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Explorations in Brazil: GIA's 102nd Field Expedition

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Introduction

While early European colonizers explored South America looking for precious stones, gem deposits in Brazil were mostly undiscovered until the second half of the 20th century. Today, Brazil stands as a powerhouse of colored stone mining from emerald to tourmaline to opal. This poster gives an insider's view of GIA's 102nd Field Expedition to Brazil from the summer of 2025.

Objectives of the Expedition

GIA's Field Gemology Department supports identification and lab services by providing high-quality samples with known provenance. An important area of focus is geographic origin determination research which requires reference samples collected as close to the source as possible. There are several areas in Brazil that required attention in order to bolster GIA's Colored Stone Reference Collection:

- Opal from Pedro II, Piauí State
 - White opal, similar in appearance to some Australian opal
- Emerald from Campos Verdes, Goiás State
- An important source of strongly colored emeralds with unique characteristics, production peaked in the 1980's
- Paraíba tourmaline from Batalha, Paraíba State and Parelhas, Rio Grande do Norte State
 - Copper bearing tourmaline from the original sources

Opal: Pedro II, Piauí State

Opal mining began in a serious way in the Piauí state in Brazil in the 1960's. But by the end of the 1980's most of the activity had died down and most mines were closed. There was significant investment here, especially with involvement of Australian parties, leading to rumors of the material being passed off as Australian opal on the international market. While mining activity has scaled back significantly as of now, there are still several serious active mining operations with significant opal production to this day.



Mining activity at the Boi Morto (Dead Cow) Opal Mine near Pedro II, Piauí State, Brazil. Photos by Aaron Palke, ©GIA

The Brazilian state of Piauí produces opal with very similar appearance to white opal produced in Australia. Opal here forms at the contact between sedimentary rocks and an intrusive diabase dike. GIA is planning to launch an Opal Identification and Origin Report in late 2025, marking one of the major reasons for staging an expedition to the Pedro II Opal Fields. The samples collected will be a major part of the opal origin research supporting this new service.



Polished and rough opal seen on GIA's Field Expedition to Pedro II, Piauí State, Brazil. Top quality material produced here is white opal, resembling Australian material, sometimes occurring in exceptional sizes (Top left). While opal mining is down compared to the heyday of the 1960's to 1980's, opal culture is still alive and well. A thriving opal cutting and jewelry industry still exists with creative productions like the opal mosaic cabochons as seen on the bottom right. Photos by Aaron Palke, ©GIA

Emeralds: Campos Verdes, Goiás State

The Goiás state in Brazil was a major world producer of emerald in the 1980's. While current production is significantly reduced, there is still active mining in the area and stones from this region still circulate in the international colored stone trade. Emeralds here are hydrothermal/metamorphic in nature, so their trace element chemistry and inclusions can be somewhat similar to emeralds from Pakistan, Afghanistan, and even Colombia.



Emeralds seen in the field in the Goiás state, Brazil and an active mining operation (bottom right). Photos by Aaron Palke, ©GIA

Paraíba Tourmaline

Stunning electric blue and green copper bearing tourmaline was discovered in the late 1980's in the Brazilian state of Paraíba and a few years later in Rio Grade do Norte. The same material was later found in Nigeria and Mozambique, creating a need for research into geographic origin determination for these stones.



Tourmaline seen on the GIA expedition. Mining and cutting continue, though reduced from the 1990's. Photos by Aaron Palke, ©GIA



Map of Brazil showing gem producing regions visited by the GIA Field Gemology team on their 102nd field expedition. Cartography by Alexander Goodsuhm, ©GIA.