

Recommended Datasets for Satellite Imaging Disaster Monitoring

Forest Fire Datasets

1. NASA FIRMS (Fire Information for Resource Management System)

- **URL:** <https://www.earthdata.nasa.gov/data/tools/firms>
- **Description:** Near real-time fire alerts using MODIS and VIIRS data
- **Features:** Global coverage, daily updates, active fire detection
- **Format:** CSV, shapefile, KML, WMS
- **Access:** Free with NASA Earthdata account

2. Global Forest Burn Severity (GFBS) Dataset

- **URL:** <https://essd.copernicus.org/articles/16/3061/2024/>
- **Description:** 30m resolution global forest burn severity dataset (2003-2016)
- **Features:** Degree of biomass consumed by fires, 30m resolution
- **Format:** GeoTIFF
- **Access:** Free through Copernicus

3. Google FireSat

- **URL:** <https://sites.research.google/gr/wildfires/firesat/>
- **Description:** High-resolution multispectral satellite imagery with AI analysis
- **Features:** Near real-time insights, faster detection
- **Format:** Various
- **Access:** Through Google Earth Engine

4. Burned Area Delineation from Satellite Imagery Dataset

- **URL:** <https://paperswithcode.com/dataset/burned-area-delineation-from-satellite>
- **Description:** 73 satellite images of forests damaged by wildfires across Europe
- **Features:** Up to 10m resolution per pixel
- **Format:** GeoTIFF
- **Access:** Free download

5. NOAA Hazard Mapping System Fire and Smoke Product

- **URL:** <https://www.ospo.noaa.gov/products/land/hms.html>
- **Description:** Real-time satellite analysis of smoke, fire, and dust
- **Features:** Interactive maps, daily updates
- **Format:** Shapefile, KML, WMS
- **Access:** Free

Flood Datasets

1. SEN12-FLOOD Dataset

- **URL:** <https://clmrmb.github.io/SEN12-FLOOD/>
- **Description:** 336 time series containing Sentinel-1 and Sentinel-2 images of flood events (2019)
- **Features:** Co-registered optical and SAR images
- **Format:** GeoTIFF
- **Access:** Free download

2. NASA LANCE Global Flood Products

- **URL:** <https://www.earthdata.nasa.gov/data/instruments/viirs/near-real-time-data/nrt-global-flood-products>
- **Description:** Two global daily ~250m resolution NRT flood products
- **Features:** Near real-time updates, global coverage
- **Format:** GeoTIFF, NetCDF
- **Access:** Free with NASA Earthdata account

3. ETCI-2021 Flood Detection Dataset

- **URL:** <https://huggingface.co/datasets/blanchon/ETCI-2021-Flood-Detection>
- **Description:** Comprehensive flood detection segmentation dataset
- **Features:** SAR images from ESA Sentinel-1 satellite
- **Format:** GeoTIFF
- **Access:** Free through Hugging Face

4. MMFlood Dataset

- **URL:** <https://ieee-dataport.org/documents/mmfflood-multimodal-dataset-flood-delineation-satellite-imagery>
- **Description:** Multimodal remote sensing dataset for flood delineation

- **Features:** 1748 Sentinel-1 acquisitions, 95 flood events
- **Format:** GeoTIFF
- **Access:** Free through IEEE DataPort

5. Copernicus GloFAS Global Flood Monitoring

- **URL:** <https://global-flood.emergency.copernicus.eu/technical-information/glofas-gfm/>
- **Description:** Continuous monitoring of floods worldwide
- **Features:** Processes Sentinel-1 SAR data
- **Format:** Various
- **Access:** Free through Copernicus Emergency Management Service

Hurricane/Tornado Datasets

1. HURSAT (Hurricane Satellite) Data

- **URL:** <https://www.ncei.noaa.gov/products/hurricane-satellite-data>
- **Description:** Tropical cyclone-centric satellite data
- **Features:** Gridded format, easy to work with files
- **Format:** NetCDF
- **Access:** Free through NOAA

2. NASA Hurricane and Typhoon Visualizations

- **URL:** <https://svs.gsfc.nasa.gov/gallery/hurricanesand-typhoons/>
- **Description:** Collection of data visualizations and imagery for tropical cyclones
- **Features:** High-quality visualizations, educational resources
- **Format:** Various (images, videos, data)
- **Access:** Free

3. TorNet Dataset

- **URL:** <https://news.mit.edu/2024/tornet-ai-dataset-carves-new-paths-tornado-detection-0429>
- **Description:** Public AI dataset for tornado detection and prediction
- **Features:** Supports ML algorithm development
- **Format:** Various
- **Access:** Free (recently released by MIT)

4. NOAA Historical Hurricane Tracks

- **URL:** <https://www.climate.gov/maps-data/dataset/historical-hurricane-tracks-gis-map-viewer>
- **Description:** Interactive mapping tool for hurricane track data
- **Features:** HURDAT2 data, comprehensive historical records
- **Format:** GIS, CSV
- **Access:** Free through NOAA

5. GOES-R Satellite Imagery

- **URL:** <https://www.goes-r.gov/multimedia/dataAndImageryImagesGoes-16.html>
- **Description:** Advanced weather-monitoring satellite system for Western Hemisphere
- **Features:** High-resolution, frequent updates
- **Format:** Various
- **Access:** Free through NOAA

Multi-Disaster Datasets

1. NASA Earthdata Disaster Portal

- **URL:** <https://www.earthdata.nasa.gov/topics/human-dimensions/disasters>
- **Description:** Comprehensive collection of disaster-related datasets
- **Features:** Multiple disaster types, various sensors
- **Format:** Various
- **Access:** Free with NASA Earthdata account

2. Copernicus Emergency Management Service

- **URL:** <https://emergency.copernicus.eu/>
- **Description:** European rapid mapping service for disasters
- **Features:** On-demand mapping, risk assessment
- **Format:** Various
- **Access:** Free

3. USGS Hazards Data Distribution System

- **URL:** <https://hddsexplorer.usgs.gov/>
- **Description:** Repository of disaster imagery and data
- **Features:** Post-event imagery, multiple sensors

- **Format:** Various
- **Access:** Free with registration