GEOMORPHOLOGY, SEDIMENTOLOGY AND STRATIGRAPHY OF PERAK RIVER AND COASTAL PLAINS.

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INTRODUCTION

- This study focuses on the geomorphology, sedimentology and stratigraphy of the Perak River and its coastal plain areas.
- It is an attempt to unravel the controls on the evolution of the river and the sedimentation on the coastal-deltaic plain of the larger part of Perak.
- This study will try to document the present geographical and geomorphologic aspects of the river, as well as the Quaternary successions of the coastal plain.

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Source : modified from satellite image (Google Earth)

RESEARCH BACKGROUND

1. Holocene sea-level change

- Exposed during Last Glacial Maximum (LGM); about -116m below MSL.
- Situated middle of Sundaland.
- ‘A savanna corridor’

2. Perak River evolution

- Studied by Koopmans (1964).
- 5 evolution based on aerial photograph.

3. Stratigraphy.

   Young Quaternary deposits:

- Gula Formation.

  Members include: Matang Gelugur, Port Weld, Teluk Intan and Bagan Datoh.

- Beruas Formation.

  Member: Pengkalan.

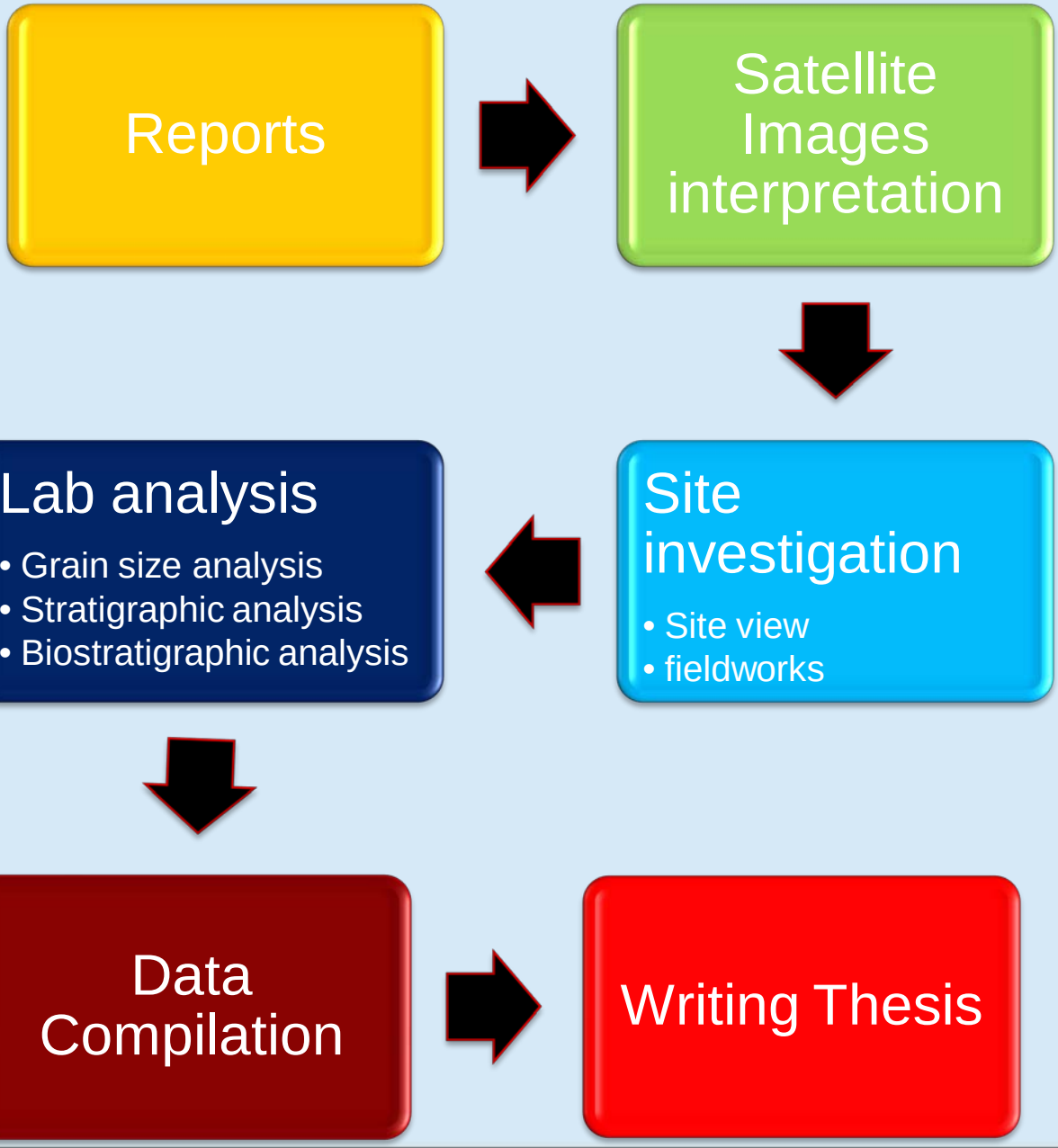
PROBLEM STATEMENT

- What is the geomorphology features occurred along Perak River.
- how the impact of Holocene relative sea level change on the development of Perak River and the coastal plain.

RESEARCH OBJECTIVE

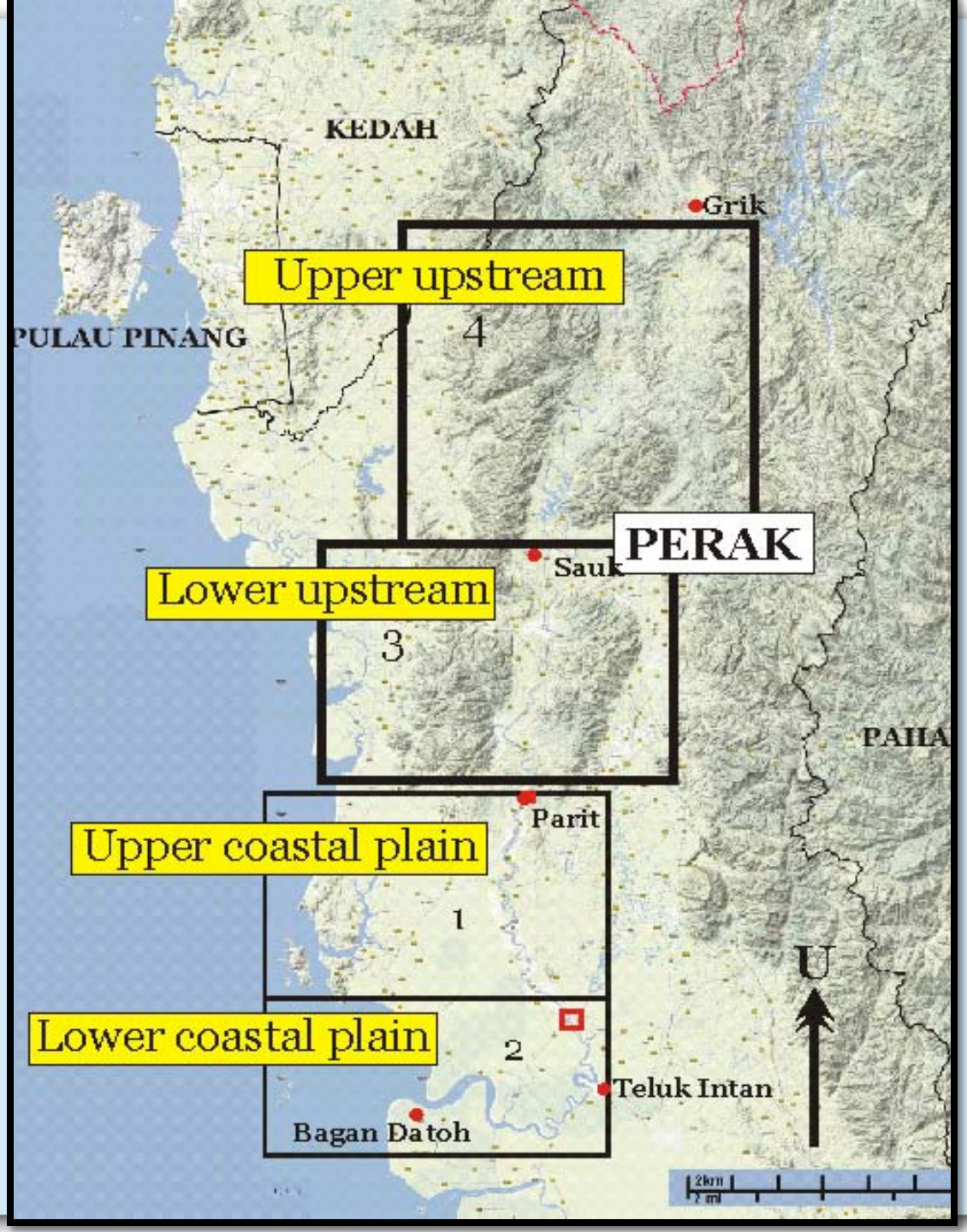
1. To document the changes in the Geomorphology of the Perak River and coastal plains through time.
2. To investigate the controls and influence of Holocene sea-level changes on the geomorphologic and stratigraphic evolution of the area.
3. To characterize the sedimentation trends and to document stratigraphy in coastal plain areas.

METHODOLOGY

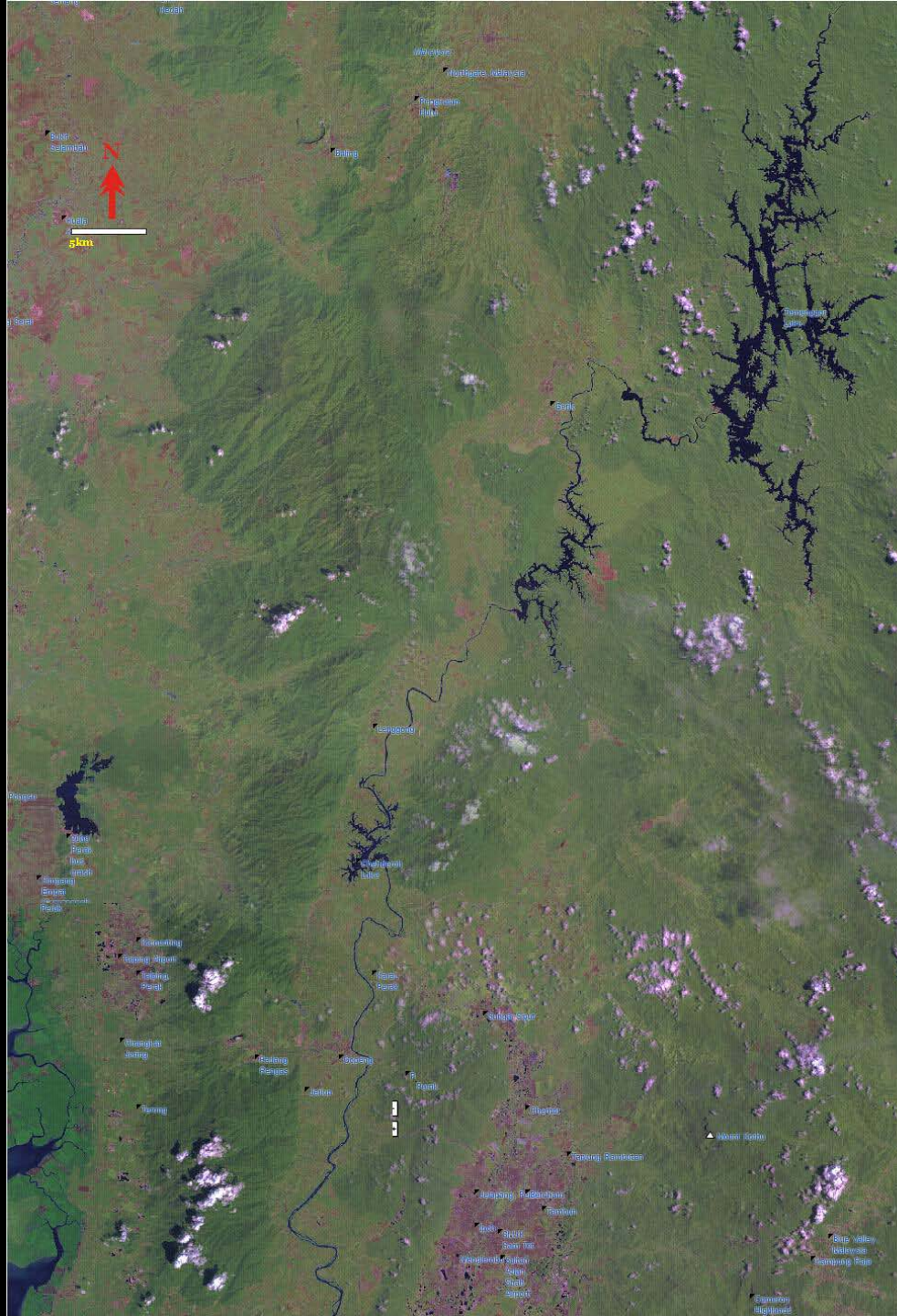


RESEARCH FINDING

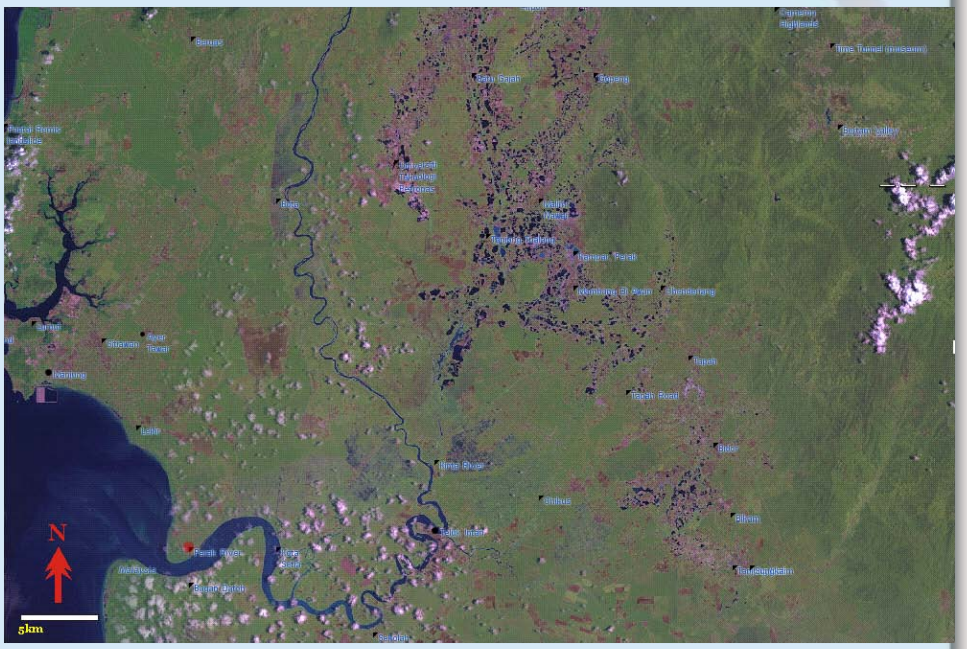
1. Four Geographic sections :
   i. Upper Upstream
   ii. Lower Upstream
   iii. Upper coastal plain
   iv. Lower coastal plain


KEDAH
Grik
Upper upstream
4
PULAU PINANG
PERAK
Sauk
Lower upstream
3
PAHA
Parit
Upper coastal plain
1
U
Lower coastal plain
2
Teluk Intan
Bagan Datoh

Sections ---------- descriptions	**Upper upstream**	**Lower upstream**
Location	Grik-Sauk	Sauk-Parit
Channel pattern	Straight-braided; slightly sinuous	Straight; slightly sinuous
Sand bars distribution	High; active and vegetated	High; vegetated (up to 0.8-1km long)
River width	200-500m	200-500m
Direction of the river flow	North-south	North-south

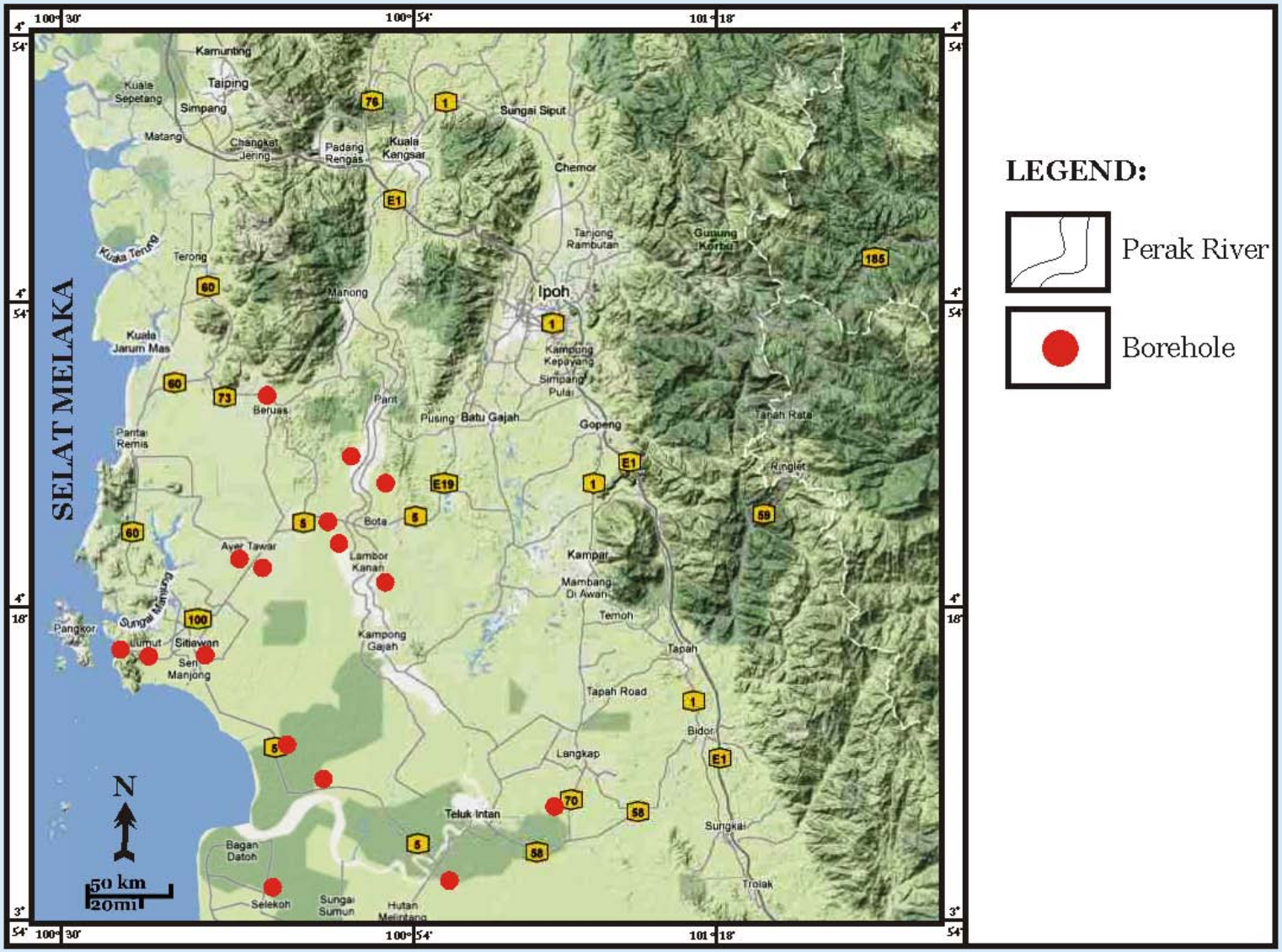


Sections ---------- descriptions	**Upper coastal plains**	**Lower coastal plains**
Location	Parit-Chenderong Balai	Chenderong Balai-Bagan Datoh
Channel pattern	Straight and meandering	Strong meander pattern
Sand bars distribution	Moderate: active and vegetated	Low
River width	500m	From 500m up to 2-2.3km
Direction of the river flow	southeast	Easterly to the west



2. Borehole Data.

- Collection and compilation from previous studies.



STRATIGRAPHY

This Quaternary sediment is thins towards the foothills, but may thicken up to 76m towards the lower coastal plain.

The borehole data analysis from earlier reseacher shows:

- Lithologies: peat, clay, silt, sand and gravel.
- Borehole depth: 4 meters to 78 meters around 15 areas.

Upper coastal areas (Lambor Kanan):
Beruas F (clay, silt, gravel, peat) underlies by Gula F (clay, silt ,sand).

Foodplain (Ayer Tawar):
2 layers contain of plant remains and peat. (clay, silt, sand and peat)

Lower coastal areas (Teluk Intan):
Clayey sediment and peat at the top of each log.

River mouth (Bagan Datoh):
Gula F: Matang Gelugur M (sand, silt), Teluk Intan M (sand, clay, silt, plant remains)

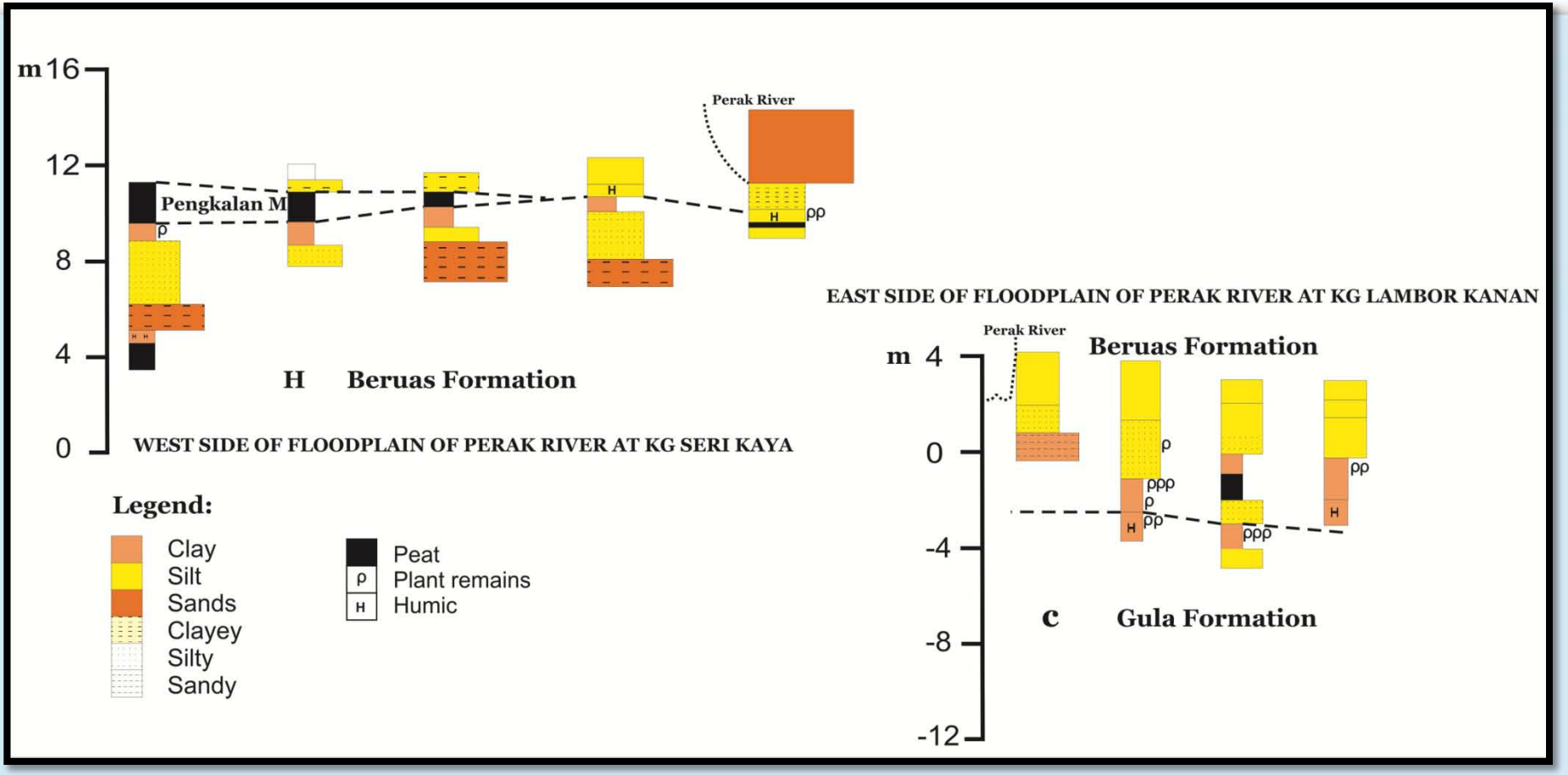


Figure 10: The borehole data at Kg Seri Kaya and Kg Lambor Kanan located at the both side of Perak River's floodplain and shows occurrence of two Young Quaternary Stratigraphy; Beruas Formation and Gula Formation which is the deposition environment are interpreted as marine and paludal environment (Bosch,1986).

CONCLUSION

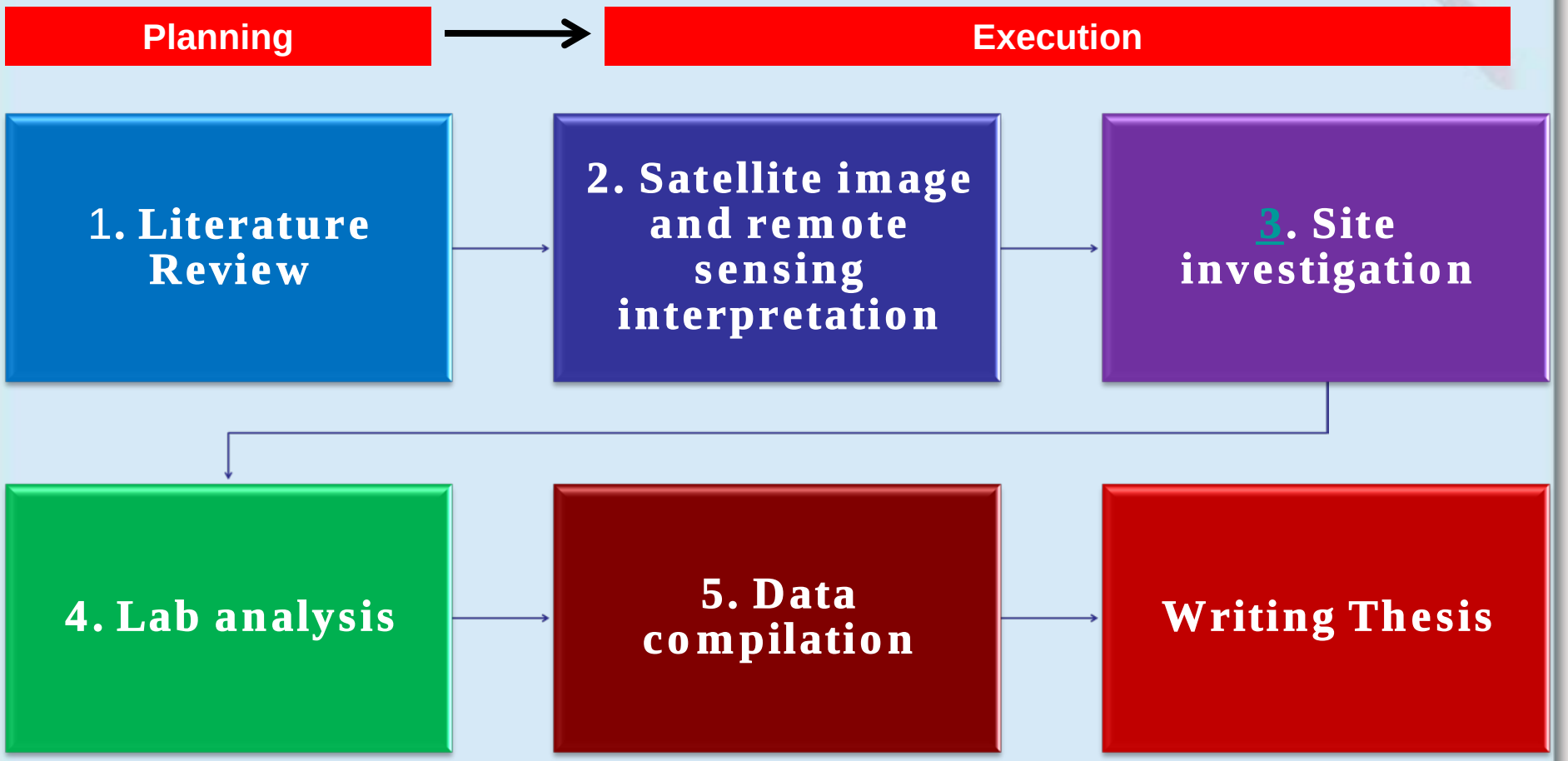
1. The flows direction: from north to the south and change its direction towards the west from Teluk Intan to Bagan Datoh. Factors may influence the changes:
   i. The topography and types of river bank.
   ii. human impact: vegetation and development

2. Holocene Sea-level change.

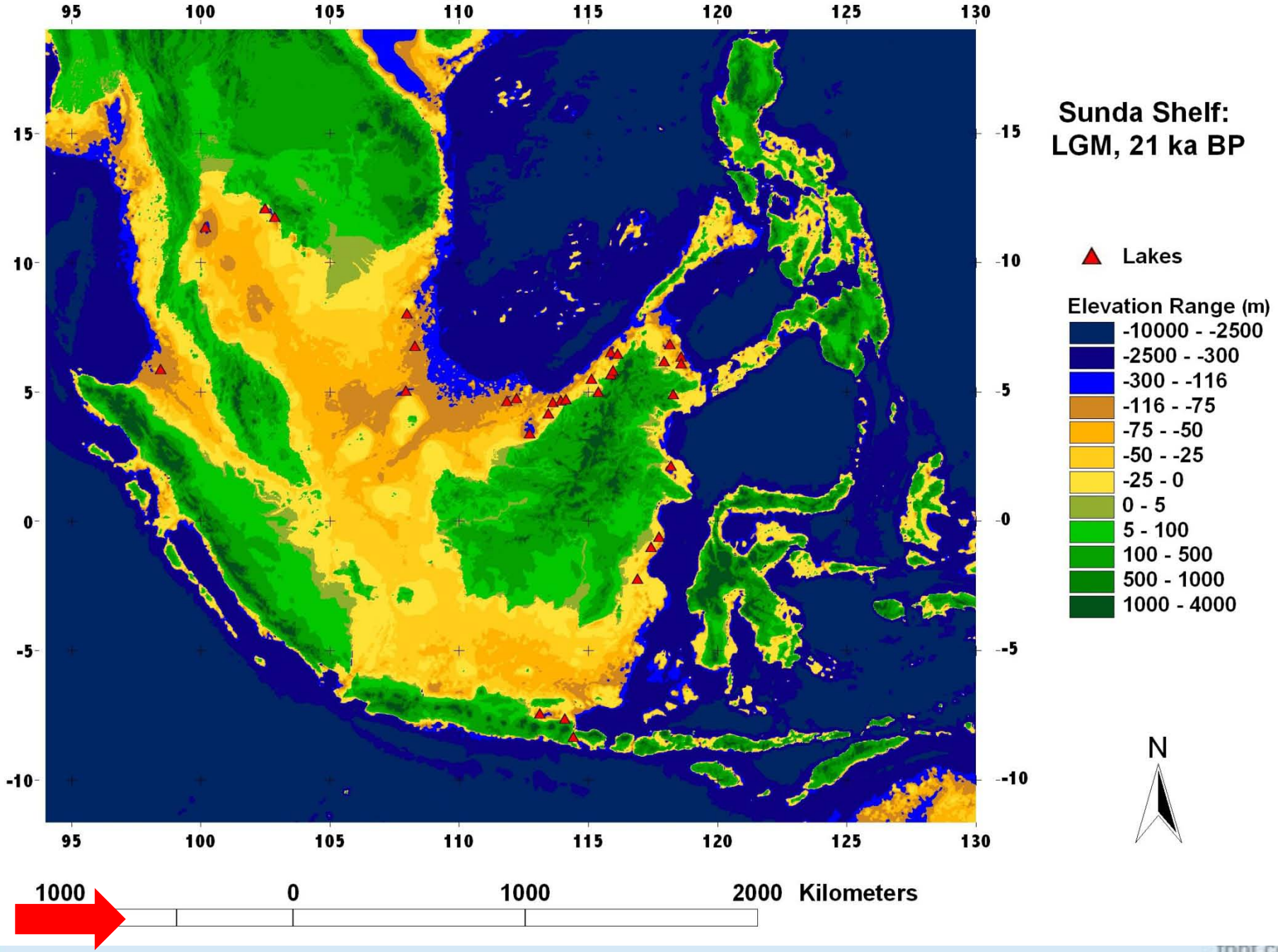
   Eg: Kg Seri Kaya and Kg. Lambor Kanan from log interpretation from borehole data by Bosch (1986) as shown in Figure 11 .

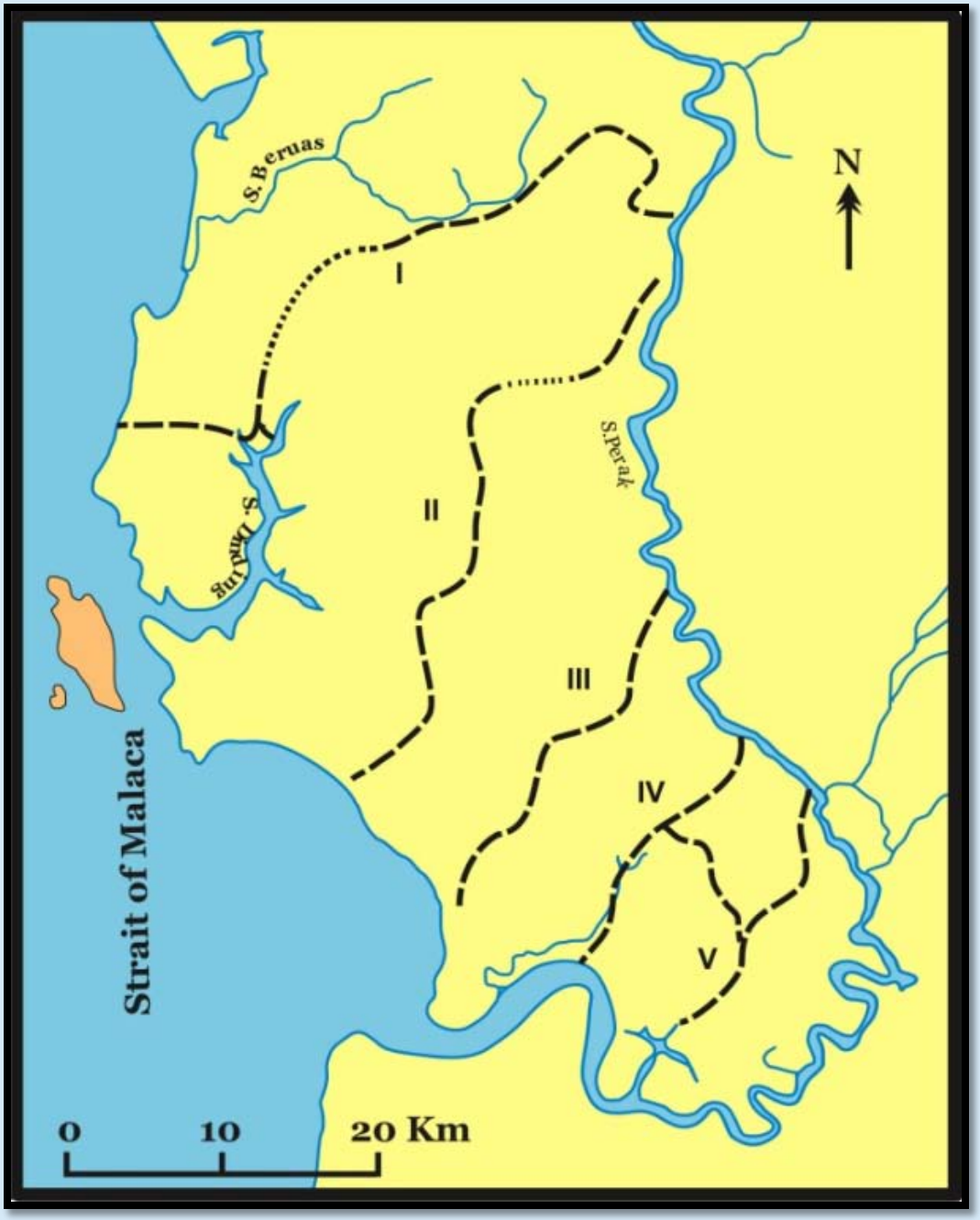
3. River channel pattern
   i. Straight-braided : high distribution of sand bars
   ii. Meandering : moderate to low distribution of sand bars

FUTURE DIRECTION



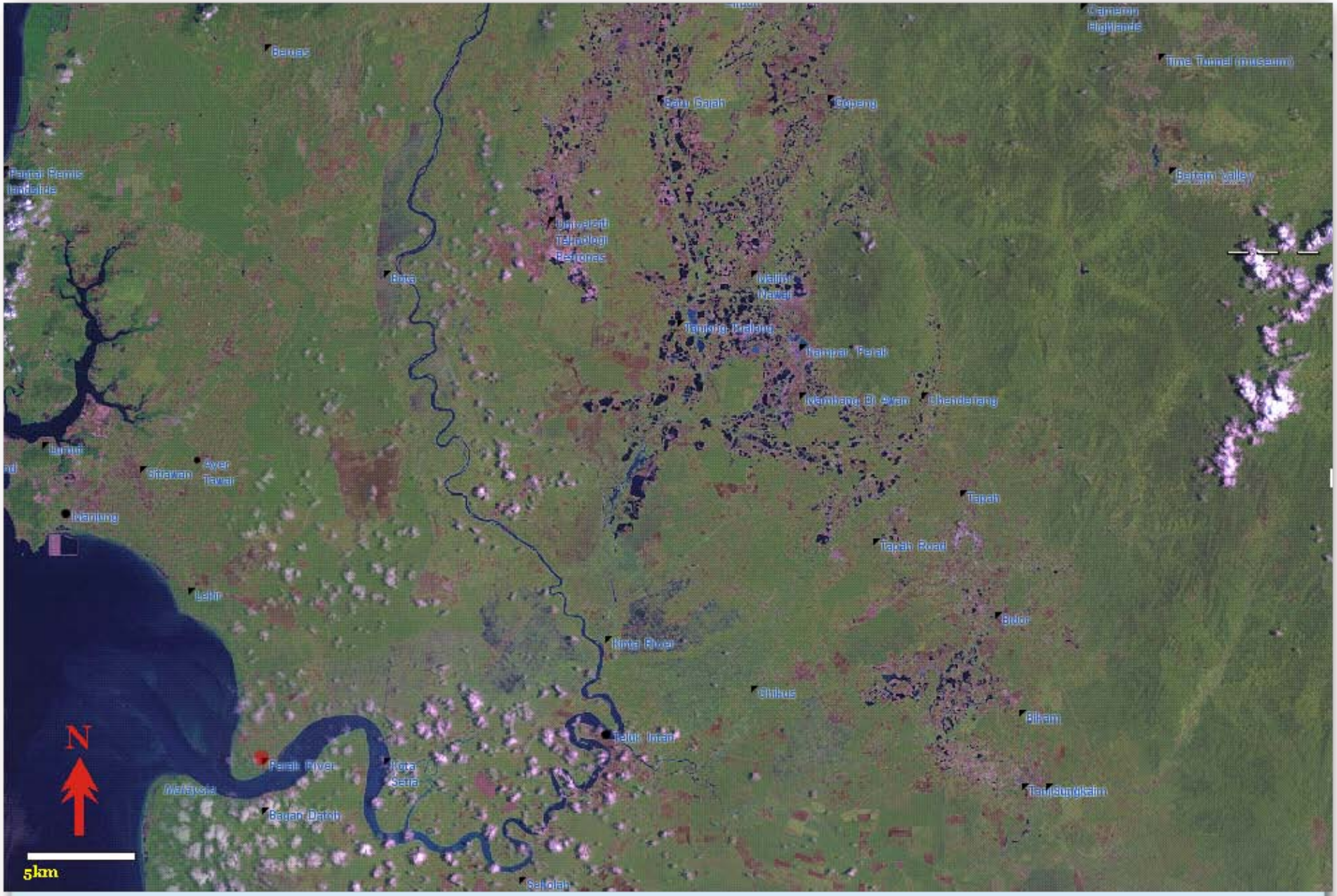
THANK YOU FOR YOUR ATTENTION~


Sunda Shelf:
LGM, 21 ka BP
Lakes
Elevation Range (m)
-10000 - -2500
-2500 - -300
-300 - -116
-116 - -75
-75 - -50
-50 - -25
-25 - 0
0 - 5
5 - 100
100 - 500
500 - 1000
1000 - 4000
N
95
100
105
110
115
120
125
130
15
10
5
0
-5
-10
1000
0
1000
2000 Kilometers


S. Beruas
N
I
II
III
IV
V
S.Perak
S. Dinding
Strait of Malaca
0
10
20 Km

Vegetated former sand bar about 1.46km long at northwest of Kg Dato Sagor and the imaginary date is 20.2.2010.

vegetated sand bar located at west of Kg Pulau Kemiri, taken from Google Earth and the imaginary date is 20.2.2010.


Cameron Highlands
Time Tunnel (museum)
Batu Gajah
Gopeng
Pantai Remis
Bahau
Universiti Teknologi Petronas
Bota
Malim Nawar
Tanjong Belanja
Tampar Perak
Kampung Di Awah
Chenderiang
Lumut
Sitiawan
Ayer Tawar
Tapah
Manjung
Tapah Road
Lekir
Bidor
Kinta River
Chikus
Bikam
Teluk Intan
Perak River
Kota Setia
Malaysia
Bagan Datoh
Sekolah
N
5km

Lateral sand bar or point and side sand bar located at Kg Teluk Kepayang longer up to 1 km along the river taken from Google Earth and the imaginary date is 11.2-12.5 2007 .

Meander part and the point bar nearly isolated at Teluk Intan.

Meander part at the north of Hutan Melintang taken from Google Earth and the imaginary date is around 27.1-15.6 007.

Mouth of the Perak River at Bagan Dato' show the wider width of the Perak River taken from Google Earth and the imaginary date is around 6.2.2001.


LOCATION: BOTA.