

CURRICULUM VITAE OF ŞEBNEM ELÇİ

Professor of Civil Engineering

Izmir Institute of Technology, Civil Engineering Department

Gülbahçe Campus 35437, Urla Izmir Turkey

Email: sebnemelci@iyte.edu.tr

Phone: +90 232 7506806, <https://civil.iyte.edu.tr/>



EDUCATION

- **Georgia Institute of Technology, Atlanta, Georgia USA**
Doctor of Philosophy in Environmental Fluid Mechanics and Water Resources, 2004
- **Dokuz Eylül University, İzmir, Turkey**
Master of Science in Hydrology and Water Resources, 1998
- **Middle East Technical University, Ankara, Turkey**
Bachelor of Science in Civil Engineering, 1995

CURRENT POSITION

- Professor of Civil Engineering, Izmir Institute of Technology
Years within the University: 18

KEY QUALIFICATIONS

- More than 25 consecutive years of experience in the field of Hydraulics and Water Resources.
- Author of more than 50 Publications in the field of water engineering
- Lectured more than 10 different courses in graduate and undergraduate levels
- Coordinated 5 Internationally and Nationally Funded Projects and Participated in 6 Other Projects related to Sediment Transport, Reservoir Modelling, Water Quality, Flood Modelling etc.
- Proven experience in 3-D Hydrodynamic Modelling and field monitoring in rivers and reservoirs
- Chair of the 14th International Conference on Hydrosience and Engineering, (ICHE 2022) held in Izmir, Turkey, May 26-27, 2022
- As of October 2022, has 720 citations to the papers, with an h index of 11 according to Google Scholar

HONORS AND AWARDS

- Recipient of the **DAAD Grant** given by the German Academic Exchange Service for Research Stays for University Academics and Scientists (2022)
- Recipient of the **Marie Curie International Reintegration Grant** given by the European Commission (2005)
- Awarded **Rising Star Trophy** for Research in the Seventh Annual Graduate Student Research Forum of Clemson University (2002)
- Invited as **visiting professor** to University of California in Davis, CA. (2012)
- Invited as **visiting researcher** to USGS California Water Science Center in Sacramento, CA. (2020)

- Invited as *visiting professor* to Lund University (2013), Perugia University (2014) and Warsaw University (2014) to give short term lectures via ERASMUS Mobility Programme
- Awarded *scholarship* from Norwegian Government for the participation in the International Summer School of University of Oslo (1996)
- Awarded *scholarship* from NATO for the participation in the meeting “Modelling Climate change and Its Variability”, in Les Houches, France (June, 1997)

COMPLETED PROJECTS

- Investigation of the Effects of Thermal Stratification on Hydrodynamics of a Reservoir (*Funded by European Commission IRG - 28292*) (**Project Coordinator**)
- Modelling of Hydrodynamic Circulation in Tahtalı Reservoir and Investigation of Thermal Stratification on Vertical Current Profiles (*Funded by TUBITAK Project No : 104Y323*) (**Project Coordinator**)
- Experimental and Theoretical Investigation of Sediment Transport in Unsteady Flows in open Channels - Application of the Results to Tahtali Basin (*Funded by TUBITAK Project No : 106M274*) (**Project Participant**)
- Assessment of Geothermal Energy Applications with the Consideration of Renewal Energy in the Example of Kızıldere Geothermal Power Plant, Denizli and Balçova Geothermal District Heating, Izmir (*Funded by TUBITAK Project No : 104M301*) (**Project Participant**)
- An approach on modification of settling velocities in turbulent flows and investigation of applicability of turbulence models (*Funded by TUBITAK Project No : 114M019*) (**Project Coordinator**)
- Experimental and Theoretical Investigation of Propagation Of Flood Waves Due To Dam Break—Application To Real Dams In GIS Environment (*Funded by TUBITAK Project No : 110M240*) (**Project Participant**)
- Thermal Modeling of Discharge Water of Manisa Combined Cycle Power Plant (*Funded by AKSA Energy*) (**Project Participant**)
- Investigation of Flow Characteristics and Scour Depths Around Bridge Piers Implemented on the Inclined Side Slopes of Watercourses (*Funded by TUBITAK Project No : 116M519*) (**Project Participant**)
- Investigation of Turbulence Effects on Settling Velocity of Suspended Sediments by Experiments (*Funded by TUBITAK Project No : 116M035*) (**Project Coordinator**)

CURRENT PROJECTS

- Development of Artificial Mixing Methods for Controlling Cyanobacterial Blooms in Lakes and Reservoirs (*Funded by TUBITAK Project No : 122M849*) (**Project Coordinator**)
- Investigation of velocity profiles and the structure of turbulence at the both inner and outer bank of compound meander bends, monitoring bank erosion over the years using GIS maps. Case study: B. Menderes River (*Funded by İzmir University of Economics*) (**Project Participant**)

ADMINISTRATIVE DUTIES

- | | |
|---|-------------------------|
| • Vice Dean, Engineering Faculty | 2011-2015 |
| • Vice Chair, Civil Engineering | 2006 – 2007 ; 2008-2011 |
| • Chair, Civil Engineering | 2007 – 2008; 2017-2020 |
| • Cooperative Education (COOP) Institute Coordinator, | 2013-2017 |
| • Board Member, Continuous Education Center | 2005-2007 |
| • Board Member, Engineering Faculty | 2009-2010 |
| • Board Member, Geothermal Energy Research and Application Center | 2008–2014 |

LECTURES OFFERED AT GRADUATE LEVEL

- CE 505 Open Channel Hydraulics
- CE 508 Advanced Mechanics of Fluids
- CE 507 Design of Hydraulic Structures
- CE 509 Transport Processes in Surface Flows
- CE 510 Sediment Transport
- CE 538 Water Systems Engineering
- CE 698 Research Seminar

LECTURES OFFERED AT UNDERGRADUATE LEVEL

- CE 272 Fluid Mechanics
- CE 371 Hydromechanics
- CE 372 Engineering Hydrology
- CE 471 Water Resources Engineering
- CE 475 Design of Hydraulic Structures

PUBLICATIONS IN SCIENTIFIC JOURNALS

1. Hazar, O.; Tayfur, G.; Elçi, S.; Singh, V.P. Developing Predictive Equations for Water Capturing Performance and Sediment Release Efficiency for Coanda Intakes Using Artificial Intelligence Methods. *Water*, 2022, 14, 972. <https://doi.org/10.3390/w14060972>.
2. Bor, A., Elçi, S. Impacts of construction of dam on the flow regimes and water quality: a case study from Turkey. *International Journal of Environmental Science and Technology*, <https://doi.org/10.1007/s13762-021-03886-y>, 2022.
3. Dumlu, E. Elçi, S. Application of the WASP Model for Assessment of Aeration Impact on Water Quality of Porsuk River, Turkey, *Scientific Research Communications*, 2(2), 2022.
4. Hazar, O., Elçi, S. Design of Coanda Intakes for Optimum Sediment Release Efficiencies. *KSCE J Civ Eng* 25, 492-502, 2021.
5. Vural, B., Elçi, S., Okten, H.E., 2021. An experimental study on release mechanism of iron and manganese from sediments to the water column in reservoirs. *Environ Res Tech* 4(3):190–198. DOI 10.35208/ert.833975.
6. Elçi, Ş. and Ekmekçi, B. ‘Observational and Numerical Methods for Quantifying and Modeling of Turbulence in a Stratified Reservoir’ *Journal of Applied Fluid Mechanics*, 9(4),1603-1614, 2016.
7. Haltaş, İ., Elçi, S., and Tayfur, G. ‘Numerical Simulation of Flood Wave Propagation in Two-Dimensions in Densely Populated Urban Areas due to Dam Break’ *Water Resources Management*, 30(15) 5699-5721, 2016. DOI 10.1007/s11269-016-1344-4.
8. Elçi, S., and Tayfur, G. Haltaş, İ., ve Kocaman. B. ‘Numerical Modeling of Two Dimensional Flood Wave Propagation in Residential Areas After the Dambreak’. *Technical Journal of Turkish Chamber of Civil Engineers (İMO Teknik Dergi)*, 28(3) 7955-7975, 2017.
9. Haltaş, İ., Tayfur, G. and Elçi, S. Two-dimensional numerical modeling of flood wave propagation in an urban area due to Ürkmez dam-break, İzmir, Turkey. *Natural Hazards*, 81(3), 2103-2119, 2016.
10. Work, P.A., Haas, K., Warren, D., and Elçi, S. ‘Assessment and Transport of Sediment-Bound Estuarine Contaminants’, *Water Quality Exposure and Health*, 7 (1), 5-14, 2015.
11. Güney, M.S., Tayfur, G., Bombar, G., and Elçi, S. "Distorted Physical Model to Study Sudden Partial Dam Break Flows in an Urban Area." *Journal of Hydraulic Engineering*, ASCE, 140 (11), 05014006, 2014.
12. Elçi, Ş. and Şimşek, S.E. ‘How Do Contaminated Reservoir Bottom Sediments Affect Water Quality? An Assessment Using SWIM Model’, *Water Environment Research*, Volume 85, Number 11, November 2013 , pp. 2201-2208(8).

13. Elçi, Ş. and Selçuk, P. 'Effects of Basin Activities and Land Use on Water Quality Trends in Tahtali Basin, Turkey', *Environmental Earth Sciences*. 68:1591–1598, 2013.
14. Bombar, G., Elçi, Ş., Tayfur, G., Güney, M.S., and Bor, A. "Experimental and Numerical Investigation of Bedload Transport Under Unsteady Flows", *Journal of Hydraulic Engineering*, ASCE, 137 (10) 1276-1282, 2011.
15. Bombar, G., Güney, M.S., Tayfur, G and Elçi, S. "Calculation of the time-varying mean velocity by different methods and determination of the turbulence intensities". *Scientific Research and Essays* Vol. 5(6), pp. 572-581, 2010.
16. Elçi, Ş., Aydın, R., and Work, P.A. "Estimation of suspended sediment concentration in rivers using acoustic methods," *Environmental Monitoring and Assessment by Springer*, (159) 255-265, 2009.
17. Elçi, Ş., A. Bor, ve A.Çalışkan, "Utilizing numerical models and acoustic methods to predict reservoir sedimentation", *Lake and Reservoir Management*, North American Lake Management Society, (25) 297-306, 2009.
18. Çalışkan, A., and Elçi, Ş. "Investigation of the hydrodynamics and withdrawal effects in a stratified lake," *Water Resources Management*, (23) 1257-1273, 2009.
19. Elçi, Ş. "Effects of thermal stratification and mixing on reservoir water quality," *Limnology*, 9(2) : 111-123. 2008.
20. Elçi, Ş., Work, P.A., and Hayter, E. "Influence of stratification and shoreline erosion on reservoir sedimentation patterns," *Journal of Hydraulic Engineering*, ASCE, 133 (3) 255-266, 2007.
21. Work, P.A., Guan, J., Hayter, E.J., and Elçi, Ş. "Mesoscale model for morphologic change at tidal inlets. J. of Waterway, Port," *Coastal and Ocean Eng.*, 127(5), ASCE, 282-289, 2001.

PUBLICATIONS IN BOOKS/REPORTS

22. Naranjo, R., Work, P., Heyvaert, A., Schladow, G., Cortes, A., Watanabe, S., Tanaka, L., and Elçi, S., 2022, *Seasonal and long-term clarity trend assessment of Lake Tahoe, California–Nevada: U.S. Geological Survey Scientific Investigations Report 2022–5070*, 86 p., <https://doi.org/10.3133/sir20225070>. ISSN: 2328-0328 (online).
23. Sebnem Elçi and Gökçen Bombar (Editors). *Proceedings of the 14th International Conference on Hydroscience and Engineering*, (ICHE 2022) Urla, Izmir, Turkey, May 26-27, 2022 (ISBN : 978-975-6590-19-5)
24. Sebnem Elçi. Estimation of Suspended Sediment Concentration in Stratified Lakes by Acoustic Methods in *Encyclopedia of Lakes and Reservoirs, Geography, Geology*, Bengtsson, Lars; Herschy, R.W.; Fairbridge, R.W. (Eds.), published by Springer, 2012, 954 p. ISBN 978-1-4020-5616-1.
25. Elçi, Ş., and Work, P.A. "Field observations for definition of reservoir shoreline erosion and sedimentation, Lake Hartwell, SC/GA," *Technical report submitted to Georgia Water Resources Institute*.
26. Elçi, Ş., and Work, P.A. "Prediction of shoreline erosion and sedimentation in Hartwell lake, SC/GA," *Technical report no. GTREP-CEE/2002-1, submitted to South Carolina Water Resources Center*.

PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED CONFERENCE PROCEEDINGS

27. Bor, A and S. Elçi. Water Quality Evaluation Using Various Water Quality Indices: A Case Study for B. Menderes River, Turkey. Proceedings of the 39th IAHR World Congress, Granada, Spain, 19-24 June 2022. doi://10.3850/IAHR-39WC2521716X20221404. p. 5745-5754.
28. Hazar, O., Bahadioğlu, N., Karakaya, D. Elçi, S. Design of an Artificial Destratification System to Control Cyanobacteria Growth in Reservoirs. Proceedings of the 39th IAHR World Congress, Granada, Spain, 19-24 June 2022. doi://10.3850/IAHR-39WC2521716X20221404. p. 1668-1678.
29. Dumlu, E. and S.Elçi. Application of Wasp Model for Assessment of Water Quality of the Porsuk River, Turkey. Sebnem Elçi and Gökçen Bombar (Editors). Proceedings of the 14th International

- Conference on Hydrosience and Engineering, (ICHE 2022) Urla, Izmir, Turkey, May 26-27, 2022 (ISBN : 978-975-6590-19-5), p. 177-185.
30. Hazar, O., Bahadırođlu, N., Karakaya, D. Elçi, S. An Experimental Study on Artificial Destratification of Thermally Stratified Reservoirs. Sebnem Elçi and Gökçen Bombar (Editors). Proceedings of the 14th International Conference on Hydrosience and Engineering, (ICHE 2022) Urla, Izmir, Turkey, May 26-27, 2022 (ISBN : 978-975-6590-19-5), p. 165-176
 31. Hazar, O., Tayfur, G. and S. Elçi. Application of Genetic Algorithm Method to Develop Equations for Water Capturing Performance (WCP) and Sediment Release Efficiency (SRE) of Coanda Type Intakes. Sebnem Elçi and Gökçen Bombar (Editors). Proceedings of the 14th International Conference on Hydrosience and Engineering, (ICHE 2022) Urla, Izmir, Turkey, May 26-27, 2022 (ISBN : 978-975-6590-19-5), p.409-420.
 32. Heba, O.H. and S.Elçi. Data-Driven Water Quality Assessment of Inland Waterbodies Using Satellite Spectral Data: A Conceptual Framework. Sebnem Elçi and Gökçen Bombar (Editors). Proceedings of the 14th International Conference on Hydrosience and Engineering, (ICHE 2022) Urla, Izmir, Turkey, May 26-27, 2022 (ISBN : 978-975-6590-19-5), p.551-560.
 33. Karahan, S.M. and S.Elçi. Simulation of Water Resources of Tahtalı-Seferihisar Subbasin Based on a WEAP Model. Sebnem Elçi and Gökçen Bombar (Editors). Proceedings of the 14th International Conference on Hydrosience and Engineering, (ICHE 2022) Urla, Izmir, Turkey, May 26-27, 2022 (ISBN : 978-975-6590-19-5), p.547-550.
 34. Köken, M., Hesap, E., Bombar, G. Elçi, S. and A.H. Cardoso. Numerical Investigation of Flow Around an Isolated Pier on an Inclined Surface. Sebnem Elçi and Gökçen Bombar (Editors). Proceedings of the 14th International Conference on Hydrosience and Engineering, (ICHE 2022) Urla, Izmir, Turkey, May 26-27, 2022 (ISBN : 978-975-6590-19-5), p.37-40.
 35. Elçi S.and Hazar O. Assessment of Sediment Capture Performances of Coanda and Tyrolean Intakes by Experiments. Proceedings of the 38th IAHR World Congress, Panama City, Panama September 1-6, 2019. doi:10.3850/38WC092019-0499.
 36. Elçi, S., Vural B., Ay M., Ökten H.E. 2017. Effects of Hypolimnetic Oxygenation on Iron and Manganese Concentrations in Reservoirs, Proceedings of the IWA 2nd Regional Symposium on Water, Wastewater and Environment.
 37. Hayat E., Elçi, S. 2017. A Strategic Framework for Transboundary Water Resources Management in Afghanistan, Proceedings of the IWA 2nd Regional Symposium on Water, Wastewater and Environment.
 38. Elçi S, Hazar O. 2018. Assessment Of Sediment Capture Performances Of Coanda And Tyrolean Intakes By Experiments. Proceedings of the 5th International Symposium on Dam Safety, 27 October-1 December 2018, Istanbul.
 39. Bombar, G., Elçi S. 2018. Up-to-date Review of Dam-Break Studies. Proceedings of the 5th International Symposium on Dam Safety, 27 October-1 December 2018, Istanbul.
 40. Elçi S., Bombar G., Vural B., Ay M.. 2018. Experimental Investigation for the Effects of Turbulence on the Settling Velocities of Sediments. Proceedings of the 13th International Congress on Advances in Civil Engineering, 12-14 September 2018, İzmir.
 41. Elçi.S. An Approach for Estimating Settling Velocity in Turbulent Flows. Proceedings of the 36th IAHR World Congress, The Hague, 28 June- 3 July 2015.
 42. Pulat, A., Ata, C., Altınsoy, S. Bombar, G., Elçi, S. Experimental Investigation Of Flow Characteristics Of Discretized Triangular Hydrographs. Proceedings of the 36th IAHR World Congress, The Hague, 28 June- 3 July 2015.
 43. Elçi, A., Elçi, S. and Boyacıođlu, 2014. Cooling water discharge impacts to an ephemeral stream: A heat transport modeling study. 11th International Conference on Hydrosience & Engineering, Hamburg, Germany. ICHE 2014, Hamburg - Lehfeldt & Kopmann (eds) - 2014 Bundesanstalt für Wasserbau ISBN 978-3-939230-32-8, 881-888.
 44. Elçi, S. and Tayfur, G. 2014. Advances in the history of reservoir monitoring. Proceedings of IWA Regional Symposium on Water, Wastewater and Environment: Traditions and Culture, Patras, Greece, 22-24 March 2014.

45. Haltaş, İ., Kocaman B., Tayfur, G., Elçi, Ş. Two Dimensional Flood Modeling and Mapping for Porsuk Dam Break. Proceedings of 11th International Congress on Advances in Civil Engineering, 21-25 October 2014, Istanbul, Turkey.
46. Work, P.A., Haas, K., Warren, D., Elci, S. and E. Otay, 2013. Risk analysis for transport of contaminated estuarine sediments. 6th Intl. Perspective on Water Resources and the Environment, ASCE, Izmir, Turkey.
47. Haltas, I., Elci, S., and G. Tayfur, 2013. Numerical Simulation of Flood Wave Propagation due to Dambreak., 6th International Perspective on Water Resources and the Environment, İzmir, Turkey.
48. Elçi, Ş. Quantifying Vertical Mixing in Stratified Reservoirs in Proceedings of 10th International Congress on Advances in Civil Engineering, 17-19 October 2012, Ankara, Turkey.
49. Haltaş, İ., Tayfur, G. and Elçi, Ş. Numerical Simulation of Flood Wave Propagation due to Dambreak in Proceedings of 10th International Congress on Advances in Civil Engineering, 17-19 October 2012, Ankara, Turkey.
50. Güney, M.Ş., G. Tayfur, Ş. Elçi, G. Bombar, and A. Bor, 2009. Experimental and numerical investigation of bed load flux in unsteady open channel flows. Proceedings of the 33rd IAHR Congress, Canada, 2009, 3100-3107.
51. Elçi, Ş., Erdem, A. and G. Gökçen, 2010. Numerical modeling of the effects of Kızıldere Geothermal Power Plant on water quality of the Great Menderes River, Turkey. Proceedings of Fourth International Conference on Water Observation and Information System for Decision Support, BALWOIS 2010 held in Ohrid, Macedonia.
52. Şebnem Elçi and Pelin Selçuk, 2010. Effects of Basin Activities and Landuse on Water Quality Trends in Tahtali Basin. Proceedings of the 9th Int. Congress on Advances in Civil Engineering Conference held in Trabzon, Turkey, 27-30 September, 2010.
53. Aslı Bor, Şebnem Elçi ve Anıl Çalışkan, 2008. Prediction of Sedimentation in Reservoirs by Acoustic Methods. Proceedings of Riverflow Conference, İzmir, 3-5 Eylül 2008, (2), 1251-1263.
54. Anıl Çalışkan and Şebnem Elçi, 2007. Investigation of the hydrodynamic Structure in a Stratified Lake: Tahtali. Proceedings of 32nd Congress of IAHR, Venice, Italy. Theme A1.a. Hydrodynamics of lakes and reservoirs Paper #320 16 pages.
55. Şebnem Elçi and Paul A. Work, 2004. Field Observations for Definition of Hydrodynamic Circulation in Hartwell Lake, SC/GA. Proceedings of the 6th Int. Congress on Advances in Civil Engineering, Istanbul, Turkey, 1228-1237.
56. Şebnem Elçi and Paul A. Work, 2003. Numerical Modelling of Hydrodynamic Circulation and Cohesive Sediment Transport in Hartwell Lake, South Carolina/Georgia, USA. Contaminated Sediments: Characterisation, Evaluation, Mitigation/Restoration, Management Strategy Performance, ASTM STP 1442, J. Locat, R. Galvez-Cloutier, R.C. Chaney, and K. Demars, Eds., ASTM International, West Conshohocken, PA, 2003, 296-310.
57. Şebnem Elçi and Paul A. Work, 2003. Prediction Of Reservoir Shoreline Erosion. Proceedings of the 2003 Georgia Water Resources Conference, Athens, GA, 846-850.