



GOES Capabilities In Detecting Local Fires

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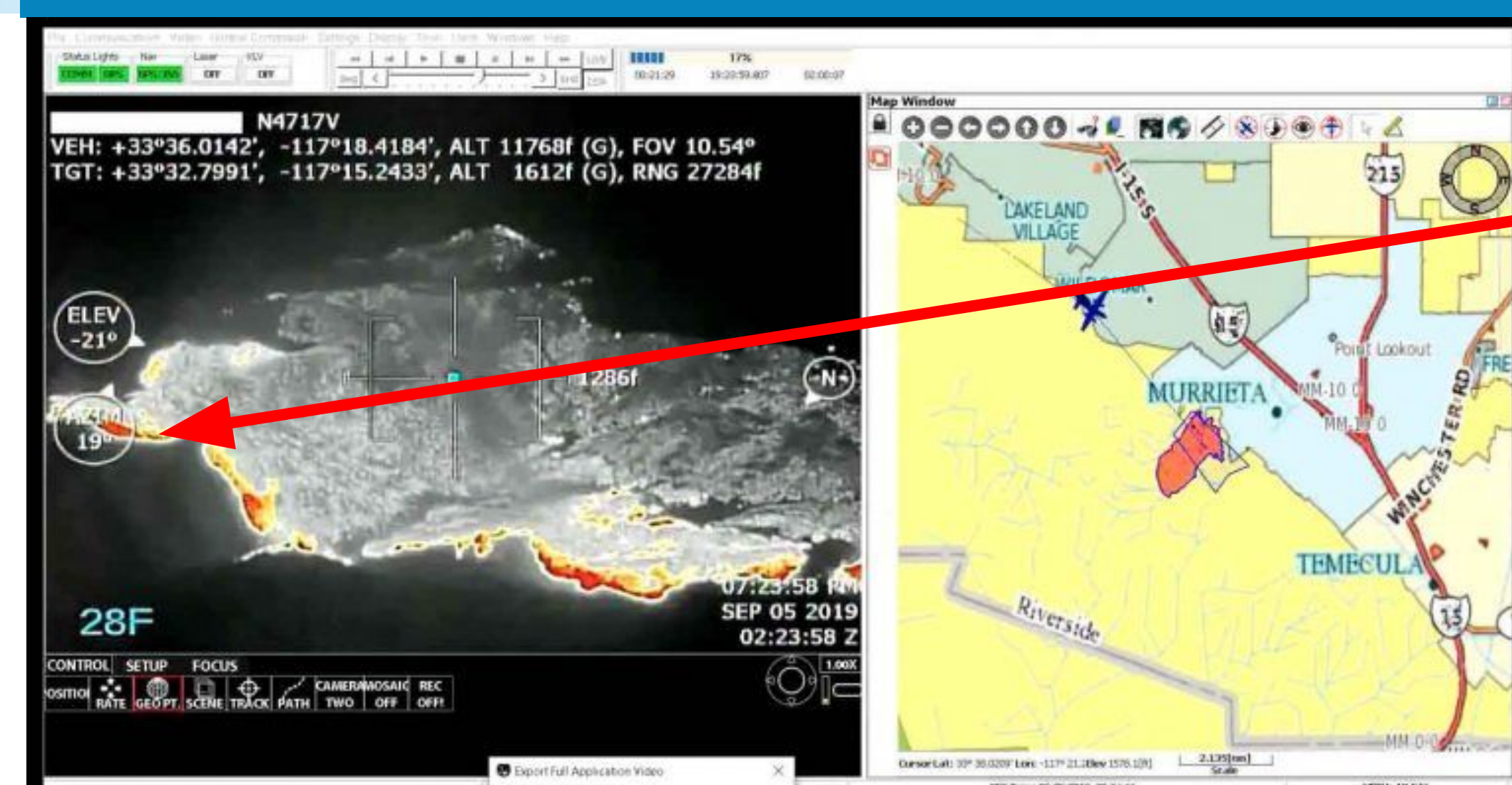
ABSTRACT

In researching the various capabilities of the GOES satellite I was drawn to the infrared and the particulate matter abi bands and thought that it could help in assisting firefighters in their various tasks when combating fires. I narrowed down my hypothesis to: if firefighters use the GOES satellite in conjunction with other surveillance methods then they should be able to fight fires more safely and efficiently because it can help with assisting firefighters in locating where the fire is, where it will spread and give insight on how to fight the fire and who to evacuate. As I conducted my research through the help of Captain Greg Barta, the FIRIS archives, and the GOES archives I found that the GOES satellites may not help in coordinating small urban and suburban fires, but may help in detecting fires in rural and remote areas

HYPOTHESIS

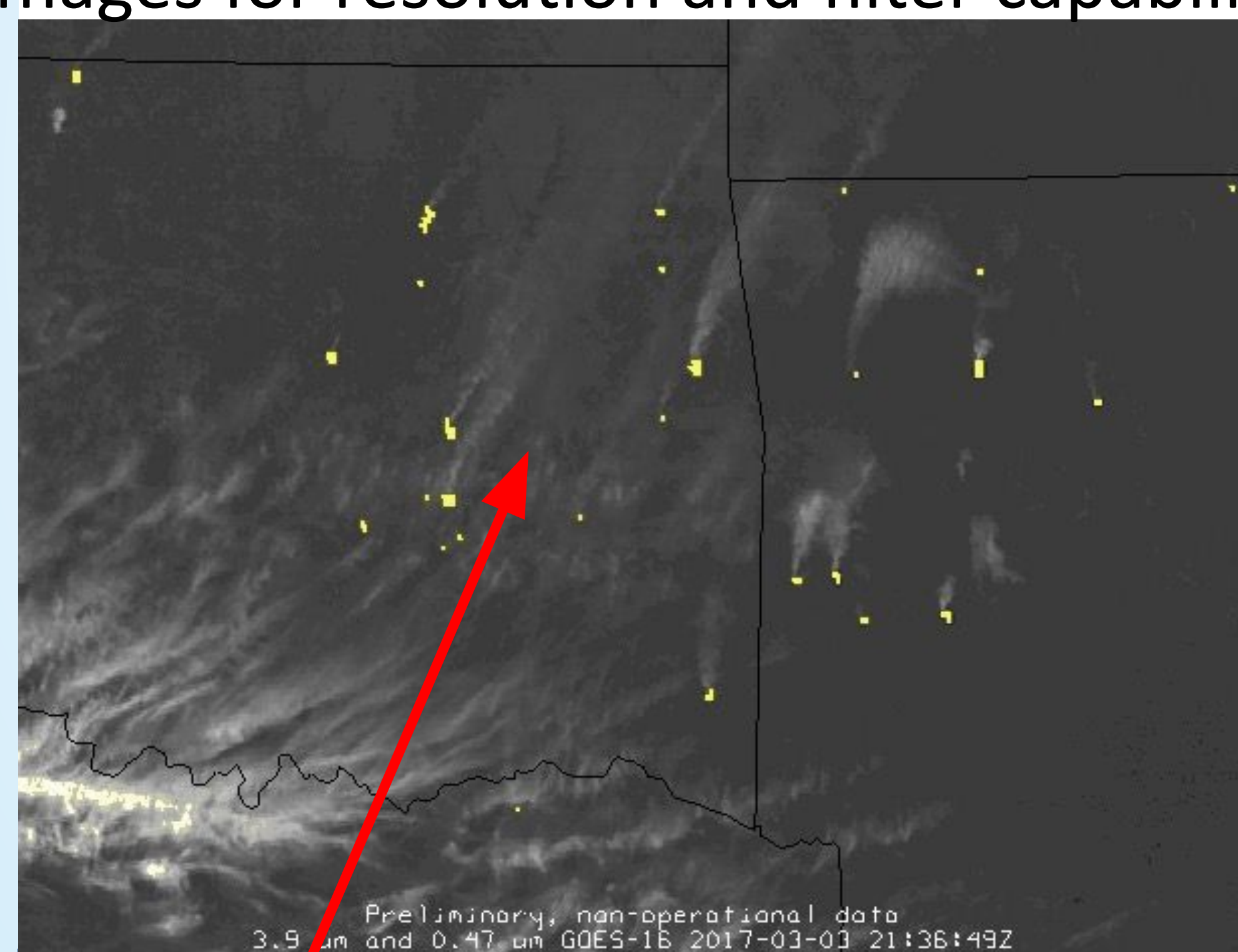
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RESEARCH with Satellite Images & ABI Bands



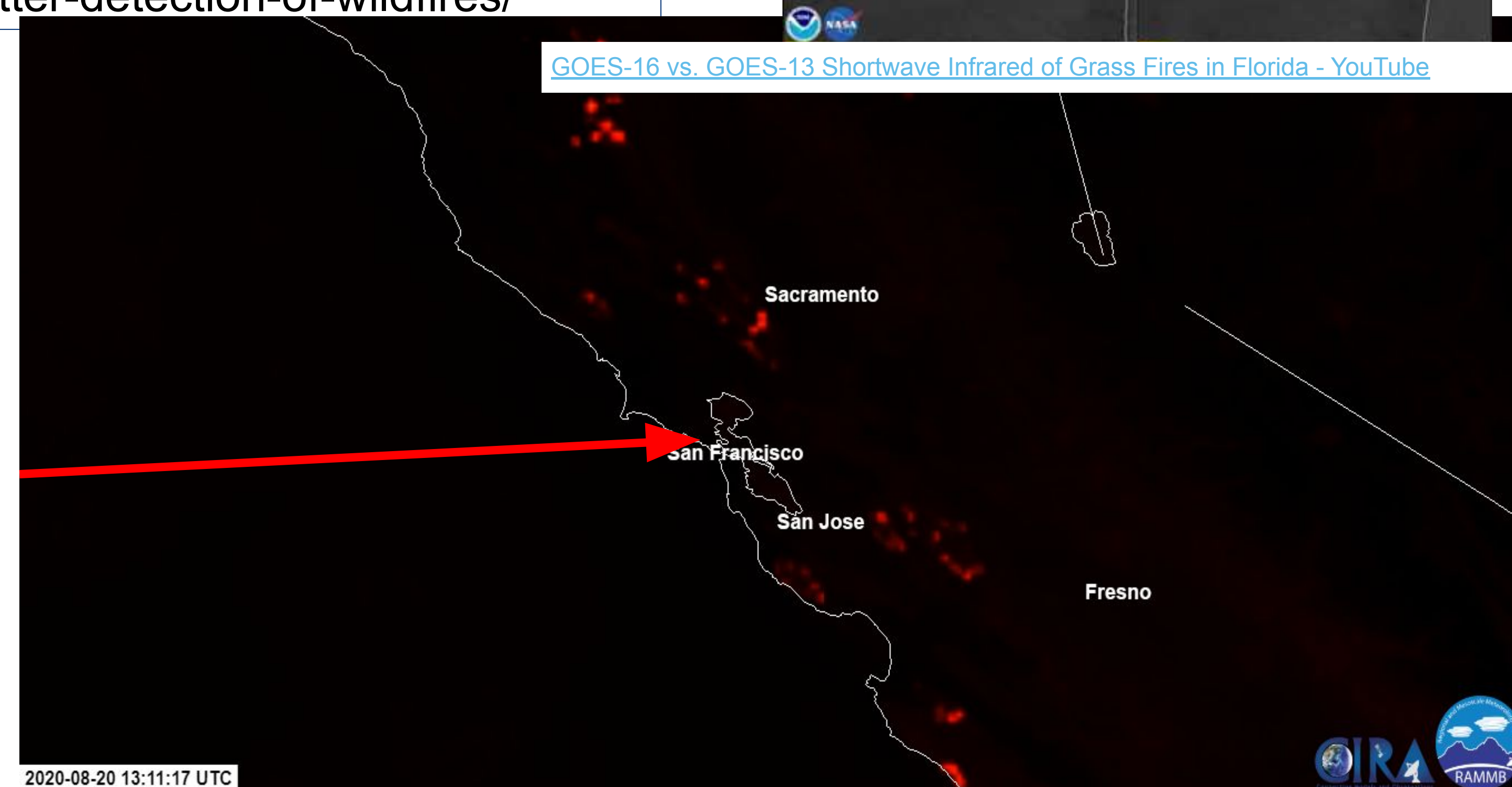
<https://wildfiretoday.com/tag/firis/>

Research was conducted comparing current FIRIS images with GOES 13, 16, and 17 images for resolution and filter capabilities.



<https://wildfiretoday.com/2017/03/04/new-goes-16-satellite-offers-better-detection-of-wildfires/>

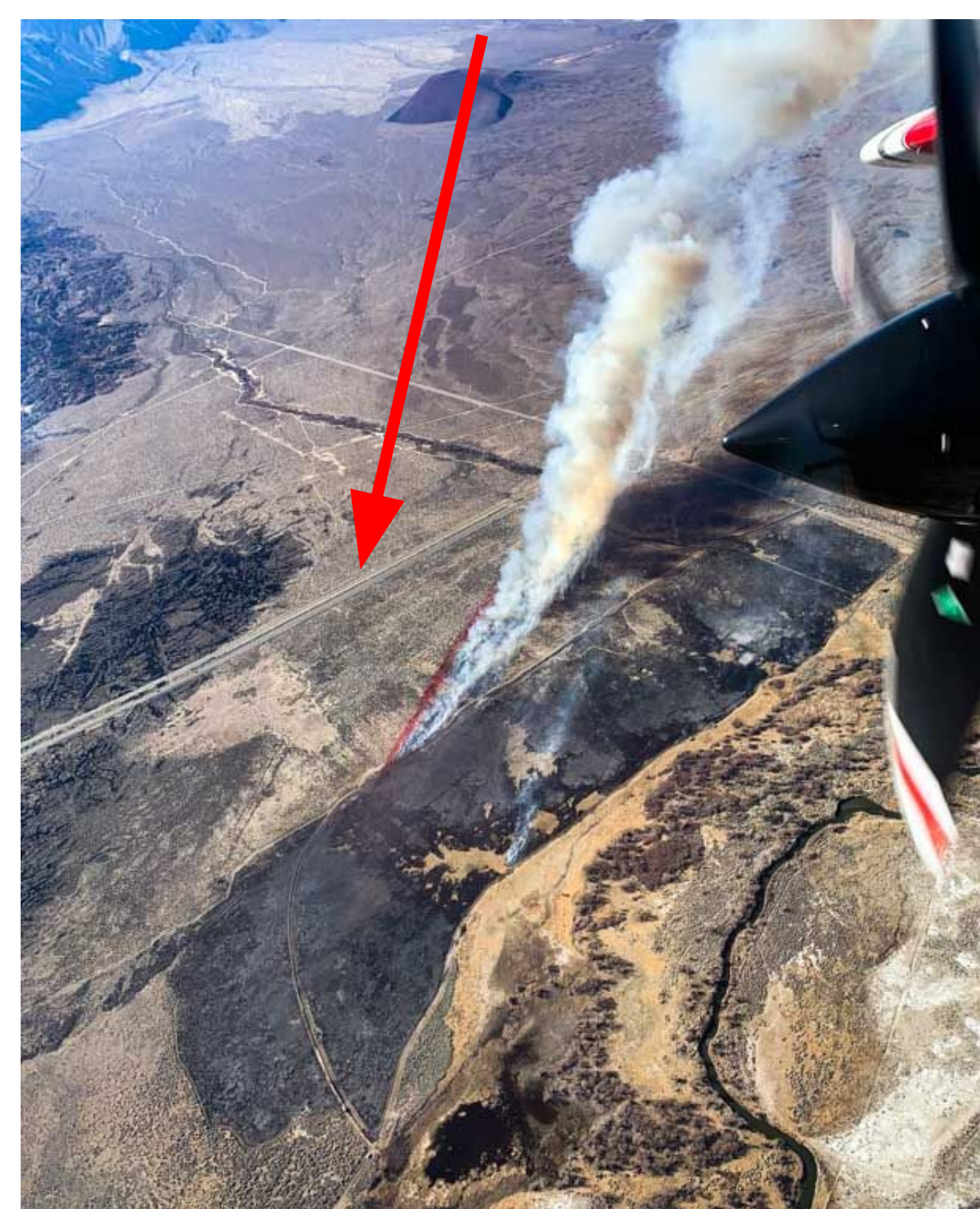
Fires captured by the GOES Satellite's bands 5,6, and 7 that form the RGB filter



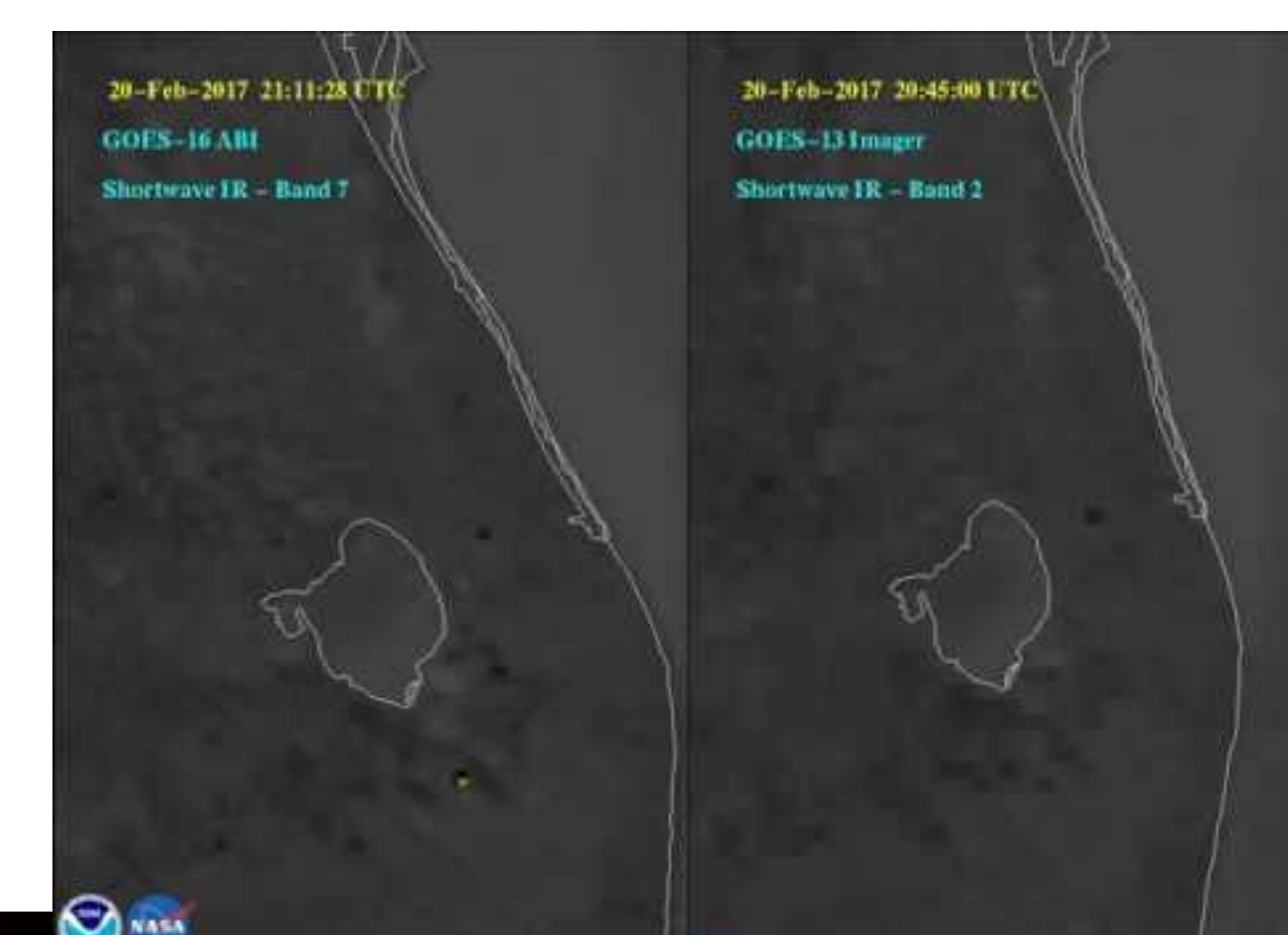
Fires from the goes 17 satellite

<https://www.nesdis.noaa.gov/content/noaa-satellites-monitoring-massive-wildfires-and-two-cyclones>

a fire shown in full color and infrared from FIRIS units



<https://wildfiretoday.com/tag/firis/>



[GOES-16 vs. GOES-13 Shortwave Infrared of Grass Fires in Florida - YouTube](https://www.youtube.com/watch?v=GOES-16-vs.-GOES-13-Shortwave-Infrared-of-Grass-Fires-in-Florida)

RESULTS and CONCLUSIONS

- Hypothesis was not supported
- FIRIS has higher resolution and can see the fire better
- GOES satellite is good at detecting fires with its various infrared, near infrared and particulate matter abi bands
 - despite bundling the bands there isn't enough resolution
- GOES is not enough when FIRIS can provide more real time support
- There may be an application for GOES to detect rural and remote fires depending on fire protocols

References

- <https://wildfiretoday.com/tag/firis/>
 - <https://wildfiretoday.com/2017/03/04/new-goes-16-satellite-offers-better-detection-of-wildfires/>
 - <https://satelliteliasonblog.com/2017/03/06/meso-sectors-shift-west-for-fire-severe-weather/>
- Captain Greg Barta of OCFD