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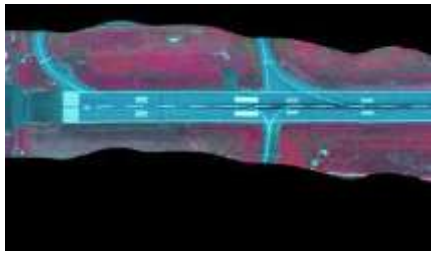
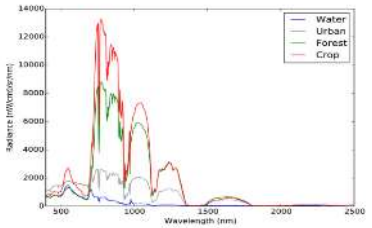
KCL-NCEO aerial capability

- AISA FENIX:
  - 400-2500nm (VNIR & SWIR)
  - 620 spectral bands
  - Spatial resolution @ 1000m: 1.52m
  - Swath @ 1000m, ~600m (384 pixels)
- AISA OWL:
  - 7.6 – 12.5 µm (LWIR)
  - 102 spectral bands
  - Spatial resolution @ 1000m: 1.2m
  - Swath @ 1000m, ~410m (384 pixels)
- Leica ALS50-II LiDAR
  - 1064nm wavelength laser
  - XY accuracy: 0.10m (SPIA)
  - Z accuracy: 0.07m (SPIA)
  - Swath width: 721m (SPIA)
- Phase One 100MP RGB camera:
  - Digital photogrammetry





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KCL-NCEO calibration and validation capability

- Cal-val of thermal sensors:
  - Temperature controlled laboratory chamber
  - Blackbodies:
    - High temperature
    - Cone and flat targets
  - Burn chamber

- Thermal emissivity and spectroscopy:
  - *Laboratory*: Bruker Vertex 70v spectrometer with gold integrating sphere, optimised for short, mid and far infrared spectroscopy.
  - *Field*: Bruker EM27 open path spectrometer, designed and optimized for remote sensing of chemical substances in the atmosphere.
  - *Burn chamber*: Bruker Matrix MG5 closed path gas spectrometer. Measures similar compounds to the EM27 open path spectrometer, but without interference from the atmosphere.

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NASA-HyTES in the UK mission (London segment)

- Payload:
  - Fenix (VNIR-SWIR)
  - Airborne hyperscout (SWIR-NIR, cubesat test sensor)
  - OWL (LWIR)
  - HyTES (LWIR)
  - RGB camera if enough apertures in bottom of plane
- Flight plan:
  - 700ft day pass
  - Higher night pass tbc

- **One week to request any adjustments or new paths > from today (29.03.19)**

Jet Propulsion Laboratory
California Institute of Technology

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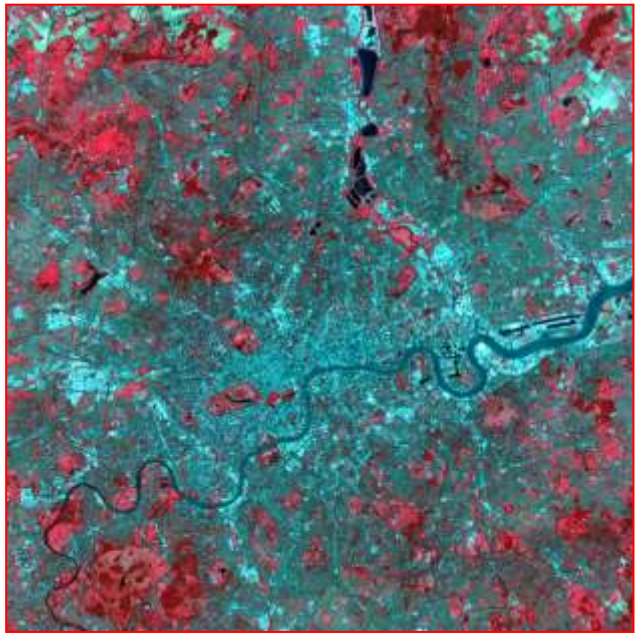
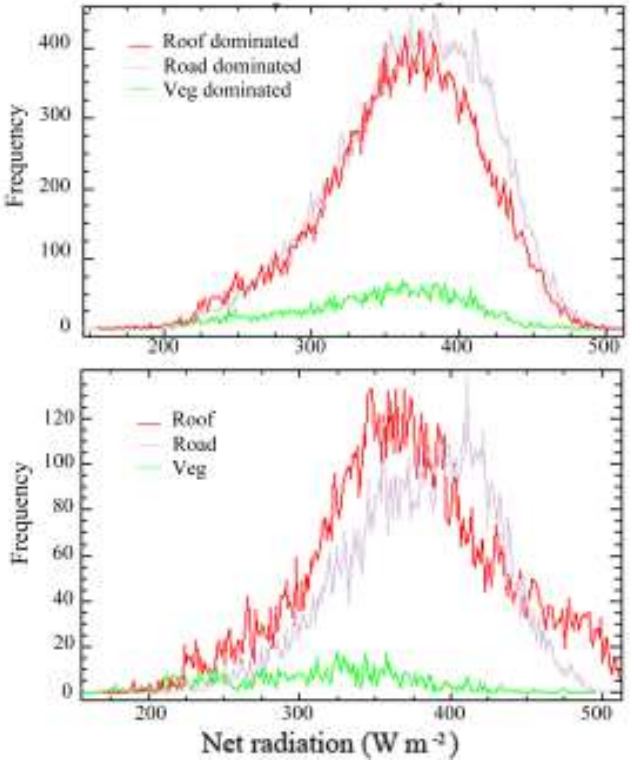
Research objectives, datasets and possibilities for London (KCL-Leicester-UCL)

- Satellite: land surface temperature, indicative air quality products, greenness and estuary monitoring.



(a) Net radiation



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Research objectives, datasets and possibilities for London (KCL-Leicester-UCL)

- In situ: laser scanning of trees (now), surface/air T (future), observations for better urban meteorology (future).

- Data integration: could seek funds from NERC to develop digital environment platform for London for urban science, monitoring and planning.
  - Objective: to provide more rapid and consolidated change description.

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Research objectives and datasets for London (KCL-Leicester-UCL)

- What is the current ground validation monitoring network for temperature and thermal emissivity?
  - If there is a network, should we adjust HyTES flight plan to fly over them?

- Interested in urban heat islands, the canyon effect, thermal emissivity testing and validation of urban materials and surfaces.
  - Ground validation targets and cal-val campaigns for high resolution urban temperature data products.

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