BIO-, MAGNETO-, AND CHEMO- STRATIGRAPHIC INVESTIGATION ON OLIGOCENE/MIOCENE MOLASSE BASIN-FILL FOR IMPROVED PETROLEUM SYSTEM MODELING, SWISS AND SOUTHWEST GERMAN SECTORS

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Abstract

This proposed research project would focus on sedimentation controls on generation of petroleum systems in the northern Alpine Foreland Basin, which encompasses the Swiss and southwest Germany segments. The primary objectives of this research are to (1) estimate accurate sedimentation rates and deposition ages on the Oligocene/Miocene strata, (3) elucidate regional variations in sedimentation rates, and (3) improve the current basin evolution models. This study will use bio-magnetostratigraphy and isotope chronostratigraphy to date the laterally continuous Lower Marine Molasse and Lower Freshwater Molasse exposed in the limbs of the Murnau syncline at the front of the Alpine nappes. Selected outcrops will be logged and interpreted to establish correspondence with other sections. For accurate dating of strata, samples will be collected throughout the sections and analyzed for bio-stratigraphic indexing, natural remanent magnetization, and isotope-geochemistry. Analytical tools for absolute dating of the sections include a thermal ionization mass spectrometer and DC SQUID cryogenic magnetometer. The empirical data generated by this study will further constrain the age structure of the north Alpine Foreland Basin, and settle a longstanding debate concerning time intervals represented in these strata. As such, the results of this study will enable the accurate quantification and dating of economically significant sedimentary processes. Such information is required for efficient and successful exploration and development on conventional and unconventional targets throughout the northern Alpine Foreland Basin.

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