DIFFICULT AIRPORTS

Nate Turner
Pilot, Manager, Engineer

… and technology that helps us fly safely into them

Honeywell
THE POWER OF CONNECTED

Overview

- Introduction
- Aviation technology evolution
- Difficult airports in the U.S.
- Technology that aids pilots flying into these airports
- The Future
- Q&A

Honeywell
THE POWER OF **CONNECTED**

Introduction

- Nate Turner
  - Manager Product Marketing at Honeywell Aerospace
  - Avionics & Mobile Applications Software Development Experience
  - Responsible for Pilot Training Services & Connectivity in our Next Generation Flight Deck
- Started flying in my early teens
- Flight Instructed out of Phoenix Mesa Gateway Airport
- Flew commercial for American Eagle on the ERJ 145 out of Chicago
- Commercial Single & Multiengine Instrument Certified
  - ERJ 145 Type Rated
  - Gold Seal CFII / MEI

Honeywell
THE POWER OF **CONNECTED**

Aviation Technology Evolution

Communication & Connectivity

Flight Instruments

Plates

**Honeywell**
THE POWER OF CONNECTED

10 Difficult Airports in the U.S.

- Aspen-Pitkin County Airport (Aspen, Colorado)
- Truckee-Tahoe Airport (Truckee, California)
- Bert Mooney Airport (Butte, Montana)
- Yellowstone Regional Airport (Cody, Wyoming)
- Ronald Reagan Washington National Airport (Washington, D.C.)
- Juneau International Airport (Juneau, Alaska)
- LaGuardia Airport (Queens, New York)
- Mammoth Yosemite Airport (Mammoth Lakes, California)
- San Diego International Airport (San Diego)
- Telluride Regional Airport (Telluride, Colorado)

Honeywell
THE POWER OF **CONNECTED**

Aspen, CO (KASE)

- High altitude
- Steep approaches
- Difficult missed approach
- High minimums for approaches
- Downdrafts / crosswinds
- One way in / one way out
- Requires special training for crews

Honeywell
THE POWER OF **CONNECTED**
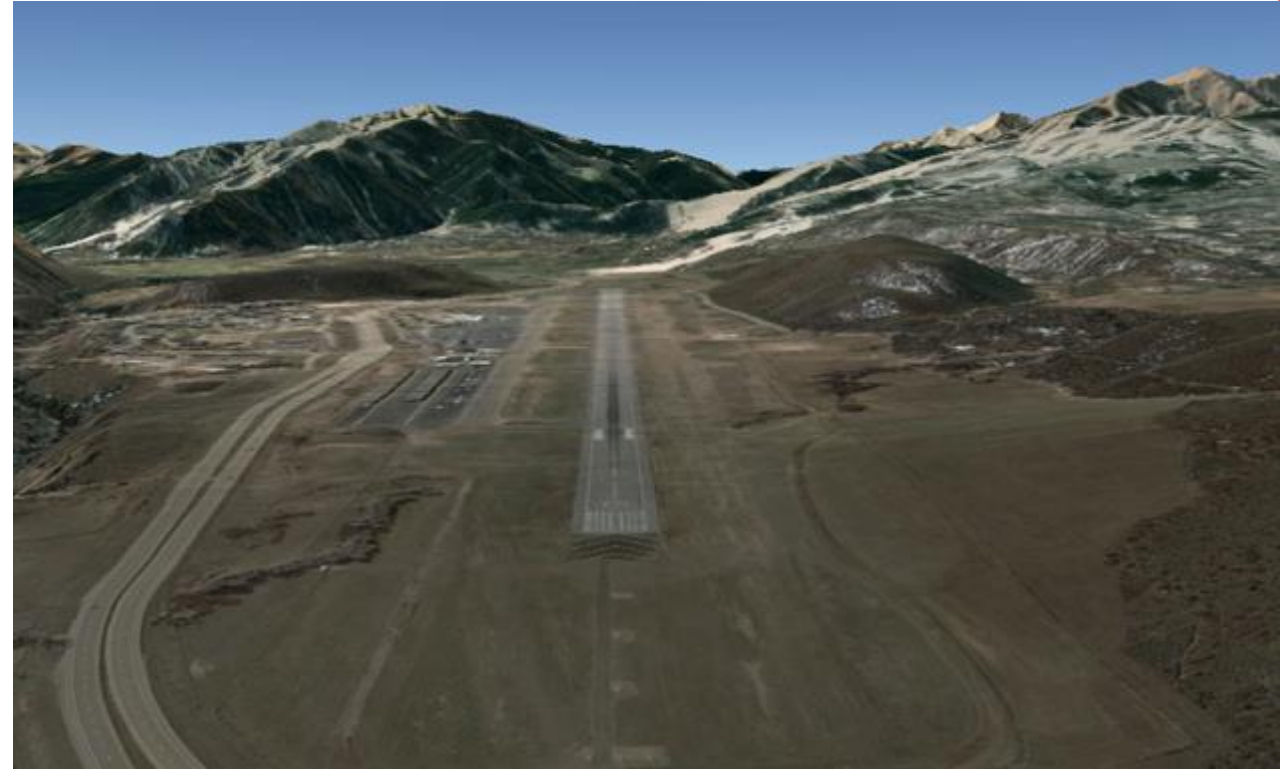
Truckee-Tahoe Airport (KTRK)

- High altitude airport
  - Density altitude considerations
- Fast weather changes prove to be challenging
- Strong winds

Honeywell
THE POWER OF CONNECTED

Bert Mooney Airport (KBTM)

- Nestled between Yellowstone and Glacier National Parks
- High minimum approaches
- Cold temperature restricted

Honeywell
THE POWER OF **CONNECTED**

Yellowstone Regional Airport (KCOD)

- While the beautiful mountains make Yellowstone a prime destination, the mountainous terrain surrounding this airport makes landing challenging
- No control tower
- Non-precision approaches only

Honeywell
THE POWER OF **CONNECTED**

Ronald Reagan Washington National Airport (KDCA)

- Congested airspace
- "River Visual" approach requiring a 30 to 40 degree turn close to the Potomac River to line up with the runway.
  - RNP overlay of the river visual

Honeywell
THE POWER OF CONNECTED
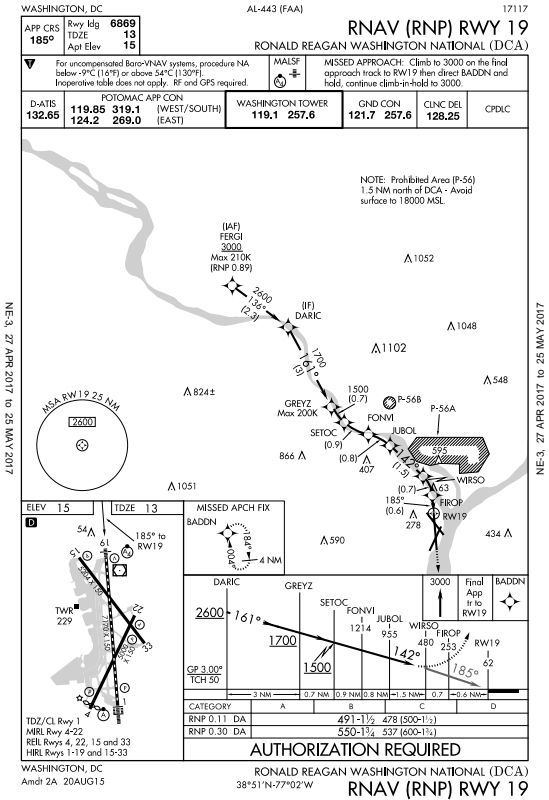
Juneau International Airport (PAJN)

- Surrounded by snow-capped mountains and glaciers
  - Generating turbulence and cross-wind challenges for crews
- Ever since commercial air services to Juneau started in 1947, the mountainous terrain and surrounding valleys have made landing challenging for both commercial and business aviation pilots over the years.

Honeywell
THE POWER OF CONNECTED
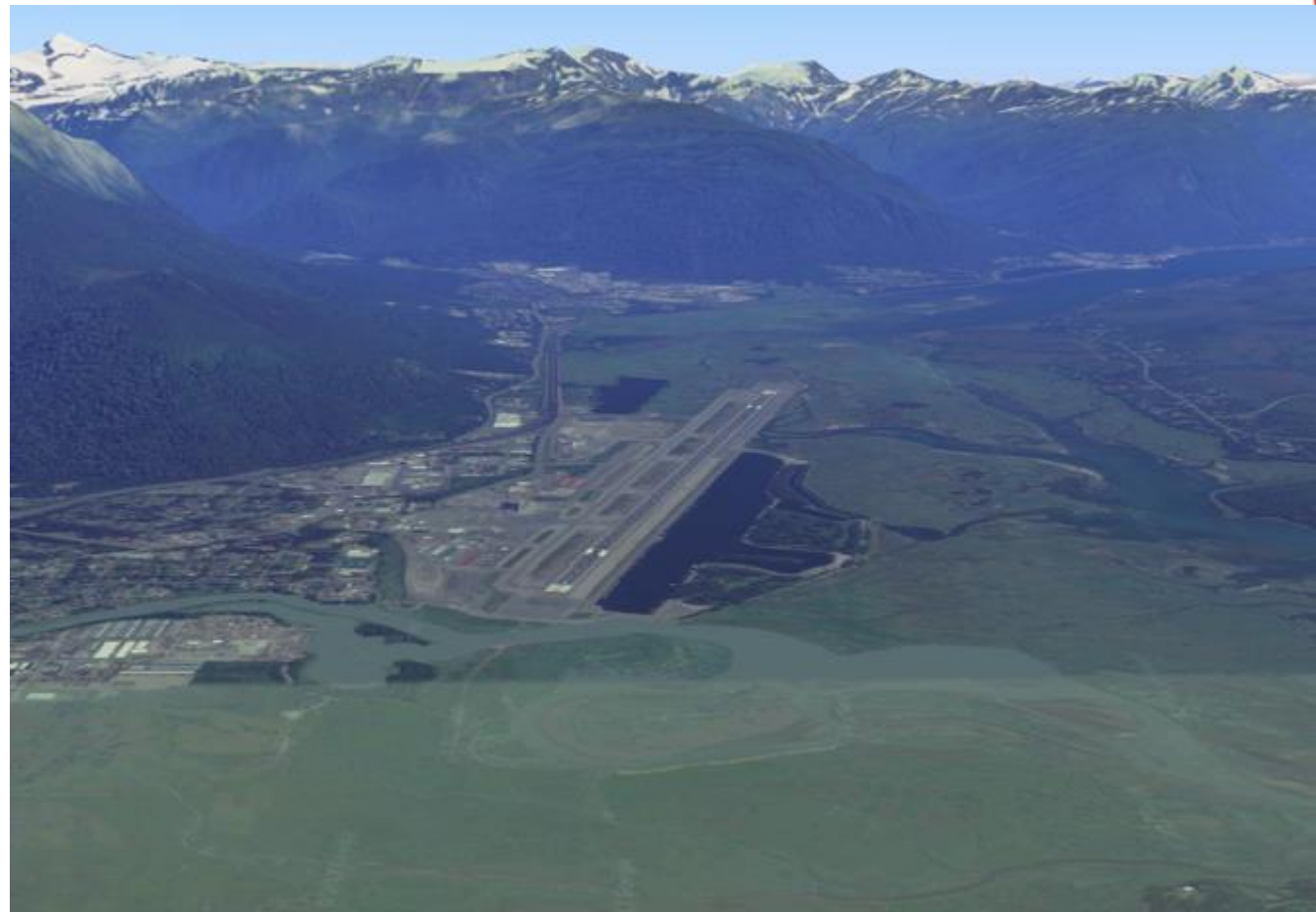
LaGuardia Airport (KLGA)

- Highly congested airspace

- Though scheduled flights are limited to 1,500 miles, except for Denver and Saturday flights, LaGuardia's popular location creates a difficult and busy approach for pilots navigating multiple runways and jets landing in New York.

- In January 2009, Honeywell's Auxiliary Power Unit helped Captain Sullenberger land safely in the Hudson River providing the necessary power to execute this difficult, historical landing.

Honeywell
THE POWER OF CONNECTED

Mammoth Yosemite Airport (KMMH)

- Mammoth Yosemite Airport is located on the side of a mountain in a box canyon creating a difficult approach, especially in mountainous weather conditions.
- High winds creating up/down drafts
- Quick weather changes near the Sierras

Honeywell
THE POWER OF CONNECTED

San Diego International Airport (KSAN)

- Flying into any busy airport can be challenging, but San Diego International's steeper than usual approach path that brings pilots over the city skyline
- Strong winds
- Congested airspace

Honeywell
THE POWER OF CONNECTED

Telluride Regional Airport (KTEX)

- Telluride is the highest commercial airport in the U.S. Mountainous terrain creates an especially difficult approach for pilots landing here.
- Strong updrafts at both ends of the field
- One way in and one way out for most operators

Honeywell
THE POWER OF CONNECTED
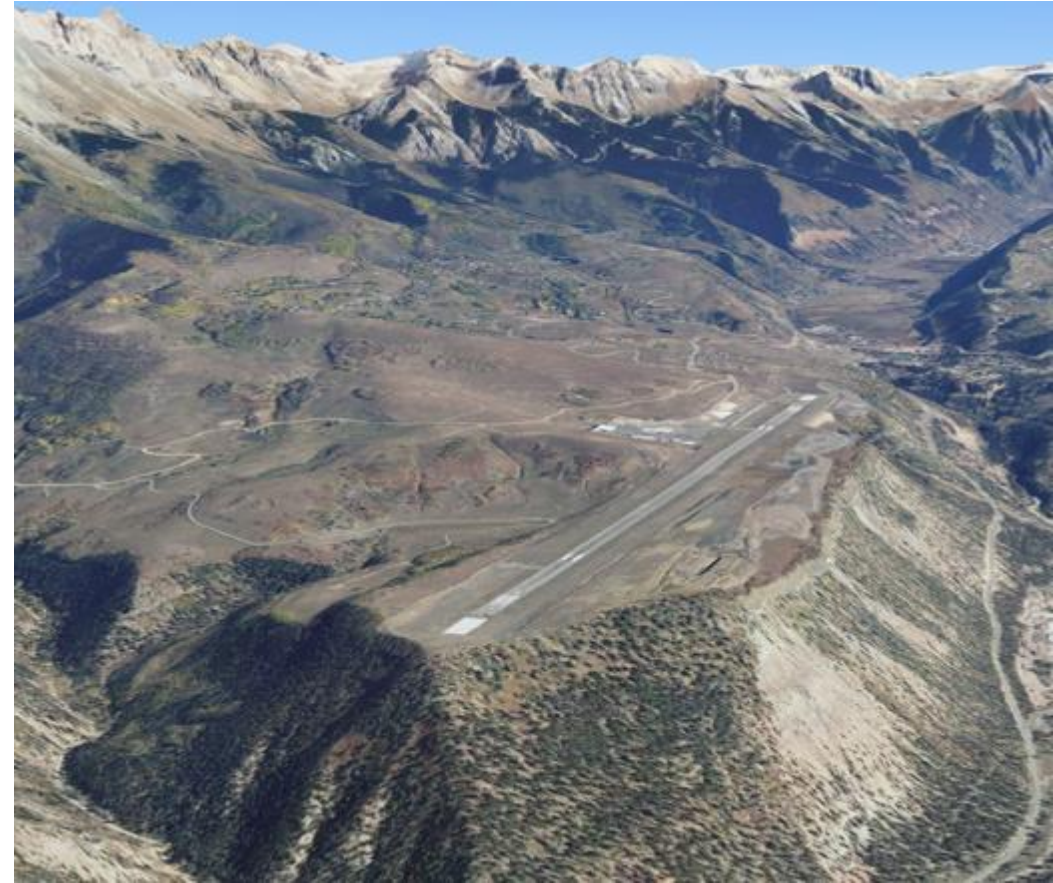
A few technologies that help us fly safely into these airports

**Honeywell**
THE POWER OF CONNECTED

IntuVue RDR-4000 Weather Radar

- 3-Dimensional weather acquisition
- Allows for scan coverage out to 320 NM
  - Ground to 60,000 feet
  - Wingtip to wingtip
- Predictive lightning, windshear, and turbulence detection
- Automatically separates weather from ground clutter
- Crowd sourcing weather data

Honeywell
THE POWER OF CONNECTED
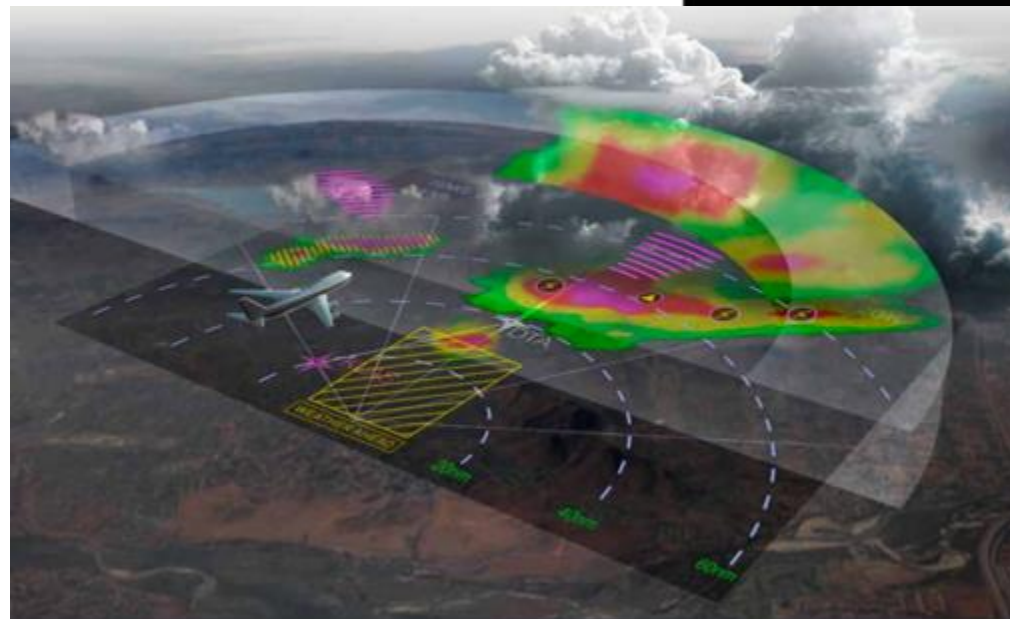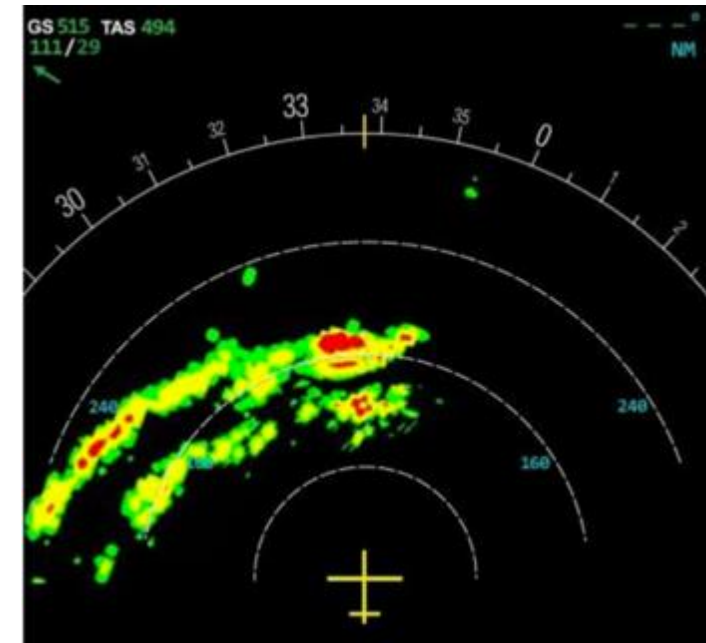
SmartView Synthetic Vision System

- Displays 3D terrain in front of the aircraft
- Uses color coding for absolute altitude terrain
- Provides visualization of obstacles
- Depicts airport and runway environment
  - Extended course centerline (breadcrumb trail)

Honeywell
THE POWER OF CONNECTED
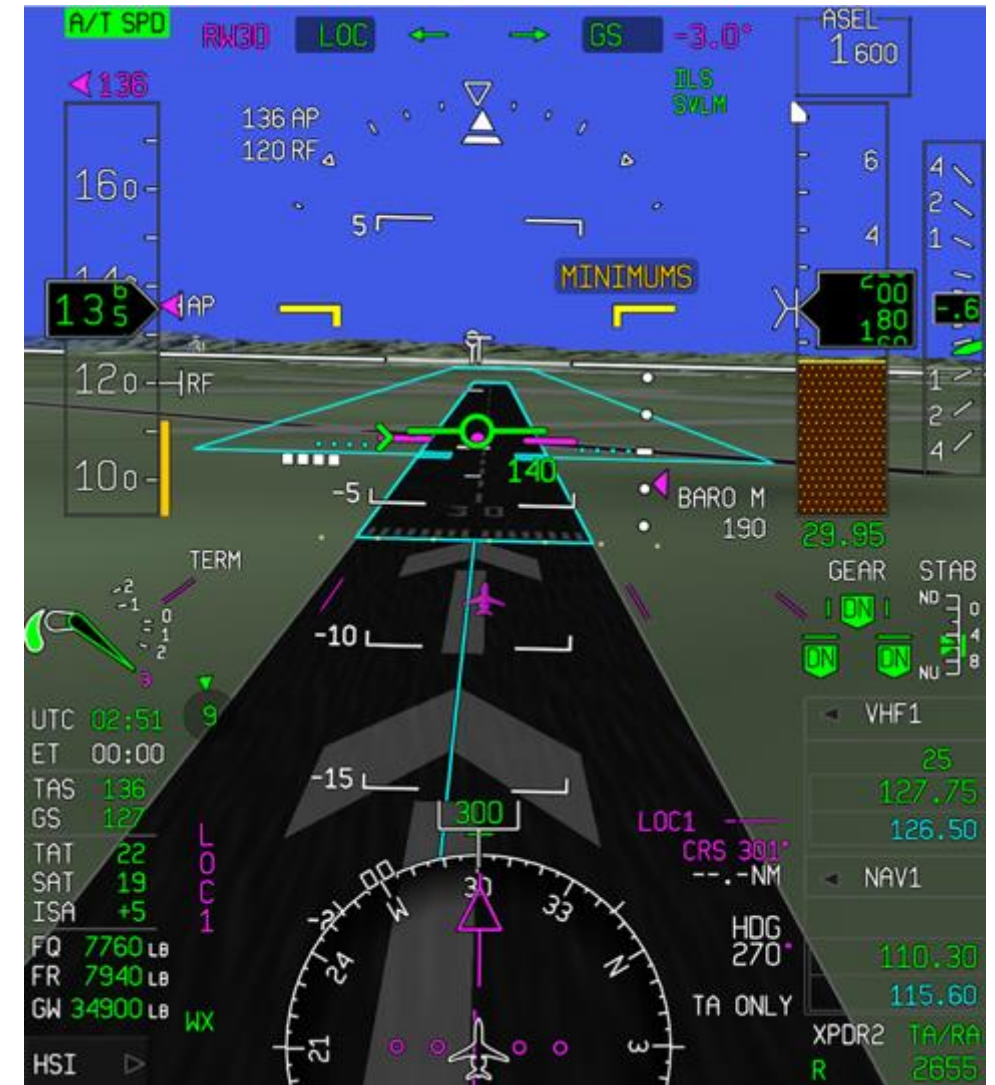
Runway Awareness and Advisory System

- Improves crew situational awareness on:
  - Taxi
  - Takeoff
  - Approach
  - Landing
- Audio and visual alerts for:
  - Taxiing - approaching / on runways
  - Approaches
    - Stability
    - Speed
    - Altitude
    - Warnings

Approaching Two Five Right

WRONG RUNWAY

"Approaching zero seven left"

Honeywell
THE POWER OF CONNECTED

GoDirect Flight Preview

- iOS app live on the Apple App Store
- Allows anyone to familiarize themselves with an airport before departure
- See a unique view of an approach
  - runway highlights
  - waypoints
  - altitude constraints
  - rendered in a 3-D view
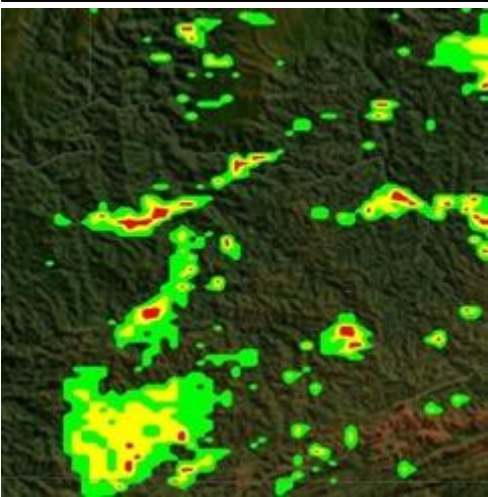
Honeywell
THE POWER OF **CONNECTED**

Weather Information Services

- Strategic weather data helps avoid hazards to enhance safety and fuel efficiency
- Optimized data to reduce connectivity costs
  - Graphical
    - RADAR
    - Satellite
    - Lightning
    - Forecasts of thunderstorms, icing and turbulence
    - SIGMETs
    - PIREPs / AIREPs
    - METARs
  - Textual
    - TAFs/METARs
    - Digital ATIS (D-ATIS)
    - PIREPs / AIREPs

Honeywell
THE POWER OF CONNECTED

Weather Data Available - Observations

Ground Radar	Satellite Cloud Cover	Airport Weather

United States

Southern Canada

Western Europe
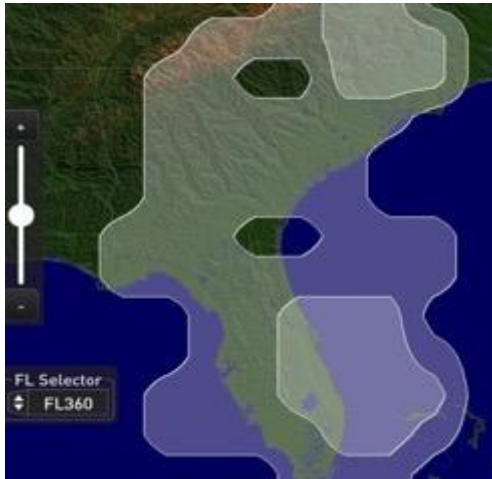
Australia

Global

Global

PIREPs / AIREPs	Lightning

Global

Global

Historical radar and satellite data available for up to 3 hours to allow flight crew to review weather trends

Honeywell

THE POWER OF **CONNECTED**

Weather Data Available - Forecasts

Cumulonimbus (Cb) Tops	Winds Aloft	Clear Air Turbulence (CAT)

Global

Global

Global

Icing	SIGMETs
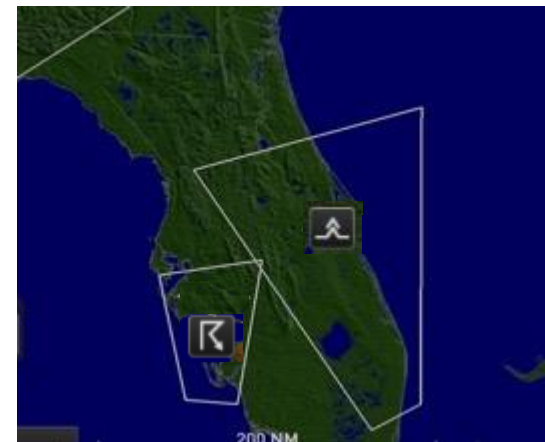
Global

Global

Forecast data available for up to 24 hours to allow flight crew to review weather trends

Honeywell

THE POWER OF **CONNECTED**

The Future

Aviation's continuing evolution

Honeywell
THE POWER OF **CONNECTED**

Q&A

Honeywell
THE POWER OF **CONNECTED**