

Ocean Investigation Lab

Topic: Currents – the Coriolis effect

Directions: Read all directions before beginning. On your lab sheet, fill in the topic line and answer the question “What do you know about the topic?”

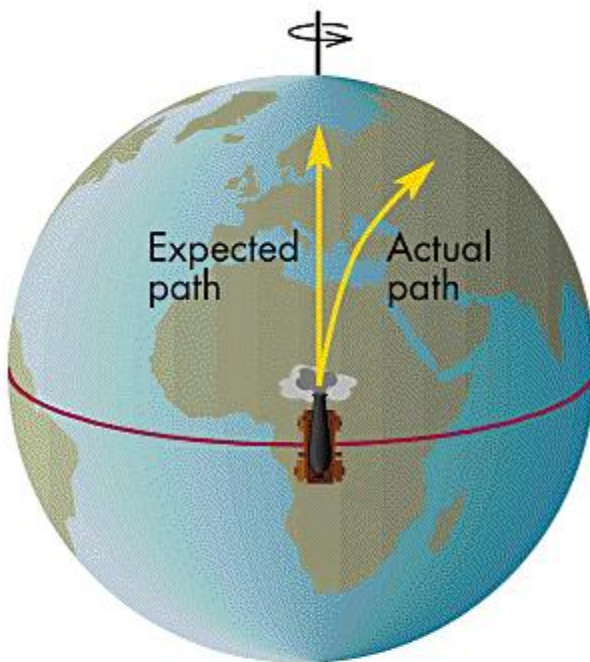
Materials: Bowl, shaker with cornmeal

Procedure:

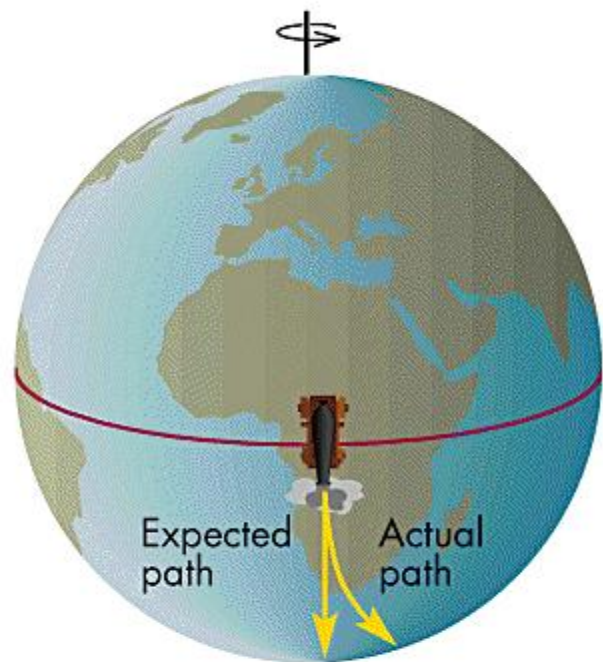
1. Fill the bowl almost to the top with water.
2. Sprinkle a little cornmeal in the water so that some floats on top.
3. Record your prediction about what will happen when you complete step 4.
4. Blow steadily and easily across the water surface and observe the way the cornmeal is carried by the currents.
5. Record your observations on the lab sheet.
6. Summarize your investigation on the lab sheet.
7. Answer the “Are there new questions or investigations you would like to try?” If possible begin investigating these new questions.
8. If your station is messy, prepare for the next group by dumping the water out of the bowl and rinsing it.

Coriolis effect

CORIOLIS EFFECT [Coriolis effect] [for G.-G. de Coriolis, a French mathematician], tendency for any moving body on or above the earth's surface, e.g., an ocean current or an artillery round, to drift sideways from its course because of the earth's rotation. In the Northern Hemisphere the deflection is to the right of the motion; in the Southern Hemisphere it is to the left. The Coriolis deflection of a body moving toward the north or south results from the fact that the earth's surface is rotating eastward at greater speed near the equator than near the poles, since a point on the equator traces out a larger circle per day than a point on another latitude nearer either pole. A body traveling toward the equator with the slower rotational speed of higher latitudes tends to fall behind or veer to the west relative to the more rapidly rotating earth below it at lower latitudes. Similarly, a body traveling toward either pole veers eastward because it retains the greater eastward rotational speed of the lower latitudes as it passes over the more slowly rotating earth closer to the pole. It is extremely important to account for the Coriolis effect when considering projectile trajectories, terrestrial wind systems, and ocean currents.



A Projectile fired northward



B Projectile fired southward