The national flood information system of Finland, established in 2006, brings together the essential information on floods under a single user interface. The system is based on GIS and Web technology and contains various types of flood information. It promotes flood risk assessment, flood-proof land use planning, and rescue operation planning. Evidently, it increases public awareness about flood risk and ensures that the experiential flood knowledge is transmitted for the younger generations. Interactivity with other information systems and GIS datasets eases the maintenance and provides a basis for further needs, such as development of flood risk maps.

Flood risk mapping also takes into account the officially protected cultural heritage — archaeological sites, built cultural heritage and landscapes. Many archaeological sites are situated on the banks of regulated inland water bodies and have now partly collapsed into the water. Floods also carry loose soil that can cover the archaeological heritage. Extreme weather phenomena will impact cultural landscapes because of the need to prepare for them and adapt to them. Floods cause problems for the built cultural heritage during the flooding stage and also when the structures dry out. In addition to charting flood risks it is also necessary to consider systems and means for the drainage and drying of plots and buildings.

Town of Pori — the most significant flood risk area in Finland

The town of Pori, established in 1558, is located at the mouth of the Kokemäenjoki river. About 15,000 people is living in the flood prone area. The town centre is situated on the southern bank of river Kokemäenjoki. It is a site of archaeological importance. The town dates back to the second half of the 19th Century and is listed on the inventory of cultural heritage sites of national importance in Finland. The area lies relatively safe +10 m above sea level, but the recently developed areas are more threatened. Also threatened by flooding are the industrial area from the 19th and 20th Centuries on the northern bank of the river and the parks situated on the islands. The parks and the industrial area are also listed on the inventory of cultural heritage sites of national importance.

Flood information types in the present flood information system

- Flood observations (water level and discharge)
- Historic flood maps
- Simulated flood scenarios (water level and discharge)
- Dam break flood hazard maps
- Minimum allowed building site levels

Types of flood information in the Flood Information System and formats of the information. The arrows denote the processing of the information in flood mapping and flood management.

EXTREFLOOD II

- EXTREFLOOD II research project aims to develop methods, which enable more effective flood risk assessment in Finland.
- One of the main objectives is to develop flood risk mapping as a part of the national flood information system.
- According to the flood directive (2007/60/EC) flood risk maps should indicate potential adverse consequences of flooding under several probabilities as a minimum in terms of:
  - Indicative number of inhabitants potentially affected,
  - Type of economic activity of the area potentially affected,
  - Installation which might cause accidental pollution in case of flooding and
  - Potentially affected protected areas.

Flood risk mapping also takes into account the officially protected cultural heritage — archaeological sites, built cultural heritage and landscapes.

Flood hazard map of Suomenlinna.

Suomenlinna fortress was built with French aid as Sweden’s Fortress against the Russians in the second half of the 18th century on a group of islands located at the entrance of Helsinki’s harbour. Under the Russians it served as a defence against the West. Suomenlinna is listed in Unesco’s World Heritage List.

Even a temporary rise of sea level of 1.50–1.60 metres damages the shoreline structures of Suomenlinna, such as its piers, supporting walls and earthworks. Flooding will also threaten the historic dry dock of Suomenlinna as water rising over the level of the gates can enter its basins. The increasing occurrence and strengthening of extreme weather phenomena, especially storms, will also cause damage to roofs and trees at Suomenlinna.

A major storm in Finland in January 2005 showed that the risk of flooding genuinely exists on the coasts of Finland. The above-normal high sea levels, with the rise of sea level by approximately 1.55 metres, caused major economic losses and the risk of a catastrophe in Helsinki’s Market Square was very close (Uusi-maa Regional Council 2007). This storm also had an impact on the Suomenlinna Fortress.


Flood hazard map of Pori.

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