

Resources for Finding and Using Satellite Imagery



Caspian sea. Photo: NASA on Unsplash

A GIJN Reporting Guide

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Global Investigative
Journalism Network

Resources for Finding and Using Satellite Imagery

A Reporting Guide by the Global Investigative Journalism Network

Satellite images are powerful tools for discovery and analysis, plus providing vivid illustrations. There is real potential for investigative journalists to make greater use of these space images, although they have used them to report on conflicts, climate change, refugees, forest fires, illegal mining, oil spills, deforestation, slavery and many other topics.

Imagery, as one expert put it, “is independent of the official line of thinking.”

Among other benefits, images are great for showing change over time, such as retreating shorelines, growing islands or lost vegetation. Examining images can complement other research, possibly providing corroborating evidence.

This GIJN resource includes ten places to go for pro bono help and free images, including high resolution images.

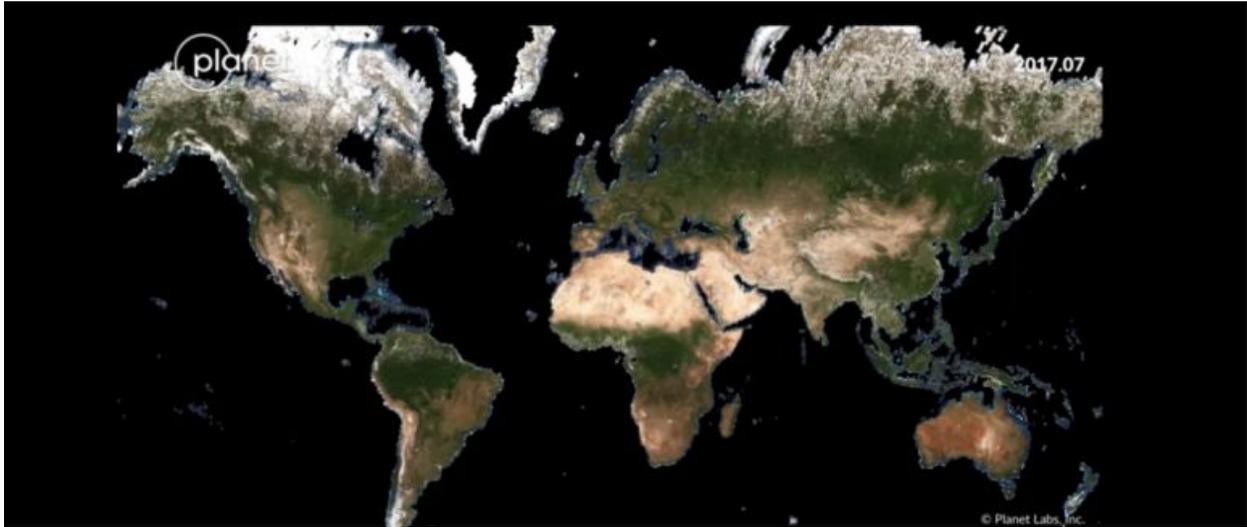
Several on the list are non-profit organizations, but GIJN also has learned that some of the largest commercial firms are prepared to help journalists and provide images (see below).

Given the technical issues involved, reporters may be well advised to seek expert help. “I’d rather have journalists spend their time and effort in doing the story and crafting a great piece than sitting at a computer and scratching their heads saying what can a Sentinel 2 image do that a Landsat 8 image can’t,” commented one veteran in the field who works for a group that helps journalists.

He and others who work regularly with satellite imagery believe that journalists can do much more with satellite images.

For a good basic introduction to the topic try this [article](#) by [Anne Hale Miglarese](#), founder and CEO of the [Radiant.Earth](#), a Washington, D.C. nonprofit applying satellite imagery to global development issues.

Getting Inspired



Screenshot: Planet.com

The value of satellite imagery for investigative journalism should grow as the quality of the raw material improves.

Smaller and cheaper low-orbit satellites increasingly are providing images with more detail, taken more often and of more places. With over 175 satellites, one U.S. company, [Planet](#) creates daily high-resolution images of all the earth's landmasses, 58 million square miles. High-resolution images of one square meter per pixel show features such as roads, buildings and the average color of crops and forests. Resolutions now measured in the tens of centimeters show even more, furthering the possibilities.

For inspiration, here are several places to keep up on recent stories based on satellite imagery.

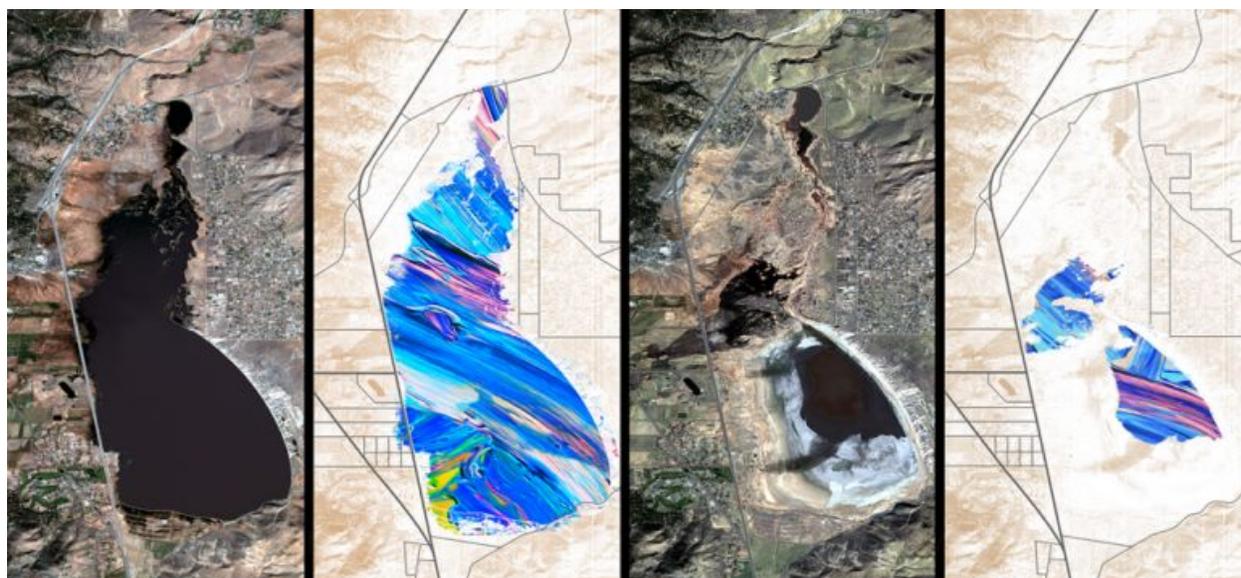
Planet has a [news section](#). EarthRise Media features a [Newswire](#) and [case studies](#). Skytruth chronicles its [projects](#).

One recent [report](#) that caught our eye was done by Estacio Valoi of Oxpeckers Investigative Environmental Journalism about contested land in Massingir, a rural area on the border between South Africa's world-renowned Kruger National Park and Mozambique. See [description](#) of how drone and satellite images were used.

At GIJN's 2017 conference in South Africa, Joel Konopo of the INK Centre for Investigative Journalism in Botswana explained the value of a purchased satellite image that was [used to prove that construction had taken place at the presidential compound](#). "Using satellite imaging, we found a number of vehicles and military activity within the compound, despite the government's continual denials," said Konopo.

Also worth noting is regular use of satellite images for investigations by Bellingcat, a UK-based non-profit. Bellingcat in 2018 used satellite images for an in-depth report, "[Nefarious Negligence: Post-Conflict Oil Pollution in Eastern Syria](#)." In another story, Bellingcat [proved that Iran was widening and lengthening the runway at a strategic airfield](#).

Organizations That Work with Journalists



Screenshot: Earthrise.media.

EarthRise Media: Earthrise Media supports journalists in finding, licensing, analyzing and producing satellite imagery. Earthrise services include a Newswire of stories that can be enhanced with original content from satellite imagery. Another Earthrise service is on-demand analysis and design for satellite imagery. The raw imagery is difficult for general/non-specialist readers to understand so Earthrise applies custom filters to make the images more understandable, along with basic analysis and measurement of the images. How much water has disappeared? How many structures are there on an island in the South China Sea? Finally, Earthrise ensures that the images are appropriately licensed for use in news media. Send requests [here](#).

SkyTruth: The investigative group based in West Virginia is willing to consult on investigative projects worldwide, according to founder John Amos. Contact him at john@skytruth.org.

Esri: Esri provides access to satellite imagery, as well as analysis and visualization tools that let you mashup imagery with other data to tell compelling data-driven stories through maps. Esri has a continually updated [World Imagery Basemap](#) (as well as a cloud-free version called [clarity](#)) and also provides extensive resources to explore and analyze [current](#) and [historic](#) data from Landsat satellites. It also curates a collection of imagery through the [Living Atlas of the World](#). You can keep track of updates to imagery with this [story map](#). Esri also offers a wide variety of tools to work with imagery, including [ArcGIS Earth](#), a free 3D viewer that's designed for people who have less familiarity with GIS. The [Story Maps website](#) provides a variety of ways to present maps accompanied by multimedia and narrative text.

Esri maintains close partnerships with leading satellite imagery companies and often publishes updated imagery around key current events such as the Olympics or disasters on [ArcGIS Online](#), its mapping and analytics platform.

Through a generous agreement with ESRI, GIJN member organizations can request free licenses of ArcGIS software to work with imagery and create maps. For more information, [contact GIJN here](#).

Maxar News Bureau: Maxar Technologies, a provider of “advanced space technology solutions” for commercial and government markets has, since March 2017, operated a “News Bureau initiative that leverages the power of its high-resolution satellite imagery and analysis for social good and global transparency.” DigitalGlobe, a unit of Maxar, creates some of the highest resolution images available. The News Bureau will partner with trusted media organizations on projects, providing free expertise and imagery. Contact Turner Brinton at turner.brinton@maxar.com with inquiries.

MacroScopeMedia: Provides free help for journalists on stories involving satellite images. Grants permit Jeff Stein, the founder and CEO, to consult on satellite-related media projects. (No website.) See [his colorful presentation](#) at GIJC17. Contact him at Jeff.Stein@macroscope.com.

Planet has a database called [Planet Stories](#) that allows anyone to browse, compare, and share this imagery. Two tools are **Compare** and **Timelapse**. Compare lets people select two images and put them into a slider for the purposes of comparison. Timelapse

allows people to select multiple images and create an animated story of change. Unusually, Planet collects daily images of the entire world's landmass. In addition, Planet will share images and expertise with accredited news organizations. Contact press@planet.com.

Descartes Labs: A commercial service that collects data daily from public and commercial imagery providers also will help journalists. "We are often called on to create imagery for the press and are happy to help when we can," according to Shawn Patrick shawn@descarteslabs.com who is the contact person. "We do not charge for these requests, only ask that they are credited."

EOS: EOS Landviewer provides free services for up to 10 images. More images and analysis are available to journalists at a discount. Contact: Artem Seredyuk artem.seredyuk@eosda.com. EOS is in the process of developing a service provisionally called EOS Media that will be provide free images and analysis of major natural disasters.

Radiant Earth: Radiant.Earth is a non-profit group that helps the global development community discover, explore and analyze satellite, drone and aerial imagery archives. Radiant Earth is working with Code of Africa, among others. Apply to gain assistance via <http://bit.ly/RadiantEarthAccess>. Or [contact](#) Radiant Earth.

Resource Watch: A nonprofit platform, still in beta, that provides hundreds of data sets on the state of the planet's resources and citizens. It is sponsored by the World Resources Institute and other organizations. Resource Watch data are free and users can download data. Contact Rose Gilroy at Rose.Gilroy@wri.org.

Selected Sources for Free Satellite Images



New York City at night. Photo: NASA on Unsplash.

There are many sources for satellite images. Here are some of the most user-friendly free options, followed by a list of “collections” containing even more potential sources.

[Earth Explorer](#): From the US Geological Service. Provides mainly US images. Gives access to Landsat satellite data as well as NASA’s Land Data Products and Services. The USGS Global Visualization Viewer ([GloVis](#)) provides remote sensing data. The [USGS archive](#) contains a complete and well-maintained collection of NASA Landsat data.

[Sentinel Hub Playground](#): A user-friendly place for Sentinel 2/Landsat images. Free services on this commercial site include features for using different color bands and up-to-date imagery. The [EO Browser](#) facilitates time-lapse reviews.

[Copernicus](#): The site for the European Space Agency and for images from Copernicus’ six Sentinel satellites. Better resolution than Landsat. See explanation from the website [GISGeography](#) on how to download free images.

[GoogleEarthEngine](#): A large catalog of satellite imagery and geospatial datasets with planetary-scale analysis capabilities. Earth Engine is free for research, education, and

nonprofit use, but applications are necessary. [Google Earth](#): Entertaining travel through a virtual globe.

[Google Maps](#): Provides detailed maps and images. [Google StreetView](#): Ground-level images. Historic images available for some places.

[Bing](#): Microsoft maps and street views. Bellingcat, an organization that specializes in online investigations, comments that Bing provides, “more recent and higher resolution imagery than Google, e.g. in Iraq.”

[Wikimapia](#): A privately owned [open-content collaborative mapping](#) project that aims to mark all geographical objects in the world and provide a useful description of them. Not related to Wikipedia. The website provides a [Google Maps API](#)-based interactive web map that consists of user-generated information layered on top of [Google Maps](#) satellite imagery and other resources. Available in many languages.

[TerraServer.com](#): A large searchable library of images, but little is public. At \$299 a year, however, some journalists consider the subscription a good investment.

[NASA EarthData](#): WorldView allows visualization of near real-time imagery from NASA. A wide array of satellite and aerial images; broad search criteria; and other mapping and visualization tools such as [FIRMS](#) for fires. Access to more than a dozen NASA data centers and associated satellite data products. [NASA Earth Observations](#): More than 50 datasets on atmosphere, land, ocean, energy, environment and more.

[GeoVisual Search](#) is a search engine that lets users visually query images for similar geographic features. The platform from [Descartes Labs](#) is built on satellite imagery from [Landsat](#), the [National Agriculture Imagery Program \(NAIP\)](#), and [PlanetScope](#). Also see [description](#) of how to use it.

[ESA Earth Online](#): EOLi (Earth Observation Link) is the site that consolidates European Space Agency's earth observation data on topics such as temperature, agriculture and ice sheets.

[Open Imagery Network \(OIN\)](#) collects openly licensed imagery. Contributors to OIN make imagery and its associated metadata available under a common license. Open Imagery Network connects satellite and aerial imagery providers, humanitarian relief efforts, cloud hosting companies, drone and balloon mapping enthusiasts, governments and NGOs, mapping companies, and anyone else who is producing, hosting, and using

aerial imagery. Built on top of the [Open Imagery Network \(OIN\)](#), [OpenAerialMap](#) is an open service that provides search and access to this imagery.

Resources on Using Images



Storm over Yemen. Photo: NASA on Unsplash

[The Engine Room](#), an international NGO, publishes a wide-ranging introduction to using satellite images in human resources investigations. It covers where to find images and how to use them.

[Starting satellite investigations](#), by Lisa Gutermut, a Programme Coordinator at [Tactical Technology Collective](#), includes list of sources and prices.

[Making Sense of Satellite Data, An Open Source Workflow: Accessing Data](#), is a four-part series on using data by Robert Simmon of Planet Labs.

[The High-Resolution Satellite Imagery Ordering and Analysis Handbook](#) is published by the American Association for the Advancement of Science and includes "a few simple questions the researcher can ask to determine if satellite imagery might be helpful."

Inventories and Related Resources

[Geohack sources](#): An inventory of satellite and map sources around the world, in multiple languages, by Wikipedia.

[Mashable](#): A summary of sites useful for reporting on climate change, authored by Andrew Freedman.

A [spreadsheet](#) of resources by Israeli geographer [Harel Dan](#).

[GISGeography](#): “15 Free Satellite Imagery Data Sources,” with comments on their strengths and weaknesses. Official sources in US, EU, Japan, India and elsewhere. (Also look at public comments at bottom for other suggestions). GISGeography is a team of geographers passionate about all things related to understanding location. Also articles and other lists, such as “13 Open Source Remote Sensing Software Packages.”

[Venture Radar](#): A listing of commercial providers.

[Bellingcat's Digital Forensics Tools](#): A tip sheet on many resources, including satellites, from a group that uses open source and social media to investigate a variety of subjects.

[Knowing where to look: Sources of imagery for geolocation](#): Bellingcat's Eliot Higgins explains where he turns for corroborating evidence when verifying pictures or video.

[Journalists Toolbox](#): A huge list of map-related resources from the US Society of Professional Journalists.

This guide was put together by Toby McIntosh, director of [GIJN's Resource Center](#). He was with [Bloomberg BNA](#) in Washington for 39 years. He is the former editor of [FreedomInfo.org](#) (2010-2017), where he wrote about FOI policies worldwide, and serves on the steering committee of [FOIANet](#), an international network of FOI advocates.

GIJN welcomes suggestions for additions to this resource. [Contact GIJN here](#) or email hello@gijn.org.

The Global Investigative Journalism Network (GIJN) is an international association of nonprofit organizations that support, promote, and produce investigative journalism. GIJN holds conferences, conducts trainings, and provides resources and consulting.

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