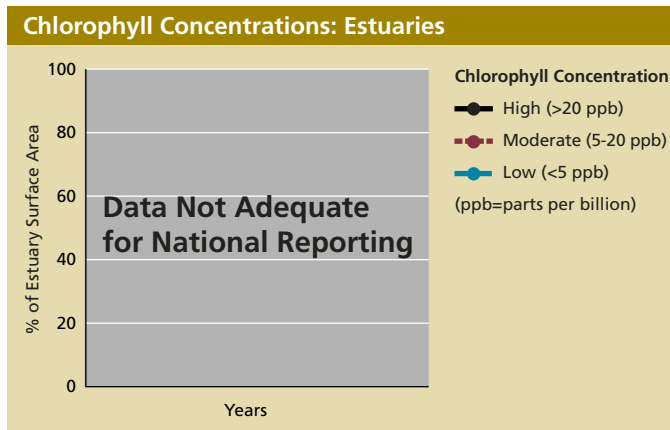
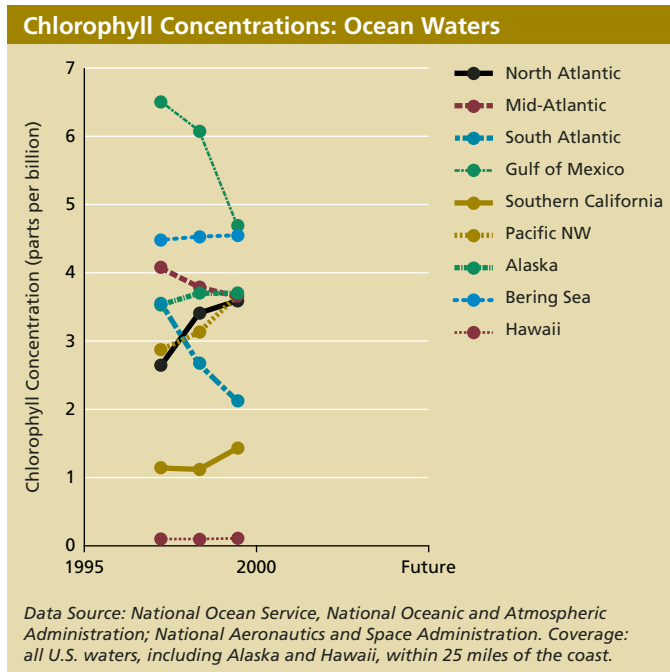


SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants Physical	Plants and Animals Communities Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

Chlorophyll Concentrations



What Is This Indicator, and Why Is It Important?

This indicator reports the chlorophyll concentration in estuaries and ocean waters within 25 miles of shore. For ocean waters, the indicator reports the average value for the season with the highest concentration, for each region. For estuaries, the indicator will report the percentage of area in three ranges: below 5 parts per billion (ppb), between 5 and 20 ppb, and above 20 ppb, using data for the season with the highest average concentration.

Chlorophyll concentration is a measure of the abundance of algae, also called phytoplankton, which account for most of the plant production in the ocean. Phytoplankton are difficult to measure directly, yet they are the direct or indirect source of food for most marine animals.

Although increasing algae growth (as measured by chlorophyll) tends to support larger fish populations, excessive growth often leads to degraded water quality—for example, decreases in water clarity, noxious odors, oxygen depletion (see p. 71), and fish kills (see p. 77)—and may be linked to harmful algal blooms (see p. 78). Excessive algae growth appears to occur as a consequence of increases in nutrient inputs (especially nitrogen—see the national nitrogen indicator, p. 46) and in response to declines in the abundance of filter-feeding organisms like oysters, clams, and mussels.

Why Can't This Entire Indicator Be Reported at This Time?

Most estuaries are not sampled frequently enough or thoroughly enough to produce comparable data on seasonal chlorophyll levels.

What Do the Data Show? Ocean data from 1998–2000 suggest that chlorophyll levels are higher in the Gulf of Mexico than in the waters off Hawaii and Southern California; differences between other regions may not be meaningful. The time series is too short to establish trends.

The technical note for this indicator is on page 226.