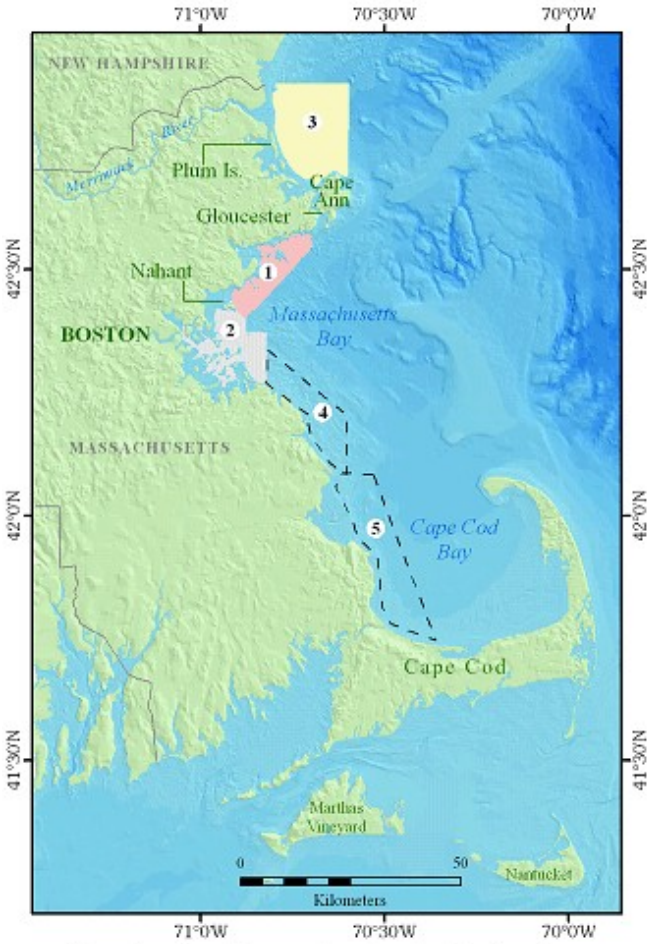
High-resolution geologic mapping offshore of Massachusetts

SUMMARY:

Geologic mapping of the Massachusetts inner continental shelf is a cooperative effort by the USGS Coastal and Marine Geology Program (CMGP), the Massachusetts Office of Coastal Zone Management (CZM), and the National Oceanic and Atmospheric Administration (NOAA). The project provides information on seafloor geology to address a wide range of research and management issues in the Massachusetts coastal ocean. Priority areas are identified by CZM and local management partners, and USGS provides technological capabilities and science expertise. Cost savings were achieved by incorporating existing data that was originally collected by NOAA to update navigation charts.



Map of eastern Massachusetts showing the five areas of coastal ocean included in this project: 1. Nahant to Gloucester, 2. Boston Harbor and approaches, 3. Cape Ann to Salisbury Beach, 4. Duxbury to Hull, and 5. Sagamore Beach to Duxbury.

Mass Bay map

INVESTIGATORS:

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DESCRIPTION:

The main goal is to define the regional geologic framework of the region, in order to better understand the late Quaternary evolution of the coastal zone, especially coastal erosion, sea-level rise, and factors that impact marine habitats.

START DATE OF PROJECT:

April 15,2003

END DATE OF PROJECT:

December 31, 2009

LOCATION:

Massachusetts

TOPIC:

Seafloor geology, resources and the environment, GIS, dissemination of Earth sciences information and outreach

APPROACH:

Seafloor geology is mapped using data from interferometric and multibeam sonars (swath bathymetry), sidescan sonar (acoustic backscatter), chirp seismic-reflection profiling (stratigraphy and structure), direct sampling and bottom photography/video.

IMPACT/RESULTS:

Accurate maps of seafloor geology provide critical guidance for management of coastal and marine resources. They are important first steps toward protecting fish habitat, delineating marine reserves, and assessing environmental changes due to natural or human impacts. This program has developed detailed bathymetric data and interpretative geologic maps of the Massachusetts inner continental shelf in depths of 5-90 m. All data and maps were compiled in a geographic information system (GIS) and made available on DVD and on the project website to encourage broad distribution.

RELATED:

- Coastal Mass Web site