, Third Edition: República de Venezuela, Ministerio de Energía y Minas, vols. I and II, 328 p.

Petróleos de Venezuela, 2003. Código geológico de Venezuela: Petróleos de Venezuela web site at <http://www.pdvsa.com/geo> (Accessed 2002-2003).

Schuchman, P.G., Wynn, J.C., Gray, F., Cox, D.P., Stewart, J.H., and Brooks, W.E., 1997. Geology and mineral resource assessment of the Venezuelan Guayana Shield at 1:500,000 scale - A digital representation of maps published by the U.S. Geological Survey U.S. Geological Survey Digital Data Series DDS-46, CD-ROM.

Urbani, F., 1999. Revisión de las unidades de rocas ígneas y metamórficas de la Cordillera de la Costa, Venezuela. GEOS, Universidad Central de Venezuela, Escuela de Geología, Minas y Geofísica, no. 33, p. 1-170.

Urbani, F., and Rodriguez, J.A., eds., 2004. Atlas geológico de la Cordillera de la Costa, Venezuela: Universidad Central de Venezuela and Fundación Venezolana de Investigaciones Sismológicas, Caracas, Venezuela, 144 sheets, map scale 1:25,000.

U.S. Geological Survey, 2003. Shuttle radar topography mission: U.S. Geological Survey web site at <http://srtm.usgs.gov/> (Accessed November-December, 2003).

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