Energy and Matter: Sea Surface Temperature

The world's ocean is heated at the surface by the sun, and this heating is uneven for many reasons. Earth's rotation, revolution around the sun, and tilt all play a role, as do the wind-driven ocean surface currents. This animation shows the long-term average sea surface temperature, with red and yellow depicting warmer waters and blue depicting colder waters. The most obvious feature of this temperature map is the variation of the temperature by latitude, from the warm region along the equator to the cold regions near the poles. Another visible feature is the cooler regions just off the western coasts of North America, South America, and Africa. In these regions, the combination of Earth's rotation and alongshore winds push water away from the coast, allowing cooler water to rise from deeper in the ocean. The long-term average (or "climatology") of sea surface temperature used in this animation came from the World Ocean Atlas 2005.

Sea Surface Temperature color scale

Credit: NASA Scientific Visualization Studio; The Blue Marble Next Generation data is courtesy of Reto Stockli (NASA/Goddard Space Flight Center) and NASA Earth Observatory.

Sphere(s)

- Hydrosphere
- Earth as a System

Phenomenon

- Ocean Circulation Patterns

Dataset in LAS
• Daily Sea Surface Temperature (Celsius)

Related Links

• Visualizing Earth Systems: A NASA Quick Start Guide for Educators
• Sea Surface Temperature, Salinity and Density
• Daily Sea Surface Temperatures

Related Lessons

• Hurricanes as Heat Engines
• GPM: Hurricanes