

Master Thesis

Visualising Star Dune-Environment Interaction: A Cartographic Approach to Spatio-Temporal Remote Sensing Data

This thesis investigates how multi-temporal satellite observations of star dunes can be transformed into effective cartographic and narrative representations. While remote sensing analysts derive optical and SAR time-series products that describe star dune dynamics and their variability under environmental influences, the focus of this work lies in their interpretation and communication through advanced geovisualization methods. Using high-resolution 3D dune morphology as a spatial framework, the thesis explores how time-dependent geomorphic processes, environmental parameters, and satellite-derived indicators can be integrated into coherent cartographic designs and story map formats. The research aims to develop and evaluate visual strategies for spatiotemporal mapping, visual analytics, and narrative geocommunication that support understanding of star dune-environment interactions. Thus, the thesis will contribute novel cartographic and visual-analytics strategies that enhance the interpretability of remote sensing-derived process information, providing transferable design principles and workflows for spatiotemporal communication in environmental and geomorphological applications.

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