

R/V MARIA S. MERIAN - Project GeoHifi

Weekly Report No. 1

November 9, 2020 – November 15, 2020

MSM97 (GPF 20-3_085), Emden – Emden



Even though the scientific crew went on board RV Maria S. Merian on November 12, our journey started already on November 9 when we checked in in a 'Corona quarantine' Hotel in the city of Leer. We spent three days isolated in single rooms, but provided with good room service, and we have been tested twice for Covid-19. Fortunately, all participants were test negative. Meanwhile our four Containers arrived on board RV Maria S. Merian and the deck crew started already with mobilization of winches and equipment – thank you very much.

Arriving on board, we were welcomed by well-known and new crew members. Thanks to the good preparation work by the deck crew we could finalize most of mobilization work already in port. Next morning at 08:30 h on November 11, RV Maria S. Merian started the cruise leaving Emden port (figure 1). It took 10 hours heading north to reach our working area 'Westschleswig Block' in the German North Sea, 18 nm northwest of Heligoland. During transit, we prepared the labs, set up all instruments and started the first seismic profile already this evening. This was an extremely fast start of reflection seismic measurements thanks to the good preparation of our technicians and the strong support of the crew. Even though weather conditions are demanding (around beaufort 9), we finalized already several profiles (see figure 2).

Within project GeoHifi we investigate the southern part of the 'Westschleswig Block' with high-resolution multichannel 2D reflection seismics, gravimetry, shallow water multibeam echo sounder and sediment echo sounder. We are interested in Cenozoic sedimentation, which took place during the last 65 million years. Especially, barrier formations are in our focus, sediments that act as a seal for fluids and gas due to their petrophysical properties (e.g. clays). However, if those sediment layers are influenced by tectonic processes or salt diapirs, former barrier formations might become leaky and fluids or gas might migrate to the seafloor. Natural gas flares can often be observed in the North Sea. We are interested in the processes, how those distortions are created and how do different fault systems interact. Which faults are still active and which reach the seafloor? The understanding of the fault system and processes is important to evaluate chances and risks of storing fluids and gas in reservoir rocks at depth.

We are all doing well and send our best regards from RV Maria S. Merian!

Greetings on behalf of all cruise participants,

Axel Ehrhardt

(Federal Institute for Geosciences and natural resources (BGR) – Hannover)



Figure 1: Leaving Emden port heading towards the Westschleswig Block – North Sea

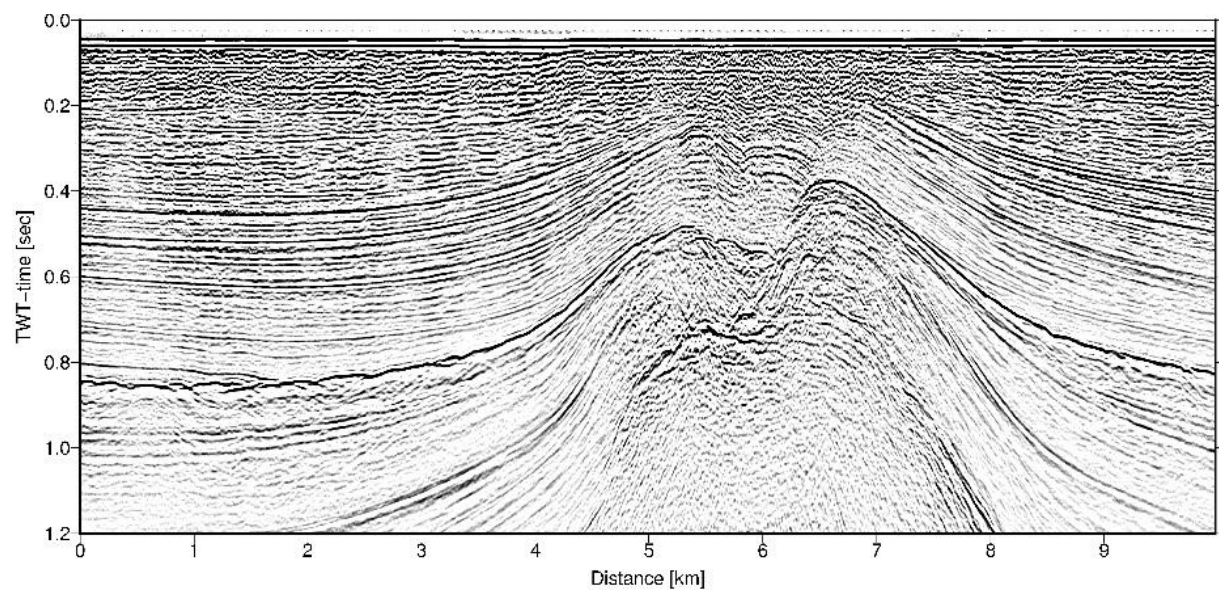


Figure 2: Multichannel seismic section after first draft processing on board picturing the salt block ,Heike'.