

An Update on NASA's Harmonized Landsat and Sentinel-2 Project

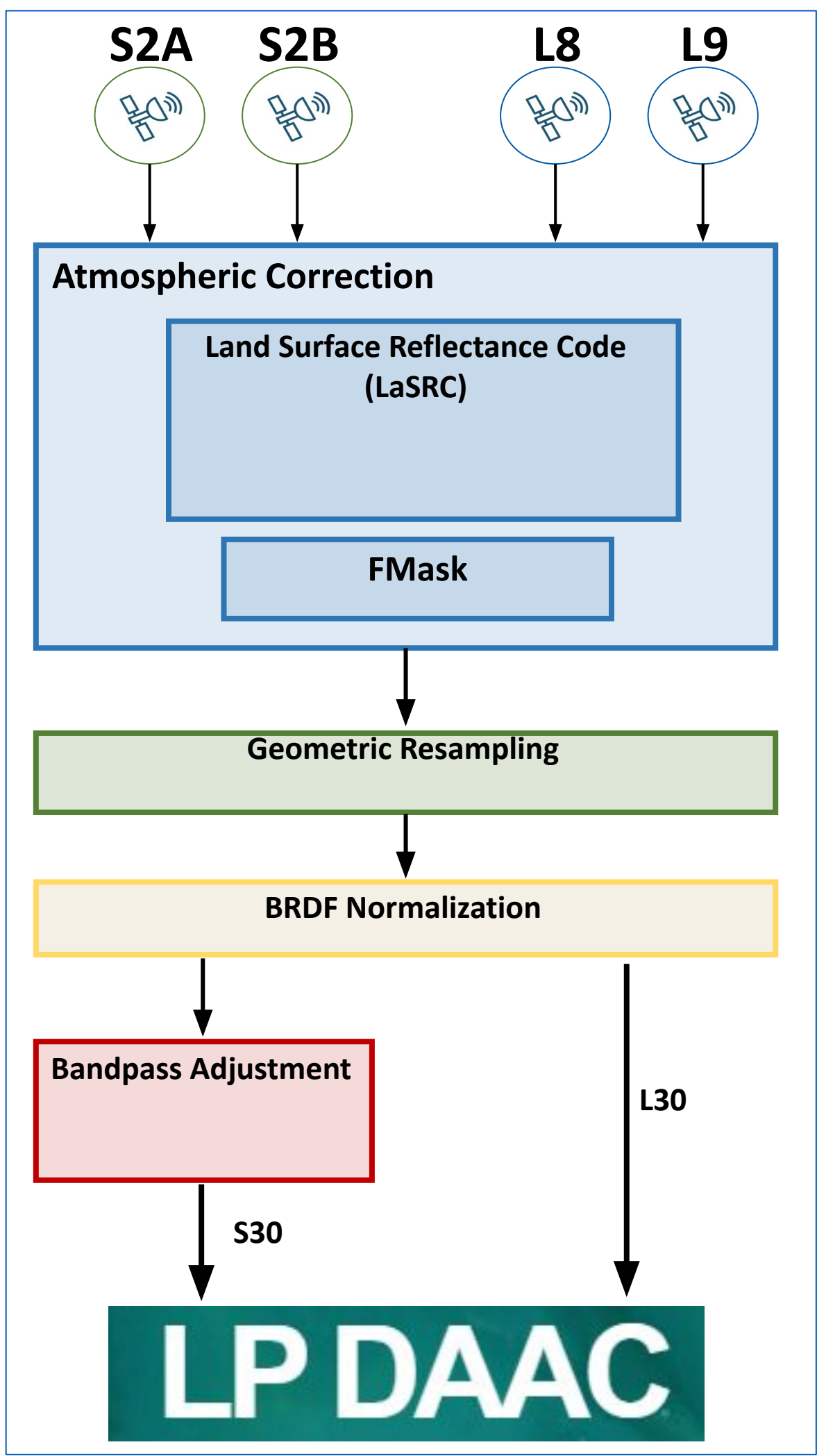
John Mandel¹, Brian Freitag¹, Madhu Sridhar^{1,2}, Junchang Ju^{3,4}, Sean Harkins⁵, Rahul Ramachandran¹, Qiang Zhou^{3,6}, Charles Daniels⁵

1 - NASA Marshall Space Flight Center, 2 -University of Alabama in Huntsville, 3 -NASA Goddard Space Flight Center,
4 - University of Maryland, 5 - Development Seed, 6 - Science Systems & Applications, Inc

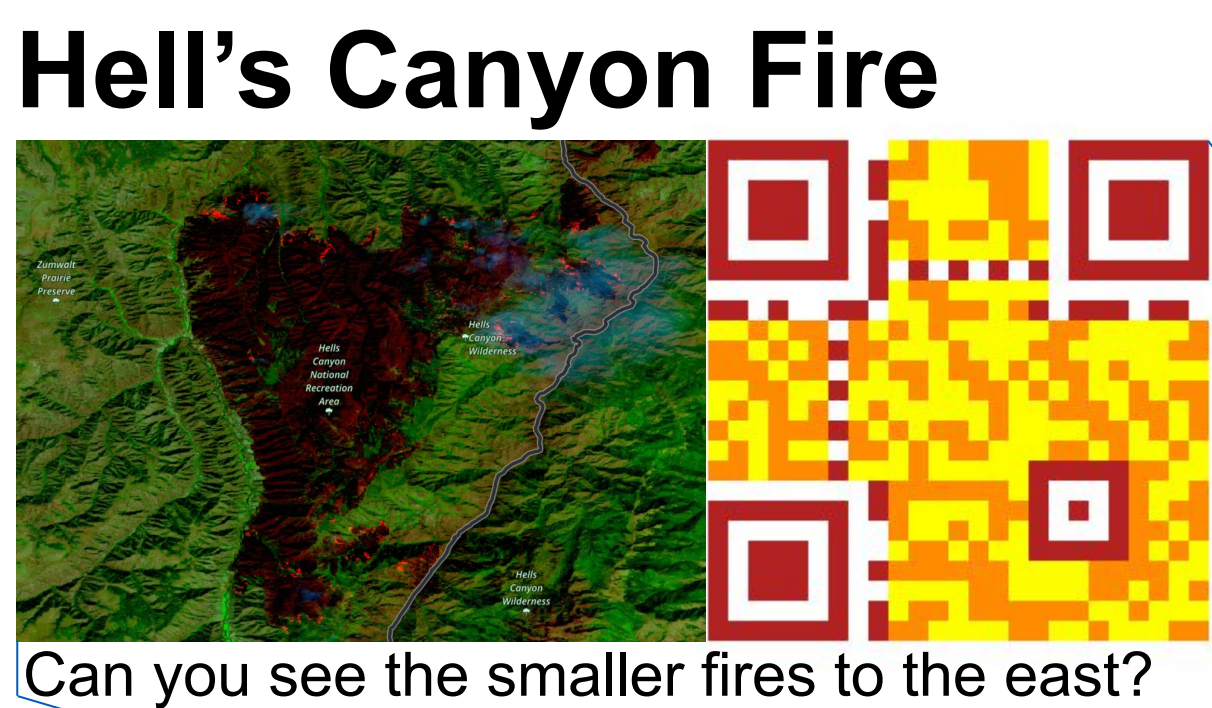


Analysis-Ready Surface Reflectance Products from Landsat (NASA) and Sentinel-2 (ESA) Satellite Imagery

The Harmonized Landsat and Sentinel-2 (HLS) project [normalizes all the data from Landsat 8 & 9 and Sentinel-2A & 2B](#) to common standards and the same grid. The resulting 30-meter datasets (L30 & S30) can be used interchangeably for scientific analysis and to [observe the Earth more frequently](#) than is possible with Landsat or Sentinel-2 alone.



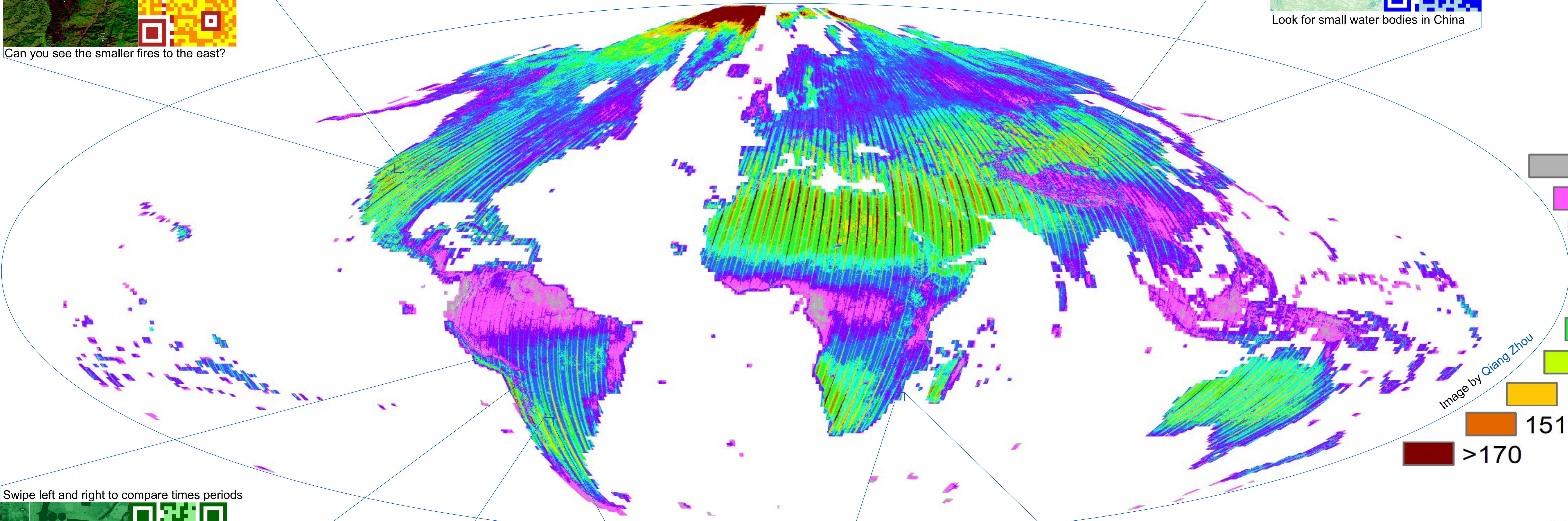
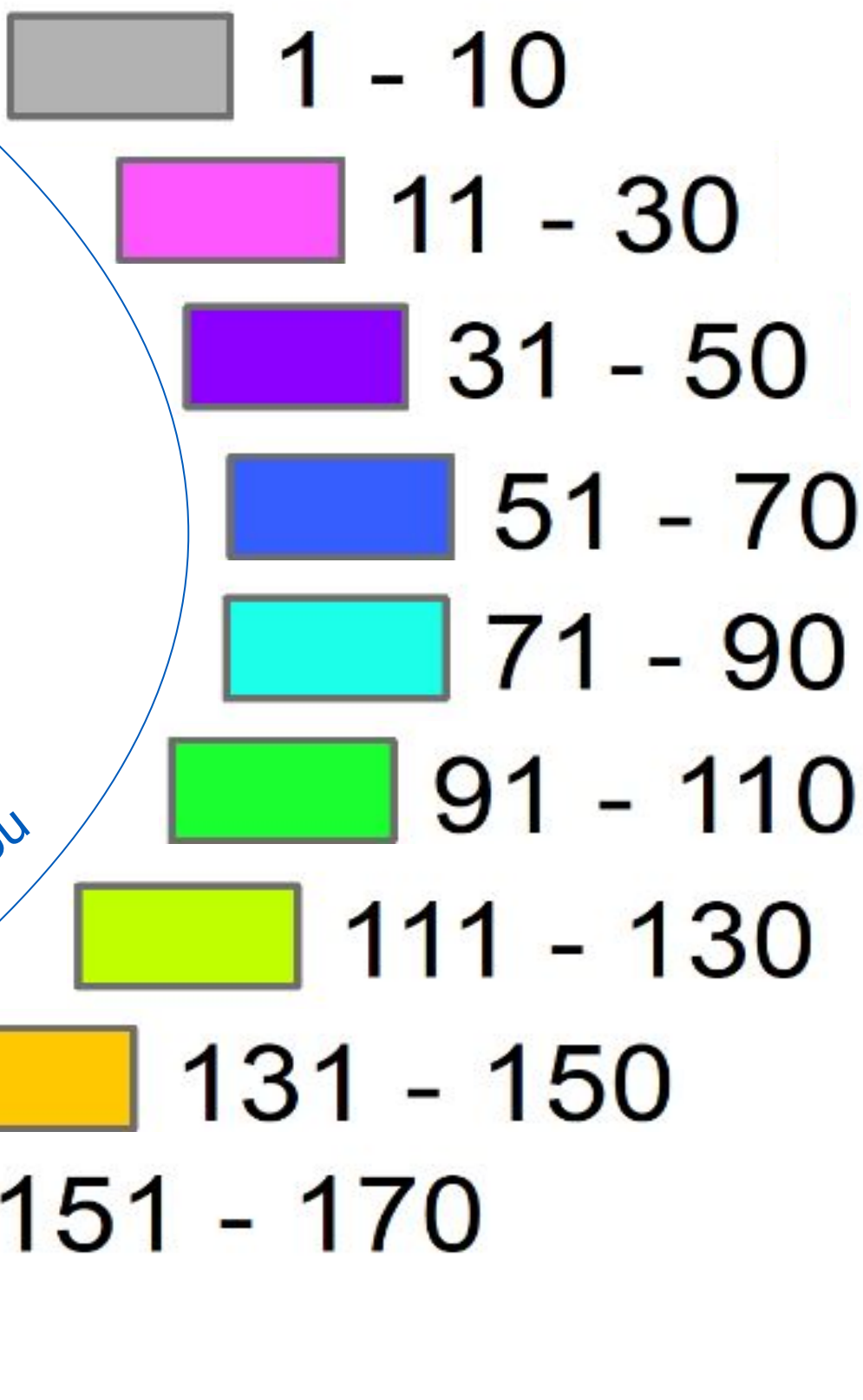
The HLS codebase is open-source and freely available on GitHub



Hell's Canyon Fire

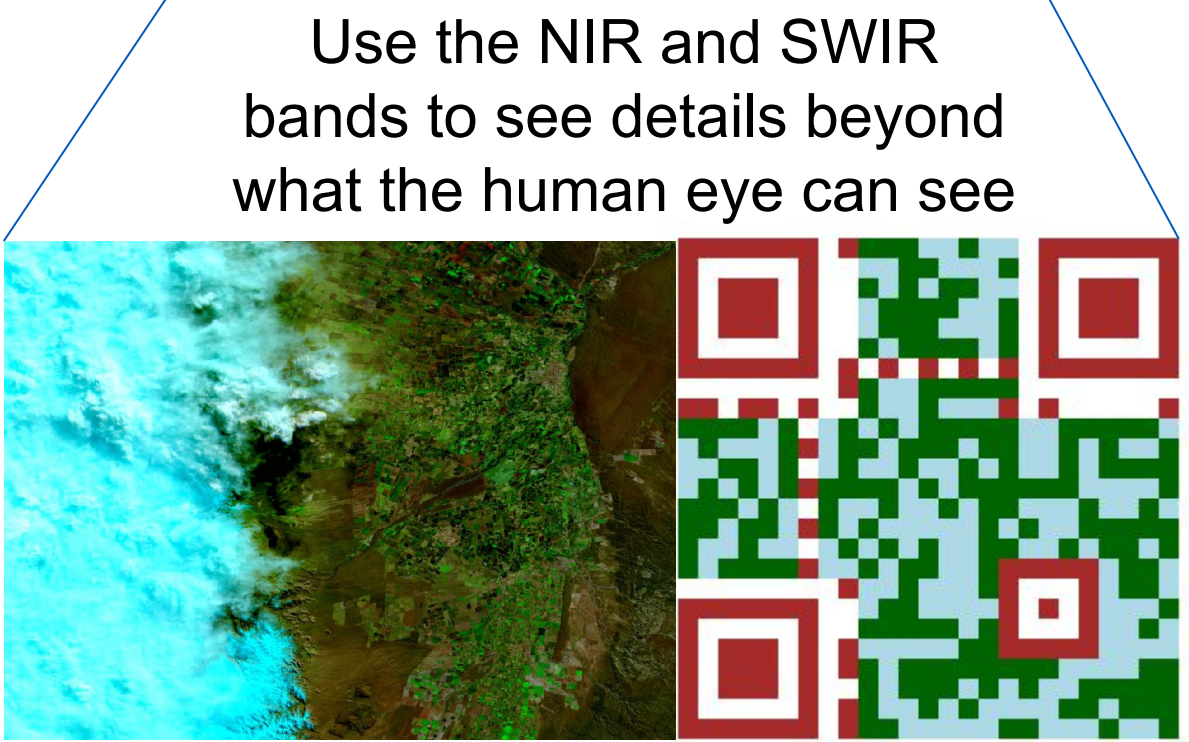
Can you see the smaller fires to the east?

Cloud-Free Observations in 2022



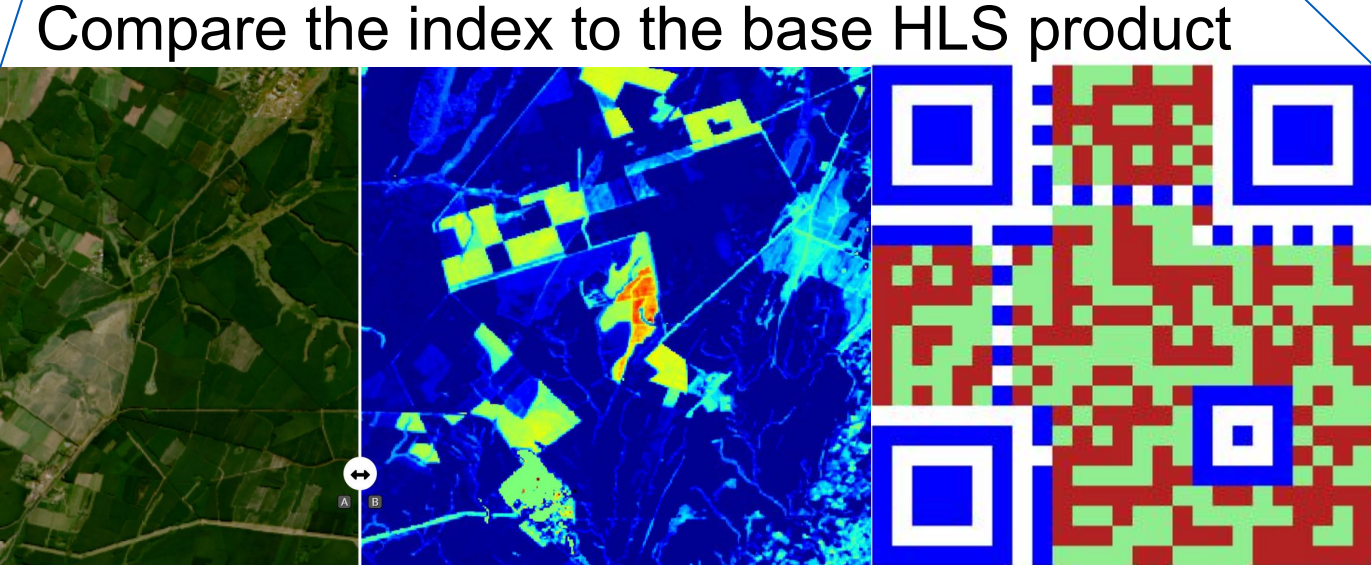
NDVI: Brazilian Agriculture

Swipe left and right to compare times periods



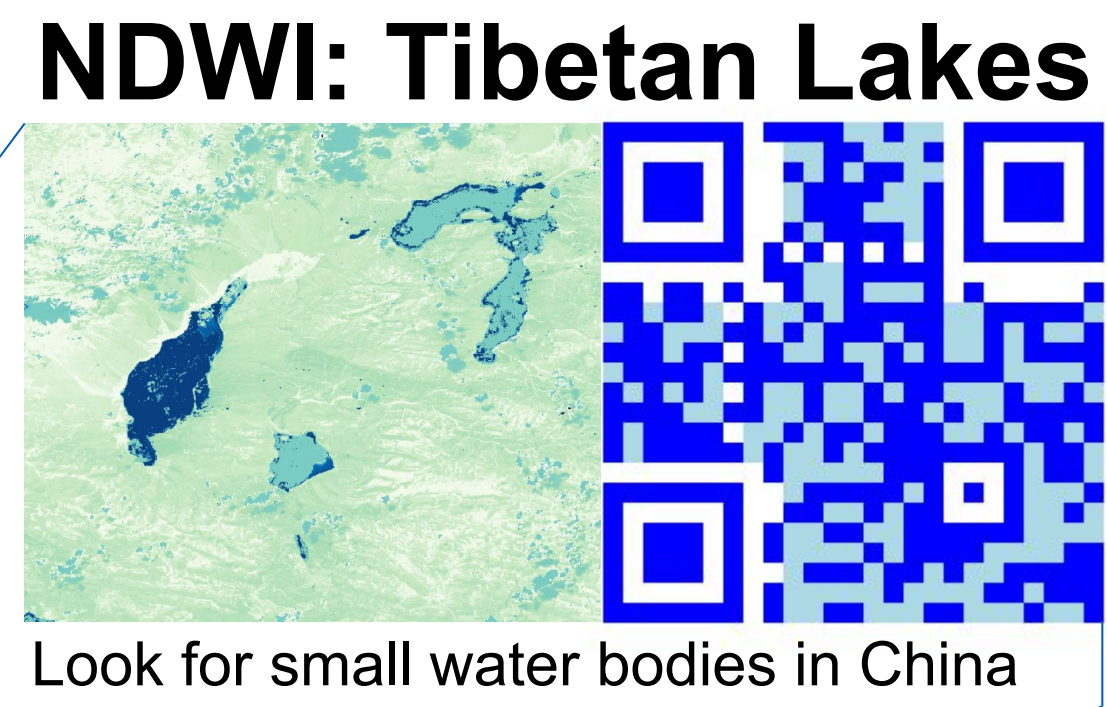
Change Your Worldview

Use the NIR and SWIR bands to see details beyond what the human eye can see



NDMI: South African Coast

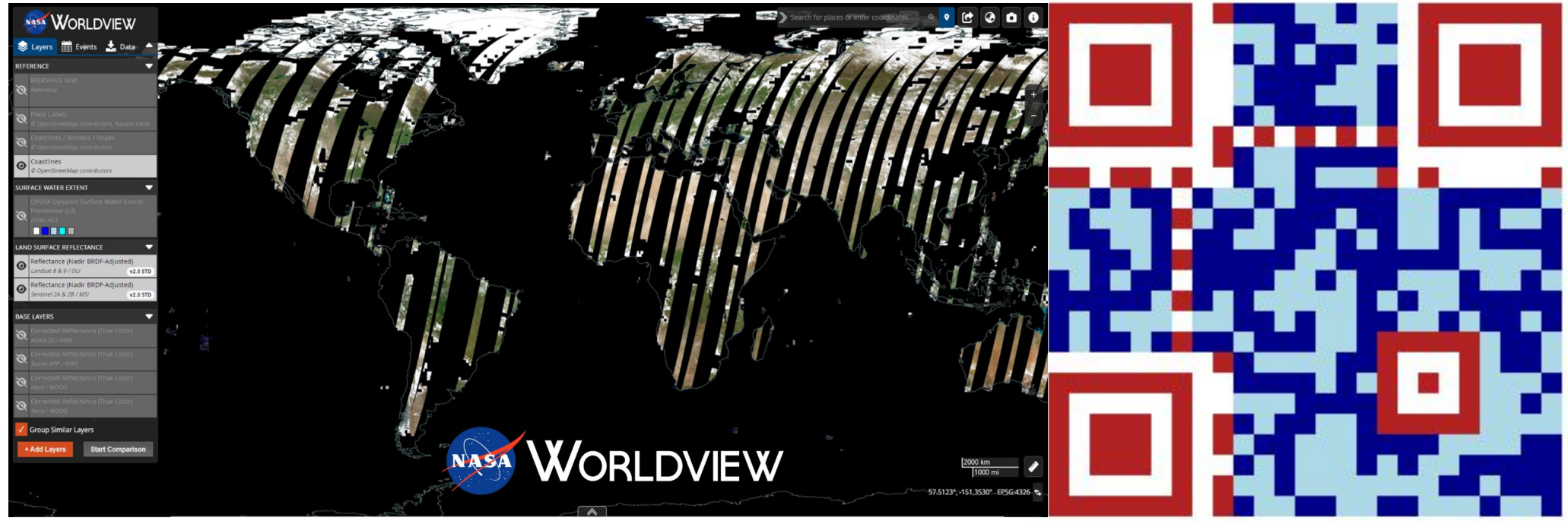
Compare the index to the base HLS product



NDWI: Tibetan Lakes

Look for small water bodies in China

Explore the Full Dataset on NASA Worldview



Dataset Characteristics

Resolution	30 meters
Spatial Coverage	Global land (excluding Antarctica)
Coordinate Reference System	Military Grid Reference System (MGRS)
Latency	2 - 4 days
Data Format	Cloud Optimized GeoTiff
Granule Structure (all delivered individually)	10 (L30) or 13 (S30) data bands 4 angle bands 1 QA band
Granule Coverage	109.8 x 109.8 km
Data Distributor	Land Processes DAAC
S30 Temporal Coverage	December 2015 - Present
L30 Temporal Coverage	June 2013 - Present

Acknowledgements

Chris Neigh, NASA GSFC

Jeff Masek, NASA (Retired)

The USGS Land Surface Reflectance Data (LSRD) team

The open-source development community

