GEOENVIRONMENTAL RESOURCES OF NORTH KANARA DISTRICT, KARNATAKA - A GENTLE INTRODUCTION

By

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INTRODUCTION

- Any site development undertaken today must be compatible with both the possibilities and limitations of our natural environment and its resources.
- Predevelopment analyses must therefore consider the problems presented by the physical site factors.
- Interest in terrain analyses has recently increased because of population pressure and widespread concern for the environmental issues.
- Planners trying to solve envnl. problems need info. that will provide a comprehensive and accurate physical resource data.
- Unfortunately, for most part of our State, important types of physical data are either lacking or available in a highly fragmented form.

GEOENVIRONMENTAL PARAMETERS (12)

ABIOTIC

1. Geology
2. Geomorphology
3. Pedology
4. Surface waters
5. Ground water
6. Land use
7. Air quality
8. Noise level
9. Meteorology

BIOTIC

10. Terrestrial Ecology
11. Aquatic Ecology
12. Socio-Economics

The abiotic parameters i.e., **1-9** are called **geoenvironmental parameters**.

R. S Techniques help in detecting and mapping of environmental impacts of anthropogenic activities on land-water system at a short time and low cost.

Area under investigation

1.Study of Coastal geomorphology and Quaternary Environment, North Kanara Dist.

2. Evaluation of Placer Mineral occurrences near near Honnavar town, North Kanara District

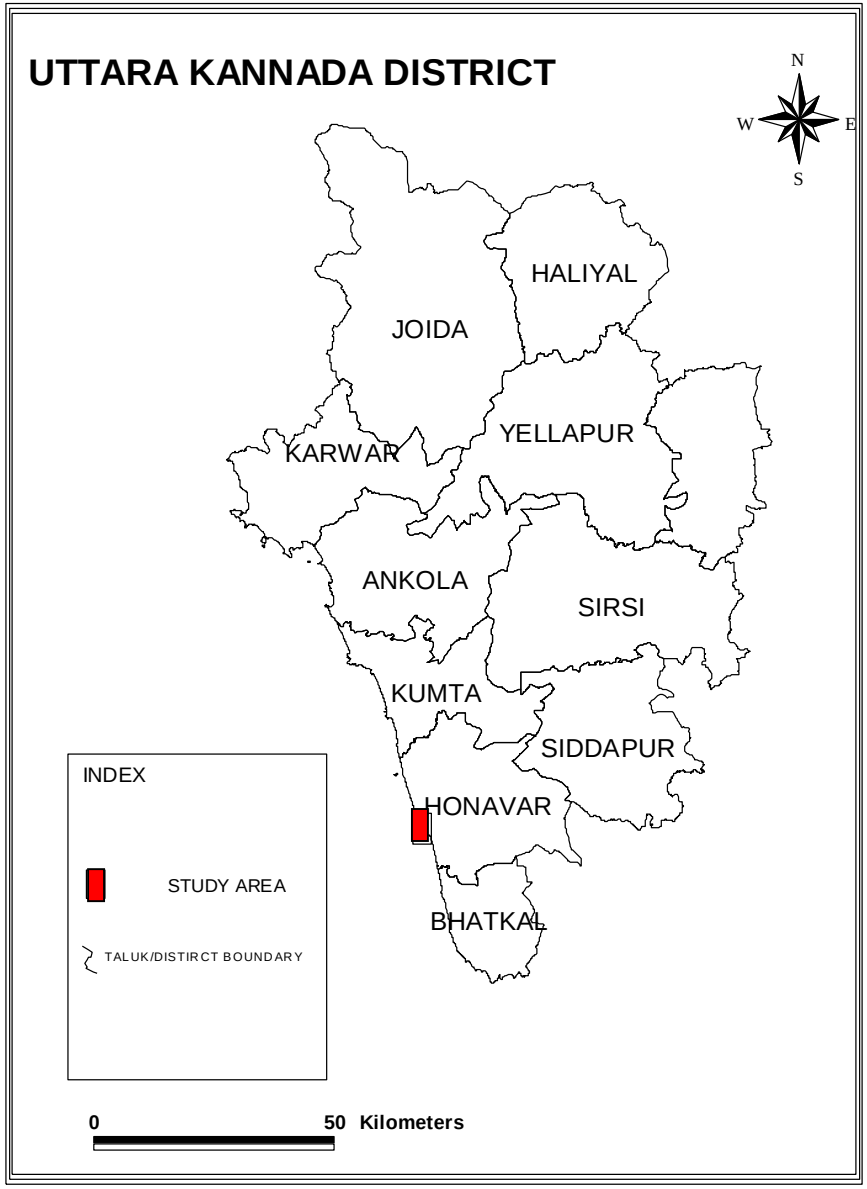


Figure 1 Location map of study area

OBJECTIVES

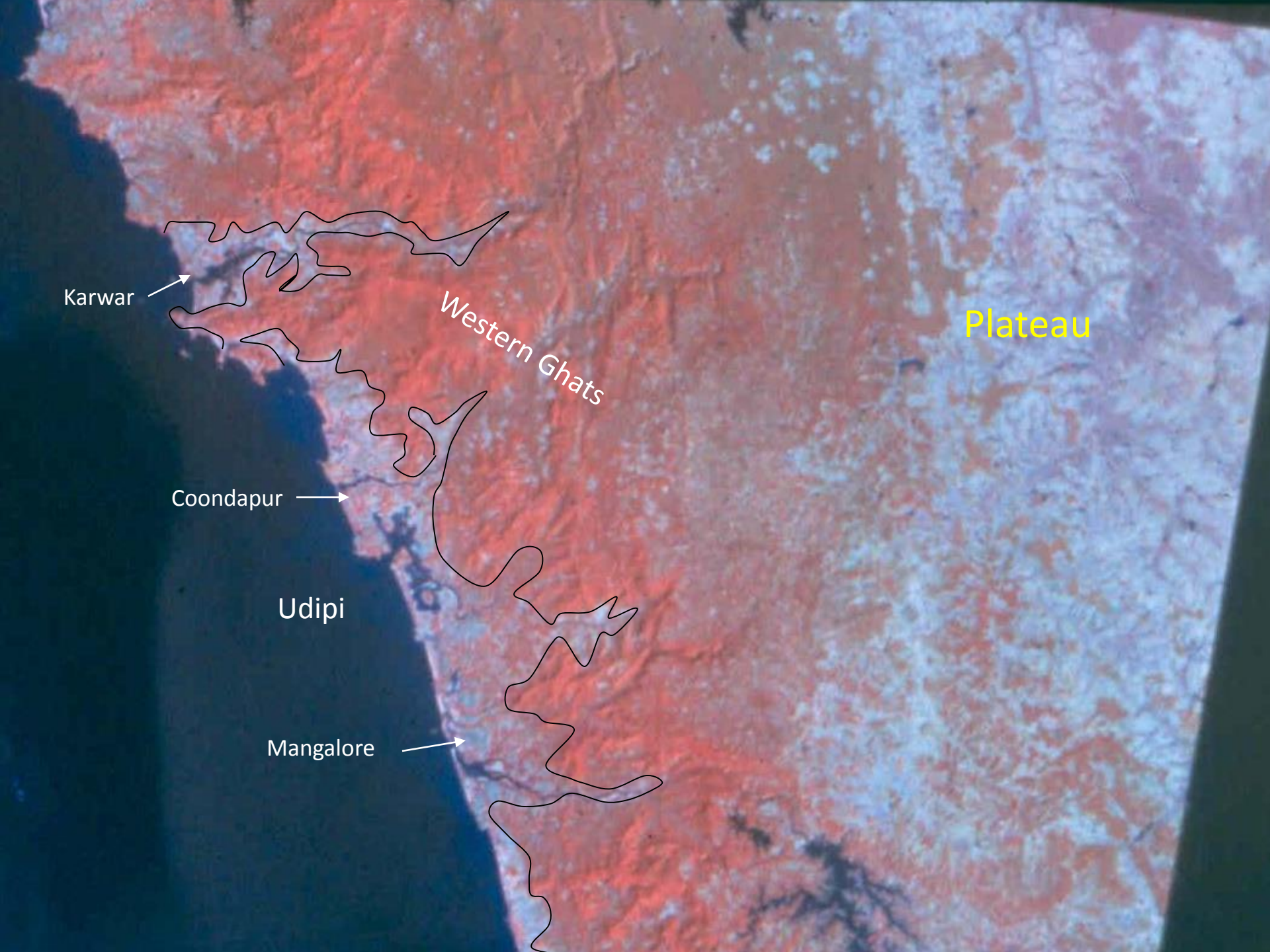
1. Study and classify the coastal geomorphic units and landforms

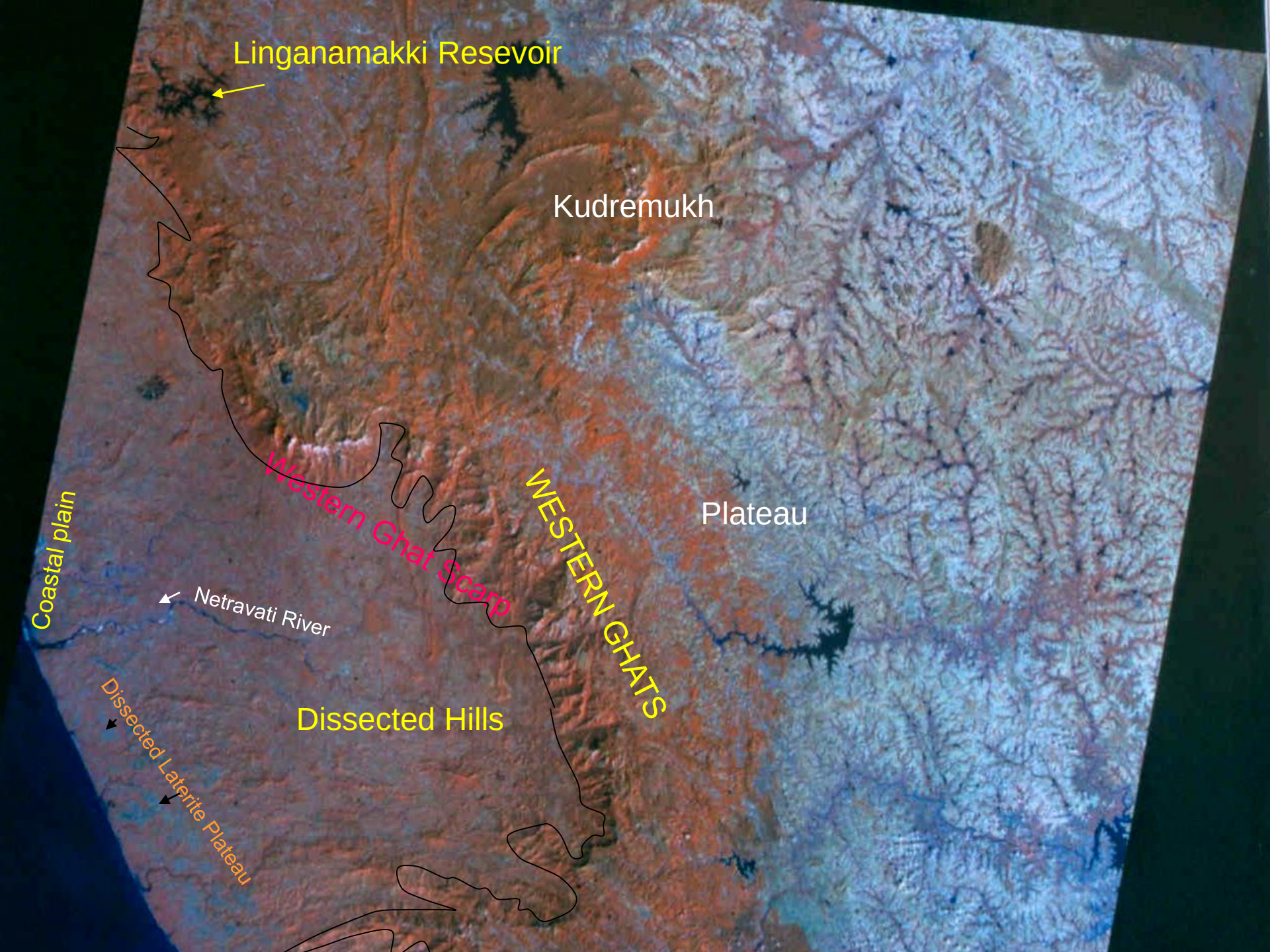
2. Classify Quaternary Geological formations

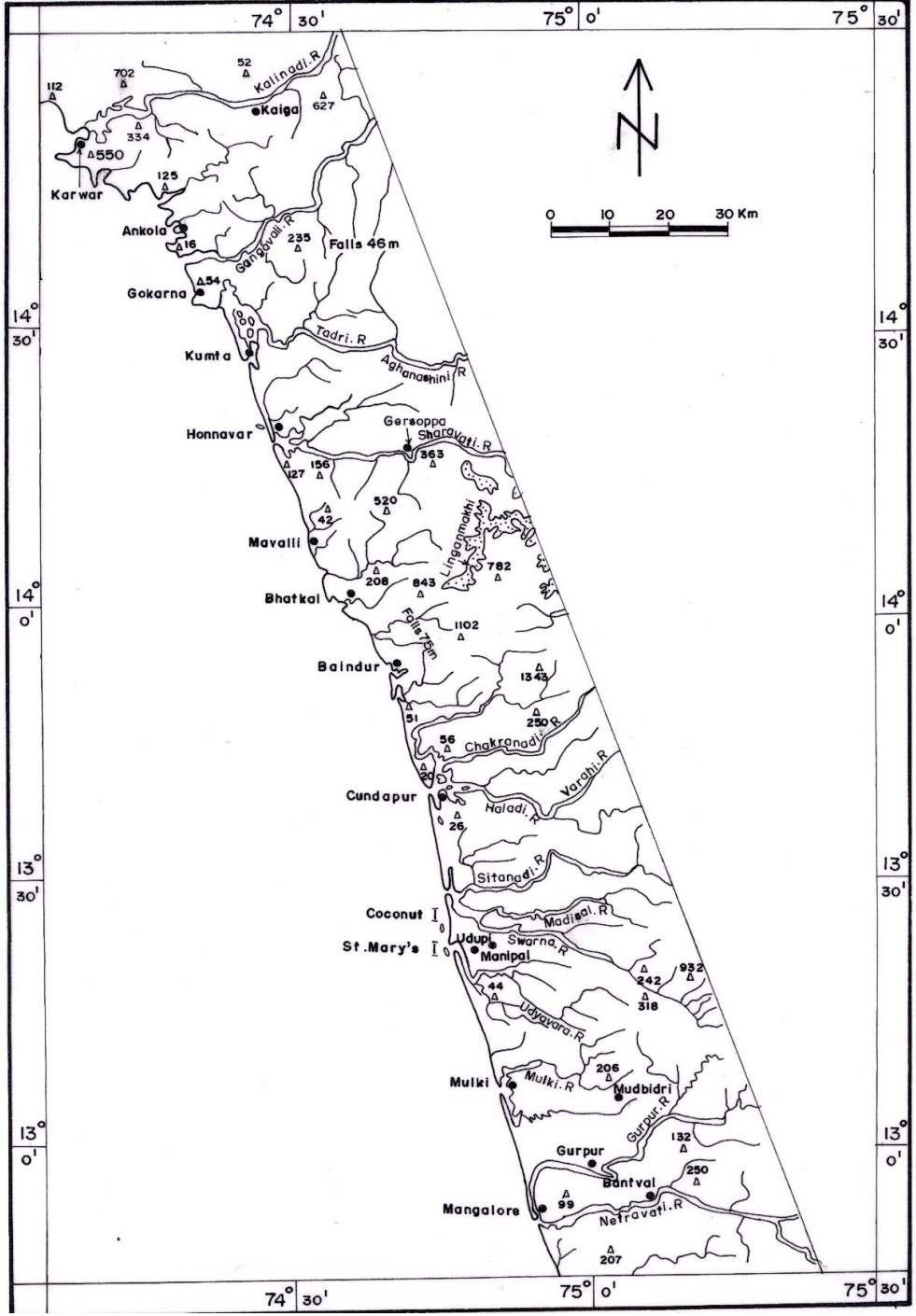
3. Assess Geological and Mineral Resources

4. Date coastal deposits by radiocarbon method

5. Study coastal evolution, impact of climate change/ sea level rise


Karwar
Western Ghats
Plateau
Coondapur
Udipi
Mangalore


Linganamakki Resevoir
Kudremukh
Western Ghat scarp
WESTERN GHATS
Plateau
Coastal plain
Netravati River
Dissected Hills
Dissected Laterite Plateau



Karnataka part of West Coast of India is generally straight and narrow and trends in a NNW-SSE direction.

The nearly 300 km long, generally smooth coastline extends from Majali in northern end to Talapadi in southern end.

GEOMORPHIC CLASSIFICATION

Three main geomorphic units delineated from E-W

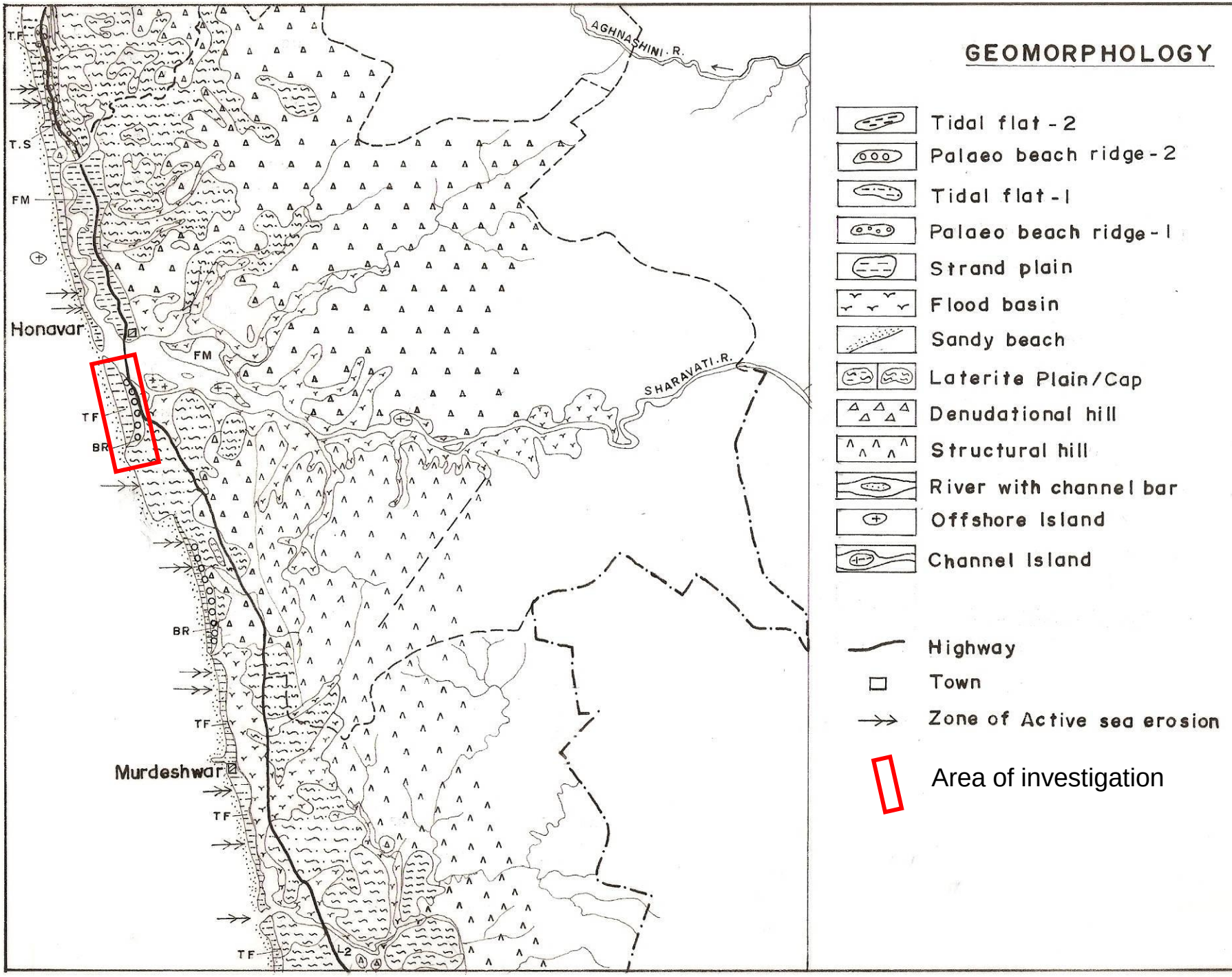
Malnad area- denudational hills & plateau,

Ridge –Valley topography and

Narrow, coastal alluvial plain.

En-echelon pattern of the headlands & presence of coast parallel river segments reveal that the coastal configuration of the area is controlled by longitudinal as well as cross faults.

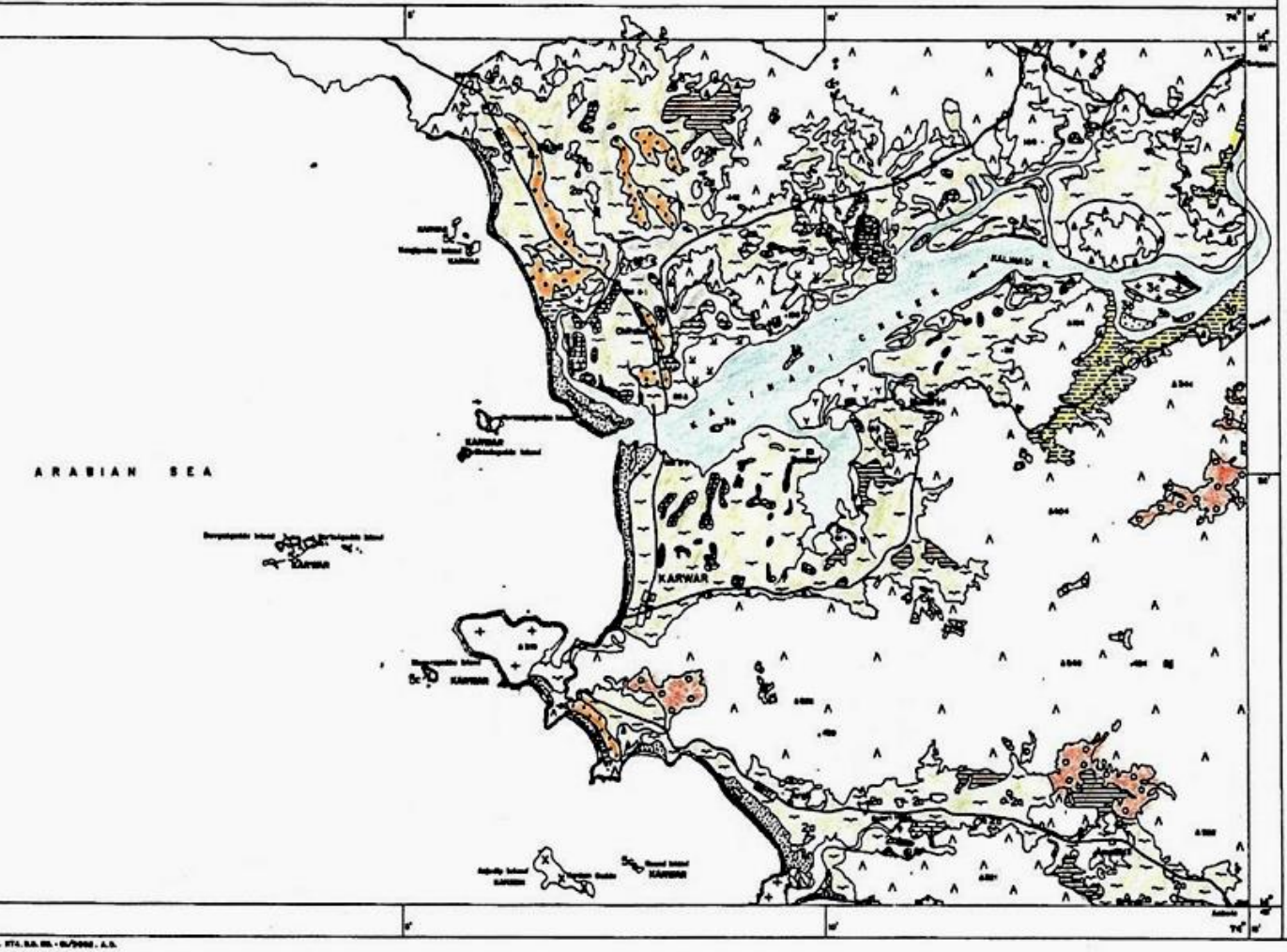
The short-run courses of west flowing rivers denote strong structural control.


AGHNASHINI R.
SHARAVATI R.
Honavar
Murdeshwar
T.F
T.S
FM
TF
BR
L2
GEOMORPHOLOGY
Tidal flat - 2
Palaeo beach ridge - 2
Tidal flat - I
Palaeo beach ridge - I
Strand plain
Flood basin
Sandy beach
Laterite Plain/Cap
Denudational hill
Structural hill
River with channel bar
Offshore Island
Channel Island
Highway
Town
Zone of Active sea erosion
Area of investigation

Scale : 1 : 2,50,000

Fig. I

QUATERNARY GEOLOGICAL AND GEOMORPHOLOGICAL MAP OF KARWAR AREA, NORTH KANARA DISTRICT, KARNATAKA.



INDEX

1. MARINE
   - 1a STRANDPLAIN / MARINE SURFACE — SILT, CL
   - 1b PALAEO BEACH RIDGE WITH SAND DUNES — SAND, ME
   - 1c ACTIVE BEACH / BARRIER BEACH — SAND, FI SORTED
   - 1d TIDAL FLAT — CLAY, SI
   - 1e MARSH / SWAMP — CLAY, SI
   - 1f SPIT — SAND, FI
   - 1g MANGROVE SWAMP — CLAY, SI
2. AEOLIAN
   - 2a SAND DUNE — SAND, SE LIGHT G
3. FLUVIAL
   - 3a ALLUVIAL PLAIN — SANDY C
   - 3b CHANNEL BAR — SAND, FI
   - 3c CHANNEL ISLAND — HARD R
4. FLUVIO-DENUDATIONAL
   - 4a COLLUVIUM — GRAVEL
   - 4b FILLED-IN-VALLEY — SANDY C
5. DENUDATIONAL
   - 5a DENUDATIONAL HILL — ARCHAE
   - 5b HEADLAND — ARCHAE
   - 5c OFFSHORE ISLAND — ARCHAE
   - 5d LATERITES — PRIMARY CRUST TYPE, P

General Geological Setup

Quaternary sediments

Laterites

Granites

Ultramafic rocks

Chlorite schist

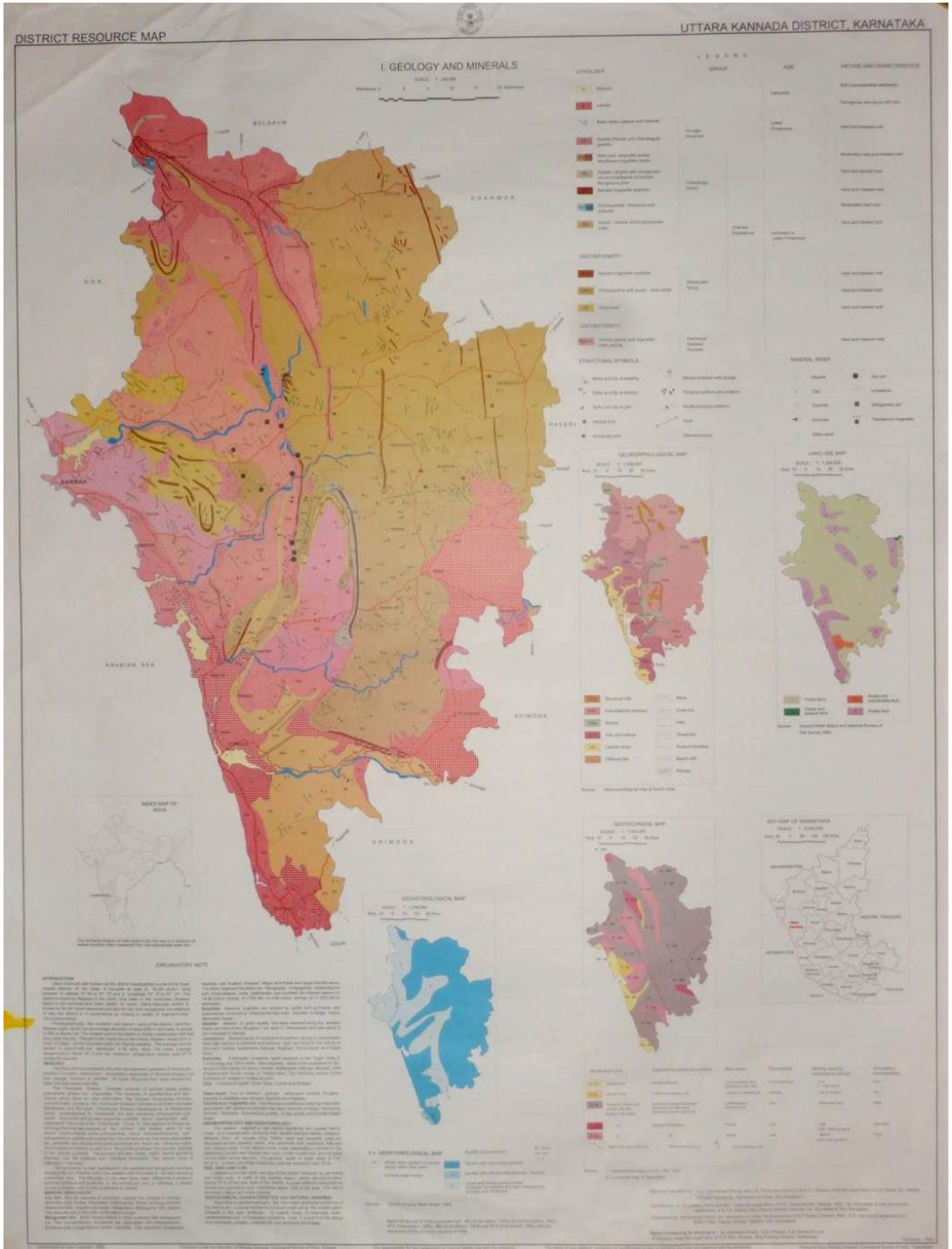
Metabasalts

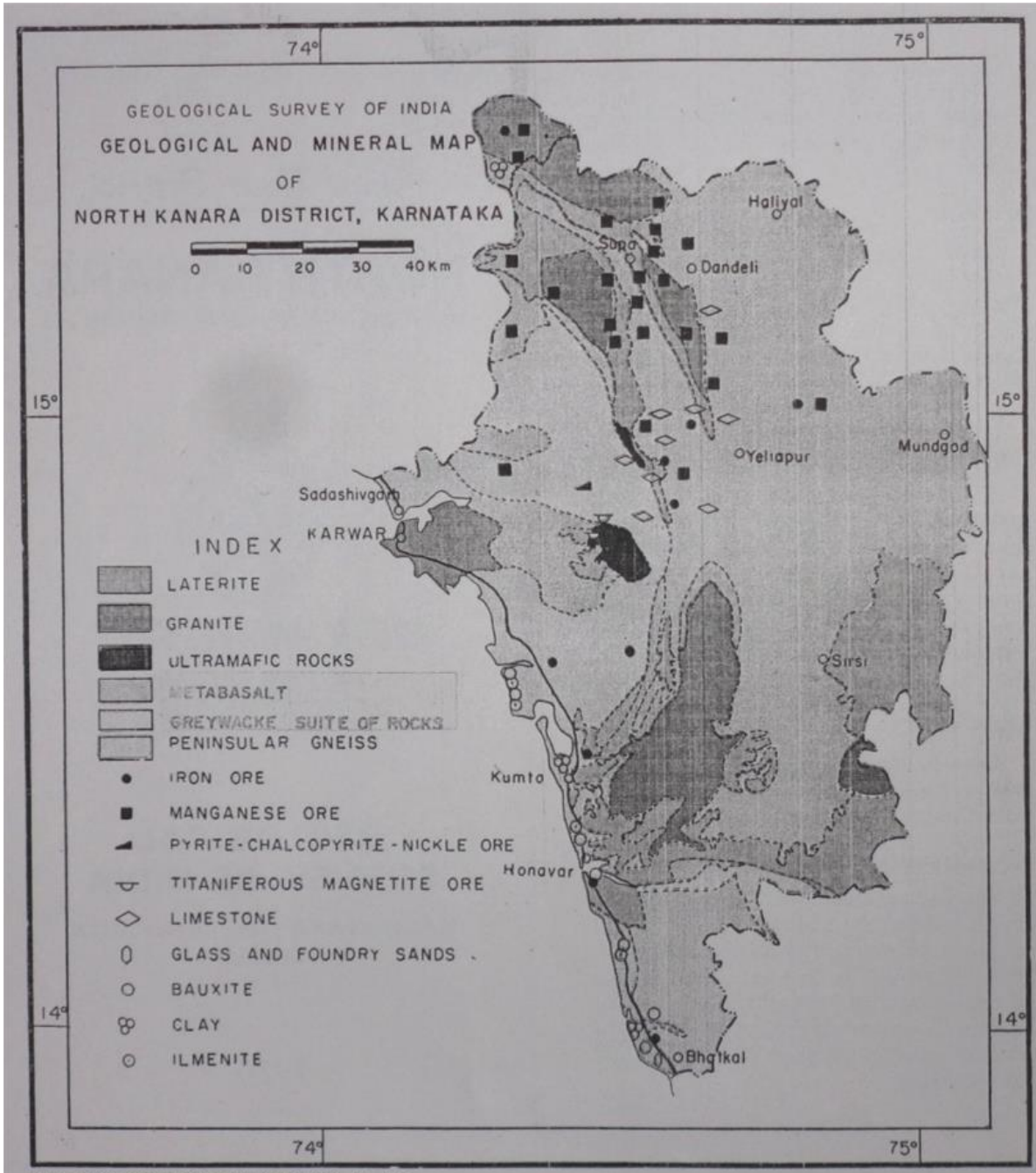
Banded iron formations

Peninsular Gneisses

DISTRICT RESOURCE MAP

UTTARA KANNADA DISTRICT, KARNATAKA





INTRODUCTION:

The North Kanara District covers an area of 10,176 sq. km.

The northern and eastern parts of North Kanara District form the Malnad area and the western portion of the district is mostly coastal plain with low lying open country and rarely with hill features. The Western Ghats form a chain of ridges along the coastal tract. Some of the areas in the district are covered with thick vegetation.

GEOLOGY:

The common rock types found are: gneissic granite, orthoquartzite, limestone, banded ferruginous quartzite, greywacke and ultrabasic rocks belonging to the Precambrian formations and laterite of pleistocene age.

MINERAL RESOURCES/RELATED INDUSTRIES:

The chief minerals and ores found in North Kanara District are as follows:

Iron ore:

Iron ore deposits of economic interest are located in Anmod, Siddhi hills, Ivoli, Hudsa, Illaiyadabe, Hatkhamba, Shiroli, Kunang, Avarchi, Bedgar, Hosahali, and Apsarkonda areas. Some of these deposits are at present being mined. The estimated reserves are of the order of 79.96 million tonnes with 55 to 60% Fe content.

Manganese Ore:

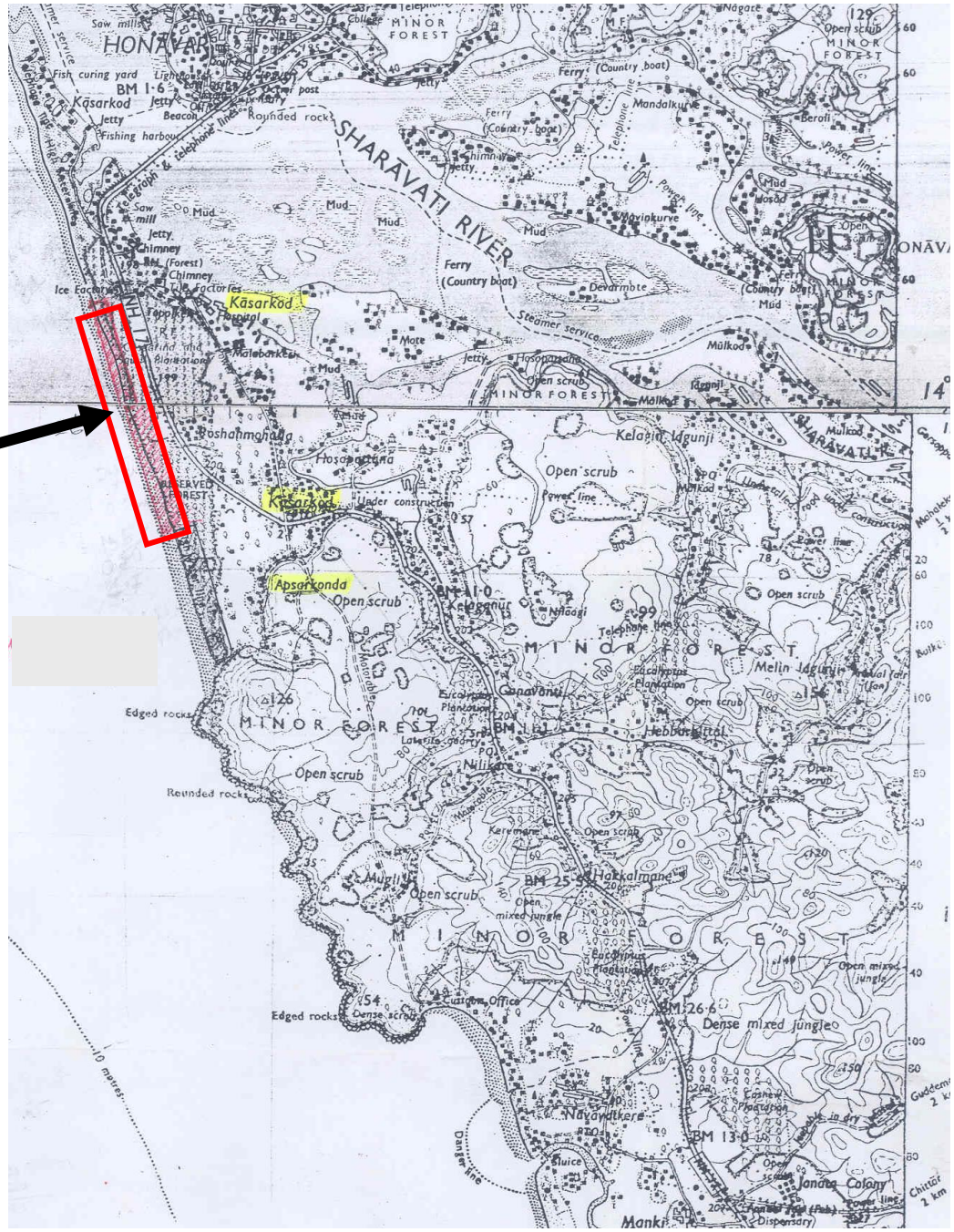
North Kanara District is richly endowed with manganese ore. The important

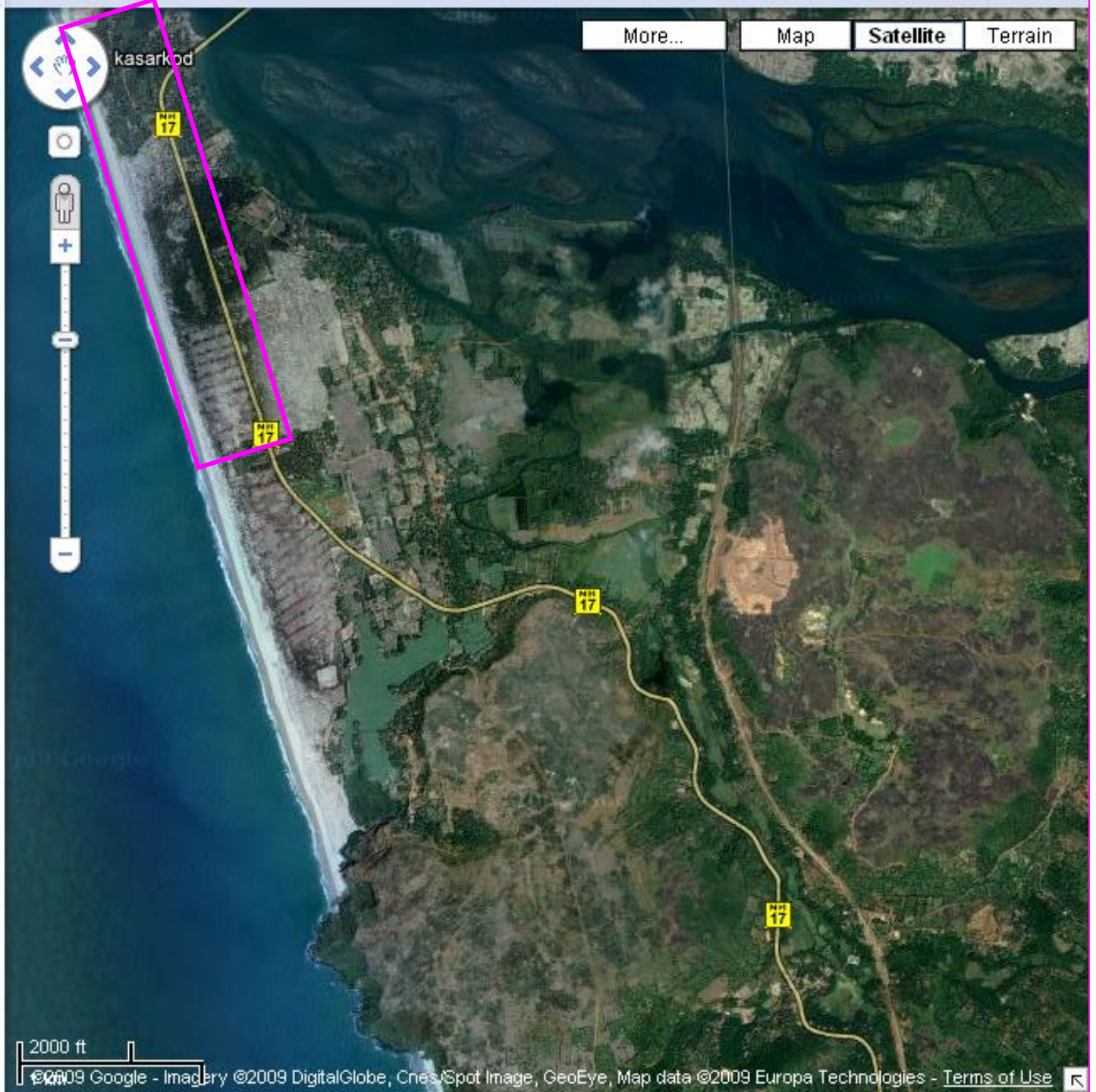
Crescent shaped beach bordering the Karwar town, Karnataka

Dune sands- actively mined for construction purpose, north of Karwar town.

Dune sands- actively mined for construction purpose, north of Karwar town.

Study Area in parts of T. Sheets Nos.48J/7 & 48J/8




More...
Map
Satellite
Terrain
kasarkod
NH 17
NH 17
NH 17
NH 17
2000 ft
1 km
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Overview of Placer Mineral Project Area,Honnavar

Pitting & logging of Placer Mineral Bands, Honnavar Beach Block

COASTAL GEOLOGY

The Warkallis is classified under Older Cenozoic and the younger as Quaternary formations.

The coastal Quaternary deposits are flanked by the extensively developed multi-level laterite surfaces which descend in steps towards the Arabian sea.

COASTAL ALLUVIUM

The coastal alluvial deposits are classified into marine, fluvio-marine, fluvial and denudational units.

A number of sand dunes, perched on rocky pediments and laterites, are also traced 4- 6 km away from shoreline, around the Karwar town.

The Quaternary sediments with an estimated thickness of **50-100m**, are unconformably underlain by the Archaean crystallines and Neogene sedimentaries (= Warkallis?), at different places.

Sand quarry- Dune sands actively mined for construction purpose, north of Karwar town.

- The Quaternary fluvial record along the coast generally indicates in the top 4-5 m, two to three cycles of sediments consisting of boulder-pebble beds, overlain by current bedded sands, clay with peat, pockets of white sands and grey, silty clay.

CONCLUSION

Geological resources must be studied/mapped in detail & data to be integrated with other resources

Mineral resources to be exploited in a sustainable manner

Coastal evolution has to be worked out in detail for understanding sea level rise and its impact on the fragile coast.

Spectacular growth of spits and bars and their general expansion along the coast, reveals

gradual recession of the sea,
coupled with tectonic uplift
during the Late Pleistocene to Late Holocene times.


THANK YOU