Editorial

Tina Wunderlich [1], **Hanna Hadler** [2], **Ruth Blankenfeldt** [3]

1 Institute of Geosciences, Kiel University, Kiel, Germany, tina.wunderlich@ifg.uni-kiel.de
2 Institute of Geography, Johannes Gutenberg University Mainz, Mainz, Germany, hadler@uni-mainz.de
3 Centre for Baltic and Scandinavian Archaeology (ZBSA), Schleswig, Germany, ruth.blankenfeldt@zbsa.eu

The proceedings at hand offer the unique opportunity to collect the latest research in archeological prospection in 90 short articles. Results of measurements, improvements in data processing and visualization in these articles were presented and discussed at the 15th International Conference on Archaeological Prospection (ICAP2023) in Kiel, Germany March 28 – April 1, 2023). All submitted articles, regardless of poster or oral presentation, were subject to peer review. Two reviewers have read and commented the articles and their comments together with a decision of the editorial board were send to the corresponding author. After revision the articles were again checked by the editorial board and accepted for publication provided that the article was improved adequately.

The volume starts with articles from four keynote speakers, presenting the wide range of present-day research in archaeological prospection: (1) shedding light on the mobility patterns of hunter-gatherer groups in Northern Europe, (2) submersible ground penetrating radar (SGPR) providing amazing insights into the depositional structures in lake floor sediments, (3) seismic full-waveform inversion (FWI) enabling imaging of sub-meter scale archaeological objects, and (4) landscape reconstruction in ancient Olympia proving the existence of a so far unknown lake. In addition, in memory of Albert Hesse, a pioneer in archaeological geophysics, who passed away in 2022, one article reflects on his life and achievements.

As the hosting Kiel University also has a focus on marine sciences, a special session on marine and wetland prospection is presented. The respective articles deal with the localization of archaeological objects as well as landscape reconstruction on nowadays silted-up land, tidal flats or shallow water investigations. Numerous geophysical methods can be applied, but partly need adaptations with respect to instrument carriers and processing techniques.

The majority of articles focuses on case studies all over the world. Most of them use several geophysical or remote sensing methods in combination to yield a better characterization of the subsurface. Although naturally they focus on relatively local and site-specific targets, their experiences can also be applied to other sites, which makes this session a valuable contribution to archaeological prospection in general.

In contrast to single archaeological features the investigation of the past environment is the focus of the session on environmental studies and landscape evolution. Naturally, these studies cover larger areas and also have to deal with large amount of data.

New methodological developments and innovations include amongst others a semi-autonomous driverless system, true 3D Electric Resistivity Tomography (ERT) measurements or the investigation of the effect of rain on GPR measurements.

Last but not least, advances in processing and visualization techniques, partly connected with data from case studies are presented. Amongst others, the articles deal with tools for the combination of data from multiple sensors, noise reduction in GPR data, using seismic noise for subsurface imaging or deep learning for automatic hyperbola detection.

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Wolfgang Rabbel, **Ercan Erkul**, **Martin Thorwart**, **Dennis Wilken**, **Tina Wunderlich**
Institute of Geosciences, Kiel University, Kiel, Germany

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We highly acknowledge the reviewing of the articles by the following experts:

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International Society on Archaeological Prospection (ISAP), Portsmouth, United Kingdom

KIEL-UP • DOI: https://doi.org/10.38072/978-3-928794-83-1/p1