

29 September 1972

JMX-68606

SUMMARY

ERTS-1 Imagery of Central California: Preliminary
Geologic EvaluationPaul D. Lowman Jr.
Goddard Space Flight Center

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Multispectral scanner and return beam vidicon pictures of the Coast Ranges and Sierra Nevada of California have been examined to determine their geologic value. The technique used was conventional drainage analysis by visual study of color composites and single band pictures. Structural overlays were drawn on the color composites, with geologic features shown on the Geologic Map of California sheets (1:250,000 scale) being plotted first. Most major structures, such as the San Andreas fault, were easily identified, although some active faults, in particular the Hayward fault, are evidently concealed by urban construction. In both the Coast Ranges and the Sierra Nevada, numerous linear features were visible on the ERTS pictures that were not shown on the 1:250,000 maps. These features, chiefly drainage anomalies, are thought to be faults, joints, or a combination of the two, since they do not correspond to mapped lithologic contacts or stratification. Only the most general rock identifications could be made by simple inspection of the ERTS pictures, although tone differences between MSS bands were visible in the New Idria serpentine mass.

The potential geologic value of ERTS imagery seems well-demonstrated by the fact that structural features not previously mapped on a scale of 1:250,000 could be found on pictures of a thoroughly studied and easily accessible area.

Original photography may be purchased from:

EROS Data Center
10th and Dakota Avenue
Sioux Falls, SD 57198(E72-10048) PRELIMINARY GEOLOGIC
EVALUATION OF ERTS IMAGERY P.D. Lowman,
Jr., et al (NASA) 29 Sep. 1972 3 p CSCL

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studied on microfiche

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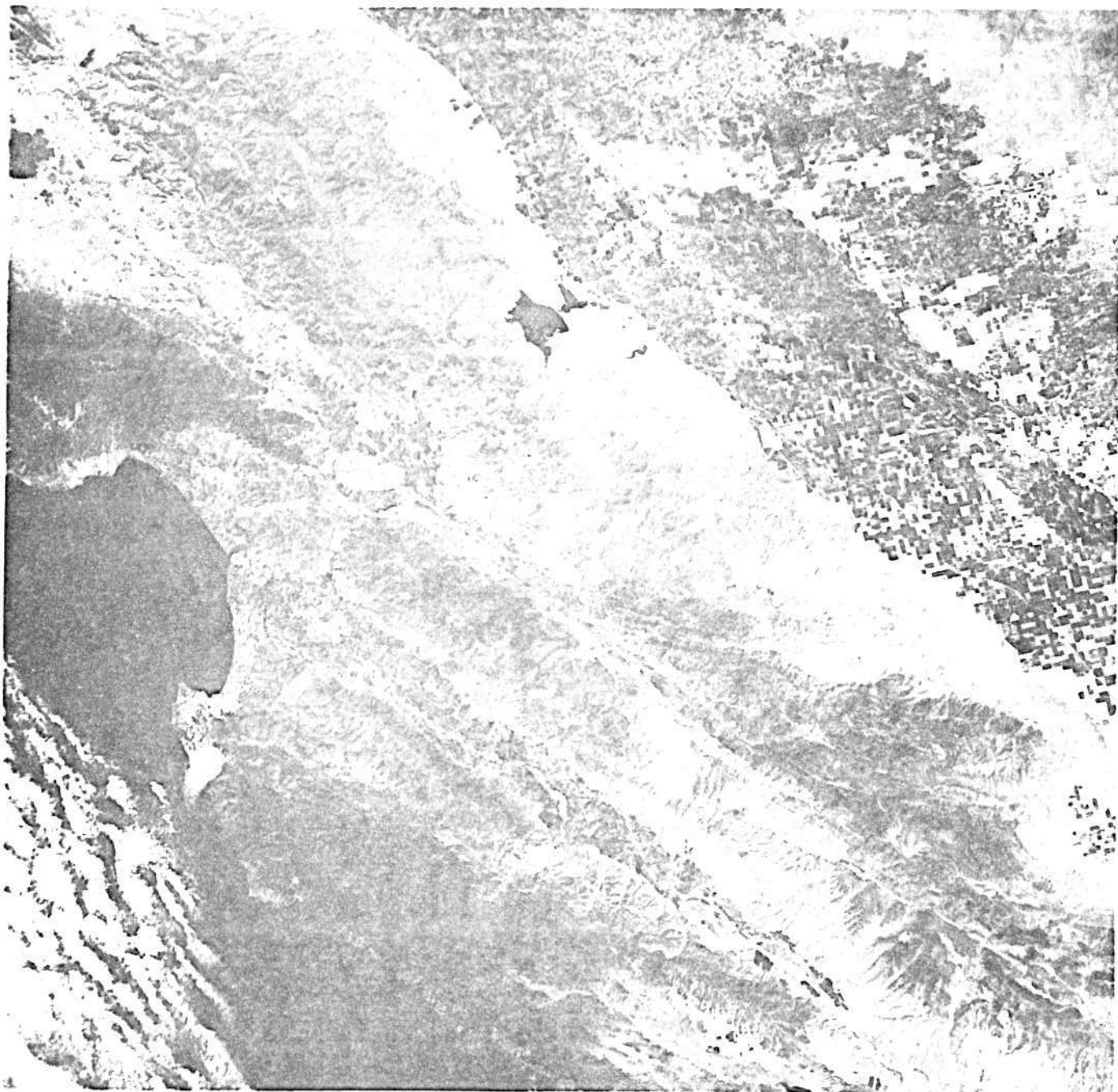
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Band 5 (Red)

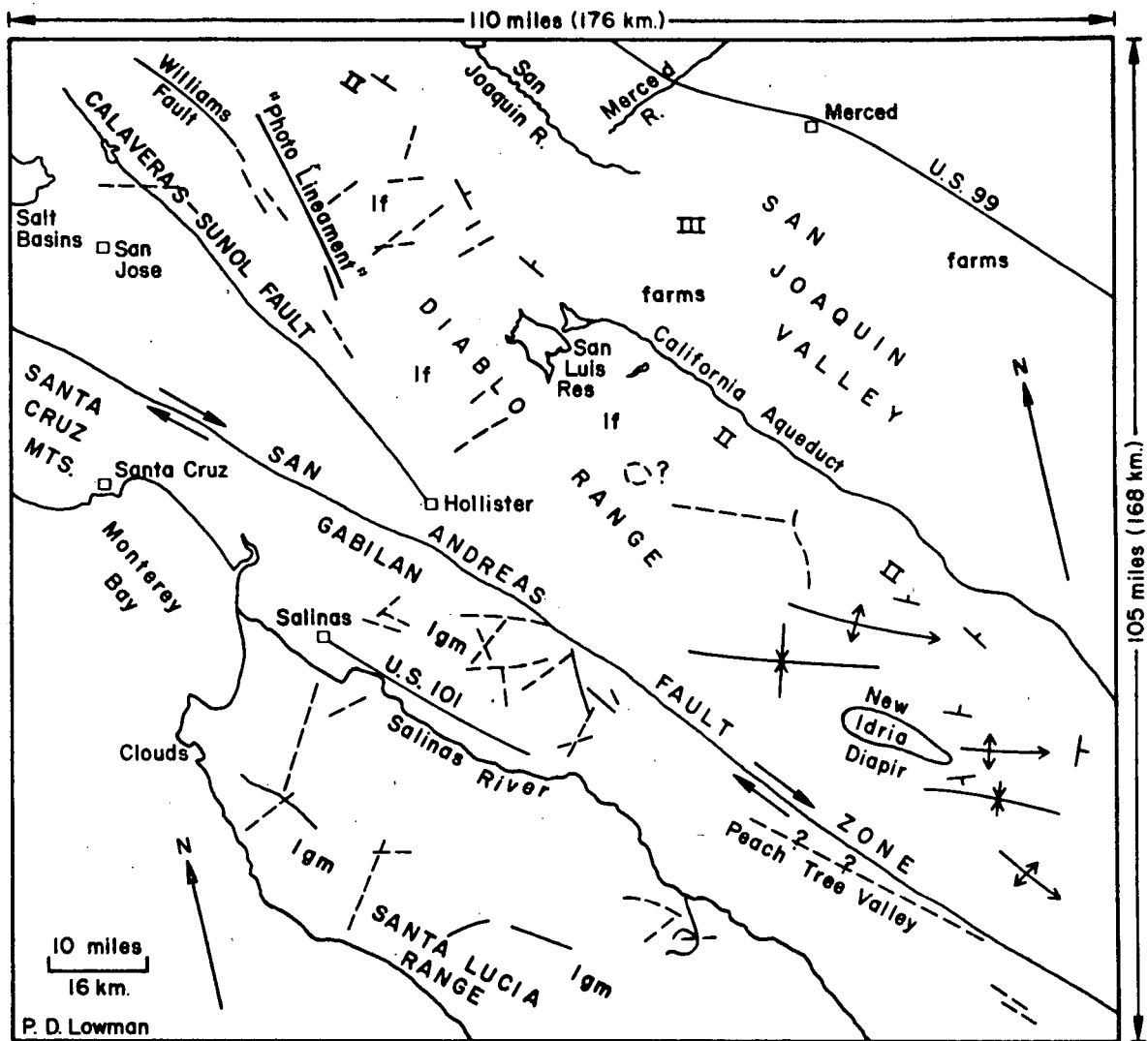
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GEOLOGIC SKETCH MAP
CENTRAL COAST RANGES, CALIFORNIA

Legend:

- Calaveras
Fault Fault shown on 1:250,000 Geologic Map of California
- Photo lineament (fault ?) not shown on Geologic Map of California

- Plunging anticline
- Plunging syncline
- Attitude of strata (schematic)

Scale and orientation shown on map; principal point approximately 36°45'N, 121°10'W. Spacecraft altitude 560 stat. miles (900 km). Lithology after Page (1966); contacts not drawn:

- III Cenozoic terrestrial sediments
- II Late Mesozoic marine sediments (Great Valley sequence)
- Igm Granitic-metamorphic core complex with Cretaceous igneous intrusions
- If Franciscan core complex (Mesozoic eugeosynclinal rocks)

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30 July 1972