



Swirled World

The Earth has many swirling currents—underground, in the oceans and in the atmosphere.

Air near the ground and water in the oceans gets dragged along with the Earth as it spins on its axis. This creates swirling currents in the ocean and in the air. Air currents may strengthen and grow into typhoons and hurricanes. These currents are caused by the Coriolis force (named after an 18th to 19th century French mathematician).

Imagine you're floating in space, looking down on Earth in line with the equator. You would 'see' air and water get dragged in a clockwise direction in the southern hemisphere and in an anticlockwise direction in the northern hemisphere as the Earth spins.

Air and water near the equator have a greater distance to move as the Earth spins than air and water at the poles. This means equatorial air and water will be dragged along faster in a clockwise/anticlockwise direction.

Low pressure systems of air (creating storms) will follow these clockwise/anticlockwise patterns and move from the equator towards the poles. Storms grow stronger as they move towards the poles and they may become hurricanes.

There is a strong urban myth that water drains through plugholes in an anticlockwise/clockwise direction in the northern and southern hemisphere due to the Coriolis force. This is untrue, even when 'demonstrated' by tourist operators who step on either side of the equator with a pan of water. They're simply using tricks of the hand and eye. Water drains from a sink in a pattern based on the shape of the sink and how the water starts moving.

More Information

New Scientist The Last Word Which way to turn?
<http://www.newscientist.com/lastword/article.jsp?id=lw445>

Bad Coriolis <http://www.ems.psu.edu/~fraser/Bad/BadCoriolis.html>

Scientific American Ask the Experts 21 July 1997
What causes the high-speed winds, or "jet stream," in the stratosphere?
http://www.sciam.com/print_version.cfm?articleID=000D2B8B-DAF4-1C71-9EB7809EC588F2D7

Scientific American Ask the Experts 28 January 2001
Does water flowing down a drain spin in different directions depending on which hemisphere you're in?
http://www.sciam.com/print_version.cfm?articleID=00069EE7-6D24-1C71-9EB7809EC588F2D7

Rotating Frames of Reference on Earth and in Space
<http://www.spof.gsfc.nasa.gov/stargaze/Srotfram.htm>

Coriolis force <http://observe.arc.nasa.gov/nasa/space/centrifugal/centrifugal7a.html>