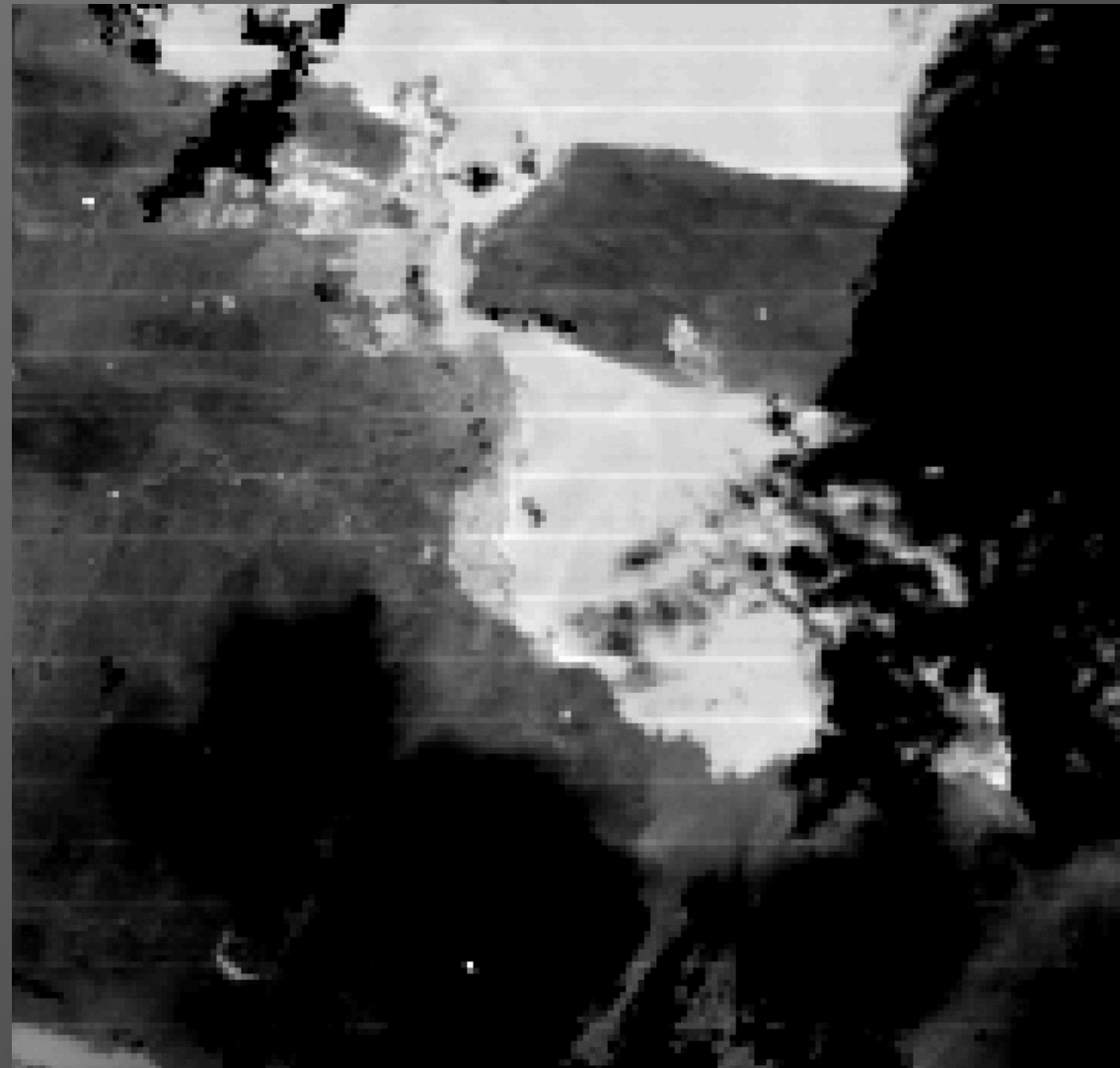


Evolution of the LUSI eruption from satellite and ground-based remote sensing



L. Vanderkluysen, A. Clarke, H. Hartnett, J.-F. Smekens

LUSI satellite and ground-based remote sensing: Outline

- Why we care
- How it works
- Preliminary results
- Future work

LUSI satellite and ground-based remote sensing: Why we care



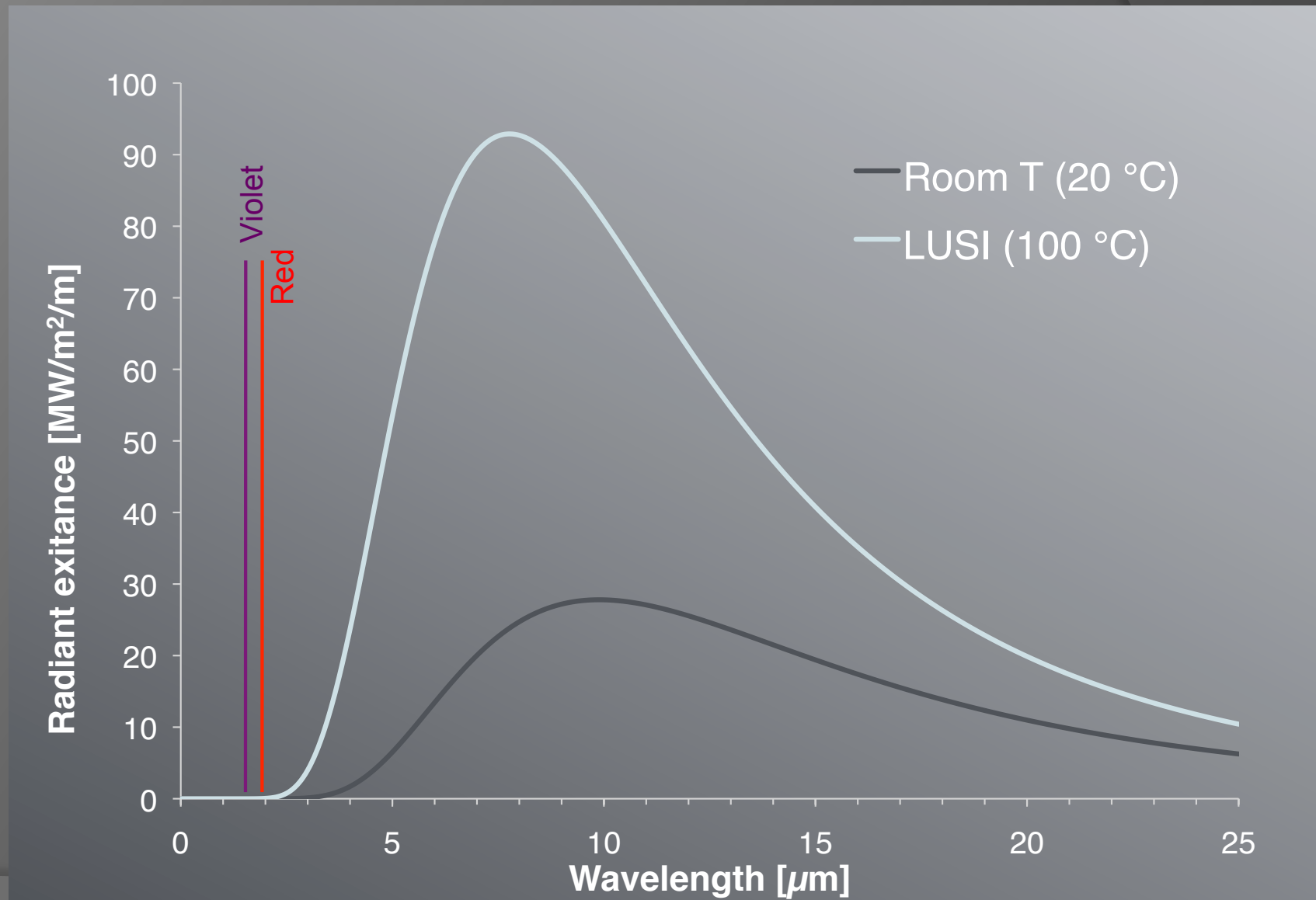
Nov. 11, 2008



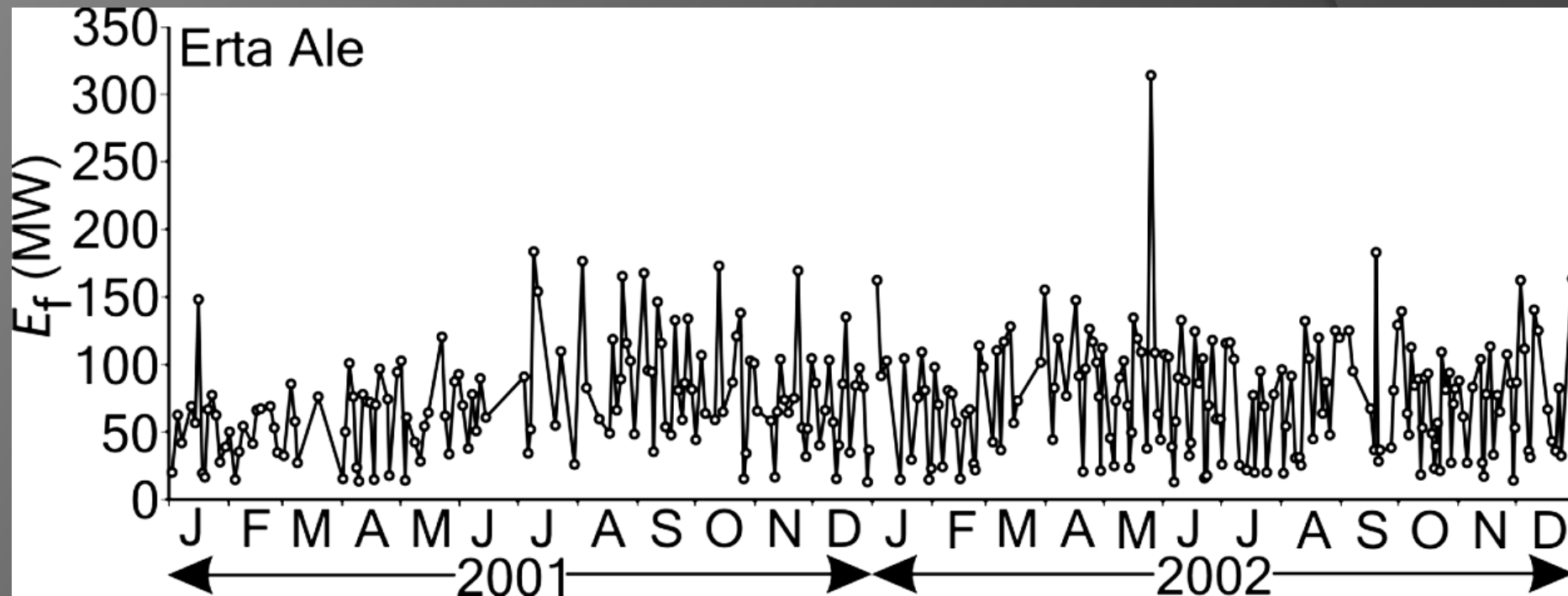
Oct. 20, 2009

Data: NASA ASTER science team

LUSI satellite and ground-based remote sensing: How it works



LUSI satellite and ground-based remote sensing: How it works



Radiative power loss E_f from Erta Ale volcano, 2001-2002

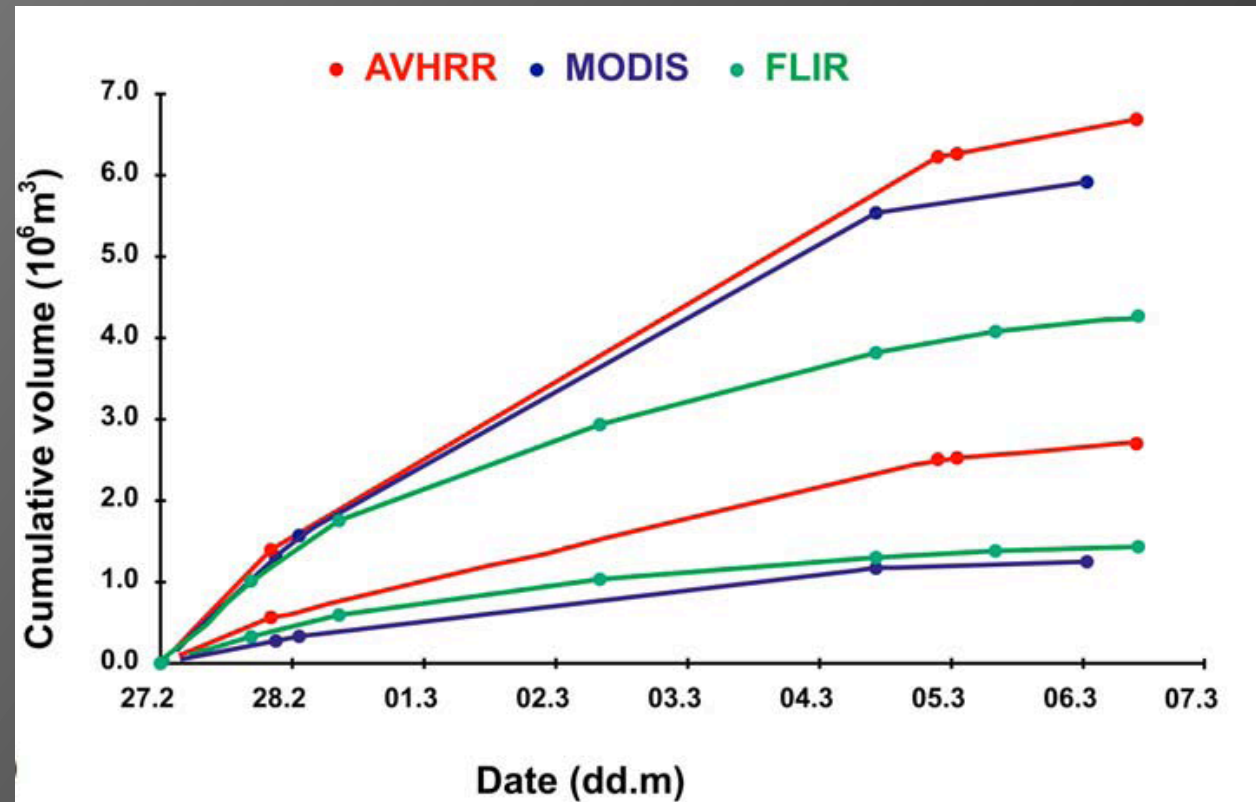
After Wright & Flynn 2004, Geology, v. 32

LUSI satellite and ground-based remote sensing: How it works

In lava flows, an empirical relationship relates heat flux to mass flux

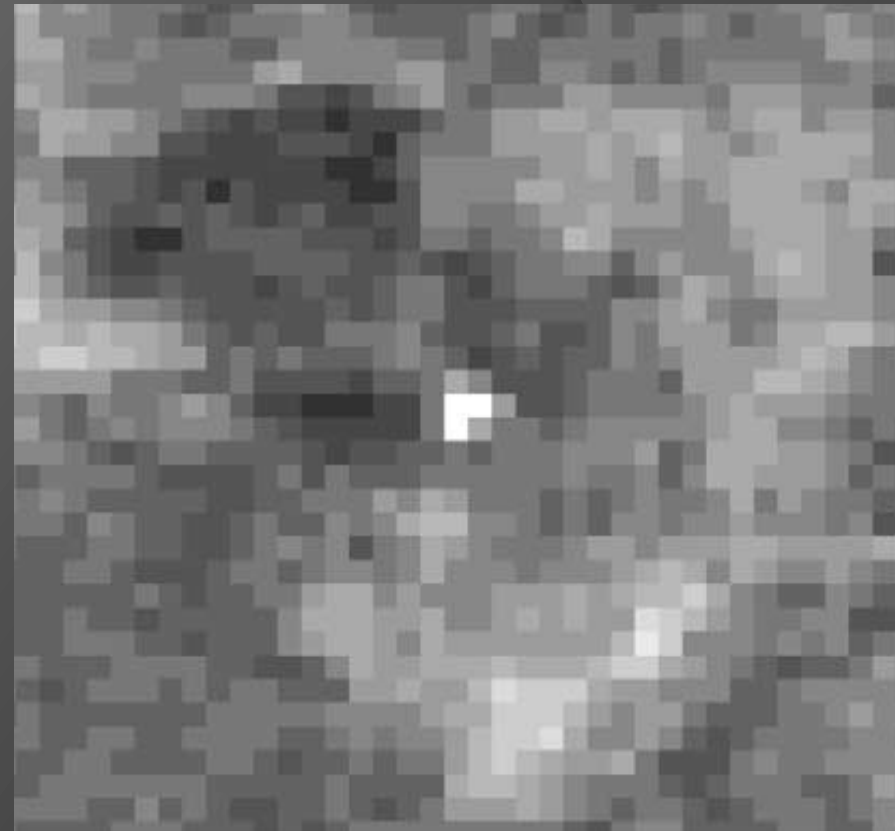
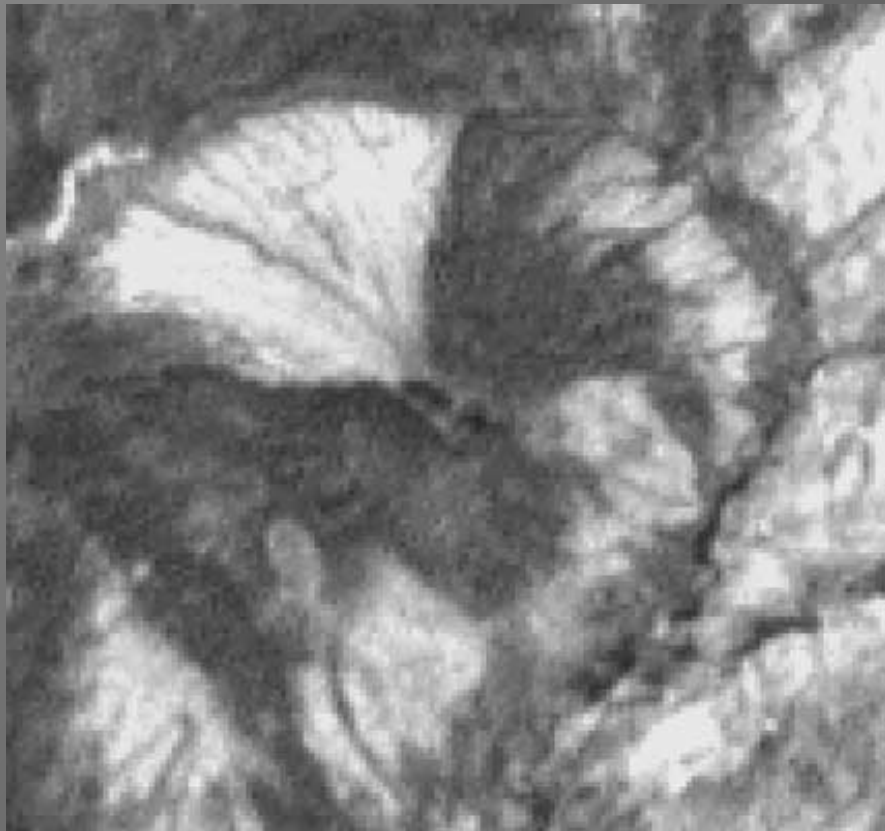
After Harris et al. 1997, J. Geophys. Res. 102

$$E_r = \frac{F_{\text{inst}}}{\rho [C_p \Delta T + \phi c_L]}$$



After Calvari et al. 2010, J. Geophys. Res., v. 115B

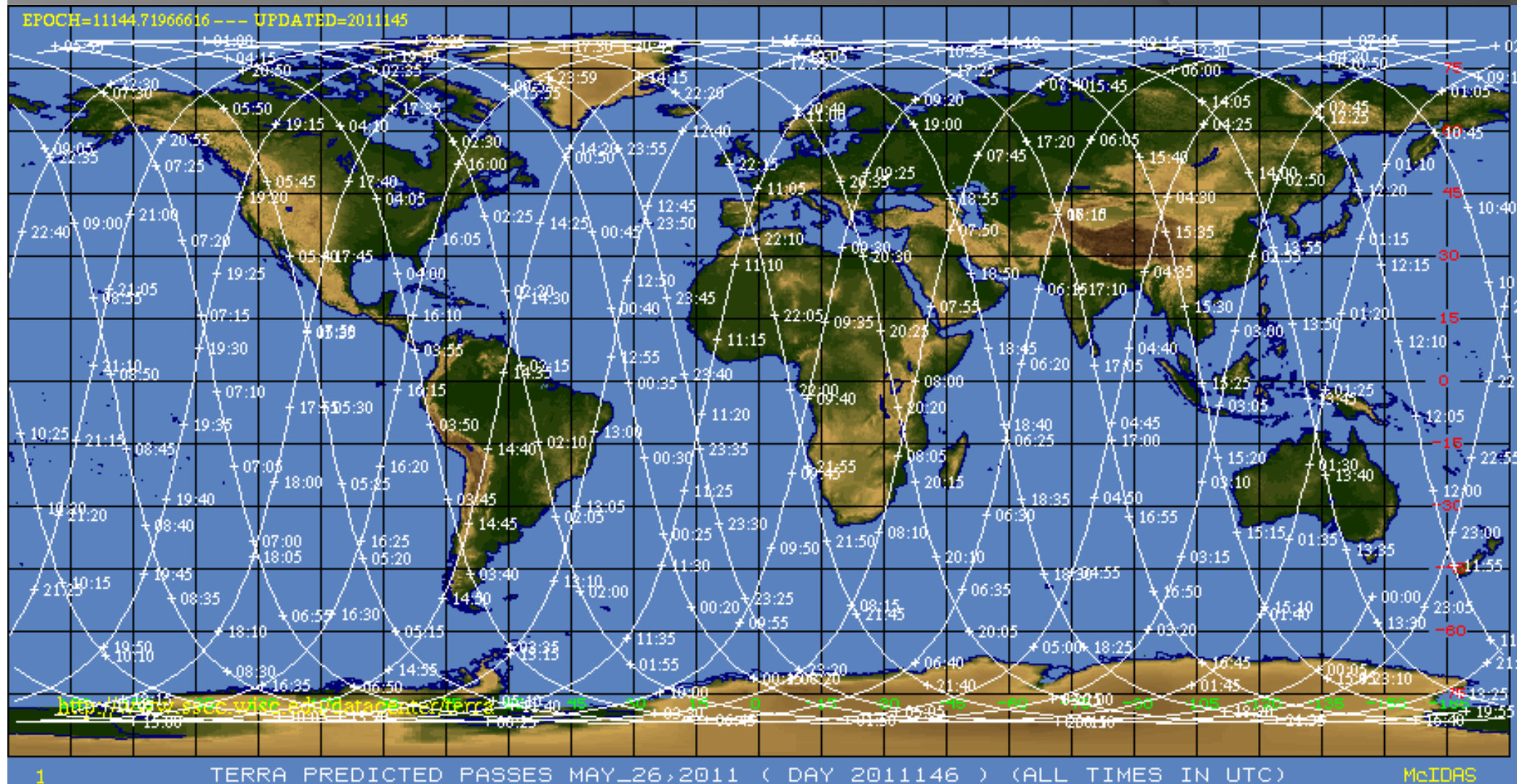
LUSI satellite and ground-based remote sensing: Does it work?



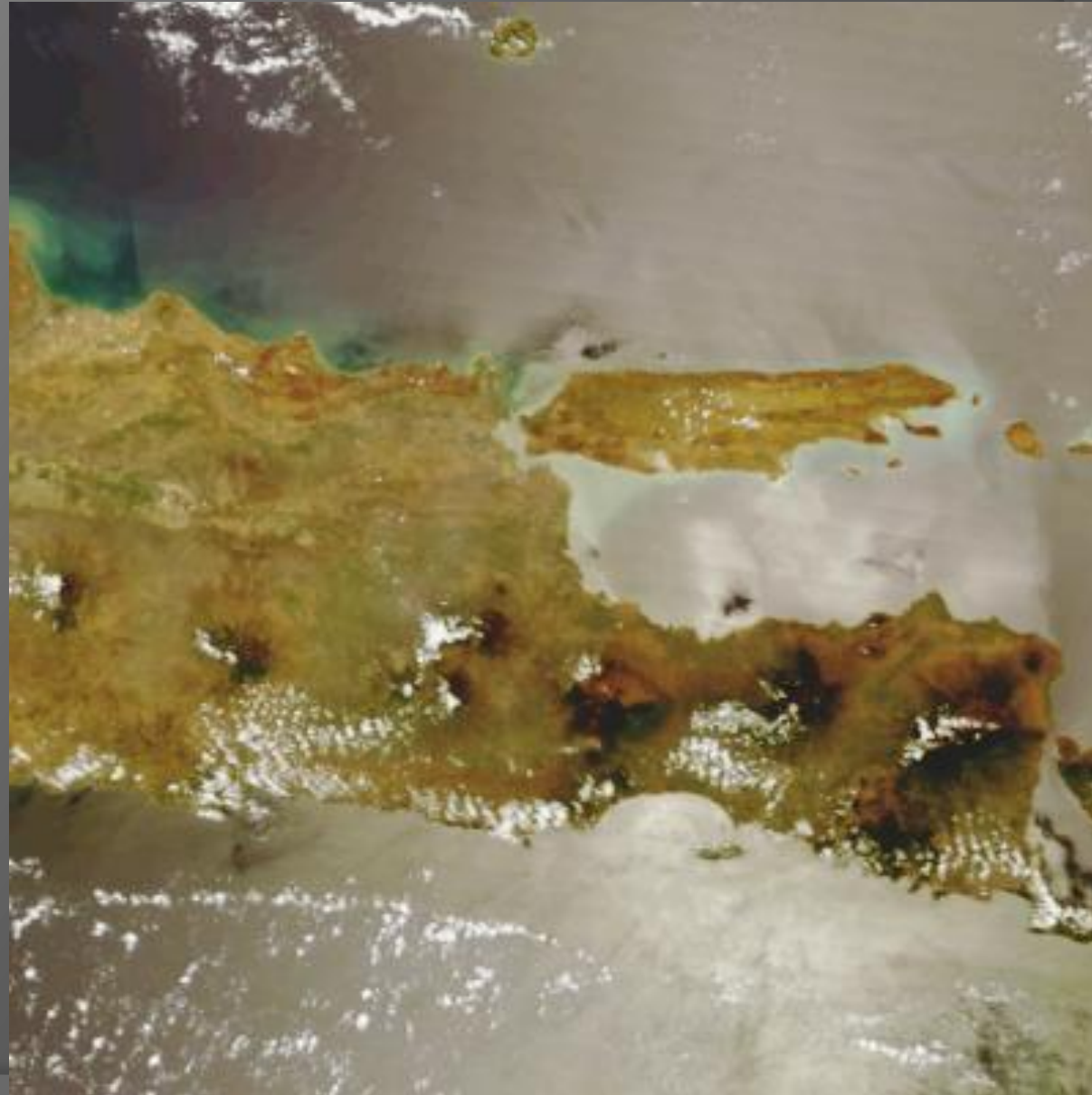
LANDSAT 7 ETM+ bands 8 and 6, Lower Klawasi mud volcanoes, Alaska

After Patrick et al. 2004, J. Volcanol. Geothermal Res. 131

LUSI satellite and ground-based remote sensing: How it works: MODIS



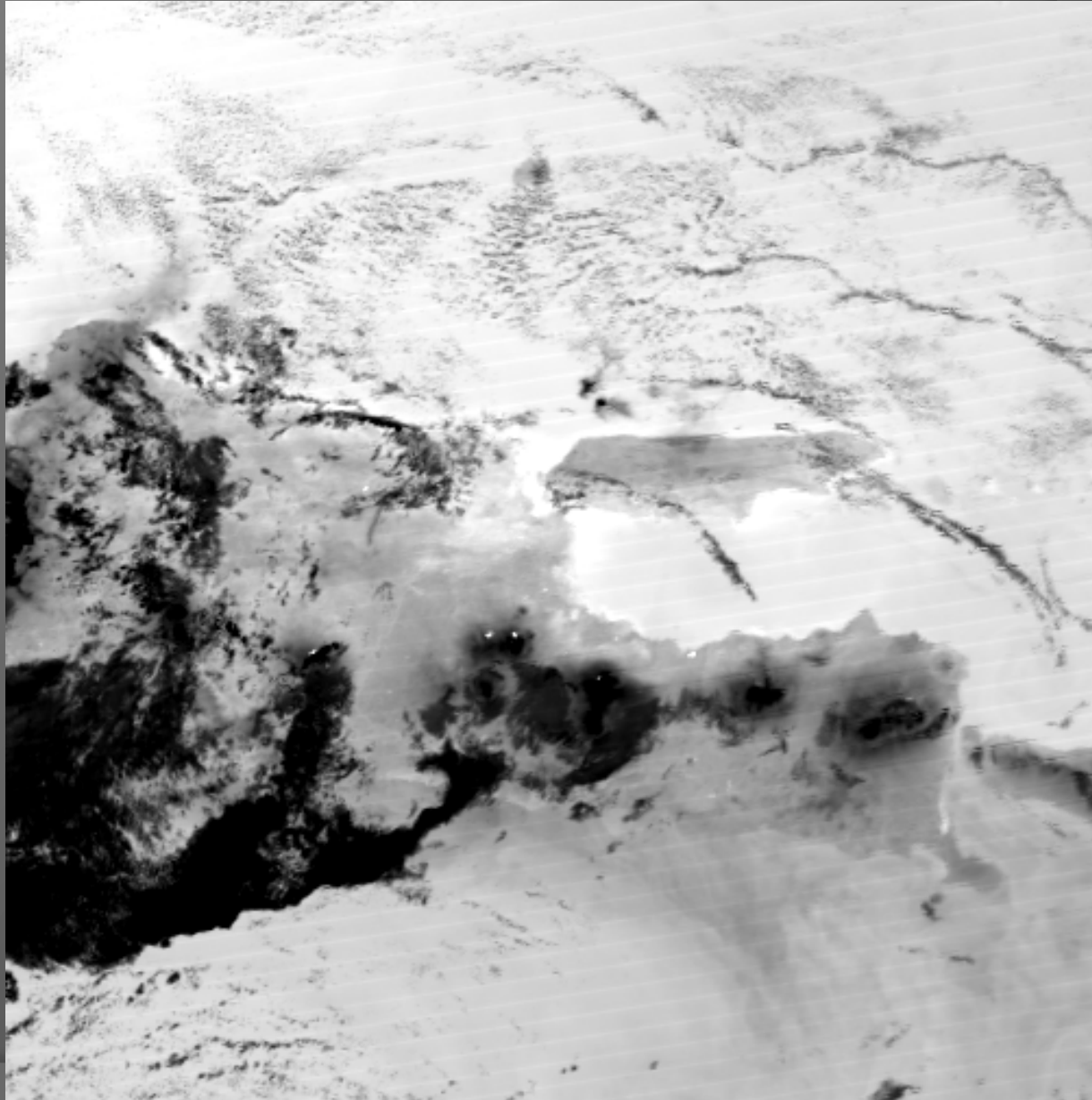
LUSI satellite and ground-based remote sensing: How it works



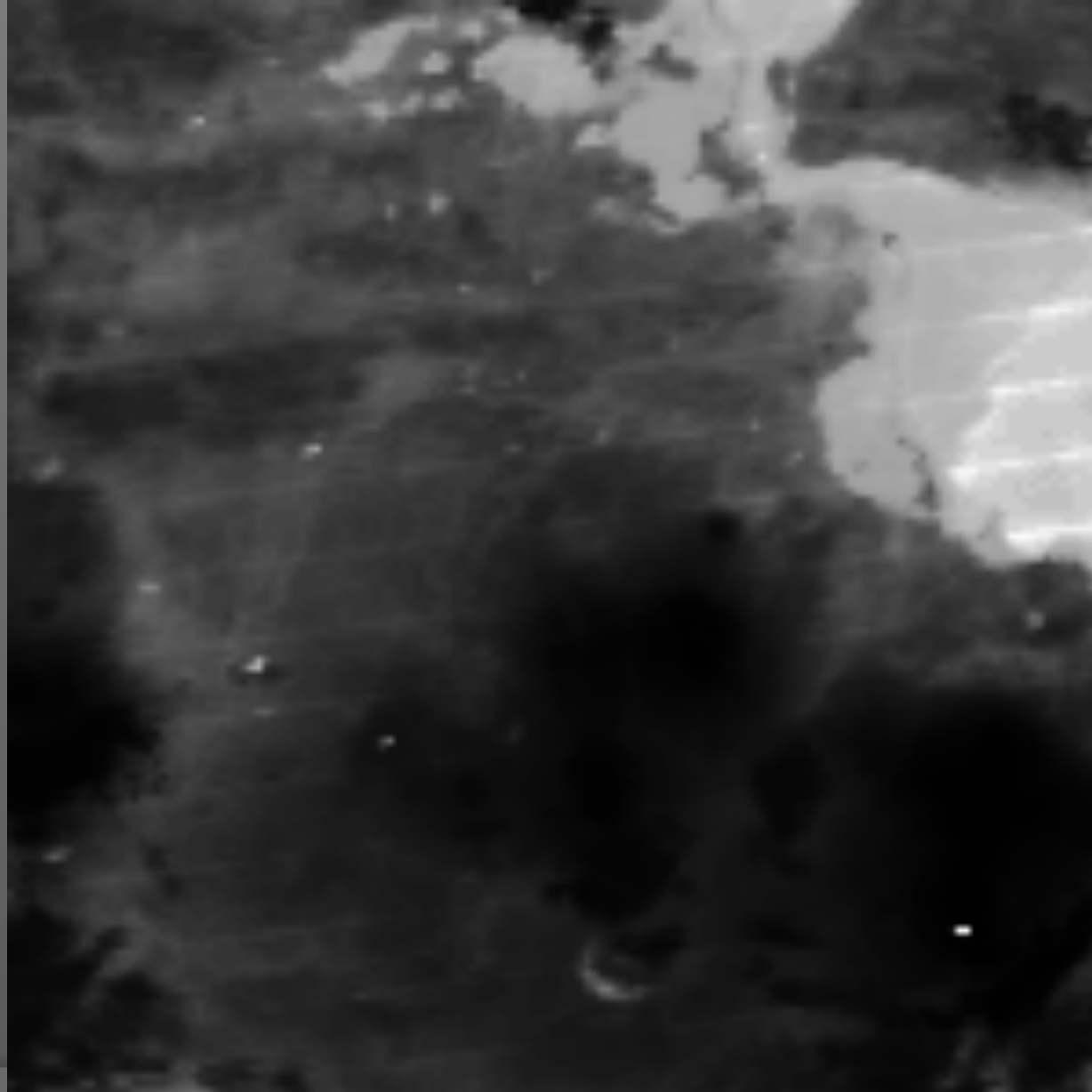
LUSI satellite and ground-based remote sensing: How it works



LUSI satellite and ground-based remote sensing: How it works



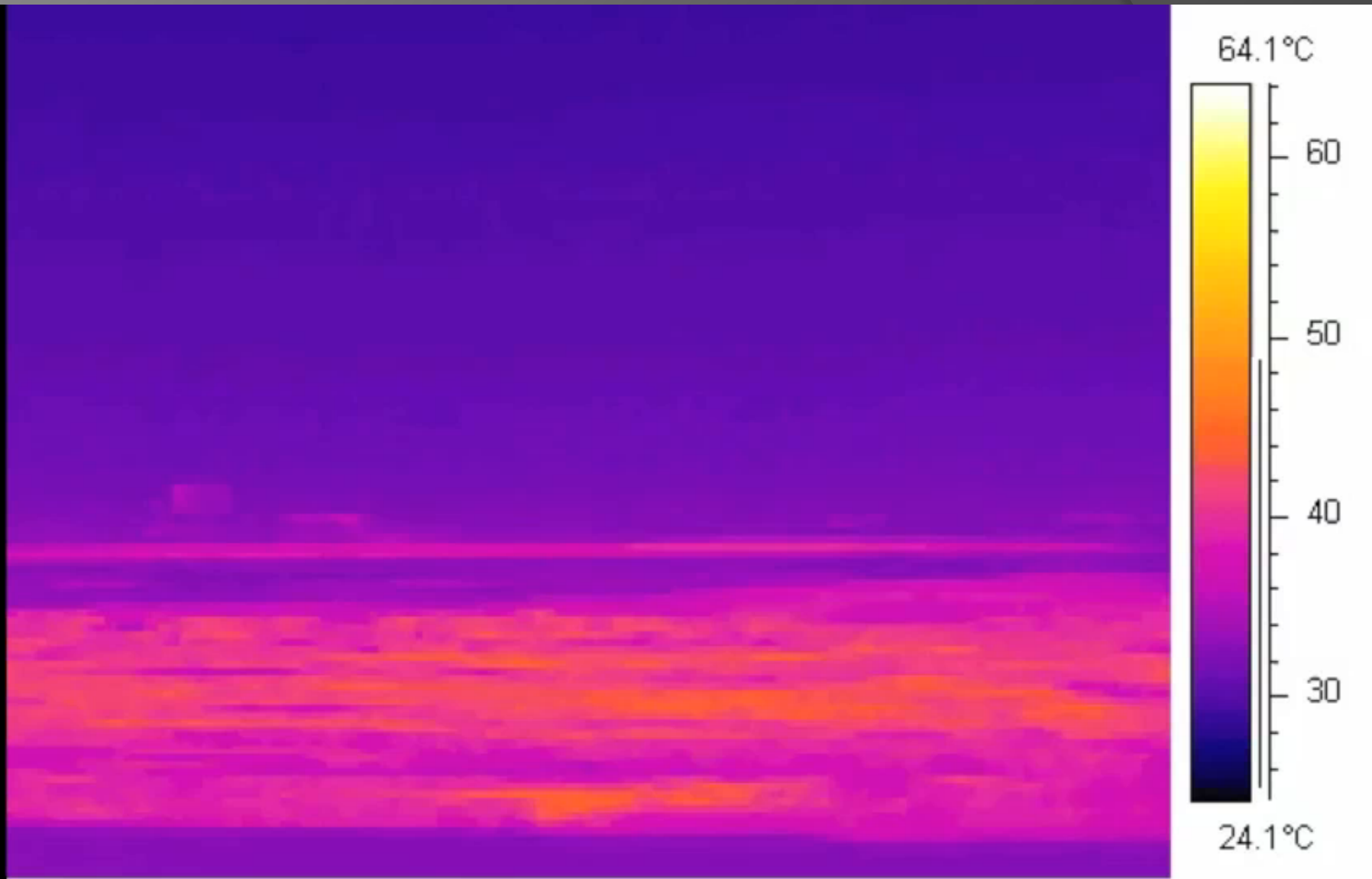
LUSI satellite and ground-based remote sensing: How it works



LUSI satellite and ground-based remote sensing: Future work

- Ground-based visual & thermal surveillance
- Visual & thermal satellite data
- Geochemical monitoring of fluids

LUSI satellite and ground-based remote sensing: Future work





Thank you for your attention

