Flight Deck Weather Information :
Current and Future

Friends and Partners of Aviation Weather

October 18-19, 2015

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Overview

- Background

- Current Capabilities
  - Weather Information on mobile devices and avionics
  - Advanced Airborne Radar
  - Improved Global Weather

- Future Capabilities
  - Integrated Weather
  - Advanced HMI for 4D Weather Avoidance
  - Crowd Sourced Weather

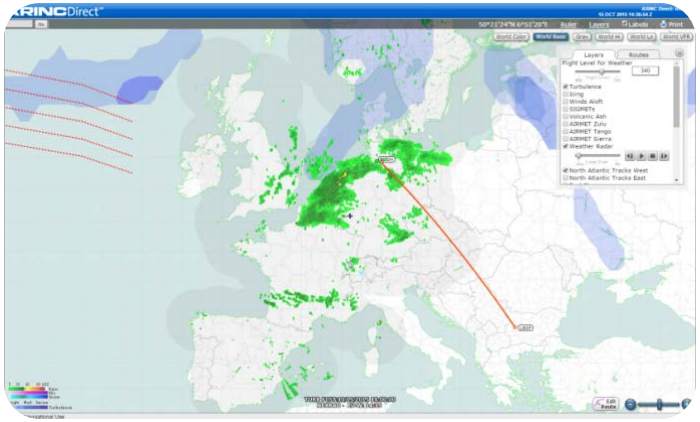
Background

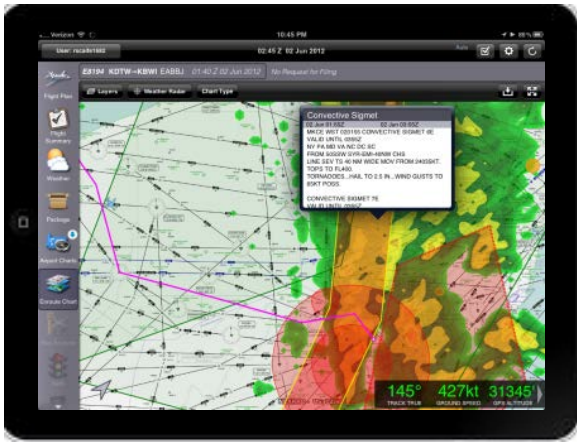
- Cockpit Weather Information Improvement Enablers and Drivers:
  - Improved Connectivity
  - Improved Airborne Wx Sensors
  - Increased Automation
  - Mobile Devices
  - FAA NextGen Weather and System Wide Information Management (SWIM)

- Cockpit Weather Information Deficiencies
  - Lack of high quality global weather information
  - Lack of integrated weather
  - Disparate views of weather from pilot vs. ground perspectives.

Weather on Flight Decks: Mobile Devices

- Nearly all mobile devices have applications that can access and display weather information.
- ARINCDirect mobile application provides display of weather information. Integrated with ground flight support services, the application provides alerting of future weather threats to operators.
- Mobile devices provide an effective method of delivering advanced interactive weather solutions to flight decks.
  - Easier to incorporate enhanced weather threats (turbulence, icing, convective, etc.)
  - Decision support functions can be readily added.



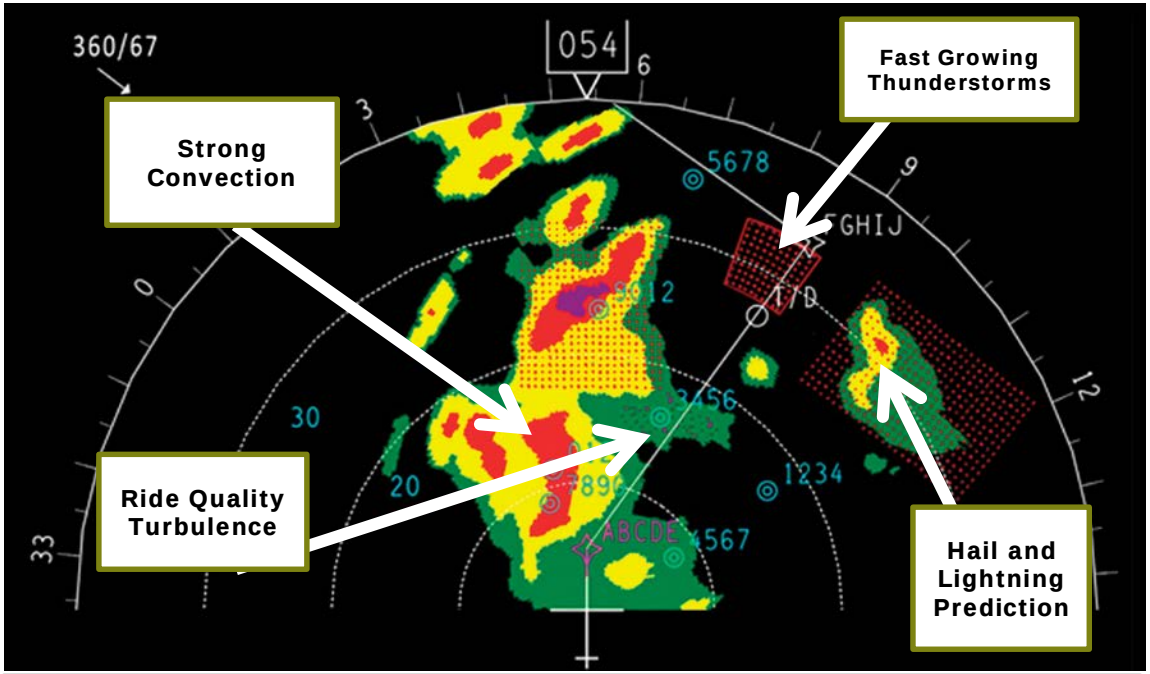


Weather on Flight Decks: Integrated Avionics

- Integrated avionics, such as Pro-Line Fusion, provide the most up to date information on position and location of threats, including weather threats using uplink weather and the airborne weather radar.
- Multiple views of the weather allow pilot to display graphical weather with flight path and aircraft position overlays.
- Unrestricted use in all phases of flight.

MultiScan ThreatTrack™ Radar

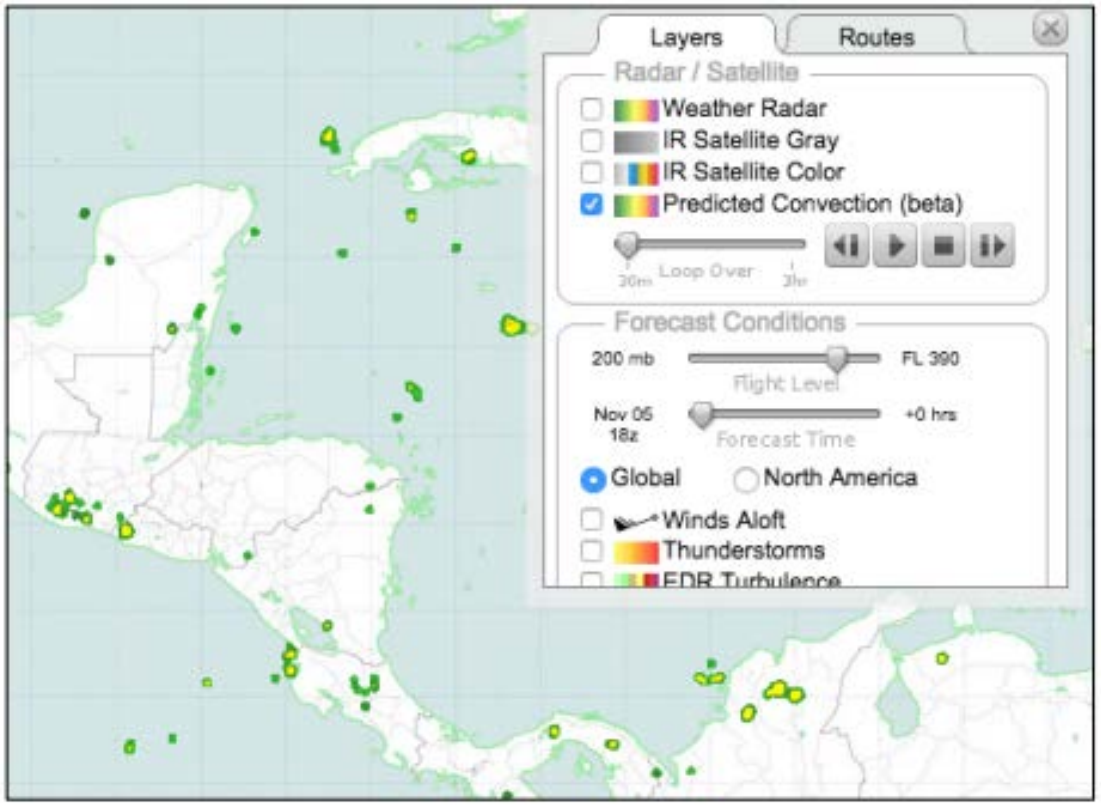
- WXR-2100 MultiScan In Service Since 2002
- Extensive Customer Base
  - 8000+ Systems in Service
- Fully Automatic Radar Operation
  - Horizontal and Vertical weather scanning.
  - Adaptive Gain and Ground Clutter suppression
  - OverFlight Protection™
  - Geographic Weather Correlation
  - Certified Turbulence & Windshear Detection
  - Threat Assessment
- Based on 'Dark Cockpit' (Clean Screen) Philosophy



Threat Assessment Brings Significant Operational Benefits

Improved Global Weather

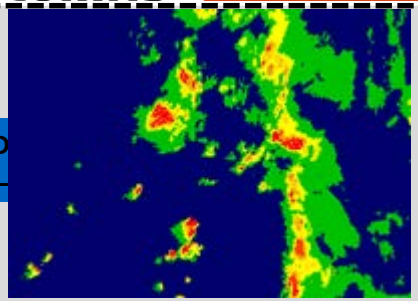
- Weather vendors and university researchers developing high quality global weather information.
- Satellite products and existing global sensors being used in unique ways.



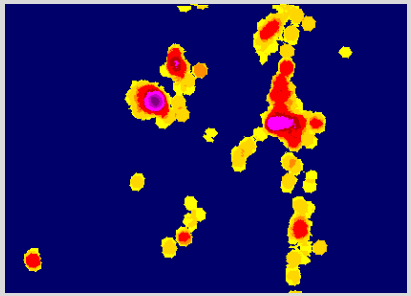
ARINCDirect Predicted Convection

Global Integrated Weather

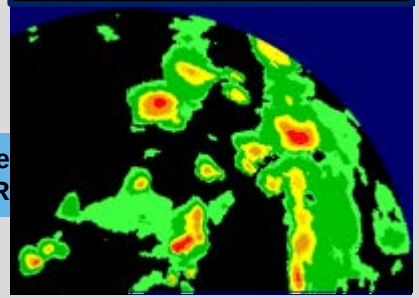
NEXRAD VIL



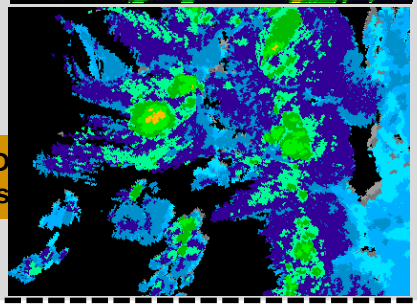
Predicted Convective



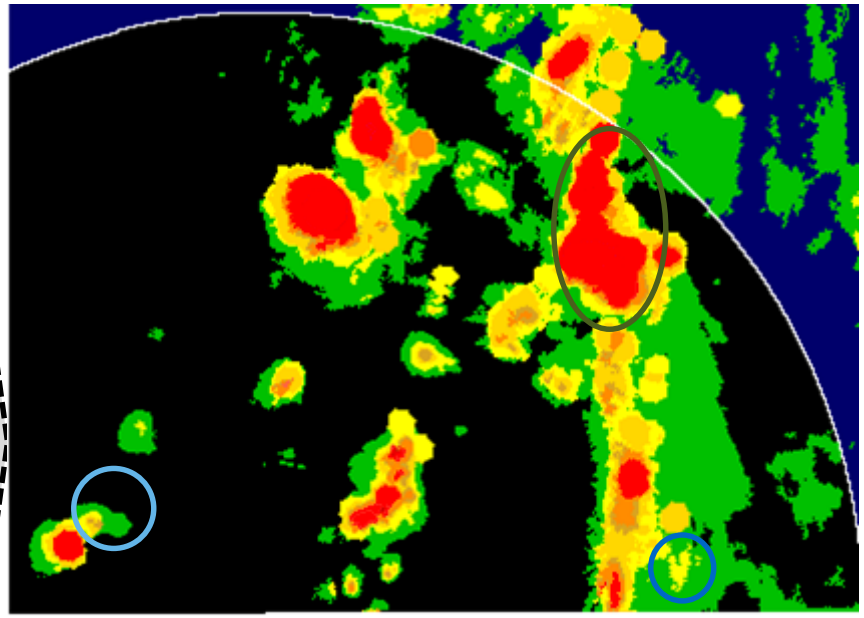
Airborne WxR



NEXRAD Echo Tops



Separate Threat Displays/Layers



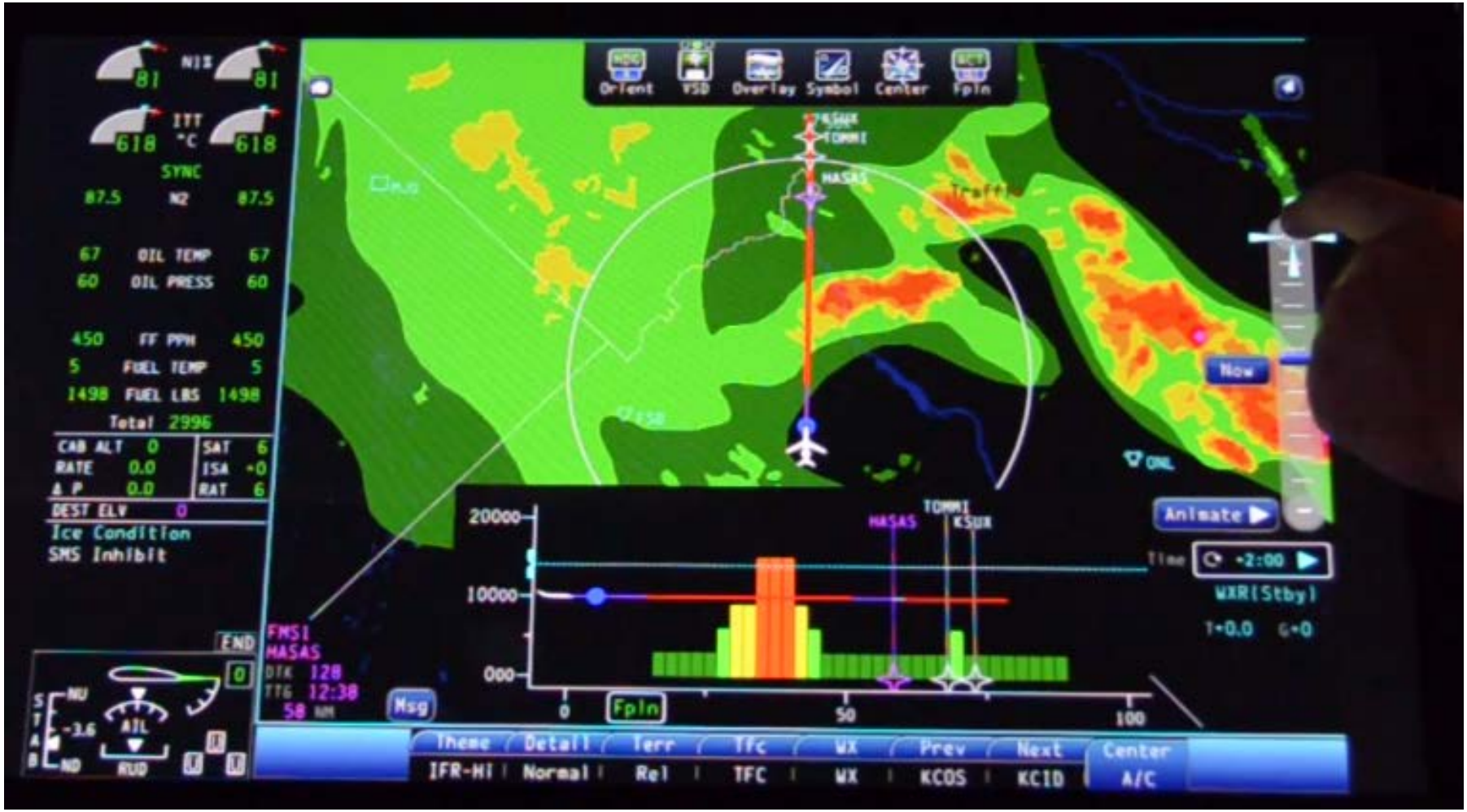
Single Integrated Threat Display

RTCA

DO-340 Datalink Wx Usage Guidelines

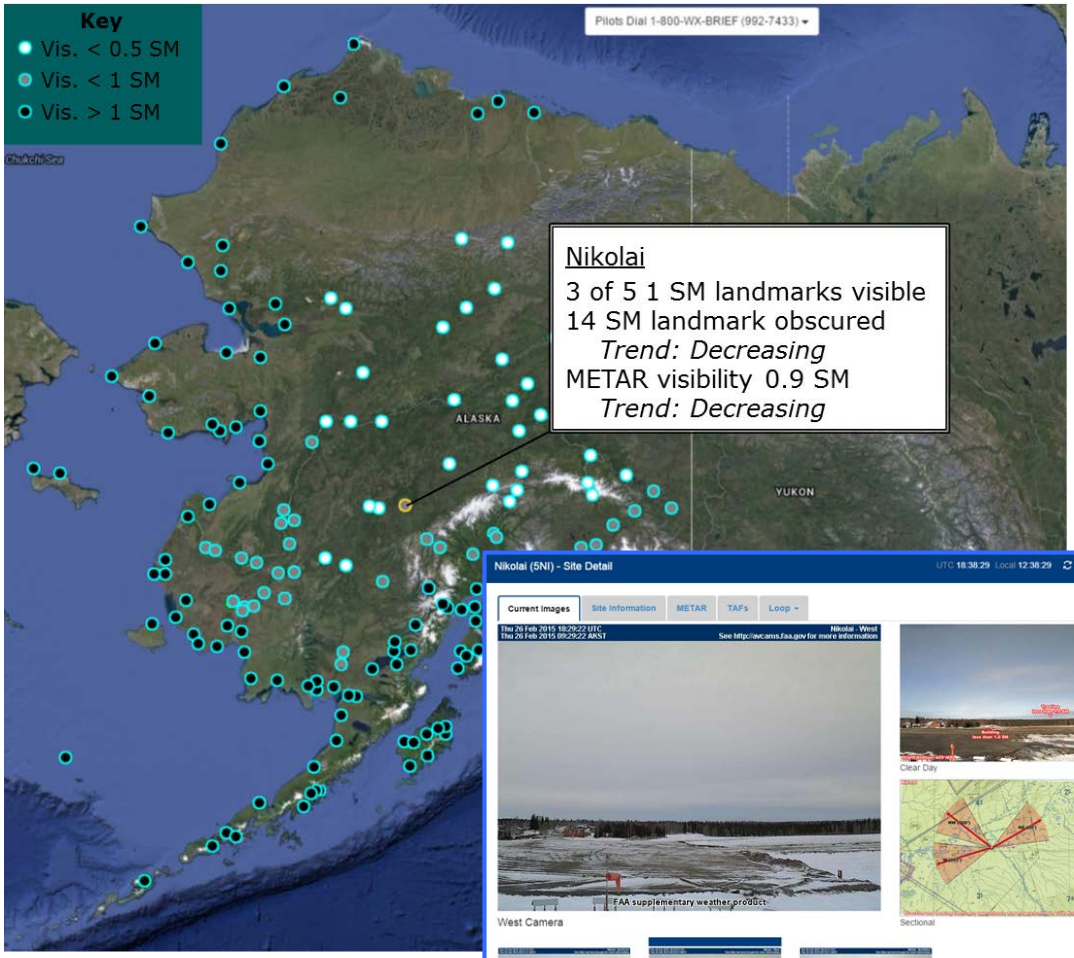
Data Fusion automates complex datalink usage logic and takes advantage of the strengths of each sensor source.

Advanced 4D weather avoidance



Crowd Sourcing Weather Information

- FAA WTIC office research to determine feasibility of Crowd Sourcing weather information for aviation.
- Global anonymous participants (aka “crowd”) analyze web camera images to provide summary visibility data to operators.
- 2016 Research:
  - Prototype evaluation at William J. Hughes Technical Center.
  - Quality Control Assessment.



Future State

Current State