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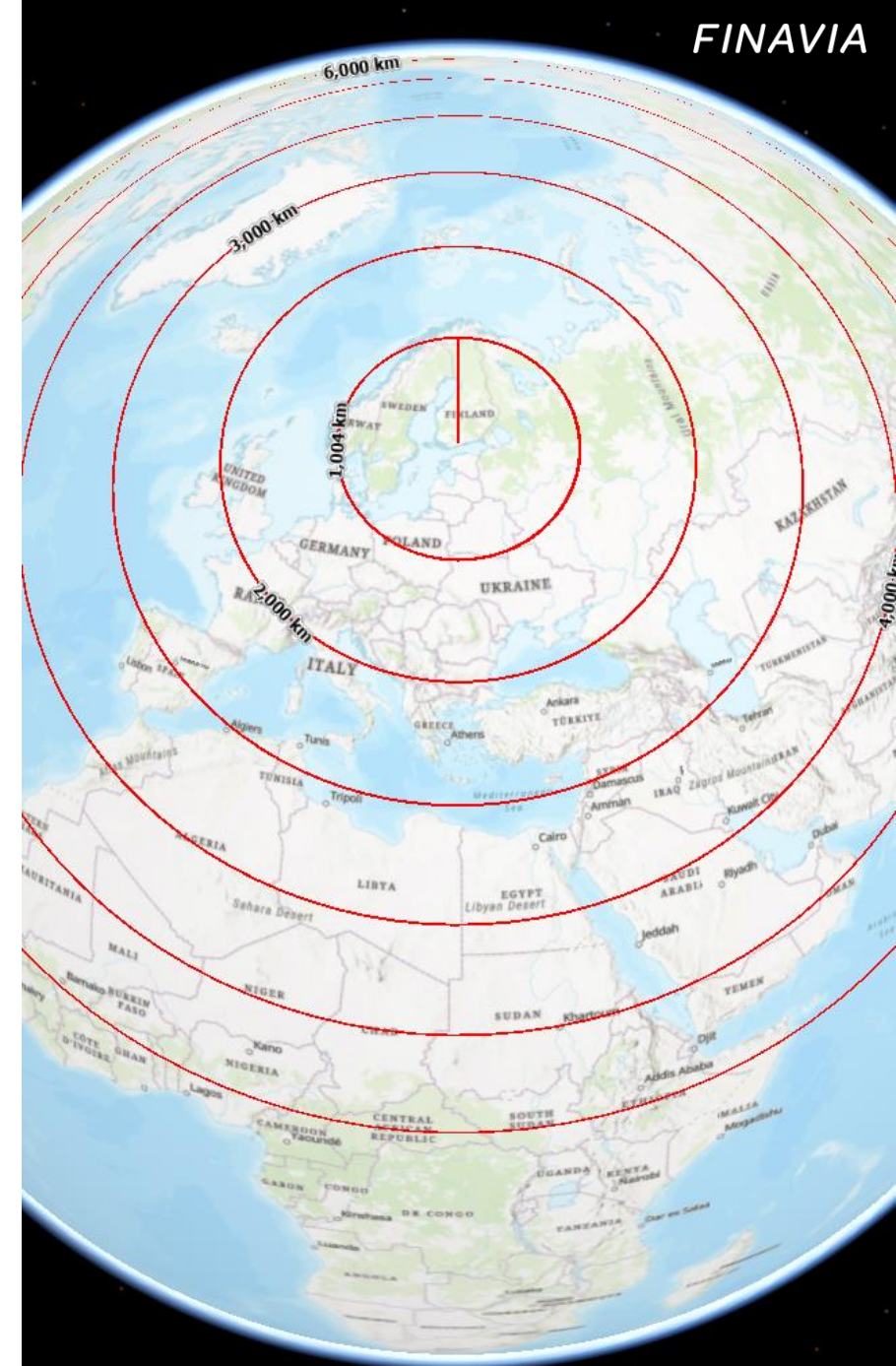
Getting More Out of Aircraft Noise at Helsinki Airport

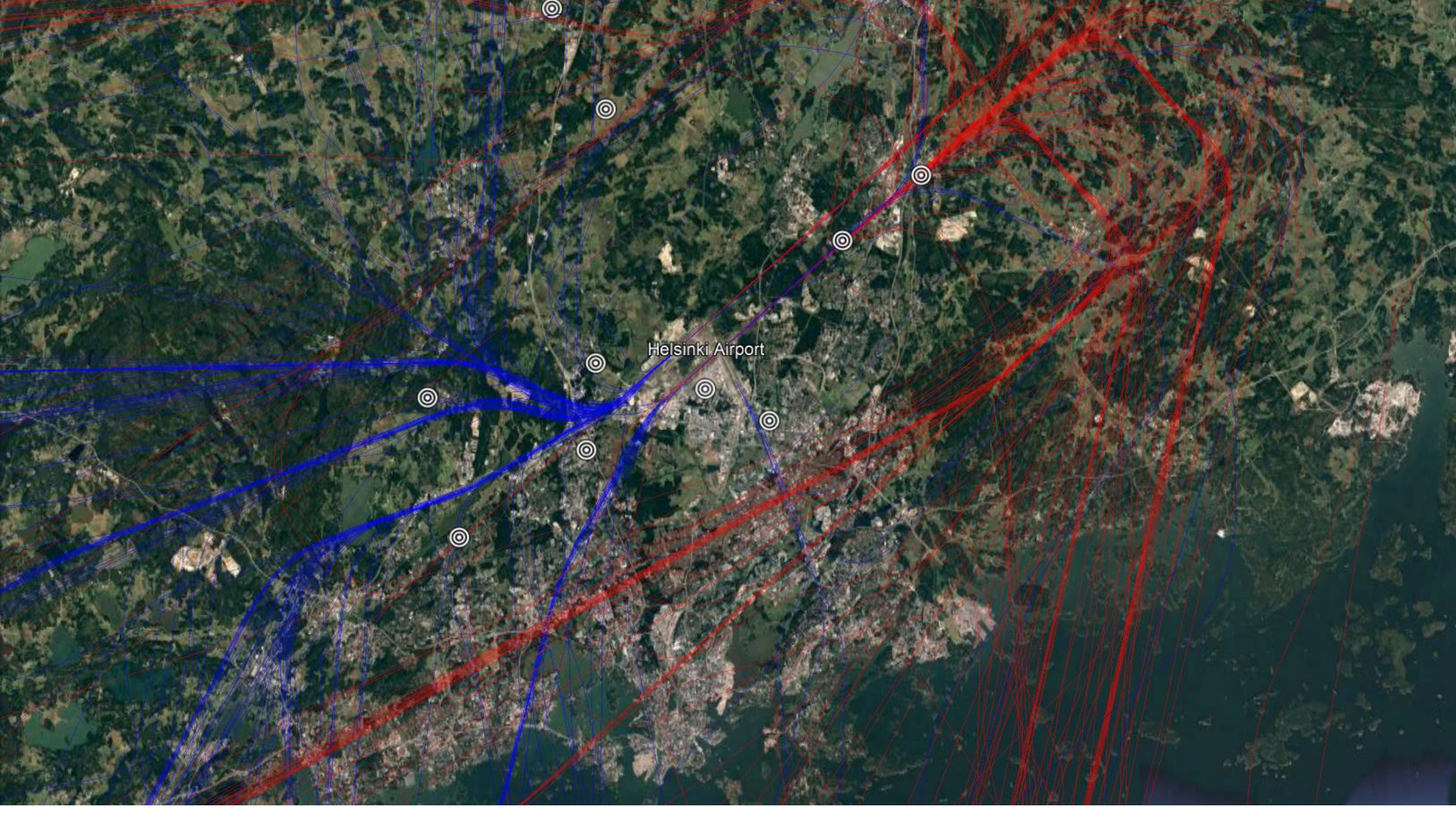
10.-13.9. ANOMS User Forum, Lisbon

Ari Pietilä, Head of Aircraft Noise Management, Finavia

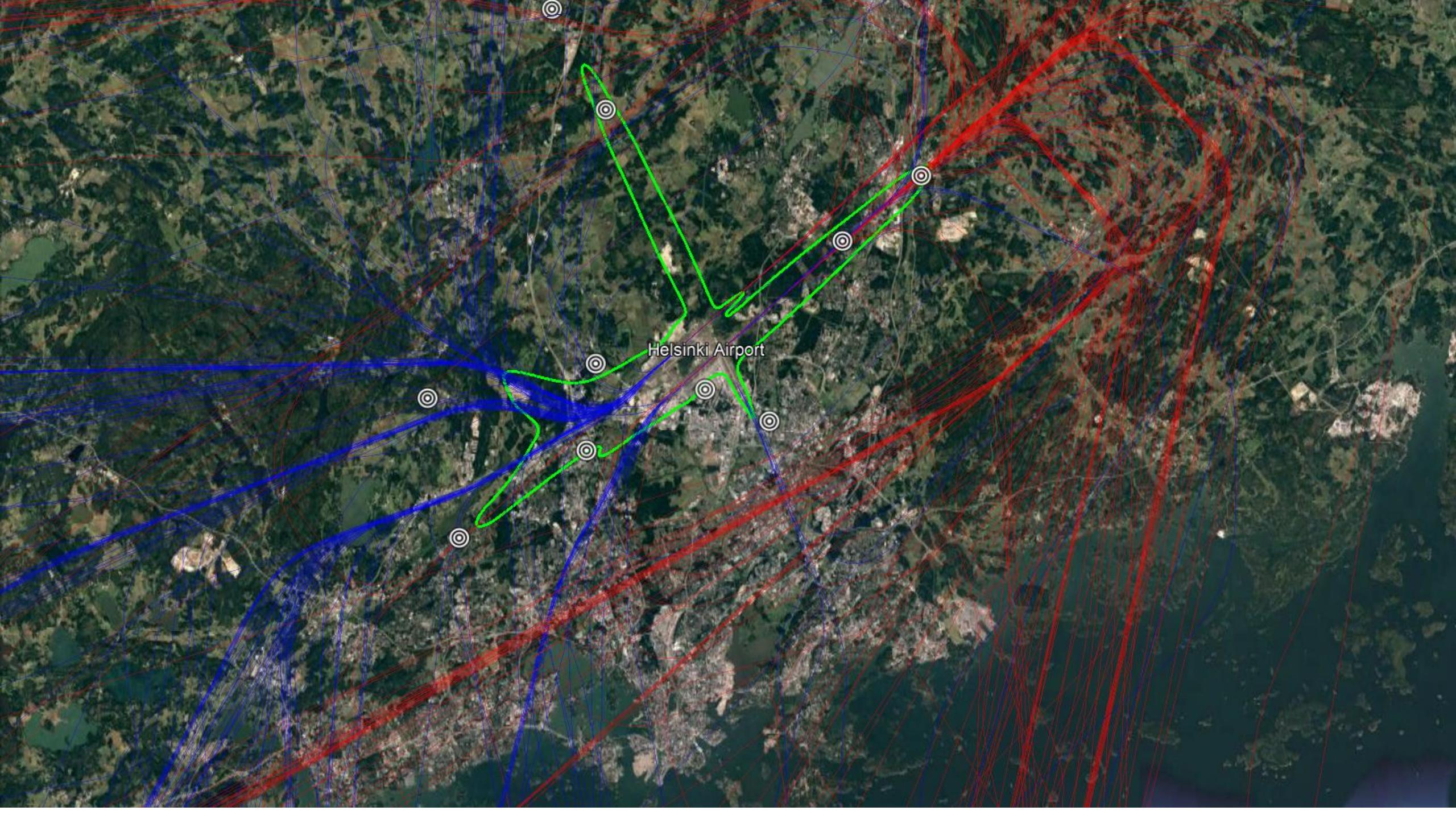
Topics

1. Geography of Helsinki Airport
2. Analysing the Aircraft Noise
3. Snow and Noise
4. Finetuning the Aircraft Specific Noise Calculation Input





Helsinki Airport



Helsinki Airport

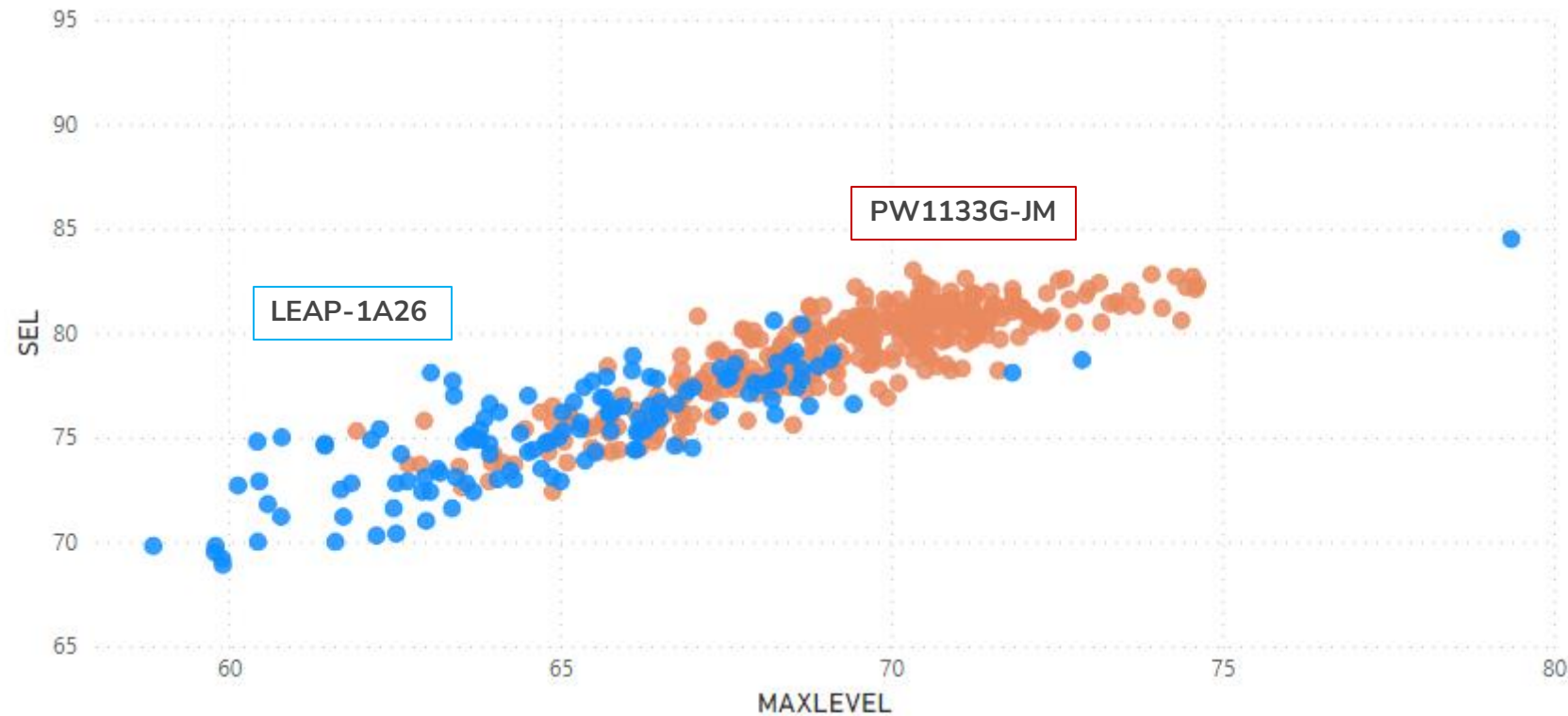
Analysing the Aircraft Noise



A321 median arrival noise (SEL) annually, 6,7 km to RMT from runway end

	NUMBER	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Older models CFM56 early 2000s	.ZA	86,40	86,40	86,20	86,60	86,30	86,20	85,70	84,30	85,40		
	.ZB	85,75	86,50	86,40	86,40	85,80	85,90	85,20	84,60	85,70		
	.ZC	86,60	86,40	86,30	86,60	86,30	86,30	85,85	84,80	86,00		
	.ZD	86,50	86,60	86,10	86,40	85,90	86,00	85,90	86,10	87,40		
	.ZE	86,85	86,30	85,70	86,30	86,00	86,00	85,65	84,90	85,45		84,35
	.ZF	86,40	86,30	86,30	86,50	86,20	86,10	85,80	85,75	86,70		
Different engine type V2533-A5	.ZG		84,75	84,05	84,40	83,80	83,90	83,40	83,60	84,70	84,25	83,30
	.ZH		85,00	84,00	84,20	83,80	83,70	83,50	83,70	84,80	84,25	83,30
	.ZI		85,70	84,15	84,10	83,90	83,85	83,60	83,70	85,30	84,25	83,30
	.ZK			84,40	84,30	84,00	84,00	83,70	83,90	84,80	84,25	83,60
	.ZL			84,30	84,45	83,70	83,80	83,80	83,70	84,90	84,00	83,35
	.ZM						83,90	83,50	83,70	84,90	83,80	82,90
Vortex generator / FOPP noise reduction	.ZN						83,90	83,30	83,50	85,00	82,90	82,80
	.ZO						83,80	83,50	83,60	84,75	84,00	82,90
	.ZP						84,00	83,70	83,70	84,95	84,35	83,00
	.ZR						83,20	83,30	83,60	84,20	83,45	82,90
	.ZS						84,40	83,50	83,70	84,40	83,80	82,90
	.ZT						82,40	83,30	83,40	84,45	83,50	82,60
	.ZU							83,80	83,90	84,50	84,20	82,80

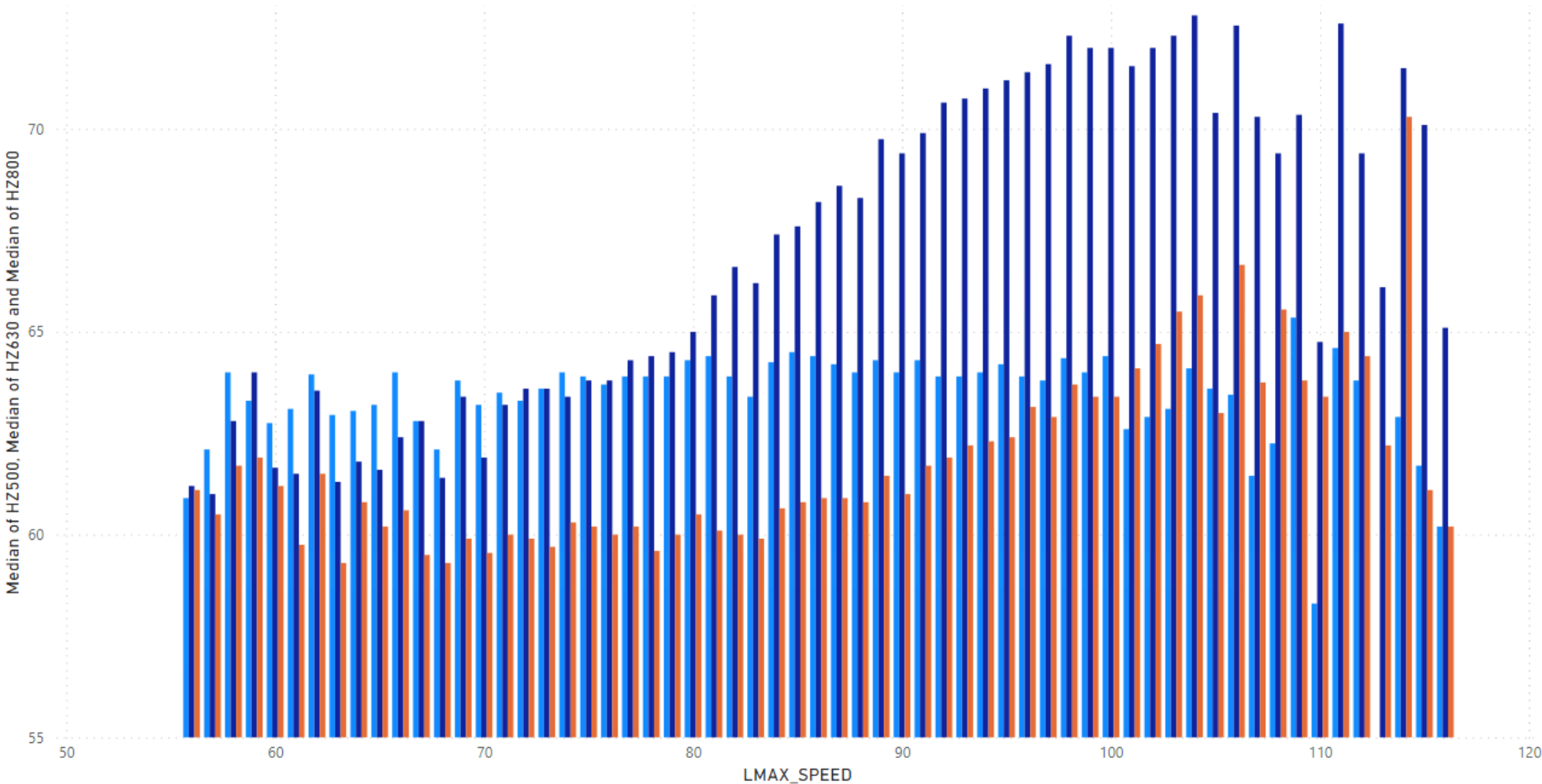
Departure noise, 6,7 km to RMT from runway end, A20N with different engine option



Older A32-series aircraft with FOPP noise (12 km to runway end)

Median of HZ500, Median of HZ630 and Median of HZ800 by LMAX_SPEED

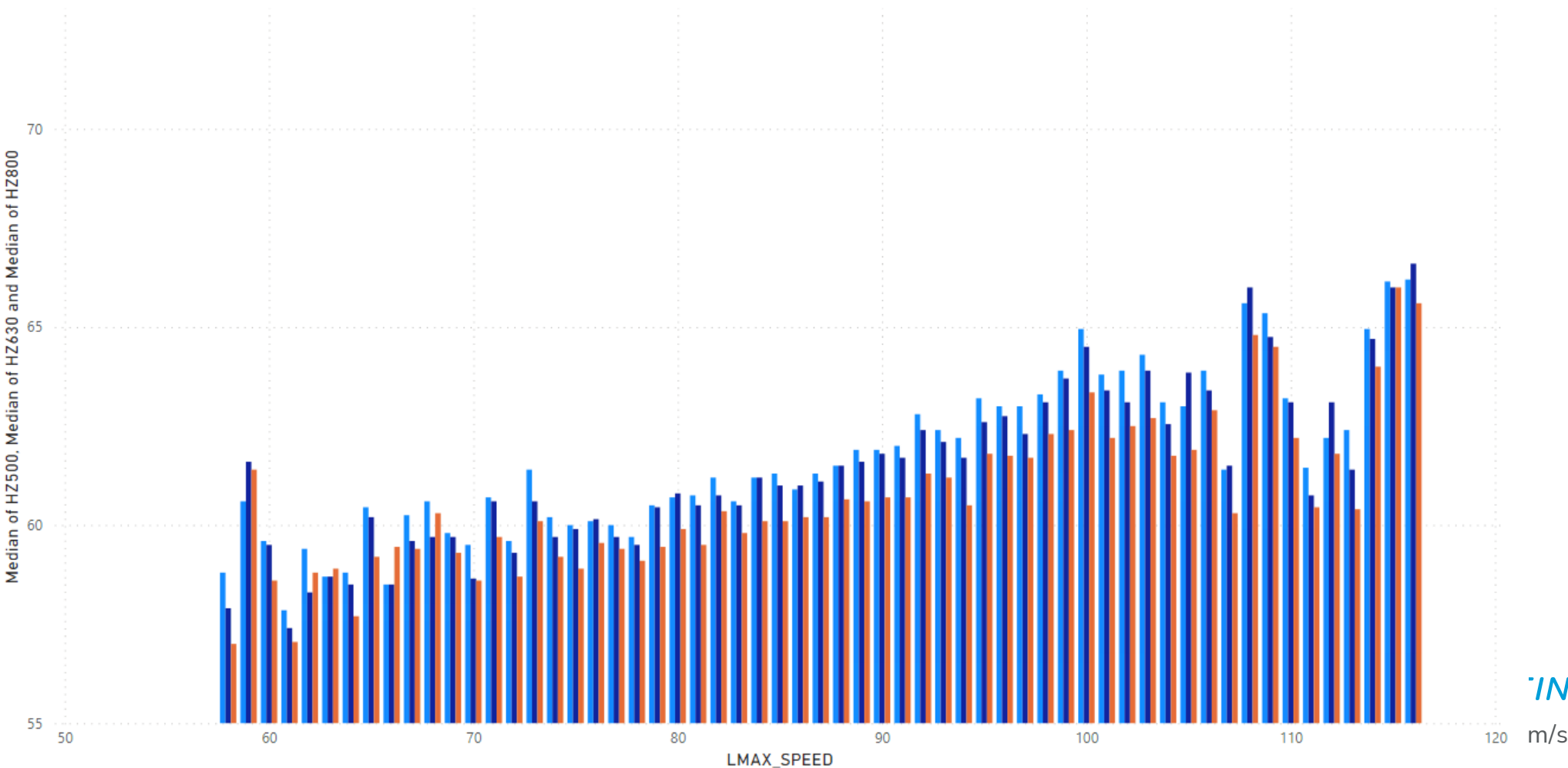
● Median of HZ500 ● Median of HZ630 ● Median of HZ800



Newer A32-series aircraft without FOPP noise (vortex generator installed, same location)

Median of HZ500, Median of HZ630 and Median of HZ800 by LMAX_SPEED

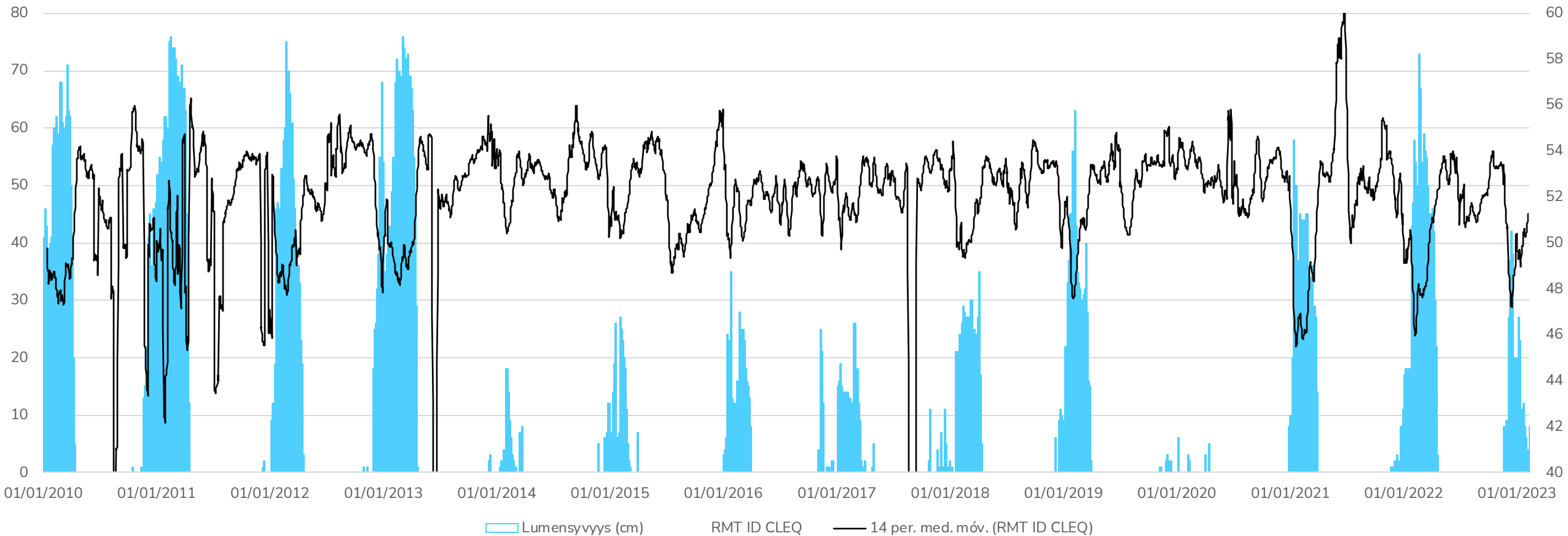
● Median of HZ500 ● Median of HZ630 ● Median of HZ800



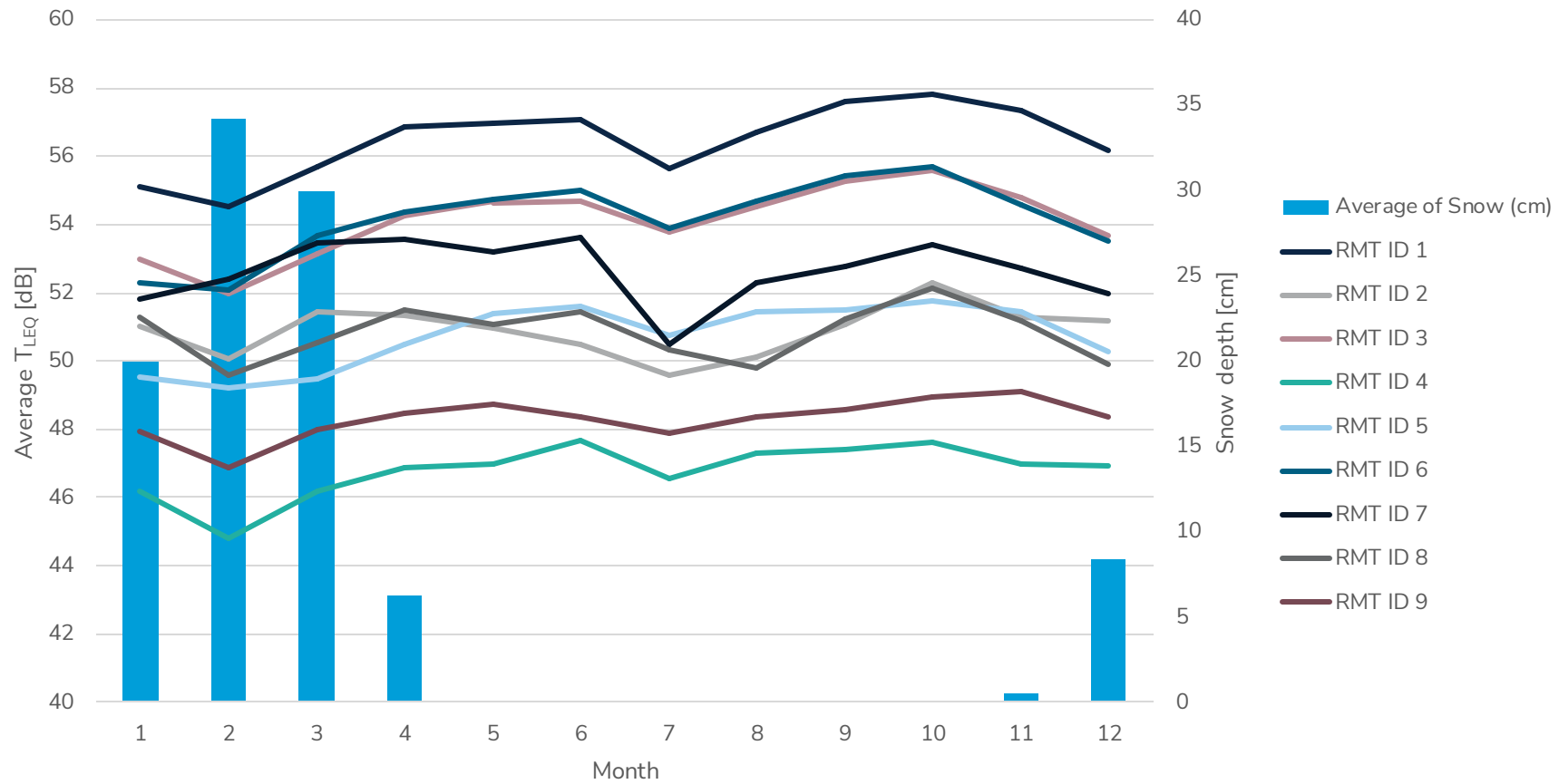
Snow and Noise



Daily Community Noise Levels C_{LEQ} dB 2010 – 1.3.2023 and snow depth in cm



Monthly averages for T_{LEQ} on different noise monitoring locations, 2010 - 2022



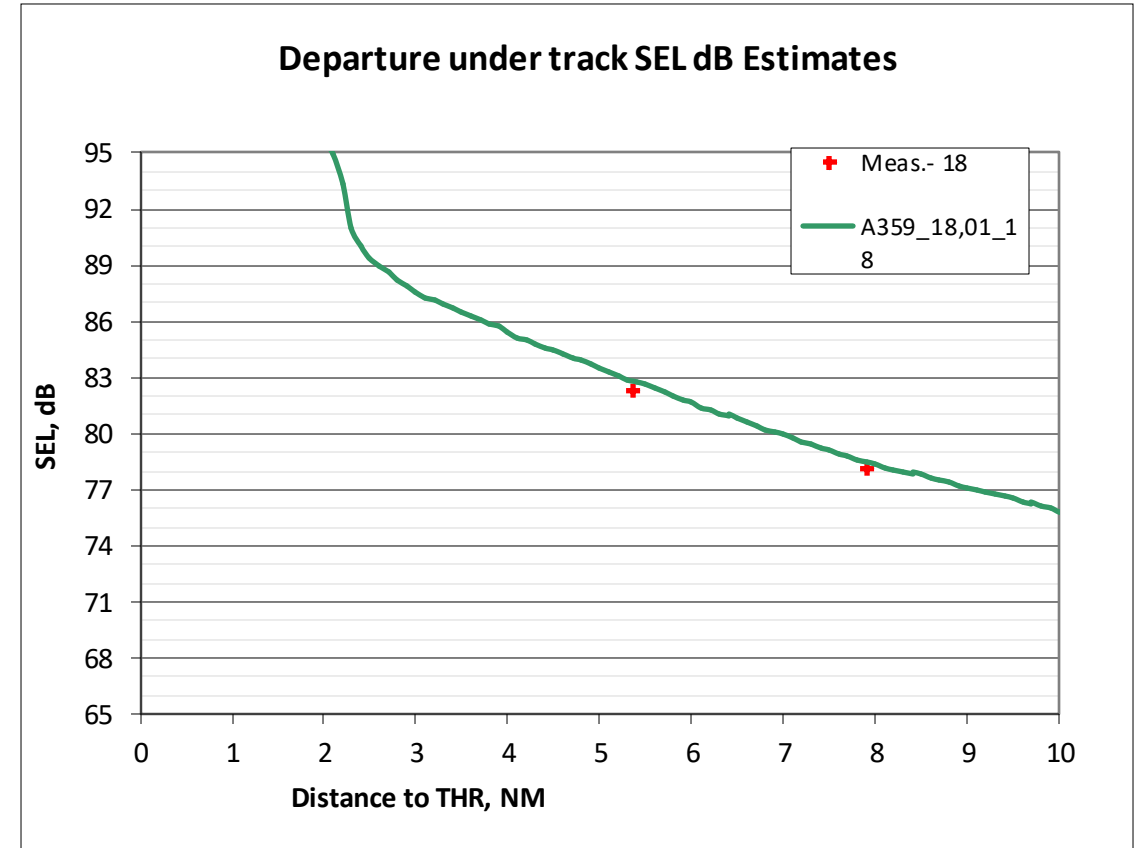
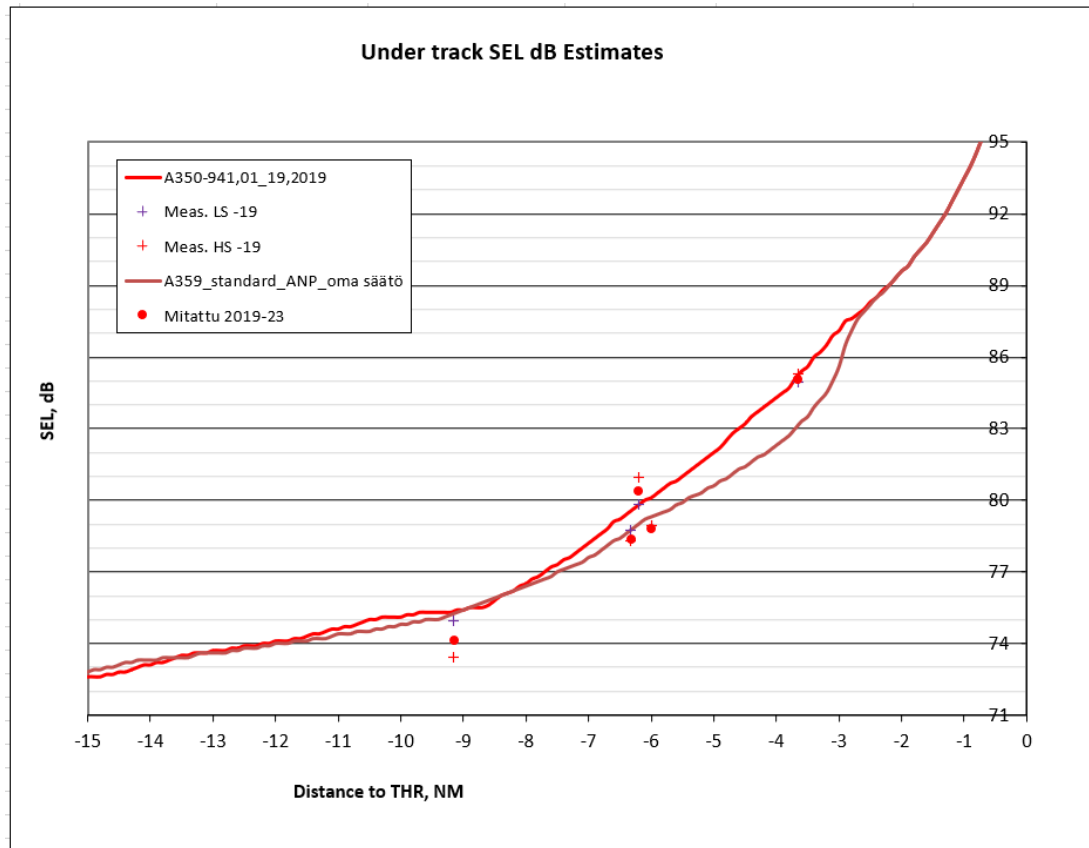
Contacts Due to Aircraft Noise 2011-2022, monthly, Helsinki Airport



Finetuning the Aircraft Specific Noise Calculation Input



Measured and modelled noise levels, SEL



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Thank you



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