Field campaign 8 – early Kimmeridgian – late Tithonian unconformity (February 23 -24, 2022)

The main goal of this field campaign was the additional sampling of the first unconformity. The field campaign started in the Rovinj bauxite mine. The fieldwork comprised of bauxite, clay, hanging wall and footwall limestones sampling from a newly extracted core by the mine's personnel. The mine was revisited the next day, where additional bauxite samples from lower, previously unexposed section, were collected. After that, the Zlatni rat locality was visited, to resample the hanging wall and footwall of the unconformity, as well as the unconformity deposits themselves. Out of collected limestone samples, thin sections will be fabricated, together with $\delta^{18}O$, $\delta^{13}C$ analysis in certain samples. On bauxite and clay samples SEM, micromorphological study, geochemistry, together with heavy and light mineral fraction analysis is going to performed. In pyrite-rich clay and limestone samples $\delta^{34}S$ will be analysed.



Figure 1. members of GEO and PALEO team together with the proprietor of the mine, Milan Mihovilović

Rovinj 1 bauxite deposit

Fieldwork at this site included sampling of the bauxite, its hanging wall and footwall from the extracted core, and the sampling of the lowermost bauxite section on the outcrop. Hanging wall limestones were sampled every 20 cm in first meter above the bauxite. Additional samples in the rest of the hanging wall were taken as needed. In the footwall section, the principle was the same, samples were taken every 20 cm in the first meter below the bauxite, while the rest of the samples were taken as needed. Bauxites and clay were taken from core sections where that was possible, as some of the sections were destroyed during core drilling. The core section in total was 29.1 m.

The additional bauxite samples were taken the next day on the newly exposed section of the bauxite deposit, located beneath the bottom of our previously sampled section. Samples were taken every meter adding up additional 8 m to our main bauxite profile, sampled on our sixth filed campaign. Another interesting occurrence of grey bauxite was found along the fault in the north-western flank of the deposit, where several samples were taken.



Figure 2. *a)* obtained core sections, *b)* newly exposed lower section of the bauxite body, *c)* bauxite sampling, *d)* ongoing mining operations in the mine, *e)* occurrence of the grey bauxite in the fault zone

Zlatni Rat

Zlatni rat was visited on the second day of this field campaign. PALEO team took several preliminary footwall, hanging wall and clay samples during last Spring to inspect the locality, but during this campaign both PALEO and GEO teams were present which allowed for detailed sampling of the locality. GEO team collected samples every 20 cm in the hanging wall and footwall of the unconformity and where needed. In addition to previously collected clay samples from the sixth filed campaign, the PALEO team collected several more clay samples for heavy and light mineral fraction analysis. A pit was also dug in the clay material to reach the bedrock, which was located about 60 cm from the clay surface. Three samples were collected in the pit, one from the bottom, one in the middle and one in the topmost section of the pit. On the contact of the bedrock and clay a pyrite crust was observed, with a emerald green clay surrounding it from within the clay deposit. Another smaller clay occurrence was found in the vicinty, but it was extremely weathered, but one sample was taken nevertheless to compare these two occurences. It should be noted that the unconformity on this locality is present as a clay bed and clay infillings in the footwall, but it is also present as an immediate transition from the footwall to the hanging wall, with no material in between. Fragments of footwall and black limestones are potruding of ouf the clay, and are sometimes in direct contact with the hanging wall limestones. Pyrite is present in clays, as well as in footwall and hanging wall limestones close to the unconformity.

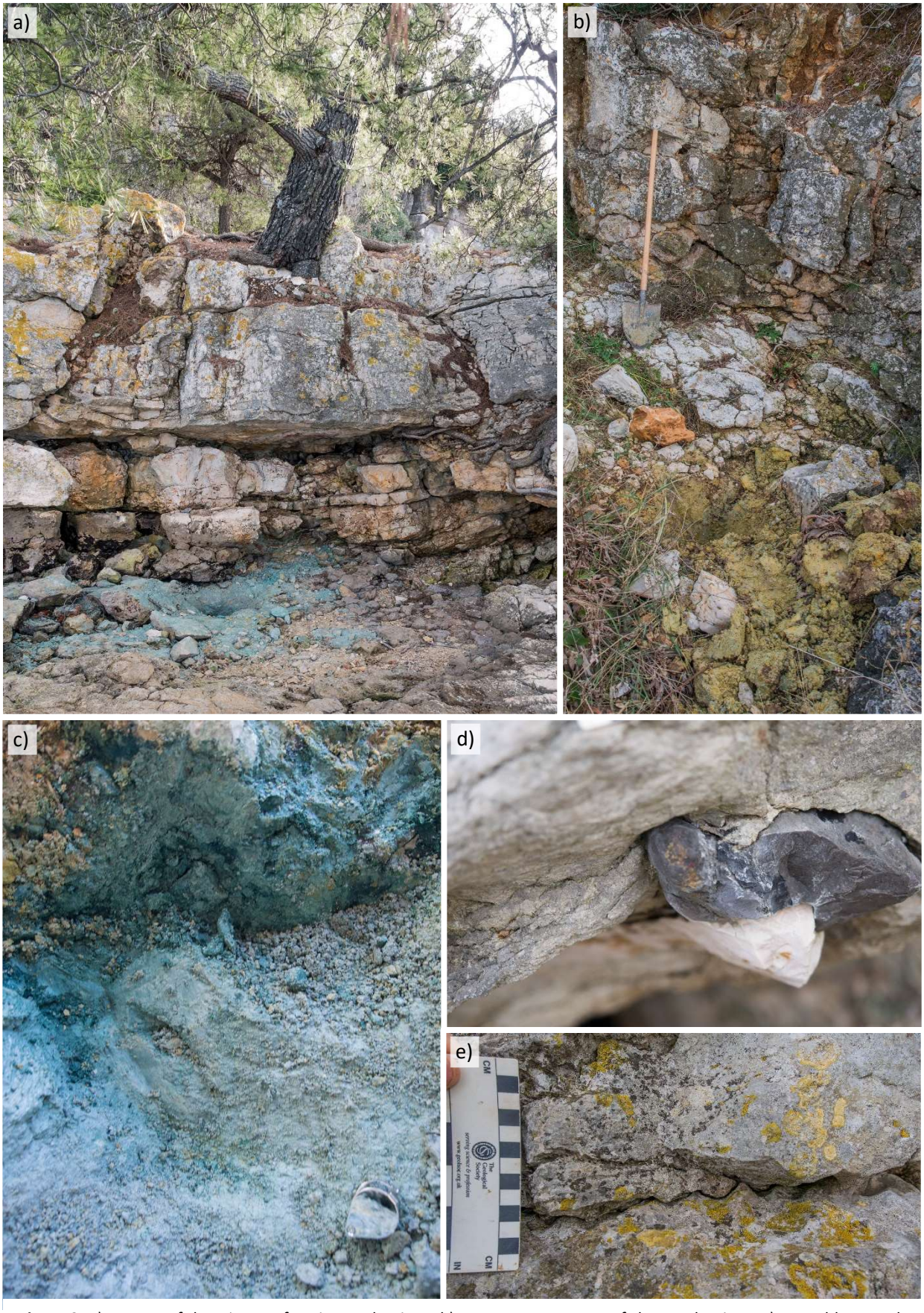


Figure 3. *a)* outcrop of the 1st unconformity on Zlatni rat, *b)* separate occurrence of clay on Zlatni rat, *c)* emerald green clay on the contact between the clay deposit and bedrock, *d)* impressed black pebble and footwall fragment into the hanging wall limestones, *e)* direct contact between the footwall and hanging wall of the unconformity