

## **Abstract:**

This thesis focuses on ground-based lightning detection which is important since lightning discharges still cause casualties yearly worldwide. The thesis provides description of several ground-based lightning detection networks and an analysis of lightning data of three lightning detection networks covering the Czech Republic during 2015 - 2021. Specifically, the data of the World Wide Lightning Location Network (WWLLN), the amateur network Blitzortung and the European network European Cooperation for Lightning Detection (EUCLID) are investigated. The thesis examines the spatial and temporal characteristics of lightning discharges from the three detection networks, the relationship between lightning discharges and land cover from CORINE Land Cover data, and the relationship of lightning discharges with types of weather situations based on the Czech Hydrometeorological Institute (CHMI) data. The results show that there is not much difference in the temporal and spatial characteristics of lightning discharges among the three detection networks. The relationship between lightning activity and land cover is the same for the three networks. Unlike the relationship between lightning activity and land cover, the relationship between lightning activity and weather types is in good agreement among the three lightning detection networks for only the most dominant types, which is B (low pressure trough) and Bp (migratory low pressure trough).

## **Keywords**

Lightning, discharge, EUCLID, BLIDS, WWLLN, Blitzortung, Czechia