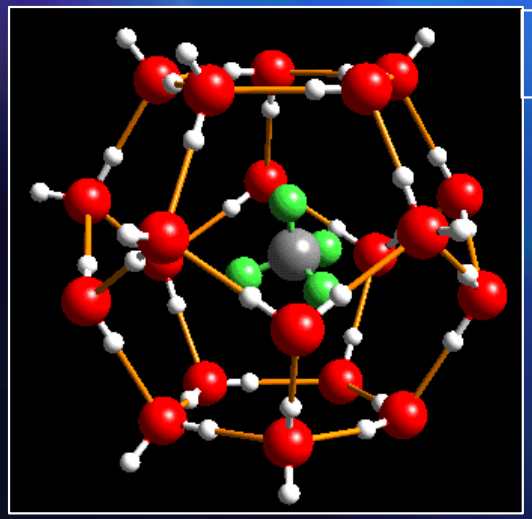
Hydráty metanu

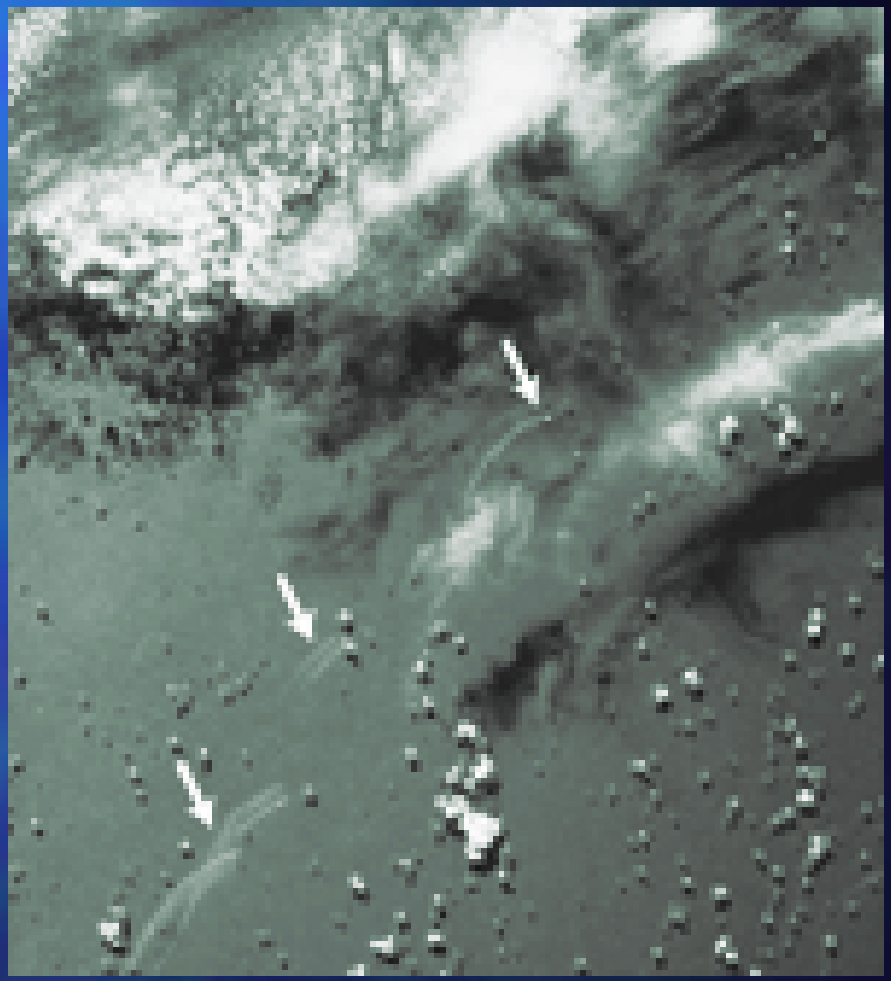
systém H_2O-CH_4 a environmentální aspekty

Struktura a uvolňování metanu

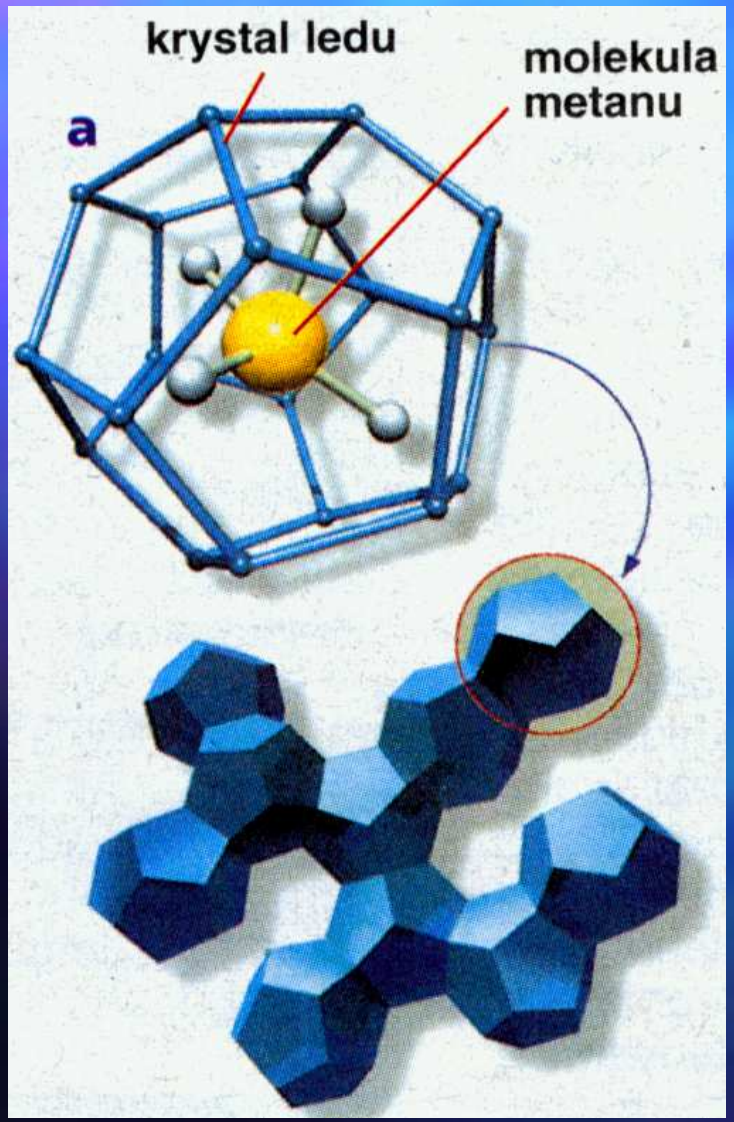
This colorized image of the ocean surface taken from the space shuttle makes the sea and clouds look like an artist's abstract dabs and brushstrokes. The bright streaks are oil slicks produced by hydrocarbons seeping naturally from seafloor vents.

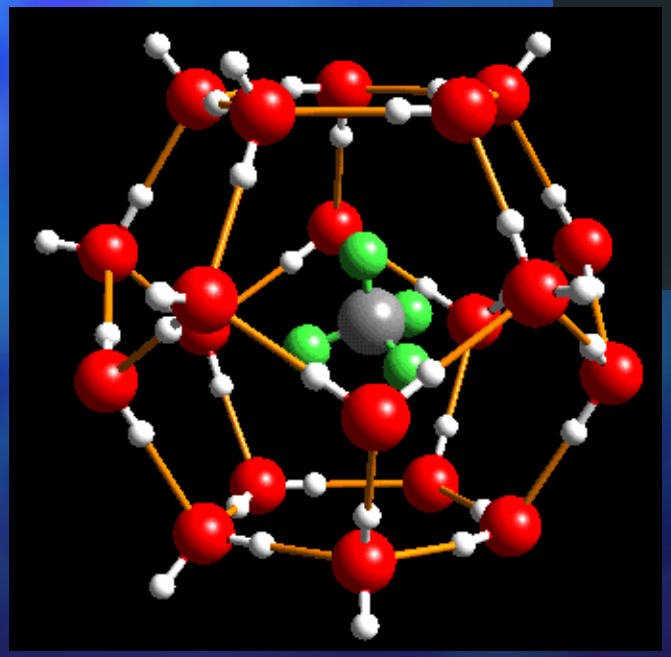


struktura led-metan

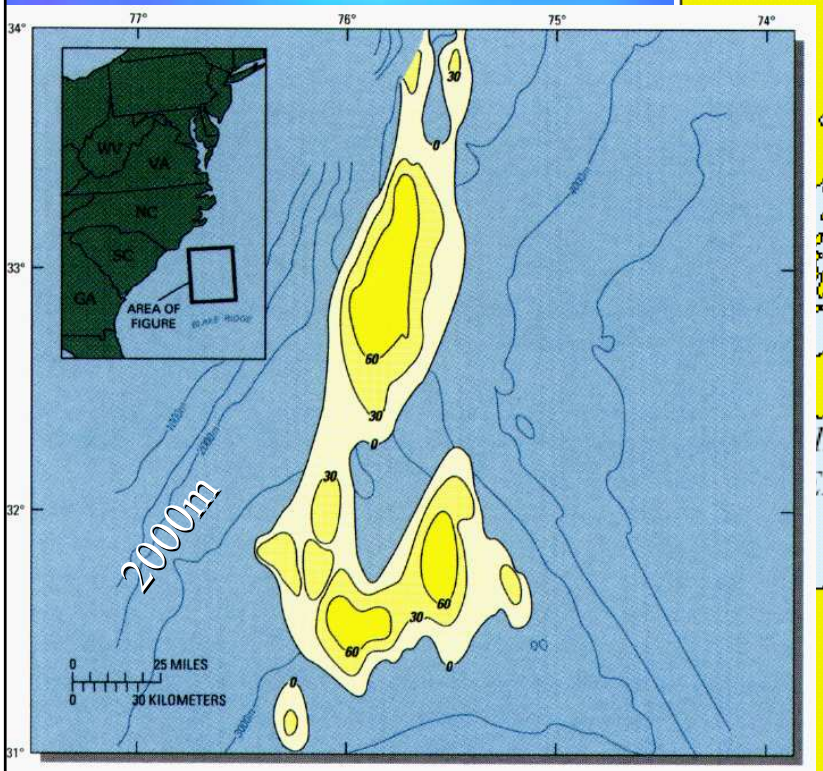


Hydráty CH_4





Rozšíření hydrátů metanu



Map showing location and inferred thickness (in meters) of hydrates within sediments in the high concentration area off North Carolina and South Carolina.

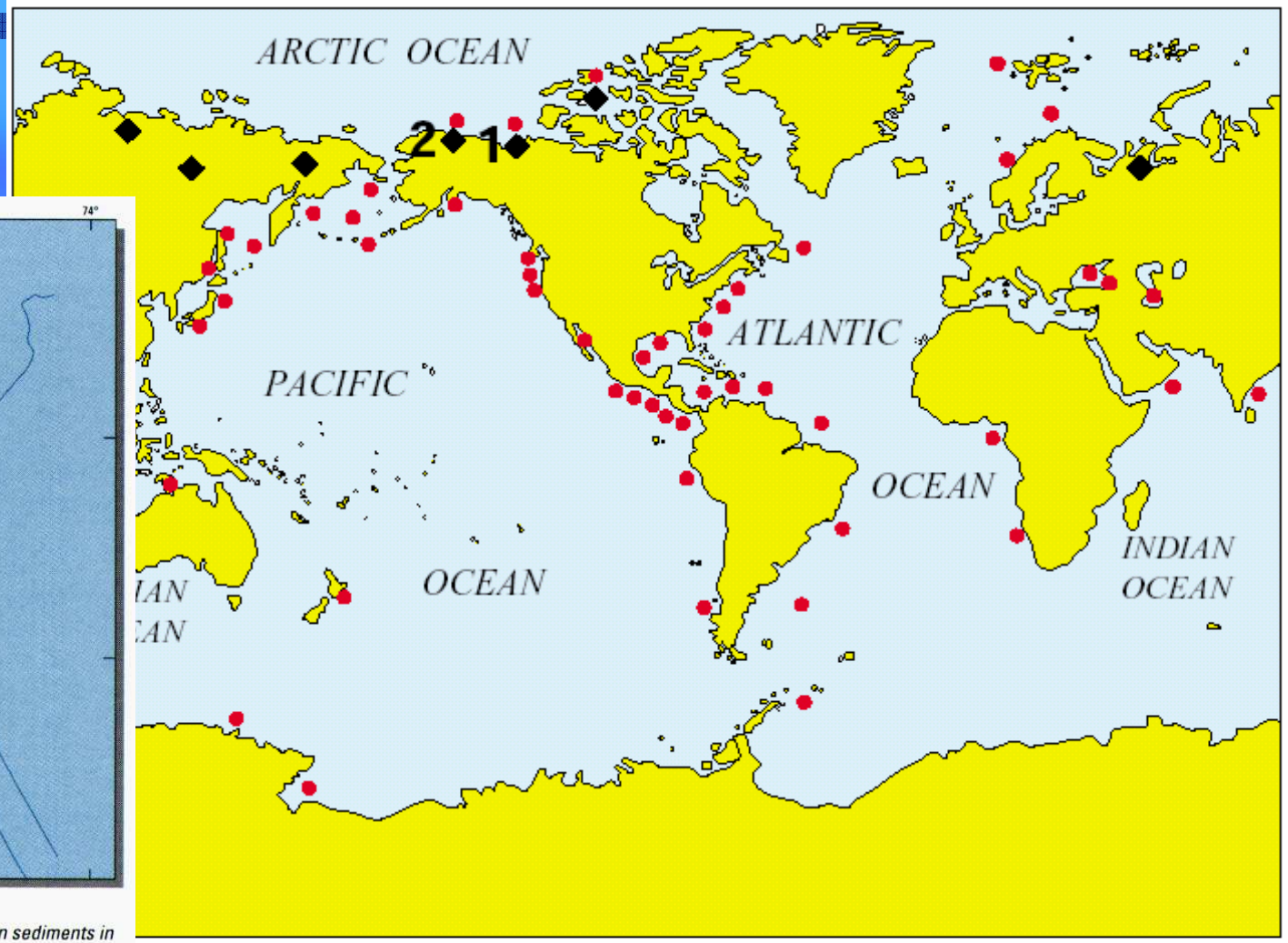


Figure 1. Known and inferred natural gas hydrate occurrences in marine (red circles) and permafrost (black diamonds) environments. Modified from K. A. Kvenvolden, U.S. Geological Survey (written commun., 1999). The USGS is studying hydrates at sites 1 (Mackenzie Delta, Canada) and 2 (North Slope, Alaska).

Vrstvičky hydrátů metanu

Figure-2 Layers of gas hydrate in a subsea sediment sample.

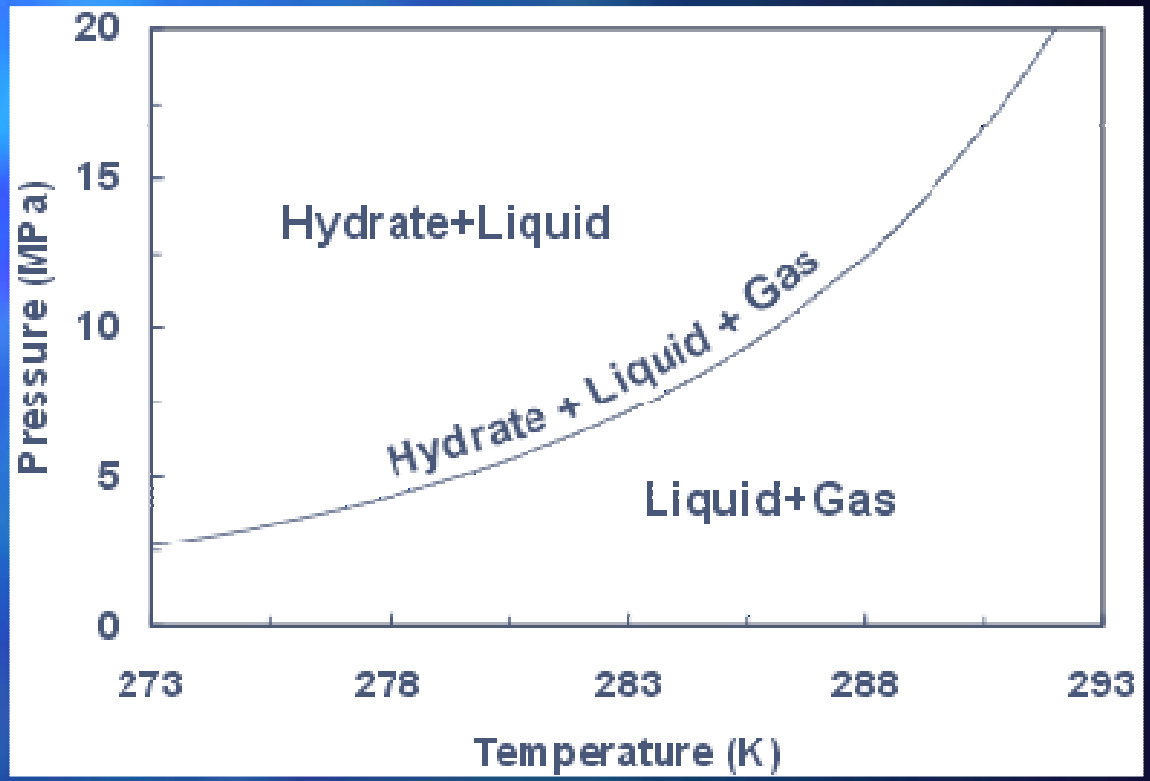
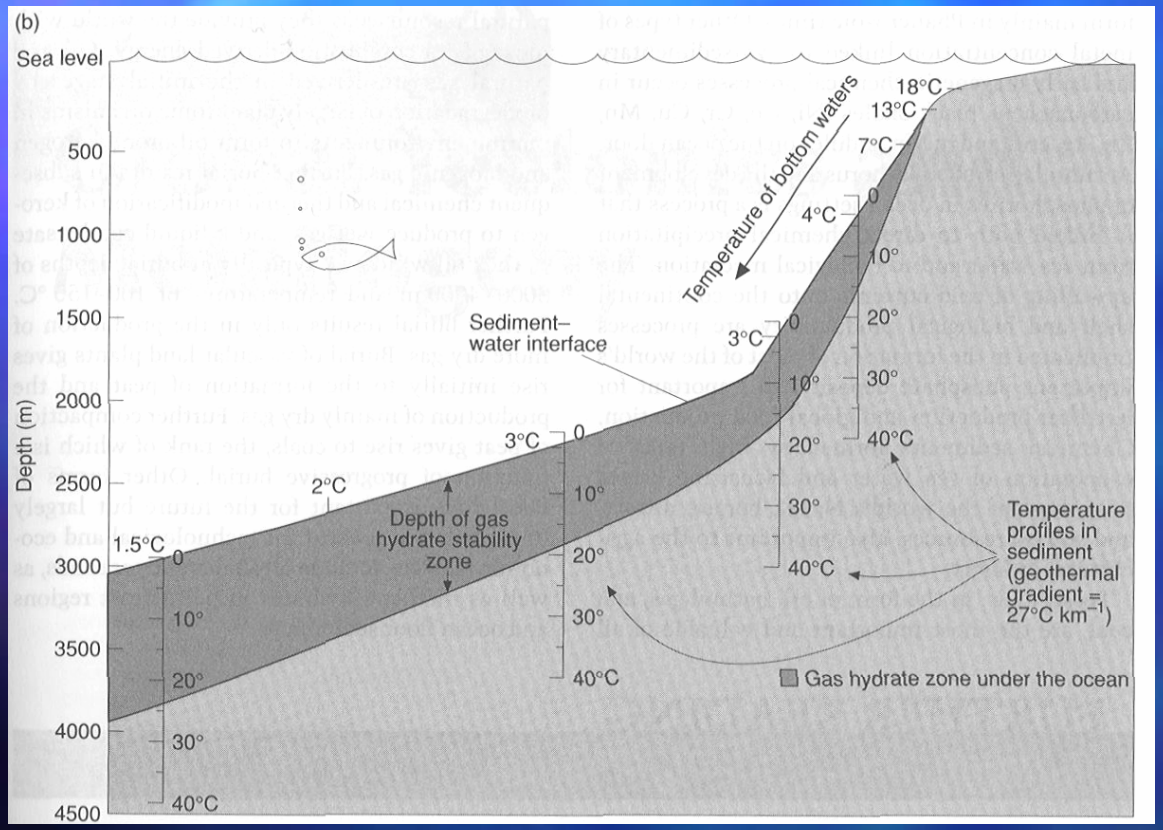


Figure 1 Pressure versus temperature phase diagram for simple methane hydrates.

Stabilita hydrátů CH_4 I.



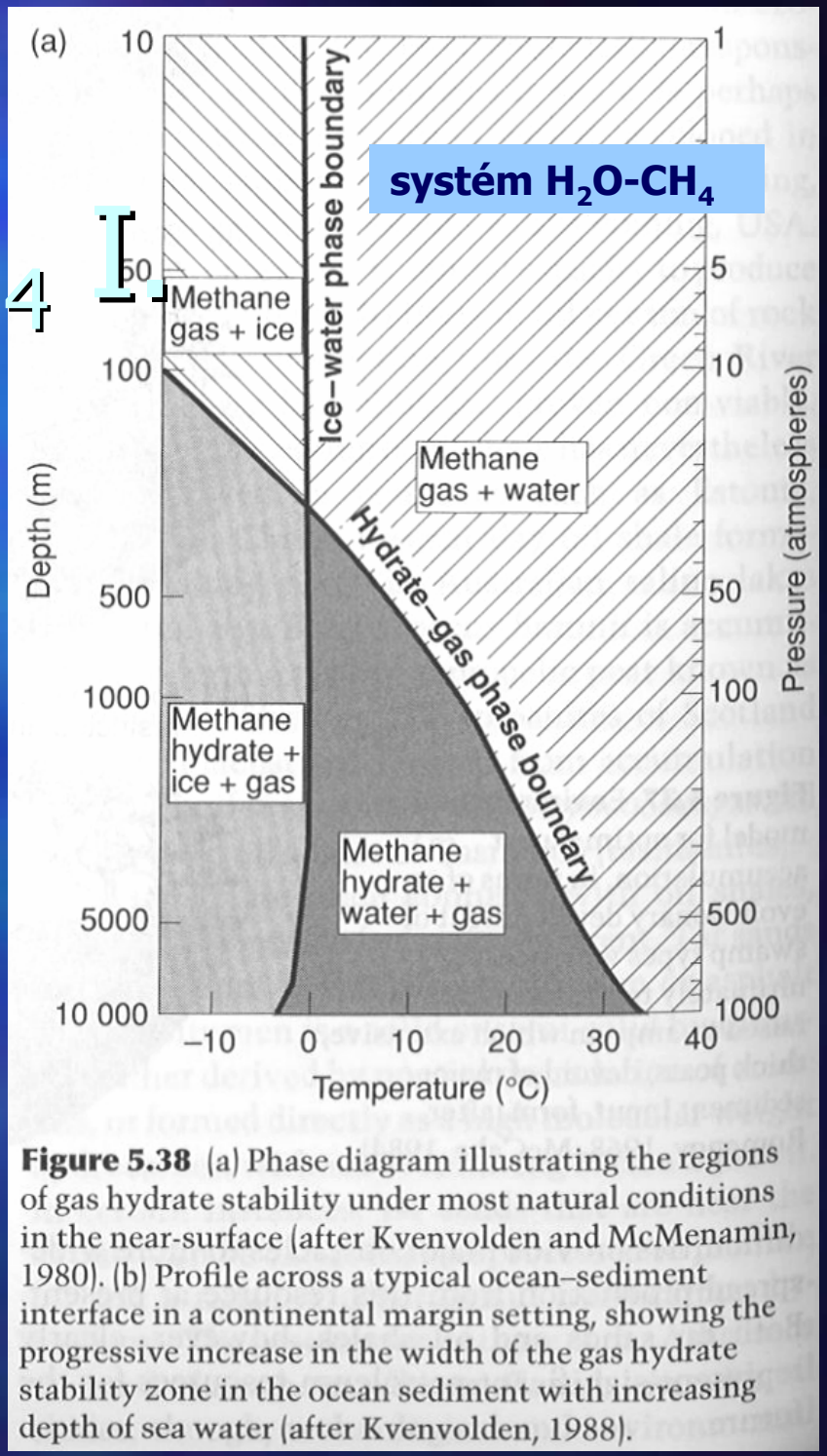


Figure 5.38 (a) Phase diagram illustrating the regions of gas hydrate stability under most natural conditions in the near-surface (after Kvenvolden and McMenamin, 1980). (b) Profile across a typical ocean–sediment interface in a continental margin setting, showing the progressive increase in the width of the gas hydrate stability zone in the ocean sediment with increasing depth of sea water (after Kvenvolden, 1988).

Stabilita hydrátů CH_4

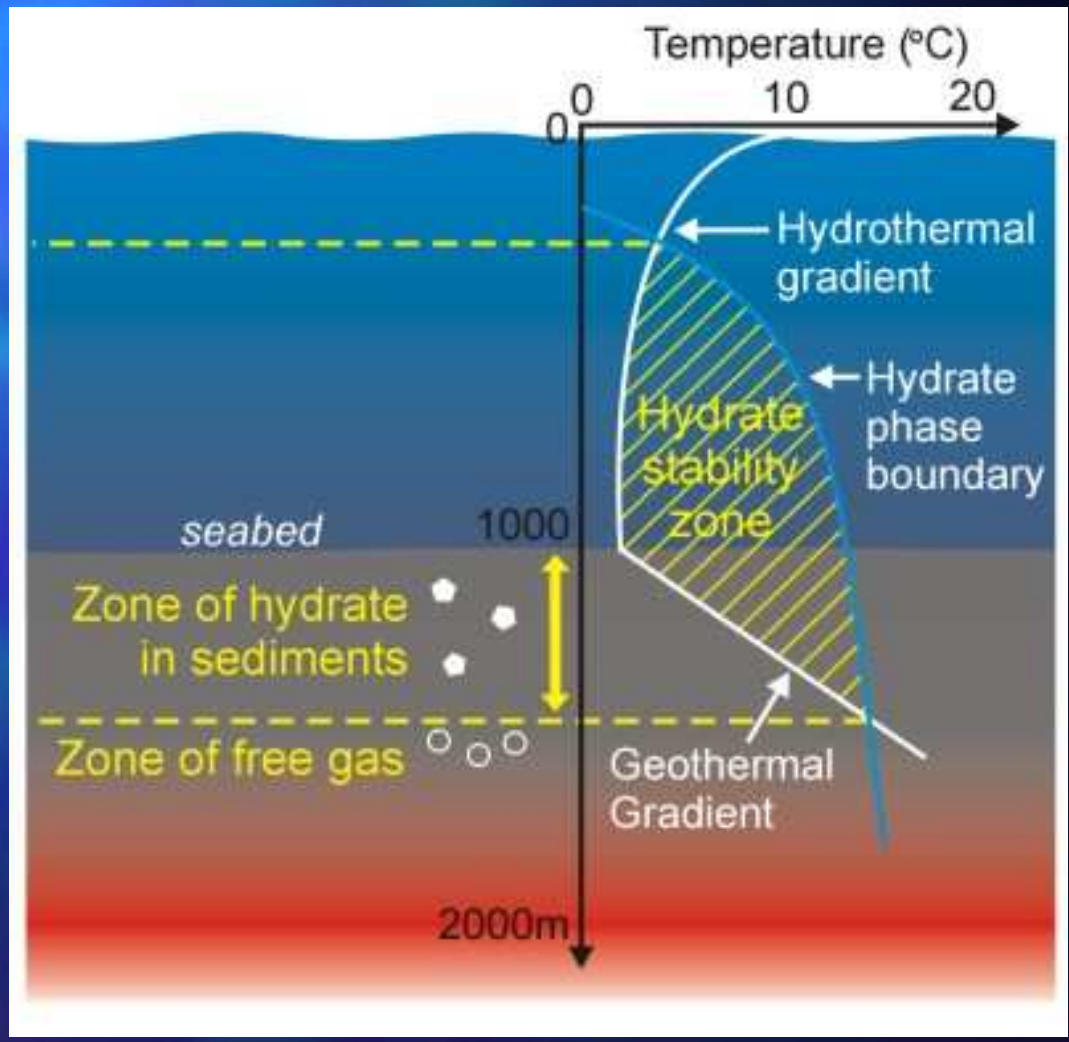
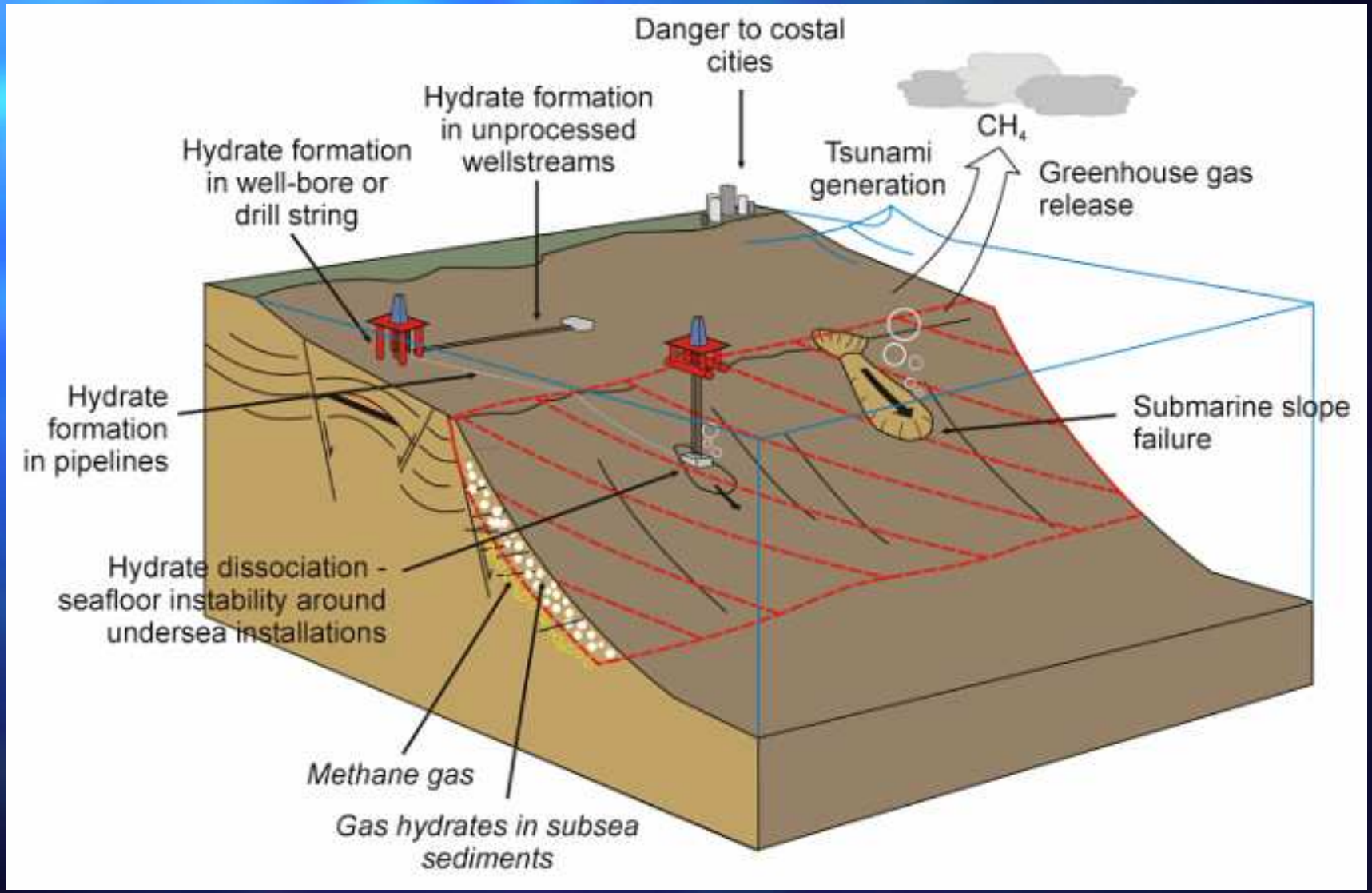


Figure 3 The Hydrate Stability Zone in Subsea Sediments

Pozice a rizika hydrátů CH_4



Hydráty metanu v potrubí

Figure-2 A large gas hydrate plug formed in a subsea hydrocarbon pipeline. Picture from Petrobras (Brazil).

Stabilita sedimentů s hydráty metanu

Figure-3 Potential scenario whereby dissociation of gas hydrates may give rise to subsea slope failure and massive methane gas release.