

Can submarine fan successions be potential hydrocarbon source rocks?: A review

*Takeshi Nakajima¹

1. Institute for Geo-Resources and Environment, Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology

Turbidites and submarine fan successions constitute major deep-water hydrocarbon reservoirs in the world oil fields. Yet, their potential for hydrocarbon source rocks has never been aware until recently. In this presentation, some cases of modern and ancient submarine fan systems which exhibit potential for hydrocarbon sources are reviewed. Hyperpycnal flows are thought to be particularly important agents to transport terrestrial organic matters to these submarine fan systems. These cases commonly include “rhythmite beds” often associated with inversely to normally graded structures and plant debris. These “rhythmite beds” are interpreted as hyperpycnites and commonly yield relatively high TOC with abundant signatures of land plants. Some ancient cases are actually associated with oil fields and yield high Hydrogen Index (oil-prone). Oil in these cases show abundant biomarkers characteristics in land plants (angiosperm). Hyperpycnites are therefore thought to have high hydrocarbon potential. Further sedimentological, stratigraphic and geochemical approach will be required to quantify how much submarine fan successions can contribute to hydrocarbon sources.

Keywords: submarine fan, hyperpycnite, source rocks, organic carbon, oil