

# NASA, Japan make ASTER earth data available at no cost

## April 4, 2016



In March 2016, ASTER captured the eruption of Nicaragua's Momotombo volcano with its visible and thermal infrared bands. The ash plume is depicted by the visible bands in blue-gray; the thermal infrared bands show hot lava flows in yellow and the active summit crater in white. Vegetation is red.

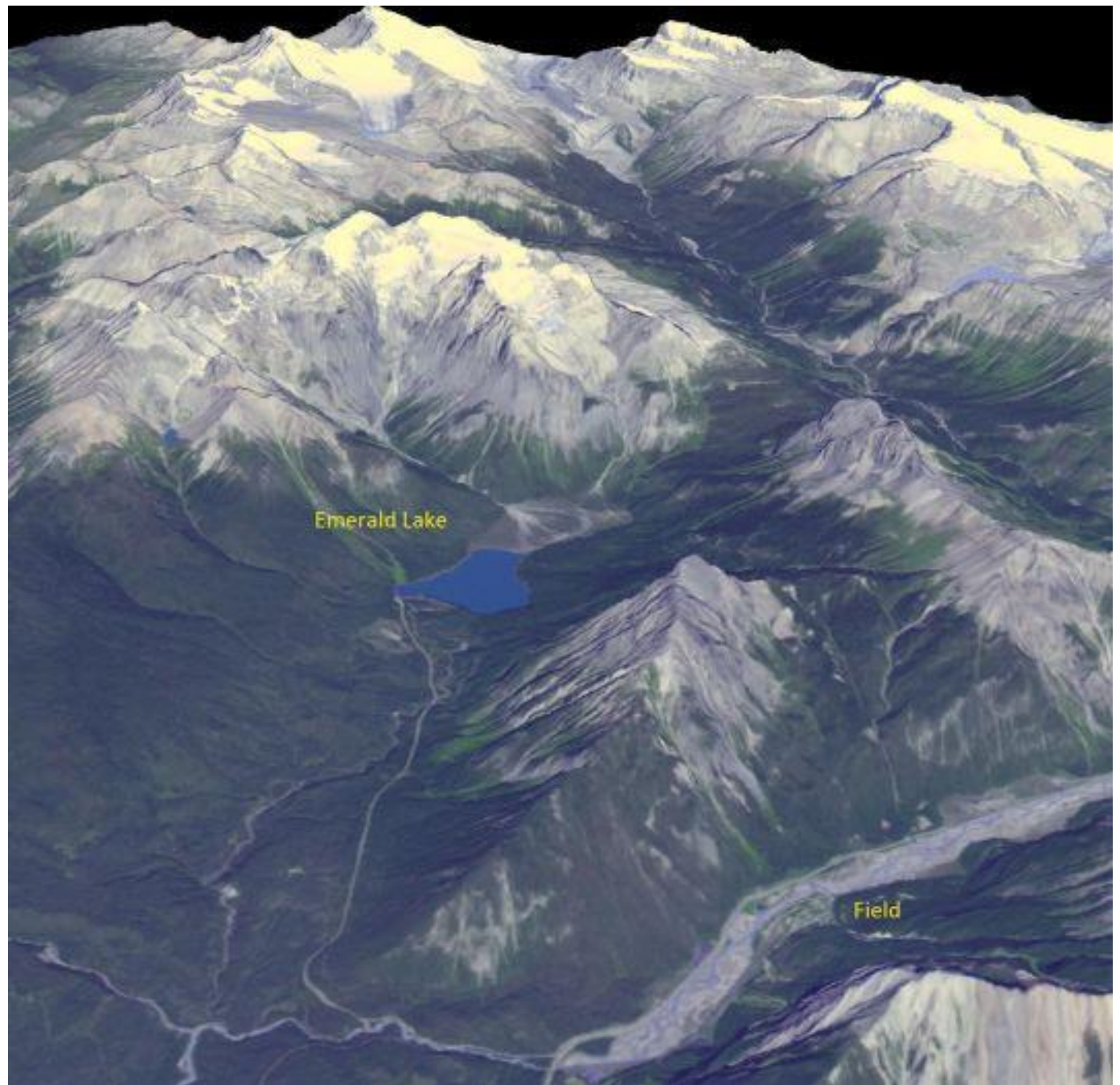
# ASTER 'superspectral' bands - band 3 has two modes: 3N and 3B

<u>Band</u>	<u>Wavelength (microns)</u>	<u>Spatial Resolution (m)</u>
Visible to Near-Infrared Bands		
1	0.52 ◆ 0.60	15
2	0.63 ◆ 0.69	15
3	0.76 ◆ 0.86	15
Shortwave Infrared Bands		
4	1.60 ◆ 1.70	30
<b>Failed 2008</b> 5	2.145 ◆ 2.185	30
6	2.185 ◆ 2.225	30
7	2.235 ◆ 2.285	30
8	2.295 ◆ 2.365	30
9	2.360 ◆ 2.430	30
Mid-infrared (Thermal) Bands		
10	8.125 ◆ 8.475	90
11	8.475 ◆ 8.825	90
12	8.925 ◆ 9.275	90
13	10.25 ◆ 10.95	90
14	10.95 ◆ 11.65	90

Only 'multispectral' since 2008

ASTER

Yoho Nat.  
Park



## St. Patrick Bay Ice Caps Nearly Gone, 1959-2004-2015



<http://earthobservatory.nasa.gov/IOTD/view.php?id=87740&src=eoaiotd>

# Viking discovery could put southwest Newfoundland on the map

Locals say discovery could spell huge boost for tourism in the region

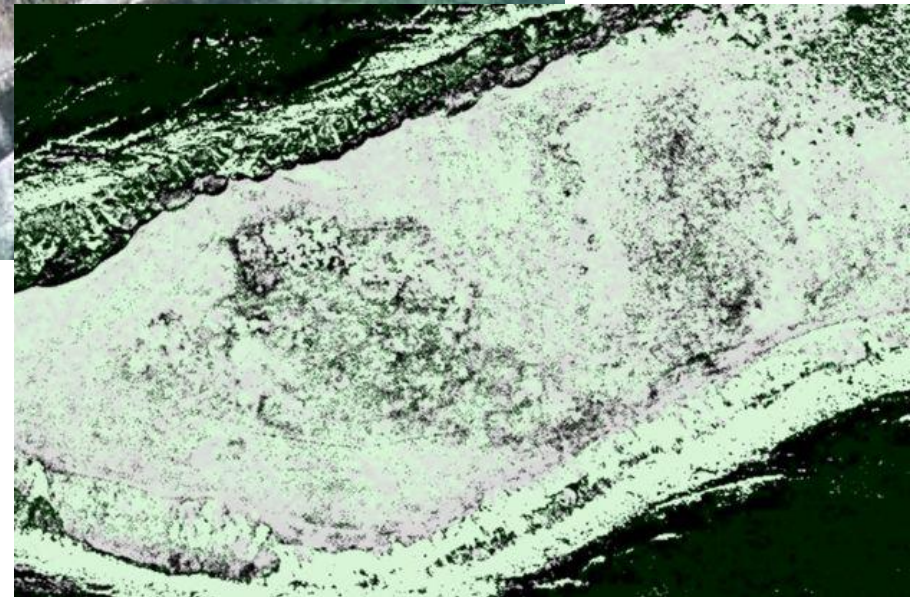


<http://maps.google.ca>

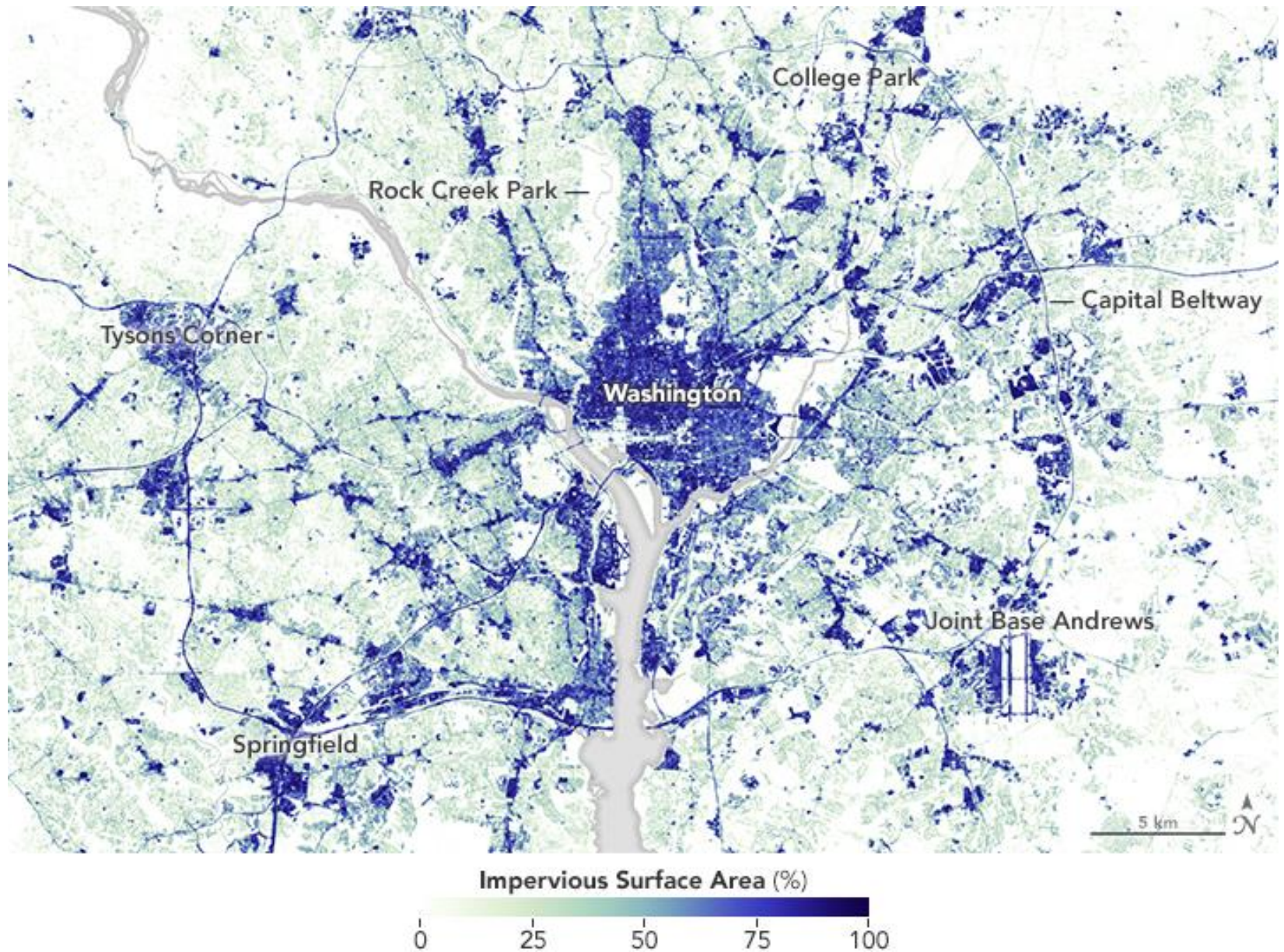


Worldview 3 image

BWvariance image



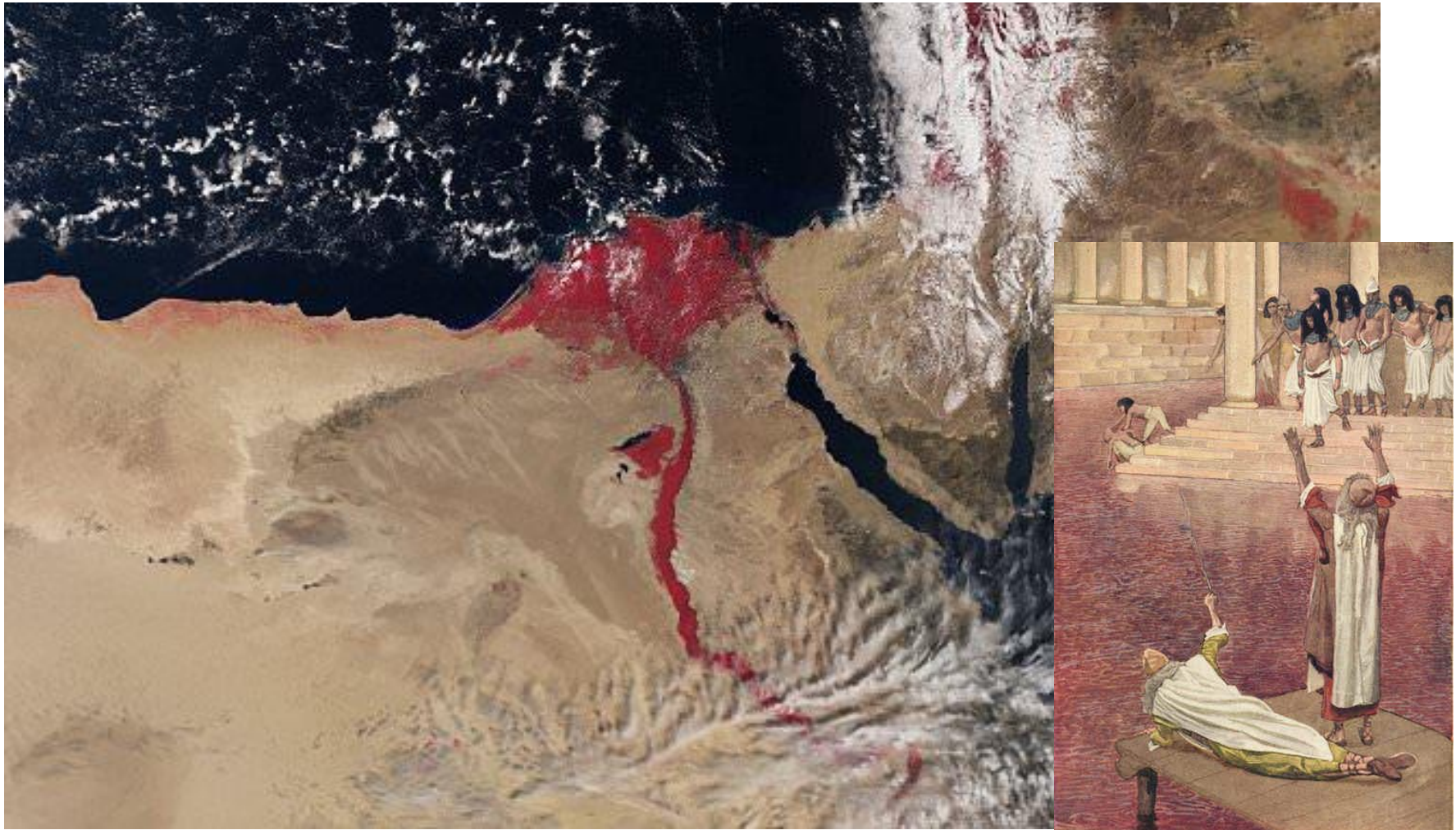
# Paving Washington, Landsat TM 1984-2010



# Holy Moses!

Satellite image of red River Nile evokes biblical legend

Photo uses infrared technology to map heat created by vegetation surrounding the Egyptian river



A satellite image of the Nile using infrared technology colors the river in red (European Space Agency, April 2016)

*The First Plague: Water Is Changed into Blood*



# Lectures for exam

- MODIS, MODIS presentations
- DEMs and DEM differences
- Rapideye
- RS software
- Planetary RS and presentations
- Google Earth Engine – Forest Cover
- Unmanned Aerial Vehicles
- Hyperspectral RS
- Digital Aerial photography
- Astro-photography

# **Exam Sample questions**

**Q: What are two main differences between the RapidEye sensors and most other remote sensing systems ?**

**Q: LiDAR before and after DEM bare earth image data can be used to show glacier downwasting.  
List / describe two other application areas**