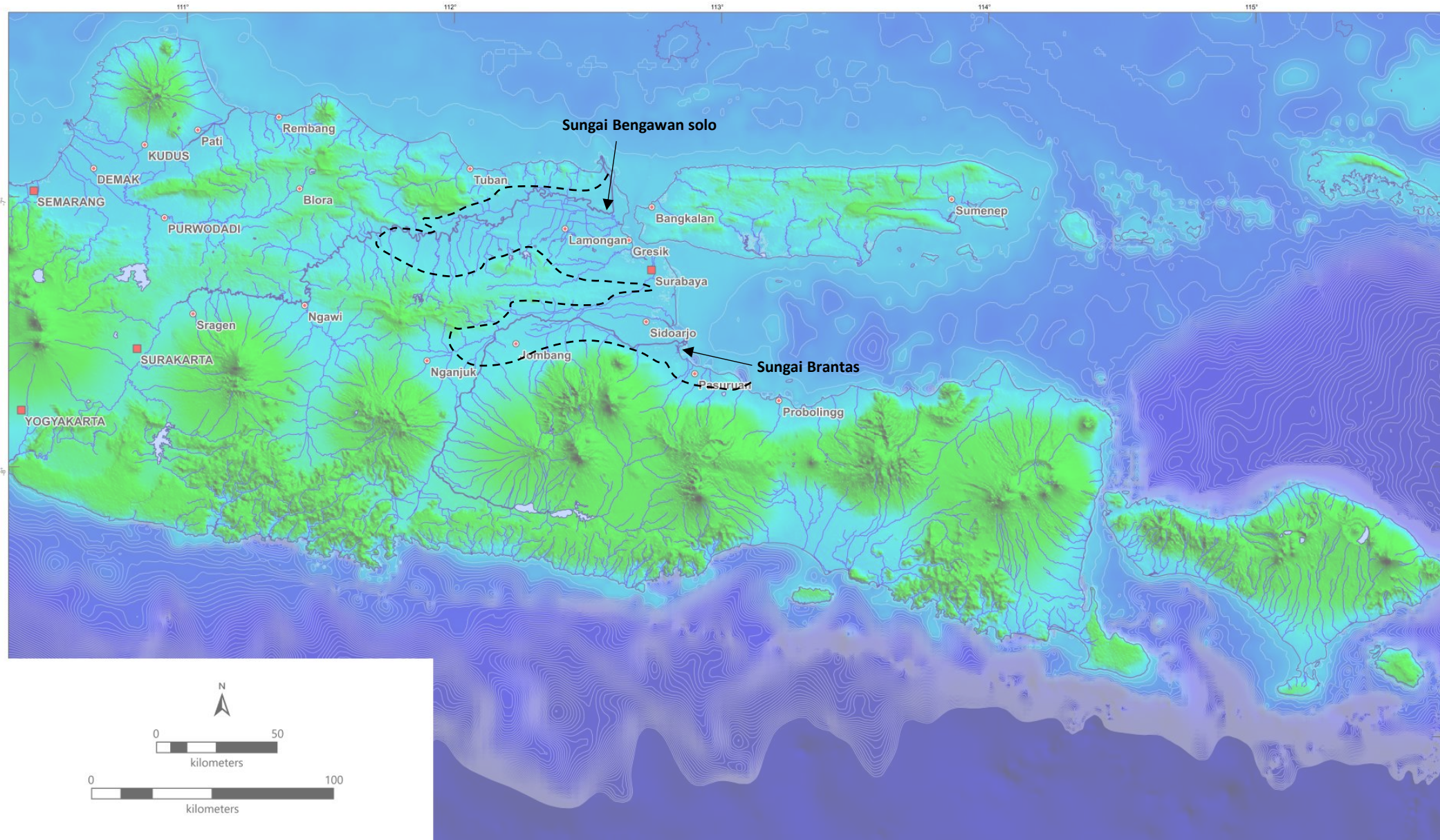


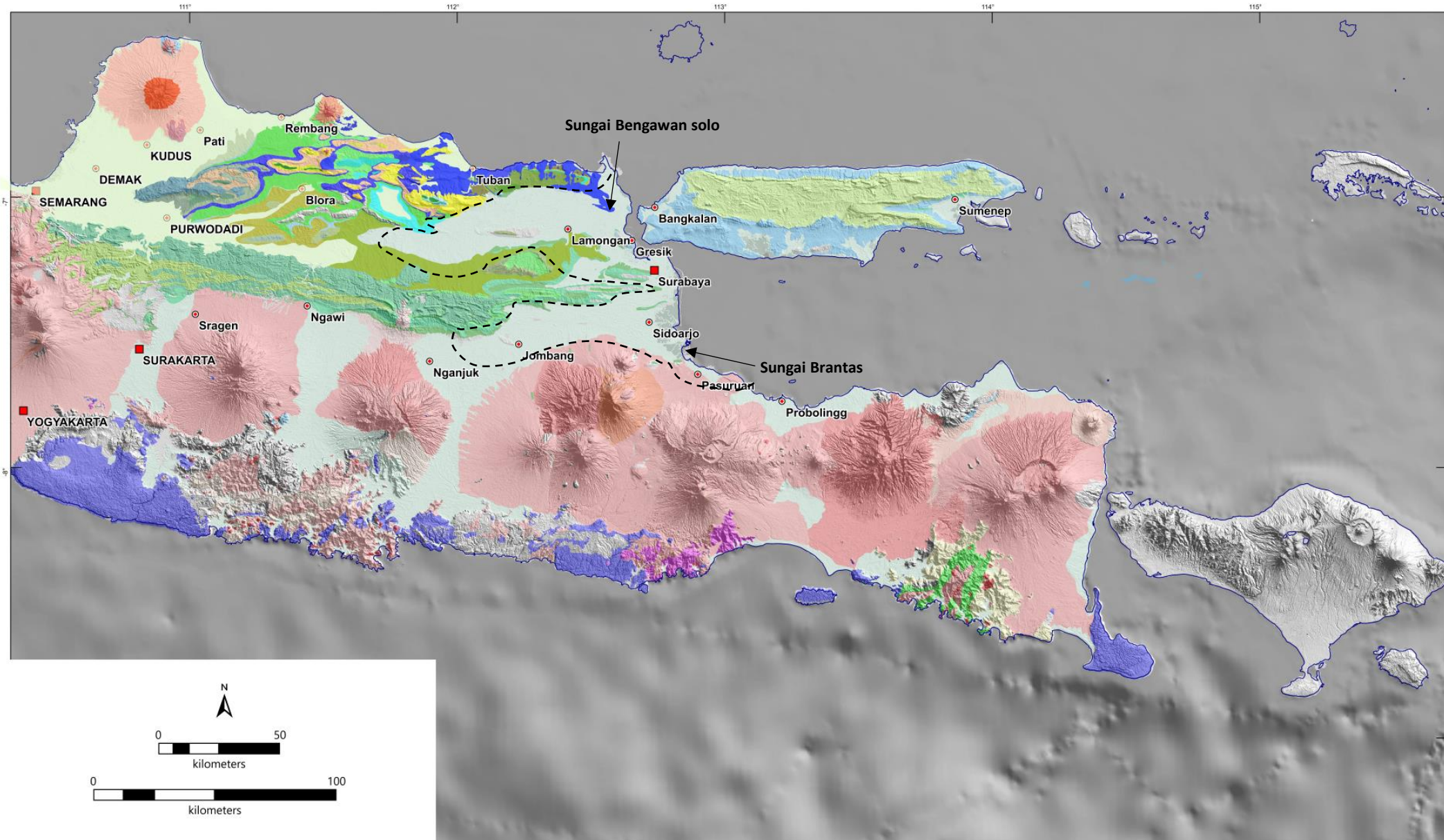
EVOLUSI GEOLOGI JAWA TIMUR

Oleh: DR. Andang Bachtiar M.Sc

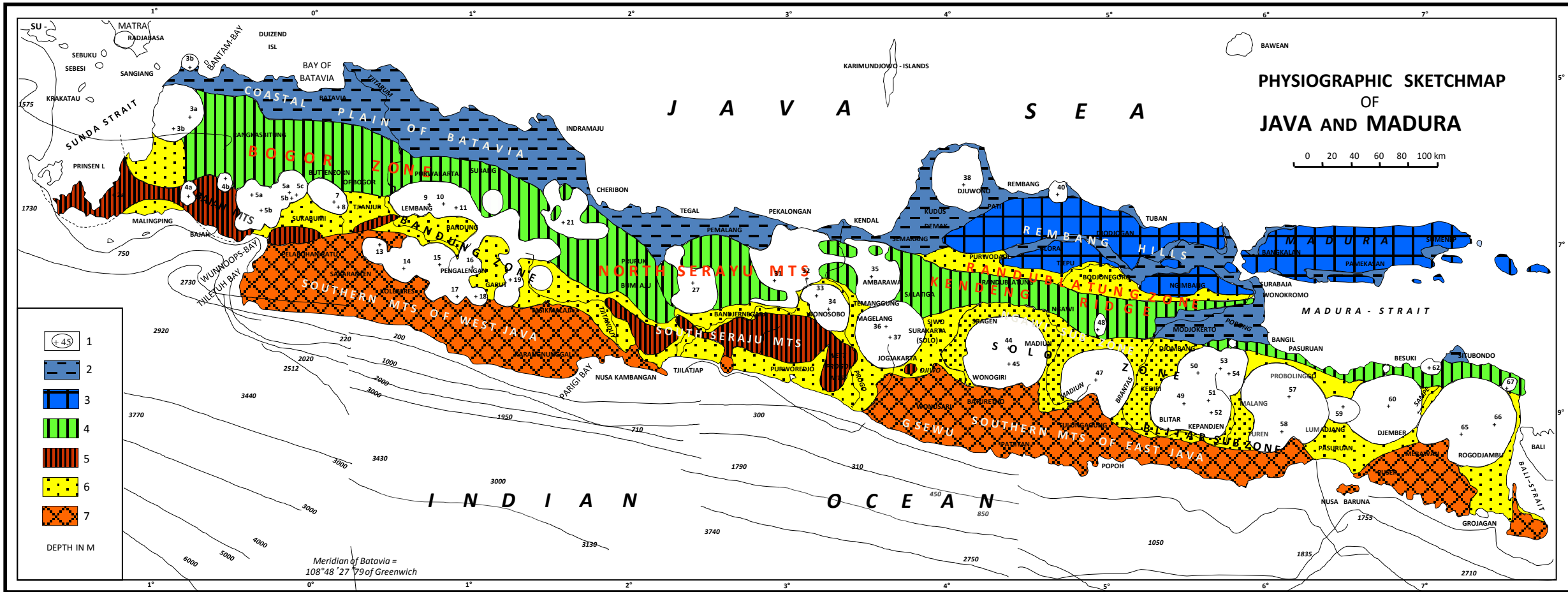
PRESENT DAY TOPOGRAPHY OF EAST JAVA



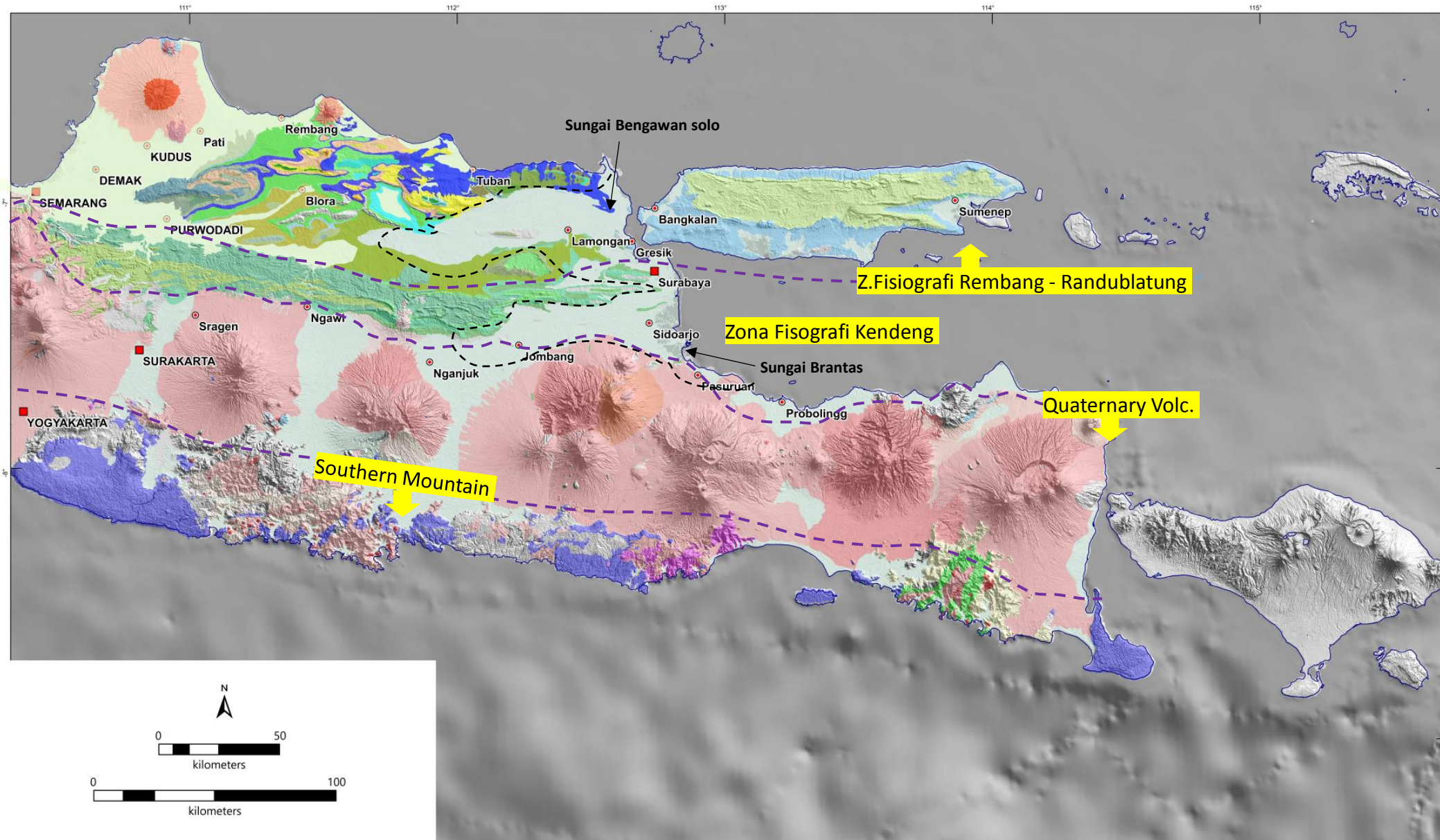
PRESENT DAY SURFACE GEOLOGICAL MAP OF EAST JAVA



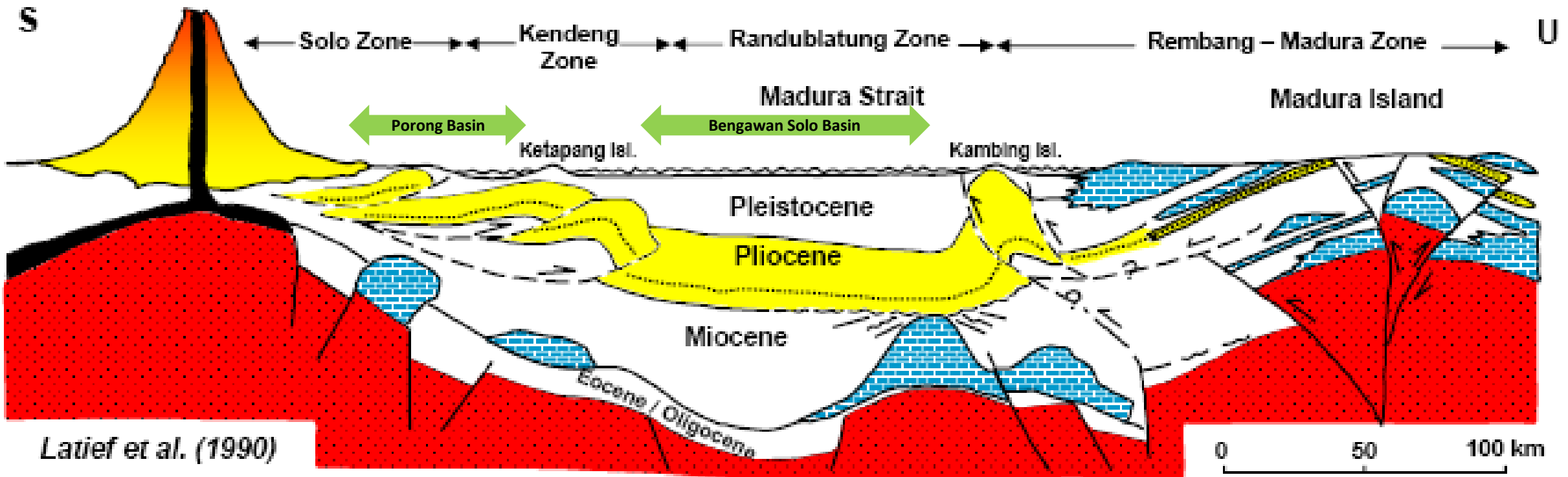
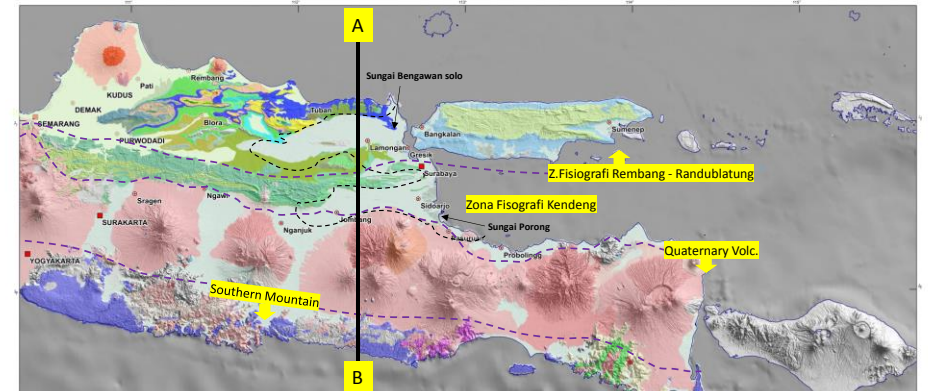
PRESENT DAY PHYSIOGRAPHY MAP



PRESENT DAY PHYSIOGRAPHY MAP

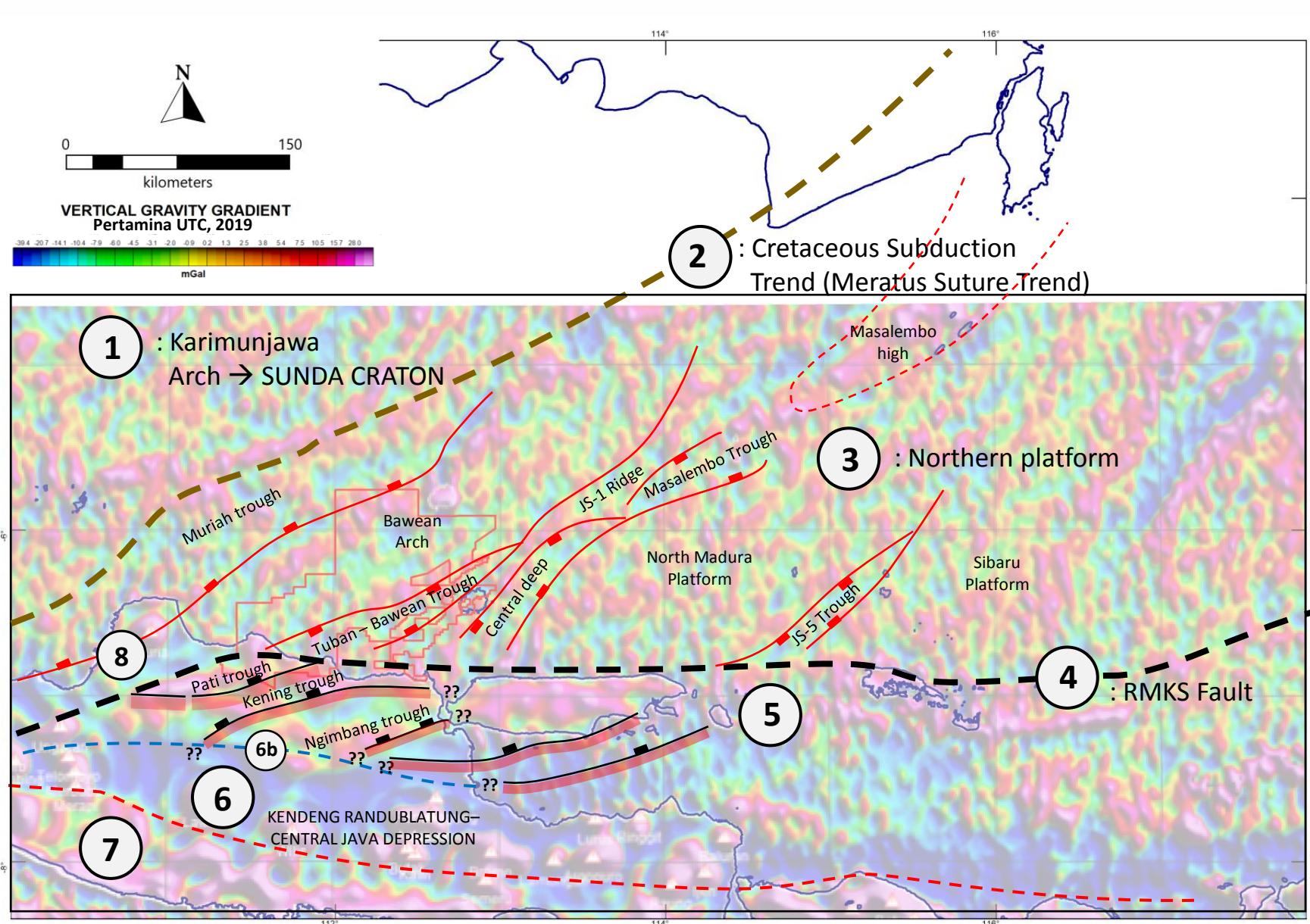


REGIONAL CROSS SECTION



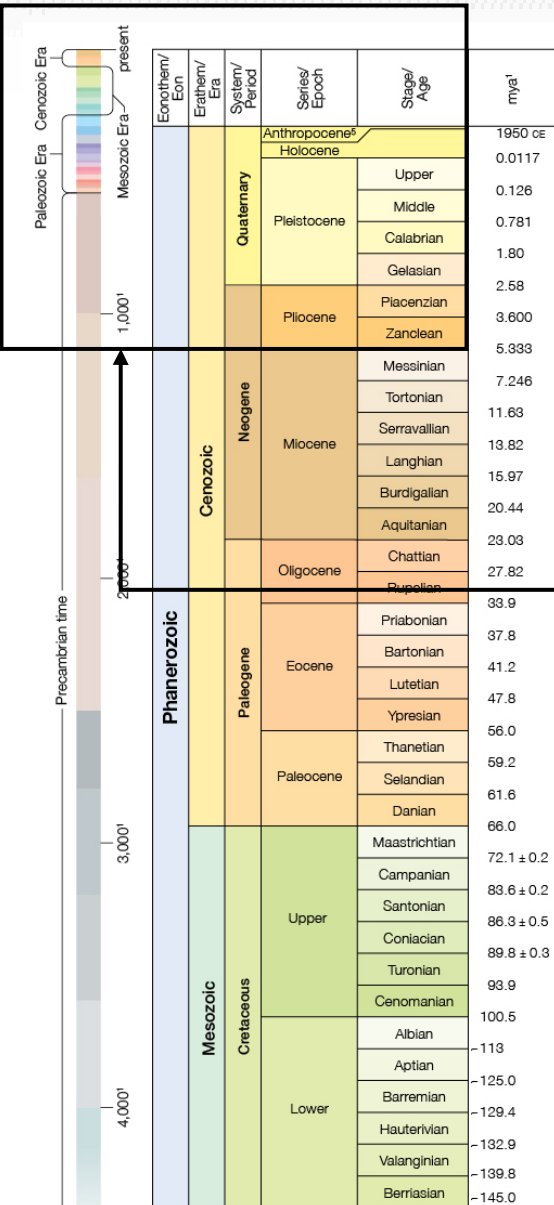
Latief et al. (1990)

CRITICAL TECTONIC ELEMENTS



- 1** : Karimunjawa Arch
- 2** : Cretaceous Subduction Trend (Meratus Suture Trend)
- 3** : Northern platform
 - Muriah arch
 - Bawean arch
 - Tuban – Bawean Arch
 - JS-1 Ridge
 - Central Deep
 - Masalembu Trough
 - JS-5 Trough
 - Sibaru Platform
- 4** : RMKS Fault – PALEO SUTURE?
- 5** : REMBANG RANDUBLATUNG ZONE
 - Pati Trough
 - West Cepu, Dermawu, Sumber Ridge
 - Kening Trough
 - East Cepu Ridge
 - Ngimbang Trough
 - Kemandung Ridge
 - BD Ridge
 - XX-1 Ridge
- 6** : Kendeng – Randublatung – Central Java Depression
- 7** : Southern Mountain Uplift
- 8** : Back arc basin magmatism
- 9** : Hindia – Australi Subduction System

REGIONAL STRATIGRAPHY – LONG HISTORY EVOLUTION OF EASTERN JAVA

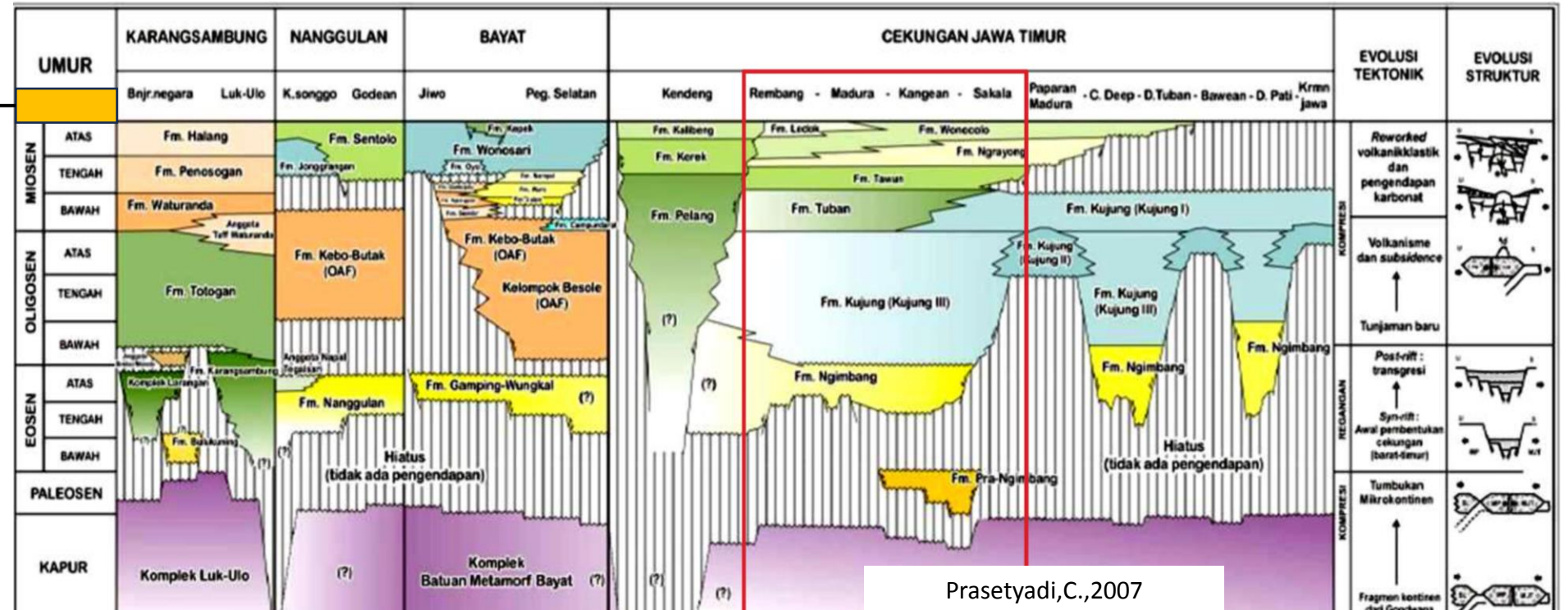


Rentang hidup Manusia Purba di Jawa yang sementara ini berhasil ditemukan (Homo Erectus)

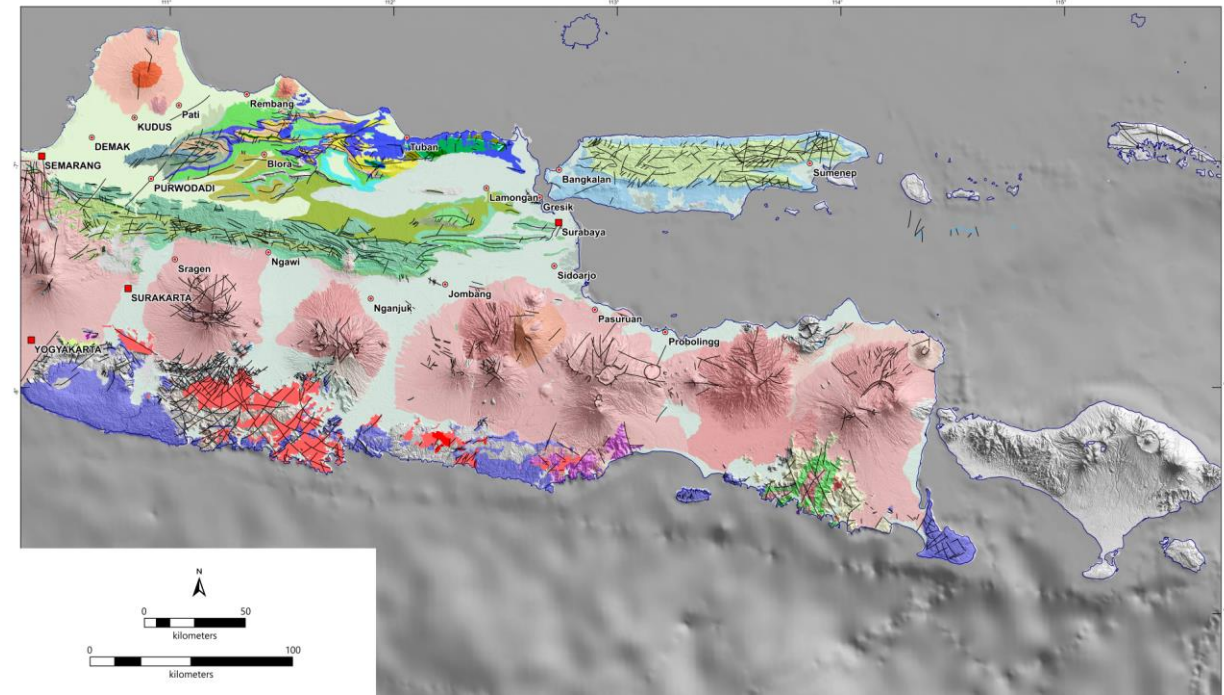
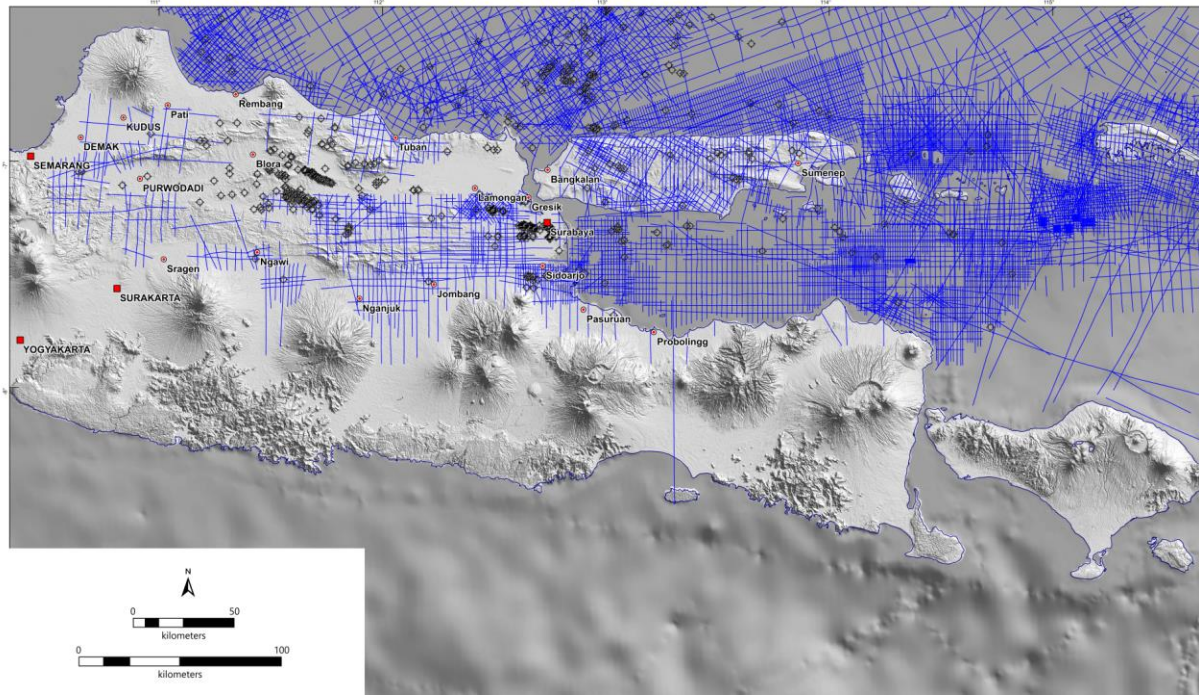
- Pithecanthropus erectus → Ditemukan oleh E.Dubois → Sangiran → estimasi umur 1 jt – 500.000 tahun yang lalu
- Dating dari batuan pengisi disekitar tengkorak ditemukan adalah 1.5 – 1.8 juta

Rentang hidup Masyarakat Modern di Jawa:

- Kerajaan Tarumanegara → Jawa Barat sekitar abad ke 4 Masehi
- Kerajaan Kalingga → Jawa Tengah sekitar abad 6 -7 Masehi
- Kerajaan Mataram Kuno → Jawa Tengah sekitar abad 8 – 10 Masehi



Prasetyadi,C.,2007

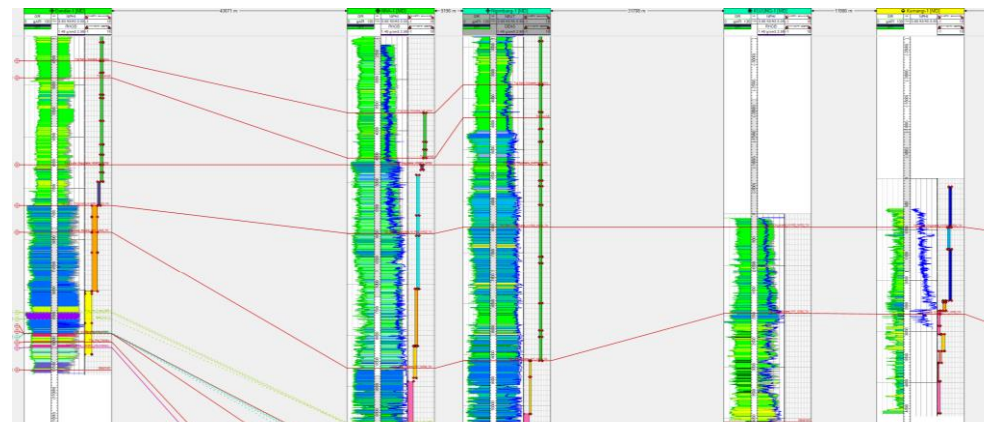


September 15, 2014

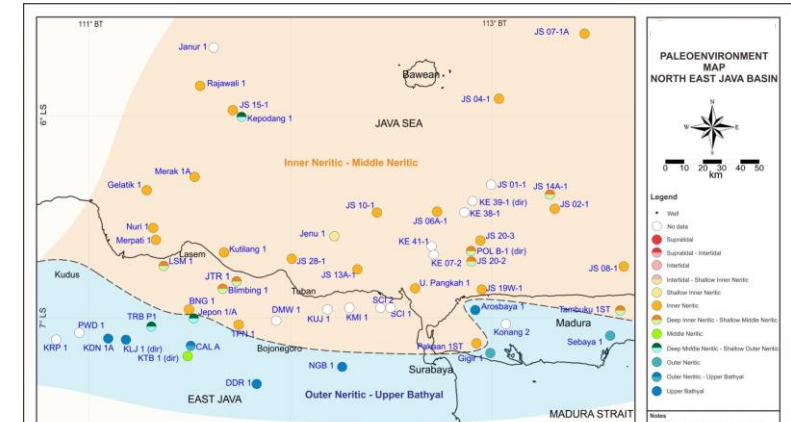
DATUM SUCCESSION DANDER DDR-1 KB: 121.71m

Geologic Age	Formation Top (Original)	Lithostratigraphic	Letter Stage	Zone (1990)	Measured Depth (meters)	Planktonic foraminifera and nanno Datums Taxa in red are calc.nanno Blue foraminifera, Green LBP T: top datum, R: reworked C: caved, P: present	DEPOSITIONAL ENVIRONMENT			
							SPINACID	INSTR	SHALIC	UPPER BATHYAL
UPPER MIOCENE	MUNDU	LEDOK	MUNDU	N.17 - N.18	110 - 225	<i>G.pestiumida</i> (T)-3.76 <i>R.pseudumbilic</i> (c)				
					390	<i>G.praebulloides</i> (T)-6.94 <i>D.nohumatus</i> (c)				
MID MIOCENE	WONOCOLO	LEDOK	WONOCOLO	N.15 - N.17	595 - 860	<i>G.languensis</i> (C)-6.14 <i>Coccolites</i> (T)-9.69				
	TUBAN			N.14	1200 - 1270	<i>G.akiensis</i> (T)-10.46 <i>G.subquadratus</i> (T)-11.79 <i>G.periphoreoides</i> (T)-12.56 <i>Pisaceras</i> (T)-14.53 <i>P.transitoria</i> (T)-15.86 <i>G.kugleri</i> (T)-21.12				
LOWER MIOCENE	KRAMATI	PRUPUH		N.5-N.9	1800	<i>G.primordialis</i> (P)				
	KUJUNG			N.2	1735 - 2050	<i>G.priparensis</i> (T)-22.89 <i>G.gadili</i> (T)-26.16 <i>G.gorani</i> (T)-26.46 <i>G.gopani</i> (T)-26.83 <i>G.lampitaperia</i> (T)-30.42 <i>G.praesepist</i> (r)				
OLIGOCENE	NEZIRANG			N.2	2264 - 2395	<i>Nummulites</i> sp(T)-28 <i>G.officinalis</i> (c)				
	EP NOTORANG			N.2	2515 - 2765	<i>H.pantaniensis</i> (T)-34.3 <i>G.tapuriensis</i> (T)				

Analisa biostratigrafi sumuran

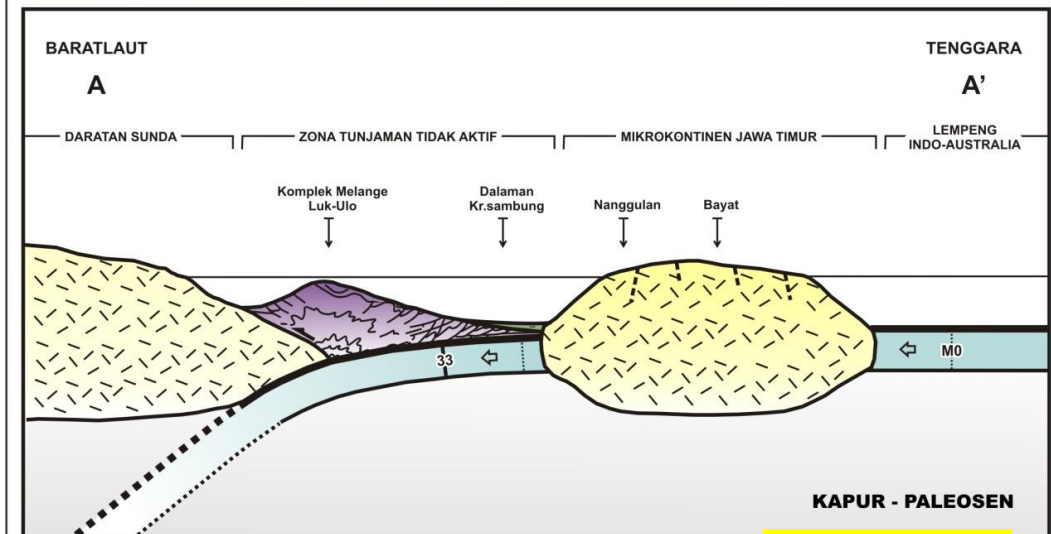
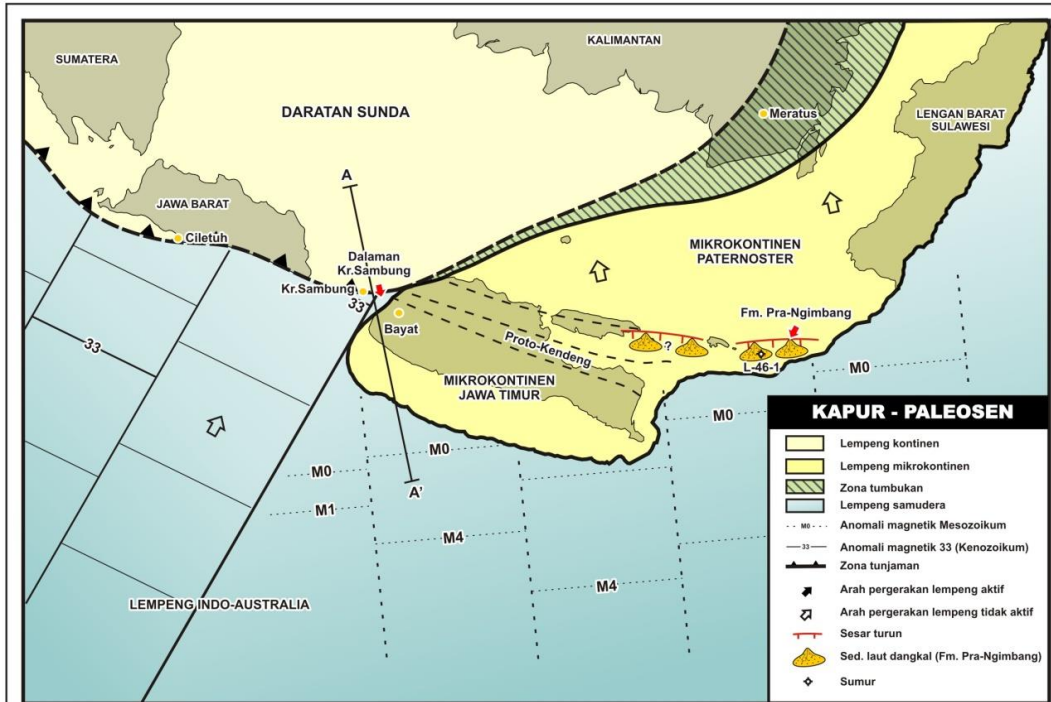


Korelasi lateral marker krono-stratigrafi (garis kesamaan umur batuan)

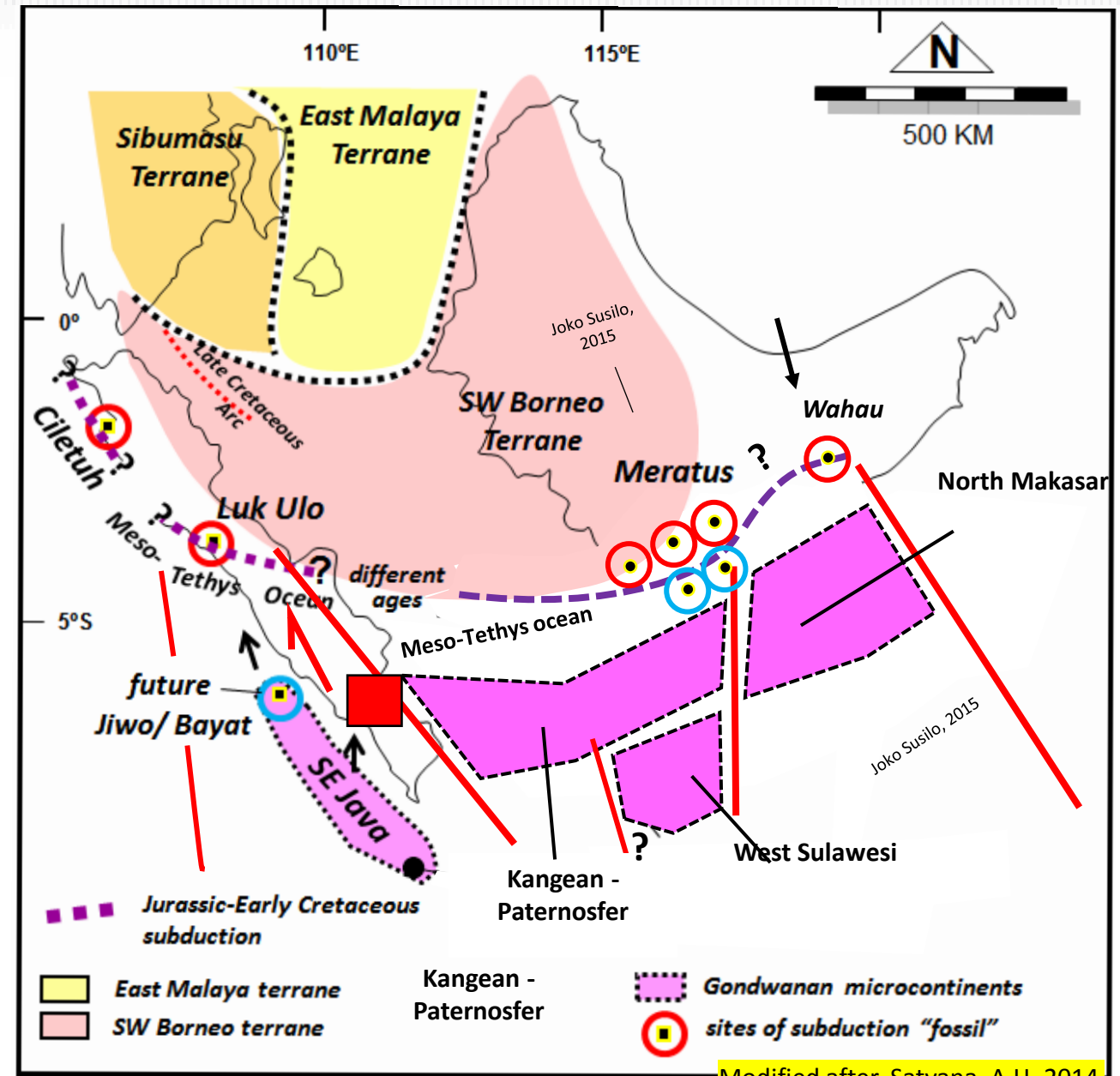


Penyusunan peta paleogeografi

THE SUBSTRATE OF EAST JAVA

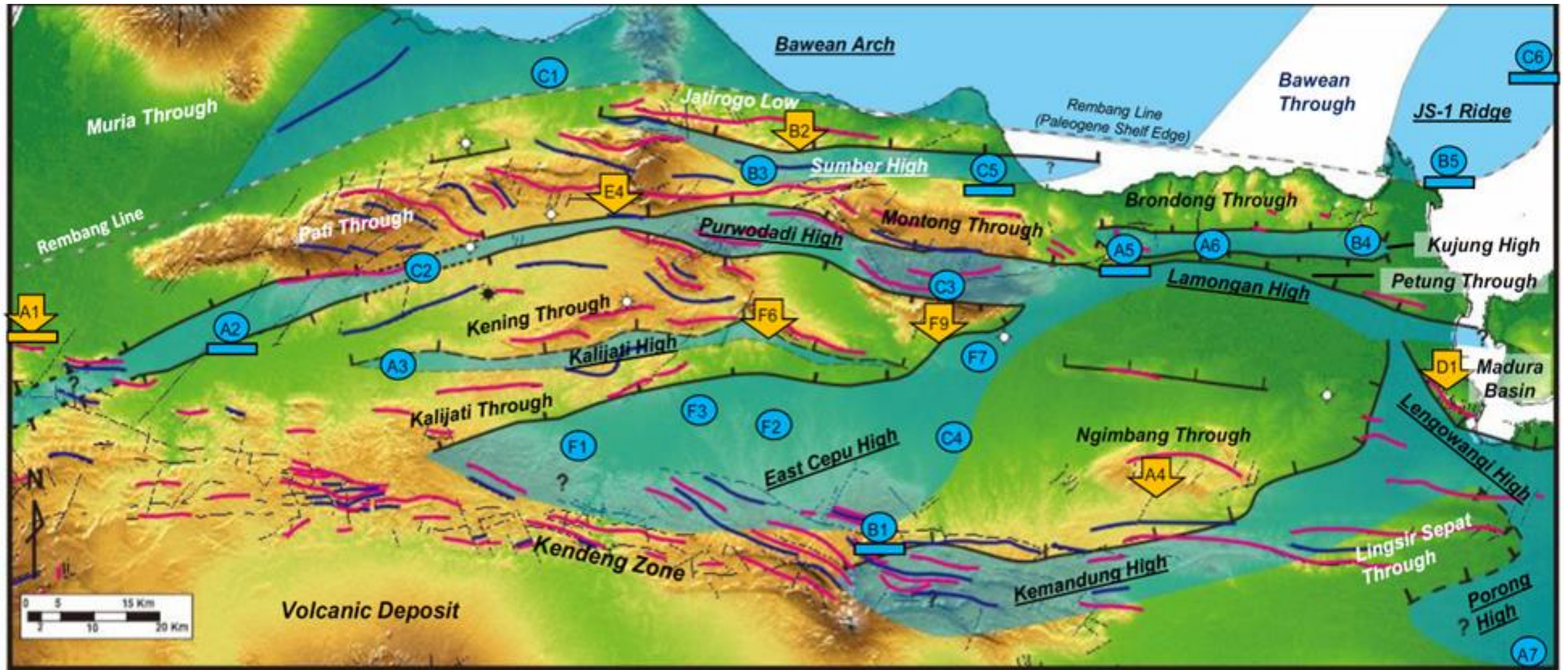


Prasetyadi, C., 2006



Modified after, Satyana, A.H, 2014

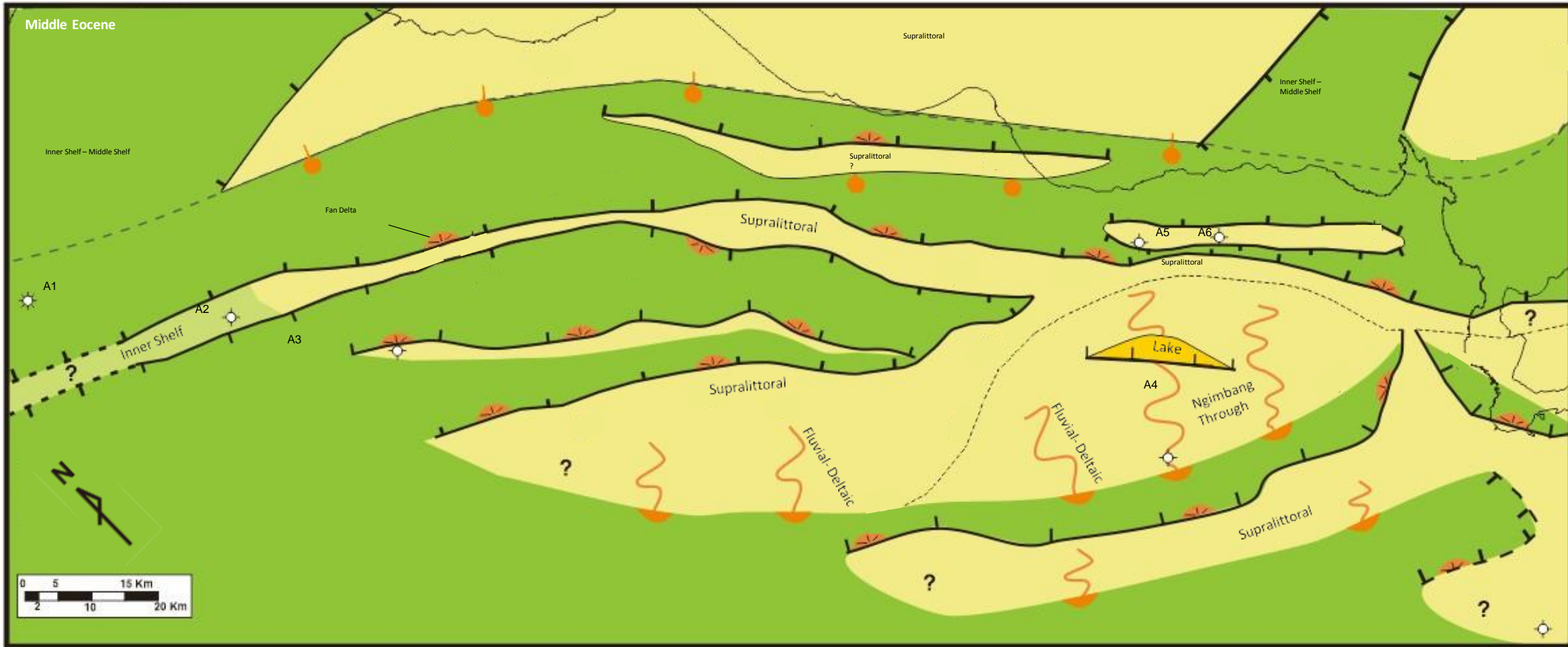
PRESENT DAY TOPOGRAPHY VERSUS PALEOGENE BASEMENT CONFIGURATION



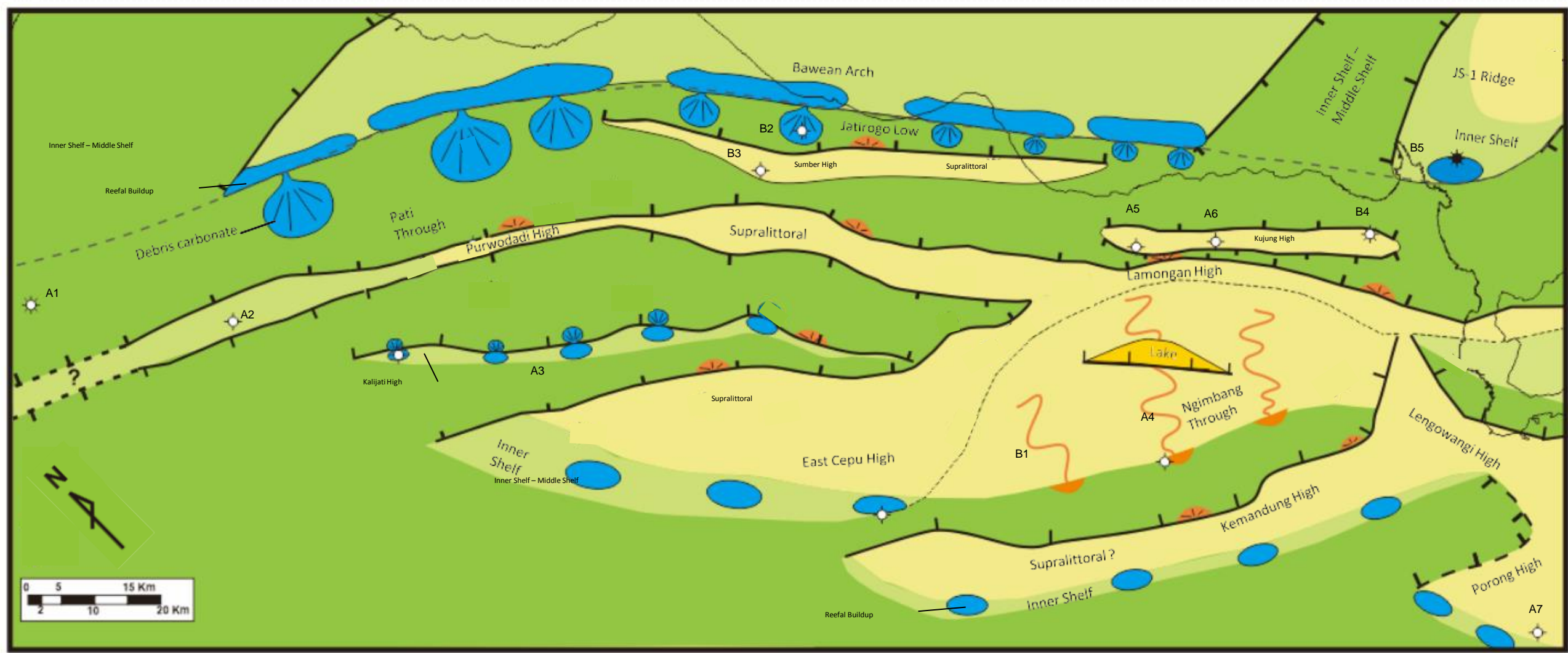
- : Syncline axis
- : Anticline axis
- : Well penetrated Eocene to/or Early Miocene carbonate (Horst indicator)
- : Well penetrated carbonate & basement / pre-tertiary rock (Horst indicator)
- ↓ : Well penetrated thicker sediment & deeper environment (Graben indicator)
- ↓ : Well penetrated thicker sediment, deeper environment & basement (Graben indicator)

Redefined basin configuration along the Rembang - Randublutung area comes from integrating seismic, wells, and surface geological structure evidence. There are nine horst and ten grabens in Rembang-Randublutung Zones, excluding Muria Through, Bawean Arch, Bawean Through, and JS-1 Ridge. Horst's continuation to the South remains unknown since covered by Kendeng Zone and the quarternary volcanic deposit (Purnama Y.S., 2022).

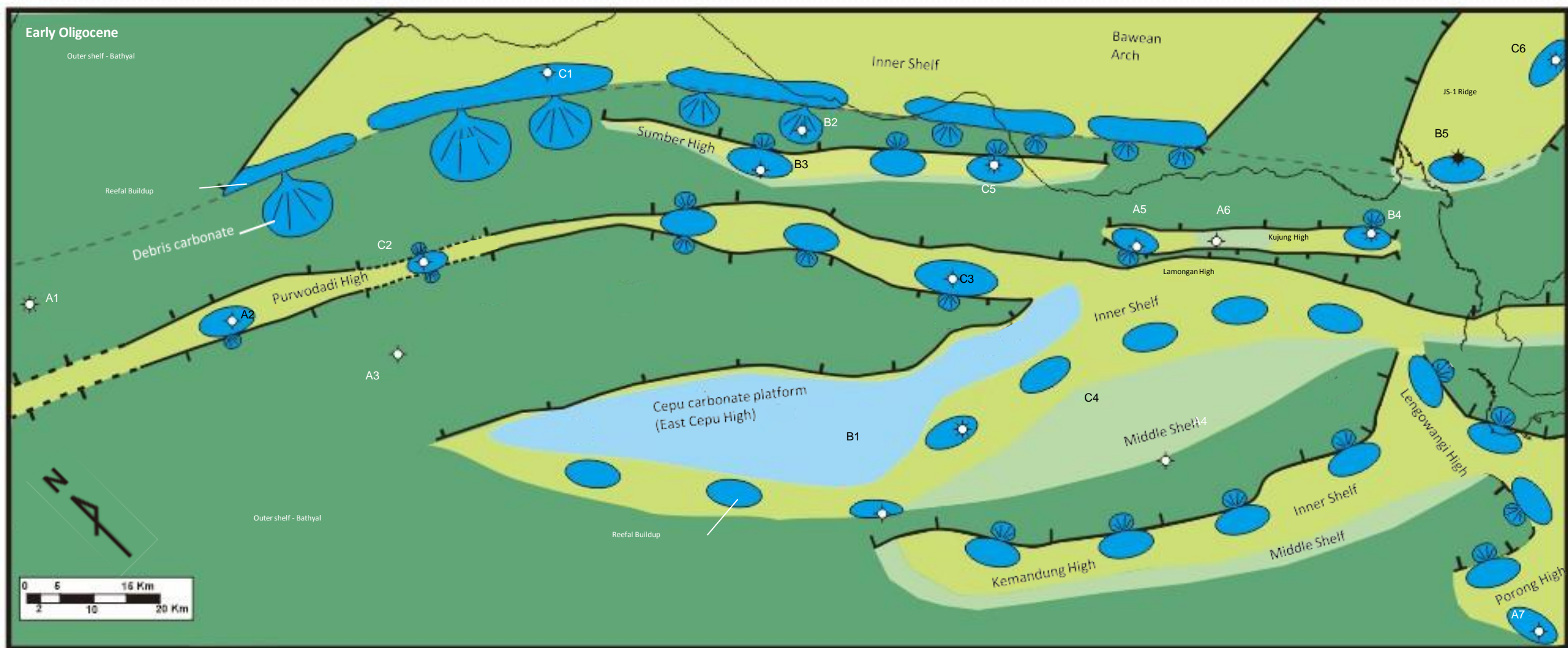
PALEO-ENVIRONMENT MAP DURING MIDDLE EOCENE



PALEO-ENVIRONMENT MAP DURING LATE EOCENE



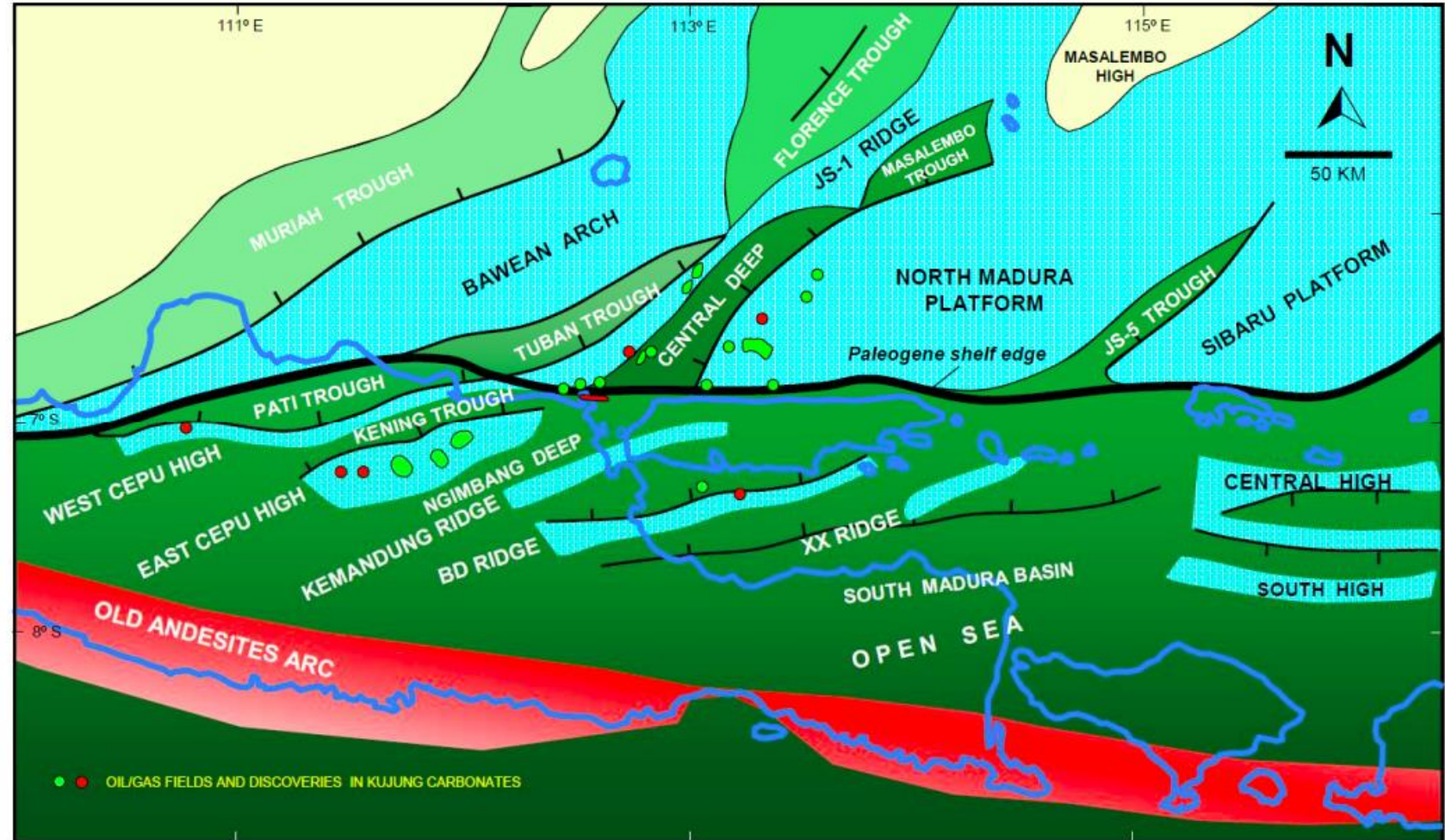
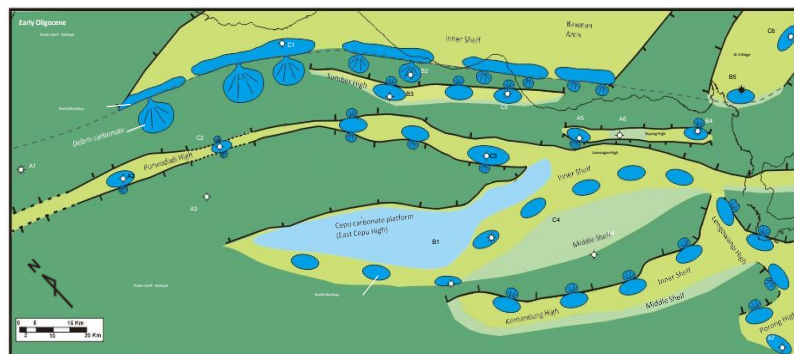
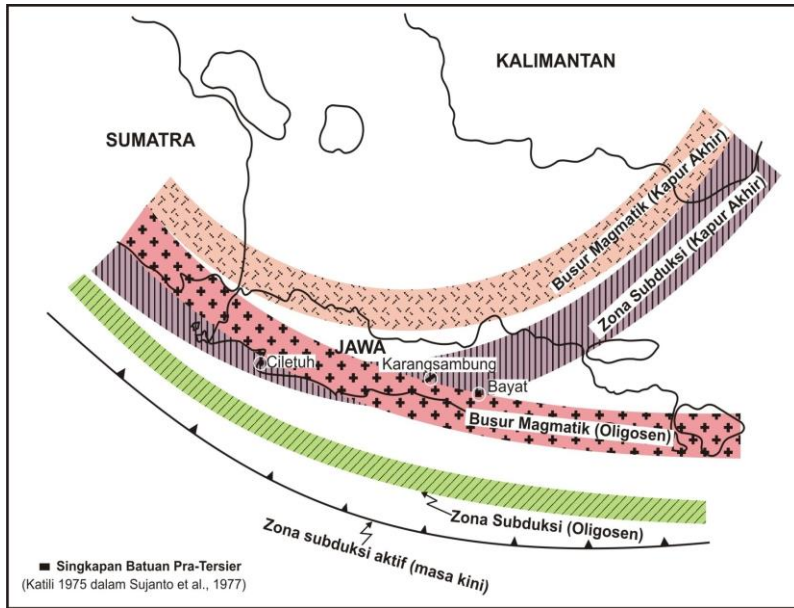
PALEO-ENVIRONMENT MAP DURING LATE EOCENE – EARLY OLIGOCENE



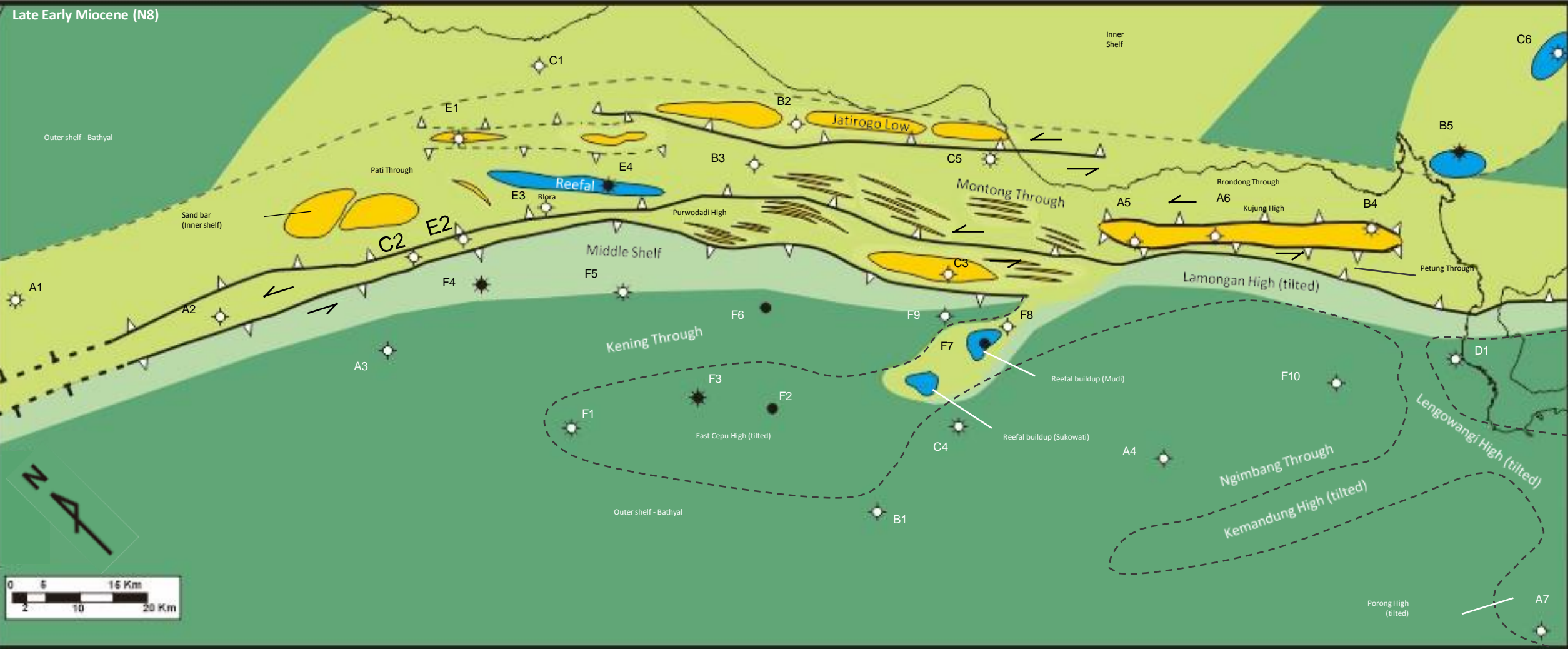
PALEO-ENVIRONMENT MAP DURING LATE OLIGOCENE – EARLY MIOCENE



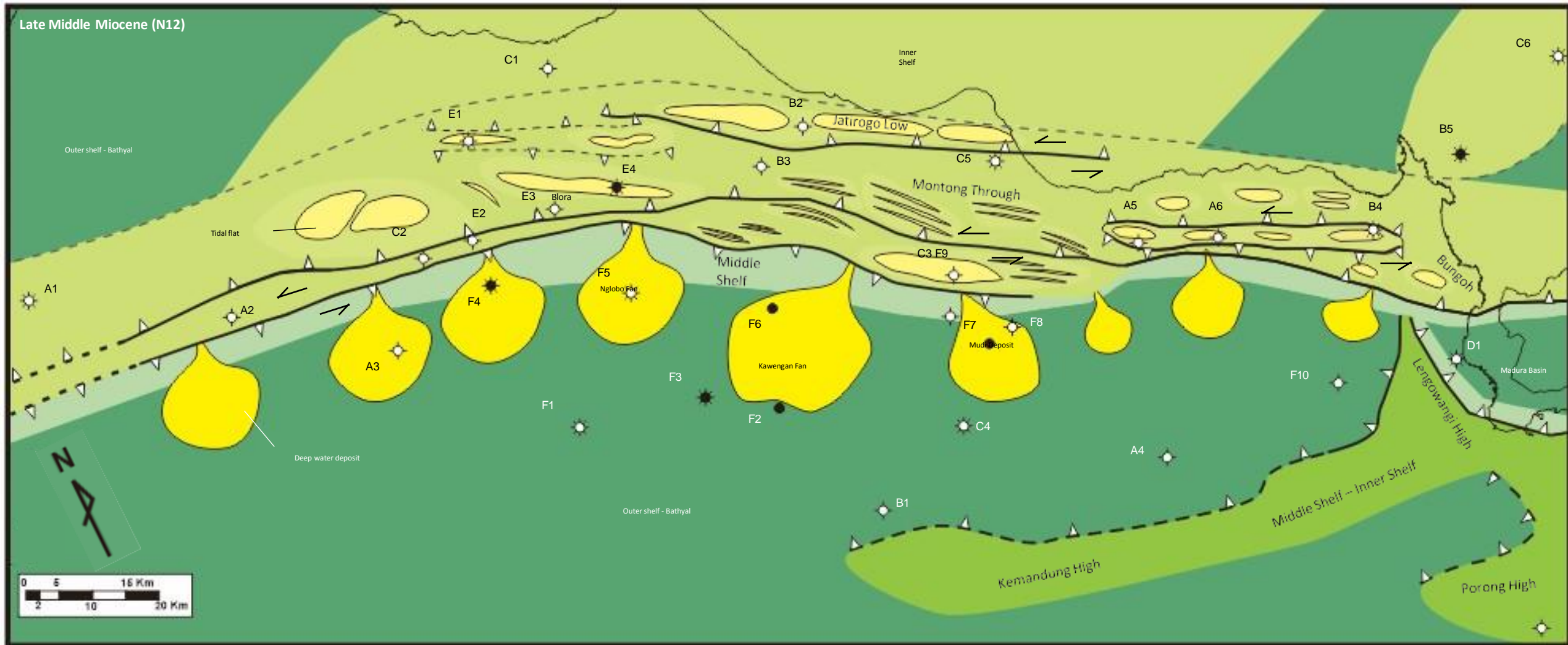
PRESENT DAY TOPOGRAPHY VERSUS PALEOGENE BASEMENT CONFIGURATION



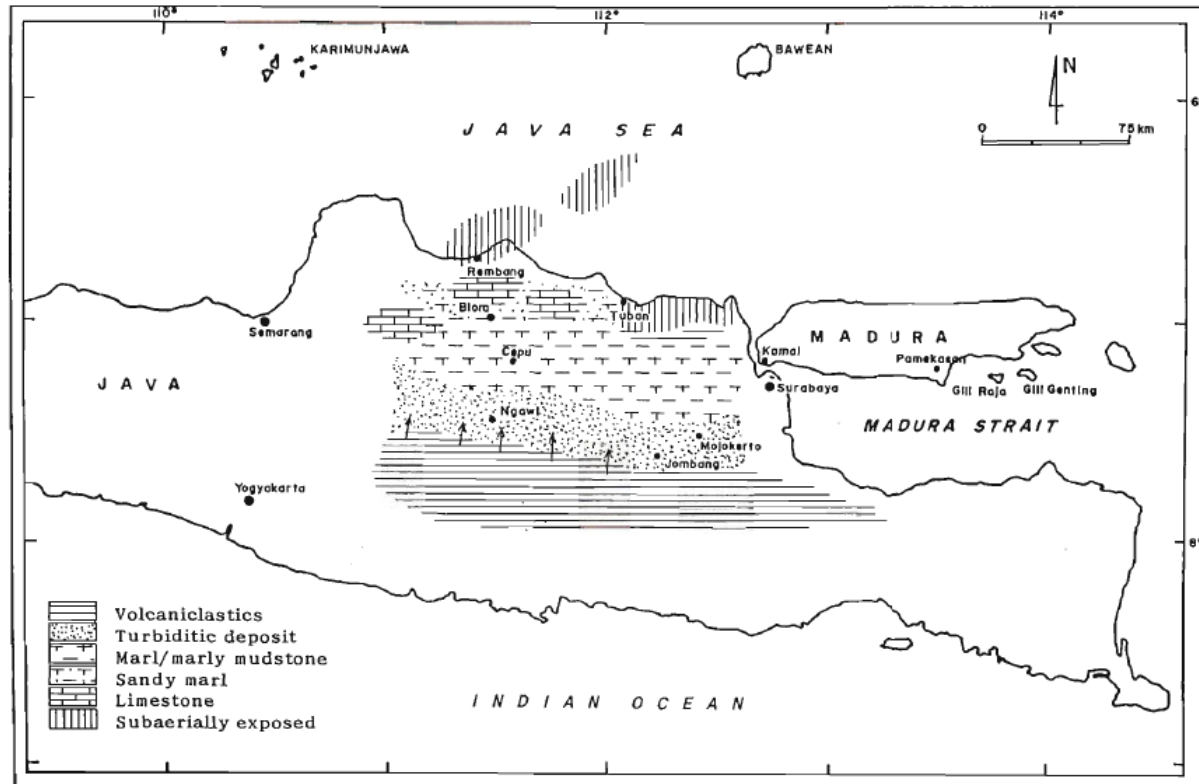
PALEO-ENVIRONMENT MAP DURING MIDDLE MIOCENE



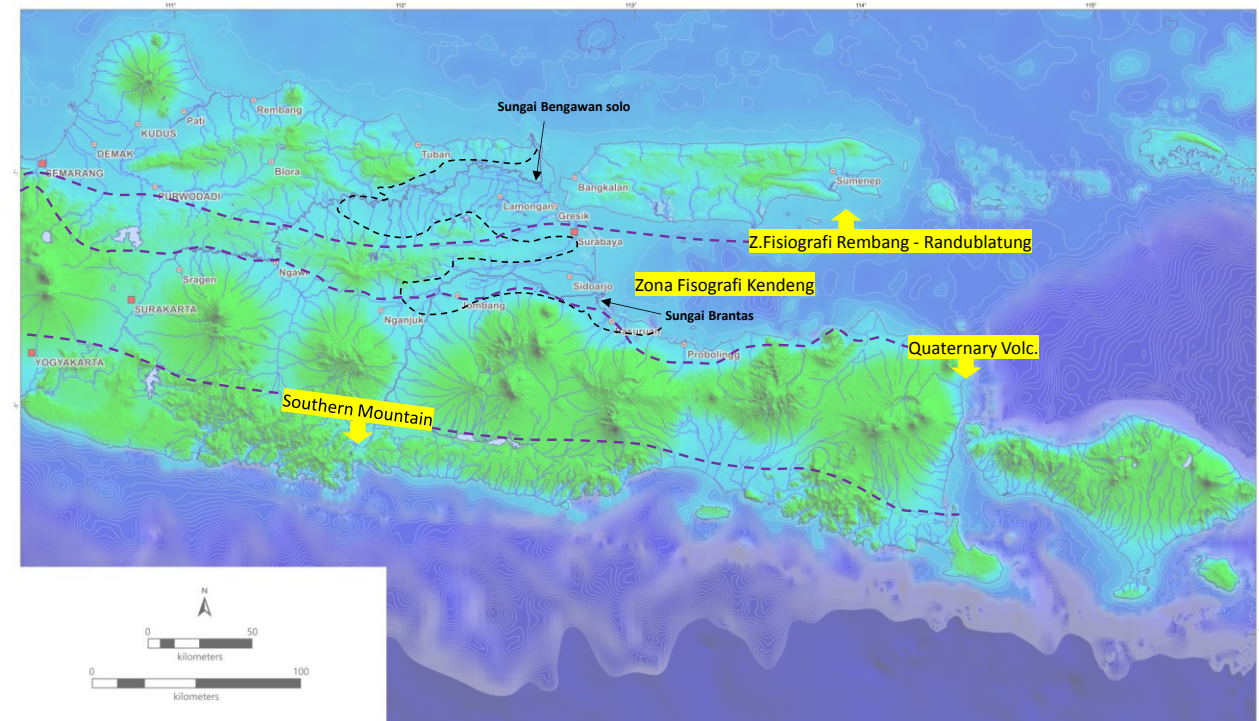
PALEO-ENVIRONMENT MAP DURING LATE OF MIDDLE MIOCENE



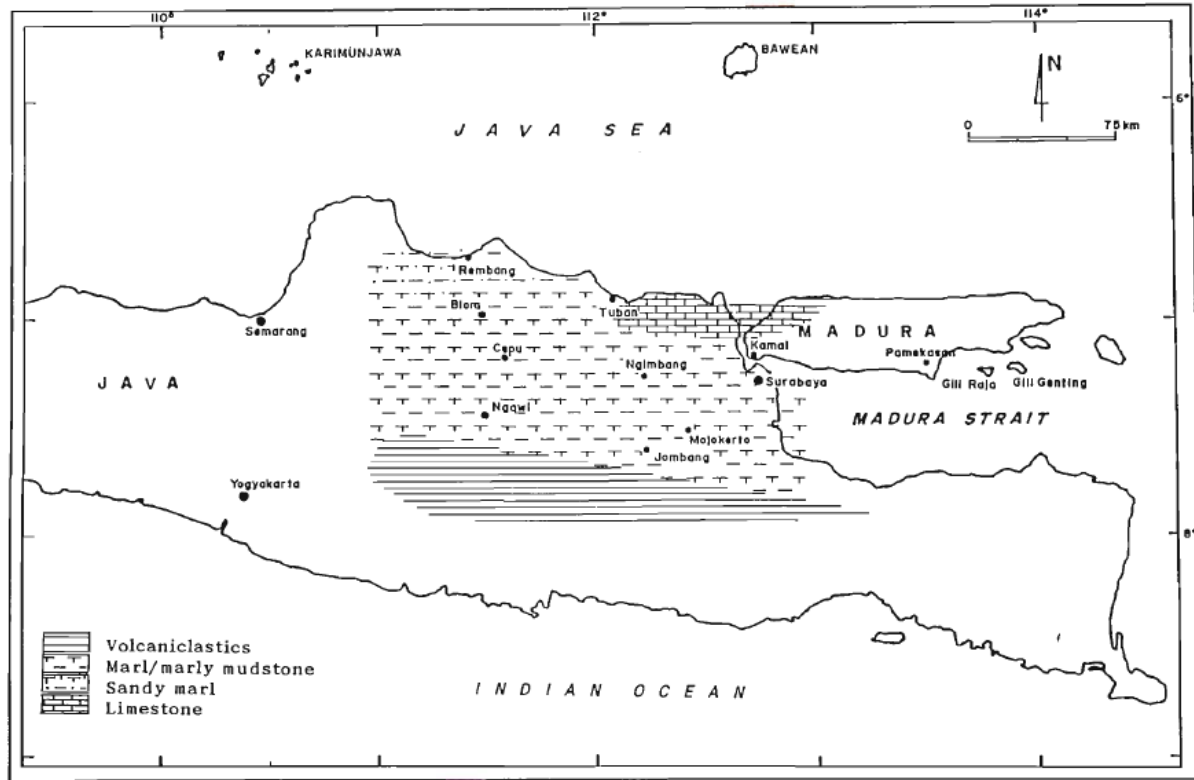
PALEO-ENVIRONMENT MAP LATE MIOCENE



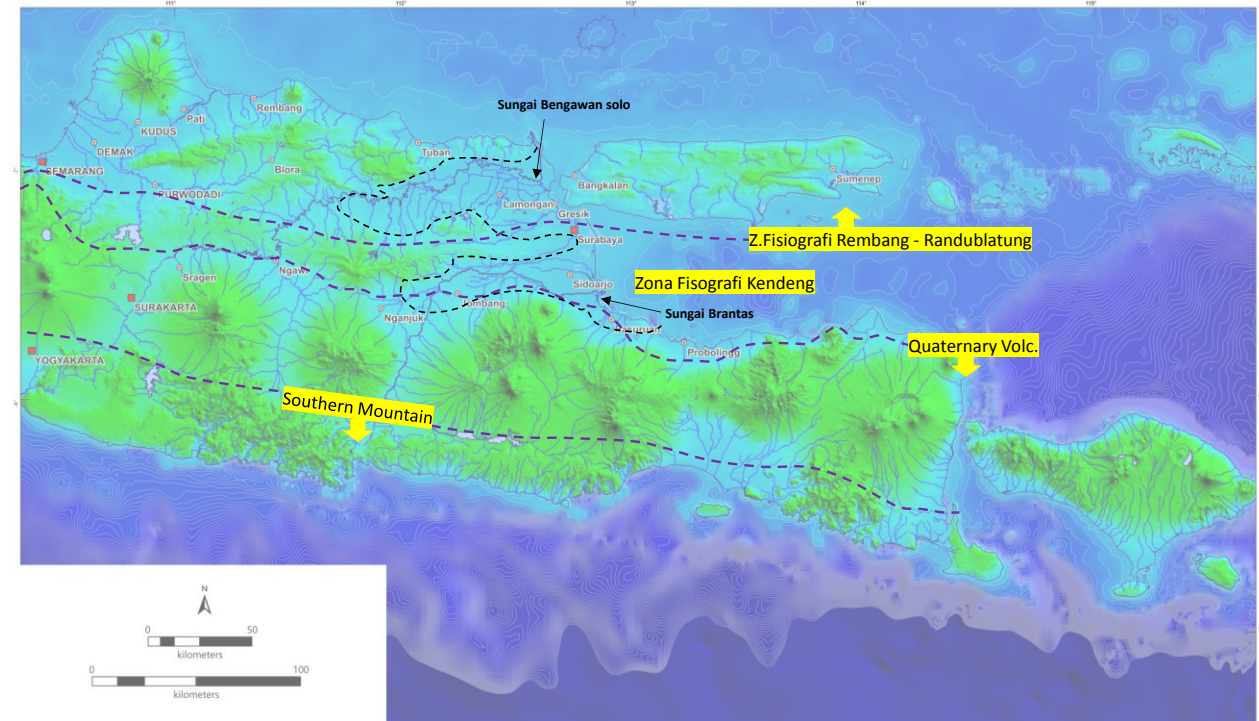
Susilohadi, 1995



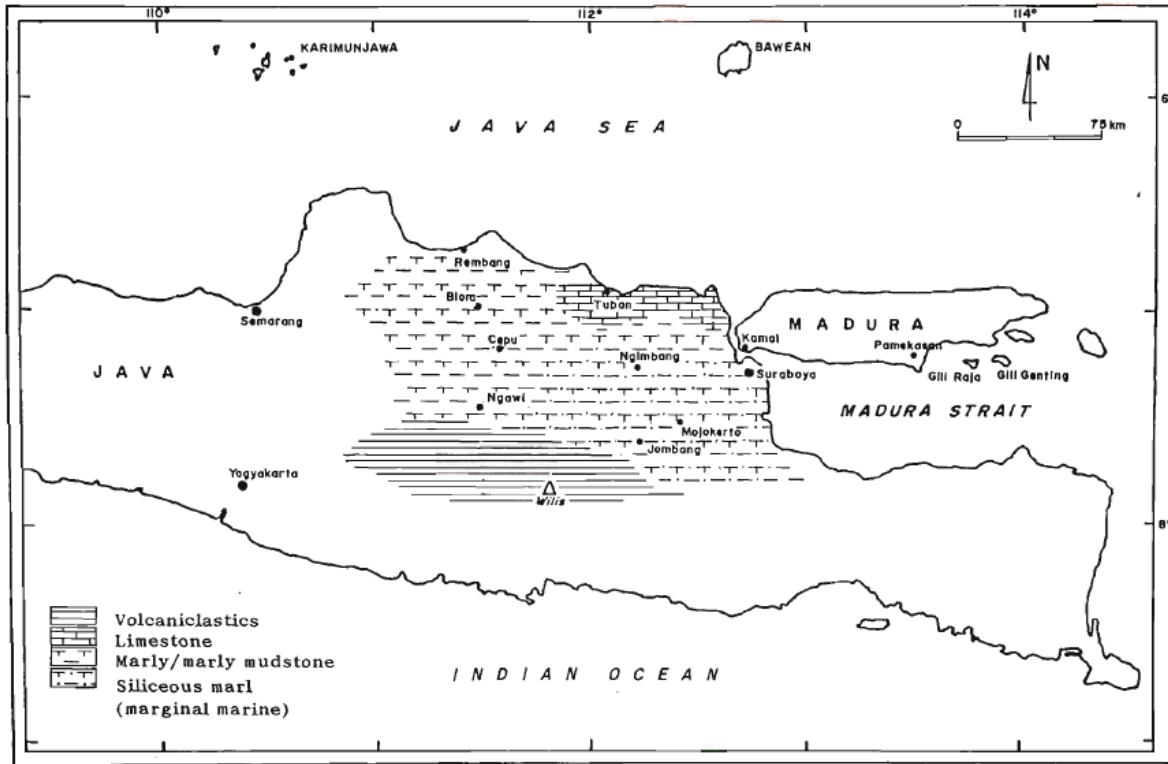
PALEO-ENVIRONMENT MAP OF EARLY PLIOCENE



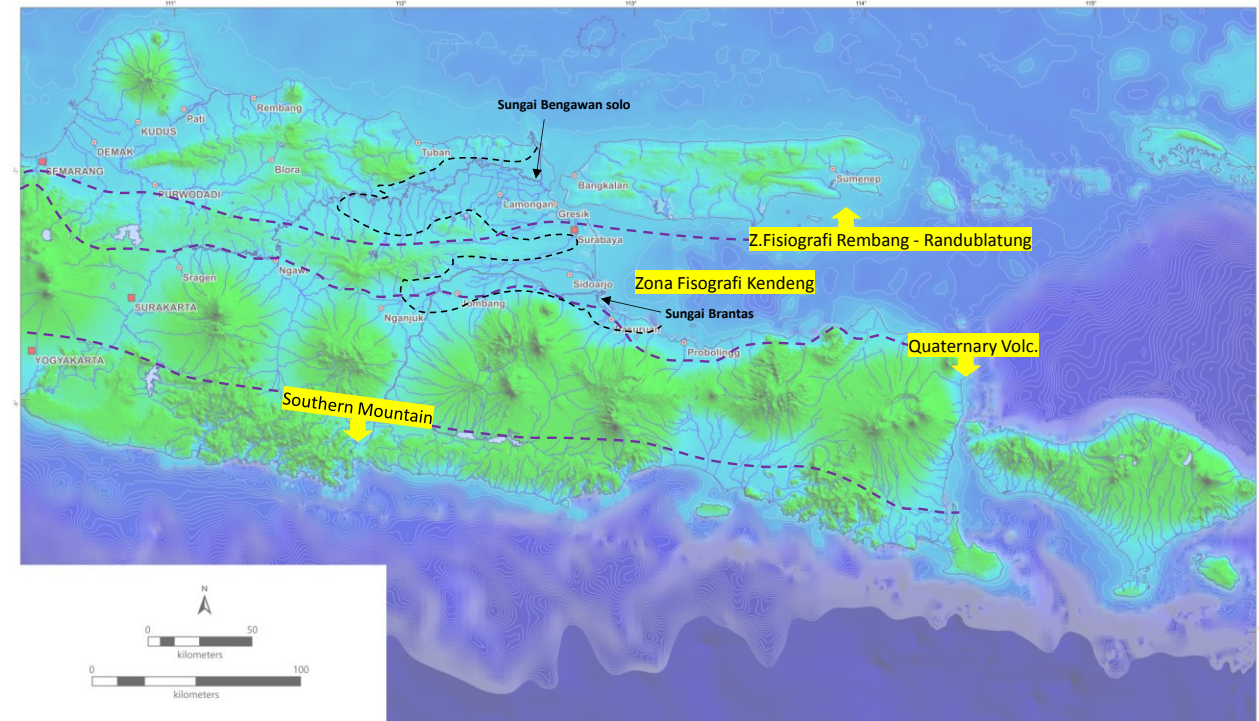
Susilohadi, 1995



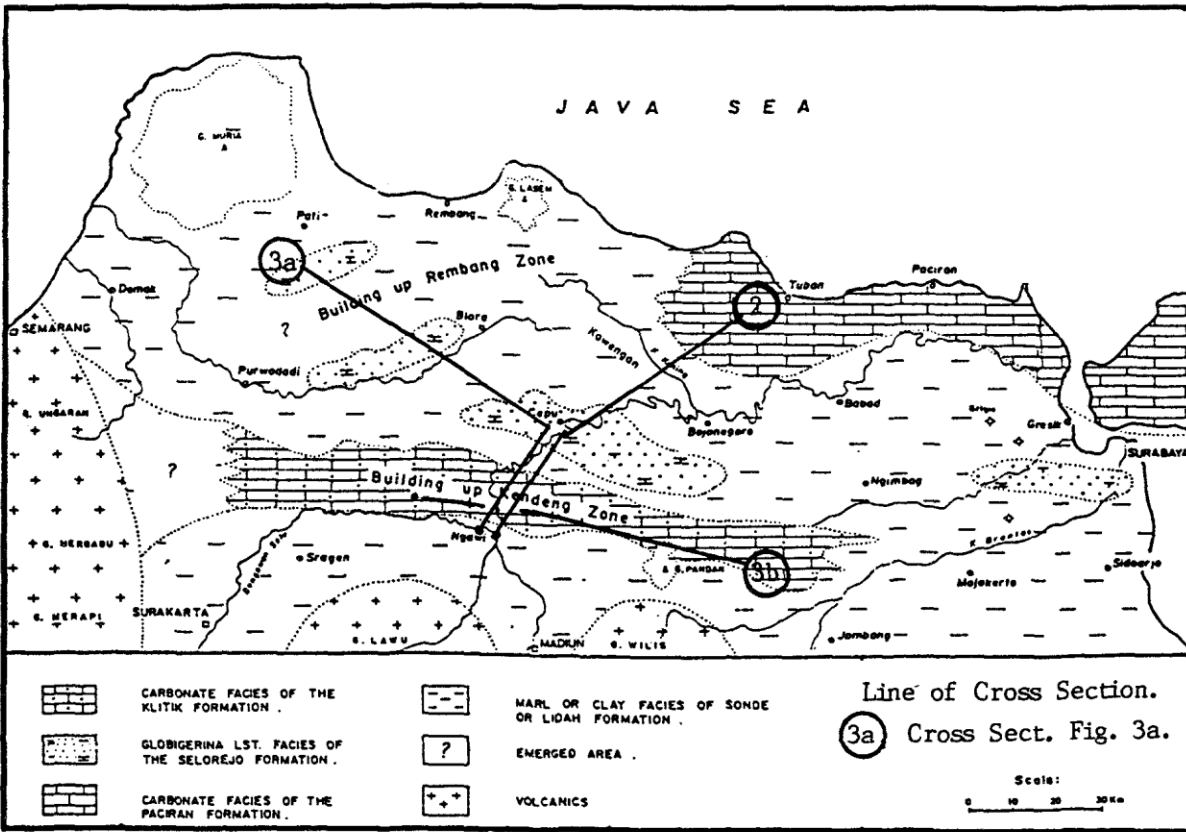
PALEO-ENVIRONMENT MAP MIDDLE PLIOCENE



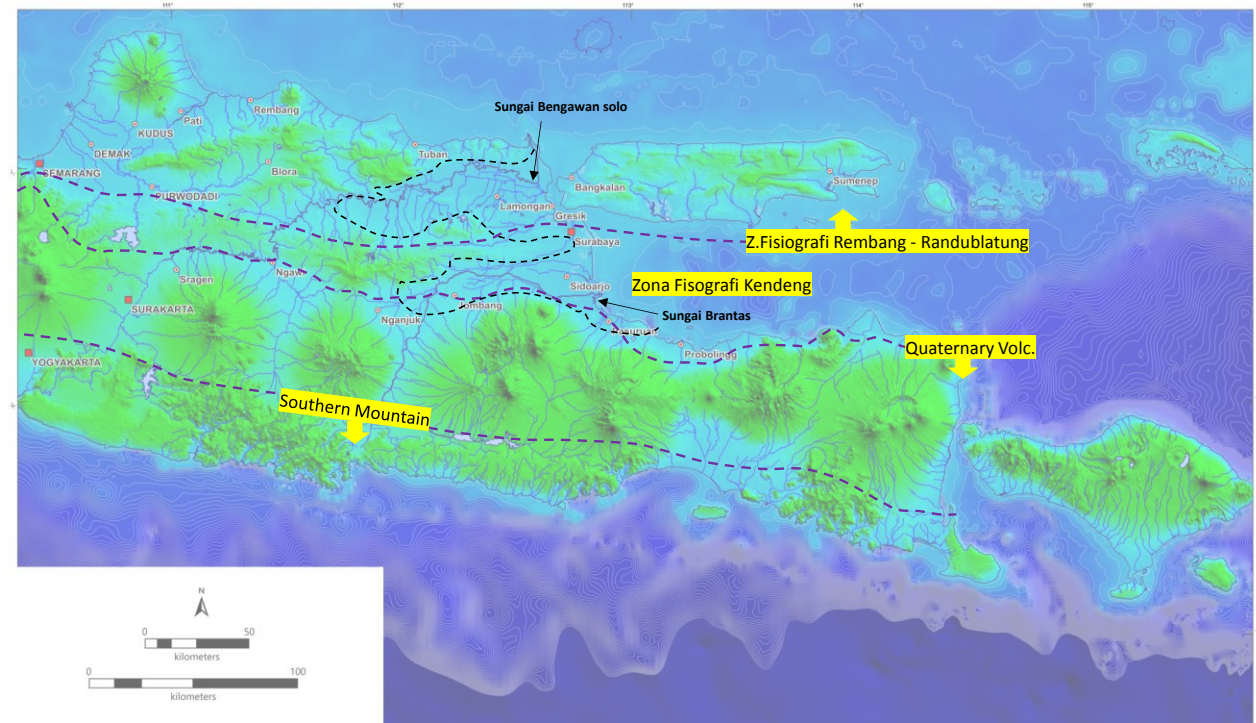
Susilohadi, 1995



PALEO-ENVIRONMENT MAP LATE PLIOCENE

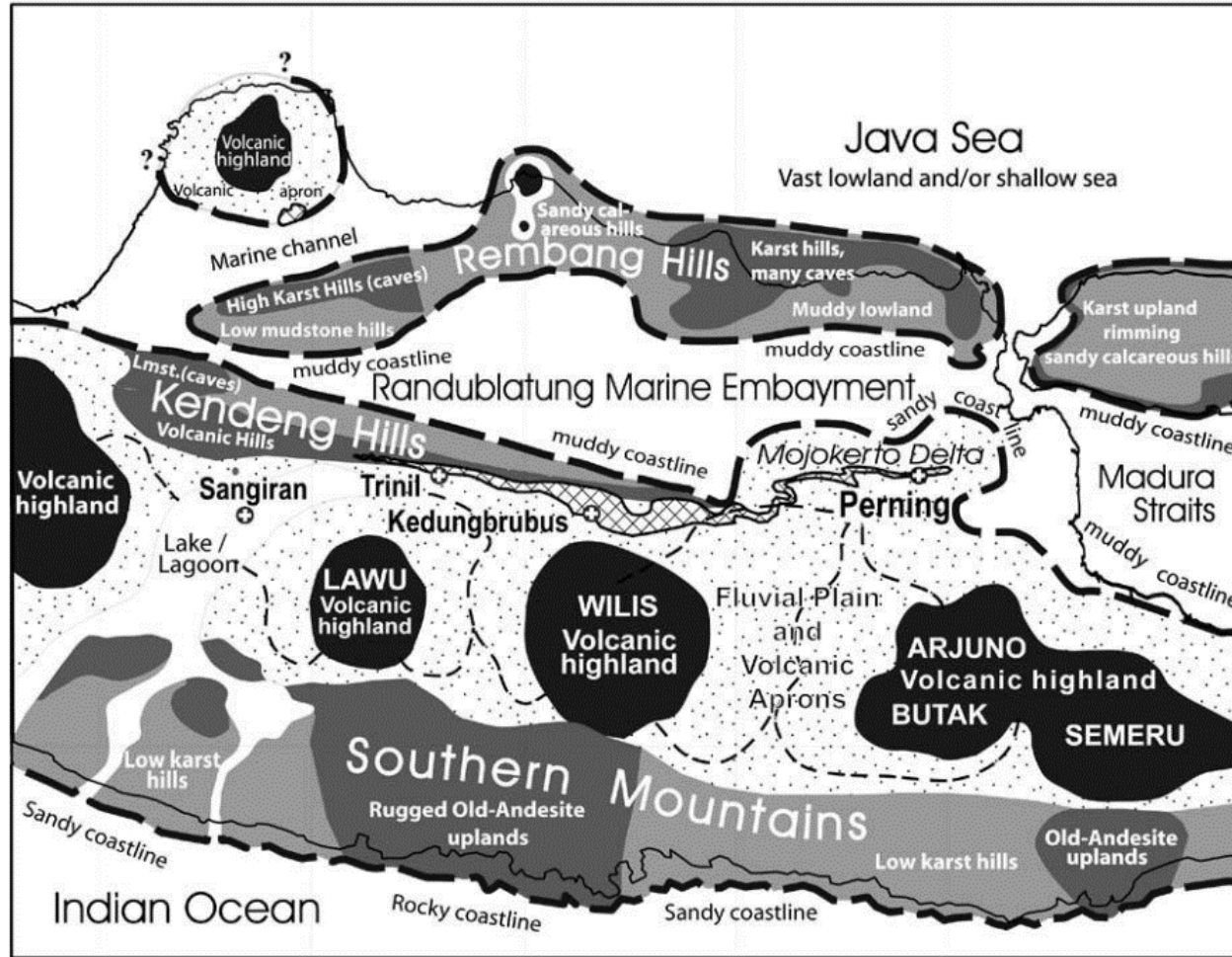






Sabardi Musliki, 1996



PALEO-ENVIRONMENT MAP PLEISTOCENE

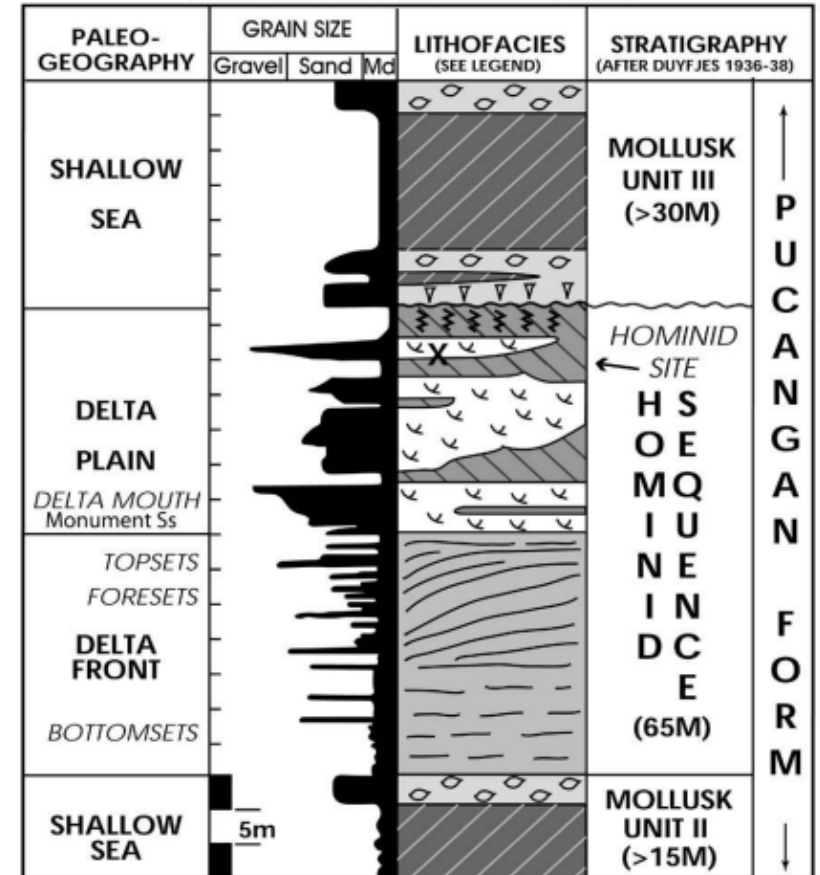
O. Frank Huffman, 2003












-  Plio-Pleistocene hominid beds
-  Key hominid sites
-  Potential coastline habitats (Modern shoreline in fine black line)
-  Major rivers (hypothetical)

Homo modjokertensis GEOLOGICAL CONTEXT

BASED ON DETAILED MEASURED SECTIONS



-  NON MARINE SANDSTONE
-  MARINE MUDSTONE
-  MARINE SANDSTONE & MUDSTONE INTERBEDS
-  CROSS BEDDING
-  PALEOSOL
-  UNCONFORMITY
-  MARINE MOLLUSKS
-  BURROWS
-  HOMINID SITE