Chun-Hung Pao (鮑俊宏)

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EDUCATION

2023/06	Ph.D.	Depart. of Hydraulic and Ocean Engineering, NCKU, Taiwan
2007/08	MSc	Depart. of Hydraulic and Ocean Engineering, NCKU, Taiwan
2005/08	BSc	Depart. of Hydraulic and Ocean Engineering, NCKU, Taiwan

EMPLOYMENT

2023/07 - present	Postdoctoral Fellow	RCEC, Academia Sinica, Taiwan
2018/06 - 2023/06	Executive Officer/Specialist	Ocean Affairs Council, Taiwan
2009/11 - 2018/06	Associate Engineer	The Sixth River Management Office, WRA, MOEA, Taiwan
2019/06 - 2019/07	Oversea Research	Hamburg University of Technology, Hamburg, Germany
2017/06 - 2017/07	Oversea Research	Bureau of Reclamation, Denver, United State
2014/06 - 2014/07	Oversea Research	UNESCO-IHE, Delft, Nederland
2008/11 - 2009/01	Salesperson	Tour L.L.C, Sydney, Australia
2006/07 - 2006/09	Housekeeper	Xanterra Parks & Resorts, California, United State

HONORS & AWARDS

2024 Best Paper Award of Chinese Institute of Engineers
2023 Best Paper Award of The Taiwan society of Ocean Engineering
2023 The Phi Tau Phi Scholastic Honor Society of Republic of China
2023 Excellence Award of NCKU Grand Review and Competition
2018 Professional Hydraulic Engineer, Taiwan

RESEARCH INTEREST

One of my research areas focuses on marine energy, particularly in ocean current power generation. I have extensive experience studying ocean currents' utilization for electricity generation. Additionally, I have qualified by the national's exam as a Professional Hydraulic Engineer and possess expertise in ocean engineering. During my career at The Sixth River Management Office, Water Resources Agency, MOEA, I conducted primary research on coastal erosion, sediment transport, wave-current interactions,

and coastal protection structures. I supervised both engineering projects and field investigations, accumulating a decade of practical experience in coastal protection and engineering. Furthermore, I have specialized knowledge in river hydrology and hydraulic analysis. I contributed to establishing flood warning systems and data assimilation processes, amassing ten years of experience in flood forecasting systems. During my career at the Ocean Affairs Council, I dedicated myself to formulating and planning national marine science and technology policies and developing key technologies related to ocean currents power generation. This five-year experience enhanced my expertise in the field. My comprehensive understanding of river systems, nearshore environments, and offshore dynamics allows me to provide a more holistic elucidation of the processes involved in transmitting flood from river channels to estuaries and adjacent coastlines and subsequently the transport of sediment to continental shelves. Consequently, I specialize in resolving the complex mechanical interactions occurring near river mouths, focusing on the intricate dynamics of estuarine and adjacent areas by numerical models.

RESEARCH HIGHLIGHTS

1. **Hydrodynamics and hyperpycnal flow in the river mouths**
   My recent research endeavors have investigated the hydrodynamic interactions in the river mouths, including wave-tide-flood interactions and the phenomenon of hyperpycnal flow. The latter can lead to scouring of the seabed in estuarine areas, with the potential to deepen the seabed by over 1 meter, even at depths of 100 meters, exposing submerged pipelines or leaving them suspended, thereby posing risks of damage. Therefore, analyzing the mechanisms behind this scouring process is essential for guiding maintenance and operational activities.
2. **Analysis of transmission and distribution for Ocean Current Power Generation**
   In alignment with identifying optimal locations for ocean current power generation sites, an analysis is conducted to evaluate alternative solutions such as electrical grid integration, transmission and distribution, and energy storage. Additionally, a comprehensive cost analysis is carried out with these alternatives.

REPRESENTATIVE PUBLICATIONS (*: corresponding author)

1. **Chun-Hung Pao**, Jia-Lin Chen (2023). A numerical investigation of density currents in the Zengwen river mouth. *Journal of Coastal and Ocean Engineering. Vol.* 19(1), 23-38. (in Chinese)
2. **Chun-Hung Pao**, Andhy Romdania, Jia-Lin Chen (2023). Tidally-modulated stratification in a channel-shoal estuary. *Journal of Estuarine, Coastal and Shelf Science*. Vol. 284(5), 108279.
3. **Chun-Hung Pao**, Jia-Lin Chen, Mon-Shen Shi, Ching-Yuan Liao (2022). A near shore observation of sediment transport combine with numerical investigation using a 3D model ROMS in the Beinan River mouth. *The Magazine of the Chinese institute of Civil and Hydraulic Engineering.* Vol. 49(6), pp. 72–79. (in Chinese)

4. **Chun-Hung Pao**, Jia-Lin Chen, Shih-Feng Su, Yu-Ching Huang, Wen-Hsin Huang and Chien-Hung Kuo (2021). The effect of wave-induced current and coastal structure on sediment transport at the Zengwen river mouth. *Journal of Marine Science and Engineering* 9(3):333.
5. Takaaki Uda, **Chun-Hung Pao** and Yu-Hsiang Lin (2020). Development of a sand spit and estimation of rate of longshore sand transport along Tainan coast, *Journal of Japan Society of Civil Engineers, Ser. B2 (Ocean Engineering*),76(2), I_637-I_642.
6. Takaaki Uda, **Chun-Hung Pao** and Yu-Hsiang Lin (2019). Beach erosion caused by imbalance of longshore sand transport near Erren River mouth and Golden Beach in Taiwan, *Journal of Japan Society of Civil Engineers, Ser. B3 (Ocean Engineering*),75(2), I_593-I_598.
7. Takaaki Uda, Tsung-Hsien Tsai, Yu-Hsiang Lin and **Chun-Hung Pao** (2016), Beach Erosion on Golden Beach in South Taiwan, *Journal of the Oceanographical Society of Japan*, 72(2), I_79-I_84.

Others

Invited speaker:

2024-2023, Ocean educator workshop in National Museum of Nature Science. “Ocean Technology.” Depart. of science, technology, education and culture, Ocean Affairs Council, Taiwan.

Project Supervisor:

2019-2022, “Development and Promotion of Key Technologies for Ocean Current Energy.” Government Research Report, Ocean Affairs Council, Taiwan.

2021-2022, “Establishment of Wave Energy Technology Demonstration Field.”, Research Proposal, Ocean Affairs Council, Taiwan.

2019, “The Preliminary Planning of Medium and Long-term Plans for Marine Technology Development.”, Government Research Report, Ocean Affairs Council, Taiwan.

2018-2019, “Research of Zengwen River Sand Supply to surrounding coast.”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2018, “A review on the coastal protection at Beimen, Cigu. and the Golden Coast of Tainan.”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2018, “Integrated Planning of Tainan Coastal Protection.”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2015-2016, “A Study of the Environmental Sustainable Regeneration and the Adaptive Protected Strategy due to Global Climate Change at Tainan Coast”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2014-2015, “The Plan of Section Monitoring Survey at Tainan Coast.”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2013, “Integration Plan of Flood Forecasting System & Flood Prevention for 6th River Management Office Area.”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2012, “Research on the Beach Nourishment of River Dredged Material for Kaohsiung Coast.” Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2012, “Research on the improvement of coastal sediment supply from Tseng-Wen River”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2011, “Investigation and Analysis at Kaohsiung Coast (From Xing-Da Harbor to Doan-Bao River).”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.

2011, “Research of Rehabilitation Experiments at Sicao Coastal Area”, Government Research Report, The Sixth River Management Office, Water Resources Agency, MOEA, Taiwan.