CONSIGLIO NAZIONALE DELLE RICERCHE
LABORATORIO PER LA GEOFISICA DELLA LITOSFERA

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Skylab E R E P - Second Progress Report

Original photography may be purchased from:
EROS Data Center
10th and Dakota Avenue
Sioux Falls, SD 57198

(E74-10788) SKYLAB MULTISPECTRAL PHOTOGRAPHY OF ITALIAN VOLCANOLOGY, GEOLOGY, RICE FIELDS, AND PALEO RIVER BEDS Progress (Consiglio Nazionale delle Ricerche, Milan) 9 p HC $3.25 CSCL 08F G3/13

N74-34755

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1 - Test site area: Sicily

The study of the environment of Mt.Etna will continue in the month of June with the on ground observation performed by a joint group of geologists and vegetation patologists.

The main topic will be the comparison between the forest surrounding the area of the last lateral eruption of February '74 and the one in the northern slope of the volcano, showing, by a first observation on the images,the same drop in the near I.R. reflectance which could be originated by the gases escaping from the shallow underground lavas.

While this research is of maximum interest in order to forecast the volcanic eruptions, it must be considered in the frame of a wider study regarding the so called " spectral indicators ".

The analysis of the vegetative canopy will take into account respectively the anomalous seasonal behaviour of the brush as well as of the pinus and oak trees forming the forest belt around the large volcanic structure. In fact, the velocity of the metabolic change is strongly different for brush and high trees; as far as visible and near I.R. reflectance is concerned.

2 - Other areas

a) Delta Po area.

The pattern recognition on rice fields has been almost completed using both false color I.R. photography (the original Skylab image) and the color-ratio performance of the multispectral bands.

By the ratio method the presence of chlorophyll has been enphasized while by means of the false color combination the small spectral characteristic differences were pointed out.

./...

The comparison between the ratio of bands 42-37 and 41-38 gave the best results

b) Venetian Plain Region.

The patterns of some paleo river beds have been mapped with satisfactory results using the images of S 190 A Multispectral Camera.

For this research we employed an analog TV processing system to examine the information content of the bands ratio.

By applying the integrative function it was possible to follow the continuity of the patterns influenced by the surficial moisture.

FIGURE CAPTIONS

1 - Delta of river Po.
The square corresponds to the investigated area (see slides 2 and 3).

2 - Delta of river Po (color slide): additive synthesis of ratio $\frac{42}{37}$ (red) and ratio $\frac{41}{38}$ (green).
The total surficial clorophyll distribution is shown.
The comparison between the original false color image and this composite gives almost a complete description of the vegetation canopy. The clorophyll content in coastal water is also observed.

3 - Delta of river Po (color slide) : additive synthesis of contiguous bands ratio ($\frac{37}{38} + \frac{42}{41}$). A discrimination inside the vegetation canopy is observed.

4 - Venitian Plain Ragion; encircled is shown the investigated area (north of the city of Padua).

5 - Map showing the hydrogeological knowledge (mainly concerning old riverbeds) in the venitian plain, before the Skylab investigation. Scale : 1:75.000.

6 - A map of the same area (scale 1:250.000) illustrating the old riverbeds and the gravel deposits found by the means of the analog technique of interpretation of Skylab images (masking slicing and ratio additive synthesis).

FIG.1

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REPRODUCIBILITY OF THE
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FIG. 4

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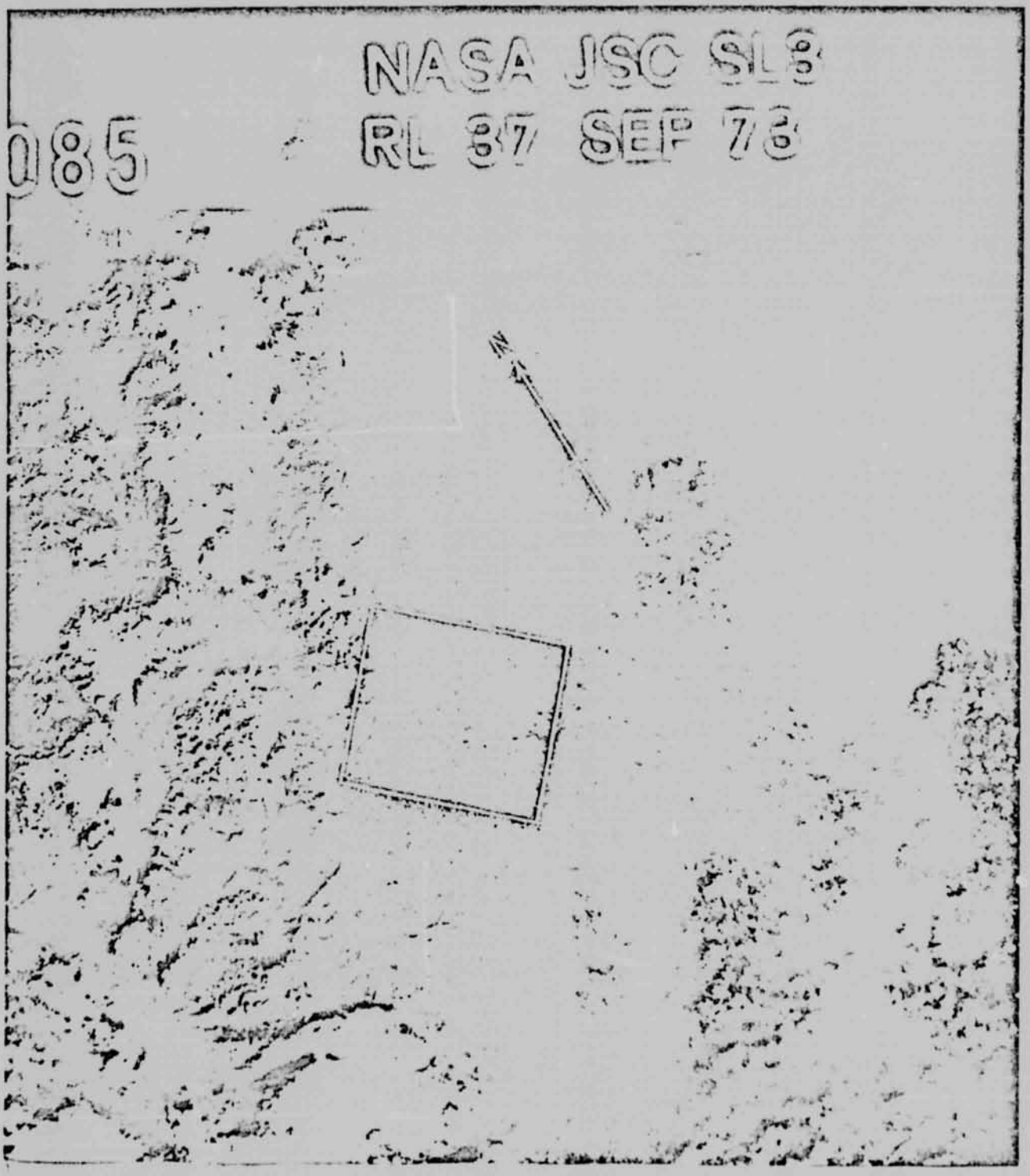

FIG. 5

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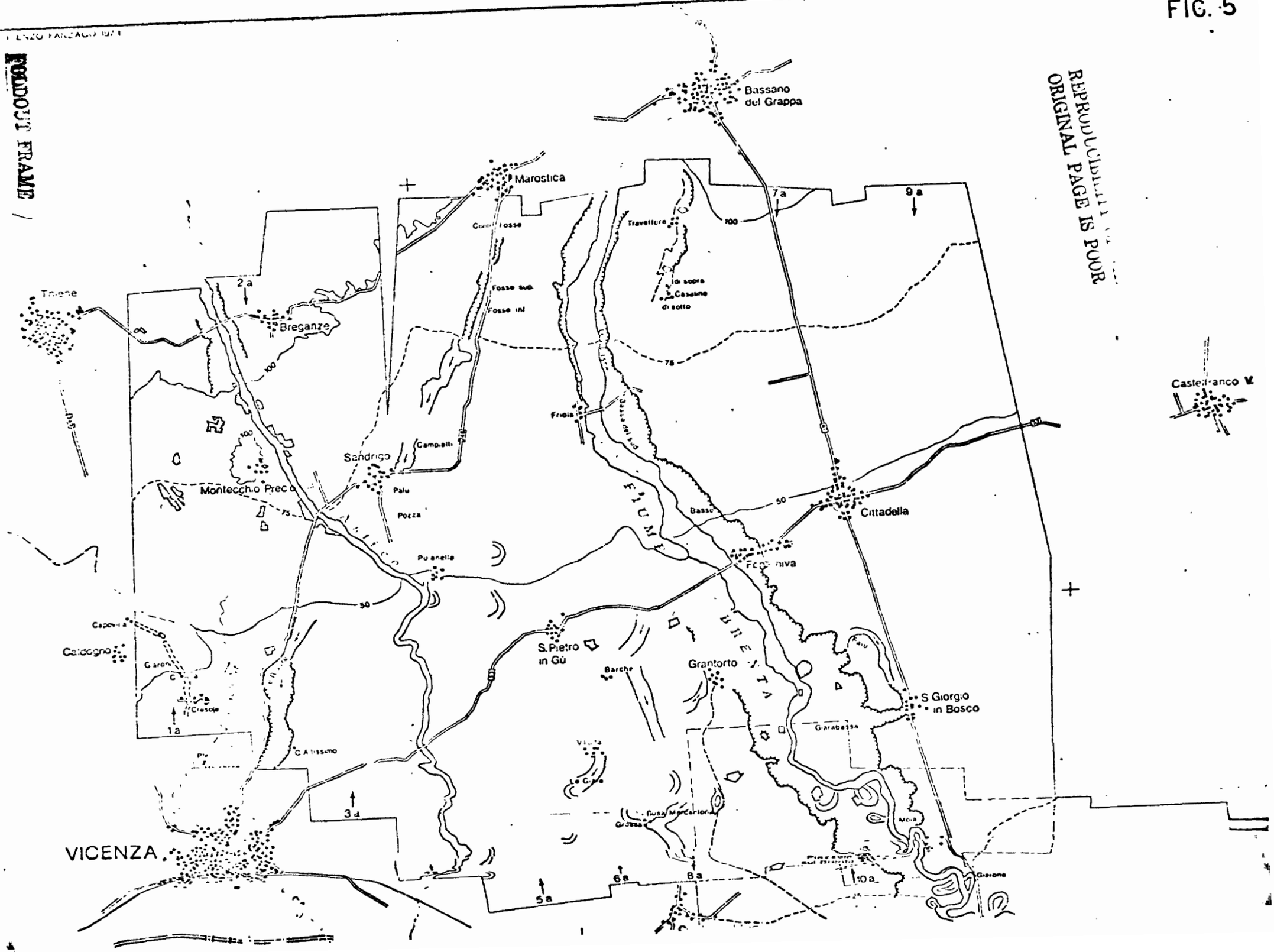

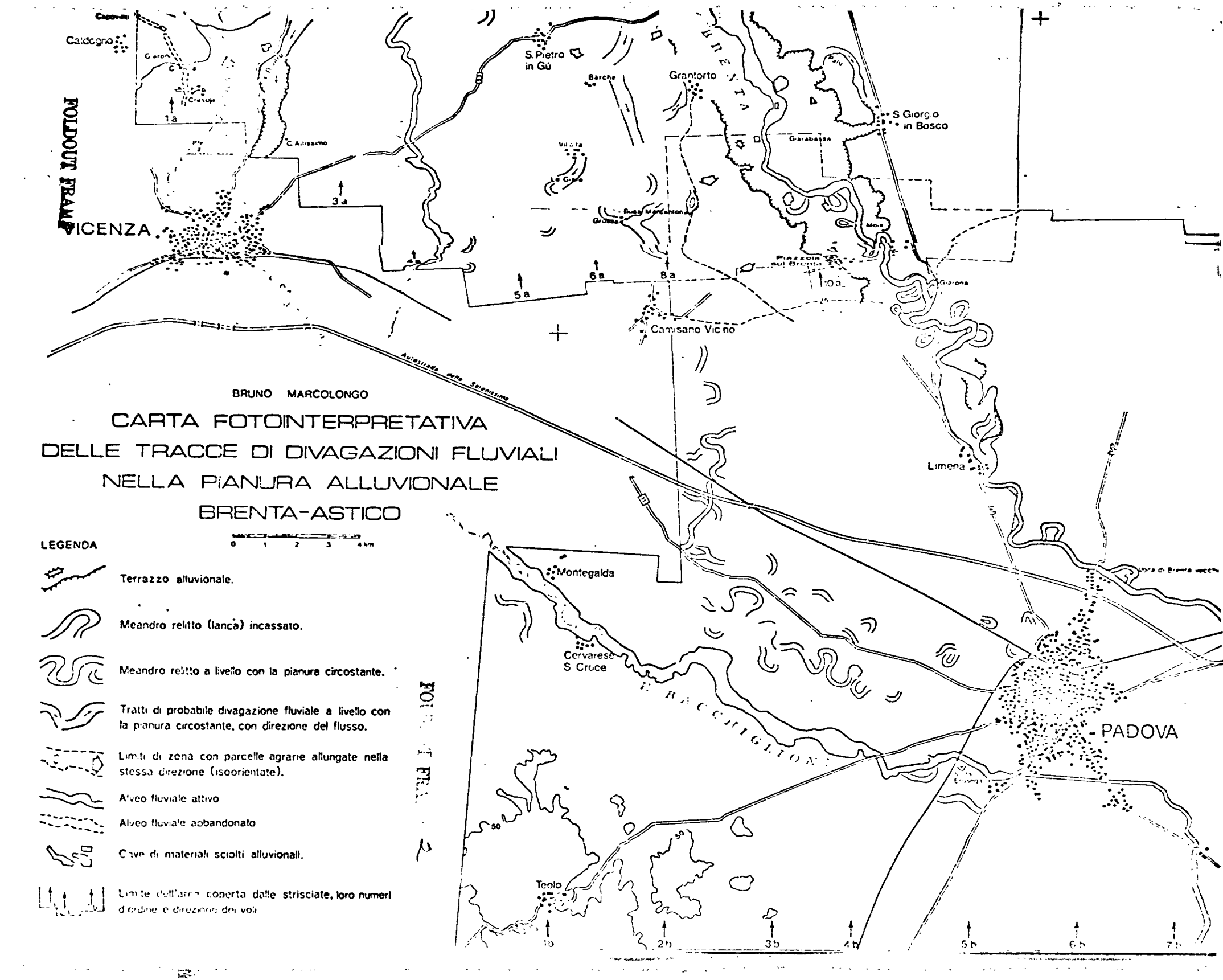
FOLDOUT FRAME
VICENZA
Caldogno
S.Pietro in Gù
Barche
Grantorto
S Giorgio in Bosco
Giarabassa
Camisano Vicino
Limena
Montegalda
Cervarese S Croce
PADOVA
Teolo
1a
3a
5a
6a
8a
10a
1b
2b
3b
4b
5b
6b
7b
BRUNO MARCOLONGO
CARTA FOTOINTERPRETATIVA
DELLE TRACCE DI DIVAGAZIONI FLUVIALI
NELLA PIANURA ALLUVIONALE
BRENTA-ASTICO
0 1 2 3 4 km
LEGENDA
Terrazzo alluvionale.
Meandro relitto (lanca) incassato.
Meandro relitto a livello con la pianura circostante.
Tratti di probabile divagazione fluviale a livello con la pianura circostante, con direzione del flusso.
Limiti di zona con parcelle agrarie allungate nella stessa direzione (isoorientate).
Alveo fluviale attivo
Alveo fluviale abbandonato
Cave di materiali sciolti alluvionali.
Limite dell'area coperta dalle strisciate, loro numeri d'ordine e direzione dei voli

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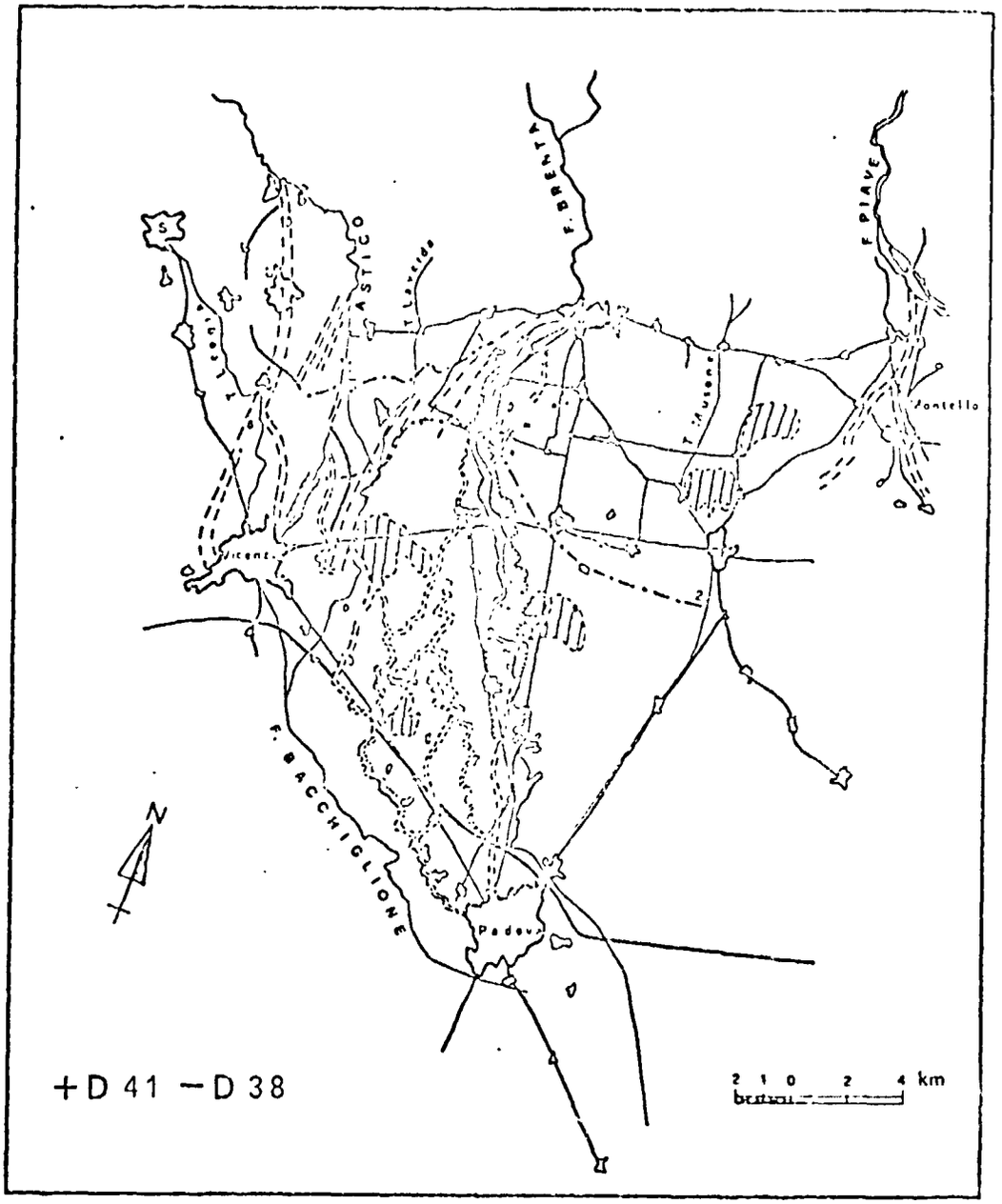
FIG.6



LEGEND

- Paleo river-bed
- Alluvial terraces
- Old river winding
- Boundary of fresh water sings
- Gravel and sand deposits
- Alluvial materials
- Urban areas
- High way
- Main road