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On the Architecture and geological Development of the Mauritania Slide Complex: new Insights from acoustic and high-resolution seismic Imaging.

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Newly acquired Parasound sediment echosounder and high resolution multi-channel seismic reflection data have afforded a more detailed characterisation of the Mauritania Slide Complex than previously reported. The slide has affected an area in the order of 34,000 sq. km lying between the upper slope and the rise, and hence ranks as one of the major slides on the NE Atlantic margin.

The ovate-shaped slide displays a long run-out distance of more than 300 km as a result of higher sediment flow mobility induced in its northern parts by bounding canyon systems and the Cape Verde Rise. In addition, sediment deformation caused by underlying widespread diapiric growths appears to have enhanced quicker disintegration of overlying weaker contouritic deposits as well as pre-existing slide material, thus contributing to increased sediment flow mobility.

The headwall scars commonly occur as a series of steps in seafloor morphology ranging between 25 - 100 m high and within 600 - 2000 m water depths. The seismic data also reveal the presence of several vertically stacked debris flow deposits separated by well-layered sediment intervals within the internal structure of the slide hence suggesting that the stages of slide development have been characterised by multiple failure events. Major sediment failures were likely initiated in areas of low slope inclination, generally less than 2˚, and propagated upslope as retrogressive modes of failure which were facilitated by widespread weak layers.

Excess pore pressures, resulting from decayed organic matter and/or sea level rise,

presumably constitute the most important trigger mechanism for slide formation. Slide development following a major slide event may have been significantly modified by later minor instability events which involved the remobilization of pre-existing debris flows as well as translational sliding induced by underlying diapiric growths. The combined activities of these destabilizing factors are the most likely cause of the complex morphology of the Mauritania Slide Complex.