

SPECIAL FOCUS – September 2020

Heavy floods caused major damage to livelihoods and infrastructure in East and West Africa from mid-July to mid-September, while more rainfall is expected to aggravate the situation in the coming weeks.

Heavy seasonal rainfall over the past weeks has triggered floods, flash floods and burst riverbanks in parts of East and West Africa, leading to casualties, displacement of people, damages to homes, infrastructure, and croplands. The floods are affecting various parts of **Sudan** since mid-July, and at the beginning of September the Government has declared a state of emergency for the next three months. The most affected states are Al Gezira, White Nile, Blue Nile, River Nile, Sennar, Khartoum, and North Darfur. According to UN OCHA reports, 650,000 people have been affected or displaced and 114 have lost their lives.

Floods affecting **Ethiopia** since early 2020 are considered the heaviest and most destructive in the last decade and as of 8 September 2020, over 1 million people had been affected, including over 340,000 displaced across 6 regions, in Afar, Oromia, SNNP, Gambella, Tigray and Somali regions ([ECHO daily flash-10/09](#)). On 01 September, the Awash River once again broke its banks, flooding areas in Amibara and Awash Fentale woredas of Afar region ([Floodlist](#)). In **Nigeria**, heavy rains have resulted in loss of lives, destruction of homes and large cropland areas in Jigawa, Kano, Kebbi and Sokoto states.

Above-average rainfall is forecast for next week in southern Mauritania, Guinea-Conakry, western Mali, Burkina Faso and central Nigeria, maintaining a high flood risk over these parts of West Africa. Moderate to heavy seasonal rainfall is forecast for Ethiopia and Eritrea, while light rainfall is expected in eastern Sudan ([FEWSNET- Global Weather Hazards Summary, 18-24/09](#)).

Figure 1 shows the location of selected areas for which flood extent mapping was performed based on SENTINEL1 and SENTINEL2 imagery.

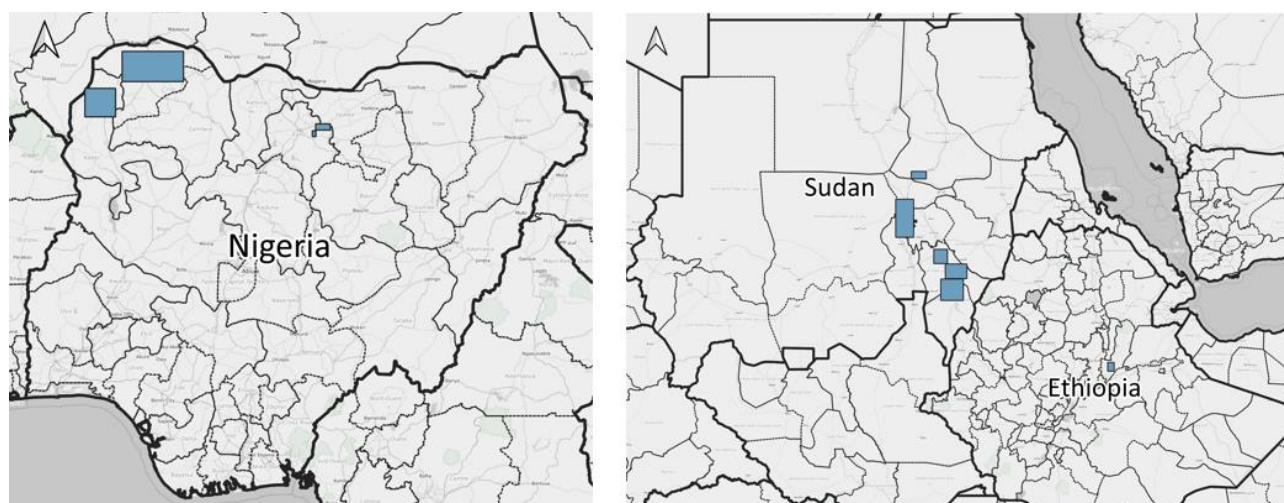


Figure 1. Overview maps of Nigeria in West Africa (left) and Sudan and Ethiopia in East Africa (right), where blue rectangles indicate areas with zoomed-in maps included in this report.

Flood extent was mapped for selected areas in Sudan, Ethiopia and Nigeria depending on satellite imagery availability at the 20th of September. The mapping method relies on applying a threshold to the Normalized Difference Water Index (NDWI) for the period of inundation using Sentinel 2 imagery or Synthetic-Aperture Radar (Sentinel-1), or by combining these two methods depending on the availability of data. NB: This is a rapid preliminary analysis and has not been field validated. The area of flooded land reported in each figure caption refers only to the window shown in each map and not to entire administrative areas.

For reference we also map the historic surface water extent, showing areas covered by surface water at least once (light blue) and up to 15 times (dark blue) over a period of 15 years (2000-2015, source: [JRC Yearly Water Classification History](#)).

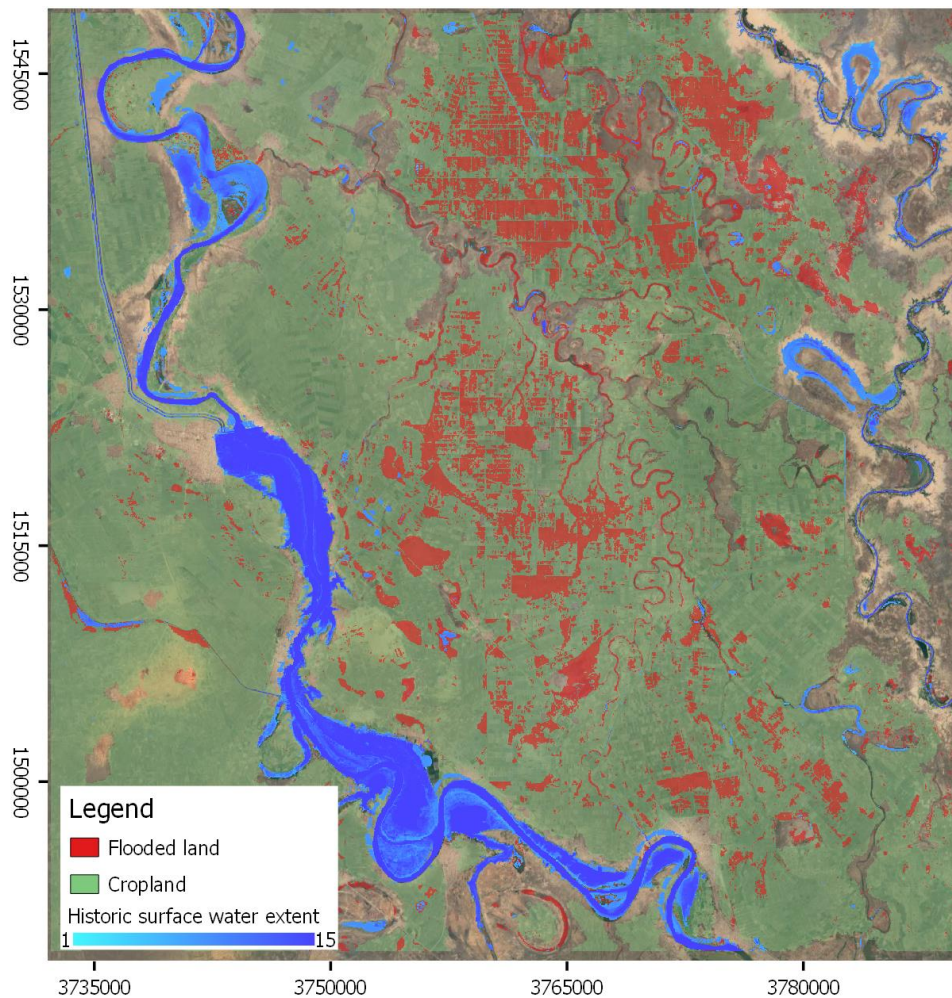


Figure 2. Flood water extent and cropland layers overlaid to a Google Satellite background layer close to Sennar town, in Sennar State, Sudan. Flood extent derived from S2 mosaic for the period 20-31/08. Flooded land: 33,406 ha, flooded cropland: 26,687 ha.

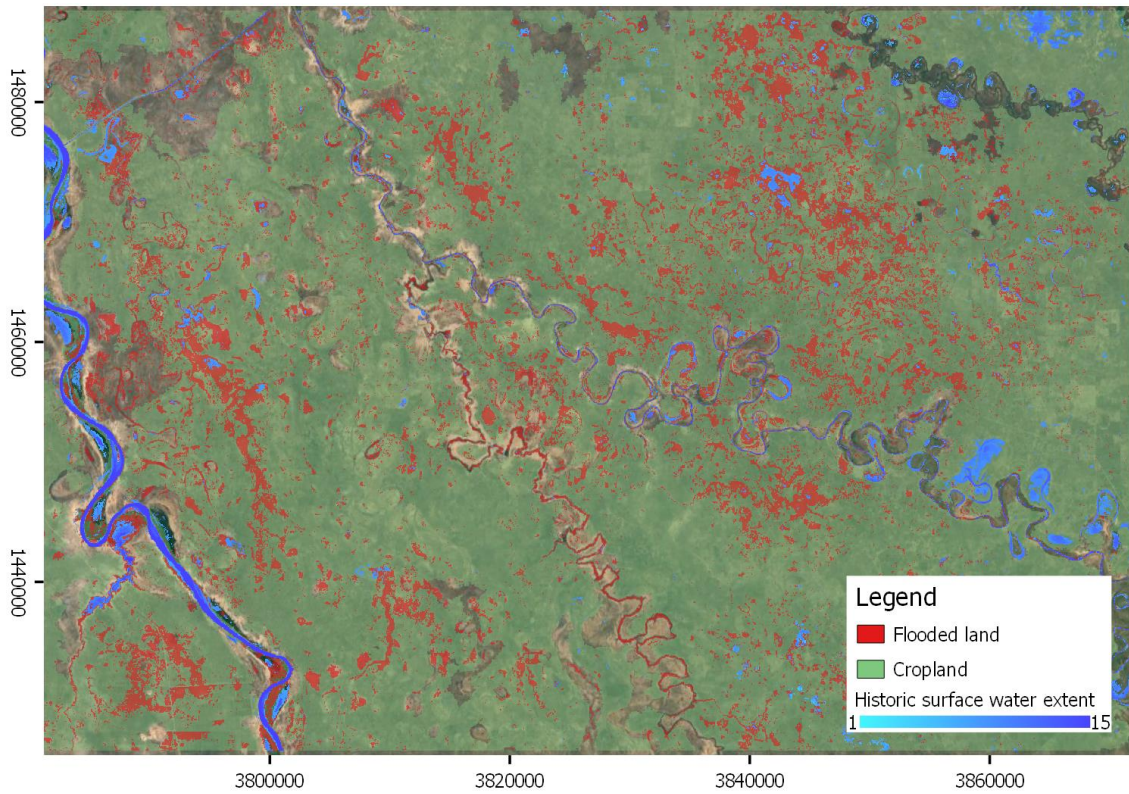


Figure 3. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area between the borders of Sennar and Gadaref states, Sudan. Flood extent derived from S2 mosaic for the period 22/08-06/09. Flooded land: 62,870 ha, flooded cropland: 51,925 ha.

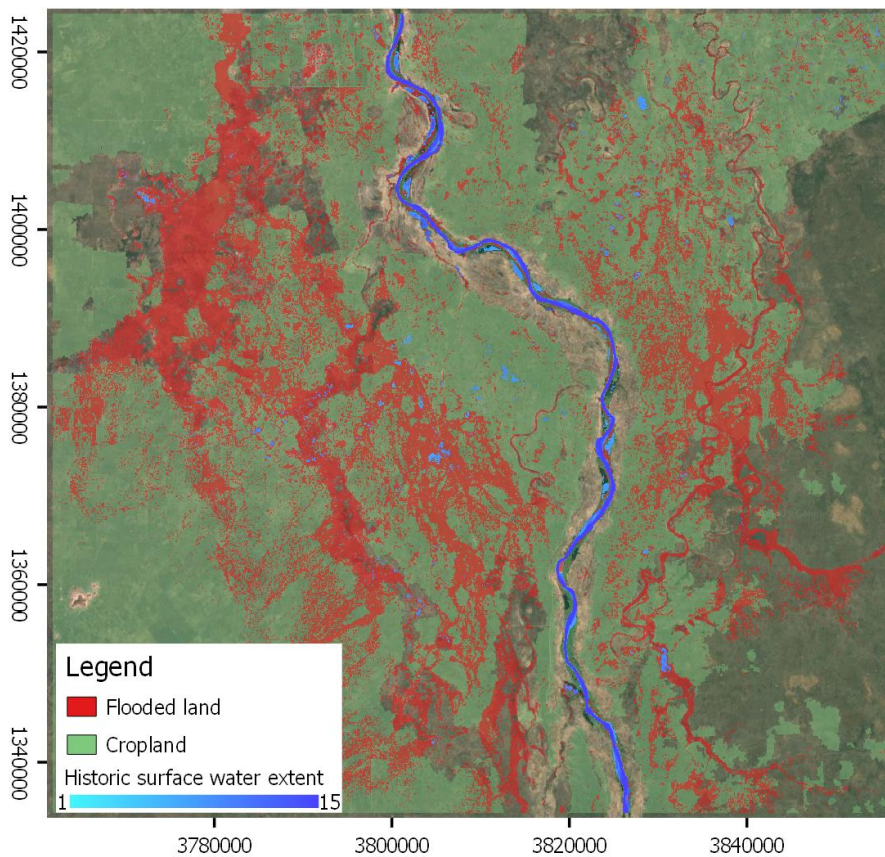


Figure 4. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area between the borders of Sennar and Blue Nile states, Sudan. Flood extent derived from S2 mosaic for the period 01-14/09. Flooded land: 172,073 ha, flooded cropland: 112,299 ha.

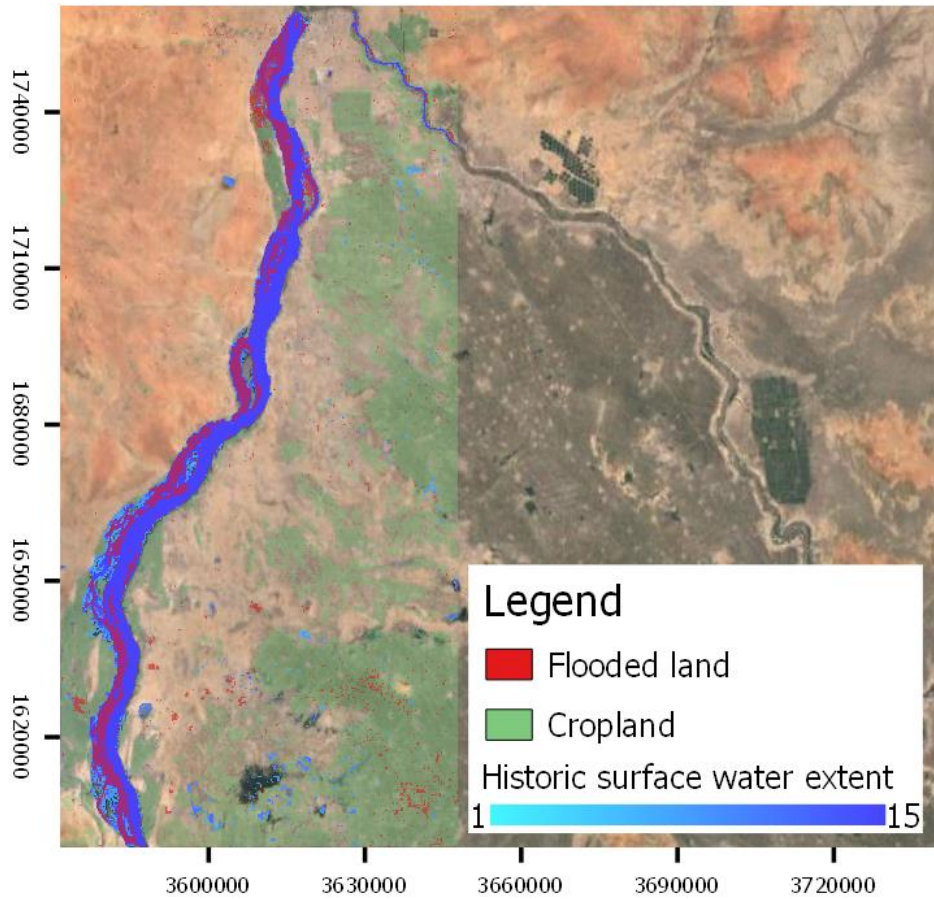


Figure 5. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area close to Khartoum, along the White Nile river, Sudan. Flood extent derived from S1 data (S1 date “Before” the flood: 13/07, S1 date “After” the flood: 30/08), Flooded land: 35,329 ha, flooded cropland: 8,660 ha. (Note: magenta color indicates flooded land that is overlapping with the Historic surface water extent).

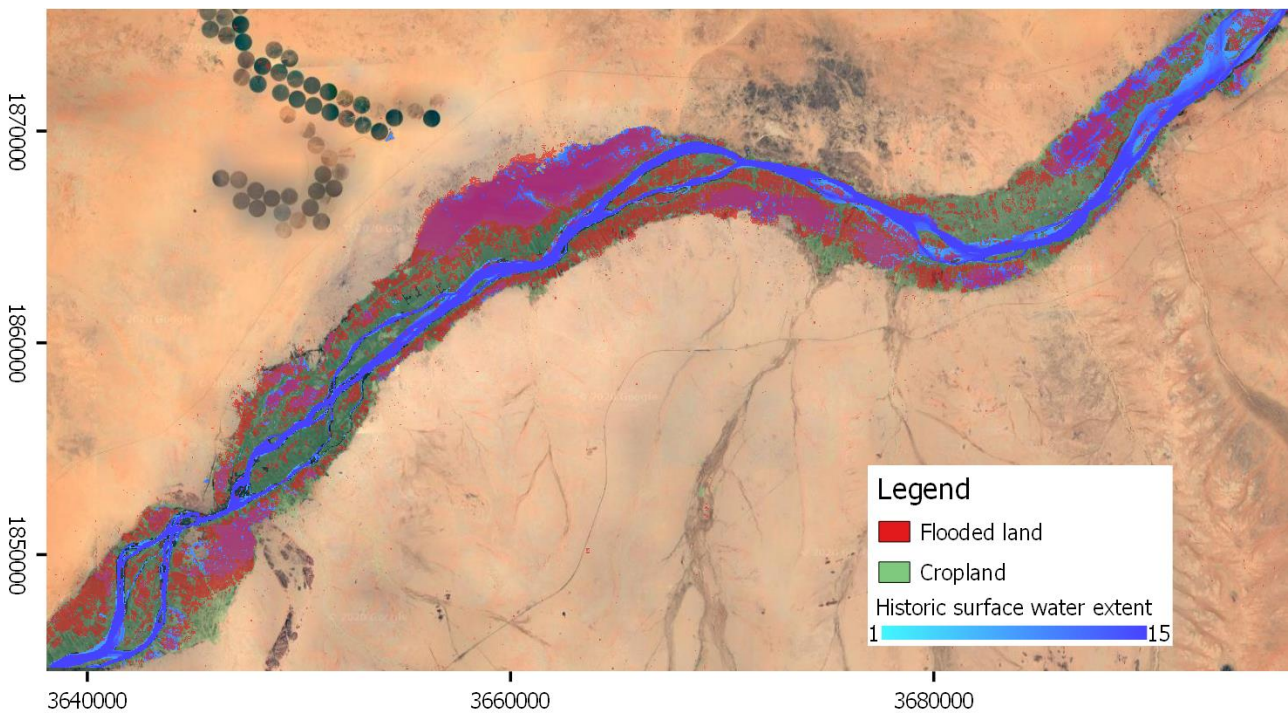


Figure 6. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area west of Shendi along Nile river, in Nile State, Sudan. Flood extent derived from S1 data (S1 date “Before” the flood: 25/07, S1 date “After” the flood: 11/09), Flooded land: 11,203 ha, flooded cropland: 10,352 ha. (Note: magenta color indicates flooded land that is overlapping with the Historic surface water extent).

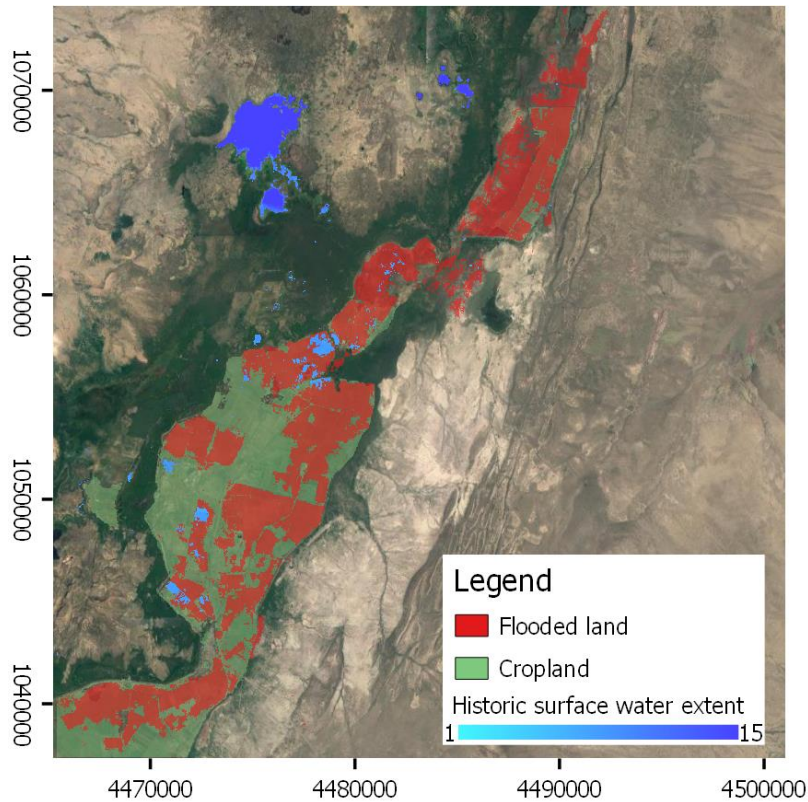


Figure 7. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area along Awash River, close to Melka Werer town, in Afar region, Ethiopia. Flood extent derived from S1 data (S1 date "Before" the flood: 28/08, S1 date "After" the flood: 09/09). Flooded land: 9,832 ha, flooded cropland: 7,363 ha.

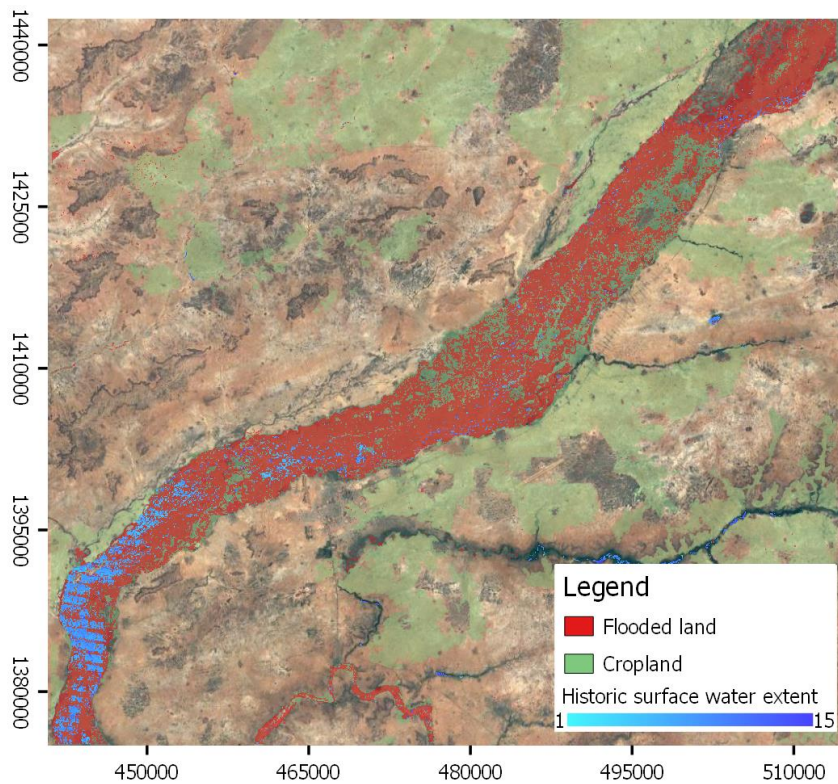


Figure 8. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area along Sokoto River, close to Birnin Kebbi town, Kebbi State, Nigeria. Flood extent derived from a combination of S1 and S2 data (S1 date "Before" the flood event: 17/08, S1 date "After" the flood event: 29/08-10/09, S2 mosaic: 01-16/09). Flooded land: 45,926 ha, flooded cropland: 36,886 ha.

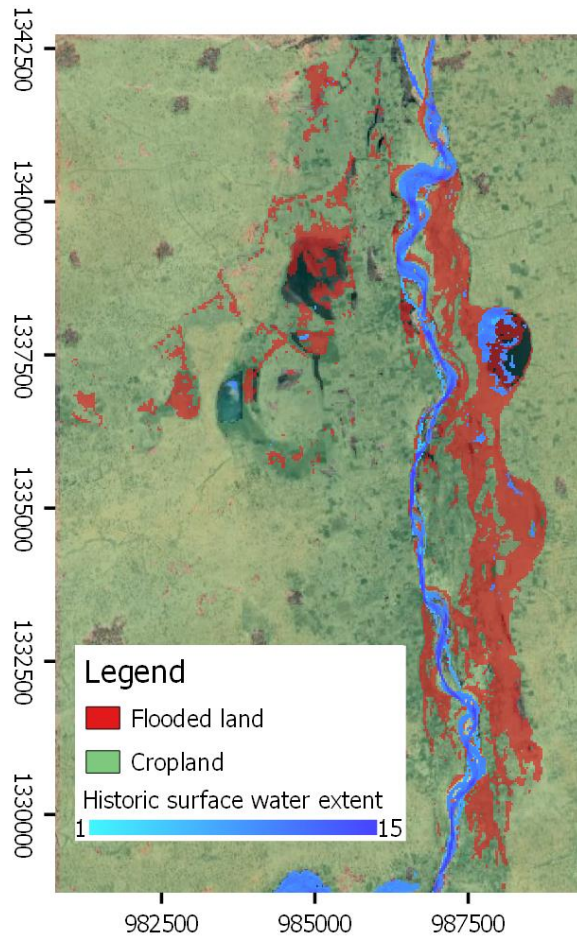


Figure 9. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area along Hadejia river, Kano State, Nigeria. Flood extent derived from S2 mosaic for the period 01-10/09. Flooded land: 1,180 ha, flooded cropland: 978 ha.

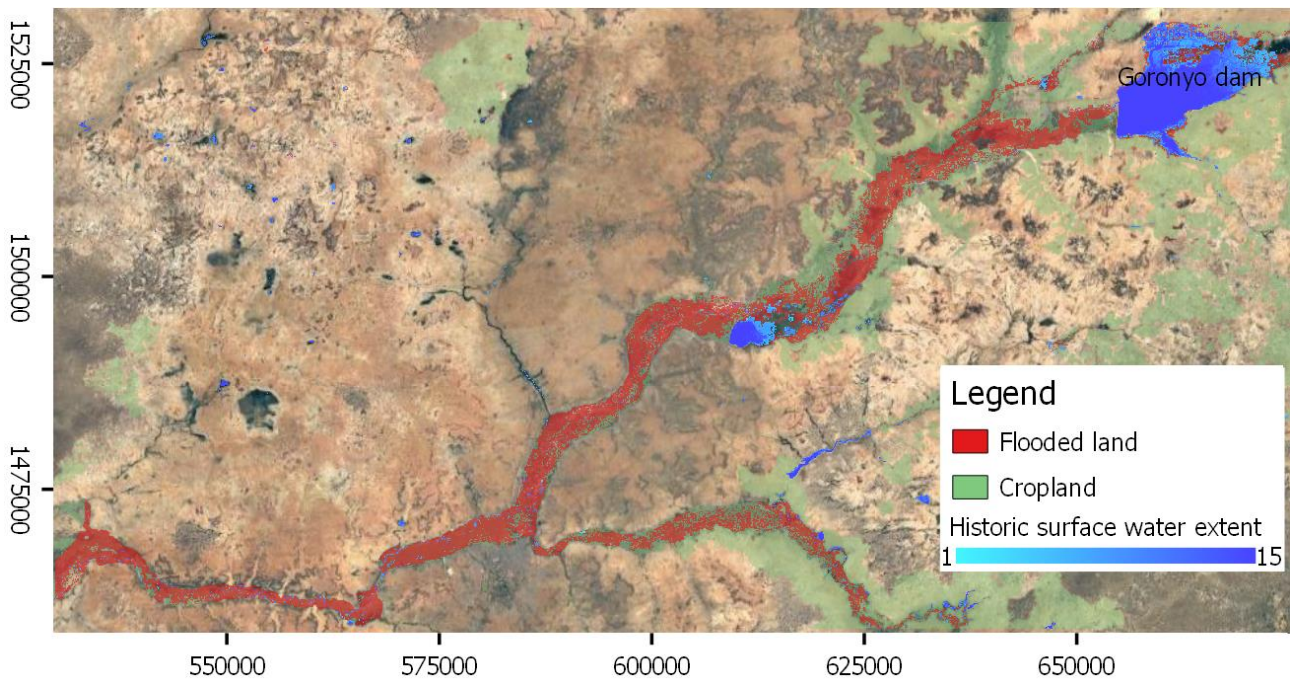


Figure 10. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area along Gagere river, Sokoto State, Nigeria. Flood extent derived from S2 mosaic for the period 10-16/09. Flooded land: 47,602 ha, flooded cropland: 26,916 ha.

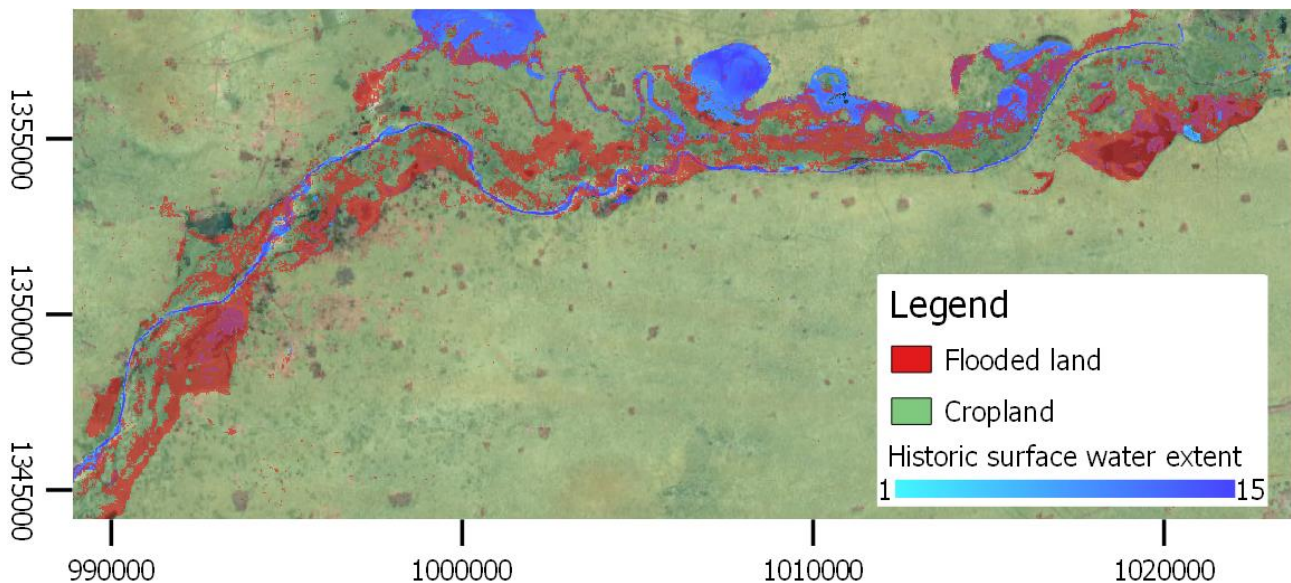


Figure 11. Flood water extent and cropland layers overlaid to a Google Satellite background layer in an area along Hadejia river, between Kano and Jigawa States, Nigeria. Flood extent derived from S1 data (S1 date “Before” the flood: 19/08, S1 date “After” the flood event: 29/08-12/09. Flooded land: 4,672 ha, flooded cropland: 3,659 ha. (Note: magenta color indicates flooded land that is overlapping with the Historic surface water extent).

More information can be found here:

- ECHO Daily Flash Archive: <https://erccportal.jrc.ec.europa.eu/ECHO-Flash/ECHO-Flash-List/yy/2020/mm/9>
- Floodlist- Nigeria, 06/09: <http://floodlist.com/africa/nigeria-floods-jigawa-kano-kebbi-september-2020>
- Floodlist- Sudan, 08/09: <http://floodlist.com/africa/sudan-state-of-emergency-floods-september-2020>
- Floodlist- Sudan, 28/09: <http://floodlist.com/africa/sudan-khartoum-floods-august-2020>
- OCHA, Sudan, 08/09: https://reliefweb.int/sites/reliefweb.int/files/resources/Flash%20Update%20-%20Sudan%20-%2027%20Aug%202020_1.pdf
- Floodlist- Ethiopia, 11/09: <http://floodlist.com/africa/ethiopia-floods-update-september-2020>
- <https://reliefweb.int/report/ethiopia/gov-t-providing-humanitarian-assistance-600000-flood-affected-persons>

For any feedback and questions please write to the address below.

Feedback can also be posted on Twitter by including the hashtag: #asapEU

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