MICHEÁL WALSH, DEARCÁN Ó DONNGHAILE & MICHEAL FANEY

MARINE RENEWABLE ENERGY & SUSTAINABLITY

ATU Ollscoil Teicneolaíochta an Atlantaigh Atlantic Technological University

BLUEWISE MARINE

Marine Institute Foras na Mara

Údarás na Gaeltachta

seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

Ocean Currents Activity

The constant pushing of molecules into each other is the reason we feel wind. As one molecule bumps into another, it transfers energy into the next molecule. This constant pushing on the ocean's surface also transfers energy to the water. This energy transfer is responsible for the motion of the world's ocean currents. Students will make their own ocean currents using straws and black pepper.

Supplies

One coffee stir straw per student, one container for each group of four students & coarse ground black pepper.

Procedure

1. Fill the baking pan with water to about one inch deep.
2. Position one student on each corner of the pan.
3. Sprinkle some black pepper in one corner of the baking pan.
4. At each corner position, have the students aim their straw along the side of the pan to their left.
5. Have each student gently blow through the straw across the top of the water and observe the motion of the pepper.

Surface Currents Activity

Discussion

- Very quickly, the students will see a circulation develop in their pan and observe the pepper move in a clockwise motion. This clockwise motion is the same basic motion of the currents in the Northern Hemisphere.
- The persistent high-pressure systems over both Atlantic and Pacific Oceans have created the clockwise motion of the currents in each region. Since wind moves in a clockwise motion in high pressure, the wind transfers some of its energy to the sea surface generating currents.
- In the Southern Hemisphere, the wind in high pressure systems moves in a counter-clockwise motion. As a result, the ocean's currents also move in a counter-clockwise direction.
- You can also have the students at each corner blow across the water toward each other and observe what happens when opposing currents come together.

Simplified diagram of large scale ocean circulation

Surface Currents Activity

Building a Weather-Ready Nation

- Unlike the slow drift of ocean currents, rip currents are powerful, local, channelled currents of water flowing away from shore. They typically extend from the shoreline, through the surf zone, and past the line of breaking waves. Rip currents can occur at any beach with breaking waves, including the Great Lakes.

What to do

- Remain calm to conserve energy and think clearly.
- Never fight against the current.
- Swim out of the current in a direction parallel to the shoreline. When out of the current, swim at an angle away from the current towards shore.
- If you are unable to swim out of the rip current, float or calmly tread water. When out of the current, swim towards shore.
- If you are still unable to reach shore, draw attention to yourself by waving your arm and yelling for help.