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PUBLICATIONS:
INTERNATIONAL
JOURNALS

1. **Kumar, L.**, Mulders, S., and Alhaddad, S. **(2026)**. Flow field around Coandă effect-based polymetallic-nodule collector: insights from three-dimensional numerical simulations. *Applied Ocean Research*, 170, 105032.

2. **Kumar, L.**, Afzal, M. S., and Alhaddad, S. **(2026)**. Computational investigation of scour around square piles oriented at 45 degrees and 90 degrees in wave-current flows.*Journal of Offshore Mechanics and Arctic Engineering*, 148(3), 031201.

3. **Kumar, L.**, Afzal, M.S. and Alhaddad, S. **(2024)**. Computational investigation of scour around submerged square piles in wave-current flows. *Ocean Engineering*, 314(2), 119766.

4. **Kumar, L.** and Afzal, M.S., **(2024)**. Computational fluid dynamics modeling of scour around abutment geometries under combined effects of waves and currents. *Ocean Engineering*, 294, 116812, 1-21.

5. **Kumar, L.**, Afzal, M.S., **(2024)**. Estimating pier scour depth under combined waves and current using boosting machine-learning models. *Acta Geophysica*, 72, 1895–1911.

6. **Kumar, L.** and Afzal, M.S., **(2023)**. Experimental and numerical investigation of scour at vertical wall abutment under strong current-dominated combined wave-current flow in low Keulegan-Carpenter number regime. *Ocean Engineering*, 285(2), 115394, 1-19.

7. **Kumar, L.** and Afzal, M.S.,**(2023)**. A review of the state of research on bridge pier scour under combined action of waves and current. *Acta Geophysica*, 71: 2359–2379.

8. **Kumar, L.** and Afzal, M.S., **(2023)**. Numerical Simulations of Scour around Vertical Wall Abutments with Varying Aspect Ratios under Combined Waves and Current Flows. *Journal of Marine Science and Engineering*, 11(10), 1886.

9. **Kumar, L.**, Afzal, M.S., and Ghosh, S., **(2023)**. A novel-tuned Custom ensemble machine learning model to predict abutment scour depth in clear water conditions. *AQUA-Water Infrastructure, Ecosystems and Society*, 72(5), 798-813.

10. Afzal, M.S., **Kumar, L.**, Chugh V., Kumar, Y., and Zuhair, M., **(2023)**. prediction of significant wave-height using machine learning and its application to extreme wave analysis. *Journal of Earth System Science*, 132(2), 1-17.

11. **Kumar, L.**, Afzal, M.S. and Ahmad, A., **(2022)**. Prediction of water turbidity in a marine environment using machine learning: A case study of Hong Kong. *Regional Studies in Marine Science*, p.102260.

12. Afzal, M.S., and **Kumar, L.**, **(2022)**. Propagation of wave over a rugged topography. *Journal of Ocean Engineering and Science*, 7(1), 14-28

13. **Kumar, L.**, Afzal, M.S. and Afzal, M.M., **(2020)**. Mapping shoreline change using machine learning: a case study from the eastern Indian coast. *Acta Geophysica*, 68 (4), pp.1127–1143.

14. Afzal, M.S., Bihs, H. and **Kumar, L.**, **(2020)**. Computational fluid dynamics modeling of abutment scour under steady current using the level set method. *International Journal of Sediment Research*. 35 355-364

PUBLICATIONS: PEER REVIEWED BOOK CHAPTERS (SCI AND SCOPUS)

1. **Kumar L.**, Afzal M.S., Chalwad S. **(2022)**. Flood Inundation Mapping Using HEC-RAS 2D in Sangli City of Krishna River Basin, Maharashtra (India). In: Maiti D.K. et al. (eds) Recent Advances in Computational and Experimental Mechanics, Vol II. Lecture Notes in Mechanical Engineering. Springer, Singapore.

2. Dutta D., **Kumar L.**, Afzal, M.S., and Rathore P. **(2022)**. Hydrodynamic Study of the Flows Caused by Dam Break Around a Rectangular Obstacle. In: Maiti D.K. et al. (eds) Recent Advances in Computational and Experimental Mechanics, Vol II. Lecture Notes in Mechanical Engineering. Springer, Singapore.

3. **Kumar L.**, and Jha R., **(2022)**. Forecasting Standardized Precipitation Index Using Wavelet-Coupled MARS and SVM Model in Punpun River Sub-Basin (Bihar), India. In: Hydrological Modeling: Hydraulics, Water Resources and Coastal Engineering (pp. 241-257). Cham: Springer International Publishing.

PUBLICATIONS: PROCEEDINGS OF INTERNATIONAL CONFERENCES

1. **Kumar, L.**, Dutta, D., and **Afzal, M.S.**,**(2023)**. Scour around a pair of abutments under combined wave-current flow. Accepted to *IAHR World Congress, Vienna, Austria, 2023)*.

2. **Kumar, L.**, and **Afzal, M.S.**,**(2023)**. Computational fluid dynamics modeling of scour around vertical-wall abutment with varying aspect ratios under combined wave–current flows. Accepted to *HYDRO 2023*.

3. Purkayastha, S., Dutta, D., **Kumar, L.**, and **Afzal, M.S.**,**(2022)**. Numerical Modelling of Flow past a Slippery Elliptical Cylinder. *27th International Conference on Hydraulics, Water Resources, Environmental and Coastal Engineering (HYDRO 2022)*.

4. Dutta, D., **Kumar, L.** and Afzal, M.S.,**(2022)**. Three-Dimensional Numerical Study of hydrodynamics around a pair of circular cylinders due to the combined wave-current effect using the level set method. *IAHR World Congress, Granada, Spain, June 2022*