

GEOLOGY OF THE JOCOTAN AND TIMUSHAN QUADRANGLE SOUTHEASTERN GUATEMALA

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ABSTRACT

The Jocotan and Tismushan quadrangles cover about six-hundred square kilometers in southeastern Guatemala adjacent to Honduras. They are located thirty to forty kilometers south of the Central Cordillera of Guatemala and thirty kilometers northeast of the Ipala Volcano, a late Tertiary or Quaternary cone belonging to the Volcanic Mountains Province of the Pacific Coast. Rock types and structural features of both provinces occur within the quadrangles.

The northwest third of the Jocotan Quadrangle is predominantly pre-Mesozoic phyllite and granite which belong to a zone of "basement" rocks exposed between the Motagua Valley-Bartlett Trough fault zone and a parallel fault crossing the Jocotan Quadrangle and extending north seventy-degrees east into Honduras. The age of the granite is not certain. The phyllites are tentatively correlated with the Permian Tactic Formation (shales) of northern Guatemala.

The largest known occurrence of Cretaceous limestone in southern Guatemala crops out in a tightly folded anticline whose axis trends north seventy-degrees east across the center of the Jocotan Quadrangle. Approximately 1300 meters of thin-bedded Albian age limestone, shale and dolomite overlain by 200 meters of massive Albian age limestone are exposed in the rivers dissecting the anticline. A 200-meter thick sequence of conglomerate and sandstone separates the two units. These clastics are evidence of movement along northeast - southwest fault trends during middle Albian time. There are no marine sediments in the area definitely younger than Cenomanian age. The limestone was probably folded in late Cretaceous time during the orogeny which affected all of Nuclear Central America.

Terrestrial red beds similar to those of the Subinal Formation in the Motagua Valley developed on the folded and eroded Cretaceous limestone and exposed phyllite and granite during late Cretaceous or Tertiary time. These red beds are composed of a mixture of volcanic fragments and fragments of the underlying rock type. The volcanic content generally increases toward the top of the red beds. They are probably of Miocene or Pliocene age.

Late Tertiary (Pliocene?) block-faulting has affected the limestone and red beds, particularly in the southwestern part of the Jocotan quadrangle. A later increase in volcanic activity blanketed the area in white, rhyolitic tuff. Basalt and laharic deposits developed around local fissures at about the same time. They are most abundant in the southern Jocotan Quadrangle, and in the regions to the south and west. Later Tertiary or Quaternary rhyolite flows and Quaternary basalt flows occur locally.