

Biogeography. Lecture 5

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Outline

Basics of physical geography
Basics of climatology

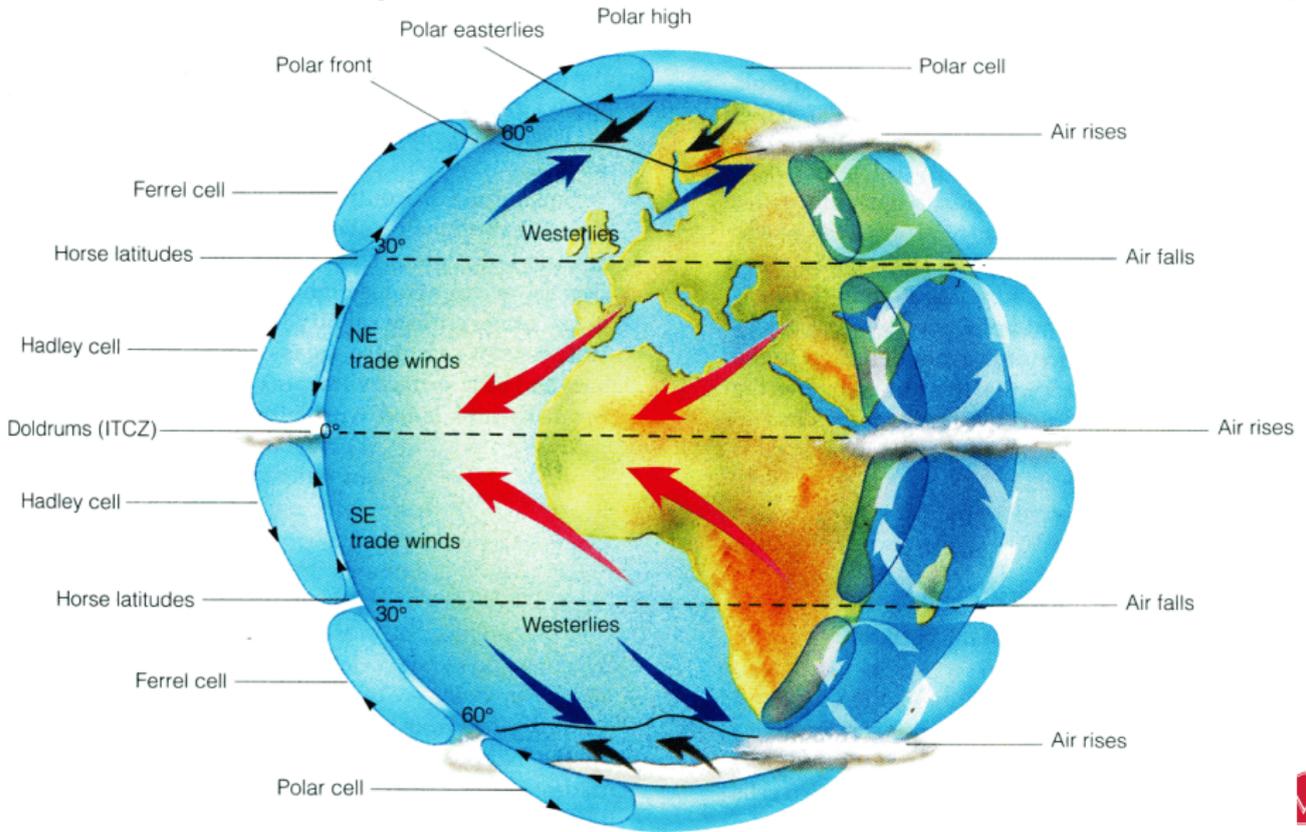


Basics of physical geography

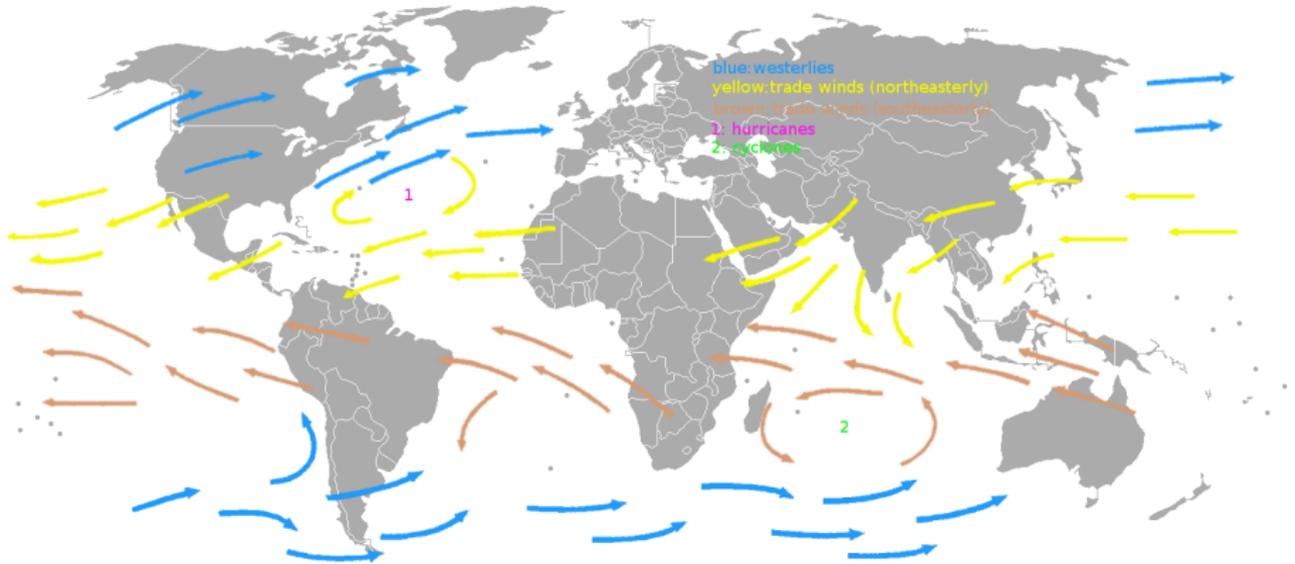
Basics of climatology



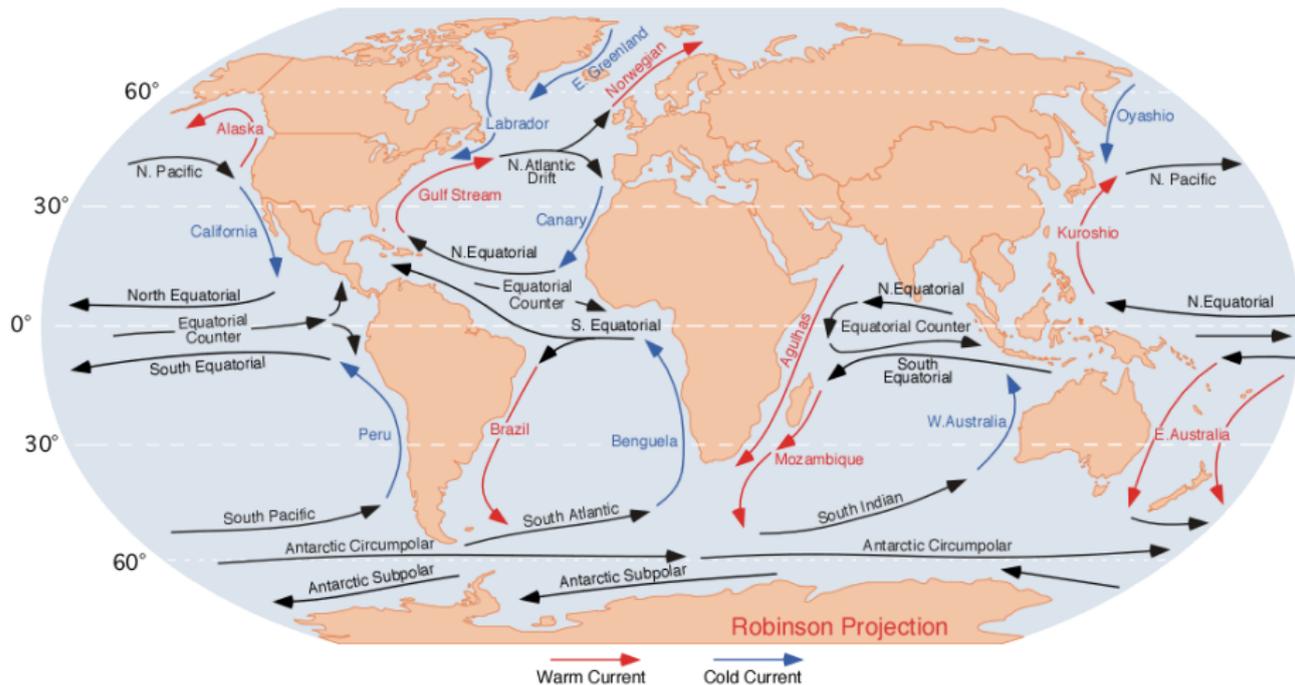
Idealized atmospheric circulation on Earth (with labels)



Prevailing winds



Ocean currents



El Niño: climatic oscillation

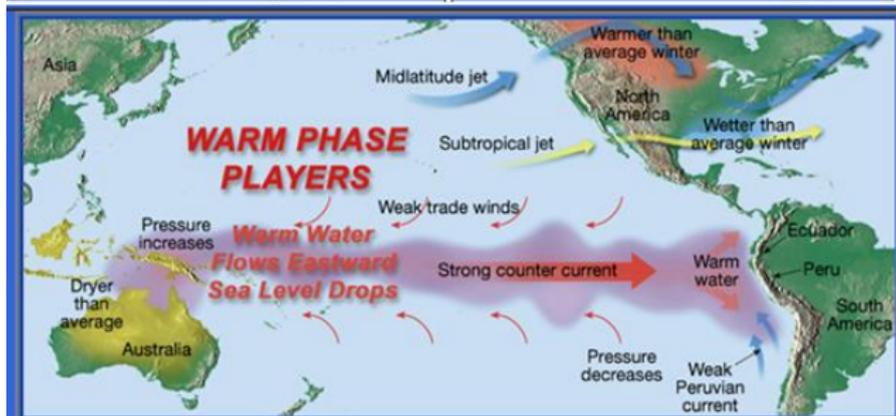
- ▶ Sometimes, western warm currents change atmospheric circulation in East Pacific
- ▶ They will bring wet and warm weather, mostly damaging to the living organisms from western North and South America (adapted to low precipitation)



La Niña versus El Niño



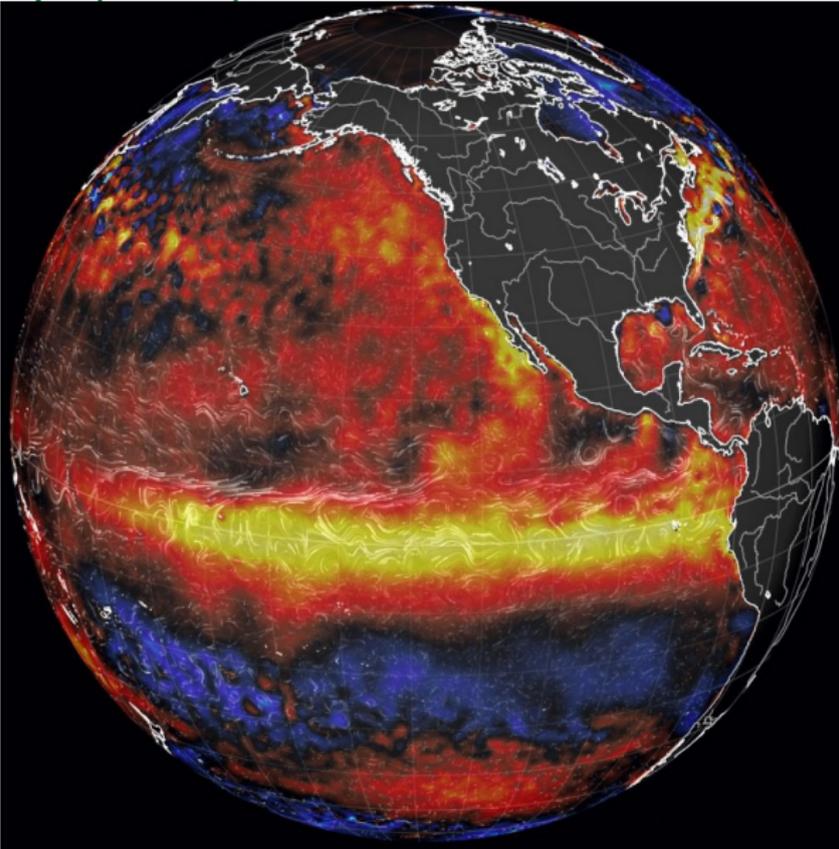
Normal
Situation



El Niño
Situation



Last El Niño (2016)



Seasons

- ▶ Temperature seasons: axial, not orbital effects
- ▶ Tropical wet seasons (monsoons) are related with temperature seasons and circulation

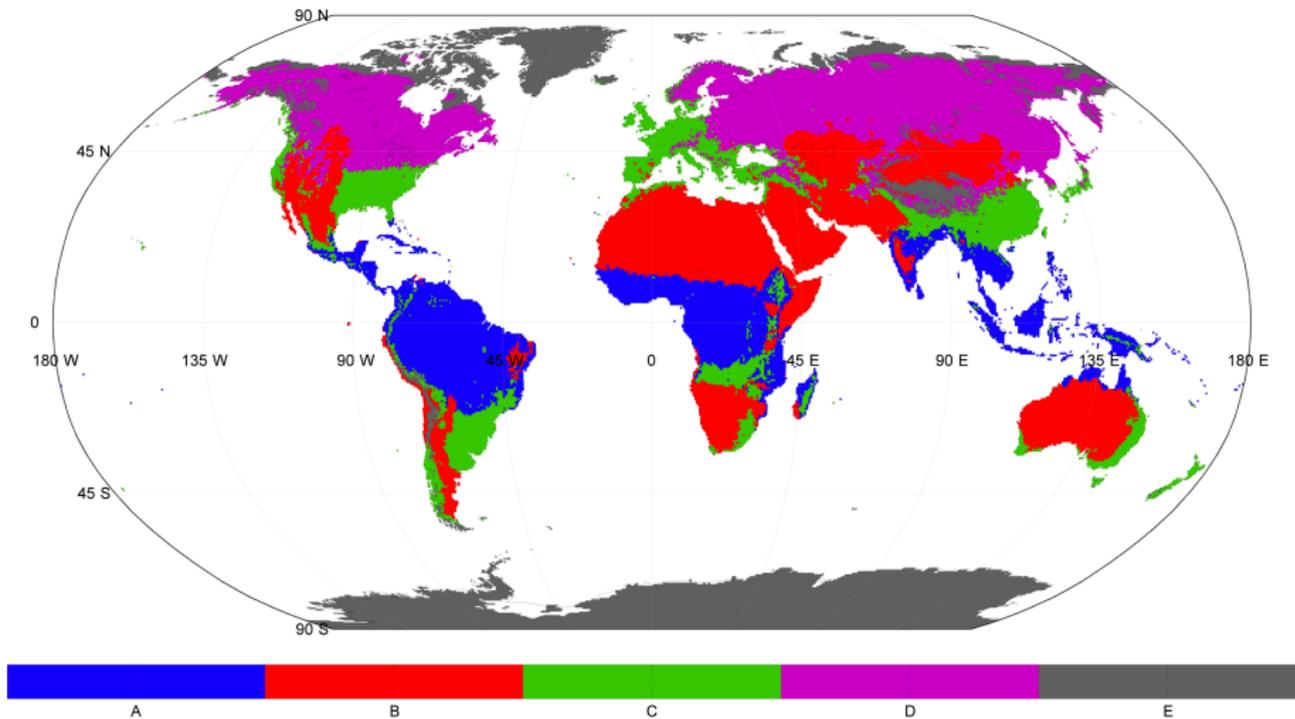


Climates

- ▶ Geographical zones: arctic, temperate and tropical
- ▶ Koeppen climates: A, tropical; B, dry; C, mild mid-latitude; D, cold mid-latitude; and E, polar



Koepfen climates

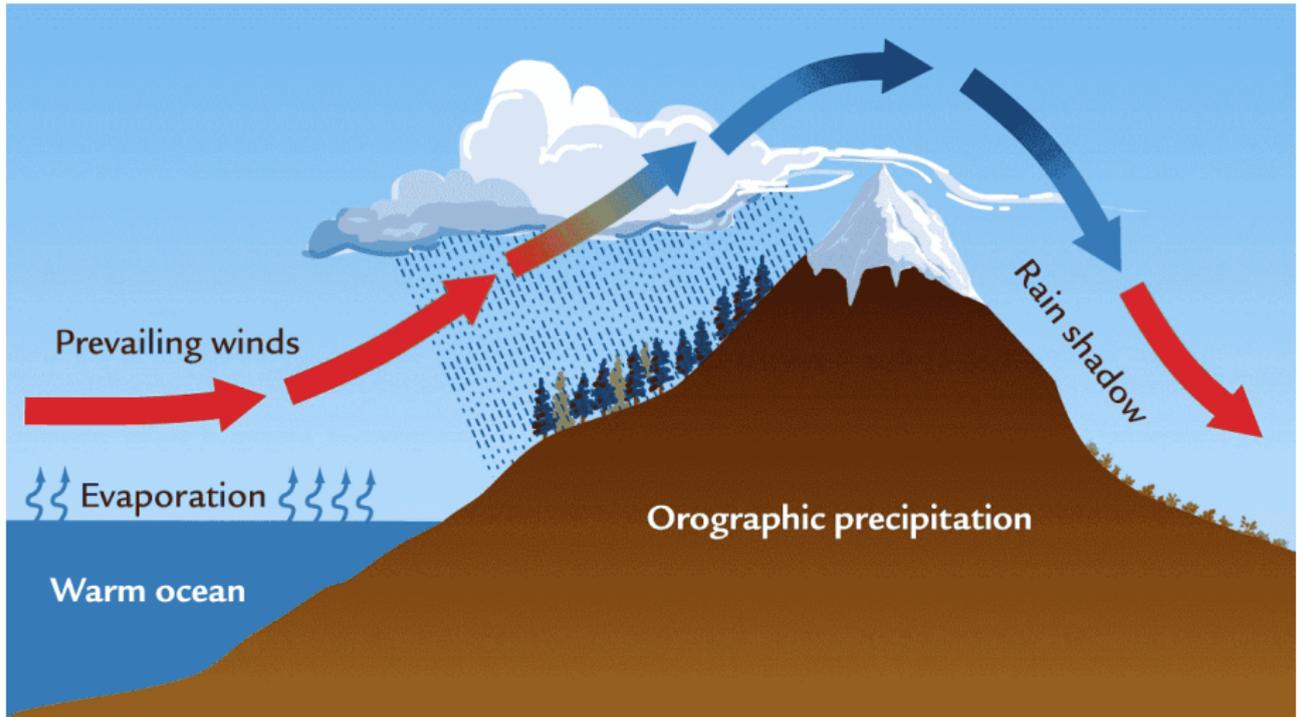


Climate and altitude

- ▶ Sea warming and rain shadow
- ▶ Altitudinal zones: lowland, montane, subalpine, alpine and snow



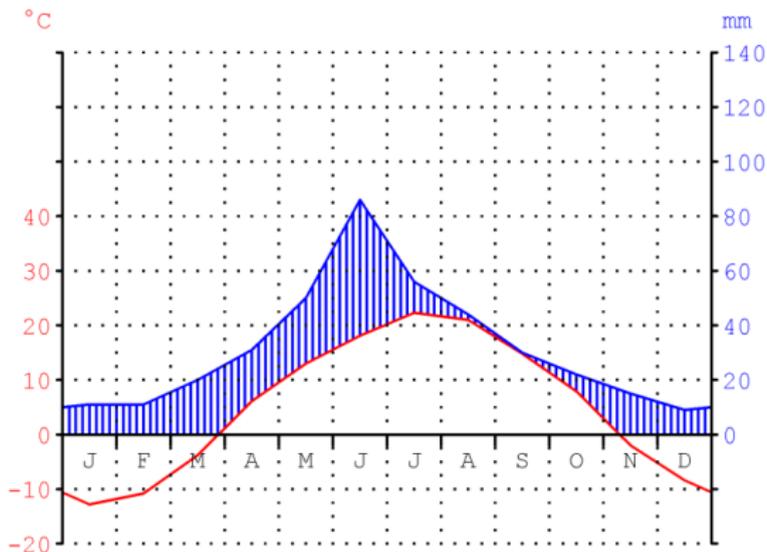
Sea warming and rain shadow



Climate diagram I

Erstellt mit Geoklima 2.1

Bismarck/USA
46°46'N/100°45'W
511m



Monat	Temp. (°C)	Nied. (mm)
JAN	-12,8	11
FEB	-10,8	11
MRZ	-3,8	20
APR	6,1	31
MAI	13,0	50
JUN	18,1	86
JUL	22,3	56
AUG	21,0	44
SEP	14,8	30
OKT	7,9	22
NOV	-2,0	15
DEZ	-8,4	9

Temp.-Jahresmittel
5,4 °C

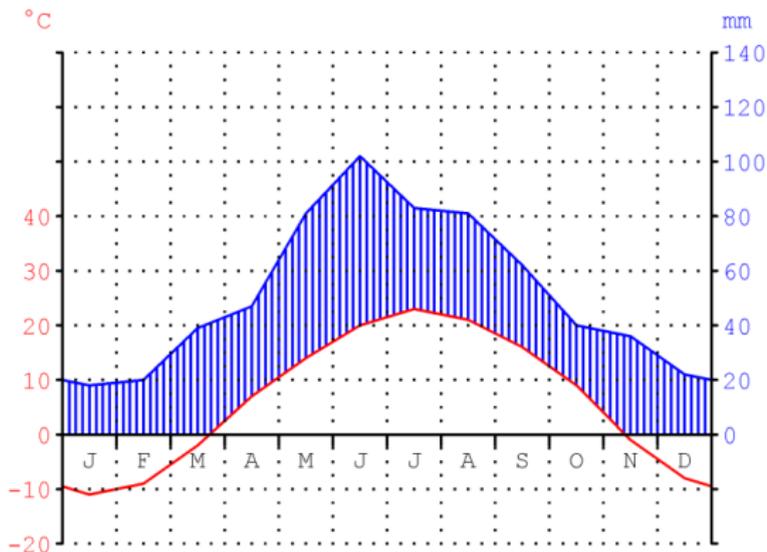
Niederschlagssumme
385 mm



Climate diagram II

Erstellt mit Geoklima 2.1

Minneapolis/USA
 44°53'N/93°13'W
 254m



Monat	Temp. (°C)	Nied. (mm)
JAN	-11,0	18
FEB	-9,0	20
MRZ	-2,0	39
APR	7,0	47
MAI	14,0	81
JUN	20,0	102
JUL	23,0	83
AUG	21,0	81
SEP	16,0	62
OKT	9,0	40
NOV	-1,0	36
DEZ	-8,0	22

Temp.-Jahresmittel
 6,6°C

Niederschlagssumme
 631 mm

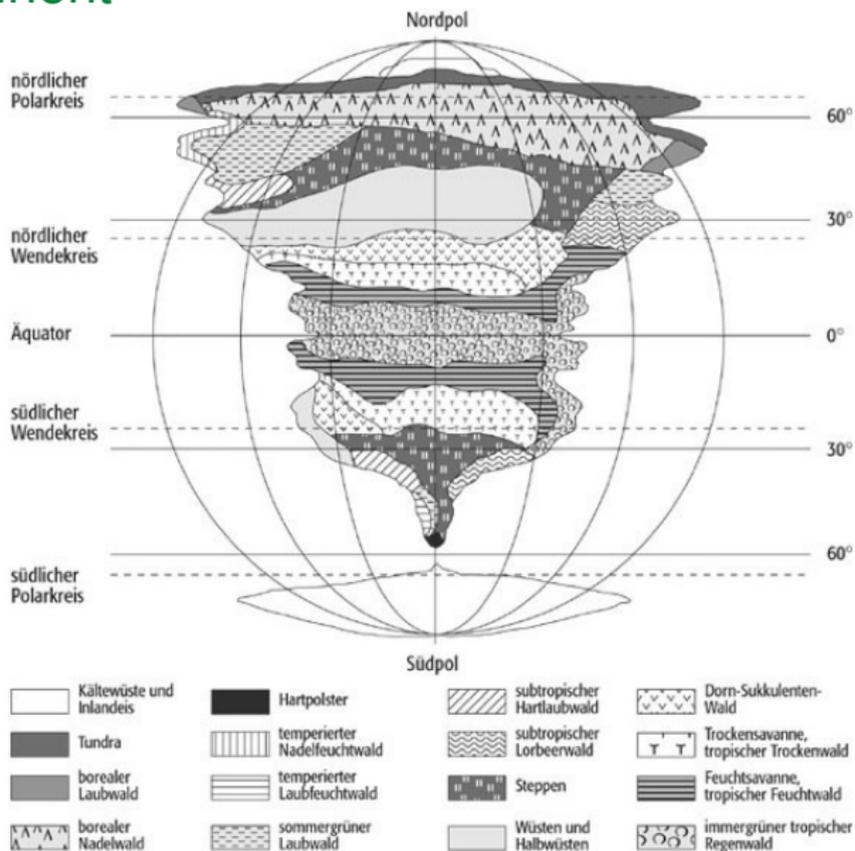


Climate and life

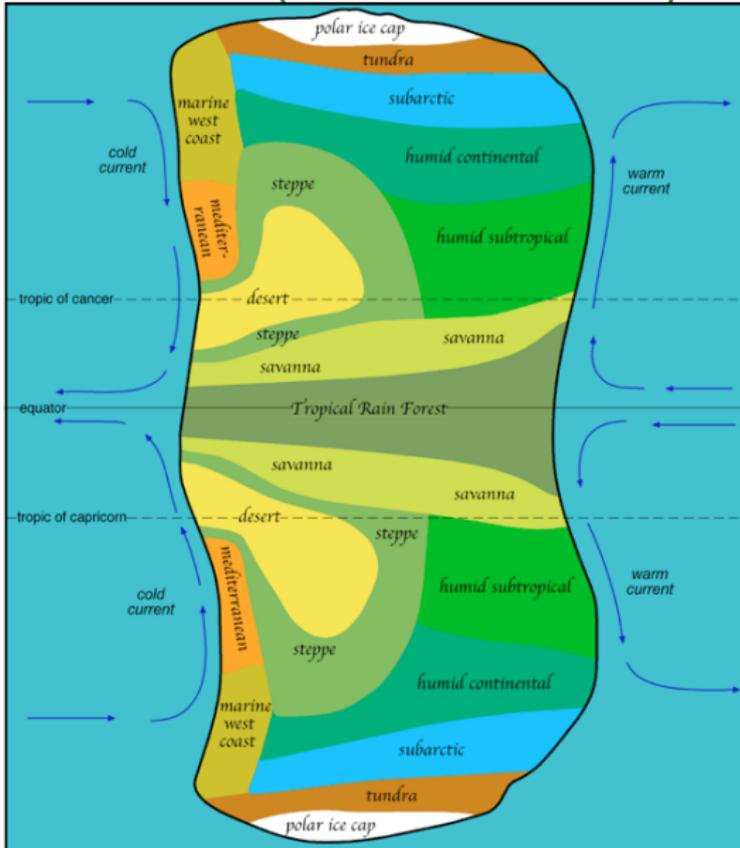
- ▶ Life zones are basing on temperature and precipitation
- ▶ Ideal continent (“Idealkontinent” in German)



Idealkontinent



Hypothetical continent (another version)



Summary

- ▶ Temperature seasons: axial, not orbital effects
- ▶ Tropical wet seasons (monsoons) are related with temperature seasons and circulation



For Further Reading



A. Shipunov.

Biogeography [Electronic resource].

2014—onwards.

Mode of access:

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



Major circles of latitude.

http://en.wikipedia.org/wiki/Circle_of_latitude



Atmospheric circulation.

[http:](http://en.wikipedia.org/wiki/Atmospheric_circulation)

[//en.wikipedia.org/wiki/Atmospheric_circulation](http://en.wikipedia.org/wiki/Atmospheric_circulation)

