PANASONIC WEATHER SOLUTIONS

ELIZABETH WILSON

PANASONIC AVIONICS

A B4B COMPANY THAT BUILDS SOLUTIONS UNIQUELY TAILORED TO THE BUSINESS NEEDS OF EACH AIRLINE

ULTIMATE ENTERTAIMENT

BUSINESS PLATFORM

CONNECTED AIRCRAFT

TURNKEY

ZERO TOUCH

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NETWORK EVOLUTION – 2016 & BEYOND

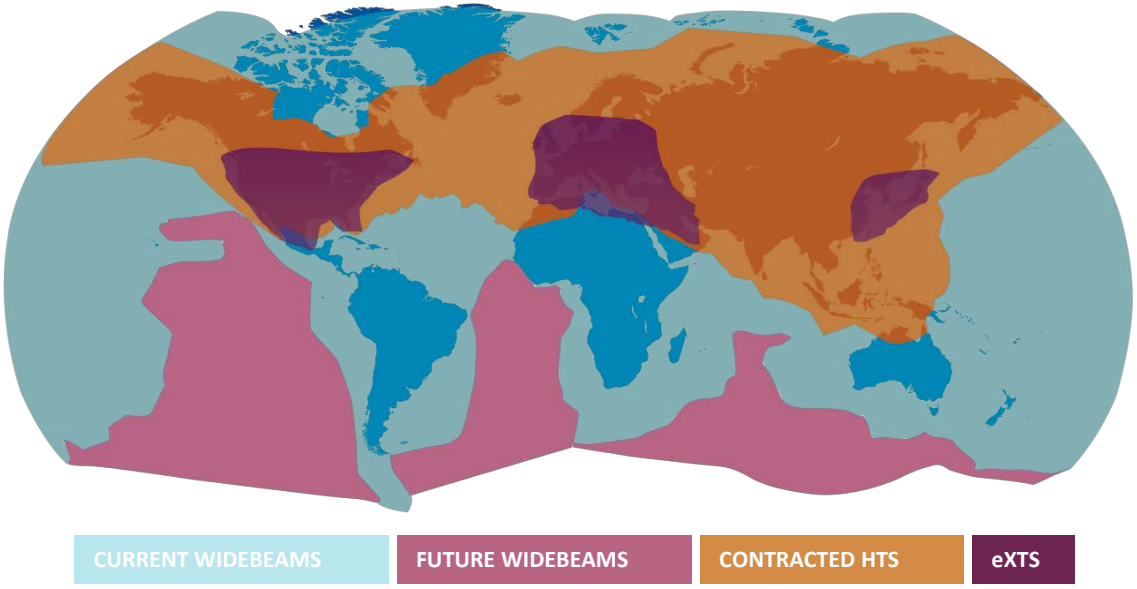
Simplifying and strengthening our network

18 satellites

150 beams

20,000 – 40,000 MHz

Extremely powerful spot beams are layered over existing wide and HTS beams, covering 50% of all commercial air traffic



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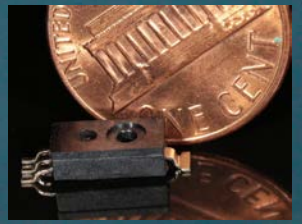

TAMDAR

FlightLink Satcom

Wind
Temperature
Moisture (RH)
Icing
Turbulence (EDR)
Pressure Alt
GPS Alt

Each TAMDAR probe has **3 RH sensors** inside.

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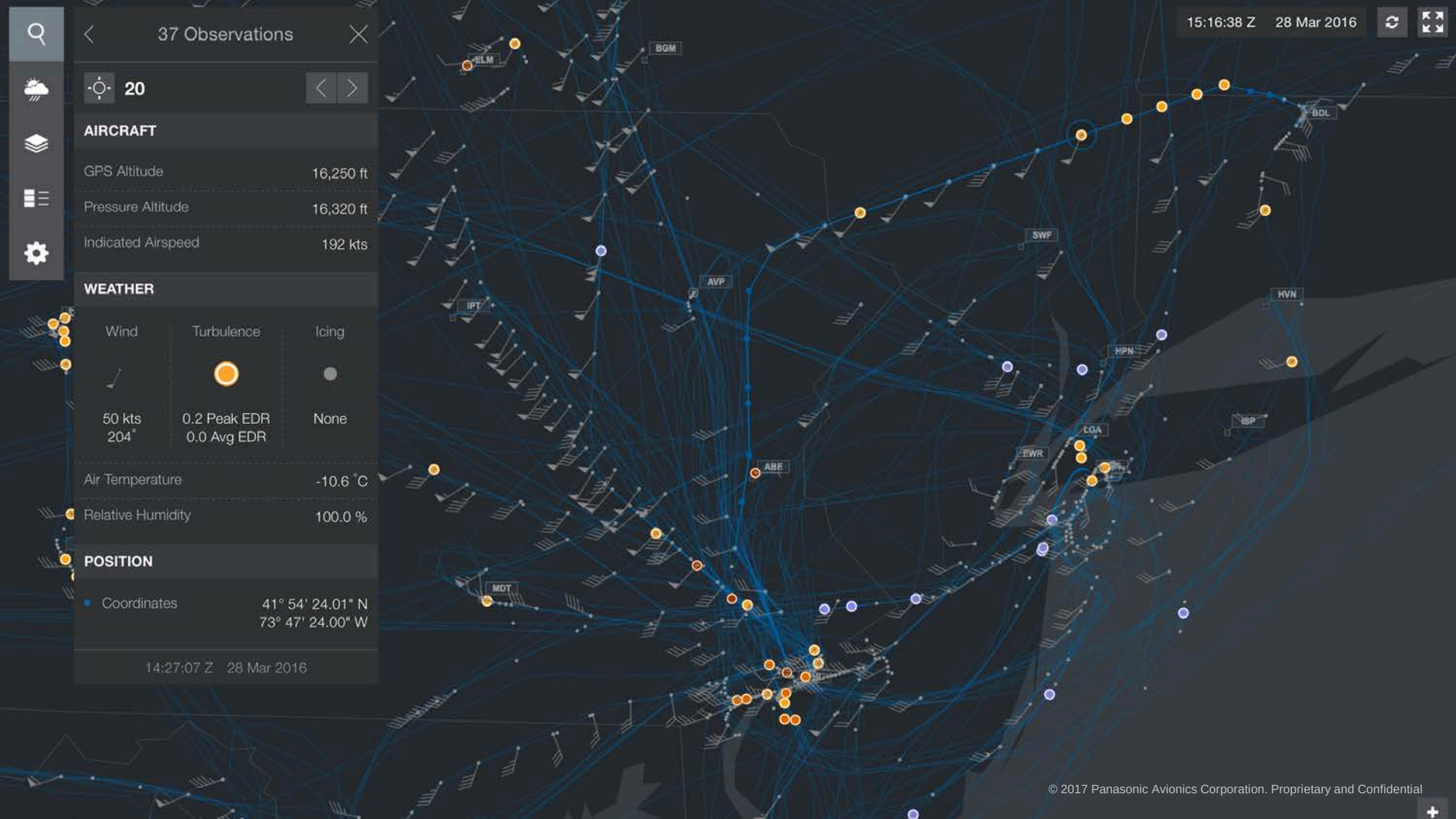

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FAA/NOAA TAMDAR STUDY RESULTS

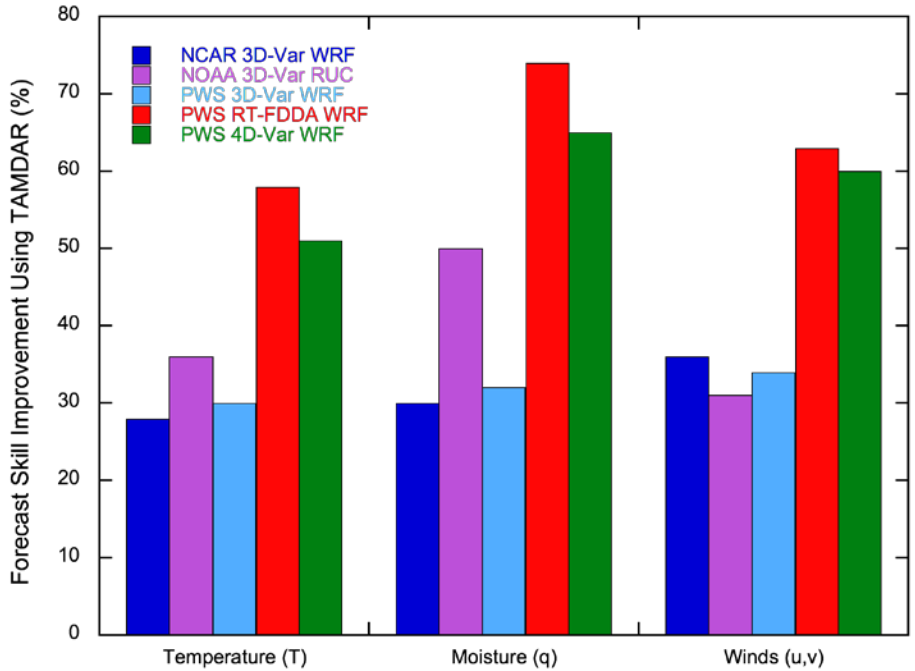

Chart of improvements in forecast skill of the experimental (with TAMDAR) over the control (without TAMDAR) All forecasts were verified using RAOBs as "truth"

NOAA's most optimized model for aircraft data is RUC

PWS 3D-Var WRF is essentially the same code as NCAR 3D-Var WRF

PWS RT-FDDA and 4D-Var WRF are best suited to utilize *asynoptic* observations

Moninger, W. R., S. G. Benjamin, B. D. Jamison, T. W. Schlatter, T. L. Smith, E. J. Szoke, 2010: Evaluation of Regional Aircraft Observations Using TAMDAR. *Wea. Forecasting*, **25**, 627–645.

Benjamin, S. G., B. D. Jamison, W. R. Moninger, S. R. Sahm, B. E. Schwartz, T. W. Schlatter, 2010: Relative Short-Range Forecast Impact from Aircraft, Profiler, Radiosonde, VAD, GPSPW, METAR, and Mesonet Observations via the RUC Hourly Assimilation Cycle. *Mon. Wea. Rev.*, **138**, 1319–1343.

*After corrections outlined in:
Jacobs, N. A., D. J. Mulally, and A. K. Anderson, 2014: Correction of Flux Valve–Based Heading for Improvement of Aircraft Wind Observations. *J. Atmos. Oceanic Technol.*, **31**, 1733–1747.

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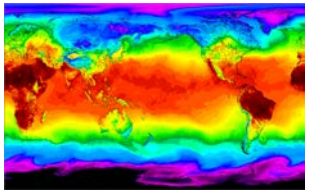


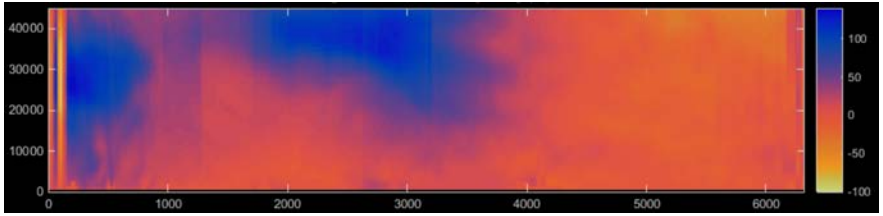
Hybrid 4D-EnVar Deterministic Global Model

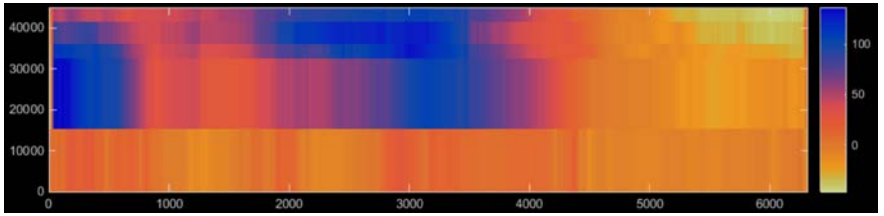
Output on Native Flight Levels (1000 ft)

Panasonic Global

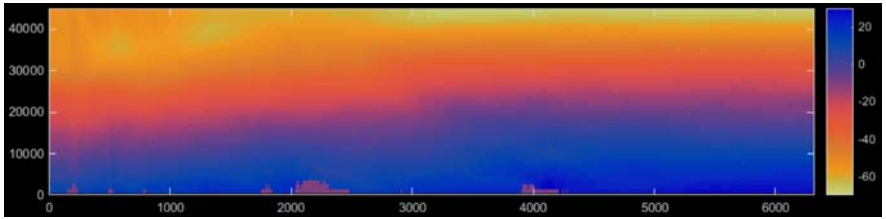
NCEP Global

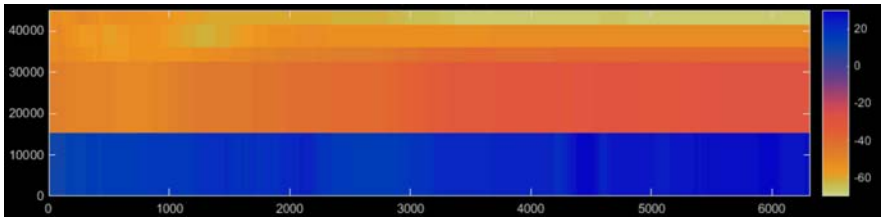
Wind





Temp





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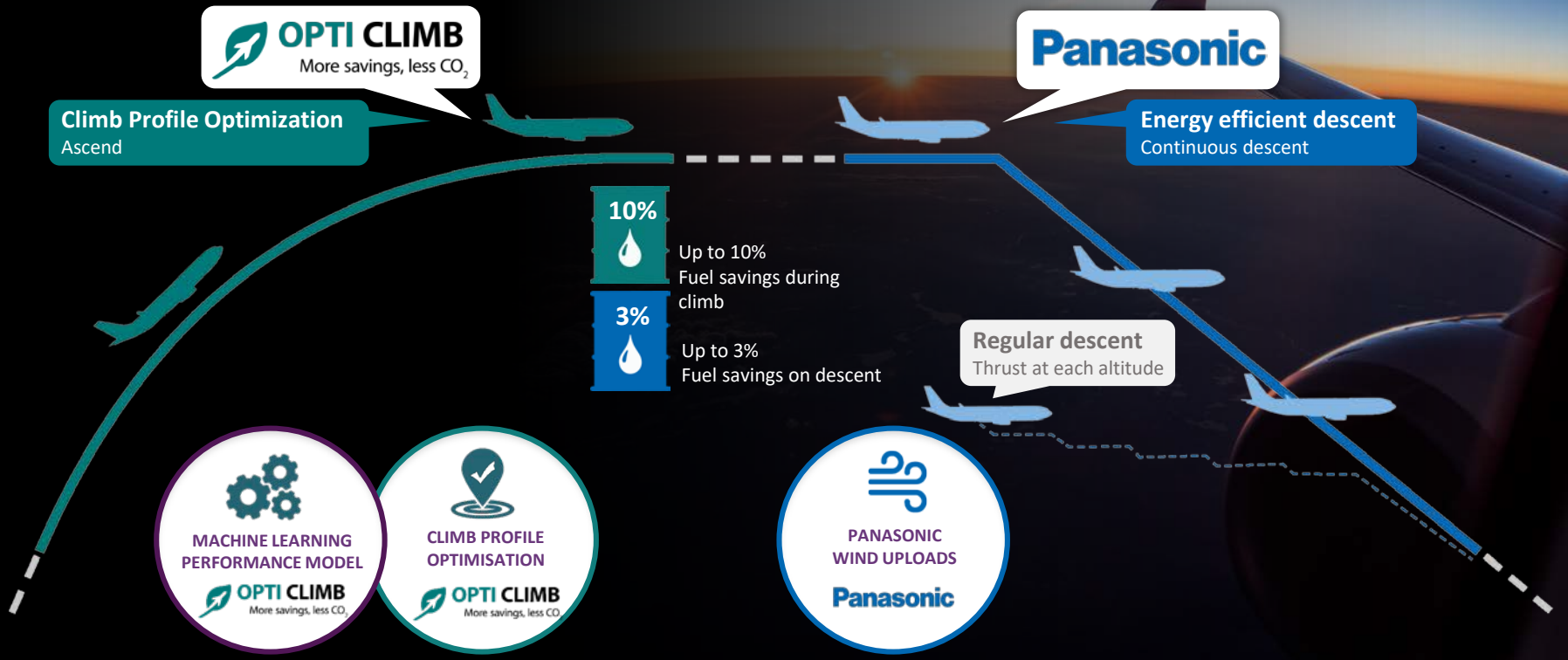
Reduction in CO2 emission and fuel costs



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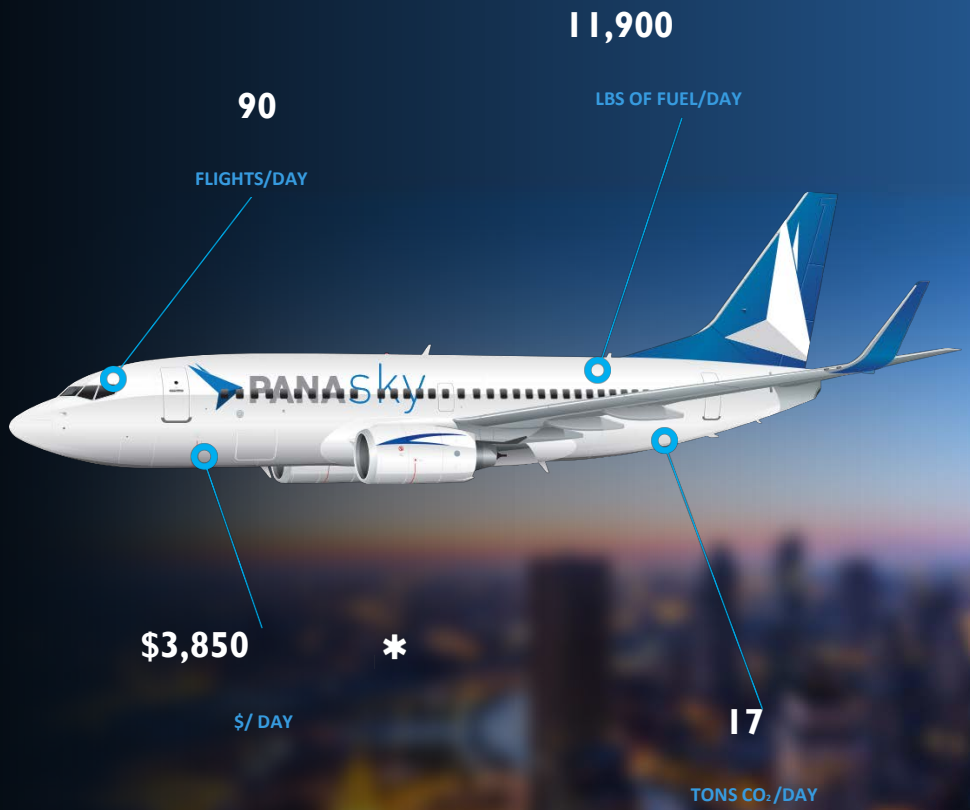
Fuel Savings & Reduction in CO_2 Emission

Powered by TAMDAR, FlightLink, OptiClimb and the PWS forecast

Potential for annual benefit across a 20 aircraft, mixed fleet:

$1.4M USD/Year of fuel savings
6,205 metric tons of CO2/year emissions reduction

*Based on an average fuel cost of US $2.00 per gallon



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Thank You!

Elizabeth.Wilson@panasonic.aero