

## Assoc. Prof. Özkan Kale

### Personal Information

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### International Researcher IDs

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### Biography

Özkan Kale is a faculty member at the Department of Civil Engineering at the TED University. He received his B.Sc. (2005) from Dokuz Eylül University, and M.Sc. (2009) and Ph.D. (2014) in Structural Engineering from Middle East Technical University. Dr. Kale worked as a research associate at the Department of Earthquake Engineering, Bogazici University Kandilli Observatory and Earthquake Research Institute in 2015, and at the Department of Civil and Environmental Engineering, Rice University in 2016.

Dr. Kale has over 10-year academic experience in Earthquake Engineering and Engineering Seismology. The main research interests of Dr. Kale are earthquake response and design spectra, ground motion data processing, development and testing of ground motion predictive models, probabilistic seismic hazard analysis, and uncertainties in ground motion parameters for seismic evaluation of structures. He has been involved as a researcher, principal investigator or consultant to various national and international seismic hazard projects.

### Education Information

Doctorate, Middle East Technical University, Turkey 2010 - 2014

Postgraduate, Middle East Technical University, Turkey 2006 - 2009

Undergraduate, Dokuz Eylül University, Turkey 2000 - 2005

### Academic Titles / Tasks

Associate Professor, TED University, Faculty of Engineering, Department of Civil Engineering, 2017 - Continues

Research Assistant, Rice University, Civil and Environmental Engineering, 2016 - 2017

Research Assistant, Bogazici University, Earthquake Engineering, 2015 - 2016

Research Assistant, Middle East Technical University, Civil Engineering, 2010 - 2014

### Academic and Administrative Experience

Head of Department, TED University, Graduate School, Civil Engineering, 2023 - Continues

BAP Scientific Commissioner, TED University, Faculty Of Engineering, Department Of Civil Engineering, 2023 - Continues

Engelli Öğrenciler Komisyonu, TED University, Faculty Of Engineering, Department Of Civil Engineering, 2023 - Continues  
Assoc. Prof., TED University, Civil Engineering, 2019 - Continues  
Asst. Prof., TED University, Civil Engineering, 2017 - 2019

## Courses

Master's Thesis II, Postgraduate

Fundamentals of Steel Design, Undergraduate, 2023 - 2024, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019

Structural Analysis, Undergraduate, 2023 - 2024, 2022 - 2023, 2018 - 2019, 2017 - 2018

Engineering Mechanics I, Undergraduate, 2023 - 2024, 2021 - 2022, 2017 - 2018

Introduction to Probability and Statistics for Engineers, Undergraduate, 2022 - 2023

Introduction to Mechanics of Materials, Undergraduate, 2022 - 2023, 2020 - 2021, 2019 - 2020, 2018 - 2019, 2016 - 2017

Earthquake Engineering, Postgraduate, 2021 - 2022

Civil Engineering Design, Undergraduate, 2022 - 2023, 2021 - 2022, 2020 - 2021, 2019 - 2020

Introduction to Earthquake Resistant Design, Undergraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019

Structural Dynamics, Postgraduate, 2021 - 2022

Introduction to Mechanics of Materials, Undergraduate, 2020 - 2021, 2019 - 2020, 2018 - 2019

Numerical Methods in Engineering, Undergraduate, 2017 - 2018

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Engineering attributes of ground motions from February 2023 Türkiye earthquake sequence**  
Buckreis T. E., Pretell R., Sandikkaya M. A., Kale Ö., ASKAN GÜNDOĞAN A., Brandenburg S. J., Stewart J. P.  
Earthquake Spectra, vol.40, no.4, pp.2268-2284, 2024 (SCI-Expanded)
- II. **A simulation-based regional ground-motion model for Western Türkiye**  
SANDIKKAYA M. A., Akkar S., Kale Ö., Yenier E.  
Bulletin of Earthquake Engineering, vol.21, no.7, pp.3221-3249, 2023 (SCI-Expanded)
- III. **The Samos Island (Aegean Sea) M7.0 earthquake: analysis and engineering implications of strong motion data**  
Askan A., GÜLERCE Z., Roumelioti Z., Sotiriadis D., Melis N. S., Altindal A., Akba B., Sopaci E., Karimzadeh S., Kalogeras I., et al.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.20, no.14, pp.7737-7762, 2022 (SCI-Expanded)
- IV. **A procedure to develop a backbone ground-motion model: A case study for its implementation**  
Akkar S., Kale Ö., SANDIKKAYA M. A., Yenier E.  
EARTHQUAKE SPECTRA, vol.37, no.4, pp.2523-2544, 2021 (SCI-Expanded)
- V. **Impact of rupture-plane uncertainty on earthquake hazard: observations from the 30 October 2020 Samos earthquake**  
Akkar S., Caglar N. M., Kale Ö., Yazgan U., SANDIKKAYA M. A.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.19, no.7, pp.2739-2761, 2021 (SCI-Expanded)
- VI. **A new formulation for a code-based vertical design spectrum**  
Kale Ö., Akkar S.  
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS, vol.49, no.10, pp.963-980, 2020 (SCI-Expanded)
- VII. **Evaluation of the epistemic uncertainty in fragility analysis depending on the ground motion dataset and intensity measure**  
Kale Ö.  
JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.34, no.4, pp.2125-2140, 2019 (SCI-Expanded)
- VIII. **Some Discussions on Data-Driven Testing of Ground-Motion Prediction Equations under the Turkish**

## Ground-Motion Database

Kale Ö.

JOURNAL OF EARTHQUAKE ENGINEERING, vol.23, no.1, pp.160-181, 2019 (SCI-Expanded)

- IX. **Evolution of seismic hazard maps in Turkey**  
Akkar S., Azak T., ÇAN T., Ceken U., Tumsa M. B. D., Duman T. Y., Erdik M., Ergintav S., Kadirioglu F. T., Kalafat D., et al.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.16, no.8, pp.3197-3228, 2018 (SCI-Expanded)
- X. **The 2014 seismic hazard model of the Middle East: overview and results**  
Sesetyan K., Danciu L., Tumsa M. B. D., Giardini D., Erdik M., Akkar S., Gulen L., Zare M., Adamia S., Ansari A., et al.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.16, no.8, pp.3535-3566, 2018 (SCI-Expanded)
- XI. **Ground-motion characterization for the probabilistic seismic hazard assessment in Turkey**  
Akkar S., Kale Ö., YAKUT A., Ceken U.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.16, no.8, pp.3439-3463, 2018 (SCI-Expanded)
- XII. **The 2014 Earthquake Model of the Middle East: ground motion model and uncertainties**  
Danciu L., Kale Ö., Akkar S.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.16, no.8, pp.3497-3533, 2018 (SCI-Expanded)
- XIII. **Erratum to: A model for predicting vertical component peak ground acceleration (PGA), peak ground velocity (PGV), and 5% damped pseudospectral acceleration (PSA) for Europe and the Middle East (Bulletin of Earthquake Engineering, (2017), 15, 7, (2617-2643), 10.1007/s10518-016-0063-9)**  
Çağnan Z., Akkar S., Kale Ö., Sandikkaya A.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.15, no.12, pp.5623-5624, 2017 (SCI-Expanded)
- XIV. **A Study Depending on the Probabilistic Seismic Hazard Analyses for Design Spectrum Parameters**  
Kale Ö.  
TEKNIK DERGI, vol.28, no.4, pp.8077-8103, 2017 (SCI-Expanded)
- XV. **A ground motion prediction equation for novel peak ground fractional order response intensity measures**  
Kale Ö., Padgett J. E., Shafieezadeh A.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.15, no.9, pp.3437-3461, 2017 (SCI-Expanded)
- XVI. **A Ground-Motion Logic-Tree Scheme for Regional Seismic Hazard Studies**  
Kale Ö., Akkar S.  
EARTHQUAKE SPECTRA, vol.33, no.3, pp.837-856, 2017 (SCI-Expanded)
- XVII. **A model for predicting vertical component peak ground acceleration (PGA), peak ground velocity (PGV), and 5% damped pseudospectral acceleration (PSA) for Europe and the Middle East**  
Cagnan Z., Akkar S., Kale Ö., SANDIKKAYA M. A.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.15, no.7, pp.2617-2643, 2017 (SCI-Expanded)
- XVIII. **A Ground-Motion Predictive Model for Iran and Turkey for Horizontal PGA, PGV, and 5% Damped Response Spectrum: Investigation of Possible Regional Effects**  
Kale Ö., Akkar S., Ansari A., Hamzehloo H.  
BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, vol.105, no.2A, pp.963-980, 2015 (SCI-Expanded)
- XIX. **Reply to "Comment on 'A New Procedure for Selecting and Ranking Ground-Motion Prediction Equations (GMPEs): The Euclidean Distance-Based Ranking (EDR) Method' by Ozkan Kale and Sinan Akkar" by Sum Mak, Robert Alan Clements, and Danijel Schorlemmer**  
Akkar S., Kale Ö.  
BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, vol.104, no.6, pp.3141-3144, 2014 (SCI-Expanded)
- XX. **The 23 October 2011 M(w)7.0 Van (Eastern Turkey) Earthquake: Interpretations of Recorded Strong Ground Motions and Post-Earthquake Conditions of Nearby Structures**  
Akansel V., Ameri G., ASKAN GÜNDOĞAN A., CANER A., Erdil B., Kale Ö., Okuyucu D.  
EARTHQUAKE SPECTRA, vol.30, no.2, pp.657-682, 2014 (SCI-Expanded)
- XXI. **Evaluation of Successful Seismic Bridge Design Practice in Turkey**  
Okuyucu D., Kale Ö., Erdil B., CANER A., ASKAN GÜNDOĞAN A., Akansel V. H.

- JOURNAL OF PERFORMANCE OF CONSTRUCTED FACILITIES, vol.28, no.1, pp.4-12, 2014 (SCI-Expanded)
- XXII. **A New Procedure for Selecting and Ranking Ground-Motion Prediction Equations (GMPEs): The Euclidean Distance-Based Ranking (EDR) Method**  
Kale Ö., Akkar S.  
BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, vol.103, no.2A, pp.1069-1084, 2013 (SCI-Expanded)
- XXIII. **The high-frequency limit of usable response spectral ordinates from filtered analogue and digital strong-motion accelerograms**  
Akkar S., Kale Ö., Yenier E., Bommer J. J.  
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS, vol.40, no.12, pp.1387-1401, 2011 (SCI-Expanded)
- XXIV. **A Model for Vertical-to-Horizontal Response Spectral Ratios for Europe and the Middle East**  
Bommer J. J., Akkar S., Kale Ö.  
BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, vol.101, no.4, pp.1783-1806, 2011 (SCI-Expanded)

### Articles Published in Other Journals

- I. **Variation of Near Fault Ground Motion Intensity Measures Due to Filtering**  
Cavdar E., Ozdemir G., Kale Ö.  
Academic Perspective Procedia, vol.3, no.2, pp.841-849, 2020
- II. **Kesirsel Mertebeli Şiddet Ölçülerinin Olasılıksal Sismik Talep Modellerinde Kullanımının Tek Serbestlik Dereceli Sistemlerle Değerlendirilmesi**  
Kale Ö.  
Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.22, no.Special, pp.427, 2018

### Books & Book Chapters

- I. **Revised Probabilistic Seismic Hazard Map of Turkey and Its Implications to Seismic Design**  
Akkar S., Kale Ö.  
in: Elaboration of maps for climatic and seismic actions for structural design with the Eurocodes, , Editor, 2016

### Refereed Congress / Symposium Publications in Proceedings

- I. **A brief note on the earthquake hazard module of Turk Reinsurance Inc.'s catastrophic event modeling platform for insurance portfolio loss: Comparisons with OpenQuake**  
Akkar D. S., Kale Ö., Atıcı A. T., Ülkü O.  
3rd European Conference on Earthquake Engineering and Seismology, Bucuresti, Romania, 4 - 09 September 2022, pp.1-8
- II. **Olasılıksal Deprem Tehlike Analizlerinde Omurga Model Yaklaşımının Uygulanmasının Etkileri: İzmir'deki Saha İçin Bir Vaka Çalışması**  
Kale Ö., Akkar S., Sandıkkaya M. A.  
6ICEES
- III. **The Sensitivity of Elastic and Inelastic Displacement Demands of Long Period Structures to the High-Pass Filtering Parameters**  
Çavdar E., Özdemir G., Kale Ö.
- IV. **Simulated Ground Motion Based Evaluations for Improving the Limitations in Turkish Ground Motion Database**  
Gür K., Kale Ö., Karimzadeh S., Askan A.  
5th International Conference on Earthquake Engineering and Seismology (5ICEES), Ankara, Turkey
- V. **Assessment of the Seismic Design Code-Based Vertical Spectrum Functional Forms**

Kale Ö.

13th International Congress on Advances in Civil Engineering, İzmir, Turkey

- VI. **The Effects of Implementing Different Ground-motion Logic-tree Frameworks on Seismic Risk Assessment**  
Ay B. Ö., Kale Ö.  
16th European Conference on Earthquake Engineering (16ECEE), Thessaloniki, Greece
- VII. **Temsili ve Ayırık Yer Hareketi Tahmin Denklemlerinin Türkiye Yer Hareketi Veri Tabanı Altındaki Performanslarının Karşılaştırılması**  
Kale Ö., Akkar S., Çağnan Z.  
4th International Conference on Earthquake Engineering and Seismology (4ICEES), Eskişehir, Turkey
- VIII. **An Auxiliary Tool to Build Ground-Motion Logic-Tree Framework for Probabilistic Seismic Hazard Assessment**  
Kale Ö., Akkar S.  
3. Türkiye Deprem Mühendisliği ve Sismoloji Konferansı, İzmir, Turkey
- IX. **Tasarım Spektrumu Köşe Periyotları ve Zemin Amplifikasyon Katsayılarının Olasılıksal Sismik Tehlike Analizleri İle Belirlenmesi**  
Kale Ö., Akkar S.  
3. Türkiye Deprem Mühendisliği ve Sismoloji Konferansı, İzmir, Turkey
- X. **Türkiye sismik tehlike haritasının güncellenmesi ve yeni deprem yönetmeliği**  
Akkar S., Kale Ö.  
8. Ulusal Deprem Mühendisliği Konferansı, İstanbul, Turkey
- XI. **Developments in Ground Motion Predictive Models and Accelerometric Data Archiving in the Broader European Region**  
Akkar S., Kale Ö.  
2nd European Conference on Earthquake Engineering and Seismology (2ECEE), İstanbul, Turkey, 24 - 29 August 2014, vol.39, pp.293-320
- XII. **Türkiye için Geliştirilen Yeni Bir Yer Hareketi Tahmin Denklemi ve Bu Denklem Orta Doğu Bölgesinde Yapılacak Sismik Tehlike Çalışmaları için Uygunluğunun Test Edilmesi**  
Kale Ö., Akkar S.  
2. Türkiye Deprem Mühendisliği ve Sismoloji Konferansı, Hatay, Turkey
- XIII. **A Method to Determine the Appropriate GMPEs for a Selected Seismic Prone Region**  
Kale Ö., Akkar S.  
15th World Conference on Earthquake Engineering
- XIV. **Yerel ve Global Yer Hareketi Tahmin Denklemlerinin Türkiye için Uygulanabilecek Sismik Tehlike Analizlerinde Kullanılabilirliklerinin Test Edilmesi**  
Kale Ö., Akkar S.  
1. Türkiye Deprem Mühendisliği ve Sismoloji Konferansı, Ankara, Turkey
- XV. **Uncertainty in Nonlinear SDOF Response Due to Long-Period Noise of Accelerograms**  
Akkar S., Guekan P., Kale Ö.  
Workshop on Advances in Performances-Based Earthquake Engineering, Corfu, Greece, 01 July 2009, vol.13, pp.69-78
- XVI. **Influence of Low-Cut Filter Frequency on Nonlinear Oscillator Displacements Computed from Non-Degrading to Degrading Hysteretic Models**  
Kale Ö., Akkar S., Erberik M. A.  
14th World Conference on Earthquake Engineering

## Supported Projects

Sandıkaya M. A., Kale Ö., Aldemir A., TUBITAK Project, Tehlike-Tutarlı 2b Zemin Büyütmesi İle Yakın Fay Direktivite Etkilerinin Orta Ve Yüksek Katlı Binalardaki Elastik Ötesi Deplasman Taleplerine Olan Katkısı: İzmir Örneği, 2022 - 2025

Kale Ö., Ay B. Ö., Sandikkaya M. A., TUBITAK Project, "Türkiye için Deprem Tehlike Analizlerindeki Yer Hareketi Epistemik Belirsizliđinin Omurga Model Yaklaşımıyla Bölgesel Olarak Tanımlanması ve Oluşturacağı Yaygın Etkilerin Araştırılması", 2021 - 2024