

## SPECIAL ALERT – May 2018

### Extensive damage to crops and rangelands in recent East Africa floods

Several countries in Eastern Africa have experienced abnormal rainfall with up to twice the seasonal amount from March to April 2018. While the exceptional water availability can have positive effects for both pastoral and agricultural vegetation, in many riverine areas in Kenya, Somalia, Ethiopia and Rwanda, floods have caused loss of lives and displacement of hundreds of thousands of people according to reports by FEWSNET, UNOSAT and ECHO. In Somalia a national emergency has been declared at end of May due to floods. In Beletwayne town (Hiraan province), major infrastructure was damaged as a result of the end of April floods while Somaliland has been hit by cyclone Sagar at end of May. Less severe damages are visible also in various parts of Uganda and Tanzania.

#### Crops

Along the Shabelle river in Ethiopia and Somalia and along the Tana river in Kenya, thousands of hectares of crop land have also been inundated with damage to crops in vegetative stage as well as to irrigation equipment. High resolution satellite coverage from SENTINEL2 shows significant areas of irrigated cropland along Tana river (Fig.1) and small scale agriculture close to the Ethiopia/Somalia border (Fig. 2) partially flooded on April 30 and in Kenya a dam has been destroyed in Nakuru county. Rice areas in Kenya and other countries in the region like Rwanda, have been flooded before or during field preparation with loss of irrigation infrastructure and rice seedlings.

High resolution satellite imagery as below, show 3 examples of flooded areas with derived flood extent, which can then be compared to areas flooded at least once in the previous 15 years (according to JRC's Global Surface Water Explorer). The left side of each figure shows the original satellite images in false color composite with vegetation in red and water in blue and magenta. The right side of each figure shows the derived flood extent in 2018 for agriculture (purple) and other land cover (in blue). In green agricultural areas which are not flooded and in yellow/red areas which were flooded at least once (yellow) and up to 15 times (red) over the last 15 years. As can be seen, the blue and purple areas flooded in 2018 are much larger than the orange/red areas covered by water in the last 15 years.

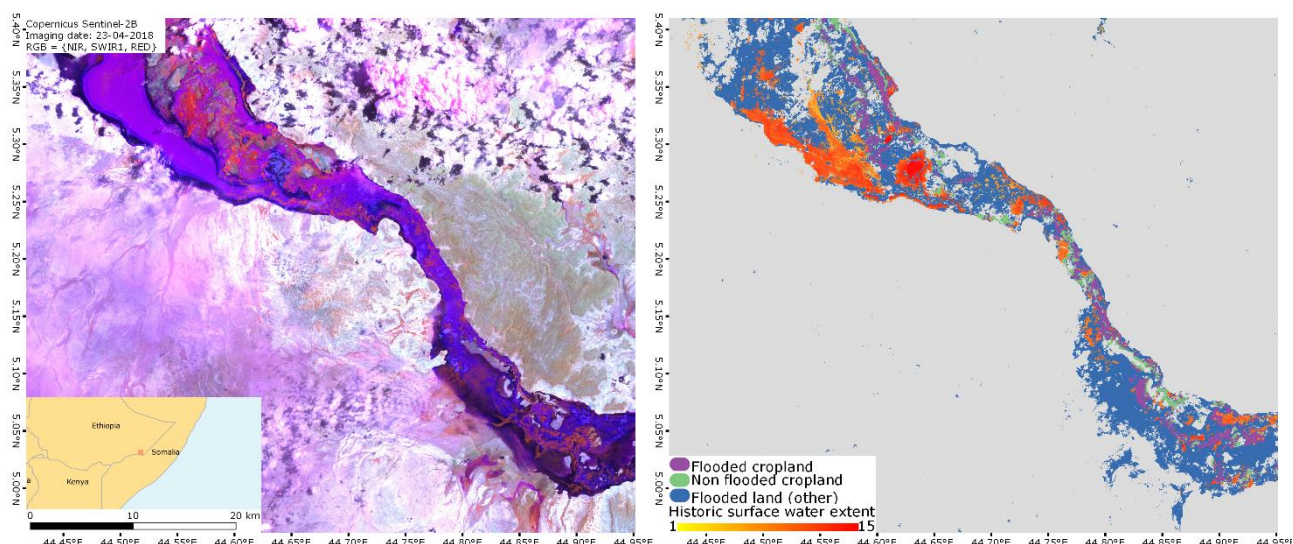


Figure 1. Pastoral and crop area along the Shabelle river just North of the Ethiopia/Somalia border inundated

by the recent floods. SENTINEL2 data show the flooded areas on April 30<sup>th</sup> (in blue and purple on the left) and the extent of flooded cropland and other land use (on the right). For reference in orange/red (right) the areas which have been flooded from a min. of 1 to a max. of 15 times in the previous 15 years according to the Global Surface Water Explorer (JRC).

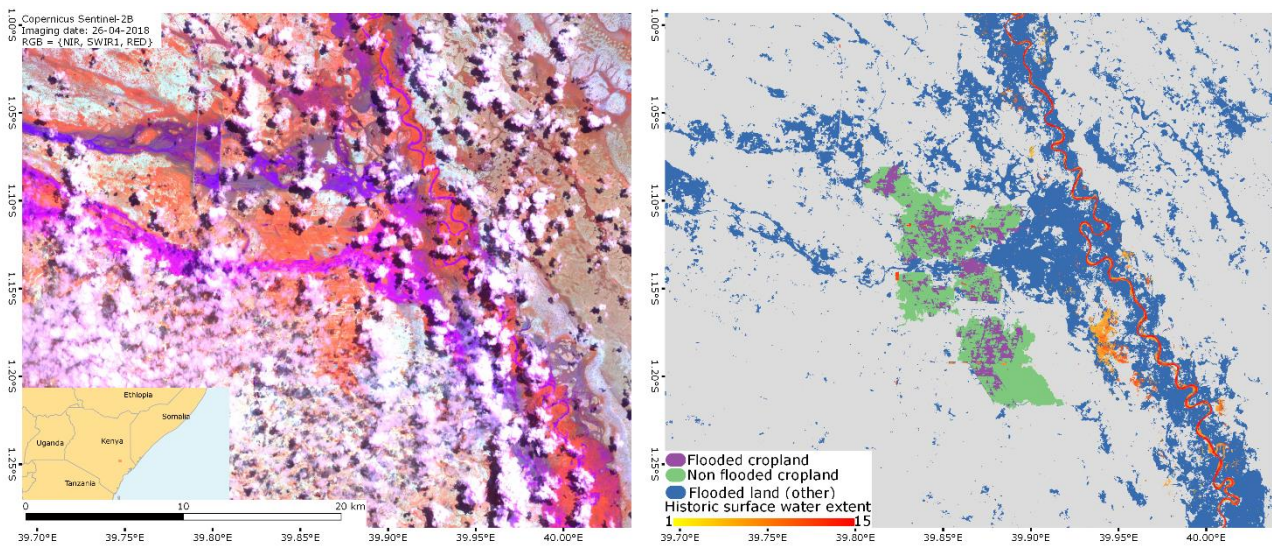


Figure 2. Irrigated farm area along the Tana River in Eastern Kenya inundated by the recent floods. SENTINEL2 data show the flooded areas on April 30<sup>th</sup> (in purple on the left) and the extent of flooded cropland and other land use (on the right). For reference in orange/red (right) the areas which have been flooded from a min. of 1 to a max. of 15 times in the previous 15 years according to the Global Surface Water Explorer (JRC).

For irrigated rice areas like in Kirinyaga county in Kenya (accounting for 80% of the national rice production), the same satellite images show again how much larger the extent of areas flooded in 2018 is as compared to areas normally flooded (Fig. 3). This is in principle beneficial for rice crop production, but only where the flooding occurs before land preparation and without destruction of irrigation infrastructure.

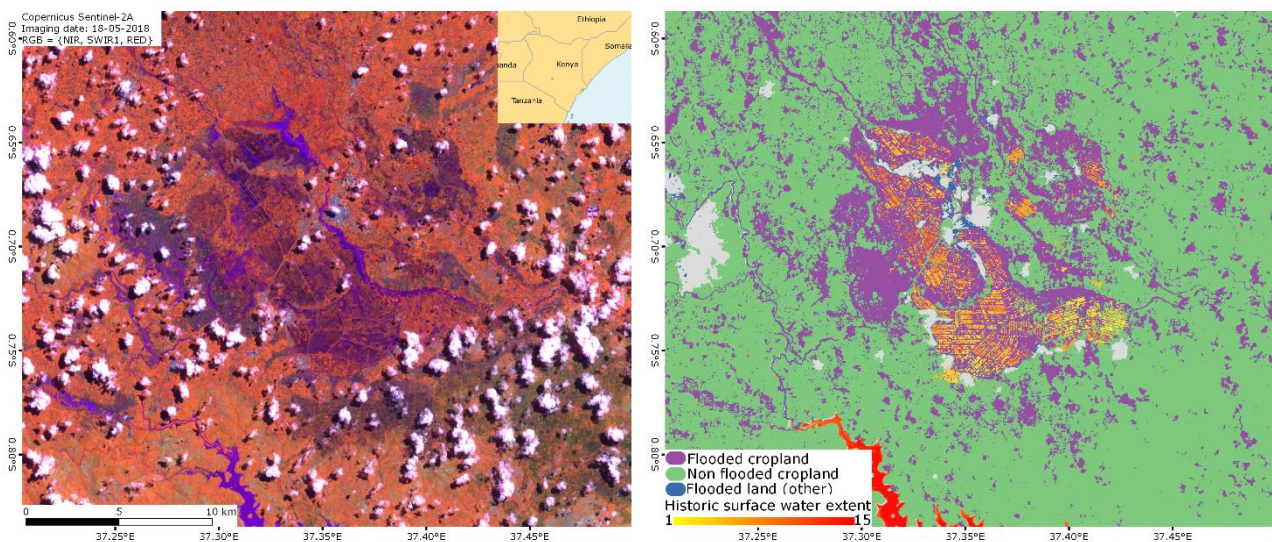


Figure 3. Main rice production area in central Kenya (Kirinyaga county). SENTINEL2 data show the flooded areas on April 30<sup>th</sup> (in purple on the left) and the extent of flooded cropland and other land use (on the right). For reference in orange/red (right) the areas which have been flooded from a min. of 1 to a max. of 15 times in the previous 15 years according to the Global Surface Water Explorer (JRC).



## Rangelands

Large parts of the river basins of the Shabelle, Juba and Tana river are occupied by semi-arid pastoral areas. In general, the high rainfall is beneficial to seasonal pasture vegetation development in these areas. However, in the immediate river proximity large areas have been flooded and are temporarily not accessible to livestock. In addition, there are risks to livestock health linked to low temperatures (pneumonia) or other livestock diseases such as rift valley fever. Also many water holes have been contaminated or destroyed by the floods.

More detailed flood extent maps are available at the following links:

<https://unitar.org/unosat/maps>

<http://www.gdacs.org/>

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

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

### **JRC ASAP team**

Jrc-asap@ec.europa.eu