Résumé du séminaire du 18 janvier 2007

The quantification of gas hydrate and methane gas in marine sediments and in permafrost regions using seismic and well log data

par
Matthias Zillmer, IFM-GEOMAR, Kiel, allemagne

Gas hydrates are ice-like solid substances. They are composed of cages of water molecules which include gas molecules. Methane hydrate occurs in marine sediments at continental margins and in permafrost areas under low temperature and high pressure conditions, if sufficient gas is present.
Gas hydrates are a potential future energy resource. On the other hand methane gas contributes to global warming. The base of the gas hydrate stability zone is indicated in seismic data by a Bottom Simulating Reflector, which separates gas hydrate bearing layers from layers with free gas in the pore space. I discuss the quantification of the amount of gas hydrate and free gas based on seismic data by using the Frenkel-Biot theory of wave propagation in porous media. I use sonic log data from ODP Leg 164 (Blake Ridge offshore Florida) and from the Mallik research well in Canada.
Seismic data from Ocean Bottom Hydrophone and Seismometer (OBH/OBS) surveys in the Black Sea, North Sea (Storegga Slide area offshore Norway) and the Svalbard continental margin are presented.