

DFO Maximum Observed Flooding

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These maps and associated GIS data are prepared for selected, DFO-listed major flood events. Their geographic extent, where possible, include the entire area of flooding for the event; thus, the map scales may vary.

The web site jpg versions provide the maps at a standard width of 10 inches; 96 dpi. The full resolution, georeferenced, geotif versions are at much larger map scale and commonly are 36 inches wide.

The map projection is Plate Carree (units are in degrees latitude and longitude) and the datum is WGS84.

Both .shp and Mapinfo GIS vector versions of the flood extent and reference water extent are provided in this folder. These data are protected by a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/). With attribution, they can be used and shared freely for non-commercial purposes provided the terms of such license are respected. The data and graphics are not in the public domain. Commercial use is available only by permission.

Help with the file names:

- 1) **Mean Annual Flood** is the main reference water (blue layer). It is superimposed above the red flood layers in the map displays. This uses five annual maximum flood extents (2012-2016) detected by the NASA automated MODIS NRT flood processor (the daily data were assembled at DFO). Only those land areas on which surface water was detected in at least four out of five of those years are preserved as “blue” and in this reference water GIS information. The spatial resolution of the source remote sensing data (MODIS on NASA’s Terra and Aqua satellites) is 250 m. **These areas are commonly under water at some time each year. In the maps, they mask (hide) water imaged during the flood event that is not unusual flooding.**
- 2) **SWBD** GIS files were created at DFO from NASA’s public domain Shuttle Water Boundary Data, obtained by the NASA SRTM mission in February of 2000. The spatial resolution is 90 m. They provide useful added detail on observed reference hydrography at this time of year. This information also masks any fine-scale, “normal” surface water imaged and mapped by higher spatial resolution observations during this flood event.
- 3) **Current** files are from the NASA MODIS NRT Flood project and actually represent an accumulation of MODIS-observed water during the 14 day period ending with date of map creation or updating. The accumulation helps remove cloud-cover obscuration. This automated processor does not always detect flood water when it is very sediment rich.
- 4) **Other flood inundation files** (red map colors) may be from a variety of sensing sources and geospatial resolutions. The sensor name and date are included in the file names. MODIS-derived

flood inundation files are at 250 m spatial resolution. Sentinel SAR (S1) files are resampled to approximately 20 m resolution and are thus much more detailed. Where GIS files are used from other organizations, they are commonly segregated into subdirectories with the organization name. All flood information that is finer than 250 m spatial resolution is commonly displayed in the maps in a darker red color and superimposed on this MODIS-derived information.

- 5) **Maximum Observed Flooding** (light gray color on maps) defines all areas observed during about 25 years of Dartmouth Flood Observatory flood event mapping operations. This information is proprietary and not provided in this public data folder as GIS data, but is shown on the map displays.

Many floods over this period were mapped at various spatial resolutions, depending on the sensor used. Also, the automated MODIS NRT Flood output was further processed in order to define maximum flood extent at 250 m spatial resolution in the 2012-2018 period. The combined information is resampled to provide spatial resolution of approximately 100 m at mid-latitudes. All discrete, separate areas (GIS polygons) smaller than .4 square km have been removed. **These areas have flooded at least once in the past 25 years and are, therefore, areas of known flood hazard. They are not normally flooded each year.**

Caution: Not all flooded land is mappable. In particular, satellite flood observation in upland areas with narrow valleys is difficult and major damaging events may not have been observed and recorded in these areas. Urbanization and vegetation cover also may obscure flooding from view.