

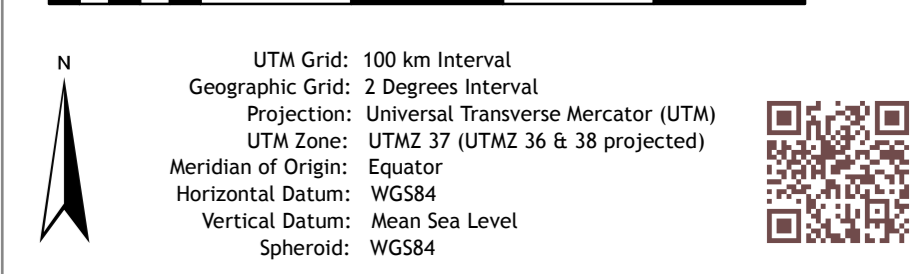
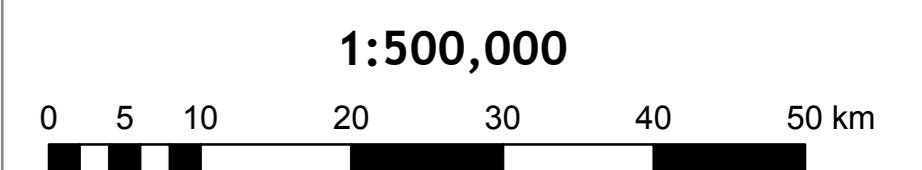
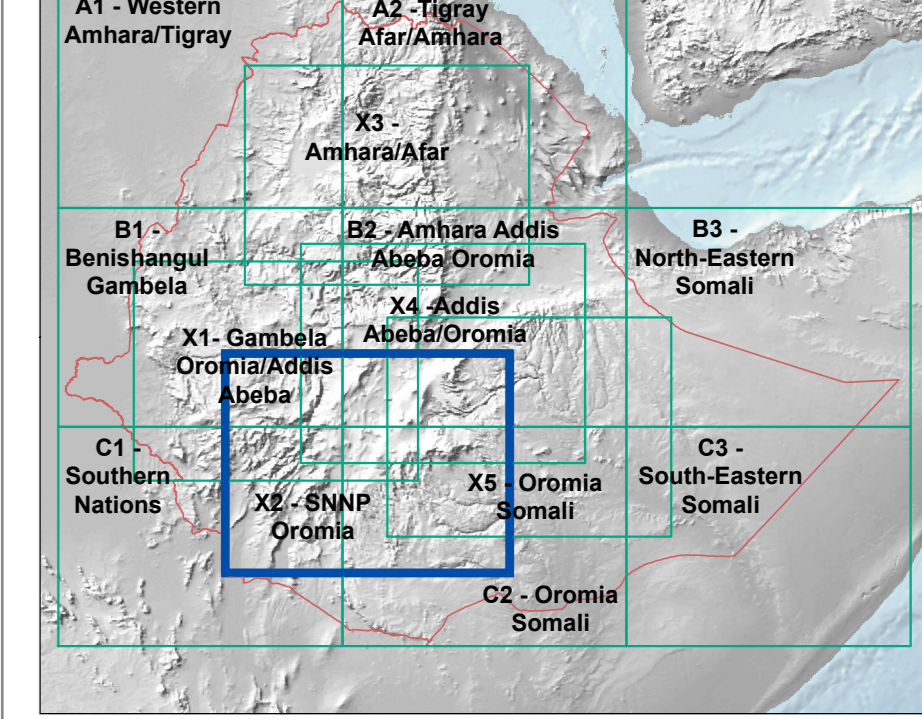
# ETHIOPIA

## Geographic Base Map

Tile X2 Standard Map Series 1:500,000  
Map Sheet # 12 X2 - SNNP Oromia

### WLRC Land Cover Map 2016

Map Sheet Index - Scale 1:15,000,000



- #### Legend
- |                       |                            |
|-----------------------|----------------------------|
| <b>Administration</b> | <b>Transport</b>           |
| National boundary     | Railway                    |
| Walled town           | International road         |
| Farmstead             | Primary road               |
| Forest                | Secondary road             |
| National Park         | Tertiary road              |
| State capital         | Track                      |
| Region capital        | Path                       |
| Large settlement      | Residential road           |
| Medium settlement     | Railway under construction |
| Small settlement      |                            |
| Not classified        |                            |
|                       | <b>Drainage</b>            |
|                       | Temporary rivulet (cat. 2) |
|                       | Occasional river (cat. 3)  |
|                       | Seasonal river (cat. 4)    |
|                       | Perennial river (cat. 5)   |
|                       | Main river (cat. 6)        |
|                       | Stream (cat. 7)            |
|                       | Large stream (cat. 8)      |

- #### WLRC Land Cover Classes
- |                  |             |
|------------------|-------------|
| <b>Hydrology</b> | Altopasture |
| Marshland        | Barrenland  |
| Wetland          | Cropland    |
| Water body       | Forest      |
| Episodic lake    | Grassland   |
|                  | Shrubland   |
|                  | Settlements |
|                  | Water body  |
|                  | Wetland     |
|                  | Woodland    |

#### How to read the "WLRC Land Cover Map 1:500,000"

The main methodological approach implemented to map the complex landscapes of Ethiopia at the required scales for the MapServer series was the majority and minority concept of land cover. The approach is based on the HCLC based mapping (Heterogeneous Image Classification Units). The employment of such a "fraction-based" approach (i.e. sub-setting of the LandSat imagery and gradually reducing the minimum mapping unit) is considered as a breakthrough in deriving important land cover information in heterogeneous landscapes, such as the rural and cultural areas of Ethiopia. Nevertheless, the final land cover map was mapped using an approach that combined the automated HCLC approach with expert knowledge and visual interpretation of maps. This approach made it possible to distinguish cultivated lands from other land use or land cover classes. Unsurprisingly, the actual amount of cultivated land is considerably larger than that indicated by official statistics in the mid-1980s, when the rural population was half of its current size. The team also mapped large-scale land use systems, inclusive of any former direct investments. Results of the study show there has been a considerable expansion and intensification of farming in the past three decades, unfortunately leading to more soil erosion.

Reference: Tebku Kassamara, Sandra Eckert, Kasper Hamt, Gete Zeleke & Hans Huml (2016): Reforesting landscape heterogeneity for improved land use and land cover (LULC) classification across the large and complex Ethiopian highlands, *Geomatics International*.

Map data: The map data were derived from a wide range of individual data sources: Open Street Map data from <https://www.openstreetmap.org/>, Landsat imagery from <https://landsat.usgs.gov/>, and Landsat imagery in natural colors from <https://landsat.usgs.gov/>. Please see the scale bar for measurements on the map when revised to scales other than the original A3 pdf format! The Standard Map Series 1:500,000 best suits the needs of regional / rural planning and policy advice.

#### Geospatial information

National spatial data infrastructure (NSDI) plays a significant role in the development of Ethiopia's rural agrarian economy, but a comprehensive and up-to-date NSDI is necessary for natural resources, infrastructure planning, and efficient management of food crops. Maps are means of visual communication and foster understanding of complex problems. They are containers of data, show spatial patterns, enable geographic analysis, and can be used to "ask" data-relevant questions. It is common knowledge that people retain 80% of what they see, 20% of what they read, and 10% of what they hear. Maps and charts are visual communication tools that last, and contain more visual aids. We are most visible on the Internet. This makes maps an ideal means of development communication.

#### The MapServer Ethiopia project

MapServer Ethiopia is a web-based open source platform for the dissemination of geospatial data maps and information about Ethiopia. The website contains three main web services that enable: 1) mapping based on pre-produced maps, 2) online mapping of selected information layers, and 3) open geospatial data download. The MapServer Ethiopia data platform and website are essential to improve mapping and spatial understanding in the context of project management, natural resources governance, human resource and work, and academic education.

The MapServer Ethiopia project is part of the activities of the Water and Land Resources Centre (WLRC) to improve data sharing and dissemination in support of land and water resources management. The MapServer Ethiopia is funded by the Swiss Agency for Development and Cooperation (SDC).

#### The Water and Land Resources Centre

The Water and Land Resources Centre (WLRC) is Addis Ababa, Ethiopia [www.wlrc.ethiopia](http://www.wlrc.ethiopia) was established by the Centre for Development and Environment, University of Bern, Switzerland [www.cde.unibe.ch](http://www.cde.unibe.ch) in 2011 as an institution associated to Addis Ababa University. Since its inception the centre systematically monitors, collects, integrates, and disseminates data and knowledge in support of sustainable management of natural resources. Today, the centre builds on long-standing achievements in rural land degradation, improve livelihoods in rural areas and serves as regional knowledge hub and centre of dialogue in land governance.

#### Origin of map data

Building on EthioGIS-3, the new (2018) release of the National Geospatial Database System for Ethiopia, the MapServer Ethiopia [www.mapserver-ethiopia.org](http://www.mapserver-ethiopia.org) site is providing a web-based gateway for open and non-authoritative geospatial information for the Federal Democratic Republic of Ethiopia. The mapping services are designed to generate improved decision support for development actors, government authorities, NGOs, international organizations, and the civil society. The MapServer Ethiopia is part of WLRC's Water and Land Resources Information System (WLIRS) and adds a portal for environmental and socio-economic data. Data sharing facilities and server capabilities for registered user through [www.wlrc.ethiopia](http://www.wlrc.ethiopia). Besides of WLRC's open geospatial data foundation, the main MapServer Ethiopia product lines are available on and other mapping services based on a wealth of free and open geospatial providers.

#### Disclaimer

The boundaries, denominations, and any other information shown on this map do not imply any judgement about the legal status of any territory, or constitute any official endorsement or acceptance of any boundaries, on the part of any Government. The joint publishers, the Water and Land Resources Centre, Addis Ababa, Ethiopia and the Centre for Development and Environment, University of Bern, Switzerland, assume no liability for any direct, incidental, or consequential damages whatsoever, and are not responsible for claims by any third party.

#### Authors

Jörg Breuer, Ulta Gampferli, Kasper Hamt, Matthias Fries, and Lukas Wernisch of CDE Geoinformatics, University of Bern, Switzerland; Gete Zeleke, Tebku Kassamara Nigussie, and Johannes Ineape, SDC of WLRC, Addis Ababa, Ethiopia.

#### Reference

Please note that you must indicate the source of geospatial data or map layers when using this map in publications or other products. Information on EthioGIS-3, University of Bern, Switzerland; MapServer Ethiopia, Thematic and Geographic Information, Field and Base Map Series (Imagery) 1:100,000, 1:250,000, Release 3.0/December 2018. <http://www.mapserver-ethiopia.org/>.  
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#### Contacts

EthioGIS-3, Wegmagistra, Dragoora Square, P.O. Box 8707, Addis Ababa, Ethiopia; Tel.: +251 11 55222822, Fax: +251 11 55222822  
Switzerland: Centre for Development and Environment, University of Bern, Milttenstrasse 45, 3012 Bern, Switzerland; Tel.: +41 78 318822, [info@cde.unibe.ch](mailto:info@cde.unibe.ch)

