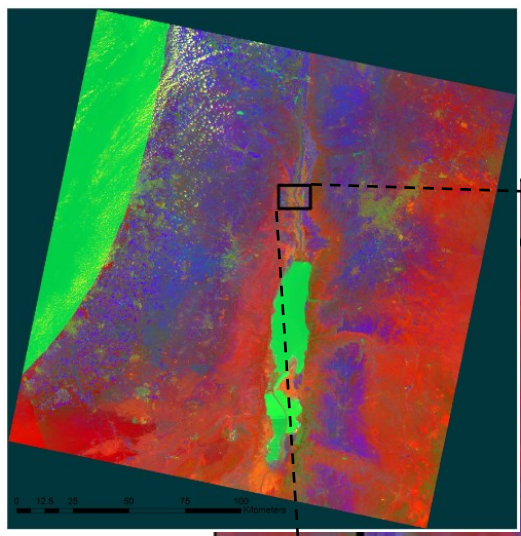


Developing a Water Productivity Target Framework

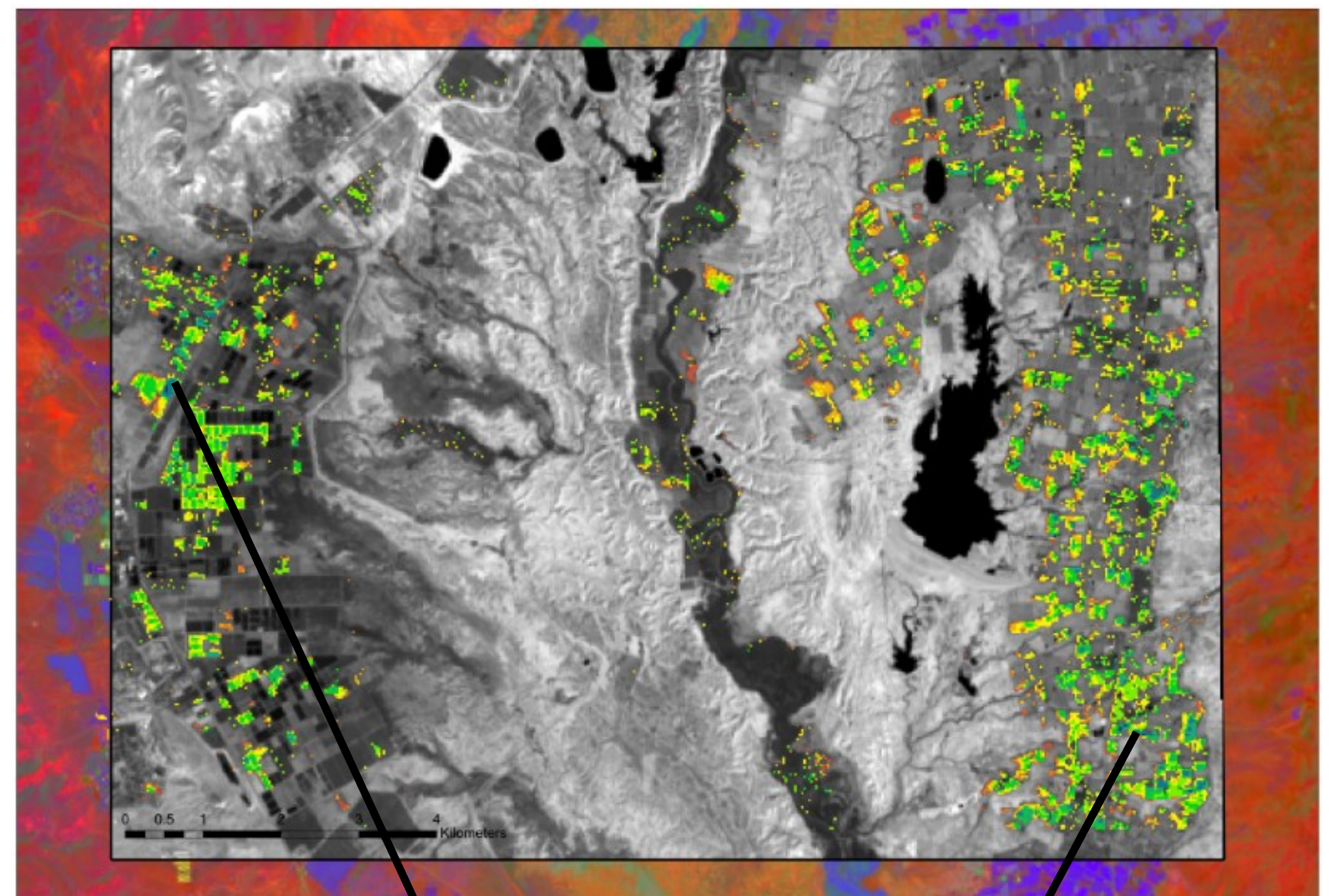
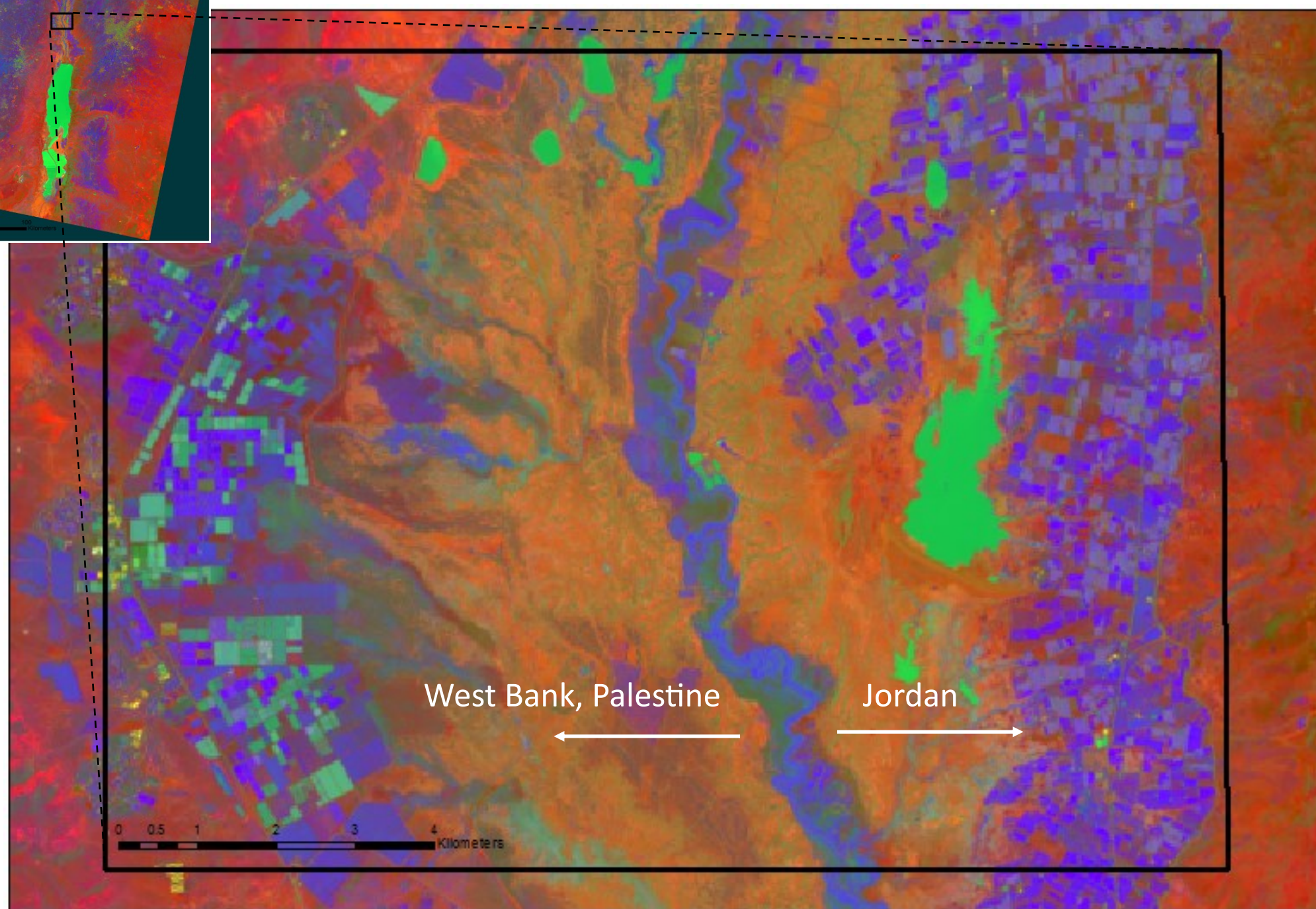
Case study: West Bank Palestine

Megan Blatchford (MSc student at UNESCO-IHE) and Tim Hessels (PhD student at UNESCO-IHE)

Sustainable Development Goal (SDG) 6.4 by 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity.

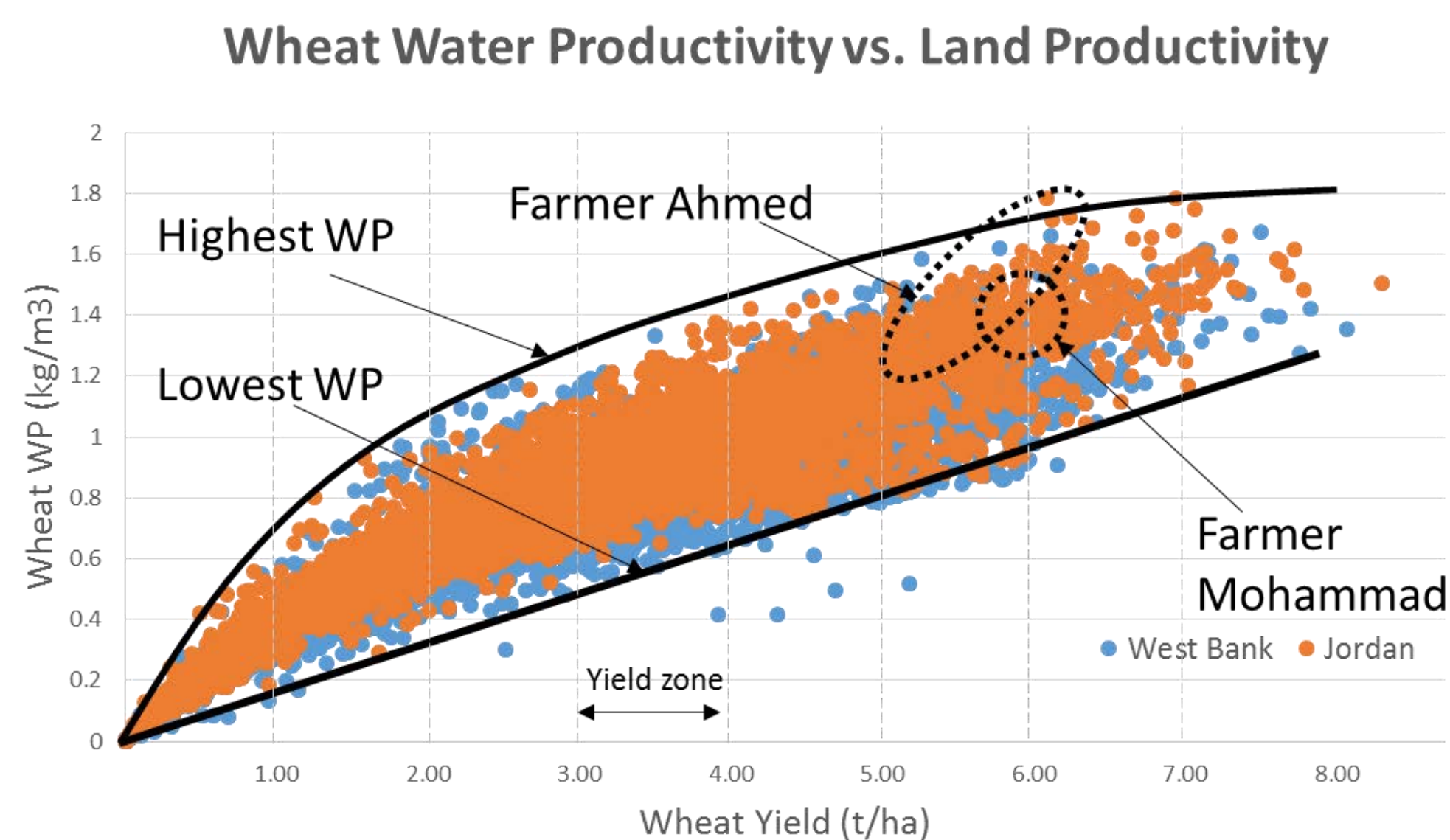
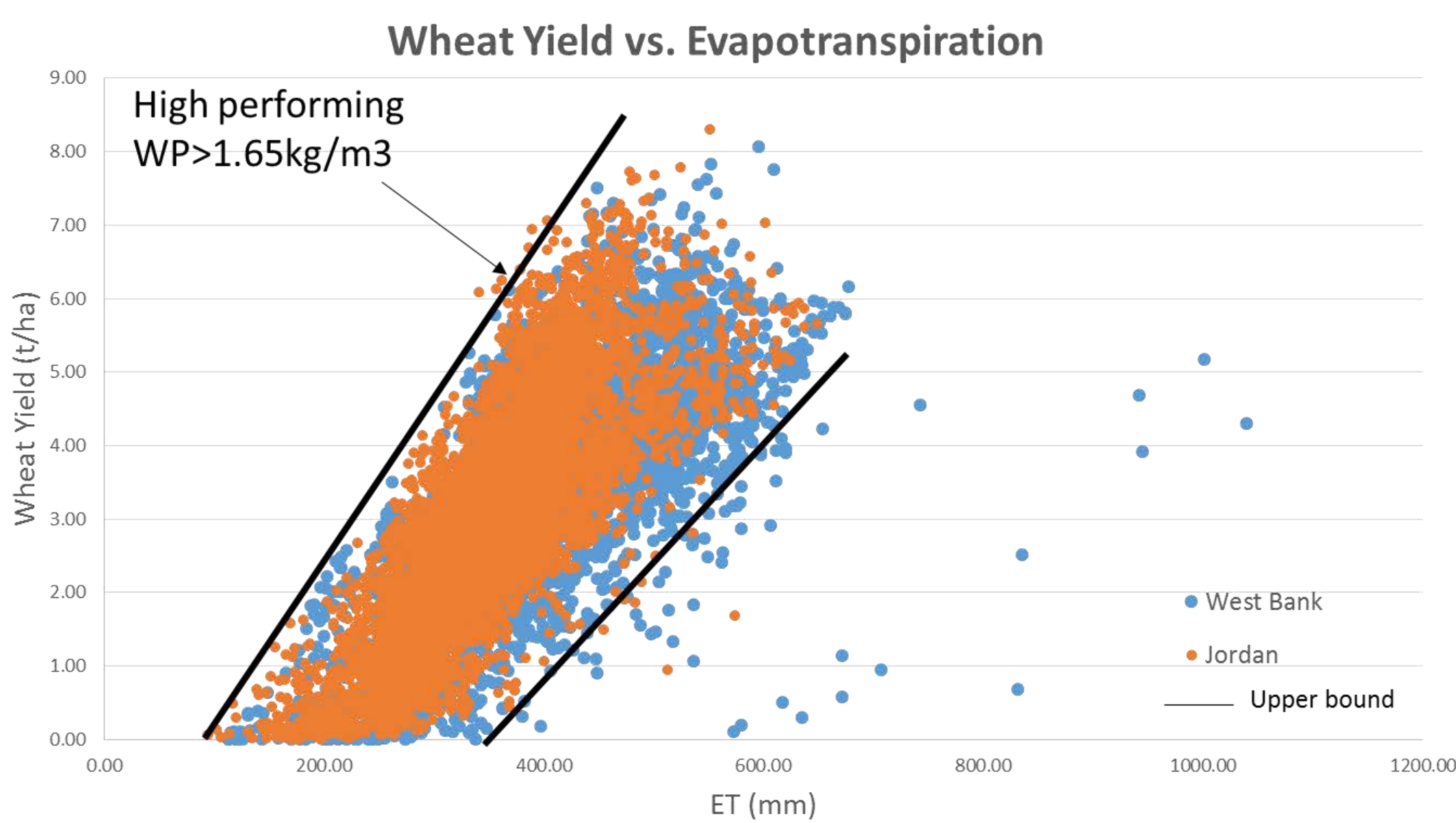


Below Left: Principle component analysis image of a region in the Jordan Valley. Below Right: Estimation of water productivity using SEBAL, developed by Bastiaanssen et al., (1998) and converted into Python format by Trambauer, Bastiaanssen and Hessels (not released).

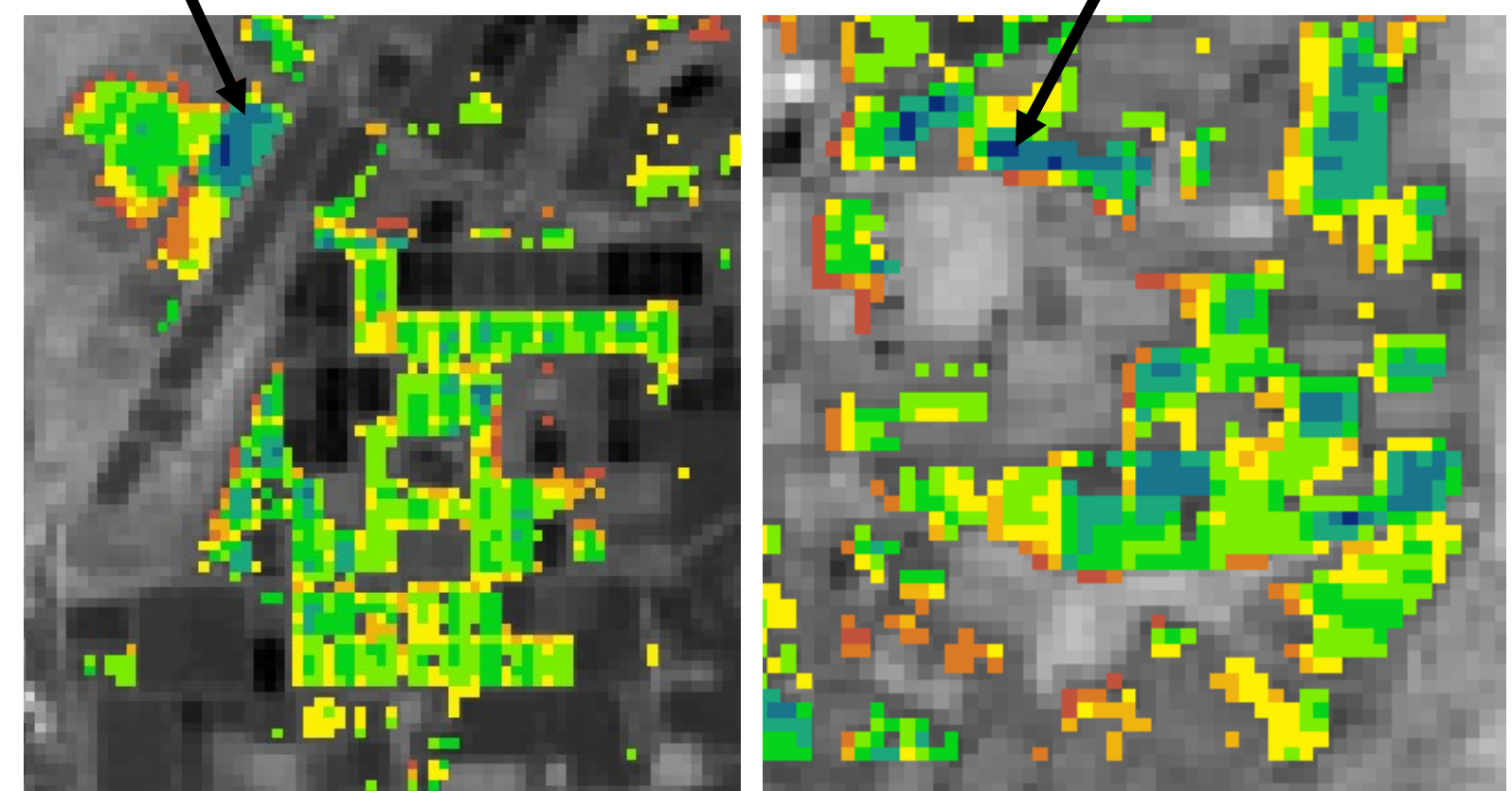
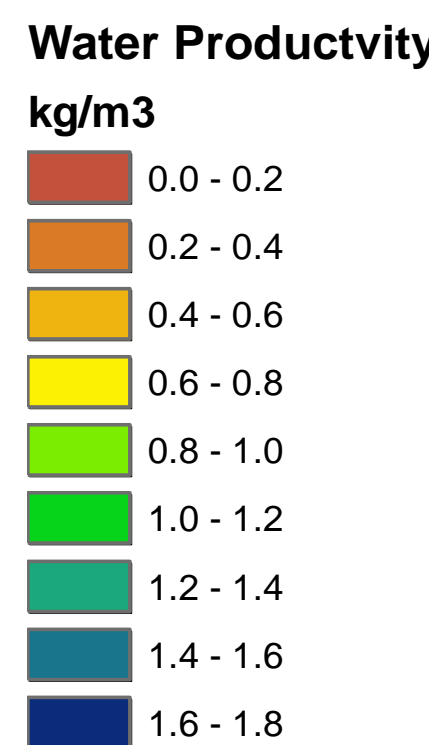


Below upper: Land productivity versus evapotranspiration in both the West Bank and Jordan.

Below lower: Water productivity versus land productivity in both the West Bank and Jordan.



Legend



Above Left: Farmer Muhammad is achieving both a **high water productivity** and a **low spatial variability**. Above Right: Farmer Ahmed is achieving **high water productivity** but a **high spatial variability**.

This research aims to address SDG 6.4 through developing water productivity target values to aid in the monitoring and evaluation of water use efficiency, specifically crop water productivity.

Agronomically, water use efficiency, or water productivity, refers to the production per unit of water used (FAO 2011).

In the Green Revolution much work was done towards improving water productivity through plant breeding. However, where water productivity is identified as low or a great spatial variation is identified, there is still scope for improvement through improving land and water management practices.

On the left it can be seen that there is a great variation in water productivity for a given yield zone. The aim of mapping water productivity, then establishing a target and associated practical guidelines, is to identify what is attainable locally. This can then be used as the target to help improve land water management practices in low performing field by, where possible, implementing similar land water management practices.

The use of remote sensing, in this case SEBAL, can assist in both the establishment of targets and the monitoring and evaluation of meeting set targets.