

DISASTER RESPONSE ACTIVATION PROTOCOL

Summary

Maxar's Open Data program was created in January of 2017 to provide imagery and related data in support of humanitarian crises, with a focus on disaster response. Since then, the program has expanded to include responses to manmade disasters and epidemiological events, such as the Ebola outbreak and the COVID-19 pandemic. This program is a tacit acknowledgement of our corporate social responsibility to support these types of crisis situations. The objectives of the Open Data Program are twofold: (1) humanitarian response efforts with timely, actionable information and (2) foster a community of practice around satellite imagery and Earth intelligence for disaster management. Through the creation of the program, Maxar can set appropriate expectations and ensure consistency of the response. Maxar's Open Data Program is also only possible because of our incredible partners, many of whom are our ground-truth in these crises. We're humbled to support their missions and work for a better world.

Natural Disaster Protocol

Maxar's FirstLook is a service for emergency management that provides fast web-based access to pre- and post-event imagery of natural disasters. High-resolution satellite imagery provides the essential information required for emergency planning, risk assessment, monitoring of staging areas and emergency response, damage assessment and recovery.

This protocol aims to improve Maxar's response to natural disasters and more effectively communicate our role with partners and the broader humanitarian community. Much of this protocol is designed to align with existing criteria and procedures already defined by key partners like the Humanitarian OpenStreetMap Team (HOT), UN Spider and others.

Open Imagery and Data

As a public good, Maxar would offer this combination of imagery and crowdsourced data layers.

This bundle of imagery will be available for humanitarian purposes for every Open Data event:

- Access to archived images of location prior to natural disaster
- Satellite tasking for most up-to-date imagery

These data layers will be made available for humanitarian purposes, when possible:

- Crowdsourcing for additional data layers
 - Damaged structures
 - Impassable roads
 - Areas of major destruction
- Weather reports
- Building footprints
- Flood layers
- Hotmaps

Monitoring & Activation Criteria

Once an event is identified, the Maxar Open Data Committee is notified via email to assess the situation and evaluate possible responses. This is the monitoring phase. The Committee classifies natural disasters using HOT's event categories: sudden onset, slow onset and protracted crisis.

The Open Data Committee will determine when to make imagery open to the public and partners and execute the additional activation steps below. In general, Maxar will make event imagery open for certain sudden-onset crisis events, specifically earthquakes and hurricanes/tropical cyclones/tropical storms. Before assessing the severity and impact of a natural disaster, it is important to also consider the role Maxar could potentially play and whether or not satellite imagery could offer value in a given situation.

- **Sudden Onset Natural Disaster**, specifically an earthquake or cyclone (see categories in the table below)
- Categorized as a **Major Event** based on geographic scope, humanitarian impact and expectation of need
- FirstLook event service has been activated
- The event affects developing countries without resources for robust emergency response
- The internal Maxar committee agrees that the event meets the open data activation criteria based on geographic scope, humanitarian impact and expectation of need
- The Open Data team has sufficient resources to support the activation

EVENT TYPE	EXAMPLES
Sudden Onset	Earthquakes, hurricanes/cyclones, tornado, wildfire, flash floods
Slow Onset	Disease outbreak, drought, famine, seasonal flooding
Protracted Crisis	Epidemic, sociopolitical transition, violent conflict

As an event is predicted or unfolds, the Maxar Open Data Committee monitors the event and calls for an Activation vote. Once the Committee reaches consensus on an Open Data Activation, communications move to Slack and the supporting teams coordinate on choosing data to be released through the Open Data Program. In alignment with the Humanitarian OpenStreetMap Team (HOT) protocol, the event will be evaluated according to these criteria. The team will consider geographic scope, humanitarian impact, estimated duration and need for activation. These will help determine whether or not the open data policy applies. Data will generally be made free and publically available for any major event.

EVENT SCOPE	MINOR EVENT	MODERATE EVENT	MAJOR EVENT
Geographic Scope	Village(s) to city	City to region/ country	Countries/regional
Humanitarian Impact	<10,000 people affected	10,000 to 100,000 people affected	>100,000 people affected
Likelihood of Need	Low	Moderate	High

Whenever possible, the Open Data Committee will monitor events ahead of time. In cases where an event has already occurred, the Team will convene as quickly as possible to judge the need for activation.

Activation Requests

Any organizational partner to the Open Data Program can make a request for activation based on the above criteria.

Imagery & Data Provided

Data will be accessible through the Maxar hosted Open Data Site to be communicated via email to our partners and publicly through the Maxar blog and social media.

Data will include:

- Processed pre- and post-event imagery. Processing includes orthorectification, atmospheric compensation, dynamic range adjustment and pan-sharpening.
- Imagery will be accessible via cloud-optimized GeoTIFF (COG)
- Metadata will include sensor, date of acquisition, catalogue identifier and pre- vs post-event identifier



Licensing

For these open data, the event imagery and data layers will have a Creative Commons Attribution-NonCommercial 4.0 license (CC BY-NC 4.0). The conditions with that license mean that users are free to share, copy and redistribute the data in any medium or format under the following terms:

- Attribution – you must give appropriate credit, provide a link to the license, and indicate if changes were made.
- Non Commercial – you may not use the material for commercial purposes

In the licensing terms, Maxar has a stated exception for OpenStreetMap. OSM is allowed to use imagery released under the Open Data Program. Even though this allows for commercial usage, OSM is a critical platform for the disaster response community. Allowing usage of our imagery in OSM will enable faster data access by local communities as well as global relief efforts.

Communications

Efficient and transparent communications will be critical. Channels for communication include:

- Social media
- Email
- Corporate blog
- External humanitarian sites

Ongoing notification emails will be sent to partners. These would include activation status, availability of pre-event imagery, status of new collects, changes to AOIs or duration, completion of new collects, availability of additional data layers, crowdsourcing campaign launch and crowdsourced data results.

Blog Posts & Social Media

Blog posts will be another important means of communicating as well as social media to communicate with the humanitarian community and bring awareness to our work as well as those of our partners.

Maxar Corporate Blog Posts will typically include:

BLOG POST	CONTENTS
Initial Post	<ul style="list-style-type: none"> - Event coverage details - Event location image - Links to even landing page - Data access sites/hosting information - URLs and credentials - Links to partner sites (HOT, OSM, UN-Spider) - Link to crowdsourcing campaign - Expected data layers from crowdsourcing campaign - Licensing
Event Update	<ul style="list-style-type: none"> - Event status - Coverage status - Post-event imagery access - Crowdsourcing update and link - Licensing
Final Post	<ul style="list-style-type: none"> - Event summary - Directions to access complete data - Results summary (AOI, crowdsourced data layers, etc.) - Duration of data availability - Licensing

Partnerships

Maxar identifies these organizations as important partners in disaster response. These partners will leverage the open imagery and data made available. They will also be solicited for feedback after the emergency phase of the response as part of the event post-mortem. Other ways to engage partners on an ongoing basis could include guest blog posts, co-presenting at conferences on coordinated disaster response, identifying partnership on websites, sharing/promoting social media and/or other marketing materials, sponsoring events and more.

ORGANIZATION	ROLE
Humanitarian OpenStreetMap Team (HOT)	Mapping for disaster relief, advising on the activation protocol, provided feedback on priority areas and new activations
UN-OOSA	Contact point for UN agencies and partners, assisting in dissemination of imagery and data for open events through UN-SPIDER and other fora
World Bank's Global Facility for Disaster Risk Reduction (GFDRR)	In country liaison with host government for disaster response and recovery
Team Rubicon	International organization that responds to natural disasters and utilizes Maxar data in planning and execution of recovery initiatives
Amazon Web Services	Helping promote the open imagery through AWS' open data channels; imagery and data are hosted on AWS