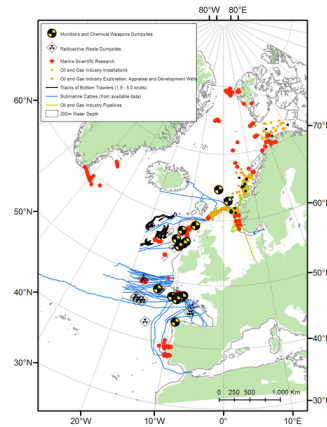


The Deep Sea and Us



The Deep Sea and Us



A large area of deep sea continental slopes and shelves are impacted by human activities.

What does it mean for sea life though?

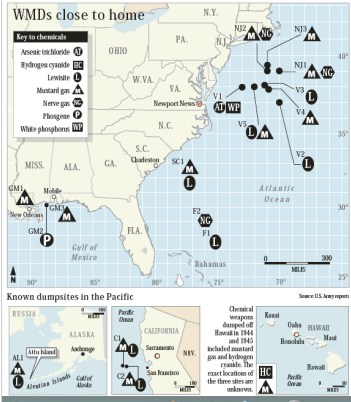
The Deep Sea and Us

- How can pollutants affect marine life?
 - DNA damage
 - Developmental defects
 - Cancers and lesions
- How can deep-sea pollution affect us?
 - Biomagnification in fisheries
 - Circulation patterns bring contaminants into shallow water, concentrates in bays, coves, estuaries etc.
 - Unexploded munitions washing up beaches or in fishing nets

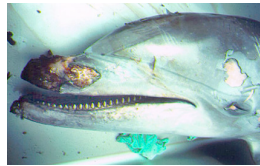
The Deep Sea and Us

- “innocent negligence” stemming from our early preconceptions of deep-sea as a wasteland
- Dumping:
 - Radioactive waste
 - Munitions (chemical and biological)
 - Sewage waste
 - Industrial chemicals (DDT)
- Unintentional “dumping”
 - Paint chips from ship hulls (TBT)
 - Chlorinated hydrocarbons (PCB)

The Deep Sea and Us



- 64 million lbs of nerve and mustard gases
- 400,000 chemical bombs, land mines
- 500 tons radioactive waste

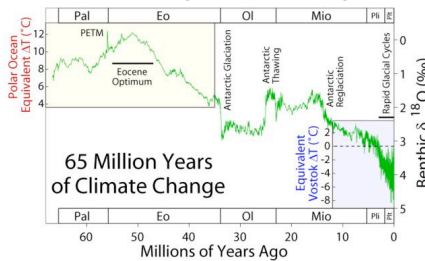


The Deep Sea and Us

- How will Climate Change affect the deep-sea?
 - Temperature, O₂ and CO₂ concentrations
 - Mixing, stratification, thermocline
 - Photic most affected, affecting overall productivity
 - Methane hydrate breakdown
 - Acidification and marine fisheries
 - Sea level rise
 - Time lag on effects because of "global conveyor belt"

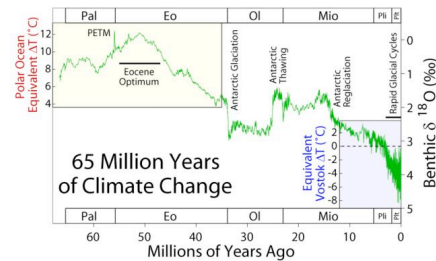
Paleocene-Eocene Thermal Max

- 55mya: For ~200,000 years, a spike in ocean temperature (inferred from O-isotopes in benthic foram in sediment core)
- Massive release of greenhouse gas CH₄/CO₂



Paleocene-Eocene Thermal Max

- What happened?
 - CO₂ levels and temperature took ~120,000 yrs to return
 - Enormous mammalian mass extinction
 - Anoxic conditions in deep-sea
 - Reduced pH killed off 35-50% benthic foram species



The Deep Sea and Us

