



GEOPHYSICAL AND GEOARCHAEOLOGICAL STUDIES IN THE NORTHERN ATACAMA DESERT AT PALPA-NAZCA, PERU

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Geoarchaeological studies in the northern Atacama desert, focus on the reconstruction of the palaeoenvironmental conditions for the Pre-Columbian cultures in the Palpa-Nazca region, southern Peru. Different geophysical methods were applied to identify archaeological structures in the shallow subsurface. The archaeological site Fundo Jauranga is situated in the river oasis of the Rio Palpa where fine-grained alluvial deposits cover wide parts of the fluvial terraces. Seismic refraction (including raytracing, seismic tomography) was used to locate the boundary between the loose sediments (v_p 200-500 m/s) and the underlying bedrock (v_p about 2500 m/s), which occurs at a depth between 4 and 8 m. By means of various 2D resistivity tomographies, the loose sediments could be further differentiated laterally: Fine-grained sediments, which belong to high-flood events, alternate with more coarse grained sediments of distinctly higher resistivity levels. The results of the resistivity tomographie revealed well-defined areas of higher resistivity (> 1000 Ohmm), which are interpreted as anthropogenic structures (e.g. tombs), enclosed by loam of lower resistivity (< 200 Ohmm). The data match up with the results of the magnetic measurements. Resistivity and magnetic anomalies were recently confirmed by archaeologists as former loam excavation pits.

Our results show, that the combination of geoelectrical and magnetic surveys is exceptionally suitable for archaeological purposes. Magnetic measurements can quickly yield detailed information about very large areas on the basis of which more tightly focused investigations, in terms of resistivity tomographies, can provide precise information about depth and topology of archaeological structures.