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OF DANUBE AND DANUBE DELTA Progress Report,  
Jan. - Mar. 1976 (College for Civil  
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USE OF LANDSAT DATA FOR NATURAL RESOURCES  
INVESTIGATION IN THE LOWER BASIN  
OF DANUBE AND DANUBE DELTA

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TYPE 1 REPORT-Progress Report  
for period January-March 1976

Report Date: April 1976

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14. Supplementary Notes  On February 2 <sup>nd</sup> 1976, 24 recordings were received and another recording on March 18 <sup>th</sup> 1976 achieving for the whole area extremely different covering frequencies (fig.1). On February 15 <sup>th</sup> 1976 two sets with magnetic tape Landsat recordings were received.		
15. Abstract  Preliminary analyses of the newly received recordings were carried on and we started their proper processing. The unfavourable meteorological conditions, turned the area not wholly covered, though we possess recordings for the whole area. The series of recordings achieved on 3 successive days 17-19 June 1975 as well as some other recurrent recordings are of interest. We present some results of the processings and interpretations on the geomorphological zoning, the spreading of surface deposits, hydrogeology and geology, especially in the Danube Delta, which confirm a number of aspects already known from the previous studies made through classical methods, and which also point out to a number of new elements which are to be checked out. There arose possibilities to analyse new aspects such as: - sensing and monitoring of the quality of inland and costal waters; - pursuit of the catastrophic effects of the floods of July 1975 and the discharges of sediments at the Danube mouth. The first set of CCT was read on the computer and the processings were performed.		

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1 - OBJECTIVES OF THE PROJECT DADELTA (USE OF LANDSAT DATA FOR RESOURCES INVESTIGATION IN THE LOWER BASIN OF DANUBE AND DANUBE DELTA)

- a/. First of all, the objective of the investigation is the multi-disciplinary study of land use and the natural resources inventory according to Landsat 2 type data with the aim of determining the utility of these data.

At the same time the way of employing Landsat and airborne data, in sample areas for natural resources inventory and monitoring is also to be studied.

In order to solve these problems our activities are directed by the following situations:

- There are different mappings and special measurements on the territory of our country carried out by classical methods, we wish to confirm them on the basis of satellite recordings, to find possible further indications so as they should be confirmed by afferent field works;

- In some restricted areas such as the Danube Delta and the coastal area of the Black Sea where these mappings are of a more general character, we try to study them in detail of account of satellite recording combined with airborne recordings and field measurements.

- b/. A major aim is to form and organize staffs of specialists - executive, design, research, as well as at the level of the direct management - who, as a result of instructing and exchanges of experience, through directly handling satellite and airborne recordings should be capable of improving earth's resources projects. The including of areas both natural and man-transformed, will lead to a better understanding of phenomena and of component elements.

- c/. Performing specific technological works such as preliminary processing, sampling, phenology, thematic maps a.s.o. and the application in different fields (surveying in wetland, delta and coastal zones, classification of vegetation types and their quantitative estimate, geological studies directed mainly towards ground water and identification of geothermal zones), will ensure a better knowledge and gaining of experience in handling the data complex flow processing, with defining the advantages and limitations of remote sensing.

2 - SUMMARY OF THE ACCOMPLISHMENTS DURING THE PERIOD  
JANUARY-1<sup>st</sup> - MARCH 31<sup>st</sup> 1976

2.1. Technical and organizatory achievements

- A meeting with specialists in remote sensing problems took

place in order to analyse the results obtained during the year 1975 - this was a valuable exchange of experience;

- A meeting took place for the launching of the activity plan for the year 1976 in which the programme themes have been established;

- About 10 conferences took place in which more than 300 specialists participated, documentary movies have been projected accompanied by reports on the specific of the institutions and the preoccupations of the specialists invited;

- Nr.3 of the Remote Sensing Bulletin appeared (the summary for the three bulletins already issued is given in the appendix to the present report);

- During the II<sup>nd</sup> term of the academic year 1975-1976 a course on remote sensing was delivered to the students of the IV<sup>th</sup> year from the Department Surveying and Mapping of the College for Civil Engineering in Bucharest;

- We worked a proposal in order to include our project entitled "Technological Centre for the Recording, Processing and using of Remote Sensing Information" within the United Nations Development Programme (U.N.D.P.). The contribution suggested for the Romanian Government is of 12 million lei and that for the U.N.D.P. of \$ 275,000. The project was approved by the U.N.D.P. permanent representative;

- The necessary steps have been taken to purchase the remote sensing apparatus (thermovision and minimal system of digital-analogic processing) within the sum of \$ 220,000 allotted to the remote sensing programme;

- We went on achieving density measurements for the recordings made in the test-sites area, combined with density measurements for calibration and of Agfa Contour equidensities;

- We carried out experimental tests for the use of the appendix of the colour thermograms system at the AGA thermovision, with a view to obtaining density slicing in 8 levels in black & white and colour;

- We continued to perform copies, enlargements and multiplications of the material received from Sioux-Falls:

a/ Copies from the negatives 7x7 cm on photographic paper at the scale 1:1,000,000 of all the recordings which are distributed to all users;

b/ The negatives of a poorer quality (those corresponding to the quality - good and fair) are contact copies electronically (the Elkop system) or the operation is done on the NASA dias - scale 1:1,000,000;

c/ The original NASA negatives size 7x7 cm are used for being

copied on photographic paper and on a phototechnic film size 5x6 cm, scale 1:500,000;

d/ The negative copies from the NASA dias size 23x23 cm are used for the copies on photographic paper of recordings at the scale 1:200,000 - which corresponds to the scale of our geologic and hydrologic maps;

e/ In isolated cases, for some areas of interest for test-sites enlargements up to the 1:100,000 scale are practiced;

f/ The magnetic tapes are recorded on disc for an easier reading and preliminary processing, the achievement of registration and sequential recordings included.

## 2.2. - Preliminary data analysis

### 2.2.1.-Data receipt

Table n<sup>o</sup>1 shows ID Numbers of the received data, date of recording, receipt date and short comments.

Fig.1 shows the maps with the indexes of recordings, recapitulatively mentioning the situation of the recordings undertaken so far, the recurrence of the recordings and their connections.

In spite of the fact that we dispose of recordings for the whole area, the bad meteorological conditions made the area not to be effectively covered (recording 197/29 from 1975.06.21 - the only one received for this station, presents a cloudiness over 50%). We must mention the series of recordings in the coastal zones of the Black Sea and the Danube Delta with its hinterland, registered within a period of 3 days (17-19 June 1975), as well as some recurrent recordings in the same zone especially those in the Carpathian Mountains and in the Danube, at Galatzi.

Table 1

JD Number	Quality	Index	Date	Received	Comments
	MSS 4 5 6 7				
82146-08015	5 5 5 5	193/29	17.06.75	16.02.76	On the whole, good quality recordings, yet many of them presenting quite large cloudiness in the zones of interest.
82146-08021	5 5 5 5	193/30	17.06.75	16.02.76	
82129-08070	2 8 8 8	194/28	31.05.75	16.02.76	
82165-08070	8 5 5 5	194/28	06.07.75	16.02.76	
82129-08072	2 5 5 8	194/29	31.05.75	16.02.76	
82147-08073	5 5 8 5	194/29	18.06.75	16.02.76	
82129-08075	2 8 8 5	194/30	31.05.75	16.02.76	
82147-08080	5 5 8 8	194/30	18.06.75	16.02.76	
82291-08061	F F F F	194/30	09.11.75	16.02.76	
82112-08123	8 5 8 8	195/28	14.05.75	16.02.76	
82130-08124	5 8 8 8	195/28	01.06.75	16.02.76	

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ID Number	Quality MSS	Index	Date	Received	Comments
	4 5 6 7				
82166-08125	8 5 8 5	195/28	07.07.75	16.02.76	A series of sent recordings haven't yet reached the destination; their list with those unreceived in the previous quarter is added in the appendix to the present report.
82274-08111	5 5 5 5	195/28	23.10.75	16.02.76	
82310-08105	5 5 5 5	195/28	28.11.75	18.03.76	
82148-08132	8 8 8 8	195/29	19.06.75	16.02.76	
82130-08133	5 5 8 8	195/30	01.06.75	16.02.76	
82148-08134	5 5 8 8	195/30	19.06.75	16.02.76	
82131-08183	5 8 Lack	196/28	02.06.75	16.02.76	
82275-08170	5 5 5 5	196/28	24.10.75	16.02.76	
82131-08185	8 8 8 8	196/29	02.06.75	16.02.76	
82131-08192	8 8 8 5	196/30	02.06.75	16.02.76	
82150-08242	5 8 8 5	197/28	21.06.75	16.02.76	
82150-08245	5 5 8 8	197/29	21.06.75	16.02.76	
82168-08251	5 8 8 5	197/30	09.07.75	16.02.76	
82169-08300	8 8 8 8	198/28	10.07.75	16.02.76	
Computer compatible tapes (CCTs)					
82183-08071	8 5 5 5	194/29	24.07.75	16.02.76	
82184-08125	5 5 5 8	195/29	25.07.75	16.02.76	

2.2.2. - "First glance" analysis

ID Number	Index	Date	Comments
82146-08015	193/29	17.06	Recording in clouded marine zone; possible to watch penetration through clouds on marine background.
82146-08021	193/30	17.06	The carrying on of the above mentioned recording with the same observations.
82129-08070	194/28	31.05	Useful recording for watching the transport of the Danube sediments into the sea under various meteorological conditions; to this end bands 4, 5 and possibly 6 are to be used.
82165-08070	194/28	06.07	The same observations as in above mentioned recording, recurrent character under various meteorological conditions.
82129-08072	194/29	31.05	Interesting recording for watching the Danube discharges into the sea at the end of the month of May.
82147-08073	194/29	18.06	Idem in 18 days as compared to the previous situation yet before catastrophic floods that followed; especially useful bands 4,5 and 6.
82129-08072	194/30	31.05	The phenomena mentioned on the succession of recordings on the same orbit are to be followed: 194/28, 194/29, 194/30, in order to study

the regime of deposits on the Black Sea continental platform afferent to the Danube mouths.

- |             |        |       |   |
|-------------|--------|-------|---|
| 82147-08080 | 194/30 | 18.06 | Recurrent recording contingent with that of the same date station 194/29, that should be also connected with the recording 193/30 of the previous day and respectively with that of the following day 195/30. |
| 82291-08061 | 194/30 | 09.11 | Isolated recording in a marine zone, with a few possibility of connection-registration.   |
| 82112-08123 | 195/28 | 14.05 | Useful for recurrent observation of a restricted zone in the Danube Delta; otherwise it is a typical example of a substantial exceeding on the percentage of cloudiness recorded in catalogues.               |
| 82130-08124 | 195/28 | 01.06 | The same observation as for the previous recording; "the window" of interest is located this time in the Brăila-Galatzi area.   |
| 82166-08125 | 195/28 | 07.07 | Is of interest for the observation of the Danube Delta discharges into the sea during the flood period.   |
| 82274-08111 | 195/28 | 23.10 | Heavy cloudlines over zones of interest. The lower waterway of the Danube can be observed.  |
| 82310-08105 | 195/28 | 28.11 | Extremely interesting. Recording under the conditions of complete snow covering. It is worth a special study, especially for the Danube Delta.  |
| 82148-08132 | 195/29 | 19.06 | High quality recording during the catastrophic flood period in 1975.  |
| 82130-08133 | 195/30 | 01.06 | Contingent with the recording 196/30 on the following day; it is of main interest for the marine zone.  |
| 82148-08134 | 195/30 | 19.06 | Recurrent recording underlining marine turbidity and coastal regime during the flood period.  |
| 82131-08183 | 196/28 | 02.06 | High quality recording rendering evident the high levels of the Danube and its affluents, vegetation, geological structures in Oriental Carpathians and Dobrudja.   |
| 82275-08170 | 196/28 | 24.10 | Recurrent recording presenting cloudiness, remains of interest from geological point of view.   |
| 82131-08185 | 196/29 | 02.06 | One of the best and most interesting recordings on the area; a correlation with the recordings 196/28 and 196/30 on the same orbit, and with those the on previous day, should be made.                       |

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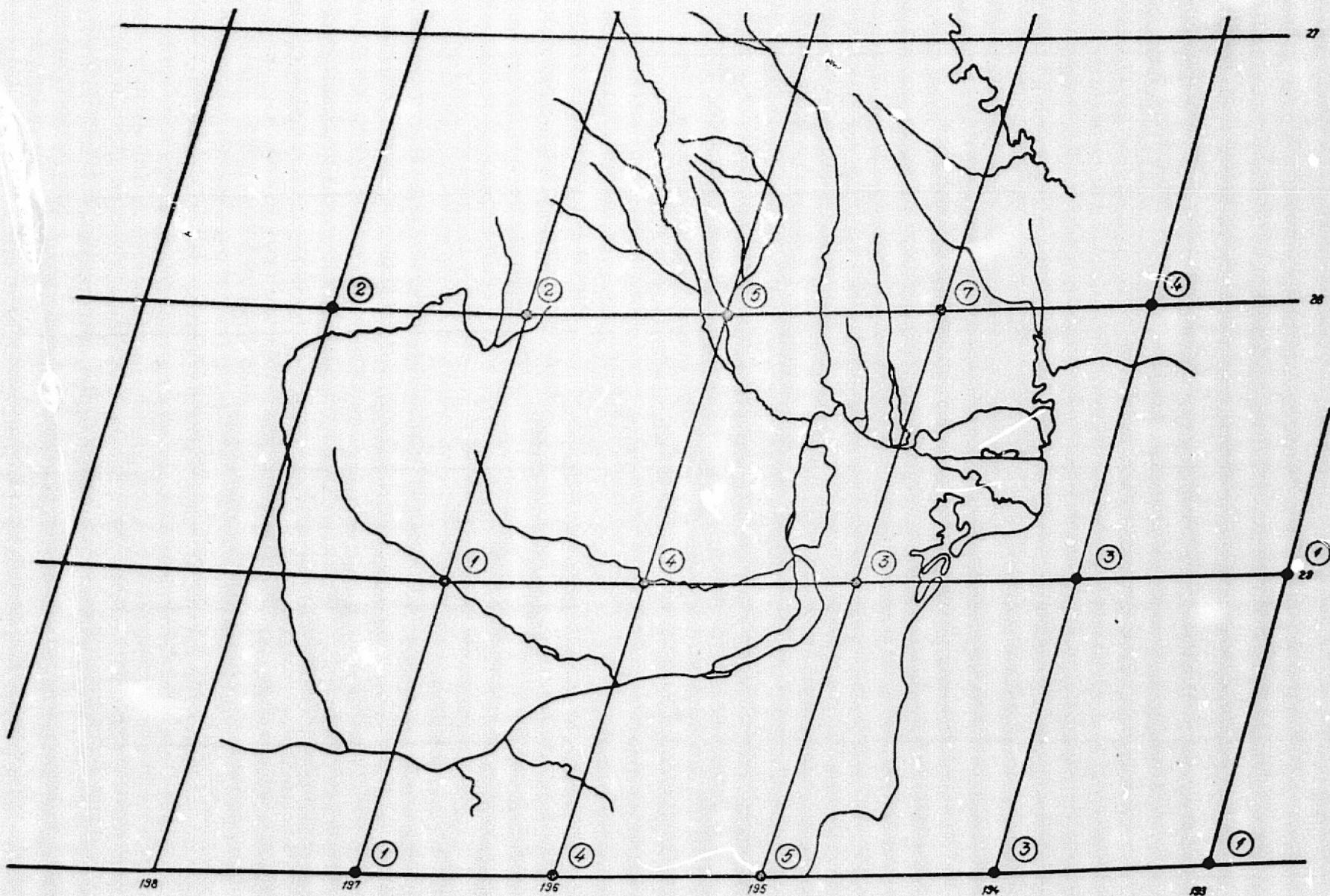


Fig.1 Index map of the test site; (N) the recurrence of the recordings,recapitulatively mentioning.

82131-08192	196/30	02.06	Recording contingent with the previous one, of the same good quality.
82150-08242	197/28	21.06	Recording which recurrently refers to the Carpathian Mountains area; it is of interest for geological mapping.
82150-08245	197/29	20.06	The area is covered during a very interesting period, yet the cloudlines is more than 50%.
82168-08251	197/30	09.07	Interesting as a period, being connected with the top of flood period, yet it is highly clouded.
82169-08300	198/28	10.07	High quality recording, which although overpassing the studied areas, renders evident the vegetation, phreatic level, during the top period of the catastrophic flood.

### 2.3. Some interim analyses of the recordings

#### 2.3.1. Concerning the evolution of certain deltas of the branches of the Danube leading into the sea, with the distribution of the alluvial deposits concentration in inland lakes and in the zones of discharges into the sea

Having at our disposal satellite recordings and panchromatic and colour airphotographs we could proceed to analyses together with field measurements. So, in fig.2, one can follow the distribution of alluvial deposits concentration in the maritime area of the Danube Delta, using relative indices of density (qualitative determinations made by the Institute of Meteorology and Hydrology) and the satellite recording of 24 July, band 5; the same distribution can be followed in the sampling area in fig.3 and 4, by means of airphotographs and field determinations; in fig.5 one can follow an attempt of qualitative determination of turbidity currents by means of satellite recordings of September the 4<sup>th</sup> 1972 and of a minimum of field measurements. These measurements are to be continued using both densitometry systems, Agfa Contour technics and black and white and respectively colour density slicing. A detail-sample has been achieved for inland lakes (fig.6). For "the red blossoming" (biological pollution) of coastal waters one can follow the suggestive images in fig.7, achieved in cooperation with the institute specialized in determination and survey of the quality of water.

Turbidity currents and distribution of alluvial concentration can be followed in the sampling area -band 5, Sept., 4-th 1972 and band 4 July 24-th 1975 (fig.8).

2.3.2. Referring to the geomorphological zoning, to the spreading of quaternary deposits, to the hydrological study of ground waters in the Danube Delta

The studies have been carried on as well for the Danube Delta ensemble as concentrated for the test site zone, which has the form of a transverse strip profile crossing the Dunavăț Laboratory grounds where intensive field measurements and repeated aerophotographic mapping have been performed.

The studies have been carried on and are being carried on continuously in cooperation with the specialized institute, reaching at this stage, the following conclusions:

The interpretation of satellite recordings correlated to the geological, geomorphological and geophysical data, known by classical methods confirmed several already known aspects, but emphasized also some new elements which are to be checked up by site measurements. In the first category there are: the general representation, the land-use, the geomorphological zoning, partially the structural aspects of the fundament, the spreading of surface deposits. In the second there are: the attempt to complete the tectonic picture and to present roughly the depth of ground waters.

In fig.9-12, using overlays on the background of satellite recordings a number of thematic maps are shown whose explanation is given in the corresponding legends.

2.3.3. Referring to the geological studies directed towards the discovery and utilization of geothermal zones and towards the prospecting of useful mineral substances

The study performed by the specialized institute has reached the following conclusions:

- Some geological elements are easily discerned on the satellite recordings and may be drawn with entire impartiality. They may be compare without difficulty to the known geological data, but they yield also new data which are going to be checked up in the field;
- Some geological elements discerned only at a very attentive analysis, knowing the geology of the given region. They yield interesting explanations and may suggest new hypotheses which are to be checked up by detailed mapping;
- Some data from the recordings cannot be explained at the present stage of knowledge; the existance of new hidden structures has been suggested, whose explanation could bring forth geophysical data or

even reference drillings;

- Some major geological elements well-known from the geological maps cannot be identified or can only partially be identified on the recordings.

Generally, the disjunctive structures are much more emphasized on the recordings than the plicative ones. Still, the layer ends are sometimes sensed very clearly, so that a suggestive picture of the structural style of the region could be obtained.

A quantitative estimation indicates: the comparison with the existing conventional maps, at different scales, has shown the nearly 40 percent of the linear identified elements on the remote sensing are corresponding to geological faults, anomalous contacts or other disjunctive tectonic elements known, 30 percent are not shown on the maps, but there is evident for them to be in agreement with the structural tendencies, and the rest of 30 percent are not in agreement with the present geological data and many have probably no geological basis.

In this respect, on the basis of criteria applied independently by two researchers, on the same data recordings, the distribution maps of lineation field gave good results which have been processed statistically. The results are to be reported within the next QPR.

It is mentioned that all recordings have been interpreted by direct observation, on the magnifying of the 3<sup>rd</sup> generation pictures, without gauging means, namely more sophisticated correction or processing laboratory apparatuses; by the aquisition of the first equipment sets, the results will obviously improve especially for the quantitative values.

#### 2.3.4. - Plan for the next reporting period

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In spite of the difficulties met, connected mainly to the delay of date receiving and to the unfavorable weather conditions, in the present stage the works are tending to develop at a normal pace, under all their organizational, methodological and technical aspects. New possibilities have arisen for:

- The surveying and monitoring of the inland water quality and of the coastal zone;
- The study of the effects of the catastrophic flood in June-July 1975 as well as the discharge of deposits into the sea at the Danube mouths;
- Operative use of the RPMI (Radiant power measurement instrument)

3.1. - On space recordings and other data

- The delayed receiving of data is the big difficulty for most interpretations;
- We did not receive some recordings or other range of data stipulated to be delivered; their list is given in the appendix;
- We did not receive data from Fucino in connection with the CCTs format as we are to receive recordings on March 1<sup>st</sup> from this station (according to the NASA acknowledgement); this could cause difficulties and delays in the program until the new type of items are assimilated;
- Extremely useful for us would be the following papers, for digital processing:
  - "Computer compatible Tape Format-DIS 6105, General Electric";
  - "Digital Image Tape Format"
  - "The list of Programs (software) and Algorithms for the Processing of Landsat Recordings".
- We have not received the Weekly Government Abstracts; the list of the principal investigators with the titles of their respective investigation themes has not been received either;
- The aerial film IR and colour IR could not be purchased despite the NASA intervention

3.2. About the meteorological-hidrological conditions

As it has already been mentioned the weather conditions have been unfavourable: clouds, rains; this has been correlated to the satellite passing time which is too early for us.

The hydrological conditions and the winter have been different this year, as compared to the average; alike, the eutrophication conditions in coastal zone of the Black Sea and in the inland lakes.

4. PUBLICATIONS

The annex includes the list of publications and papers drawn on within inventory and discovery of new resources by remote sensing program; the summary of these papers is given in the present report.

5. CONCLUSIONS, PROPOSALS

The remote sensing program is rising an ever bigger interest within a large range of specialists in various domains of activity.

Further on, in spite of all the difficulties met, we hope for a

normal progress of the works, for the reaching of the settled aims and also their extension for the specific conditions occurring meanwhile.

We suggest to continue receiving a maximum of available data from the Eros Centre, Sioux Falls, with a view to get familiar with the actual use of the recordings like those which we are to receive by the agency of the Fucino Station.

We would like to obtain as soon as possible the items mentioned at point 3.1 of the present report.

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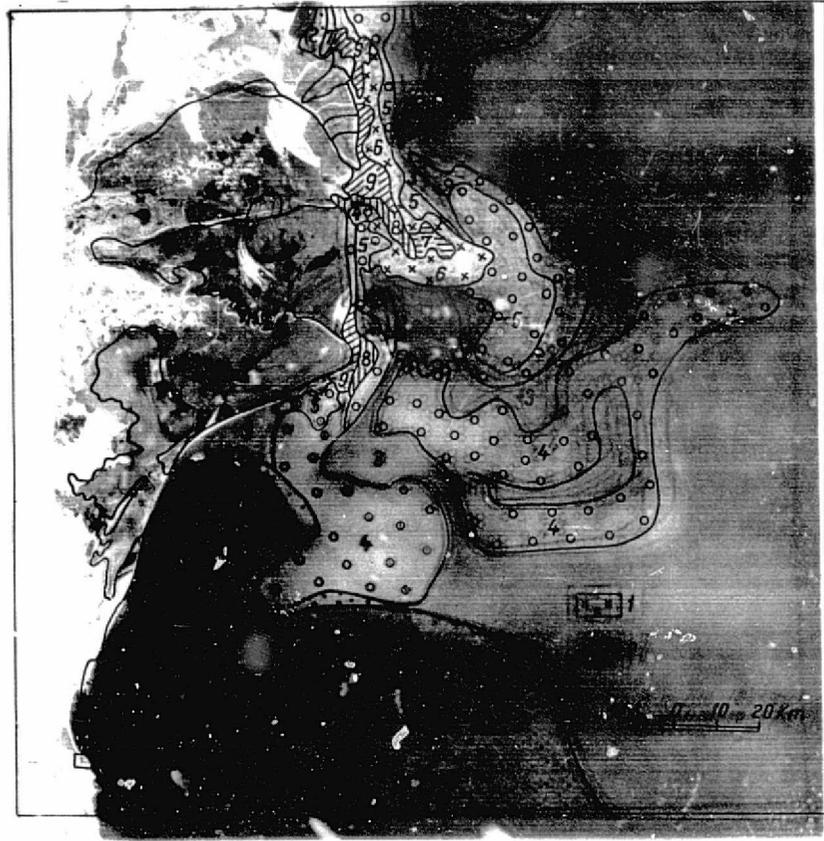


Fig. 2. Distribution of alluvial concentration in the study area. The data are based on the Landsat recordings checked on the Landsat recordings of July 1975; 1 - min; 2 - max.

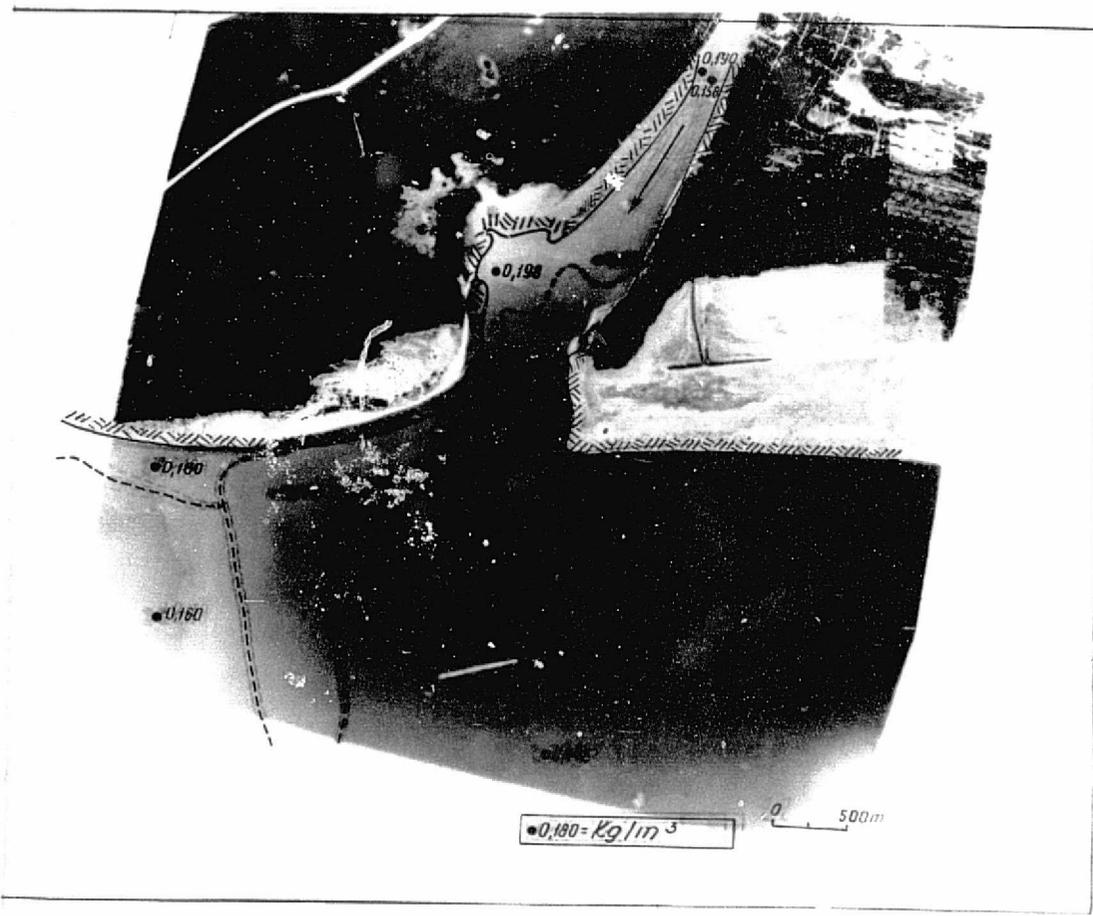


Fig. 3. Distribution of alluvial concentration followed in the

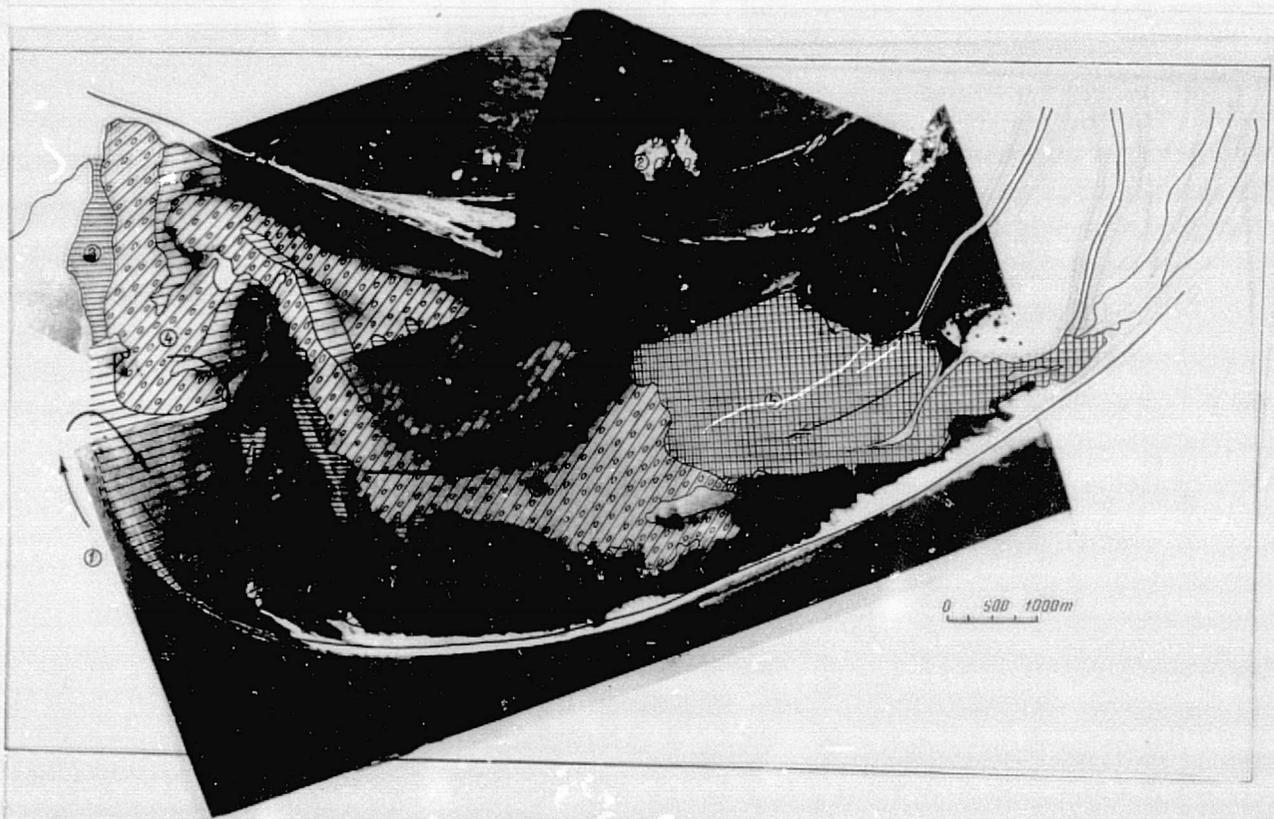


Fig. 4 Distribution of alluvial concentration in characteristic areas - qualitative determinations, making use of aerial photographs and mosaics.

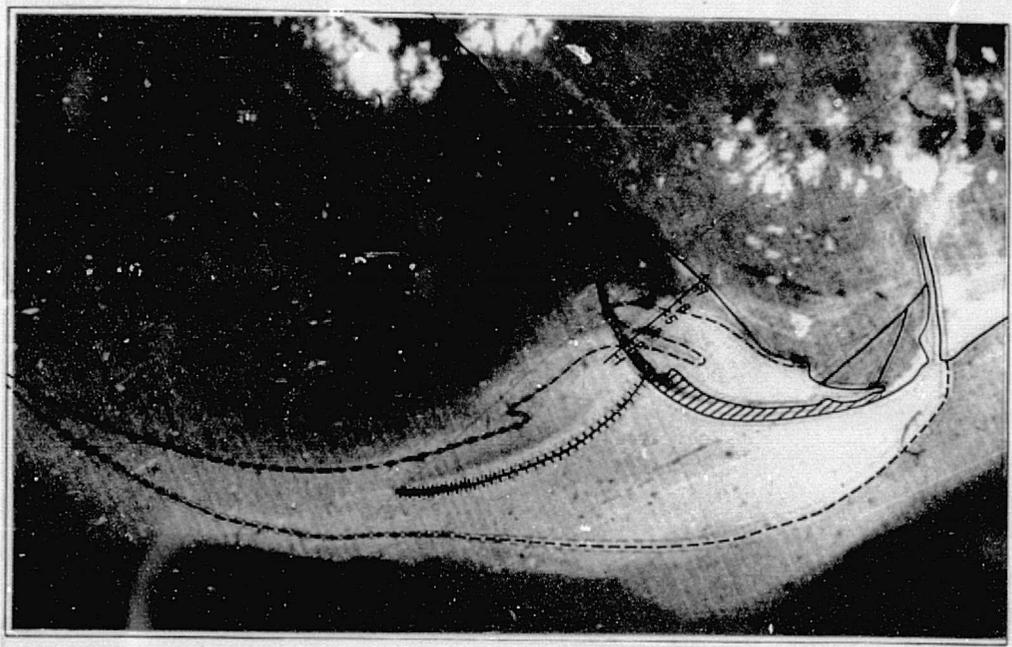


Fig. 5 Turbidity currents established by means of satellite recording of September 4-th 1972 - band 5 - and a minimum of field determinations.



Fig.6 Detailing of alluvial concentration of distribution sampling for inland lakes by means of aerial photo.



Fig.7 "Red blossoming" - biologic pollution of coastal waters followed through band 5 - June 18-th and 19-th 1975



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Location of alluvial  
sampling area -  
band 4, July 24-th

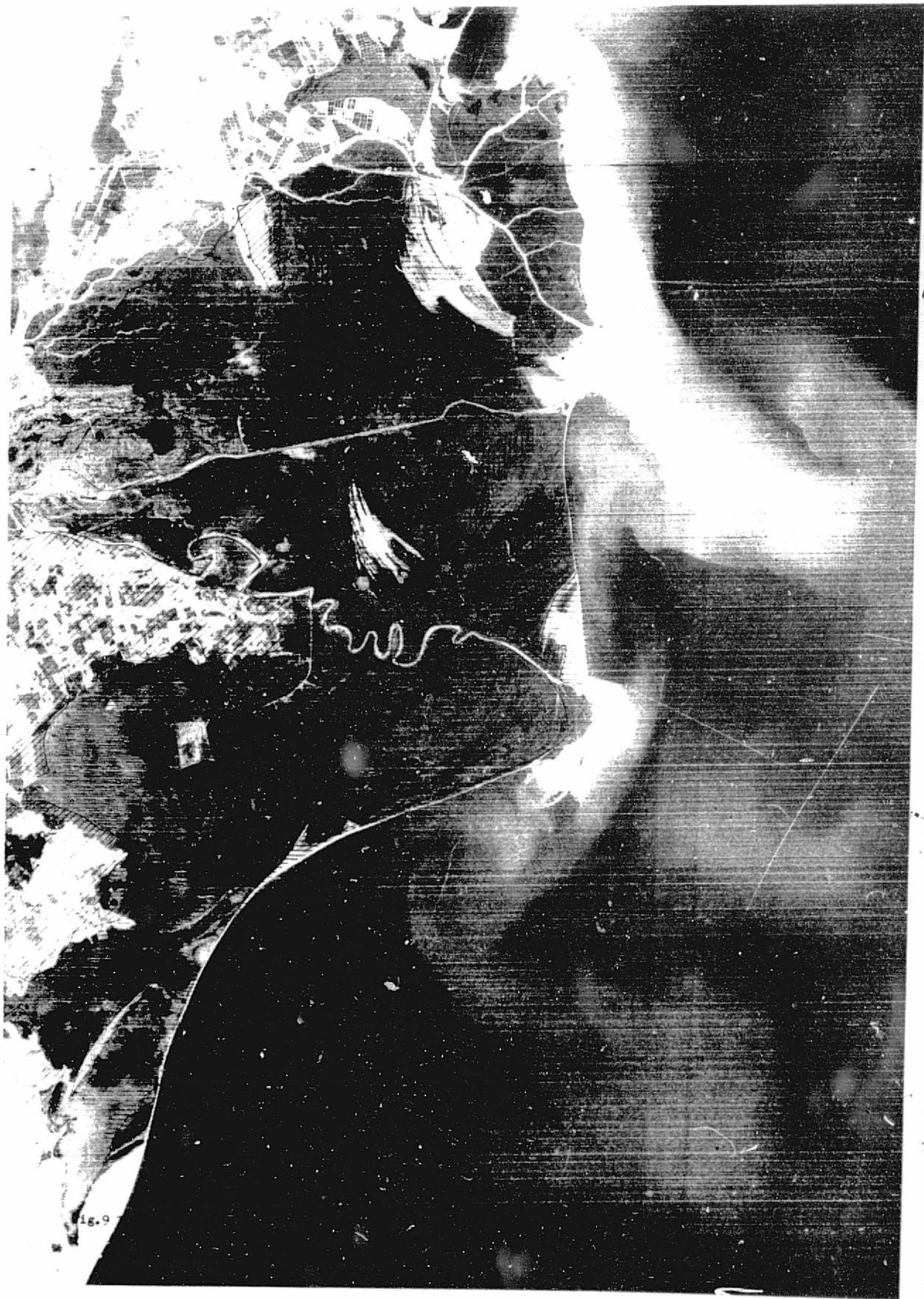
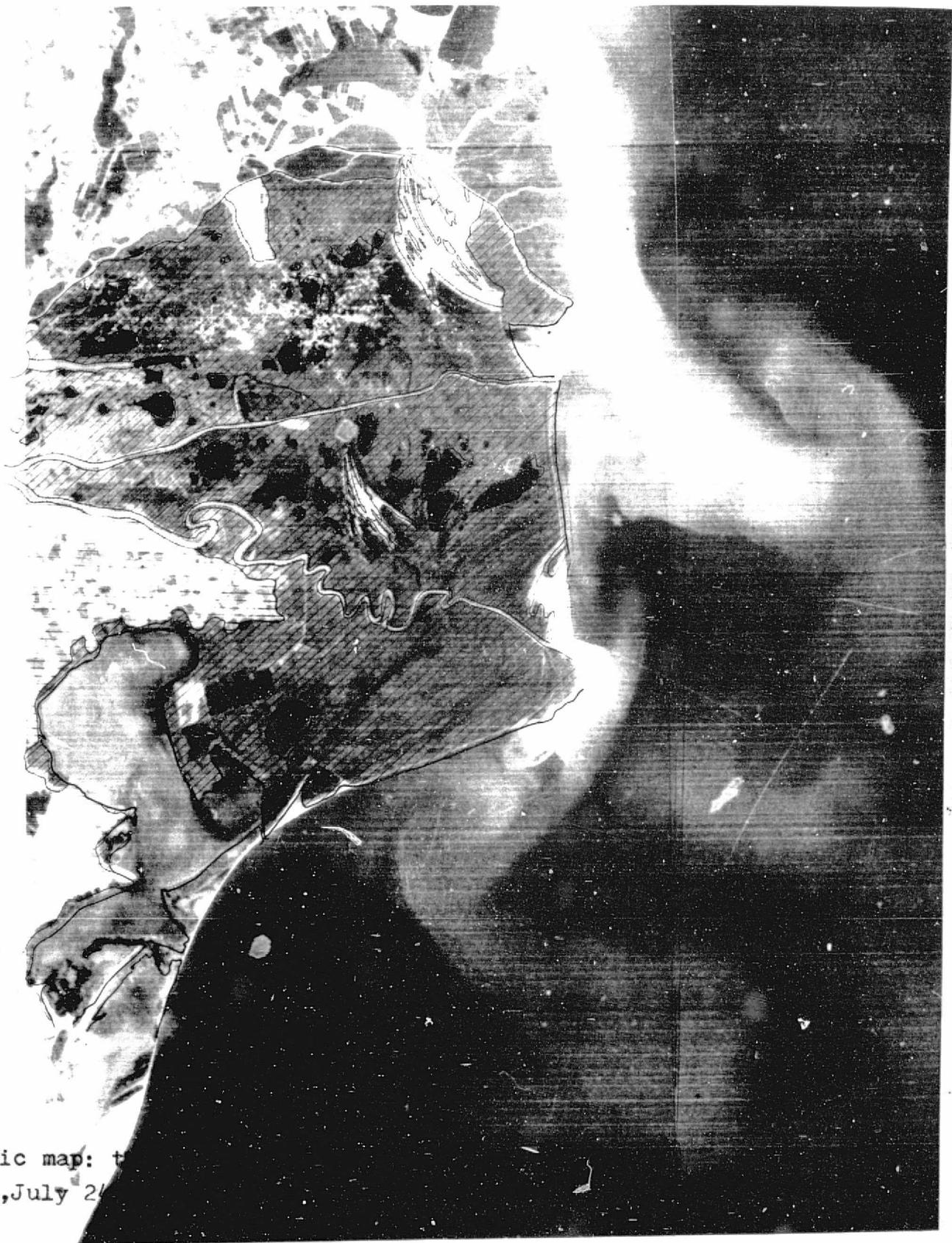


Fig. 9

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Thematic map: t  
band 5, July 2/

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Fig. 12

Thematic map: detail - intensive determinations  
unaval. sites - (band 5 and band 7 - 14 July 1975)

## ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

DATE April 1976

PRINCIPAL INVESTIGATOR Nicolaie OPRESCU

GSFC ID 27940 - 01

ORGANIZATION College for Civil Engineering

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PRODUCT ID (INCLUDE BAND AND PRODUCT)		FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
		Sea	Sediments	Delta	
82146-08015	M	▼	▼		Sea regime
82146-08015	4	▼	▼		Clouds, alluvia
82146-08015	5	▼	▼		Clouds, alluvia
82146-08015	6	▼	▼		Clouds
82146-08015	7	▼	▼		Clouds
82146-08021	M	▼	▼		Sea regime
82146-08021	4	▼	▼		Clouds, alluvia
82146-08021	5	▼	▼		Clouds, alluvia
82146-08021	6	▼	▼		Clouds
82146-08021	7	▼	▼		Clouds
82129-08070	M	▼	▼	▼	Coastal regime, coastal currents
82129-08070	4	▼	▼	▼	Alluvia, clouds, coastal currents
82129-08070	5	▼	▼	▼	Alluvia, clouds
82129-08070	6	▼	▼	▼	Alluvia, agriculture
82129-08070	7	▼	▼	▼	Delta regime
82165-08070	M	▼	▼	▼	Coastal regime
82165-08070	4	▼	▼	▼	Alluvia, coastal currents
82165-08070	5	▼	▼	▼	Alluvia
82165-08070	6	▼	▼	▼	Clouds, agriculture
82165-08070	7	▼	▼	▼	Floods-Delta
82129-08072	M	▼	▼	▼	Coastal regime, clouds
82129-08072	4	▼	▼	▼	Alluvia, coastal currents
82129-08072	5	▼	▼	▼	Alluvia
82129-08072	6	▼	▼	▼	Alluvia
82129-08072	7	▼	▼	▼	Clouds

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ERIS IMAGE DESCRIPTOR FORM  
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 N \_\_\_\_\_  
 ID \_\_\_\_\_

PRODUCT ID (INCLUDE BAND AND PRODUCT)		FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
		Sea	Sediments	Delta	
82147 08073	M	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Coastal regime
82147-08073	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Alluvia, coastal currents
82147-08073	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Alluvia, Delta regime
82147-08073	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Alluvia, Delta regime
82147-08073	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Floods-Delta
82129-08075	M	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Sea regime
82129-08075	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Clouds, alluvia
82129-08075	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Clouds
82129-08075	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Clouds
82129-08075	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Clouds
82147-08080	M	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Sea regime, clouds
82147-08080	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Alluvia, clouds
82147-08080	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Alluvia, clouds
82147-08080	6	<input checked="" type="checkbox"/>			Clouds
82147-08080	7	<input checked="" type="checkbox"/>			Clouds

\*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

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PRODUCT ID (INCLUDE BAND AND PRODUCT)		FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
		Clouds	Delta	Floods	
82291-08061	M	✓			Sea regime, coastal regime
82291-08061	4	✓			Alluvia, sea
82291-08061	5	✓			Alluvia, sea
82291-08061	6	✓			Sea
82291-08061	7	✓			Sea
82112-08123	M	✓	✓		Coastal regime
82112-08123	4	✓	✓		Alluvial, coastal currents
82112-08123	5	✓	✓		Alluvia
82112-08123	6	✓	✓		Delta regime
82112-08123	7	✓	✓		Delta regime
82130-08124	M	✓	✓		Coastal regime, Delta
82130-08124	4	✓	✓		Compact clouds, coastal currents
82130-08124	5	✓	✓		Delta regime
82130-08124	6	✓	✓		Delta regime
82130-08124	7	✓	✓		Delta regime
82166-08125	M		✓	✓	Delta regime
82166-08125	4		✓	✓	Alluvia, coastal currents
82166-08125	5		✓	✓	Alluvia
82166-08125	6		✓	✓	Limnology, agriculture
82166-08125	7		✓	✓	Hydrology
82274-08111	M	✓	✓		Coastal regime
82274-08111	4	✓	✓		Alluvia
82274-08111	5	✓	✓		Alluvia
82274-08111	6	✓	✓		Compact clouds
82274-08111	7	✓	✓		Compact clouds

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PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	Clouds	Delta	Floods	
82310-08105 M		✓		Compact snow, coastal and deltaic regime
82310-08105 4		✓		Compact snow, coastal and deltaic regime
82310-08105 5		✓		Snow, coastal currents
82310-08105 6		✓		Snow
82310-08105 7		✓		Snow
82148-08132 M		✓	✓	Vegetation, coastal regime
82148-08132 4		✓	✓	Alluvia, vegetation
82148-08132 5		✓	✓	Alluvia, vegetation
82148-08132 6		✓	✓	Vegetation, agriculture
82148-08132 7		✓	✓	Water bodies
82130-08133 M	✓			Sea, clouds, vegetation
82130-08133 4	✓			Alluvia, clouds
82130-08133 5	✓			Alluvia, clouds
82130-08133 6	✓			Clouds
82130-08133 7	✓			Geology

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PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*		DESCRIPTORS
	Clouds	Vegetation	
82148-08134 M		✓	Sea, alluvia Crops, alluvia Crops, alluvia Water bodies Liniaments
82148-08134 4		✓	
82148-08134 5		✓	
82148-08134 6		✓	
82148-08134 7		✓	
82131-08183 M		✓	Agriculture Turbidity, alluvia Humidity - -
82131-08183 4		✓	
82131-08183 5		✓	
82131-08183 6-Lack		-	
82131-08183 7-Lack		-	
82275-08170 M	✓	✓	Agriculture, forests Crops, hydrology Fractures Liniaments Geology
82275-08170 4	✓	✓	
82275-08170 5	✓	✓	
82275-08170 6	✓	✓	
82275-08170 7	✓	✓	
82131-08185 M		✓	Agriculture, forest Hydromorphometry Crops Hydrology Geology
82131-08185 4		✓	
82131-08185 5		✓	
82131-08185 6		✓	
82131-08185 7		✓	
82131-08192 M		✓	Vegetation, geology Agriculture Alluvial deposits Hydrology Geology
82131-08192 4		✓	
82131-08192 5		✓	
82131-08192 6		✓	
82131-08192 7		✓	

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PRODUCT ID (INCLUDE BAND AND PRODUCT)		FREQUENTLY USED DESCRIPTORS*		DESCRIPTORS
		Clouds	Vegetation	
82150-08242	M	✓	✓	Agriculture, forests
82150-08242	4	✓	✓	Humidity
82150-08242	5	✓	✓	Crops, forests
82150-08242	6	✓	✓	Minerals
82150-08242	7	✓	✓	Geology
82150-08245	M	✓	✓	Compact clouds, hydro-
82150-08245	4	✓	✓	logy
82150-08245	5	✓	✓	Floods
82150-08245	6	✓	✓	Agriculture
82150-08245	7	✓	✓	Hydrology
82168-08251	M	✓	✓	Minerals, faults
82168-08251	4	✓	✓	Floods, crops
82168-08251	5	✓	✓	Agriculture, forests
82168-08251	6	✓	✓	Fractures, vegetation
82168-08251	7	✓	✓	Minerals, floods
82169-08300	M	✓	✓	Geology
82169-08300	4	✓	✓	Crops, floods
82169-08300	5	✓	✓	Agriculture, floods
82169-08300	6	✓	✓	Vegetation, floods
82169-08300	7	✓	✓	Floods, morphometry
				Geology, floods

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## Appendix

The list of recordings and other documentation not yet received and which are necessary to us

## 1. Recordings:

ID Number	MSS				Index	Date	Product code
	4	5	6	7			
82131 - 08183	-	-	6	7	196/28	02.06.975	01
82184 - 08132	4	-	6	7	195/30	25.07.975	01
82256 - 08113	4	-	-	-	195/28	05.10.975	01

## 2. Documentation:

- "Computer compatible Tape Format - DIS 6105, General Electric"
- "Digital Image Tape Format"
- "The list of Program (software) and Algorithms for the processing of Landsat Recordings"
- "Weekly Government Abstracts"
- "The list of the principal investigators with the titles of their respective investigation themes"
- "Data users handbook"-Landsat; new edition
- "Fucino digital image tape format"

## Appendix

Remote Sensing Bulletin No.1 - November 1975

## Summary

1. Preliminary word . . . . .	pg.	1
2. Research theme in cooperation with NASA: "Use of ERTS for Resources Investigations in the Lower Basin of the Danube and the Danube Delta" . . . . .		2
3. The situation of the recordings received on 27 <sup>th</sup> October 1975, within the cooperation with NASA and the distribution of the copies of those recordings to those included in the remote sensing programme . . . . .		17
4. The evidence of the recordings announced as having been already sent by NASA and which will be received within the shortest time . . . . .		17
5. The evidence of the recordings ordered within the cooperation and which will be received within a short time . . . . .		17
6. Magnetic tapes sets ordered at NASA within the cooperation and which are to be received in a short time . . . . .		18
7. Map with the evidence of the recordings of the above mentioned items 3-6 . . . . .		19
8. Acknowledgements, news, recent manifestation and respectively those which will take place in a short time . . . . .		20
- Landsat News nr.3, May 1975 . . . . .		20
- Landsat News nr.4, August 1975 . . . . .		22
- Landsat News nr.5, October 1975 . . . . .		24
- Symposiums, conferences, national and international manifestations . . . . .		27
9. Facilities offered by the Laboratory of remote sensing to those included in the remote sensing programme and to those interested . . . . .		28
10. New publications received . . . . .		29
11. Publications of the remote sensing Laboratory published up to the present . . . . .		29

## Appendix

Remote Sensing Bulletin No.2 - December 1975

## Summary

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|--|-----------|-----|----|
| 1. Present situation and development of remote sensing in the near future (till 1980) and in the prospect (till 2000-2010)   | . . . . . | pg. | 1  |
| 2. The situation of the recordings received on 6 <sup>th</sup> December 1975 within the cooperation with NASA and the distribution of the copies of those recordings to those included in the remote sensing programme |           |     | 25 |
| 3. The evidence of the recordings announced as having been already sent by NASA and which will be received within the shortest time  | . . . . . |     | 25 |
| 4. The evidence of the recordings ordered within the cooperation and which will be received within a short time  |           |     | 25 |
| 5. Magnetic tapes sets ordered   | . . . . . |     | 25 |
| 6. Recapitulative situation of the existing Landsat recordings over the zone   | . . . . . |     | 26 |
| 7. The dates of Landsat 2 satellite passess for the period 1 May - 30 November 1976  | . . . . . |     | 27 |
| 8. Acknowledgements, news, recent manifestations and respectively those which will take place in a short time  |           |     | 28 |
| 9. Facilities offered by Laboratory of remote sensing to those included in the remote sensing programme and to those interested  | . . . . . |     | 32 |
| 10. New publications received  | . . . . . |     | 33 |
| 11. Type 1 report-progress report for period May-December 1975 "Use of Landsat data for natural resources investigation in the lower basin of the Danube and the Danube Delta"   | . . . . . |     | 35 |

Remote Sensing Bulletin No.3 - March 1976

## Summary

- |  |           |     |   |
|--|-----------|-----|---|
| 1. The situation of the recordings received on 16 <sup>th</sup> February 1976 and 18 <sup>th</sup> March 1976    | . . . . . | pg. | 1 |
| 2. Magnetic tapes sets ordered and received  | . . . . . |     | 1 |
| 3. Recapitulative situation of the existing recordings:  |           |     | 2 |
| 3.1. Erts-Landsat 1 recordings received as of slides 23x23 cm, white and black and respectively colour-composite |           |     |   |

## Appendix

- 3.2. Landsat 2 recordings received as negatives  
7x7 cm, slides size 23x23 cm and copies on photo-  
graphic paper 23x23 cm.
4. Acknowledgement, news, recent manifestations and respec-  
tively those which will take place in a short time 4
5. New publications received . . . . . 9
6. Type 1 report-progress for period January-March 1976  
"Use of Landsat data for natural resources investiga-  
tions in the lower basin of the Danube and the Danube  
Delta" . . . . . 11
7. Facilities offered by the Laboratory of remote sensing  
to those included in the remote sensing programme and  
to those interested . . . . . 29

List of Report Worked out during 1975 by the collaborators  
included in the programme "Inventory and discovery of new  
resources through remote sensing"

1. "Study on the use of the remote sensing in the research of  
underground waters and the interpretation of airphoto and  
the satellite recordings" - Phase 1975, 20 pages (Labora-  
tory underground waters).
2. "The hydrothermic regime of the soil for the main crops in  
the western and southern areas of the country", 82 pages  
(Laboratory of agrometeorological research).
3. "Research by remote sensing concerning morphometric and dy-  
namic charactersitics of the lakes and minor and major river  
beds", 22 pages (Meteo and hydrological institute).
4. "Control of the water quality by remote sensing methods" -  
Phase preliminary resport, 62 pages (Laboratory for water  
quality).
5. "Contribution to the hydrogeologic study of the underground  
waters in the Danube Delta and in the Black Sea area by remo-  
te sensing method" - Phase 1: March 5<sup>th</sup> 1975; 2: June 10<sup>th</sup> 1975,  
final delivery: December 20<sup>th</sup> 1975, 15 pages (Institute for  
reclamation works).
6. "Digital processing of recordings obtained by remote sensing",  
47 pages (Nuclear and electronic department).

7. "Detector assembling testing Si(Li) and cooled preamplifier and spectrometric chain variants (Nuclear and electronic department), 24 pages.
8. "Studies and trials on the recordings at medium-small height and of field - within remote sensing", 23 pages (Surveying and mapping institute).
9. "Research on remote sensing application under the geological condition in our country for the discovery and utilization of geothermal areas and for the prospecting of useful minerals", 19 pages (Laboratory of electrometric and geothermic research).
10. "Technology for processing the remote sensing recordings", 51 pages (Laboratory for remote sensing).