

Estimation of aboveground volume, carbon stocks and NPP of forests in the Amhara region, Ethiopia using terrestrial and satellite data

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Introduction

- In the last several years, the interest in forest productivity estimation has increased due to its importance for forest management, carbon stock, wood and other ecosystem services.
- However, no estimates of productivity and stored volume and carbon of different forest cover types exist throughout the Amhara region, Ethiopia.

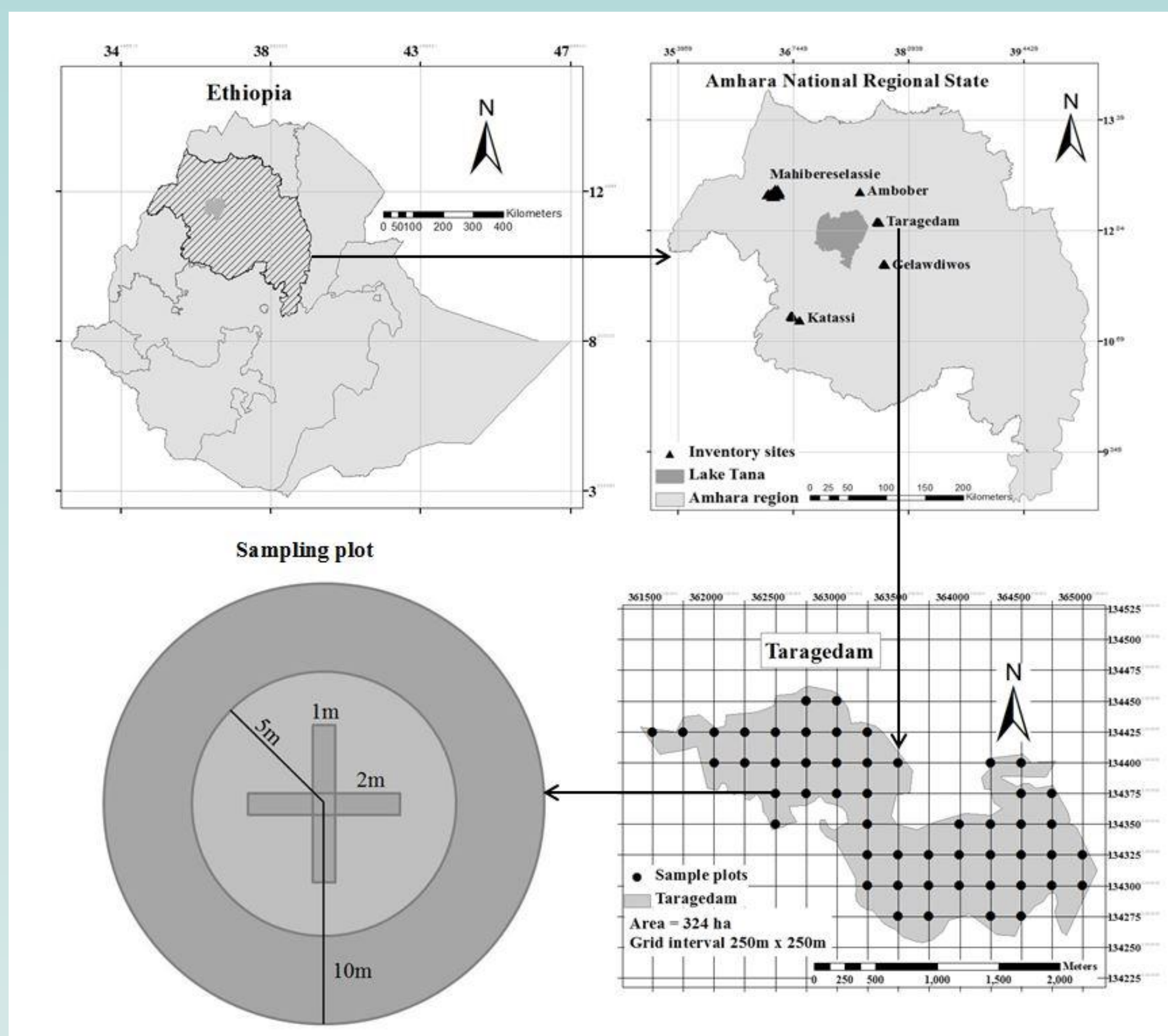
Objective

- Our objectives are to estimate aboveground volume, carbon and net primary productivity (NPP) of the Amhara region. This will be done by
 - Terrestrial inventory, II) Land cover classification and III) Extrapolation of terrestrial estimates over the whole region based on the classified map.

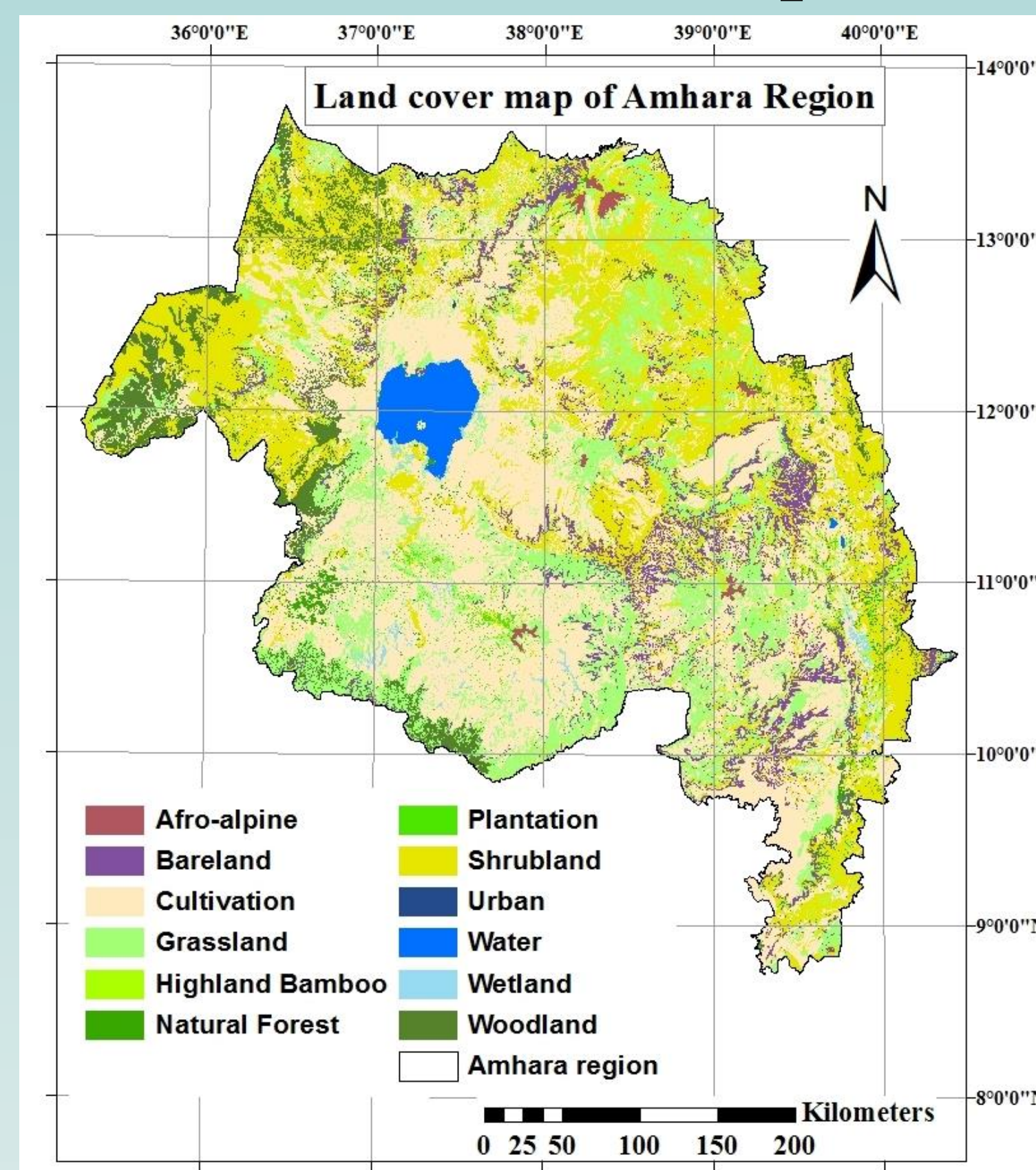
Data

Methods

Terrestrial inventory data

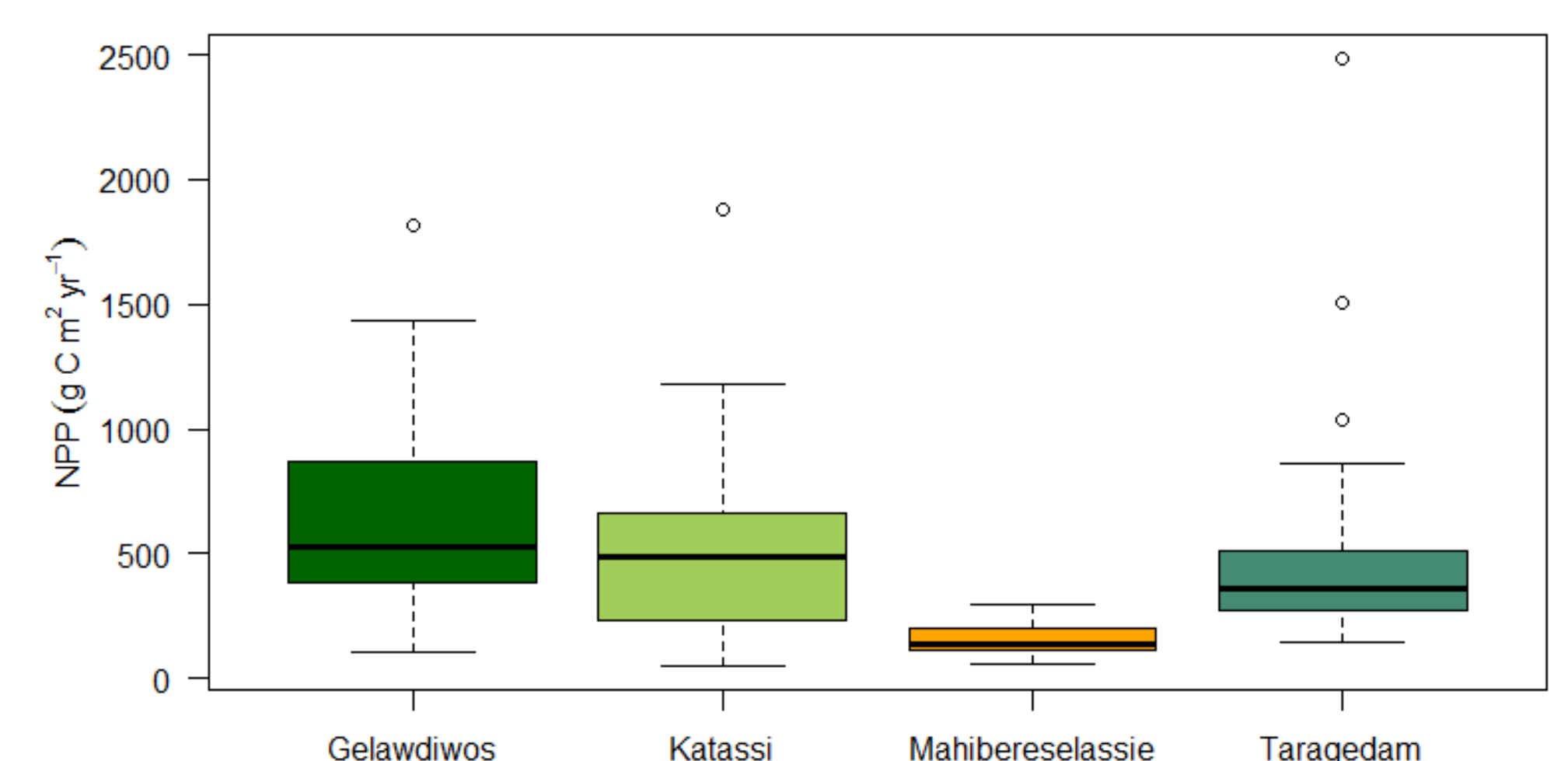
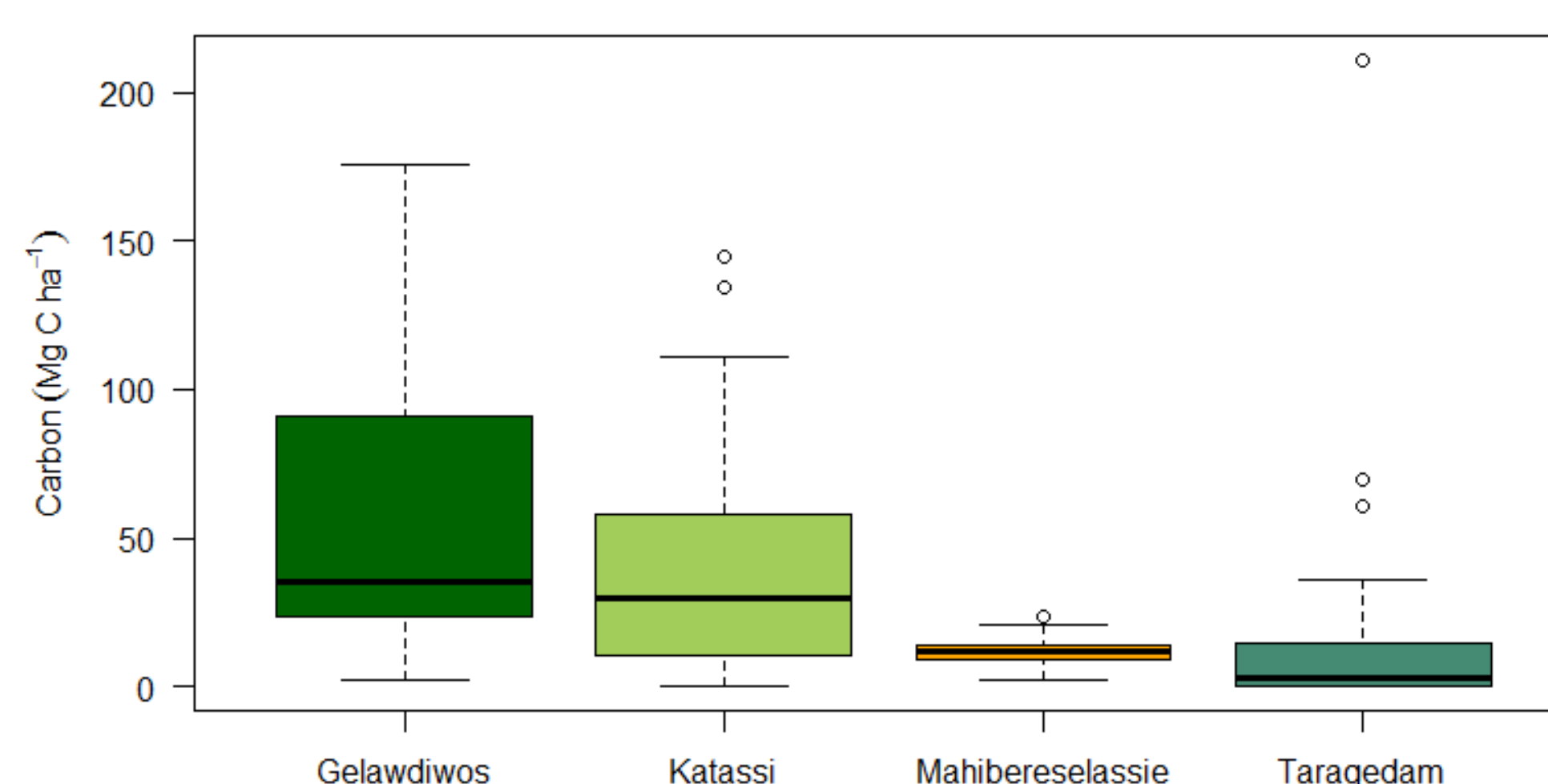
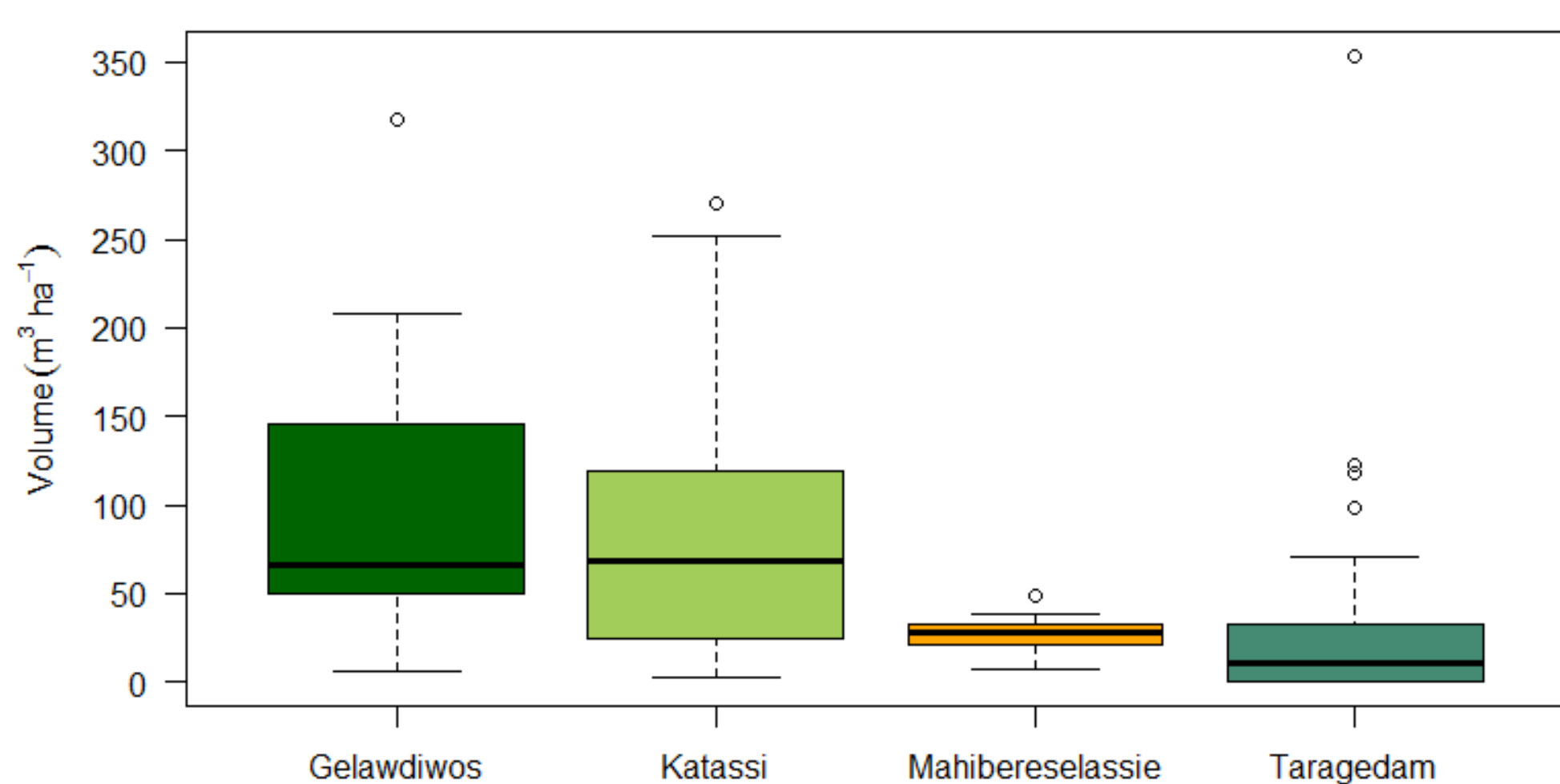


Land cover map

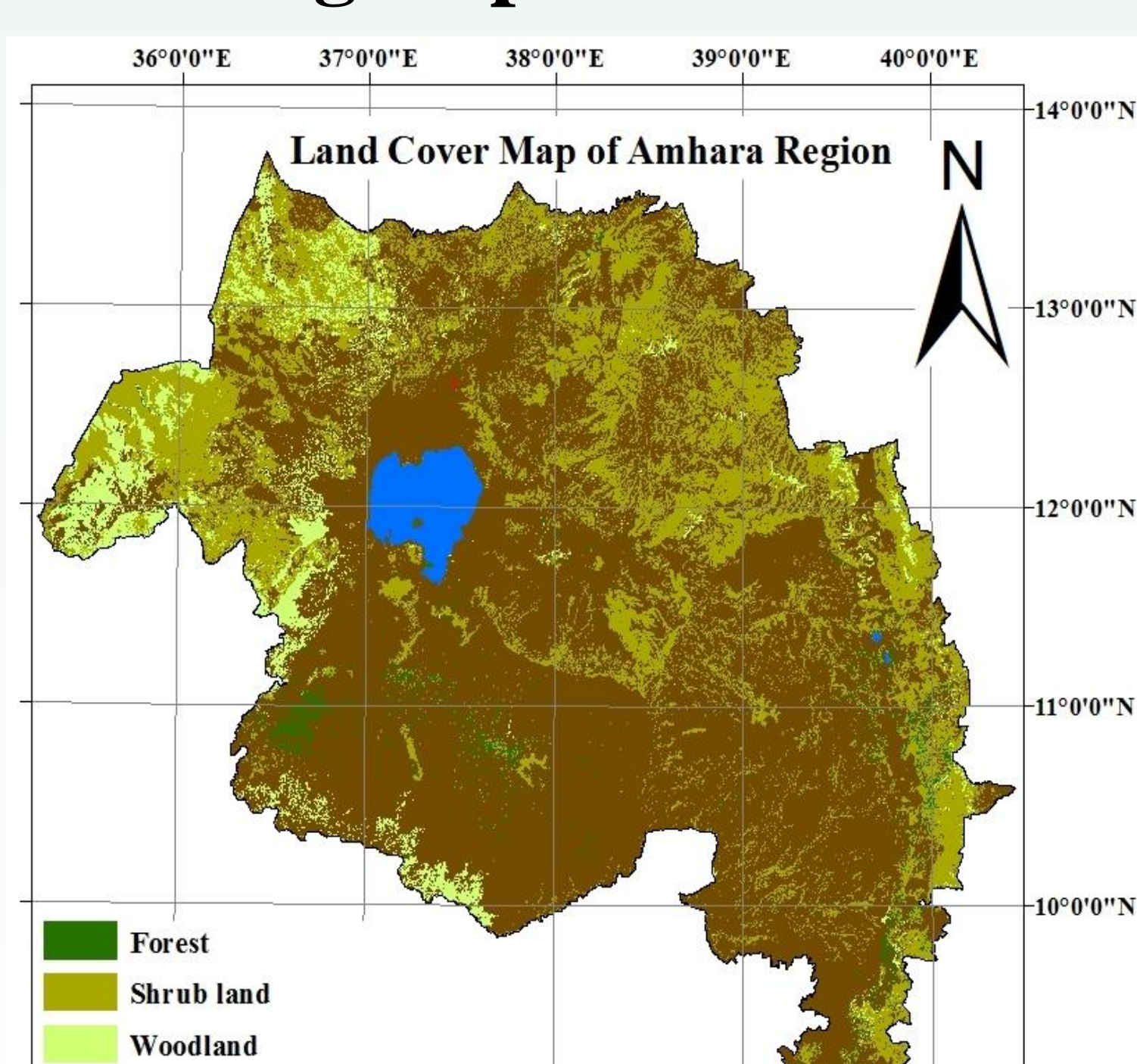


- Calculations of
 - Volume
 - Carbon
 - NPP
- Land cover classification
 - Regrouping of land cover
 - Accuracy assessment

Result



Regrouped land cover map



Volume, Carbon and NPP of Amhara region

| Land cover | Volume (m³)*10 ⁷ | Carbon (MgC) *10 ⁶ | NPP (gC m ⁻² year ⁻¹) *10 ⁶ |
|------------|-----------------------------|-------------------------------|---|
| Forest | 17.6 | 6137.4 | 403341.8 |
| Shrub | 13.8 | 10.7 | 24.8 |
| Woodland | 14.4 | 11.1 | 25.7 |

Discussion

- Accuracy assessment of the regrouping is 54.2% which is low. This is happened because the pixel size of the original cover map is 200m X 200m and severe land