

# INNER NIGER DELTA

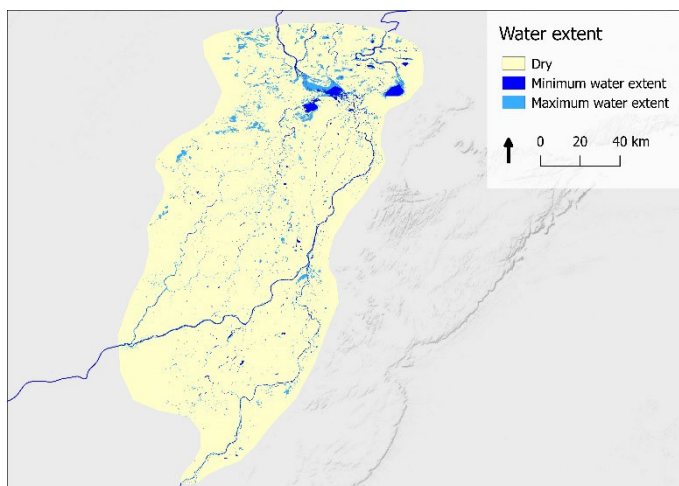
## SPOTLIGHT

**“Since the Inner Niger Delta is a wetland located in an arid region, it serves as a crucial source for the economic activity in the region.”**

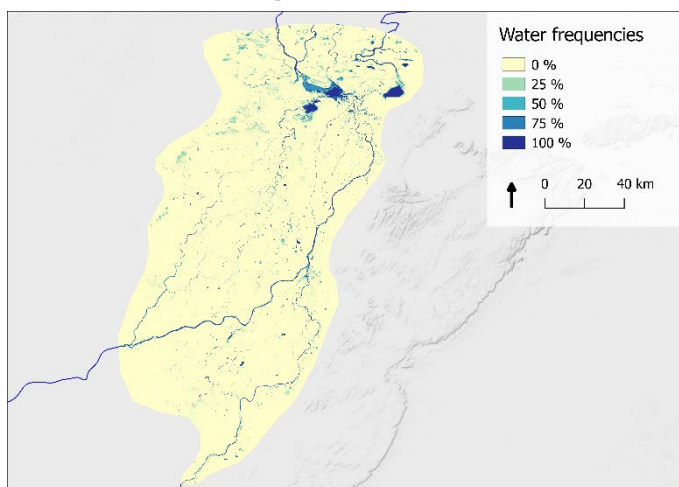
| Bergé-Nguyen et al., 2015 [2] |

## INUNDATION REGIME PRODUCTS

### Inundation Regime – Water Extent



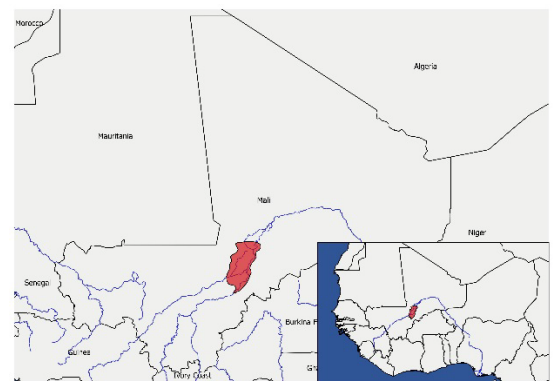
### Inundation Regime – Water Frequencies



**Description:** The maps display the courses of the Niger and Bani rivers, which flow from south to north, and the extent of the Inner Niger Delta. Especially the north contains wetland areas with vast stretches of temporarily inundated areas. The products nicely depict the water and wetland dynamics throughout the year.

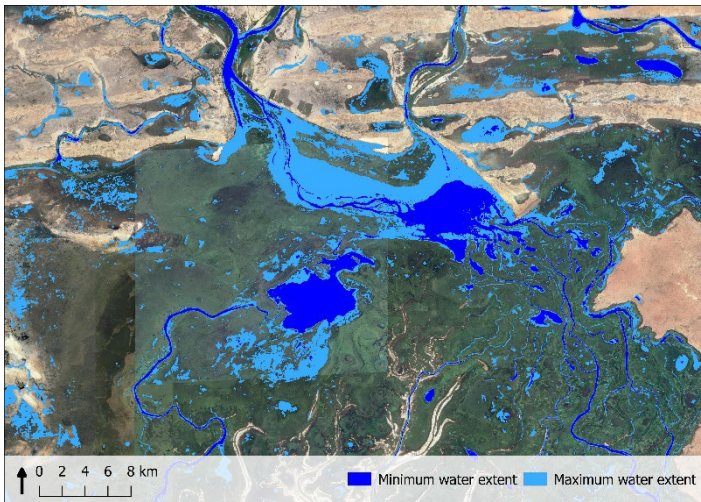
## FAST FACTS

- The Inner Niger Delta, also known as Macina, is located in central Mali. It is surrounded by the semi-arid Sahel zone.
- The Niger River which is the longest river in West Africa flows through the wetlands from south-west to north-east.
- Downstream of the Inner Niger Delta, the river turns south forming a big arch finally draining into the Atlantic Ocean in Nigeria.
- The Inner Delta is formed due to the flattening terrain causing a reduction of the flow velocity and resulting in the formation of many braided streams, marshes and lakes.
- Almost two-thirds of the original inflow is lost due to evaporation in the semi-arid climate zone and seepage into the soil.
- The amount of discharge of the Niger River varies throughout the year and is highly dependent on upstream rainfalls. This implies that the Inner Delta is affected by floods during the wet season, which lasts from July to September, but changes during the dry season into a network of channels and dried land.
- The wetlands are important as wintering spots for thousands of birds.
- The Inner Niger Delta is affected from both, climate change, which reduces precipitation upstream, and human influences, as dams are built to control the discharge and provide water for agriculture.



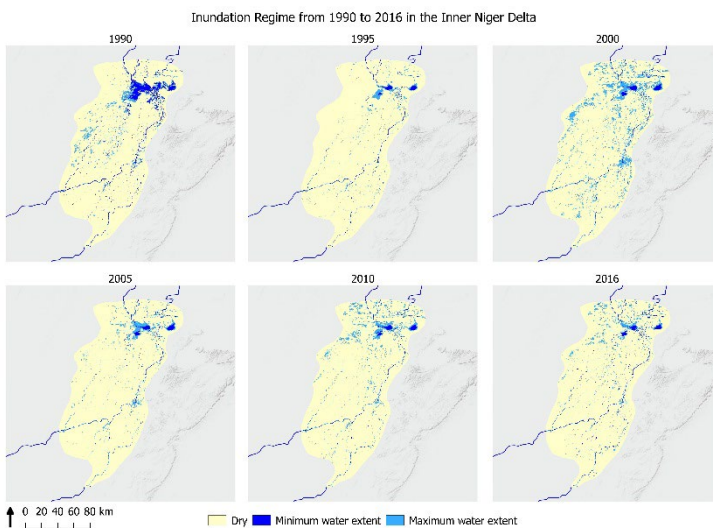
Overview map of the Inner Niger Delta, located in the central part of the Niger river.

## Detail of the Inner Niger Delta

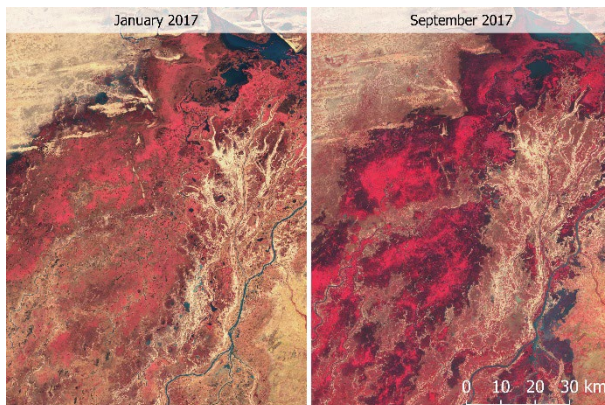


**Description:** The detailed view shows the difference in permanently and temporarily inundated areas considering the period between November 2016 and December 2017.

## Comparison of inundated areas from 1990 to 2016



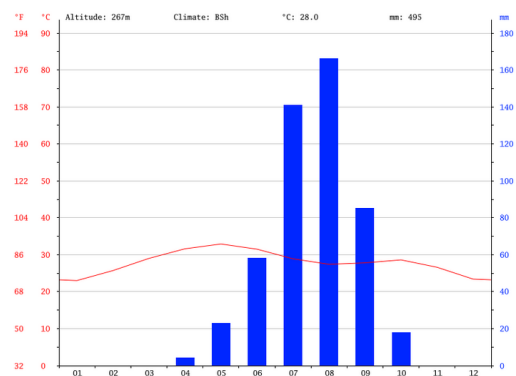
**Description:** The historic analysis (1990-2016) of the annual water extent in the Inner Niger Delta shows large variations within the 25-year-period. In 1990, the water extent was considerably larger than in the other years. This time series was created using Landsat imagery.



False color Sentinel-2A images of the central part of the Inner Niger Delta. The richer and greener vegetation cover (red) of the rain season can be clearly seen in the image of September 2017.



RGB image of the Inner Niger Delta, showing the wetlands surrounded by the semi-arid Sahel area. The red point indicates the location of Mopti, the administrative center of the region.



This is the climate diagram of Mopti, a port city situated on the Niger River at the confluence with the Bani River. Lying in the semi-arid climate zone, a clear division in wet and dry season is visible, with the highest precipitation falling between June and September. [1] The wetlands are most pronounced during these months, covering nearly the whole delta. The remaining months are very dry, landscape and vegetation change significantly. The false color images of the Sentinel-2A satellite show the variance of vegetation cover comparing the dry and wet season (images bottom-left).

## References

- [1] <https://en.climate-data.org/africa/mali/mopti/mopti-714797/>
- [2] Bergé-Nguyen, M., & Crétaux, J. F. (2015). Inundations in the inner Niger delta: monitoring and analysis using MODIS and global precipitation datasets. *Remote Sensing*, 7(2), 2127-2151.

*All satellite derived products shown here have been derived from Sentinel-1 CSAR (radar) and Sentinel-2 MSI (optical) imagery complemented with Landsat 5, 7, and 8 optical imagery for the historical analyses. The product development and processing has been performed within the ESA project GlobWetland-Africa.*

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