

Biogeography. Lecture 33

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Outline

Biogeography of the World

Biogeography of Africa

Biogeography of Holarctic Eurasia



Biogeography of the World

Biogeography of Africa



African regions: the most significant bio-markers

1. **Sahara:** date palm (*Phoenix dactylifera*), dum palm (*Hyphaene*)
2. **Northern savanna (Sudan and Guinea) belt:** African *Acacia* trees, oryx antelopes (*Oryx*) and cheetah (*Acinonyx jubatus*)
3. **Ethiopian highlands:** gelada baboon (*Theropithecus gelada*) and walia ibex (*Capra walie*)
4. **Kongo forests:** three species of anthropoid apes, *Gorilla gorilla* (*Gorilla beringei* occurs in the next region) and *Pan troglodytes* and *Pan paniscus* and hornbill birds (Bucerotidae).
5. **Eastern great savannas:** the Great African Grassland fauna ("Safari" fauna) including African elephants (*Loxodonta africana*), lions (*Panthera leo*), giraffes (*Giraffa camelopardalis*) and rhinos (*Ceratotherium* and *Diceros*). This fauna has a lot of connections with Old World faunas (except Australia).
6. **Kalahari and other southern deserts:** *Welwitschia mirabilis*, unique gymnosperm, also aloe (like *Aloe arborescens*) and cactus-like spurge (*Euphorbia*)
7. **Cape:** amazing diversity of plant species, especially from Protea family (Proteaceae).
8. **Madagascar:** indri (*Indri indri*), tenrecs (Tenrecidae), giraffe weevil (*Trachelophorus giraffa*), panther chameleon (*Furcifer pardalis*), pygmy chameleon (*Rhampholeon*), Lac Alaotra bamboo lemur (*Hapalemur alaotrensis*), crowned lemur (*Eulemur coronatus*), fossa (*Cryptoprocta ferox*), Verreaux's sifaka (*Propithecus verreauxi*), Ward's Flycatcher (*Pseudobias wardi*), Crested Drongo (*Dicrurus forficatus*).



Summary for Africa

- ▶ High, uniform and dry continent
- ▶ Homeland for the **majority** of recent plant and animal groups (“tropical pump”), e.g., Afrotheria (elephants Proboscidea, elephant shrews Macroscelidea, hyraxes Hyracoidea, tenrecs Tenrecidae with golden moles Chrysochloridae, sea cows Sirenia and armadillos Tubulidentata). All World grassland fauna originated in Africa. The third example of cosmopolitan mammal with African savanna origin are humans (genus Homo).



Biogeography of the World

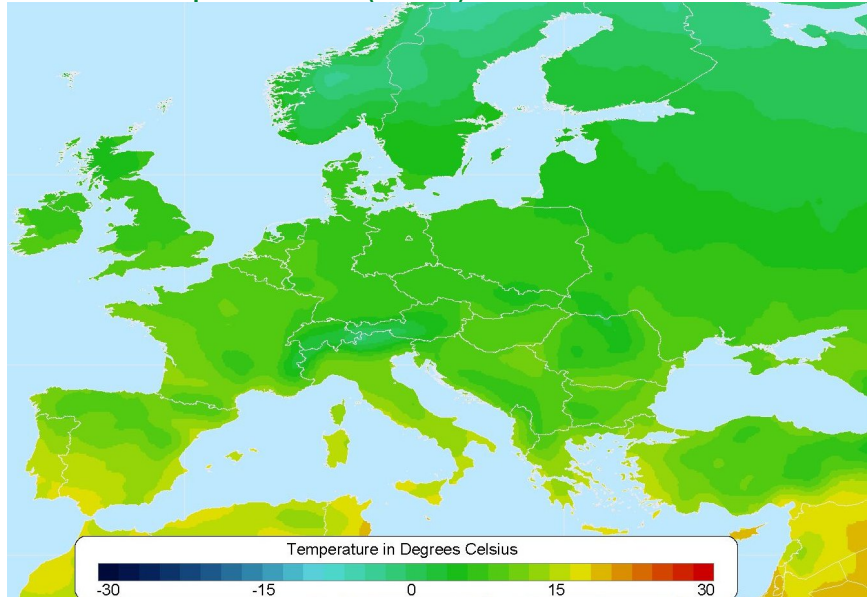
Biogeography of Holarctic Eurasia



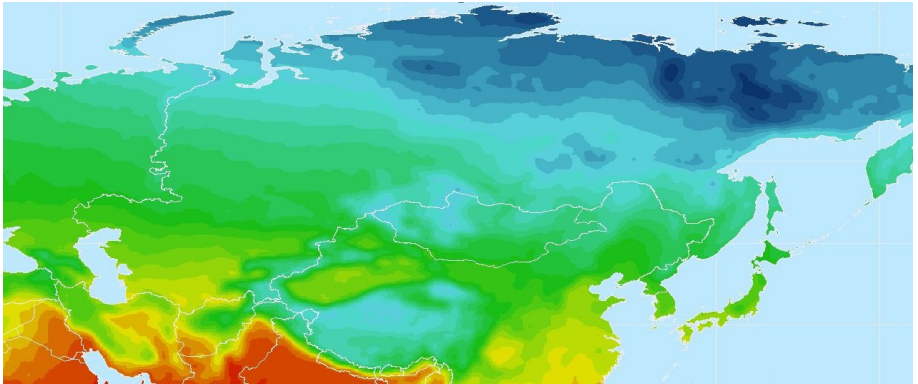


Note latitudinal mountain ranges

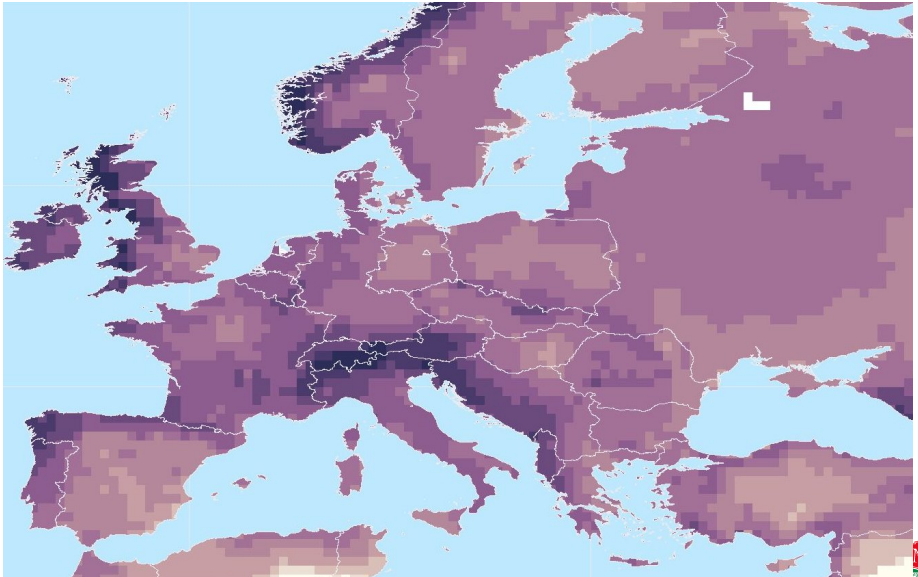
Eurasia: temperatures (west)



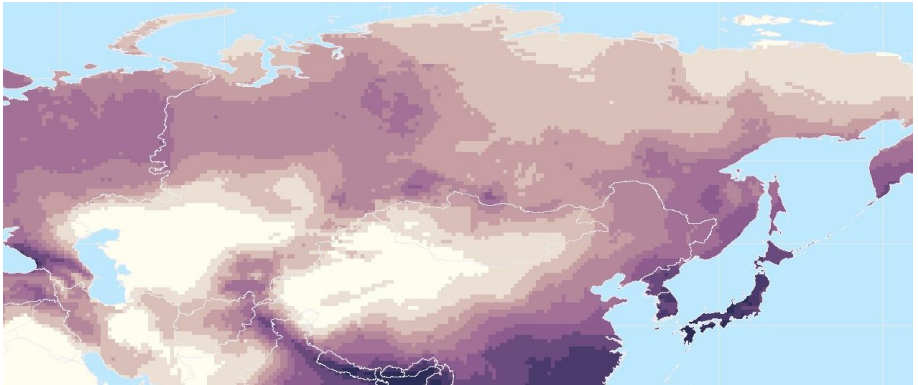
Eurasia: temperatures (east)



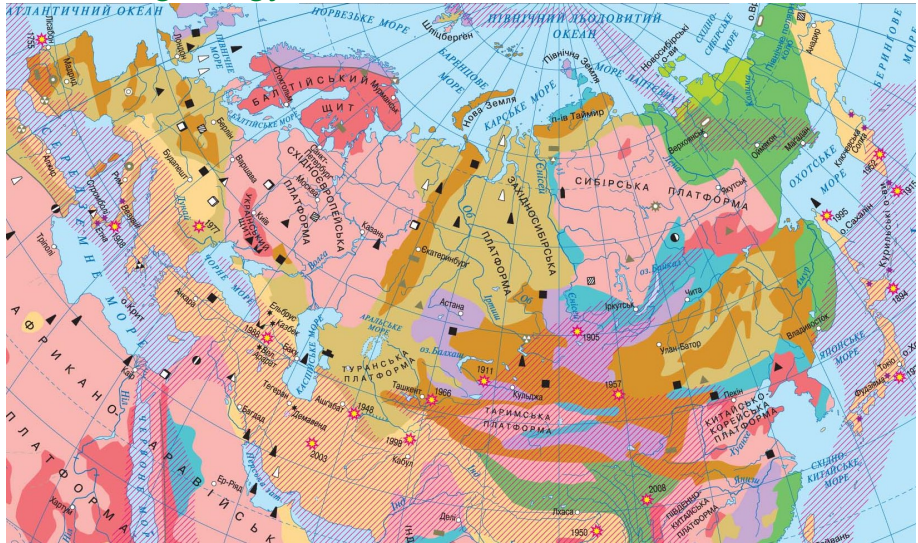
Eurasia: precipitation (west)



Eurasia: precipitation (east)



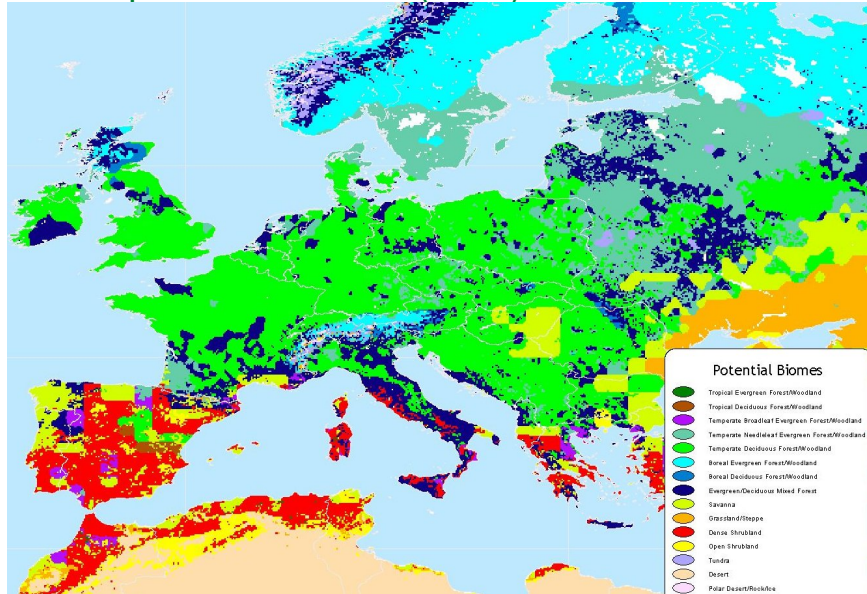
Eurasia: geology



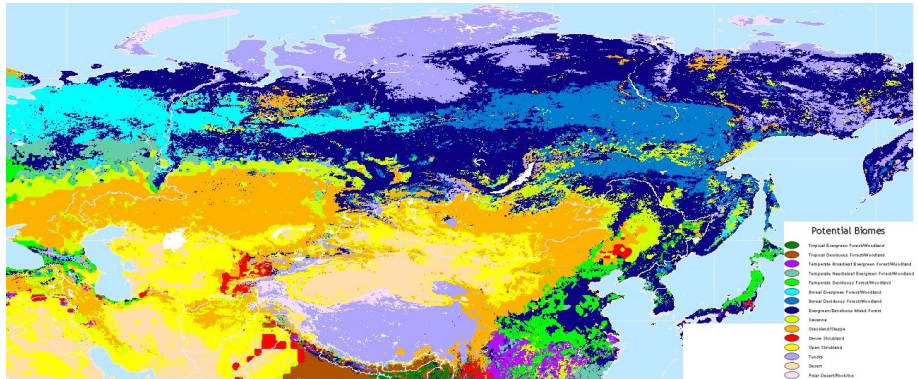
Several continental platforms and mountains on the places of collision



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

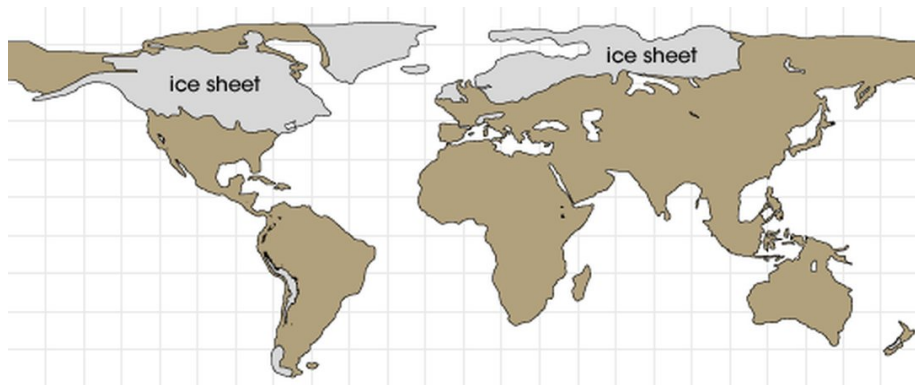


Eurasian regions: similar to North America, but not the same

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 plant groups are different, instead of Aster family the beet family (Chenopodiaceae) 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



For Further Reading



A. Shipunov.

Biogeography [Electronic resource].

2014—onwards.

Mode of access:

http://ashipunov.info/shipunov/school/biol_330



Eurasia.

<http://en.wikipedia.org/wiki/Eurasia>

