

2.6 Remote Sensing Capabilities

Digital Surface Model (DSM):

A Digital Surface Model (DSM) represents the Earth's surface, capturing both natural and man-made features, including buildings, vegetation, and other structures. DSM provide a detailed view of the surface elevation and are crucial for urban planning, infrastructure development, and environmental studies.

Digital Terrain Model (DTM):

A Digital Terrain Model (DTM) represents the bare ground surface, excluding any objects like buildings and vegetation. DTM are essential for various applications such as topographic mapping, flood risk assessment, and land use planning. They provide a clear picture of the terrain's elevation and shape, aiding in geospatial analysis.

Slope Analysis:

Slope analysis involves calculating the steepness or incline of the terrain based on elevation data from DSM or DTM. This analysis is vital for assessing land stability, erosion risk, and suitability for construction. Slope analysis helps identify areas that are prone to landslides or other geological hazards.

Aspect Analysis:

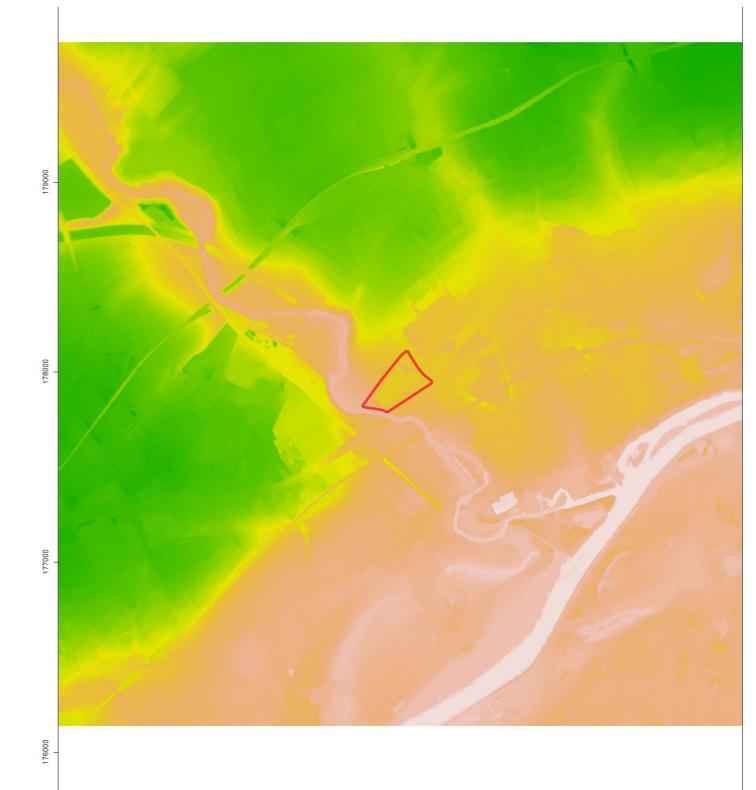
Aspect analysis determines the compass direction that a slope faces, derived from elevation data. Aspect is crucial for understanding micro climates, solar radiation exposure, and vegetation growth patterns. It informs decisions in agriculture, forestry, and urban design by indicating the best orientation for planting, building, and other activities.

The DSM, DTM, slope analysis, and aspect analysis are interconnected tools used in geospatial and environmental planning:

DSM and DTM: DSM and DTM are foundational datasets for creating accurate terrain models. While DSM include all surface features, DTM focus on the bare earth. Using both models together provides a comprehensive understanding of the terrain, enabling precise analysis for various applications. For instance, subtracting the DTM from the DSM can reveal the height of buildings and vegetation.



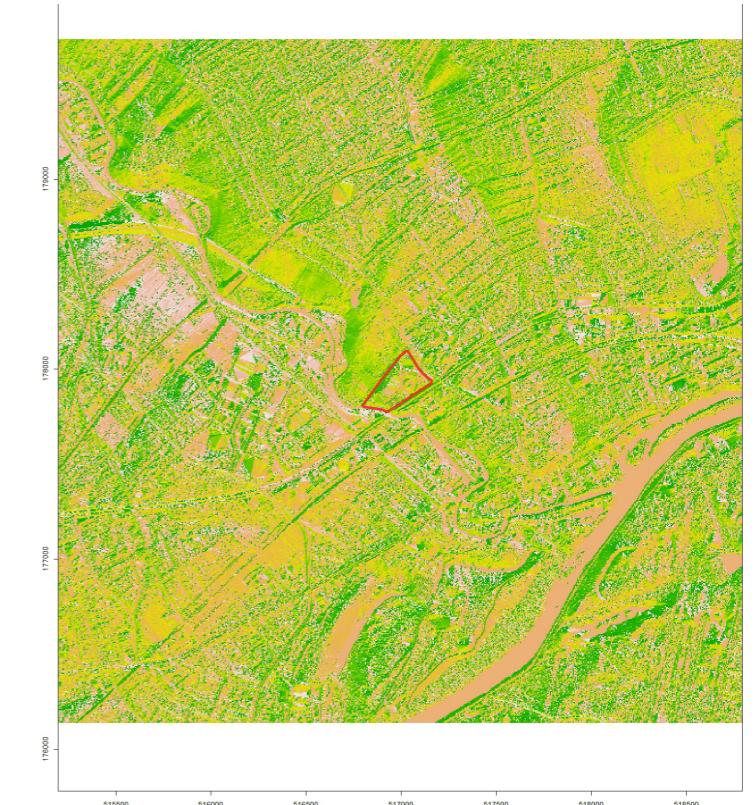
DSM (Digital Surface Model) Elevation



DTM (Digital Terrain Model) Elevation



DTM (Digital Terrain Model) Slope



DTM (Digital Terrain Model) Aspect