Paper ID	175
Author(s)	Michal Vokurka
Title	Torrent control as a means of developing international relations between Czechoslovakia and Japan

Abstract

In the second half of the 19th century, torrent control seemed to be a perspective discipline that would prevent damage to structures and land, as well as threats to the lives of people living or working near dynamic watercourses. In Europe, state subsidy programmes were implemented and specialists (mainly forest engineers or hydraulic experts) were trained to build cheap but effective structures on torrents to reduce flood waves and eliminate debris flows. In Central Europe, the main area of application of this discipline was the Alps. However, especially after the collapse of the Austro-Hungarian Empire, the successor states also used the services of these engineers in other regions. Moreover, some of them, such as Czechoslovakia, hosted experts from Japan in order to develop international cooperation in this field and to share Central European knowledge and experience with Japanese specialists. The aim of my paper is to analyse the archival material that testifies to these remarkable intercontinental contacts that sought to control the power of water and environmental processes.

Keywords	water; disasters; humans; torrent control; forest engineering

Paper ID	206
Author(s)	Satoshi Murayama
Title	An environmental history of the Ogōchi Dam: water supply to Tokyo and villages submerged in a dammed lake

Abstract

When did the decisive landscape change in Japan begin? The construction of canals and reservoirs related to the water use system still dates back to ancient times. Sayama Pond in Osaka and Manno Pond in Kagawa have an ancient history. Sayama Pond dates back to the Asuka period (616 AD), while Manno Pond is thought to have been constructed during the Taiho period (701-704 AD). Technically, the introduction of the technology from the Korean Peninsula and China was of great significance. The water supply for agricultural production, especially rice cultivation, was of central interest. However, it was the advent of concrete dams that changed the landscape throughout Japan, with their starting point being the transfer of technology from the United States of America. The first concrete dam in Japan was the Nunobiki-Gohonmatsu Dam in Kobe, Hyogo Prefecture, completed in 1900 as a dedicated water supply facility and the first gravity concrete dam in Japan. The world's first dam built entirely of concrete was the San Mateo (Lower Crystal) Dam in the USA. It was completed in 1889, with an embankment height of 52 m and an embankment length of 207 m. This presentation focuses on the Ogōchi Dam, which was built to supply water to the residents of Tokyo, a symbol of the concentration of the population in Japan.

Keywords	Water, Land, Water and People Flow, Landscape Change, Concrete Dam

Paper ID	255
Author(s)	Yuzan Liu, Takaaki Aoki and Naoya Fujiwara
Title	Percolation on real landscape reproduces city size distribution

Abstract

The Definition of “city” is inherently challenging due to its dependence on spatial distribution of people and complicated landscape. One method considers cities as connected clusters of square grids where population density exceeds a defined threshold. This approach resembles percolation theory in Physics, where clusters near the percolation threshold display critical phenomena and power-law distributions. Using population data from Japanese and European censuses, we simulate cities on real terrain as clusters generated under various thresholds. We found that city sizes follow a power-law distribution. This suggests that the emergence of cities may share principles with percolation transitions.

To explore this further, we randomly shuffled the population distribution across the grid, breaking spatial correlations inherent from census data. Remarkably, even after this randomization, the resulting clusters showed a spatial alignment with real-world urban areas. This implies a deep connection between population distribution patterns and the principles of percolation theory, potentially universal across diverse regions. Furthermore, at different set of population threshold and distance between grids, we found similar resulting clusters, indicating mechanisms between the formation of cities and the real landscape.

These findings suggests that city developments—such as city boarder expansion or population redistribution—may be affected by landscapes and historical factors.

Keywords	land, city size, percolation, power law