

## ⑧(畔田班)

### Creation of Inland Water Flooding Hazard Map Using GIS and Open Data

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#### Abstract

In recent years, there has been a lot of flood damage caused by heavy rains. Tatsuno City has a hazard map for external flooding, but there is no inland flood hazard map that is useful for disaster prevention measures. We found that internal flooding was occurring in the Shimonoda and Sano areas, so we worked on creating hazard maps for these districts.

#### 1 Theory and Experiment

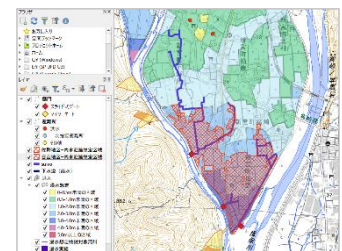
The 1m mesh DEM (numerical elevation model) published by Hyogo Prefecture was processed by the open-source QGIS, and an inundation area due to internal flooding was assumed. The 1m mesh DEM was used to create the "watershed boundary" and "stream channel" using DEM. Because of the large amount of data in the 1m mesh DEM, the 5m mesh DEM of the Geospatial Information Authority of Japan (GIS) was used for the analysis by SAGA.

#### 2 Results

SAGA did not do a good job of showing the inundation of low-lying areas that we wanted to study, so we created a color-coded elevation map using the 1m mesh DEM. After comparing the height of the levee with nearby neighborhoods, the standard height was set at 34.5 meters.

#### 3 Field Work

We determined that the areas in medium blue (figure) are likely to be inundated. Residents also confirmed that these areas had in fact been inundated in the past. They were most concerned about inland flooding occurring before a full-scale river flood.



#### 4 Conclusion

The shapefile (red area in figure) created based on the color-coded elevation map is superimposed on the external flooding hazard map published by Hyogo Prefecture (figure).

#### 5 References

[Creation of Inland Flood Hazard Maps Using Open Data] SAGAYAMA Koume, CHIYOZAWA Yae, MORI Koyo, YAHARA Sota, & YAMAMOTO Yua (Tatsuno High School)

[QGIS Ver.3 Complete User's Guide for Business Use] Written by KITA Koichi, National Forestry Extension Association