

## Atmospheric Circulation Affects Climate

- Influences the location of rain forests & deserts.
- Can influence seasonal rainfall patterns in the tropics.
- Can interact with surface topography to create rain shadows.

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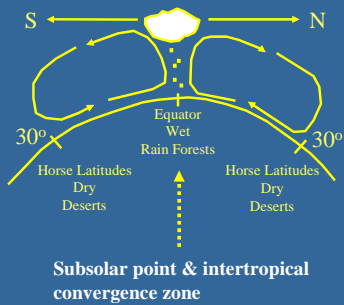
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## Tropical Hadley Cells



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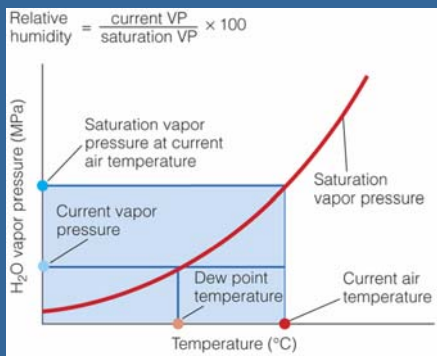
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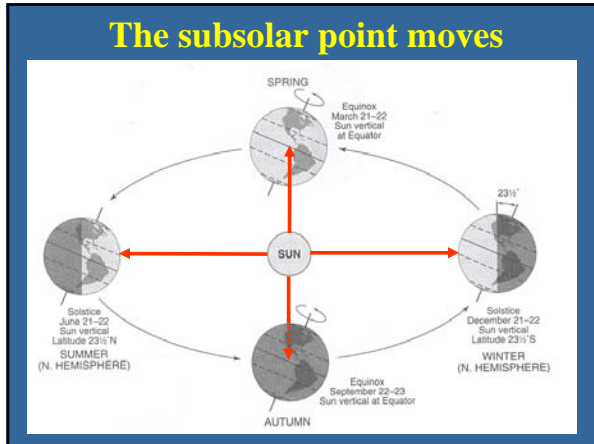
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### A moving subsolar point can affect climatic pattern in the tropics.

Which graph of monthly rainfall corresponds to Rio de Janeiro?

**A**

**B**

**C**

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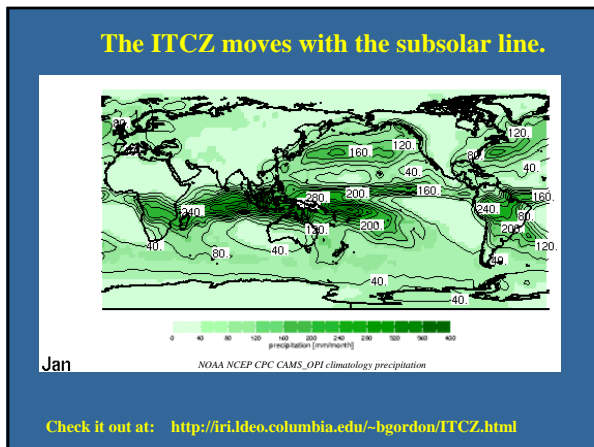
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**Pacific slope of Panama during dry season  
January through April**



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**Thought Question**

If the angle between the orbital plane of the Earth around the Sun and the plane formed by the Earth's equator were to decrease (currently it's 23.5°), what effect would this have on the seasons in the N. Hemisphere?

If the angle were 0°, when would an equinox occur?

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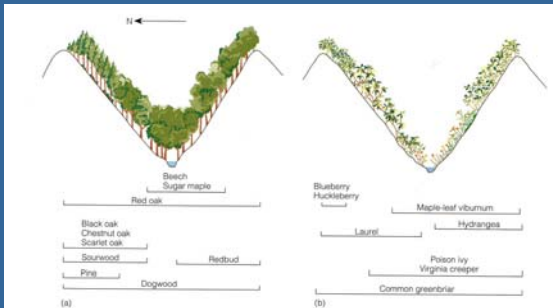
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**Sun Angle Effects Microclimate of  
North- & South-facing Slopes in the  
Mid-Latitudes**



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Outside of the Tropics, slopes that face the sun capture more energy than those that face away from it.




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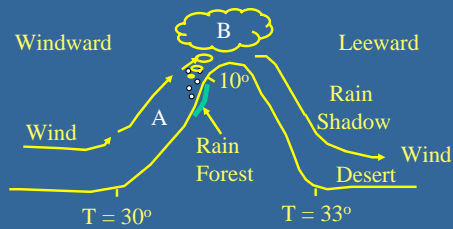
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### Orographic Effect



- A. Air rises & cools (adiabatic cooling @  $6^\circ\text{C}/\text{km}$ )
- B. As air cools it reaches its saturation vapor density - then it rains.

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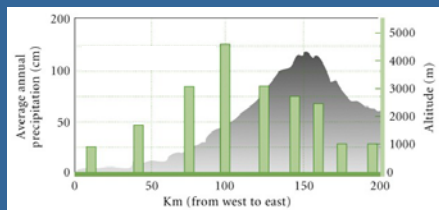
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### Where might these mountains be found?



- A)  $40^\circ$  N latitude
- B)  $10^\circ$  N latitude
- C)  $45^\circ$  S latitude
- D) Both A & C

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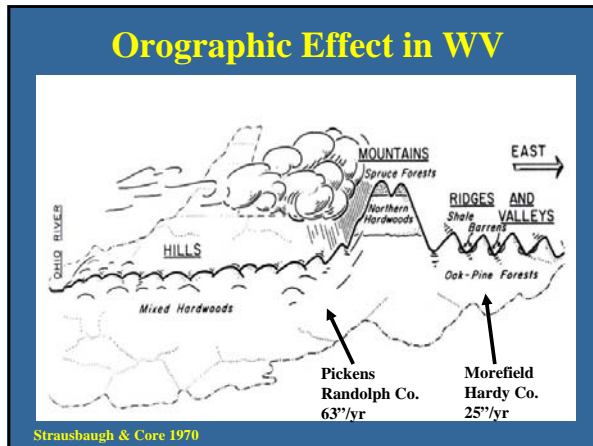
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### Ocean Circulation Can Affect:

- Regional climate.
- The price of fish.

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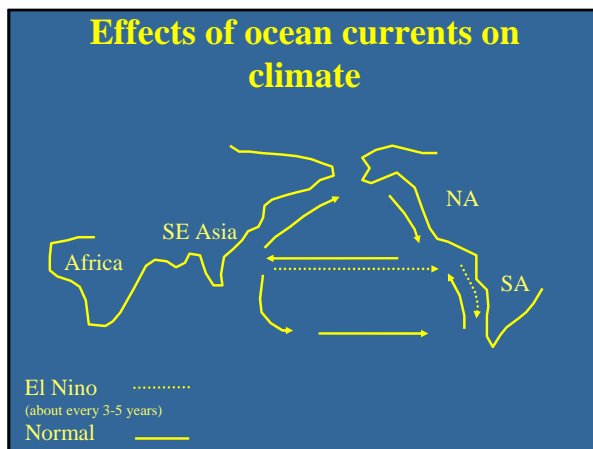
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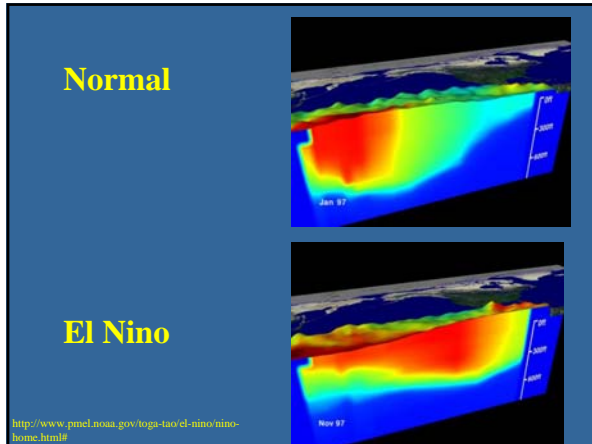
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# Lecture 4




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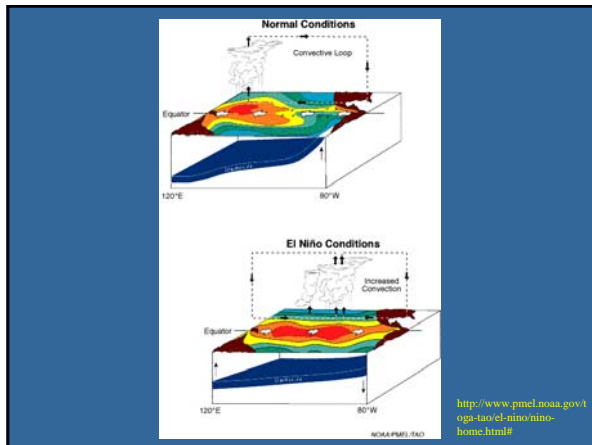
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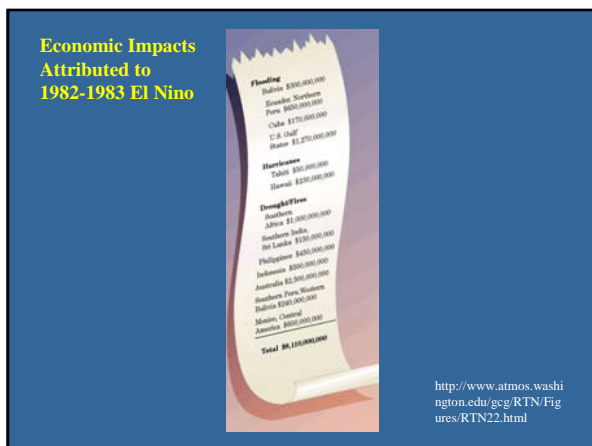
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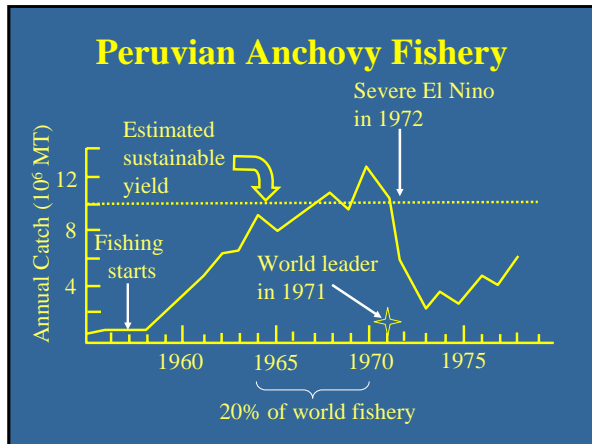
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