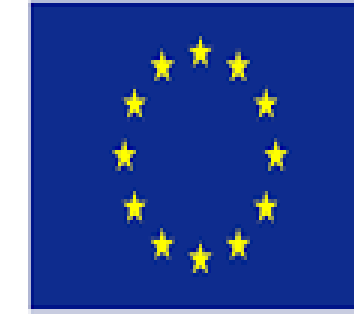


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Joint research, research training, academic mobility between
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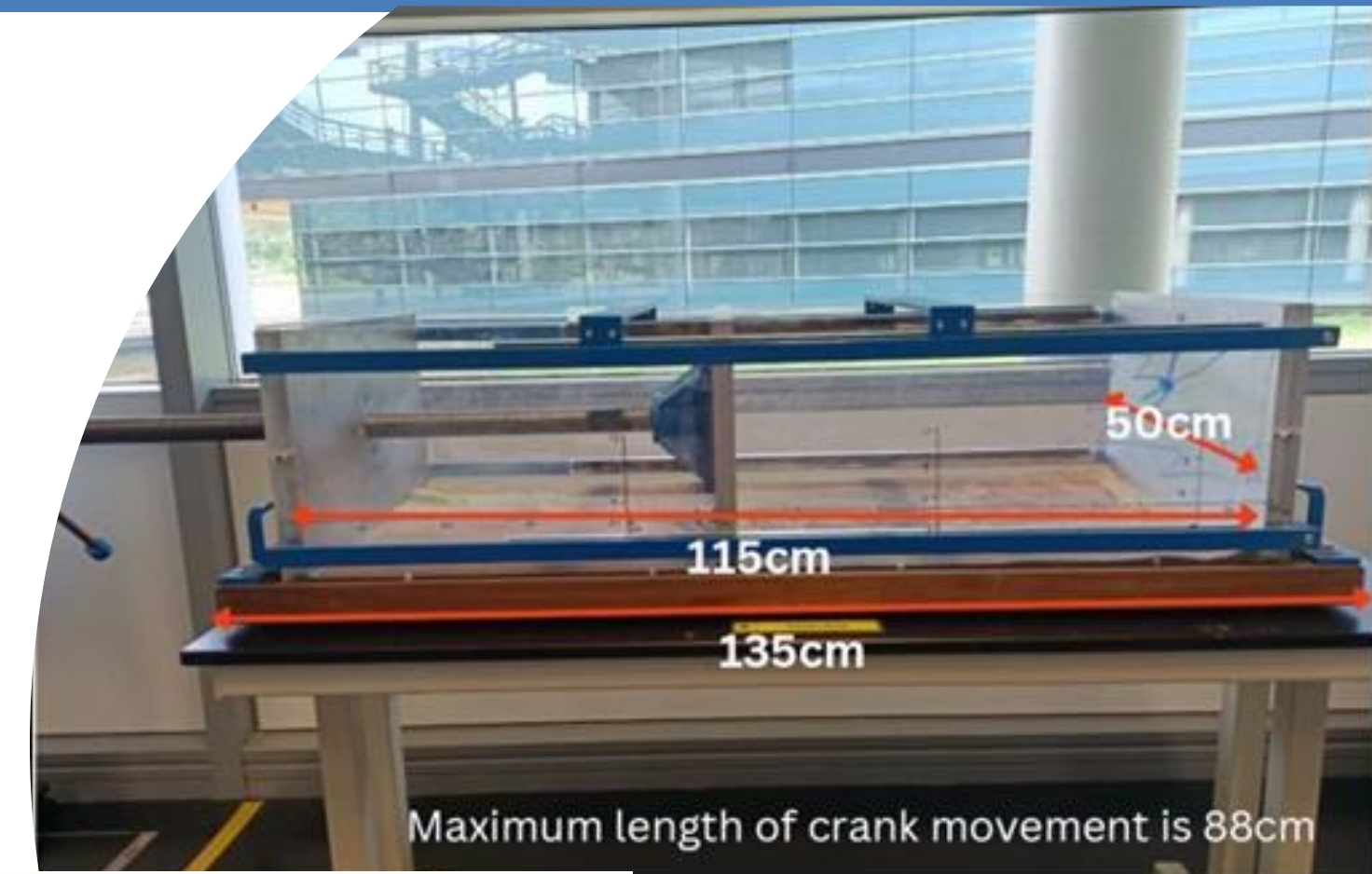
Phone number: +605-368 7302

Email address: heemin.teh@utp.edu.my

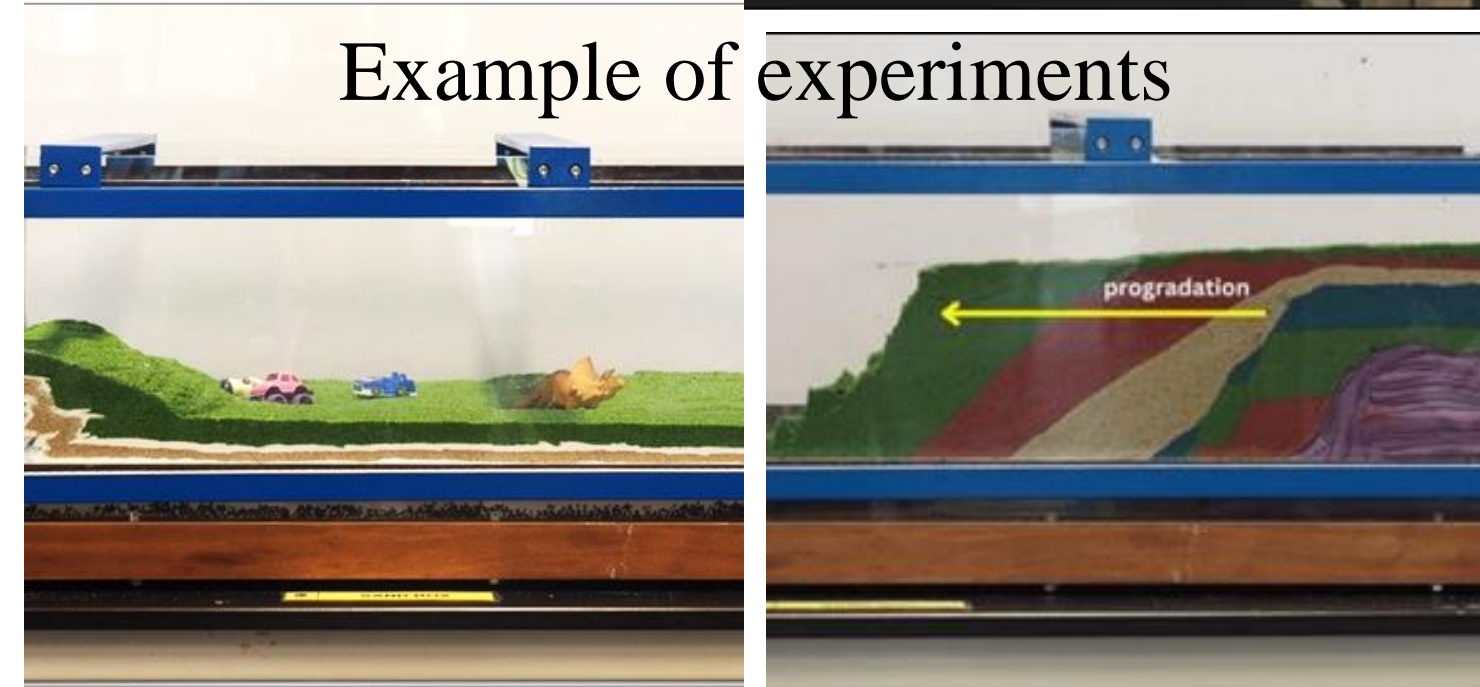
Analogue sandbox

Key Features:

Sandbox experiments are a valuable tool for gaining insights into geological processes that may be challenging to study in the field due to factors such as slow timescales or inaccessible locations. They offer opportunities for testing theoretical models, validating hypotheses, and making predictions about real-world geological phenomena. The versatility of sandbox experiments allows for the study of various geological processes, such as mountain building, faulting, sedimentation, erosion, volcanic eruptions, and landslides, among others.

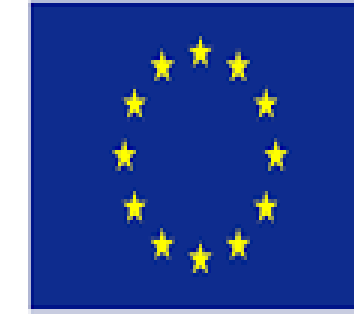


Example of experiments





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sieving machine for sediments

Description:

Sample Preparation

To Separate Particle Sand To
different Size. Preparation of
sediments and soils for analysis
involves drying and sieving, and for
rocks size reduction.

To determine the particle size of
pharmaceutical starting material.



Wave Tank

Key features:

1-Size and Dimensions:

- The wave tank at the UTP Offshore Engineering Laboratory measures 20m x 10m x 1.5m.

2- Water Depth Control:

- The basin maintains a maximum water depth of 1m for controlled experiments.

3- Structure:

- Enclosed by sturdy concrete walls with transparent tempered glass windows for visibility.

4- Wave Generation:

- Equipped with 16 strategically placed wave paddles for controlled wave generation.

5- Wave Absorption:

- Features a wave absorber for precision by minimizing reflections.

6- Versatility:

- Provides a versatile environment for various wave-related experiments.

7- Safety Measures:

- Adheres to safety standards with robust construction and transparent windows.



Wave Generation

Key features:

1. Piston-Type Wave Maker:

- The UTP wave basin is equipped with a piston-type wave maker comprising 16 paddles.

2. Active-Type Wave Generating System:

- Designed and fabricated by HR Wallingford, UK, the system is active and versatile.

3. Wave Types and Spectra:

- Capable of producing regular and random waves with pre-defined wave spectra, including Pierson-Monkowitz and JONSWAP.

4. Directional Capability:

- The system can generate oblique and multi-directional waves in addition to normal wave

5. Wave Height Range:

- The facility can generate waves with a maximum height of 0.38 m in 1 m water depth.

6. Precision in Wave Generation:

- Offers precise control over wave characteristics, allowing for detailed and controlled experiments.

7. External Expertise:

- The system, designed by HR Wallingford, reflects international collaboration and expertise in wave dynamics.



Wave Absorber

Key features:

1. Reflection Minimization:

- Addresses the common laboratory effect of wave reflection to maintain accurate wave parameters.

2. Passive Wave Absorbing "Beach":

- Positioned at a 1:10 slope at the down-wave end of the flume.

3. Wave Absorption System Components:

- Consists of four units of right-angle triangular-shaped structures.

4. Structural Composition:

- Each unit is filled with filtering materials for effective wave absorption.

5. Surface Covering:

- Covered by a steel grating, ensuring structural integrity and durability.

6. Purpose:

- Designed to minimize the reflection of incident waves from the end wall of the wave flume during experiments.

7. Enhanced Experimental Precision:

- Contributes to precise experimentation by reducing unwanted wave reflections.



Wave Probes

Key features:

1. - Manufacturer and Origin:

- Fabricated by HR Wallingford UK, ensuring expertise in design.

2- Functionality:

- Records time series of water levels using a resistance-type mechanism.

3- Wave Profile Recording:

- Measures current between two stainless steel wires to capture wave profiles.

4- Voltage Output:

- Converts current to output voltage, proportional to immersion depth.

5- Structural Design:

- Comprises parallel stainless-steel rods with a plastic head and foot.

6- Calibration and Mounting:

- Head fixed to a calibration stem, with a mounting block for versatile vertical surface placement.



Data logger

Key features:

1- Development by HR Wallingford:

- The data logger was developed by HR Wallingford, ensuring reliability in data acquisition.

2- Functionality:

- Serves as an intermediate device, converting analogue signals from wave probes into digital data.

3- Eight-Channel Configuration:

- The data logger accommodates up to eight wave probes simultaneously.

4- Monitor Card Operation:

- Each channel is managed by a monitor card.

5- Connectivity and Data Analysis:

- The monitor card connects to a PC for data analysis using the HR-DAQ data acquisition software.

6- Streamlined Data Acquisition:

- Eases the data acquisition process by providing a seamless connection between wave probes and digital data.

