1 Objective comparisons between the SAFIR and LINET networks in Hungary

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The SAFIR lightning localization network has been operating since 1997 with 3 sensors and since 1998 with 5 sensors in Hungary. As a meteorological service of a Central European country HMS is highly interested in severe weather forecasting among others. This means that we focus on the total lightning phenomenon included both cloud-to-cloud (CC) and cloud-to-ground (CG) lightnings.

Lightning detection networks in Europe which were supported by power supply and insurance companies connected to each other with the aim to increase the authorised territory mainly make emphasis on CG lightnings. It has physical and financial reasons. CG lightnings detected in the LF range can be localized by 2D TOA method with high accuracy. Results are available with larger baselines which means fewer sensors. And fewer sensors needs lower financial support.

Meteorological services due to the behaviour of the thunderstorms more interested in CC lightnings. CC lightnings appear 10-15 minutes before the CG strokes. This short time-profit is very useful in case of severe weather alarms.

The Hungarian SAFIR is more than 10 years old now. Similar to some other Central European countries the institutional budget of the HMS is usually not enough for the

regeneration of the network. Experiences showed many times that the regular maintenances of the SAFIR VHF sensors do not reach the desired accuracy therefore the azimuth measurements followed by CC localizations and as it is coupled to the CG measurements ground stroke locations were erroneous as well.

In the last two years further settings were applied in the sensors which lead to improving localizations. In this time another type of sensor – LINET - turned up on the market. This new technique uses only VLF-LF range but in oppose to other LF networks it discriminates CC lightnings with a '3D TOA' method and necessarily smaller baselines.

Before the 2007 stormy season the existing 3 LINET sensors were completed with 2 more stations to make an overall coverage of Hungary. Thus two different networks has been operating in parallel. The spatial distribution of the networks is very similar since the shape of the country. Baselines are 140-180 kms. In the last stormy season many comparisons were made using the two different database such as localization differences, detection efficiency, CG-CC discrimination, network availability etc.