Biogas generating simulation from source rock and oil in Jiyang Depression, Bohai bay Basin, China

X. LUO, L.H HOU, C.YANG AND J.H WANG

Research Institute of Petroleum Exploration and Development, Beijing, China (luoxia69@petrochina.com.cn, lhhou@petrochina.com.cn, yangchunzs@petrochina.com.cn, 284174762@qq.com)

Bacterium detection is carried out in rocks, which are different types of formation, lithology and depth in Jiyang depression, Bohai bay Basin in this paper. The results are that *methanococcales* are widely existed in different rocks such as mudstone and sandstone and in different formations such as Es_3, Es_1 and Ed formation and in wide depth from 1297 to 2522 meters (the formation temperatures are about 45°C and 80°C). The above results indicate that the living of *methanococcales* only depends on its survival environment and is independent of formation and lithology of rocks. Similar results were got from the characteristics of biogas generating simulation from source rocks and oils. The results are as follows: all kinds of rocks and oils can and only generate CH_4 and CO_2 during simulation. 45°C and 65°C are biogas generating peaks and the productivities are 20-160m^3/t TOC and 10-15m^3/t oil respectively. Carbon isotope compositions of methane ranging between -80.2‰ and -41.5‰ change lighter with simulation temperature rising while carbon isotope compositions of carbon dioxide change heavier. The hydrogen isotope compositions of methane ranging between -300‰ and -350‰ change little but deviation with biogas ranging between -240‰ and -270‰ from gas filed such as Luliang basin in Yunnan province as affected by the geological environment.

Himalayan weathering evolution from LGM to present

MAARTEN LUPKER[1], CHRISTIAN FRANCE-LANORD[1], VALIER GALY[2], JEROME LAVE[1] AND HERMANN KUDRASS[3]

[1]CRPG - 15 rue Notre Dame des Pauvres, 54501 Vandoeuvre, France

[2]WHOI-Department of Marine Chemistry, Woods Hole, MA, USA

[3]Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany

We use the sedimentary record from the Bay of Bengal (BoB) spanning from the Last Glacial Maximum (LGM) to document the weathering intensity in the Himalayan system. These cores record the Himalayan erosion products transported by the Ganga and Brahmaputra (G&B) through their floodplains. The physical setting of the G&B basin remained essentially unchanged over the Quaternary. Therefore, climate change marked by reduced river runoff and lower snowline during the LGM are the main forcing variables in the basin.

We use the classical mobile elements geochemistry but also introduce the less conventional sediment hydration [H_2O^+] and detrital carbonate concentration as weathering tracers. These tracers were first applied to the modern Ganga basin, showing the predominant role of the floodplain in weathering Himalayan sediments. These tracers also highlight that mineral sorting has to be accounted for, to derive a weathering signal from detrital sediments. The BoB sediment record is then compared to the modern system. Source proxies such as Sr and Nd isotopic composition suggest that the G&B balance between both rivers has remained constant since LGM [2]. The evolution of [H_2O^+], [K] and [Carbonates] of the cores, corrected for mineral sorting, shows that the sediments exported by the system during the LGM were significantly less weathered than modern sediments. Reduced monsoon intensity [1, 3] during glacial periods yields lower precipitation, which reduces the overall weathering intensity. Lower discharge and base level likely inhibits river avulsion and limit the reworking of mature, weathered, floodplain sediments. We thus hypothesize that during LGM, river-floodplain interactions were more limited reducing the weathering of Himalayan sediments.

[1] Duplessy (1982) *Nature* **295**, 494–498. [2] Galy *et al*. (2008) *QSR* **27**, 1396–1409. [3] Kudrass *et al*. (2001) *Geology* **29**, 63–66.