Onur Karaca

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SUMMARY

Geospatial specialist with 6+ years in GIS, remote sensing using InSAR and hyperspectral imaging, and seismic operations across environmental, geological, and energy sectors. Experienced in Python-driven automation and advanced data visualization. Two years in land seismic acquisition and three years in marine seismic for oil and gas exploration. Current Ph.D. in Geology candidate with **Permanent Resident Status** (Green Card holder) committed to returning to industry. Open to relocation and fully authorized to work in the U.S. without any restrictions.

EDUCATION

PhD, Geology, University of Houston, Houston, TX **Expected Dec 2026**
Thesis Topic: Application of GIS and Remote Sensing Techniques for Environmental and Geospatial Analysis

MS, Geology, University of Houston, Houston, TX **Dec 2021**
Thesis: Neotectonic Study of The Sibi Re-Entrant

MS, Geology, Cukurova University, Adana, Turkey **May 2015**
Thesis: Determination of Sweep Parameters by Using Vibroseismic Source in Geothermal Research

BS, Geophysics, Dokuz Eylul University, Izmir, Turkey **Jan 2011**

WORK EXPERIENCE

Graduate Teaching Assistant **August 2024 – Present**
University of Houston, Department of Earth and Atmospheric Sciences

- Collaborate on the Texas Water Development Project: analyze water quality via hyperspectral and multispectral satellite and drone imagery.
- Estimated total suspended solids using band ratios, regression, and machine learning tools across ArcGIS Pro, ENVI, Python and Machine Learning.
- Automated satellite image preprocessing, classification, and index generation using ArcGIS and custom Python scripts.
- Instructed GIS and remote sensing labs, guiding 60+ students in spatial analysis and geospatial workflows using ArcGIS Pro.

Remote Sensing & GIS Expert **Feb 2021 – August 2024**
MTA – Directorate General of Mineral Research and Exploration

- Produced geological and thematic maps over extensive regions in Turkey – involving digitization, georeferencing, and advanced spatial analysis using ArcGIS Pro.
- Performed InSAR-based deformation assessments (Sentinel-1, ALOS-PALSAR) for tectonic stability studies.
- Integrated remote sensing and GIS data to enhance environmental monitoring and mineral resource evaluations.
- Automated geospatial workflows using ArcPy and custom Python tools, reducing overall processing time.
- Engineered scalable GIS solutions with ModelBuilder and Python, enabling repeatable spatial analysis pipelines.

Research Scientist, Remote Sensing & GIS **Jan 2020 – Jan 2021**
University of Houston

- Processed a large stack of Sentinel-1 SAR imagery to generate numerous interferograms for SBAS-PS InSAR analysis, enabling the detection of subtle ground deformation patterns.
- Enhanced InSAR accuracy by integrating GPS measurements, supporting the generation of high-resolution deformation maps at the Braskem site in Brazil for monitoring subsidence and sinkhole activity.

Marine Geophysicist **May 2015 – Oct 2017**
Dokuz Eylul University Seismic Laboratory

- Led marine surveys involving both 2D seismic operations and sparker profiling, along with multibeam bathymetry data collection, to map seafloor and sub-seafloor structures.
- Contributed to the Black Sea Natural Gas Hydrate Project and TÜBİTAK-sponsored research, generating analytical reports and interpreting results.
- Processed and interpreted seismic datasets using Kingdom Suite, Petrel, and ProMax to identify geological features.
- Managed survey operations—equipment setup, daily/monthly testing, troubleshooting, and maintenance—to maintain continuous data acquisition.
- Operated workboats to support field surveys and assisted the Chief Observer in preparing detailed technical reports and documentation.

Geophysics Engineer, Junior Observer **Jan 2013 – May 2015**
Guney Yildizi Oil Production Co.

- Monitored and optimized Sercel 428XL seismic acquisition systems to ensure consistent, high-quality data collection.
- Calibrated and controlled Vibroseis source parameters (e.g., sweep frequency, amplitude) to meet field objectives.
- Operated, troubleshooted, and maintained all recording instruments—configuring parameters, conducting repairs, and ensuring reliable data backups.
- Supervised 50+ crew operations, providing mentorship and ensuring adherence to safety protocols and recording standards.

SKILLS AND CERTIFICATIONS

GIS	ArcGIS Pro, ArcMap, ArcGIS Online, ArcPy, DJI Terra, ModelBuilder, ENVI, Hyperspectral Imaging, Multispectral Analysis, Remote Sensing, InSAR (SBAS, PS), Sentinel-1, Sentinel-2, Alos-PALSAR, Landsat, MODIS, PRISMA, EnMAP, PACE,
Oil and Gas	Kingdom Suite, Petrel, ProMax, Sercel 428XL, 2D Sparker Seismic Data, Multibeam Bathymetry Data, Vibroseis
Programming	Python, Google Earth Engine, ModelBuilder, ArcPy scripting, GDAL, raster and vector processing, geospatial workflow automation
Software	CorelDraw, Global Mapper, MS Office Suite, Adobe Illustrator, WordPress
Certifications	**University of Houston – Geographical Information Systems (GIS) Certification** **ArcGIS Pro Foundation 2101 by ESRI, Jan 2025** 100 days of code : The complete Python Bootcamp (Udemy), June 9, 2025 Geospatial Data Science with Python: Data Visualization by Udemy, Jan 2024 Advanced SAR Training by Udemy, June 2024 Complete Remote Sensing Image Analysis with ENVI Software, Dec 2021

PUBLICATIONS

- **Karaca, Sukru O.**, Ismail A. Abir, Shuhab D. Khan, Erman Ozsayın, and Kamil A. Qureshi. 2021. Neotectonics of the Western Suleiman Fold Belt, Pakistan: Evidence for Bookshelf Faulting Remote Sensing 13, no. 18: 3593. https://doi.org/10.3390/rs13183593
- **Karaca, Sukru O.**, Erten G., Yimaz B. and Ozalp S., 2023. DInSAR analysis and geophysical modeling of 2022 November 23 Gölyaka-Düzce Earthquake, Turkish Journal of Earth Sciences. https://doi.org/10.55730/1300-0985.1906
- **Karaca, Sukru O.**, Erten G., Ergintav S. and Khan D. Shuhab, 2023. Anthropogenic problems threatening major cities: Largest surface deformations observed in Hatay, Turkey based on SBAS-InSAR. Mineral Research and Exploration Bulletin. https://dergi.mta.gov.tr/article/show/2773.html
- **Karaca, Sukru O.**, Erten G. 2023. DInSAR and Elastic Dislocation Modelling: A Case Study For The 24 January 2020 Elazig-Sivrice Earthquake, Turkish Journal of Remote Sensing. https://doi.org/10.51489/tuzal.1187819
- Dondurur D., **Karaca O.** and Nasıf A., Preliminary Results from Acoustic Survey Offshore Kefken, Southwestern Black Sea Margin, European Geosciences Union General Assembly 2017, 23–28 April, Vienna-Austria http://adsabs.harvard.edu/abs/2017EGUGA..1912036D
- Khan, S., Leslie, M., Shahtakhtinskiy, A., Muhammad, Y., Collier, L., Greer, P., **Karaca, S.O.** Impact of Hurricane Beryl on Texas Coast Beach-Dune Systems: Monitoring Changes via Drone-Based LiDAR and Multispectral Surveys - Science of the Total Environment. https://www.sciencedirect.com/science/article/abs/pii/S0048969725009556?via%3Dihub
- Younas, M., Khan, S., Tirmizi, O., **Karaca, S.O.,** InSAR integrated with geospatial deep learning for land subsidence monitoring in the Gulf Coast of Texas, United States (In Review)