



Figure 6.4. Steady state response of surface (left) and near-bottom currents (right) driven by a surface wind of 10 m/s (20 knots, surface stress of 0.14 N/m^2) from 0, 45° and 90° (wind direction indicated by bold arrow). Arrows on the map show current magnitude and direction. Color indicates the surface elevation (left panels) and near-bottom current speed (right panels). The 40 m isobath is shown in red. The semi-enclosed geometry of Massachusetts Bay produces a wind-driven flow pattern where there is a component of surface flow in the direction of the wind in the shallow water along the coast in Massachusetts Bay and along the outer Cape, and flow opposite to the direction of the wind in deeper parts of Massachusetts or Cape Cod Bay (right panels). The flow along the western shore of Massachusetts Bay switches from southeastward to northwestward at winds from about 70°.