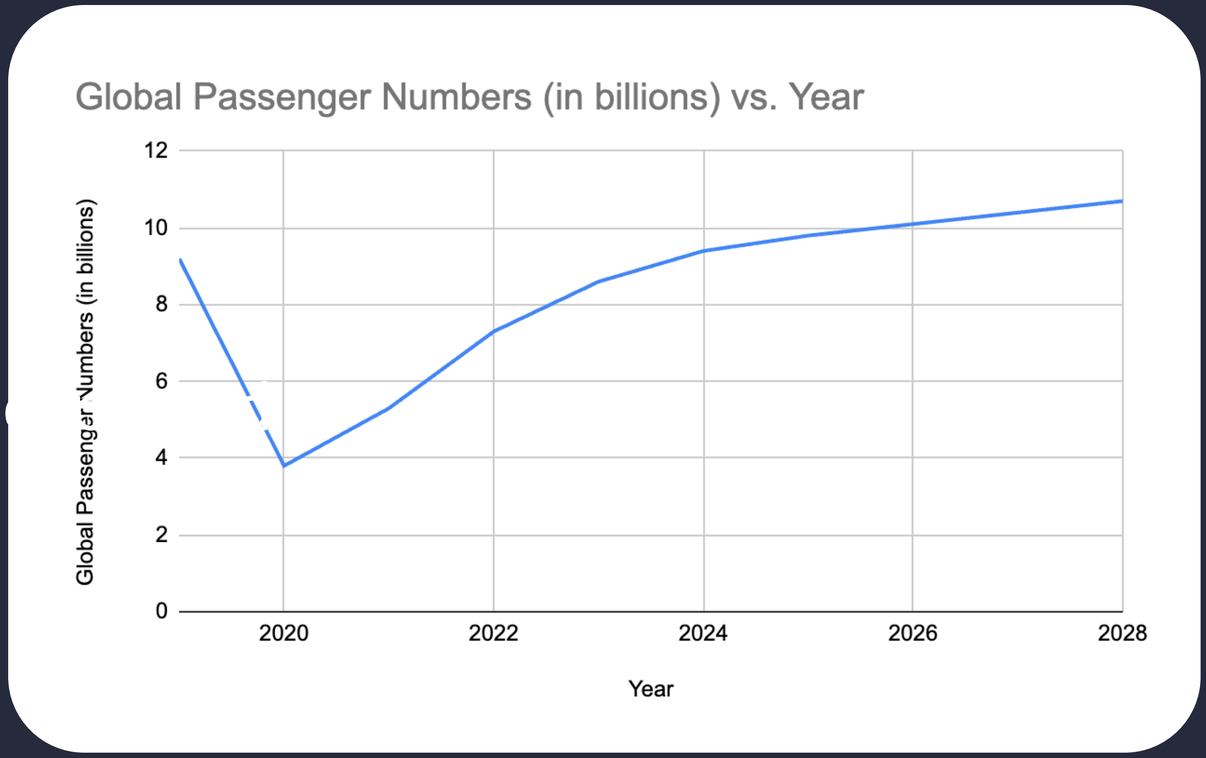
SKY PATH

A New Era in Turbulence Prediction - Rapid ML Iterations and Data Validations

Flights are busier than ever

9.4B

Travelers expected in 2024

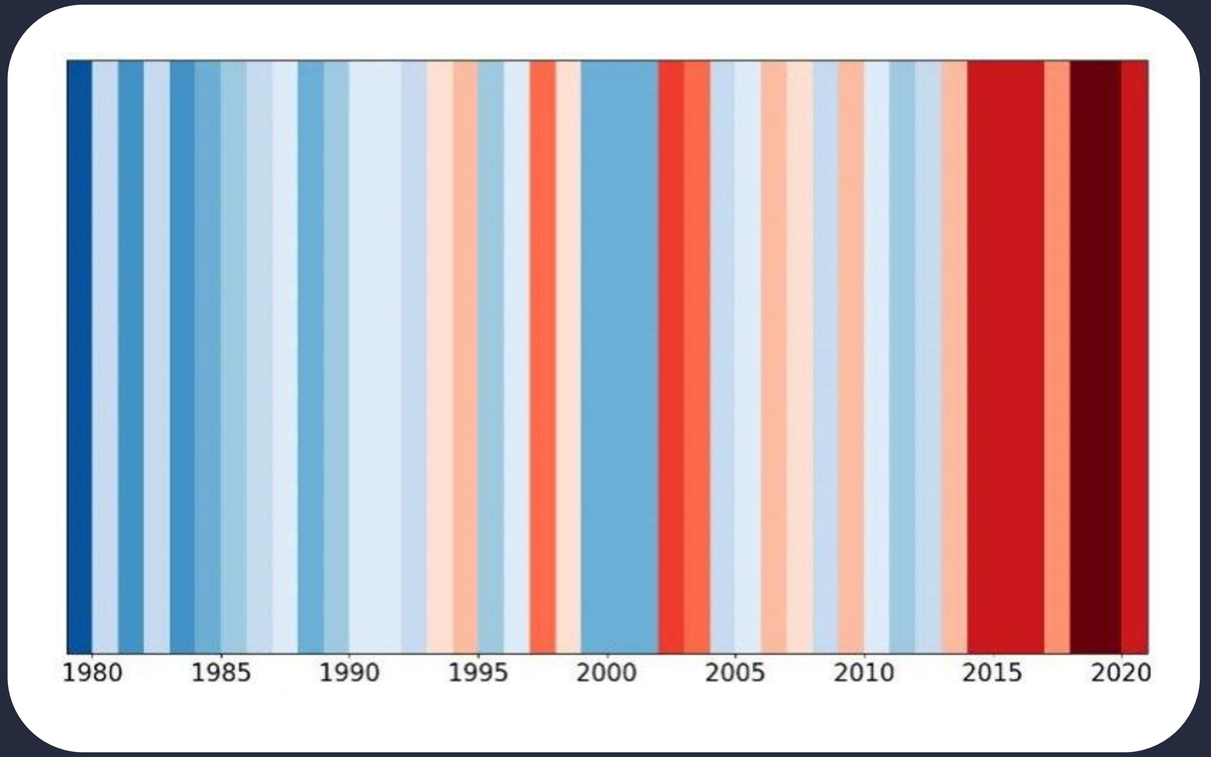


Source: ACI

Ride quality is getting worse

55%

Increase in Clear Air Turbulence



Clear-air turbulence trends over the North Atlantic in high-resolution climate models, Paul Williams, March 2023

SKY PATH

Recent

Turbulence Impact

7 hurt after Lufthansa flight experiences 'significant turbulence' and diverts to Washington, D.C., area

The plane was flying from Austin, Texas, to Frankfurt, Germany, on Wednesday when it experienced severe turbulence over Tennessee, the FAA said.

117 Comments

WORLD NEWS

Passengers feared it was ‘the end’ as Qatar Airways flight hit extreme turbulence: ‘I’m still shivering’

By Olivia Land

Published May 27, 2024 | Updated May 27, 2024, 8:46 a.m. ET

CNN travel Destinations Food & Drink News Stay Video

Climate change could be about to make flight turbulence a lot worse

By Jacopo Prisco, CNN

6 minute read · Updated 11:45 AM EDT, Wed May 22, 2024

9 comments

Turbulence is one of the most frequent causes of injuries on airplanes. Jim Watson/AFP/Getty Images

yahoo!news Search the web News

BUSINESS INSIDER

Airlines to tighten seatbelt rules and use AI to predict turbulence after Singapore Airlines incident, Emirates boss says

Pete Syme

Mon, June 3, 2024 at 7:02 AM CDT · 2 min read

4

SKY PATH

The Problem

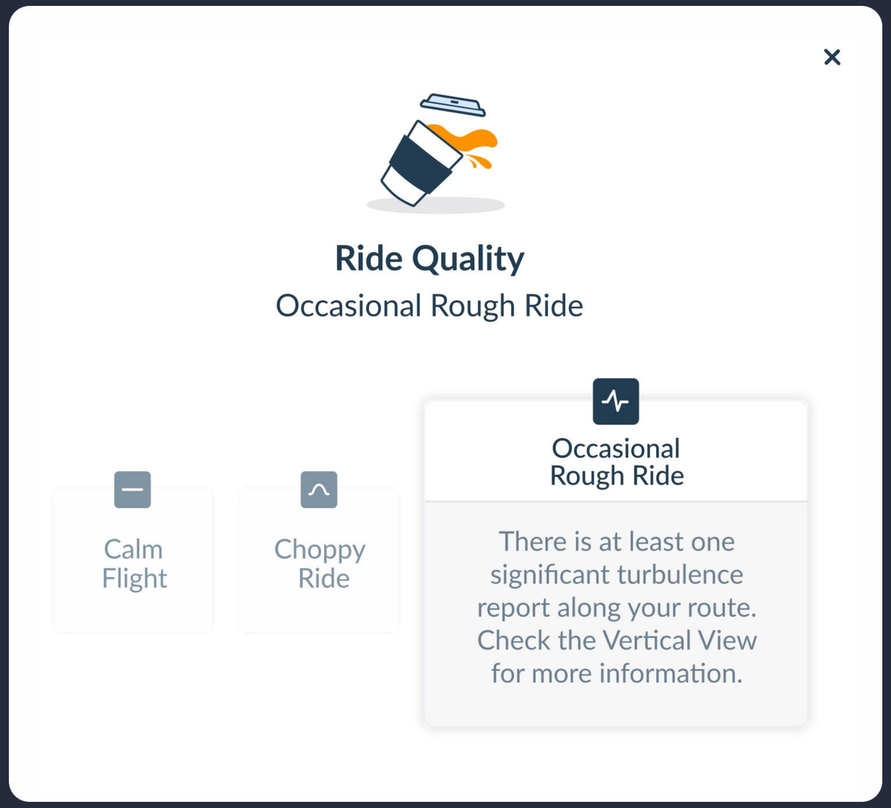
1. Ride quality is getting worse
2. Turbulence is hard to predict

- Subgrid problem (predicting 100m-scale phenomena using models with kilometer-scale resolution)
- Multiple causes: Turbulence can arise from various causes (e.g. clear-air turbulence, mountain-wave turbulence, convectively induced turbulence), each with its own set of governing dynamics
- Hard to spot (not visible via sat / radar)
- Not enough observations

SkyPath is Redefining

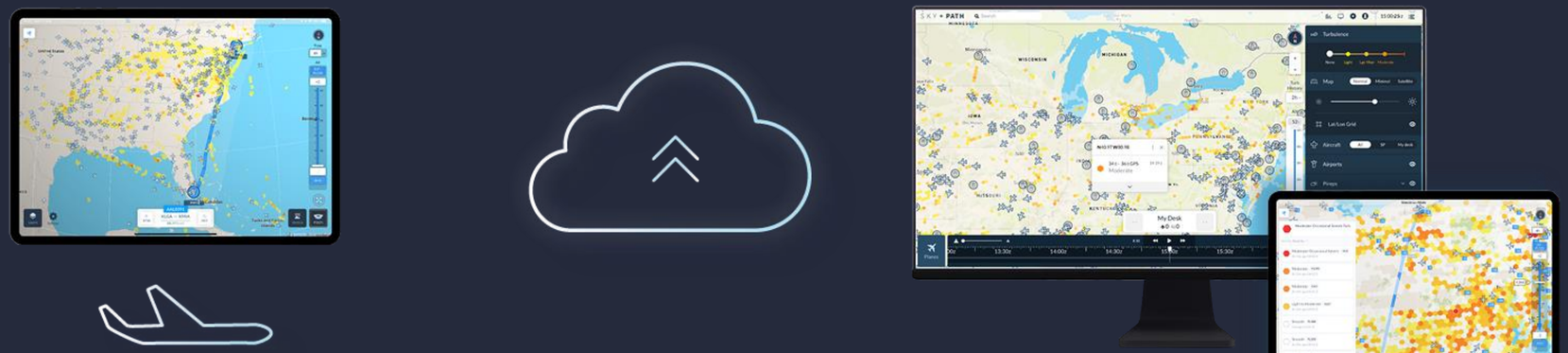
Ride Quality

Harness the collective power of live **crowdsourced turbulence data**, seamlessly fused with an **AI-generated turbulence forecast**, for unparalleled safe and informed flying



SKY PATH

How It Works



Patented algorithm tracks ipad accelerometers

A/C normalization, Noise filtering and AI

Data is disributed to all ecosystem users

Software only solution, No Aircraft integration needed.

SkyPath Data

SkyPath Numbers

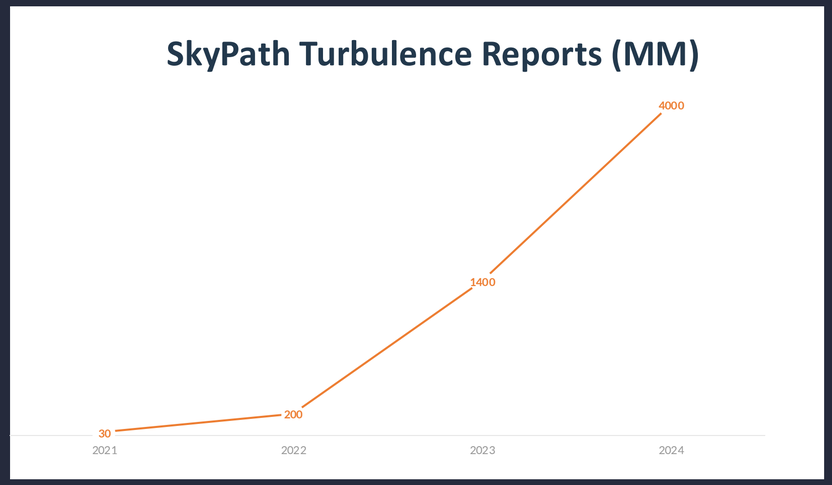
4B
Turbulence Reports
(10X YoY increase)

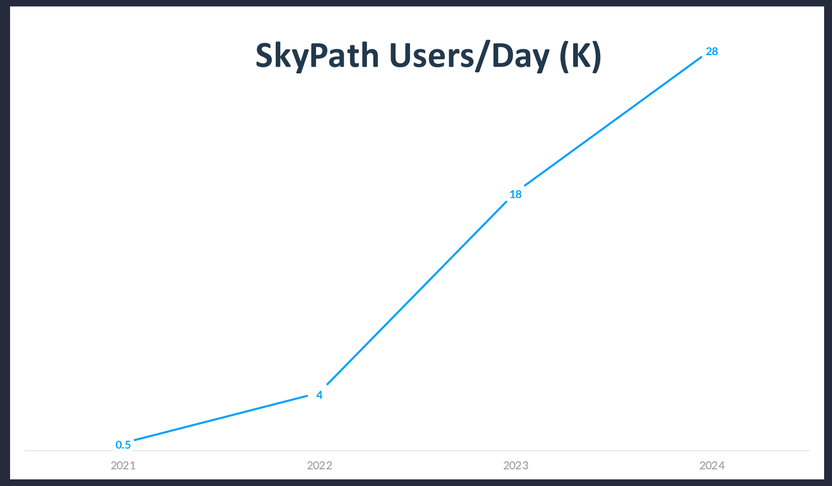
+12M
Turbulence Notifications

20K
Submitted PIREPs

100K
Subscribed pilots

Number of turbulence reports and PIREPs submissions across the entire SkyPath ecosystem

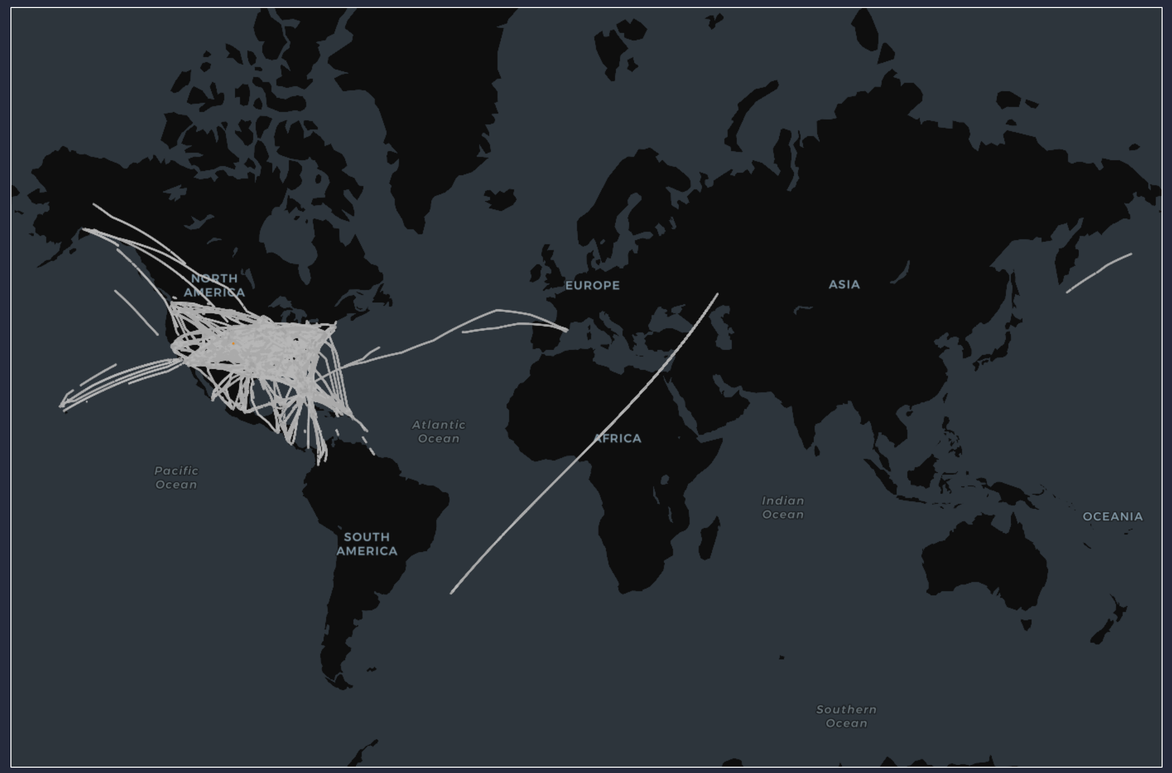




SKY PATH

Global Coverage - Growth

2021, 24 hours

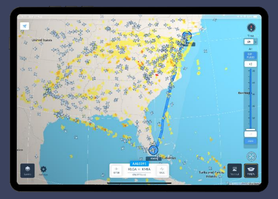


2024, 24 hours

SKY PATH

We started with the following hypothesis

Building a Machine Learning Model from the ground up with the vast amount of SkyPath data and atmospheric conditions can yield great results



Turbulence Reports

Atmospheric Conditions

Machine Learning Model

Nowcasting

Short-Term Turbulence Prediction

SKY PATH

Meteorological Parameters

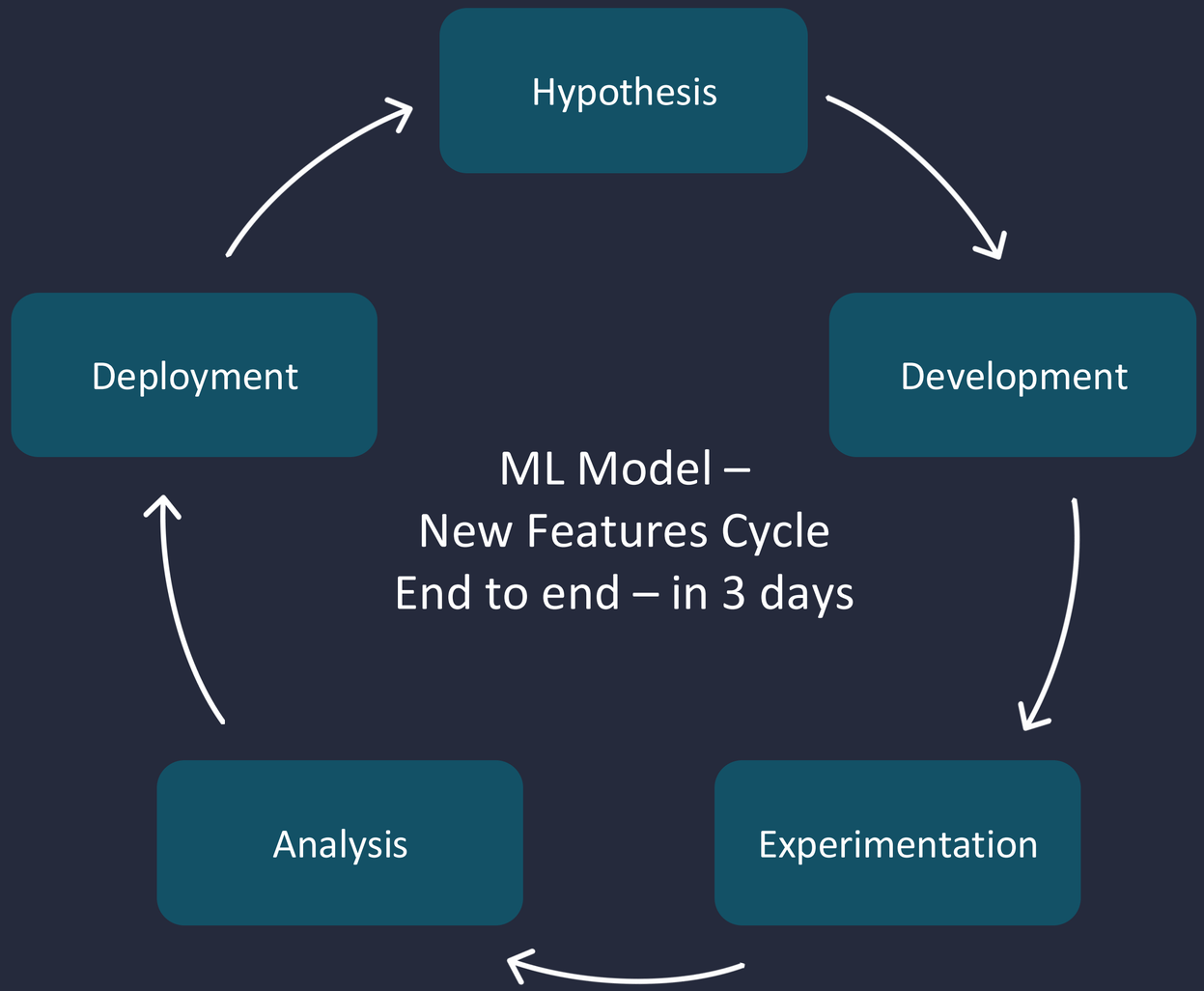
- Raw meteorological parameters - wind shear, temperature, wind speed, and pressure, etc.
- More complex parameters including topography, land cover, climate belts, and thermodynamic potentials
- Stitching multiple NWP models
- To date, the model uses hundreds of parameters
- It covers all types of turbulence and causes

Data Science Principles

- Developed an adaptive machine learning model that automatically improves using new observations and adjusts to meteorological changes
- Real time data assimilation
- Frequent training (adaptation to climate change)
- Prediction – every 1 hour
- Climate centric post process mechanism

Iterative Approach:

Perfecting Turbulence Prediction

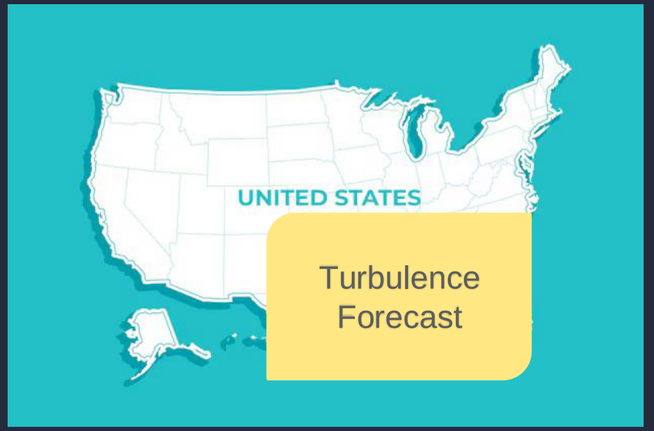


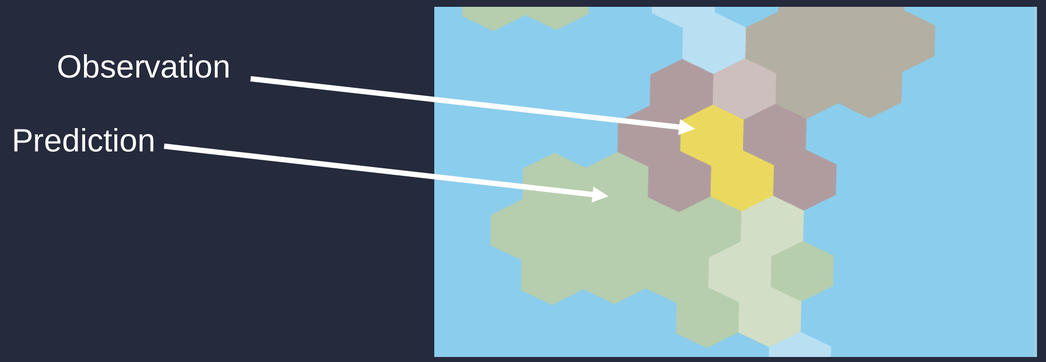
SKY PATH

UX Perspective

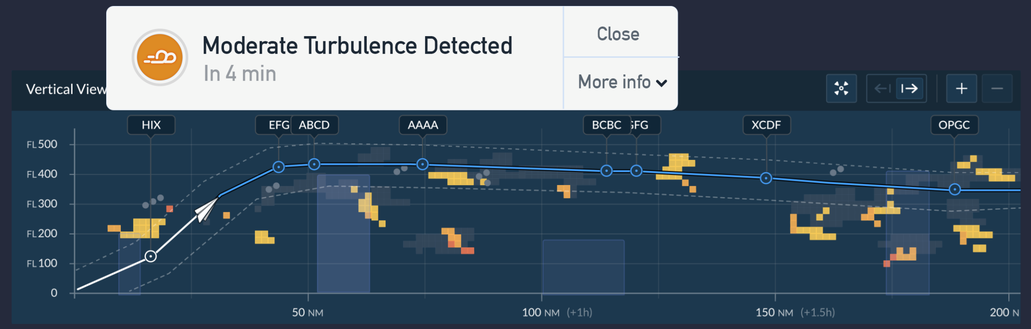
Thinking about the users is as important as the data science

- Sweet spot - High Resolution VS Actionable - 10X10 NM hexagons
- Color coded - Light / Mod / Mod-Occ-Sev





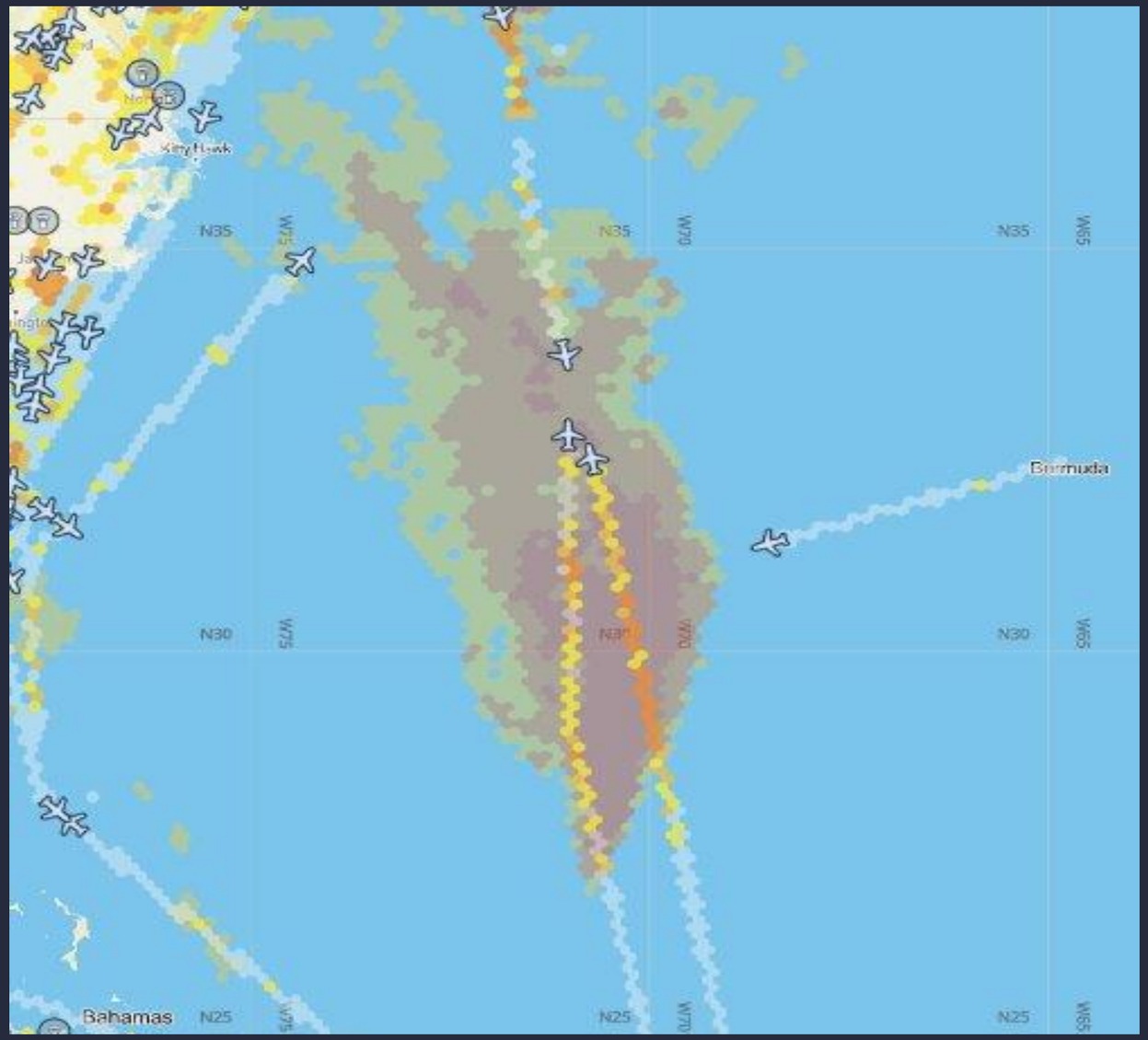
Visual and vocal notifications to notify the crew



SKY PATH

Nowcasting Results

- One snapshot out of many
- Predicts very well – validated by the observations in real time
  90% accuracy



SKY PATH

Recent

Turbulence Impact

7 hurt after Lufthansa flight experiences 'significant turbulence' and diverts to Washington, D.C., area

The plane was flying from Austin, Texas, to Frankfurt, Germany, on Wednesday when it experienced severe turbulence over Tennessee, the FAA said.

WORLD NEWS

117 Comments

Passengers feared it was ‘the end’ as Qatar Airways flight hit extreme turbulence: ‘I’m still shivering’

By Olivia Land

Published May 27, 2024 | Updated May 27, 2024, 8:46 a.m. ET

CNN travel Destinations Food & Drink News Stay Video

Climate change could be about to make flight turbulence a lot worse

By Jacopo Prisco, CNN

6 minute read · Updated 11:45 AM EDT, Wed May 22, 2024

9 comments

Turbulence is one of the most frequent causes of injuries on airplanes. Jim Watson/AFP/Getty Images

yahoo!news Search the web News

BUSINESS INSIDER

Airlines to tighten seatbelt rules and use AI to predict turbulence after Singapore Airlines incident, Emirates boss says

Pete Syme

Mon, June 3, 2024 at 7:02 AM CDT · 2 min read

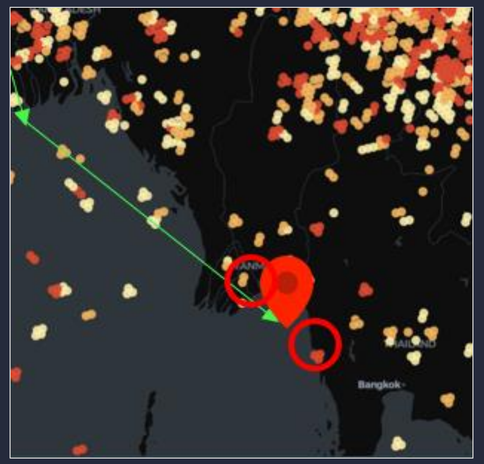
4

SKY PATH

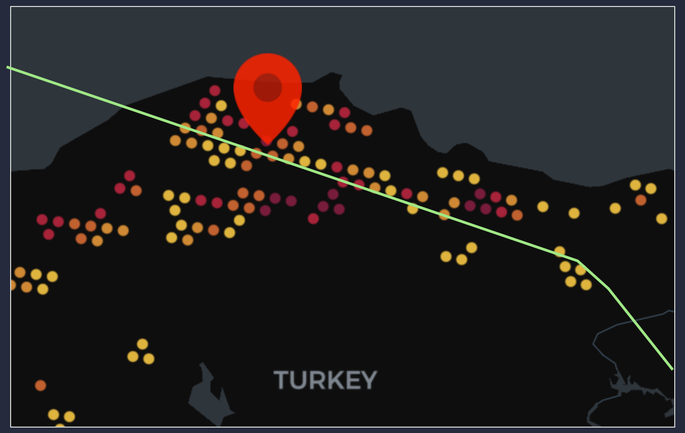
SkyPath Nowcasting in the field

Investigations of recent turbulence events show consistent hits on real-world events.

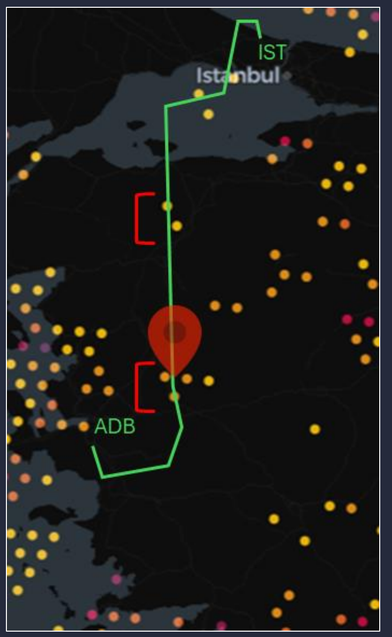
In all of these events SkyPath Nowcasting had pre-existing information on turbulence which could potentially have averted the event



May 2024



May 2024



May 2024

SKY PATH

Mind blown! Thank you for this app. Used it yesterday for the first time and within 10 minutes I realized there was no reason to ask ATC for a ride report. Just like Google Maps and Waze crowd-sourced traffic data, this app is a great tool

A320
Captain

Q&A

Thank you

Just wanted to let you know that the SkyPath app is excellent! I love the app because it's real time and allows you the ability to select rides. This is one of the best tools we have!

B737
First Officer

Love the app. I've found it to be the most accurate tool I have for predicting turbulence

A319
Captain

SKY PATH