Group photo in the Viñales Valley, Pinar del Río. In the background: the Hoyos de San Antonio Valley and Mogote La Mina, a classic example of tower karst morphology.

POST-CONFERENCE REPORT

The Geology of Cuba: Key for the Tectonic Evolution of the Caribbean–North American Plates

12–18 April 2025 | Western and Central Cuba

Field Trip Organizers and Leaders

Yamirka Rojas-Agramonte, Heidelberg University, Germany
Antonio Garcia-Casco, University of Granada, Spain
Manuel Antonio Iturralde-Vinent, Empresa de Tecnologías de la Información y Servicios Telemáticos Avanzados (CITMATEL), Cuba
Kenya Núñez-Cambra, Insituto de Geología y Paleontología, Cuba, and President of the Cuban Geological Society
Haoyu Hu, Heidelberg University, Germany

https://www.ugr.es/~agcasco/TFF2025Cuba/

Group photo in the Pinar del Río region. In the background, the Jurassic siliciclastic San Cayetano Formation.

Participants

Rafael Tenreyro-Perez (Cuba), Marcos Enrique Pazo Arango (Cuba), René Yasmany Cobas Torres (Cuba), Robert Ramirez Hernandez (Cuba), Elmidio Estévez Cruz (Cuba), Robert Willians Fuentes Rodriguez (Cuba), Yania Pedraza (Cuba), Mandy Zieger-Hofmann (Germany), Esther Rojo Perez (Germany/Spain), Sonia Sánchez Martínez (Spain), Núria Pujol-Solà (Spain), Idael F. Blanco-Quintero (Spain/Cuba), Eric Calais (France), Samuel Angiboust (France), Sylvie Leroy (France), Frederique Rolandone (France), María Isabel Sandoval (Costa Rica), Pieter Vermeesch (UK), Camilo Bustamante (Colombia), Fabricio Caxito (Brazil), Cristopher M. Bailey (U.S.), Mark Gabriel Little (U.S.), Barbara Reyes (U.S.), Katherine F. Fornash (U.S.), Stephanie Ann Sparks (U.S.), Amanda Lee Bednarick (U.S.), David Antonio Giovannetti-Nazario (U.S.), Ángel A. García Jr. (U.S.), Peter Odds (U.S.), Paul Q. Warren (U.S.). In addition, we had participants from Pinar del Rio University: Maria Elisabet Garcia Crespo, Dayrelis Diaz Cruz, Serati Ntee, Paballo Irine Lebesa; and Empresa Geominera del Centro: Carmen Gloria Galvez, Liván Roque Rodriguez, Yasniel Hernandez Primero, Daniel David Fernandez Amador. GSA staff Kaleigh Fremgen, Elizabeth Long, and Kimberly Ann Von Feldt provided assistance on site to the field forum.

https://www.ugr.es/~agcasco/TFF2025Cuba/participants.htm

Field Trip

The 2025 GSA Thompson Field Forum was held in Cuba from 12 to 18 April, bringing together a diverse group of 40 participants from 10 countries to explore the complex geology of the Cuban orogenic belt as part of the northeastern branch of the Caribbean belt. Participants included senior researchers, early career scientists, PhD candidates, and university students, all engaging directly with the rocks to discuss new results and discoveries in the field. We were particularly proud to host 17 Cuban early career researchers and university students, which created a nice atmosphere for scientific and cultural exchange. The Field Forum was funded by The Geological Society of America and organized in collaboration with the Cuban Geological Society.

The forum began in Havana and then continued west to the Viñales region of Pinar del Río, a UNESCO World Heritage Site renowned for its striking karst landscapes and well-exposed Jurassic–Cretaceous passive margin and Paleogene foredeep sequences. During the first two days, participants explored key sedimentary successions of the Guaniguanico terrane, including the San Cayetano, Jagua, Guasasa, and Pons Formations. Highlights included visits to stratigraphic sections across the Jurassic–Cretaceous (J–K) and Cretaceous–Paleogene (K–Pg) boundaries, as well as exposures of the Manacas Formation, representing Paleogene synorogenic deposits.

In addition to geological investigations, the group enjoyed a brief cultural program featuring the town of Viñales, a stop at the Viñales Geopark Visitor Center, and a visit to the Prehistoric Mural at Dos Hermanas.

On Day 3, the group moved east to Santa Clara, central Cuba, beginning a full traverse across the Cuban orogenic belt. Field stops focused on the structural, magmatic, and metamorphic evolution of the orogenic system. Participants visited:

- Ophiolite mélanges along the Santa Clara–Placetas road, where high-pressure serpentinized peridotites and eclogites reflect subduction-zone processes;

Mabujina amphibolite along the Agabama River, central Cuba.

- Cretaceous volcanic arc sequences, such as the Hilario, Brujas, Mataguá, and Los Pasos Formations;
- The Mabujina Amphibolite Complex, a metamorphosed arc complex, and associated plutonic rocks of the Manicaragua batholith; and The Escambray Complex, a deeply subducted portion of a passive margin complex (Caribeana Terrane), featuring graphitic schists, muscovite+calcite±graphite schists, and Jurassic metacarbonates.

During this second part of the trip in central Cuba, participants spent three nights in Santa Clara and one night in Trinidad, another UNESCO World Heritage Site, known for its colonial architecture and cultural history. On the way to Trinidad, the group visited the Valle de los Ingenios and Manaca Iznaga, adding a cultural dimension to the scientific journey.

Each day in the field was followed by evening discussions to synthesize observations and refine tectonic interpretations. These sessions inspired meaningful scientific dialogue and laid the groundwork for future collaborations.

The forum emphasized key questions in the regional geodynamic framework:

Group photo in the Escambray Complex (Guamuaya Mountains), south-central Cuba.

Eclogite block within the central Cuba serpentinitic mélange.

- How does the geology of Cuba record the complex interactions between the Caribbean and North American plates?
- What is the significance of the obducted ophiolites and HP metamorphic complexes in plate reconstruction models?
- How did the Caribbean arc system evolve from early Cretaceous to Paleogene?

The Field Forum succeeded in its mission to bring together experts from diverse backgrounds to engage directly with the rocks in the field and with each other. It fostered new scientific collaborations and professional connections, and several collaborative projects are already in development. This forum exemplified the spirit of the Thompson Field Forums: immersive, collaborative, and field-driven, providing participants with an unforgettable scientific and cultural experience. The success of this forum also highlighted the value of building scientific bridges and accessing regions rarely visited by the international geoscience community.

Field trip photos by cameraman Eduardo Reyes Aranzaez.

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Group photo in the central Cuba serpentinite mélange. The group rests on top of the Pelo Malo megablock of HP foliated (±dolomite) antigoritite embedded in highly brecciated serpentinites.