

QATAR GEOLOGICAL MAPPING PROJECT

PHASE II

NEWSLETTER

20/08/2025

Welcome to the Third Edition of the Qatar Geological Mapping Project – Phase II Newsletter! We're excited to share the latest updates and milestones achieved between January and July 2025, showcasing the continued progress and accomplishments of the project.

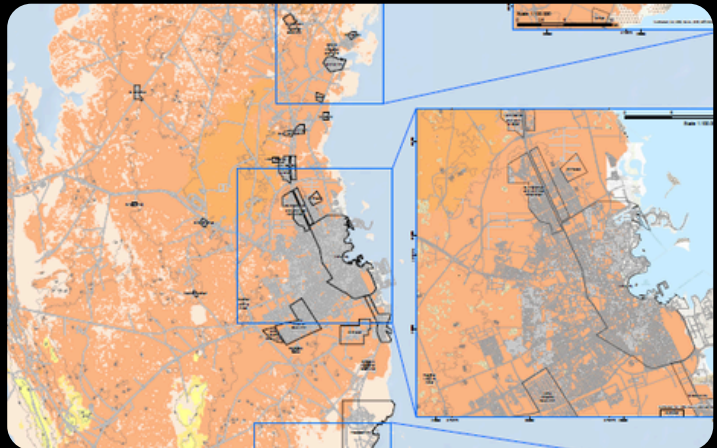
Coordination Meetings Held to Align Project Efforts

During the period from 29 January 2025 to 29 July 2025, a series of technical and administrative meetings were conducted between project partners and MM. These sessions focused on aligning efforts, reviewing progress, and ensuring effective coordination throughout the project.



REMOTE SENSING MAPPING COMPLETED FOR QATAR PENINSULA

The final remote sensing geological maps at a scale of 1:100,000 for the entire Qatar Peninsula, and at scales of 1:50,000 and 1:20,000 for the detailed geological mapping of selected critical areas, have been successfully prepared and delivered to Ministry of Municipality.



Highlighting Qatar's Geological Innovations at ESA Living Planet 2025

Participation in the ESA Living Planet Symposium, held from 23 to 27 June 2025 in Vienna, Austria, was successfully completed, where two posters presentations and one oral presentation were prepared and delivered, showcasing the application of high-resolution satellite imagery and advanced InSAR techniques for geological mapping and country-wide surface deformation analysis within the Qatar Geological Mapping Project – Phase II.



Reading the Rocks: Field Teams Trace Qatar's Geologic Story

Task-3(Geological Mapping program) teams conducted extensive field visits over the past six months, covering most of Qatar for geological mapping. Activities included bedding plane and fault measurements, sinkhole investigations, and a joint field work with QHAP and MM. Key visits included Qatar National Cement Company, karst features, southern Qatar depressions, and a subsiding building in Doha. The structural geology and karstology teams also carried out a fieldwork trip to Saudi Arabia. In addition, the current drilling core samples were examined with detailed lithological logging. During surface mapping, over 329 rock samples were collected across Qatar for geological study. Thin sections were prepared for detailed petrographic and paleontological analyses. So far, 44 surface samples have been sent for geochemical analyses (both XRD and XRF) at MTA laboratories in Ankara, Türkiye. Approximately 30–35% of the thin-section analyses have been completed to date, with work ongoing.



Ongoing Borehole Drilling Across Multiple Depths



Subsurface drilling commenced on April 4 and is currently underway with four rigs operating across shallow, medium, and deep boreholes. To date, a total of 29 boreholes have been drilled, comprising 22 shallow, 4 medium, and 3 deep boreholes, with drilling activities ongoing. Additionally, 153 hydraulic conductivity (Packer) tests have been performed within these boreholes to assess subsurface conditions. Geophysical well logging has also been completed in all 29 boreholes to gather detailed formation data. Core samples obtained during drilling are securely stored at the QGEC laboratory. Furthermore, Kahramaa has issued the necessary Decommissioning Permit, and backfilling operations are currently being completed in full compliance with regulatory requirements.

SCANNING THE GROUND RIGHT: WHAT HAPPENS BEFORE WE DRILL??

A Ground Penetrating Radar (GPR) survey was conducted prior to drilling to detect underground utilities and prevent cable damage. GPS technology was also used to accurately determine the locations of shallow, medium, and deep boreholes, ensuring safe and precise drilling operations.



GEOPHYSICAL SURVEY

The geophysical survey began with microgravity measurements at the Al Sailya sinkhole in May 2025, covering approximately 60,800 m². The same technique was applied at Dahl Mudhleim cave and Al Jumayliyah sinkholes 1 and 2, covering around 63,000 m², 27,500 m², and 27,300 m², respectively, using a 5m x 10m station grid.

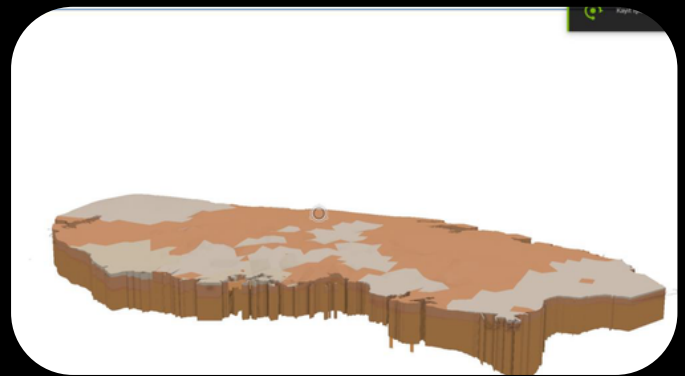
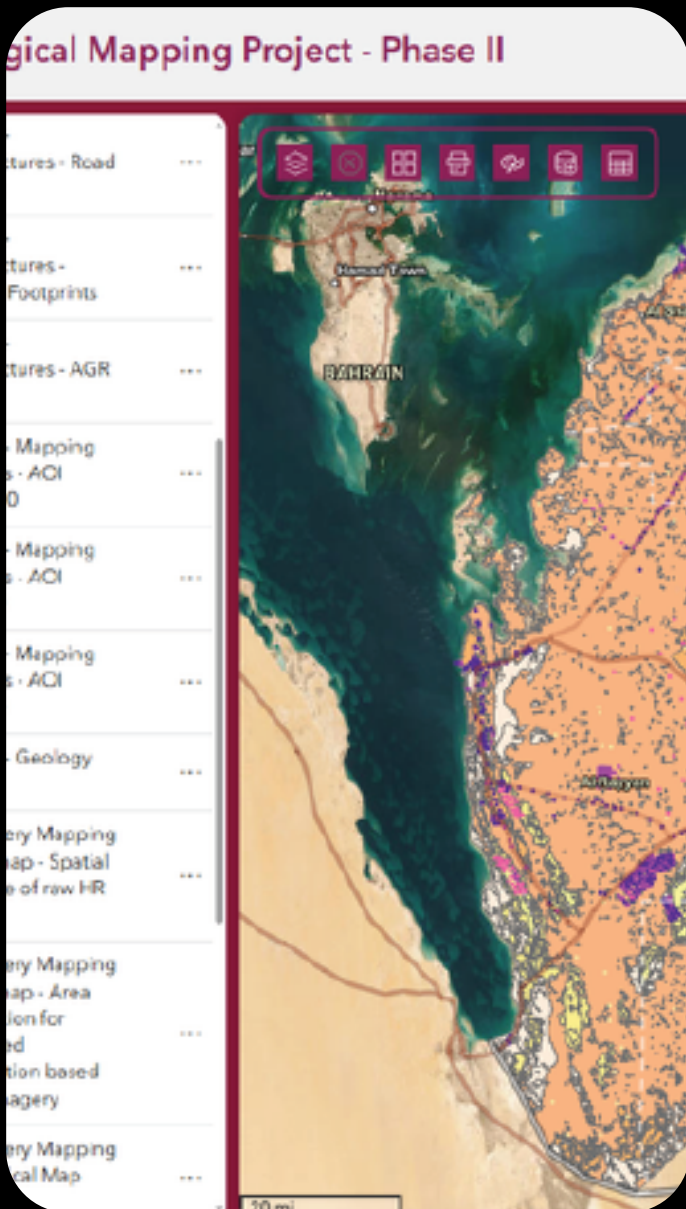


QGMP II- GEOPORTAL

The Geoportal team continues to make strong progress in system development. Efforts have focused on organizing and verifying borehole data from multiple sources to ensure accurate integration into the Geoportal. This work has included close collaboration with Task 6 to enhance the management and visualization of 3D data. Additionally, the team has reviewed new datasets and worked to improve the quality of existing information.

DEEP INSIGHTS: TURNING BOREHOLE DATA INTO 3D VISION

3D geological model developed using verified deep well data. A preliminary model design has been completed based on data from Phase I, focusing on boreholes deeper than 50 meters. The model was created using the following data inputs: digital elevation model (DEM), geological maps (lithological units), points of boreholes, and data from boreholes (drill logs). In parallel, three separate geotechnical models are being developed for Doha, Al Khor, and Al Wakra-Mesaieed based on shallow borehole data.



QGMP II -BOOKLET

The hard copy booklet is finalized, effectively outlining the project's scope, objectives, and highlighting the significance of QGMP II to ensure all stakeholders are well-informed.

