STRUCTURAL MAPPING

THROUGH

REMOTE SENSING

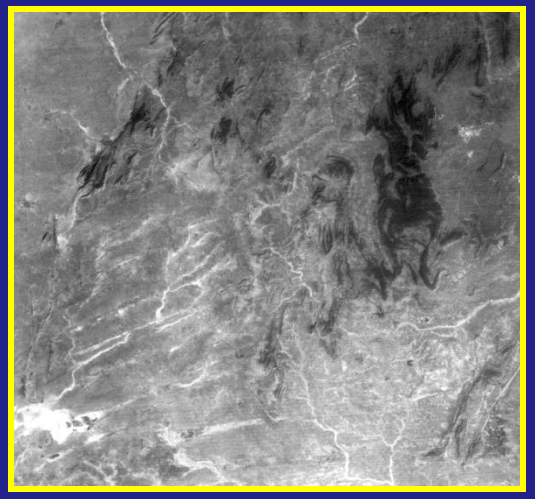
CREDIBILITY OF REMOTE SENSING

- SYNOPTIVITY
- MULTI SPECTRAL NATURE
- REPETIVITY

SOUTH INDIA MOSAIC

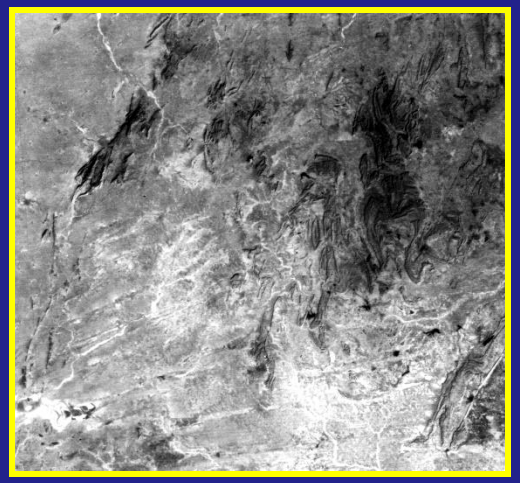
MULTISPECTRAL IMAGE

MSS 4



MSS 5

MSS 6



MSS 7

MAHA KUMBHMELA IMAGE

April 2000

December 2000

January 2001

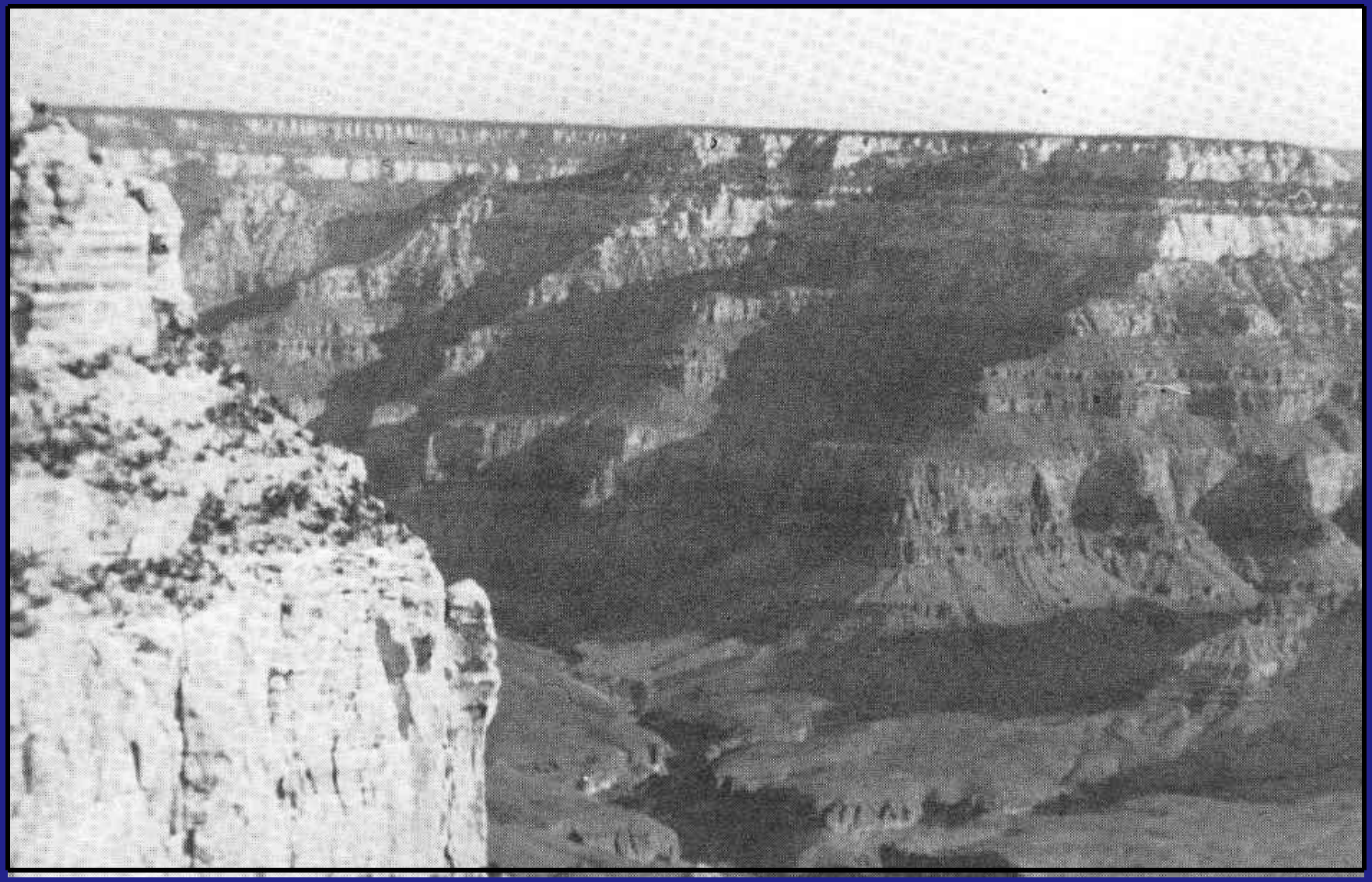
STRUCTURAL STUDIES

PHOTO SIGNATURES OF STRUCTURAL FEATURES

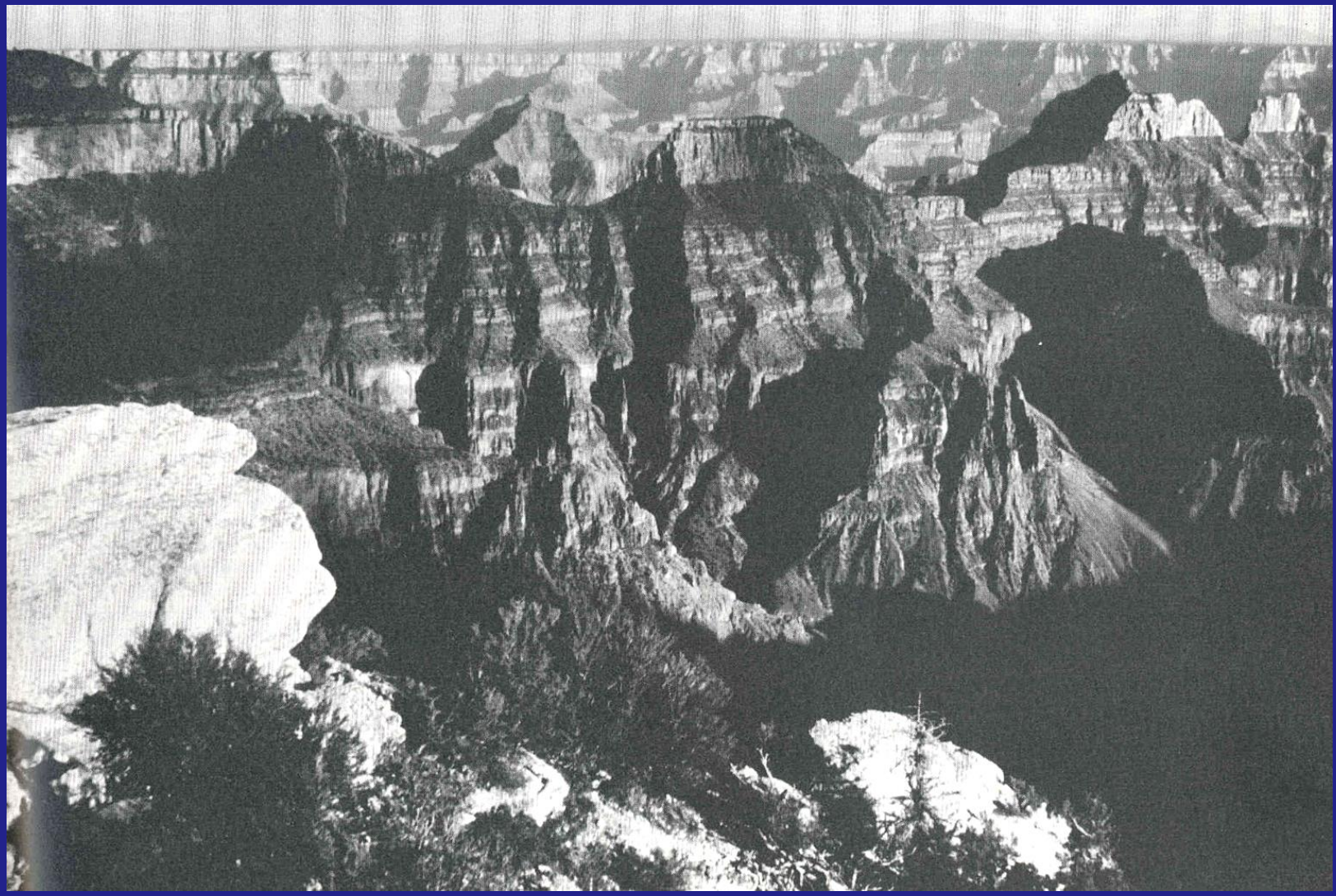
FLAT LYING BEDS:

- Different layer – alternating tonal variation
- Alternate Resistant & Non Resistant units
  - Step cliff for Non resistant
  - Gentle slope for resistant
- Dendritic drainage(if no joints & fractures controls)

GRAND CANYON PLATEAU



GRAND CANYON PLATEAU



IRS – PAN STERIO DECCAN PLATEAU

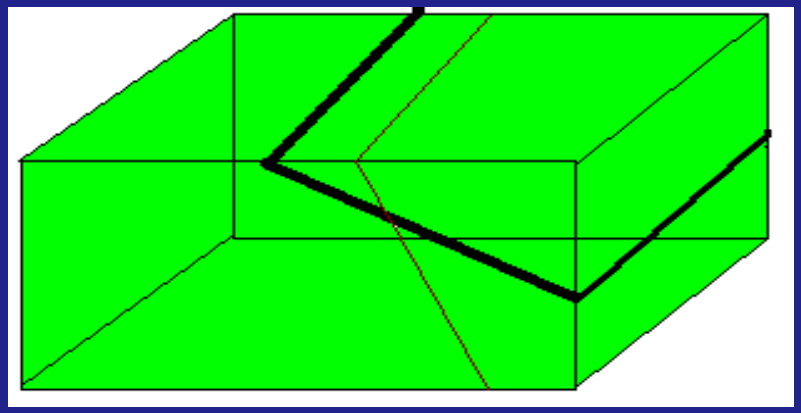
DIPPING BEDS:

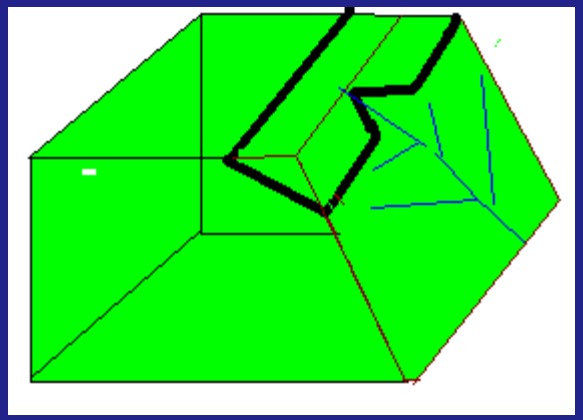
Out crop pattern

- **Bed dip & topographic slope coincide-tree crown character**

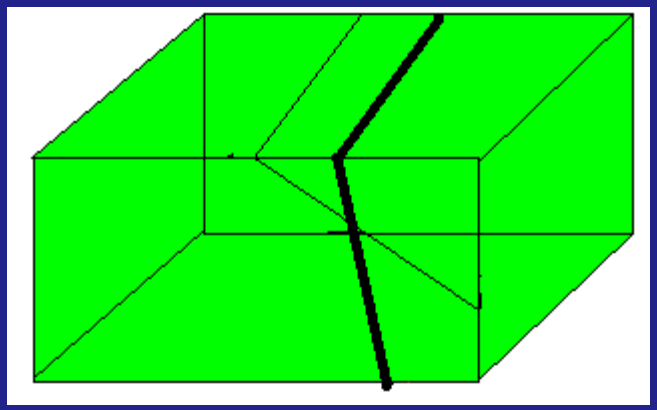
- **If bedding by tonal variation is seen then the "V" of the drainage valley with bedding is criteria.**
  - **V*point toward dip direction-if the surface gradient is gentler than dip of bed.**
  - **V*point opposite to dip direction – if the surface gradient is steeper than dip of bed.**

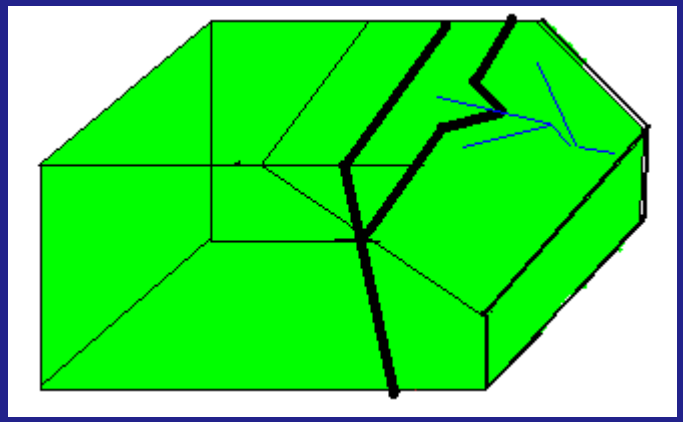
V*point opposite to dip direction – if the surface gradient is steeper than dip of bed.





V*point toward dip direction-if the surface gradient is gentler than dip of bed.





DIPPING BEDS: (Contd.) [Drainage Character]

a (i) Relatively long drainage in the dip direction
(ii) Short drainage opposite to dip
→ Gentle Slope

b. (i) Relatively short drainage in the dip direction
(ii) Longer drainage opposite to dip
→ Dips $>45^0$

c. Long linear beds trends → Vertical bed
Initial dip → Wavy pattern
Secondary dip → Regular pattern

CUESTA – CANADA

CUESTA

CUDDAPAH BASIN

FOLDS:

EXPOSED ONES - Easy to identify & understand

COVERED / BELOW THE SURFACE - Not easy – take help of drainage pattern

LIMBS **:** Parallel drainage

Plunging folds : Closure- points the direction of plunge

Antiformal : Two set of parallel drainage flowing in opposite direction.

Synformal : Two set of parallel drainage flowing towards each other

Overturned folds : Difficult – No Photo signatures

Isoclinal folds : Structural trend lines are long linear and parallel o each other

Open folds : Structural trend lines equally spaced – wide apart.

Closed folds : Unequal disposition and frequent trend line

Parallel folds : Parallel anticline cliffed syncline – at zones of less erosion.

HOMOCLINAL : Parallel drainage

MONOCLINAL : Parallel drainage with offset

SYMMETRICAL FOLDS :

(I) Two set of drainage flowing opposite or inward

(ii) Equally spaced structural trends with central gap

ASYMMETRICAL FOLD :

(I) Two sets of parallel drainage opposite & inward

(ii) Their lengths are unequal

(iii) Unequally spaced structural trends

DOMES & BASINS : Circular outcrop with radial drainage

FOLDS DUE TO HORIZ_ COMPRESSIVE FORCE — Tight folds with conjugate fractures

FOLDS DUE TO TANGENTIAL MANNER — "S" or "Z" shaped folded hills & beds

FOLDS DUE TO IGNEOUS INTRUSION — Structural trends envelopes Igneous bodies

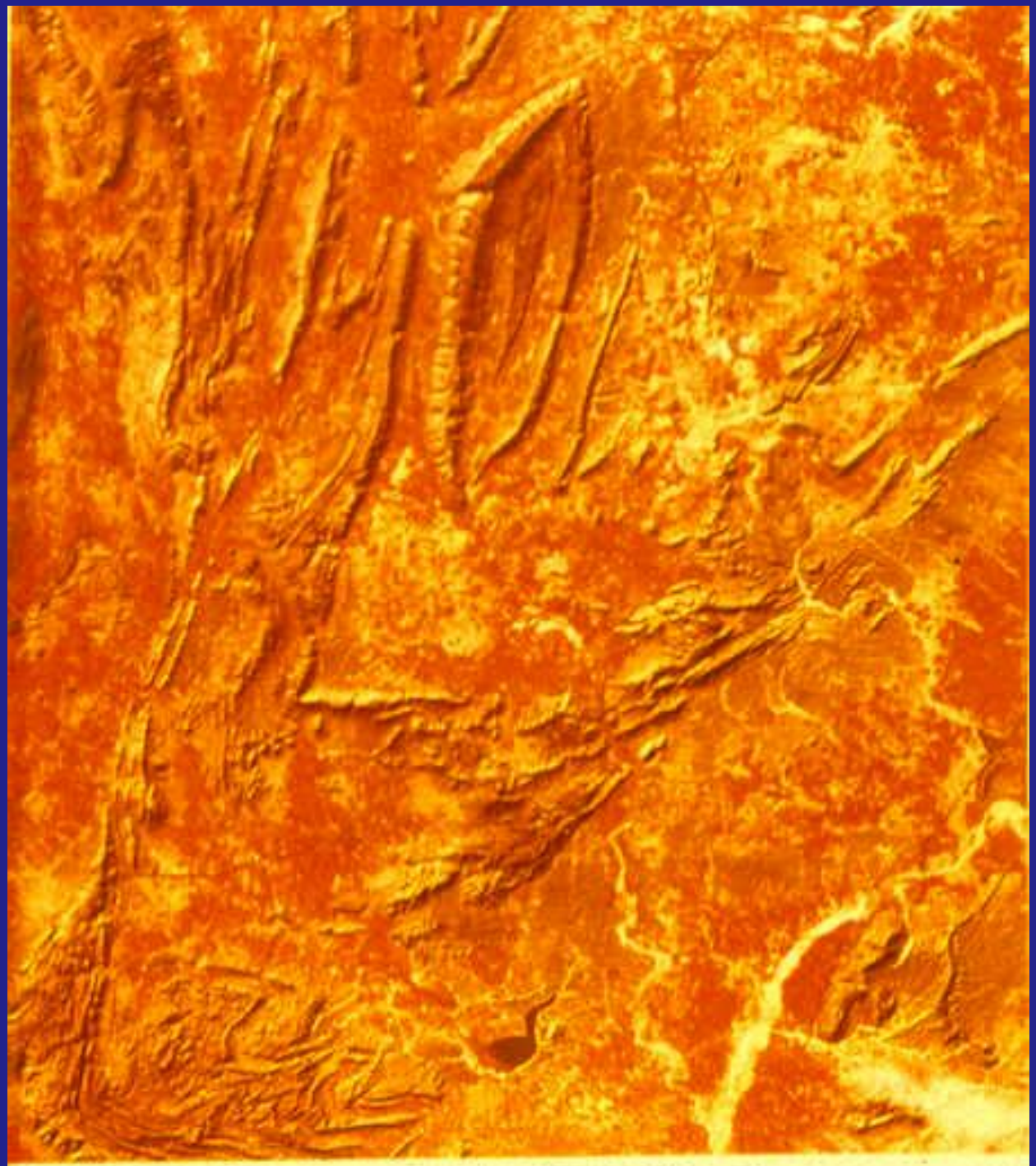
APPALACHIAN FOLD

TEXAS

LISS III - BURMA

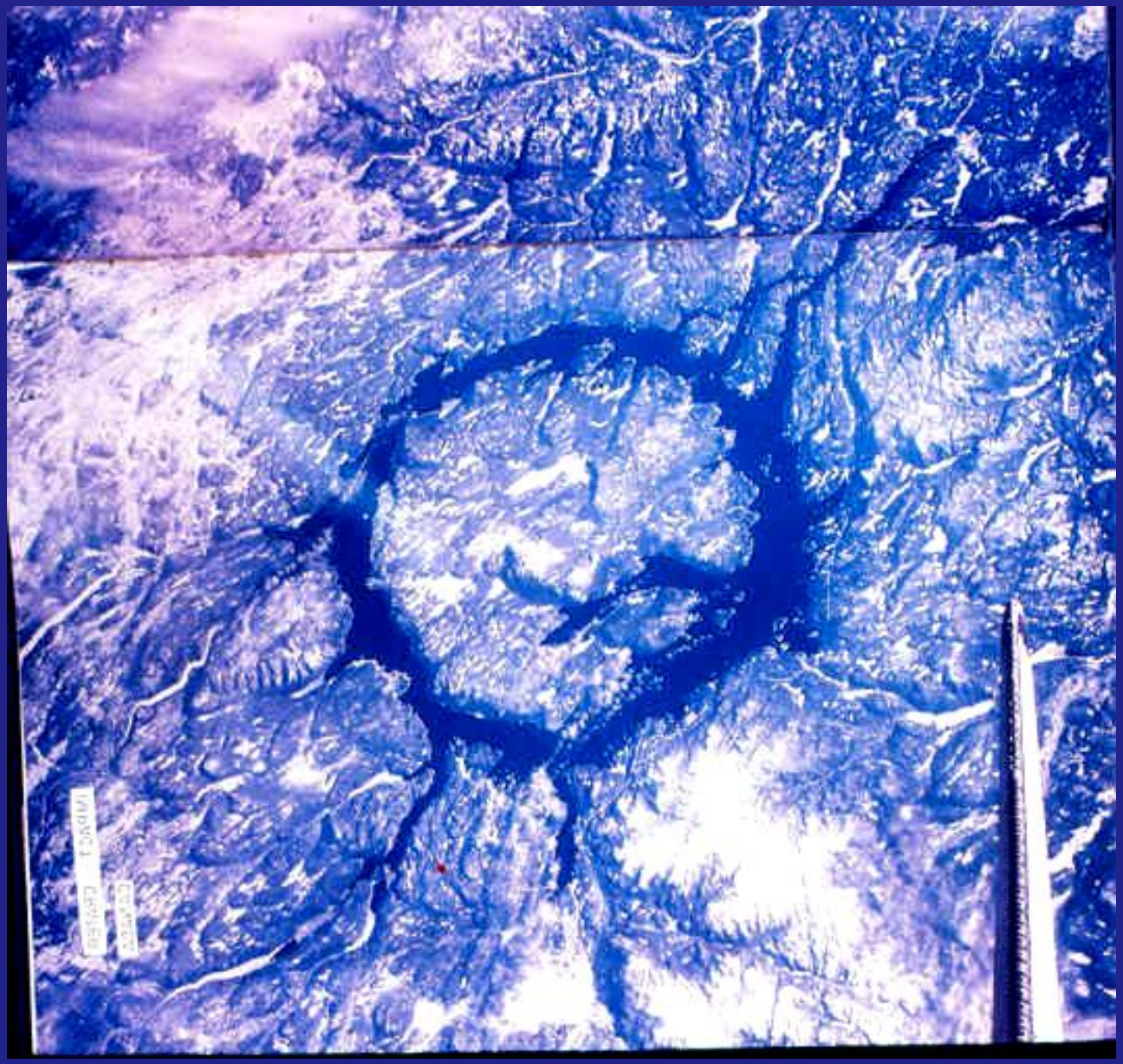
IRAN FOLD

Eastern ghats

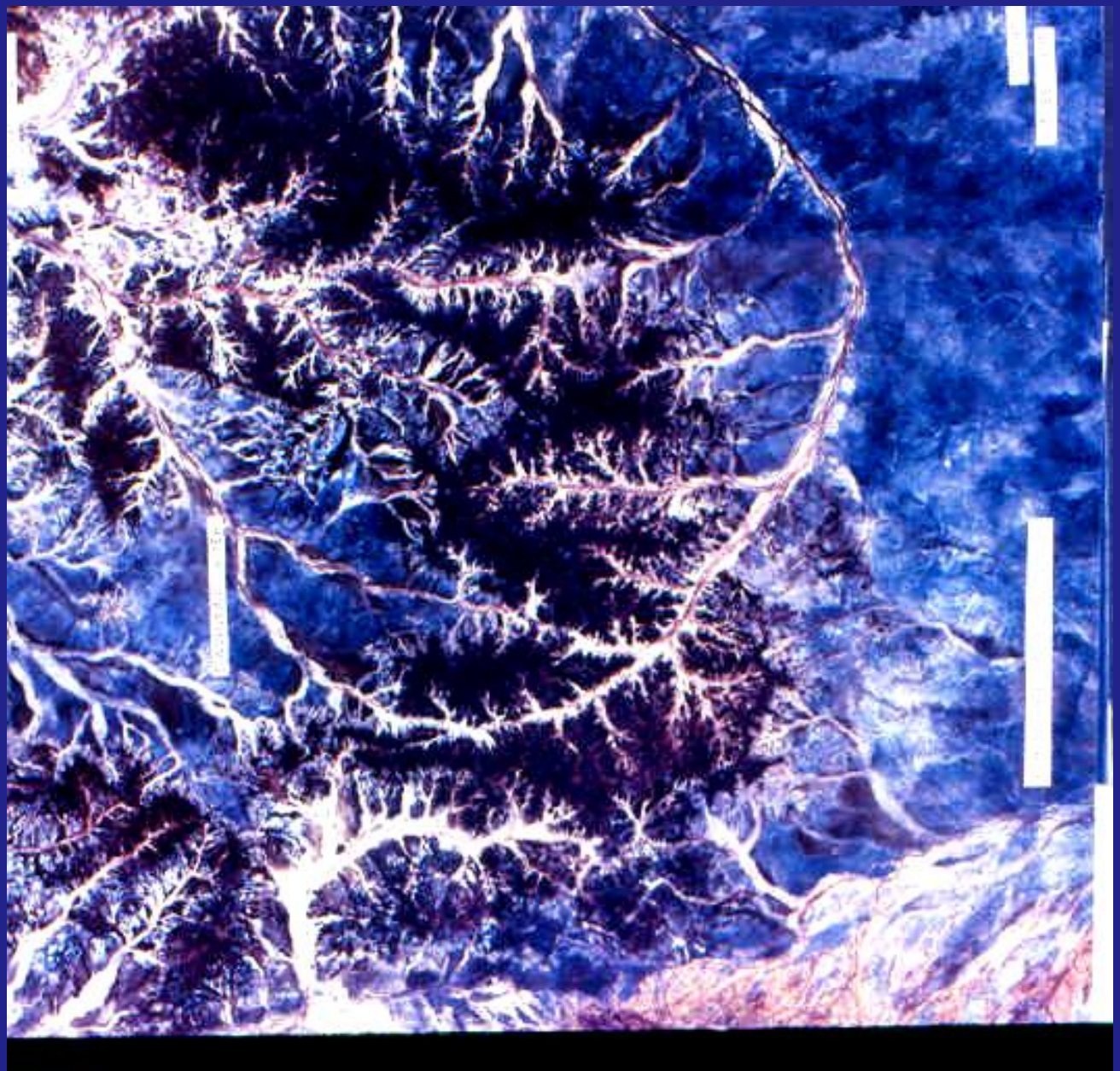


ALWAR
Quartzites

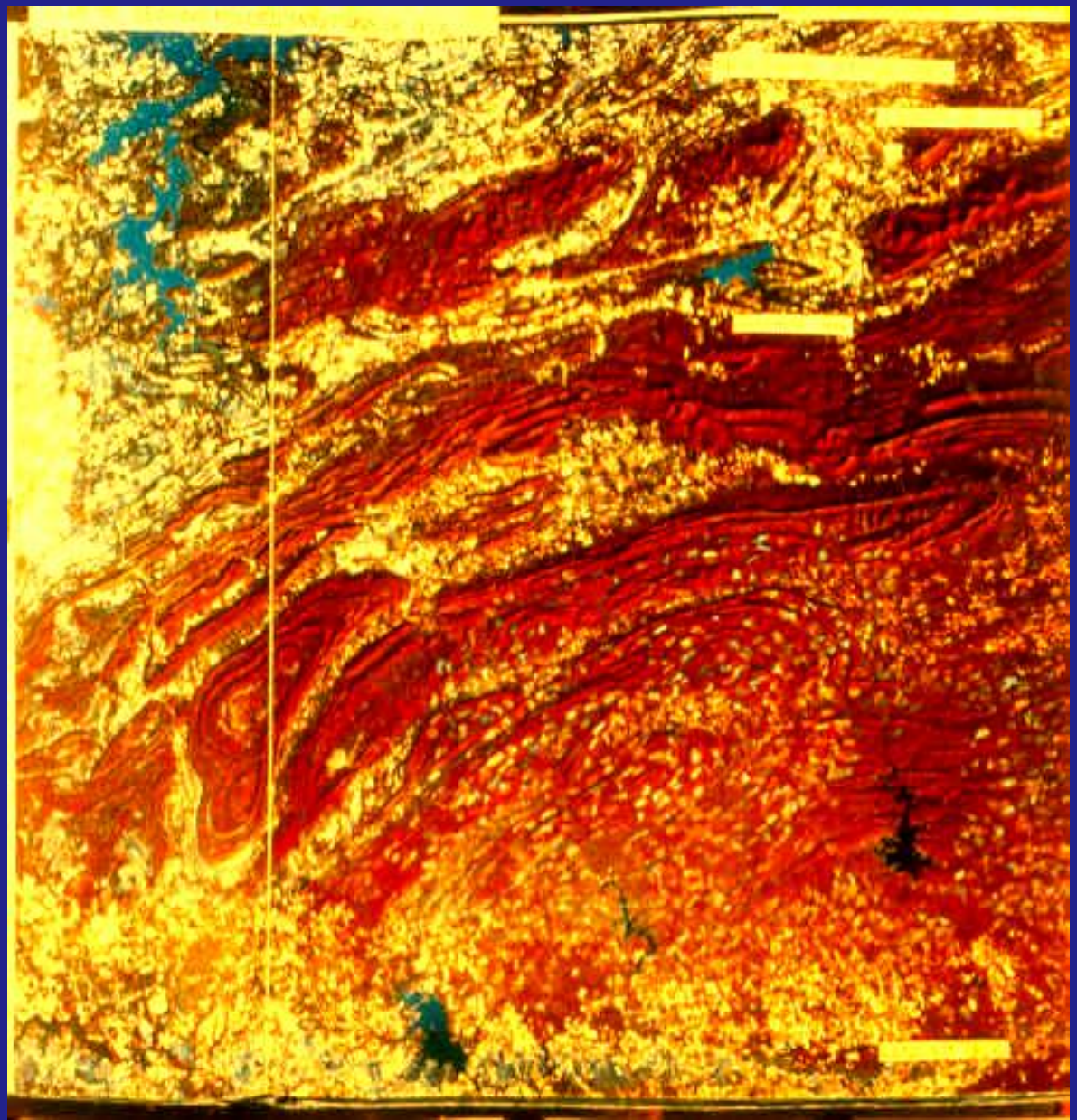
CIRCULAR DRAINAGE



Radial & Annular drainage



FOLDS OF U S A

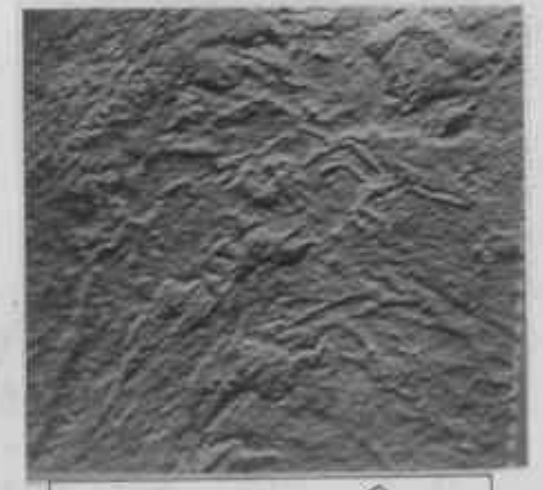


Structural mapping Through Remote Sensing:

- Interpretation & tracing of Structural Trend Lines from satin
  - Linear and curvilinear Ridges
  - Colour or textural linearity
  - Bedding and foliation
  - Structural hills
- Possible dip direction of these trend lines
- Constructing fold pattern by connecting trend lines
- Tracing of fold styles
- Marking the axial traces of these fold styles
- Demarcation of domains based on the orientation of axial traces and fold styles
- Constructing entire fold pattern of the area under study
- Constructing the structural history

LANDSAT TM IMAGERY SHOWING STRUCTURAL TRENDS

(NOT TO SCALE)

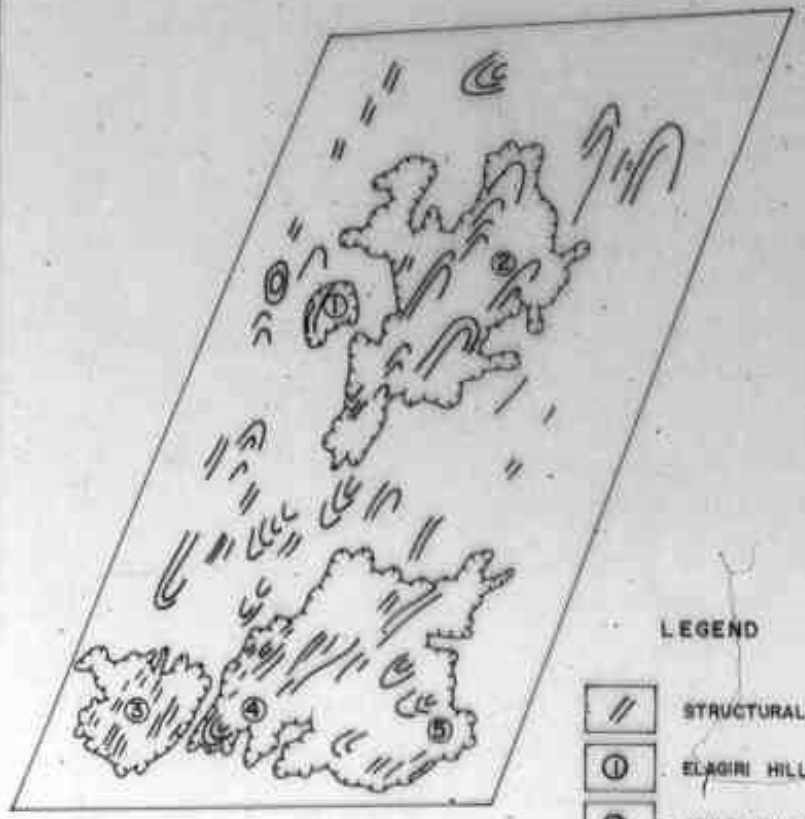


LEGEND

STRUCTURAL TRENDS

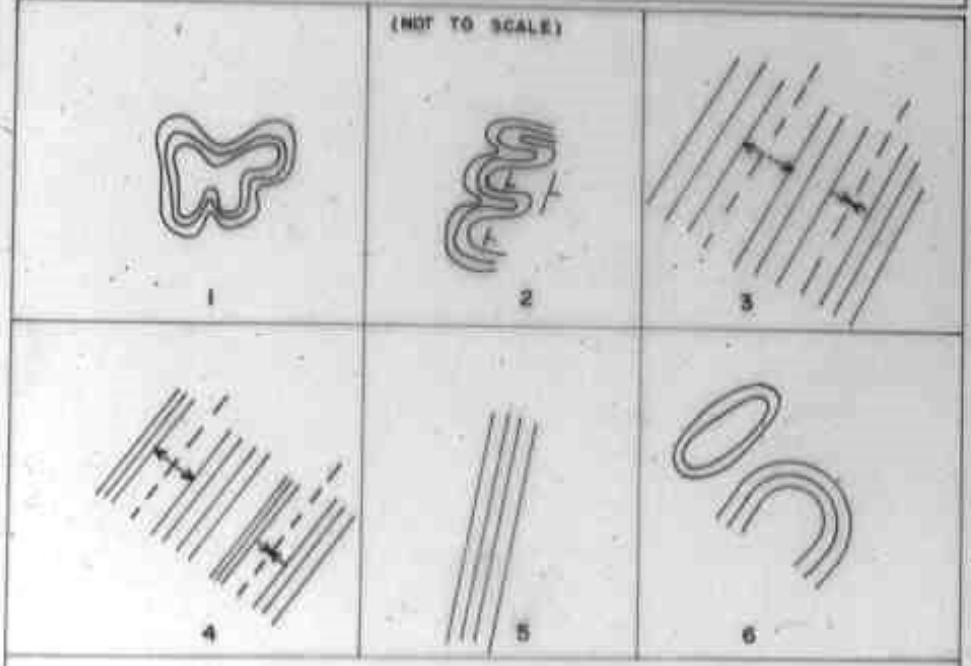
N-B Type of imagery. TM Thermal band - Sobel filter

STRUCTURAL TRENDLINE MAP OF JAVADI - SHEVROY
CHITTERI - KALRAYAN HILLS



STRUCTURAL TRENDLINE AND RELATED FOLD STYLES

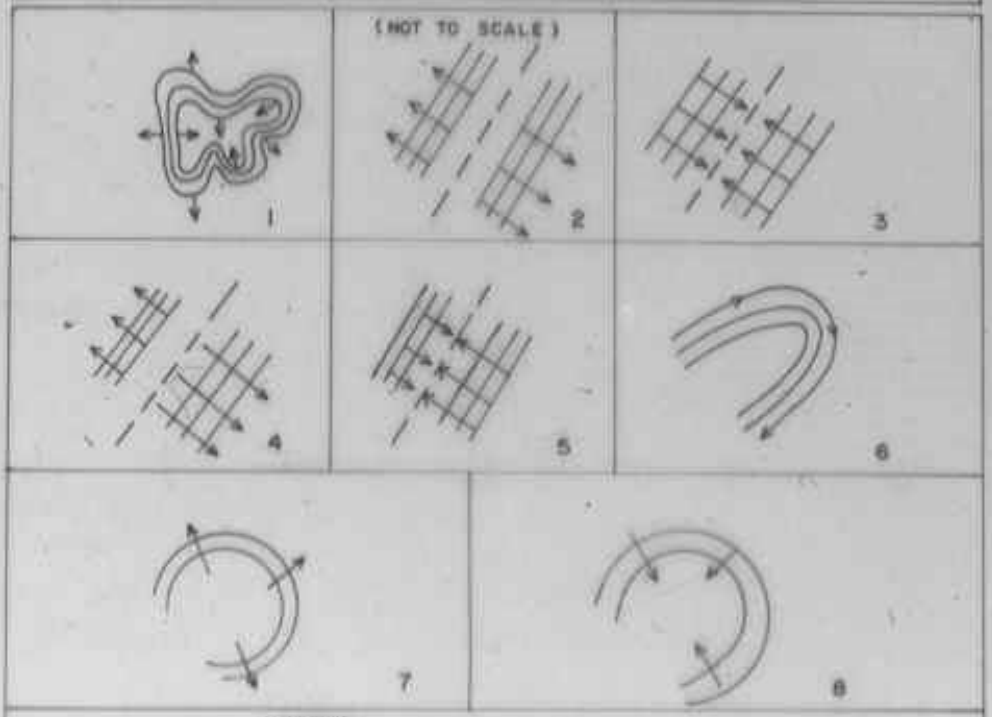
(NOT TO SCALE)



LEGEND

- TRENDS OBSERVED IN SATELLITE DATA
- AXIS OF FOLDS
- DIRECTION OF DIPS
- 1 FLAT LYING BEDS
- 2 LOW DIPPING BEDS
- 3 UPRIGHT SYMMETRICAL ANTICLINES / SYNCLINES
- 4 ASYMMETRICAL ANTICLINES / SYNCLINES
- 5 VERTICALLY DIPPING BEDS
- 6 DOMES BASINS, DOUBLY PLUNGING FOLDS

STRUCTURAL TRENDS, DRAINAGE PATTERN AND FOLDS



LEGEND

STRUCTURAL TRENDS

DRAINAGE CHARACTERISTICS

- DRAINAGE ALONG WITH THEIR DIRECTION OF FLOW
- 1 INNER CONTRIPETAL AND OUTER CENTRIFUGAL - PLATEAU
- 2 PARALLEL DIVERGENT - SYMMETRICAL ANTICLINE
- 3 PARALLEL CONVERGENT - SYMMETRICAL SYNCLINE
- 4 PARALLEL DIVERGENT WITH INEQUAL LENGTHS - ASYMMETRICAL ANTICLINE
- 5 PARALLEL CONVERGENT WITH INEQUAL LENGTHS - ASYMMETRICAL SYNCLINE
- 6 ANNULAR / ARCUATE - ANTICLINE / SYNCLINE CLOSURE
- 7 RADIAL CENTRIFUGAL - DOME
- 8 RADIAL CENTRIPETAL - BASIN

Fig. 1.6

SATELLITE IMAGERY SHOWING STRUCTURAL TRENDLINES AND SHADOWS

(NOT TO SCALE)

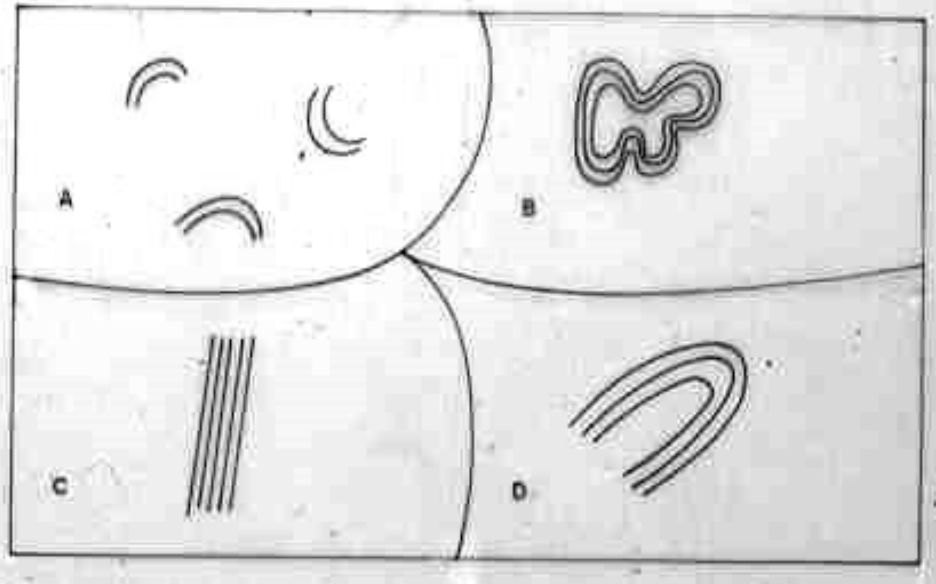
LEGEND

- STRUCTURAL TRENDS

DIRECTION OF DIP OF BEDS

DEMARCATION OF STRUCTURAL DOMAINS - CONCEPTUAL MODEL

(NOT TO SCALE)



LEGEND

A-D - DIFFERENT STRUCTURAL DOMAINS

A - DOMAINS OF DOMES AND BASINS

B - DOMAINS OF FLAT LYING BEDS

C - DOMAINS OF TIGHT FOLDS

D - DOMAINS OF MARGINAL TIGHT FOLDS

Fig. I-10

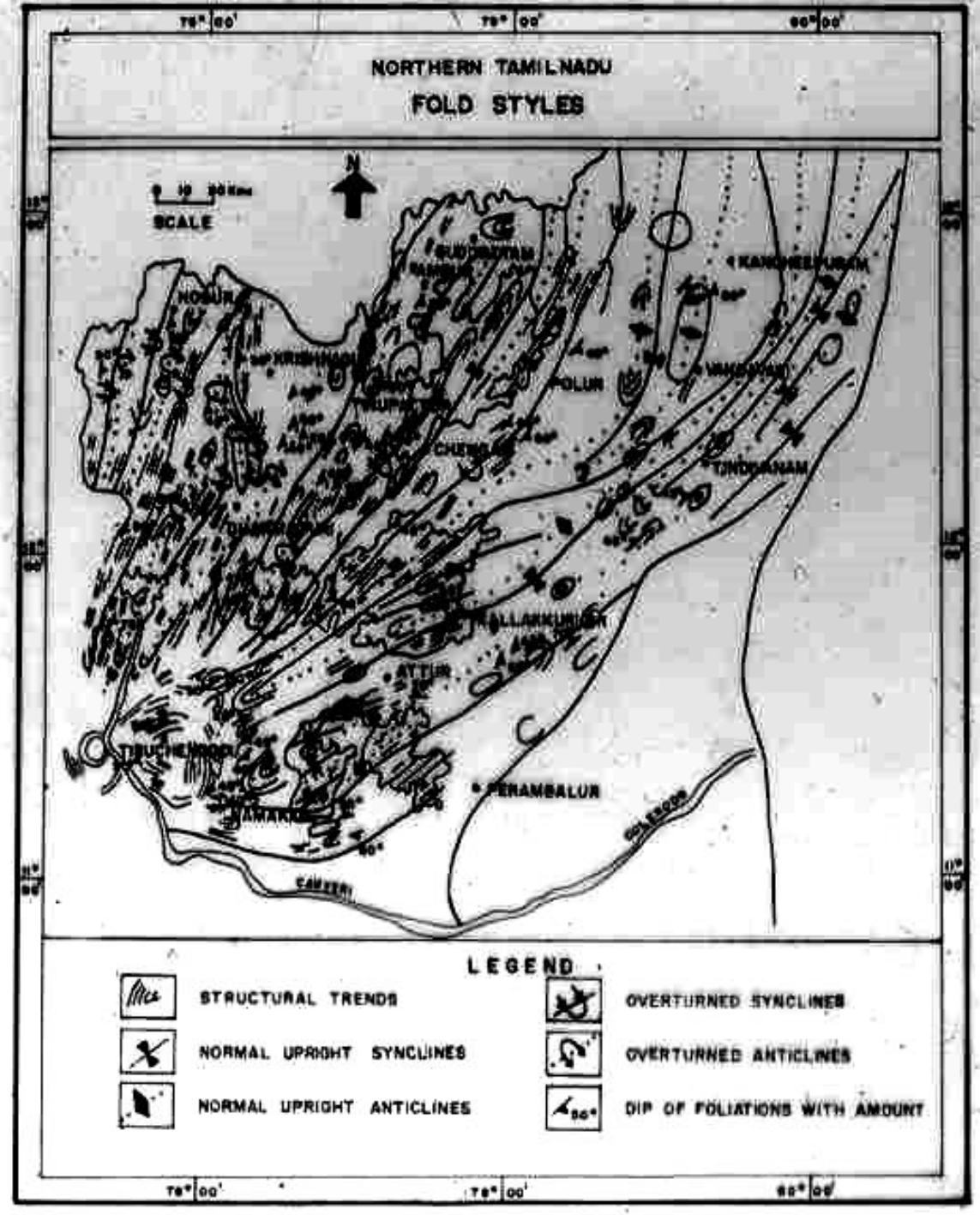
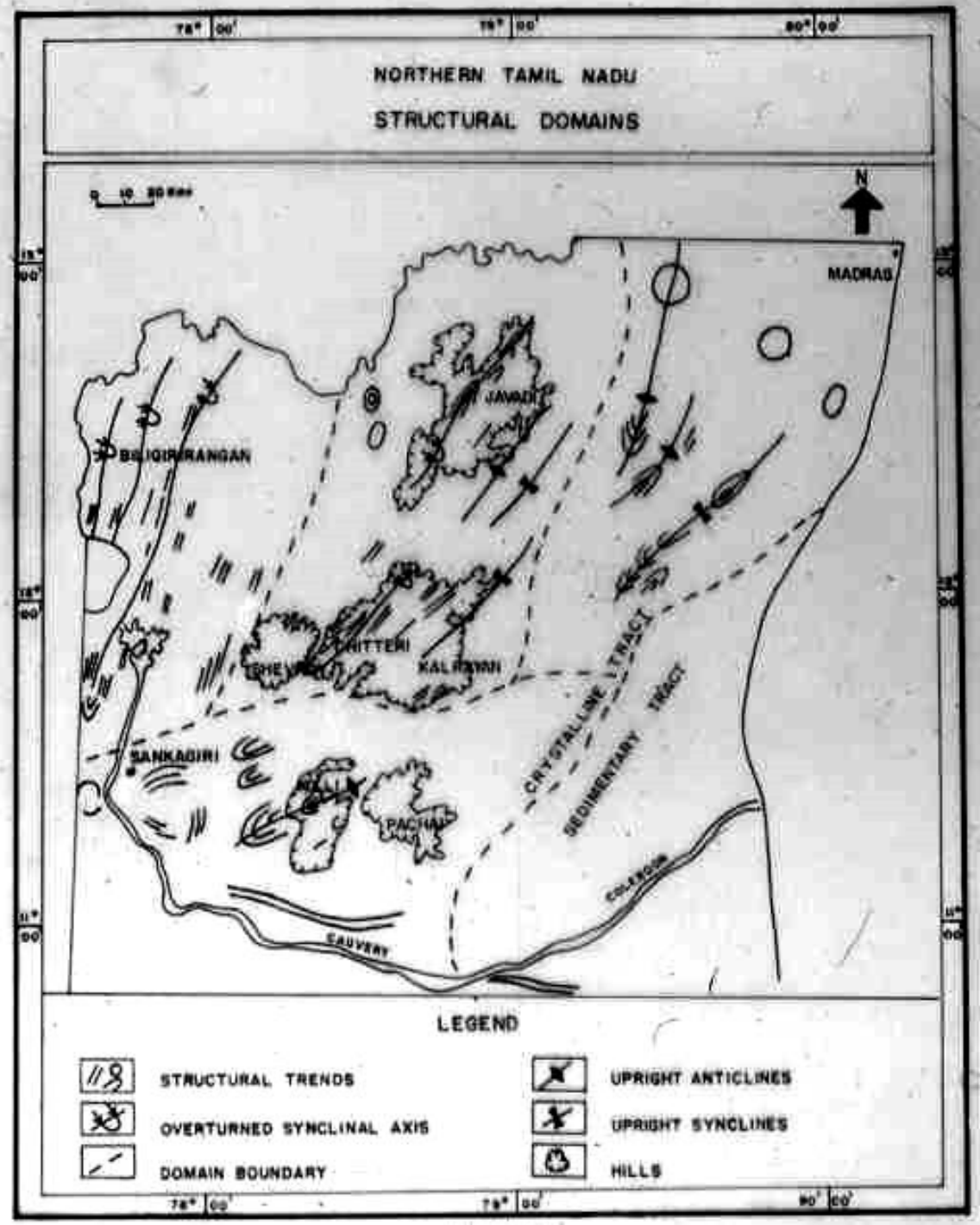
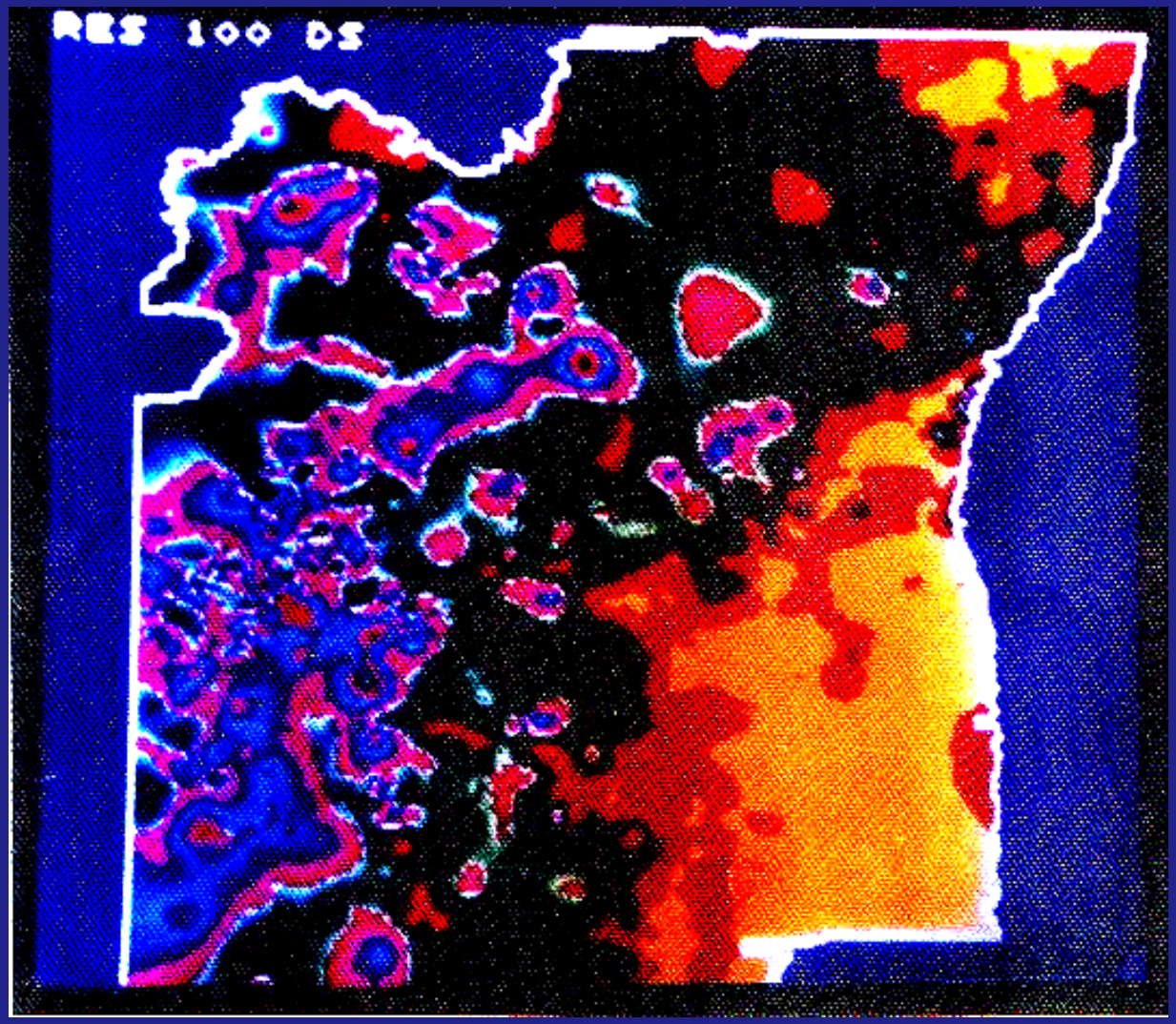

NORTHERN TAMILNADU
FOLD STYLES
SCALE
N
KANCHEEPURAM
VANDAVASI
TINDIVANAM
ATTUR
PERAMBALUR
CUDDALORE
CAUVERY
LEGEND
STRUCTURAL TRENDS
NORMAL UPRIGHT SYNCLINES
NORMAL UPRIGHT ANTICLINES
OVERTURNED SYNCLINES
OVERTURNED ANTICLINES
DIP OF FOLIATIONS WITH AMOUNT

Fig. 3.8


NORTHERN TAMIL NADU
STRUCTURAL DOMAINS
N
MADRAS
JAVADI
BELIGIRANGAN
KALRAYAN
SANKAGIRI
CRYSTALLINE TRACT
SEDIMENTARY TRACT
COLEROON
CAUVERY
LEGEND
STRUCTURAL TRENDS
OVERTURNED SYNCLINAL AXIS
DOMAIN BOUNDARY
UPRIGHT ANTICLINES
UPRIGHT SYNCLINES
HILLS

Evaluation of Depth Extension of Folds Using Multi Depth Satellite Data

Resistivity Image of 100m Depth



Sub surface Structures study –Depth Probe:

Electrical Resistivity Data Analysis

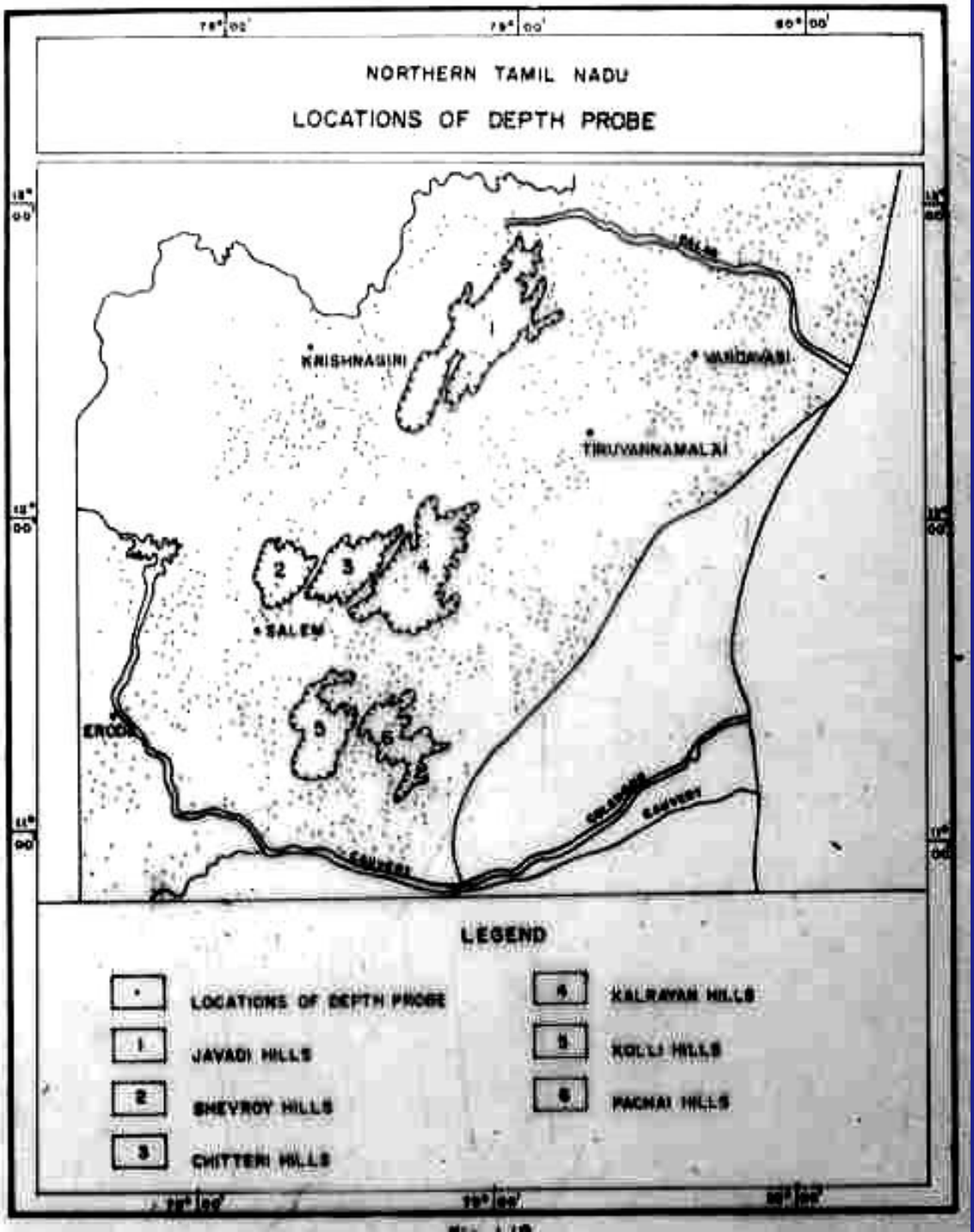
- **Apparent resistivity for each location**
- **At different depth (26,50,75 and 100 meters)**
- **Preparation of Isoresistivity contours**

Interpretation:

- **Types of fold styles on the nature of shape, pattern and resistivity values**
- **Higher resistivity at the centre / core – Hard and solid rock at its core**

(Dobrin and Savit 1988)

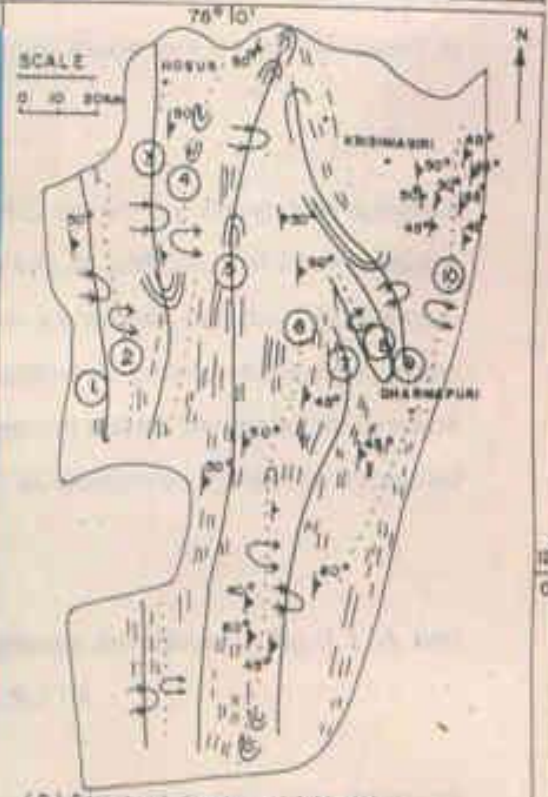
- **Anticline : Elliptical contour with central high value**
- **Syncline : Elliptical contour with central low value**


NORTHERN TAMIL NADU
LOCATIONS OF DEPTH PROBE
KRISHNAGIRI
TIRUVANNAMALAI
SALEM
ERODE
LEGEND
LOCATIONS OF DEPTH PROBE
JAVADI HILLS
SHEVROY HILLS
CHITTERI HILLS
KALRAYAN HILLS
KOLLI HILLS
PACHAI HILLS

SURFICIAL EXPRESSION OF FOLDS IN BILIGIRIRANGAN DOMAIN

(Deduced from satellite imagery)

(A) IRS-1A FCC imagery



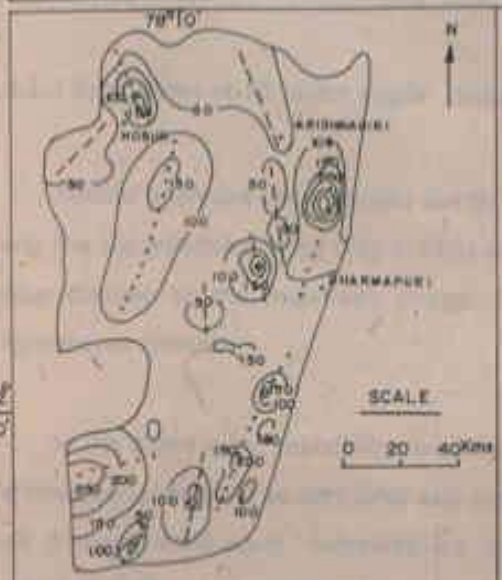
(B) Structural trends and fold styles

LEGEND

- STRUCTURAL TRENDS
- OVERTURNED SYNCLINES
- OVERTURNED ANTICLINES
- DIP OF FOLIATIONS WITH AMOUNT
- 1, 3, 5, 7 AND 9 SYNCLINES
- 2, 4, 6, 8 AND 10 ANTICLINES

EXPRESSION OF FOLDS AT 26 METRE DEPTH IN BILIGIRIRANGAN DOMAIN

(Deduced from resistivity data)



(A) Isoresistivity Contours

(B) Resistivity Image

(C) Structural trends and fold styles

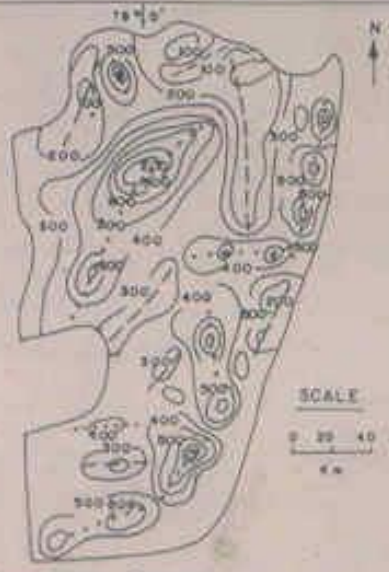
LEGEND

- ISORESISTIVITY CONTOURS IN Ohm mts
- PROBABLE ANTICLINAL AXIS
- PROBABLE SYNCLINAL AXIS

N.B DIFFERENT COLOURS IN RESISTIVITY IMAGE INDICATE DIFFERENT VALUES OF APPARENT RESISTIVITY (Red - Highest followed by Yellow, Green, Blue & Black)

EXPRESSION OF FOLDS AT 50 METRE DEPTH IN BILIGIRIRANGAN DOMAIN

(Deduced from resistivity data)



(A) Isoresistivity Contours

(B) Resistivity image

(C) Structural trends and fold styles

LEGEND

400 ISORESISTIVITY CONTOURS IN Ohm mts

PROBABLE ANTICLINAL AXIS

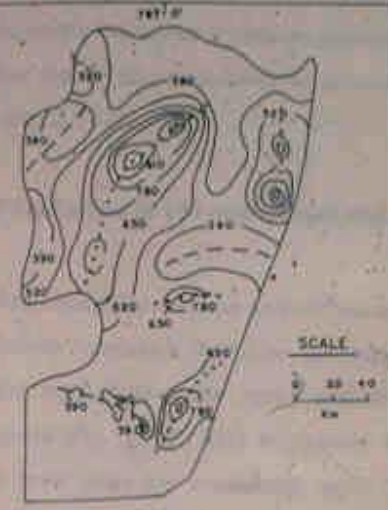
PROBABLE SYNCLINAL AXIS

N.B: RED COLOUR INDICATES THE HIGHEST RESISTIVITY FOLLOWED BY YELLOW, GREEN, BLUE & BLACK IN RESISTIVITY IMAGE

FIG. 3.12

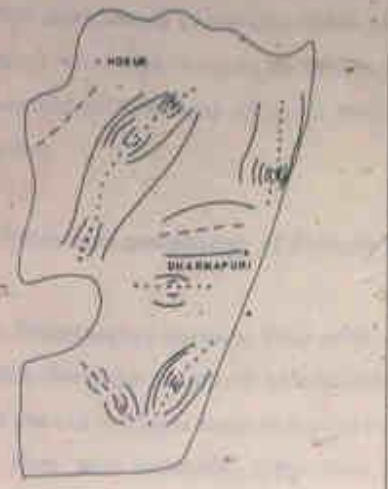
EXPRESSION OF FOLDS AT 75 METRE DEPTH IN BILIGIRIRANGAN DOMAIN

(Deduced from resistivity data)



(A) Iso resistivity contours

(B) Resistivity Image



(C) Structural trends and fold styles

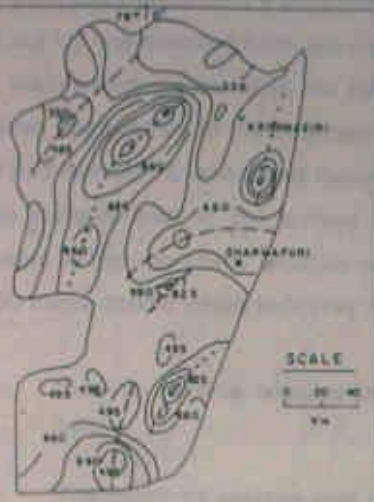
LEGEND

- ISORESISTIVITY CONTOURS IN Ohm mts
- PROBABLE ANTICLINAL AXIS
- PROBABLE SYNCLINAL AXIS

N.B: RED COLOUR INDICATES THE HIGHEST RESISTIVITY FOLLOWED BY YELLOW, GREEN, BLUE AND BLACK IN RESISTIVITY IMAGE

EXPRESSION OF FOLDS AT 100 METRE DEPTH IN BILIGIRIRANGAN DOMAIN

(Deduced from resistivity data)



(A) Isoresistivity contours

(B) Resistivity image

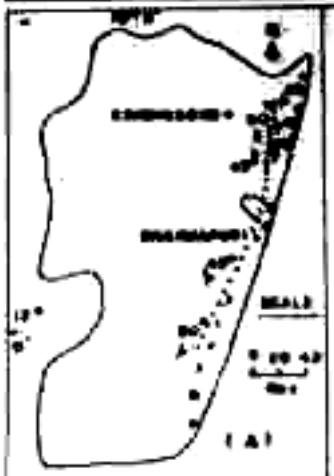
(C) Structural trends and fold styles

LEGEND

- ISORESISTIVITY CONTOURS IN Ohm mts.
- PROBABLE ANTICLINAL AXIS
- PROBABLE SYNCLINAL AXIS

N.B: RED COLOUR INDICATES THE HIGHEST RESISTIVITY FOLLOWED BY YELLOW, GREEN, BLUE AND BLACK IN RESISTIVITY IMAGE

SURFICIAL AND SUBSURFICIAL EXPRESSION OF KRISHNAGIRI – DHARMAPURI ANTICLINE IN BILIGIRIRANGAN DOMAIN



(A)

Structural trends interpreted from satellite data

(B)

Isoresistivity contours at 25 metres depth

(C)

Isoresistivity contours at 50 metres depth

(D)

Isoresistivity contours at 75 metres depth

(E)

Isoresistivity contours at 100 metres depth

(F)

Integration of surface and subsurface fold axes

LEGEND

- STRUCTURAL TRENDS
- OVERTURNED ANTICLINAL FOLD AXIS
- FOLD AXIS AT 25 METRES DEPTH
- FOLD AXIS AT 50 METRES DEPTH
- FOLD AXIS AT 75 METRES DEPTH
- FOLD AXIS AT 100 METRES DEPTH
- ISORESISTIVITY CONTOURS IN OHM METRES

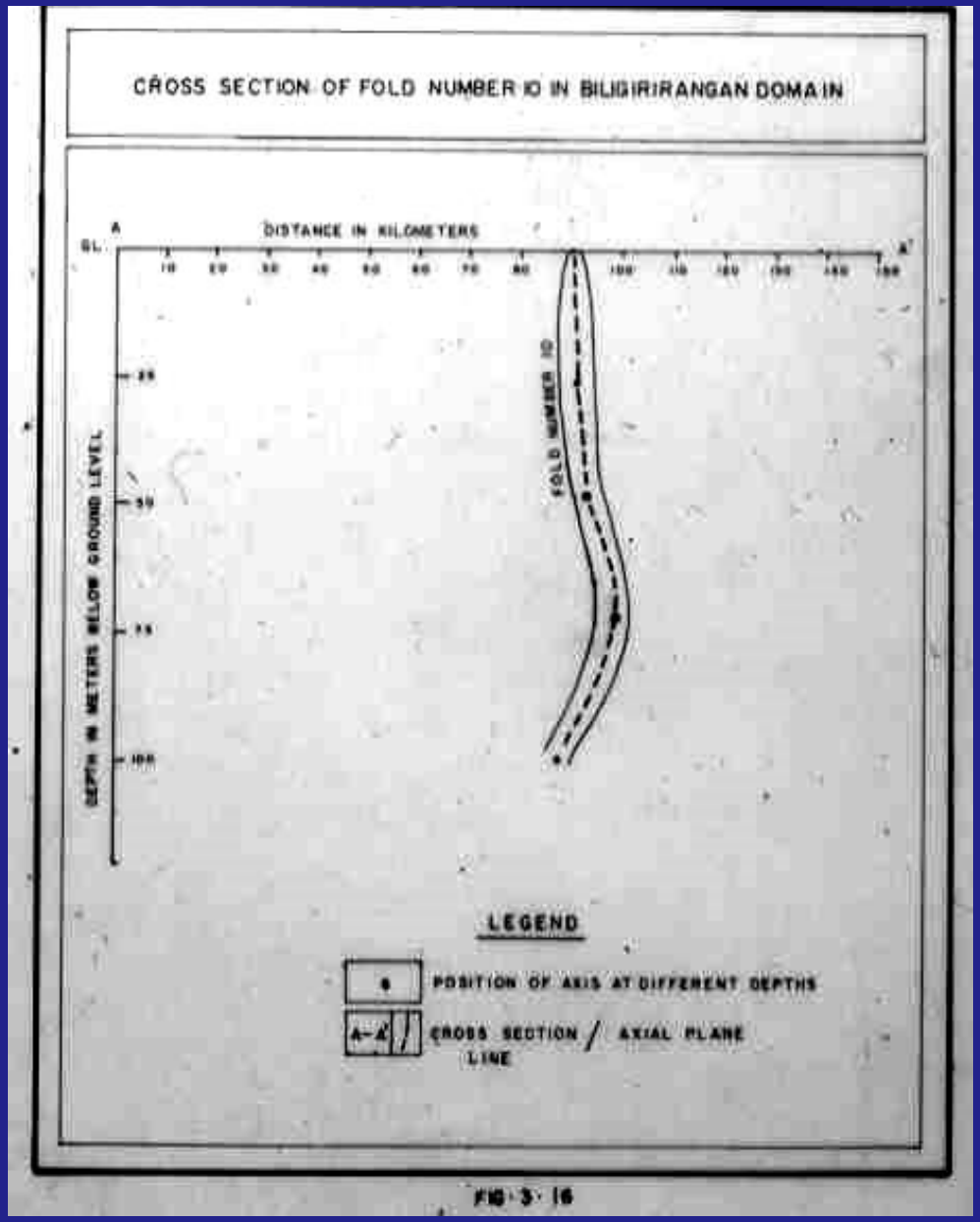
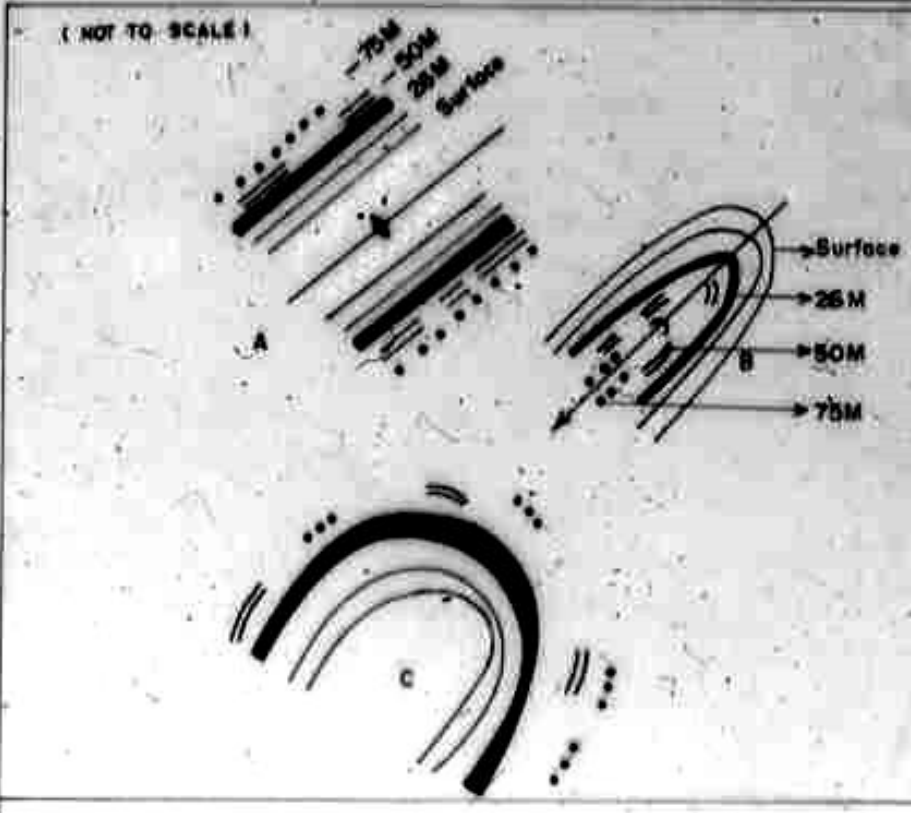

CROSS SECTION OF FOLD NUMBER 10 IN BILIGIRIRANGAN DOMAIN
A
DISTANCE IN KILOMETERS
A'
GL
FOLD NUMBER 10
DEPTH IN METERS BELOW GROUND LEVEL
LEGEND
POSITION OF AXIS AT DIFFERENT DEPTHS
A-A'
CROSS SECTION / AXIAL PLANE LINE

FIG. 3. 16

SUBSURFACE MORPHOLOGY OF FOLDS

CONCEPTUAL FIGURE



LEGEND

STRUCTURAL TRENDS AT SURFACE LEVEL

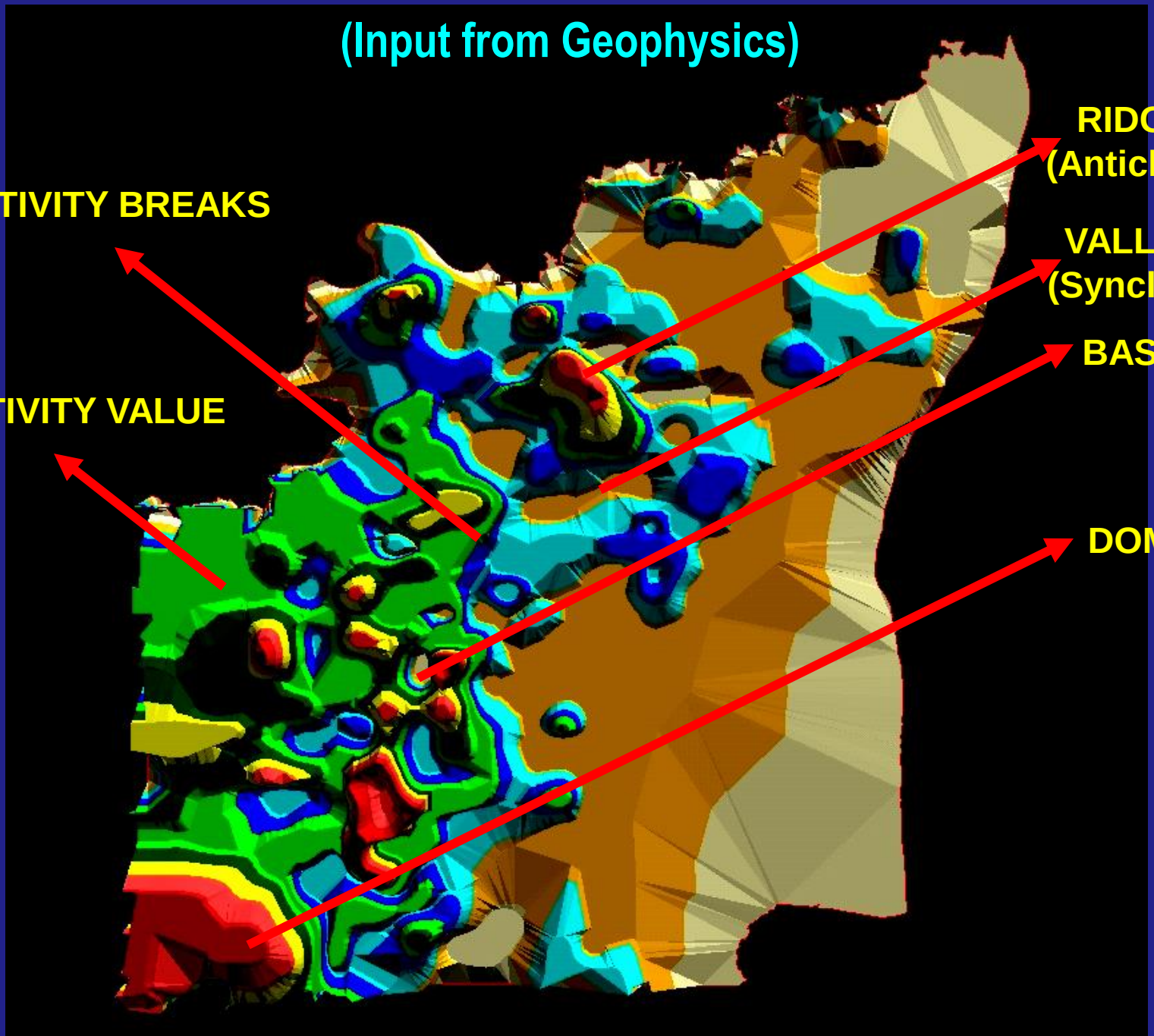
STRUCTURAL TRENDS AT 25 METRE DEPTH

STRUCTURAL TRENDS AT 50 METRE DEPTH

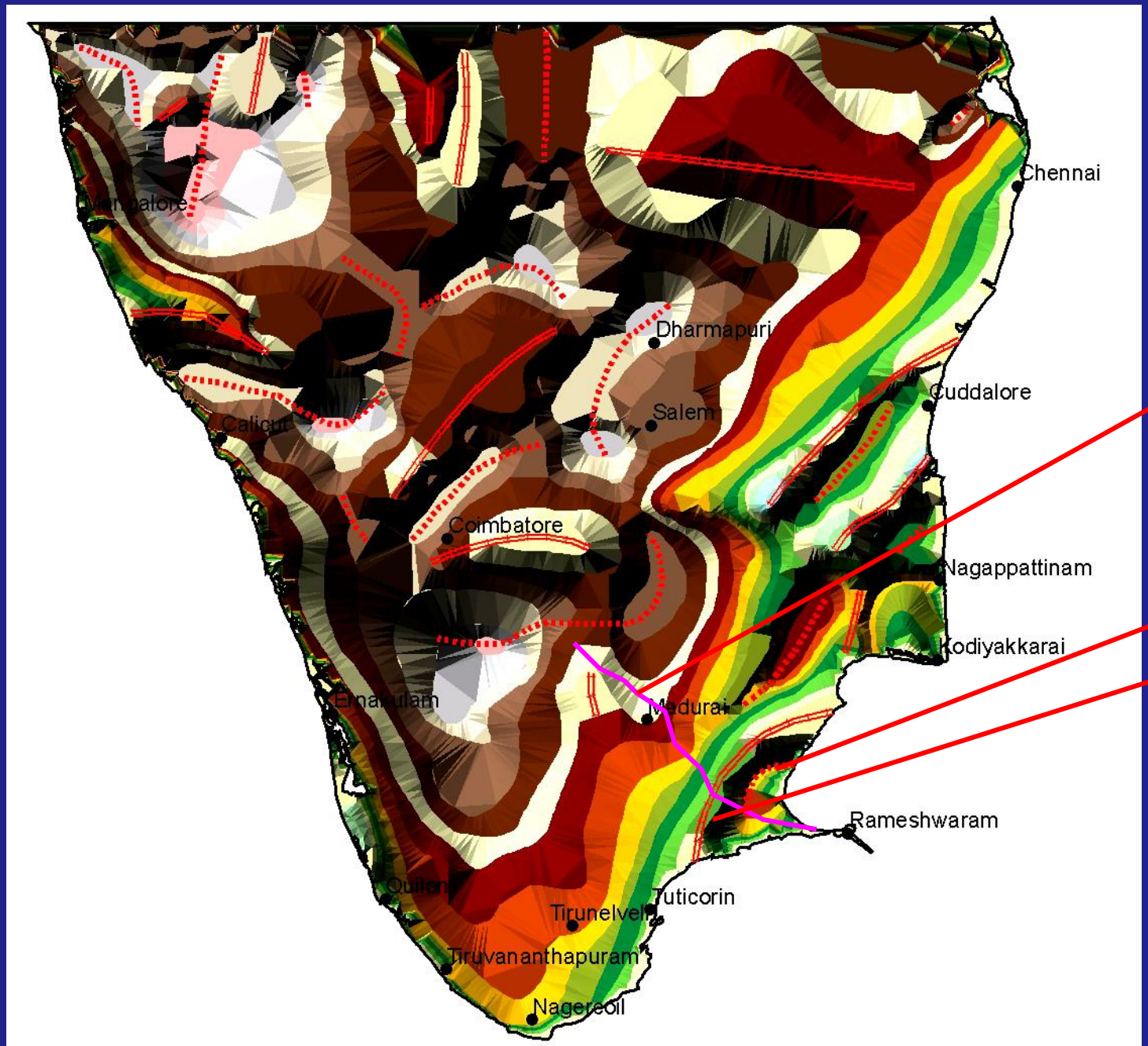
STRUCTURAL TRENDS AT 75 METRE DEPTH

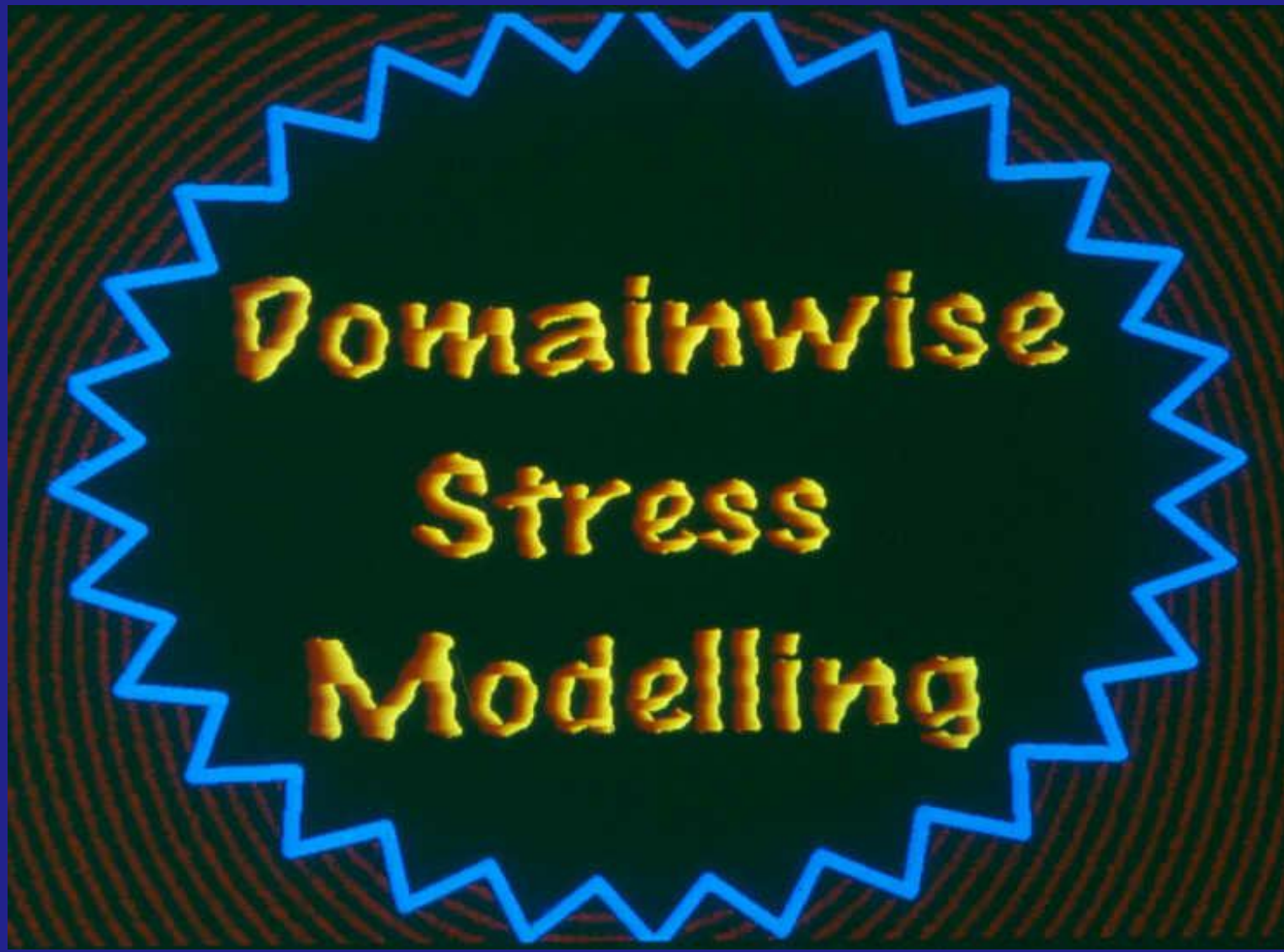
3D RESISTIVITY IMAGE – 50M

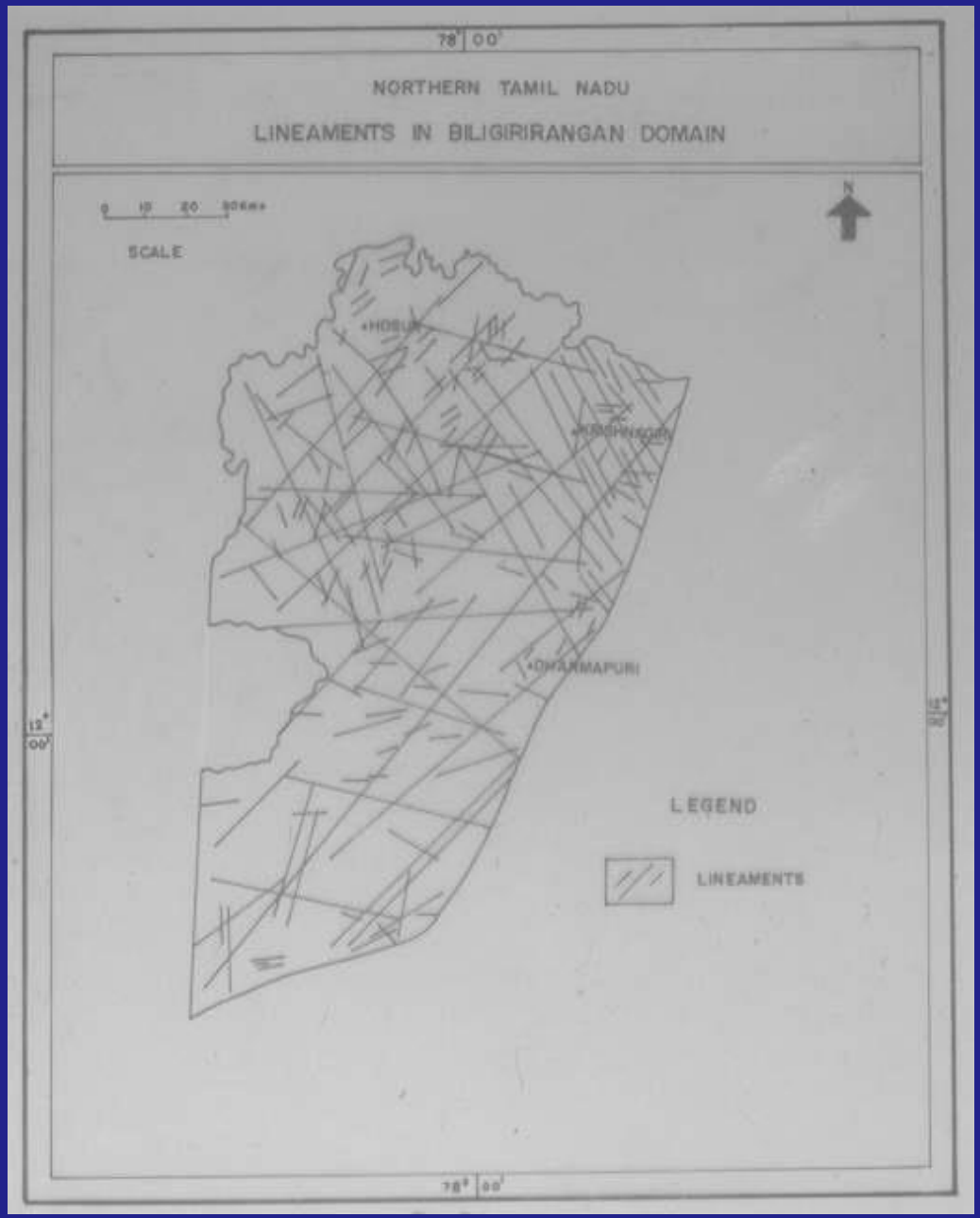
(Input from Geophysics)



Gravity of South India

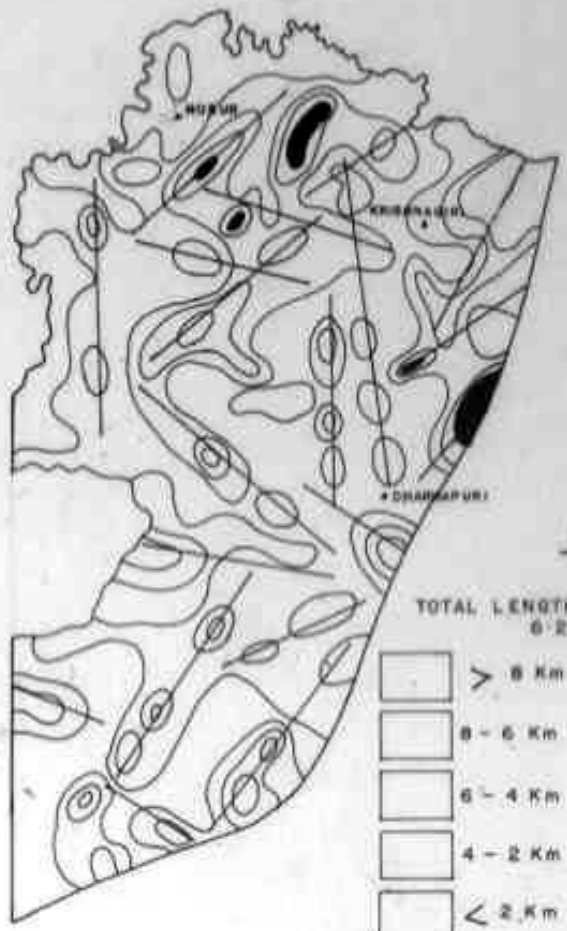



Domainwise
Stress
Modelling


78° 00'
NORTHERN TAMIL NADU
LINEAMENTS IN BILIGIRIRANGAN DOMAIN
0 10 20 30Kms
SCALE
N
HOSUR
KRISHNAGIRI
DHARMAPURI
12° 00'
LEGEND
LINEAMENTS
78° 00'

NORTHERN TAMIL NADU

LINEAMENT DENSITY IN BILIGIRIRANGAN DOMAIN



SCALE

0 10 20 30 Kms

LEGEND

TOTAL LENGTH OF LINEAMENTS IN Kms / 6·25 Sq·kms

> 8 Km

8 - 6 Km

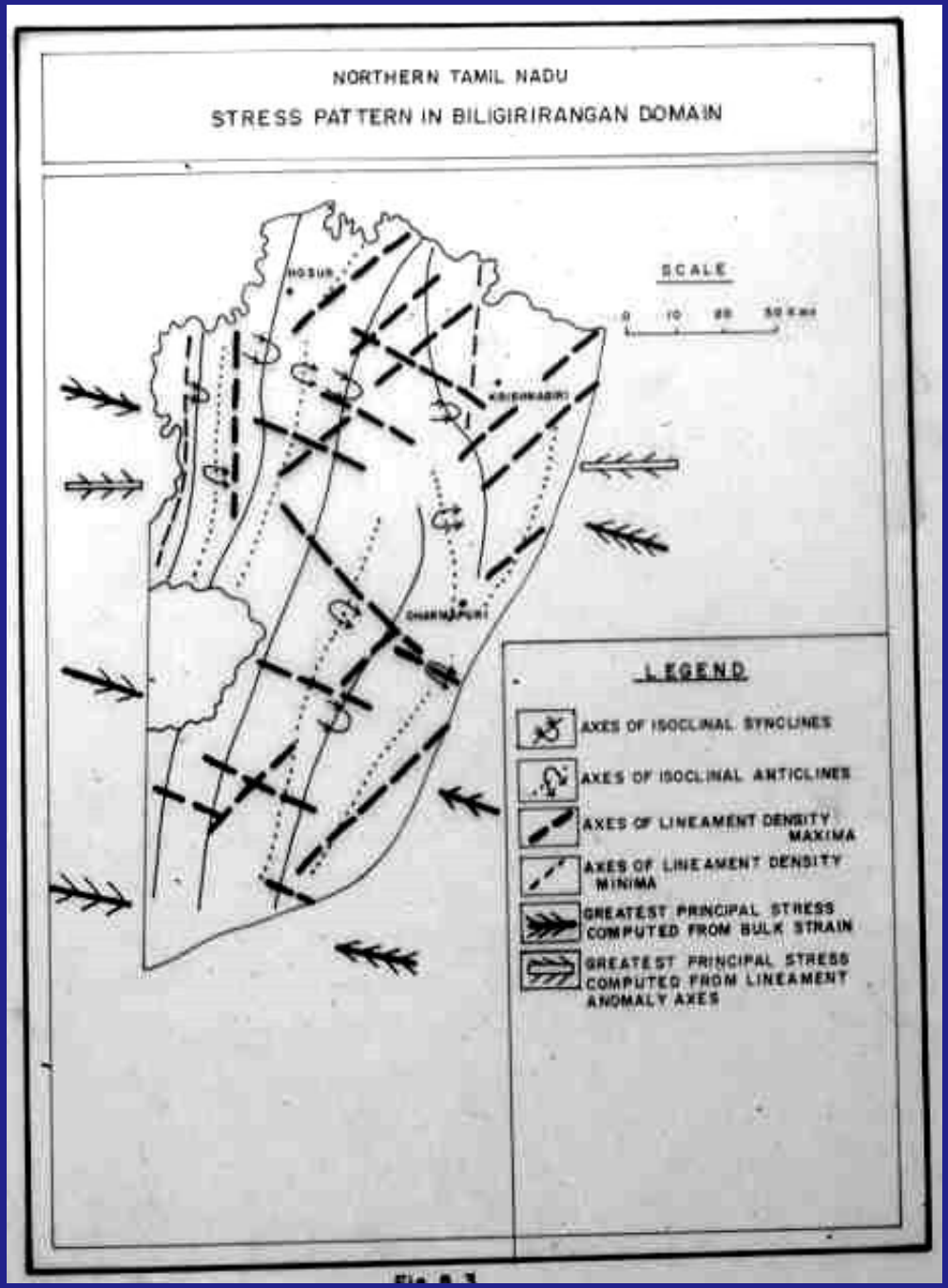
6 - 4 Km

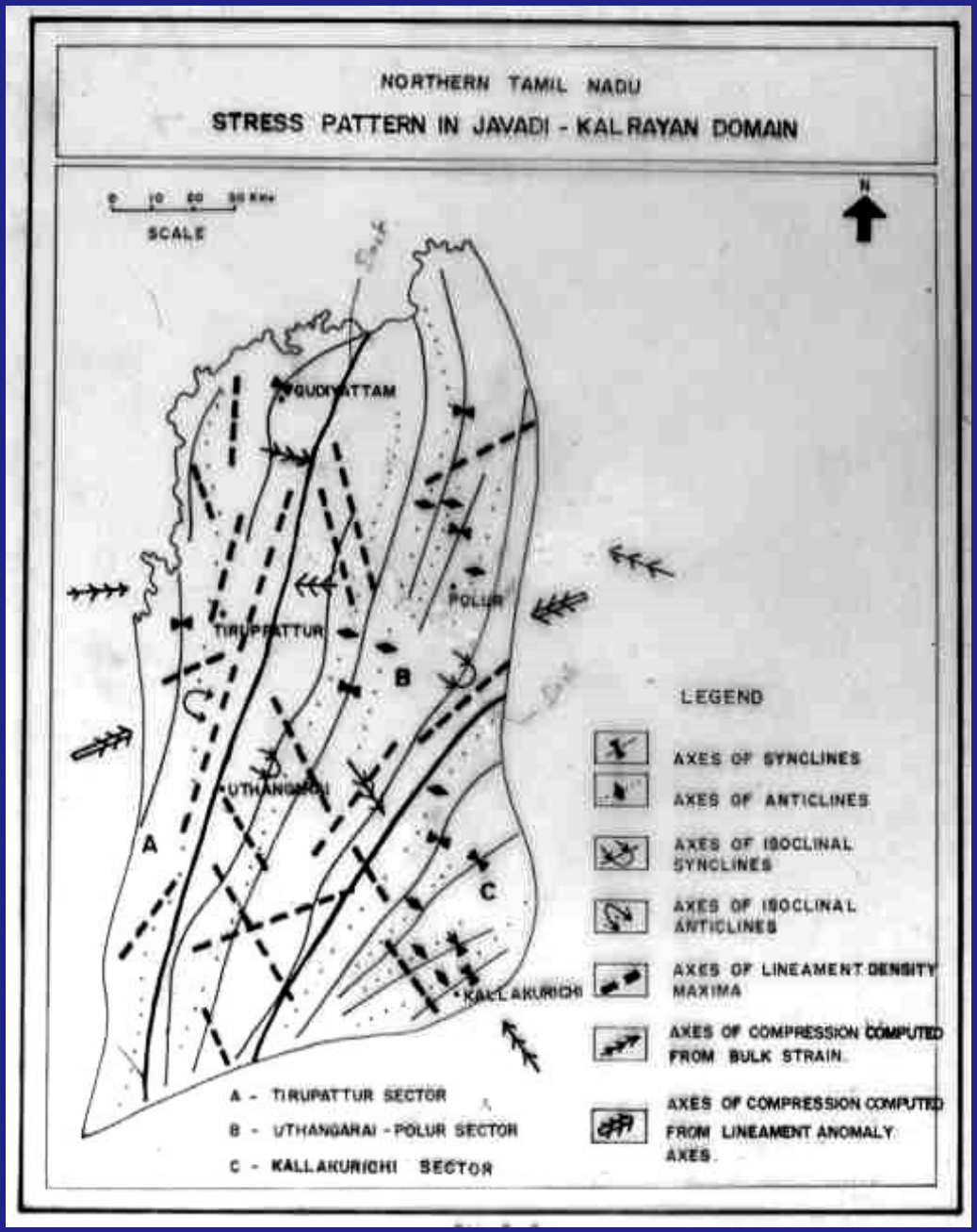
4 - 2 Km

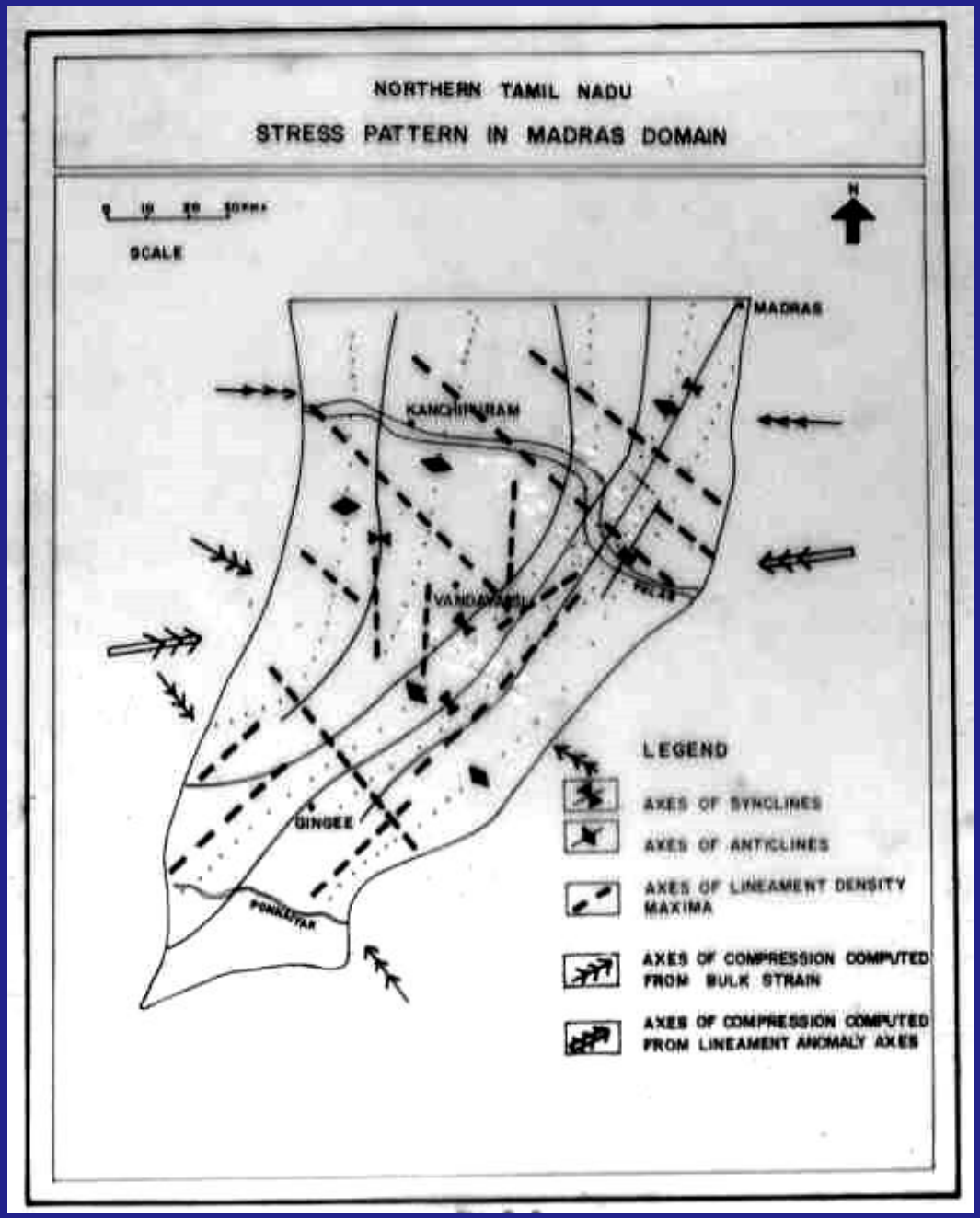
< 2 Km

LINEAMENT MAXIMA AXIS

Fig. 5.2


NORTHERN TAMIL NADU
STRESS PATTERN IN BILIGIRIRANGAN DOMAIN
HOSUR
KRISHNAGIRI
DHARMAPURI
SCALE
0 10 20 30 Kms
LEGEND
AXES OF ISOCLINAL SYNCLINES
AXES OF ISOCLINAL ANTICLINES
AXES OF LINEAMENT DENSITY MAXIMA
AXES OF LINEAMENT DENSITY MINIMA
GREATEST PRINCIPAL STRESS COMPUTED FROM BULK STRAIN
GREATEST PRINCIPAL STRESS COMPUTED FROM LINEAMENT ANOMALY AXES


NORTHERN TAMIL NADU
STRESS PATTERN IN JAVADI - KALRAYAN DOMAIN
SCALE
N
GUDIYATTAM
TIRUPATTUR
POLUR
UTHANGARAI
KALLAKURICHI
A
B
C
LEGEND
AXES OF SYNCLINES
AXES OF ANTICLINES
AXES OF ISOCLINAL SYNCLINES
AXES OF ISOCLINAL ANTICLINES
AXES OF LINEAMENT DENSITY MAXIMA
AXES OF COMPRESSION COMPUTED FROM BULK STRAIN
AXES OF COMPRESSION COMPUTED FROM LINEAMENT ANOMALY AXES.
A - TIRUPATTUR SECTOR
B - UTHANGARAI - POLUR SECTOR
C - KALLAKURICHI SECTOR


NORTHERN TAMIL NADU
STRESS PATTERN IN MADRAS DOMAIN
SCALE
N
MADRAS
KANCHIPURAM
VANDAVASI
GINGEE
PONDICHERRY
LEGEND
AXES OF SYNCLINES
AXES OF ANTICLINES
AXES OF LINEAMENT DENSITY MAXIMA
AXES OF COMPRESSION COMPUTED FROM BULK STRAIN
AXES OF COMPRESSION COMPUTED FROM LINEAMENT ANOMALY AXES

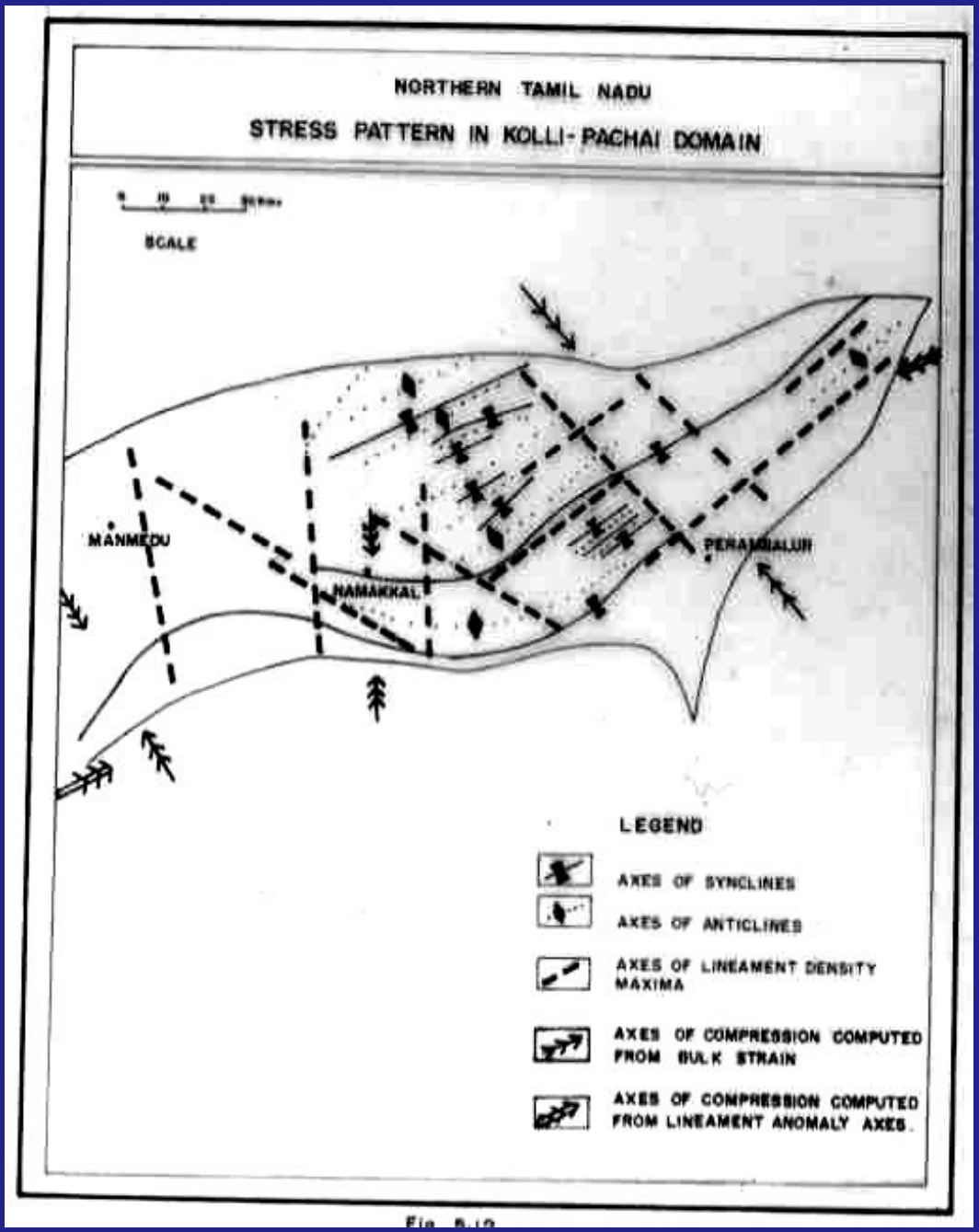
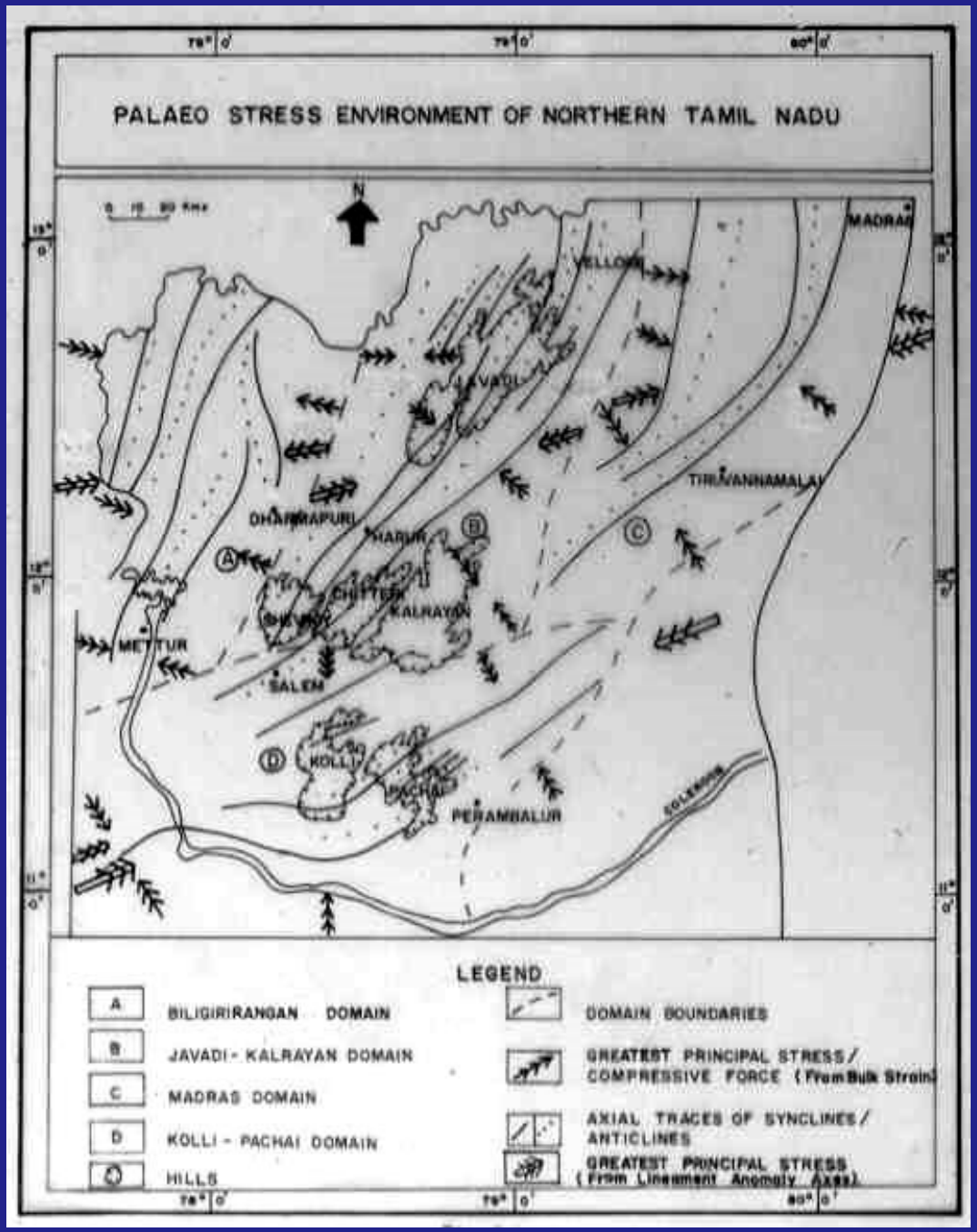

NORTHERN TAMIL NADU
STRESS PATTERN IN KOLLI-PACHAI DOMAIN
SCALE
MANMEDU
NAMAKKAL
PERAMBALUR
LEGEND
AXES OF SYNCLINES
AXES OF ANTICLINES
AXES OF LINEAMENT DENSITY MAXIMA
AXES OF COMPRESSION COMPUTED FROM BULK STRAIN
AXES OF COMPRESSION COMPUTED FROM LINEAMENT ANOMALY AXES.

Fig. 5.10

Regional Tectonic Model


PALAEO STRESS ENVIRONMENT OF NORTHERN TAMIL NADU
N
MADRAS
VELLORE
JAVADI
TIRUVANNAMALAI
DHARMAPURI
HARUR
KALRAYAN
METTUR
SALEM
KOLLI
PACHAI
PERAMBALUR
A
B
C
D
LEGEND
BILIGIRIRANGAN DOMAIN
JAVADI - KALRAYAN DOMAIN
MADRAS DOMAIN
KOLLI - PACHAI DOMAIN
HILLS
DOMAIN BOUNDARIES
GREATEST PRINCIPAL STRESS / COMPRESSIVE FORCE (From Bulk Strain)
AXIAL TRACES OF SYNCLINES / ANTICLINES
GREATEST PRINCIPAL STRESS (From Lineament Anomaly Axes)

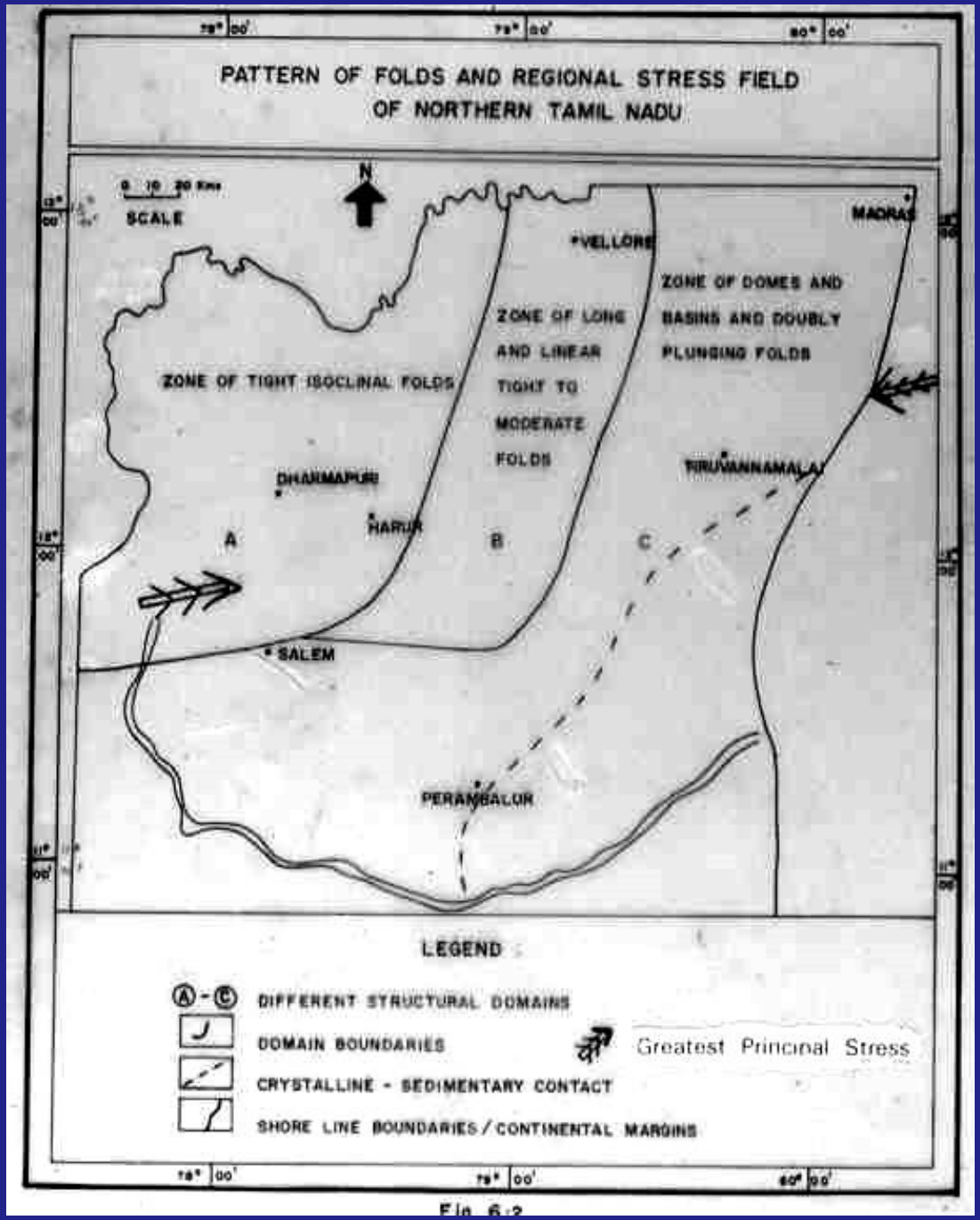
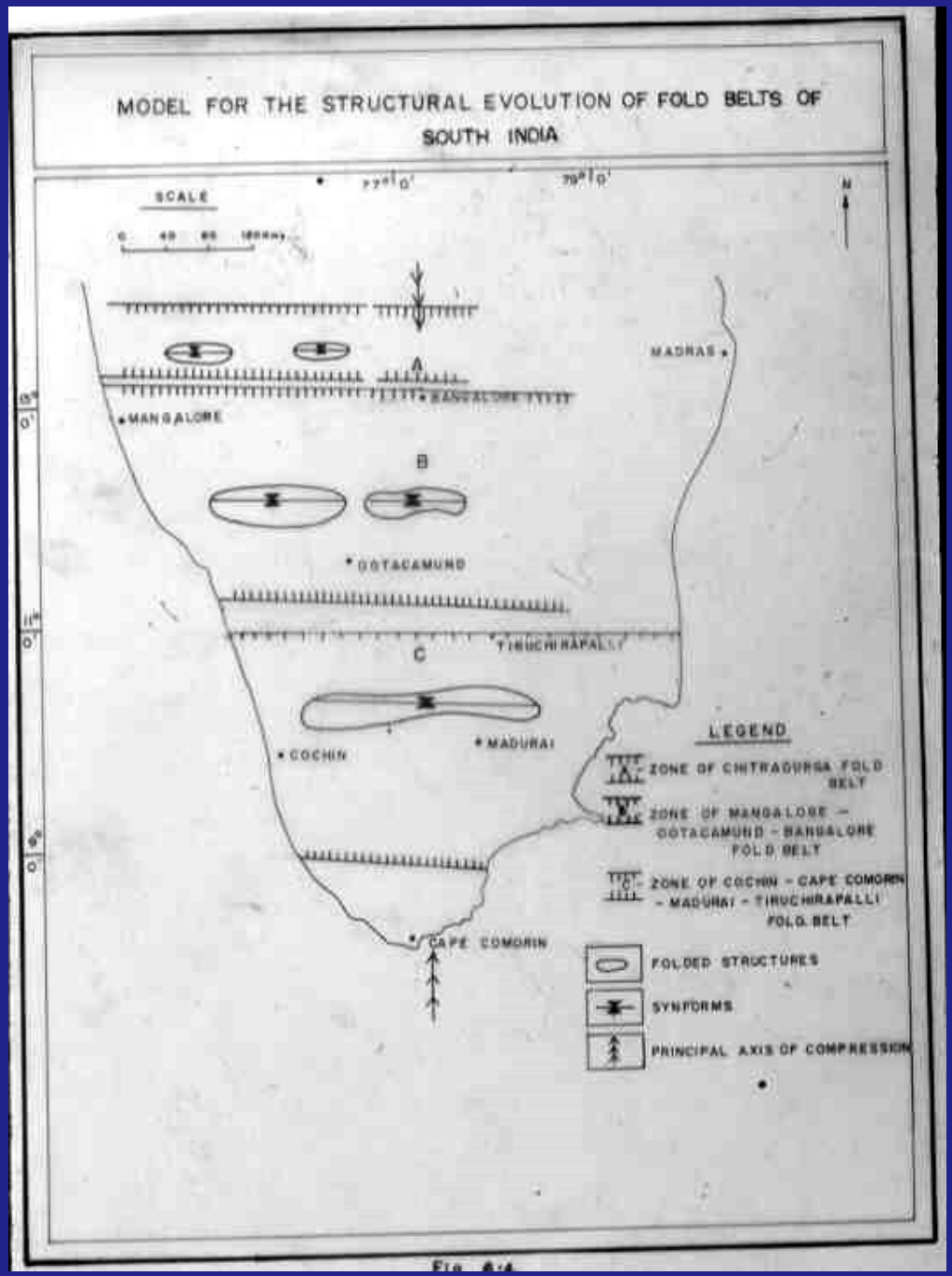
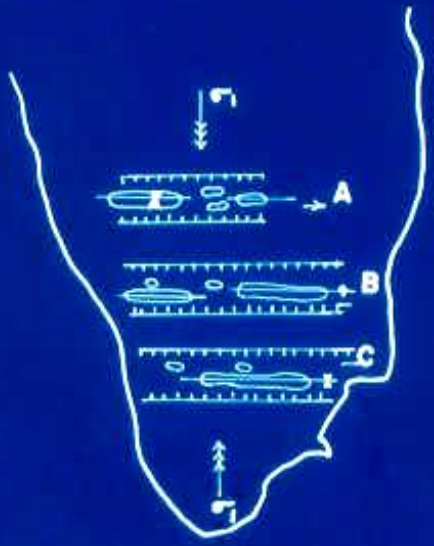

PATTERN OF FOLDS AND REGIONAL STRESS FIELD
OF NORTHERN TAMIL NADU
SCALE
N
VELLORE
MADRAS
ZONE OF TIGHT ISOCLINAL FOLDS
ZONE OF LONG AND LINEAR TIGHT TO MODERATE FOLDS
ZONE OF DOMES AND BASINS AND DOUBLY PLUNGING FOLDS
DHARMAPURI
HARUR
TIRUVANNAMALAI
A
B
C
SALEM
PERAMBALUR
LEGEND
A - C DIFFERENT STRUCTURAL DOMAINS
DOMAIN BOUNDARIES
Greatest Principal Stress
CRYSTALLINE - SEDIMENTARY CONTACT
SHORE LINE BOUNDARIES / CONTINENTAL MARGINS

Fig. 6.2


MODEL FOR THE STRUCTURAL EVOLUTION OF FOLD BELTS OF SOUTH INDIA
SCALE
N
MADRAS
A
MANGALORE
B
OOTACAMUND
TIRUCHIRAPALLI
C
COCHIN
MADURAI
CAPE COMORIN
LEGEND
ZONE OF CHITRADURGA FOLD BELT
ZONE OF MANGALORE – OOTACAMUND – BANGALORE FOLD BELT
ZONE OF COCHIN – CAPE COMORIN – MADURAI – TIRUCHIRAPALLI FOLD BELT
FOLDED STRUCTURES
SYNFORMS
PRINCIPAL AXIS OF COMPRESSION

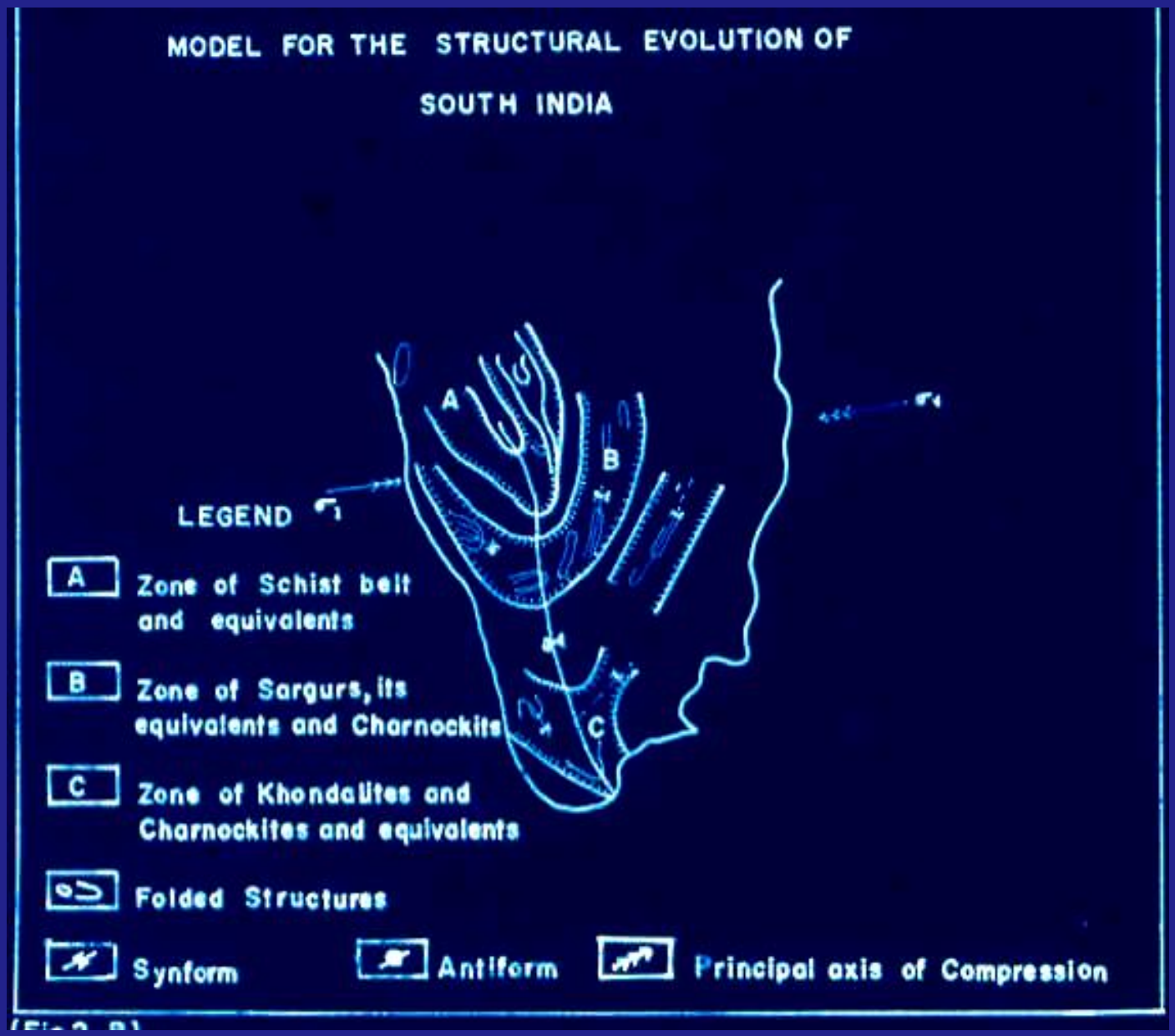
MODEL FOR THE STRUCTURAL EVOLUTION OF SOUTH INDIA

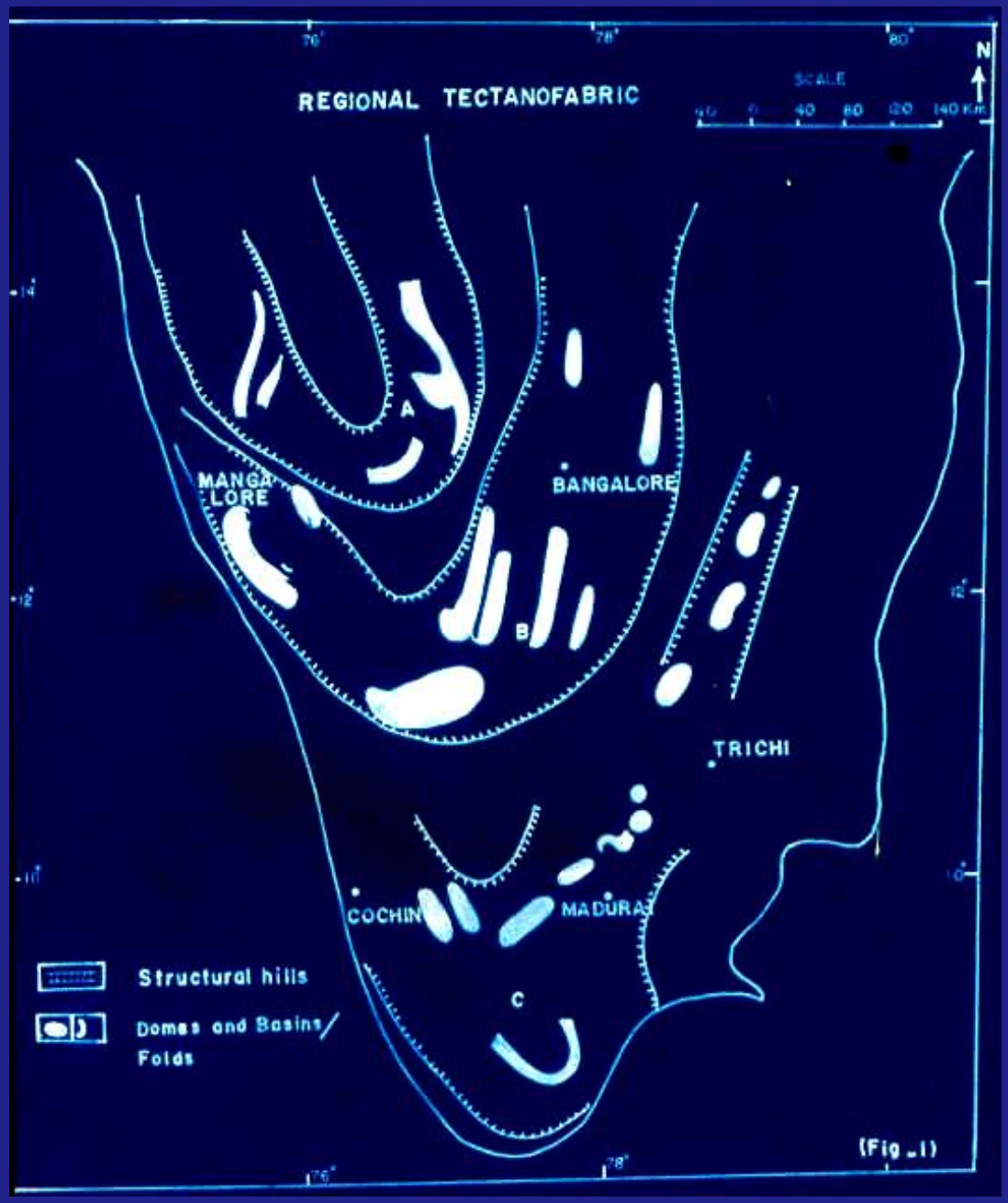


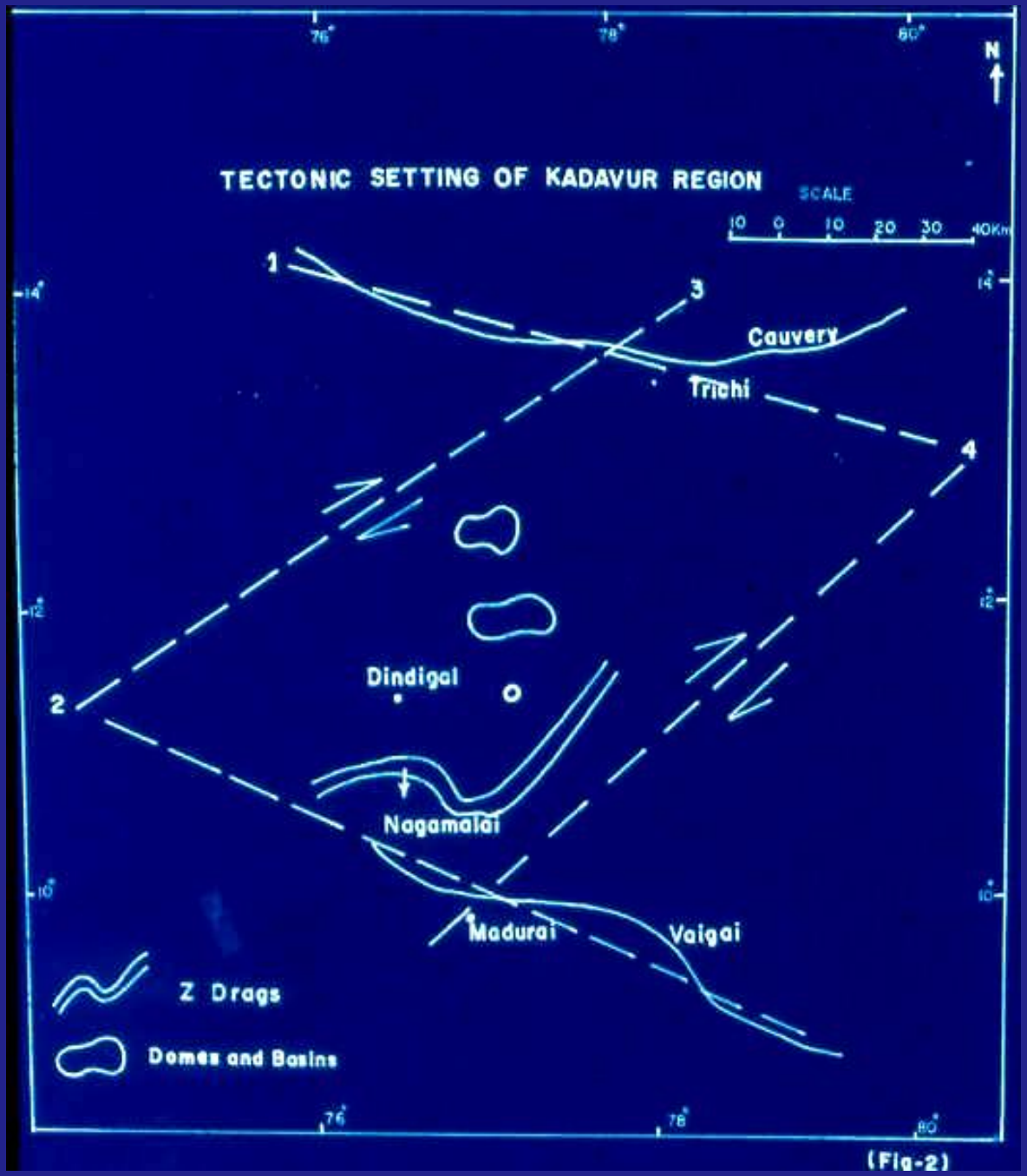
LEGEND

- A — Zone of Schist belt and equivalents
- B — Zone of Sargurs, its equivalents and Charnockits
- C — Zone of Khondalites and Charnockites and equivalents
- Folded Structures
- Principal axis of Compression
- Synform
- Antiform

MODEL FOR THE STRUCTURAL EVOLUTION OF SOUTH INDIA

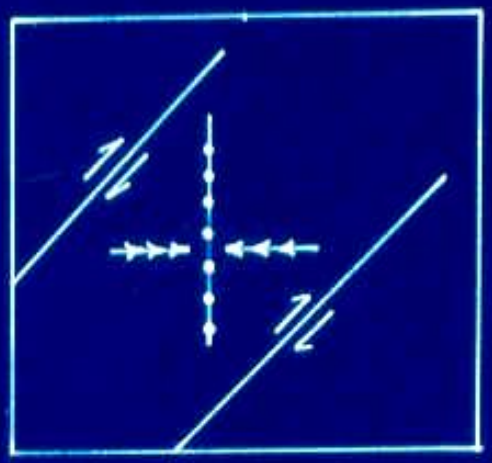


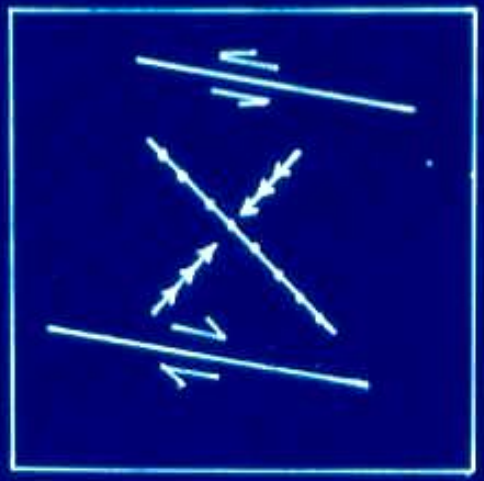

REGIONAL TECTANOFABRIC
SCALE
40 0 40 80 120 140 Km
N
70°
78°
80°
14°
12°
10°
A
B
C
MANGA LORE
BANGALORE
TRICHI
COCHIN
MADURA
Structural hills
Domes and Basins/ Folds
(Fig _1)


TECTONIC SETTING OF KADAVUR REGION
SCALE
10 0 10 20 30 40Km
N
76°
78°
80°
14°
12°
10°
1
2
3
4
Cauvery
Trichi
Dindigal
Nagamalai
Madurai
Vaigai
Z Drags
Domes and Basins

(Fig-2)

MODEL FOR THE EVOLUTION OF DOMES AND BASINS



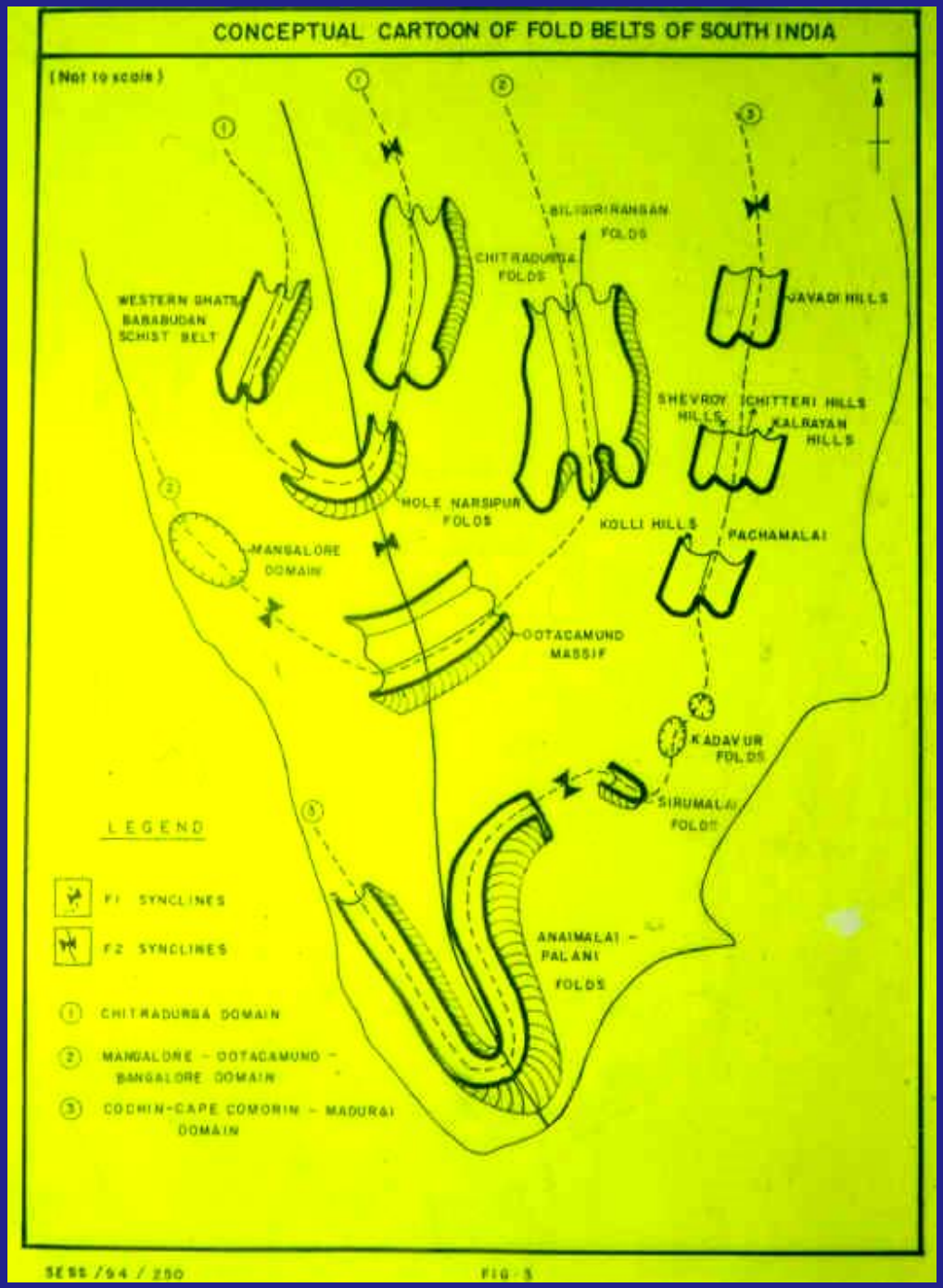


Dextral Fault

Sinistral Fault

Fold axis

Compressive Stress



SESS /94 / 250

FIG-3

AEROMAGNETIC SURVEY:

Advantages:

- **Greater depth information than the thickness of surface deposits (>10kms under ideal conditions)**
- **Uniform picture of large areas**
- **Differentiates rocks with 0.5% - 1% difference in magnetic contents**
- **Large structures – subsurface or unrecognizable on ground – are revealed**
- **Discriminates between major (regional) and minor (local) structures**
- **Provide continuity of information**
- **Can be presented in contour maps**
- **Amenable to digital processing**

Causes for magnetic anomalies:

- Various lithologies
- Various structures:
  - Strike and dip of conformable horizons
  - Folds (with marker beds)
  - Faults
    - Abrupt change in strike
    - Abrupt disappearance of horizon
    - Displacement of horizon

Magnetic Anomaly Interpretation:

- QUALITATIVE
- QUANTITATIVE

Factors affecting interpretation:

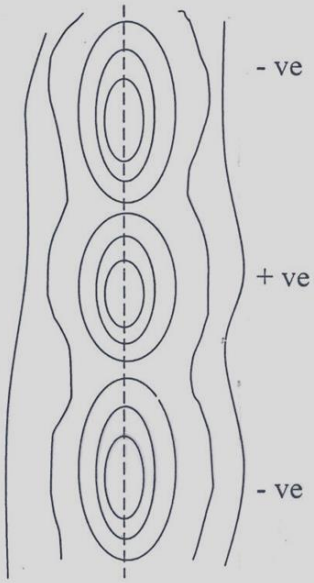
- Line spacing
- Line direction
- Flight height
- Topographic relief
- Environment (Geological)
  - Structural complexity
  - Magnetic content

QUALITATIVE INTERPRETATION

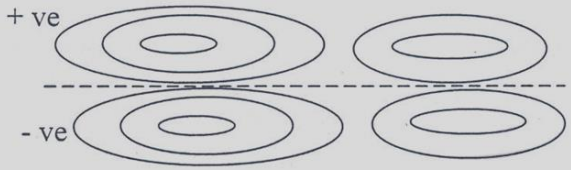
- **Size**
- **Shape**
- **Magnitude**
- **Attitude**

of magnetic anomaly depends on

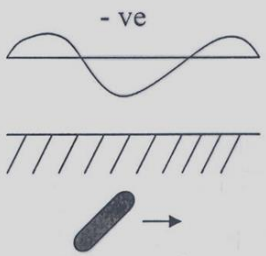
- **Latitude**
- **Shape of the causative body**
- **Orientation**



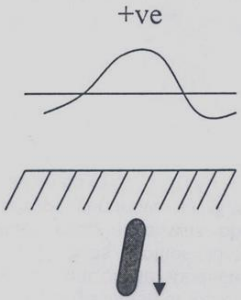
N-S striking Dyke like body



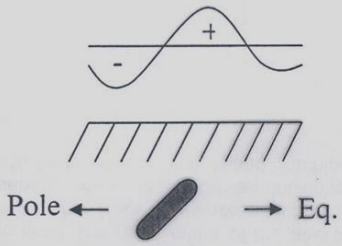
E-W striking Dyke like body



At magnetic equator
Mag. Incl = 0
Anomaly = -ve



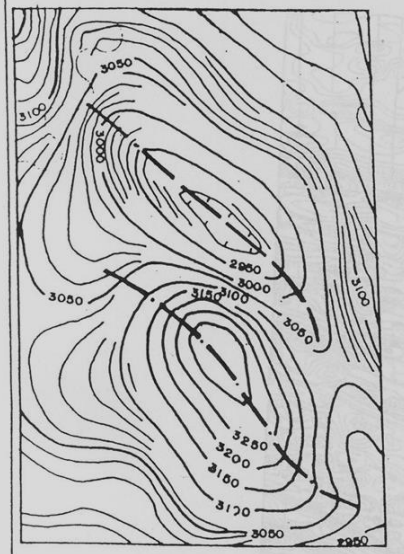
At magnetic pole
Mag. Incl = 90^0
Anomaly = +ve



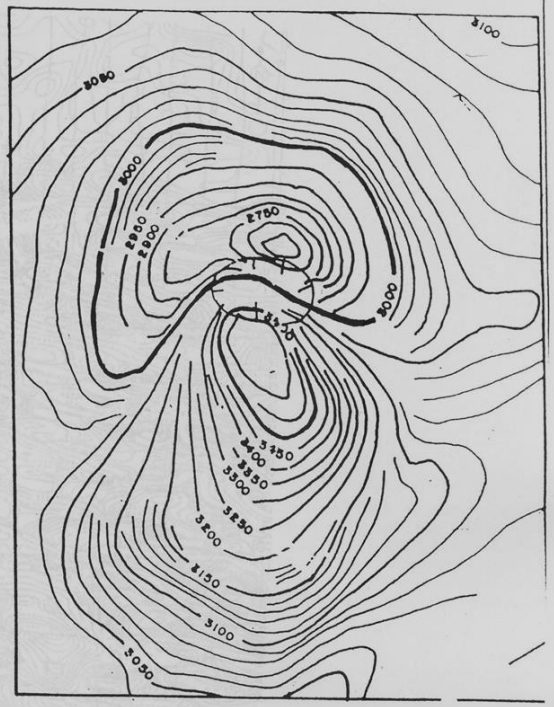
Between magnetic equator & pole Mag. Incl = $0 - 90^0$
Anomaly = -ve
+ve towards equator
-ve towards pole

MAGNETIC FEATURES

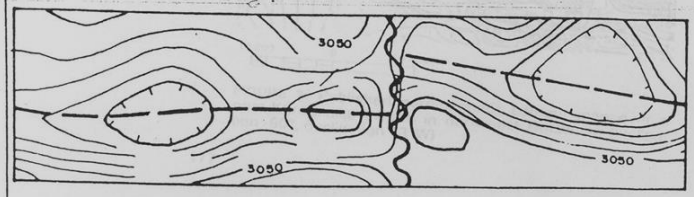
MAGNETIC AXIS



DIPOLAR ANOMALY



MAGNETIC BREAK



INDEX.

POSITIVE MAGNETIC AXIS

NEGATIVE MAGNETIC AXIS

MAGNETIC BREAK.

MAGNETIC CONTOUR

DIPOLAR ANOMALY

QUALITATIVE INTERPRETATION

- Size
- Shape
- Magnitude
- Attitude

All these above magnetic anomalies depends on

- Latitude
- Shape of the causative body
- Orientation

QUANTITATIVE INTERPRETATION

- Contour maps
- Magnetic profiles
- Standard curves

Calculation of depth, size, shape, magnetic susceptibility etc using magnetic profiles

Comparison of magnetic profiles with -- Mathematical models & Standard profiles

Magnetic susceptibility tests conducted and compared with calculated susceptibility values

REMOTE SENSING FOR LINEAMENT ANALYSIS

LINEAMENTS:

→ Fractures of tectonic origin

→ Always studied in relation with deformation history

→ It can be linear or curvilinear

→ It can be shorter (minor) or longer (major)

→ It can be a fault or a Joint

RECOGNITION OF FAULTS THROUGH REMOTE SENSING

- Linear feature in terrain
- Abrupt end of hills
- Juxta position of terrain of contrasting elevation
- Abrupt end of lithologies
- Abrupt end of folded structures
- Striking contrast in the intensity of weathering & degree of denudation
- Occurrences of older & younger tectonic land forms on either side of lineaments
- Contrast drainage density on either side.

Drainage anomalies like straightness

Sudden loss or emergence of drainage

Straightness in shore line

Occurrence of mass wasting phenomenon in desert

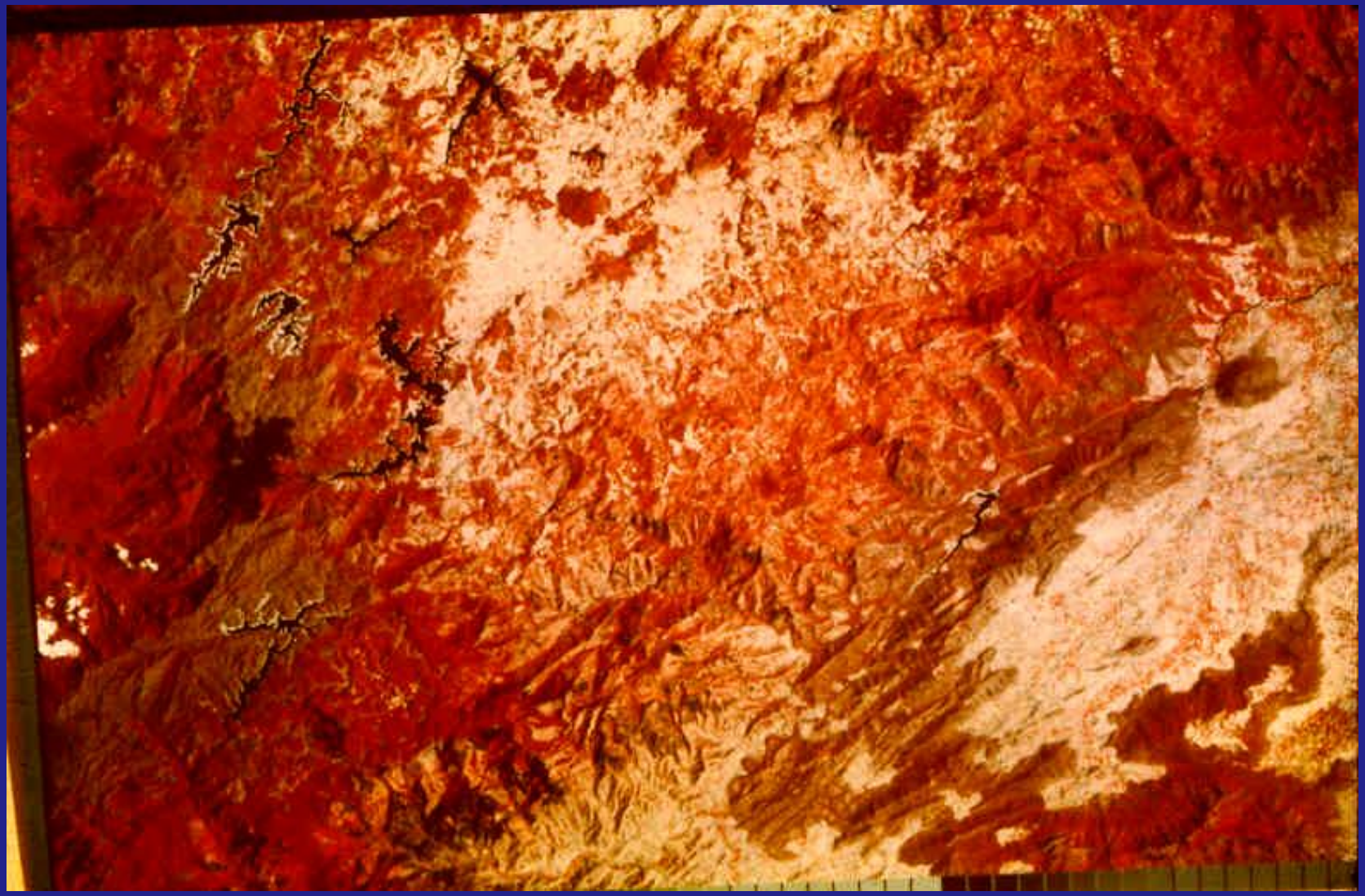
Occurrence of mineralisation along a lineament

Occurrence of high yield wells along a lineament

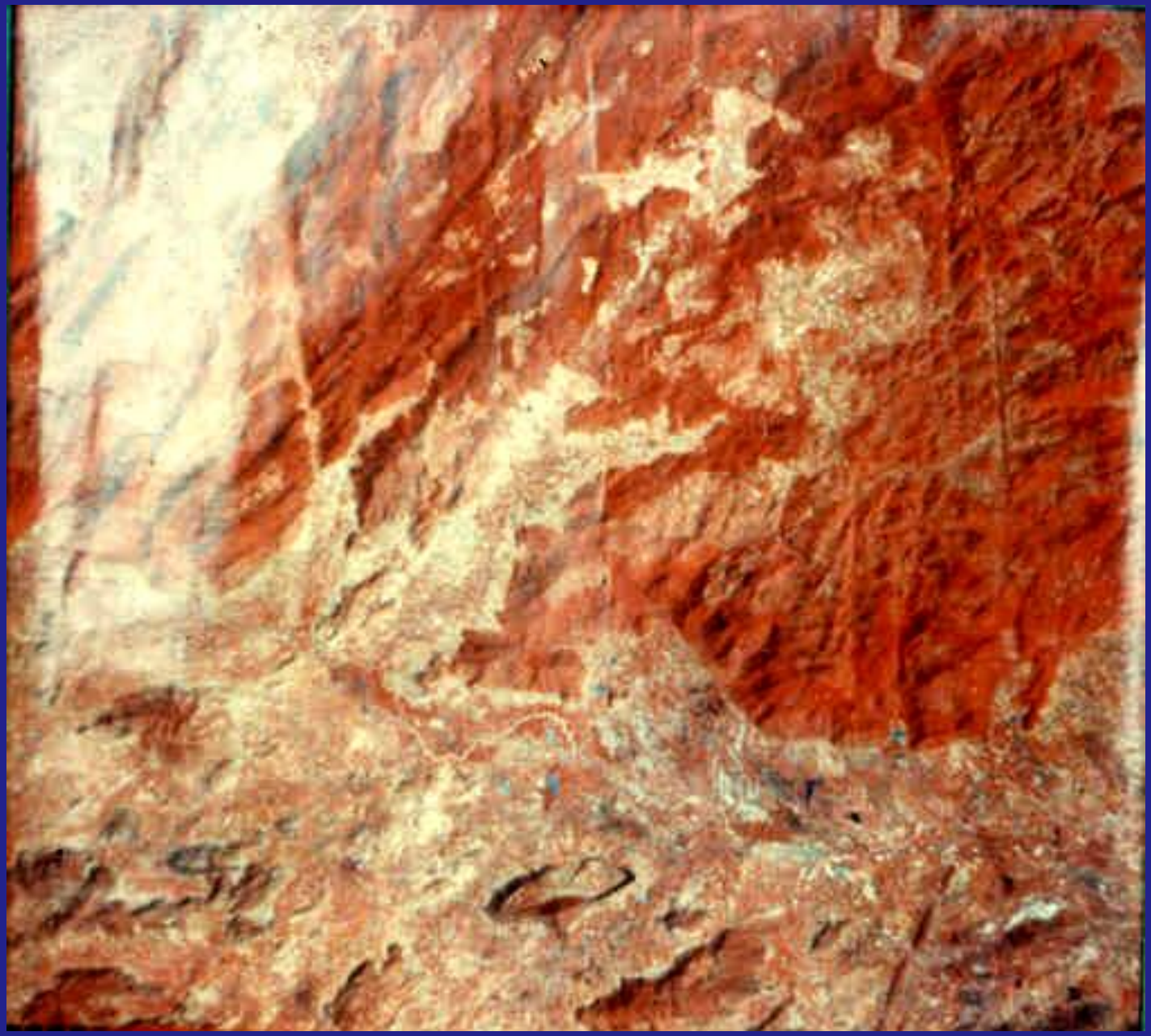
Occurrence of hot springs along a lineament

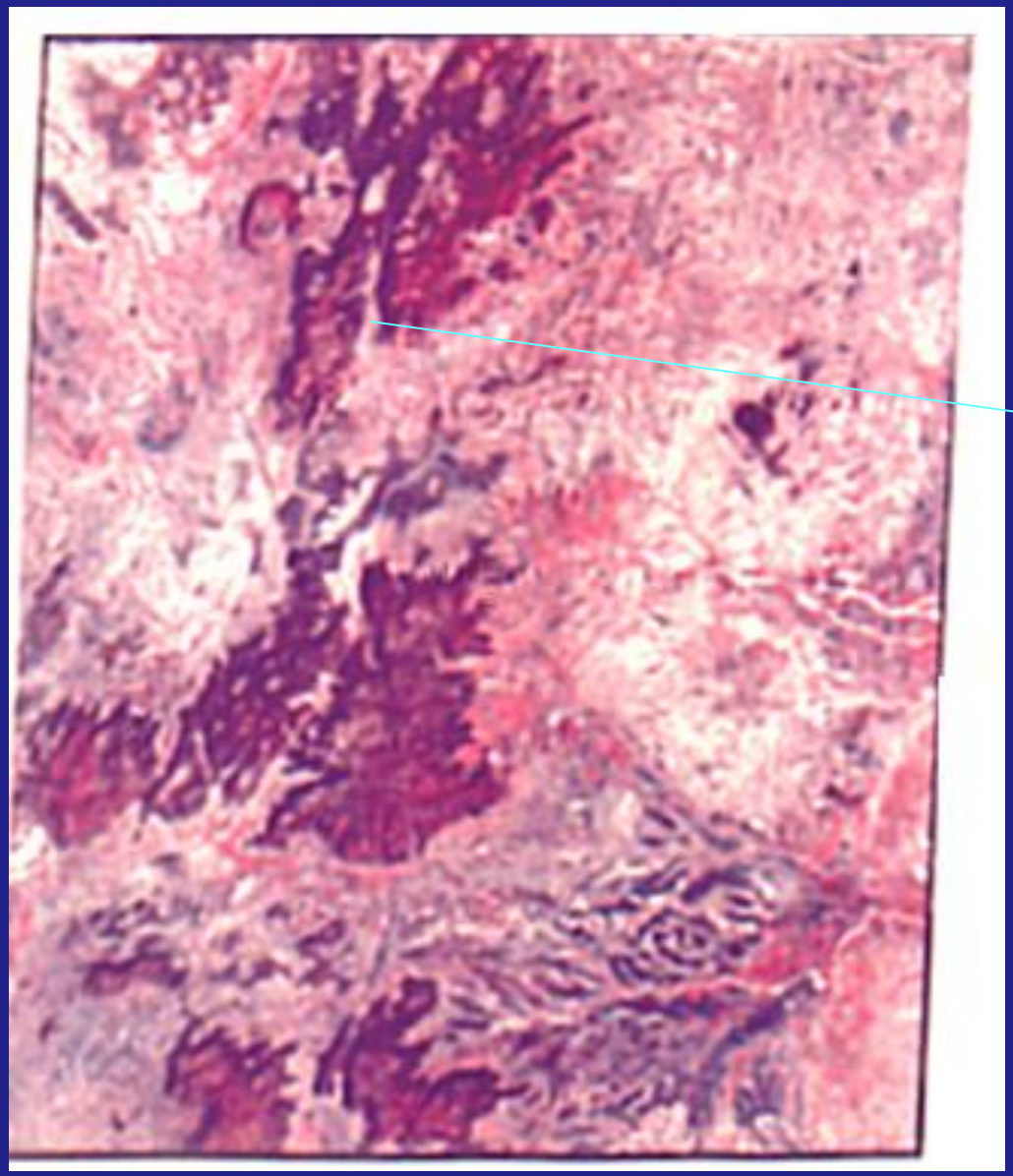
Occurrence of seismic epicenter along a lineament

Occurrence of plutonic bodies along a lineament.



SPOT FCC –LINEAMENTS OF STANLEY RESERVOIR AREA

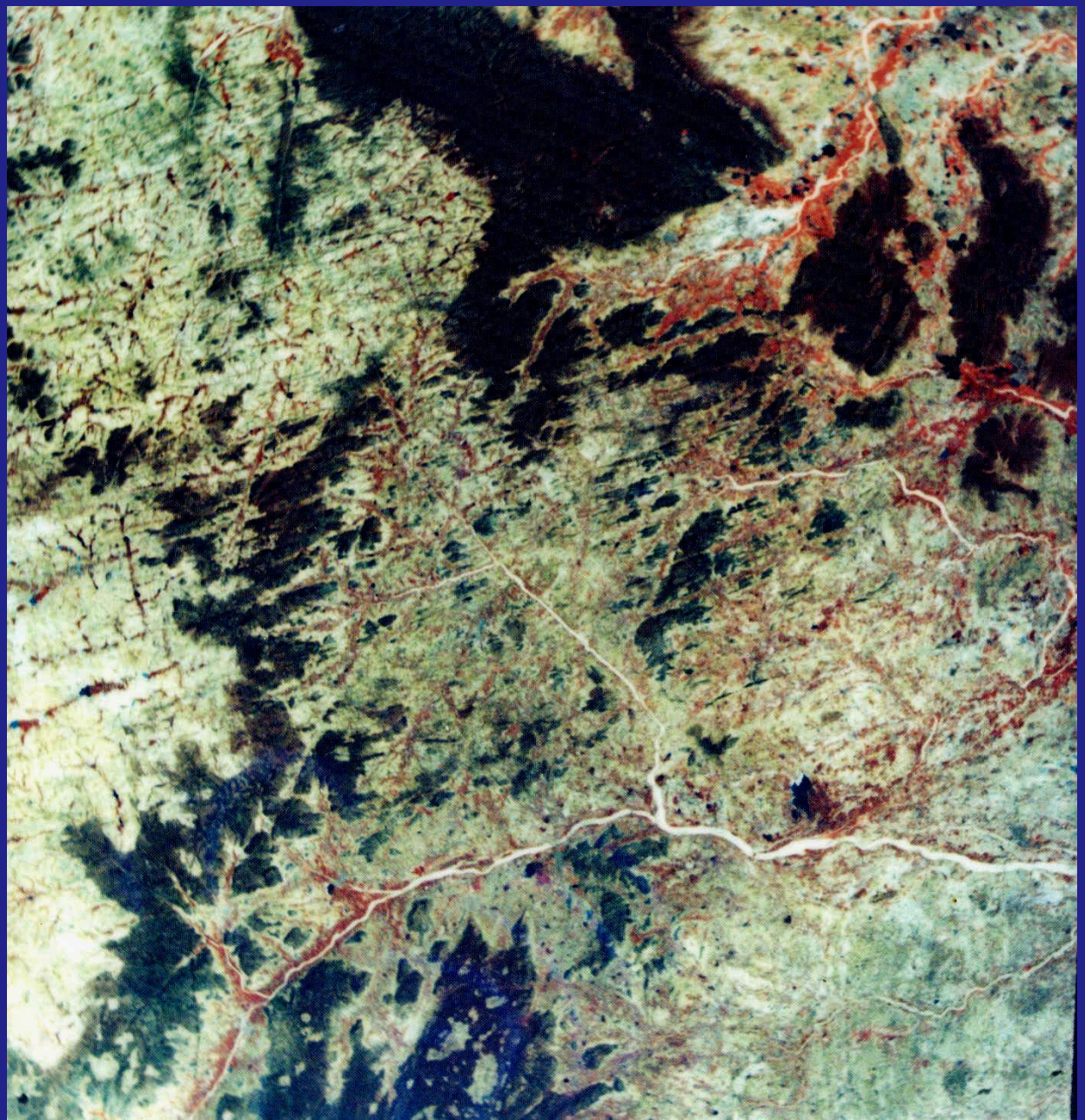




Salem Area

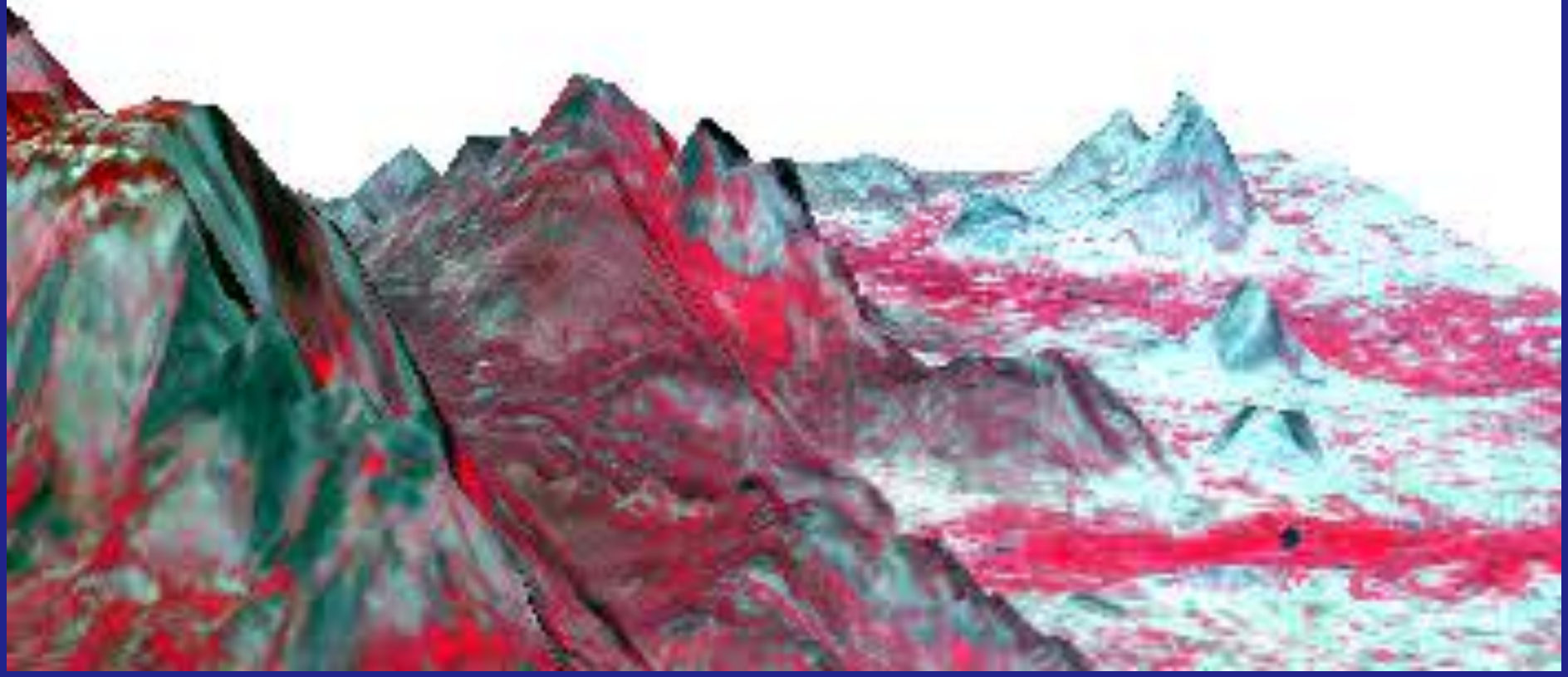
N-S Faults

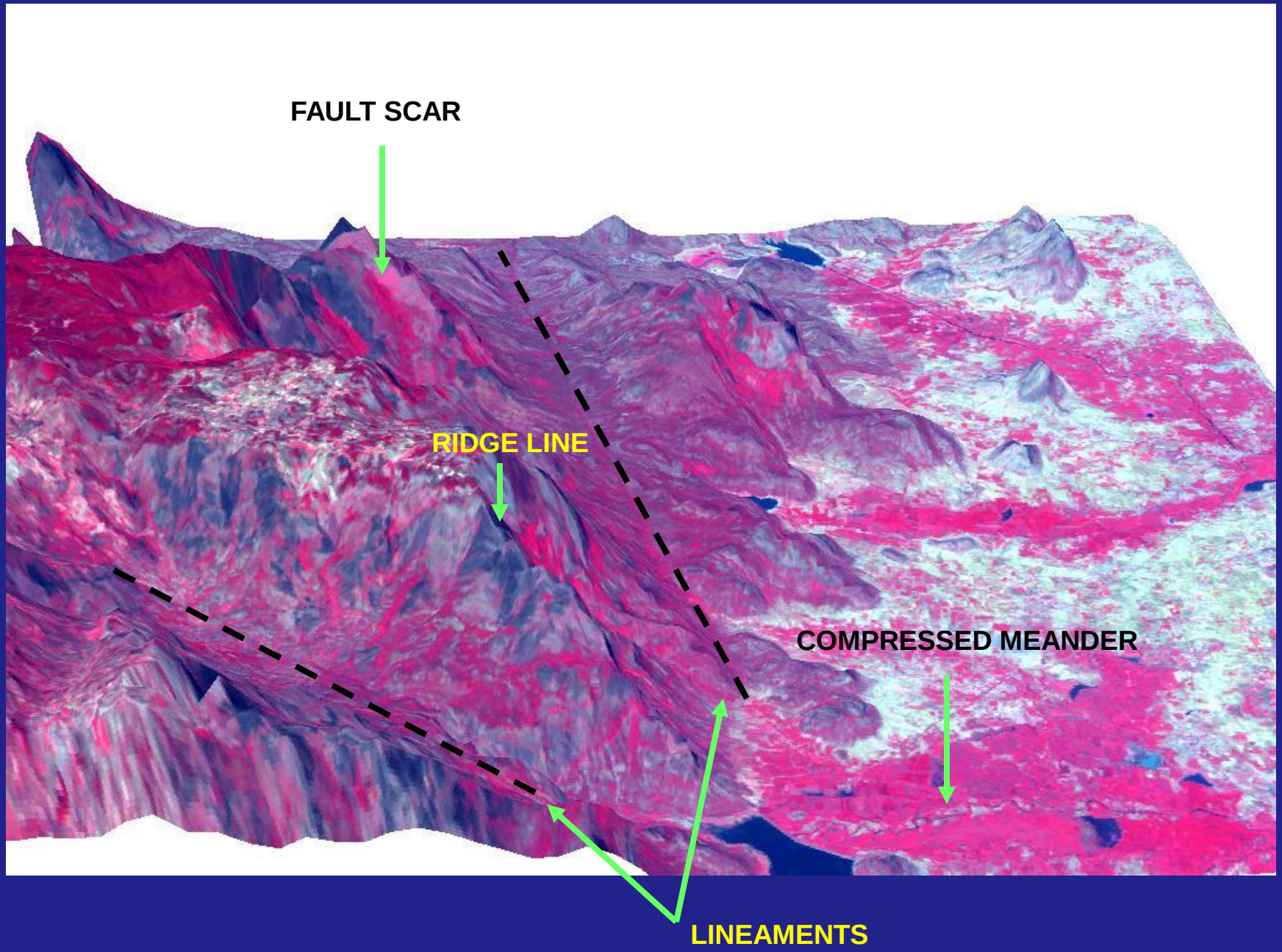
Tiruthani EW fractures

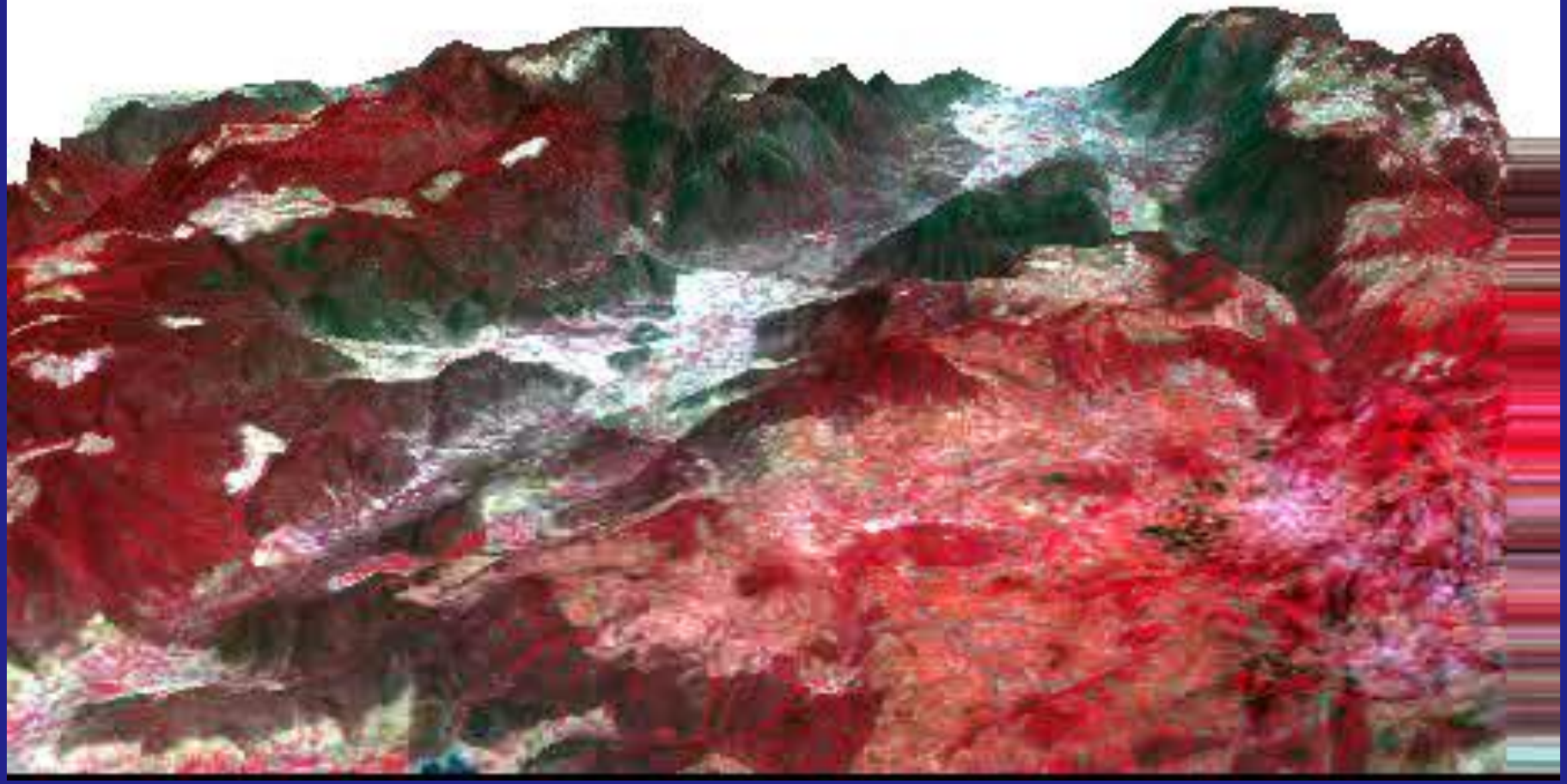


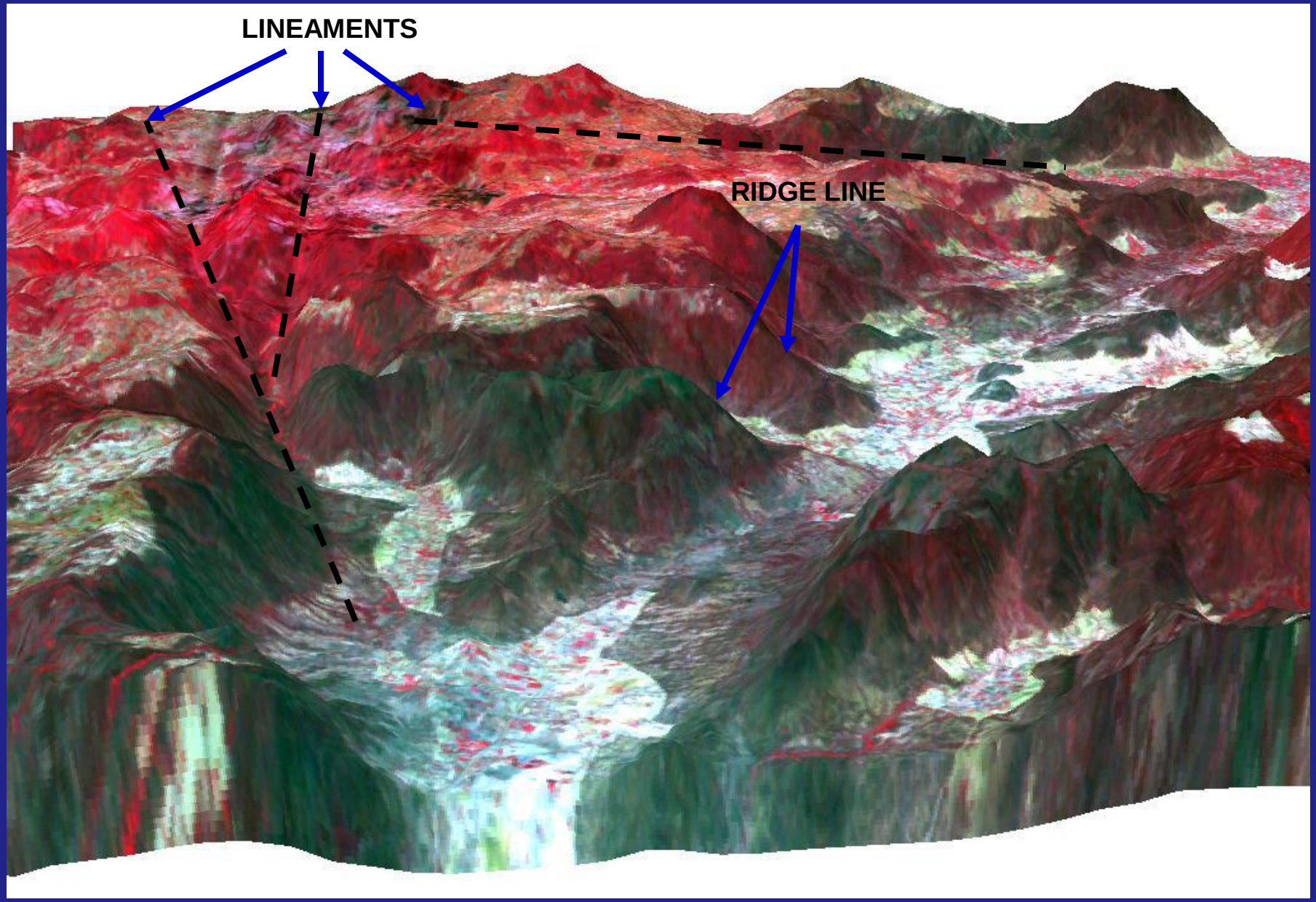
FAULT SCAR - SAN ANDREAS FAULT

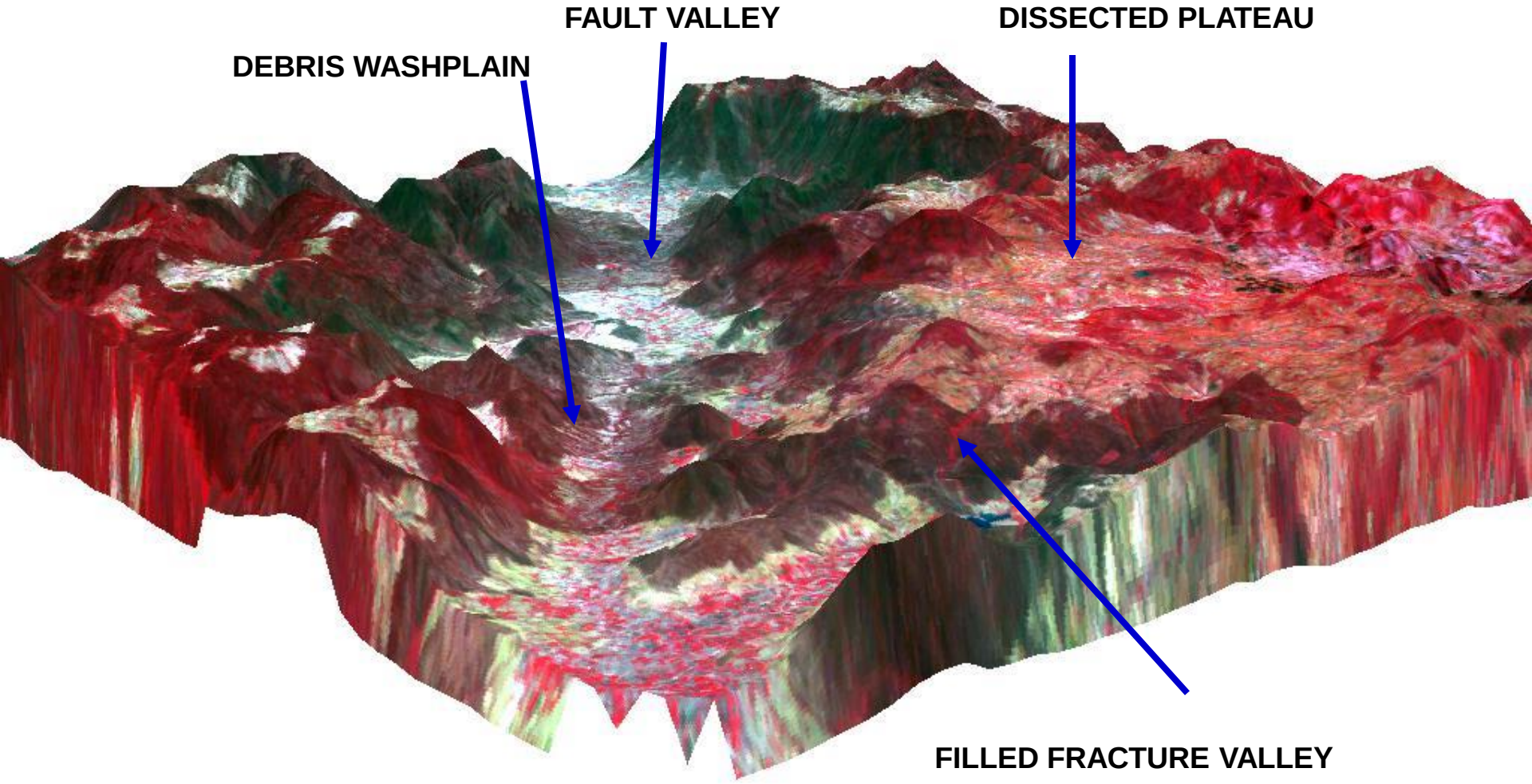
Regional Lineament Studies

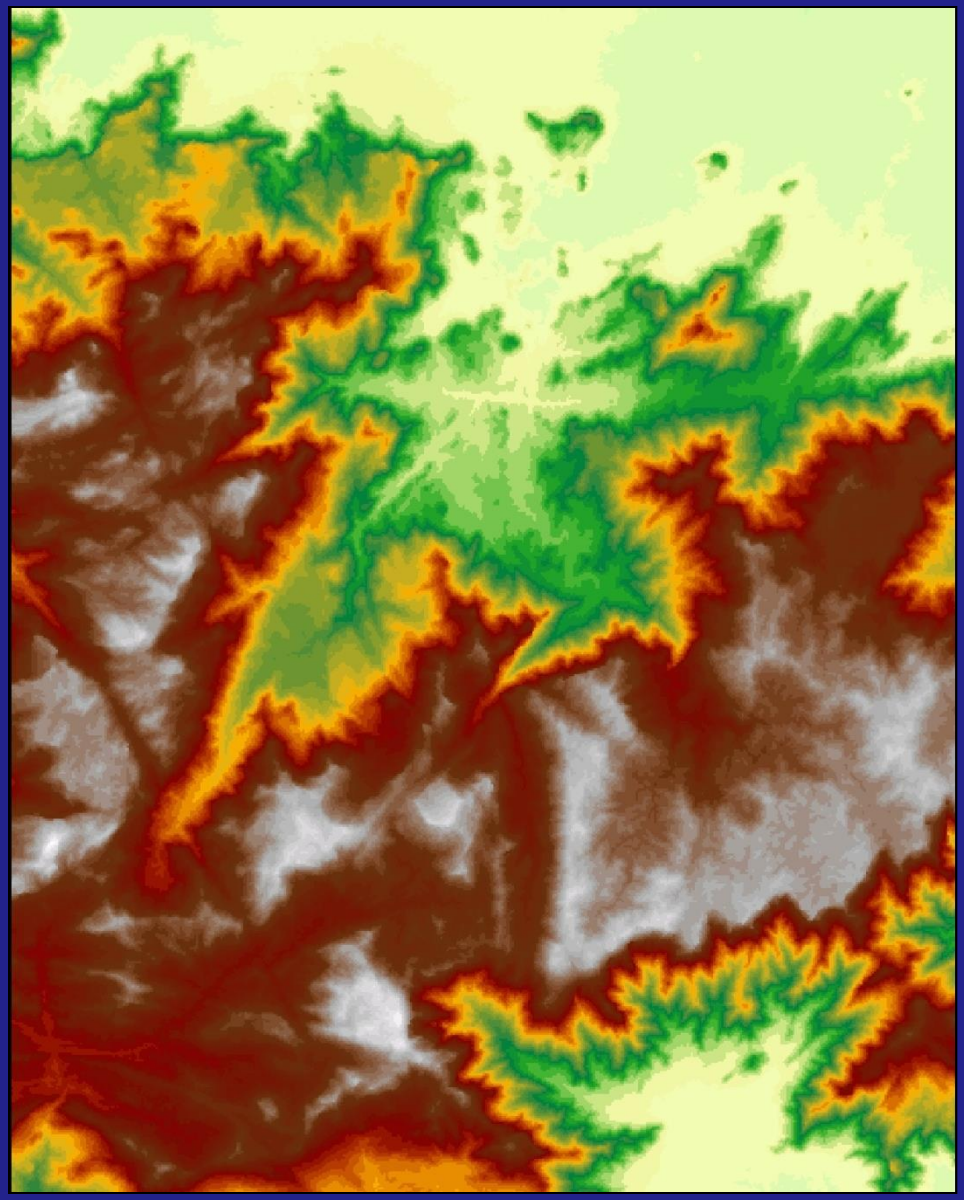



FAULT SCAR
RIDGE LINE
COMPRESSED MEANDER
LINEAMENTS



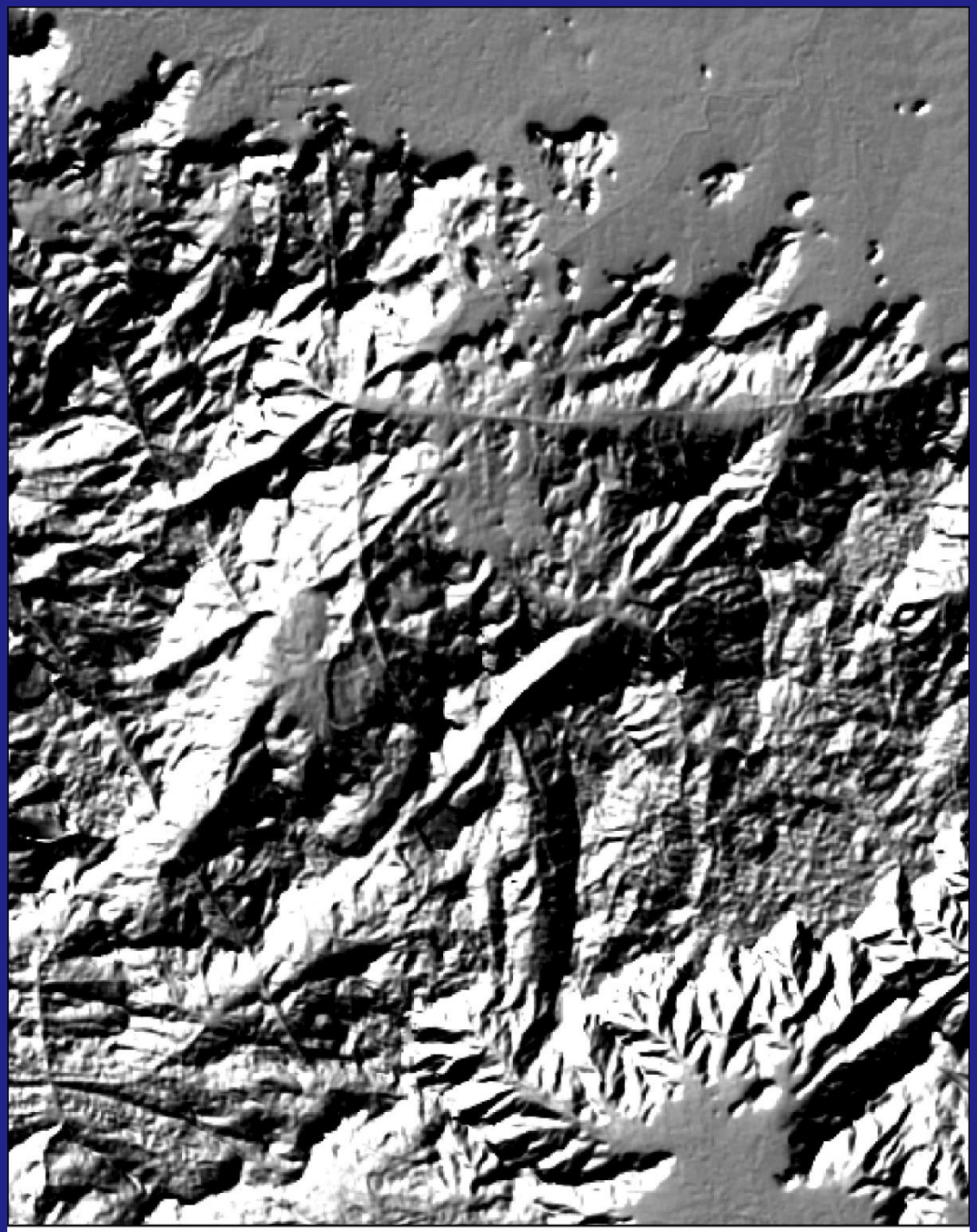

LINEAMENTS
RIDGE LINE


FAULT VALLEY
DISSECTED PLATEAU
DEBRIS WASHPLAIN
FILLED FRACTURE VALLEY



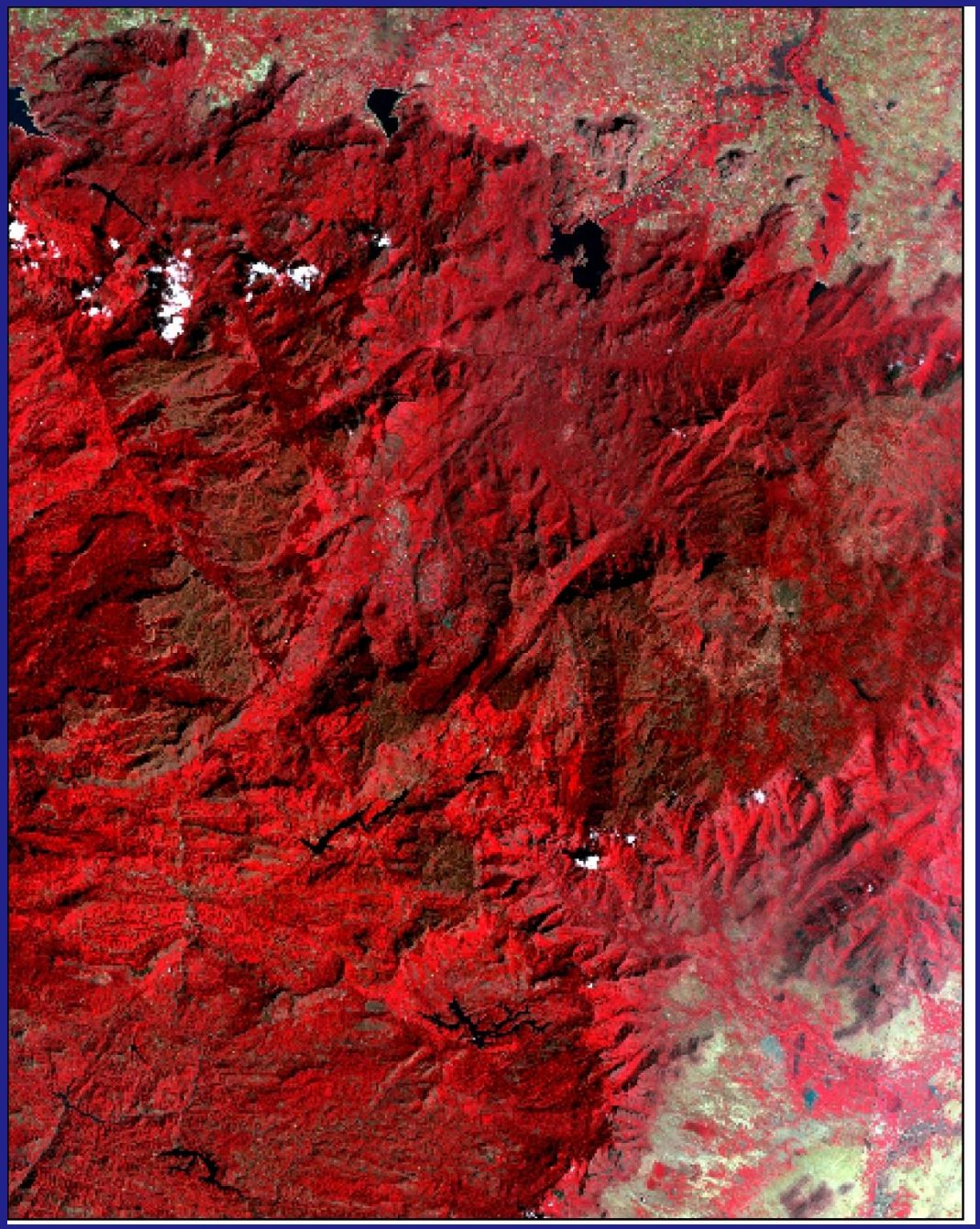
DENSITY SLICED SRTM DATA

- 1 - 50
- 50.00000001 - 100
- 100.0000001 - 150
- 150.0000001 - 200
- 200.0000001 - 250
- 250.0000001 - 300
- 300.0000001 - 350
- 350.0000001 - 400
- 400.0000001 - 450
- 450.0000001 - 500
- 500.0000001 - 550
- 550.0000001 - 600
- 600.0000001 - 650
- 650.0000001 - 700
- 700.0000001 - 750
- 750.0000001 - 800
- 800.0000001 - 850
- 850.0000001 - 900
- 900.0000001 - 950
- 950.0000001 - 1,000
- 1,000.000001 - 1,050
- 1,050.000001 - 1,100
- 1,100.000001 - 1,150
- 1,150.000001 - 1,200
- 1,200.000001 - 1,250
- 1,250.000001 - 1,300
- 1,300.000001 - 1,350
- 1,350.000001 - 1,400
- 1,400.000001 - 1,450
- 1,450.000001 - 1,500
- 1,500.000001 - 1,550
- 1,550.000001 - 1,600
- 1,600.000001 - 1,650
- 1,650.000001 - 1,700
- 1,800.000001 - 1,850
- 1,850.000001 - 1,900
- 1,900.000001 - 1,950
- 1,950.000001 - 2,000
- 2,000.000001 - 2,050
- 2,050.000001 - 2,100
- 2,100.000001 - 2,150
- 2,150.000001 - 2,200
- 2,200.000001 - 2,250
- 2,250.000001 - 2,300
- 2,300.000001 - 2,350
- 2,350.000001 - 2,400
- 2,400.000001 - 2,450
- 2,450.000001 - 2,500
- 2,500.000001 - 2,550
- 2,550.000001 - 2,600
- 2,600.000001 - 2,650



SHADED RELIEF MAP

40 (ALTITUDE) -130 (AZIMUTH)



SATELLITE FCC IMAGE

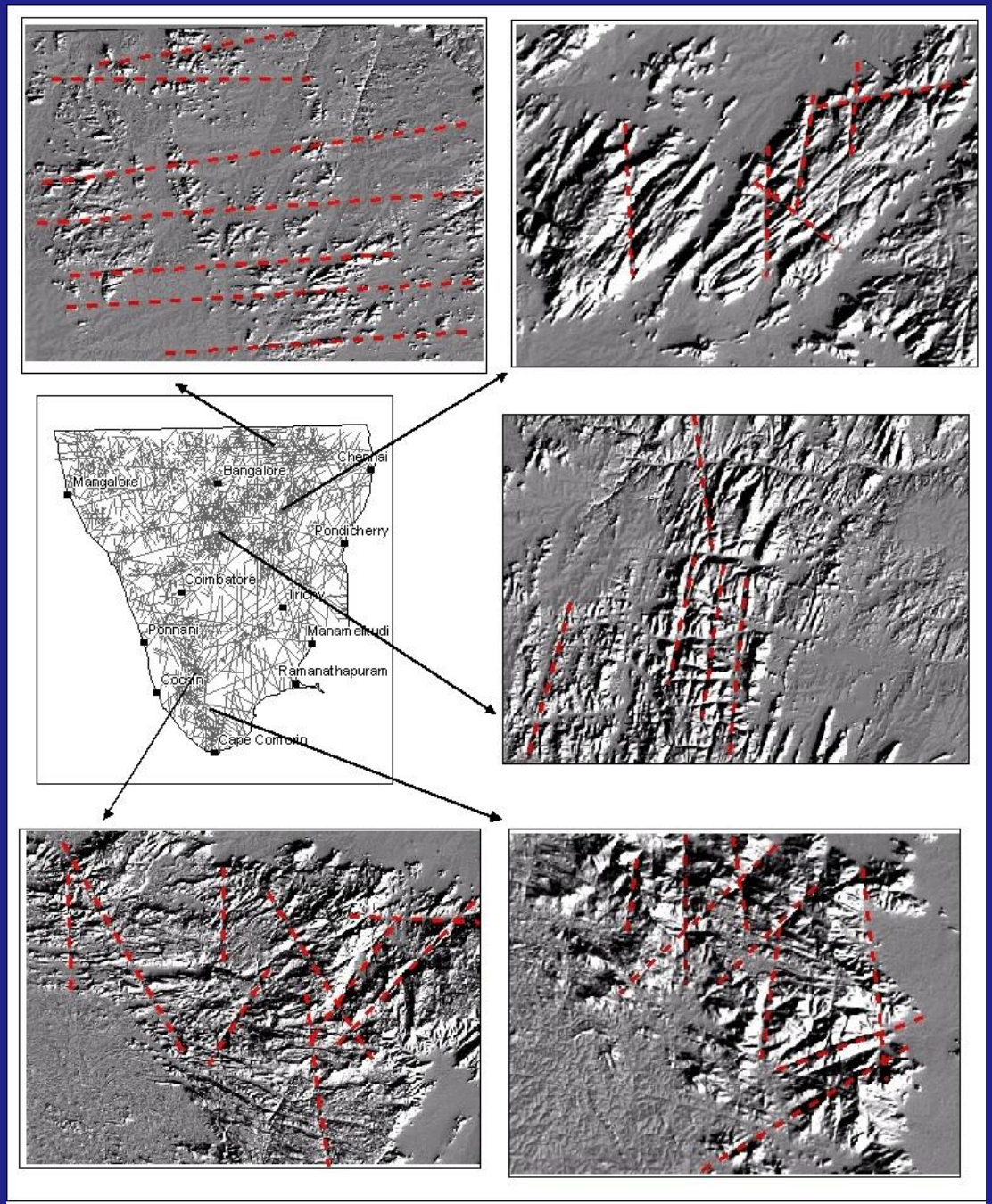


Fig.3 - Lineaments and faults derived from shaded relief map (SRTM)

Lineament Mapping from SRTM based Shaded Relief Map

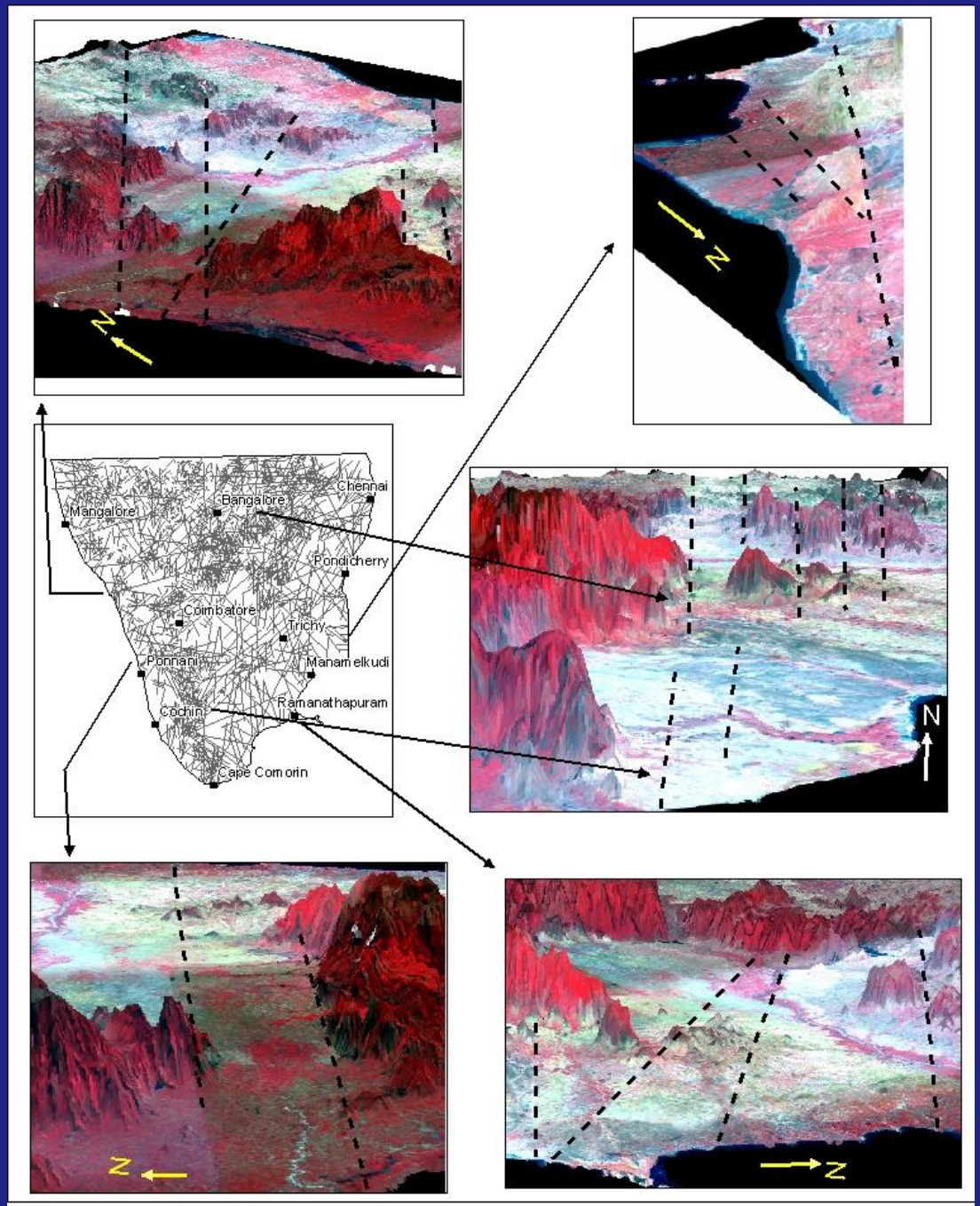


Fig.4 - Lineaments and faults derived from DEM wrapped FCC data

Lineament Mapping from SRTM based FCC Wrapped DEM

Final Lineament / Fault map of South India

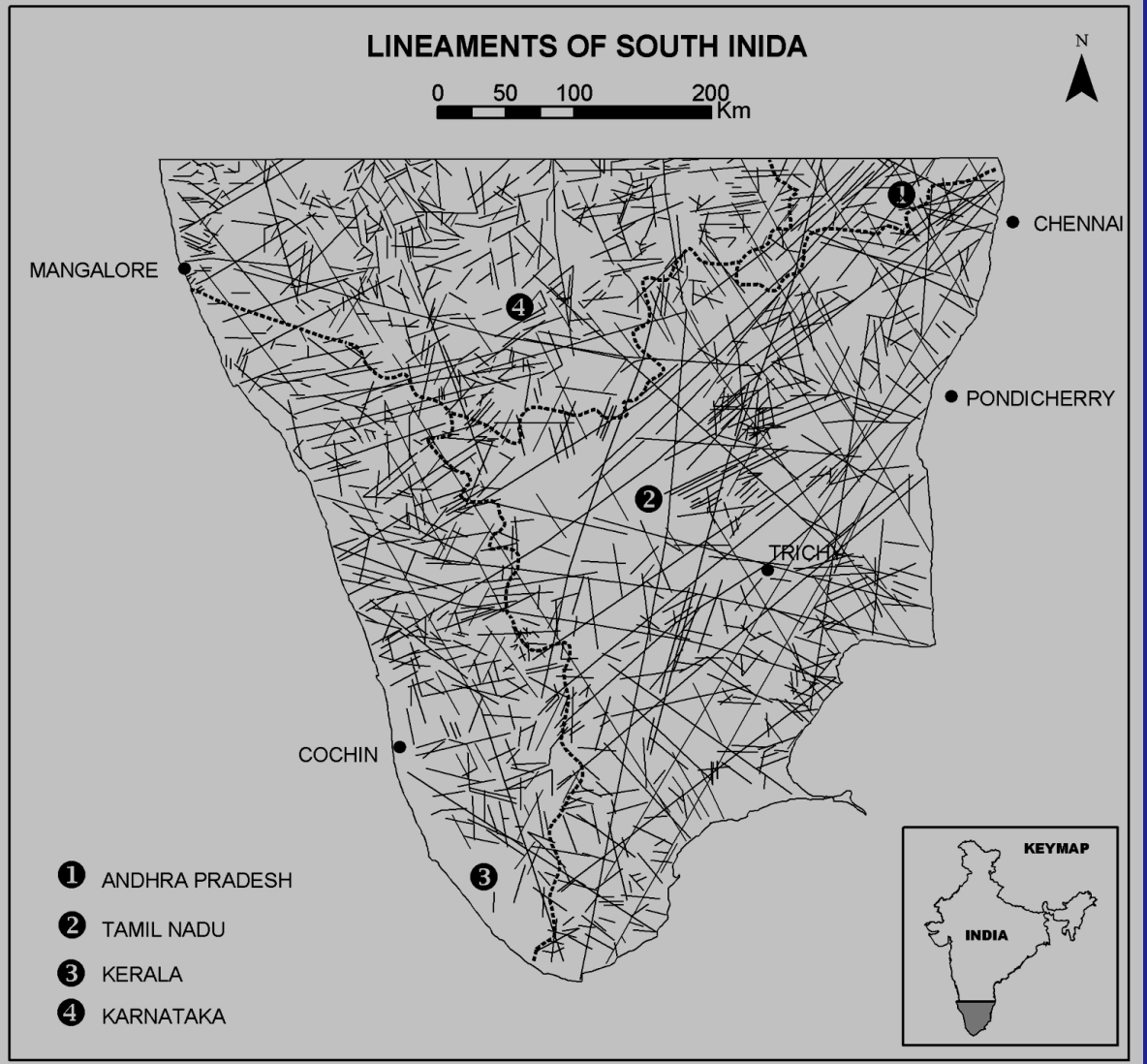
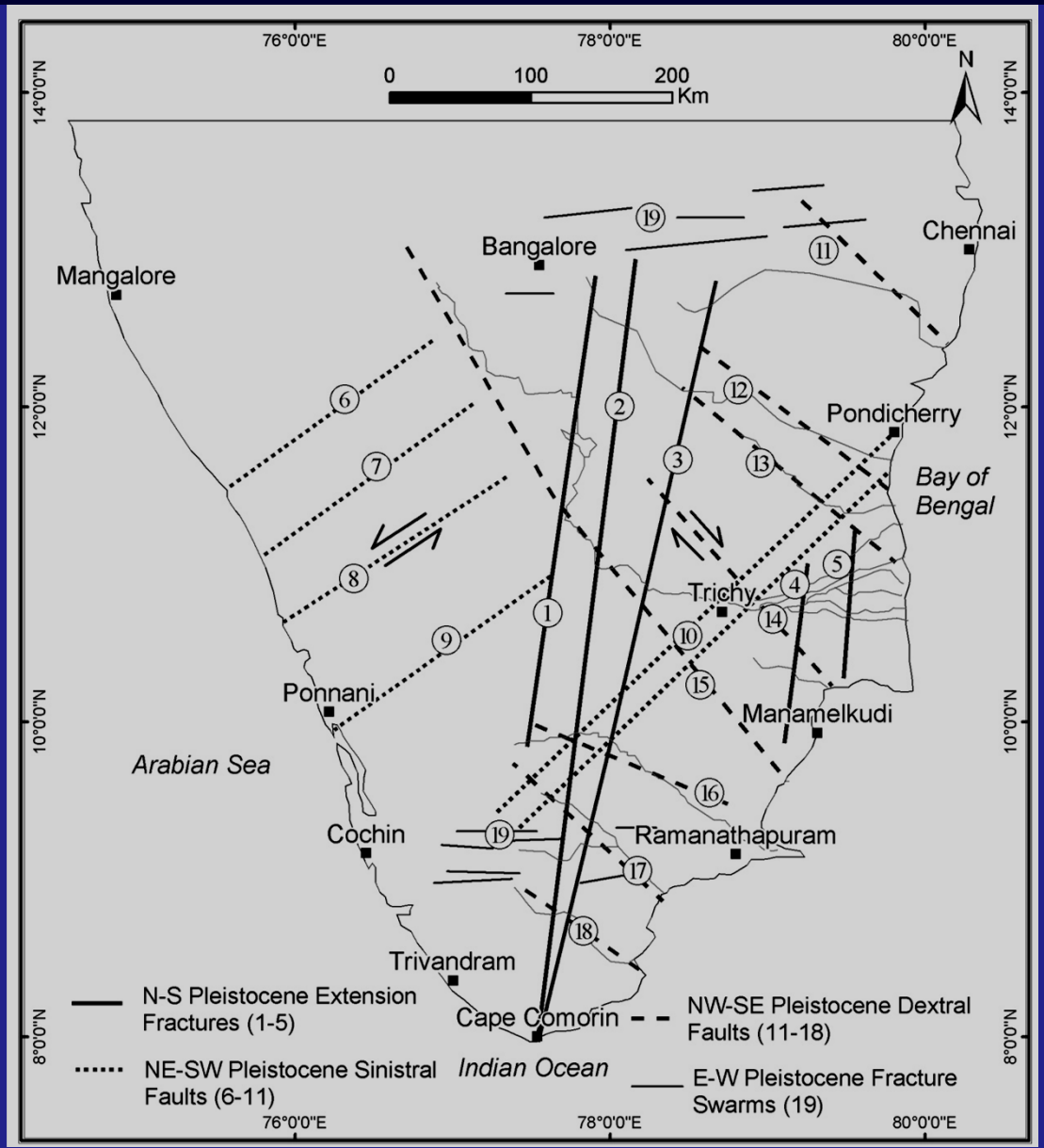


FIG.28

The Representative Neo-Active Tectonic Faults of South India



At Next stage,

These Neo-Active Tectonic Faults were Confirmed Through the

- **GIS Based 3D Visualization of Gravity and Resistivity Data**