



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

## ⊖ Coastal Erosion

### What Is This Indicator, and Why Is It Important?

The indicator will report how much of the U.S. coast is managed in an attempt to control erosion and how much remains in a “natural” state, with no erosion control. For unmanaged areas, the indicator reports what fraction is eroding, accreting (gaining land area), or stable.

Management methods include replacement of sand (often called “beach nourishment”) and construction of bulkheads or other “armoring.” Neither approach necessarily eliminates future erosion, but the effects of armoring generally last longer.

Coastal erosion costs hundreds of millions of dollars a year, including damage caused by storms and flooding, costs of erosion prevention, and expenses to dredge channels and harbors. Poorly designed or sited development can lead to erosion, while measures to control erosion in one place may exacerbate it in others and may have significant environmental impacts of their own. Accretion may also create problems, as when inlets fill in, interfering with navigation. Also, many experts predict that continued global warming will be accompanied by rising sea levels, resulting in increased coastal erosion worldwide.

**Why Can’t This Indicator Be Reported at This Time?** Assessments of shoreline stability are now conducted as short-term or single-purpose projects that are neither regional nor national in scope. Local assessments often use different methods, which makes it difficult to combine results into an accurate national picture.

**Discussion** Scientists and coastal managers will need to agree on numerical definitions of “eroding” or “accreting” (this is likely to be in the range of from one-half to several feet horizontally per year). Further, how long a beach that has been nourished should be reported as “managed” needs to be determined.

Priority should be given to using the large amount of existing local data, which will require assessment of coverage, quality, and comparability. Also, standard methods and definitions should be developed for nationwide use, ensuring the compatibility of data collected in the future.

The technical note for this indicator is on page 221.

