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
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Settlements in a dynamic fluvial environment – a multi-proxy approach to investigate the landscape history around Kom el-Gir (northwestern Nile Delta, Egypt)

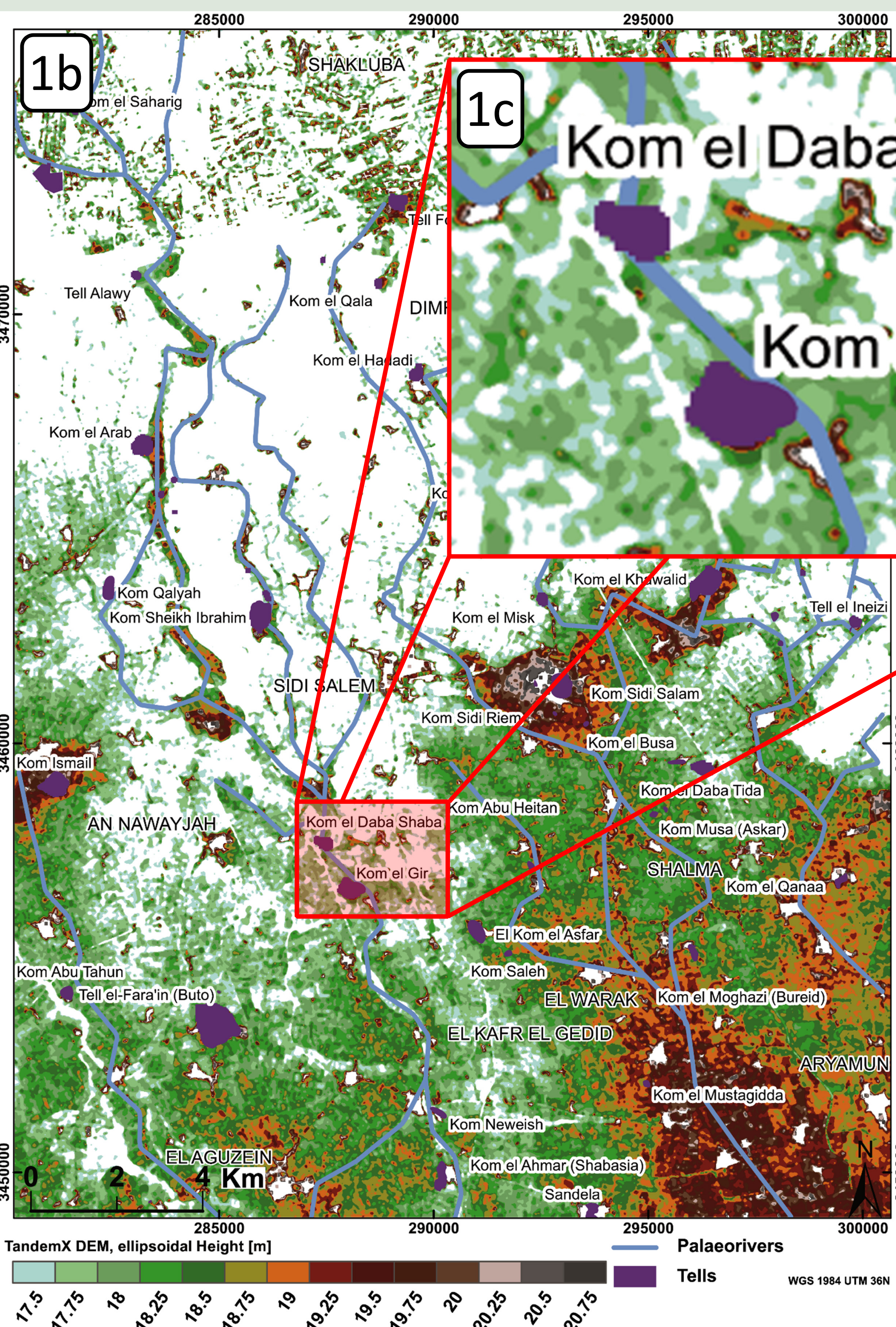
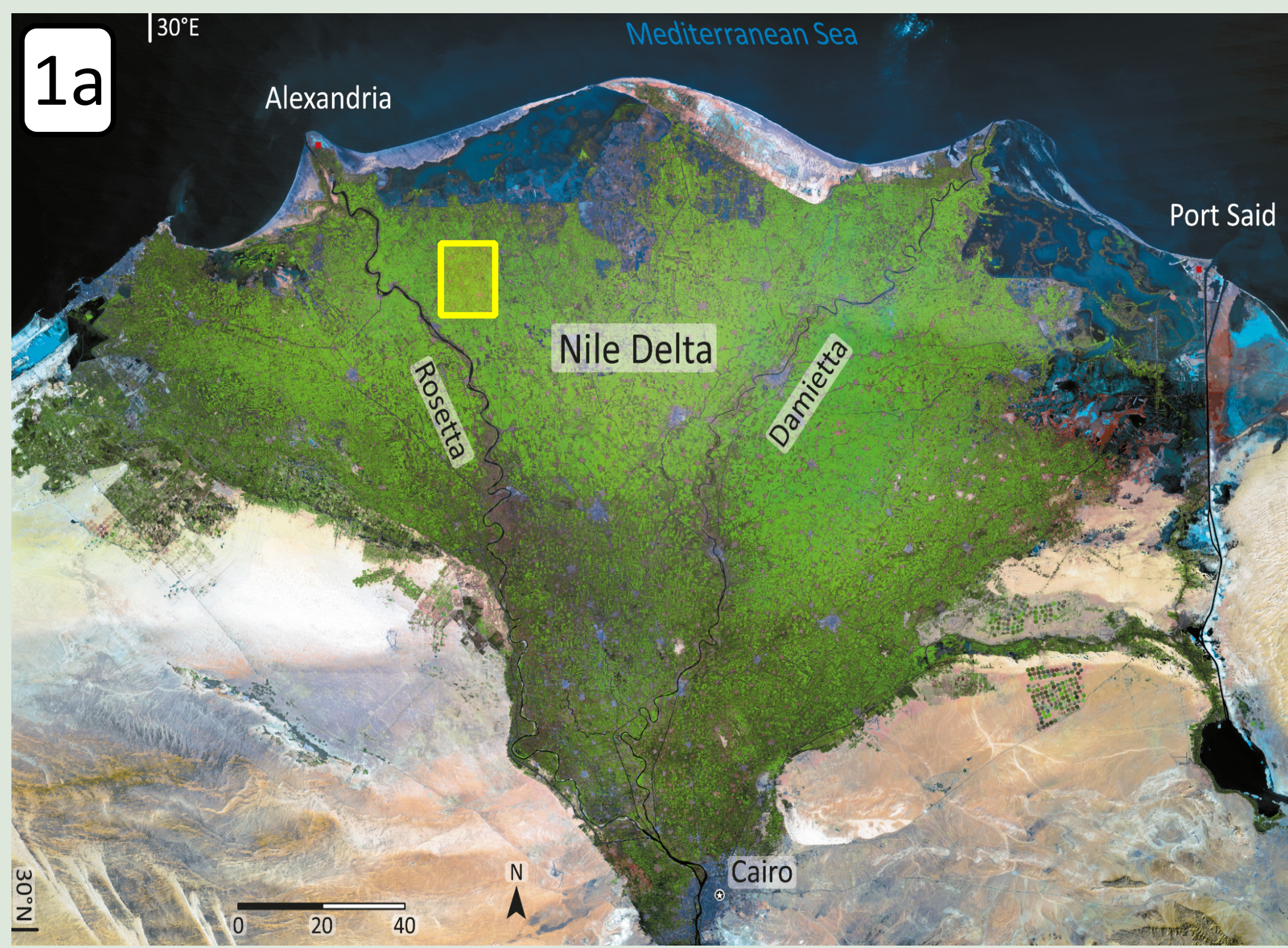


Figure 1: Nile Delta and study area; (a) An overview of the Nile Delta. The location of the wider study area is marked in yellow. (<https://na.unep.net/atlas/webatlas/>); (b) Tandem X DEM of the wider study area. Based on the DEM possible former river courses are filled virtually with water (Ginou et al., 2019; Qi). The study area around Kom el-Gir is marked in red; (c) enlarged study area around Kom el-Gir.

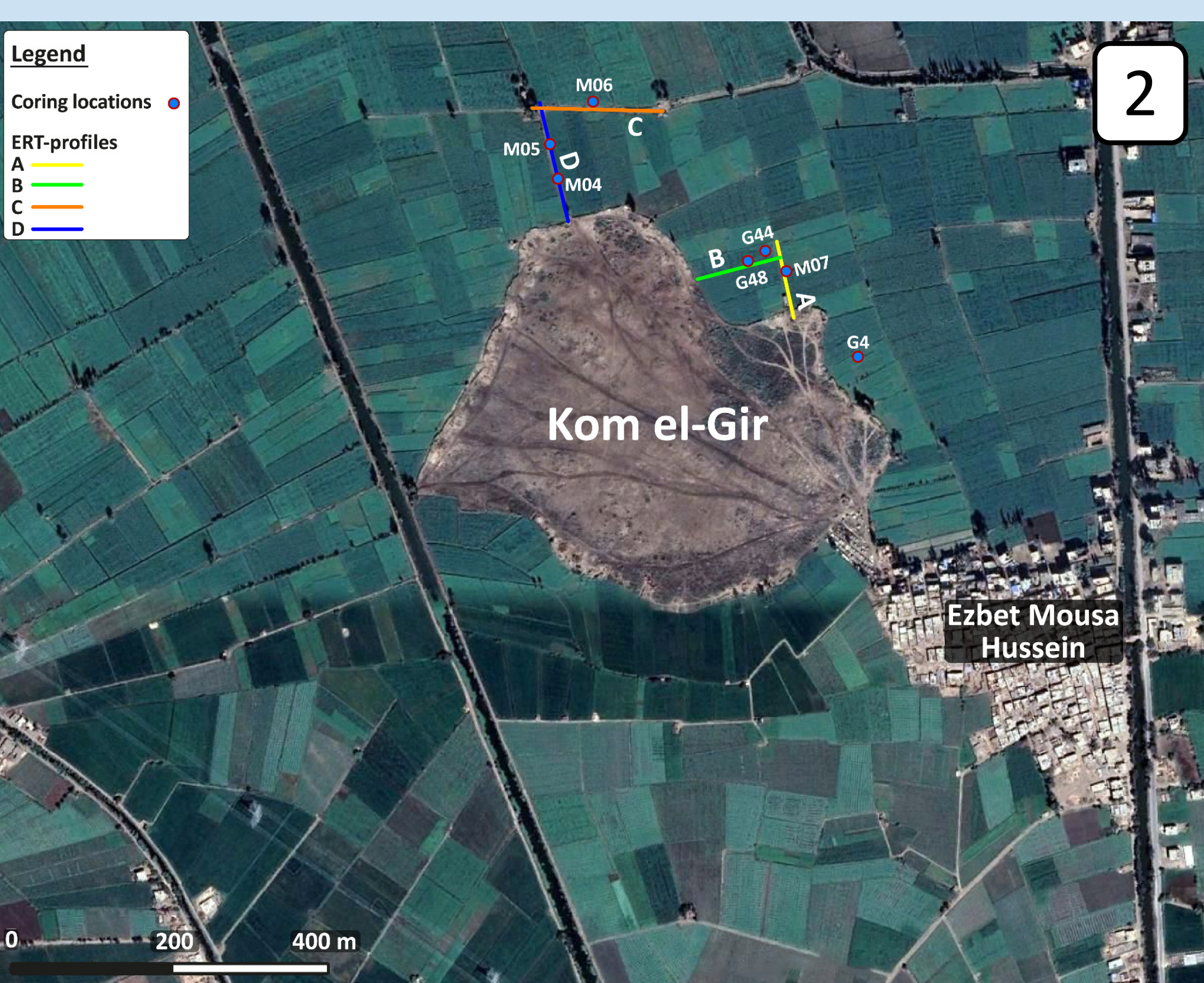


Figure 2: Overview of the area around Kom el-Gir. To check the possible river course in the east of the tell, several corings and altogether four ERT profiles were performed (Google Earth Image April, 1st 2019).

Introduction and Motivation

Settlement activity in the Nile delta is characterised by its profound connection to the branches of the river Nile. Major ancient settlements were founded next to waterways. The constant shifting of these Nile branches – coming either too close or moving too far away – was a fundamental challenge for settlements. This research focuses on the region around Buto (Tell el-Fara'in) and Kom el-Gir in the northwestern Nile delta (**Figs. 1a, b**).

Based on a high-resolution Tandem-X DEM several possible former waterways had been detected. However, their verification is still pending (**Figs. 1b, c**).

Aims

This study presents the first results of the former fluvial landscape around the Kom el-Gir, which was settled between the 4th cent. BC and the 7th cent. AD. A Late Roman fort, the first from the interior of the Delta, was archaeologically verified recently. Based on a multi-proxy approach containing corings and ERT-profiles we aim to prove the assumptions made by the Tandem-X DEM and verify a former river branch of the Nile east of the Kom el-Gir.

First Results and Interpretation

Four ERT-profiles and several corings were performed in the eastern and northeastern area of Kom el-Gir (**Fig. 2**). ERT-profiles A and B (**Fig. 3**) correlates very well with the sedimentary units of corings M07 and G48. Both corings present clayey-silty material in the uppermost 3-4 m which can be associated with the annual flooding of the Nile (**Fig. 4**). The lowermost parts of both corings consist of laminated sands intercalated by silty sections which are linked to a riverine slightly shifting channel. The distribution of the electrical-resistivity measurements presented in **Fig. 3** reflects the sedimentary characteristics. Low values are linked to clayed-silty sediments while higher values occur in the sandy sections of the corings.

Additionally, we analysed the sediments of all corings by XRF which will hopefully back our interpretation of fluvial activity in this area.

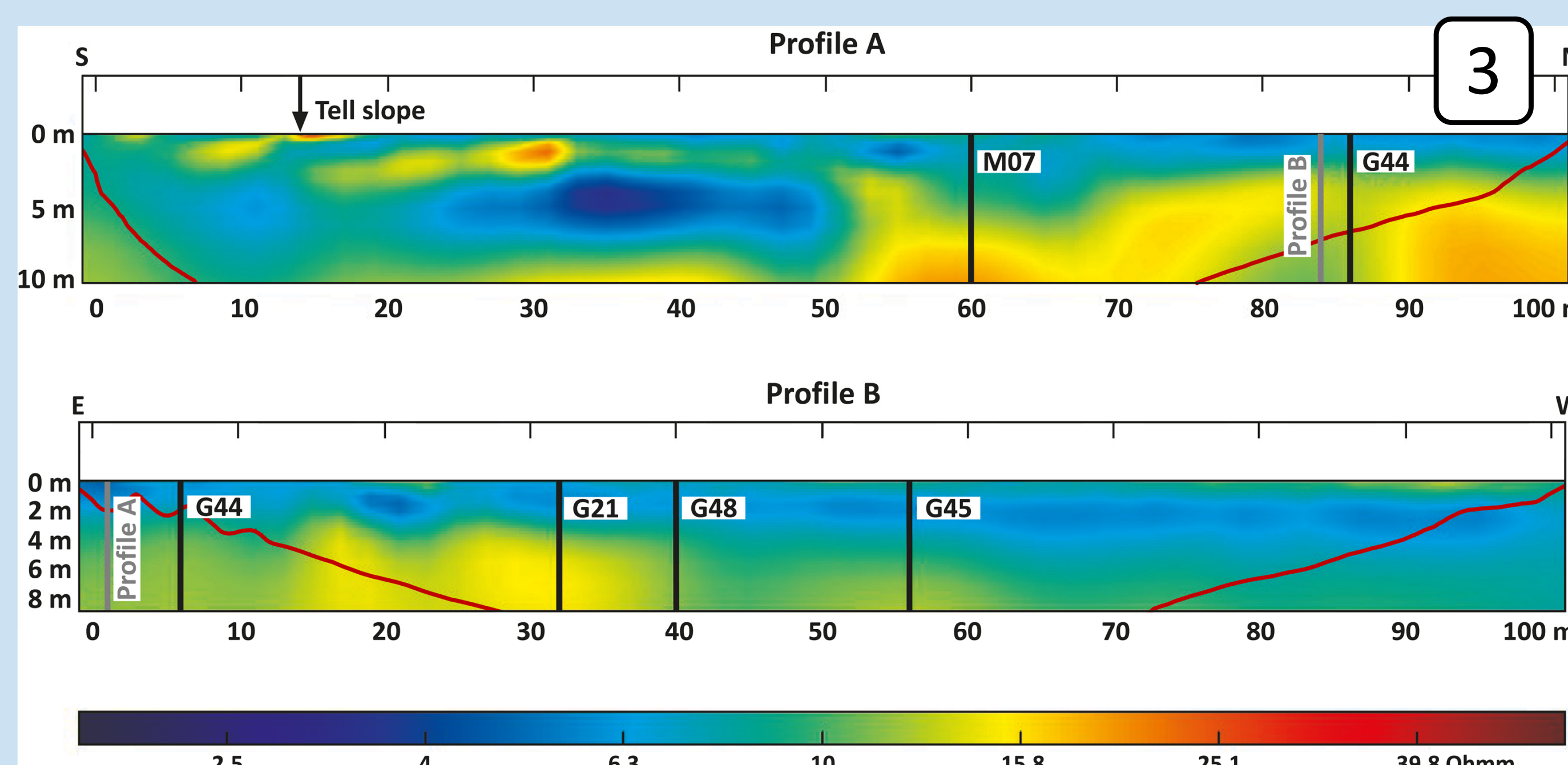


Figure 3: ERT-profiles A and B. For location see **Fig. 2**. The legend is valid for both profiles (the measurements were performed by Victor Nawa and Mona Maier-Rotter; Goethe University Frankfurt).

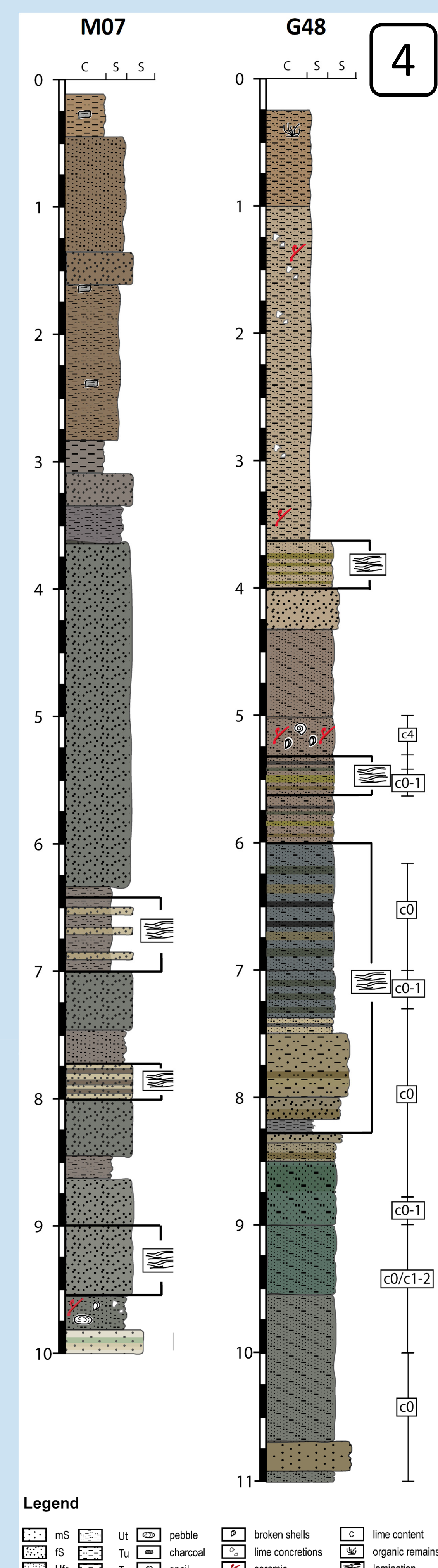


Figure 4: Sedimentary units of cores M07 and G48. For location see **Fig. 2**.