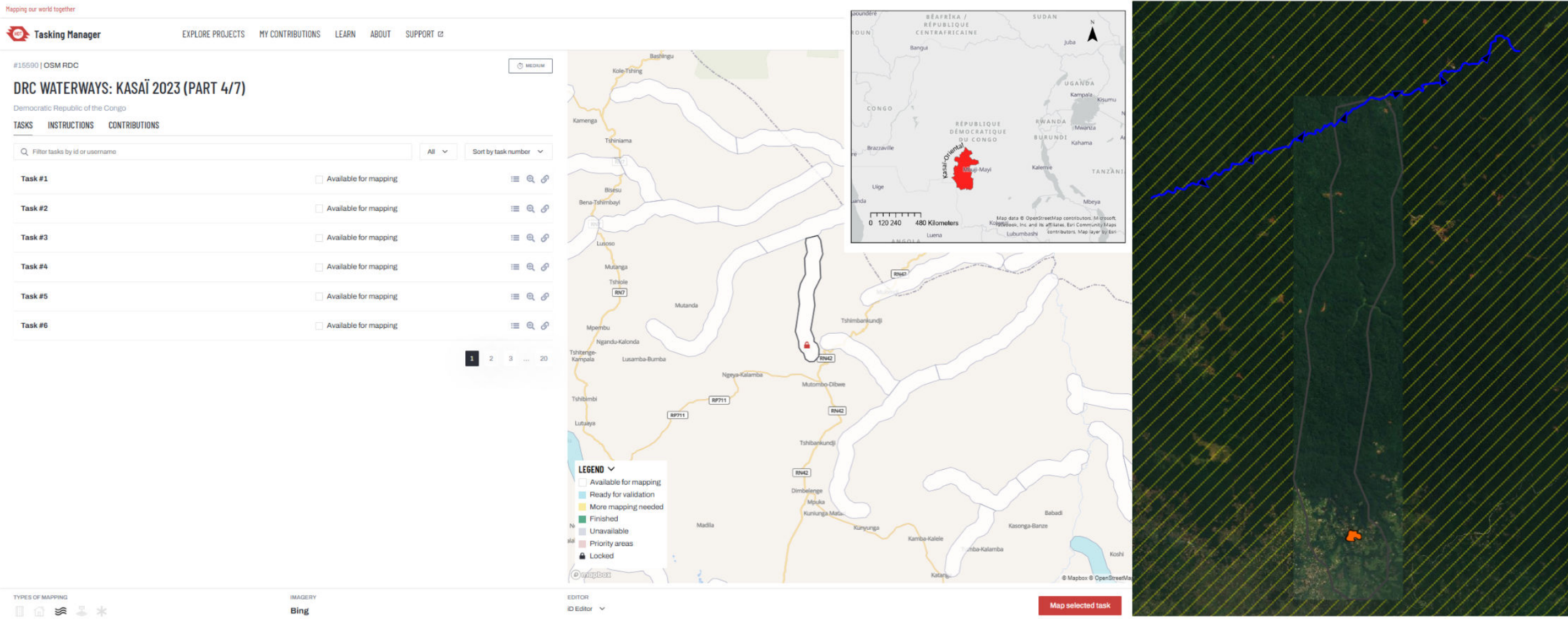


# HOT Task Manager - Task 91 project #15590 using SAR imagery for better waterways detection in the DRC

This map highlights the advantages of using **Synthetic Aperture Radar (SAR)** imagery to detect waterways, particularly in areas with dense vegetation where optical imagery can be limited. In regions like the Democratic Republic of the Congo (DRC), dense forests and cloud cover often obscure rivers, lakes, and streams, making it difficult to detect these features using traditional satellite imagery. SAR imagery, however, provides a significant advantage by penetrating both vegetation and cloud cover, offering clear data about the ground surface, including water bodies.

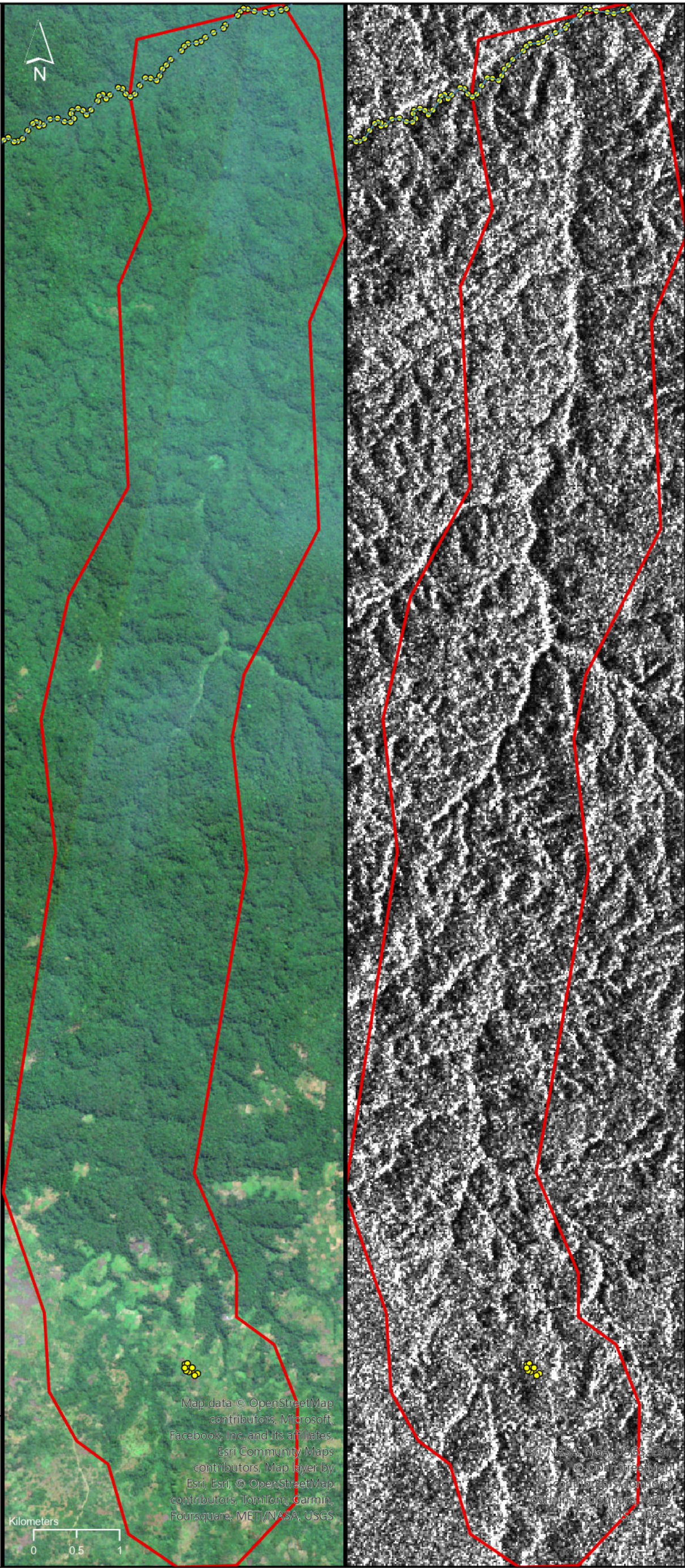
To demonstrate this advantage, I explored how SAR imagery could be helpful in digitizing waterways in **Project: DRC waterways: Kasai 2023 (part 4/7) #15590 Task 91**, which can be found on the HOT (Humanitarian OpenStreetMap Team) tasking manager. In this task, Bing imagery is recommended to detect waterway segments. Instead, with this project I highlight how SAR technology can reveal waterways in regions where optical imagery fails, showing its clear advantages for mapping in areas with dense vegetation such as the DRC.



The unique capabilities of SAR, especially its ability to capture data in VV polarization (Vertical transmit and Vertical receive), make it highly effective for identifying water surfaces, as water reflects radar signals in a predictable manner.

The images on the side help illustrate this point, showing the boundary box with coordinates for the Kasai region. These images visually reinforce how SAR imagery can successfully detect waterways in areas that would otherwise be obscured by dense vegetation or cloud cover.

Project #15590, published by OSM DRC, presents a methodology that can be easily adapted to other initiatives, such as those by **Médecins Sans Frontières (MSF)**. I have documented the entire workflow in a Jupyter Notebook titled "HOT Task 91 Project #15590," which provides a comprehensive, step-by-step guide (including an interactive map). You can explore this notebook and other projects in my GIS portfolio, showcasing my dedication to GIS. I hope this example serves as a helpful resource for anyone looking to apply similar techniques to their own mapping efforts.



Spatial Reference  
Name: WGS 1984 (EPSG: 4326)  
Datum: WGS 1984

SAR Satellite Imagery : Sentinel-1  
Imagery Date: January 9, 2025, at 04:11:03 AM UTC  
Resolution: 20 m

RGB Satellite Imagery: Sentinel-2  
Imagery Date: June 26, 2024, at 08:51:50 AM UTC  
Resolution: 20 m

**Legend**  
ways  
nodes  
polygons  
task91  
bbox