

Urban Heat: The “Sixth Sense” lets you see it



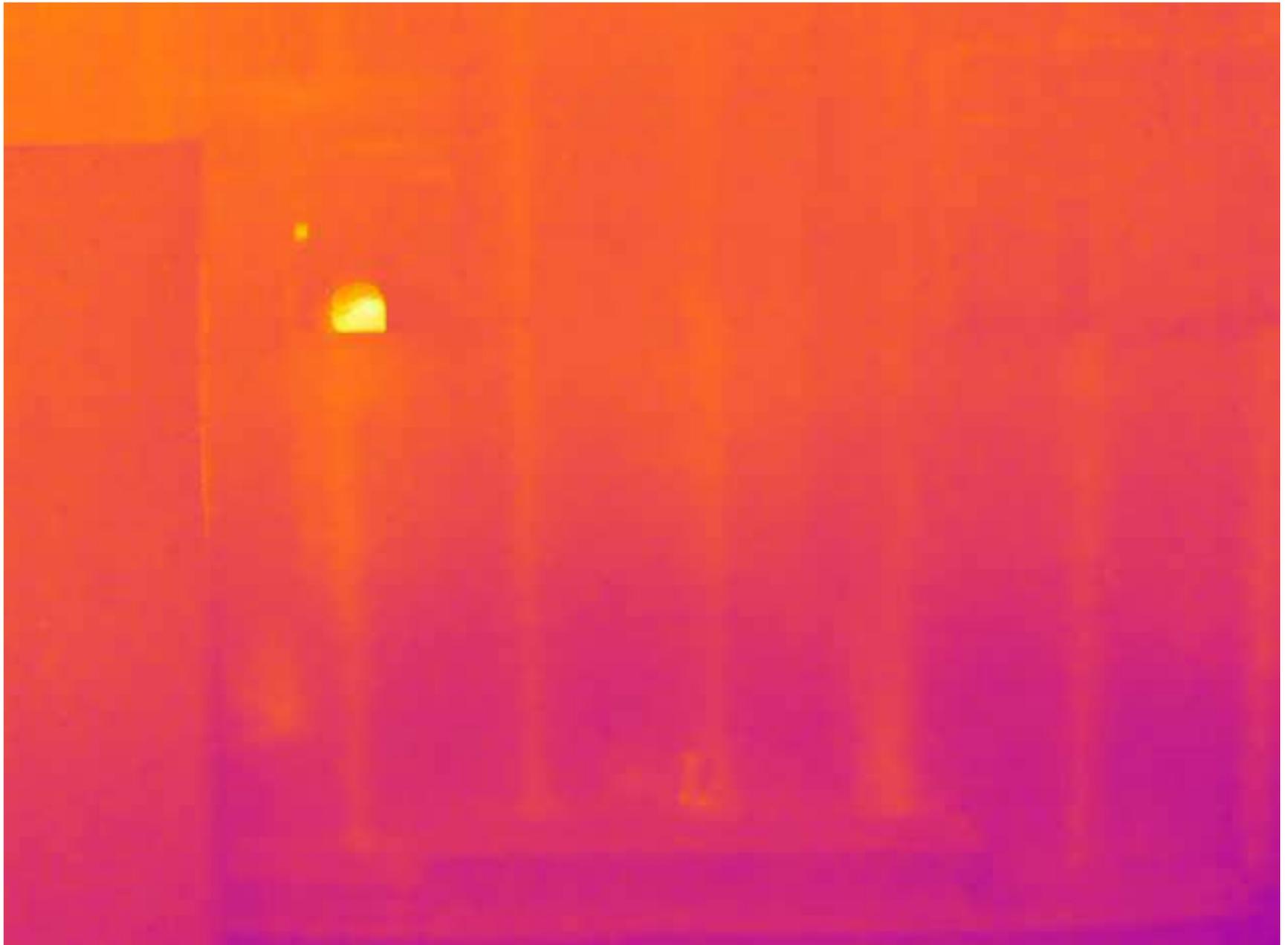
Alan Roditi (HST); Ethan Johnson (UG); Andrew Chui (HSS)

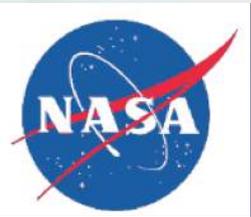
NASA Goddard Institute for Space Studies

Stuart Gaffin, Ph.D.

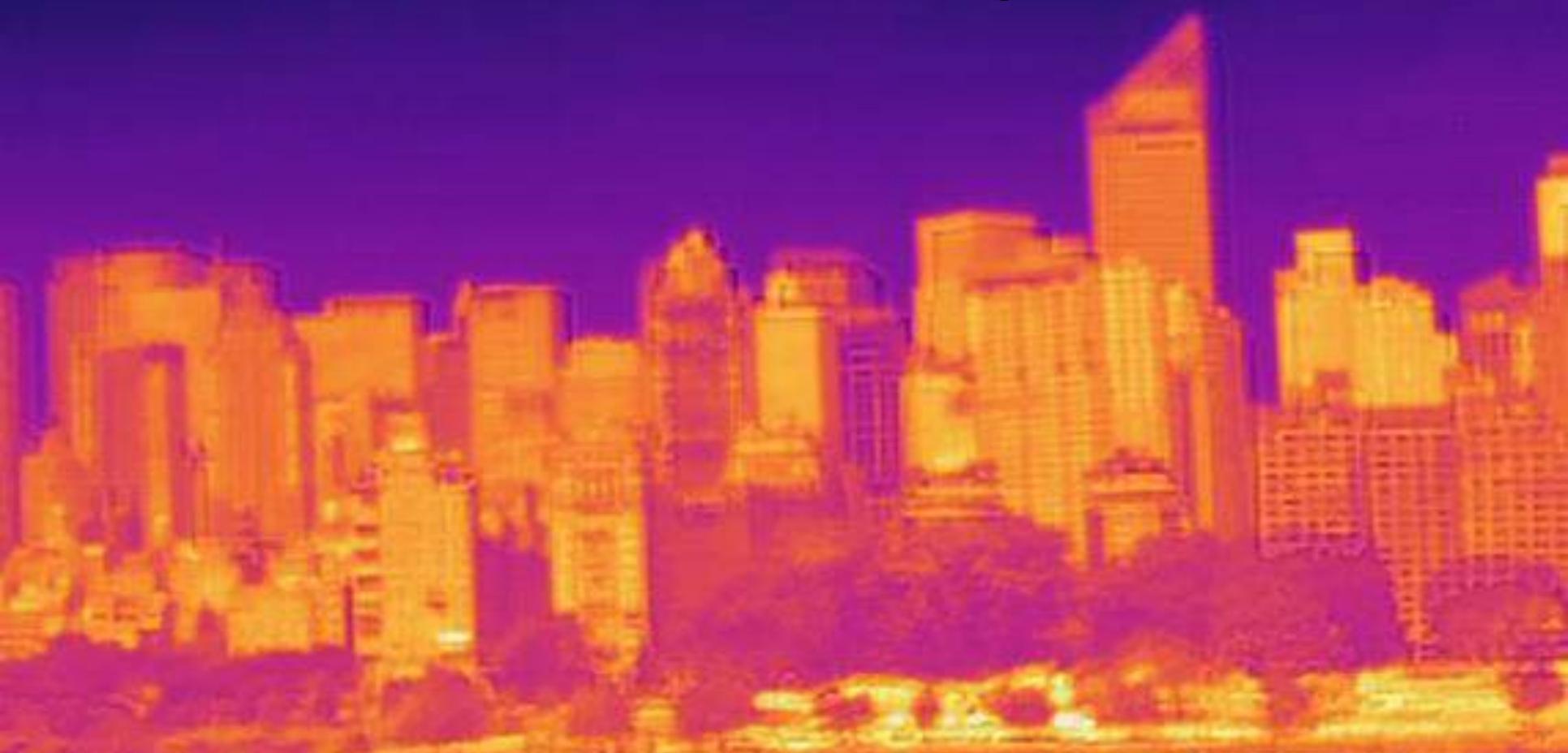
NASA GSFC at GISS, NYC

August 6, 2015





Urban Heat: The “Sixth Sense” lets you see it



Alan Roditi (HST); Ethan Johnson (UG); Andrew Chui (HSS)

NASA Goddard Institute for Space Studies

Stuart Gaffin, Ph.D.

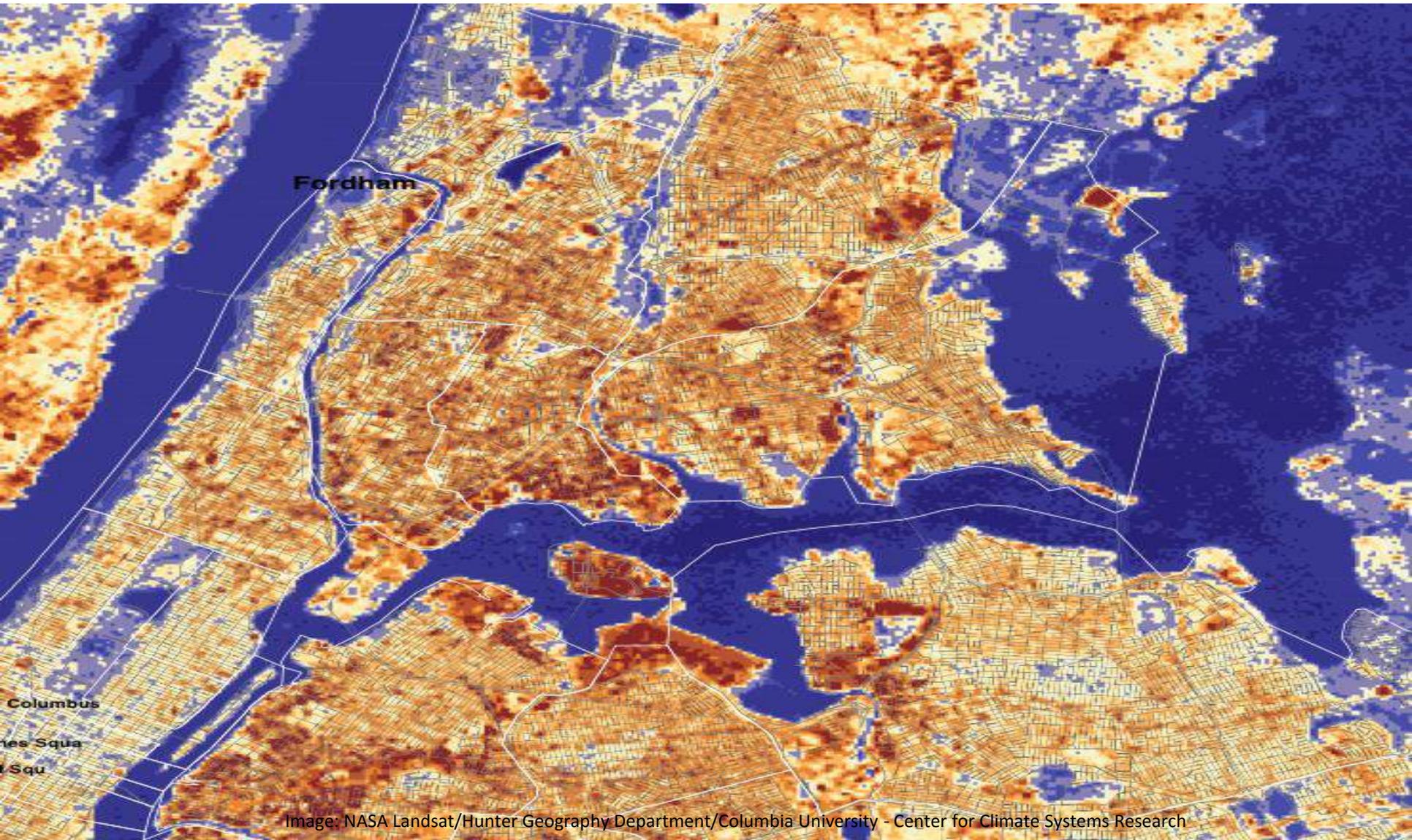
NASA GSFC at GISS, NYC

August 6, 2015



Urban Heat Island Effect

NASA LANDSAT thermal image of NYC, August 14, 2002



Thermal Technology

- Our team is now working with a new level of IR sensing

FLIR T650



image

ture readings

Image: https://www.google.com/search?q=urban+heat+island+nyc&biw=1240&bih=681&source=Inms&tbm=isch&sa=X&ei=a6yeVZDSFMm4-AHIsIDwBQ&ved=0CacQ_AUoAg#tbm=isch&q=flir+t650sc&imgcr=AAIL7NDBbbL3IM%3A

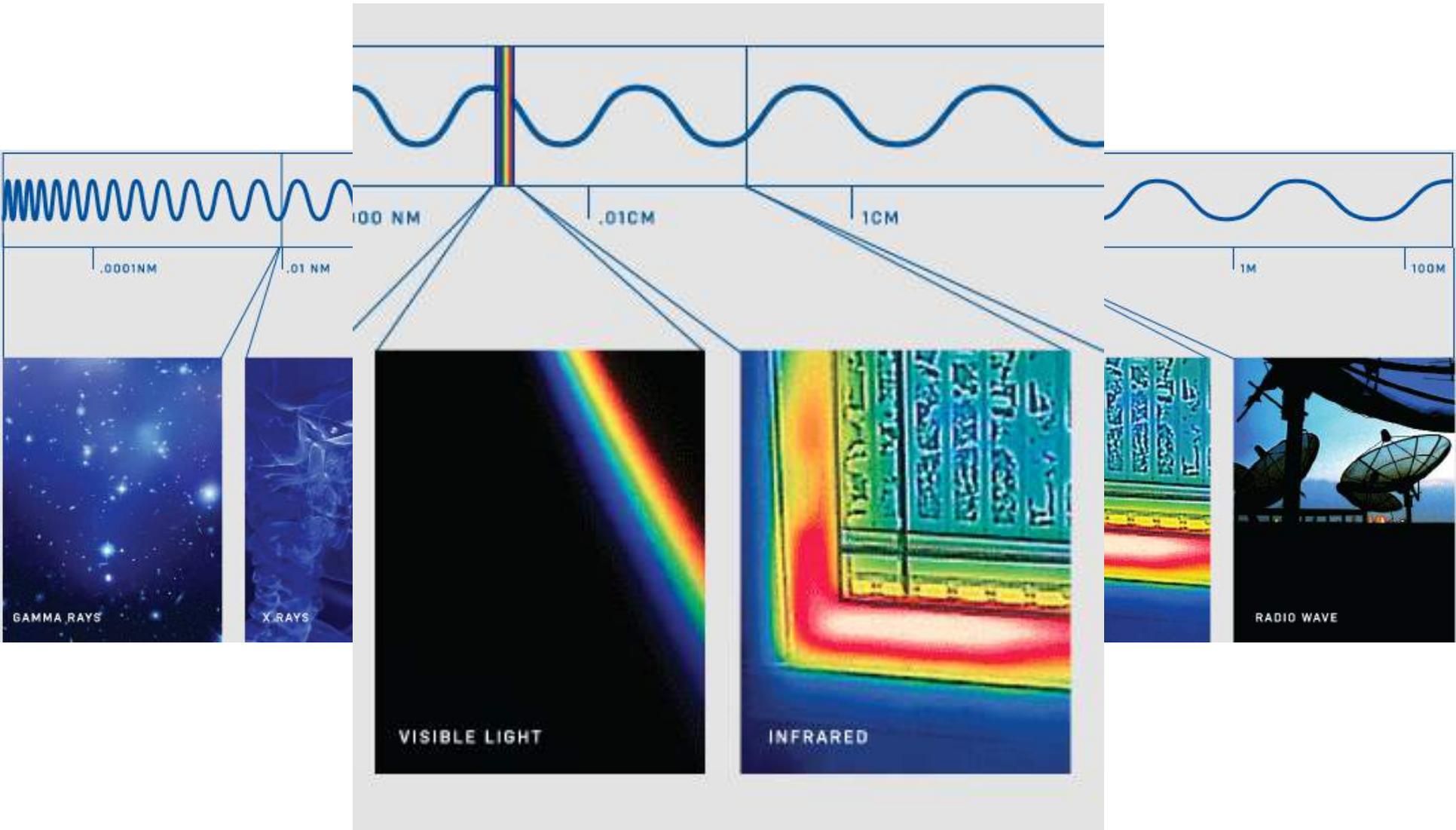
Image: <http://www.flir.com/flirone/content/?id=62910>

Upgrade to thermal cameras



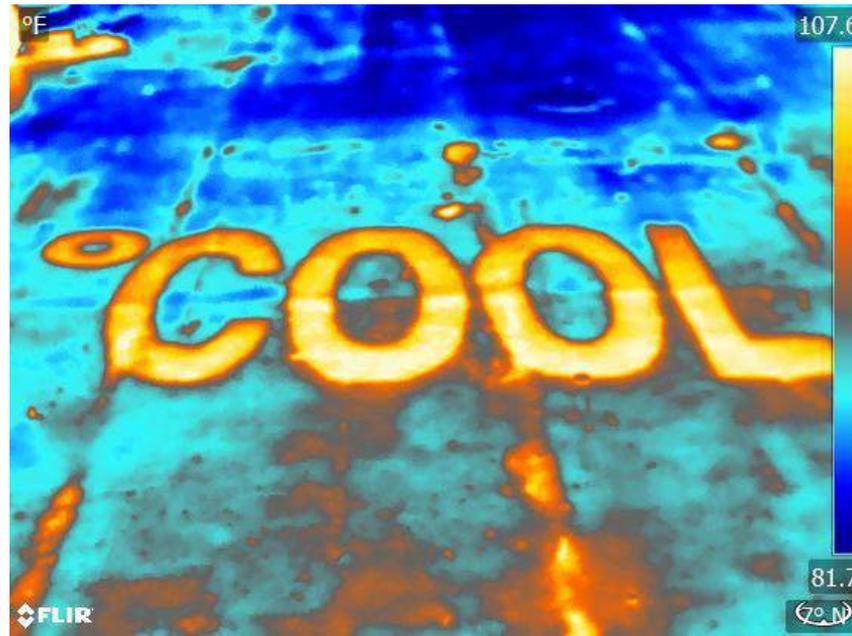
Image: <http://thermoworks.com/products/ir/irpro.html>

Urban Climate on a different wavelength

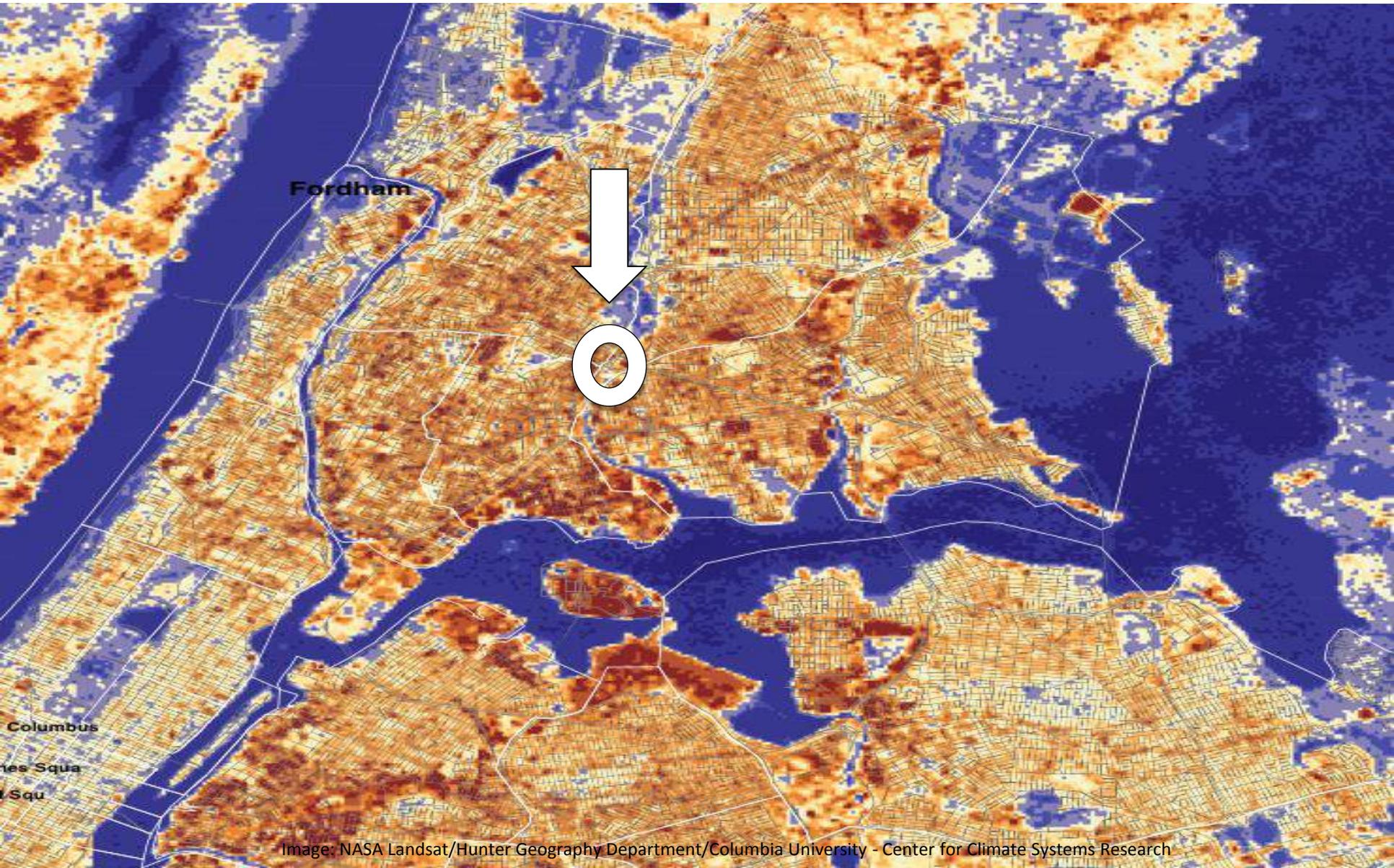


Our summer goals

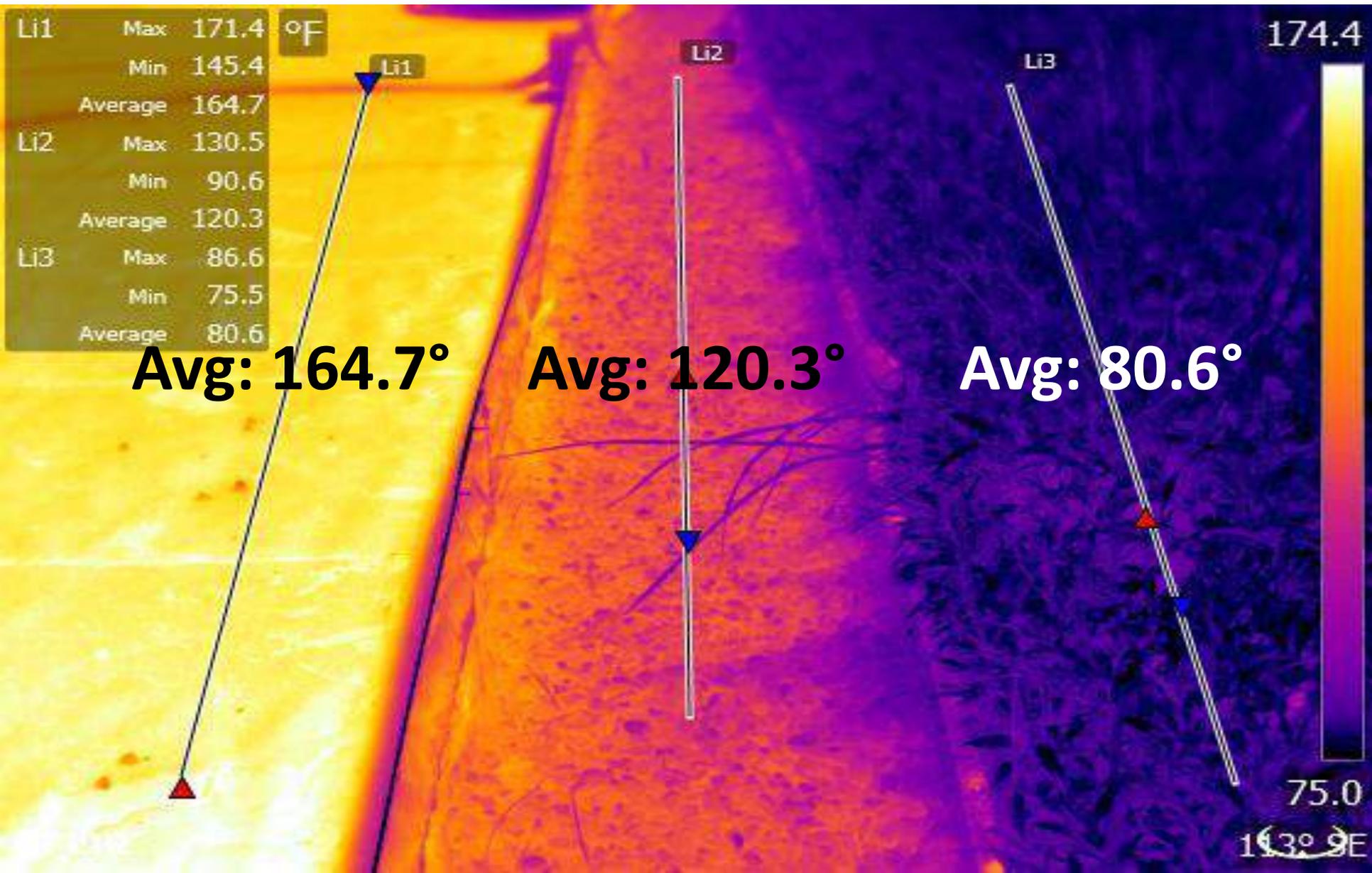
- Use new instrument to study the **roofscape** temperatures
- Use new instrument to study **streetscape** temperatures
- Learn the potential of thermal technology for studying urban climate



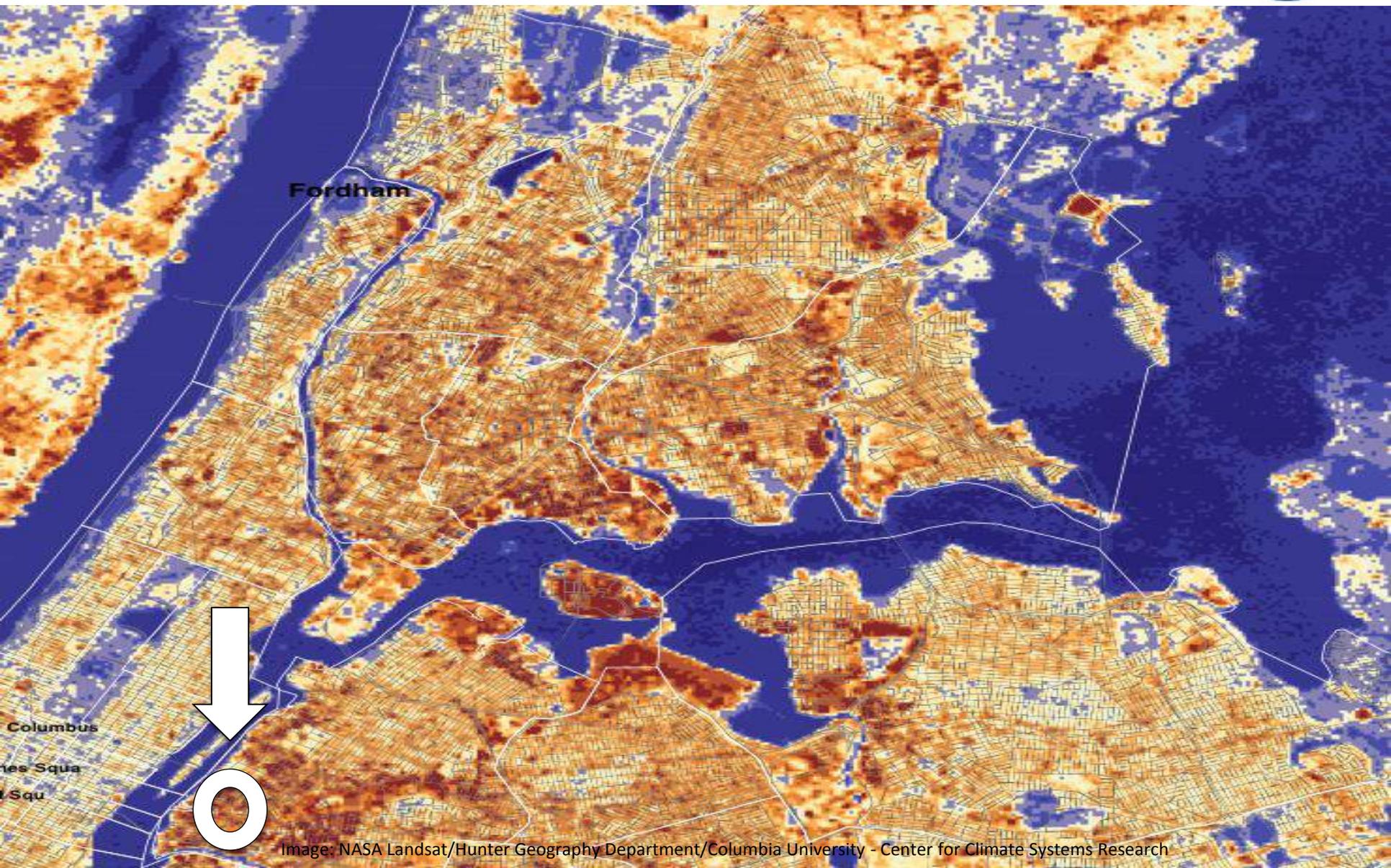
Parks Dept. Headquarters, The Bronx



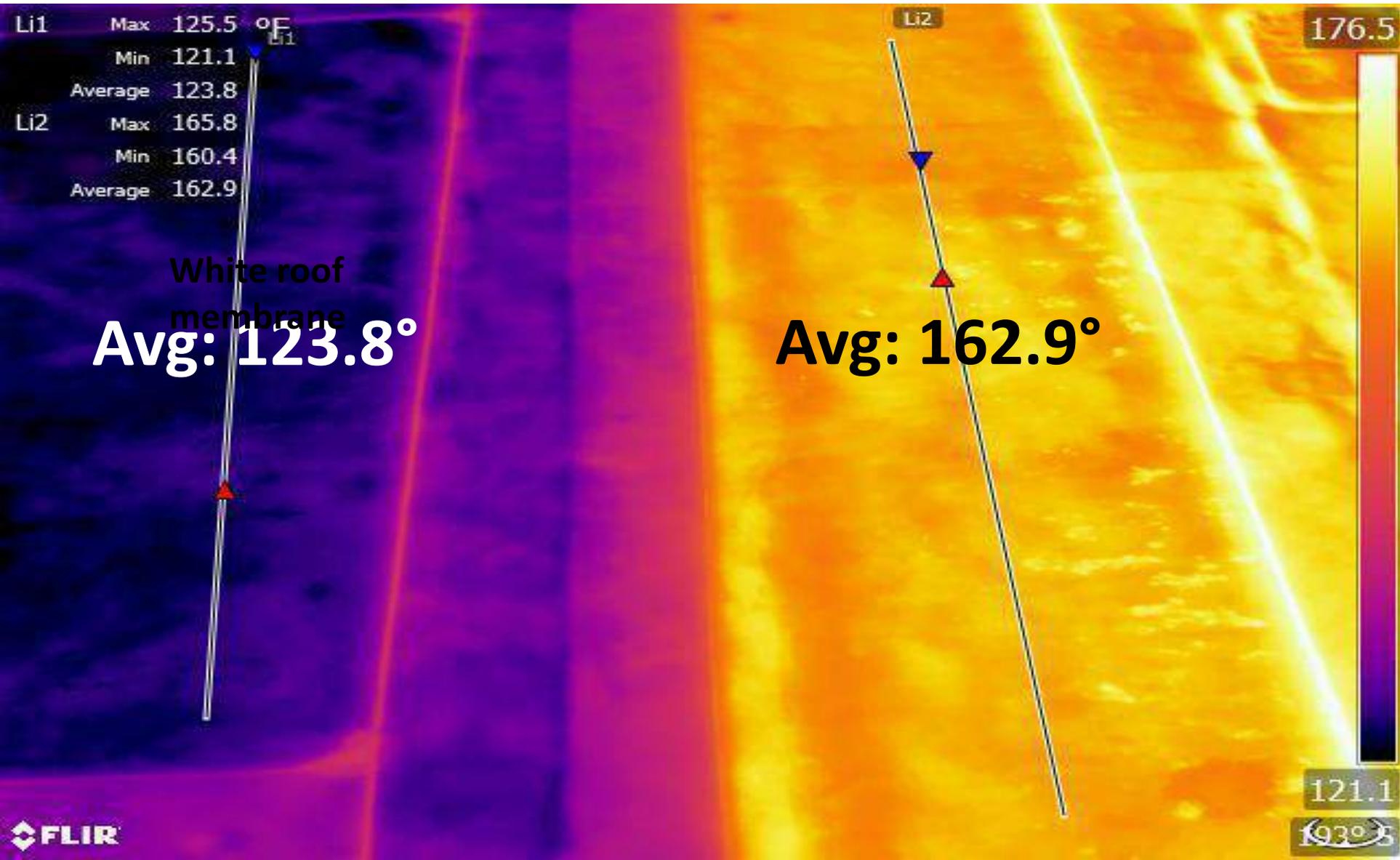
Comparing grass and black asphalt surface temperatures



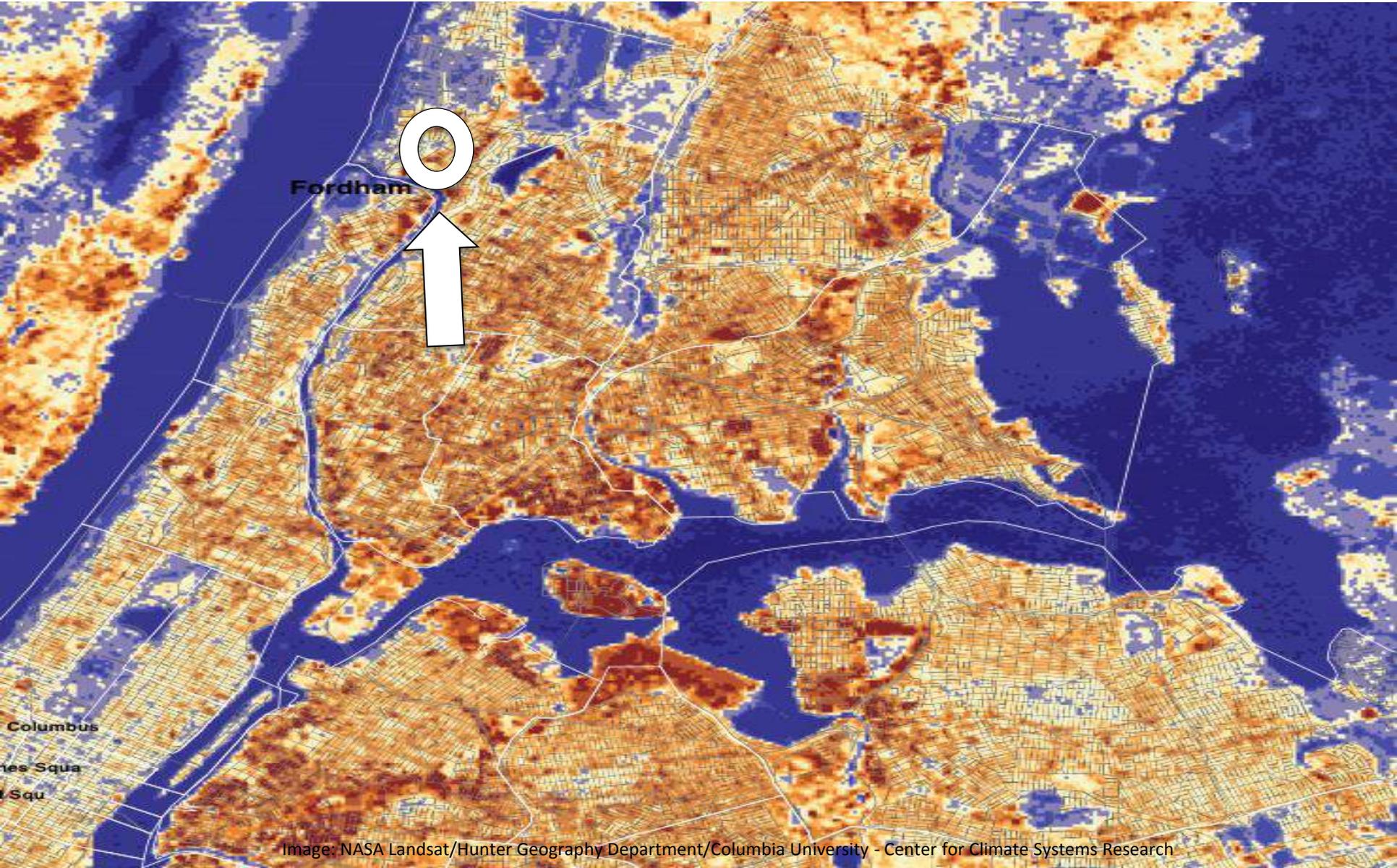
Con Edison, Long Island City



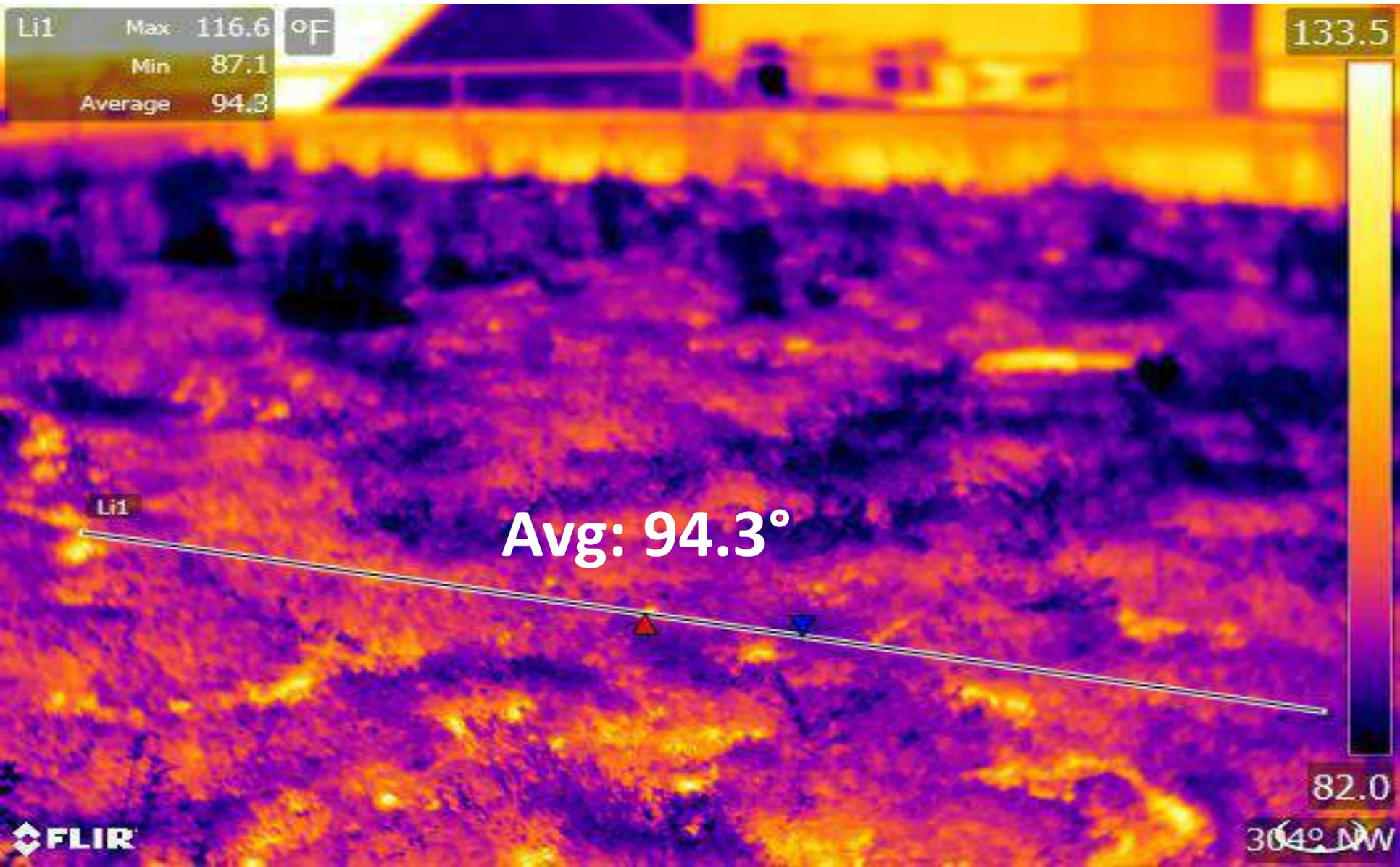
Comparing white and black membrane roofs



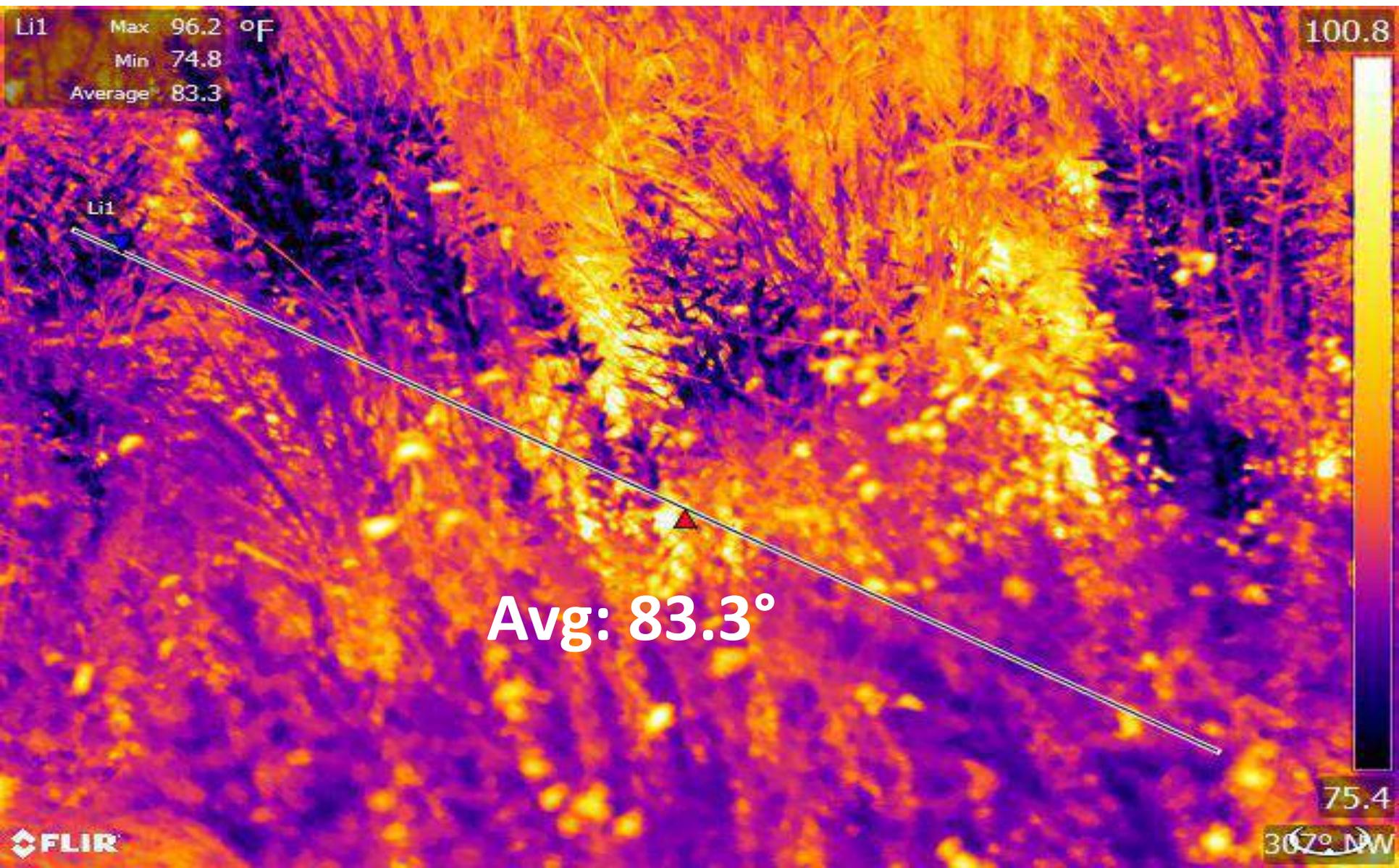
Fieldston School, Riverdale



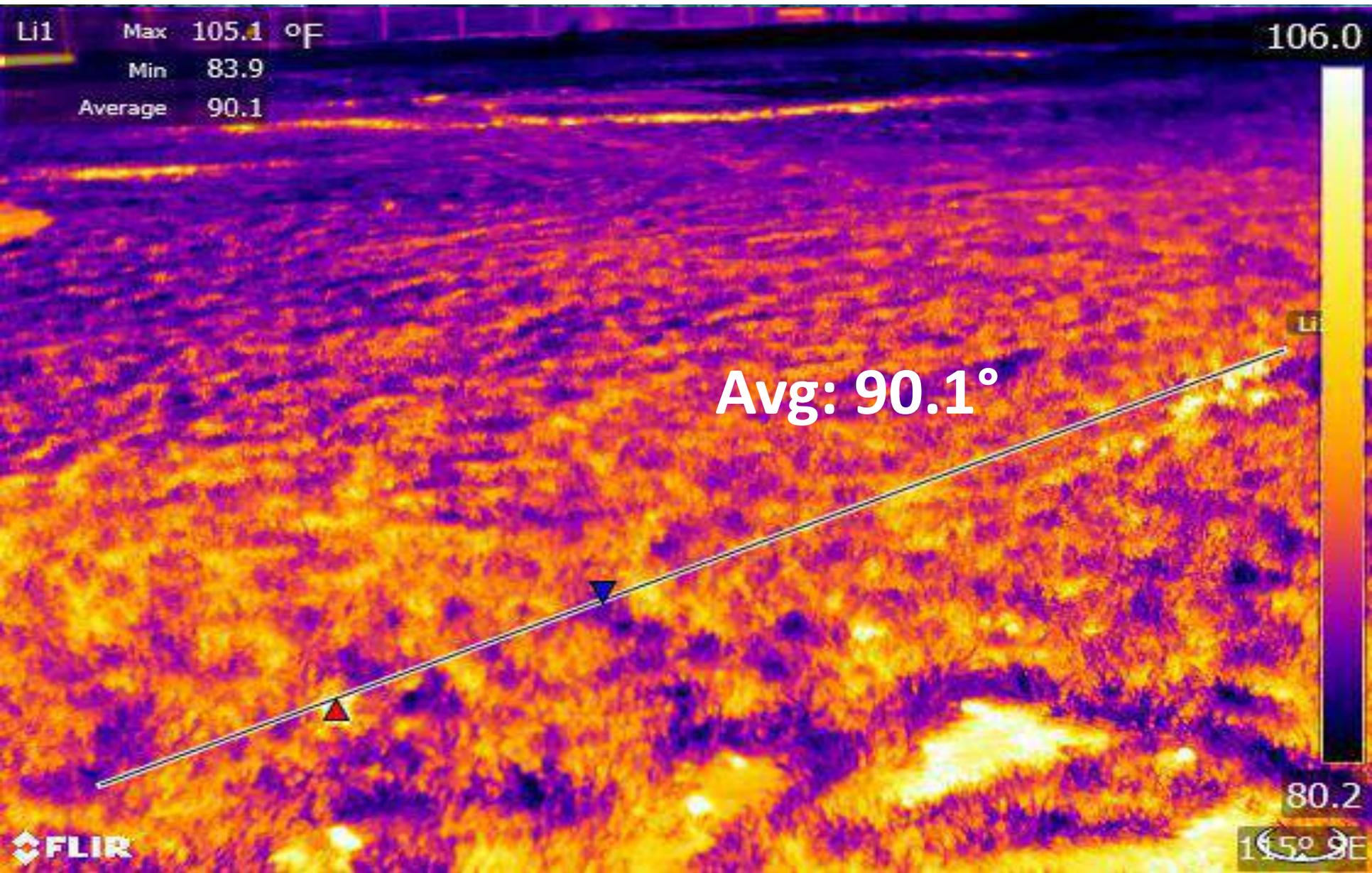
Comparing sedums and natives



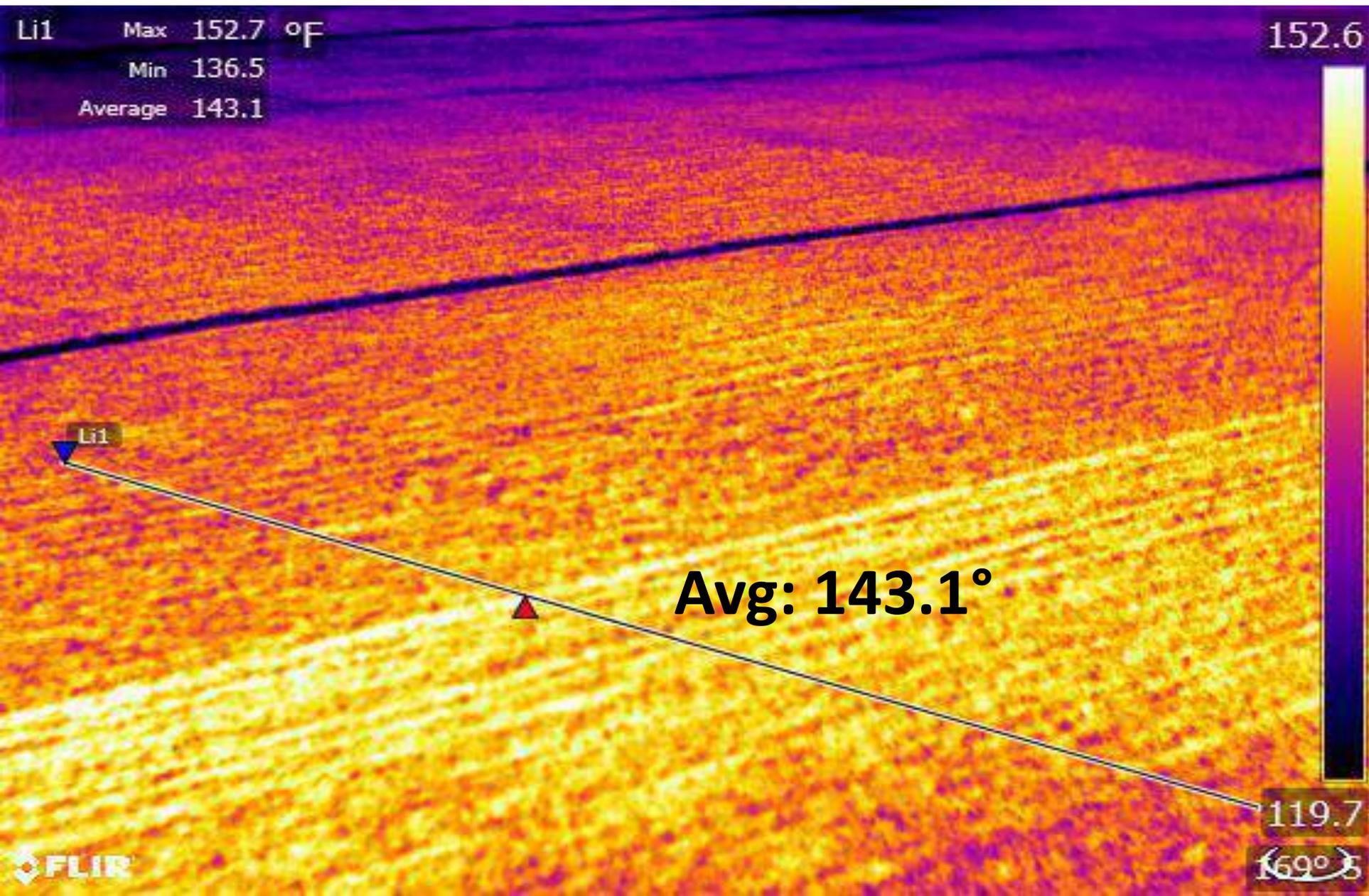
Comparing sedums and natives



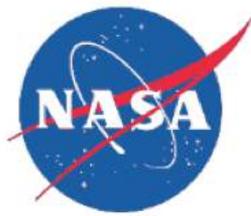
Comparison of living grass and artificial turf



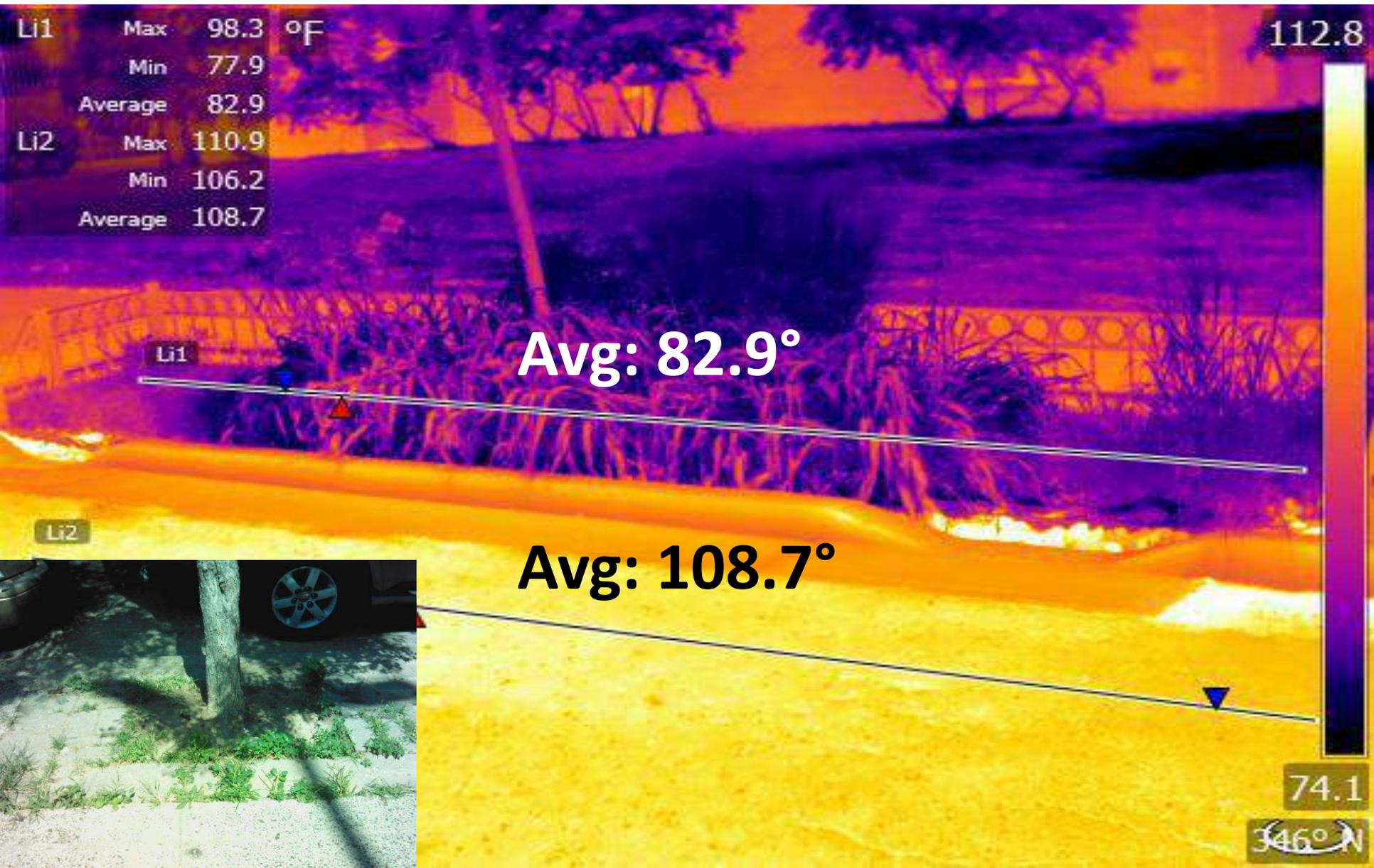
Comparison of living grass and artificial turf



Bioswale and Stormwater Green Street, The Bronx



Bioswale and street temperatures



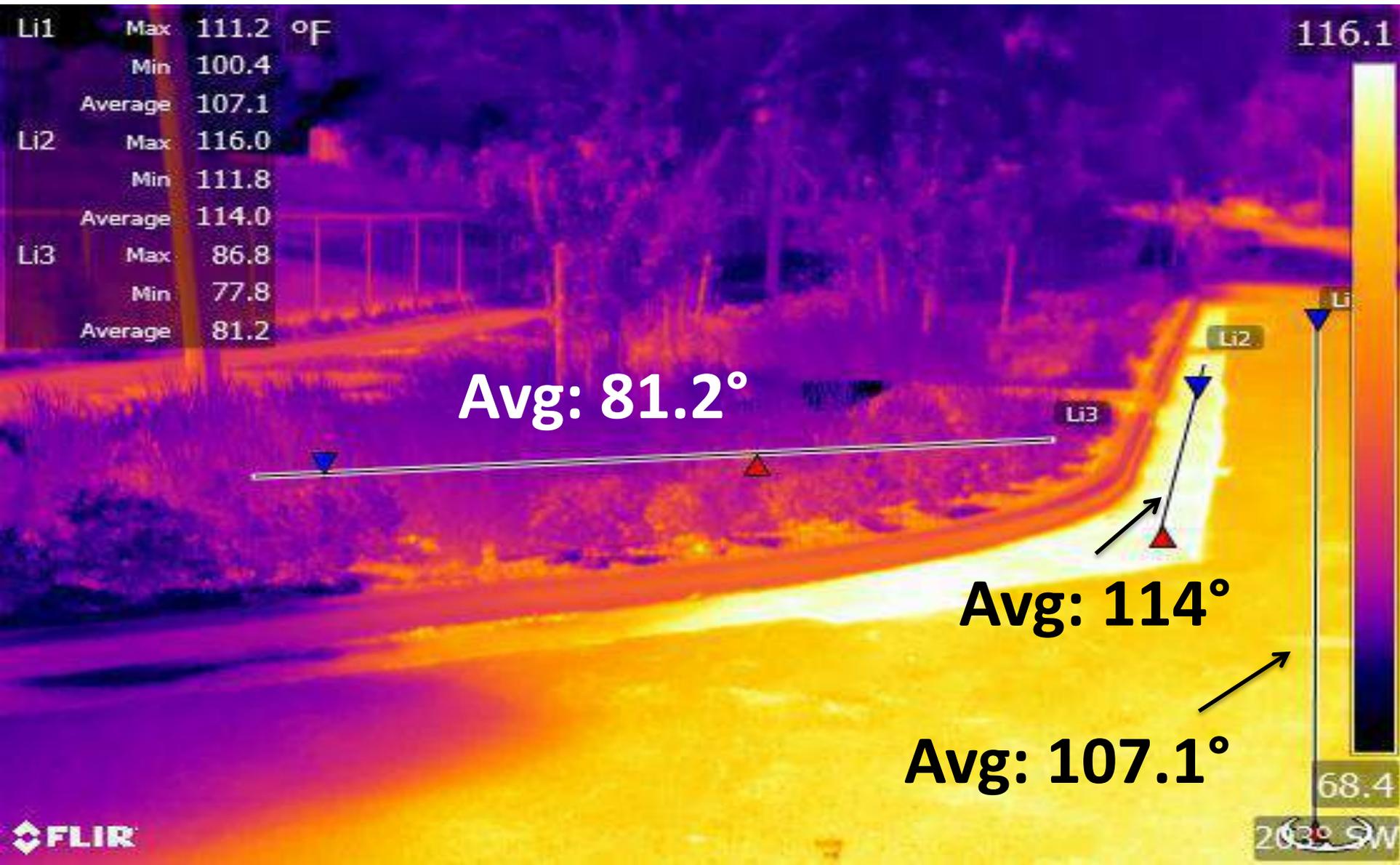
Bioswale in action



Video by NYC Water:

<https://www.youtube.com/watch?v=RnAjTRZr2Z0>

Stormwater Green Street and asphalt street temperatures



Conclusions and Future Work

- Our short term focus will turn to an experimental roof with 6 different white coating roofs in Wayne, NJ.



Image credit: Tom Taylor/GAF Inc

- Long term focus will be to better understand the role of thermal technology in studying urban climate

A banner for the Goddard Space Flight Center featuring a composite image of a planet, Earth, and a person in a cleanroom.

Goddard Space Flight Center

A banner for the Goddard Institute for Space Studies featuring a planet with rings, Earth, and a city skyline.

Goddard Institute for Space Studies

A banner for the New York City Research Initiative with a city skyline background.

New York City Research Initiative

Acknowledgements

Dean Kern, Deputy Director NASA Goddard Space Flight Center

Matthew Pearce, Education Program Specialist NASA Goddard Institute of Space Studies

Cynthia Rosenzweig, Ph.D., Principal Investigator

Stuart Gaffin, Ph.D., Principal Investigator

Tom Taylor, Executive Director of Research and Development, GAF Roofing

Amy Furman, Policy Advisor, NYC Mayor's office of long term planning and sustainability

Brian Laughlin, NYPD roof liaison