

# HIRA ASHFAQ LODHI

Assistant Professor, Department of Physics,  
NED University of Engineering & Technology, Karachi.  
Ph: +92-99261261-268 Ext (2233)  
**Email:** [hiralodi@neduet.edu.pk](mailto:hiralodi@neduet.edu.pk)

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## Research Interests

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Modelling and mapping coastal hazards such as tsunami, cyclones etc.

## Professional Outline

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- **Public Sector**

Assistant Professor, Applied Physics at NED University of Engineering & Technology – (March 11,2018 to date)

Lecturer, Applied Physics at NED University of Engineering & Technology – (January 15, 2009 to March 11,2018)

## Education

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- NED University of Engineering & Technology in progress  
**PhD (APPLIED MATHEMATICS)**
- NED University of Engineering & Technology 2011-2013  
**MS (APPLIED MATHEMATICS)**-First Division  
(**Research project:** Tsunami inundation modelling)
- University of Karachi 2007-2008  
**M.Sc (APPLIED PHYSICS)** – First Division  
(**Elective:** Electronics)
- University of Karachi 2004-2005  
**BACHELOR OF SCIENCE** – First Division  
(**Electives:** Physics, Math, Stats)

## Trainings / Workshops / Conferences Attended

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- a) IGCP-Project 639 (conference and field study) on "Sea level changes from Minutes to Millennia" Oman, 2016
- b) Training Workshop on "Coastal Hazard Assessment: Applications in Risk Assessment, Management and Mitigation" Colombo,2015
- c) International conference on "Reducing tsunami risk in the western Indian ocean", Muscat, 2015.
- d) Workshop on "Communicating the effects of the 1945 Makran tsunami to increase awareness and preparedness of tsunami hazards in the Makran Region", Islamabad, May 2014.
- e) International conference on "Renewable Energy and Sustainability", NEDUET, 2013.

## Publications

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- a) Assessing Tsunami Risk to Karachi Port through Simulation of the Currents that were reportedly produced by the 1945 Makran Tsunami, 16<sup>th</sup> World Conference on Earthquake Engineering, Chile, 2017.
- b) Promoting Survival of the next Makran Tsunami in the Indus Delta, poster presentation, IGCP-Project 639, Muscat, 2016.

- c) Numerical simulation of Makran tsunami in creeks of the Indus Delta, Pakistan, poster presentation, IGCP-Project 639, Muscat, 2016.
- d) Initial steps towards mapping urban limits for Pakistan, oral presentation, International conference on Reducing tsunami risk in the western Indian ocean, Muscat, 2015.
- e) The impact of earthquake source parameters on the 1945 tsunami wave profiles and arrival times, poster presentation, International conference on Reducing tsunami risk in the western Indian ocean, Muscat, 2015.
- f) Elders recall an earlier tsunami on Indian Ocean, EOS Transactions, American Geophysical Union, Vol. 95, P 485-492, 2014.

## **Projects and Collaborations**

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- a) Tsunami Inundation Modelling: Numerical studies conducted for the cities of Gwadar and Pasni. It was an Oxfam GB led project supported by UNESCO. The study was carried out to develop inundation maps and very first risk maps for the two cities. A major outcome of the project was development of a tsunami evacuation map for the city of Gwadar. A training workshop was also conducted to train stake holders such as NIO, Navy, PMD etc. for risk mapping. Funded by Oxfam GB worth.
- b) Pakistan Tsunami: Field study along the Indus delta to investigate the unrecorded and verify the recorded history of 1945 Makran tsunami. US State Department, Office of foreign disaster assistance, USA.
- c) Collaborative research at University of Washington to develop a mathematical model for transportation of boulders by tsunami. Funded by US Geological Survey.
- d) Coastal evidence for Puerto Rico Trench earthquakes and tsunamis in Anegada, British Virgin Island: Field study at Anegada, the project was to investigate the breaches in coastal sand ridges and inland fields of boulders. The field evidence is being used to test simulations of tsunami and of tsunami like bores from tropical cyclones. Funded by National Earthquake Hazards Reduction Program (NEHRP), USA.
- e) Post-disaster (Irma) field study along Anegada, British Virgin Island: Field study to track the effects of Irma, tropical cyclone of category 5. To be carried out in January 2018. Funded by National Science Foundation (NSF), USA.