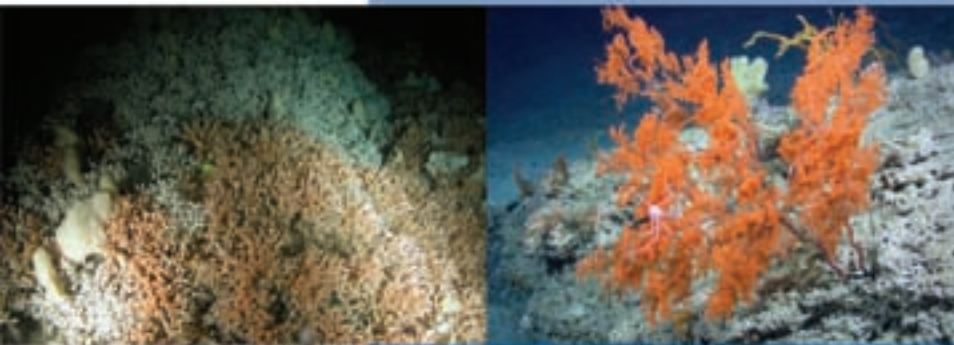


GLOBAL CHANGE

OCEAN ACIDIFICATION



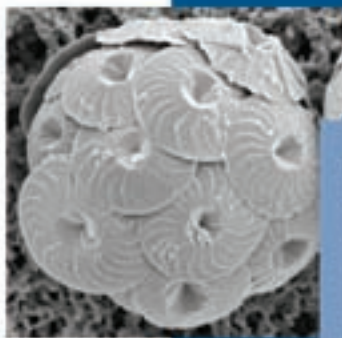
European cold water coral communities, Tisler Reef Skagerrak

CO₂-induced ocean acidification is irreversible during our lifetimes. Tens of thousands of years are required for ocean chemistry to return to pre-industrial levels.

If global CO₂ emissions continue to rise at current trends, acidity of the oceans will cause the pH to drop 0.5 units by 2100.

This pH-value will be lower than has been for millions of years in the past and proceeds at a rate 100-times faster than ever before.

IMPACT OF OCEAN ACIDIFICATION ON MARINE LIFE

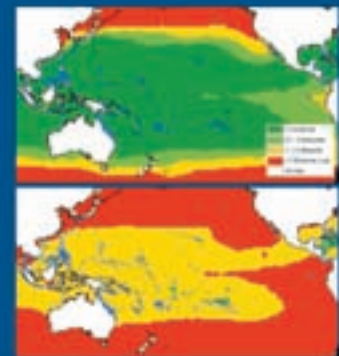


Healthy calcareous algae grown at 280 ppm CO₂

Algal shell growth is hampered by elevated CO₂ (ca. 600 ppm)



Pre-industrial CO₂ at 280 ppm



Predicted CO₂ for 2070 at 600 ppm

Worldwide decline of area favourable for coral reef growth with rising CO₂

RESEARCH NEEDS

- ▶ to quantify magnitudes of CO₂ sources and sinks
- ▶ to determine effects of CO₂-induced acidification on marine life
- ▶ to predict adaptation of marine organisms to decline in pH
- ▶ to ascertain biogeochemical feedbacks to global change