



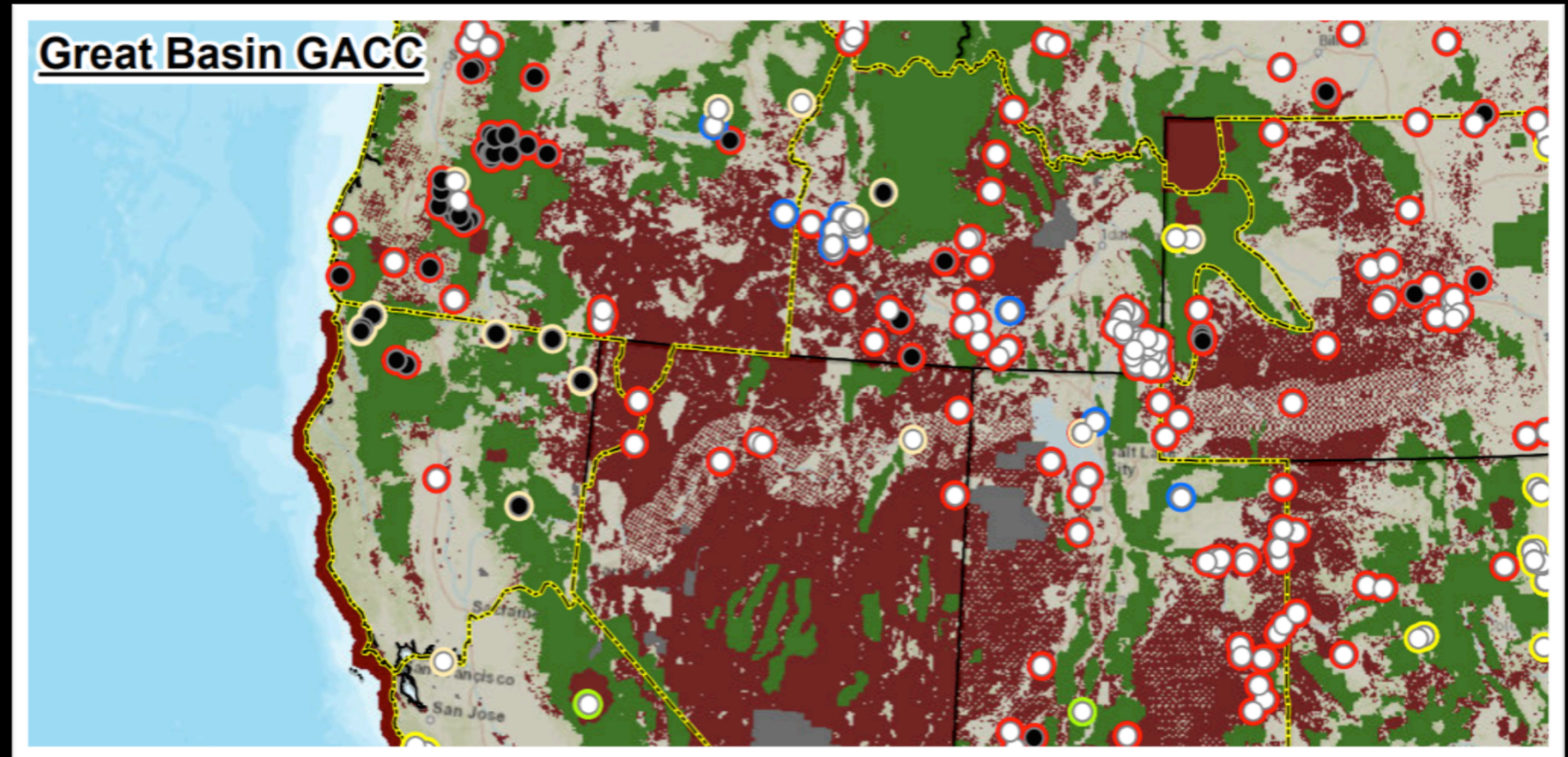
# U.S. Department of the Interior Unmanned Aircraft Program Update



# FY 2017 Recap

4976 flights

- BLM 56%
- USGS 22%
- USBR 7%
- NPS 6%
- OAS 6%
- FWS 2%
- OSMRE 2%







# FY 2017 By GACC

## By GACC

- Great Basin 22%
- Northwest 17%
- Rocky Mtn. 14%
- AK 12%
- Southwest 9%
- Eastern 8%
- Southern 8%
- Socal 5%
- N. Rockies 4%
- Norcal 2%

DOI UAS Flights by Bureau and GACC									
GACC	BLM # %	FWS # %	NPS # %	OAS # %	OSMRE # %	USBR # %	USGS # %	GACC Tot. # %	
Alaska	484 81%	50 8%	64 11%	0 0%	0 0%	0 0%	3 0%	601	12%
Eastern	20 5%	5 1%	13 3%	1 0%	84 21%	0 0%	268 69%	391	8%
Great Basin	914 82%	2 0%	23 2%	62 6%	2 0%	105 9%	10 1%	1118	22%
Northern California	39 37%	0 0%	0 0%	66 63%	0 0%	0 0%	0 0%	105	2%
Northern Rockies	112 59%	0 0%	0 0%	0 0%	0 0%	48 25%	29 15%	189	4%
Northwest	683 83%	7 1%	0 0%	26 3%	0 0%	38 5%	71 9%	825	17%
Rocky Mountain	310 46%	0 0%	0 0%	4 1%	0 0%	81 12%	285 42%	680	14%
Southern	11 3%	45 12%	6 2%	2 1%	0 0%	7 2%	311 81%	382	8%
Southern California	55 22%	0 0%	29 12%	128 51%	0 0%	0 0%	38 15%	250	5%
Southwest	146 34%	0 0%	149 35%	18 4%	0 0%	53 12%	65 15%	431	9%
Bureau Totals	2774 56%	109 2%	284 6%	307 6%	86 2%	332 7%	1080 22%	4,976	

# Dept. of the Interior - UAS Platforms



2009-2015

**AeroVironment – Raven RQ-11A**



**Honeywell - T-Hawk**



**MLB Super Bat**



*PRESENT*

**3DR Solo (385)**



**Firefly Y6S (15)**



**Pulse Vapor 55(1)**





# DOI Remote Pilot Stats

259 DOI Remote Pilots

Non-DOI = 12

BLM: 123

USGS: 62

BIA: 2

NPS: 14

OAS: 10

OSMRE: 10

USBR: 19

FWS: 19

USDA: 1

USFS: 7

State of AK: 3

NOAA: 1

**271 TOTAL Current**



\*Note: DOI Remote pilots have  
blanket authorization from USFS.





# DOI UAS Fleet Numbers

- BLM-147
- USGS-129
- FWS-66
- OAS-20
- NPS-19
- USBR-17
- OSMRE-8
- BIA-8
- Total=419





# FY 2017 Training

194 pilots carded in FY 17

13 Basic UAS courses

218 Aircraft Purchased

24 bureau mentors/lead instructors

- BLM = 8
- USGS = 7
- USFWS = 5
- NPS = 3
- USBR = 3
- OSMRE = 0

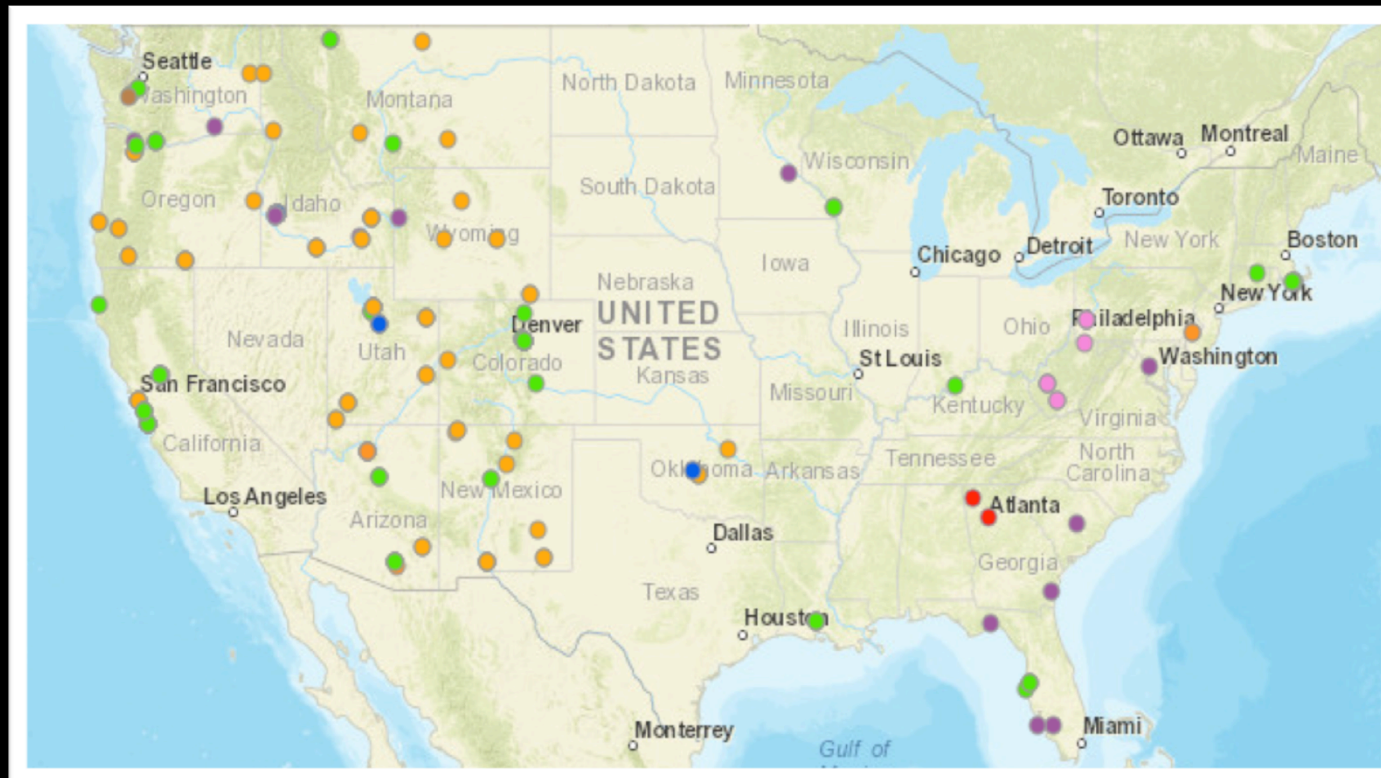
## Lead instructor process

- Take A-450
- Nominated by Bureau Program Lead
- Team Teach A-450
- Qualified IAT instructor
- Evaluator Sign off based on competency



# Current DOI UAS Fleet Distribution

[https://www.doi.gov/sites/doi.gov/files/uploads/doi\\_fy2017\\_uas\\_flights\\_summary\\_with\\_gacc\\_maps.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/doi_fy2017_uas_flights_summary_with_gacc_maps.pdf)





# Cameras & Sensors



## Point & Shoot, MILC and DSLR Cameras



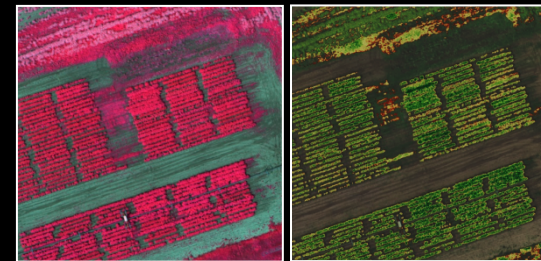
## High Definition Video



## Thermal Sensor



## Multispectral Sensor



Courtesy of MicaSense Sample Images



# Firefly Payloads

## Payloads

- [Sony a6000](#) 24Mp imager for daytime mapping
- [Sony A7r](#) 36Mp imager for higher resolution daytime mapping
- [Sony RXIRII](#) 42Mp imager for higher resolution daytime mapping
- [Slantrange 3P](#) multispectral camera
- [MicaSense RedEdge](#) multispectral camera
- [MicaSense RedEdge M](#) multispectral camera
- [Parrot Sequoia](#) multispectral camera
- [Gimbalel GoPro Hero 4](#) HD
- [Gimbalel FLIR Vue Pro R](#) IR camera
- [Colibri](#) – EO/IR stabilized gimbaled camera (6X optical zoom)

# Remote Sensing Data



Landsat 8 (30 meter)



NAIP 2010 (1 meter)



UAS at 400 ft (5 cm)



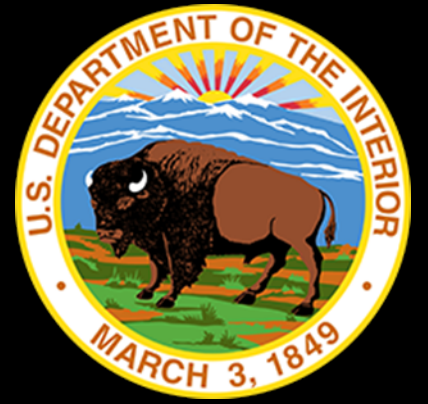
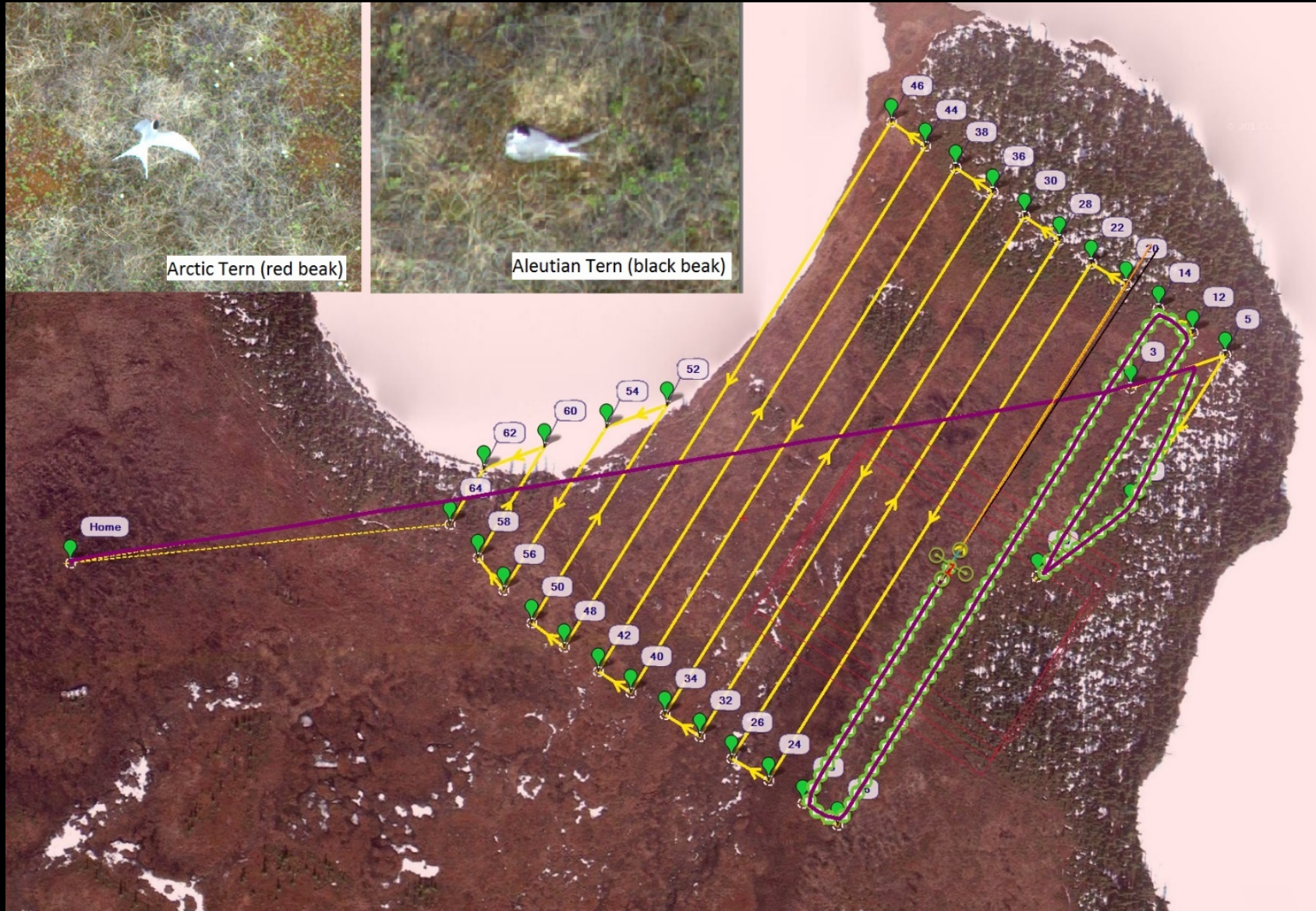
UAS at 200 ft (2.5 cm)



Courtesy USGS



# Why Does it Matter?







# 2017 Fire Missions

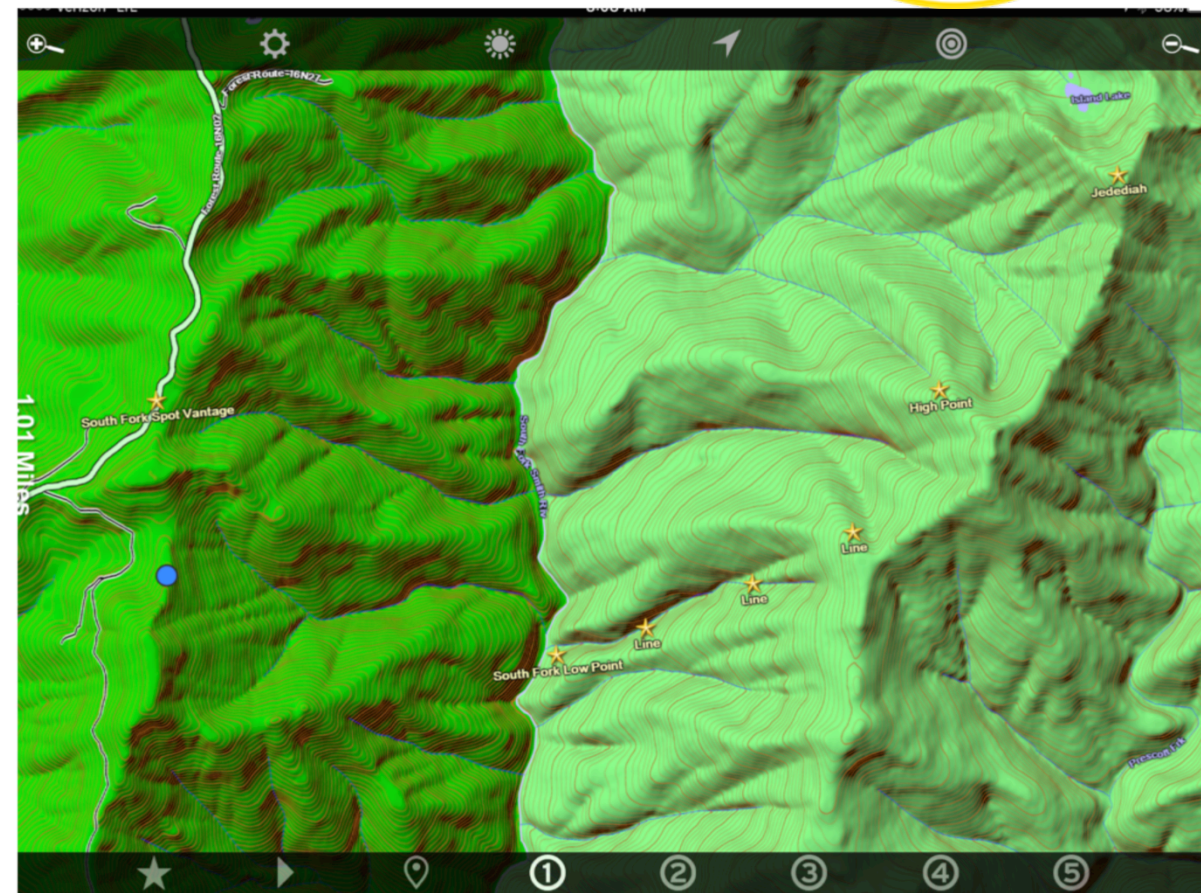
- 660+ UAS flights on fires
- 71 Individual fires
- EO/IR payload
- Both quadcopter and fixed wing aircraft







# Case Study: Fire Reconnaissance

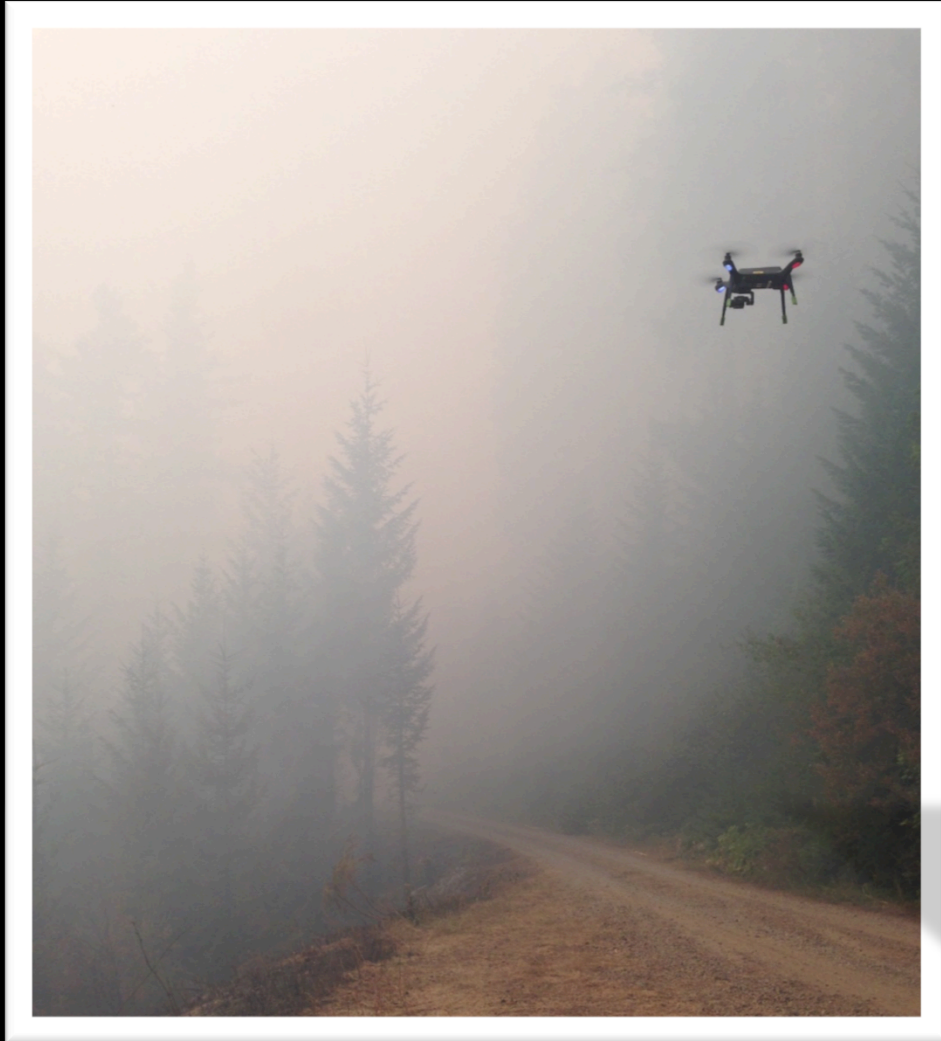


# Case Study: Fire Reconnaissance



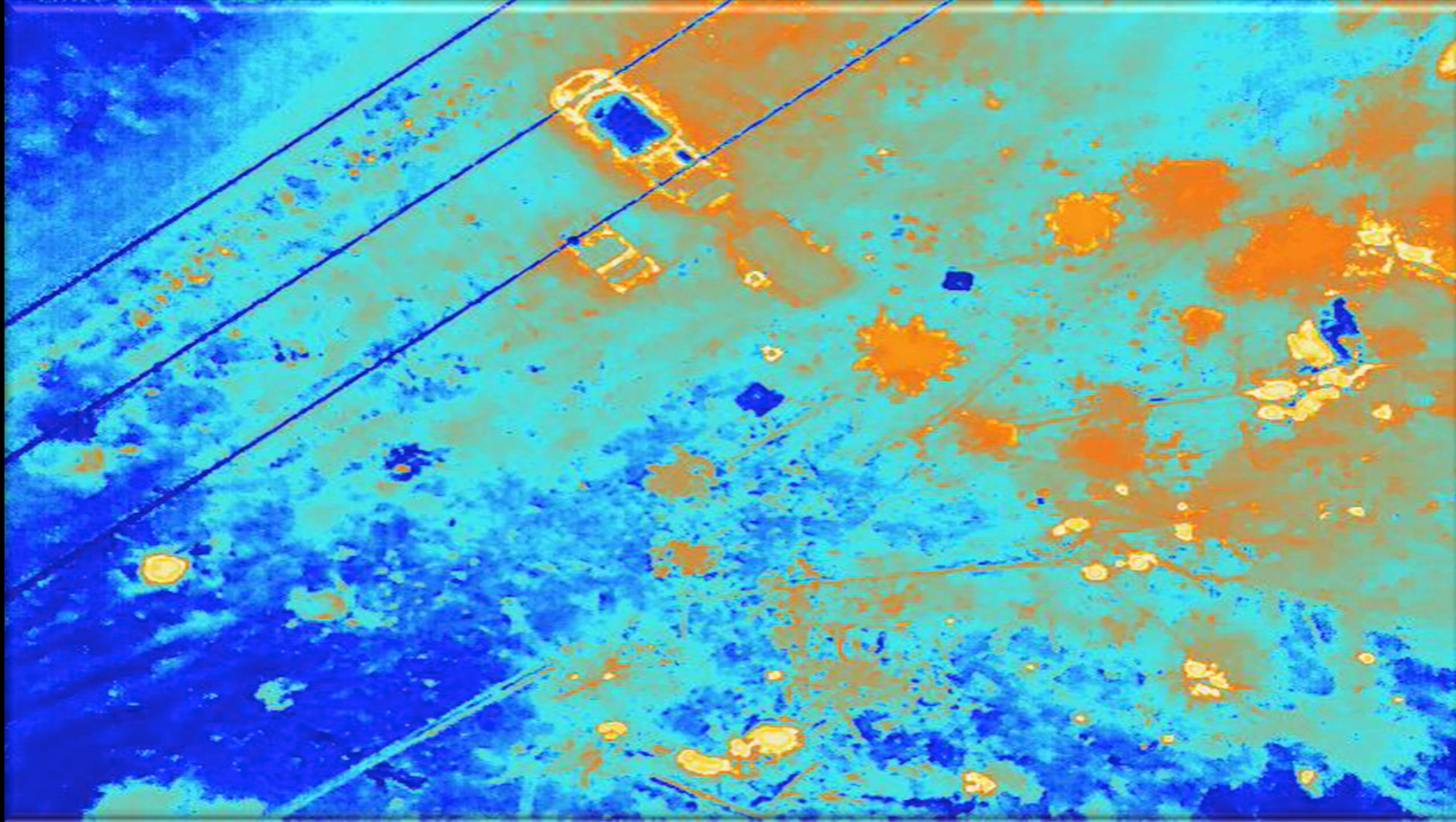


# Fire Recon





# Umpqua North Fire



# Current Projects

- Aircraft testing and evaluations (16 in past year)
- Solo Replacement Update
  - DJI
  - DIUX
  - 3DR
- BLM fire CWN contract
- Aerial ignition UAS
- Interagency Fire UAS Subcommittee
- Vertical surface inspection
- Protection of NCI/Icon sites.
- Fire Data Sharing



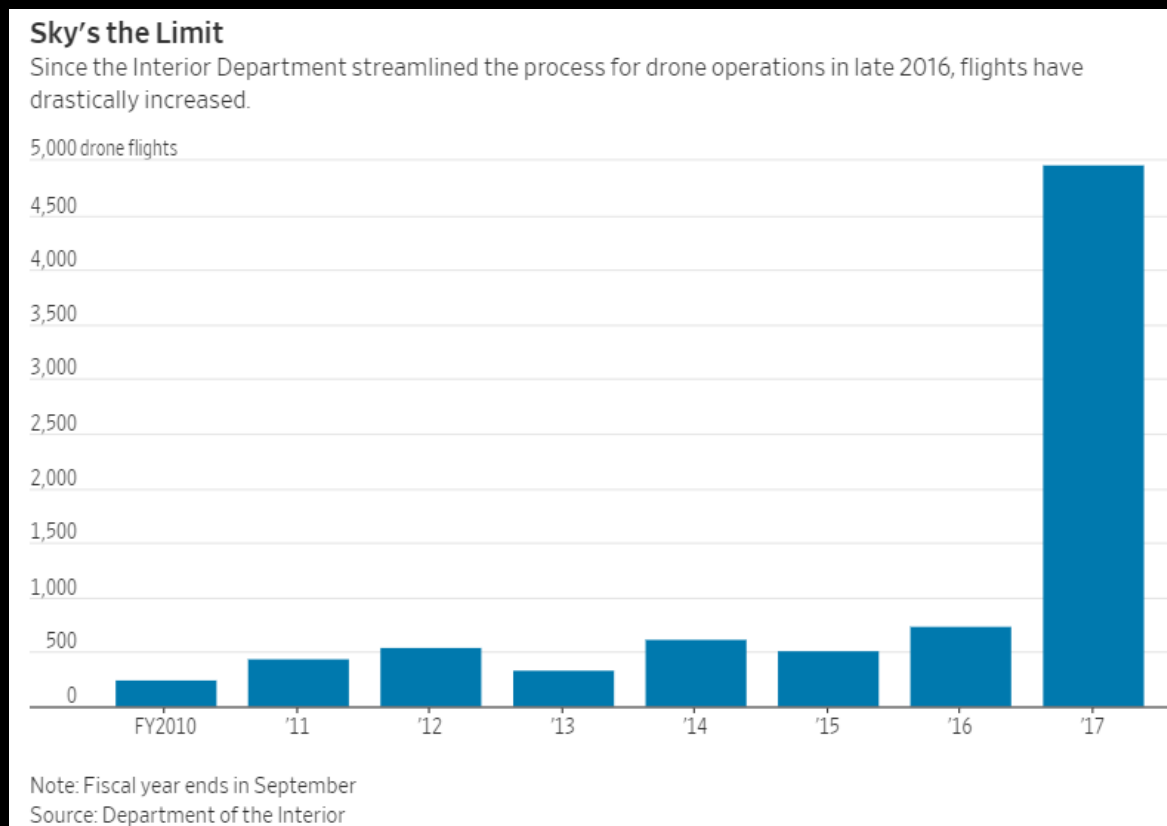


# FY 18 Training

- 13 Basic Operator Courses

## Planned

- Up to 150 additional remote pilots
- Add-on training for make/model



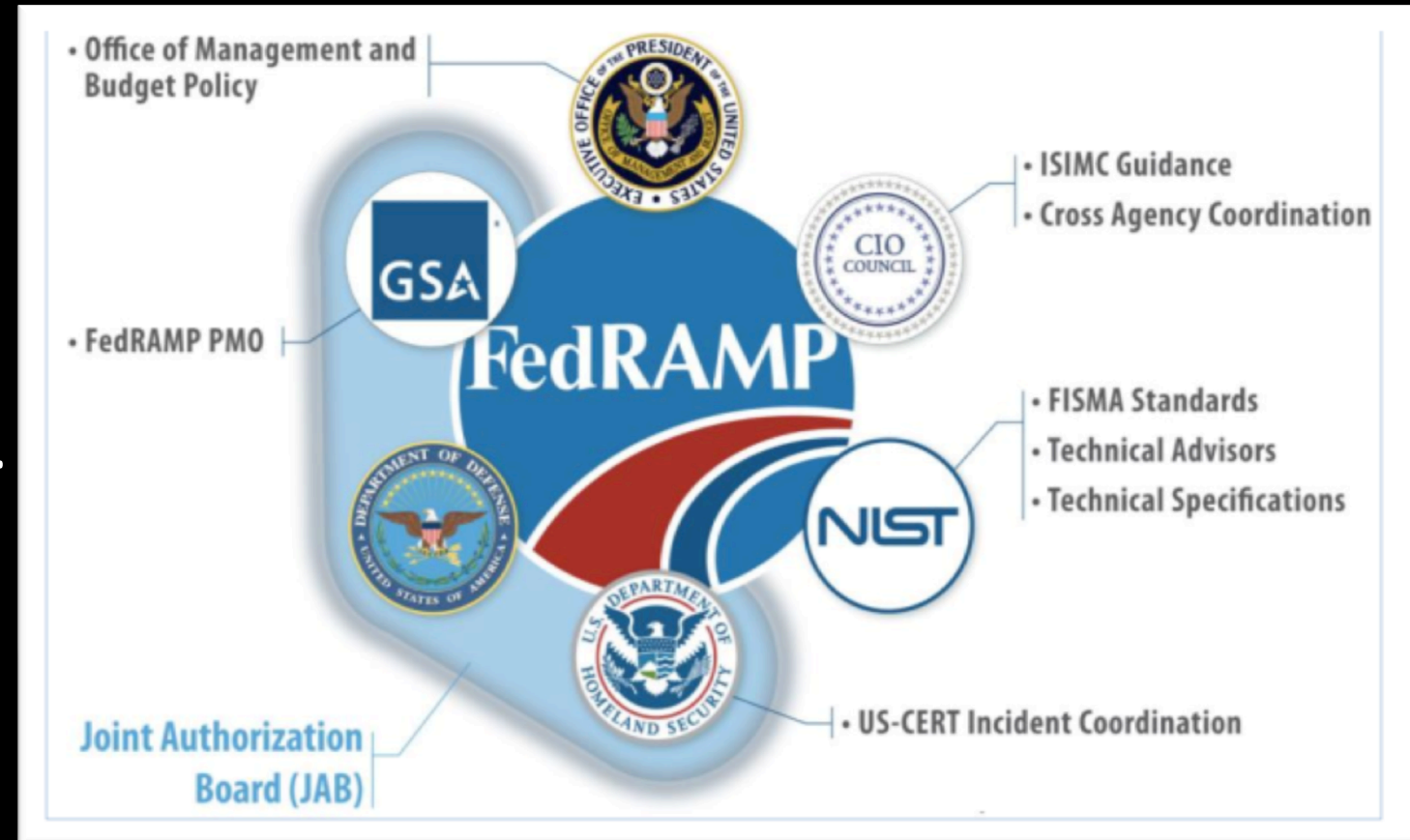
Source: WSJ





# Challenges

- Data Management and cloud processing (FedRAMP)
- Educating the workforce
- Culture
- CWN vs. Exclusive Use
- Full time UAS operators vs. collateral duty
- Acquisition cycle
- System dependability



# Future of the DOI UAS Program

- Contracting for UAS services will increase access to data
- Automation and AI will simplify data collection, processing and dissemination
- Move into tactical missions
  - Cargo/water dropping (OPA)
  - ACETA
  - Aerial application
- Much more data available to the public





# Discussion?

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[Doi.gov/aviation/uas](https://doi.gov/aviation/uas)

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