

PE&RS

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LIDAR ELEVATION & TERRAIN MAPPING

SCHEDULED - AIRMAIL DEM UPDATE
 MISSION LEAD: USGS LIDAR REMOTE SENSING PROGRAM
 PROJECT TASK: TOPOGRAPHIC UPDATE
 TAKING AUTHORITY: 9905 - MAPPING DIVISION
 PRIMARY DATABASE: 120-11-10-11-12

DATA PACKET REQUESTED BY:
 USFS - Project ID: AK 21-287
 MP3 - Project ID: Bear Cluster MP3 - 1777-21
 B04 - Project ID: Basin 12

PROJECT SEQUENCE STATUS:
 ▲ **COMPLETED:**
 LIDAR DEM (SRP 2 BLENDED, 8% OF 100%)
 LIDAR POINT CLOUD GENERATED (100%)
 DATA VERIFICATION (100%)

▶ **PROCESSING:**
 CONVERTING TO BARE EARTH TOPOGRAPHIC UPDATE (44% COMPLETE)

▼ **NEXT:**
 IMPROVING DEMS DATA PROPERTIES CHECKER (100%) - SATELLITE UPLINK (IN RANGE)

▶ **Remaining Task completion...**

PROJECT	STATUS	DATE	TIME	USER
PROJECT 1	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 2	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 3	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 4	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 5	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 6	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 7	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 8	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 9	COMPLETED	2014-11-10	10:00	ADMIN
PROJECT 10	COMPLETED	2014-11-10	10:00	ADMIN

FOREST MANAGEMENT & FIRE DETECTION

HAZARD THREAT DETECTION SENSOR SYSTEM

FIRE DETECTED
 SOURCE : THERMAL SENSOR
 DTG: 20250821:1137 GMT
 GPS-L/L/ 60°36'38.26"N/153°30'8.01"W

AUTO NOTIFICATION:
 NPS (CONFIRMED)
 USFS (CONFIRMED)

ACTIONS/AUTO NOTIFICATION:
 NPS ALERT SERVICE (CONFIRMED)
 USFS FIRE MANAGEMENT SERVICE (CONFIRMED)
 LOCATION DATA /IMAGERY SENT

FIRE SCOUT AUTO DEPLOYMENT RESPONSE:
 FIRE SCOUT UAV DEPLOYED STA: USFS AK-12
 ON-SCENE ETA : 00H:17M:08S

WILDLIFE TRACKING & MONITORING

CONFIRMED DETECTION: THERMAL IMAGE ACQUIRED
 RFID TAG #: 20200908-92857
 SPECIES: CANIS LUPUS PAMBASILEUS
 DTG: 20250821:11:45:10 GMT
 POS: LAT: 60°35'26.51" N
 LONG: 153°24'48.12" W

BIOMETRIC DATA:
 SEX: MALE
 HEARTRATE: 88 HR/M
 BODY TEMP: 101.2 F
 BODY FAT %: 16%
 STRESS: LOW

CONFIRMED DETECTION: THERMAL IMAGE ACQUIRED
 RFID TAG #: NONE
 SPECIES: CANIS LUPUS PAMBASILEUS
 DTG: 20250821:11:46:27 GMT
 POS: LAT: 60°35'26.51" N
 LONG: 153°24'48.12" W

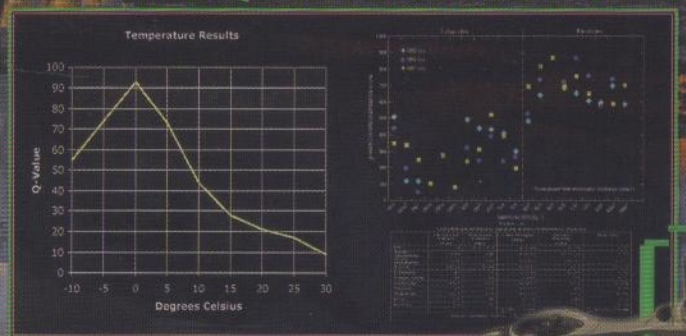
BIOMETRIC DATA:
 SEX: NA
 HEARTRATE: NA
 BODY TEMP: NA
 BODY FAT %: NA
 STRESS: NA

NEW ACQUISITION
 USFWS TAGGING UAV DEPLOYED
 DATA TRANSFERRED - ETA 00H 10M 22S

STATUS UPDATES:
 USFWS - TRACKING METADATA SENT
 DATA VERIFICATION (100%)
 NOTIFICATION TO PROJECT LEAD (CONFIRMED)
 USGS PROJECT ALSK-W-658972
 TRACKING DATABASE -
 UPDATE IN PROGRESS

MISSION RESULTS:
 POP/COUNT IN CURRENT AERIAL SURVEY: 27
 # IDENTIFIED: 18
 # NEW: 9
 NEW TAGGED: 9
 PERCENT TAGGED OF OBSERVED: 100%

WATER QUALITY & FLOW MONITORING



The Official Journal of the International Society for Unmanned Aircraft Systems Technology

PHOTOGRAMMETRIC ENGINEERING & REMOTE SENSING

COLUMNS

- Letter from Rae Kelley, ASPRS 1088
 Assistant Director—Publications
 Grids and Datums—*Republic of Tajikistan* 1099
 Behind the Scenes 1101
 Book Review—*Advances in Mapping* 1103
from Remote Sensor Imagery: Techniques and Applications

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- ASPRS 2015 Annual Conference 1085, 1105
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HIGHLIGHT ARTICLE

1089 Unmanned Aircraft Systems (UAS) Activities at the Department of the Interior

Bruce K. Quirk and Michael E. Hutt

PROFESSIONAL INSIGHT—AN INTERVIEW

1096 USS (Unmanned Santa Systems) Excitement and Controversy at the North Pole



PEER-REVIEWED ARTICLES

1107 GPU Processing for UAS-Based LFM-CW Stripmap SAR

Craig Stringham and David G. Long

The development of a stripmap SAR backprojection processor that addresses the geometries and motion typical of UAS-based SAR systems and achieves real-time processing using a GPU.

1117 Feasibility Study for Pose Estimation of Small UAS in Known 3D Environment Using Geometric Hashing

Julien Li-Chee-Ming and Costas Armenakis

A novel localization approach for small unmanned aerial systems in urban areas based on matching video images with 3D models.

1129 Multi-UAV Surveillance over Forested Regions

Vengatesan Govindaraju, Gerard Leng, and Zhang Qian

A novel method to determine the near-optimal flight paths for Multiple UAVs to conduct an effective surveillance over forested regions, using the DEM and land cover information.

1139 Retrieval of Spectral Reflectance of High Resolution Multispectral Imagery Acquired with an Autonomous Unmanned Aerial Vehicle: AggieAir™

Bushra Zaman, Austin Jensen, Shannon R. Clemens, and Mac McKee

Spectral reflectance retrieval of UAV AggieAir™ imagery.

1151 Modeling Above-Ground Biomass in Tallgrass Prairie Using Ultra-High Spatial Resolution sUAS Imagery

Chuyuan Wang, Kevin P. Price, Deon van der Merwe, Nan An, and Huan Wang

Modeling and predicting tallgrass above-ground biomass can be accomplished using ultra-high spatial resolution imagery collected by small unmanned aircraft systems.

1161 High Resolution Imagery Collection for Post-Disaster Studies Utilizing Unmanned Aircraft Systems (UAS)

Stuart M. Adams, Marc L. Levitan, and Carol J. Friedland

Review and case study of unmanned aircraft systems (UAS) usage for high resolution imagery collection for post-disaster studies.



Advances in Unmanned Aircraft Systems Technology and Applications is the focus of this *PE&RS* special issue. Successful military application of Unmanned Aircraft Systems (UAS) technology to perform intelligence, surveillance and reconnaissance has ignited the interest of the civil, commercial and academic remote sensing communities

in the research and operational applications of these technologies. This special issue of *PE&RS* focuses on UAS technology and the current and future applications of UAS. The cover represents a possible future scenario where multiple UAS acquire different types of data through different sensors – one UAS performs terrain mapping with a lidar sensor, another is collecting forestry data and also detects a fire, the third is gathering water quality and flow information and the final UAS is monitoring wildlife. These data can be shared and integrated with other geospatial data to answer many types of scientific inquiries.

APPLICATIONS PAPER