

# FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM



## Visit to Pontifical Catholic University of Peru: May 20<sup>th</sup>, 21<sup>st</sup> and 22<sup>nd</sup>, 2024

This report summarizes the visit of **PhD. Ivan G. Wong** from Lettis Consultants that took place at the Pontifical Catholic University of Peru on May 20<sup>th</sup>, 21<sup>st</sup> and 22<sup>nd</sup>, 2024.

### ITINERARY OR AGENDA

Provide the itinerary of the visit.

TIME:	ACTIVITY:
MAY 20 <sup>TH</sup>	
4:00 PM – 6:00 PM	Tour of the Malecón of Lima ("Costa Verde") and tourist areas on "Mirabus"
6:00 PM – 8:30 PM	Dinner with the student chapter leadership from this year, share and discuss tesis projects to get insight feedback from visiting professional
MAY 21 <sup>ST</sup>	
2:00 PM – 3:00 PM	Tour of the PUCP School of Engineering
3:00 PM – 4:00 PM	Technical visit to the PUCP Earthquake Engineering Laboratory (LEDI)
4:00 PM – 5:30 PM	Lunch with student representatives of EERI PUCP at the university
6:00 PM – 7:30 PM	Guest lecture by Visiting Professional
7:30 PM – 8:30 PM	Presentation of undergraduate and graduate programs by the authorities of the Civil Engineering Section
8:30 PM – 9:00 PM	Lecture by a civil engineering professor
MAY 22 <sup>ND</sup>	
12:00 PM – 1:00 PM	Informal meeting with EERI PUCP student members, activities and status of the student chapter presentation.

### STUDENT CHAPTER VISIT PLANNING COMMITTEE

**LEAD ORGANIZER(S):** {enter name of student members who lead the visit, chapter role, email}

- Gonzalo Romero, President, [romero.gonzalo@pucp.edu.pe](mailto:romero.gonzalo@pucp.edu.pe)
- Ronaldo Soto, Economy and Public Relations Director, [a20191421@pucp.edu.pe](mailto:a20191421@pucp.edu.pe)
- Rodrigo Vargas, Project Coordinator, [rodrigo.vargas@pucp.edu.pe](mailto:rodrigo.vargas@pucp.edu.pe)

### Lecture Abstract

#### **Challenges in Evaluating the Seismic Hazards Above the South American Subduction Zone and Implications to Seismic Design**

The increased need for site-specific probabilistic seismic hazard analyses (PSHAs) of dams and mine tailings storage facilities in South America has presented challenges to hazard analysts, engineers, and stakeholders. We have performed site-specific hazard analyses for critical structures and facilities in Colombia, Ecuador, Peru, Chile, Venezuela, and Argentina and a major challenge in performing such analyses is that prior seismic hazard evaluations have often underestimated the hazard. There are several reasons for this under-estimation. First, there has been an over-reliance on the historical seismicity record due to the belief that the historical record alone would accurately predict future hazard. Second, existing Quaternary fault databases are often incomplete, which commonly results in the discovery of previously unrecognized Quaternary sources or re-characterization of known faults. When local fault sources are incorporated, they commonly include narrow epistemic uncertainties that are poorly supported with available data. Third, hazard analyses have not kept pace with rapidly evolving ground motion models (GMMs). The recently developed NGA-Subduction GMMs have presented major challenges because of the significant increase in hazard over previous models. Finally, there has been a lack of adequate characterization of site effects with GMMs and  $V_s30$  (time-averaged shear-wave velocity in the top 30 m) being used when the site conditions would call for site response analyses, e.g., thin soil or weathered rock sites. In this presentation, I will discuss these issues and their implications to seismic design in South America.

### Professional Bio

#### **Ivan G. Wong**

Ivan Wong, Senior Principal Seismologist at Lettis Consultants International, is an internationally recognized expert in seismic hazard analyses with nearly 50 years of experience. He has directed the evaluations of more than 700 critical and important facilities worldwide including some of the largest ever performed in the U.S. He has worked in South America for the past 30 years.

A major focus in Ivan's career has been earthquake hazards reduction and awareness and public outreach. He has spoken, taught, and lectured at hundreds of events for schools, universities, and professional organizations, and for the general public.

In addition to his work, Ivan has been an active EERI member for 46 years including serving on the Board of Directors, as President of the Northern California chapter, Earthquake Spectra editorial board, a Safety of Schools Safety Initiative founding member, Friedman Family lecturer, and numerous committees. In 2024, he was named an Honorary EERI member for his contributions to earthquake engineering and seismology.

Ivan has served as an Associate Editor for Bulletin of the Seismological Society of America for 25 years. He has been a member of numerous scientific and engineering committees/panels both in the U.S and internationally. He has been particularly active in supporting the U.S. Geological Survey in various roles including as a reviewer of the National Seismic Hazard Maps. Ivan has authored or coauthored more than 400 professional publications including numerous guidelines and standards related to seismic safety.

## SUPPLEMENTAL ACTIVITIES

### MAY 20<sup>TH</sup>

On the first day of the visit, four representatives of the student chapter met with Dr. Wong. He was picked up by the president, Gonzalo Romero, in the lobby of his hotel and taken to the starting point of a "Mirabus," the chosen transport to give him a tour of the city. In the previously mentioned meeting, Dr. Wong mentioned that he had already been to Lima, Peru. Therefore, an activity not well known to foreign tourists was planned: a tour of the tourist areas of the Costa Verde promenade and the "huacas" of San Isidro and Miraflores.

In addition to the President, the members available to meet with Dr. Wong on the first day were: one of the Directors of Research, Claudia Julca; the Coordinator of the Projects Area, Rodrigo Vargas; and the Director of the Economics and Public Relations Area, Ronaldo Soto.

Later in the evening, a dinner was held at Mangos, one of Lima's most renowned restaurants, located in the Larcomar Shopping Center. During this dinner, the representatives of EERI PUCP were able to exchange opinions and receive advice from Dr. Wong on research, thesis topics, and major matters. Therefore, it was a highly productive meeting for the student chapter members present.

### MAY 21<sup>ST</sup>

The second day of Ivan Wong's visit took place from the afternoon until the evening, entirely on the premises of PUCP. In the afternoon, he was given a tour of the university's facilities. During this tour, he was shown the faculties of General Studies Sciences and Science and Engineering (home to the Civil Engineering Section). The visit concluded with a guided tour of the Structural Laboratory (LEDI) of the PUCP Faculty of Civil Engineering, attended by the same members as the previous day.

During this tour, Dr. Wong observed the infrastructure used for both undergraduate and graduate studies and research projects. Particular emphasis was placed on the single-degree-of-freedom shake table, various masonry tests, material analysis of bricks, scale models for the analysis of construction systems performed by the laboratory, and the concrete mix design and testing laboratory. Consequently, he observed the students' work results in fabricating concrete specimens for subsequent testing with the mentioned machines. Unfortunately, the 3D printing area was inaccessible due to improvement and maintenance work. However, access was granted to an area where new equipment for dynamic lateral load studies is being installed.

In the evening, Dr. Ivan Wong gave a lecture on the topic "Challenges in Evaluating the Seismic Hazards above the South American Subduction Zone and Implications to Seismic Design". This lecture provided us with new knowledge and criteria for proper seismic analysis. Additionally, it focused on a critique of the data used for the existing Peruvian seismic regulations. Furthermore, EERI was presented as an international institution, showcasing its various programs and benefits.

The conference was also attended by authorities from the PUCP Faculty of Civil Engineering. These included the Director of the Master's Program, Dr. Guillermo Zavala, the representative of the Director of the Undergraduate Program, Mg. Diego Villagomez, and a lecture by a professor from the Structural Field, Mg. Gustavo Loa. The estimated attendance for this event was around 15 people. Additionally, EERI PUCP decided to offer attendance to this event to those registered in the 5th series of conferences, making it partially open to the public.

MAY 22<sup>ND</sup>

The third day of Dr. Ivan Wong's visit to the student chapter was dedicated to a presentation of the work and progress of EERI PUCP's various areas. This event was led by the Vice President, Fátima Hurtado, and the Director of Economics and Public Relations, Ronaldo Soto.

The representatives of each area, coordinators, or their delegates presented the progress and plans of the different Areas and Directions of the student chapter. It was also an opportune space for conversation and the exchange of ideas and questions between the student chapter members and the visitor. Approximately 12 people attended this event.

## RESULTS, FEEDBACK AND LESSONS LEARNED

Brief description of challenges during the process, general reception of the program and Visiting Professional. Also, a description of other topics or disciplines the Student Chapter would like to cover in future visits, and related goals.

- One of the biggest barriers was the language. It is not common to receive lectures or keynote addresses in English at the university; however, with the help of members proficient in English, clear and efficient communication with the visitor was established, successfully meeting this challenge.
- Another significant challenge was the logistics for the guest's transportation. Fortunately, Ivan G. Wong had previously been to Lima, so he was somewhat familiar with the area where he was staying. If that had not been the case,
- The opportunity to have been part of this EERI program has been an invaluable experience, especially because it was in person, for the members who were able to attend and exchange ideas with Ivan G. Wong. It was definitely an honor to welcome him to PUCP.
- The student chapter would like to continue being considered part of this program because our focus is on gaining as much knowledge as possible from experts. Our goal is to learn from this experience (the first time we hosted a guest in person) and continually improve our hosting capabilities for future in-person guests. Additionally, we would like to host an expert in earthquake-resistant engineering in the future, as, due to the nearly 100-year seismic silence in Lima, it is crucial to train as much as possible to mitigate damage as professionals when an earthquake occurs.

## ACKNOWLEDGEMENTS

The PUCP EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of PhD. Ivan G. Wong through their Friedman Family Visiting Professional Program endowment.

## LIST OF ATTACHMENTS

Included at the end of this report are various attachments to supplement the information included above. A list of the attachments is included below:

- Item 1, i.e. flier for event
- Item 2, professional slide show or other handouts
- Item 3, other items

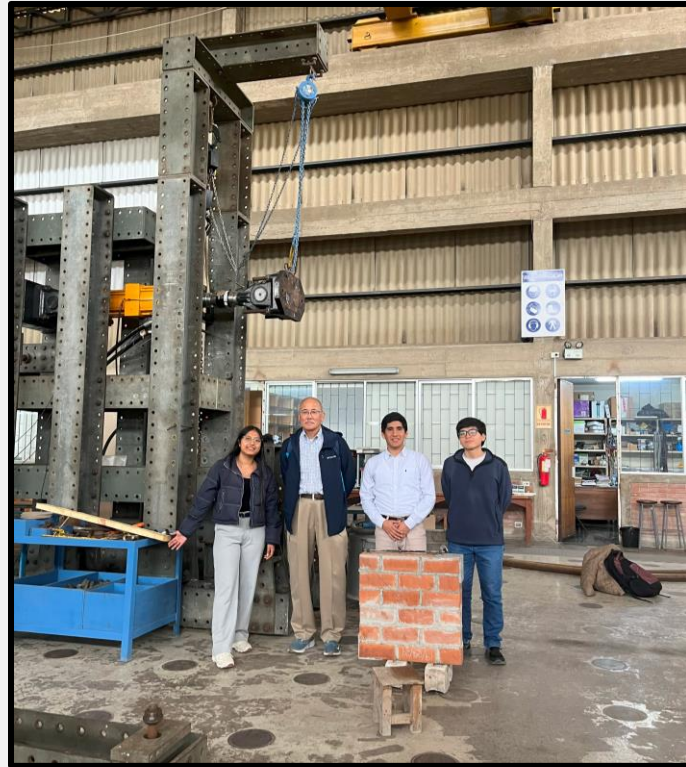
**Item 1.** Pictures from “Mirabus” trip



**Item 2.** Dinner with EERI PUCP representatives



### Item 3. Visit to LEDI Laboratory



### Item 4. Lecture from Ivan Wong PhD.



**Item 7.** Meeting with EERI PUCP members



QUINTA SERIE DE CONFERENCIAS SOBRE INGENIERÍA  
SÍSMICA Y ESTRUCTURAL

CHALLENGES IN EVALUATING THE SEISMIC HAZARDS ABOVE  
THE SOUTH AMERICAN SUBDUCTION ZONE AND IMPLICATIONS  
TO SEISMIC DESIGN



con la ponencia de

Ivan G. Wong, Ph.D.



- Sismólogo Principal en Lettis Consultants International.
- Participación en más de 700 evaluaciones de riesgo sísmico y diseño sísmico en instalaciones críticas, numerosos comités científicos e ingenieriles incluyendo el Grupo de Trabajo sobre Probabilidades de Terremotos de Utah.
- Contribuido en el software de evaluación de riesgo sísmico HAZUS para la Agencia Federal de Manejo de Emergencias (FEMA).
- Miembro de la Comisión de Seguridad Sísmica del Estado de California.
- Ha recibido 20 subvenciones externas del Programa Nacional de Reducción de Peligros de Terremotos (NEHRP) del Servicio Geológico de Estados Unidos (USGS).
- Miembro activo en EERI durante 45 años, ha sido presidente del capítulo de California del Norte (2005-2008).
- Editor asociado del Boletín de la Sociedad Sismológica de América.

MODERADOR: • Gonzalo Romero

INVITADOS

ESPECIALES:

• Dr. Guillermo Zavala

• Mg. Diego Villagomez

• Mg. Gustavo Loa



21 de mayo



18:00 horas

EERI PUCP Student Chapter

