NMSU, UAS Test Site

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NMSU Physical Science Laboratory Today – A Different Paradigm

Aligned around two major research foci

- 21st Century Aerospace
  - Unmanned Aircraft Systems
    RDT&E Flight Operations
    FAA Approved UAS Flight Test Center
  - Ballistic & Telemetry Systems
  - Lighter-Than-Air Platforms

- Information Sciences and Security Systems
  - Infrastructure/Security
  - Modeling & Simulation (Information Modeling & Threat Analysis)
  - Outreach & Education

NMSU ASSETS

From left to right: Aerostar B, CTLS, Aerostar A, Orbiter, FlightStar IISC, Aerolight, Aerostar B

Agriculture

PLANT RESEARCH

- Hybrid phenology / trait assessment for breeding
- Canopy profiling
- Wind profile / wind shear information
- Temperature / pressure profiling
- Spore, dust, pollen collection
- Water quality assessments and survey
- Methane and CO2 sensing
- Wirelessly collect data from ground sensors
- Crop counting

CROP PRODUCTION

- Crop status (growing stage, yield estimates, etc.)
- Precision Agriculture prescription data
- Tiling/drainage evaluation and survey
- Time-saving pre-assessment for field tasks
- Oblique shots for de-tassel timing
- Drainage estimates and topography
- Planting evaluation and replanting requirements
- Pathogen introduction and tracking + Weed levels

CROP PROTECTION

- Prevent birds from eating high value crops
- Keep birds away from crude oil ponds and other restricted areas
- Prevent birds that cause disease to crops
- Detect and track plant disease
- Identify wildlife that may consume crops

UAS TOOL - Right Tool for the Right Job

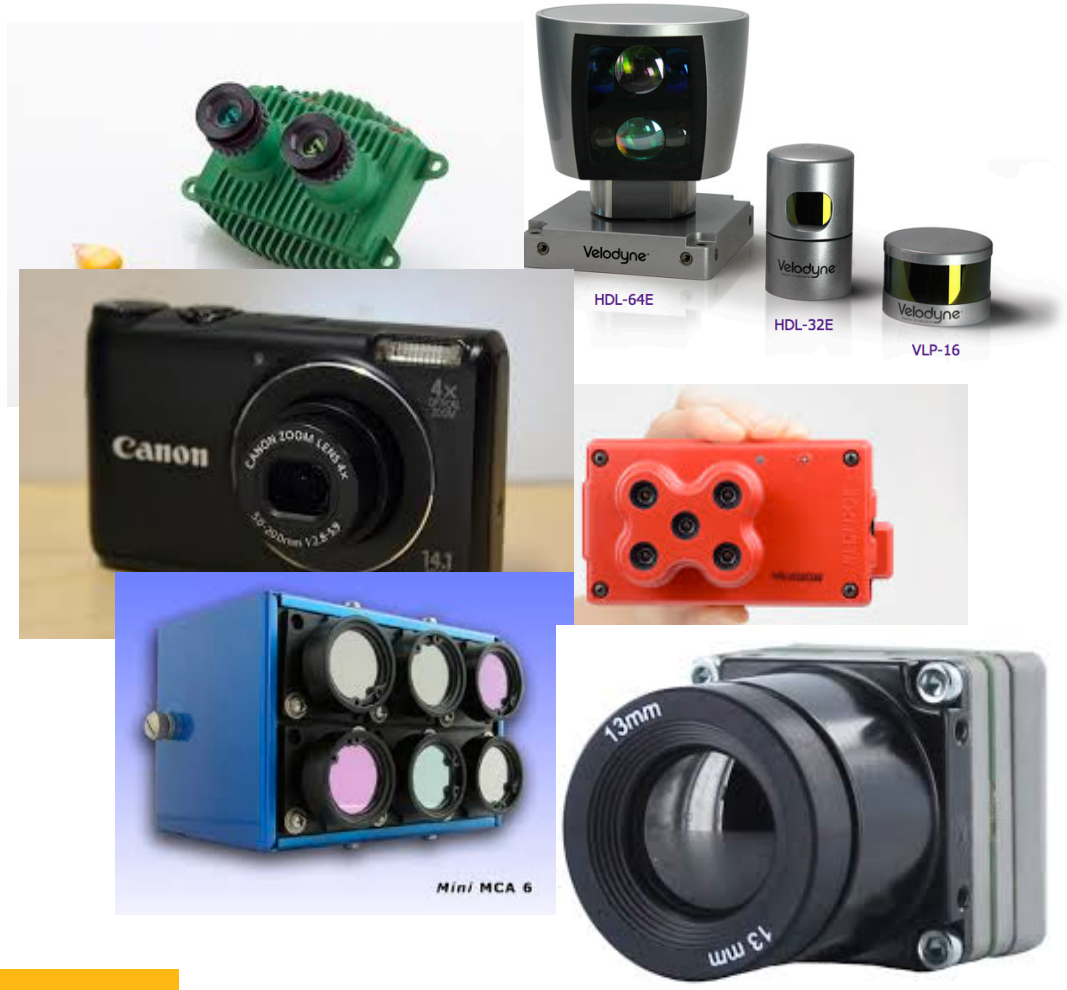
Not All UAS even Types are the Same

NM STATE Physical Science Laboratory

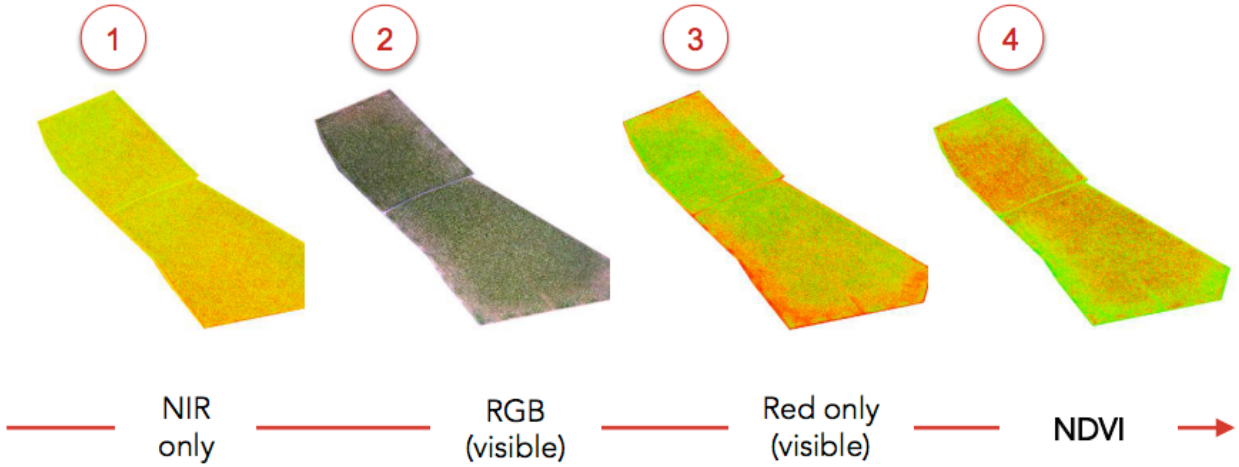
The Right Sensor for the Job

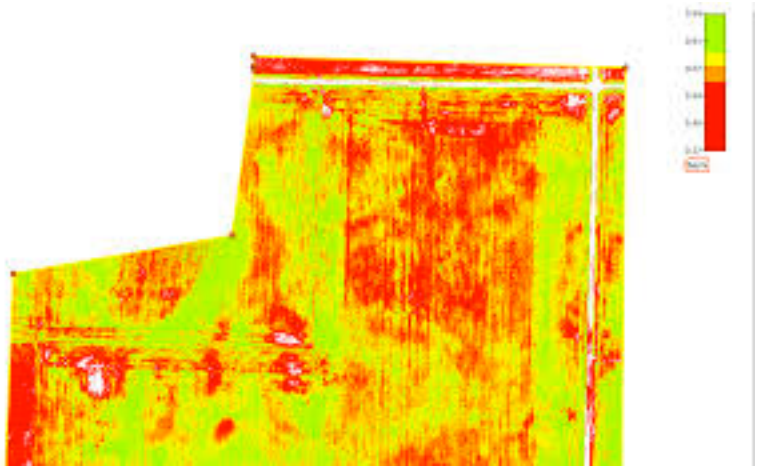
Sensors in Ag.

- Visual Light Camera
  - (RGB)
- Multi-Spectral
- Hyper-Spectral
- LiDar
- Thermal/IR



NDVI, NiR, RGB, LiDar, and Thermal





UAS Aerial Application

Yamaha, R-Max has been approved for testing only in CA.

This could be the future for aerial applications for small fields and precision applications.

To fly a sUAS in the NAS you will need this…

Rules and Regulations

Part 107

Pilot Requirements	Must have Remote Pilot Airman Certificate Must be 16 years old Must pass TSA vetting
Aircraft Requirements	Must be less than 55 lbs. Must be registered if over 0.55 lbs. (online) Must undergo pre-flight check to ensure UAS is in condition for safe operation

Rules and Regulations

Part 107

Location Requirements	Class G airspace*
Operating Rules	Must keep the aircraft in sight (visual line-of-sight)* Must fly under 400 feet* Must fly during the day* Must fly at or below 100 mph* Must yield right of way to manned aircraft* Must NOT fly over people* Must NOT fly from a moving vehicle*

Thank you for having me.. Remember we from the government but are really hear to HELP!

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Questions?