



CAFS site atlas

Khulna / Morrelganj Bangladesh

CGIAR Research Program on Climate Change, Agriculture and Food Security (CAFS)

Site Atlas

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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.

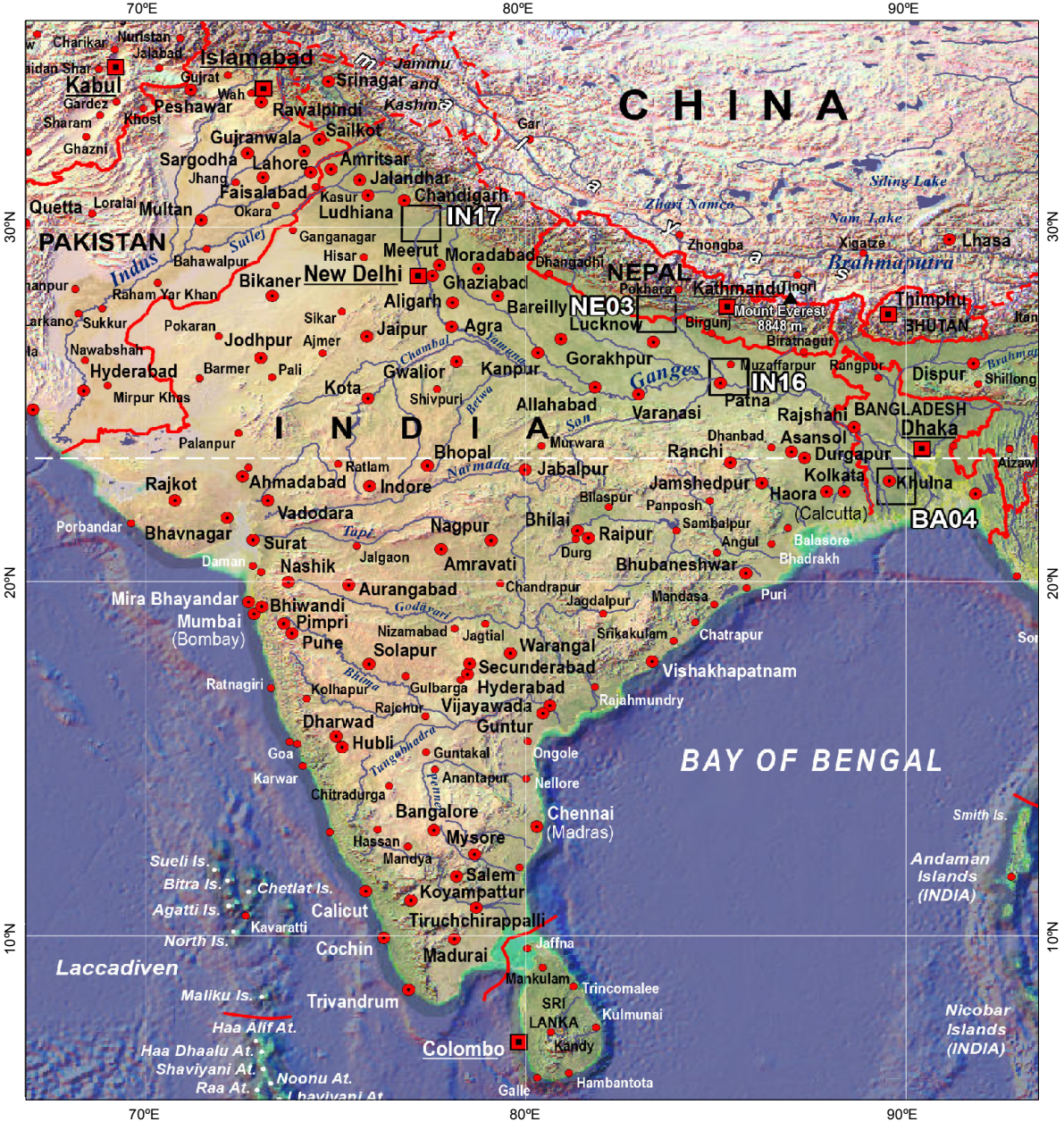
These sites serve as the initial focus of CCAFS partnership-building and long-term research activities falling within the following CCAFS Research Themes; Adaptation to Progressive Climate Change, Adaptation through Managing Climate Risk, Pro-Poor Climate Change Mitigation and Integration for Decision 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://ccaafs.cgiar.org/resources/baseline-surveys>).

More information on CCAFS work in all the three regions can be accessed at www.ccaafs.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 Khulna / Morrelganj in Bangladesh, in South Asia Region.

CCAFS Sites: South Asia



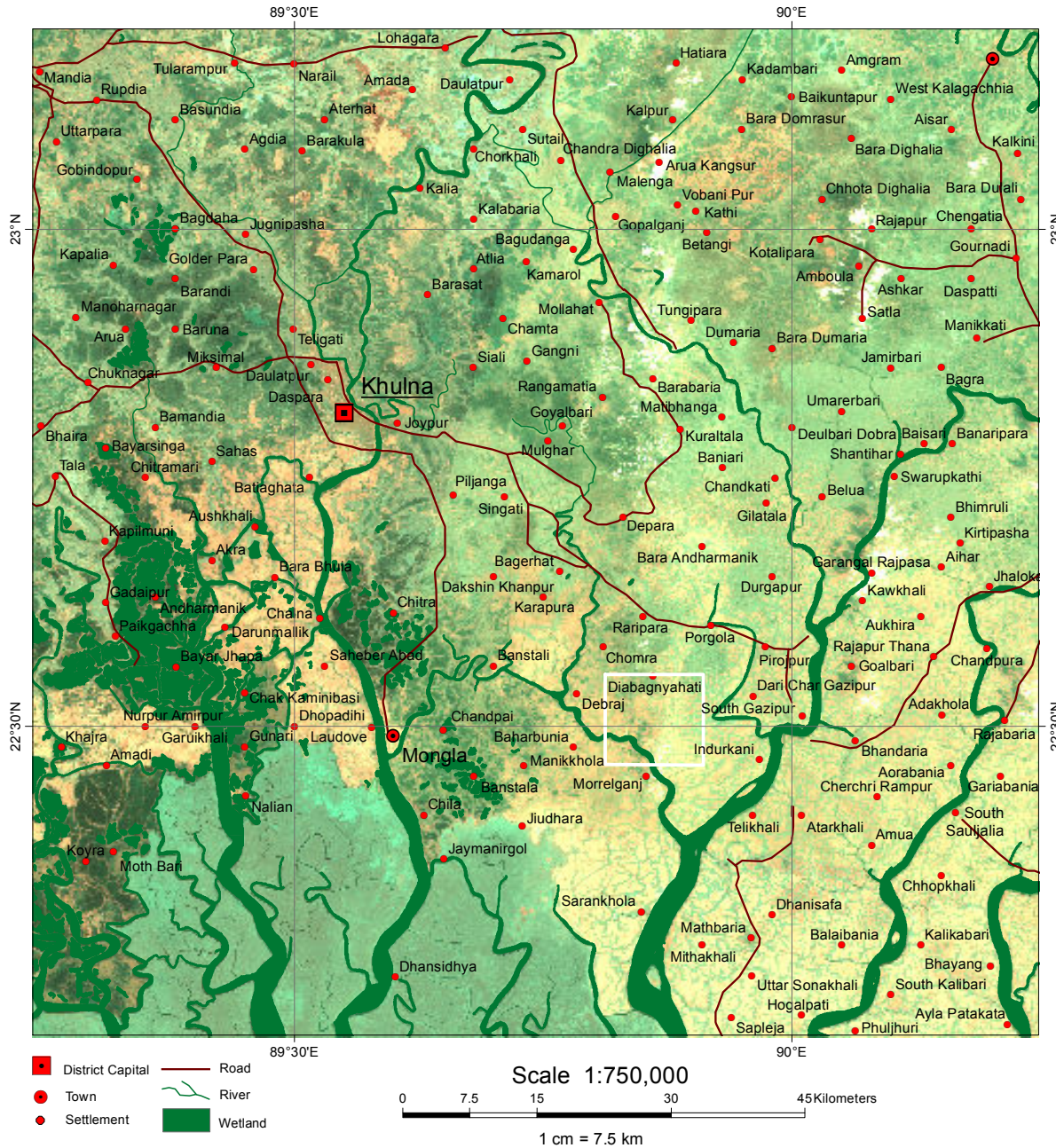
Bangladesh: Khulna (BA04)
 India: Bihar (IN16)
 India: Haryana (IN17)
 Nepal: Mid-Western Terai (NE03)

 CCAFS Country Sites

Citation: GeoMapa (2013a)

Topography Khulna

CCAFS Site BA04 Khulna / Morrelganj, Bangladesh



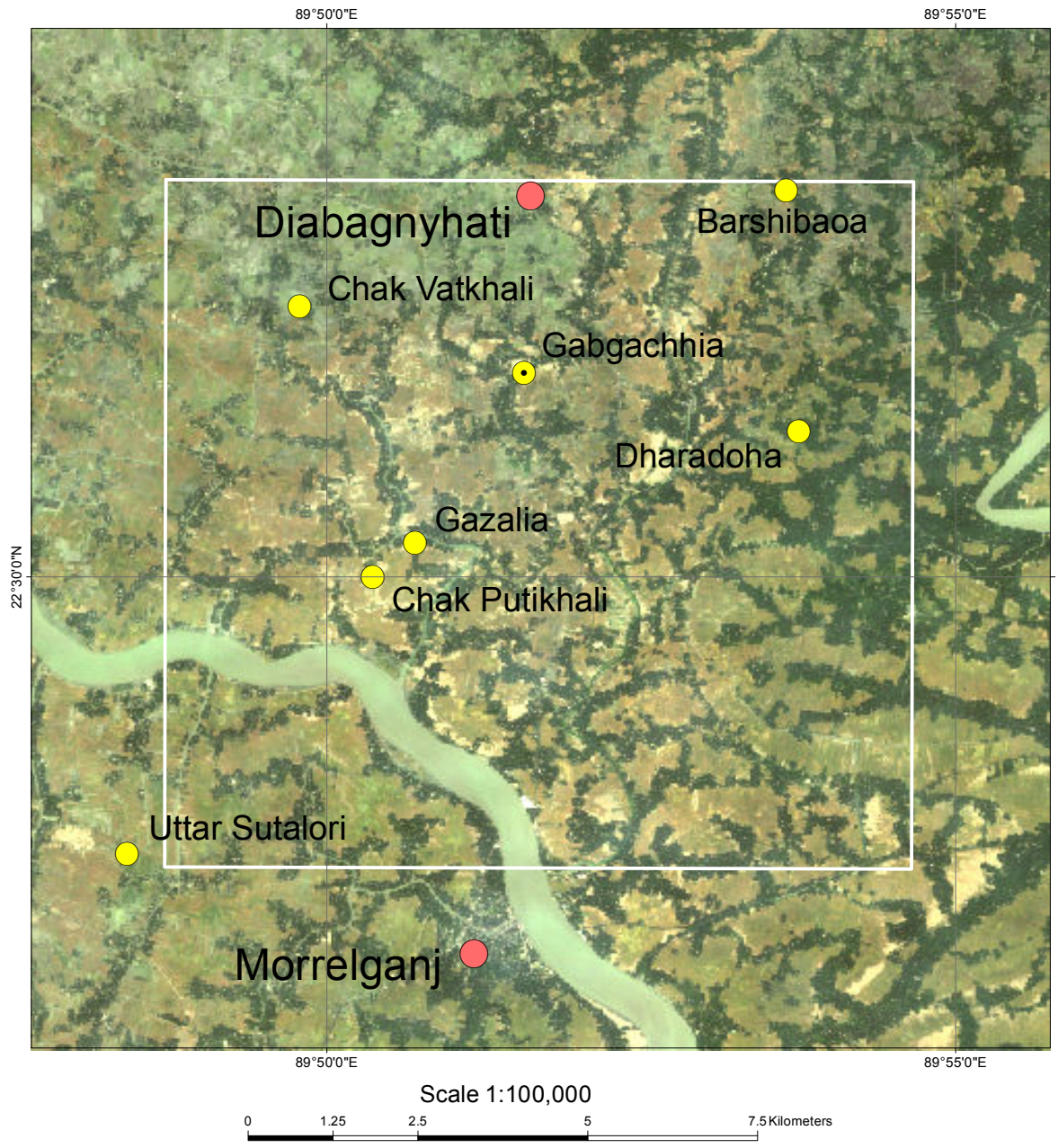
Coordinates of the CCAFS Baseline Sampling frame

89.911E 22.552N
89.911E 22.461N
89.812E 22.461N
89.812E 22.552N



Sampling frame size: 10km x 10km

Satellite Image Morrelganj



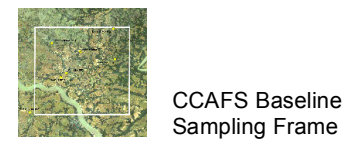
RapidEye imagery from 26-12-2011
at 5m ground resolution

HBS= Household Baseline Survey

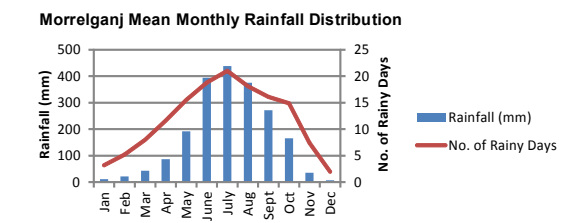
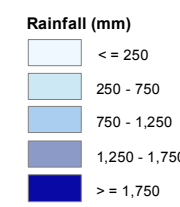
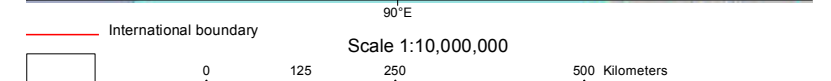
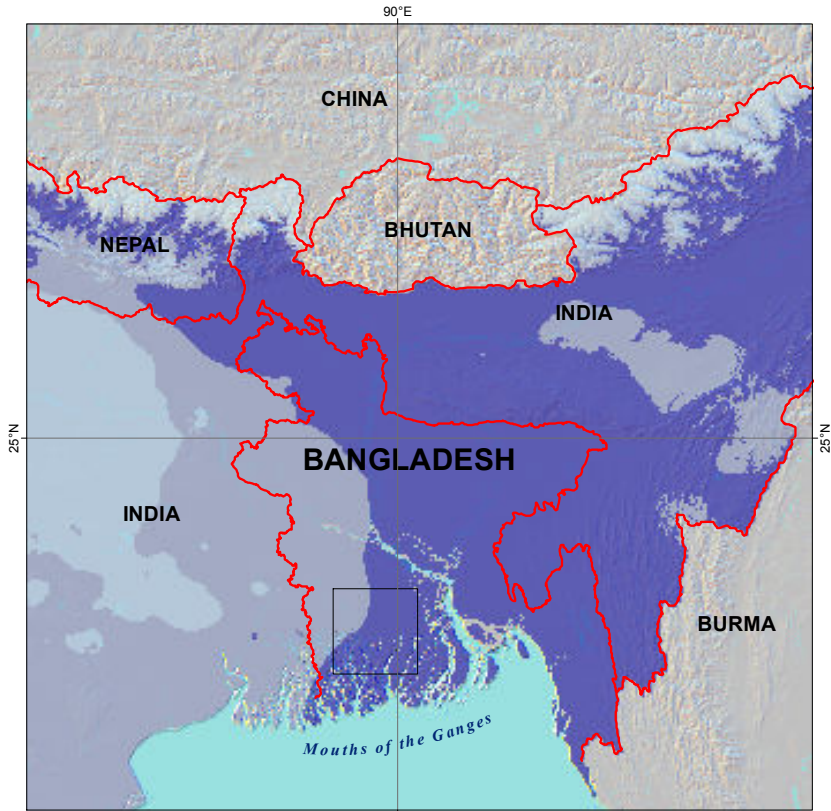
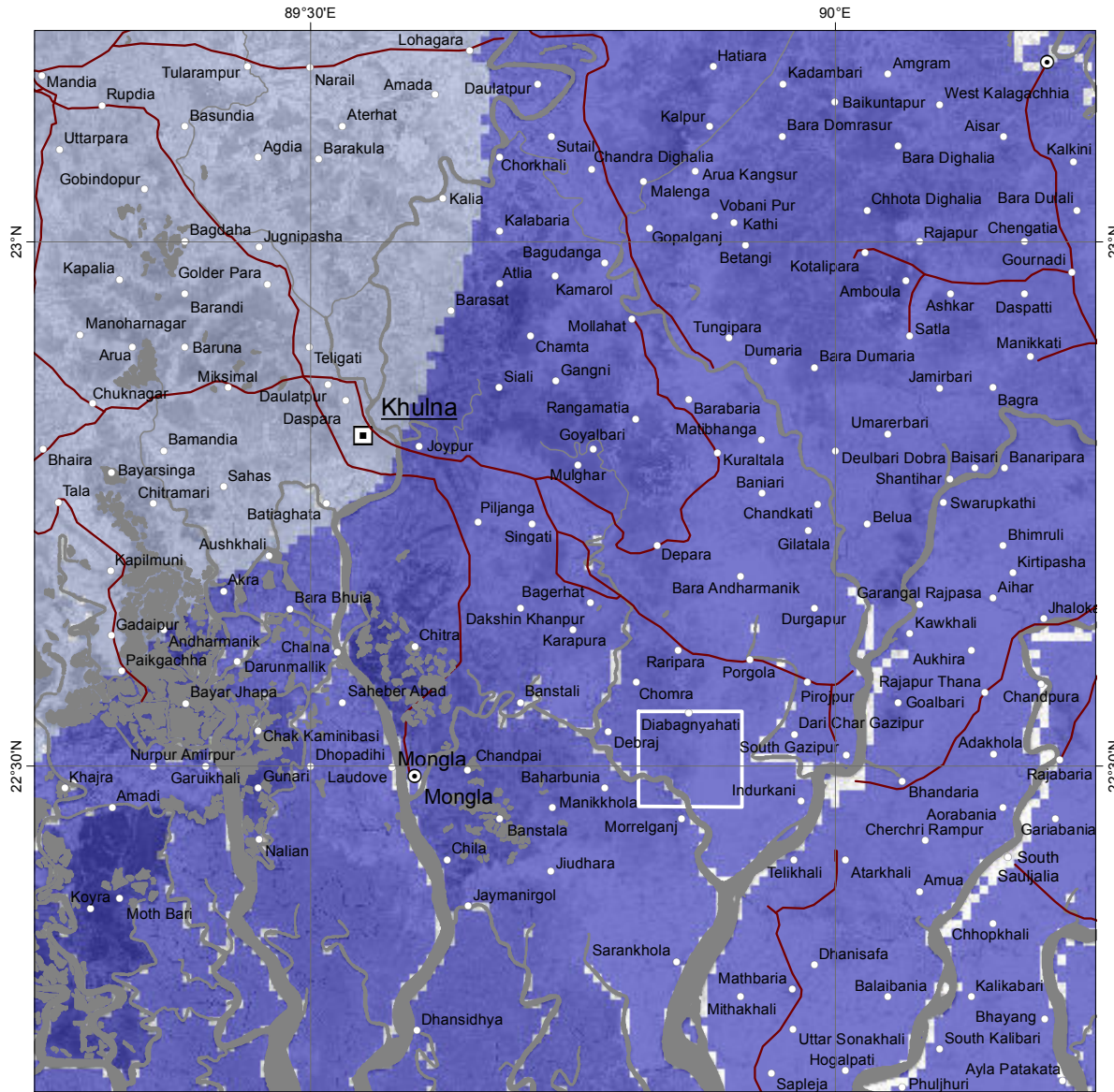
VBS= Village Baseline Survey

OBS= Organizational Baseline Survey

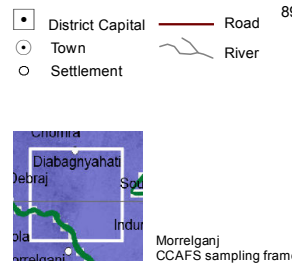
- Settlement
- CCAFS VBS/OBS village
- CCAFS HBS villages



Annual Rainfall



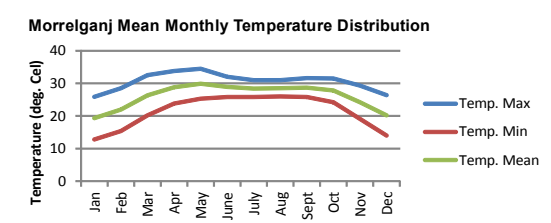
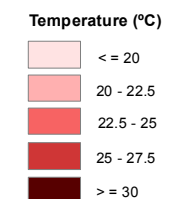
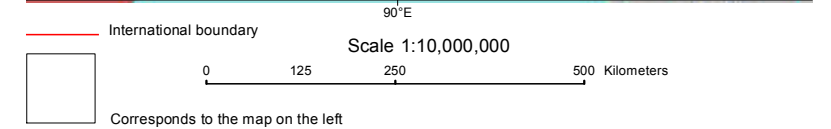
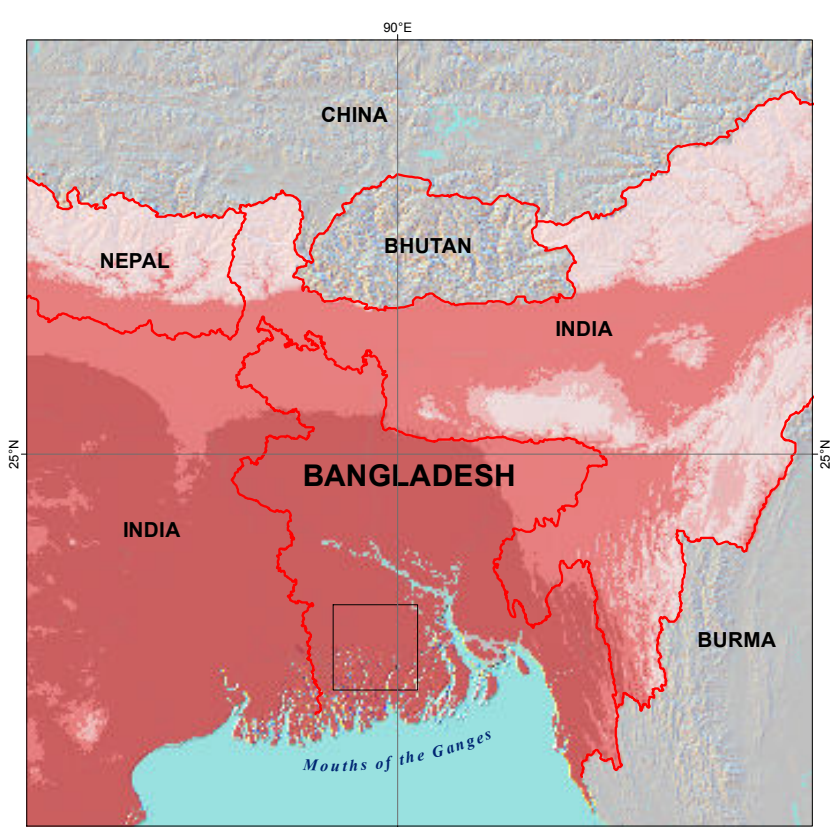
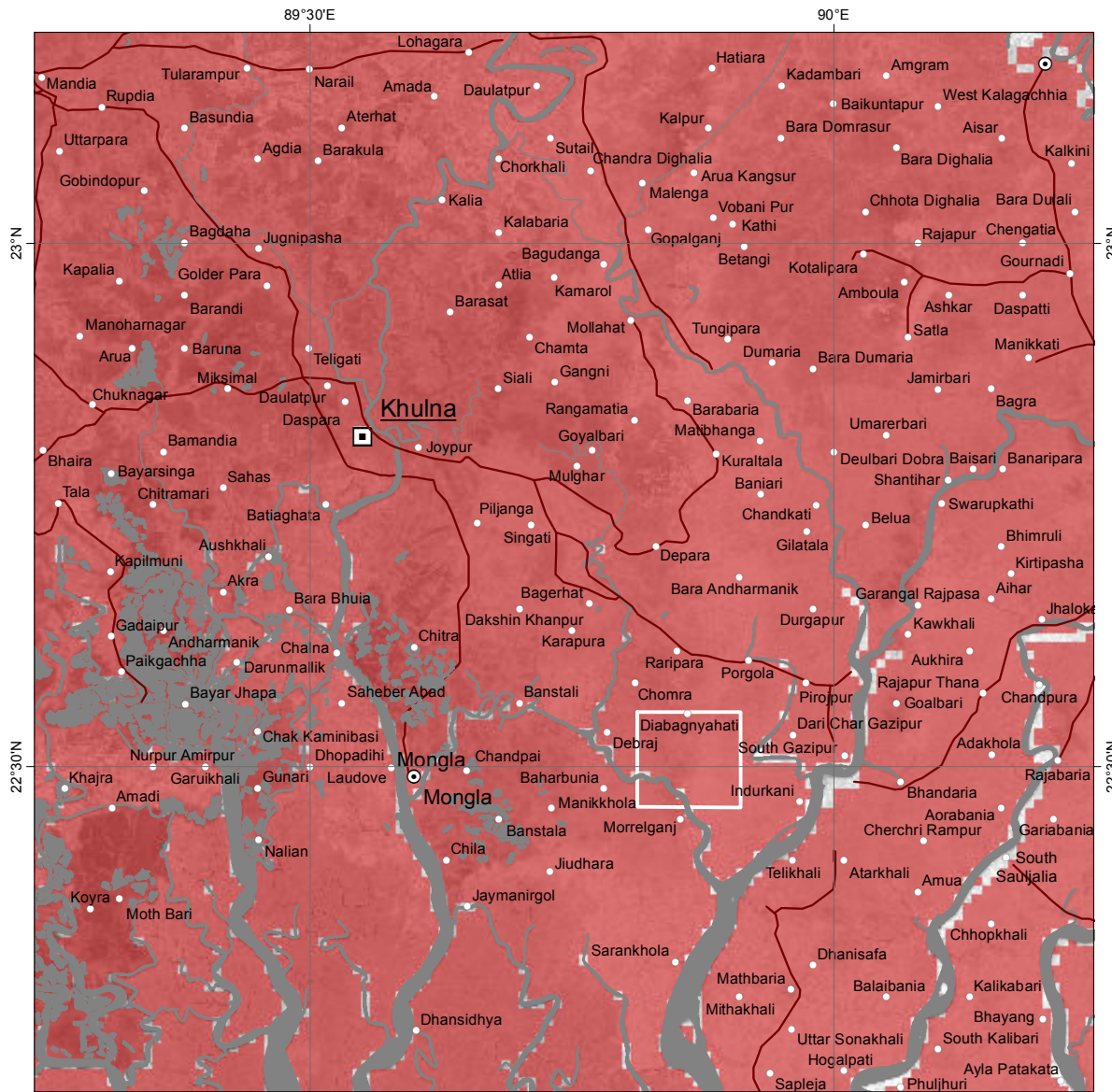
Citation: Jones et al (2002)



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

Citation: Hijmans et. al (2005)

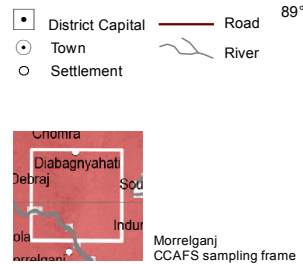
Annual Temperature



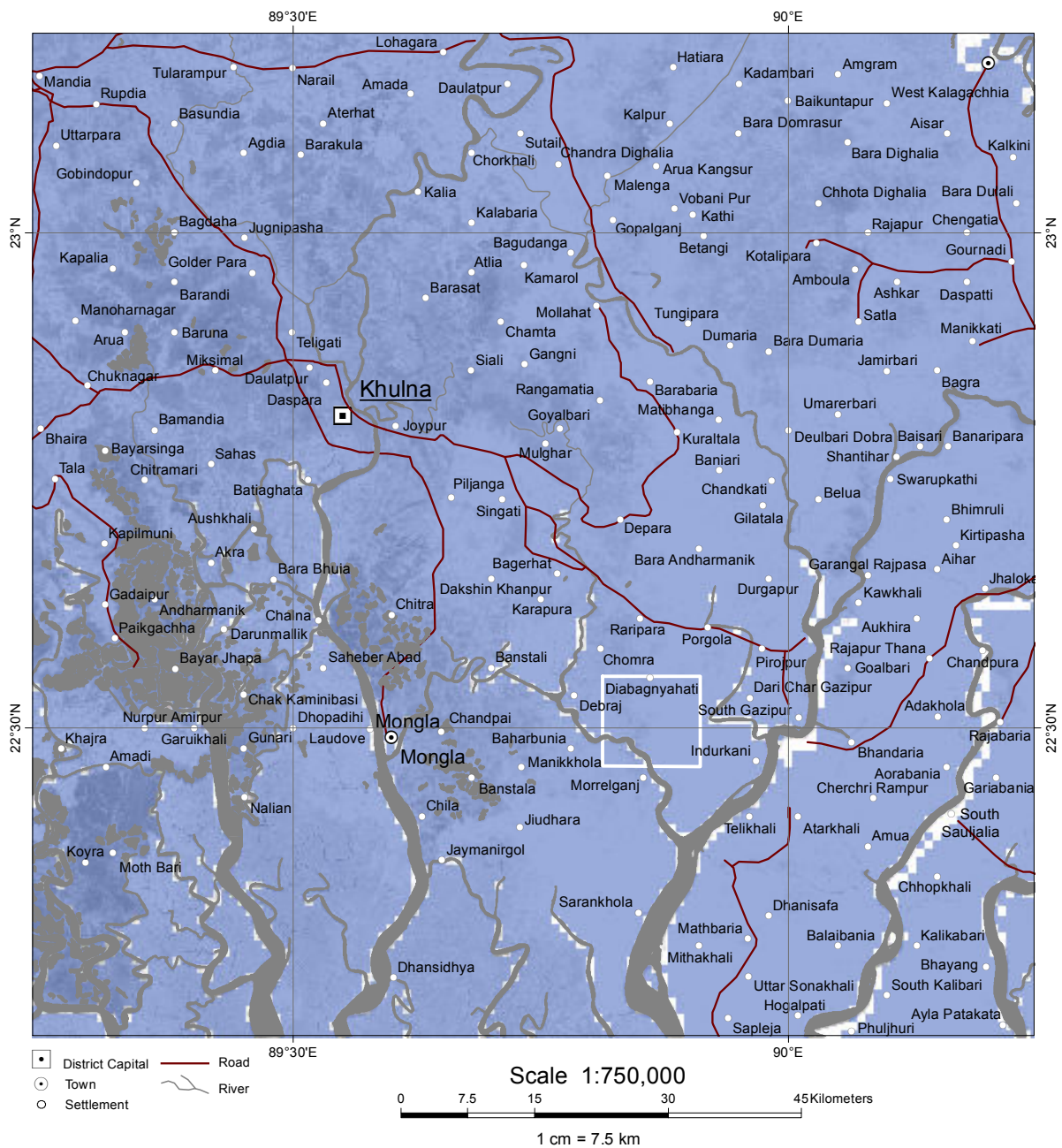
Citation: Jones et al (2002)

Annual Temperature represents annual temperature data of current interpolations of observed data, averaged for 1950 - 2000

Citation: Hijmans et al (2005)

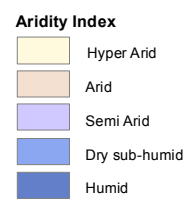


Aridity Index



International boundary

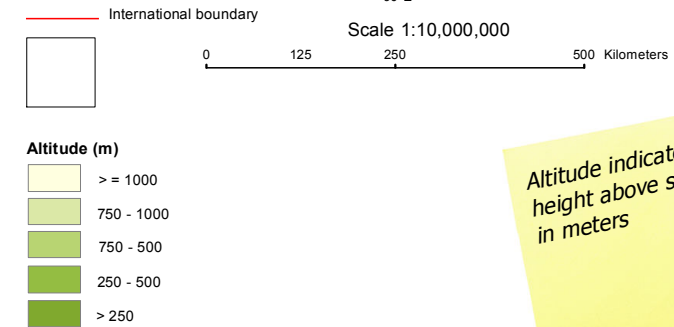
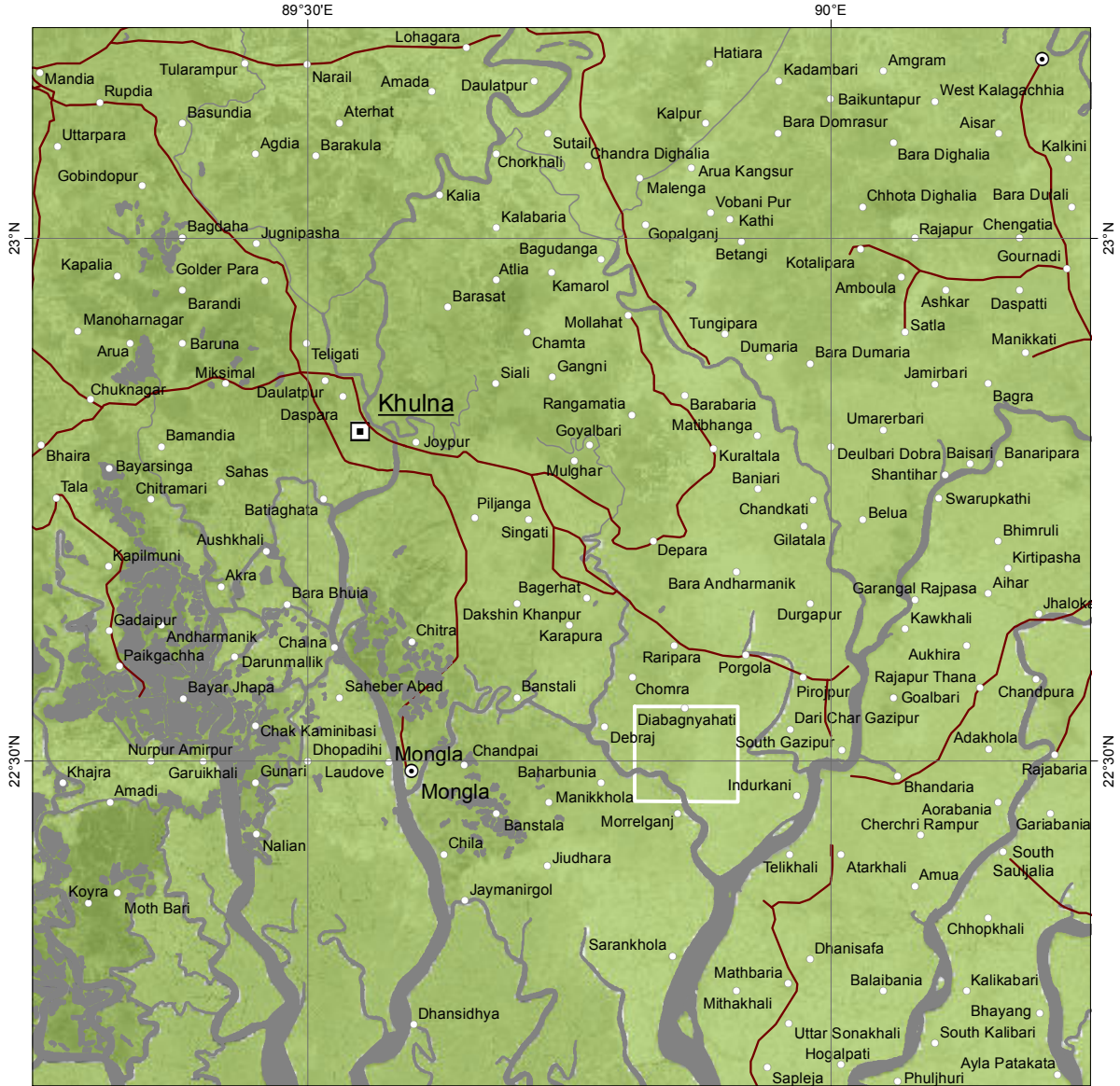
Corresponds to the map on the left



Aridity Index indicates the level of dryness at a given location of known rainfall, evapotranspiration

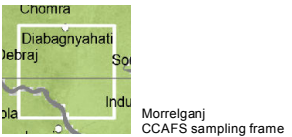
Citation: CGIAR CSI (2009)

Altitude



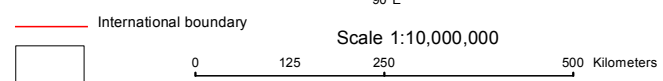
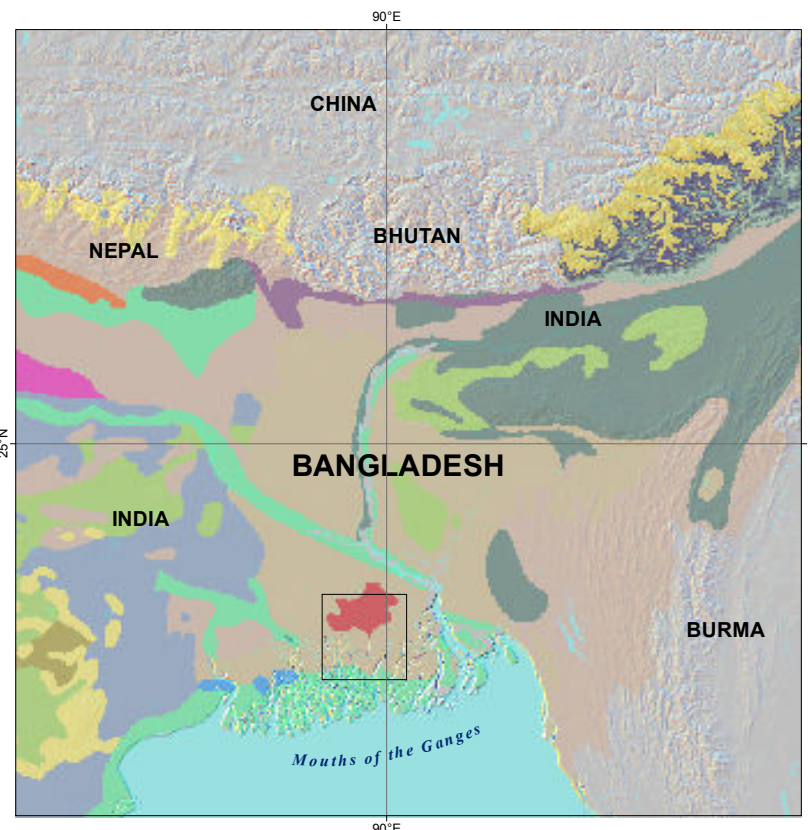
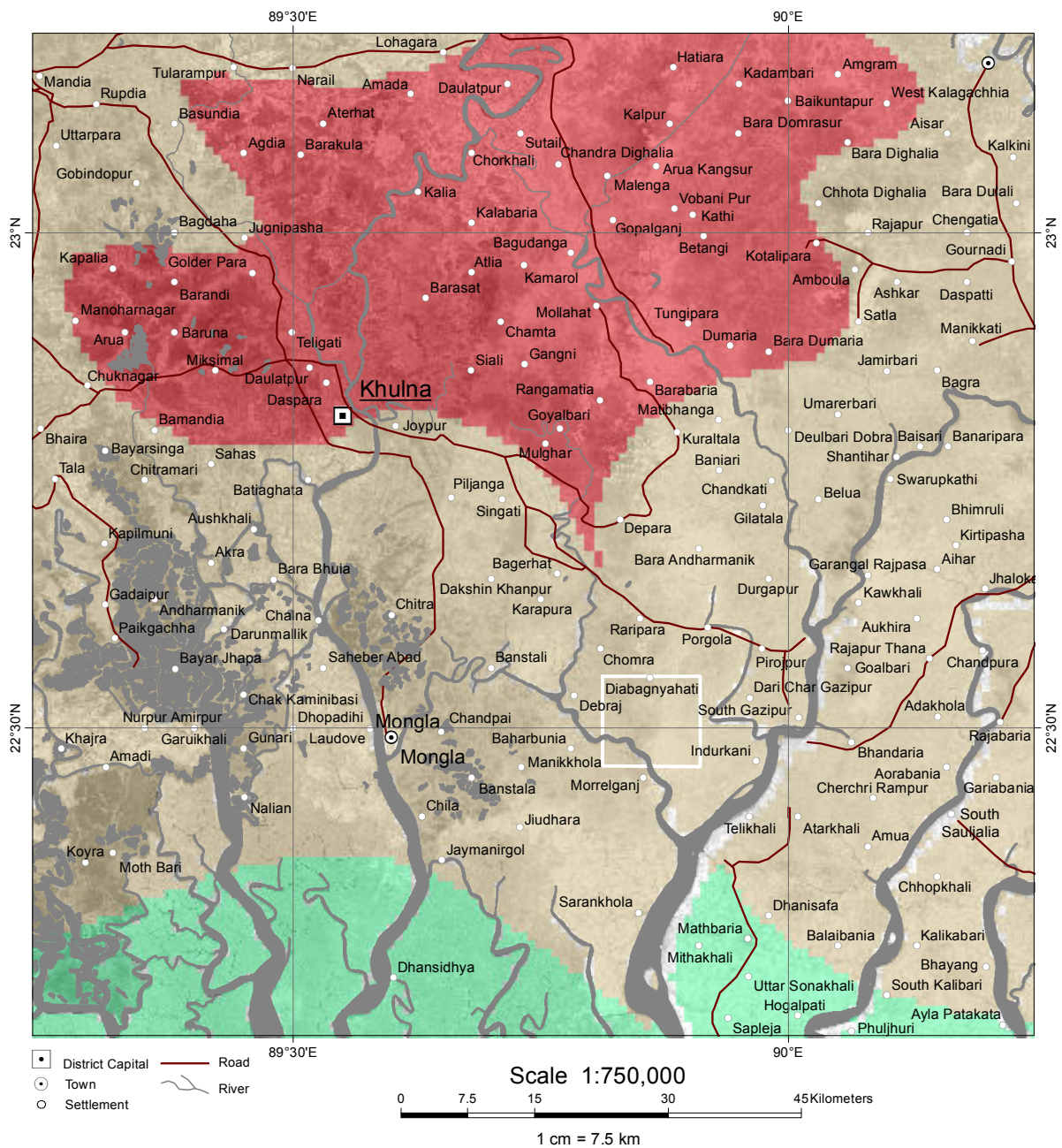
Altitude indicates the height above sea level in meters

- District Capital
- Town
- Settlement
- Road
- River



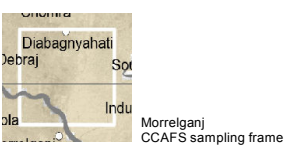
Citation: Jarvis et al (2008)

Soil Type

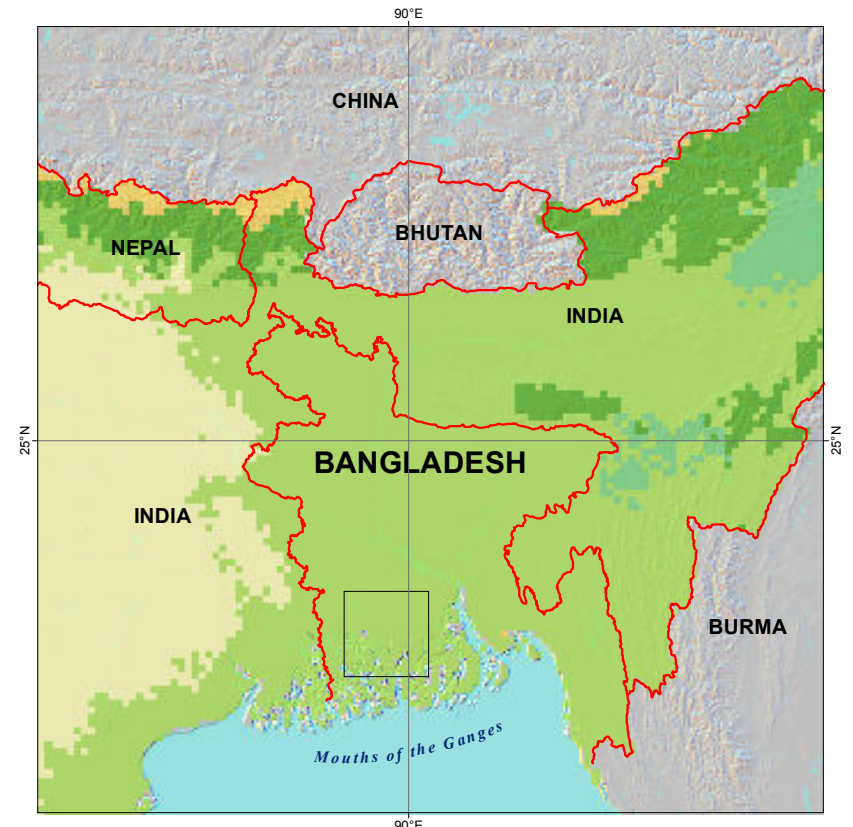
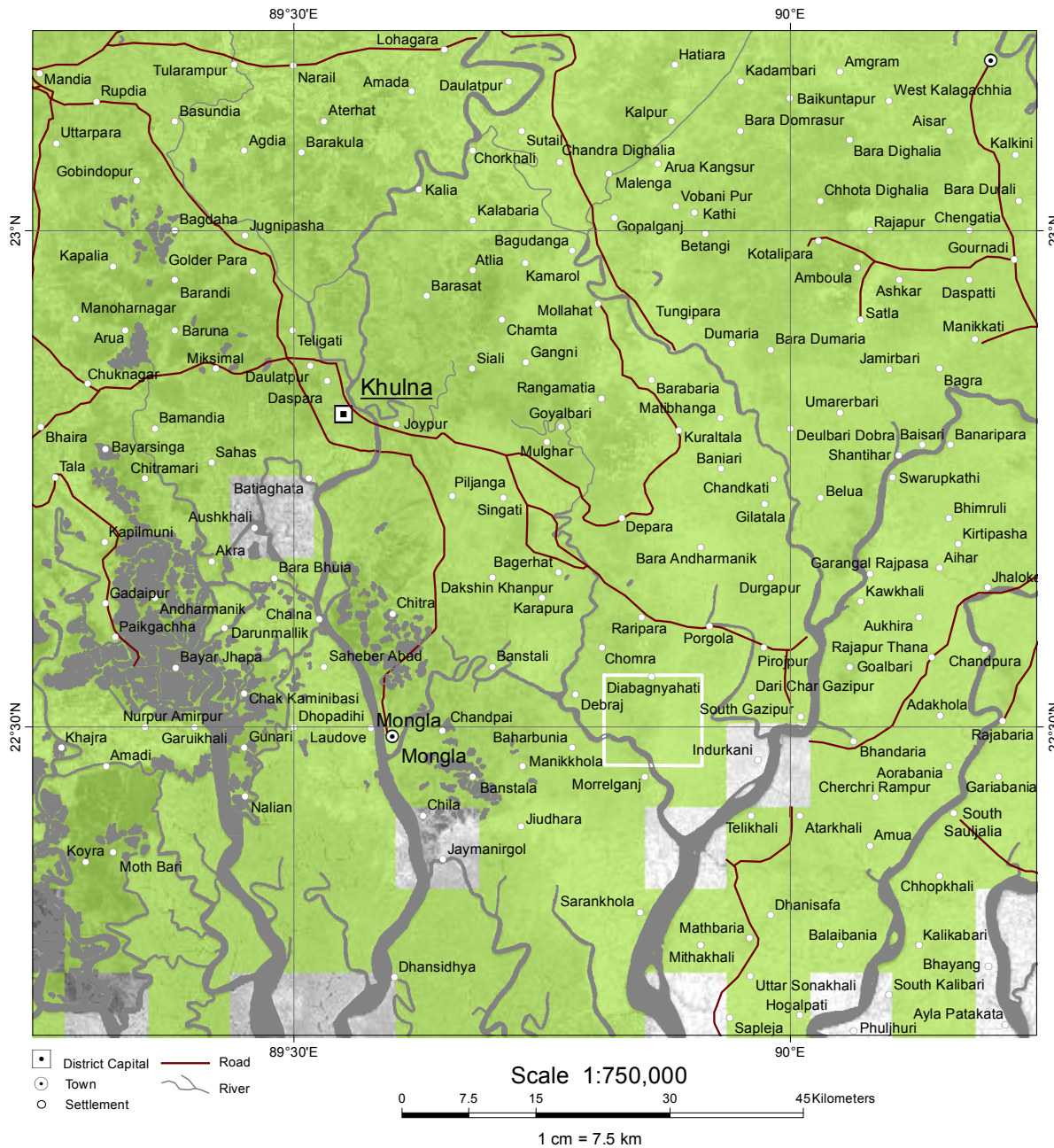


- Soil Type ***
- Fluvisols
 - Gleysols
 - Histosols
- * Legend corresponds to left map

Soil Type refers to the soil group as per the FAO classification. Soil groups are defined by their parent material and morphogenetic characteristics in terms of structural properties and texture (sand, silt and clay content), as well as organic matter content.



Agro-Ecological Zones



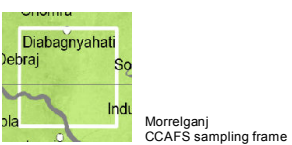
— International boundary

Scale 1:10,000,000

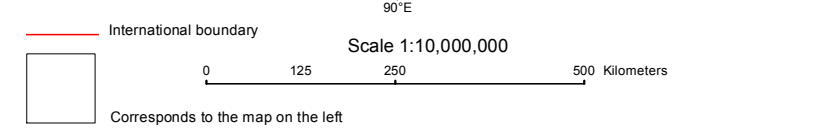
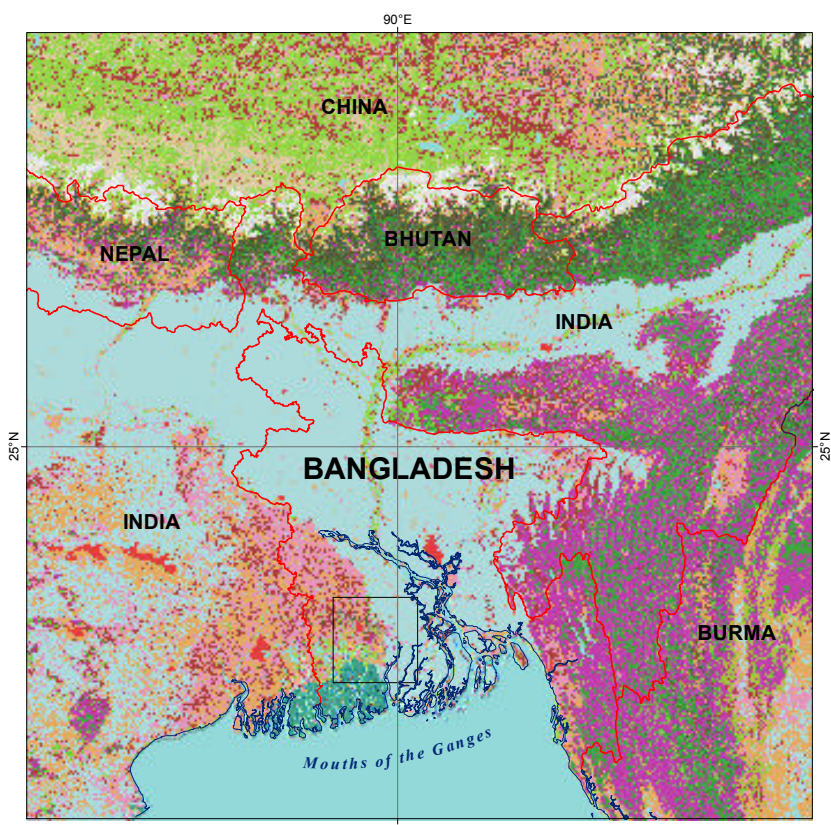
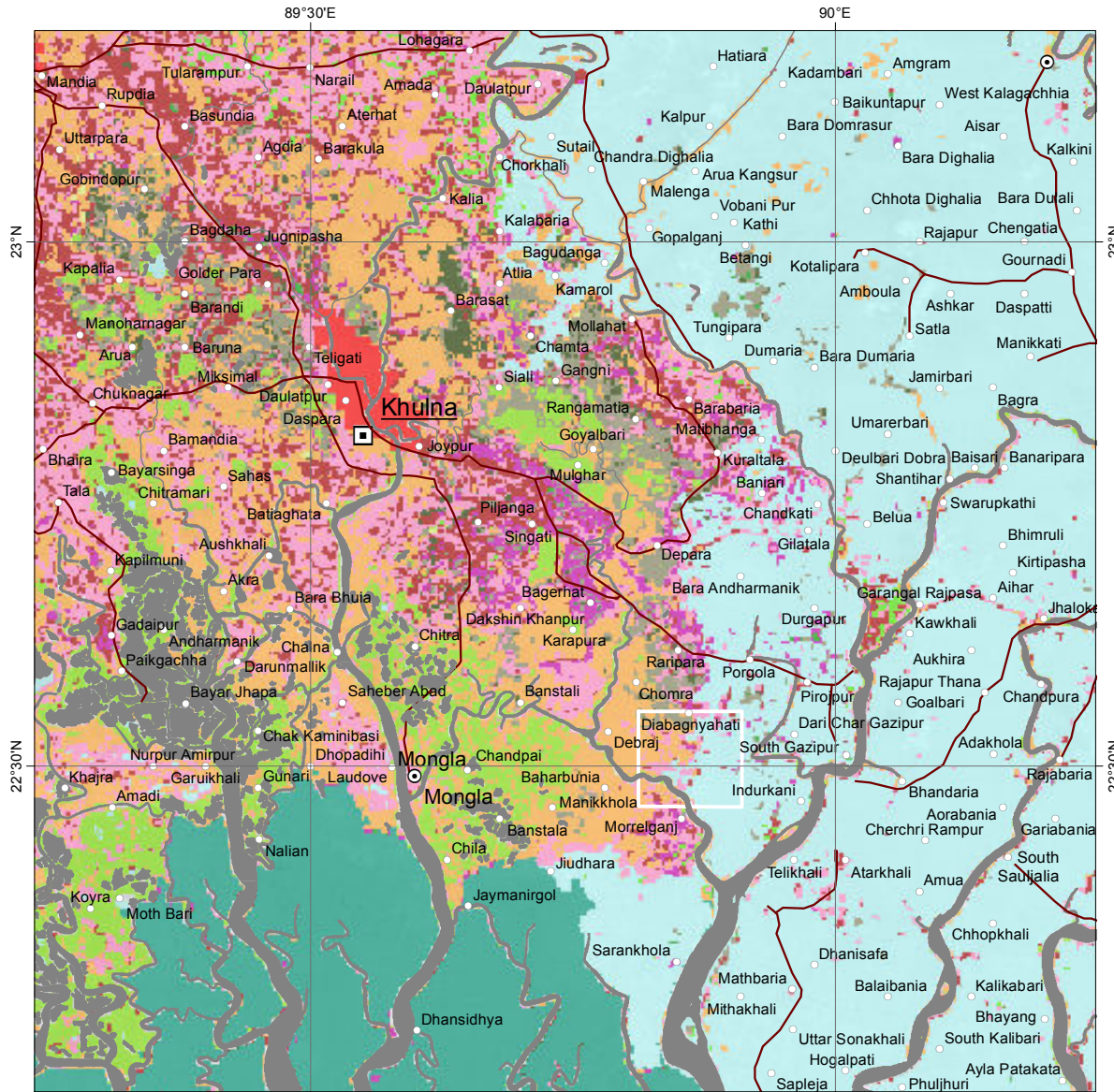
0 125 250 500 Kilometers

- Agro-Ecological Zones**
- Arid
 - Semi-Arid
 - Sub-Humid
 - Humid
 - Temperate/Highlands

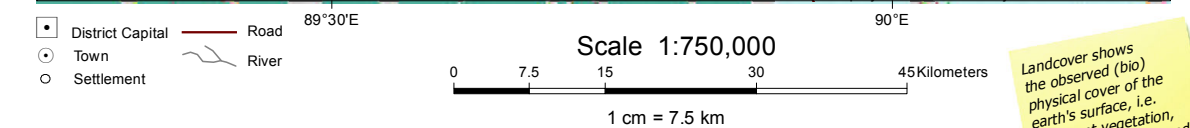
Agro-Ecological Zones indicate the division of land areas that have similar characteristics related to land suitability, potential agricultural production and environmental impact.



Citation: FAO (2008)

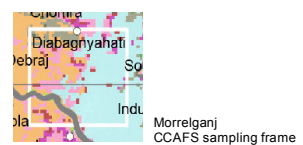


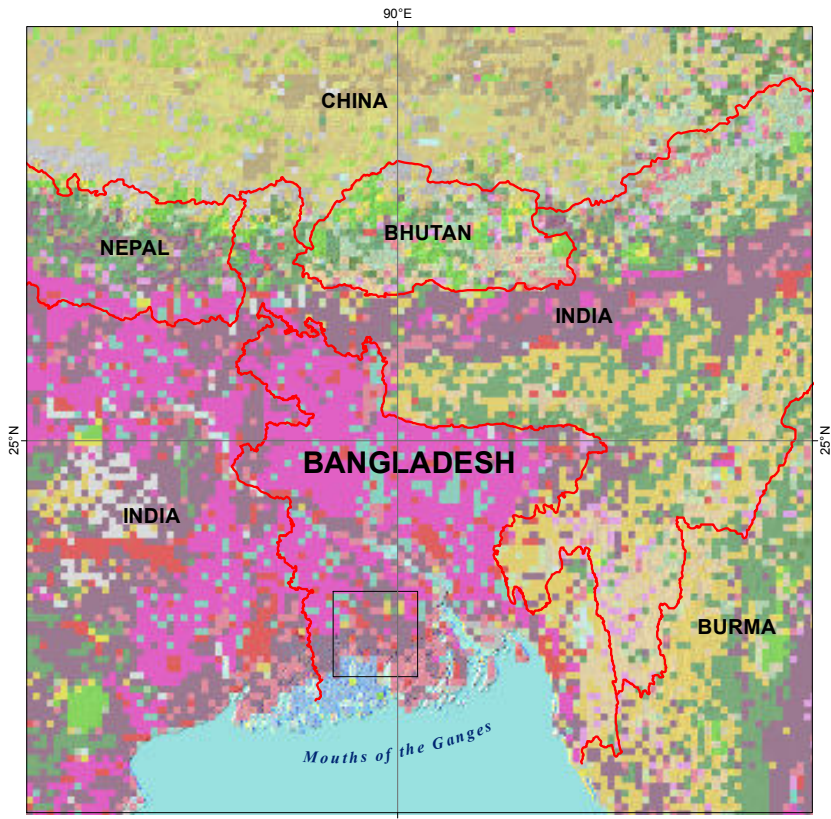
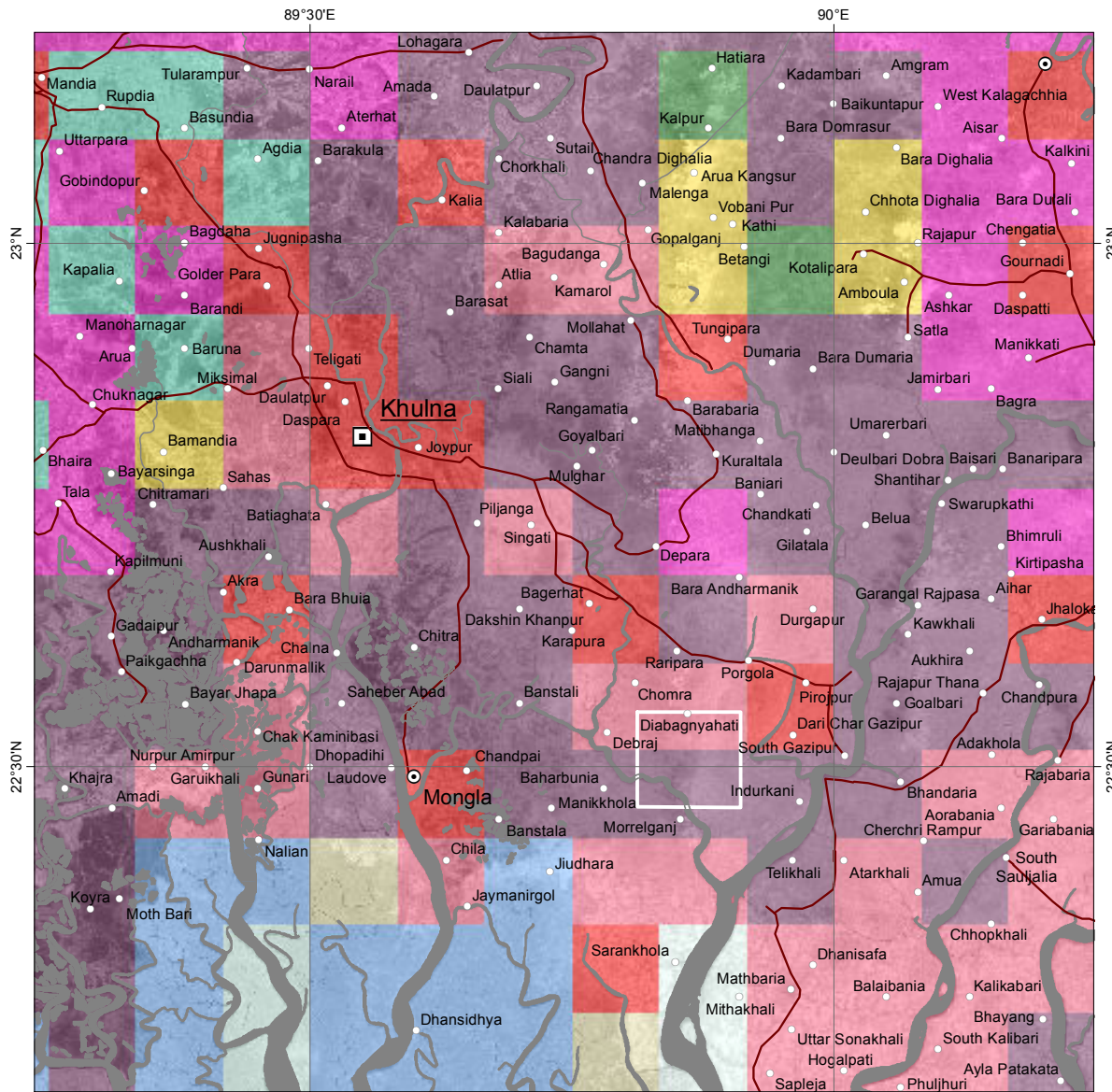
- Landcover**
- Irrigated croplands
 - Rainfed croplands
 - Mosaic Croplands/Vegetation
 - Mosaic Vegetation/Croplands
 - Closed broadleaved deciduous forest
 - Open broadleaved deciduous forest
 - Open needleleaved deciduous or evergreen forest
 - Mosaic Forest-Shrubland/Grassland
 - Closed to open grassland
 - Closed to open broadleaved evergreen or semi-deciduous forest
 - Closed to open mixed broadleaved and needleleaved forest
 - Mosaic Grassland/Forest-Shrubland
 - Closed to open shrubland
 - Sparse vegetation
 - Closed to open vegetation regularly flooded
 - Urban area
 - Bare areas
 - Closed to open broadleaved forest regularly flooded (fresh-brackish water)



Landcover shows the observed (bio) physical cover of the earth's surface, i.e. dominant vegetation, land use and man-made features.

Citation: Arino et al (2009)

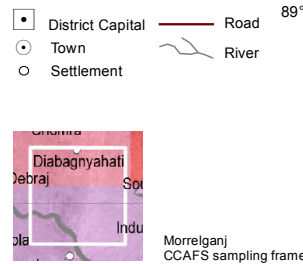




International boundary
Scale 1:10,000,000
0 125 250 500 Kilometers

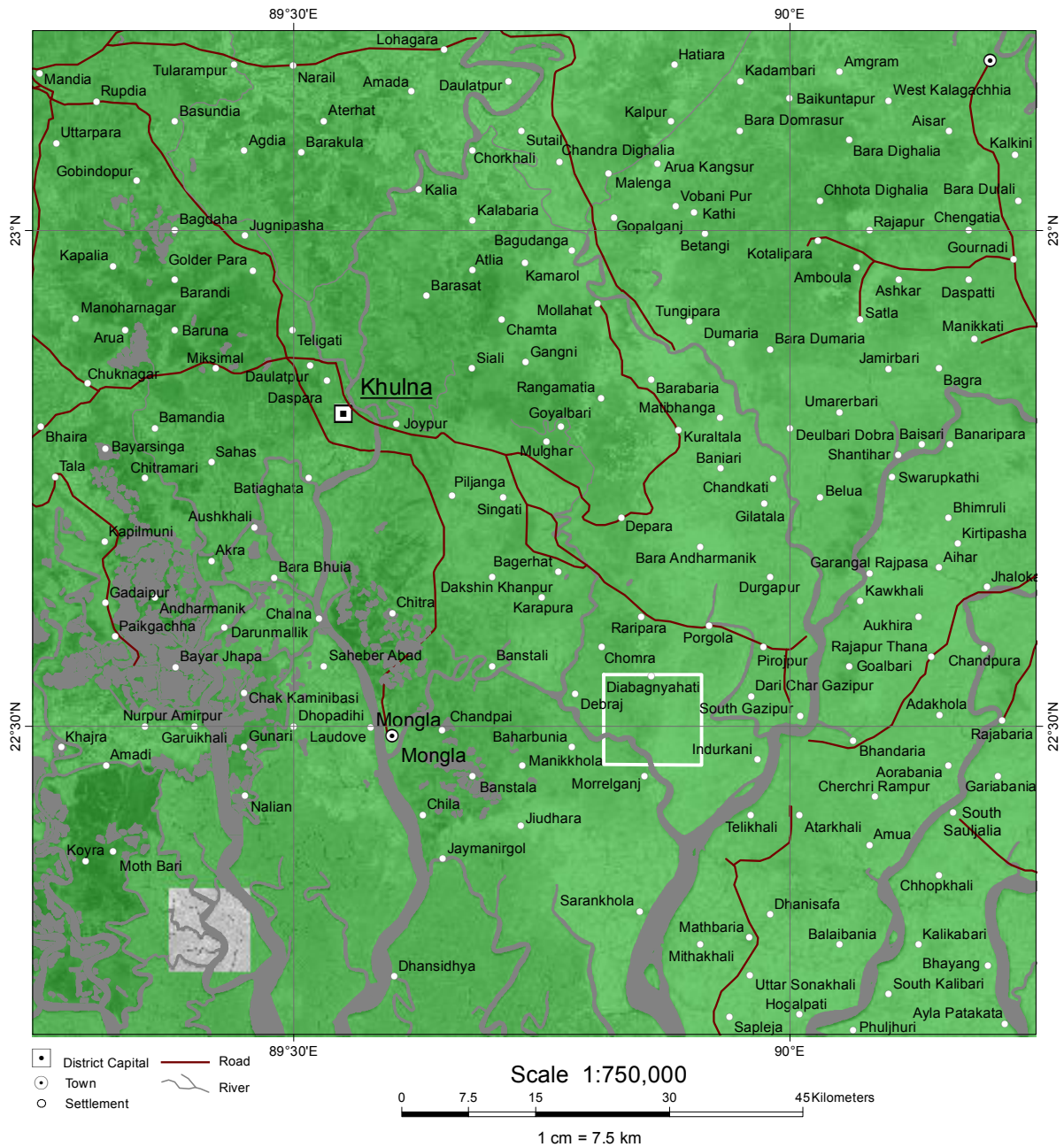
- Landuse ***
- Forest with moderate higher livestock density
 - Shrubs protected
 - Shrubs high livestock density
 - Rainfed crops (Subsistence/Commercial)
 - Crops and high livestock density
 - Crops, large-scale irrigated, moderate or higher livestock density
 - Urban area
 - Wetlands protected
 - Open Water inland Fisheries
- * Legend corresponds to left map

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

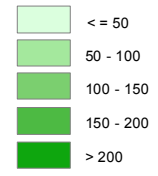


Scale 1:750,000
0 7.5 15 30 45 Kilometers
1 cm = 7.5 km

Length of Growing Period 2000

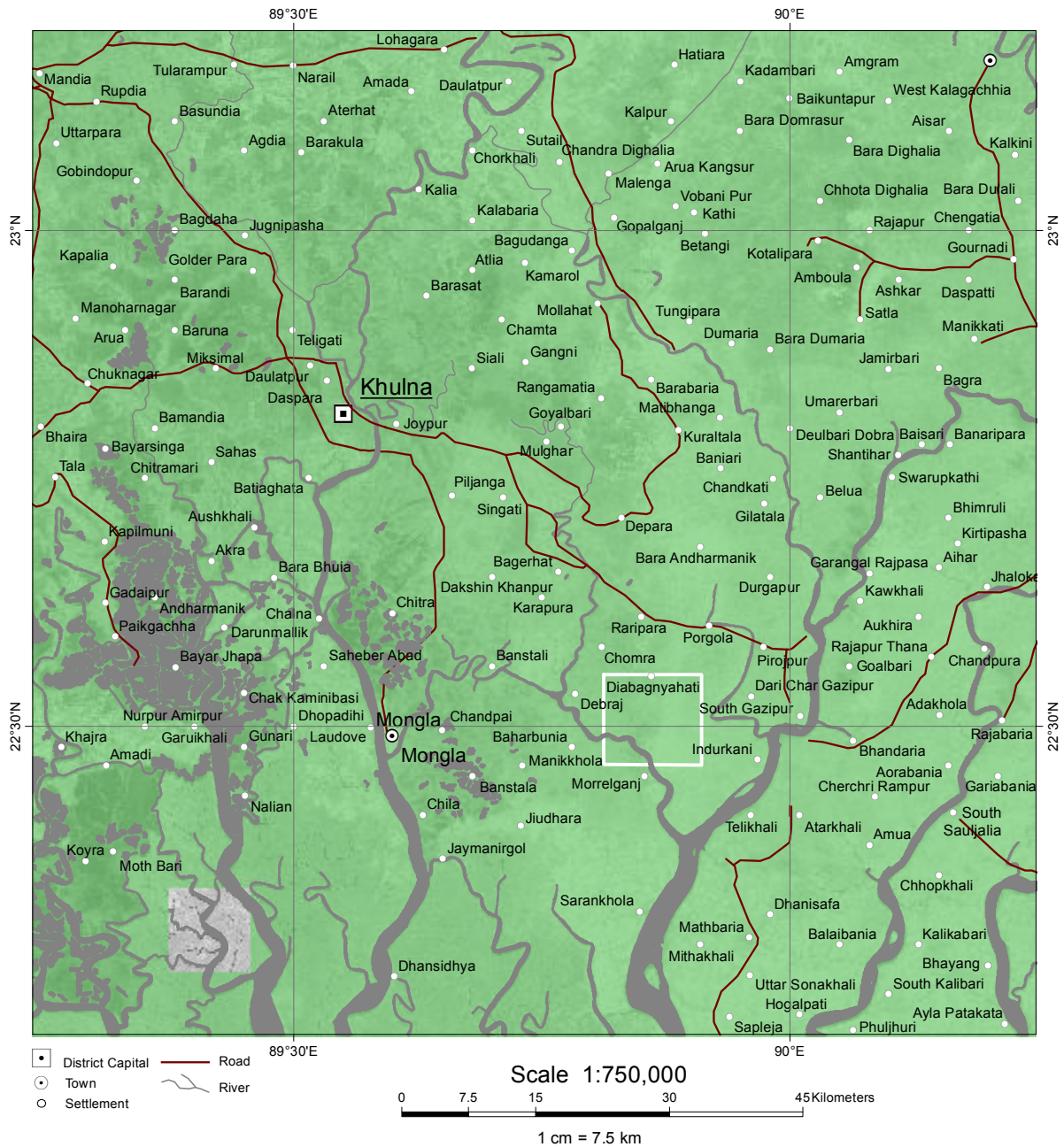


Length of Growing Period (Days)



The Length of Growing Period (LGP) is defined as the number of days in a year during which there is available rainfall and soil moisture supply for plant growth.

Length of Growing Period 2030



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.

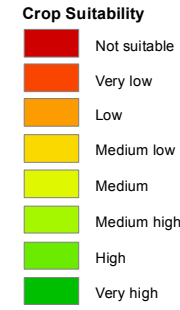
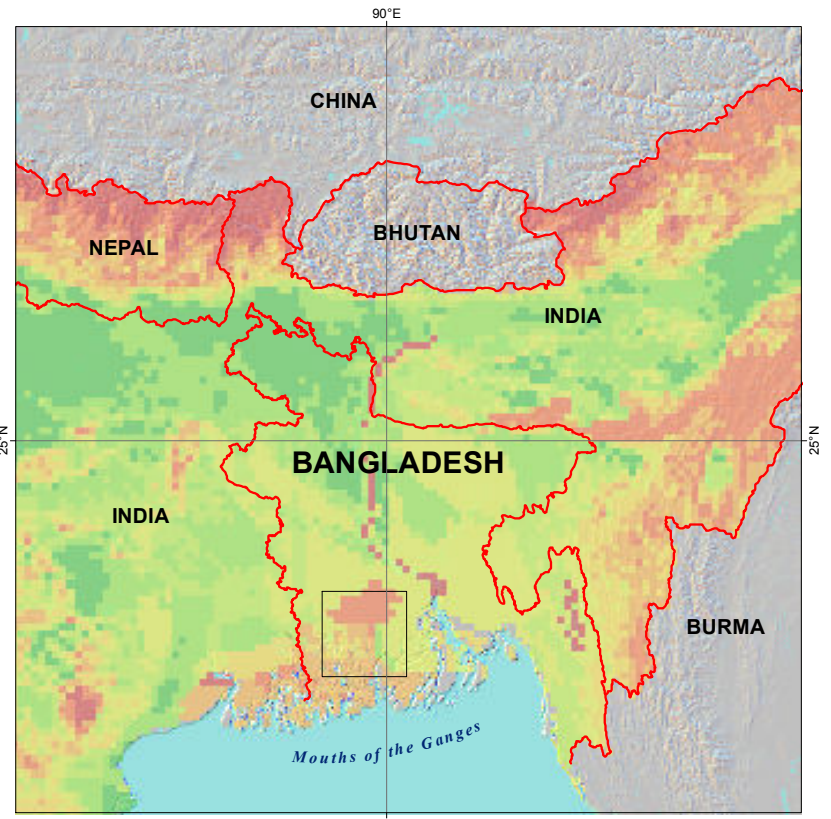
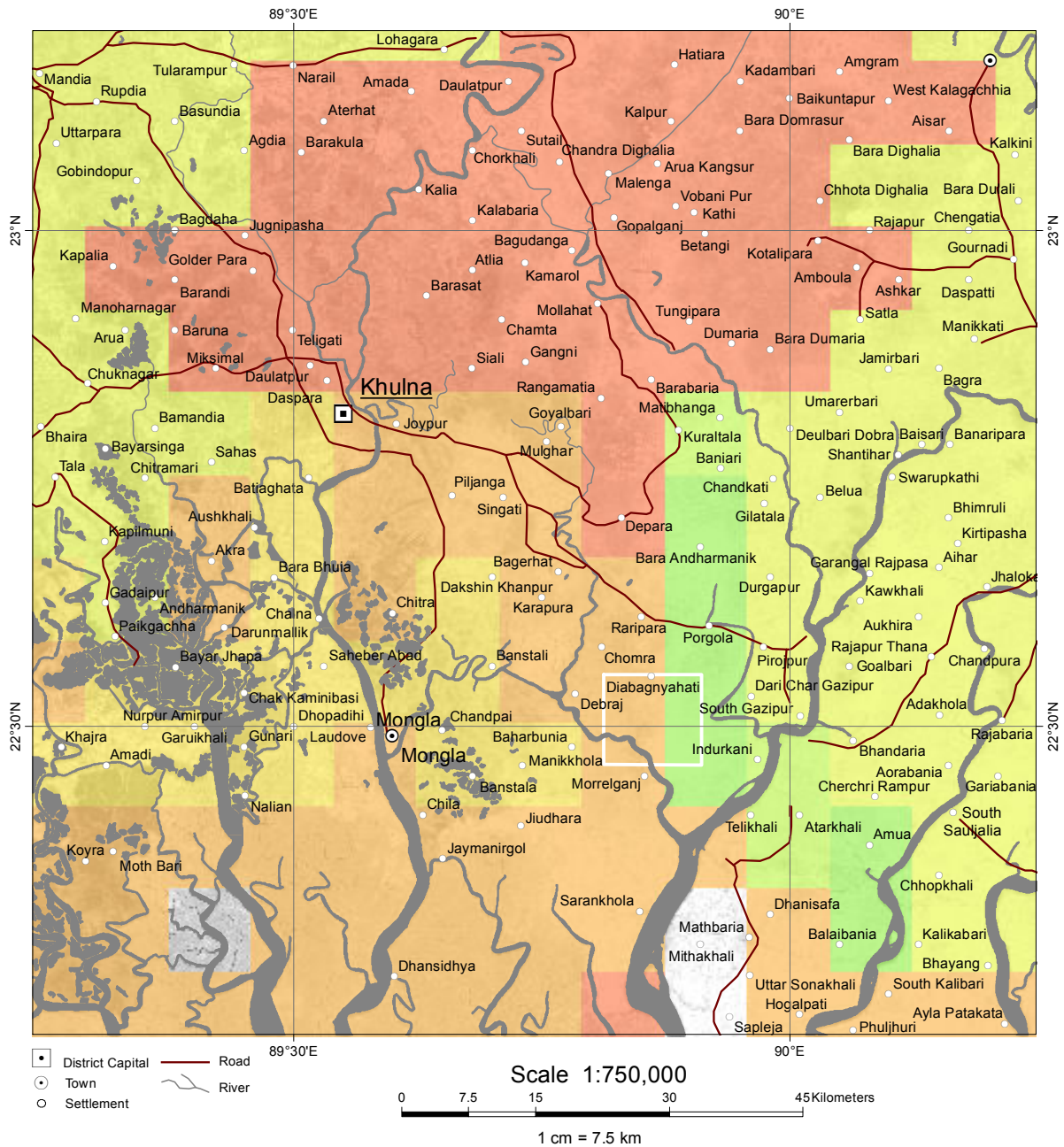
International boundary
Scale 1:10,000,000
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Length of Growing Period (Days)

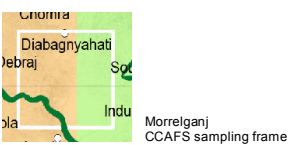
- <= 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200

Citation: Thornton et al (2006)

Crop Suitability

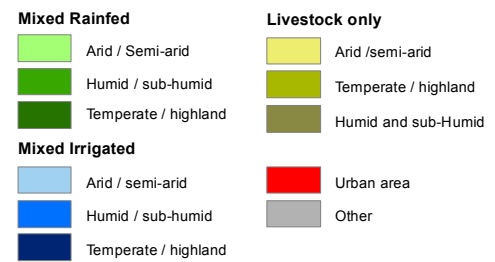
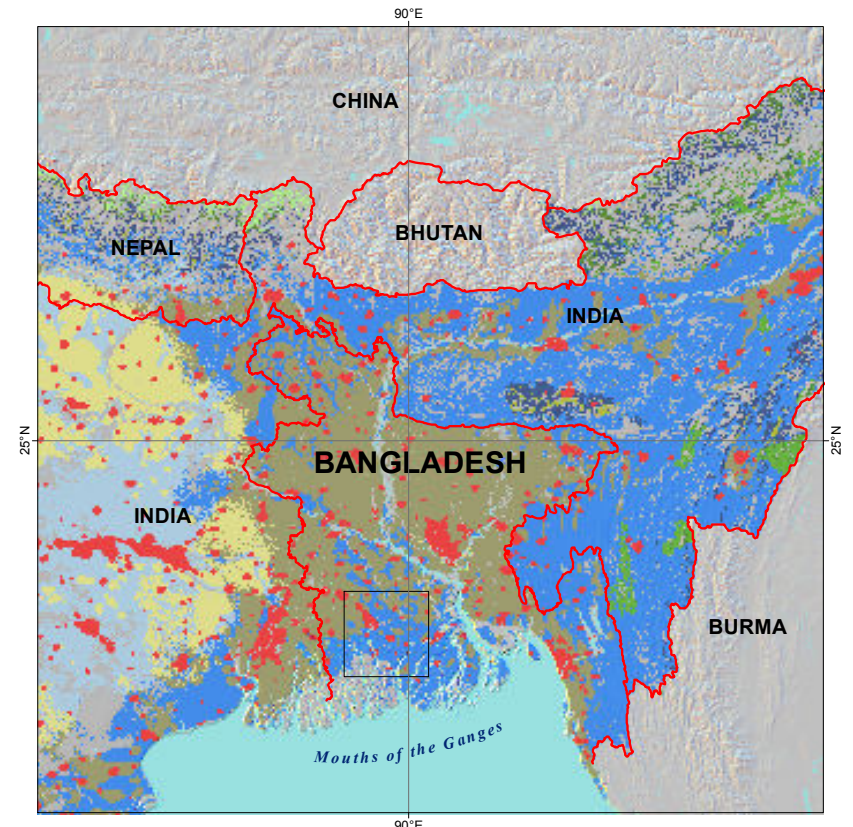
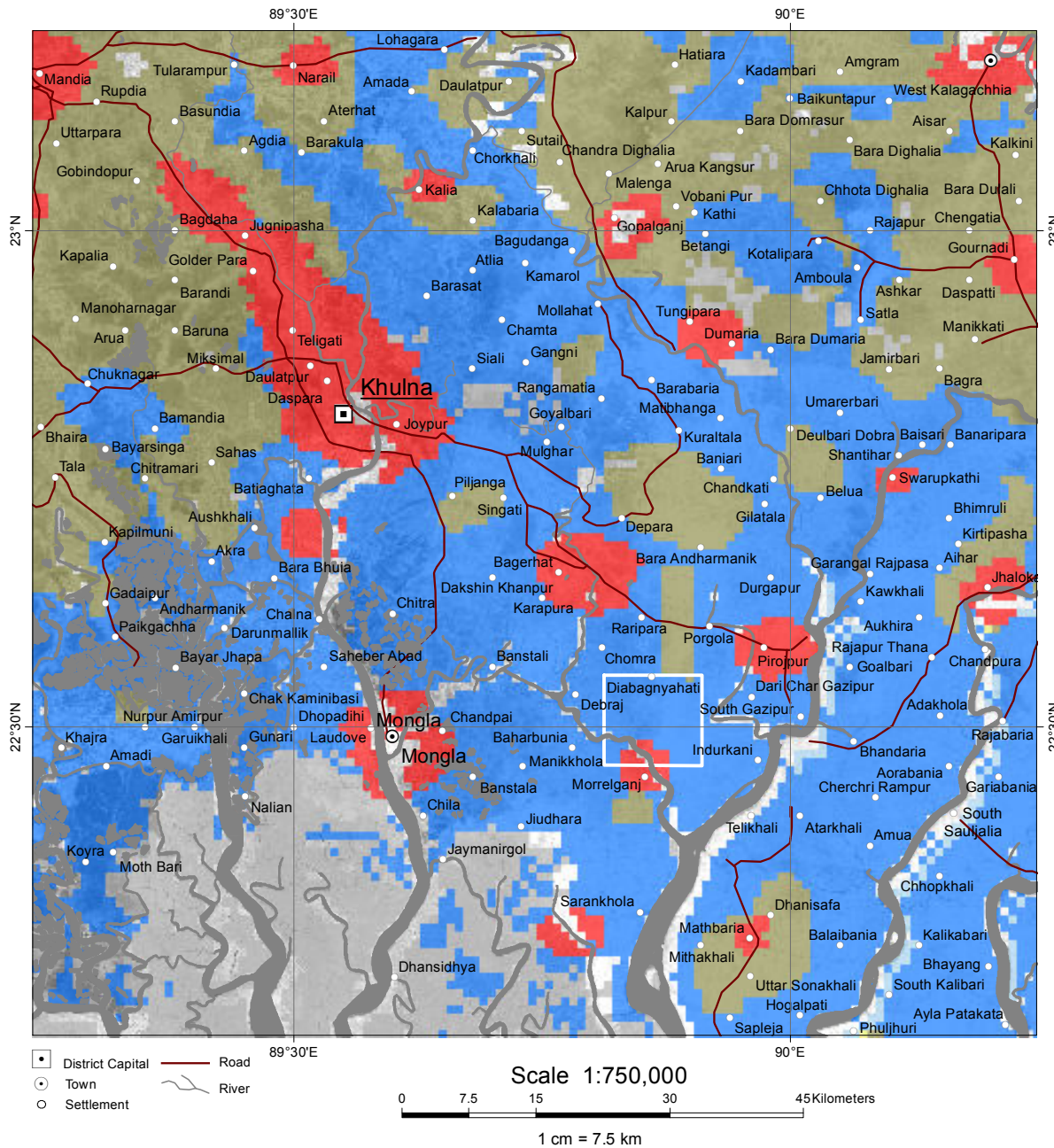


Crop Suitability refers to the land resource assessment that considers agricultural land use options with relevant agro-ecological condition to estimate expected cropping activities.



Citation: FAO and IIASA (2007)

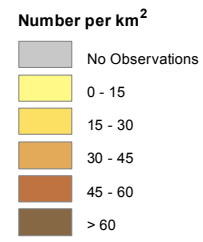
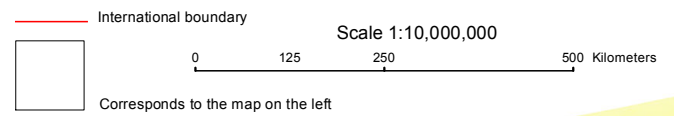
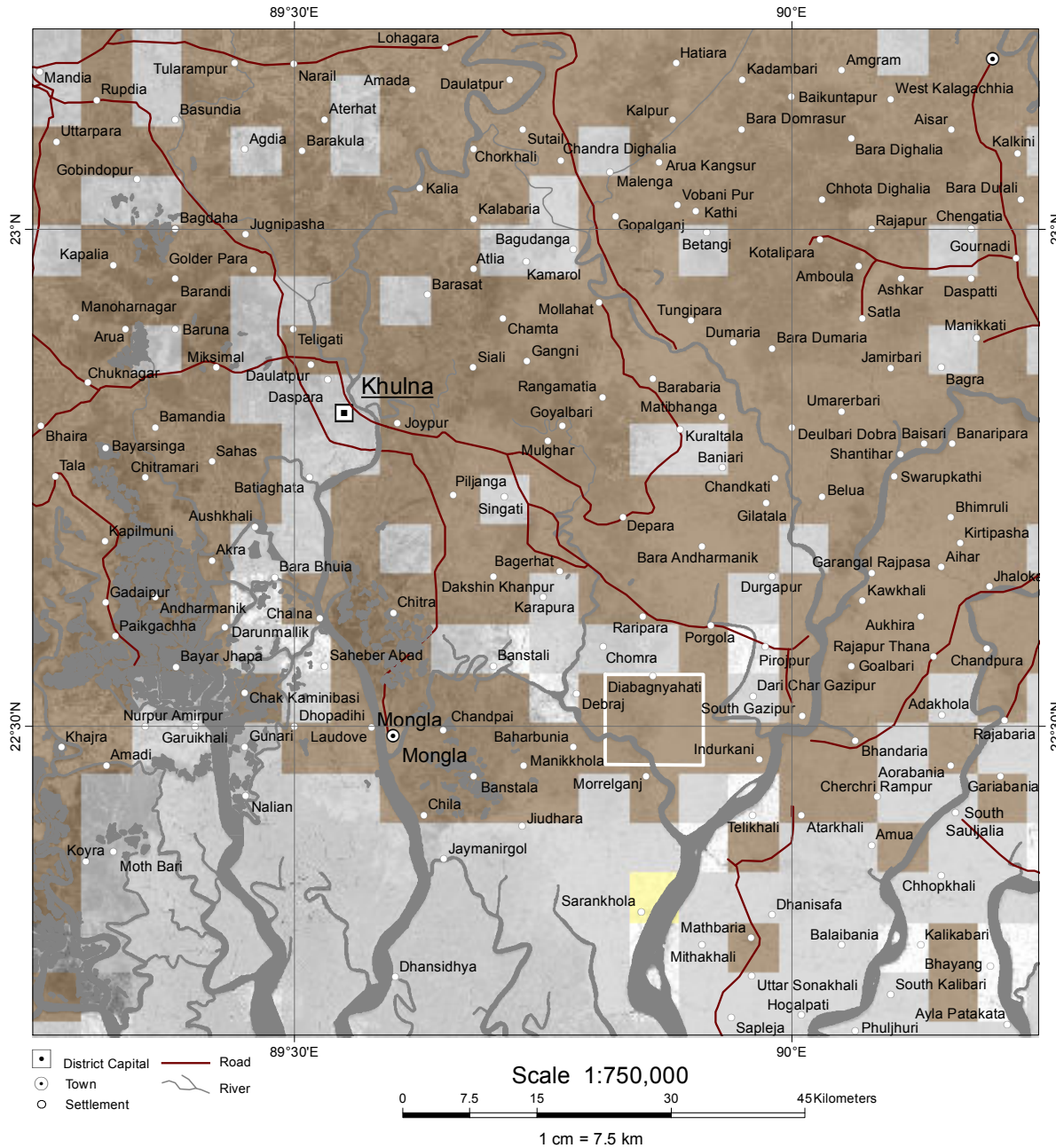
Livestock Production Systems



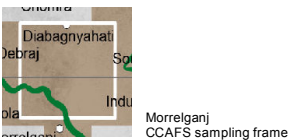
Livestock Production Systems as part of agricultural systems take agro-climatic conditions into account and are classified in terms of feed and livestock resources; production technologies; product use and livestock functions; area covered; geographic locations; and human populations supported.

Citation: FAO (2007)

Livestock Density

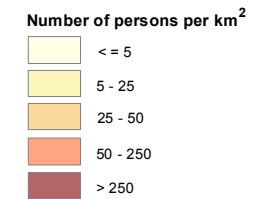
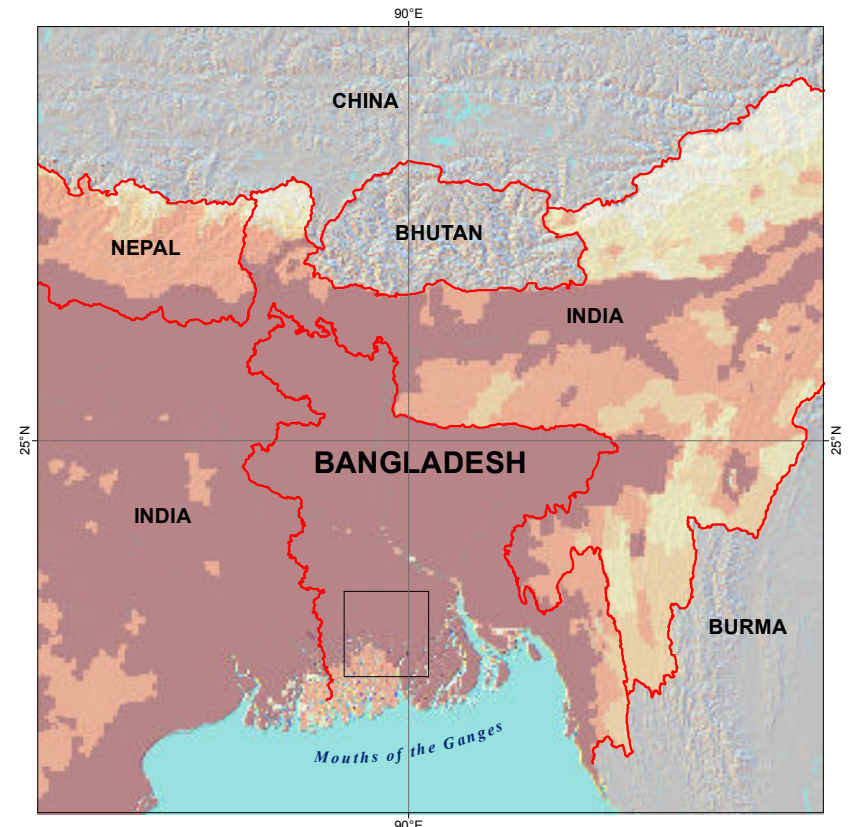
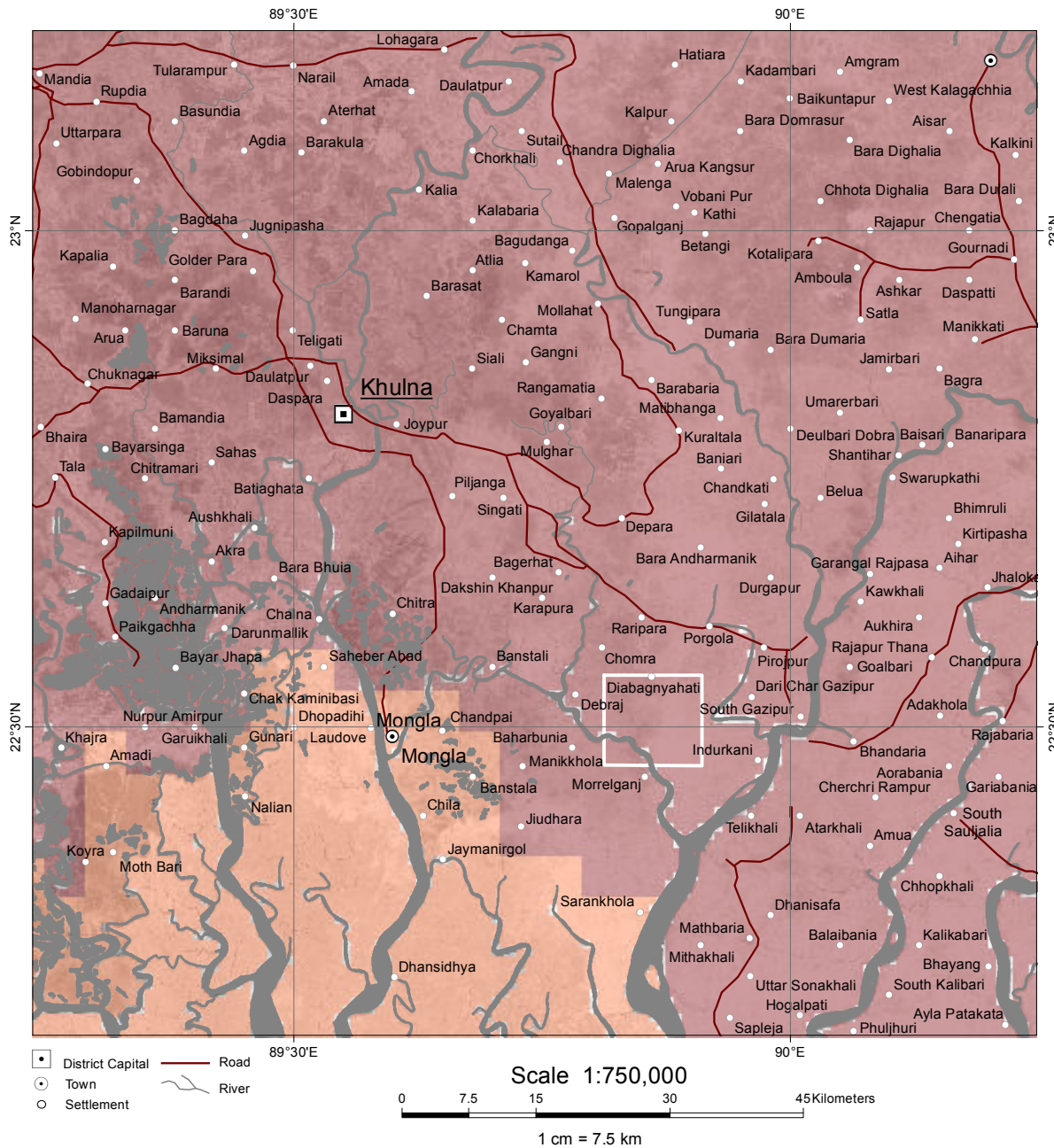


Livestock Density is measured in numbers of livestock, including cattle, goats and sheep, per km²



Citation: Wint et al (2007)

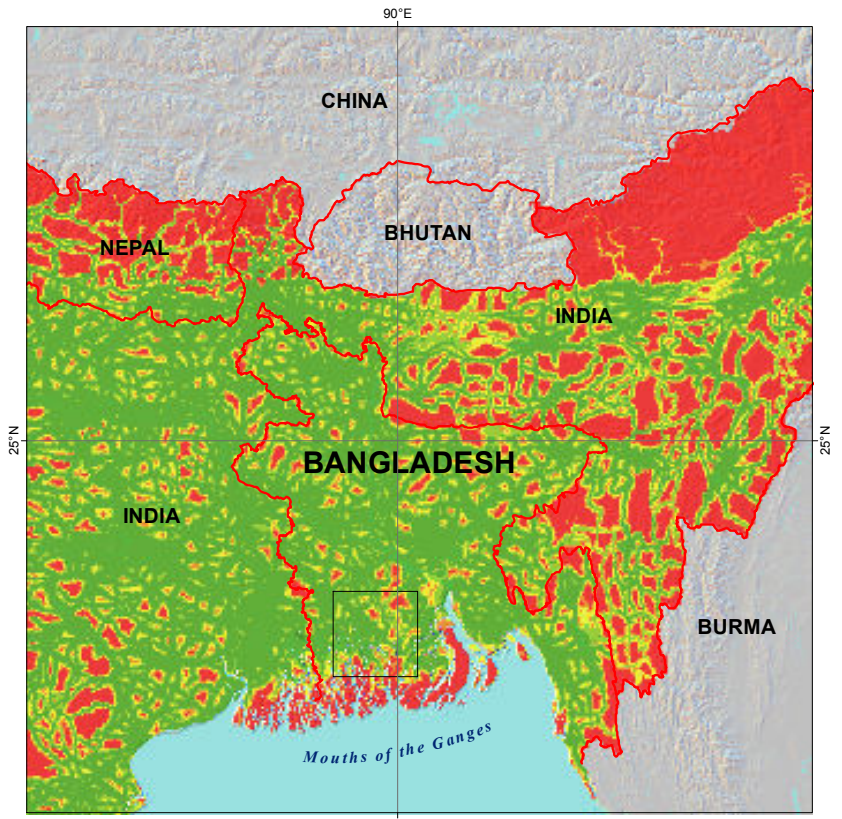
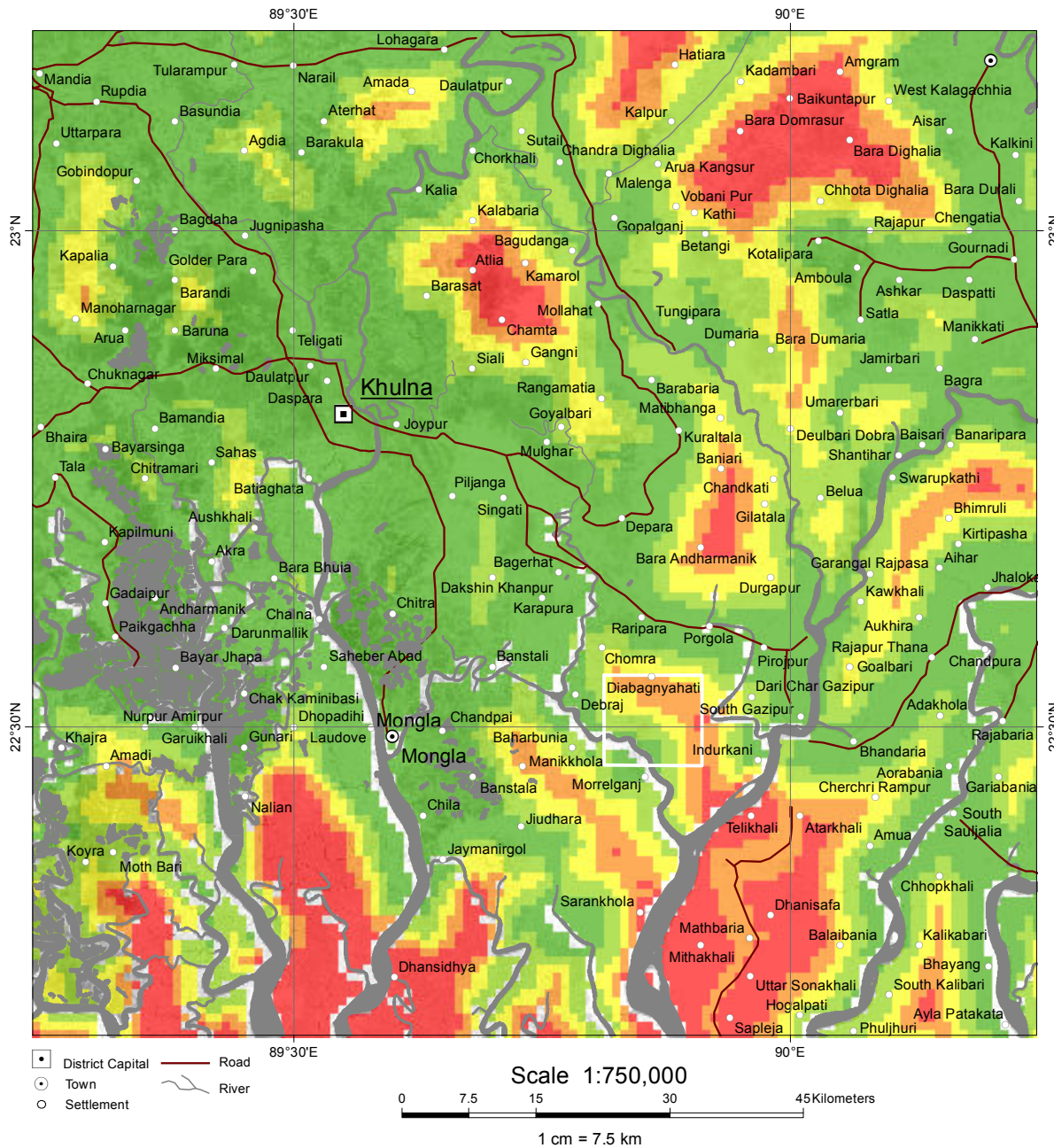
Human Population Density



Human Population Density is the gridded number of persons per km² in 2005.

Citation: CIESIN (2005)

Market Access

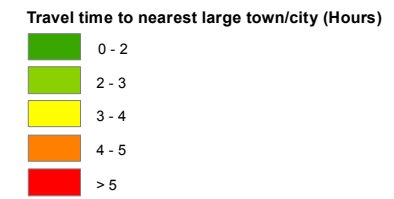


International boundary

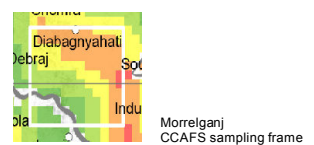
Scale 1:10,000,000

0 125 250 500 Kilometers

Corresponds to the map on the left

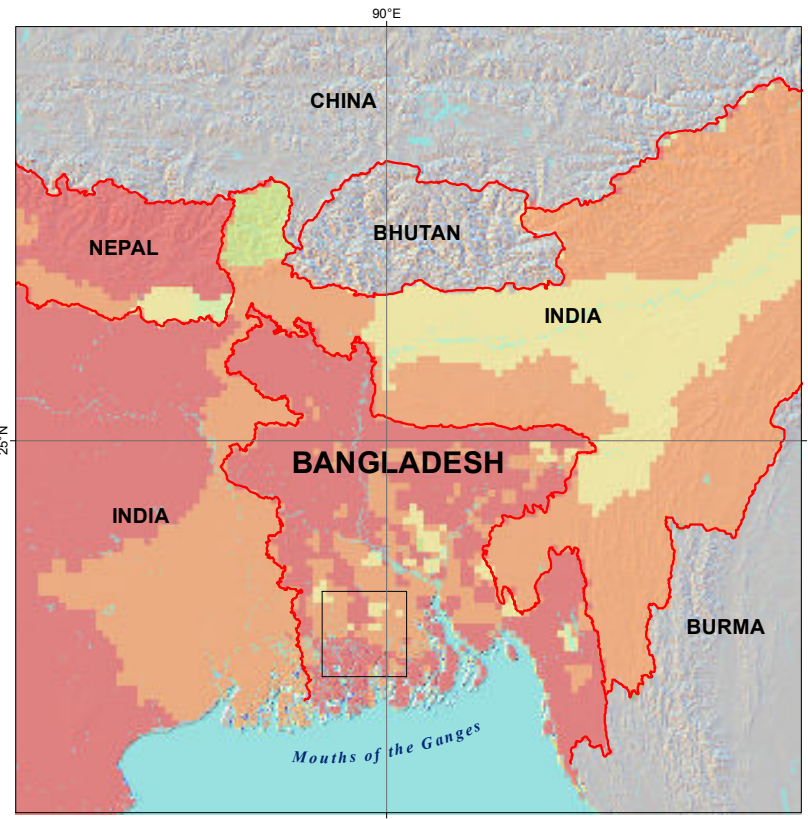
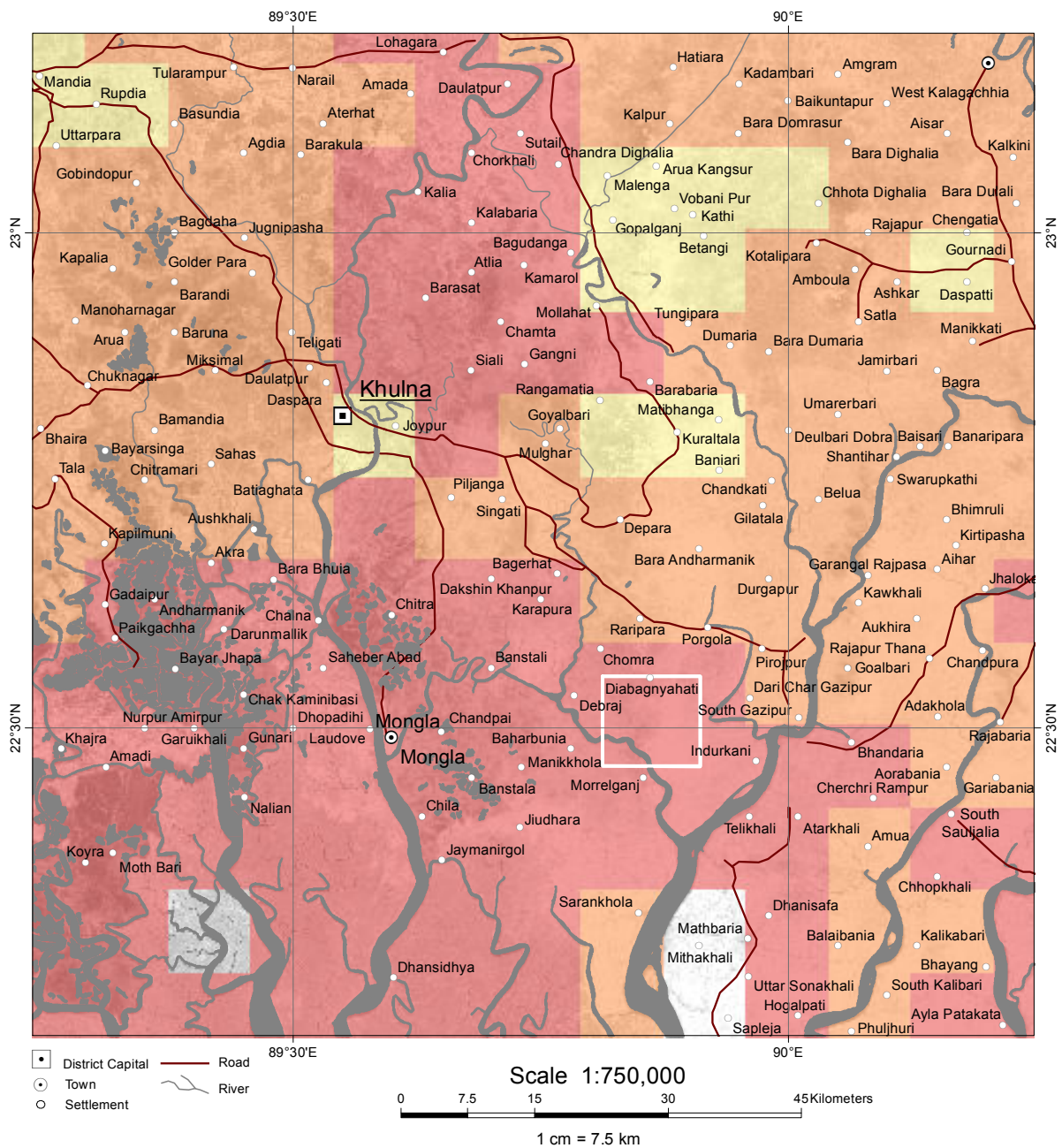


Travel time is a measure of accessibility determined in the time (hours) taken to the nearest urban centre, town or city of a population of 50,000 people or more (taking different means of transportation into account)



Citation: Nelson (2008)

Poverty

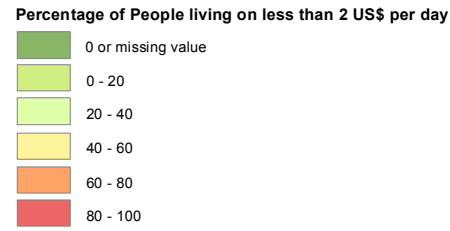


— International boundary

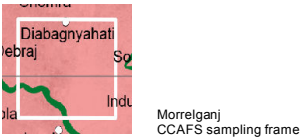
Scale 1:10,000,000

0 125 250 500 Kilometers

Corresponds to the map on the left

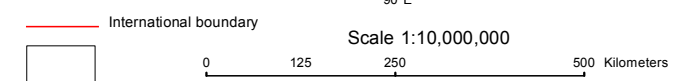
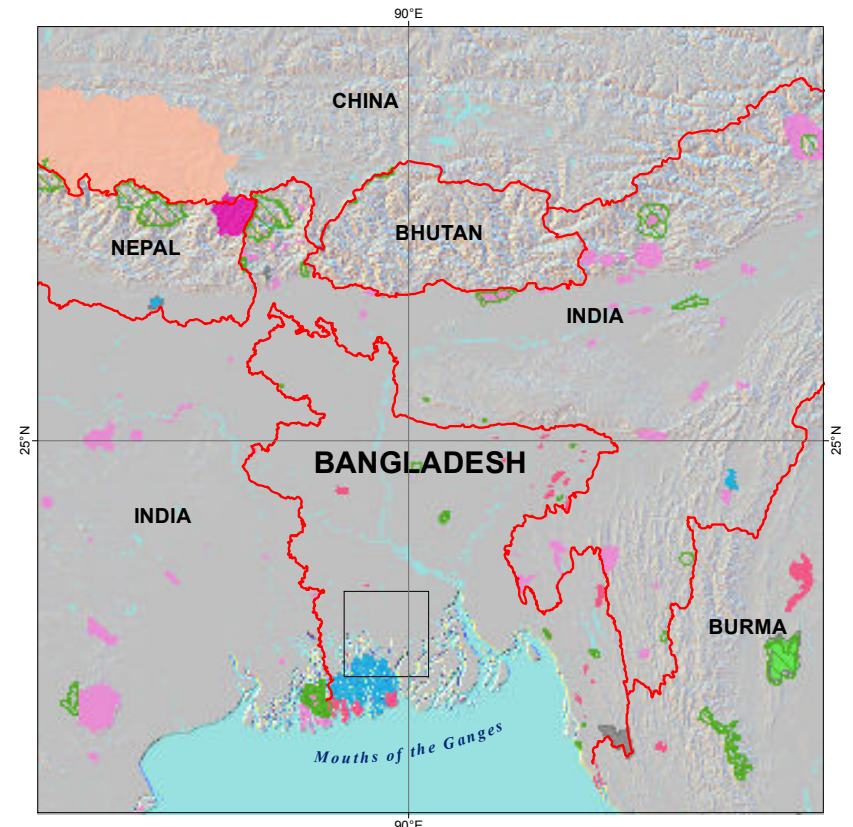
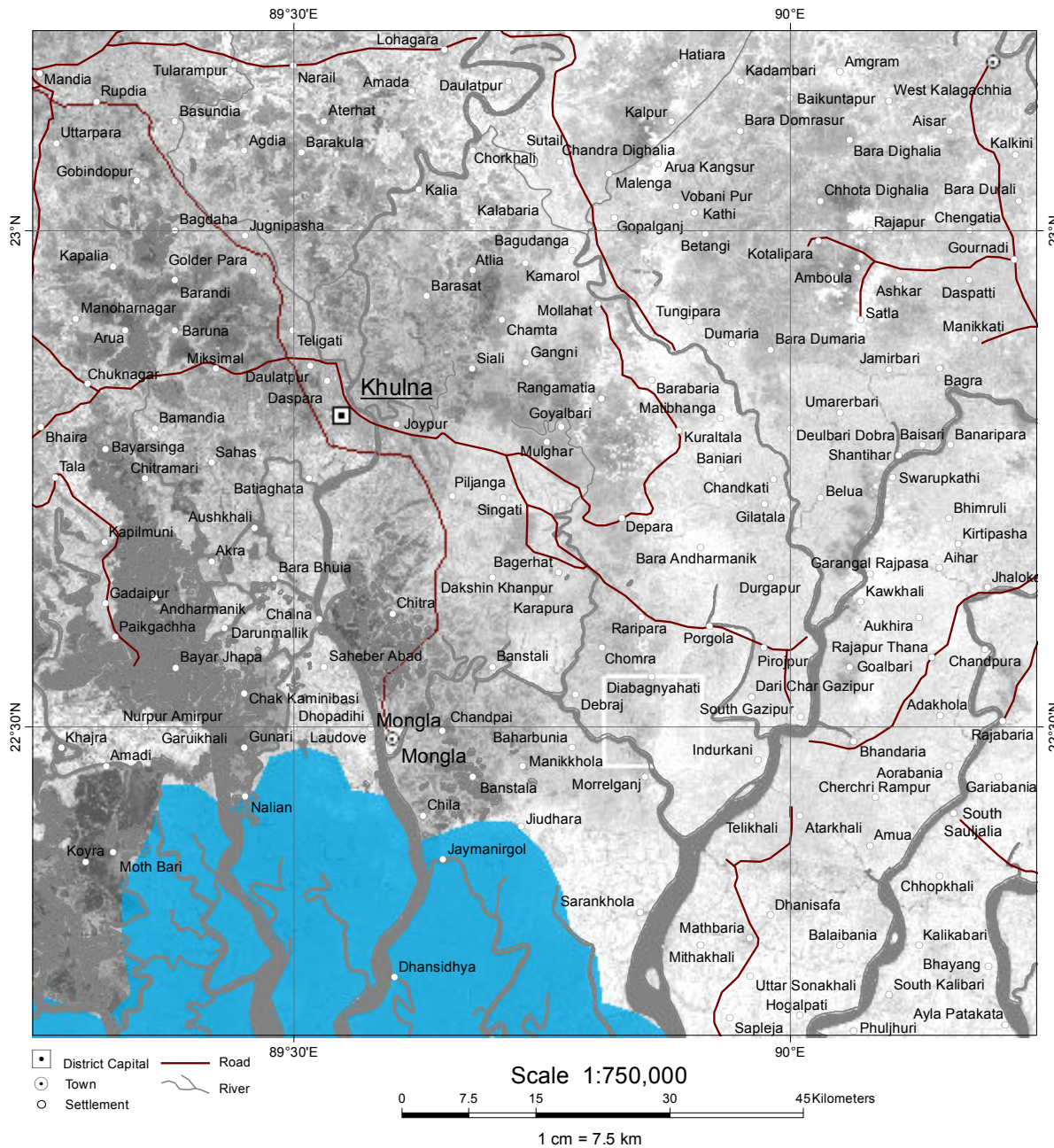


CIESIN constructed global data sets of poverty that are based on estimates of subnational infant mortality and child malnutrition data, recognizing that both are proxies for poverty and welfare rather than direct measures.



Citation: CIESIN (2005)

Conservation Areas



- Conservation Areas**
- Sanctuary
 - Conservation Area
 - National Park / Buffer Zone
 - National Park
 - National Park Extension
 - Wildlife Sanctuary
 - Nature Reserve
 - Ramsar Site, Wetland of International Importance
 - Not Reported

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

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