Biogeography. Lecture 27

Alexey Shipunov

Minot State University

May 2, 2016

Outline

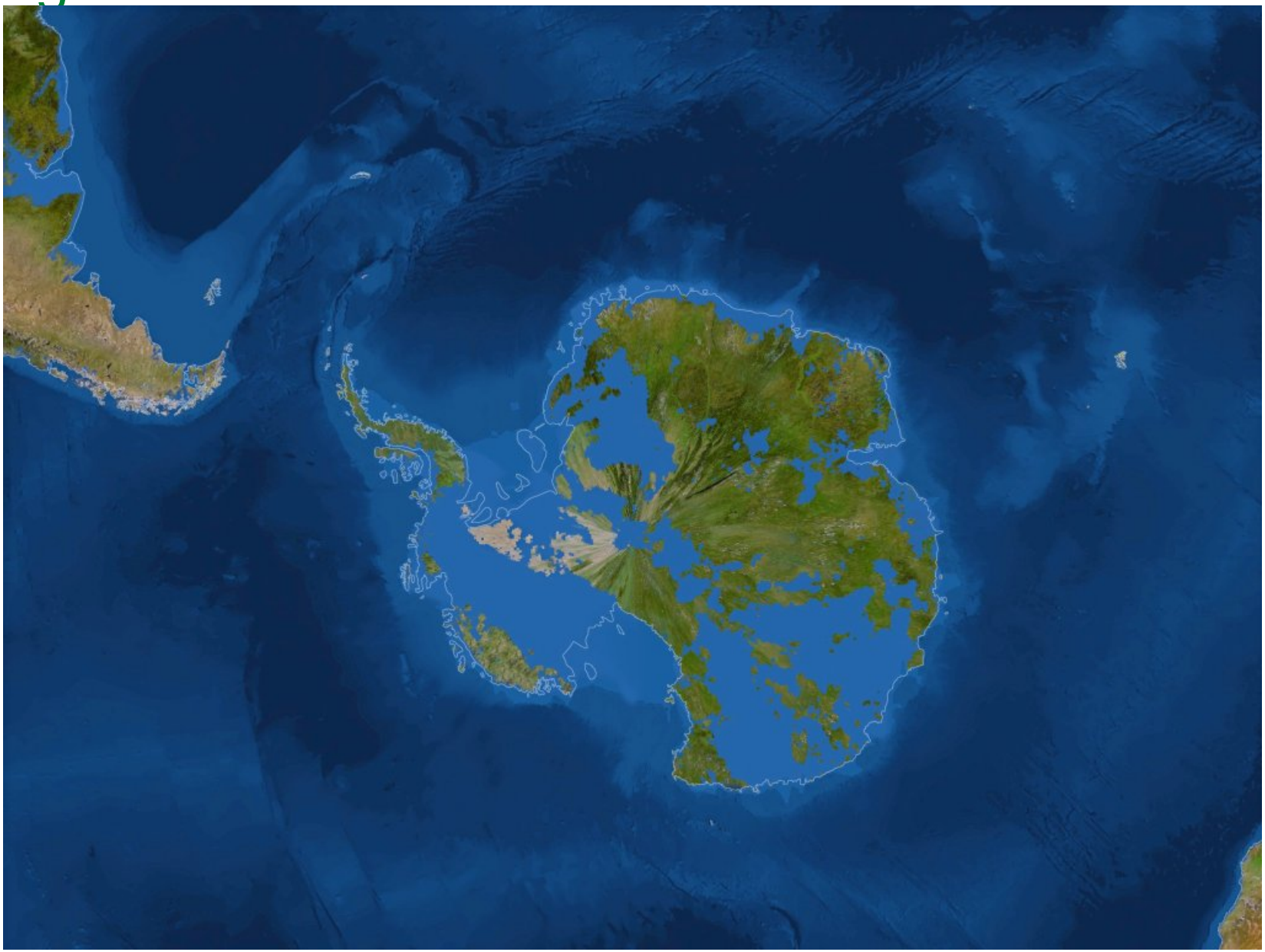
Biogeography of the World

- If all ice melted: rising seas
- Biogeography of Holarctic Eurasia
- Biogeography of Indo-Pacific region

Biogeography of the World

If all ice melted: rising seas

Rising seas: Antarctica



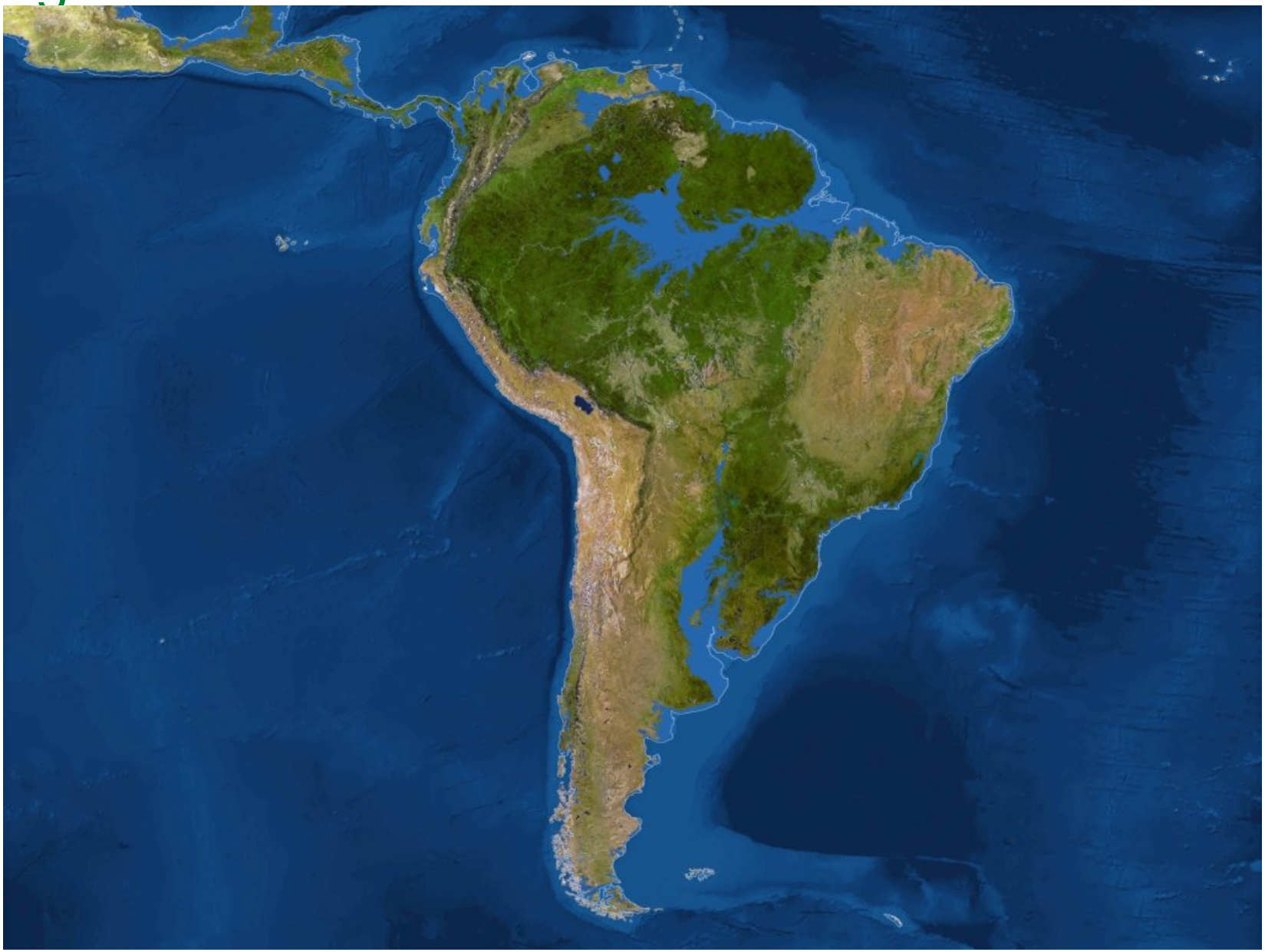
Rising seas: Asia

Rising seas: Australia

Rising seas: Europe

Rising seas: North America

Rising seas: South America



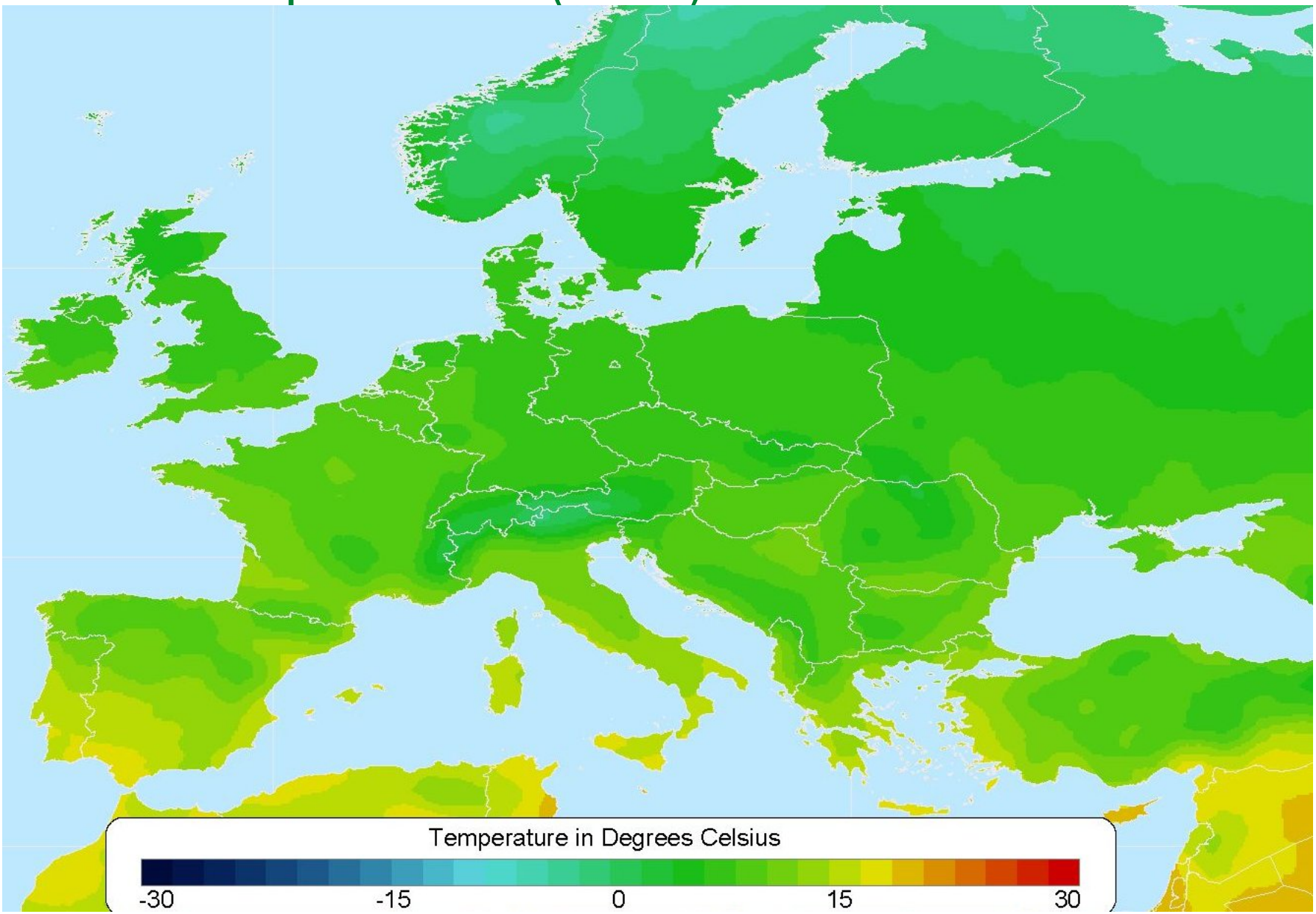
Rising seas: Africa

Biogeography of the World

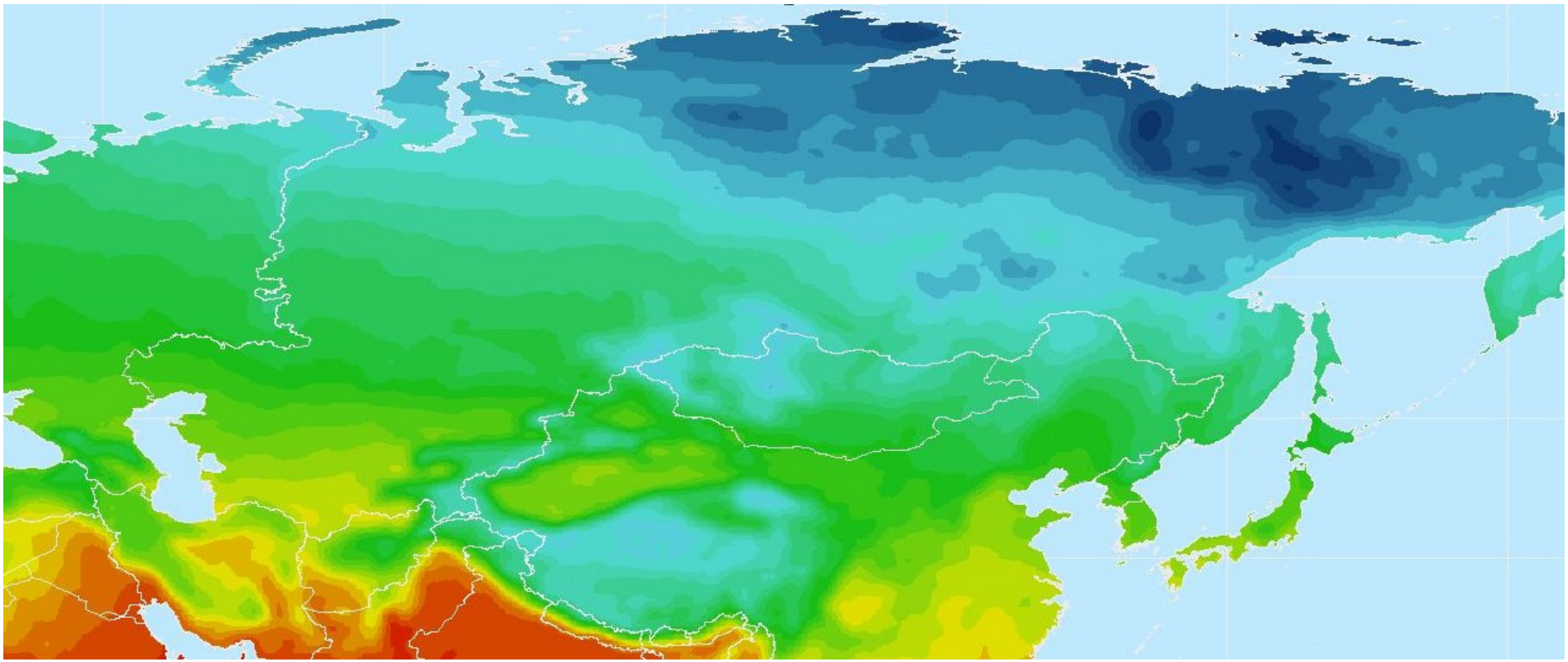
Biogeography of Holarctic Eurasia

Note latitudinal mountain ranges

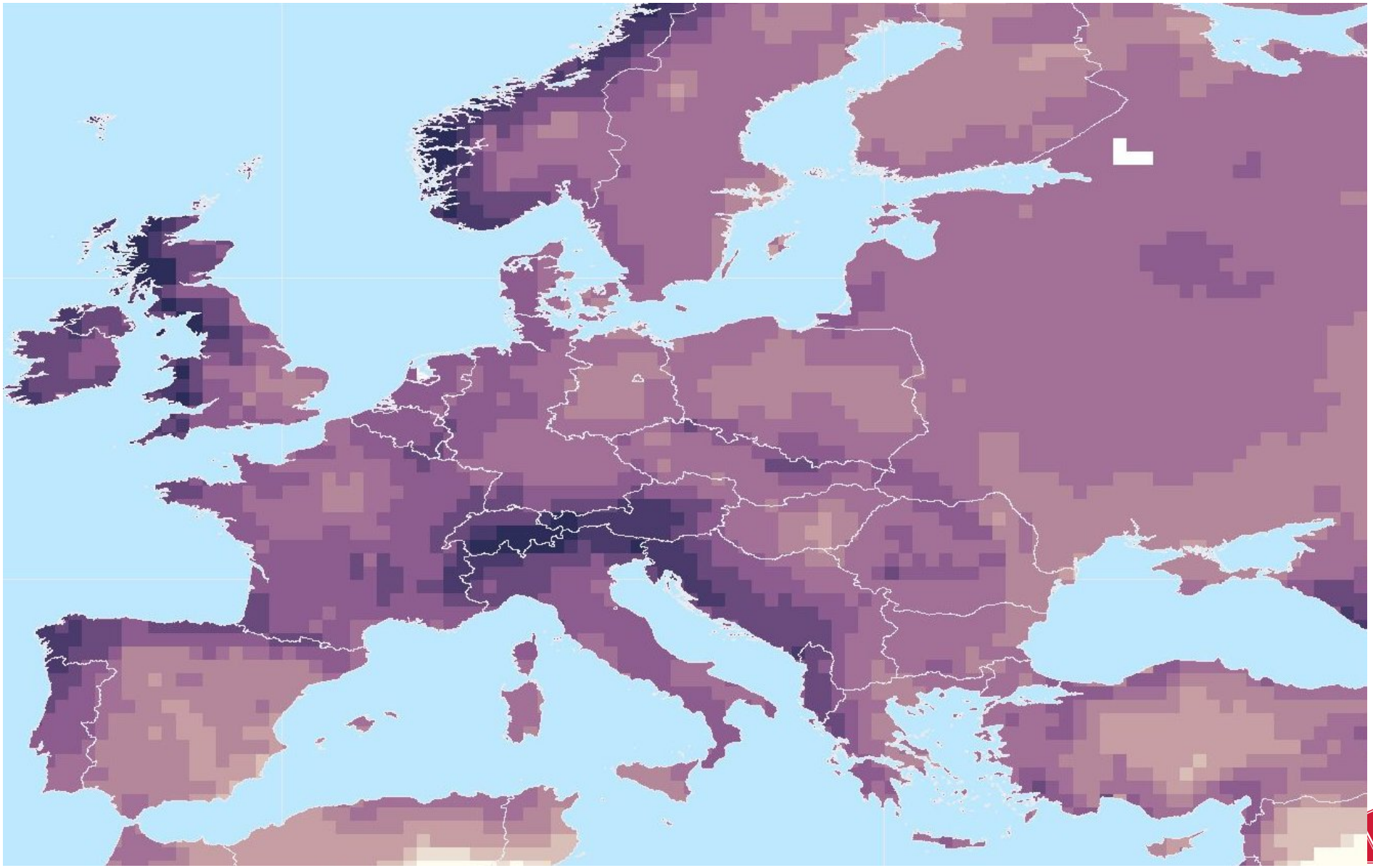
Eurasia: temperatures (west)



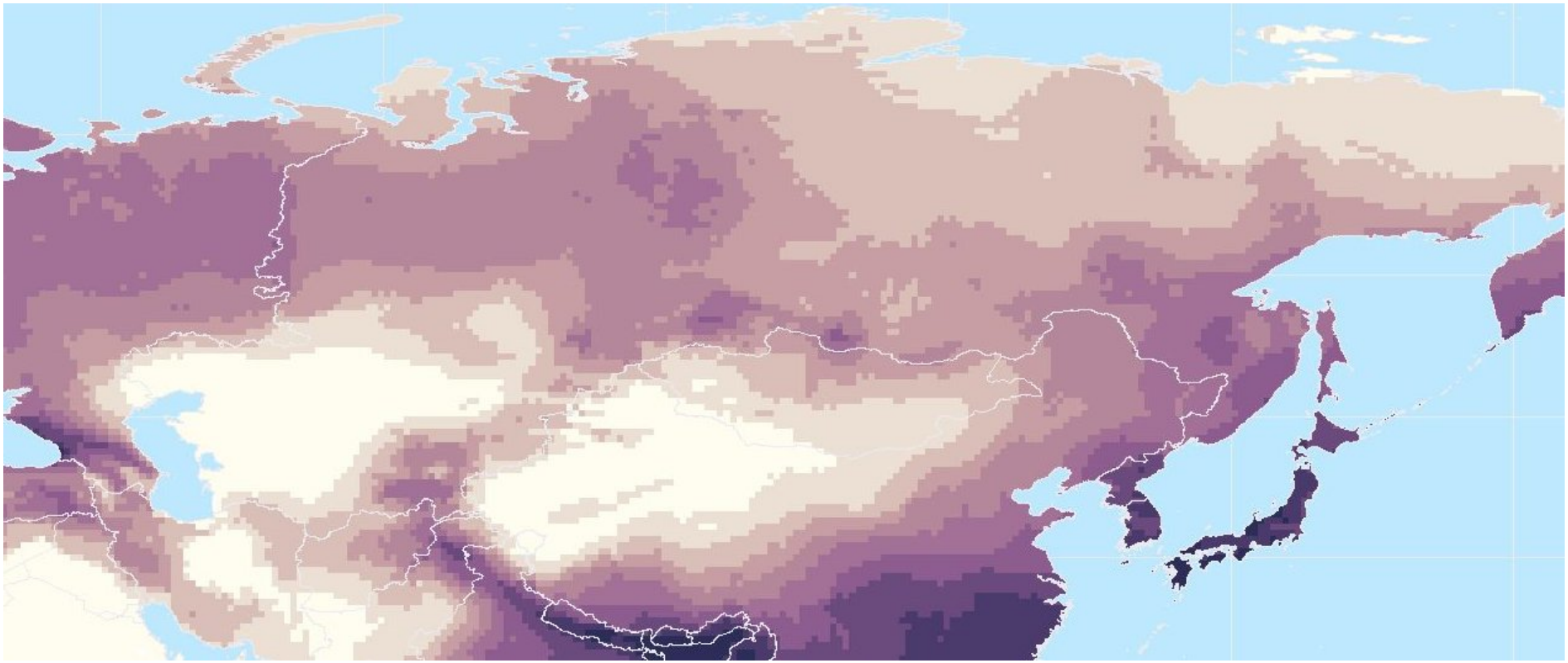
Eurasia: temperatures (east)



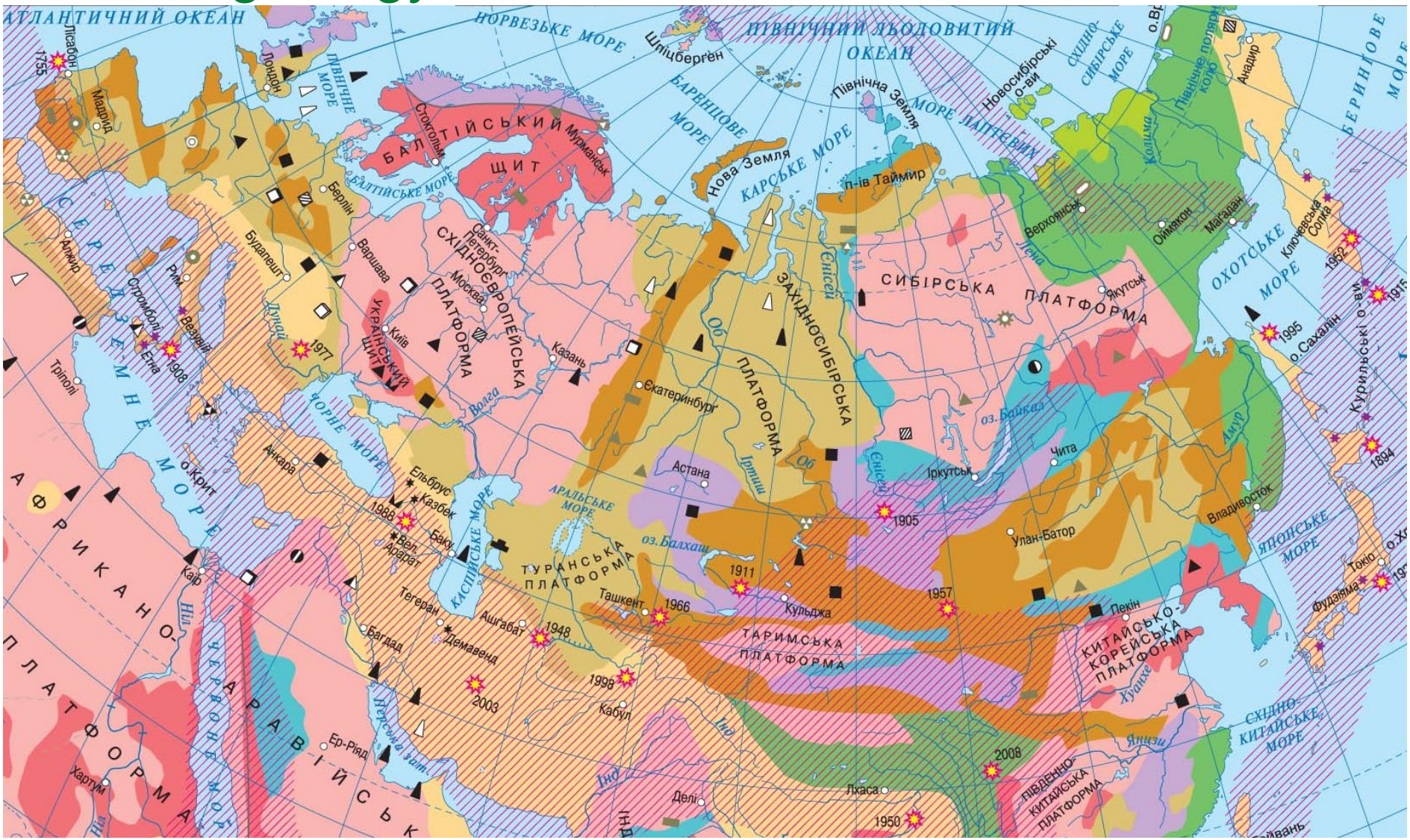
Eurasia: precipitation (west)



Eurasia: precipitation (east)

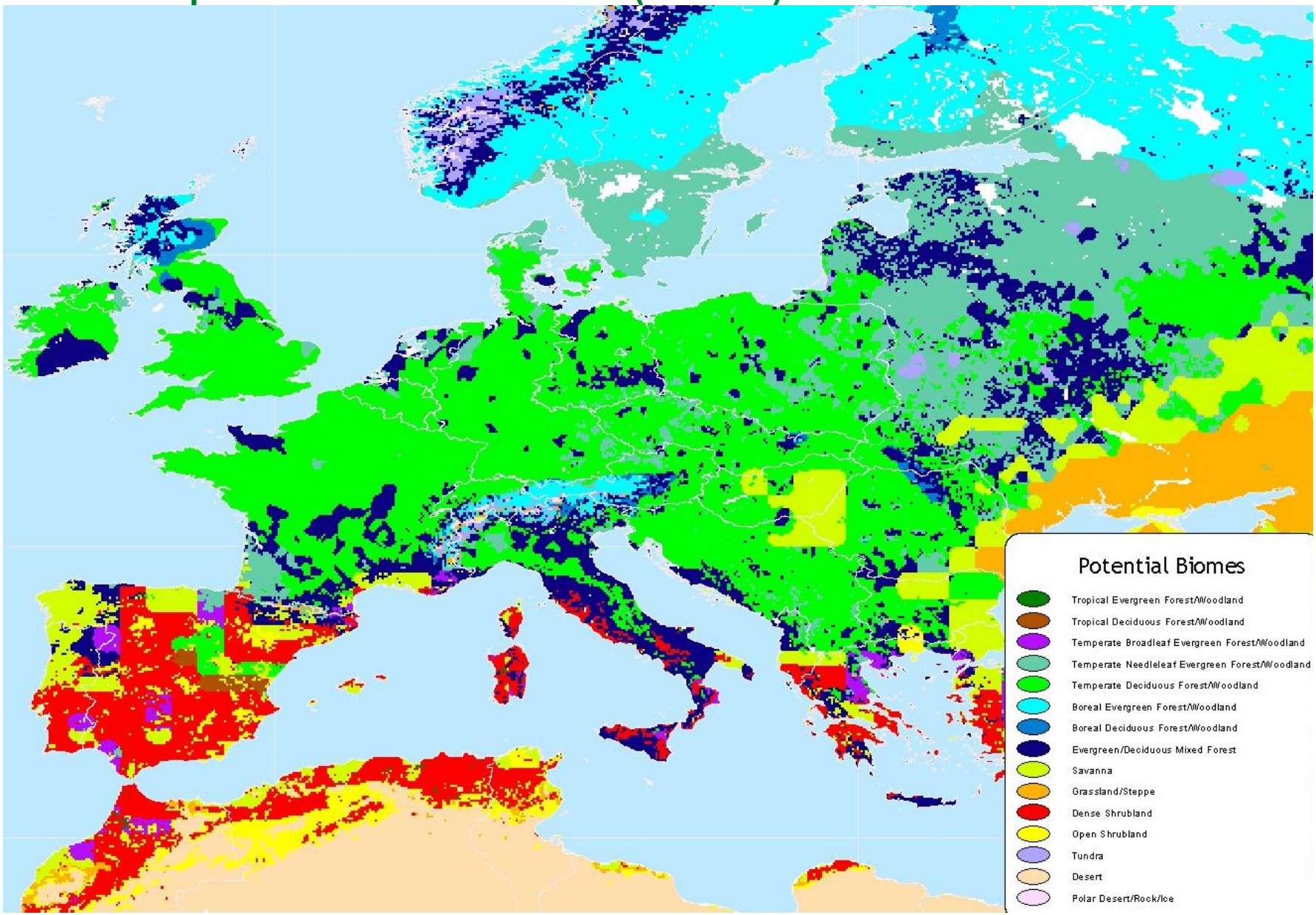


Eurasia: geology

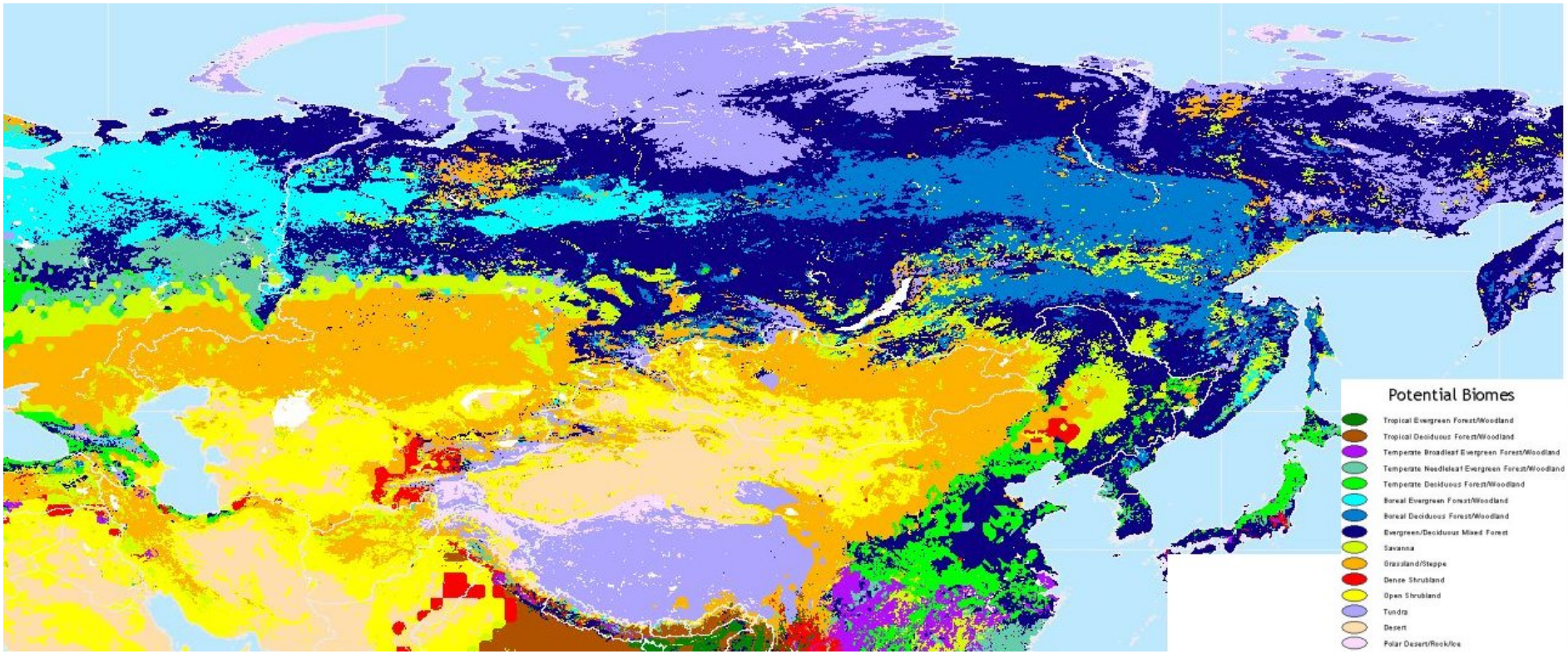


Several continental platforms and mountains on the places of collision

Eurasia: potential biomes (west)



Eurasia: potential biomes (east)



Huge “belts”

Eurasia: biogeographical regions

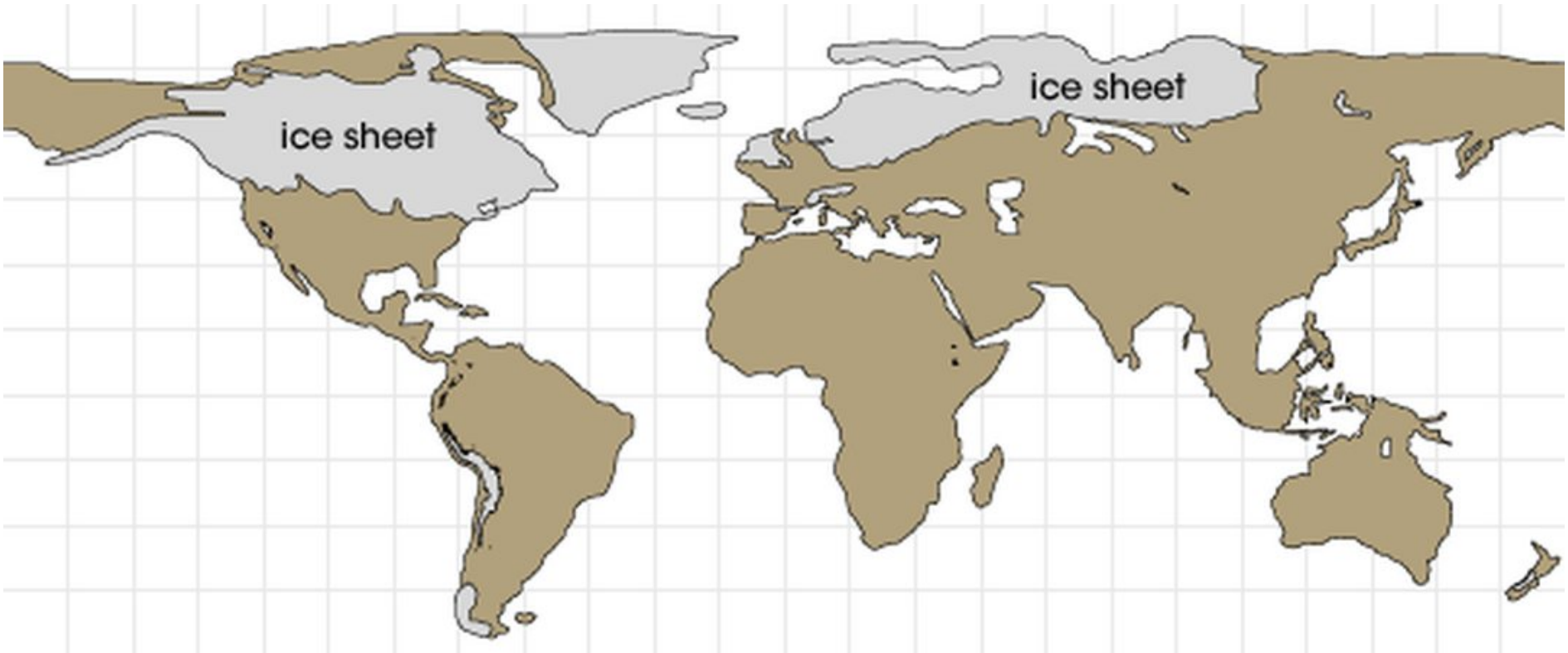
Holarctic Eurasia: 10 biogeographical regions

1. European mixed forests
2. Alps, Pyrenees, Balkans and Caucasus
3. Mediterranean region
4. Steppes: from Hungary to China
5. Taiga: from Scandinavia to Kamchatka
6. Tundra
7. East Asian mixed forests: Manchuria, Korea and Japan
8. Arabian deserts
9. Central Asian cold deserts and Tibet
10. China plain

Eurasian regions: similar to North America, but not the same

1. European mixed forests: like East Coast but less diverse
2. Alps, Pyrenees, Balkans and Caucasus: like Appalachians but more diverse and more alpine (and similar also with Rockies)
3. Mediterranean region: similar to California, and also to Cape region of Africa, has rich and distinct “ethereal oil” flora
4. Steppes: very similar to North American grasslands (same genera are dominating) but more uniform, more “grassy”, less Aster family and shrubs
5. Taiga: from Scandinavia to Kamchatka: very similar to Canadian taiga but less diverse, from other point, this is a place of active hybridisation and speciation
6. Tundra: simply the same with Canadian tundra
7. East Asian mixed forests: even more similar to the East Coast, the second part of East America / East Asia disjunction
8. Arabian deserts: similar to Chihuahua desert but no cactuses
9. Central Asian cold deserts and Tibet: the most similar region is Great Basin, but dominated plan groups are different, instead of Aster family the amaranth family (Amaranthaceae) makes most of species
10. China plain: somewhat similar to southern states (Louisiana, Alabama) but covered with loess soils (like Iowa).

Glaciation in North America vs. Eurasia



Note the Beringian land bridge between Eurasia and North America, and compare the relative size of glaciated regions

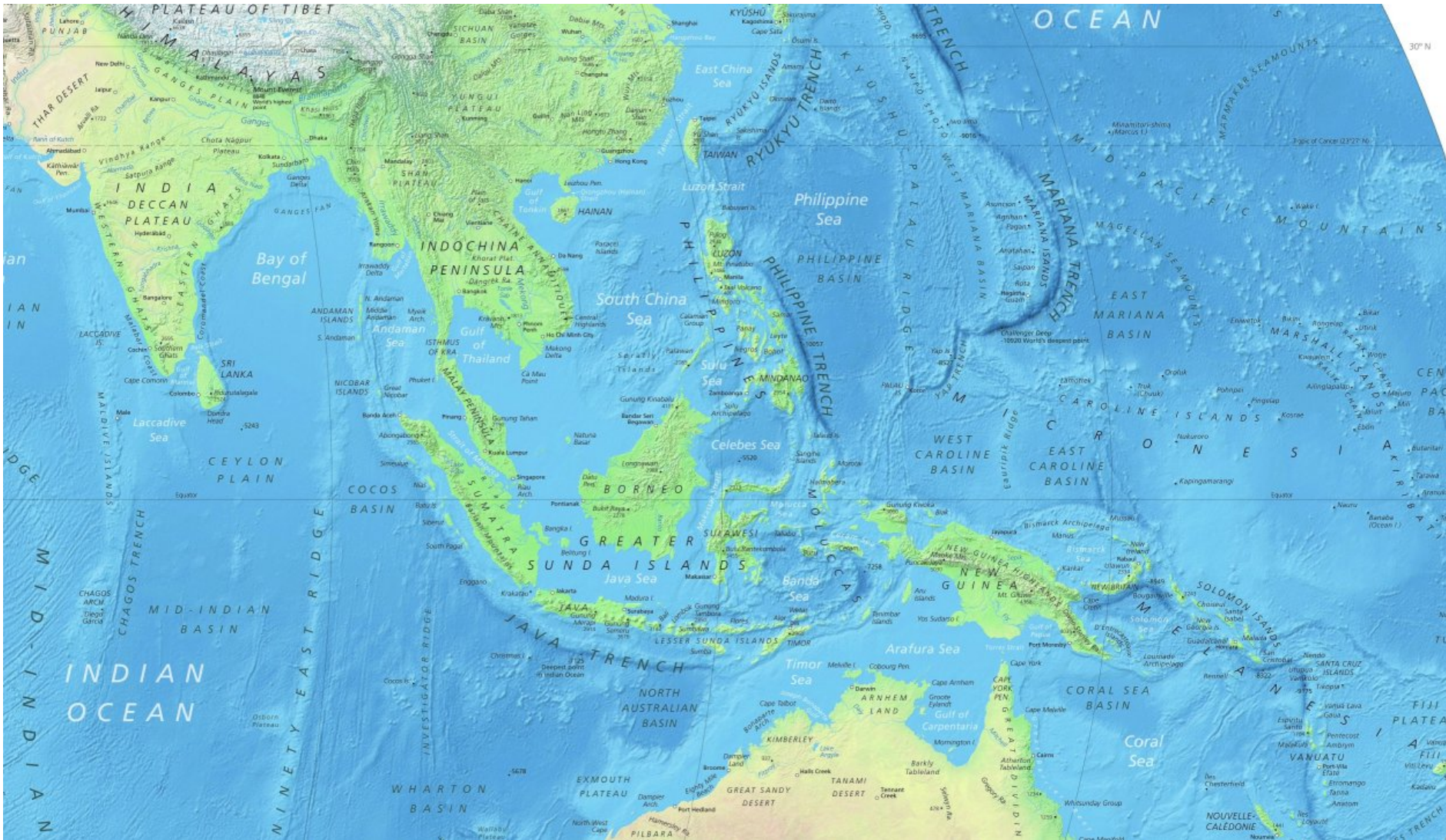
Summary for Holarctic Eurasia

- Eurasia is extremely heterogeneous continent split in two main biogeographical parts (Holarctic and Indo-Pacific) bordering in Himalayas and North Indochina.
- Biogeographically, Holarctic Eurasia is almost non-distinct from North America. Same groups, same ecosystems.
- More continental and rich of latitudinal barriers, less glaciated

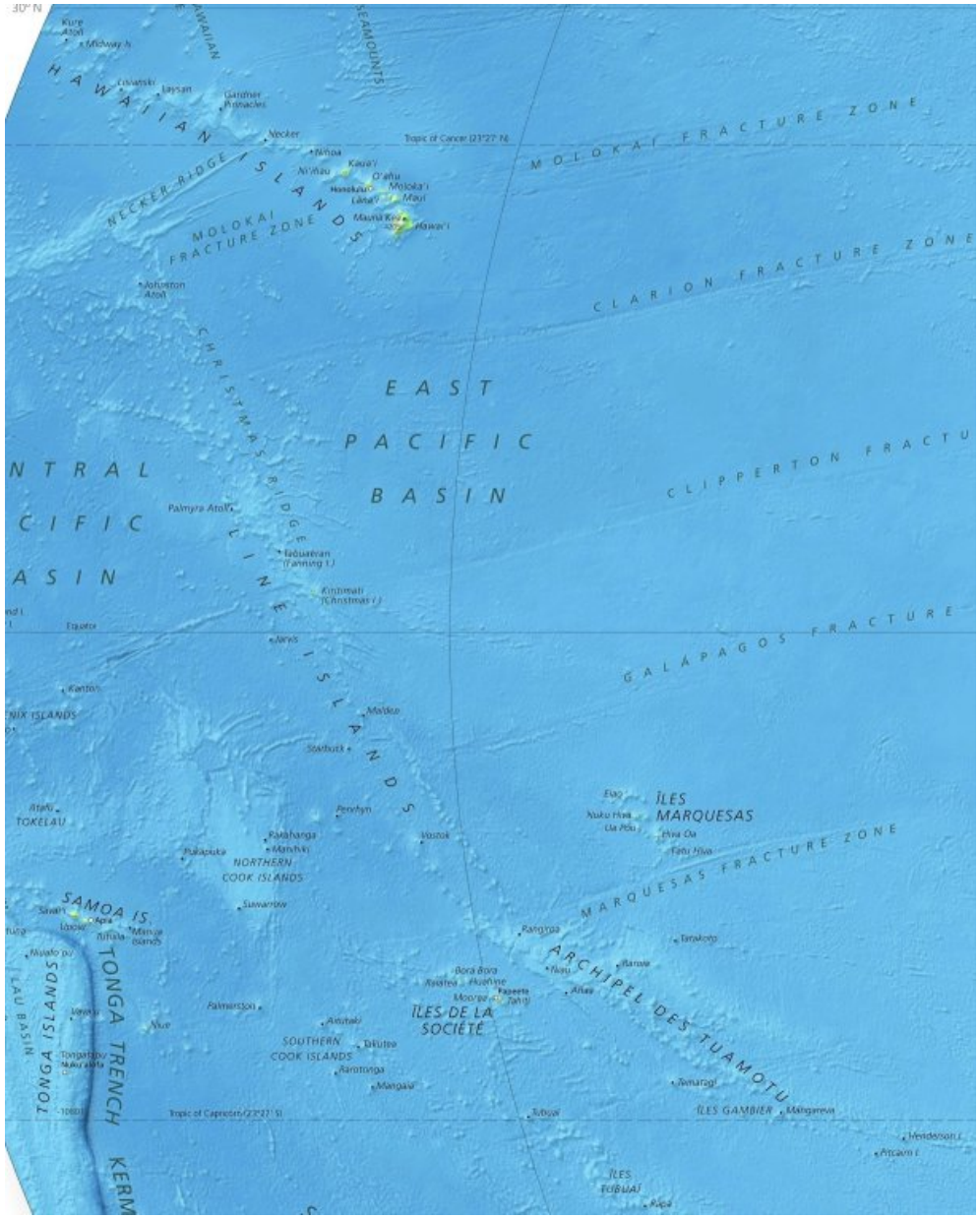
Biogeography of the World

Biogeography of Indo-Pacific region

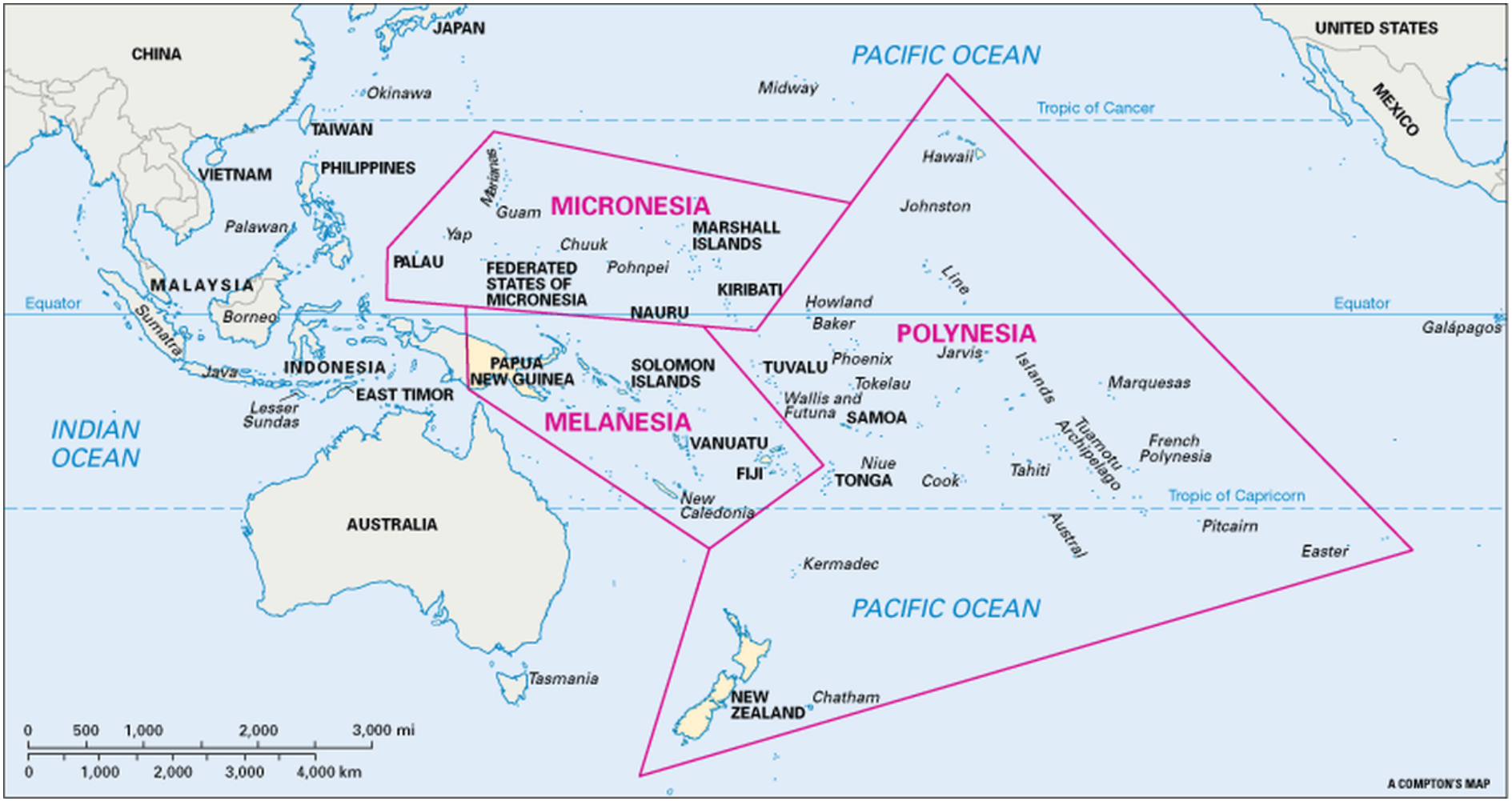
Western Indo-Pacific



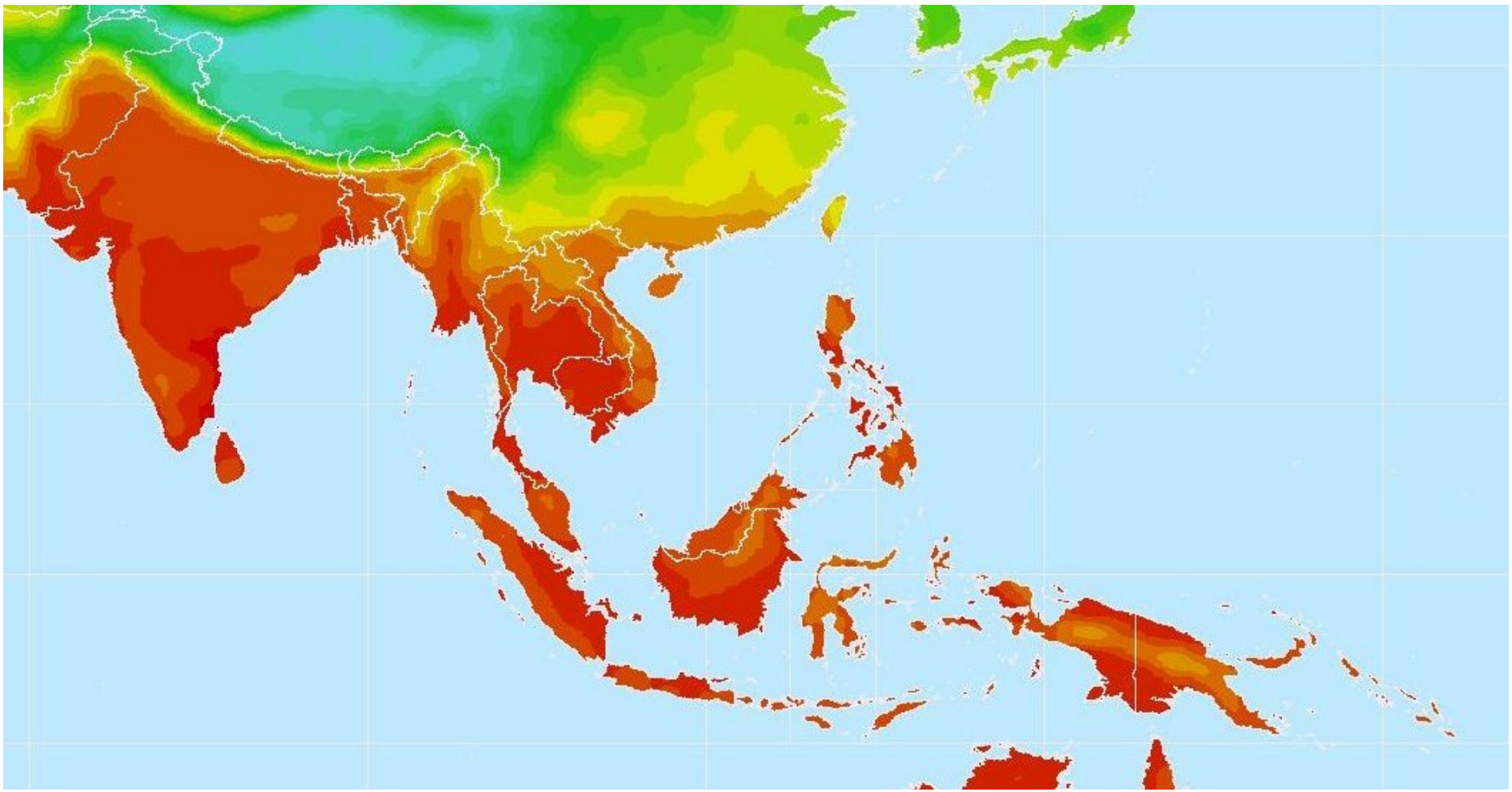
Eastern Indo-Pacific



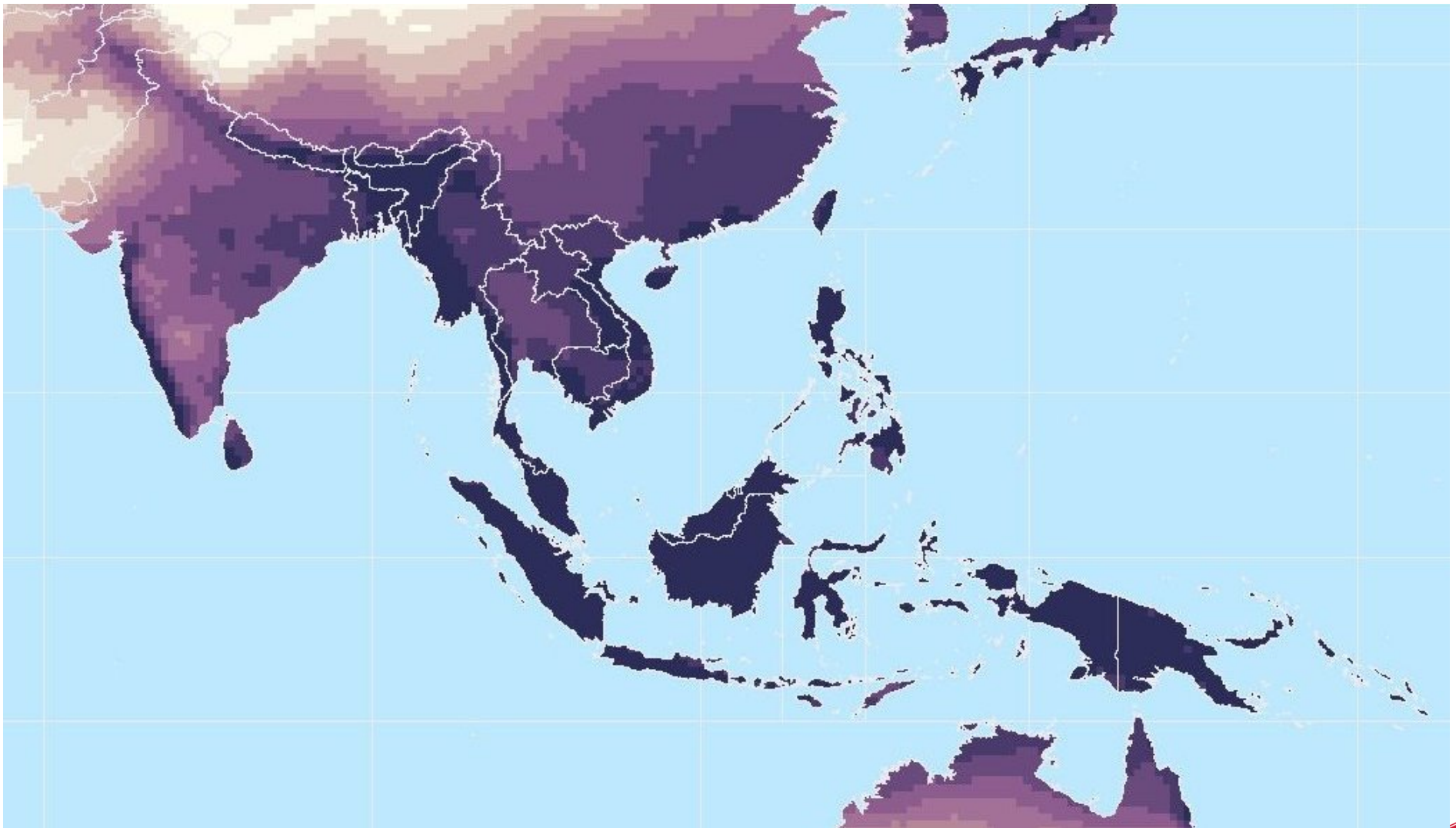
Oceania cultures



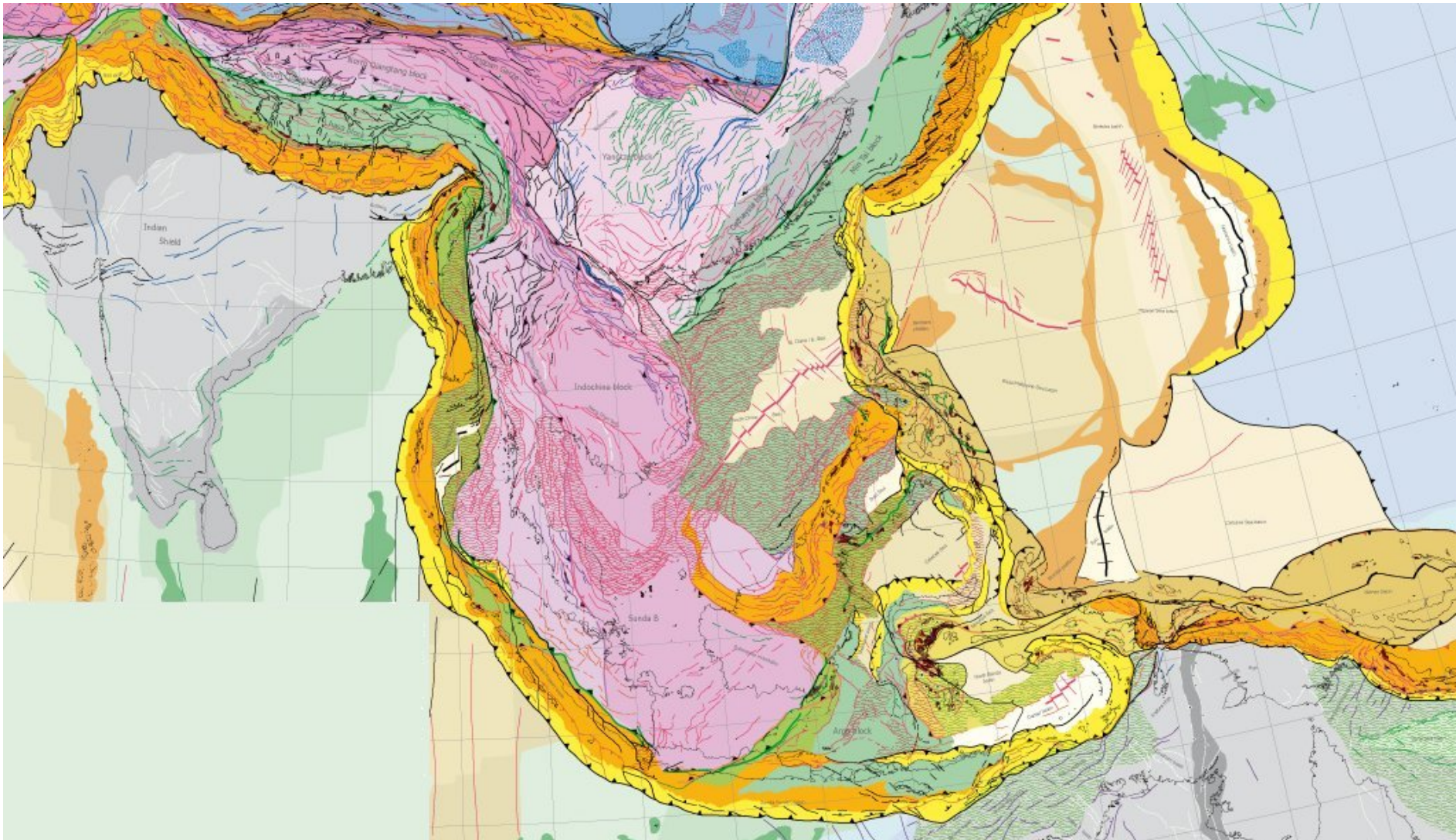
Indo-Pacific: temperatures



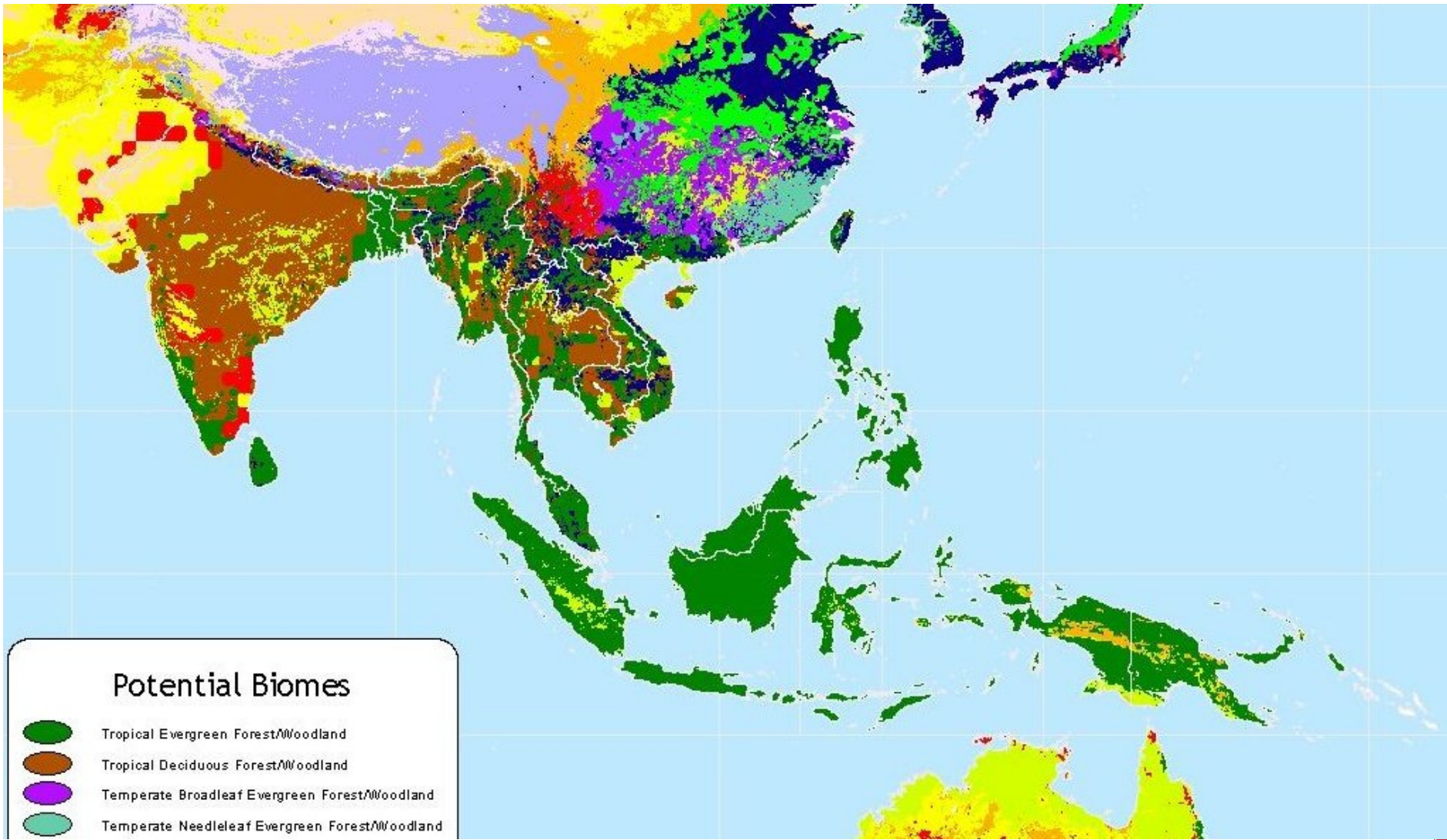
Indo-Pacific: precipitation



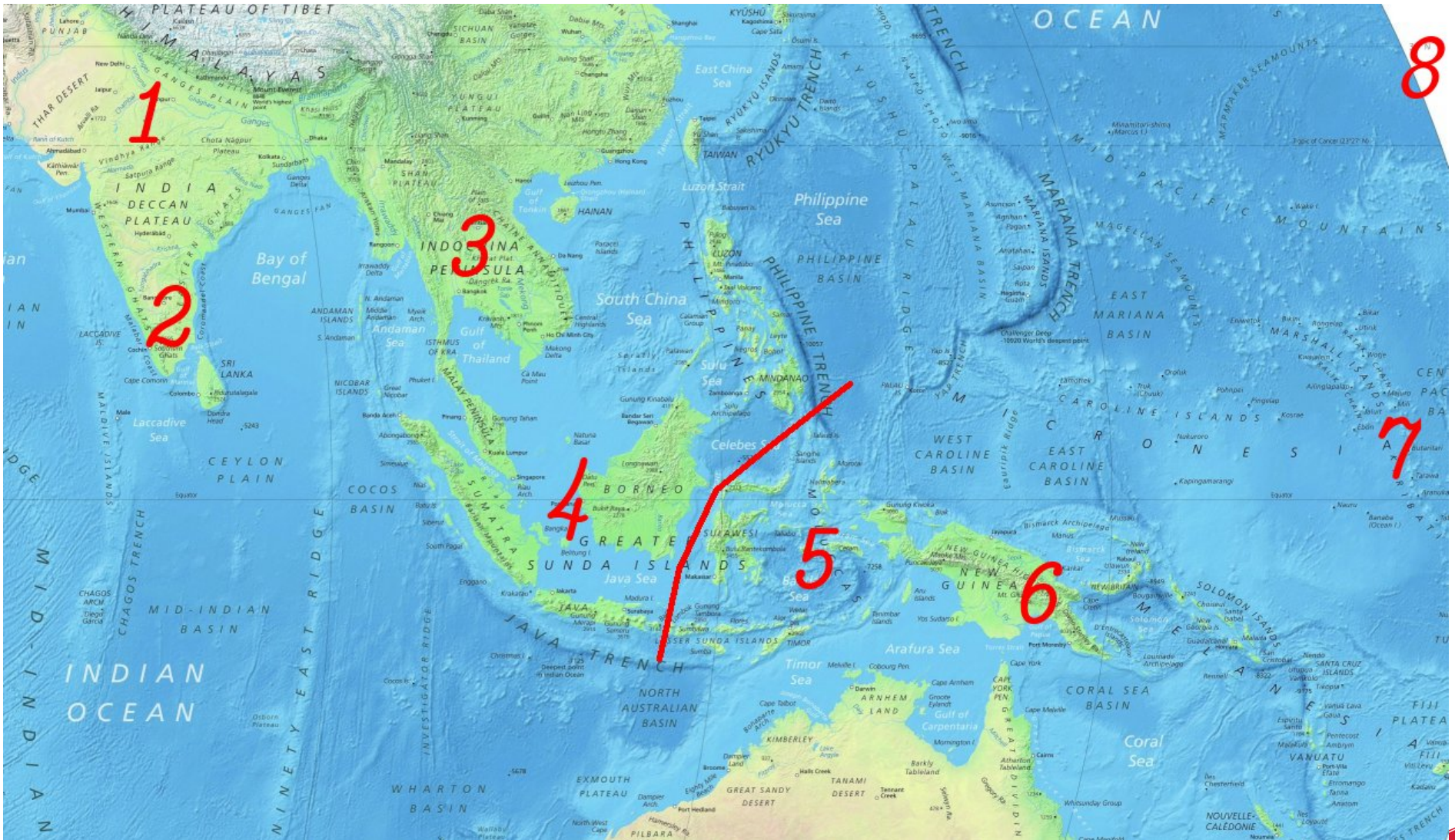
Indo-Pacific geology: the “giant puzzle”



Indo-Pacific: potential biomes



Indo-Pacific: biogeographical regions and Wallace line



Indo-Pacific: 8 biogeographical regions

1. North India
2. Deccan Plateau and South India
3. Indochina
4. Malay archipelago
5. Wallacea
6. New Guinea and Melanesia
7. Coral Pacific Islands
8. Volcanic Pacific Islands

For Further Reading

A. Shipunov.
Biogeography [Electronic resource].
2014—onwards.
Mode of access:
http://ashipunov.info/shipunov/school/biol_330