

Þórður Arason (2004), Comparison of data from a lightning location system and atmospheric parameters from a numerical weather prediction model, Í: *Proceedings Volume I, 27th International Conference on Lightning Protection (ICLP 2004)*, Centre International de Congres du Palais des Papes, Avignon, France, 13-16 September 2004, 259-263.

This study presents a comparison between the occurrence of thunderstorms in Iceland as identified by lightning location systems and the properties of the atmosphere as analysed and predicted by a short range numerical meteorological forecast model. The purpose of the comparison is to identify thunderstorm prediction indices, suitable for Iceland. The numerical meteorological forecast model of Météo-France, Arpège, was used for this study. On the basis of output from the Arpège, the key atmospheric variables were defined in a grid. The lightning locations of the ATD sferics system of the UK Met Office and the LLP-based lightning location system of the Icelandic Meteorological Office, were used for this study. Several thunderstorm indices based on the temperature and humidity profile of the atmospheric column of each element of the forecast model were calculated. The indices that best predicted occurrences of lightnings were then used in a statistical similarity model that estimates thunderstorm probabilities. These were adjusted for annual variations and diurnal variations in the summer. The results enable the construction of probabilistic local thunderstorm forecasts for Iceland, based on output from an operational numerical weather prediction model.