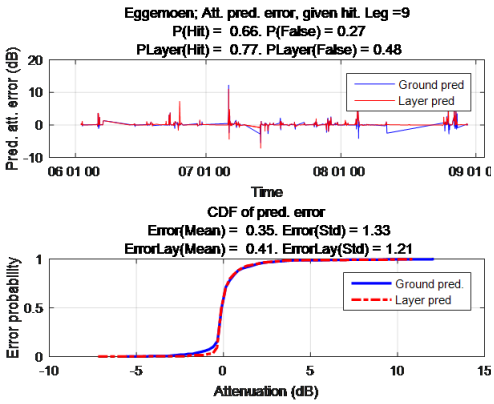

Fig. 8. Prediction errors and corresponding CDF, given that measured rain is true

D. *Prediction model results*

The following two tables summarise the statistical parameters depicted in the previous figures.

	Nittedal			Eggemoen		
Leg (H)	P(Hit)	P(False)	Error(dB) Mean/Std	P(Hit)	P(Fa)	Error(dB) Mean/Std
3	0.72	0.26	0.57/1.8	0.62	0.2	0.44/1.4
6	0.74	0.3	0.55/1.8	0.66	0.23	0.4/1.3
9	0.77	0.32	0.54/1.7	0.66	0.27	0.35/1.3
12	0.77	0.33	0.57/1.8	0.68	0.29	0.35/1.3

Table 1. Ground layer; Values of some relevant statistical parameters

	Nittedal			Eggemoen		
Leg (H)	PL (Hit)	PL (False)	Error(dB) Mean/Std	PL (Hit)	PL (Fa)	Error(dB) Mean/Std
3	0.75	0.27	0.63/1.8	0.71	0.44	0.38/1.0
6	0.76	0.27	0.63/1.7	0.78	0.50	0.4/1.0
9	0.77	0.28	0.65/1.6	0.77	0.48	0.4/1.2
12	0.77	0.27	0.7/1.7	0.67	0.42	0.36/1.1

Table 2. All layers; Values of some relevant statistical parameters

The results indicate that the hit probability is mostly larger than 65 to 70%. At the same time, the false alarm rate is mostly below 25%, although Eggemoen is just below 50%. From the attenuation CDFs, we can see that both prediction methods predict attenuations that are typically lower that what is measured. From the two tables and the previous figures, it appears that the hit probability is varying from site to site and with somewhat different results for the ground and layered approach. The same goes for the false alarm rate. Besides from possible weaknesses in the tested attenuation prediction methods, the weather model outputs may also have a varying correctness from site to site and consequently influencing the site dependent prediction quality. The results are generally encouraging and support the hypothesis that prediction based upon weather models is applicable for propagation forecasting.

V. SUMMARY

The precipitation hit-rate of the meteorological forecast model AROME at the tested sites over an accumulated period of 9 months is better than in the order of 65 to 70 percent, with a clear site dependency. Given precipitation hit, we found that the prediction of the signal attenuation has an error with a typical bias and standard deviation in the order of 0.5 to 0.5 dB and 1.0 to 1.7 dB respectively for prediction legs from 3 to 12 hours. These are encouraging results supporting the hypothesis that the user groups introduced in section 2 could benefit from a service based such predictions.

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