



## **Icing occurrences on overhead lines in Belgium**

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A client in Belgium wanted to know the frequency of occurrence of icing on the overhead lines. For that purpose a 3 km CFSR - WRF climatology has been generated over Belgium for the last 20 years. Four icing types: freezing rain, wet snow, hoar frost, and hard rime have been derived using algorithms based on precipitation, wet bulb temperature, surface temperature, wind speed and relative humidity. The icing occurrence maps show very interesting patterns over Belgium: impact of the major cities, coastal boundaries and Ardennes (hills). Verification against observations show that both in absolute and relative terms the WRF simulations can be used as a guide for the icing types, distribution and frequency on overhead lines in Belgium. Results tend to show that very high impact phenomena like freezing rain or wet snow are relatively rare, whereas the low impact phenomenon hoar frost is several times more frequent. The medium to high impact phenomenon freezing fog is relatively rare in Flanders (north of Belgium), but more frequent in Wallonia (south of Belgium) and constitutes an important type of icing in the Ardennes. On average over a winter will about 80 hours of icing problems occur near the coast, about 120 hours in Flanders up to 245 hours in Luxemburg.