

# Biogeography. Lecture 3

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# Outline

## Physical geography

- Basics of geodesy

- Basics of climatology



# Main parts of Earth: horizontal

- ▶ Lake Chad
- ▶ Sea of Marmara
- ▶ Different approaches to oceans
- ▶ Straits and currents
- ▶ Lakes and rivers
- ▶ Mountains and depressions



# Physical geography

## Basics of geodesy

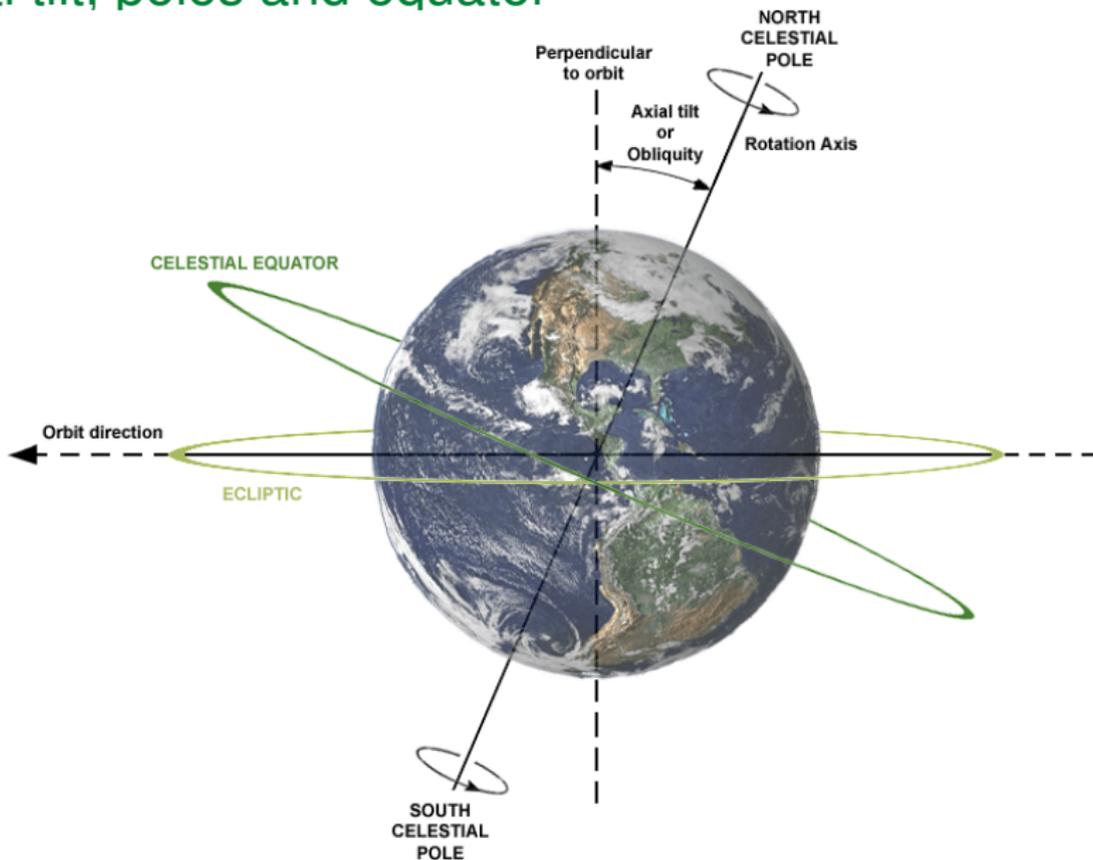


# Basics of geodesy

- ▶ Axial tilt
- ▶ Equator
- ▶ Poles (and magnetic poles)
- ▶ Tropics
- ▶ Arctic circles
- ▶ Longitude and latitude, prime meridian and international date line
- ▶ Time zones and UTC
- ▶ Hemispheres



# Axial tilt, poles and equator



# 180° Meridian, Taveuni, Fiji



# Physical geography

## Basics of climatology

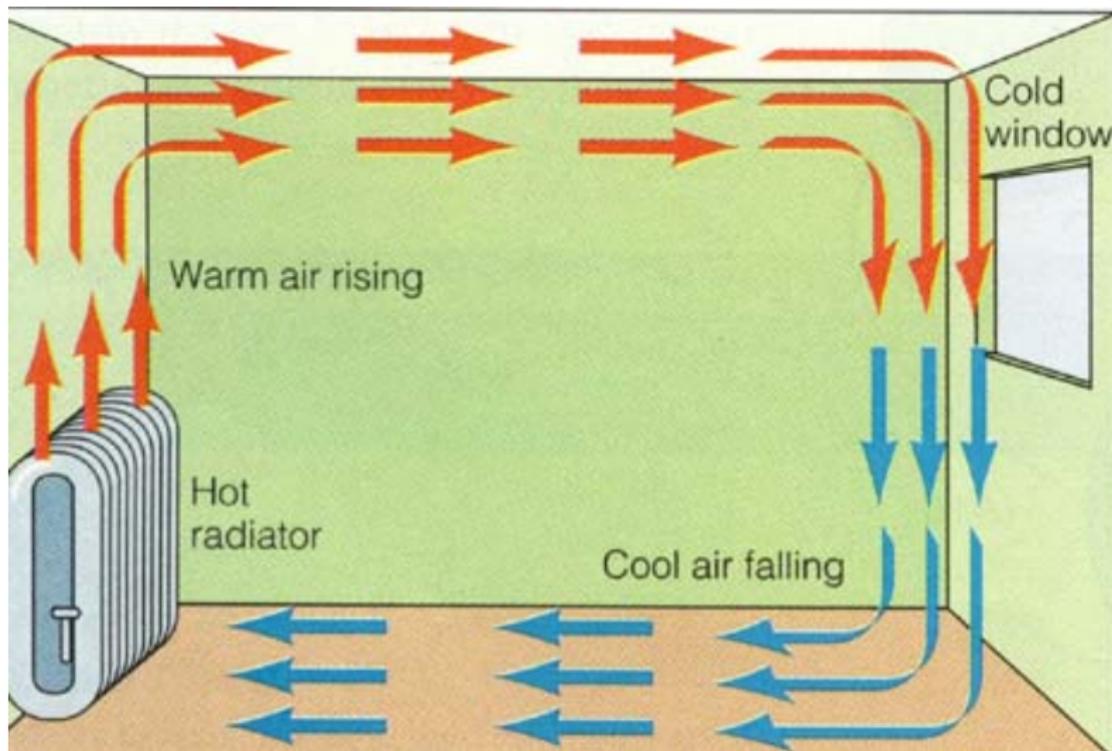


# Atmospheric circulation

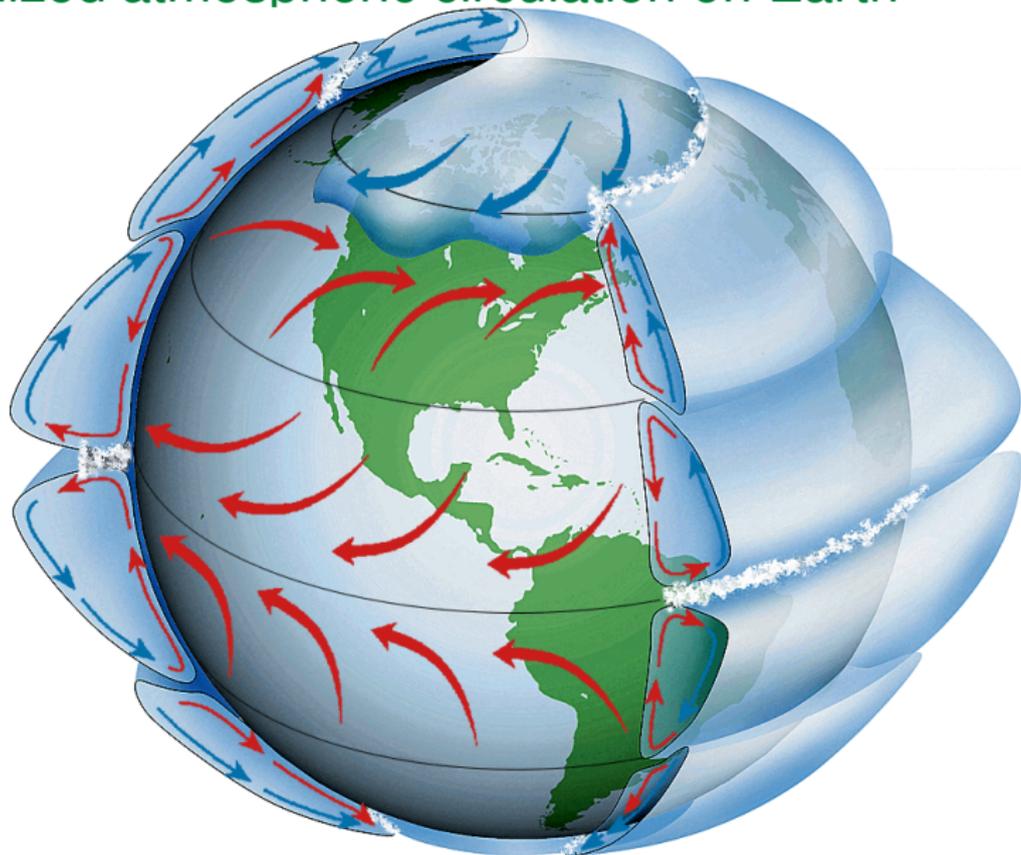
- ▶ High pressure and low pressure zones, cyclones and anticyclones
- ▶ Circulation cells
- ▶ Trade winds and westerlies
- ▶ Horse latitudes and zone of convergence



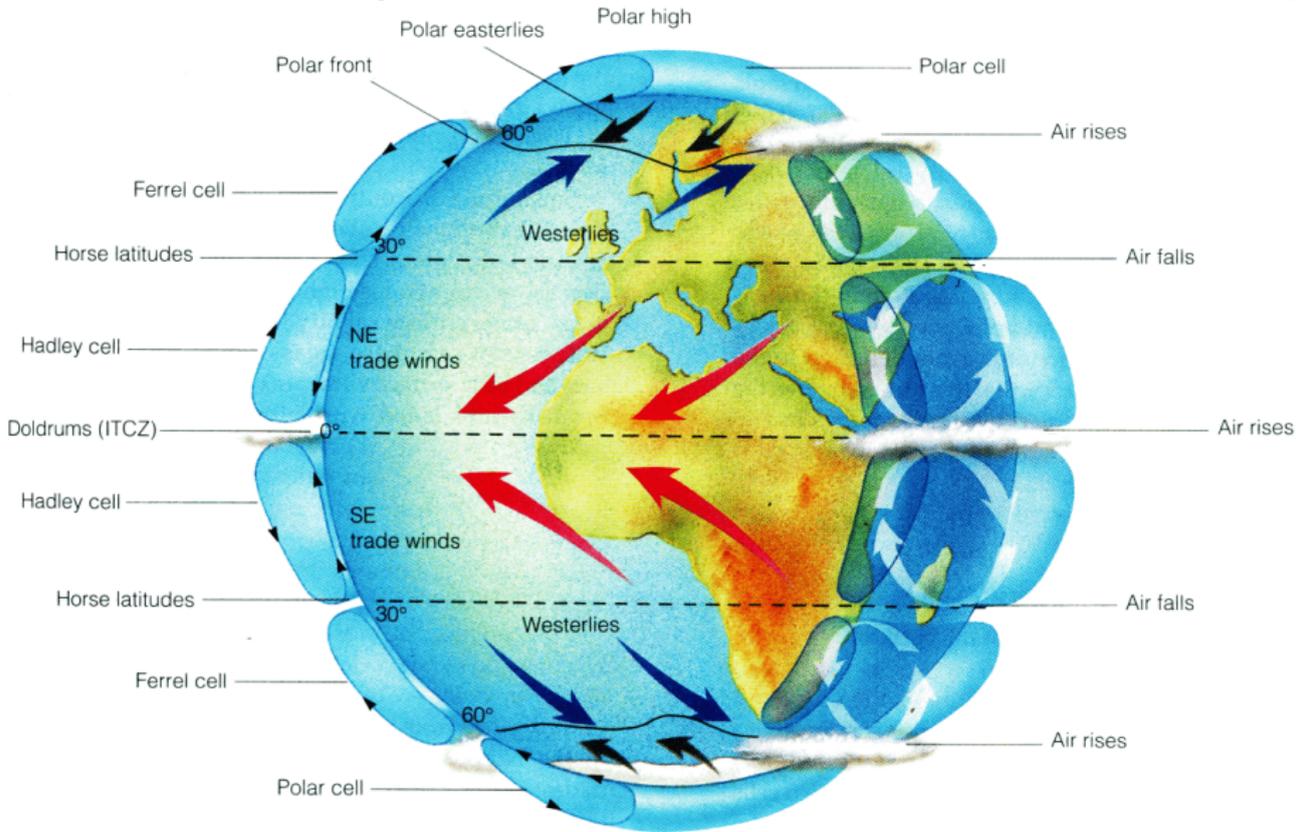
# Circulation in a room



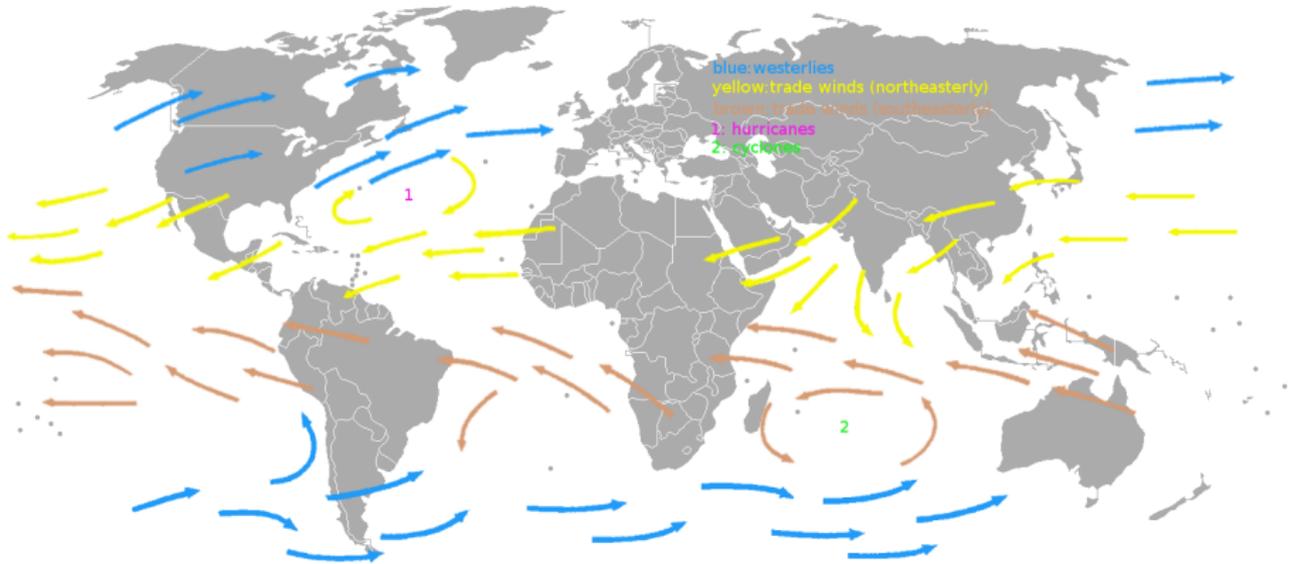
# Idealized atmospheric circulation on Earth



# Idealized atmospheric circulation on Earth (with labels)



# Prevailing winds



# El Niño: climatic oscillation

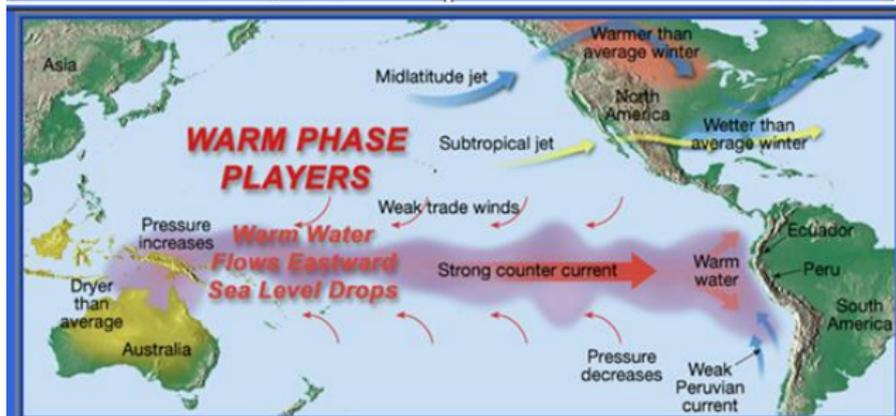
- ▶ Sometimes, western warm currents change atmospheric circulation in East Pacific
- ▶ They will bring wet and warm weather, mostly damaging to the living organisms from western North and South America (adapted to low precipitation)



## La Niña versus El Niño



Normal Situation



El Niño Situation



# Seasons and climates

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



# Summary

- ▶ For biogeography, the most important geographical sciences are geodesy, climatology and palaeogeography.



# For Further Reading



**A. Shipunov.**

*Biogeography* [Electronic resource].

2014—onwards.

Mode of access:

[http://ashipunov.info/shipunov/school/biol\\_330](http://ashipunov.info/shipunov/school/biol_330)



**Major circles of latitude.**

[http://en.wikipedia.org/wiki/Circle\\_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)

