CCAFS site atlas

Kaffrine
Senegal

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)
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Titles in this series aim to disseminate interim climate change, agriculture and food security research and practices and stimulate feedback from the scientific community.

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Introduction

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) seeks to promote a food-secure world through the provision of science-based efforts that support sustainable agriculture and enhance livelihoods while adapting to climate change and conserving natural resources and environmental services.

Climate change is an unprecedented threat to the food security of hundreds of millions of people who depend on small-scale agriculture for their livelihoods. Climate change affects agriculture and food security, and likewise, agriculture and natural resource management affect the climate system.

CCAFS has initially focused on three regions; East Africa (EA), West Africa (WA) and South Asia (SA) to carry out its research. The 15 CCAFS sites in these areas represent areas that are becoming both drier and wetter, and are focal locations that will generate results that can be applied and adapted to other regions worldwide. In this year, 2013, CCAFS is expanding its portfolio to additional sites in Latin America and South-East Asia.

These sites serve as the initial focus of CCAFS partnership-building and long-term research activities falling within the following CCAFS Research Themes; Adaptation to Progressive Climate Change, Adaptation through Managing Climate Risk, Pro-Poor Climate Change Mitigation and Integration for Decision Making. At all 15 CCAFS sites, baseline surveys have been conducted, including three levels of data collection and analysis at household, village and organizational levels (see: http://ccafs.cgiar.org/resources/baseline-surveys).

More information on CCAFS work in all the three regions can be accessed at www.ccafs.cgiar.org

To better understand the CCAFS sites’ characteristics, a list of geospatial indicators for climate variability, bio-physical characteristics and socio-economic variables have been mapped into site atlases.

This Atlas was developed for the CCAFS site at Kaffrine in Senegal, in West Africa Region.
Topography Kaffrine

CCAFS Site SE01, Kaffrine, Senegal

Coordinates of the CCAFS Baseline Sampling frame
15.407W 13.968N
15.407W 14.242N
15.686W 14.242N
15.686W 13.968N

Citation: Geomaps (2013b)
Annual Rainfall

Corresponds to the map on the left

Rainfall (mm)

Kaffrine Mean Monthly Rainfall Distribution

Citation: Jones et al (2002)

Annual Rainfall data of current interpolations of observed data, representative of 1950 - 2000

Citation: Hijmans et al (2005)
Annual Temperature

Kaffrine Mean Monthly Temperature Distribution

Temperature (°C)

- < = 15
- 15 - 20
- 20 - 25
- 25 - 30
- > = 30

Scale 1:1,000,000

International boundary

Corresponds to the map on the left

Temperature data of annual mean monthly temperature, averaged for 1990 - 2000

Citation: Hyams et al (2005)
Agro-Ecological Zones

Agro-Ecological Zones indicate the division of land areas that have similar characteristics related to land suitability, potential agricultural production and environmental impact.

Tévè Keur Massé
50

Gaina
Sinntiou Adar
Taoua
10

Keur Ayip
Tialene

Sierra Leone

Guinea

Southern Guinea Savanna

Northern Guinea Savanna

Semi-arid/Sudan Savanna

* Legend corresponds to left map

Citation: FAO (2008)
Landuse

Landuse is a description of how people utilize the land. It involves socio-economic activity, i.e., the use of the natural environment into agricultural fields and settlements. At any place, there may be multiple land uses, the dominant one is presented here.

Landuse *  
- Forest protected  
- Shrub unmanaged  
- Shrub moderate livestock density  
- Shrub high livestock density  
- Agriculture protected  
- Crops and high livestock density  
- Crops and moderate intensive livestock density  
- Urban area  
- Wetlands mangrove  
- Open water inland Fisheries  

* Legend corresponds to left map

Citation: Netteranga et al (2010)
The Length of Growing Period (LGP) is defined in a year during which there is available rainfed soil moisture supply for plant growth.

Corresponds to the map on the left

Citation: Thornton et al. (2008)
The Length of Growing Period (LGP) is defined as the number of days in a year during which there is available rainfed soil moisture supply for plant growth; here modeled for 2030.

Citation: Thornton et al. (2008)
Crop Suitability

Crop Suitability refers to the land resource assessment that considers agricultural land use options with relevant agro-ecological condition to estimate expected cropping activities.

Citation: FAO and IIASA (2007)
Livestock Density

Number per km²

- No Observations
- <= 5
- 5 - 10
- 10 - 15
- 15 - 20
- >= 20

Corresponds to the map on the left

Livestock Density is measured in numbers of livestock, including cattle, goats and sheep, per km²
Livelihood Zones

Livelihoods are complex and shaped by a variety of factors. These livelihood zone maps delineate geographic areas within which people broadly share the same livelihood patterns including access to food, income, and markets.
Market Access

Travel time to nearest large town/city (Hours)

- <= 5
- 5 - 10
- 10 - 15
- 15 - 20
- > 20

Travel time is a measure of accessibility determined in the time (hours) taken to the nearest urban centre, town or city of a population of 50,000 people or more (taking different means of transportation into account).

Citation: Nelson (2008)
CIESIN constructed global data sets of poverty that are based on estimates of subnational infant mortality, proxies for poverty and welfare rather than direct measures.
Conservation Areas

Conservation Areas represent protected areas that, according to IUCN, are clearly defined geographic spaces, recognized, dedicated spaces, recognized through legal or other effective means, to achieve long-term conservation of nature with associated ecosystem services and cultural value.

Citation: UNEP and WCMC (2012)
References and Data Sources

Regional Map

Topographic Map
Sijmons K. 2013b. Relief represenation derived from Digital Elevation Model (DEM) of SRTM (Shuttle Radar Topographic Mission) 2000, Ground resolution 90 meter and ASTER GDEM, Ground resolution 30 meter, NASA. Topographic Features digitized from Google Earth Projection: Geographic, Lat/Long, WGS84

Satellite Image
RapidEye Satellite Image, 5 meter ground resolution, Image acquisition, 17-01-2011

Annual Rainfall

Annual Rainfall Graph

Annual Temperature

Annual Temperature Graph

Aridity Index

Altitude

Soil Type

Aridity Index

Landcover

Landuse

Length of Growing Period 2000

Length of Growing Period 2030
Crop Suitability

Livestock Production Systems

Livestock Density

Livelihood Zones

Human Population Density

Market Access

Poverty
The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) brings together the world’s best researchers in agricultural science, development research, climate science and Earth System science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. CCAFS is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT).

For more information, visit www.ccafs.cgiar.org and www.geomapa.nl