Tactical Fire Remote Sensing Advisory Committee (TFRSAC)

Fall Meeting / November 3, 2016

"We'll bring our eggheads, you bring yours, and we'll scramble 'em together" – Vince A.

Meeting location: **Great Basin Training Auditorium - National Interagency Fire Center**, Boise, Idaho

Moderators: Vince Ambrosia (408-666-7609 cell), Everett Hinkley (801-455-8764 cell)

TFRSAC AGENDA – Thursday November, 3 2016

7:30 am **Breakfast on your own**

8:30 am **Meeting start --** A Webex and conference line available for those who are attending remotely (details on page 2).

Morning Presentations (20 minutes each)

• Welcome and Introductions	Vince & Everett
• Forest Service Outlook	Everett / Lisa Elenz
• NASA Outlook	Vince Ambrosia
• View from NIFC / National IR Program Manager	Tom Mellin
• AMS Update	Brad, Woody, Kaz, Sally

10:00 am **Break** (15 min)

10:15 pm **Resume** (20 minutes each)

• Forest Service UAS Update	Jami Anzalone
• Dept. of Interior UAS Update	Dustin / Stroud / Ramaekers
• Colorado Multi-Mission Aircraft	Bruce Dikken
• Northwest Nazarene Univ. sUAS activities	Dale Hamilton
• Wildfire XPRIZE (15 minutes)	David Ayward

12:00 pm **Lunch**

1:15 pm **Resume** (25 minutes each)

• Canadian Fire Season	Tim Lynham / Josh Johnston
• Update: Hawkeye // Thermal Summit	Hawkeye Team
• FASMEE Developments	N. French / M. Dickinson
• UAS demo on the North Fire (Cibola NF – NM)	Gil Dustin (BLM)

3:10 pm   **Break**

3:20 pm   **Resume** (20 minutes each)

- CalFire Update   Jana Luiz
- Wildfire SBIR – Processing, Exploitation & Delivery   Chris Rowley
- Practitioner involvement with SBIR   Ed Freeborn
- Snow Valley Cameras for Fire Detection   Ball / Pennypacker

5: 00 pm   **Adjourn for day**

Additional Topics (on deck)

- Natasha Stavros – Fire Danger Project

Acronyms (with links)

AMS	Autonomous Modular Sensor
CalFire	California Department of Forestry and Fire Protection
MODIS	Moderate-resolution Imaging Spectroradiometer
NIFC	National Interagency Fire Center
UAS	Unmanned Aircraft System
FASMEE	Fire and Smoke Model Evaluation Experiment
SBIR	Small Business Innovated Research

Points of Interest

- Check out the NASA Applied Science Program - Wildfire web page (Vince Ambrosia is the Content Manager for the site).
  Link: appliedsciences.nasa.gov/programs/wildfires-program
- The NASA Applied Science Program - Wildland Fire Annual Review Meeting is scheduled for February 28 - March 2, 2017. The meetings will be held in the Boulder, CO area (haven't firmed up hotels / meeting facilities yet). Sher Schranz (CIRA/CSU, NOAA/ESRL) is co-planning the meeting with us (NASA – Ambrosia) and we are working with her to set up various visits to facilities in the area and labs.
- UAS Workshop for March 28-30, 2017 at NASA Ames – USGS hosted / Primary contact Bruce Quirk quirk@usgs.gov
- NASA Recover (Keith Weber) - The NASA RECOVER wildfire decision-support system has a new capability that has been in planning/development for nearly two years. That is the ability to use RECOVER and NASA earth observing systems (like MODIS) to monitor wildfire area for years following a fire. To best enable this technology for you, we need your input! Please take just a few minutes to consider your long-term monitoring needs and take a short survey (https://www.surveymonkey.com/r/Post-fireMonitoring).

  > Keith T. Weber, GISP
  > ISU GIS Director
  > GIS Training and Research Center
  > NASA DEVELOP Science Advisor
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- Mark Zaller - Live InfraRed from Air Attack into FireCamps/ICS and near-realtime fire perimeters on several hi-profile fires. Multiple ICS teams have become big believers and we are on track to expand next year. We have radio vans that allowed us to instantly build hi-speed mesh networks into all corners of the fire within minutes of arrival. On the Monterey Soberatnes fire we covered over 1 million acres bringing internet, gimbal [ground] operation & live video into several fire camps and the plane all at once. Here is short video showing/describing some exciting moments: Mile long Fire Tornado (video): https://www.youtube.com/watch?v=c0uV3AQ7UuE
  Presentation (https://drive.google.com/open?id=0B5rLwXOtjl2uYlk2MGU4TlpvZGc)
- Ivan Csiszar (NOAA) - There are some nice applications of the new operational NOAA VIIRS fire product (fire mask + FRP) (= the operational version of the UMD / NASA M-band product).
  > http://www.esrl.noaa.gov/gsd/learn/hotitems/2016/hrrr-smoke.html
  > http://www.star.nesdis.noaa.gov/smcd/spb/aq/eidea/

Summary of News from Xiomas – John Green

TMAS Status — Xiomas delivered the TMAS to NASA on July 30. The team struggled with SW integration for the final 6 months of the project and ended up canceling the flight tests. The system is nominally functional in the lab but needs more work to get flight ready. An additional $35K is needed to the get last few bugs worked out of the software and to get the system hardened for flight and flight tested. TMAS is currently being considered for a NASA/USFS/Xiomas collaborative Demonstration Mission this summer on a high altitude balloon: Project Code Name "Fire Balloons". In addition we see significant opportunities to commercialize the technology and are actively looking for business partners to support this effort.

StareWAI Status — Similar to TMAS, though an additional $10K to $15K is needed to prepare for and execute a flight test. The StareWAI project ended in August 2016 and the final report is being written for submission to the USDA on November 30. StareWAI is currently being consider as a sensor for the FASMEE project which will include several flights of the StareWAI sensor over controlled burns in 2018. A priority for the FASMEE project is to obtain detailed measurement of the radiation field - resolved in time and space and encompassing an entire burn unit in order to better evaluate data for fire models and input data for smoke models. This is exactly the type of application the StareWAI was designed to support.

Xiomas Company News — Dave Rein, Xiomas Co-Founder, Chief Technical Officer, and Computer/Software Engineer is moving toward retirement. Dave is committed to completing the development of the systems we're currently working on (TMAS and StareWAI) and to supporting the technology for the near term.

In the longer term, Dave's going sailing, hanging out in art galleries with his wife Janet, and won't be very available for Xiomas work. The company will sort out the practical ramifications of Dave's exit over the next 6 months or so.

These include:

1) The possibility that we need to find a new home for the WAI, StareWAI, and TMAS. Ideally we want to see the technology in use at the USFS or NASA or in use for demonstrations internationally. A commercial Imaging Services Business using one of these prototypes is another strong possibility … but all of these will need support and maintenance and we need to find a way to transition Dave out of that role within the next 6 to 12 months.

2) Dave's pending exit also leaves Xiomas without the critical mass to develop new technology. John Green has a number of interesting concepts on the virtual drawing board (sensors for cube sats and UAVs for example), but finding another person with Dave's talents is frankly unlikely (wanted: talented engineer to work on cool stuff for intermittent pay …). Pending that gap, John may find another organization to team up with in some fashion.

Applied Remote Sensing Training Program

Application of Satellite Remote Sensing Data for Fire and Smoke Monitoring

November 14, 2016 // 2nd International Smoke Symposium, Long Beach, CA

Wildland fires present a number of critical issues, including loss of human life and property and increased in air pollution. Professionals can use satellite remote sensing data to track active fires, monitor resulting smoke, forecast air quality, and map post-burn severity. NASA's Applied Remote Sensing Training Program (ARSET) will offer a day long workshop focusing on satellite data applications for fire and smoke detection and monitoring.

The training is a pre-conference event for the 2nd International Smoke Symposium, presented by the International Association of Wildland Fire in conjunction with the National Wildfire Coordinating Group Smoke Committee. The workshop will detail the applications of NASA resources to decision-making activities for air quality forecasting; smoke, fire, and PM2.5 monitoring; image interpretation; and data access for inclusion in modeling efforts. The training will provide practitioners in wildland fire, smoke management, public health, and air quality management with tools to incorporate satellite remote sensing into their decision-making process.

Learn More: http://arset.gsfc.nasa.gov/wildfires/workshops/smoke-symposium-2016

Course Participation - This course is intended for entities involved in air quality and wildfire management, and professionals interested in implementing satellite capabilities for decision support activities.