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Route Exploring to Cheung Tsui, Sai Kong, March 2014

A group of GSHK hikers has a strong passion for exploring exciting and safe geological field trip routes for GSHK. They took a trip to Cheung Tsui in Sai Kung on 15 March 2014 and aimed at planning a route for group activities in future. The selected route is expected to contain nice landscapes with value for geological education. All in all, it should be safe enough for hiking.

The readers who are interested in joining the exploring hikes please email to the Geological Society of Hong Kong at geolsoc.hongkong@gmail.com

Ir. Raymond S M Chan

Route Exploring to Cheung Tsui, Sai Kong on15 March 2014

By CHAN Ying Kuen, NG Tak Yin, CHEUNG Sai Lam, LEE Ping Kuen, LEUNG Pik Sai, LIN Hoi Yung and YUE Hon Tung

The exploring route (Figure 1) was proposed by Leung Pik Sai (Tracy) and updated by Chan Ying Kuen (Chan Sir). Tracy, being the trip planner, led the team and completed the field trip.

Starting Point

At 09:00 A.M. of 15th March 2014 the team gathered at the minibus 29N (NR29) station in Sai Kung Town Centre. It took about 20 minutes for the minibus to travel from Sai Kung Town Centre to Sai Wan Pavilion which was our starting point. Being aware that this trip would not be an easy hike, all of us started a warm-up exercise after we alighted from the minibus. Before the hiking, we came across an officer from Agriculture, Fisheries and Conservation Department (AFCD). He advised us that we might not be allowed by the villagers of Sai Wan Village to go through the mere road of their village. If so, we had to walk via another path to our target points with extra one and half hours.

Figure 1: The hiking route of Cheung Tsui, Sai Kung.

After passing through Chui Tung Au and approaching towards Sai Wan village, we found that the main gate to Sai Wan Beach was locked and controlled by the villagers. They stopped us from entering their village and farmlands. The villagers are empowered to do this under the Country Park Ordinance. Tracy and Chan Sir then tried their best to talk friendly with an old villager, and he was eventually willing to open the gate for us. We were so lucky that we could save much time and energy to reach Sai Wan Beach which was also one of our planned geological stops. Sai Wan Beach has a curved and wide coastline with a panorama sea view of the South China Sea. Climbing up to the nearby mountain, one can see a chain of the most beautiful beaches in Hong Kong. They are, namely, Sai Wan (West Bay), Ham Tin Wan (Salty Field Bay), Tai Wan or Tai Long Wan (Big Wave Bay) and Tung Wan (East Bay).

Waves from the South China Sea impact the rock (Figure 2) along shoreline of those beaches. The age of rock in Sai Wan is 140.9±0.2Ma (Davis et al, 1997), and it is grouped to the High Island

Formation (Strange et al., 1990; Sewell et al, 2000).

Figure 2: Rock outcrop in Sai Wan.

We stayed at Sai Wan for thirty minutes in order to search for some special rock outcrop but there was no particular finding. We then started heading for Ham Tin Wan. There is a headland (Figure 3) that separates Ham Tin Wan and Tai Wan. The headland is the symbol of resistant rocky coast. It protrudes to the sea with bays on both sides. Wave impacts directly on headland but its energy is dispersed into the bays. The sea wave continually erodes the rock from the headland and moves the rock debris to the bays. Coastal erosion also brings sands to the bays (Figure 4).

Headland is believed formed because of the differential erosion between hard and soft rocks. This is a good geological stop to show the formation of headland and bays.

Referring p.83 to p.84 of the book "the Pre-Quaternary Geology of Hong Kong", the rocks of headland are classified to Kau Sai Chau Volcanic Group-Undifferentiated. When we reached the headland, Lin Hoi Yung (Yung) led the members to explore a special rock outcrop which was investigated by C. M. Lee in 2002.

Figure 3: Headland of Ham Tin Wan.

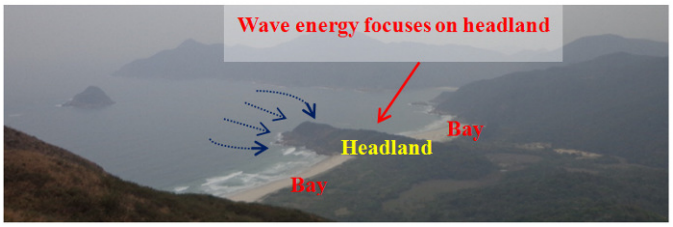

Figure 4: Erosion of headland.

The rock is in shape of spherulite (**球粒狀**) and the structure is called "lithophysae structure (**石泡構造**)" (Figure 5). According to the article from Sun Weiyan and Zhang Xueyi (2013), lithiphysae is a kind of large spherulites with radial or concentric cavities (Figure 6). The shape is ellipsoidal to spherical. Lithophysae often occurs in siliceous (**二氧化硅的**) or felsic (**長英質的**) volcanic rocks such as rhyolite (**流紋岩**), ignimbrite (**熔結凝灰岩**), rhyolitic lava (**流紋狀溶岩**), obsidian (**黑曜岩**), perlite (**珍珠岩**), tuff (**凝灰岩**) and pitchstone (**松脂石**) (Sun & Zhang, 2013). The preliminary identification of the mineral in the lithophysae cavity is chalcedony (**玉髓**) or amorphous silica (**非晶質二氧化硅**) (Figure 7). If the cavity contains adequate space for growing, it may have chance to form quartz crystals (Figure 8).

Figure 5: Lithophysae structure in Headland of Ham Tin Wan.

Figure 6: A concentric cavity was completely filled by minerals.

Figure 7 Chalcedony or amorphous silica is found inside the lithophysae cavity.

Figure 8: The space of rock was in-filled with quartz crystals.

Approaching to Tai Wan, we found some flow banding structures in this area (Figure 9). They are believed the interior flow of rhyolitic lava.

Now, the team was glad to see Cheung Tsui is in eye distance (Figure 9).

Figure 9: Tight-folded flow banding.

Figure 10: the landscape of Cheung Tsui.

The team discovered a boulder on the beach of Tai Wan. The rock type of the boulder was believed rhyolite. It contains the flow banding structure with volcanic blocks included (Figure 11). On another side of the beach, Yue Hon Tung (Henry) found a rock specimen that was dome shaped and was as light as pumice. He was devoted entirely to examine the rock (Figure 12).

Figure 11: Volcanic block was included in the rhyolite.

Figure 12: Henry was attracted by the boulder.

As we left Tai Wan at noon, landslide structure was observed on hill slope of Tung Wan (Figure 13). Landslide is a rapid downslope movement of rock or soil due to gravity. It is also generally termed as slope failure with mass washing. At the beach of Tung Wan, one more flow banding structure was observed (Figure 14).

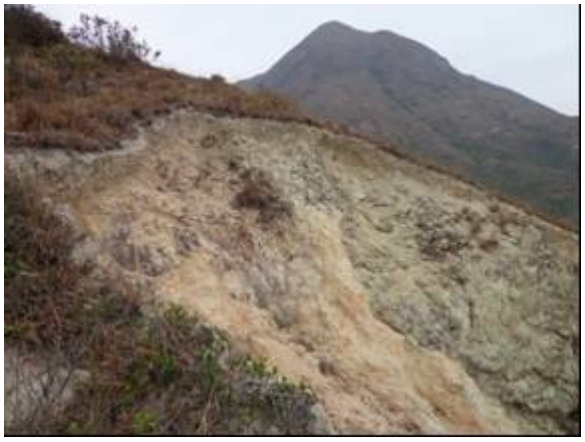

Figure 13: Landslide in hill slope of Tung Wan.

Figure 14: Flow banding structure.

At about 2:00 P.M., the team reached Tung Wan Shan. One tor stands lonely at the peak of Tung Wan Shan (Figure 15).

Figure 15: Tor behind us stands alone on the peak of Tung Wan Shan.

Tor（突岩）is a geological landscape feature resulted by spheroidal weathering process. During the rainfall, rain water penetrates into rocks through rock joints. Water reacts with rock minerals along the joints in the process of chemical weathering. Rock is then broken into a series of corestones (核心石) that are surrounded by completely weathered materials, i.e. clay, silt, sand or gravel, which are eventually decomposed into soil. Accomplished with the help of erosional agents like wind and rain water, these decomposed materials are washed down to the hill side and leave the corestones (Tors) to stay on peak of the hill (Figure 16).

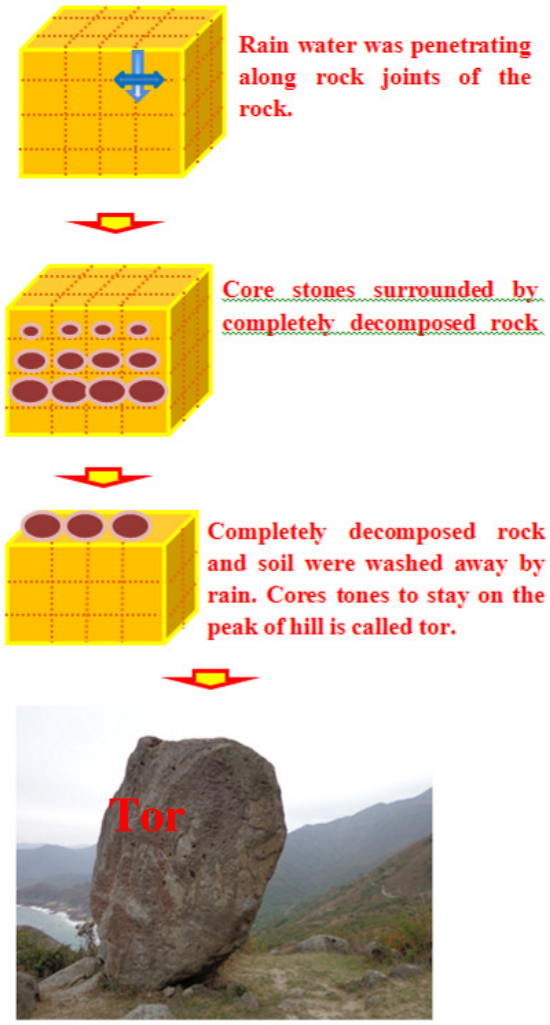

Figure 16 Formation of Tor.

At the midway between Tung Wan San and Cheung Tsui, rock fragments included small xenoliths (**虏獲岩**) were found at roadside (Figure 17). The yellowish white groundmass should be either quartz or chalcedony.

Figure 17: Rock fragment included xenoliths.

By means of passing through the four beaches of Tai Long Wan including Sai Wan, Ham Tin Wan, Tai Wan and Tong Wan (Figure 18), the team eventually arrived the destination, Cheung Tsui. We enjoyed so much the walk as there were really lots to see.

Figure 18: Four beaches of Tai Long Wan, Sai Kung.

End point

It's time to go back home. Tracy led us to walk along the hillside of Nam She Tsim for heading towards Tai Long Au. After taking refreshment at Tai Long Au, the team walked with tired bodies to Chek Keng. The sky gradually grew dark and the Moon rose as we were still walking with stars. During the long march, Tracy felt pain at her ankle. Being a scout lady, she was eventually surrendered to take the magic medicine from Chan Sir. During the course of the back journey, Yung kept silent as he was nearly exhausted and extremely hungry. Tak Yin took out the last pack of chocolate bar from Chan Sir's rack sack (which was a magic bag that contained things you needed most), and gave it to Yung to fill his stomach. Finally, we arrived at Pak Tam Au with two and half hours walk. As there was a drink vending machine next to the public toilet, all the thirsty team members immediately enjoyed the cold refreshment drinks, and then took the Bus no. 99 at 9:00 P.M.to Sai Kung Town Centre.

The Android phone apps record shows that we walked for about 27km in the 12-hour duration (Figure 19).

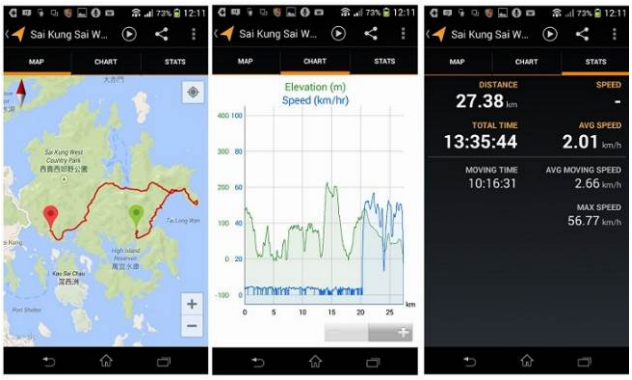

Figure 19: My track record.

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