

## Relationship between historical topography and flood damage in Iwaizumi, Iwate

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This study focuses on the changes in the topography and river channels depicted in historical maps, and analyzes the relationship it and today's disasters. In the meeting, we will show the relationship between historical topography and the 2016 flood damage in the Otomo area of Iwaizumi-cho, Iwate Prefecture as a case study.

The Otomo district of Iwaizumi-cho, Iwate Prefecture was damaged due to the overflow of the Omoto river caused by the typhoon No. 10 that occurred in 2016 (Heisei 28). In particular, the institution for the elderly, located between the current Omoto River and National Route 455 (formerly Omoto-kaido Road), was inundated and many people became its victims. In this area, there was a village of Otomo-mura along the Omoto-kaido Road in the Edo period. In 1889, the village was merged to form Iwaizumi Village. There is the map "Rikuchu No Kuni Hei Gun Otomo Mura Kakiage Zumen" showing the topography of the area, established in 1873. This historical map shows the state of land and owners of towns and villages nationwide for the government's tax reform at the time. This map was drawn on a scale at 181 m = 15 cm and at 3.9 x 3.5 m.

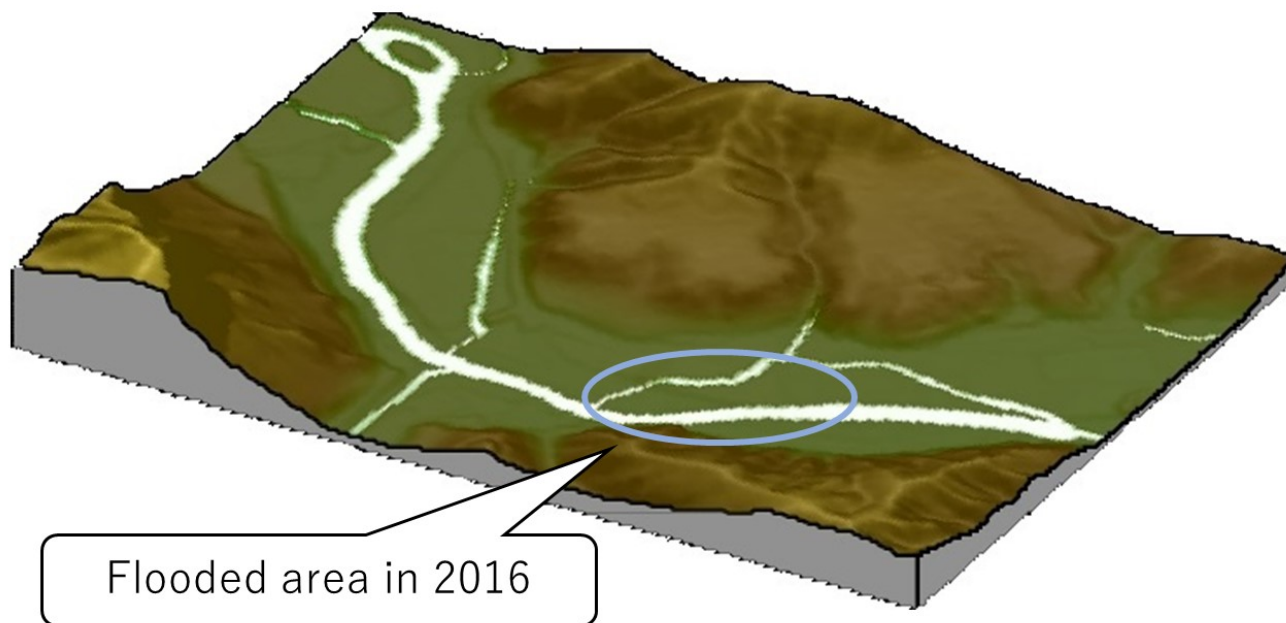
We reconstructed historical topography based on digital image of the historical map obtained using a high-resolution scanner. The map shows that agricultural lands were existed along the Omoto-kaido road and the old Omoto River was branched to several small rivers. The area damaged by the 2016 flood was portrayed as a sandbank in the river in the old map.

According to the hearing survey with local residents, the flood came to the institution from the opposite side of the Omoto River. This situation was reproduced using the numerical simulation of the 2016 flood elucidate. Thus, in the 2016 flood, Otomo district was inundated from the former tributary illustrated in the old map in addition to the main river.

As demonstrated in this study, historical topography can be reconstructed using historical maps. In particular, maps established in the early Meiji period are useful because it contains detailed information. These maps show the topography before the extensive artificial modification. Therefore, this information is can be used to identify the causes of disasters and used for the disaster mitigation in the future.

Keywords: Restoration of historical topography, High resolution scanning of historical maps, Disaster prevention based on historical documents

# Reconstructed historical topography of Iwaizumi



Flooded area in 2016