

Jet Propulsion Laboratory
California Institute of Technology

Real Time Detection and Geolocalization of Methane Plumes by AVIRIS-NG

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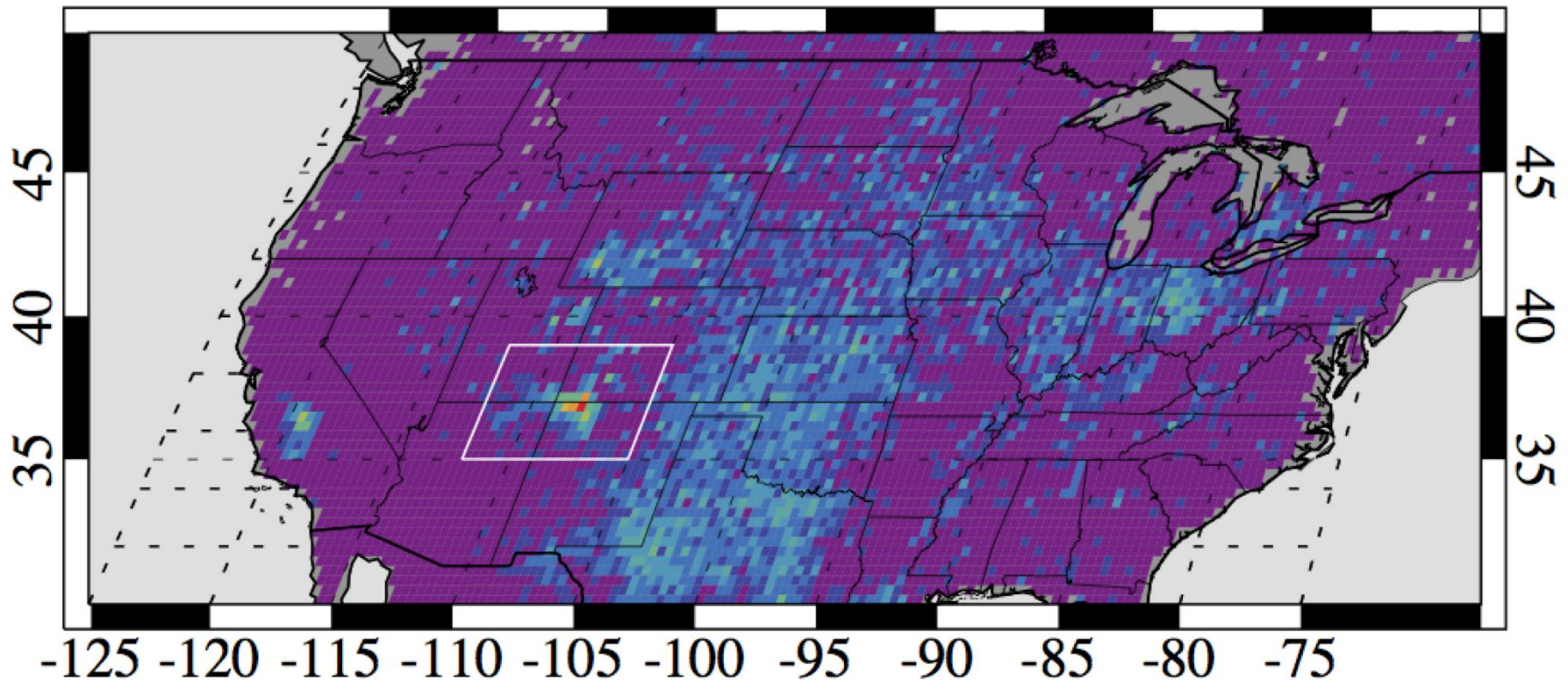
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Four Corners Methane Anomaly



SCIAMACHY retrievals [Kort, Frankenberg et al. Geophysical Research Letters 2014]

Image Credit: NASA/JPL-Caltech/University of Michigan



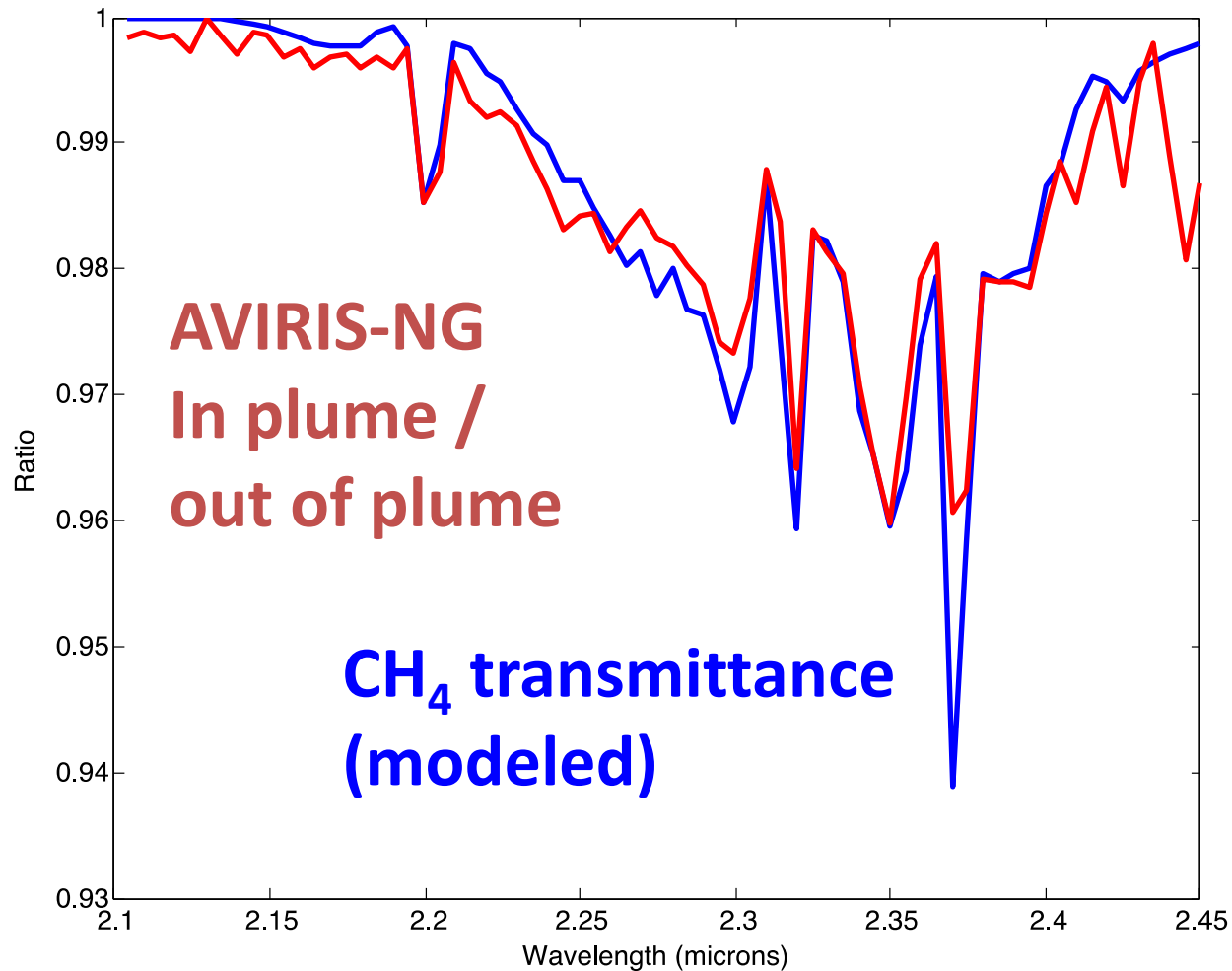
AVIRIS-NG joins NOAA over Four Corners

PI Christian Frankenberg

Funded by NASA & Jack Kaye



Methane spectral signature

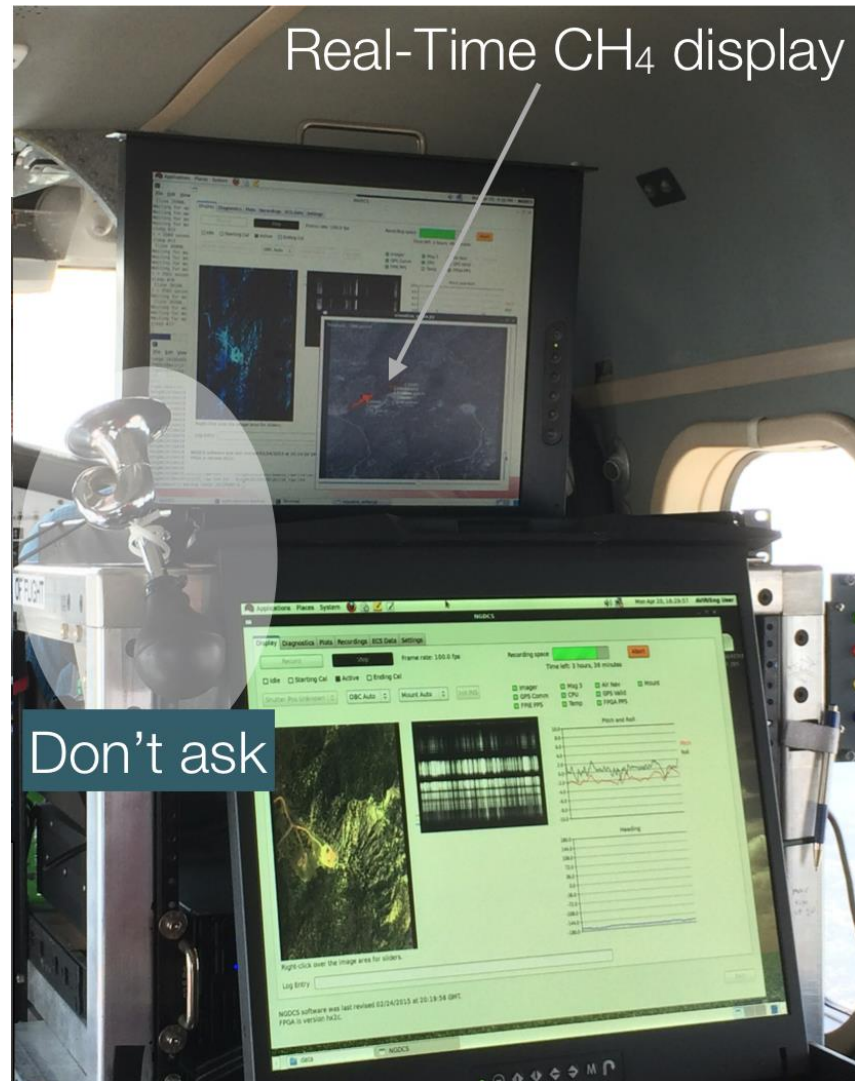


Real-time CH₄ detection

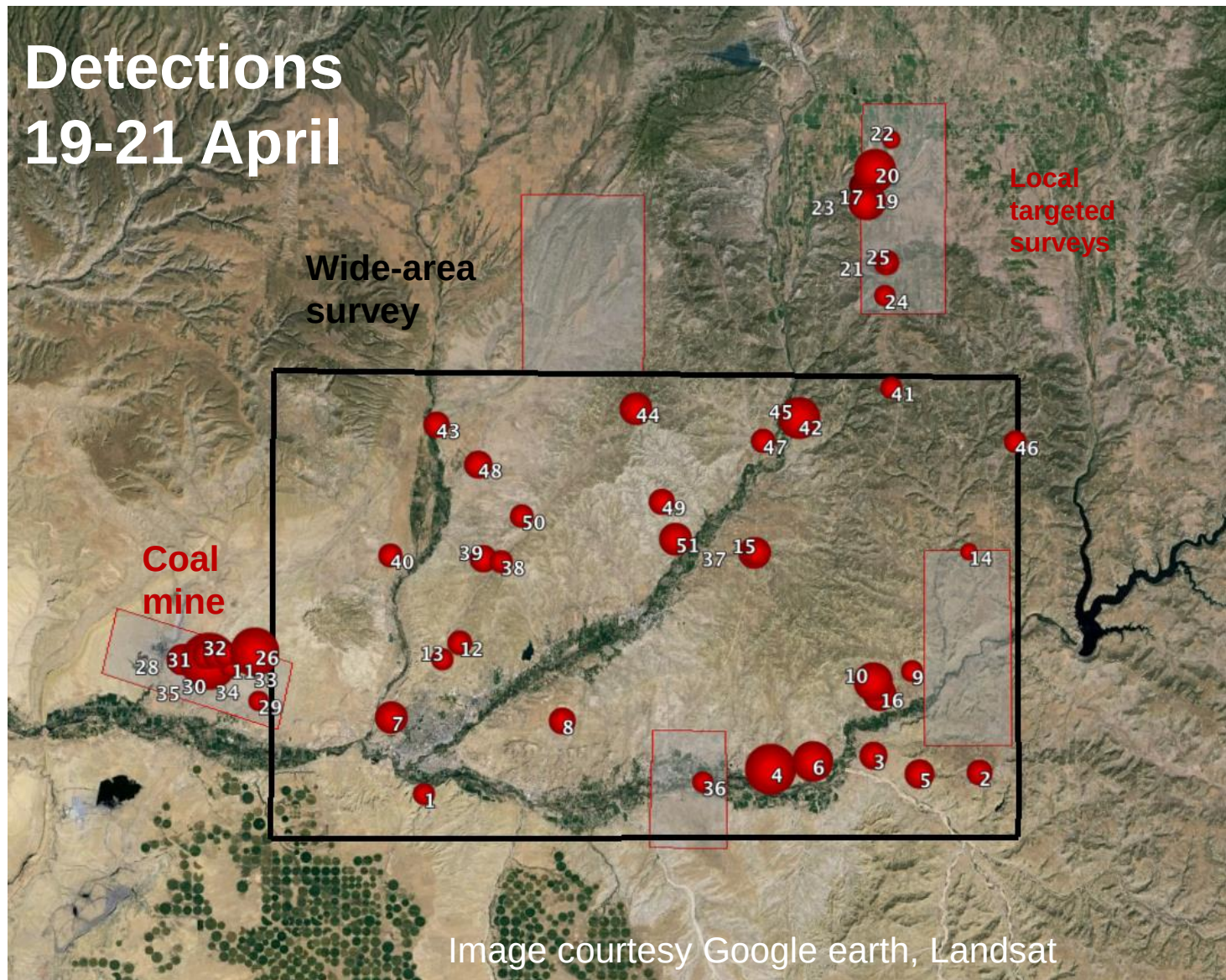
A matched filter provided real time **detection**, **measurement**, and **geolocalization** of methane absorption

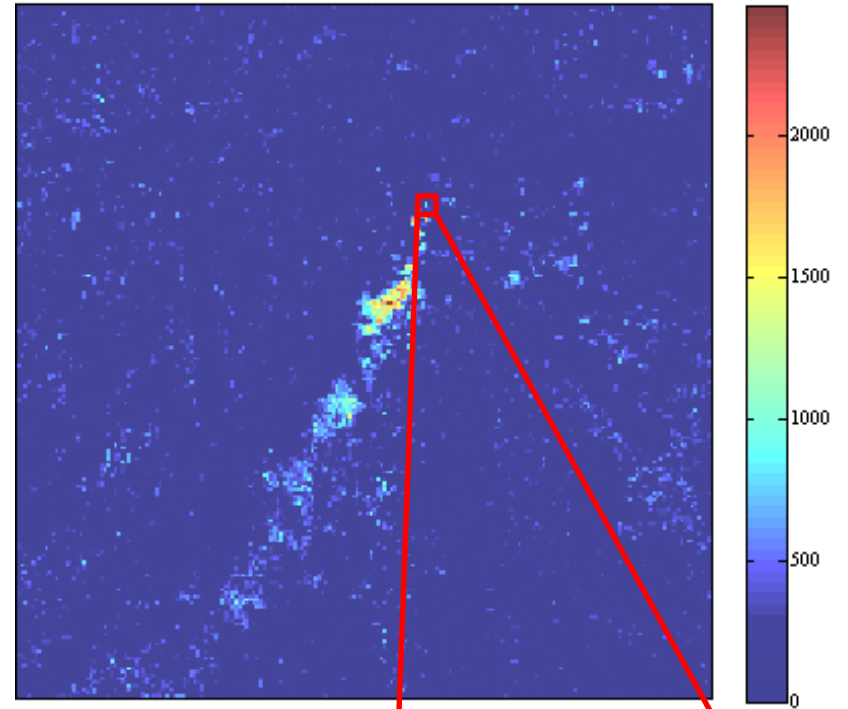
Enabled adaptive survey and immediate followup by *in situ* ground, aircraft sensors

[Thompson et al., AMTD, in press]



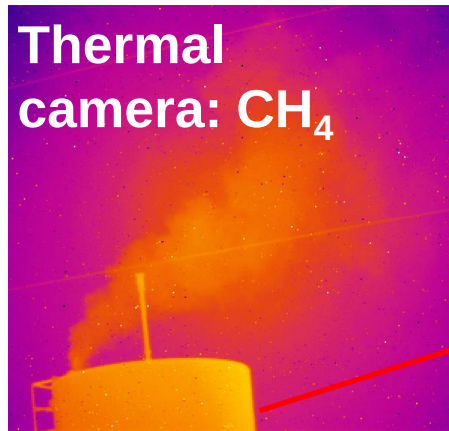
Detections 19-21 April





Typical methane plume from tank

Thermal camera: CH₄



Google Earth

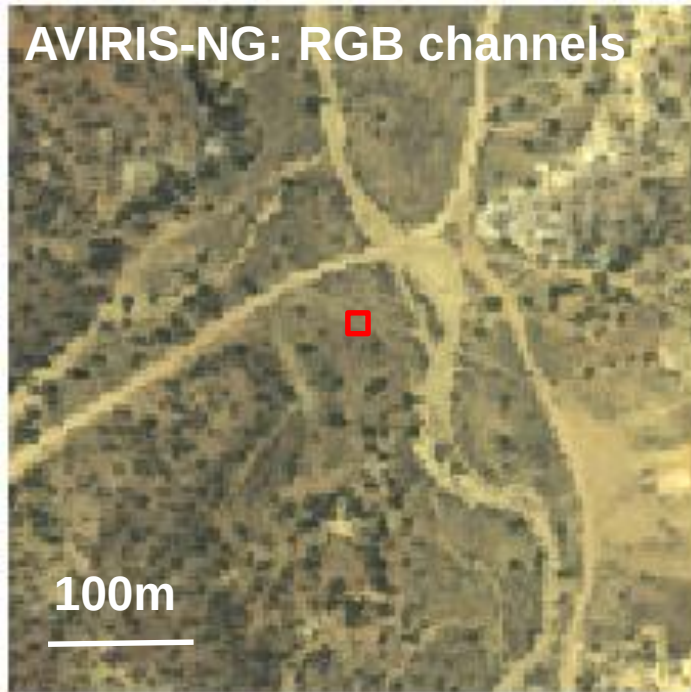




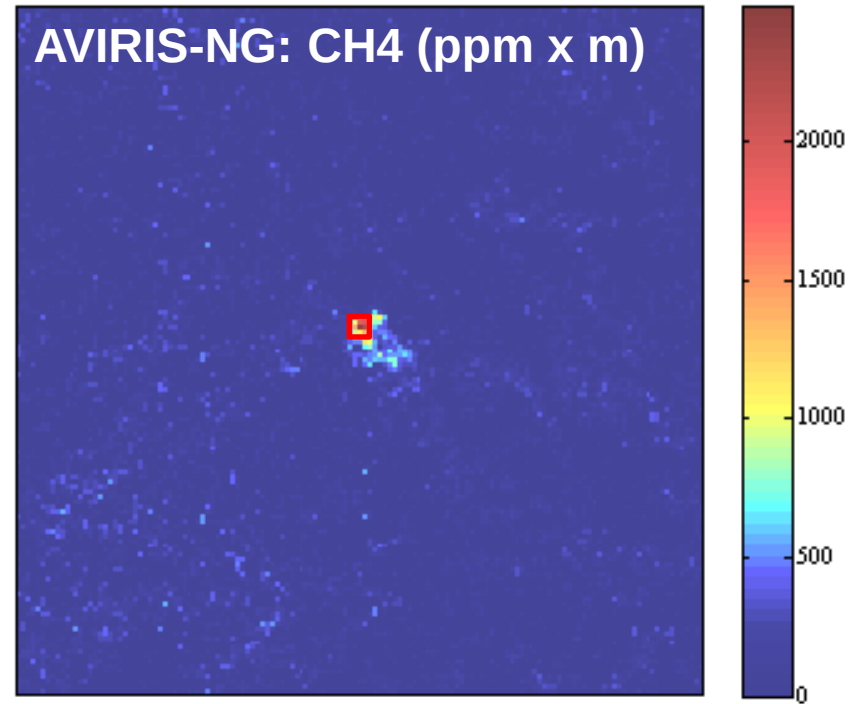
6/18/2015

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AVIRIS-NG: RGB channels

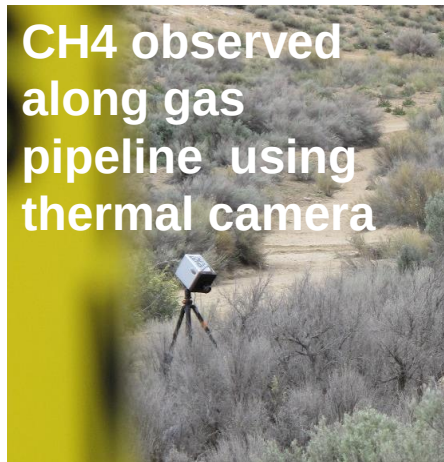


AVIRIS-NG: CH₄ (ppm x m)



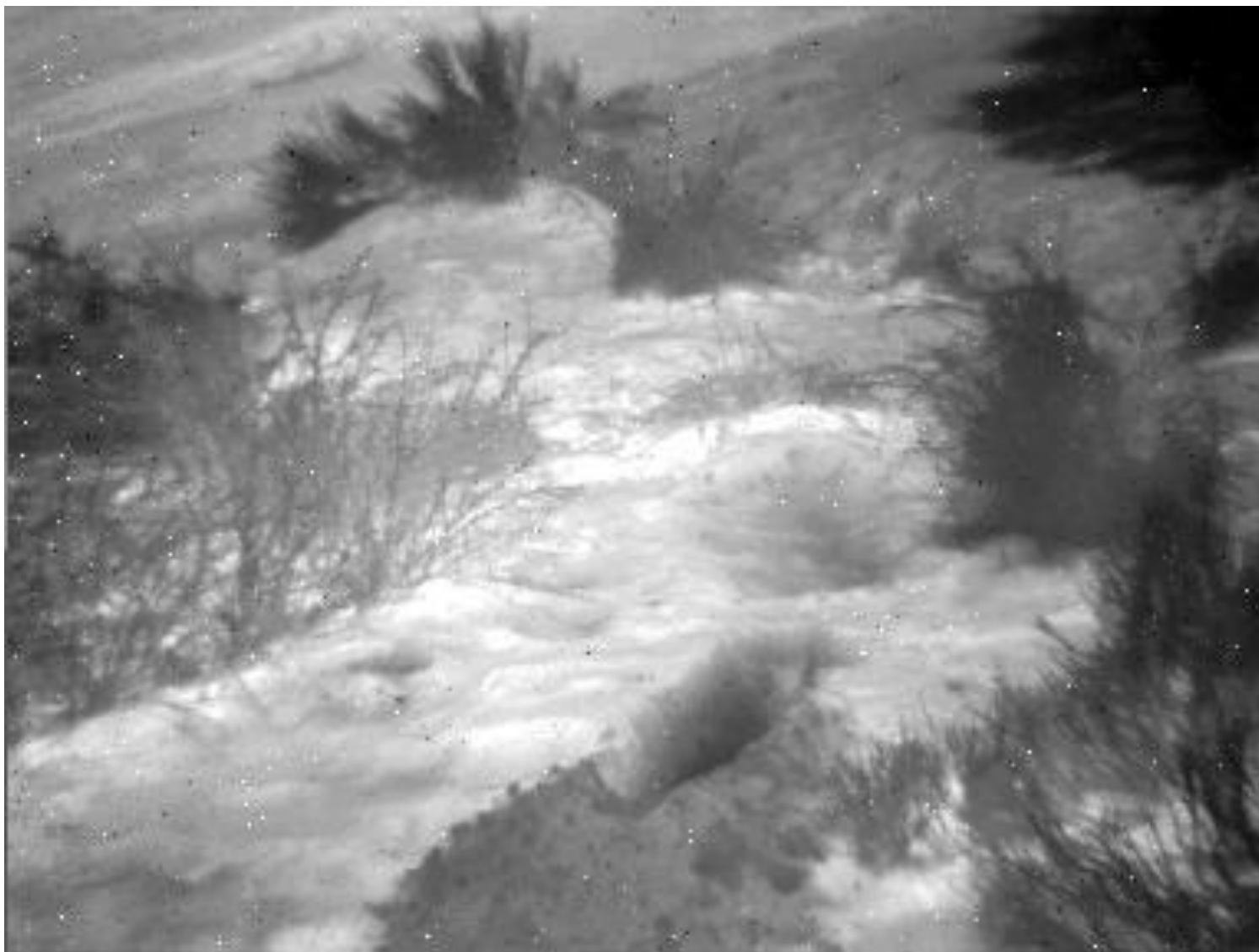
Pipeline leak (one of two detected)

CH₄ observed
along gas
pipeline using
thermal camera



Operators shut
down pipeline

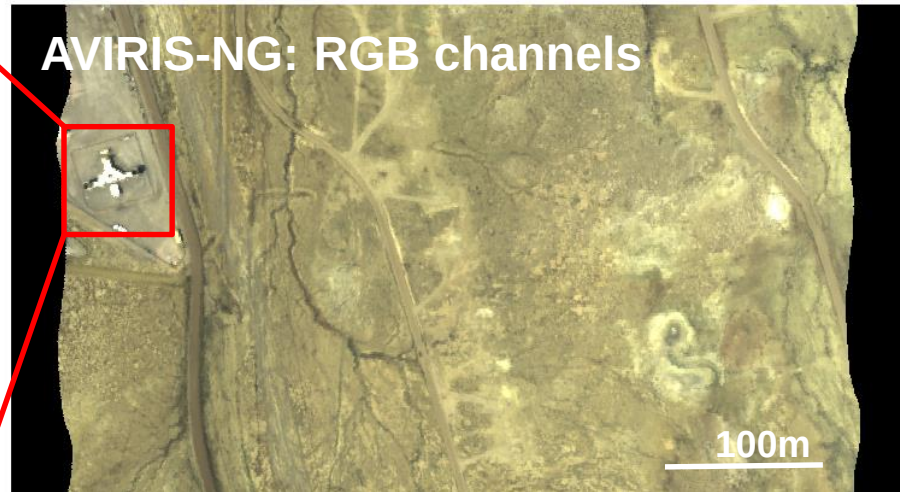
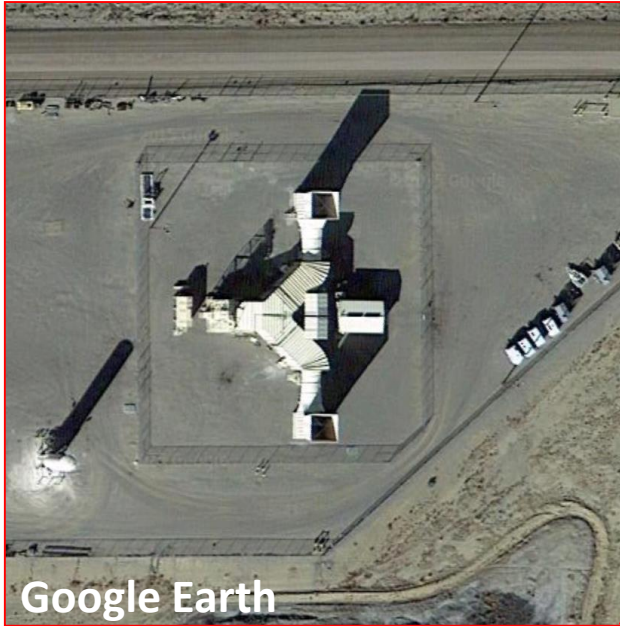




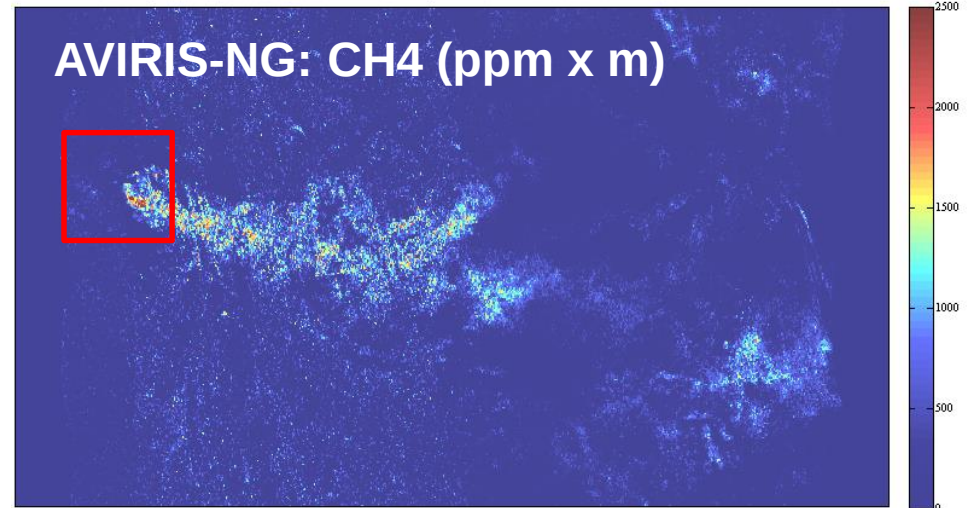
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Large Methane Plume from Coal mine vent



Thanks!

Jack Kaye and the NASA Earth Science
Division

The AVIRIS-NG and HyTES teams

PBS Video posted today

