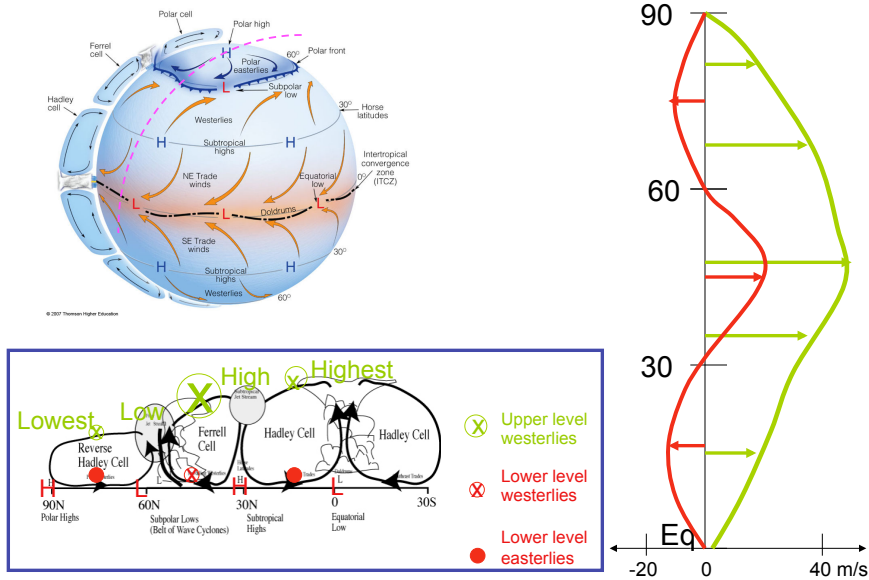
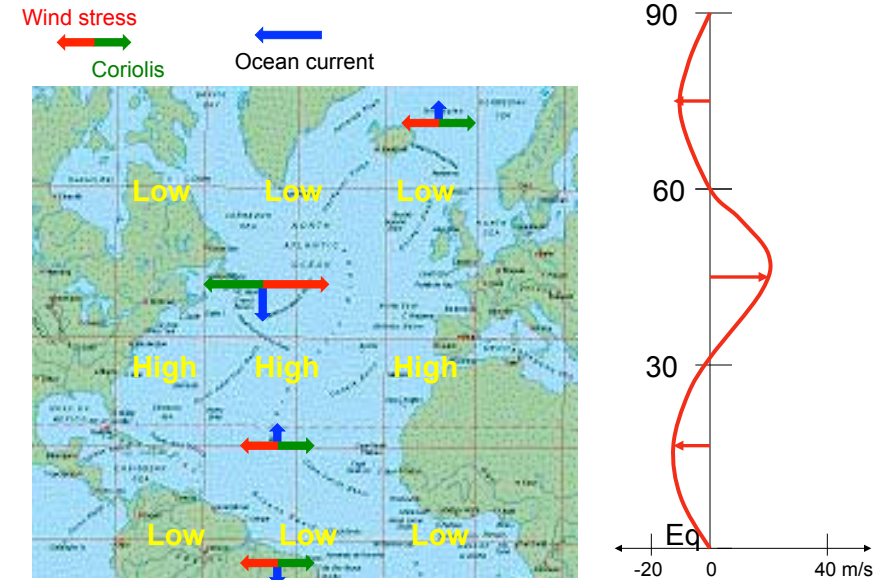


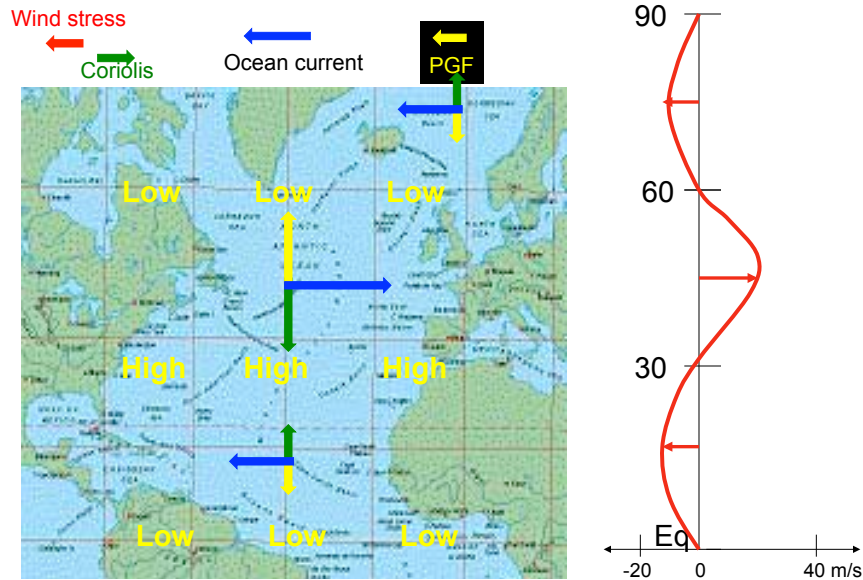
Idealized Model of Realistic Rotating Earth



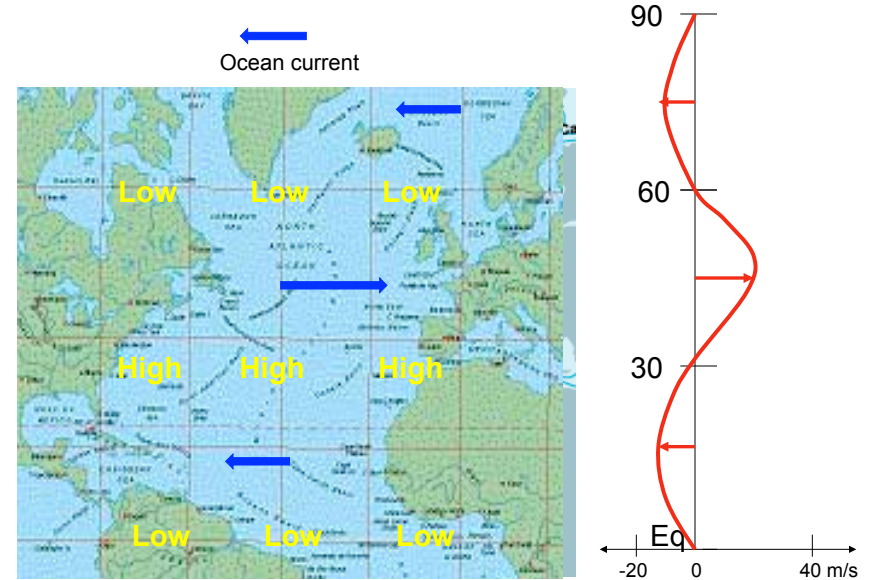
Idealized Model of Ocean Currents



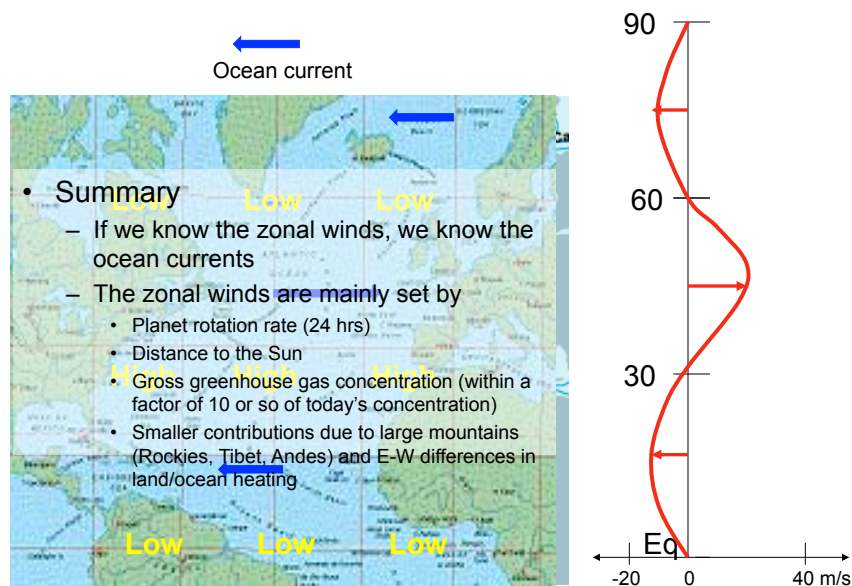
Idealized Model of Ocean Currents



Actual Ocean Currents

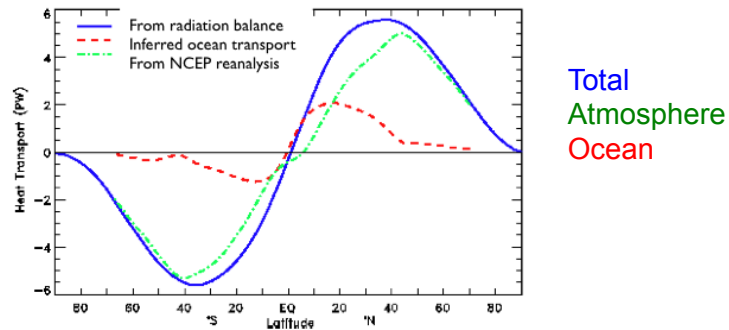


Actual Ocean Currents



Circulation moves excess energy from Equatorial to polar regions

Northward Energy Transport

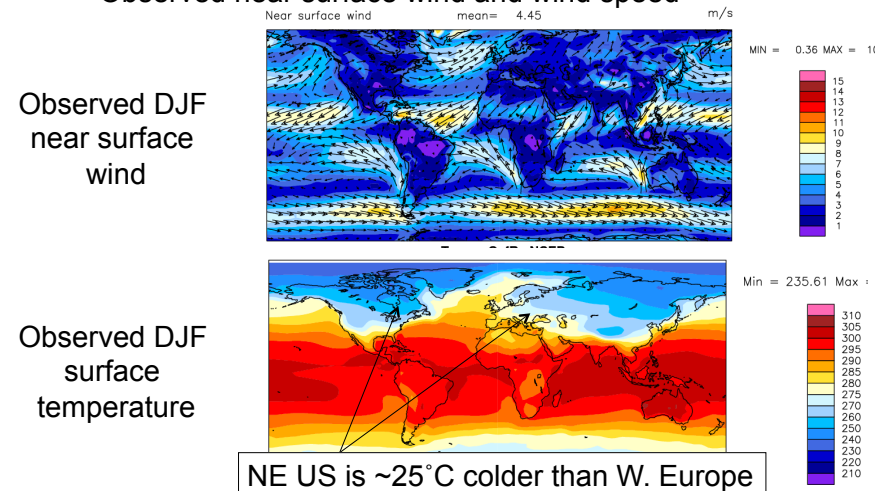


Ocean does most of the transport in the deep tropics (15°S-15°N)

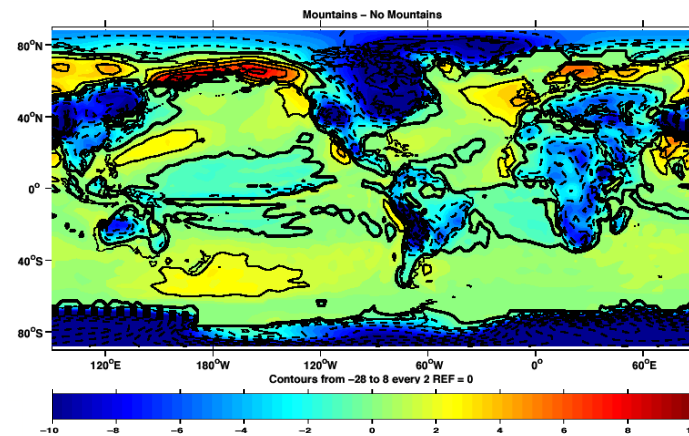
Atmosphere (midlatitude storms) does most of the transport poleward of 30°N,S

Role of the Major Mountain Ranges

Observed near surface wind and wind speed



The impact of mountains on DJF temperature



Europe is “warm” in winter because of the Rockies and *atmospheric* heat transport Seager et al 2002

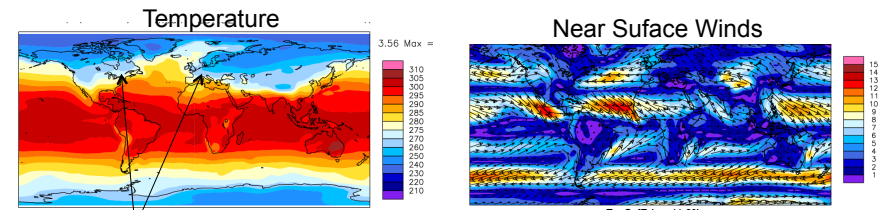
Why is Europe warm in winter (compared to New England)?

Europe minus NE Temperature (DJF)

Observed	25°C
The Rockies	12°C
Westerlies blowing over wet motionless ocean	12°C
Gulf Stream (ocean currents)	1°C
Total	25°C

Mountains *and* Rotation of Earth Matter

DJF Climate on a Backward Rotating Earth



Backward
minus
Forward

