Language at 70,000 BP
Evidence from sea-crossings

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Question ?

- When did language start?

Answer :

❏ Before 70.000 BP

Introduction

❑ Language does not fossilize → no direct evidence (before writing)

→ Indirect clues in the behavior of early humans:
- Tools (stone, bone)
- Paintings, carvings
- Sepultures

❑ Another possibility: early clues of navigation

Overview

1. Arguments for an intentional passage from South-East Asia to Papua New-Guinea

2. Language and intentional sea-crossings

3. Andaman islands and coastal migrations "Out of Africa"

Arguments for an intentional passage from South-East Asia to Papua New-Guinea

Specificity of the Wallacea region

❑ Region between the southeastern Asian peninsula and Australia / Papua New Guinea (PNG)

❑ A large maritime area filled with numerous islands, but difficult to cross...

- Reaching Australia or PNG has always involved several sea-crossings, some more than 100 kilometers wide
- no large mammals from Asia in Australia before Homo Sapiens

❑ Significant changes in the paleo-topography due to sea-level variations
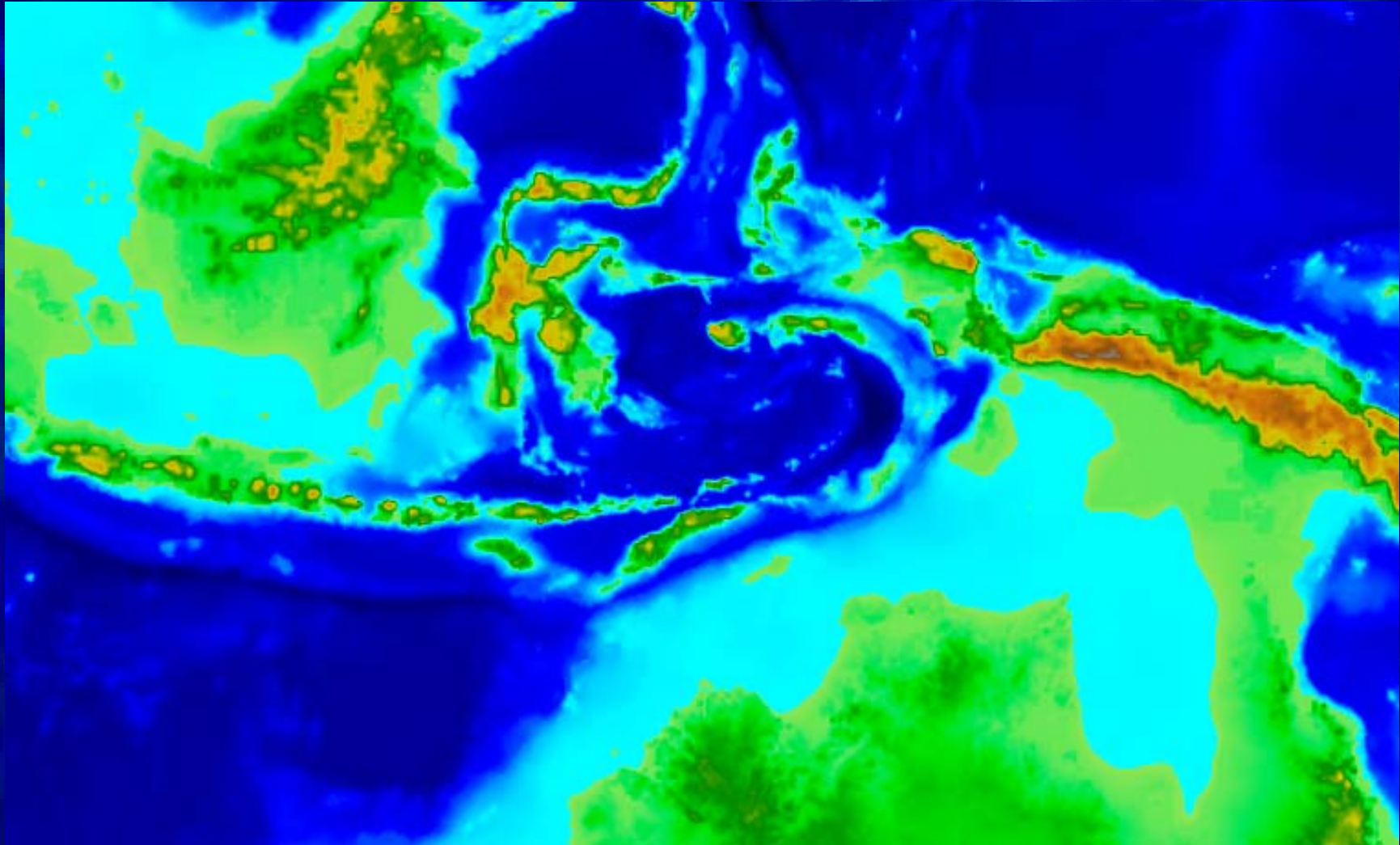
Sea-level variations
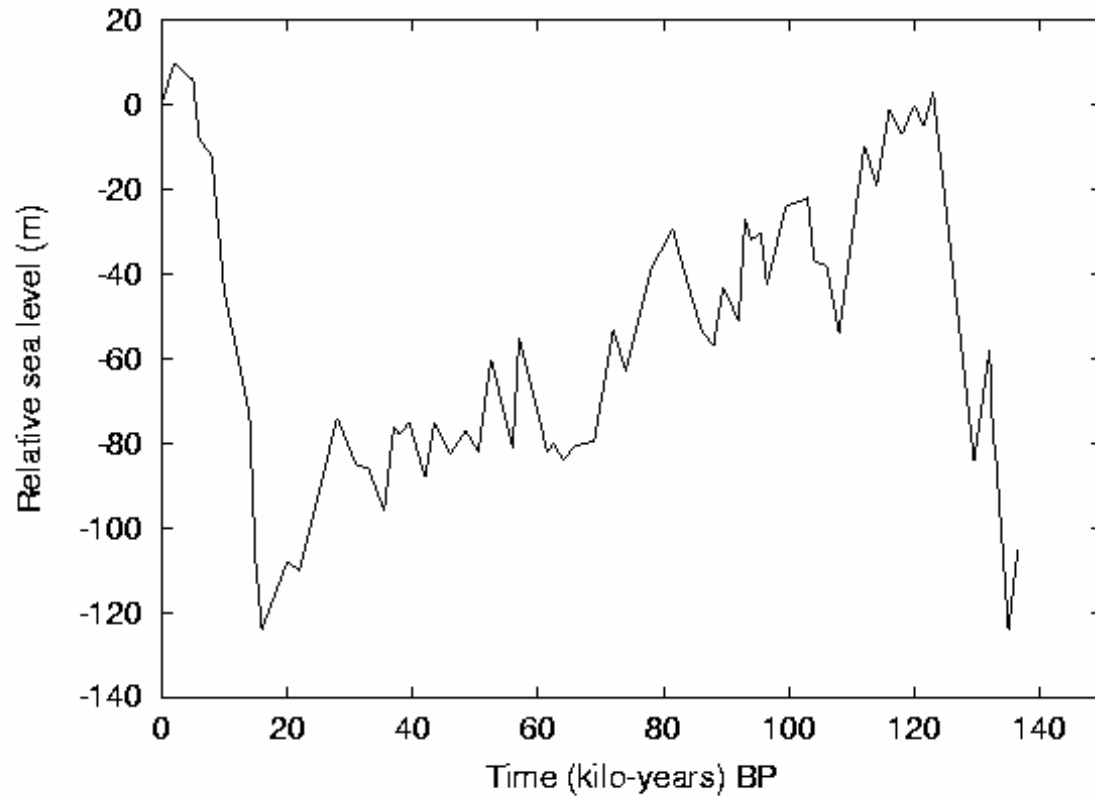
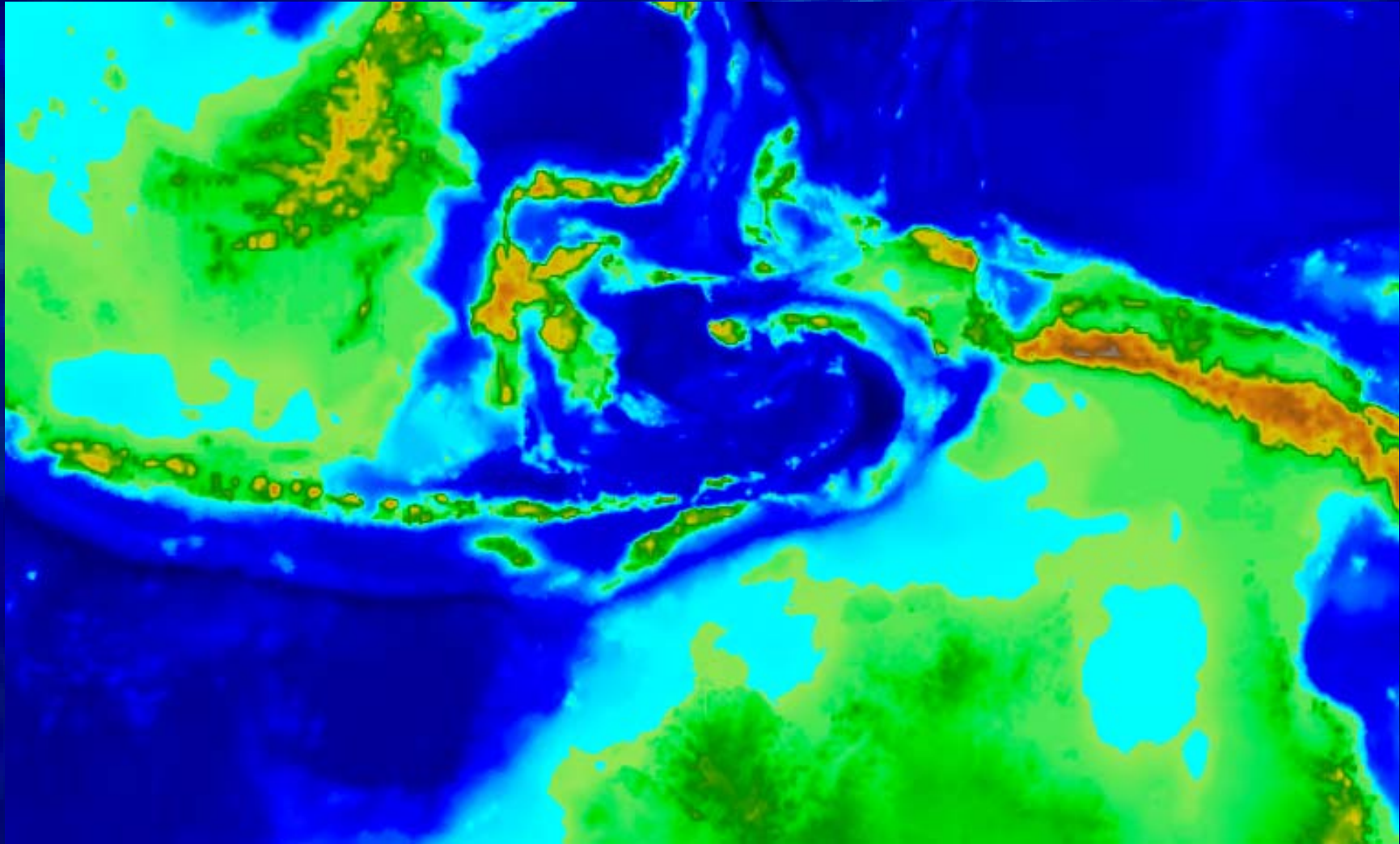(reproduced from Bard & al., 1990)

Geography of the Wallacea region
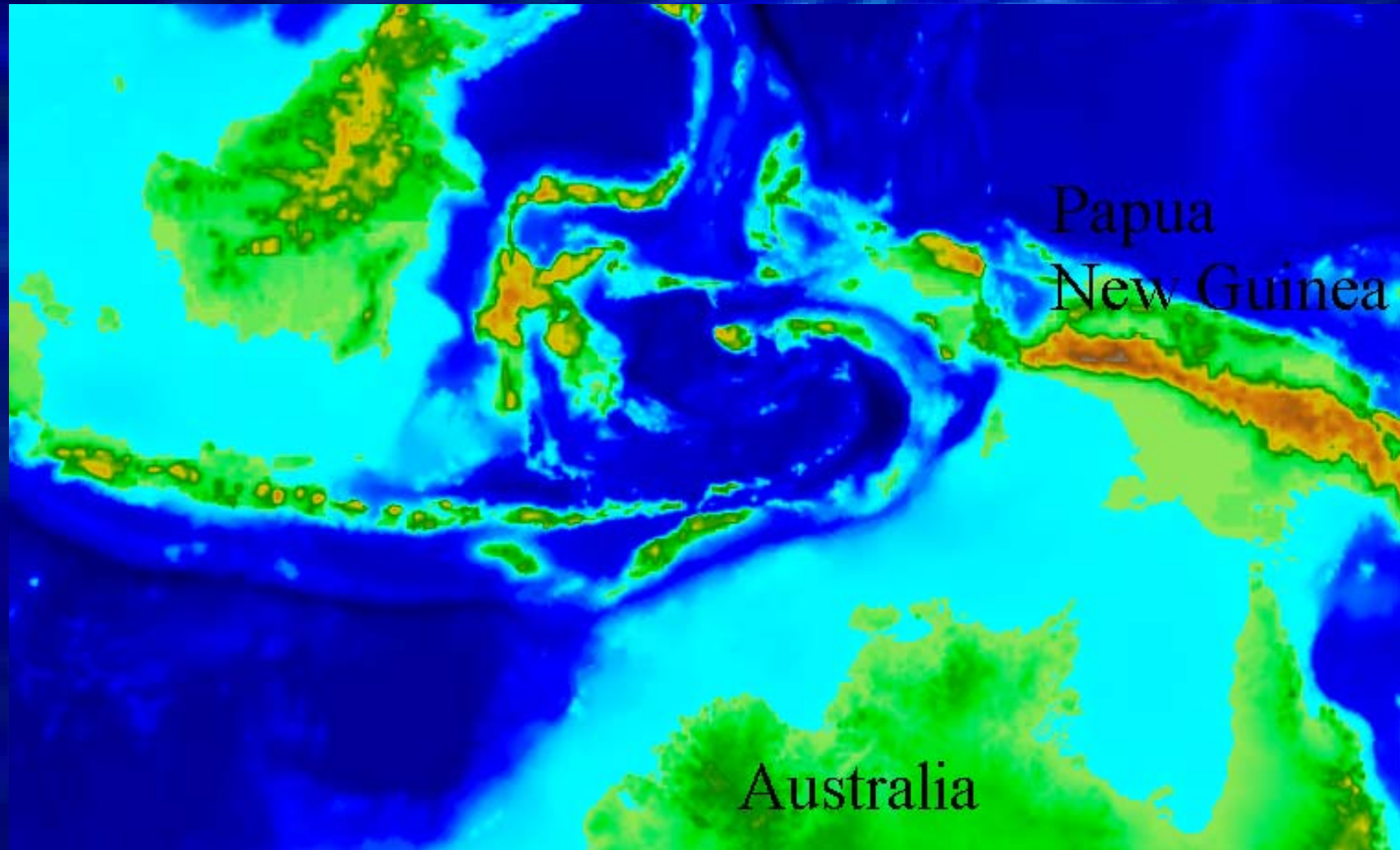
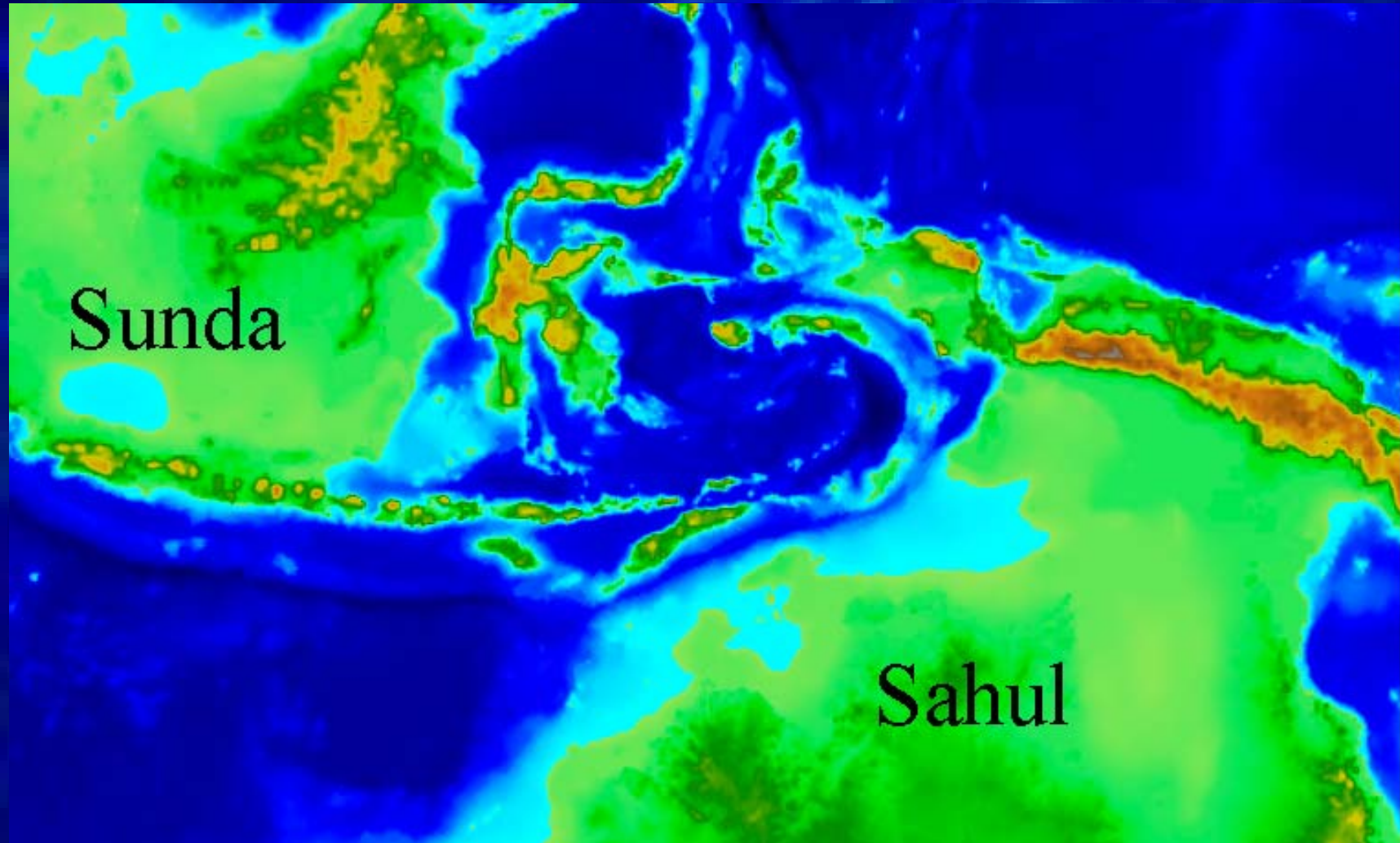Topographic base: TerrainBase (Row & Hastings, 1999)
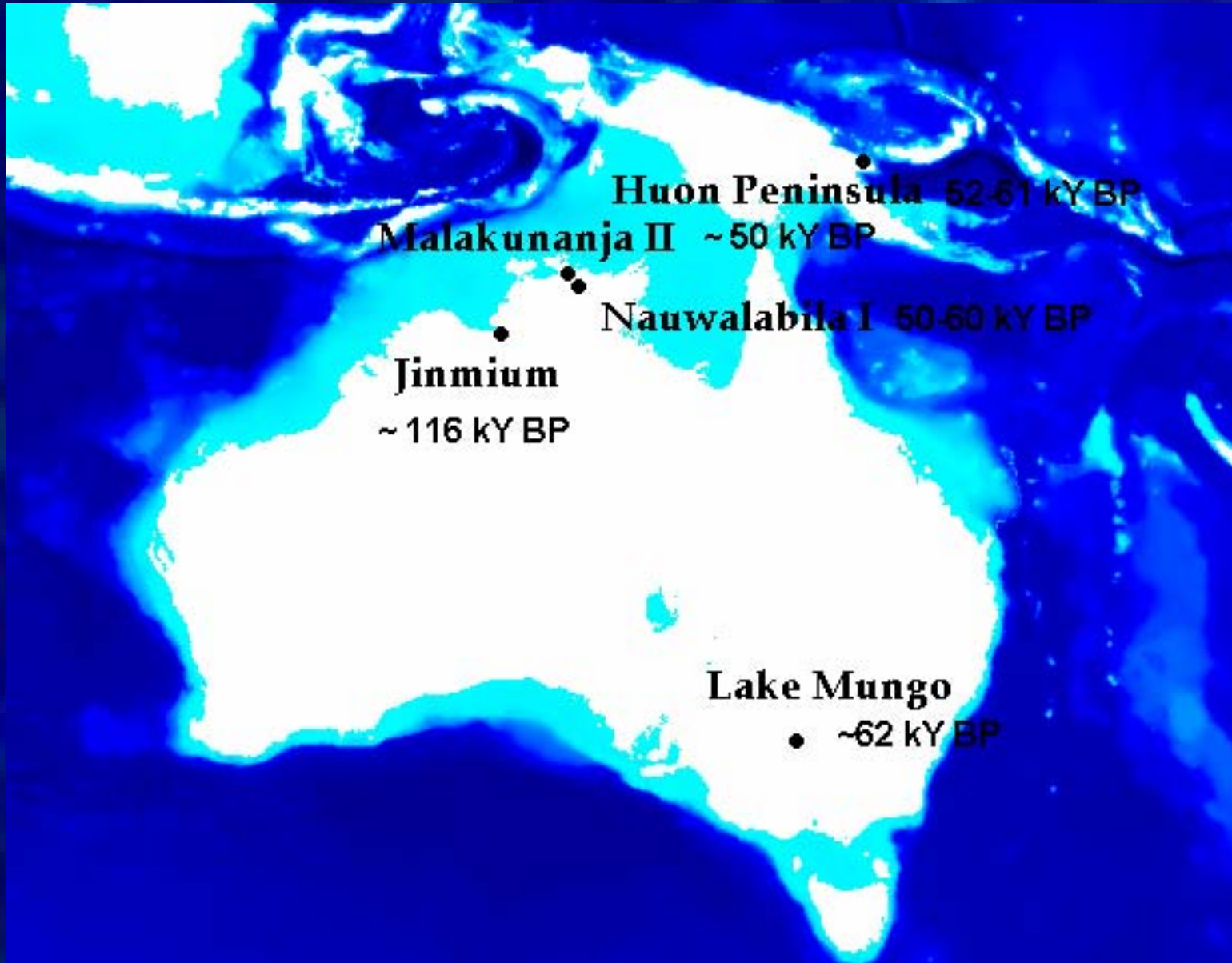
Paleo-geography (-30m)

Paleo-geography (-50m)

Paleo-geography (-80m)

First human presence in Sahul

Some arguments for an early colonization of Australia

❑ Earliest datings for a southeastern site; hypothesis of coastal migrations (Bowdler, 1977)

❑ Early changes in the paleo-environment (fires (Wright, 1986), animal extinctions (Miller & al., 1986)); population size

❑ Slow demographic rate of ancient populations

❑ Genetic data : great antiquity of some Papuan populations (Redd & Stoneking, 1999), genetic isolation (Stoneking & Wilson, 1989)

→ First sea-crossings prior to 70,000 years BP

Paleo-geographic conditions

R=6378 kilometers
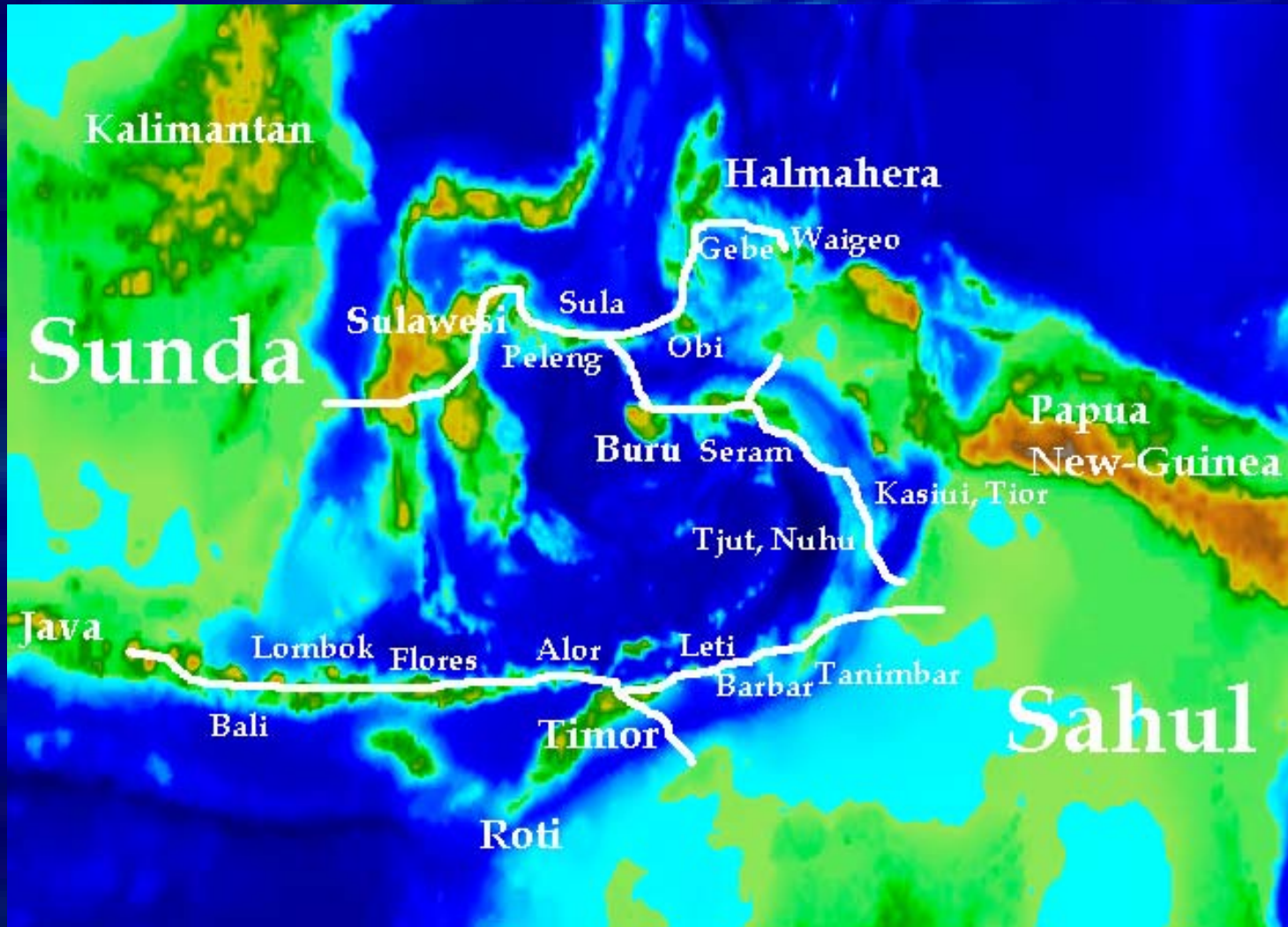d=distance between S1 and S2

❑ Given the sea-levels, possibility to consider:

- the distances between islands
- the visibility of a destination from sea-level or a given altitude
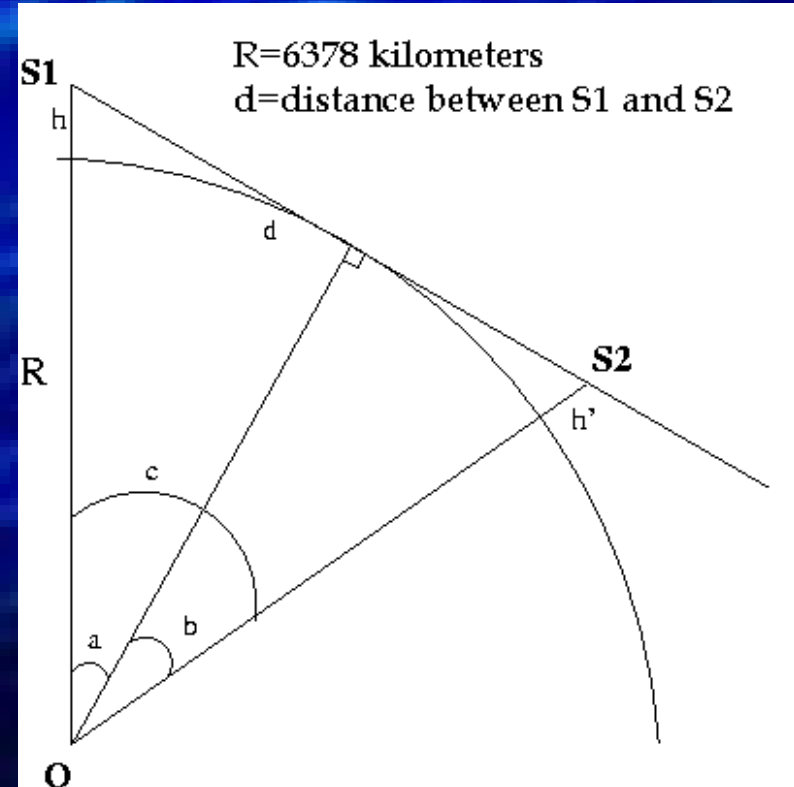
Two possible routes (Birdsell, 1977):

- A southern route leading to Australian shores
- A northern route leading to PNG

Birdsell's route to Sahul (1977)

Which route is more plausible ?

❑ Distance:

- The gap to reach Australia from Timor is more than 150 kms wide

- More gaps for the northern route, one reaching 100 kms, but much less for the others

❑ Visibility:

- No visibility of the Australian shores from Timor, even from a very elevated site

- A northern route with destinations always visible from sea-level

Accidental vs. intentional sea-crossings

□ « Classical » context:

- accidental sea-crossings (winds, currents), with extremely small founding population (Jones, 1989)
- Crossings from Timor to northwestern Australian shores

□ Another possibility:

- intentional crossings with observation of target islands, via the northern route where it is possible

Some arguments for intentional sea-crossings

❏ Advantages of intentional sea-crossings:
  - larger traveling and founding populations
  - planification for long sea journeys : drinkable water, food, more robust rafts
  - straighter and faster crossings toward the visible target

→ We propose that intentional sea-crossings are a more plausible and "parsimonious" hypothesis

Language and intentional sea-crossings

Raft building and language (I)

❑ The building of rafts (strong enough to cross large water gaps) is a proof of technological development.

❑ Points to the existence of a complex communicative system (Noble & Davidson, 1991) :
- Need of a cooperation between several individuals
- Pre-conception of the finite state: mental representations of the final object during its elaboration

Raft building and language (II)

- ❑ Polylites; use of strings
- ❑ Hetero-technical cooperation
- ❑ Necessity of language for the building of artifacts
- ❑ Does intentionality add new arguments?

Why sea-crossing ? (I)
Intentionalities

- ❑ The building of a raft requires:
  - A planification of the tasks to build the artifact
  - An intention to build it, in order to use it for different activities

- ❑ With accidental sea-crossings, the goal of raft building would mainly be fishing or short distance navigation along the coastline

- ❑ As opposed to intentional sea-crossing which requires:
  - to take visible distant islands into consideration, and conceive a long term (and shared) goal of reaching them
  - a shared motivation (or « meta-intention ») to undertake this project
  - the planification of a long journey (food, drinkable water)

Why sea-crossing ? (II) Motivations

❑ Which motivations may have been at the origin of intentional sea-crossings?

- Long distance sea journeys are dangerous
- With low-level human densities and abundant sea resources, few reasons to move from island to island
- Different from terrestrial expansions, e.g. development of agriculture (demographic explosion, search for new lands)

→ intentional sea journeys would not be common activities

→ willingness to explore new lands, conflicts (over women?), religious belief? Existence of a rich social/cultural context
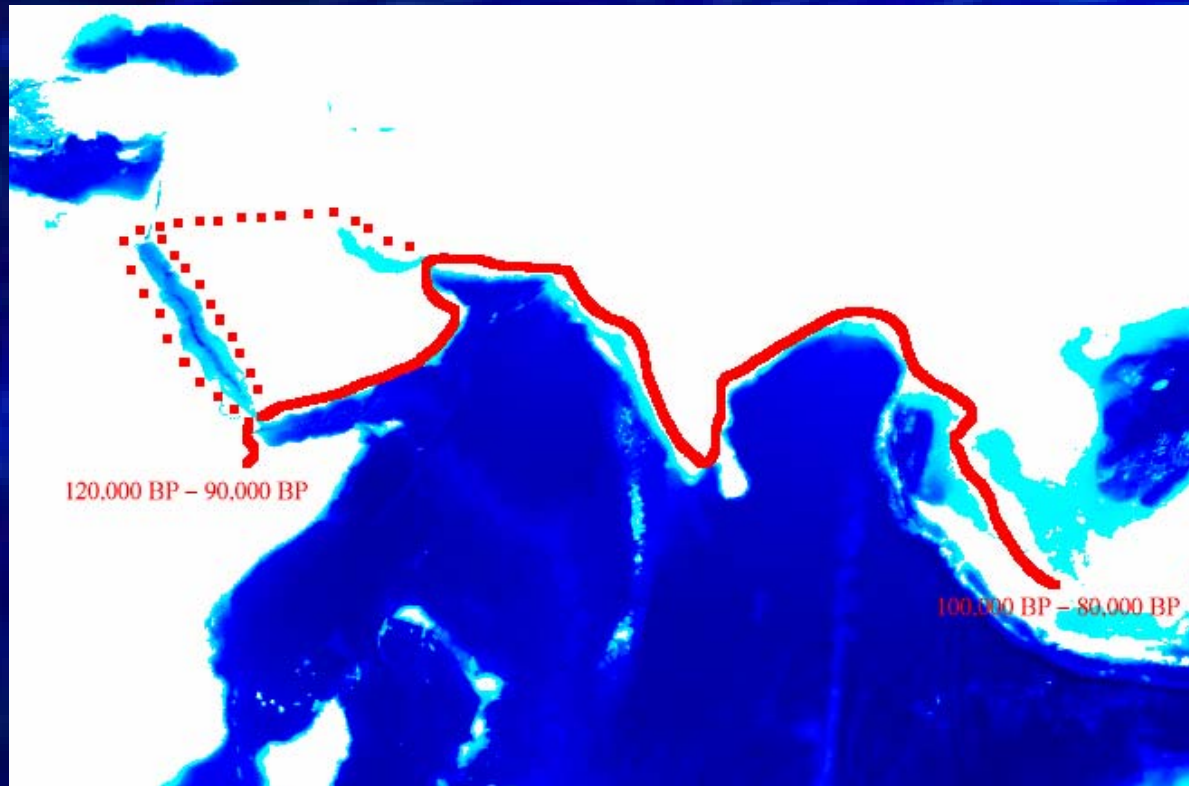
→ Stronger assumptions for the existence of a complex language to account for these activities
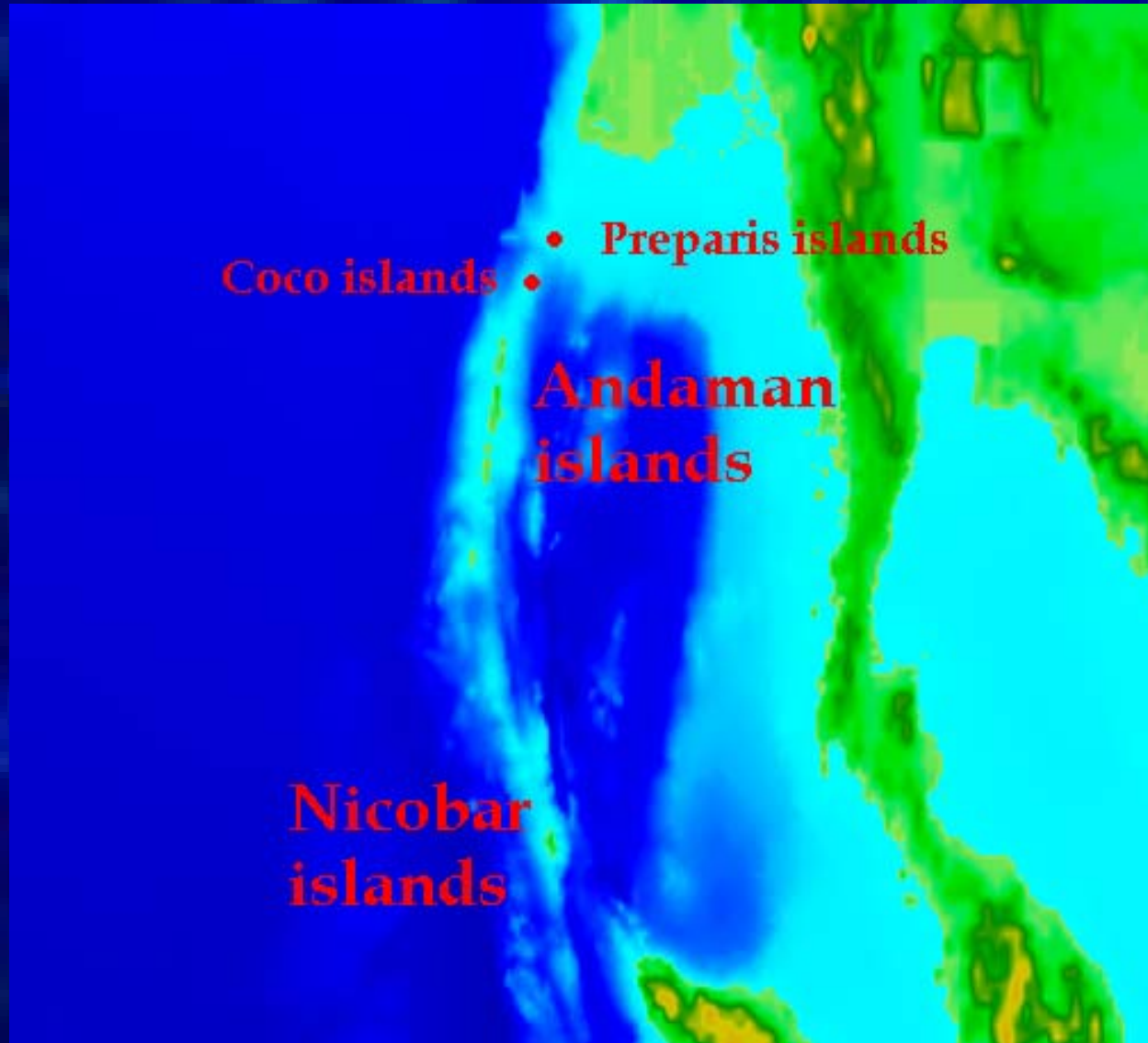
Andaman islands
and
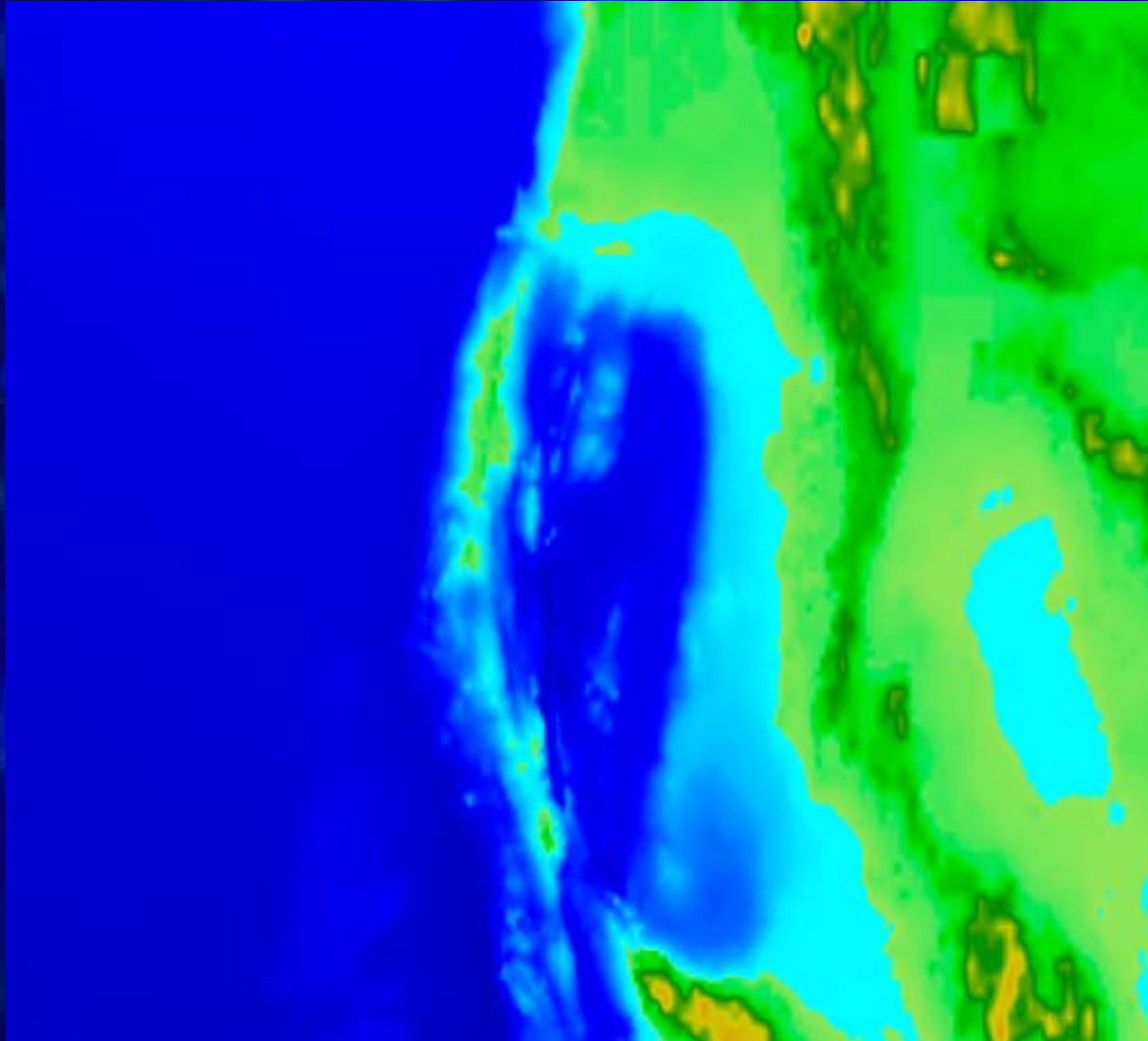# coastal migrations Out of Africa

The case of the Andaman islands

❑ A group of islands in the Gulf of Bengal

❑ In the context of the « Out of Africa » hypothesis, located on the migratory path from Africa to Sahul

120,000 BP – 90,000 BP

100,000 BP – 80,000 BP

Current geography

Paleo-geography (sea level : -50m)

An early example of intentional sea-crossings

❑ The Andaman islands may offer an early example of intentional sea-crossings, prior to those that took place in the Wallacea region

❑ Why such an hypothesis?
  - … because the paleo-geography of the Gulf of Bengal suggests that the Andaman islands were visible from the continent around 70,000 years ago

Some hints for an early colonization of the Andaman islands

❑ On-going genetic studies showing a great antiquity of the populations (some still living in complete isolation)

❑ The Andaman languages are unrelated to any surrounding language

❑ No such specificity in the Nicobar islands where there is no visibility and Austro-Asiatic languages are spoken

Migrations Out of Africa and coastal culture

❑ A global framework for human migrations:
  - A first migration « Out of Africa » toward Asia
  - mtDNA (Quintana-Murci & al., 1999) and Y chromosome (Underhill & al.)
  - A migratory path following the coastline (Stringer, 2000)
  → A more directional and « fast » pathway to Asia

❑ Development of a coastal culture (fishing, sea-shells gathering) and more and more efficient sailing; learning to use boats to cross sea barriers rather than bypassing them by foot

Summary

❑ First sea-crossings in the Wallacea region were « à vue », intentional and led to PNG more than 70 Kyears ago

❑ Humans were using a sophisticated communicative system, given their capacity to build robust rafts and to organize intentional and motivated sea journeys

❑ Their capacities partly developed "en route" from Africa to Sahul, in association with a "coastal culture"

Thank you for your attention.

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