

ID 4156

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STRUCTURAL GEOLOGY OF APULIA
PRELIMINARY STUDY BASED ON PHOTOGEOLOGY

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GEODETTIC AND PHOTOGRAMMETRIC DEPT.

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Aim of this work is to provide a structural scheme as an hypothesis for future surveys and studies on central and south Apulia (Permit Application area, see Annexe 3). Such a scheme will be furtherly developed by the interpretation of gravimetric, aeromagnetic and seismic data.

The present study is a synthesis of information obtained from different sources :

- A photogeological study by Knox, Bergman and Shearer, Cities Service geologists, compiled in 1959. Unfortunately in our file only one set of 1 : 50.000 scale maps exists (see fig 1) but nor report neither map-legend are available.
- Servizio Geologico d'Italia, Geological Map 1 : 100.000 scale surveyed in the sixties.
- Air photos, of poor quality, taken at different dates and scales, utilized for spot checks. A new coverage has been ordered (see fig 2)
- LANDSAT imagery. Only copies enlarged from NASA negatives have been utilized. Tapes (received too late from Telespazio) were faulty. We are waiting for their replacement.
- Topographic maps 1 : 100.000 scale by Istituto Geografico Militare used to prepare a geomorphic map.

One set of 4 work-maps at 1 : 250.000 scale has been prepared in order to arrange the present report annexes.

Work-maps are :

- A) A geological map obtained adjusting, photoreducing and assembling the Servizio Geologico d'Italia maps.
- B) A photogeological map obtained photoreducing and assembling the Cities Service maps (Fig 3 is a sample). The same maps have been photoreduced also at 1 : 100.000 scale on transparent paper to be compared with the Servizio Geologico d'Italia maps.
- C) A map with tectonic information taken from LANDSAT imagery.
- D) A geomorphic map obtained from 1 : 100.000 scale topographic maps smoothing the effects of less important hydrographic features then photoreduced and assembled.

Annexes 1 and 2 have been prepared making a cross-comparison of maps, studying some photos and taking into account the opinion of authors.

Annexe 1 is a geotectonic map. This means that it has a geological base (the same of map A) and tectonic elements as a synthesis of maps B, C and D.

Annexe 2 is a geomorphic map (the same of D) with the main tectonic elements. This map shows the importance of relationship between morphology and tectonic.

The studied area is bounded by the Adriatic sea at NE and by Bradano valley and Taranto gulf at SW.

From morphological point of view the area is quite flat with elevations from 300 to 500 meters in the Murge area (SW of Bari) and 0 to 100 meters in Salento peninsula (SE of Taranto). The hydrographic network is poorly developed.

From stratigraphic point of view (see legend annexe 1) the studied area is almost completely represented by a lithology typical of carbonate platform environment; cretaceous in age.

Gentle dip and flatness reduce the outcropping section so that

large amount of the regional stratigraphic section is uninvestigable; furthermore faults seems to have a little throw at least from surface evidence. Data from the only 3 wells drilled in the area are too scarce to enable us to build a reliable structural model but, in accordance with their evidence, regional dip seems to be southwards.

From the regional tectonic point of view carbonate outcrops of Murge and Salento areas represent a structural high between two systems of normal faults with downthrow toward the regional lows of the Bradano valley to SW and the Adriatic sea to NE. The main regional tectonic trend is therefore the apenninic one (NW - SE).

This trend appears also inside the studied region (see annexe 1) i.e. on the Murge near Bari and on Salento area.

The anti-apenninic trend (approximately NE - SW) is present but its evidence is not so clear as the previous one.

Most of the fault lines that we indicate as "inferred" are not in fact visible as lineations on our source documents. We infer their existence in order to explain main changes in the tectonic landscape (trend of axis, of form lines etc.).

We believe difficult, at least on the base of information available to date, to express an hypothesis about the origin of the antiapenninic faults. We hope that aeromagnetic and gravimetric studies, at present in progress will give their contribution to solve the problem.

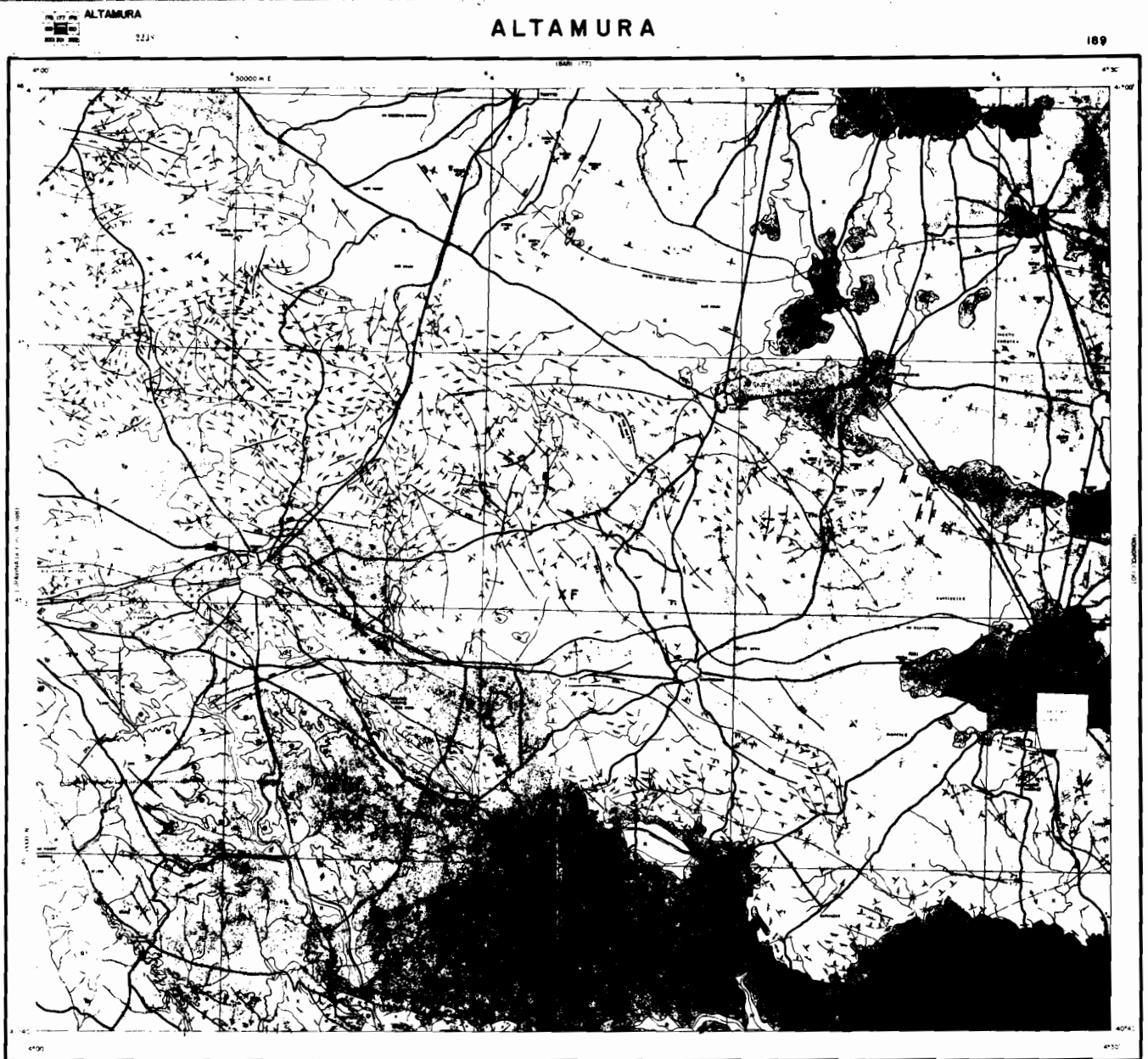
Crossing of two fault systems leads us to consider a group of blocks differently uplifted or downthrown one another (see fig 4). Inside the blocks some gentle fold may be found.

Horst and Graben tectonic appears more evident in the Salento peninsula; some little gentle folds may be here also found.

Structural axis on annexes very often show the uplifted (or do wnthrown) side of a monocline.

Tectonic landscape on the whole confirms that our region, framework of Apulian Plate according certain authors, seems not to show evidence of overthrusting or scraping phenomena but only of stretching tectonic with normal faults.

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SAMPLE OF CITIES SERVICE PHOTOGEOLOGICAL MAPS

Fig. 3

1 : 250'000 Scale