

July 9

Zǎoshang hǎo!

On a cloudy day, students with their field equipment (rock hammer, Brunton compass, hand lens, vest, helmet) and lunch were prepared to go out in the field. Along with Dr. Zhou, students visited various outcrops around Zigui to study rocks formations in the area and observe structural features such as folding and faulting in rocks. Students practiced their field skills by identifying rock types and geological boundaries, measuring strike and dip, and taking rocks samples.

To the right, Dr. Zhou was indicating the boundary between Huanling formation (granite; igneous rocks) and Liantuo formation (sandstone; sedimentary rocks).



If you were lucky and had an eye trained like Dr. Zhou, some cross-beds were visible indicating water flow direction.

Students continued to visit numerous outcrops throughout the day. Also, they observed differences between igneous and sedimentary rock types (granite, sandstones and dolomite in general), and rock unit formations around the Three Gorges Reservoir.



Students examining an outcrop and working on field



Scenic view around the Three Gorges Region (Left to Right: Anika Huq, Lorena Olivares-Ramírez and Margarita Solares-Colón)



"If you study geology, happy life" exposed on an outcrop
(Dr. Zhou translated blue symbols written)



Students searching for fossils



Last stop of the day! Here students stayed for a while and took several pictures of the view of the Three Gorges Dam and surrounding area. Back at campus, Dr. Zhou showed us around the Rock Garden.

July 10

Visit to the Three Gorges Reservoir Project!





After bus rides, various escalators, and walking around, the group finally got up close to the Three Gorges Dam.

The Three Gorges dam is the largest hydroelectric power plant in the world with a large environmental, geological and social impact for local communities and China. It is located in the Three Gorges region, where three gorges or canyons (Qutang, Wu, and Xiling gorges) meet the Yangtze River along its course.

July 11

Visit to Lianzi Cliff and Xintan Landslide!



Beautiful scenery and geological features were visible along the way, while passing through the curvy road of the mountains surrounding the Yangtze River.

Students had an introductory session about the landslide and its history led by Dr. Wang and Dr. Zhou. It was an example of a successful landslide forecast saving more than 1,400 lives. After, students had lunch in a wood terrace with a view of the Xintan Landslide as shown below.



The group reached the top in about an hour and half. After a tiring hiking of stairs, students met a woman at the top of the mountain who sells water and fruits. She remembered Dr. Wang from previous years and invited the group to her home. Instead of going down the same way to the entrance of the park, the group continued their way into the mountains. She and her husband shared their harvests and cooked for the group – green tea, peaches, tomatoes, cucumber, corn, eggs and so on that they just picked from their farm. In conversation, they mentioned that they were relocated from the affected area to this home before the landslide event.



After an hour or so the group thanked the couple for such a special afternoon and made their way back. One more stop to visit monitoring stations and then back to campus. Some students went to rest and others went out to have one last dinner in Zigui.

July 12

In the morning all students returned their field equipment and set ready to go. Next stop Badong, in a 5 hr bus ride! Once all arrived to Bandong at the Research and Educational Base of CUG, the group had an amazing dinner prepared by a chef at the hotel. After, students walked around the city and returned to take a rest.

July 13

Visit to the exploration tunnel in Huangtupo landslide!
(Where they study the landslide inside out)

Huangtupo (“yellow soil slope”) landslide is the largest landslide in the Three Gorges Reservoir region. Students arrived to the tunnel site where Dr. Wang led an introductory lecture. This tunnel was constructed within the landslide and across the Yangtze River. It has a longitude of 908 m with 5 branches perpendicular to the tunnel that serves as laboratories to study the landslide. Here, they use various methods and technologies to evaluate the landslide such as real-time monitoring of precipitation and underground water, fixed inclinometers, GPS, crack meters, distributed optic fiber, field test sites of rock and soil mechanics, water-rock interaction and hydrogeological experiments, and so on. Due to the landslide, the City of Badong has been relocated at least three times and the construction of the reservoir augmented the landslide incidence in this region.



At the entrance of the exploration tunnel

Inside the tunnel, changes in infrastructure (cracks on walls and floor) and increase in groundwater flow plus moisture on rocks as students walked the tunnel indicate that the landslide is active and is still moving slowly. After the tour of the tunnel, students walk around the landslide area and discussed how water level changes from summer season to winter season.



July 14 – July 15

For the next couple of days, students were divided into two sessions (1) to do multiple LiDAR scans of the tunnel and install GPS equipment with UH-CUG graduate students working in their investigations and (2) explore landslide area outside tunnel.



Even the LiDAR equipment needed a rest due to prolonged exposure to moisture and was taken outside for sunlight. Students used an umbrella while setting up equipment to prevent water from getting in again.



In addition, students visited a ground based InSAR (IBIS-FL) site across Huangtupo landslide that scans the area every thirty minutes for high resolution and continuous monitoring of landslide deformation.



Students exploring Huangtupo landslide area