



Weather intelligence for automotive innovators

Lasse Lumiaho
Head of Automotive

VAISALA
Xweather

THIS IS VAISALA XWEATHER

Systems that turn weather into foresight



Lightning distance 10 km

Safe to resume
operations



Water film thickness 3.14 mm

Risk of aquaplaning



Pothole detected

Class: severe



15.3



17.6



18.1

Xweather automotive customers



Weather impacts road users

Car crashes

22% of all crashes are weather related

Annual cost is **\$53B**
(\$193 per vehicle)

Traffic congestions

23% of highway congestion is weather related

Annual cost is **\$87B**
(\$315 per vehicle)

Casualties

6,000 fatalities 445,000 injuries per year

Each non-fatal accident costs **\$61,600** on avg.



Weather

AIR TEMPERATURE -2° C
RELATIVE HUMIDITY 87.2%
FOG
VISIBILITY 1.054 km
PROBABILITY OF PRECIPITATION 24%



WEATHER HAZARD WARNING
LOW TEMP

ICY CONDITIONS?

Road Weather

AIR TEMPERATURE -2° C
RELATIVE HUMIDITY 87.2%
FOG
VISIBILITY 1.054 km
PROBABILITY OF PRECIPITATION 24%

AUTOPILOT AVAILABLE
WET SURFACE
SURFACE TEMP +3° C

WET SURFACE
LAYER THICKNESS 2.13 mm
SURFACE TEMP +1° C



RISK OF AQUAPLANING!
WET SURFACE
LAYER THICKNESS 7.28 mm

~~Future~~ of mobility today

Connected

- Weather hazard warnings
- Enhanced infotainment experience
- Weather-aware navigation

Autonomous

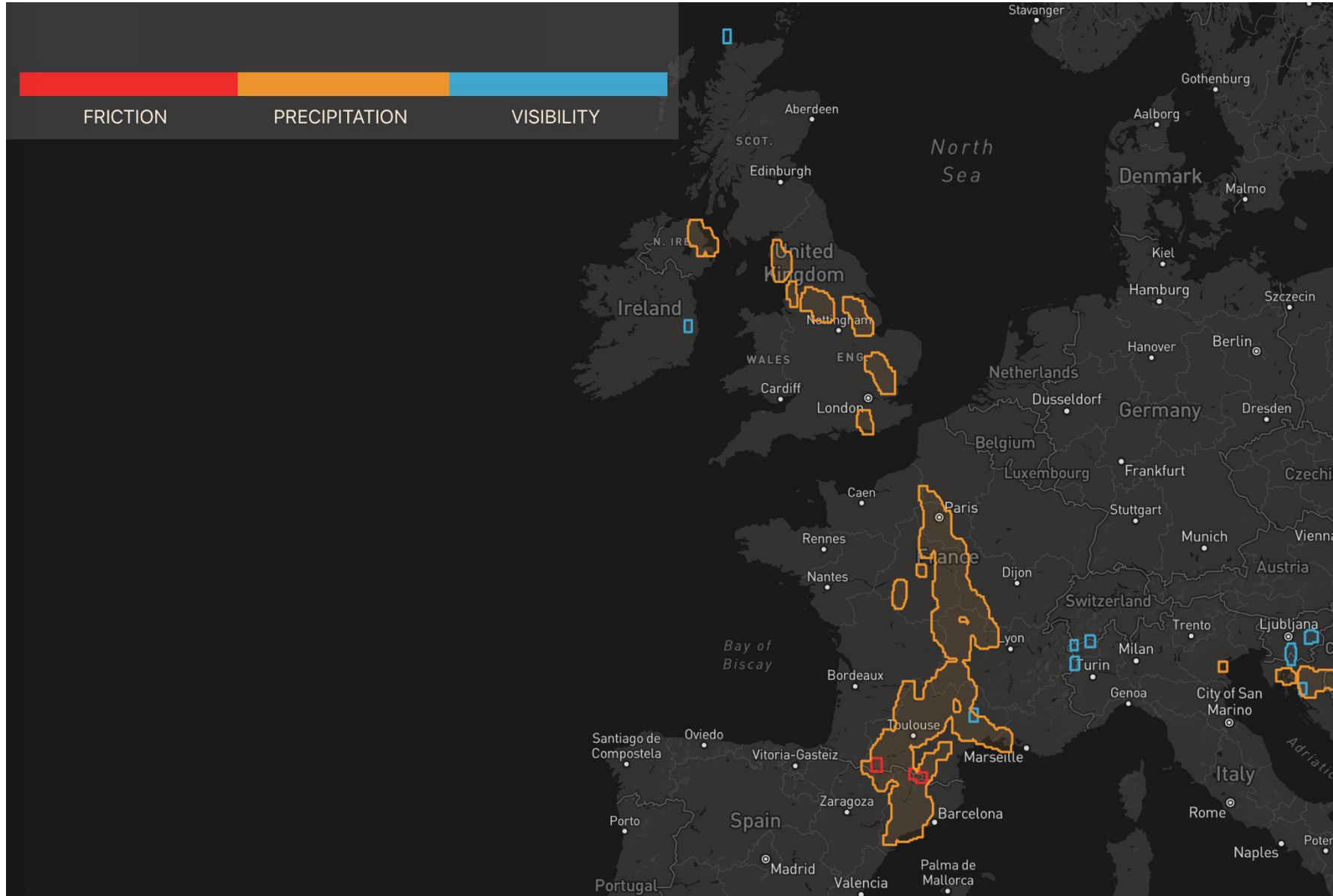
- Weather-aware vehicles
- Increased AD & ADAS availability
- Build trust in technology

Electric

- Accurate EV range prediction
- Powertrain efficiency optimization
- Accelerate EV adoption

Market leader in infotainment





EuroNCAP 2026 weather details

v1.2 2026-07

#1 Local hazards

- Poor weather
 - Heavy rain
 - Low visibility
 - Wind gusts
 - Hail
- Poor road
 - Slippery road
 - Aquaplaning

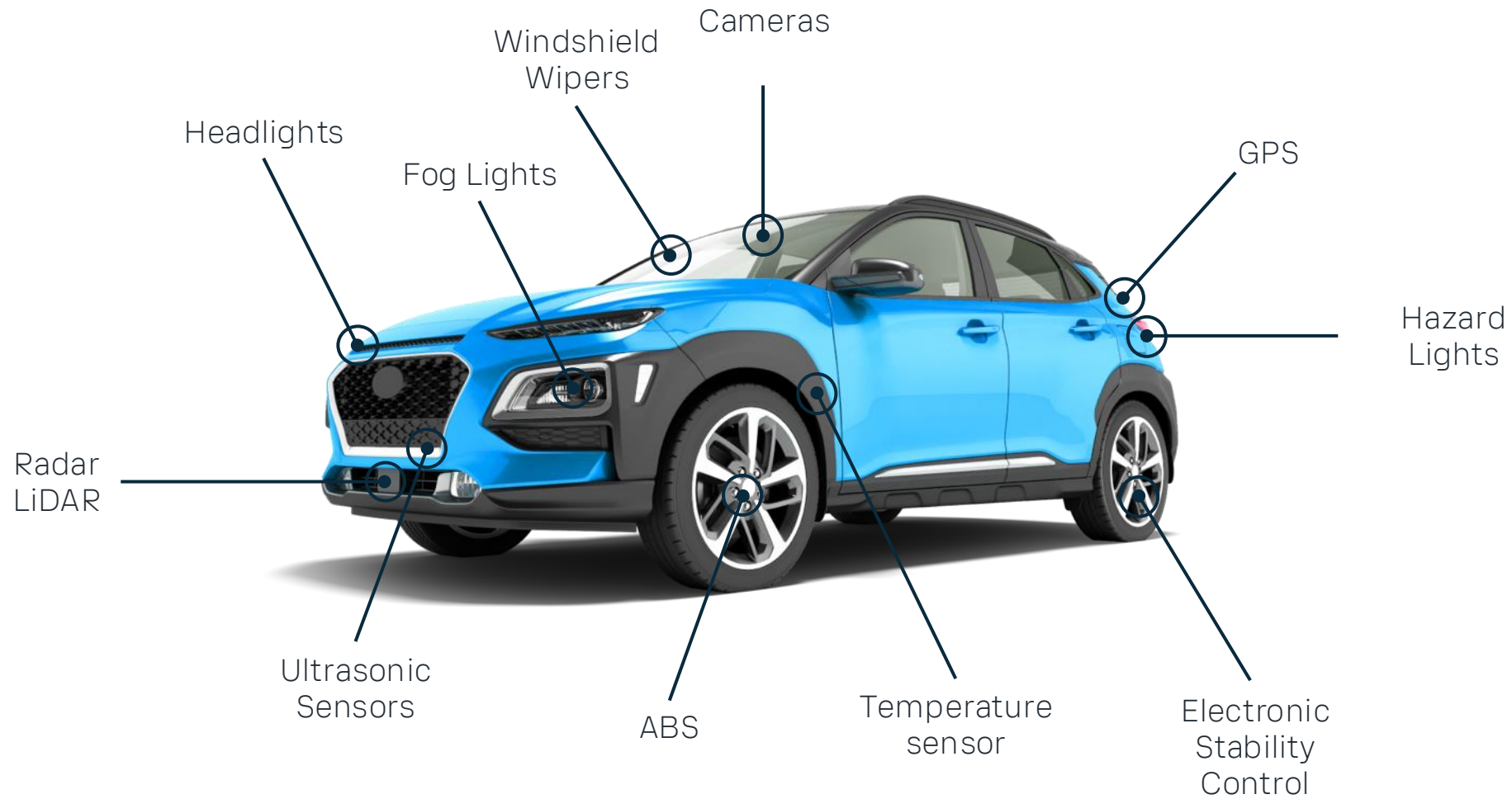
#2 Speed limits when

- Wet road
- Snowy or icy road

Philipp Koopman scaling AVs:

Getting the first 100 autonomous vehicles on the road takes the first 99% of the time, while scaling up takes the other 99% of the time.

Vehicle sensors

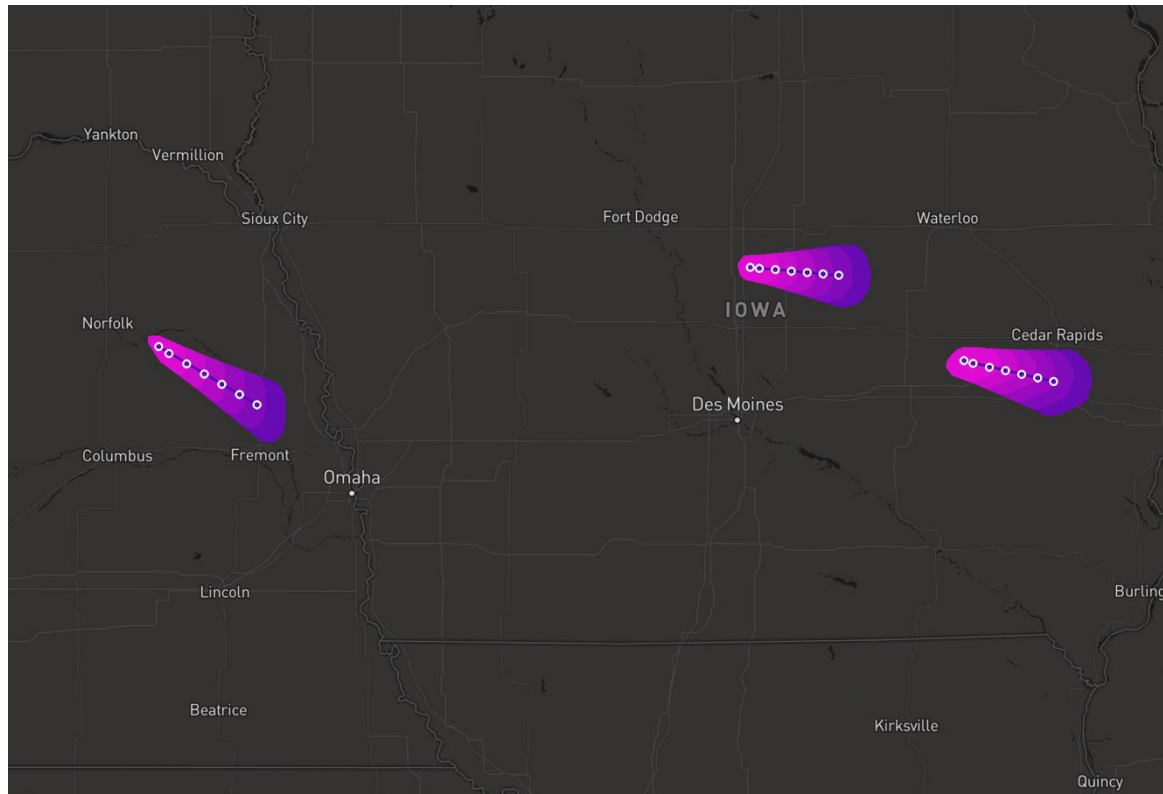


ATS 2026, San Diego: "They never look the same so the AI struggles"

- More and more edge cases for AVs are becoming constant issues for AVs

Hail or lightning breaks the sensors

(hail threat zone below)



Road works



ATS 2026, San Diego: "They never look the same so the AI struggles"

Snow moves the edge of the road

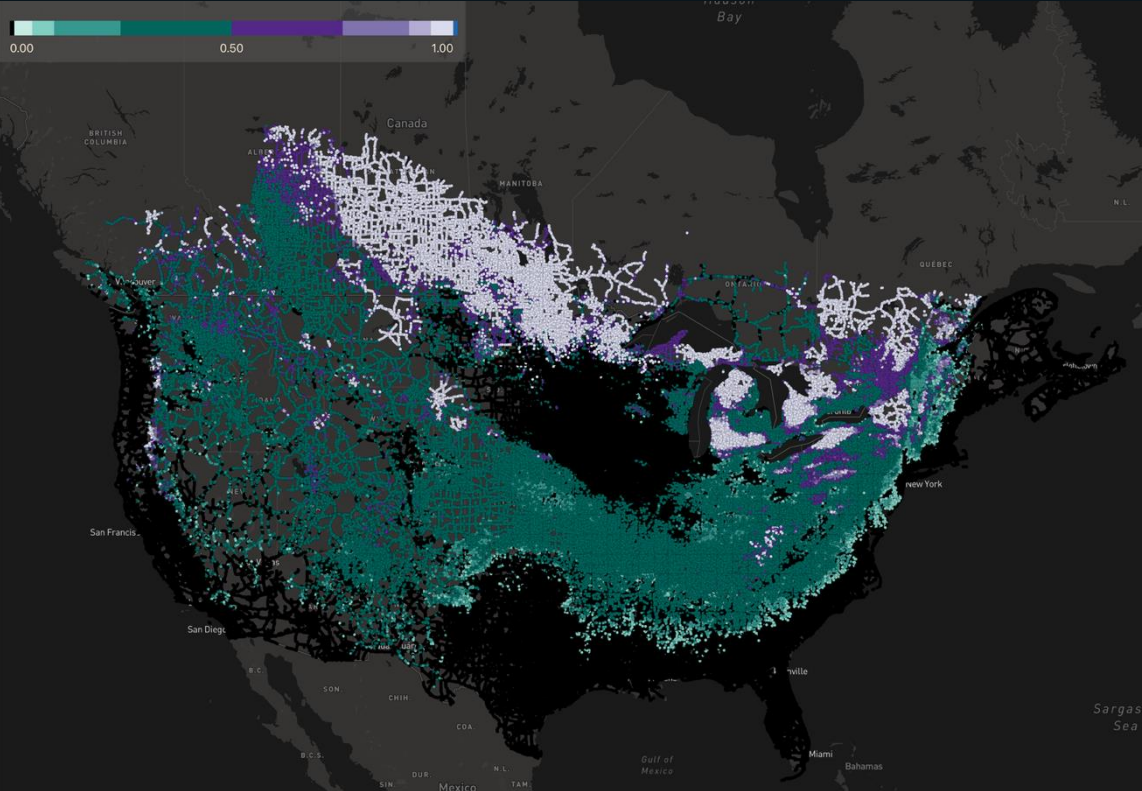


Is it a puddle or river?

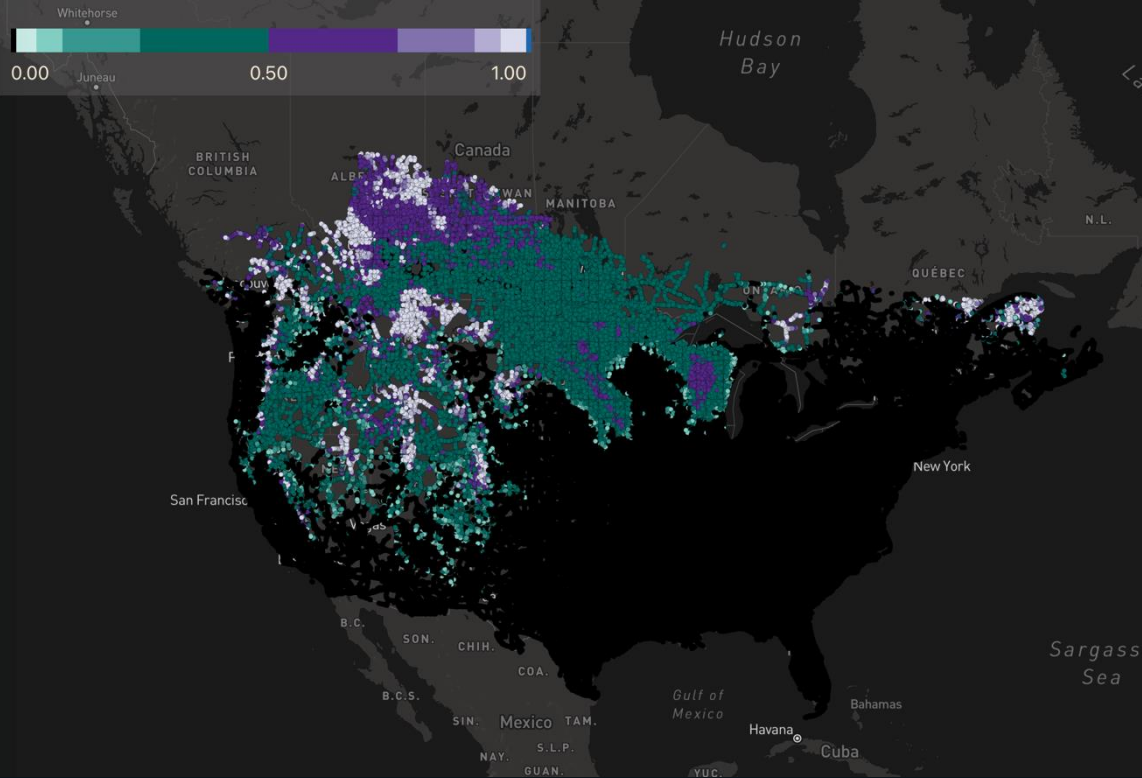


Probability of ice – comparison of two winter days

December 12th, 2024

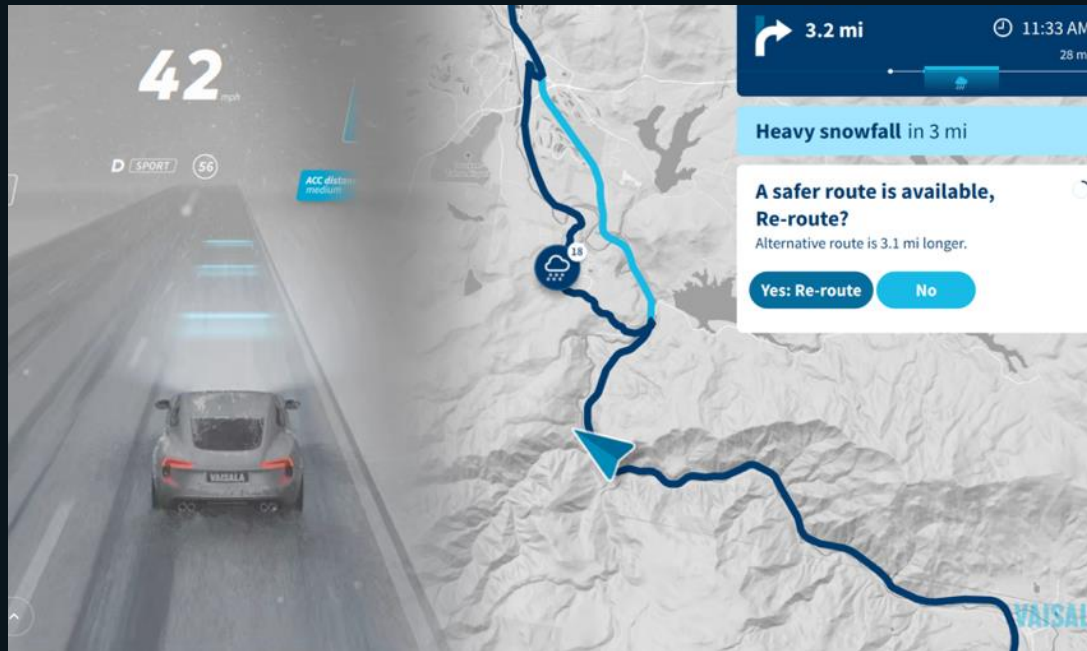


December 30th, 2024

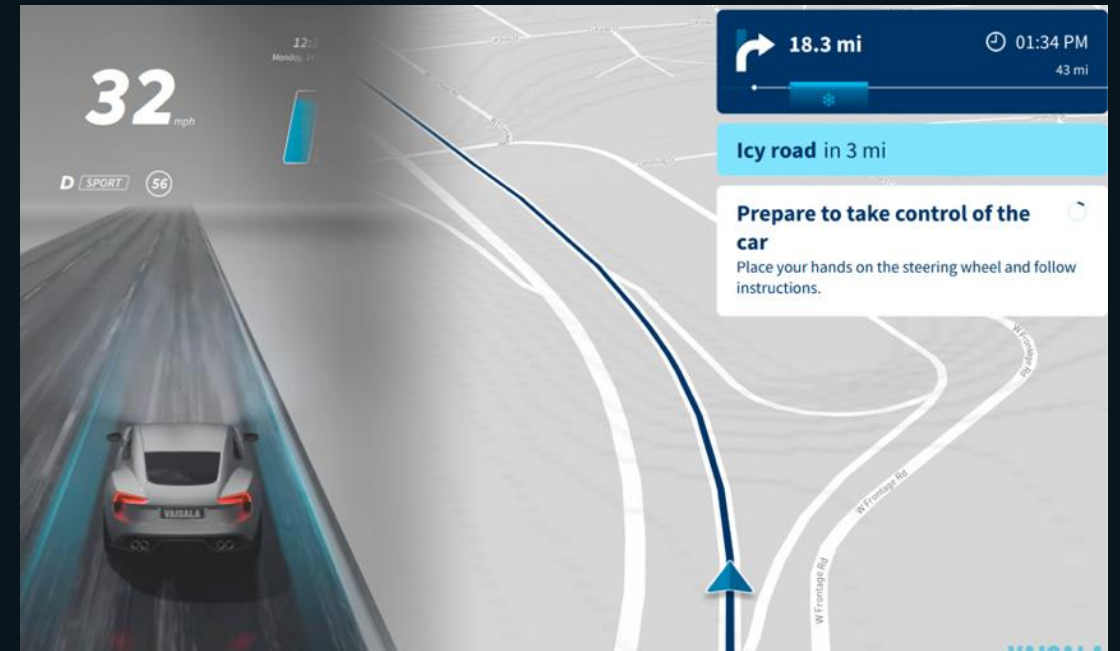


Increase availability and build trust

Optimal route, autopilot enabled, increased system availability



Safe, pre-emptive and comfortable handover before road conditions change



Electric

Accurate EV range prediction

Powertrain efficiency optimization

Accelerate EV adoption



Battery

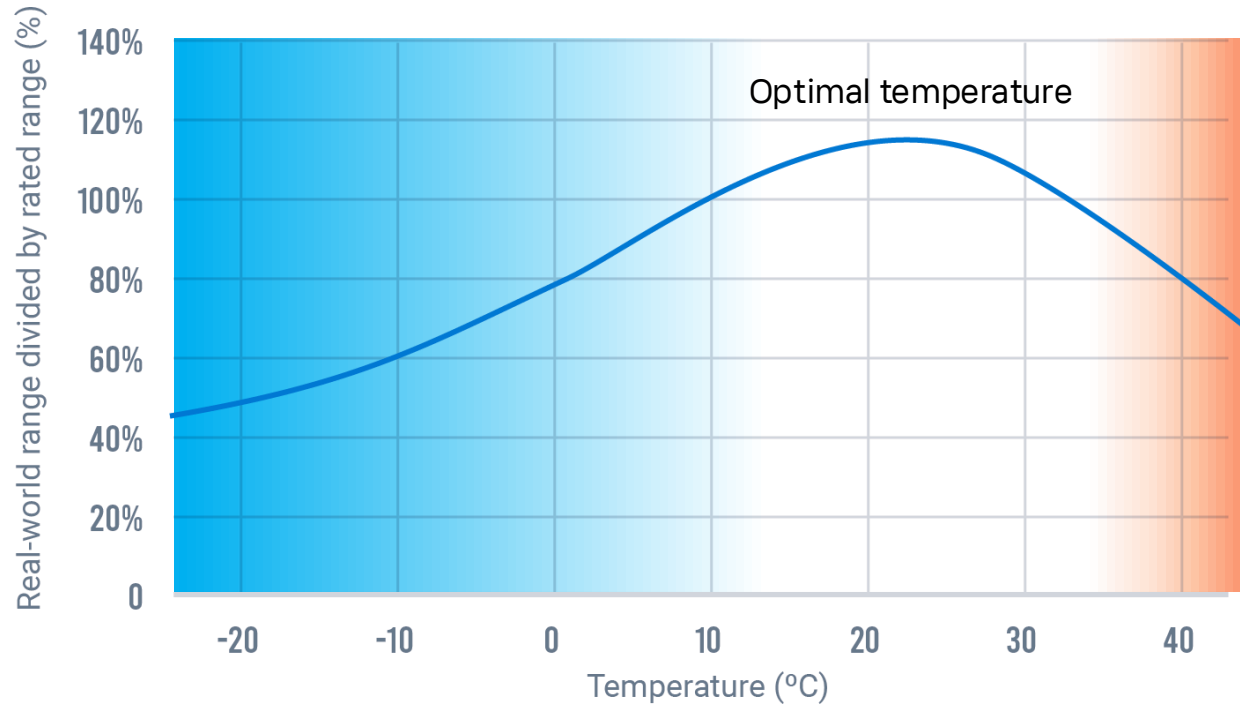
81 %



Range

219 mi

Range vs. temperature



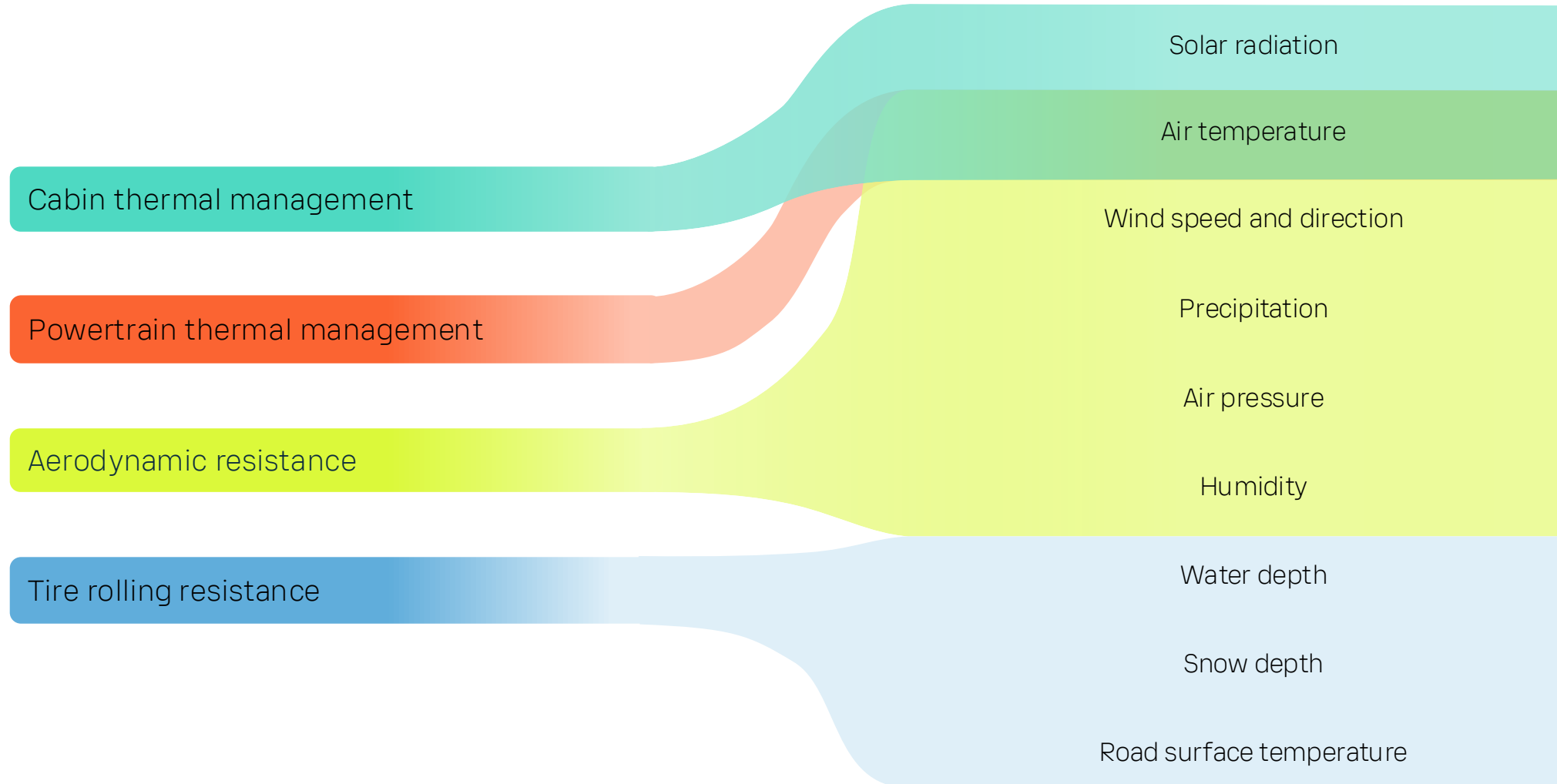
Metadata

- 5.2 million trips
- 4200 EVs
- 102 make/model/year combo

Conclusions

- Range peaks at 21.5 °C
- Over 100% rated range from 10 to 33 °C
- ~50% of rated range at -20 °C
- 80% of rated range at 40 °C

Weather data for EV range prediction



Xweather EV range report

- 2026: <https://www.xweather.com/reports/ev-range-report-2026>
- 2025: <https://www.xweather.com/the-ev-range-report>

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