

Weather Camera Program Overview



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FAA SYS OPS_AJR-B100

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Federal Aviation
Administration

Weather Camera Program

Our Mission

Improve Aviation Safety and Efficiency in the NAS

Goals

- Reduce weather-related aviation accidents
- Reduce weather-related flight interruptions
- Improve aviation flight decision making



Weather Camera Program Overview

Camera Sites

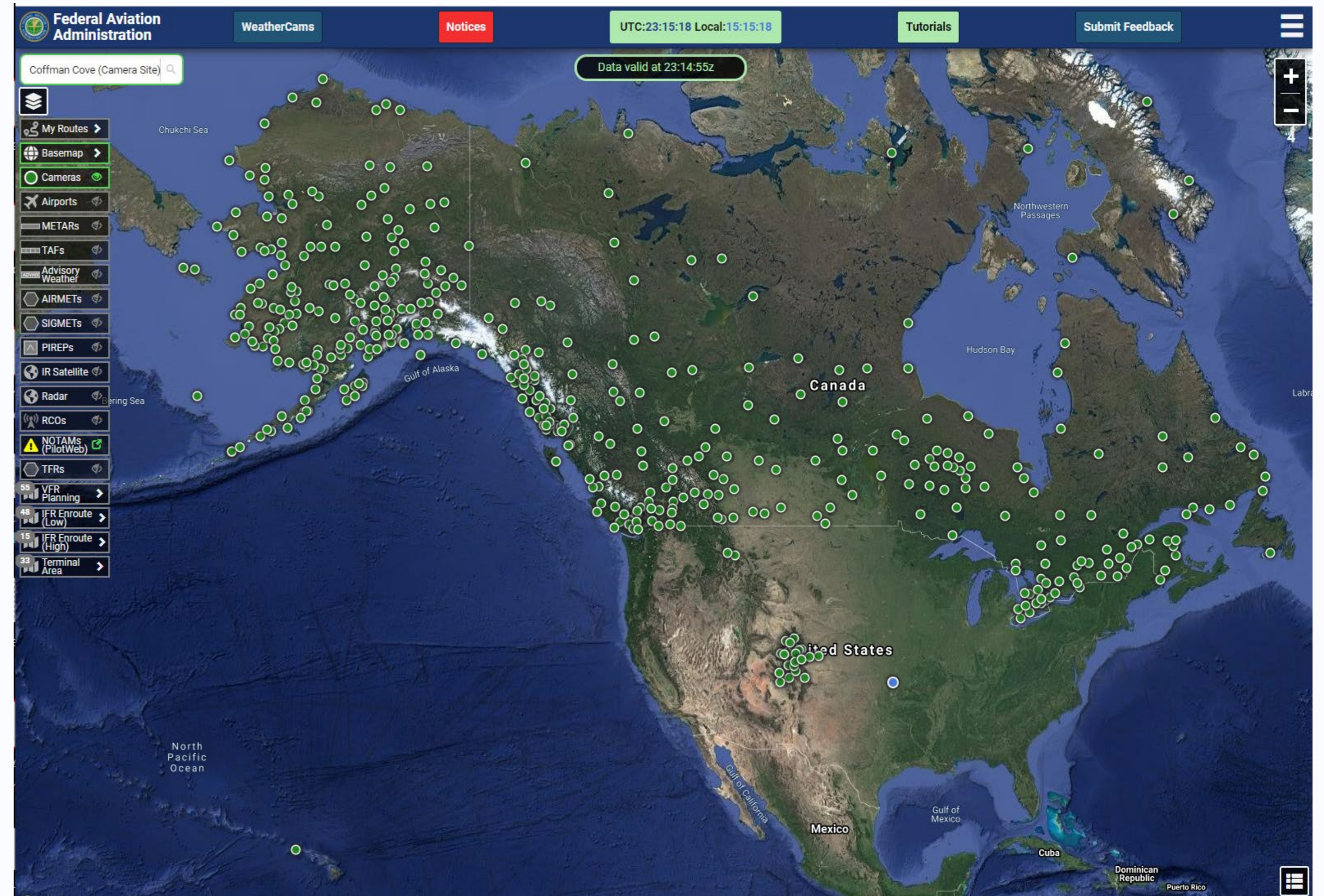
- 230 Alaska FAA Camera Sites
- 215 NAV Canada 'Hosted' Sites
- 23 Colorado DOT 'Hosted' Sites
- 2 Montana DOT 'Hosted' Site
- 1 Hawaii FAA Camera Site

Website Data Sets

- <https://weathercams.faa.gov>
- Images, METARS, TAFS, PIREPS
- Satellite, RADAR, RCO/RCAGs
- Airports, Sectionals, NOTAMs, & more.

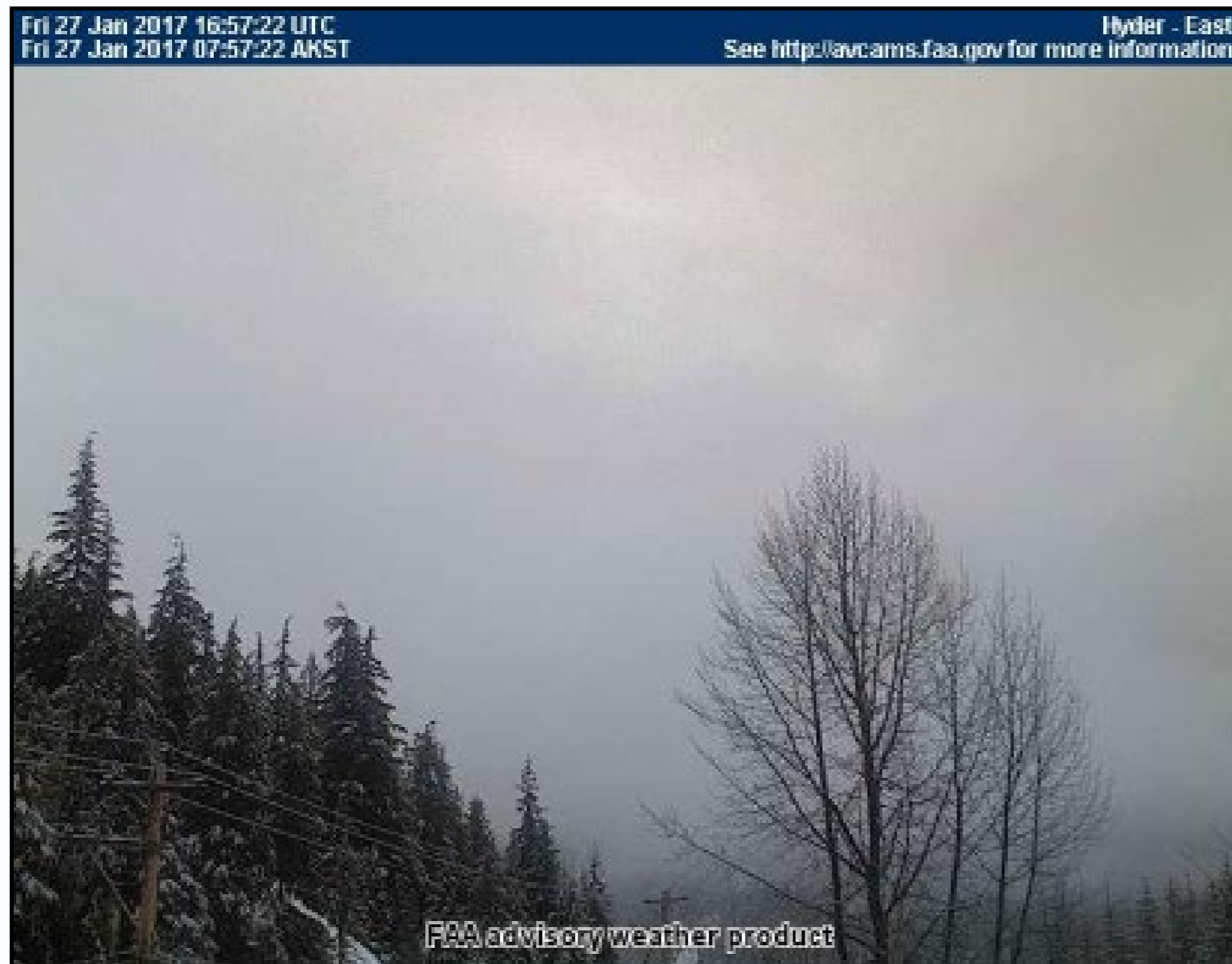
Wide Range of Users

- GA, Part 121/135/91
- Helicopter, EMS, SAR, Military
- NOAA / NWS, Marine, R&D, NextGen Development



Look Before you Fly, versus Fly out and take a look!

- Improves Pilot Self-Briefing, Pre-flight and "Go/No-Go decision making"
- Reduces accidents, fatalities, and weather-related flight interruptions



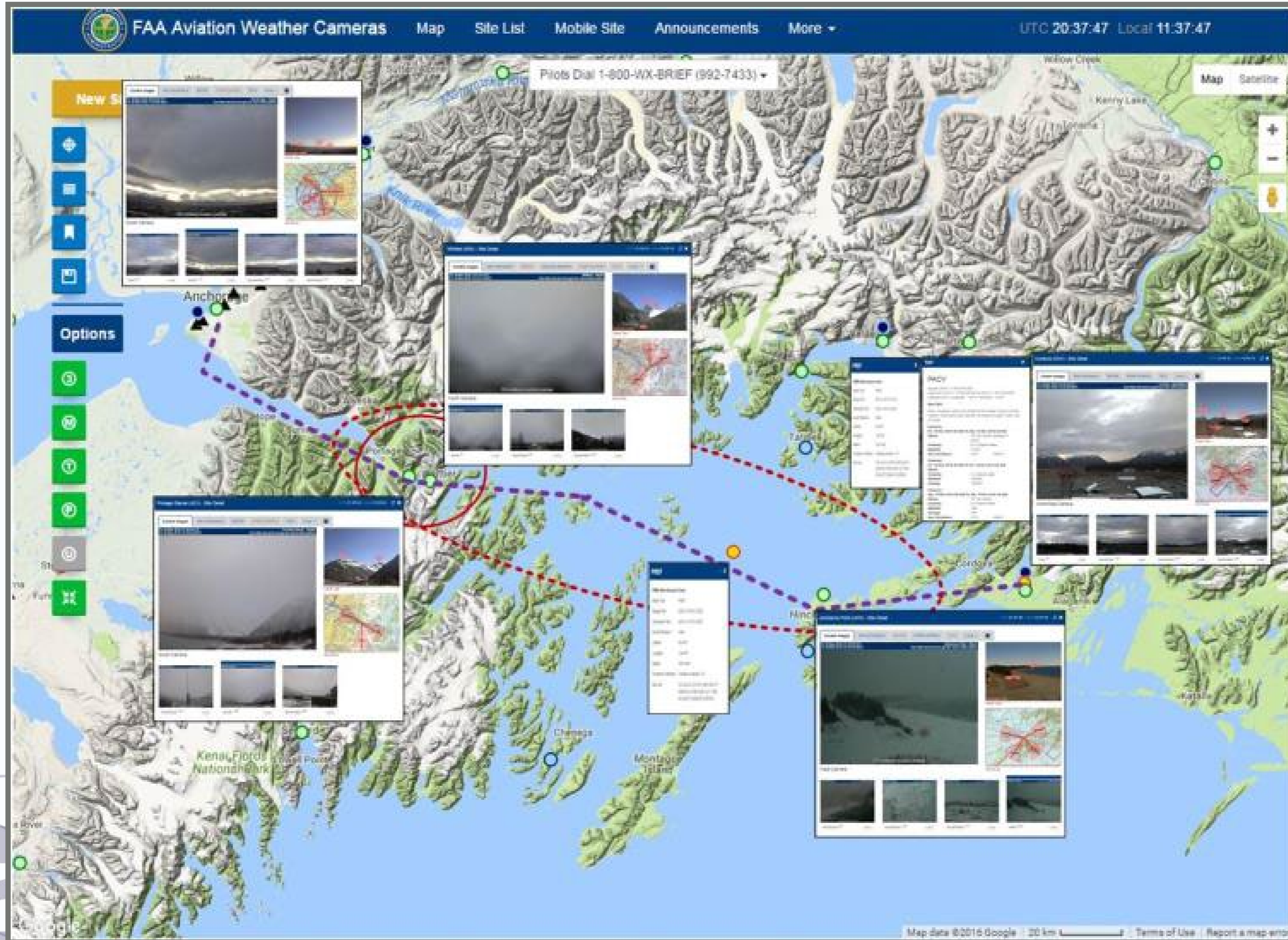
(Current Image)



(Clear-Day Comparison)



Route-based Flight Decision Making



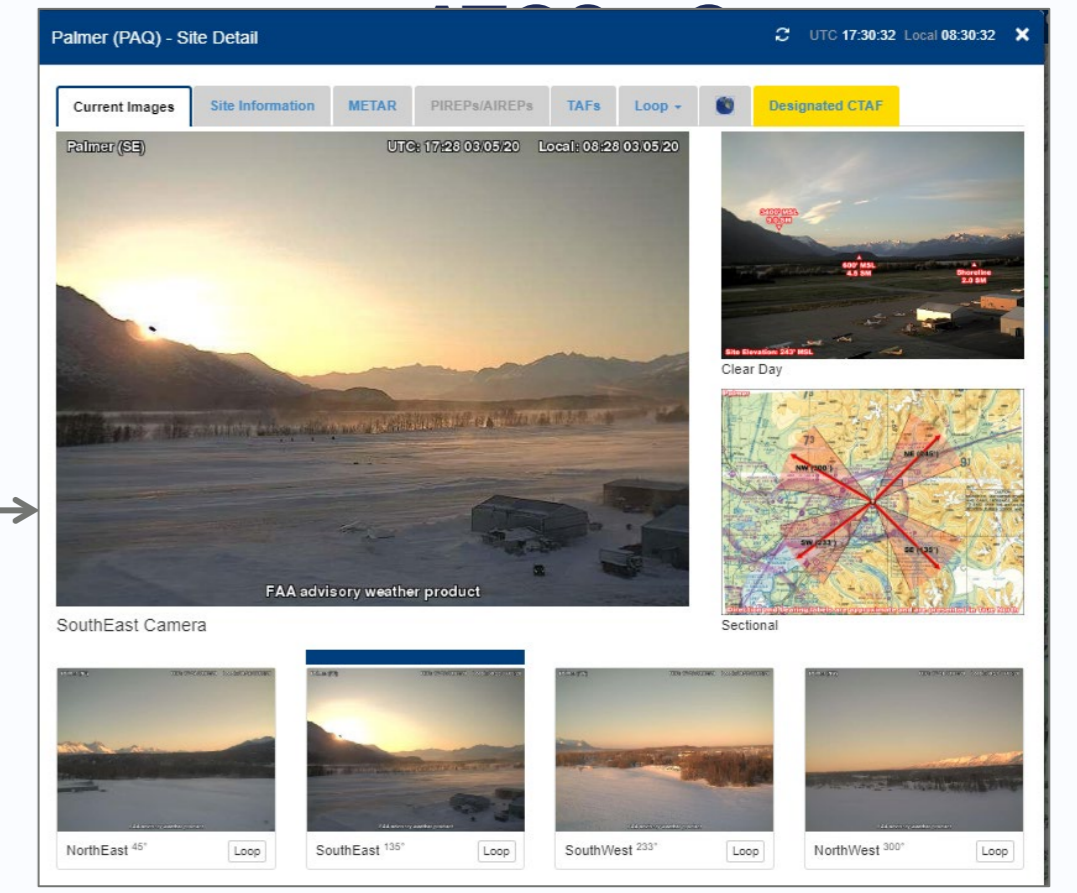
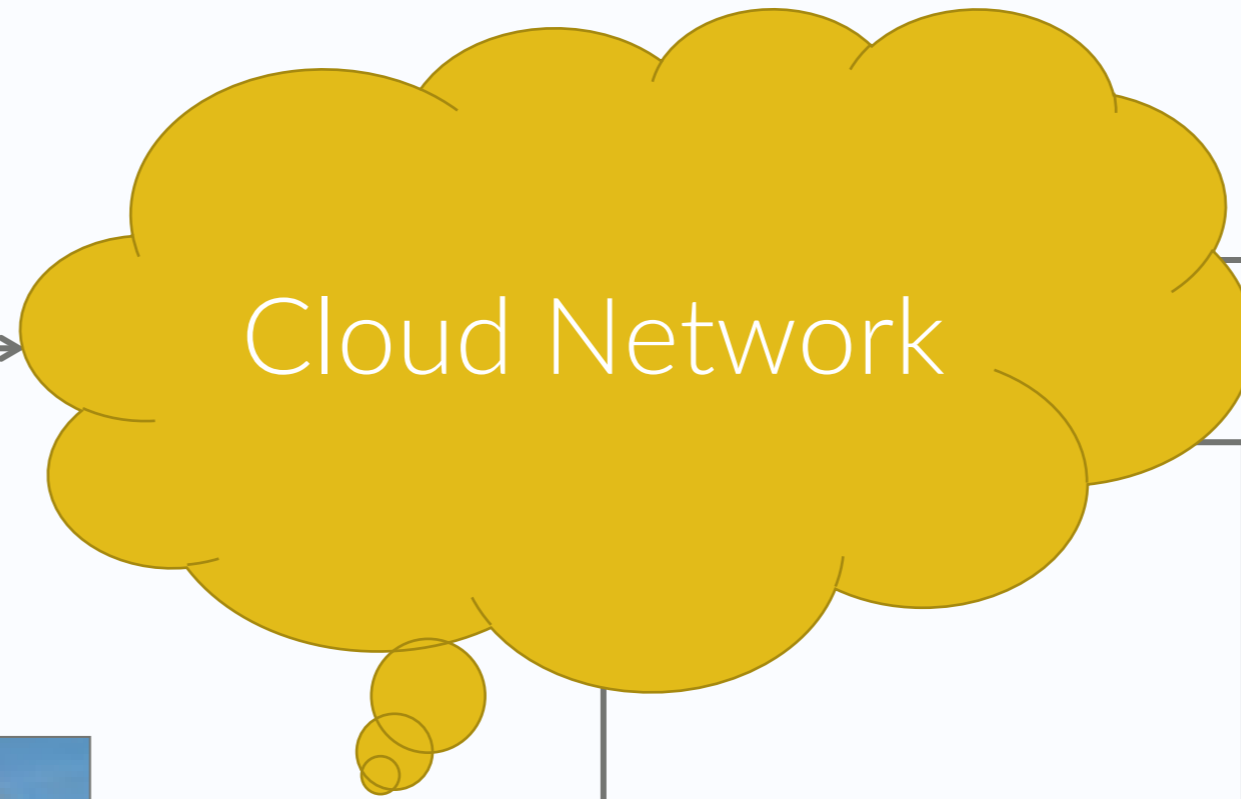
Weather Camera System Architecture



Cameras
 IP/POE
 Weather Proof
 RMM/RMC
 Heated Lenses



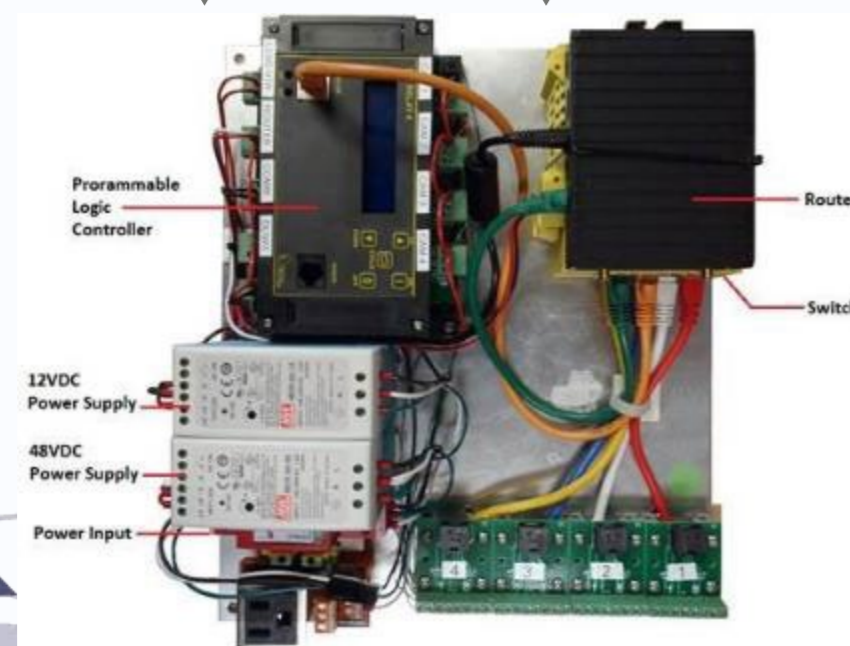
Vaisala WXT-536
 Winds Speed/Direction
 Temperature
 Humidity
 Rainfall



<https://weathercams.faa.gov>



I.P. Telecomm
 Cellular
 VSAT
 Radio Link
 Cable Modem
 DSL, Others



Camera Control Unit
 RMM/RMC
 Self repairing
 Low power
 Low Cost



API - Data Feed

- Flight Service
- National Weather Service
- Public Users



Federal Aviation Administration

Baseline Program Performance Metrics

➤ Safety: Reduction of Weather-Related Aviation Accidents

(2007 Accident **Baseline = 0.28** weather-related accidents per 100,000 hours of operations)

- 2008 Target = 0.24 Actual = 0.21
 - 2009 Target = 0.22 Actual = 0.21
 - 2010 Target = 0.20 Actual = 0.17
 - 2011 Target = 0.18 Actual = 0.13
 - 2012 Target = 0.17 Actual = 0.17
 - 2013 Target = 0.16 Actual = 0.13
 - 2014 Target = 0.15 Actual = 0.04
- (85% reduction 2007 - 2014)**

➤ Efficiency: Reduction of Weather-Related Flight Interruption hours

(2007 **Baseline = 15,374** hours of weather-related flight disruptions)

- 2008 Target = 11,327 Actual = 13,588
 - 2009 Target = 9,748 Actual = 8,709
 - 2010 Target = 8,370 Actual = 8,149
 - 2011 Target = 7,941 Actual = 5,533
 - 2012 Target = 7,724 Actual = 5,442
 - 2013 Target = 7,503 Actual = 5,286
 - 2014 Target = 7,369 Actual = 5,129
- (69% reduction 2007 - 2014)**



NTSB Safety Recommendations

August 2013: NTSB Safety Recommendations

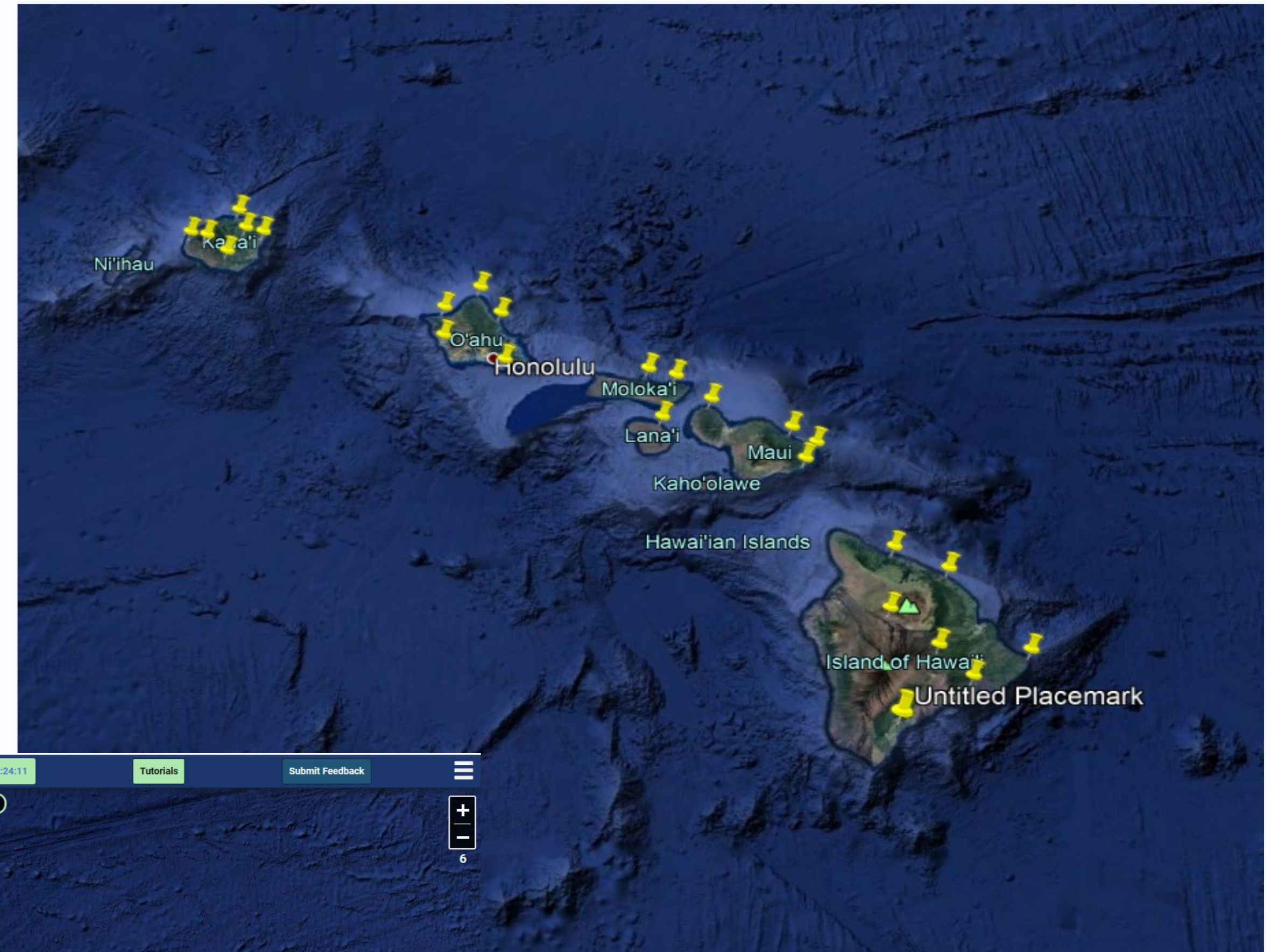
- **A-13-025** – Establish WCAM Service in Hawaii
- **A-13-026** – Establish WCAM Services in CONUS
- **A-13-027** – Enable Flight Service Specialists to brief images as a part of pilot weather briefings.



▶ Hawaii Camera Installations

26 Hawaii camera facilities planned

- FAA Owned and Maintained Sites
- First Cameras installed at Loleau, Kauai
- Estimated completion of all sites Sep 2022



**Federal Aviation
Administration**

▶ Cam service expansion via Non FAA-owned images

State DOT, Image-Hosting partnerships

- State DOT's install and maintain cameras
- FAA retrieves, formats and integrates images onto its website: <https://weathercams.faa.gov> for public use
- Partnership offered to all state DOT's
- Colorado and Montana are participating
- Other state DOT's indicating interest to participate



◀ Other WCAM Projects of Interest

WCAM Test and Development Projects

- VWOS - Visual Weather Observation System
- VEIA - Visibility Estimates Through Image Analysis
- Helicopter Air Ambulance Test and Analysis
- New API data-sharing management capability
- Satellite WIFI telecommunications
- Radio Over IP voice communications



Other WCAM Projects of Interest (continued)

VWOS - Visual Weather Observation System

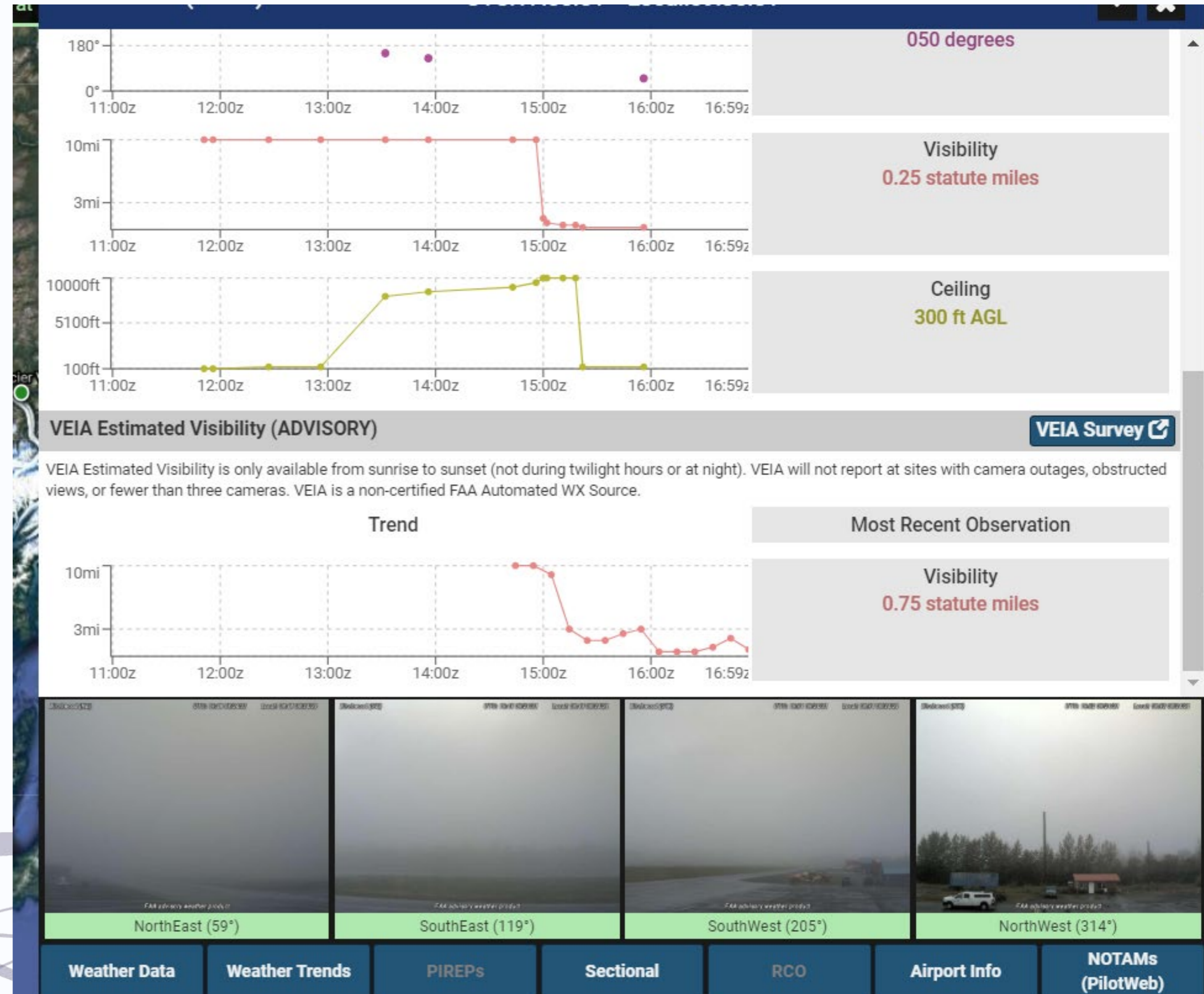
- Low Cost, Non-Certified, self-validating weather sensor suite
 - 360 degree PTZ high res camera
 - Self-checking/validating weather sensors
 - One minute observations
 - Redundant IP telecoms
- Installed at airports where Certified AWOS is unavailable



VEIA – Visibility Estimates through Image Analysis

Development and Test project

- Extracts visibility estimates from weather camera images
- Partnership: WCAMs, FAA NextGen and MIT Lincoln Labs
- Testing is conducted on the entire Alaska camera network
- Results are very encouraging
- WCAM PO intends to make this feature operational in FY22



◀ Other WCAM Projects of Interest (continued)

Helicopter Air Ambulance test and analysis

- Enhance pilot situational awareness and flight decision making
- Analysis will commence Oct, 2021 in Ann Arbor MI, and Granada and Jackson MS.
- Participants: WCAMs, Flight Standards, Med-Trans, and Metro Aviation.

Satellite WIFI telecommunications – Star Link

- Enables high speed/bandwidth data upload to the WCAM PO Cloud
- Testing will commence in Oct 2021 at two locations





Thu 19 Jun 2014 21:30:17 UTC
Thu 19 Jun 2014 13:30:17 AKDT

Eldred Rock - North
See <http://avcams.faa.gov> for more information

End



Baseline Program Performance Metrics

Camera Siting Methodology

- Direct coordination with user community
- Route-Based Camera Service Areas Defined
- Site Surveys/Selections determine best-fit locations
- User inputs determine camera view-angles
- Gap fillers identified and filled

