

PRELIMINARY ANALYSIS OF AVIRIS DATA FOR TECTONOSTRATIGRAPHIC ASSESSMENT OF NORTHERN GUERRERO STATE, SOUTHERN MEXICO

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1. PURPOSE

The tectonostratigraphic evolution of the southern margin of the North America Plate in Mexico is still in debate. Recent explanations assert Laramide age (Campanian-Eocene) accretion of far-travelled oceanic terranes (Campa and Coney, 1983; Sedlock et al., 1993). In 1989, we began an effort to bring new data to this debate through field mapping, incorporating Landsat Thematic Mapper and digital elevation data, along a 30 km by 250 km, east-west geologic transect of northern Guerrero State. Covering the region from Huetamo, Michoacán, to Papalutla, Guerrero (between latitude 18-19°N and longitude 101-99°W), our mapping results show that no stratigraphic incompatibilities suggesting terrane accretion exist in the region (Lang et al., 1996).

In November 1994, AVIRIS data were acquired along the geologic transect in order to refine our stratigraphic assessment. One objective of this hyperspectral survey was to improve mapping of limestone, dolostone and gypsum-bearing facies of the Morelos Formation which record rudist carbonate platform environments during mid-Cretaceous time.

2. RESULTS AND CONCLUSIONS

Preliminary analysis of these AVIRIS data show that signal-to-noise is sufficiently high to allow us to map the 2.34 μm calcite band, the 2.30 μm dolomite band, and 1.20 μm and 1.74 μm gypsum bands using simple ratio-based algorithms. When incorporated into our tectonostratigraphic model, AVIRIS-based mapping results: 1) support the existence of a coherent mid-Cretaceous depositional system in southern Mexico, and 2) are inconsistent with proposed terrane accretion models.

3. ACKNOWLEDGMENTS

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4. REFERENCES

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