

CWS Discussion, 24 Mei 2024

GUNUNG PADANG PYRAMID: Scientific Facts

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National Research and Innovation Agency (BRIN)

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RESEARCH ARTICLE

Geo-archaeological prospecting of Gunung Padang buried prehistoric pyramid in West Java, Indonesia

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Abstract

The multidisciplinary study of Gunung Padang has revealed compelling evidence of a complex and sophisticated megalithic site. Correlations between rock stratifications observed through surface exposures, trenching and core logs, combined with GPR facies, ERT layers, and seismic tomograms, demonstrate the presence of multi-layer constructions spanning approximately 20–30 m. Notably, a high-resistive anomaly in electric resistivity tomography aligns with a low-velocity anomaly detected in seismic tomography, indicating the existence of hidden cavities or chambers within the site. Additionally, drilling operations revealed significant water loss, further supporting the presence of underground spaces. Radiocarbon dating of organic soils from the structures uncovered multiple construction stages dating back thousands of years BCE, with the initial phase dating to the Palaeolithic era. These findings offer valuable insights into the construction history of Gunung Padang, shedding light on the engineering capabilities of ancient civilizations during the Palaeolithic era.

KEYWORDS

core drilling, geophysical prospecting, megalith, pre-history, pyramid

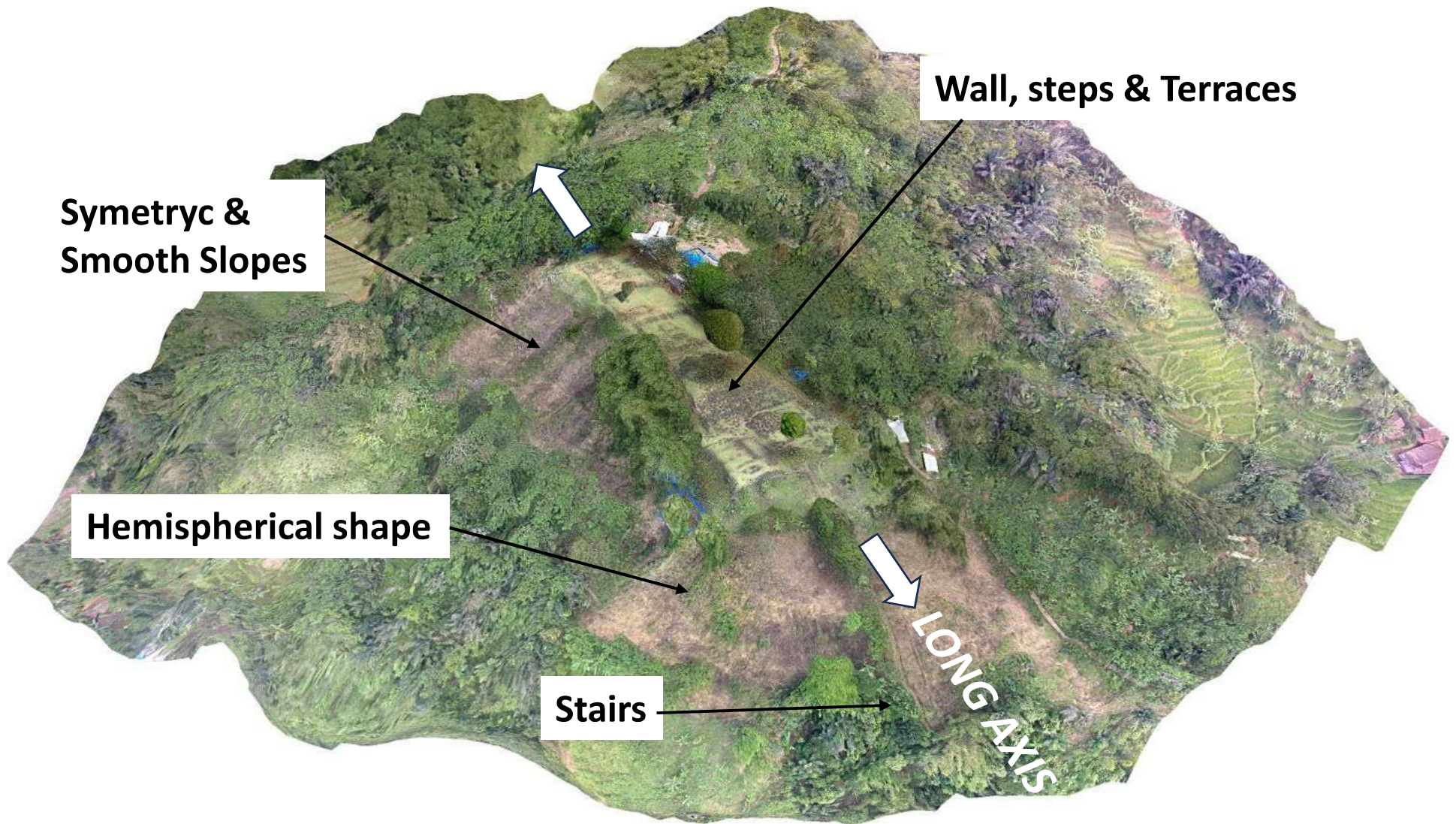
Multidisciplinary Team of Authors

- **Prof. Danny Hilman Natawidjaja, M. Sc, Ph. D – BRIN**
- **Dr. Andang Bachtiar M. Sc - Geologist – Senior Consultant**
- **Prof. Dr-eng Bagus E. B. Nurhandoko – Geophysics - ITB**
- **Dr. Ali Akbar – Archaeological Dept. UI – Head of Post-Graduate Studies**
- **Pon Purajatnika – Senior Architect**
- **Dr. Mudrik R Daryono MS – Senior Geologist at BRIN**
- **Dadan D Wardhana, MS (S3 Unpad) – Geophysicist at BRIN**
- **Dr. Andri S Subandriyo – Petrologist ITB**
- **Andri Krisyuniarto – (Borehole) - Geologist consultant**
- **Dr. Taqyuddin SS – Archeo-Geodetic mapping – Geography Dept. UI**
- **Dr. Budianto Ontowiryo M. Sc – Civil Engineering Dept. Univ. Bakri**
- **Ir. Yusuf Maulana – Geologist and Cultural Activist - UNPAD**

Comprehensive and integrated Multi – Methods

- **Surface archaeological geological-geomorphological-geodetic observations & mapping**
- **Trenching Archaeology & Geology (Geo-archaeology)**
- **Boreholes**
- **Ground Penetrating Radar (GPR)**
- **Electric Resistivity Tomography (ERT)**
- **Seismic Tomography (ST)**
- **Stratigraphic & Radiocarbon-Dating Analysis**
- **INTEGRATED ANALYSIS & INTERPRETATIONS**

GUNUNG PADANG LANDSCAPE





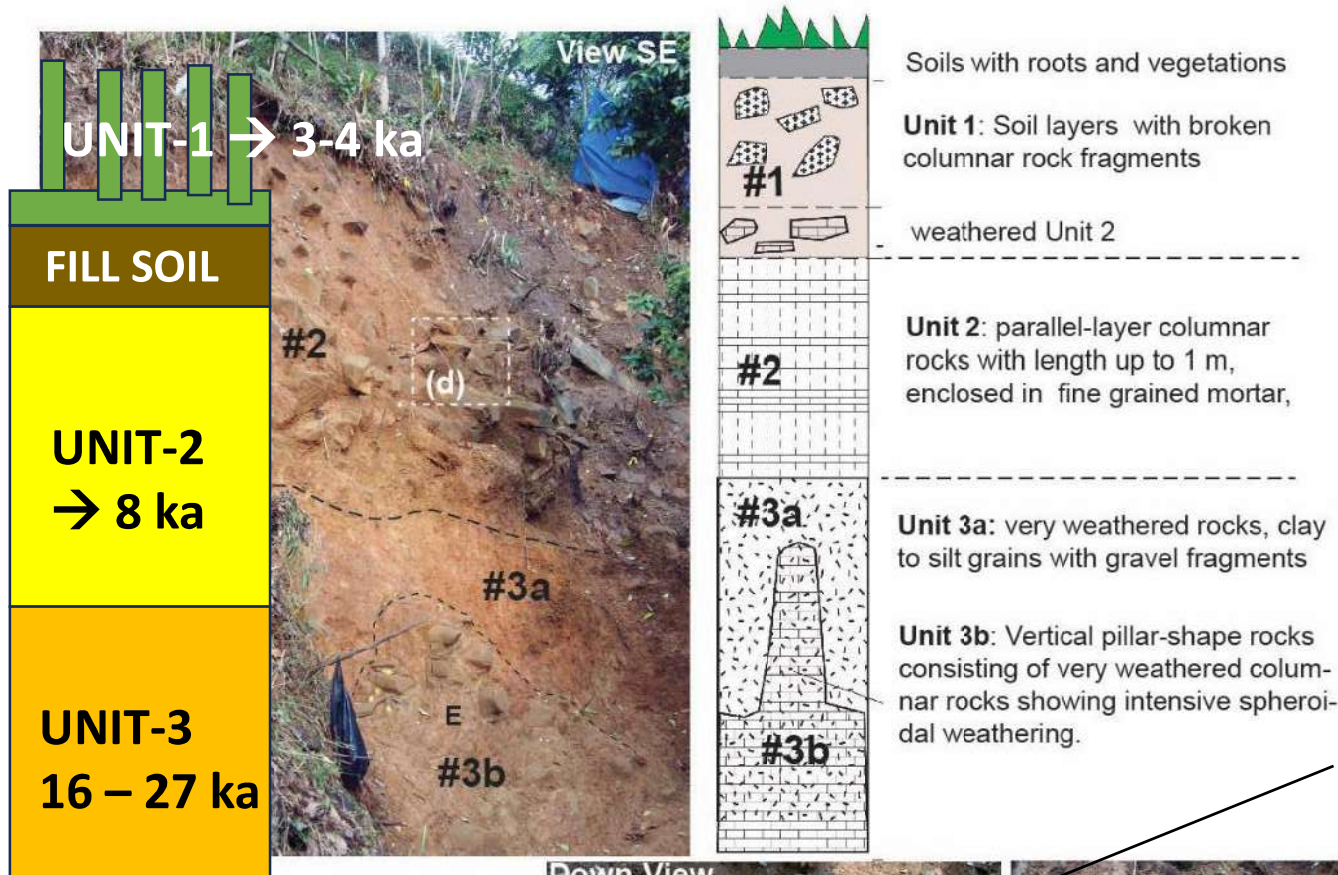
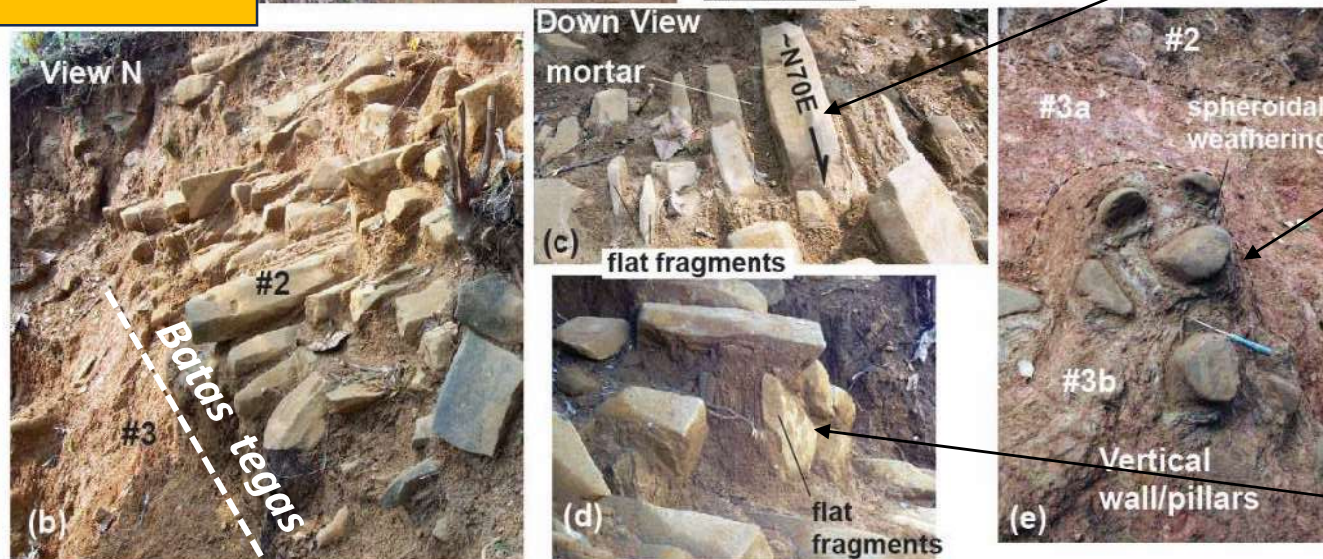


Figure 3 (Beta-2 Cliff)
Revealing the bottom of Unit-2 and the underlying Unit-3

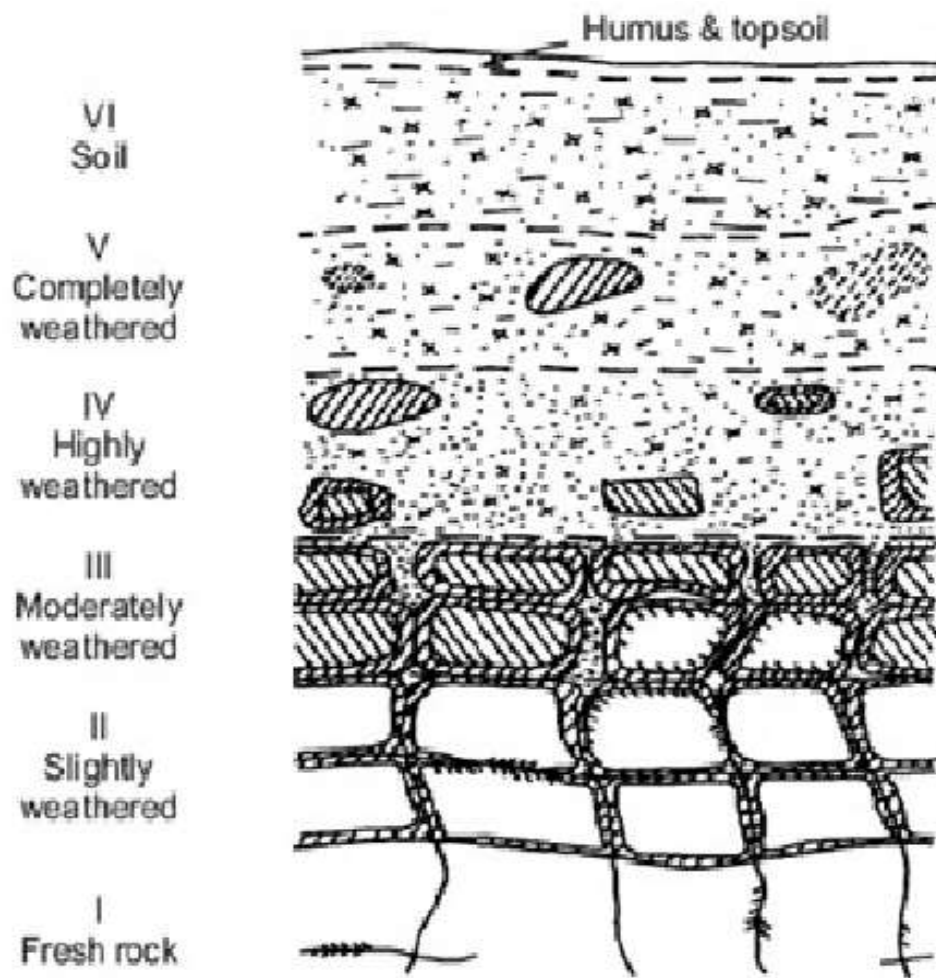
Unit 2: Columnar rocks aligned parallel to layering, with mortars in between

Unit 3: Columnar rocks aligned parallel to layering but very weathered with extensive exfoliations

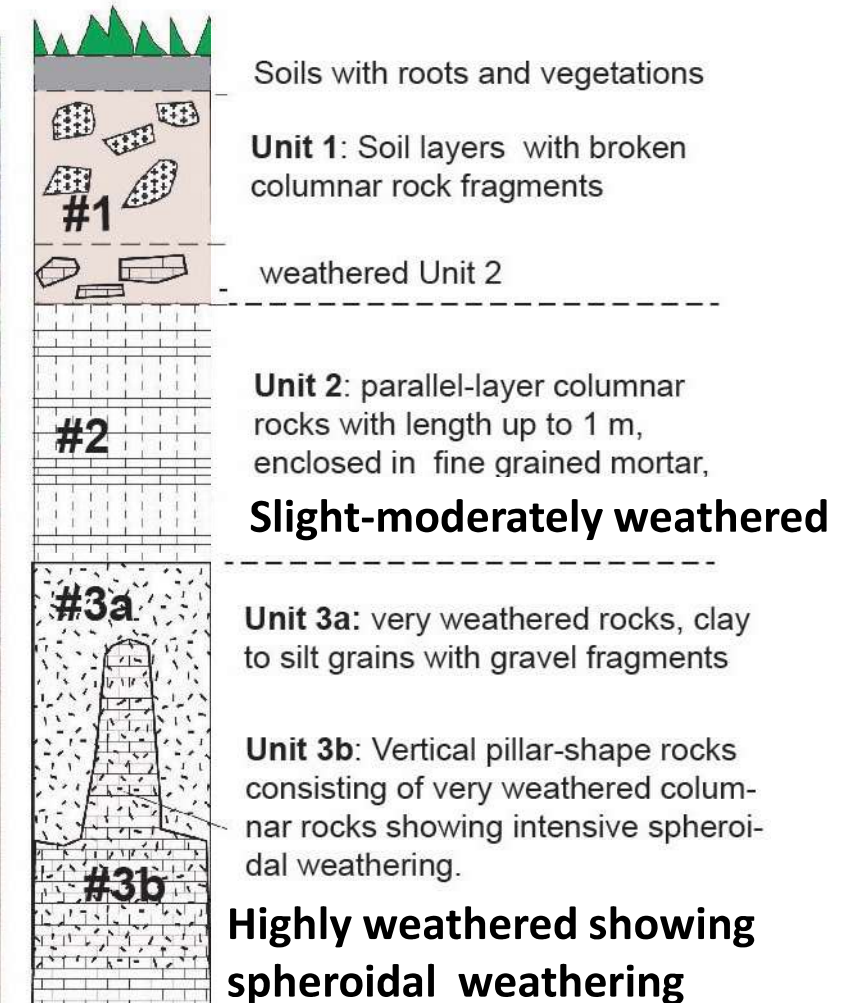
Flat rock fragments



NORMAL/NATURAL WEATHERING PROFILE OF VOLCANIC ROCKS

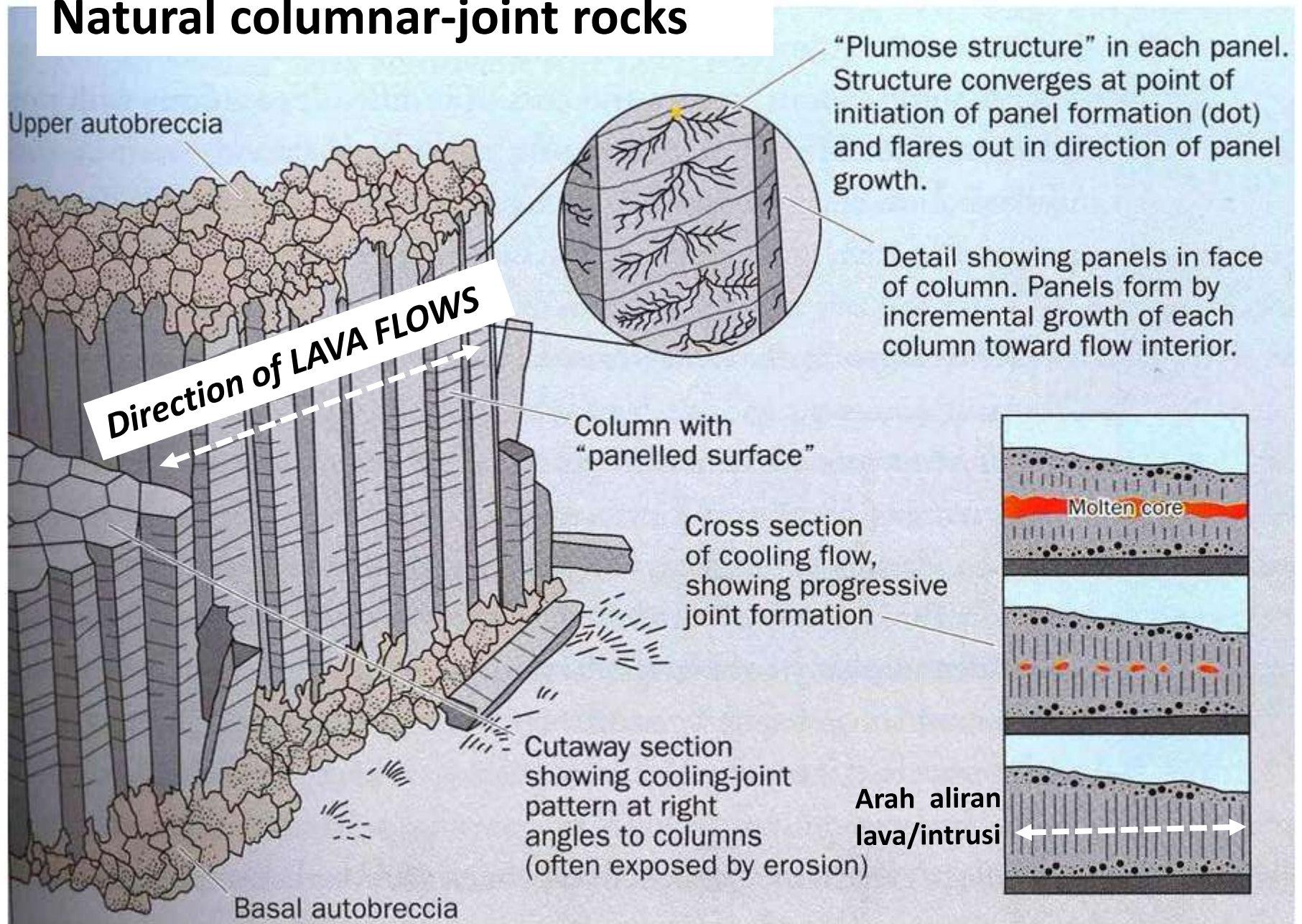


STRATIGRAFI BETA-2 CLIFF INVERSE WEATHERING PROFILE



Unit-3 has been much more weathered than the overlying Unit 2. Hence, Unit 3 had been exposed for long time before it was covered by Unit 2

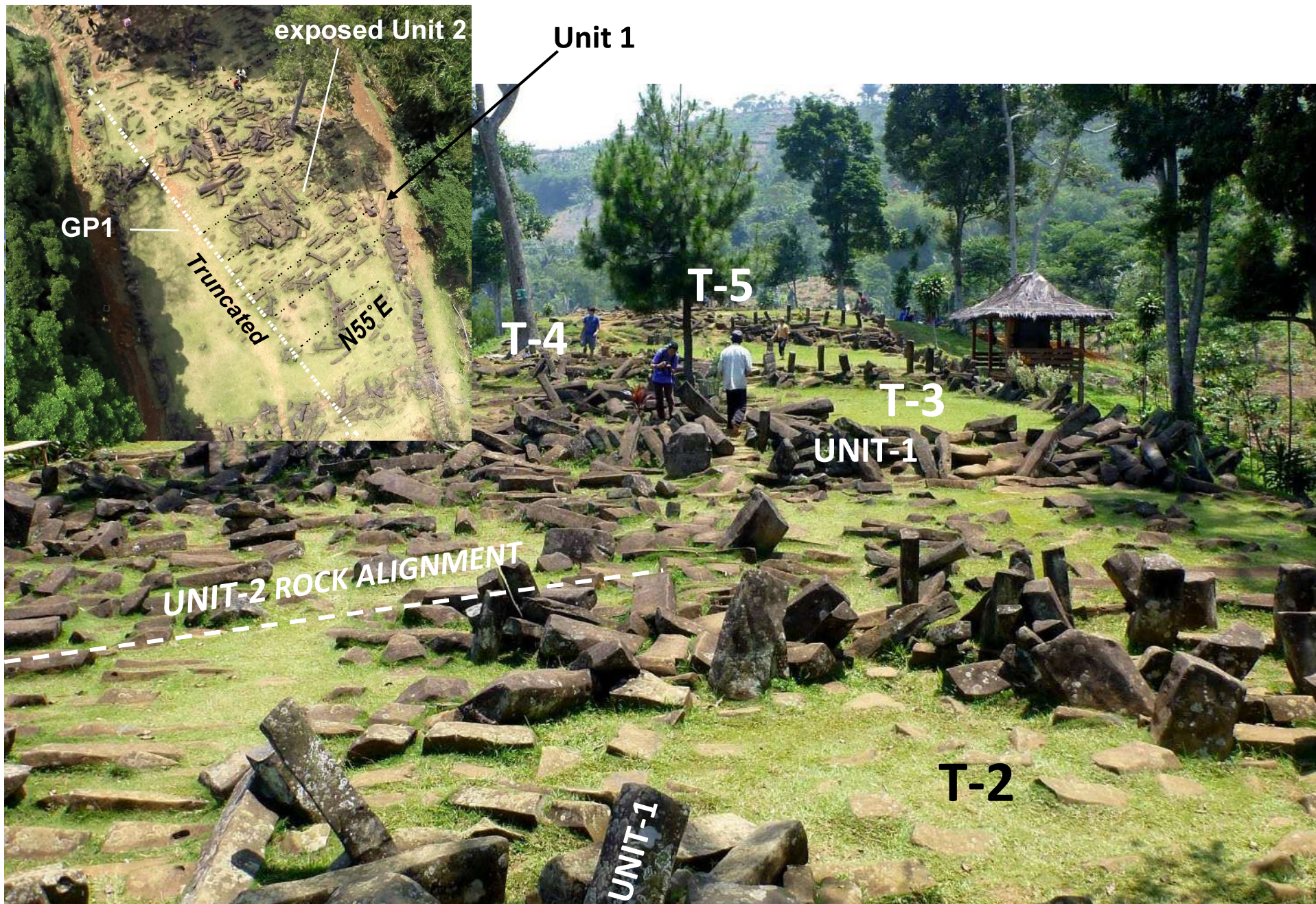
Natural columnar-joint rocks

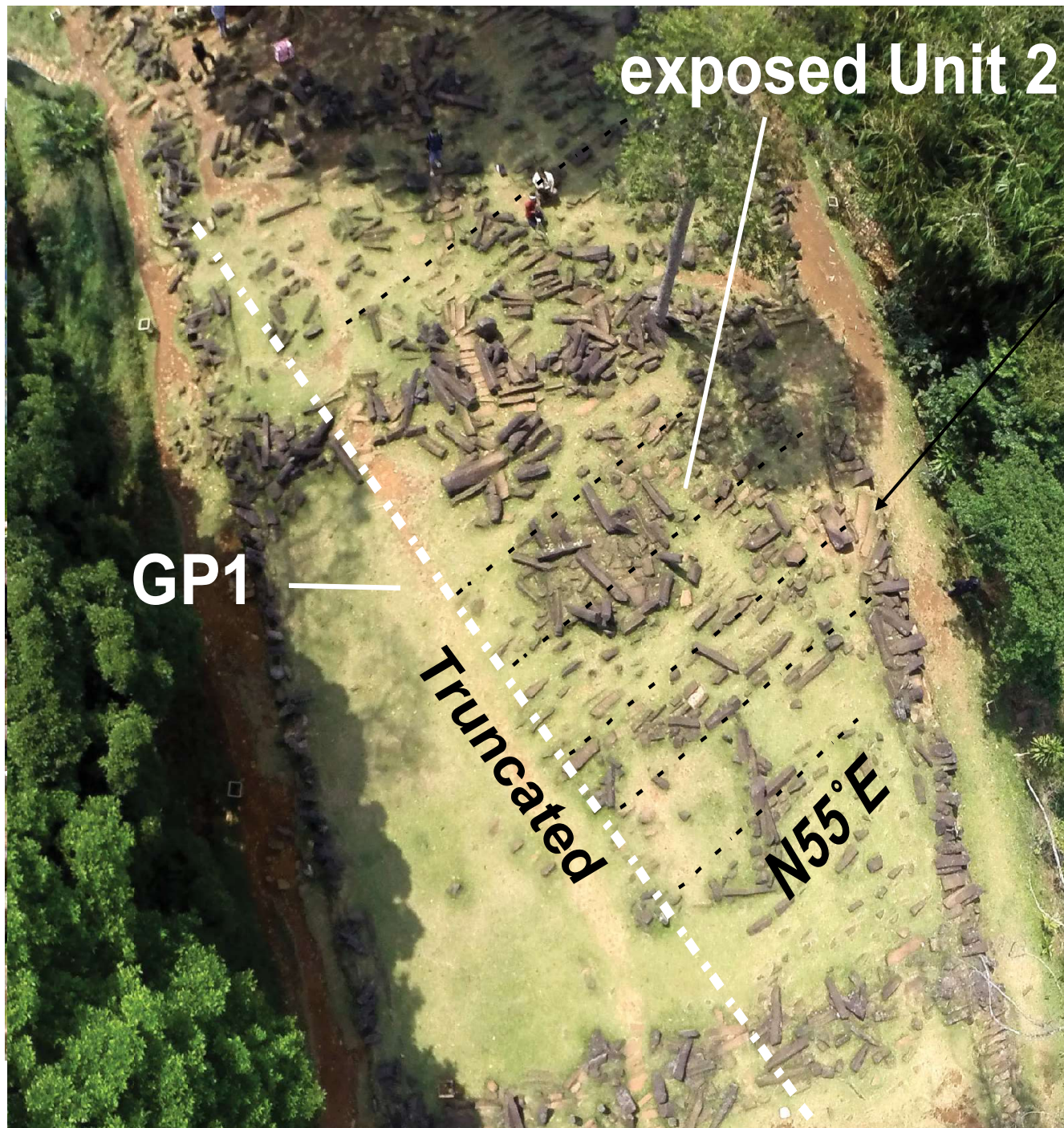


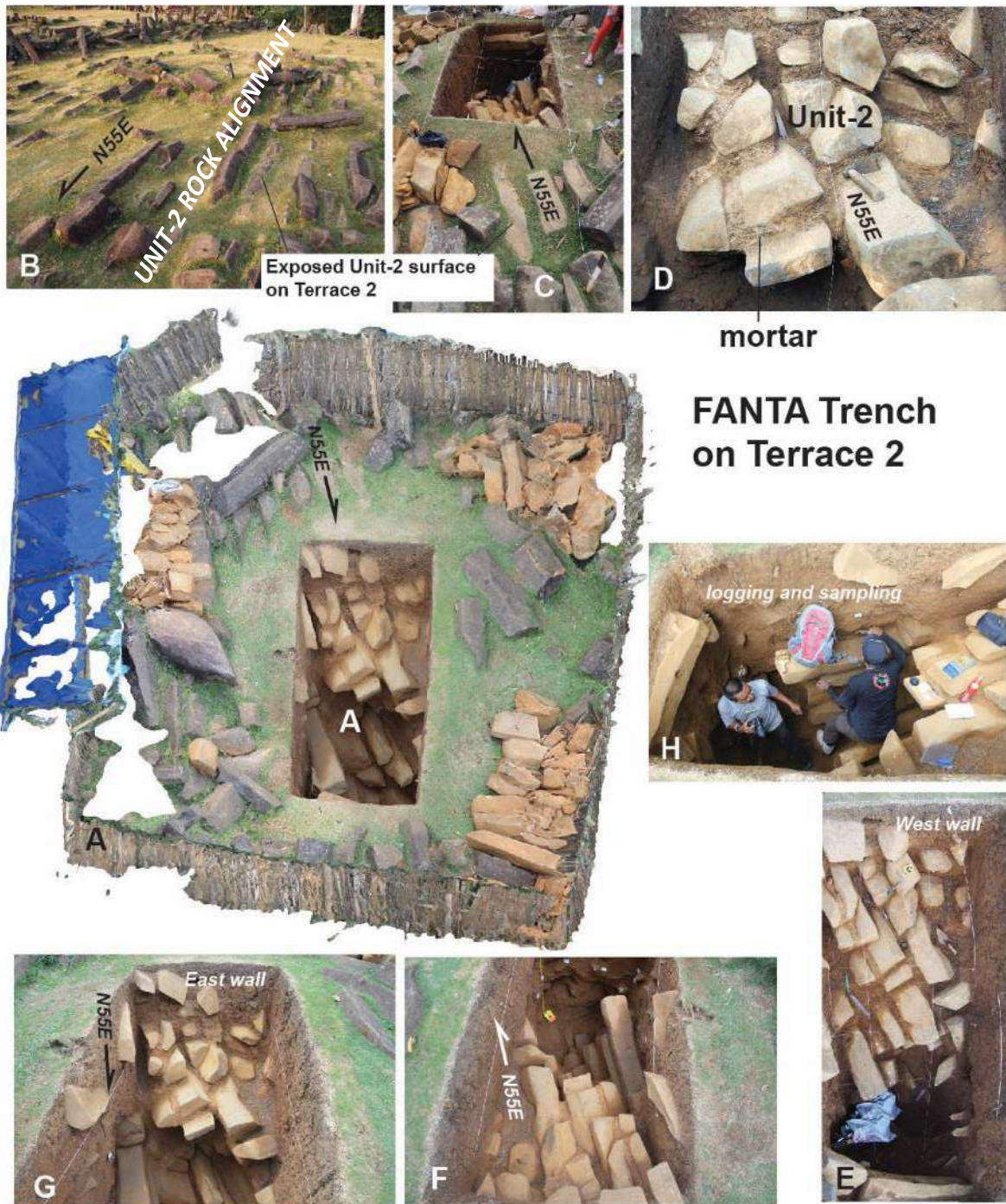
COLUMNAR-JOINT ROCK LAYER IN SUMEDANG REGENCY, WEST JAVA



Dr. Andri Subandriyo - ITB







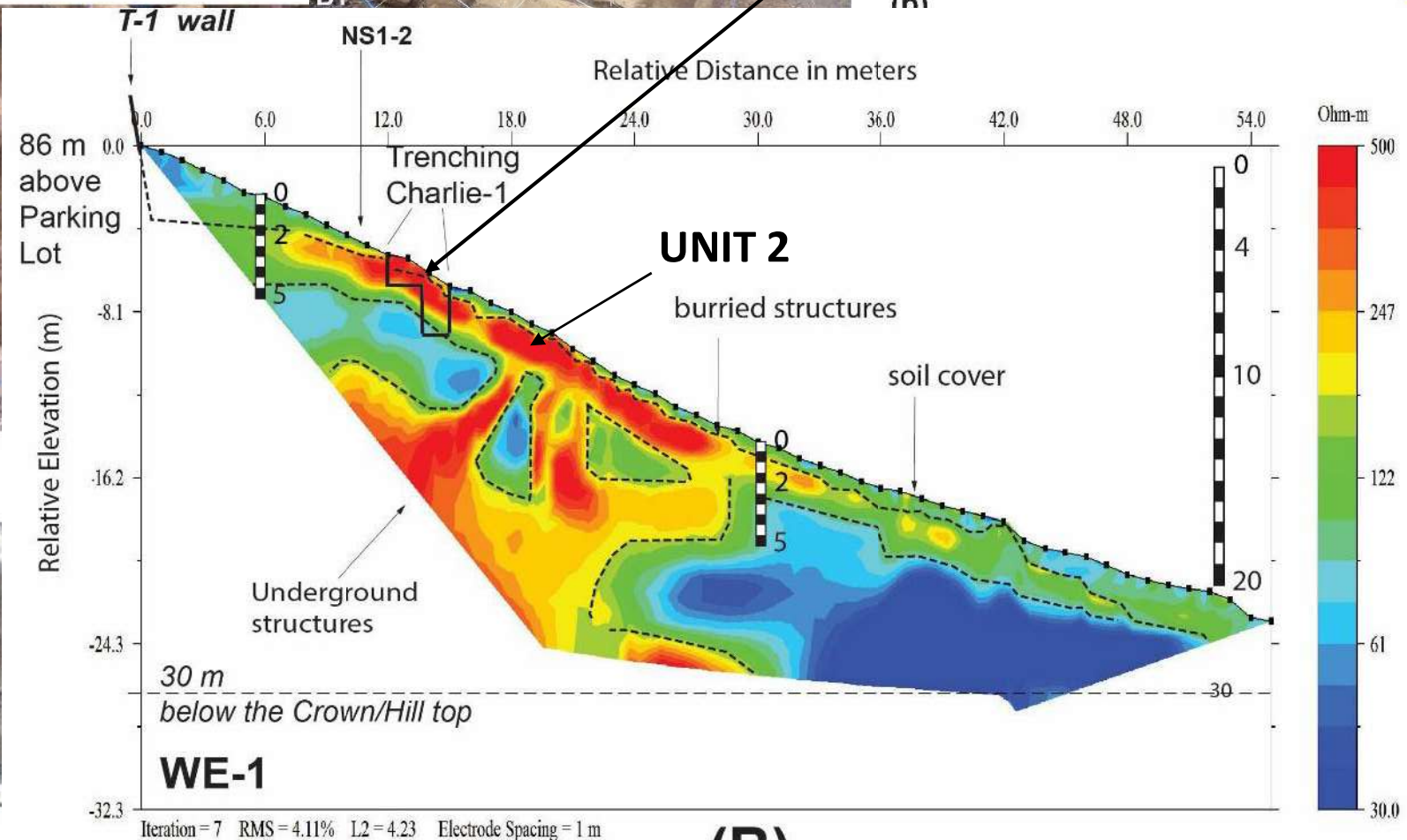
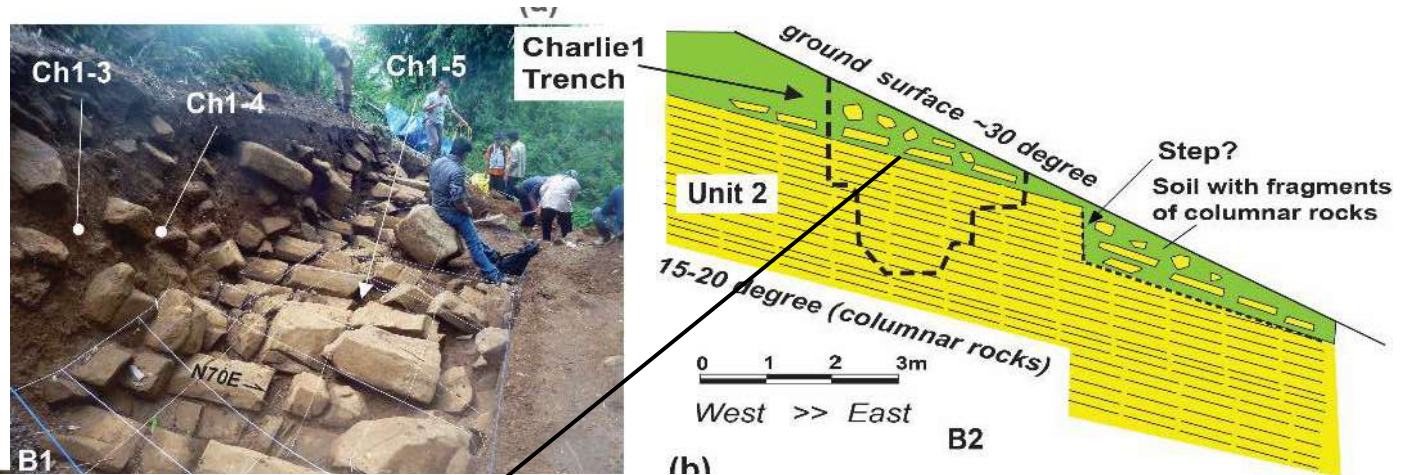
The fillers are not produced by weathering processes mortars. Columnar rocks are still relatively fresh with sharp edges.

Unit 2 formed the floors of Terrace 2&3. It continues down more than 3.5 meters. Along the perimeter, Unit 2 are covered by Unit 1

ON EAST SLOPE

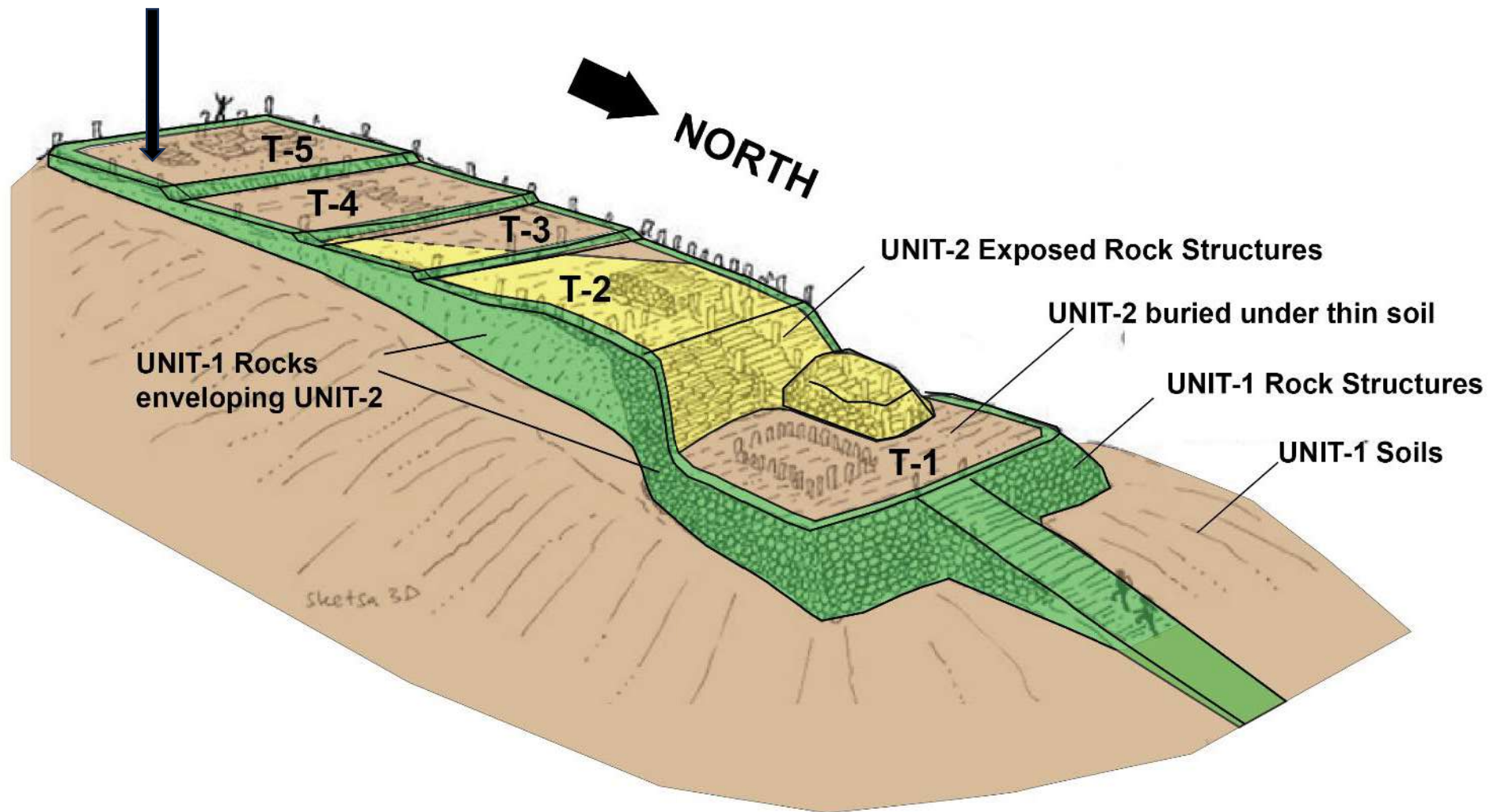
CHARLIE-1 Trench

TRENCHING CHARLIE-1

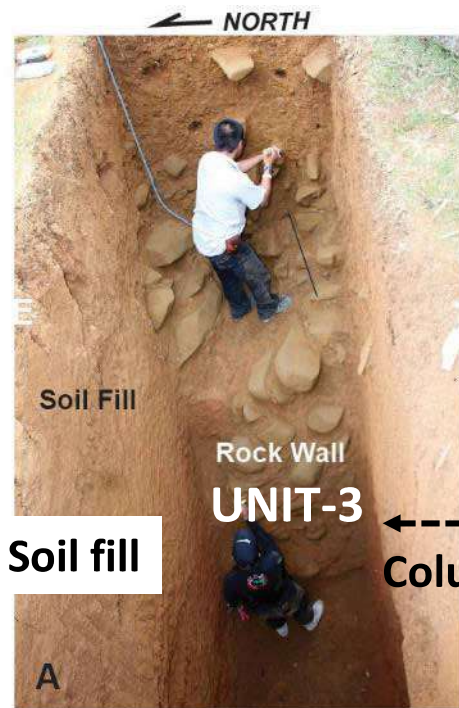


**ECHO-2
TRENCH**

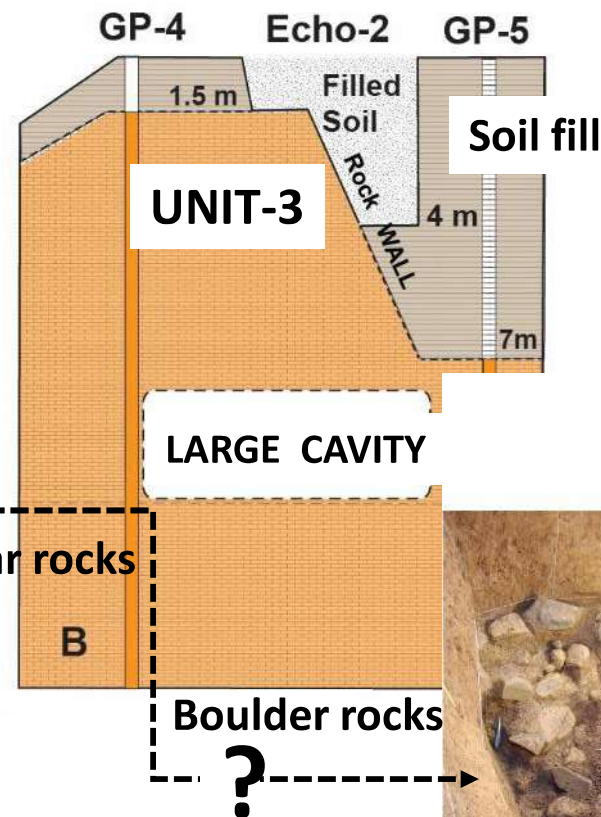
GUNUNG PADANG SURFACE EXPOSURES



**NO NATURAL GEOLOGICAL FORMATION, ALL COLUMNAR-JOINT ROCKS
HAVE BEEN ARRANGED BY HUMAN**



ECHO-2 TRENCH



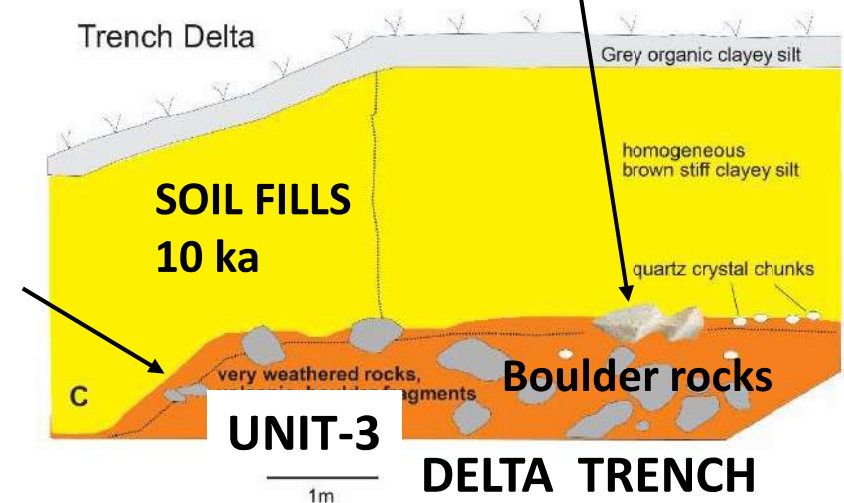
UNIT 3 exposed on the Excavation at Terrace 5

KUJANG STONE ARTIFACT



UNIT 3 is not only columnar rocks but also consists of rounded rocks (boulders).

Abrupt contact with Soil fills



DELTA TRENCH

ANALYSIS of KUJANG STONE ARTIFACT at PHYSIC LAB, ITB

Prof. Dr. Bagus Endar Prihandoko



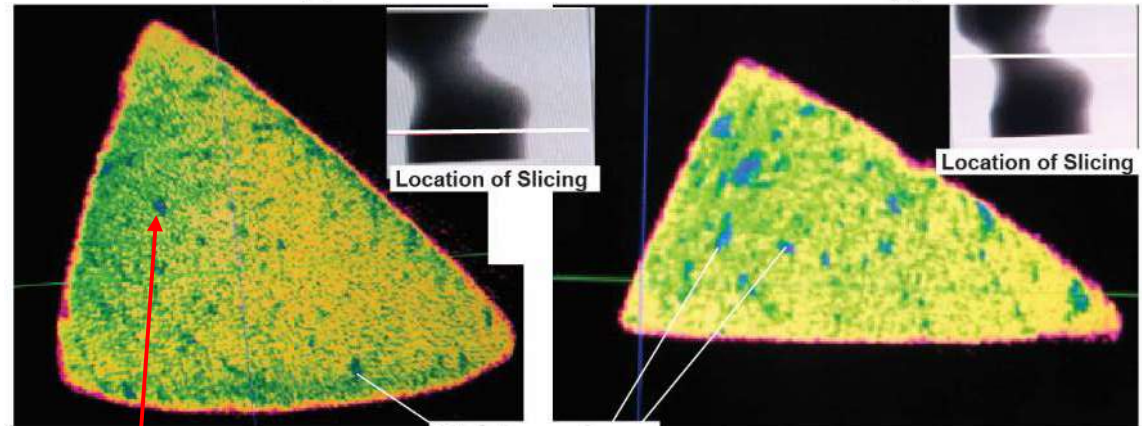
Phi number ? (22/7)



— UNIQUE SHAPE...

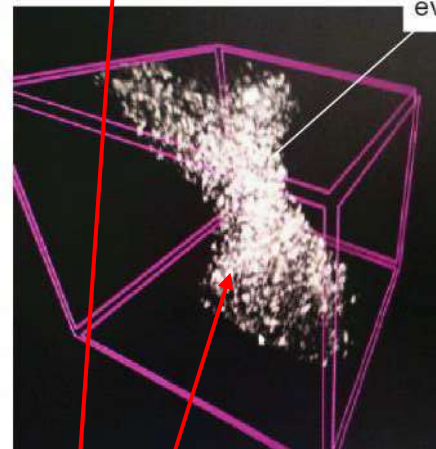
(a)

(b)



(c)

(d)



(e)



(f)

METAL GRAINS EVENLY DISTRIBUTED

GP-3 CORE LOG

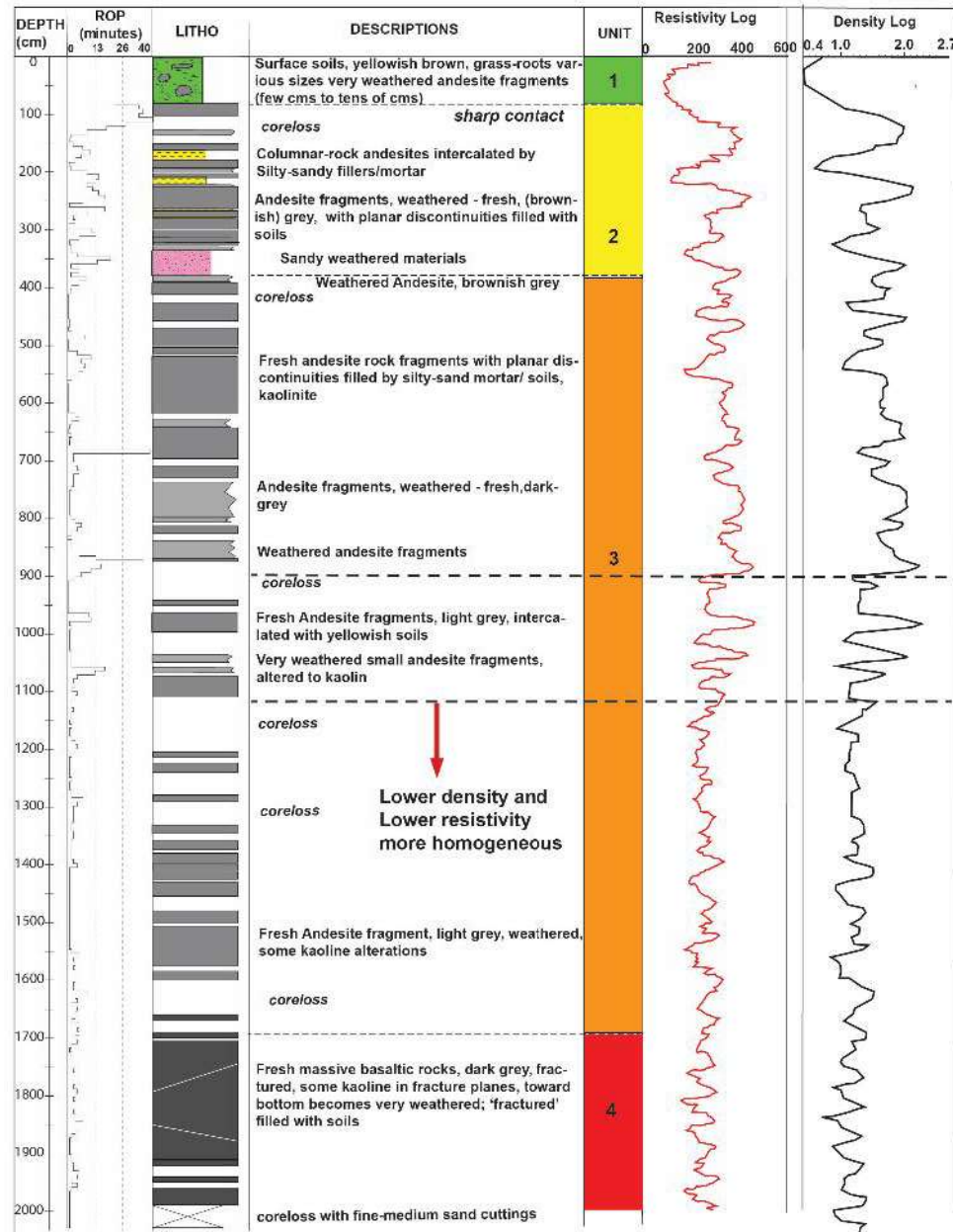


Figure 4 Boreholes
(DR. ANDANG BACHTIAR & TEAM)

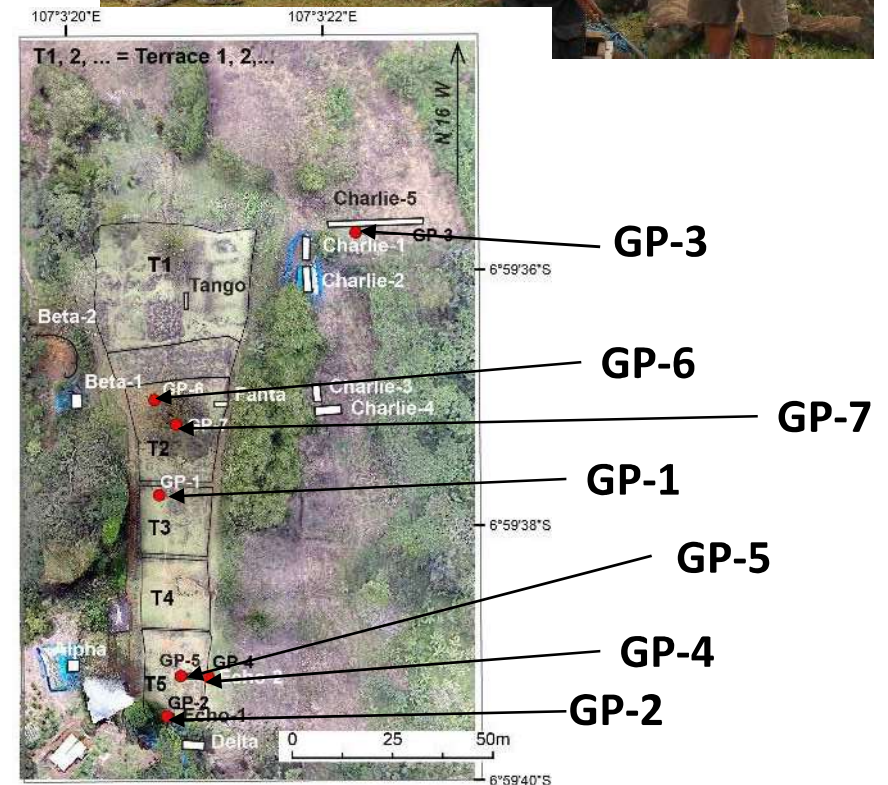
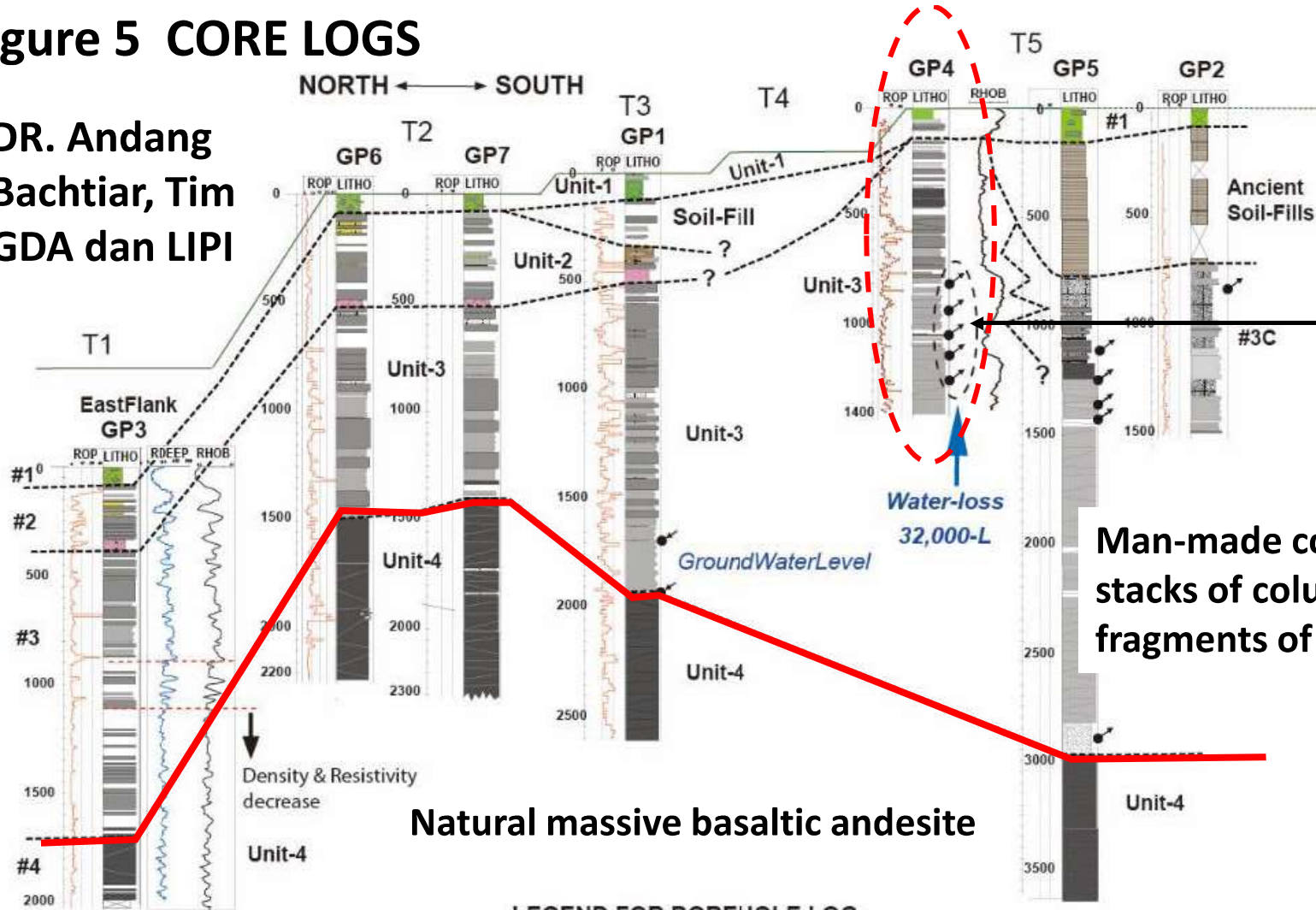


Figure 5 CORE LOGS

DR. Andang
Bachtiar, Tim
GDA dan LIPI



Water loss
32,000 l

Man-made constructions :
stacks of columnar and
fragments of andesites

Natural massive basaltic andesite

LEGEND FOR BOREHOLE LOG

Surface soil with vegetations	Loose silt and sands /weathered materials (in #3)	ROP = Rate of Penetration (minutes/10cm)
Soil fills (artificial) Basaltic-Andesite fragments	Completely weathered fine-grained materials (in #3)	LITHO = Lithology
Soils, sandy materials with gravels/rock fragment	Fresh Massive Basaltic rocks (#4)	RHOB = Density Log
Fresh Basaltic-Andesite fragment/columnar rocks	Weathered Massive Basaltic Rocks (#4)	RDEEP = Resistivity Log
Weathered Basaltic- Andesite fragment/columnar	CORE LOSS (Blank)	
Very Weathered Basaltic-Andesite fragment/columnar	planar discontinuities often filled with soils	
Sandy-silty materials/ mortars (in #2)	water loss	
	water inflow	

Ground Penetrating Radar DR. Mudrik Daryono MS & Team

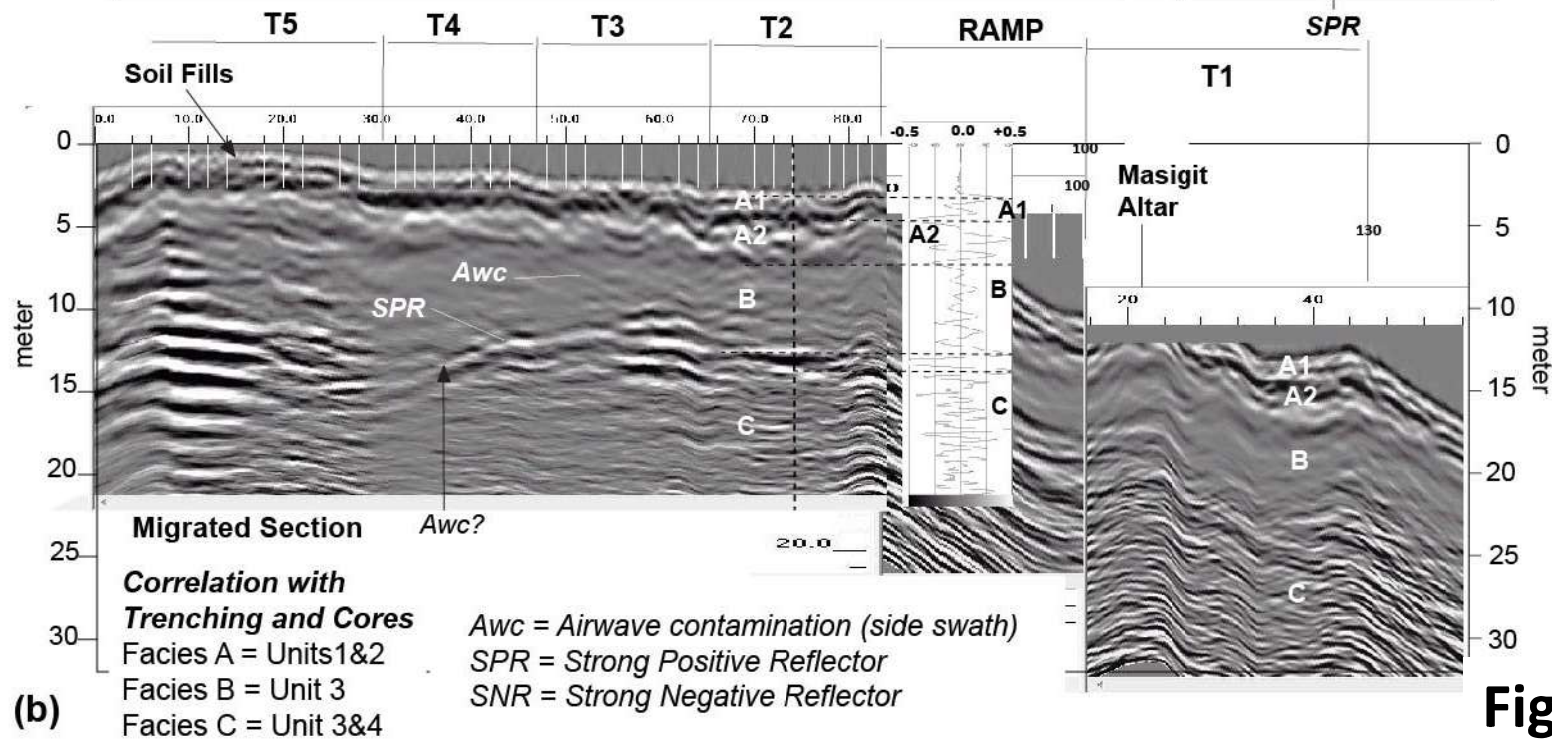
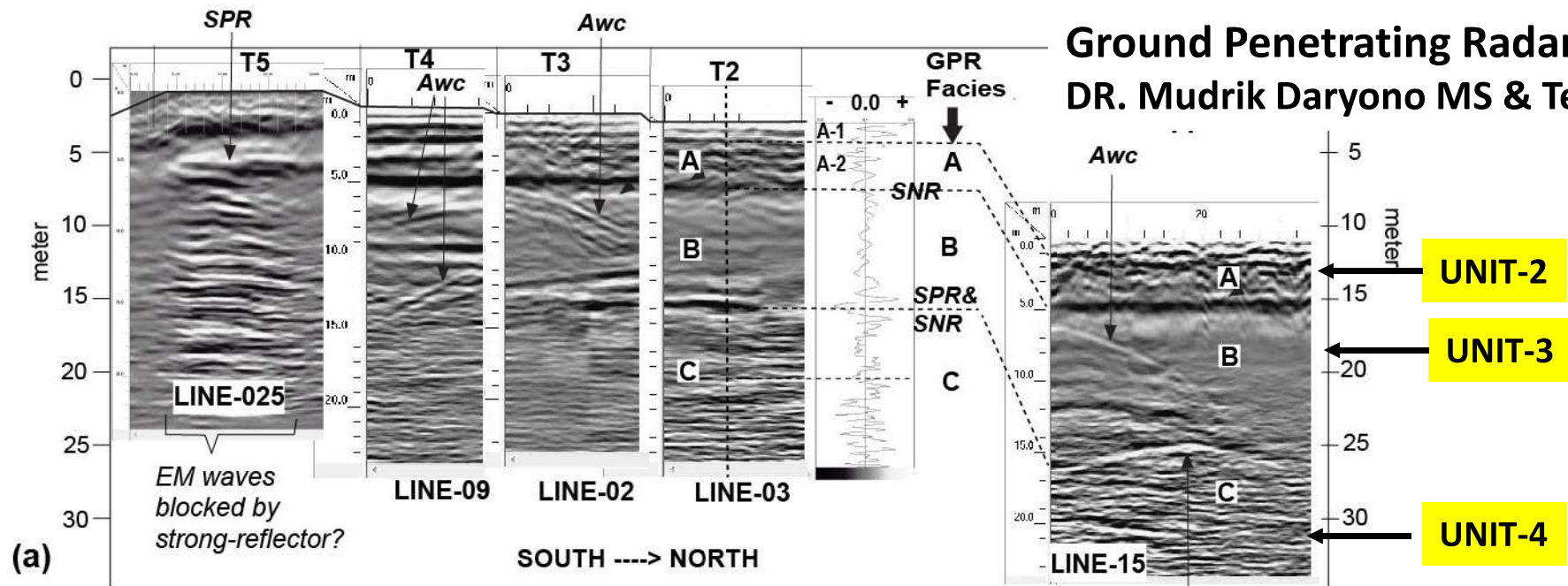
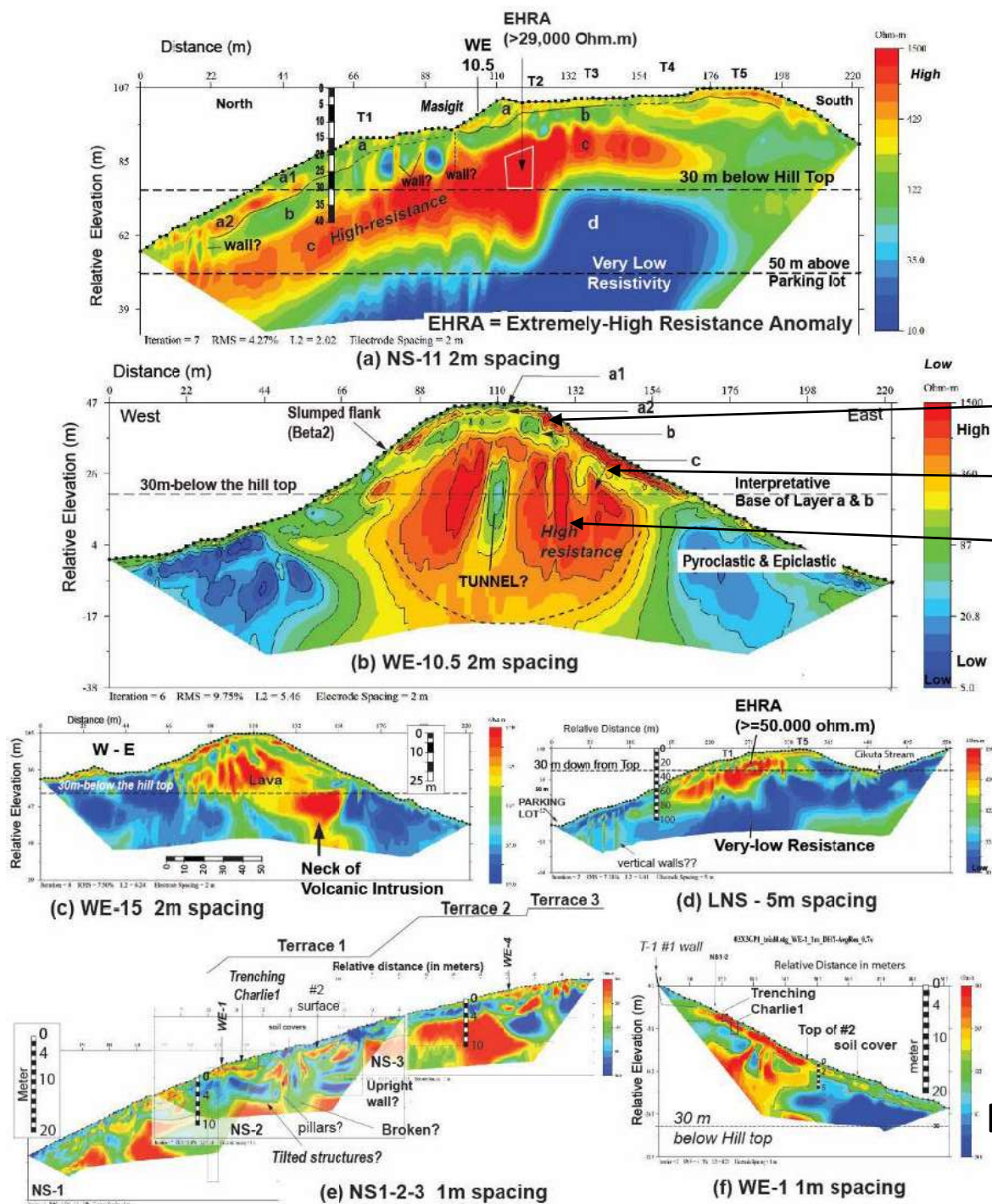


Figure 9 GPR



UNIT-2

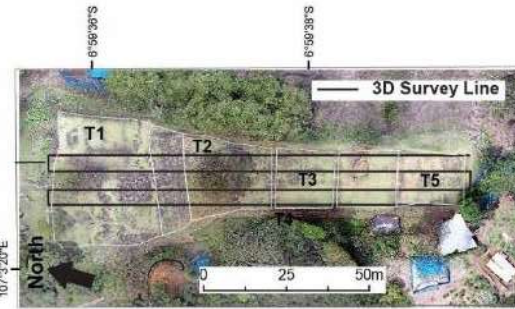
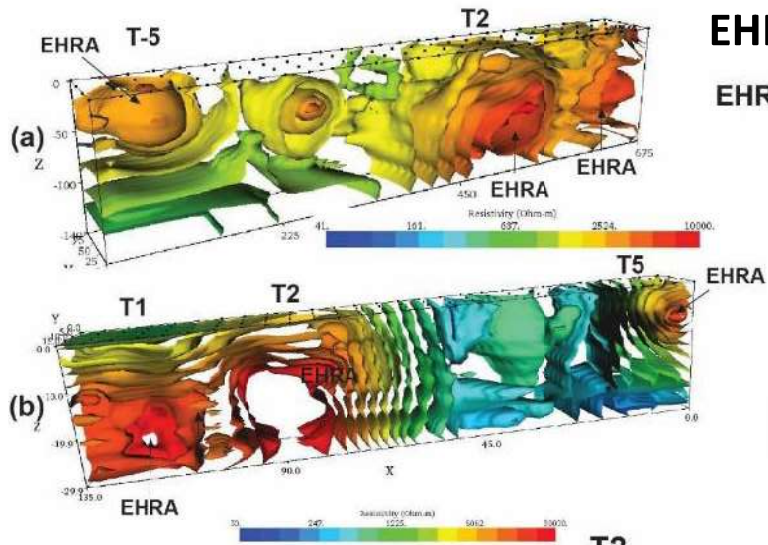
UNIT-3

UNIT-4

Figure 10 ERT
Earth Resistivity Tomography

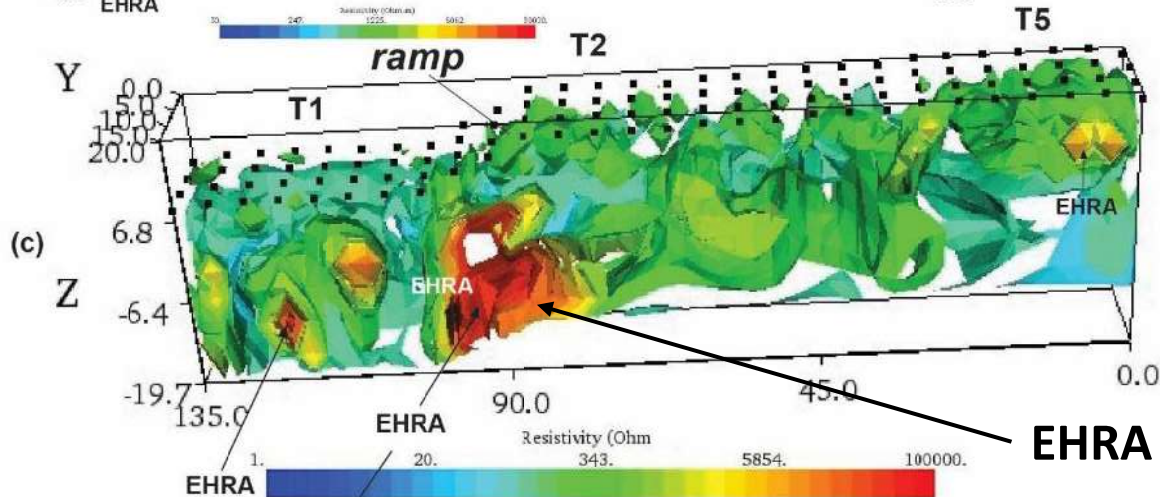
EHRA = Extremely High – Resistive Anomaly

EHRA = Extremely-High Resistive Anomaly

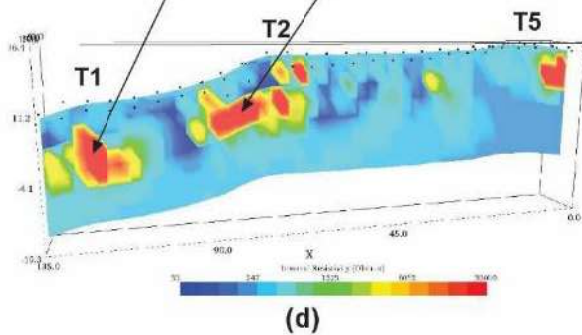


(g)

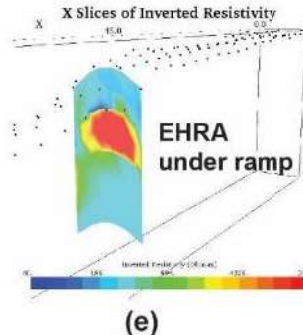
Figure 11 3D ERT



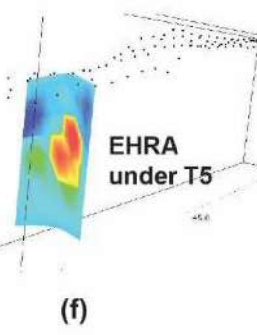
EHRA → underground chamber



(d)

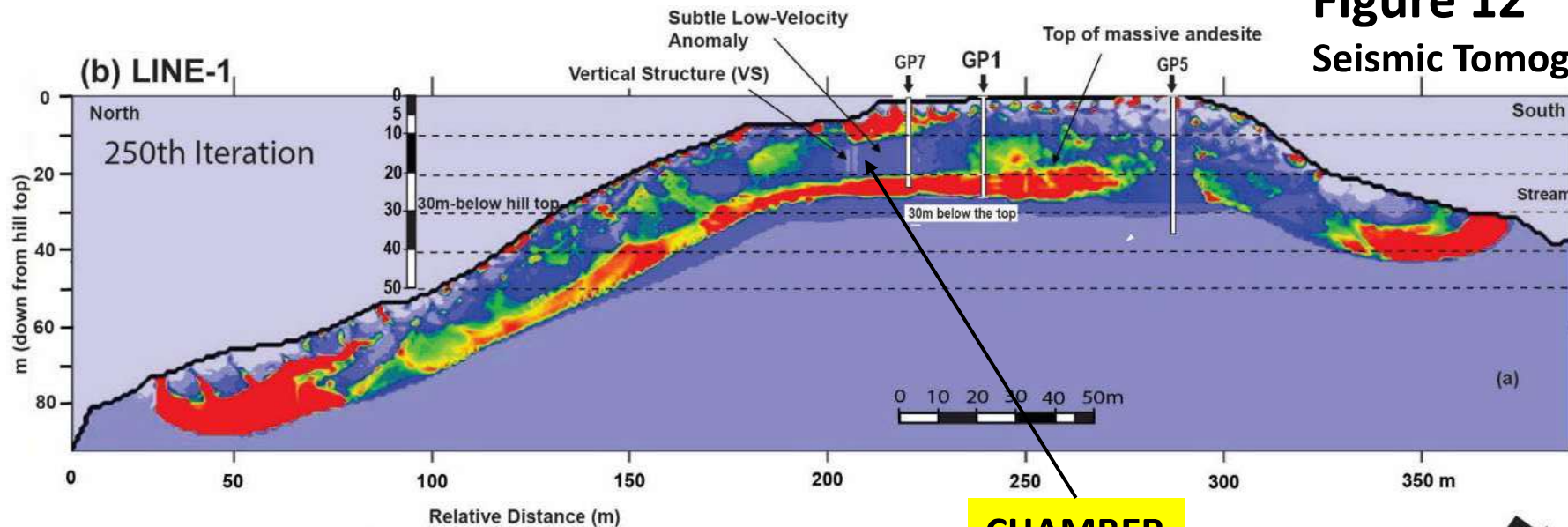


(e)

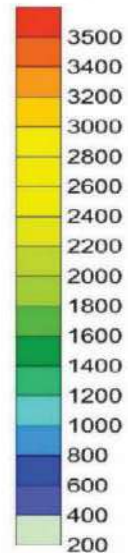


(f)

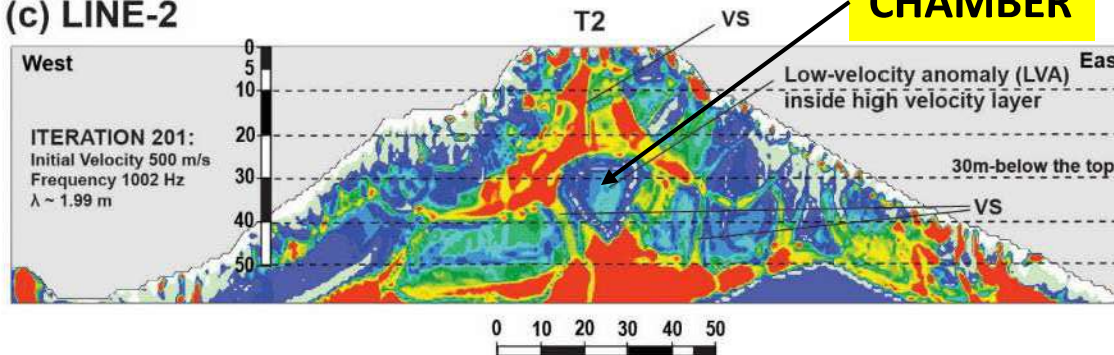
Figure 12
Seismic Tomography



Velocity
(m/sec)

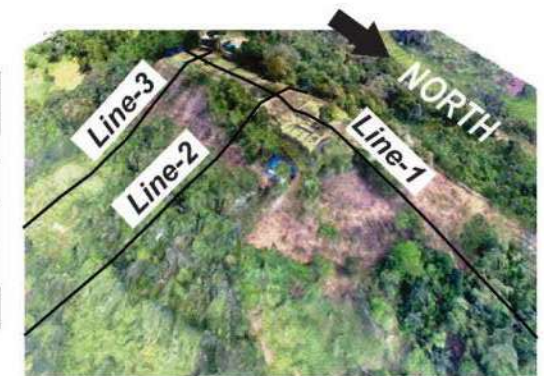
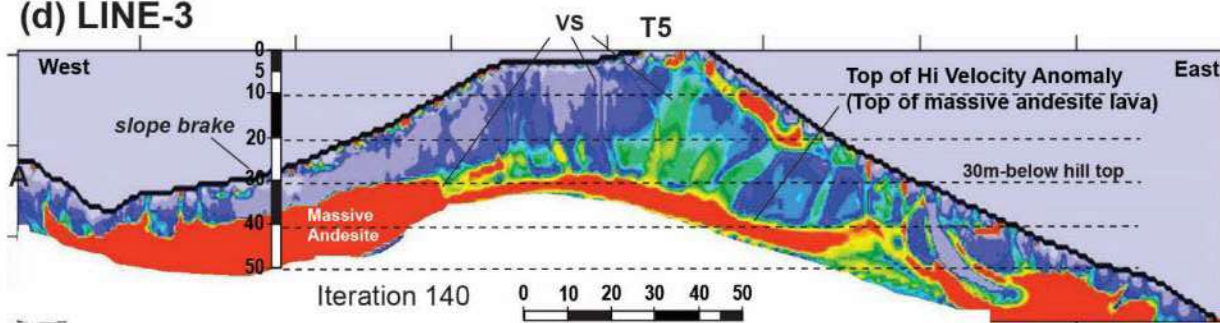


(c) LINE-2



CHAMBER

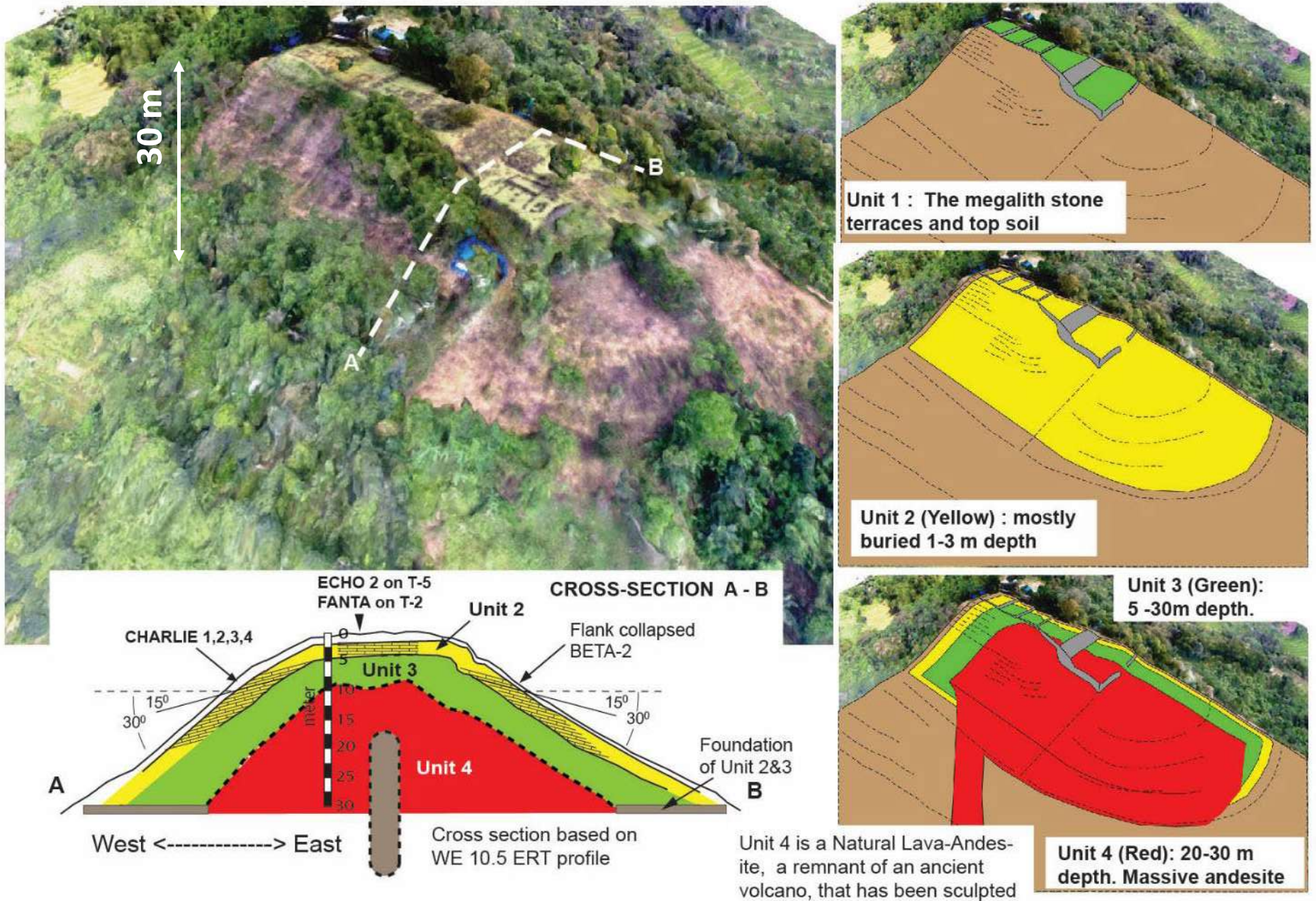
(d) LINE-3

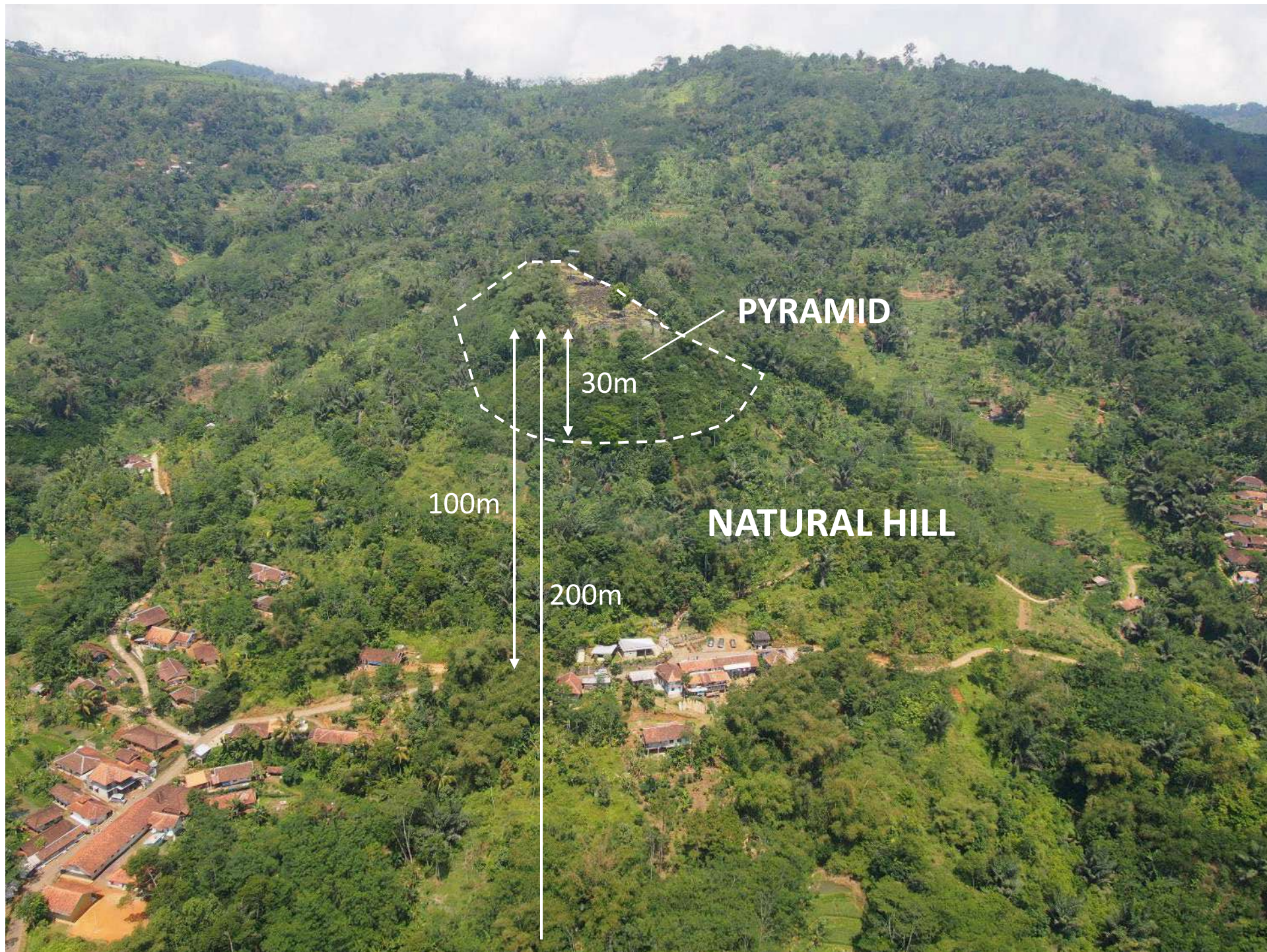


(a) Index map

Prof.DR-eng Bagus
Endar Prihandoko
& Team - ITB

Figure 14 Reconstructions of the Gunung Padang Pyramid Layers





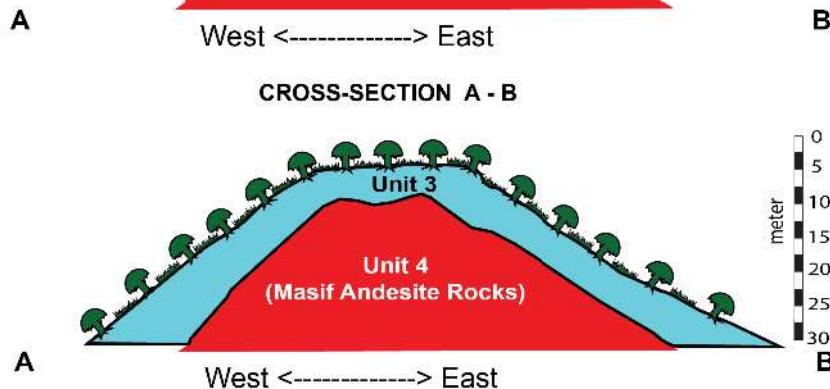
- Unit 1 : The megalithic stone terraces
- Unit 2 (Yellow): mostly buried 1-2 m
- Unit 3 (Blue)
- Unit 4 (Red): Massif Andesite



CARBON DATING METHOD

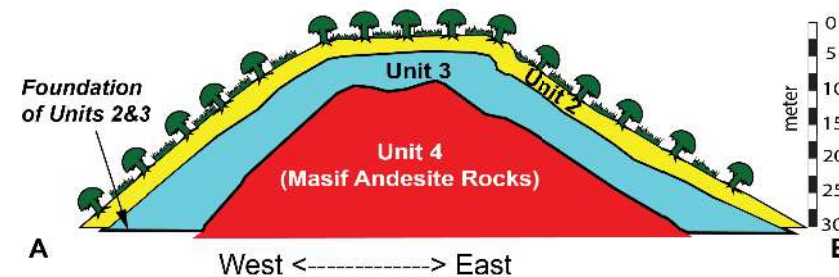
NATURAL HILL

Gunung Padang stands as the remnant of ancient volcanic hill, formed by basaltic-andesite rock intrusions



UNIT-3 (25,000 - 14,000 BCE)

Unit 3 was constructed atop Unit 4. There were possibly some organic matters associated with constructions and some bio-organic activities since the constructions. After it was abandoned for thousands of years the rock constructions significantly weathered, trees and grasses and bio-organisms occupied the ancient ground surface atop Unit-3 Layer. Their roots and rootlets penetrated Unit 3 Layer. The died trees, grasses, and bio-organisms leaves carbons in the matrix of Unit-3 rock constructions.

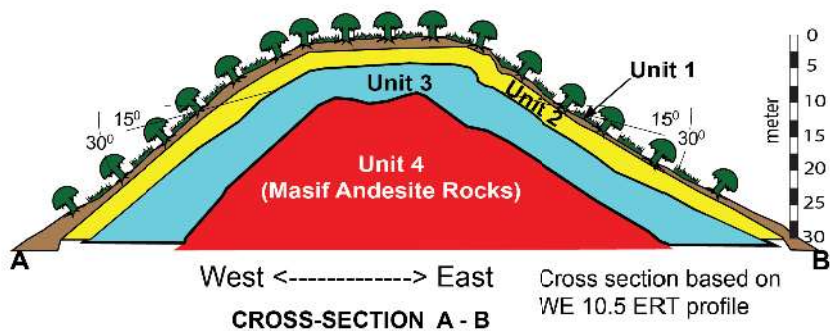


UNIT-3 BURIAL (8,000 - 6,000 BCE)

Soil fills deliberately buried Unit 3.

UNIT-2 (6,000 - 5,500 BCE)

Unit-2 constructed enveloping Unit-3. Over millennia of abandonment, the upper part of Unit-2 weathered, creating a habitat for trees, grasses, and bio-organisms on its ancient ground surface. Their roots penetrated the ground, depositing carbon traces in the rock matrix upon their demise.

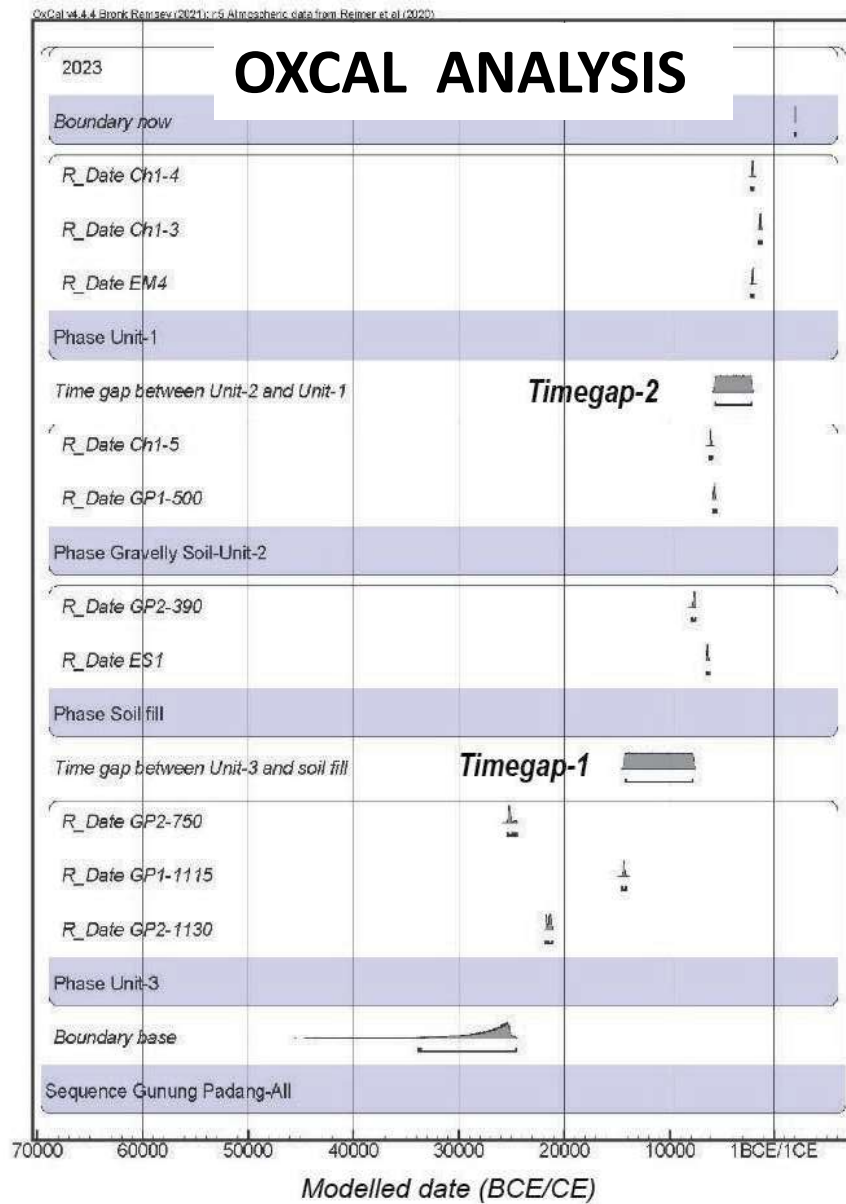


Abandonment of UNIT-2 (5,500 - 2,000 BCE)

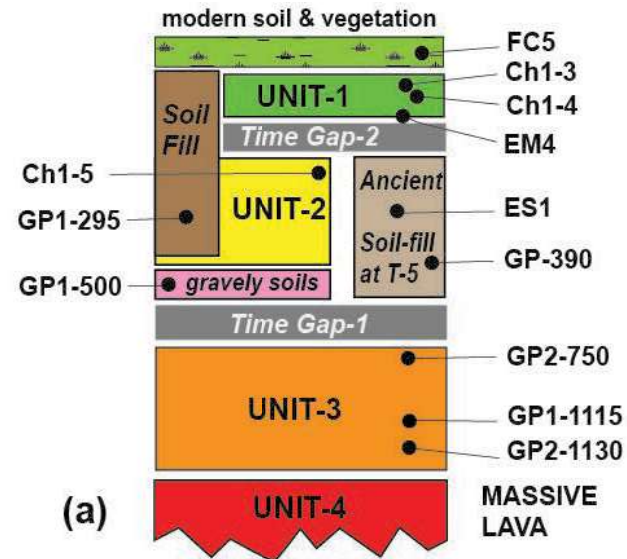
UNIT-1 (2,000 - 1,000 BCE)

Most of Unit-2 was deliberately covered by soil. Subsequently, the construction of Unit-1, including rock terraces and megalithic structures, took place. Once again, the site was abandoned, left unmaintained, and reclaimed by trees and grasses.

Radiocarbon Dating Analysis – Laboratorium BETA Analytic USA & BATAN



(b)



(a)

CARBON AGES OF LAYERS

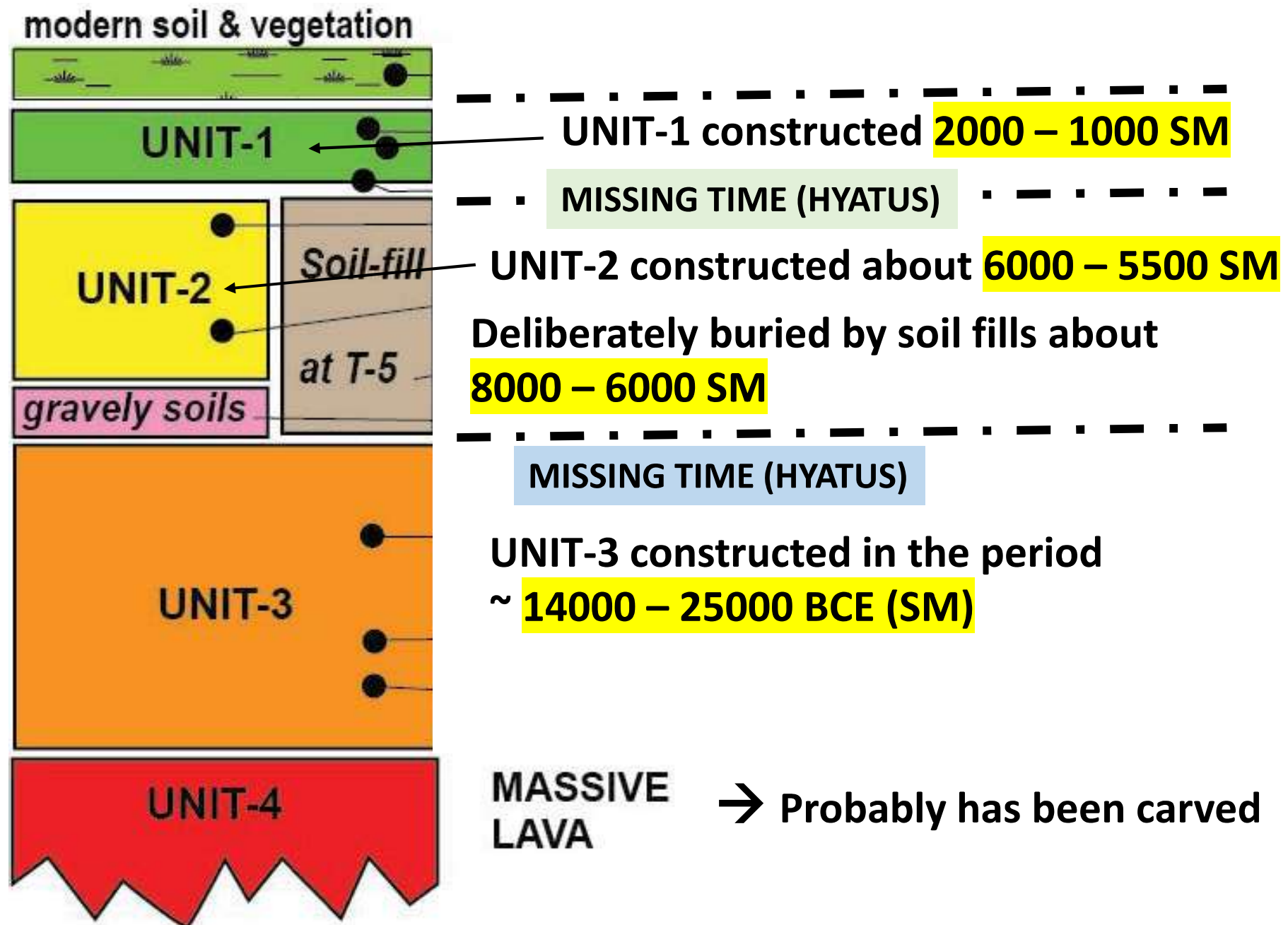
Sample Locations

Multi Construction	Time Period (Cal. BCE - CE)
Soil Fill	1393 - 1499 CE
Unit 1	2023 - 1132 BCE
Time Gap 2	5539 - 2112 BCE
Unit 2	6071 - 5483 BCE
Ancient Soil Fills	7939 - 6103 BCE
Time Gap 1	14206 - 7874 BCE
Unit 3	25353 - 14162 BCE
Unit 4	No Data

STRATIFICATION & Calendar AGES

FIGURE 7

(c)

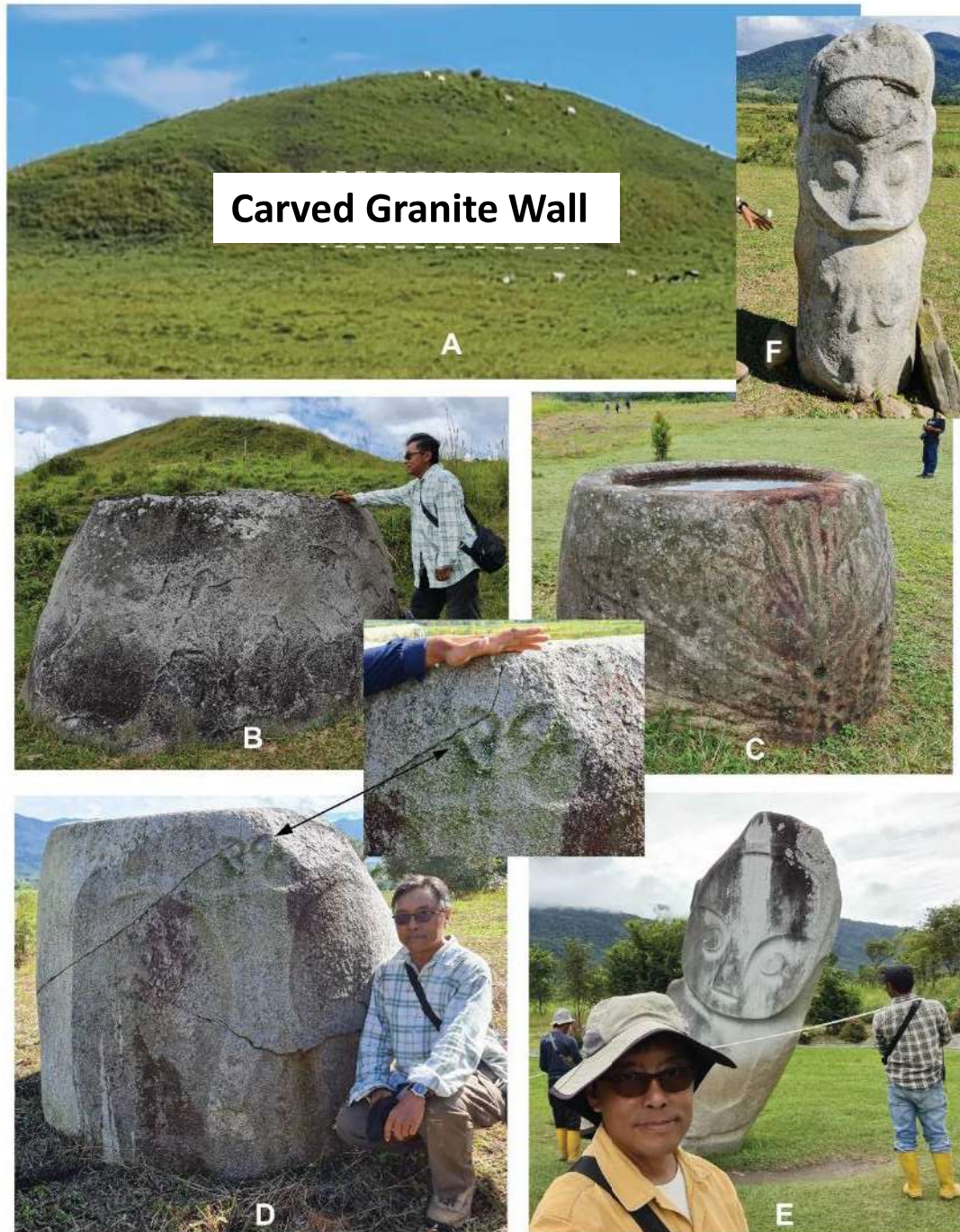


FASCINATING UN-EXPLORED LARGE ANCIENT STRUCTURES IN INDONESIA



(d)

**TOBA
PYRAMID**
Discovery in 2022



Carved Granite Wall

2022 Discovery :
PYRAMID IN
CENTRAL SULAWESI
(NAPU-BADA-BESO
MEGALITH VALLEYS

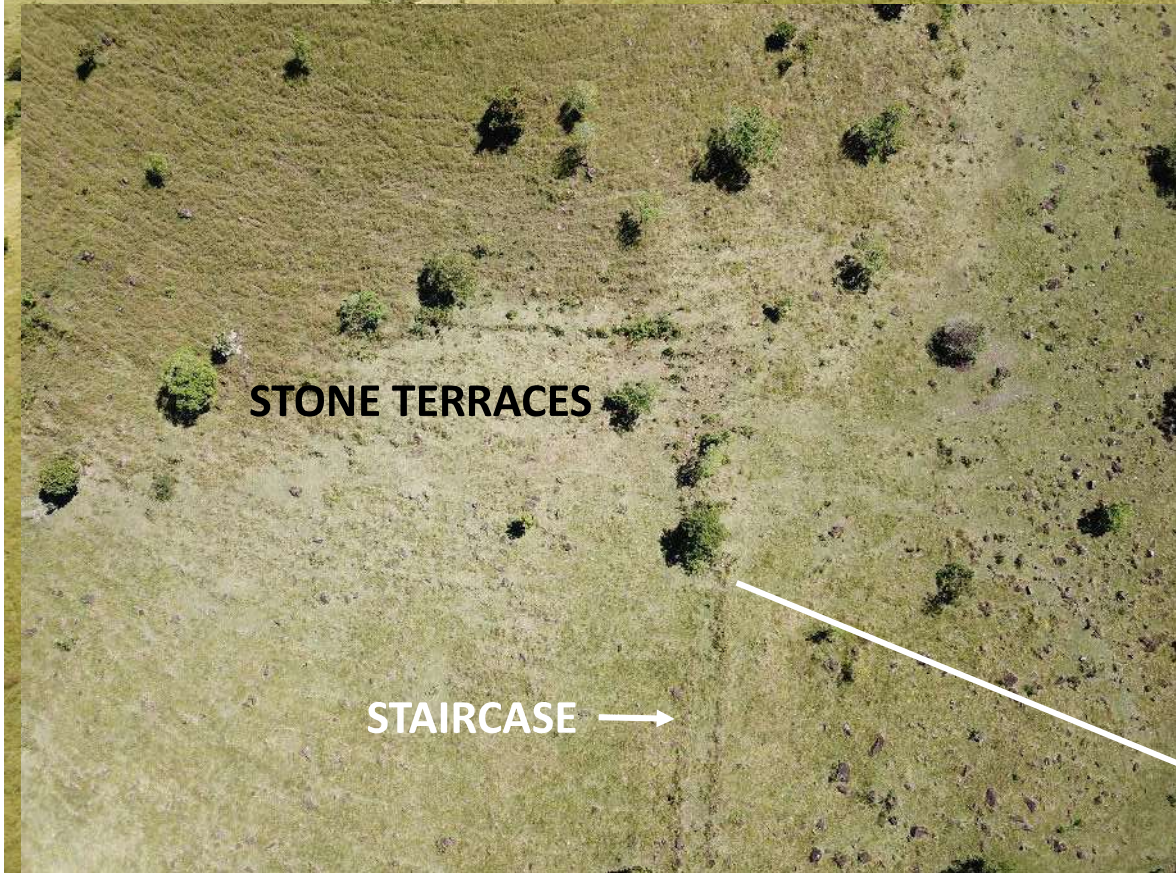
**LATEST DISCOVERY
PYRAMID IN FLORES ISLAND**



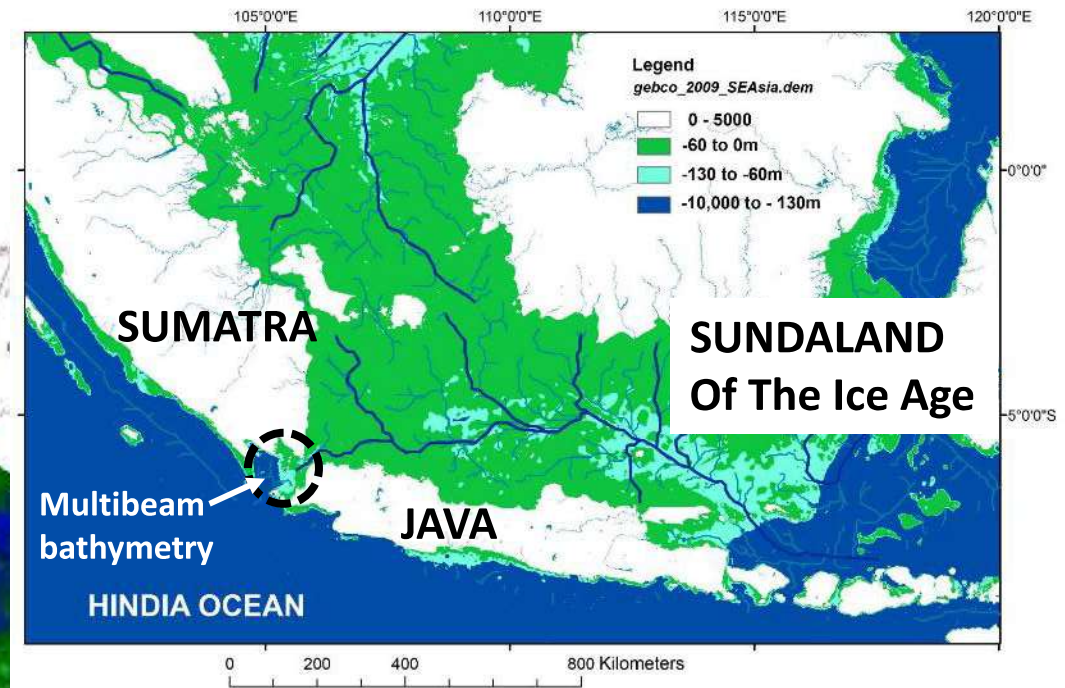
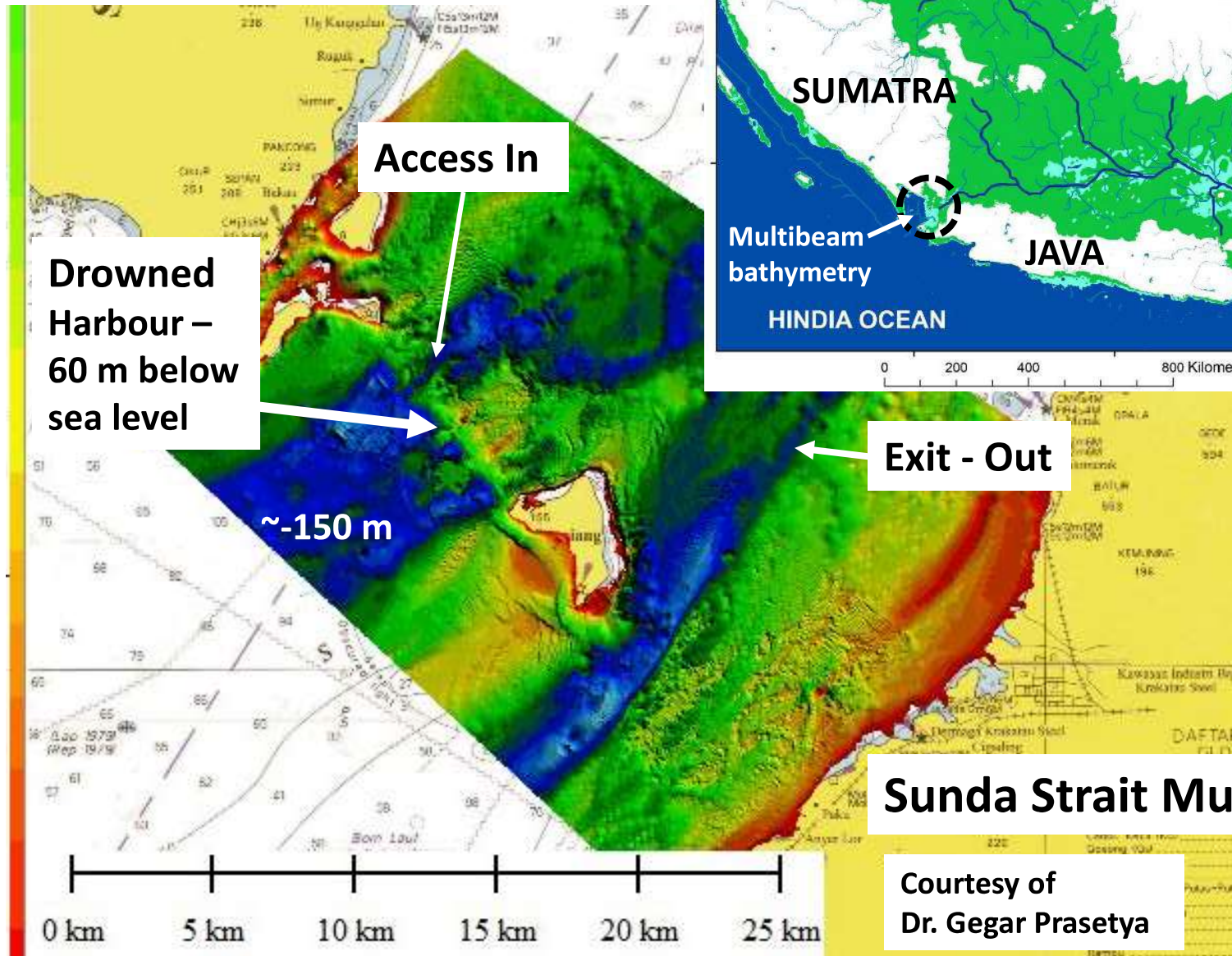
**LATEST DISCOVERY
PYRAMID IN FLORES ISLAND**



LATEST DISCOVERY PYRAMID IN FLORES ISLAND



More than 11,000 years old DROWNED HARBOUR?

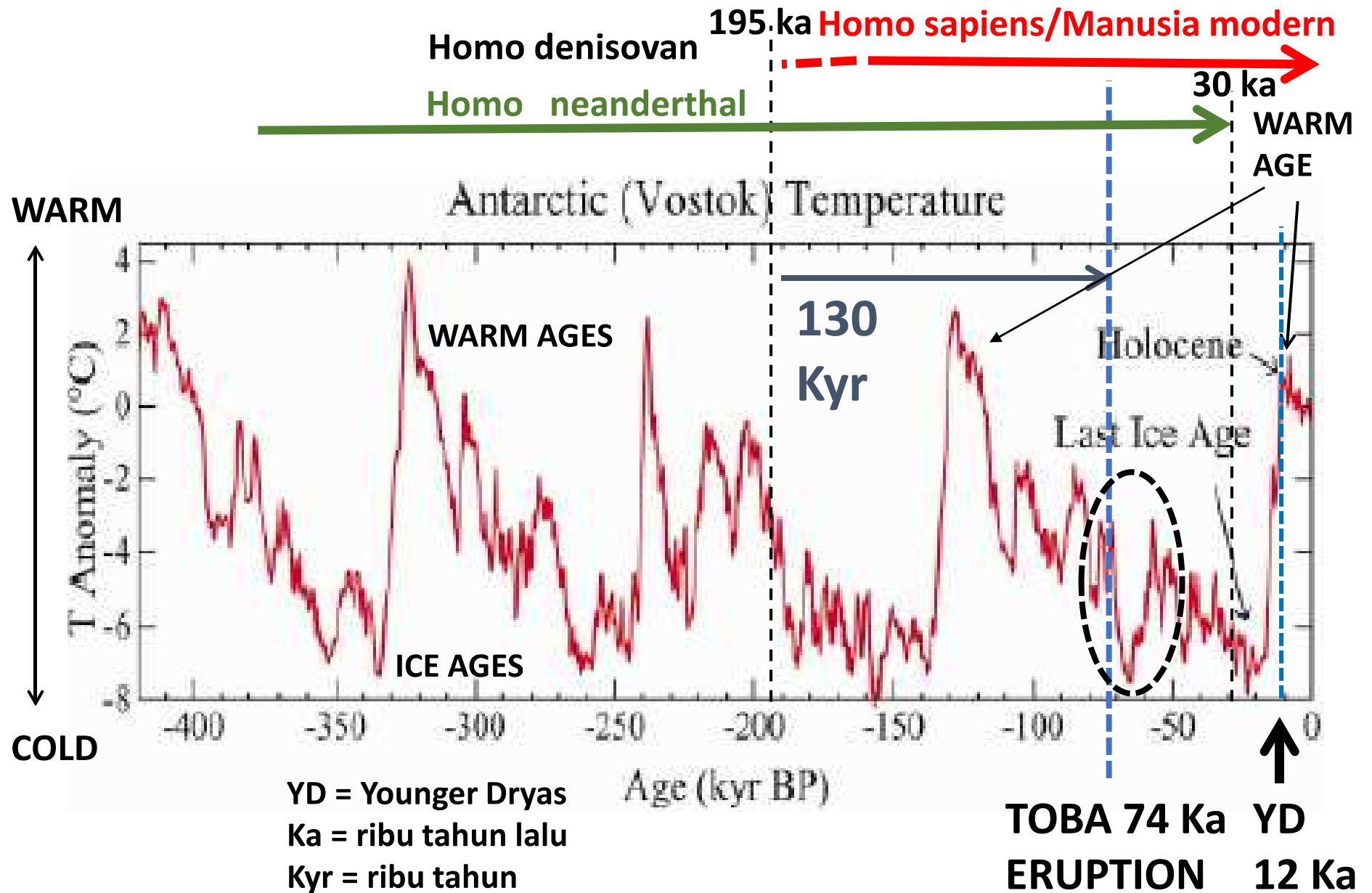


Sunda Strait Multibeam

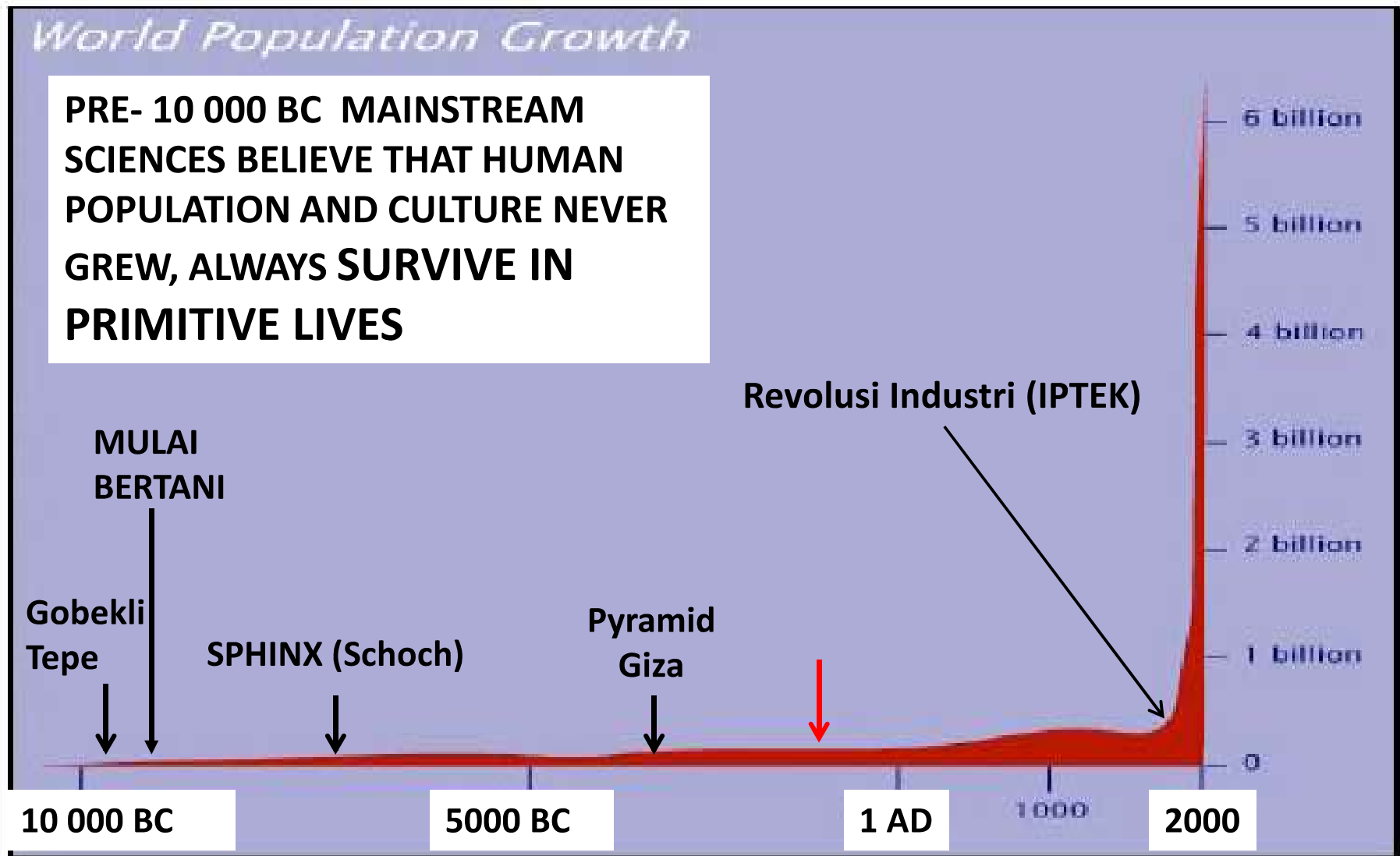
Courtesy of
Dr. Gegar Prasetya

SIGNIFICANCE OF GUNUNG PADANG RESEARCH TO THE HISTORY OF HUMAN CIVILIZATIONS

Global Weather Cycle and Catastrophic Events since 400 ka

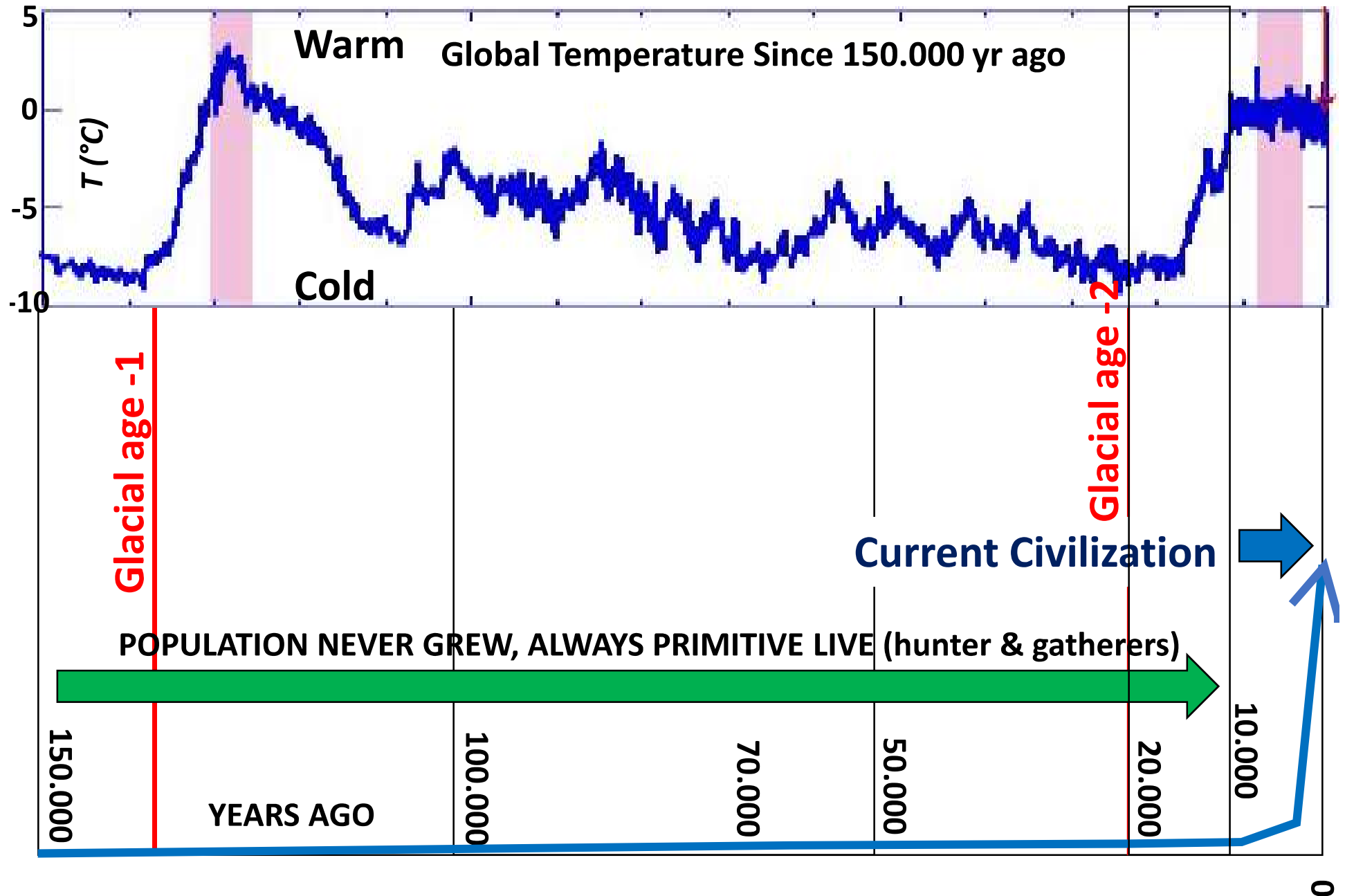


ENIGMA OF HUMAN POPULATION AND CIVILIZATIONS



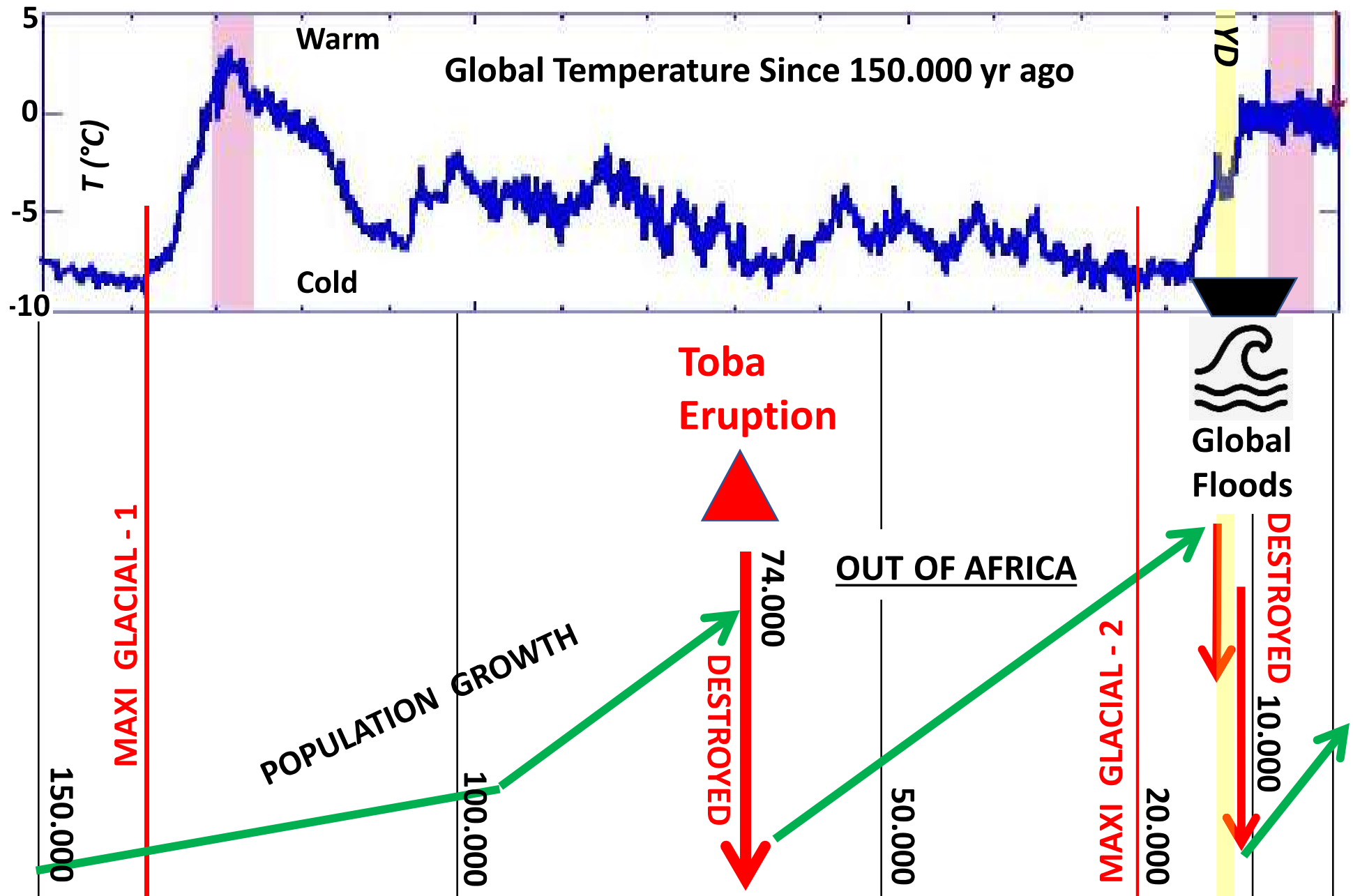
Established Belief of Human History

26

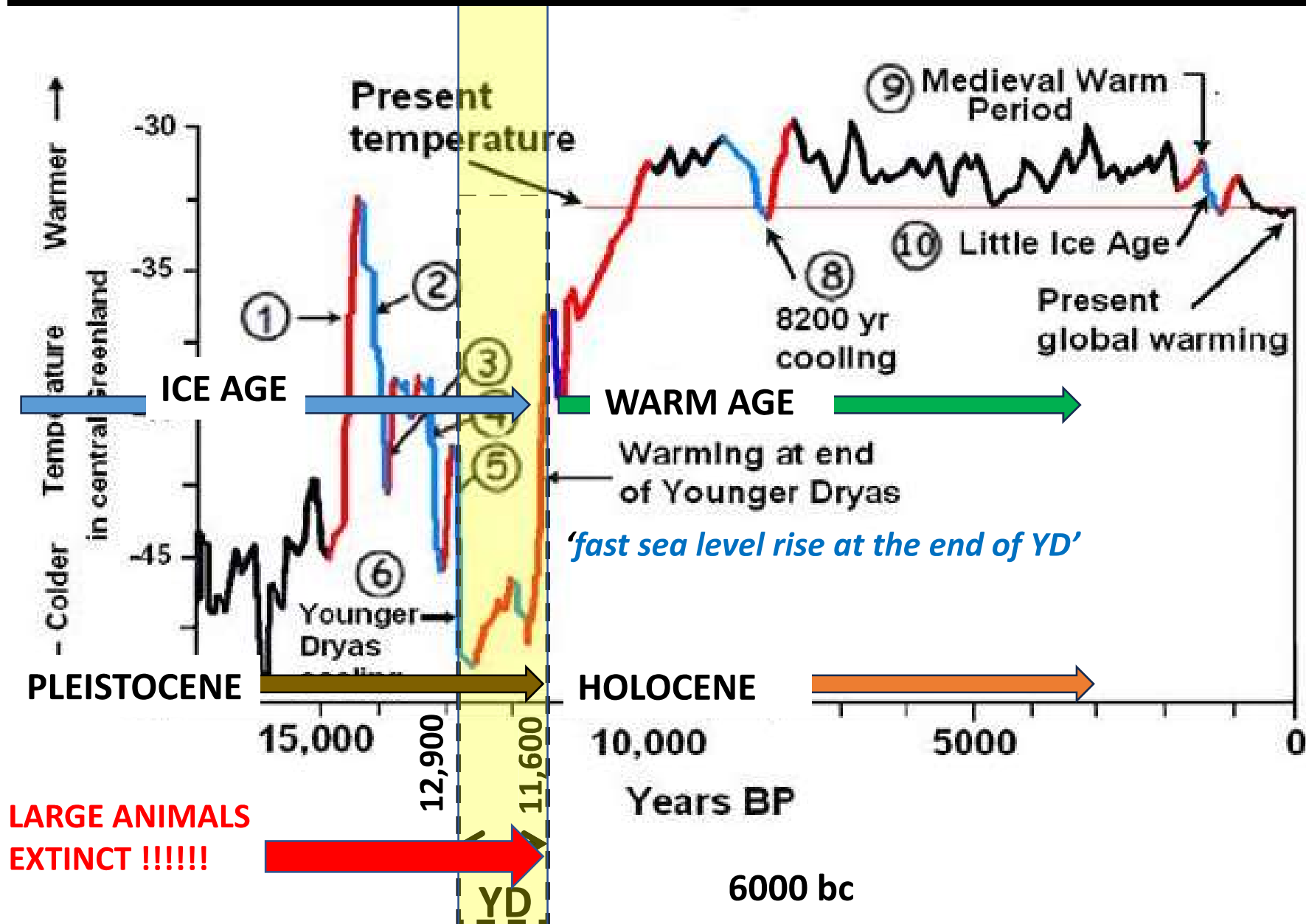


ALTERNATIVE HUMAN HISTORY: CATASTROPHIC AND CULTURE CYCLES

28



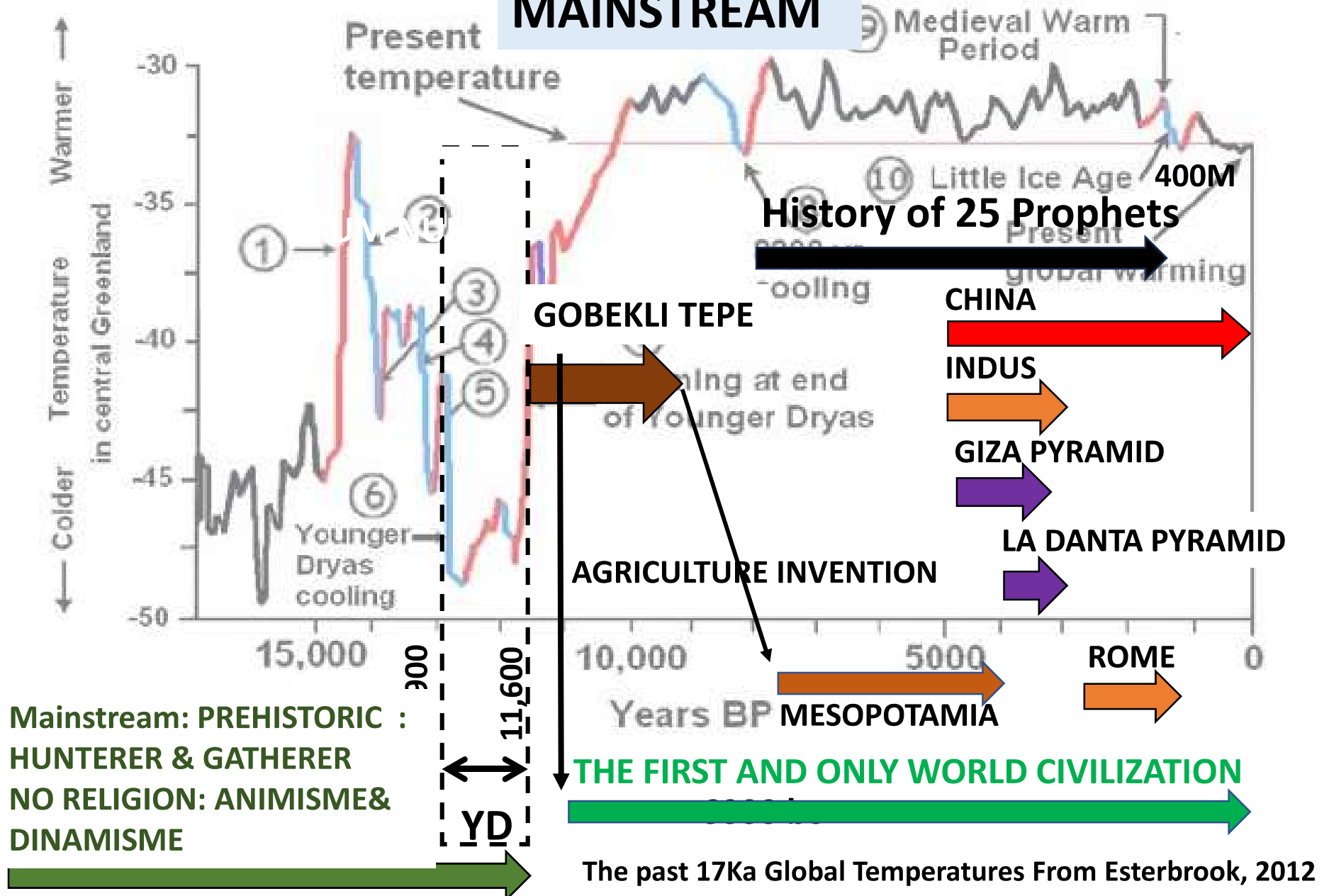
Earth & Human History



The past 17Ka Global Temperatures From Esterbrook, 2012

Earth & Human History

MAINSTREAM



Earth & Human History

