

## Visualization of Tatsuno High School's Ground Elevation Data & Investigation of the Ground's Water Drainage

We conducted research with the goal of creating a 3D model of Tatsuno High School's ground area. The purpose of the research was to find a solution to the problem of representing micro-topography. We converted Tatsuno High School's elevation data in a 3D model using STL. We then made a physical version of the model using a 3D printer. Additionally, this data was read into QGIS and a ground step color map was created. High elevations were represented by red colors, while low elevations were represented by blue colors. Using the step color map, we investigated the elevation differences of Tatsuno's grounds. We discovered the maximum difference in elevation was 80 cm, with the higher elevations being on the school's east side; the lower elevations were found on the west side. The drainage of the school ground's west side is good, while on the east side it is poor. Therefore, we investigated whether the soil quality was the reason for the difference in drainage. After a soil survey with a boring stick, we found that the ground at higher elevation has a shallow layer of soil above clay. Meanwhile, at lower elevation, the ground has a deep layer of soil above clay. These results indicate that the soil layer depth is related to the ground's drainage. From our research, we have shown that elevation data can be modeled despite very small differences in elevation.