

Systems illustrated in the Oceans

12

very approximate grade level

K/1

2 a big geographic idea
(and a good place to study it)

Systems

are important when we study the oceans because global connections mean processes in the oceans affect the land, and vice versa.

Civics: riparian rights, prior appropriation, Law of the Sea

Cycles and trends - CO₂, El Nino, and the global air/water system

Circulations - wind, ocean currents (what makes a good beach?)

Water flows downhill, pulled by gravity; but changes in land use can change river flow

Learn position words: source, path, flow (spatial model)

(clearly identified as geography)

Science: flows of matter and energy radiation, conduction, convection, water cycle

(previous classes or collaboration with other disciplines)

Map skill: interpret map of anomalies

Map skill: interpret flow diagram

(map skills)

3 some important consequences of the big idea

Coastal areas are vulnerable to the effects of rising sea level and other changes in the oceans.

Coral reefs are a "canary in the mine" indicator of ocean chemical change.

The oceans are a CO₂ sink - interactions between air and water are complex.

Arctic ice is an indicator of energy in the air-ocean system.

Pollution ends up in the ocean - tracing movements of soil, fertilizer, plastic, etc.

All rivers flow downhill - their volume depends on climate and land use.

(positioned where appropriate in the curriculum)

Water goes in a big cycle - from air to land to ocean and back to the air.

A discussion question:

How can we separate (in order to deal with)

long-term trends, medium-term cycles, and short-term fluctuations in a complex air-ocean system?



1 a scaffold of thinking skills and background knowledge that supports the big idea