**Abstract:**

When the temperature of the water drops to the freezing point, especially, in the slow flow area with the mild turbulence intensity, supercooling phenomenon occurs, and verity type of ice can be extended over the surface and depth of the flow. This Ice formation can cause variety problems at the hydraulic facilities and industrial equipment, therefore, predicting these ice formations is an essential task for engineering to prevent damages. In this paper, ice formations phenomenon has been investigated and modelled by utilizing different software and the final results are validated by using the measurement data from the Pulmanki river which have been taken through cross-sectional drill holes along river. Two numerical modeling software has been employed, TELEMAC-2D and Delf-2D, both software is open source and coupled flow ice model (determine ice parameters based on hydrodynamic parameters), but TELEMAC calculate hydrodynamic parameters by using finite element techniques which is operating on non-structured grids of triangular elements and Delft-2D uses finite volume techniques operating on structured grids of rectangular elements.