Problem

Forest fire is becoming rampant in the upstream watercourse of chari – logone river systems. These river systems contribute more than 80% of volume of water to the Lake Chad. This are mainly caused by the farmers as well as poachers who when inside the forest in search of ***bush-meat***.

Climate

- The climatic characteristics of the area are typical for the higher elevations in the tropics, showing a distinct dry and wet season. The wet season commonly occurs from June to early October, and the dry season occurs from March to early June, while November – February are transitional periods.
- Rainfall data: Below 1500mm
- Temperature: Between 25^{0} - 30^{0}c

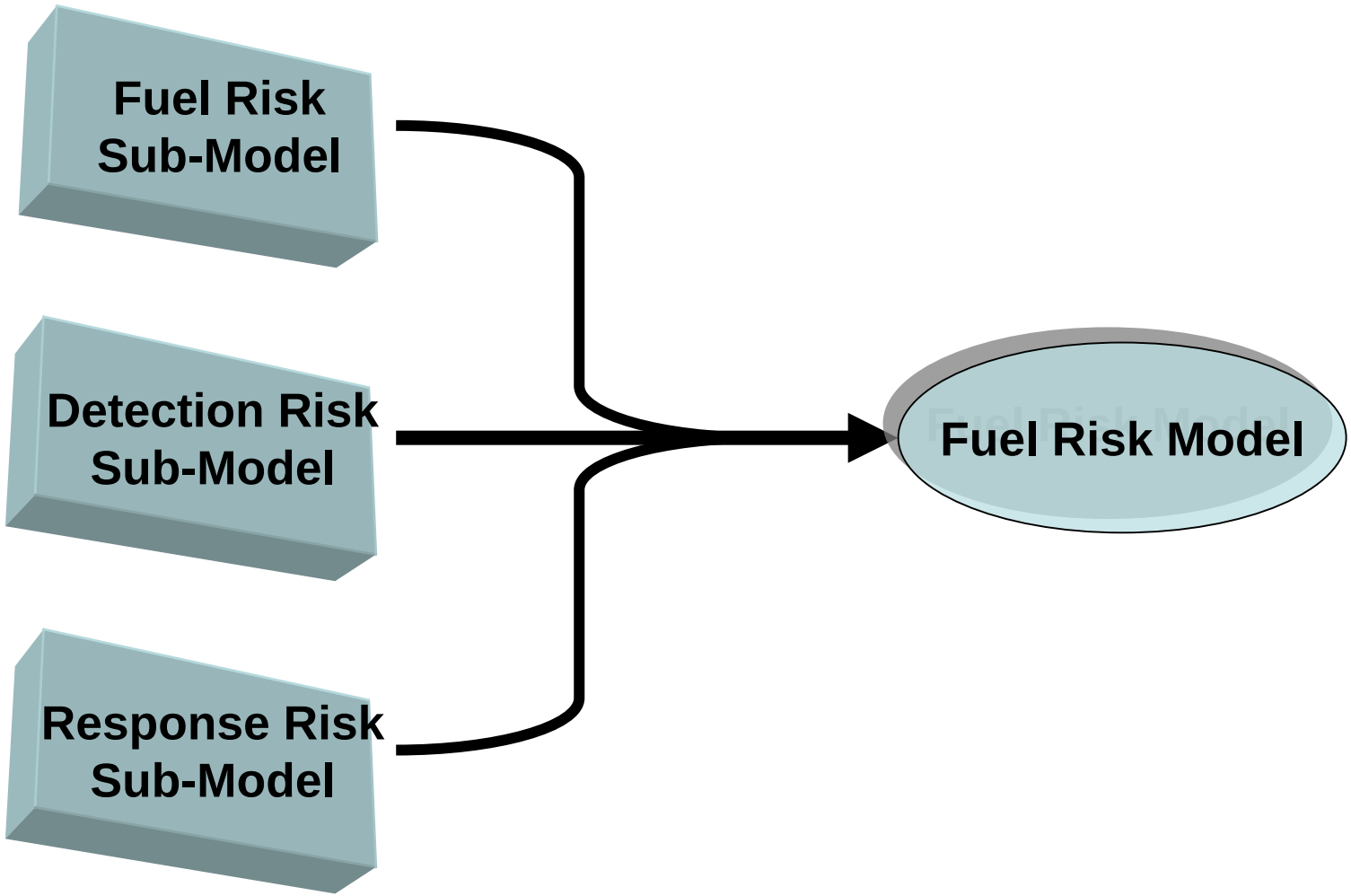
Land cover and Land use:

- Land is the major resource base in the area. All of the settlements in the area are truly engaged in agricultural activity. Most of the original vegetation, forest plantation or shrub land have been converted into agricultural land. They are mainly located in the relatively flat and accessible plains along the main rivers. The remaining, relatively undisturbed forest area is confined to high altitudes.
- Major Food crops are: Rice, Coffee, Cassava, Maize, etc
- In line with Forest Corporation's policy to contribute to the improvement of the living conditions of the rural population, agro-forestry projects have been initiated in the watershed as well. The purpose of the agro-forestry systems is to allow farmers, for a restricted period of time during the establishment of plantation forest, to cultivate food and fodder crops in the newly planted forest areas.

Forest

- Almost half of the of the upper watershed of Chari and Logone river falls within the boundaries of what is officially known as "forest land".

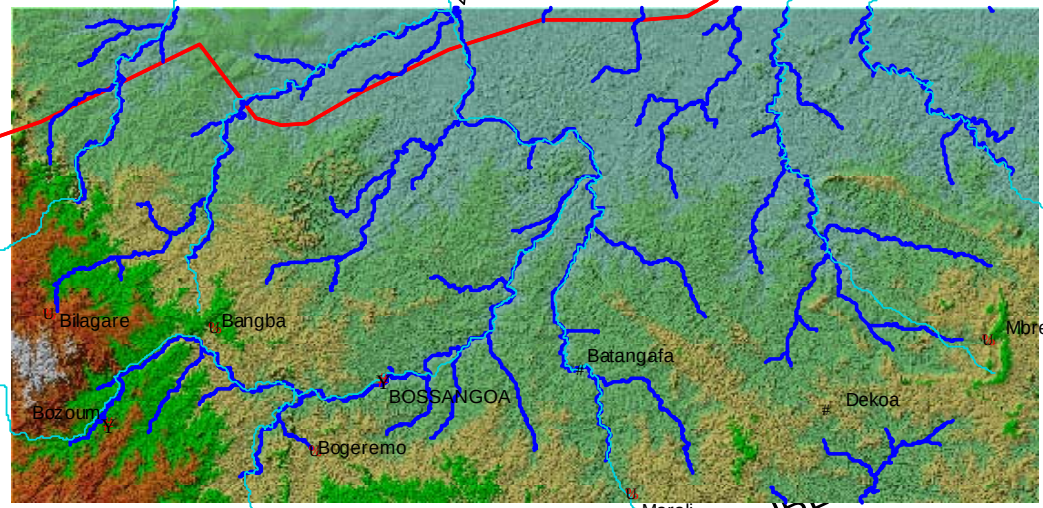
Forest Fire Hazard Model



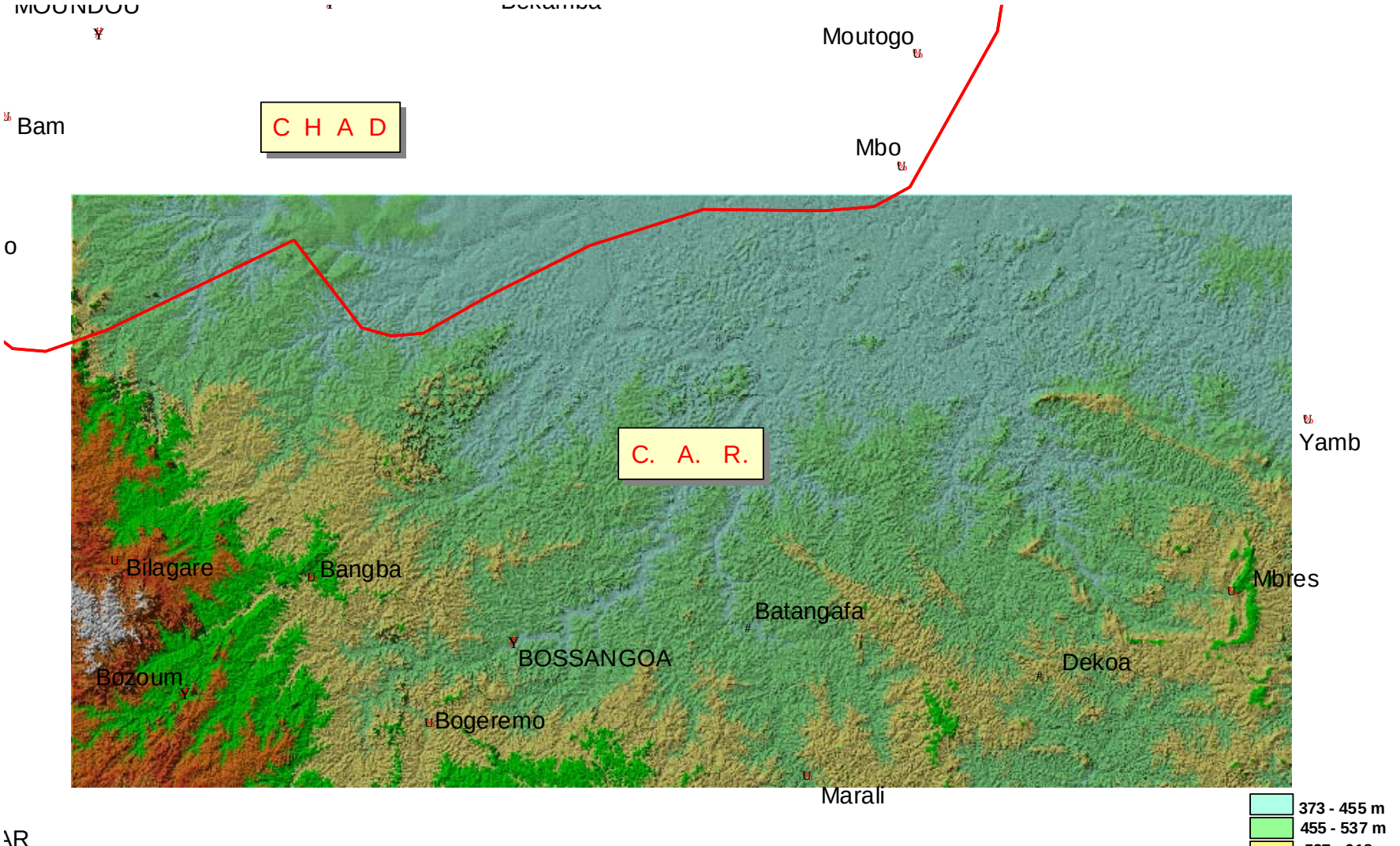
Data Needed

- Landsat TM of the area;
- Land Cover map (or a forest cover type map)
- DEM (Digital Elevation Model), for the generation of gradient maps, slope maps and an aspect map;
- Roads network;
- Settlments and location of Fire Departments
- Coordinate System and Geo-reference;

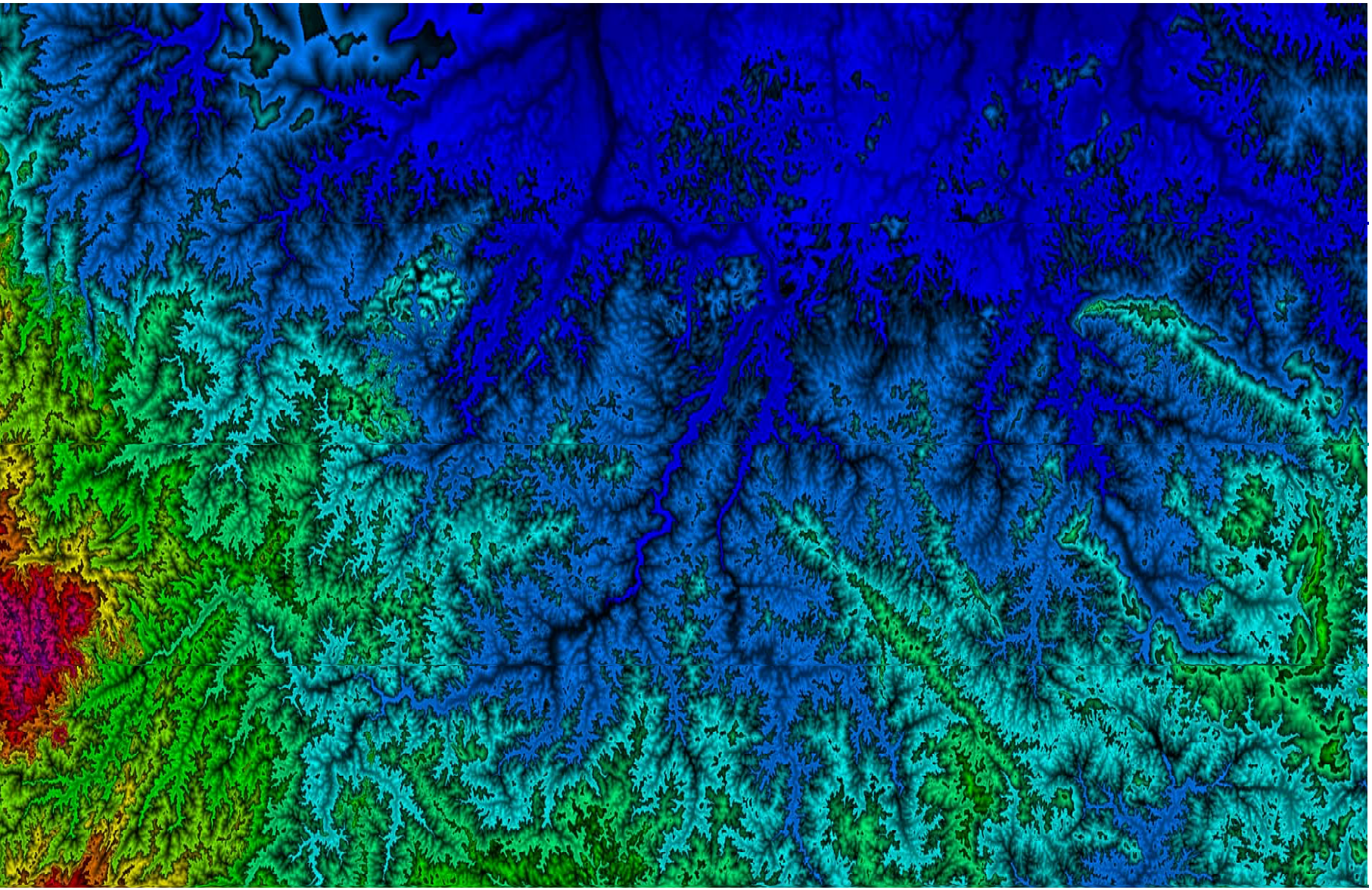
DTM from SRTM DEM 3*3 arc sec of Upstream Watercourse of Chari/Logone



Fill DEM (Depressionless Elevation – KRIGING Interpolation Method APPLIED)

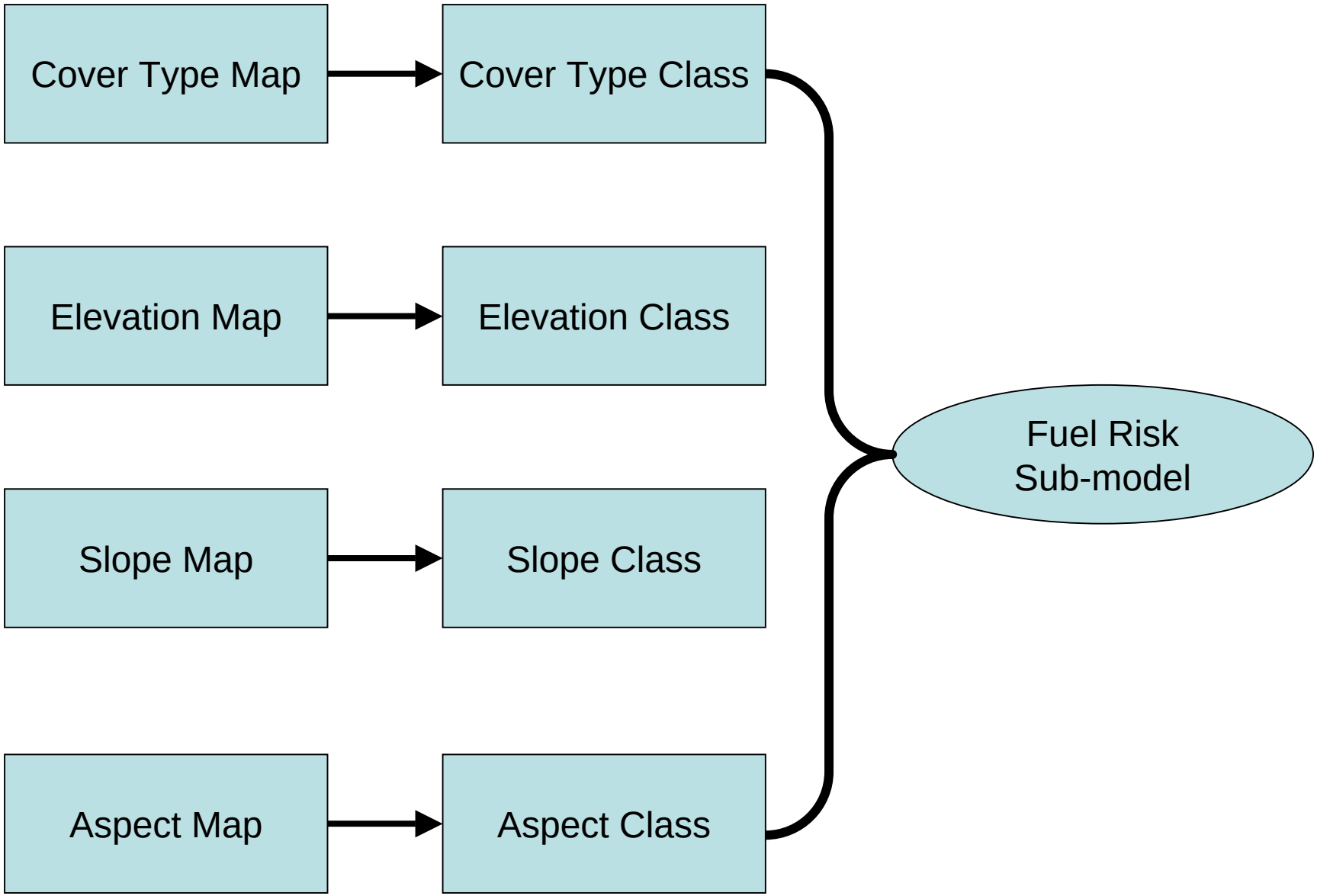


Relief Map of Part of Chari Logone Processed from DEM


1109.0
961.8
814.6
667.4
520.2
373.0

Aspect Map

Slope degree map

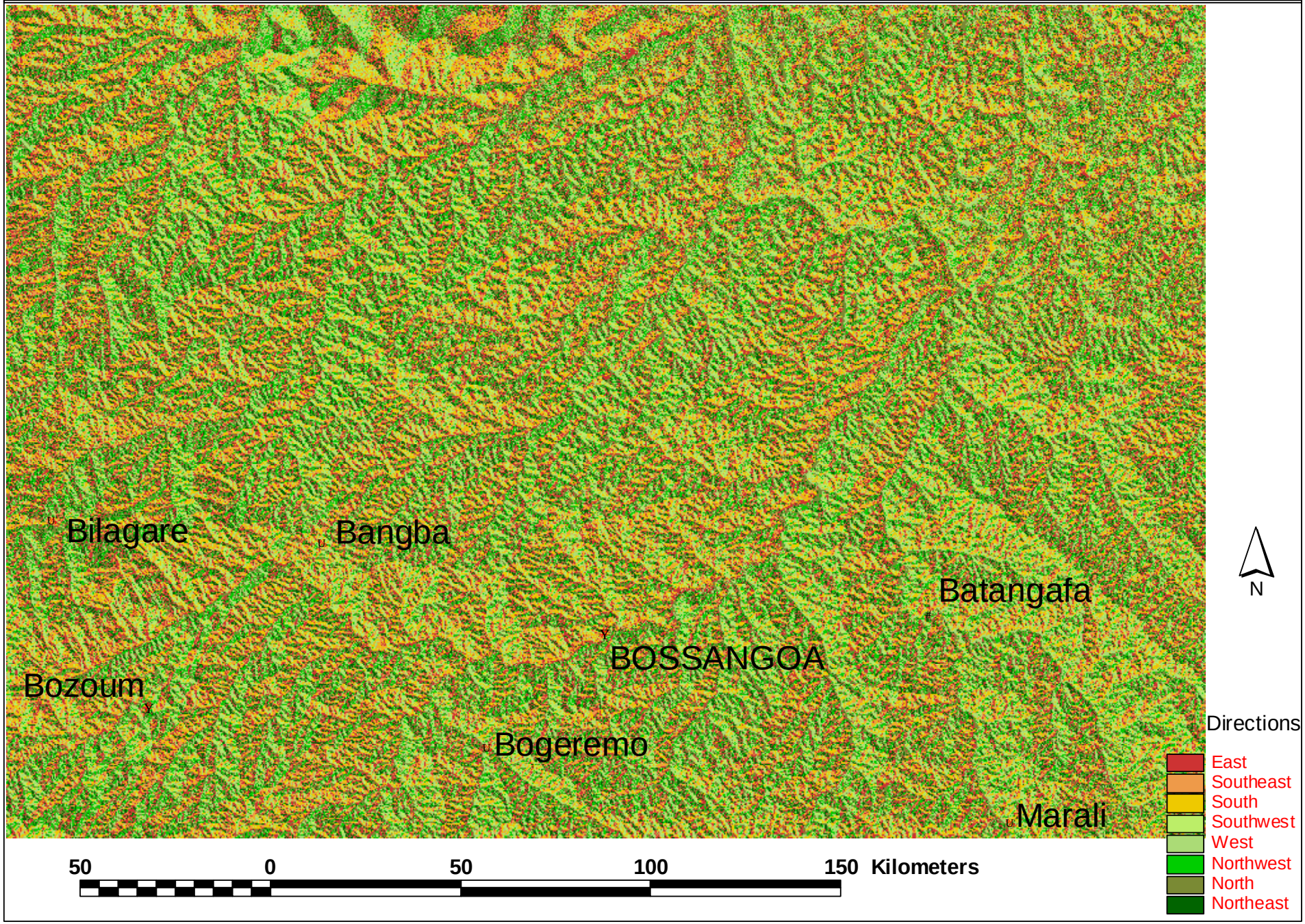

Cover Type Map
Cover Type Class
Elevation Map
Elevation Class
Slope Map
Slope Class
Aspect Map
Aspect Class
Fuel Risk
Sub-model

Land Cover

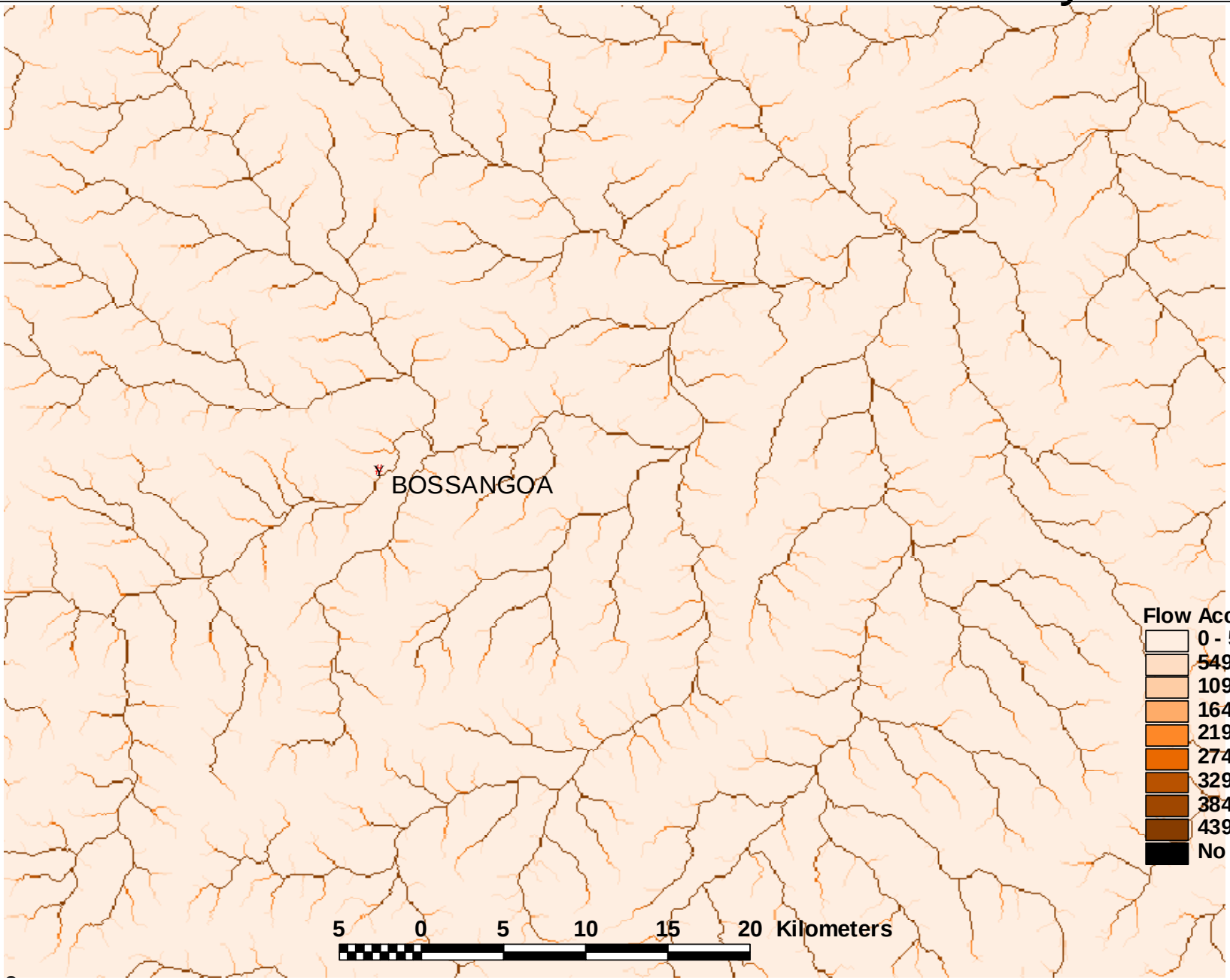
Each land cover type was assigned to a class to indicate its fuel risk:

- Road - No fuel risk
- River - No fuel risk
- Village - Very low fuel risk (although houses can burn)
- Agricultural land - Low fuel risk (Can easily be put out)
- Shrub land - Moderate fuel risk
- Plantation - High fuel risk
- Natural Forest - Very high fuel risk

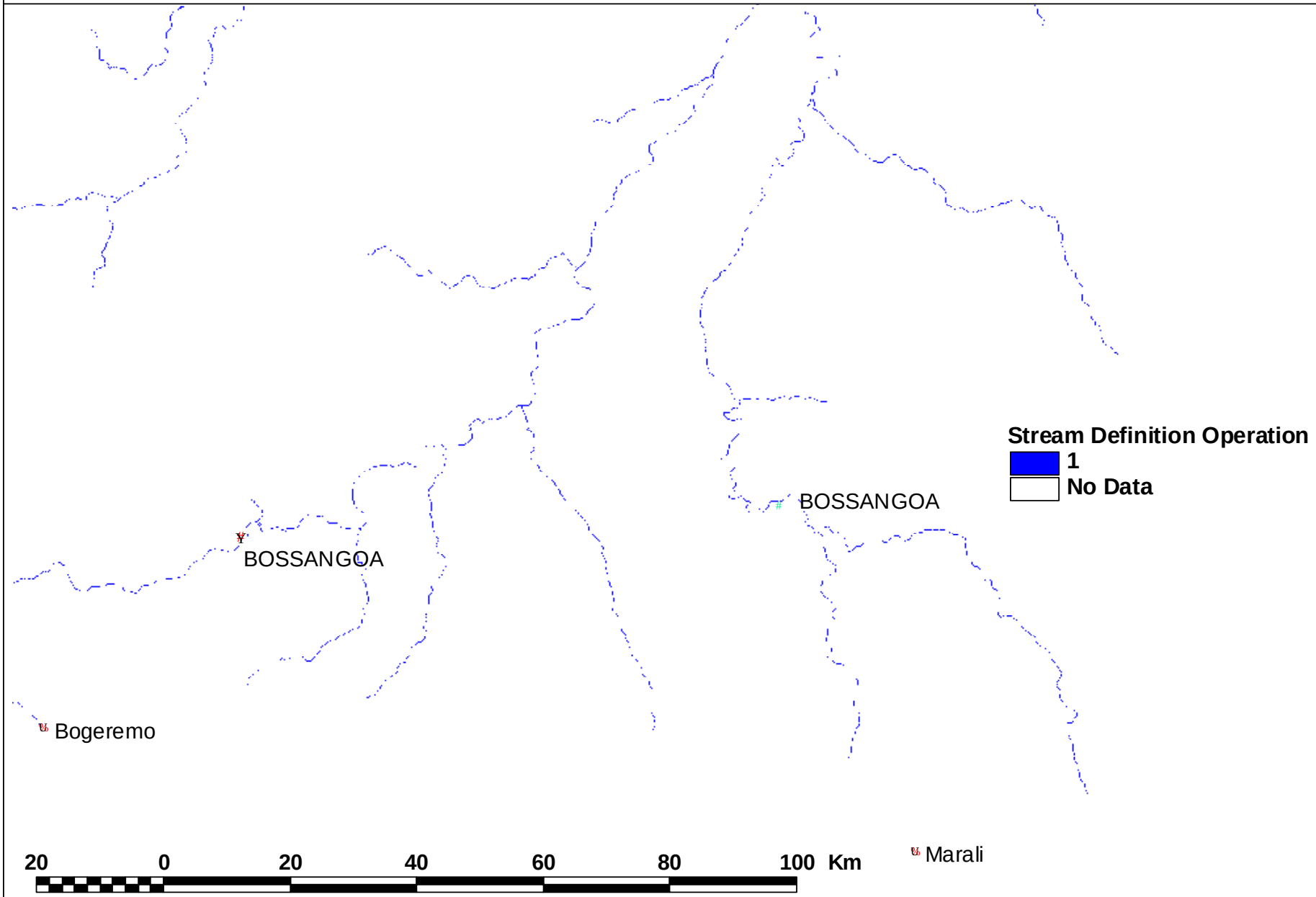
FLOW DIRECTION OF CHARI/LOGONE UPSTREAM



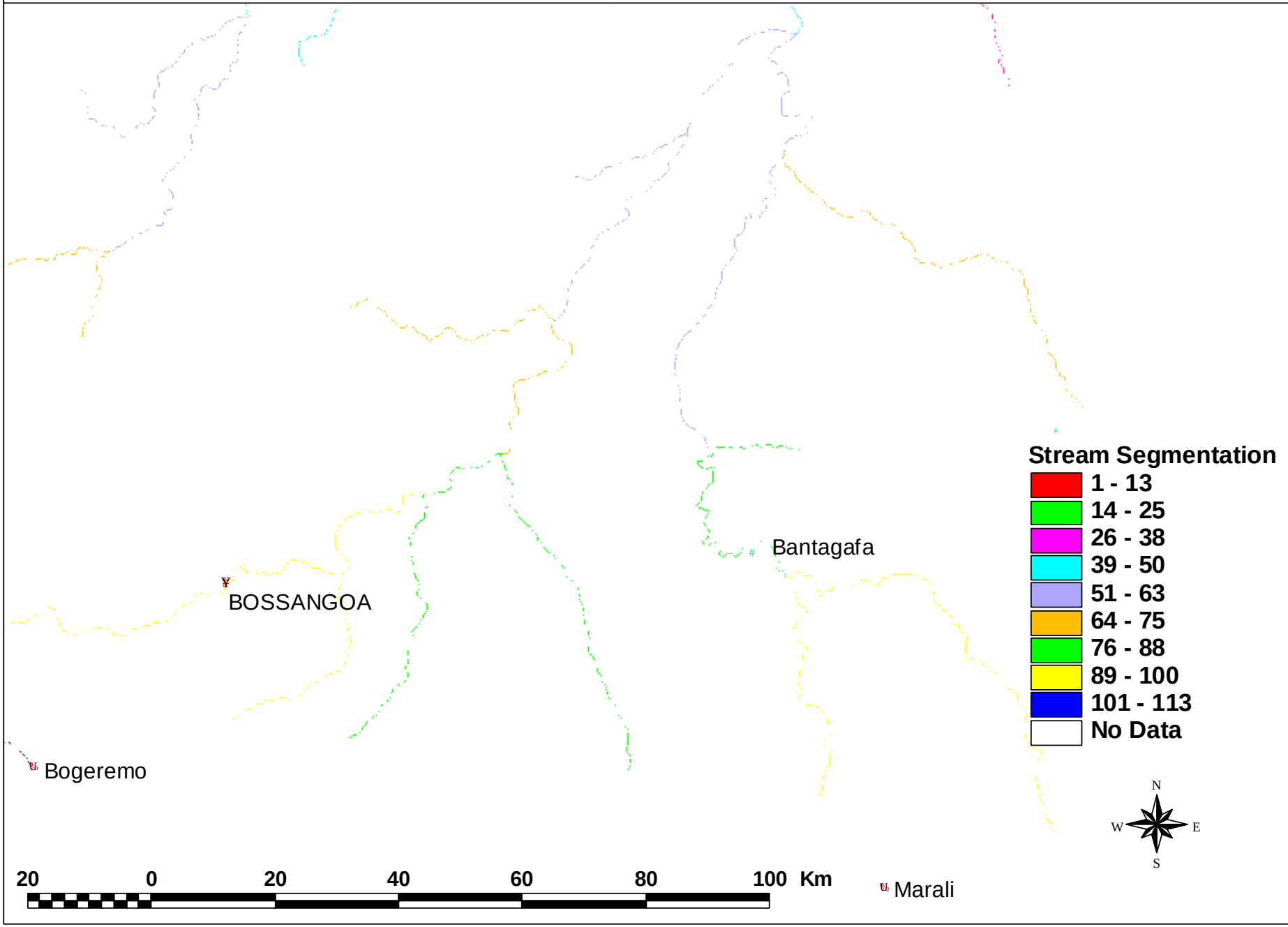
Flow Accumulation of Part of Chari River System

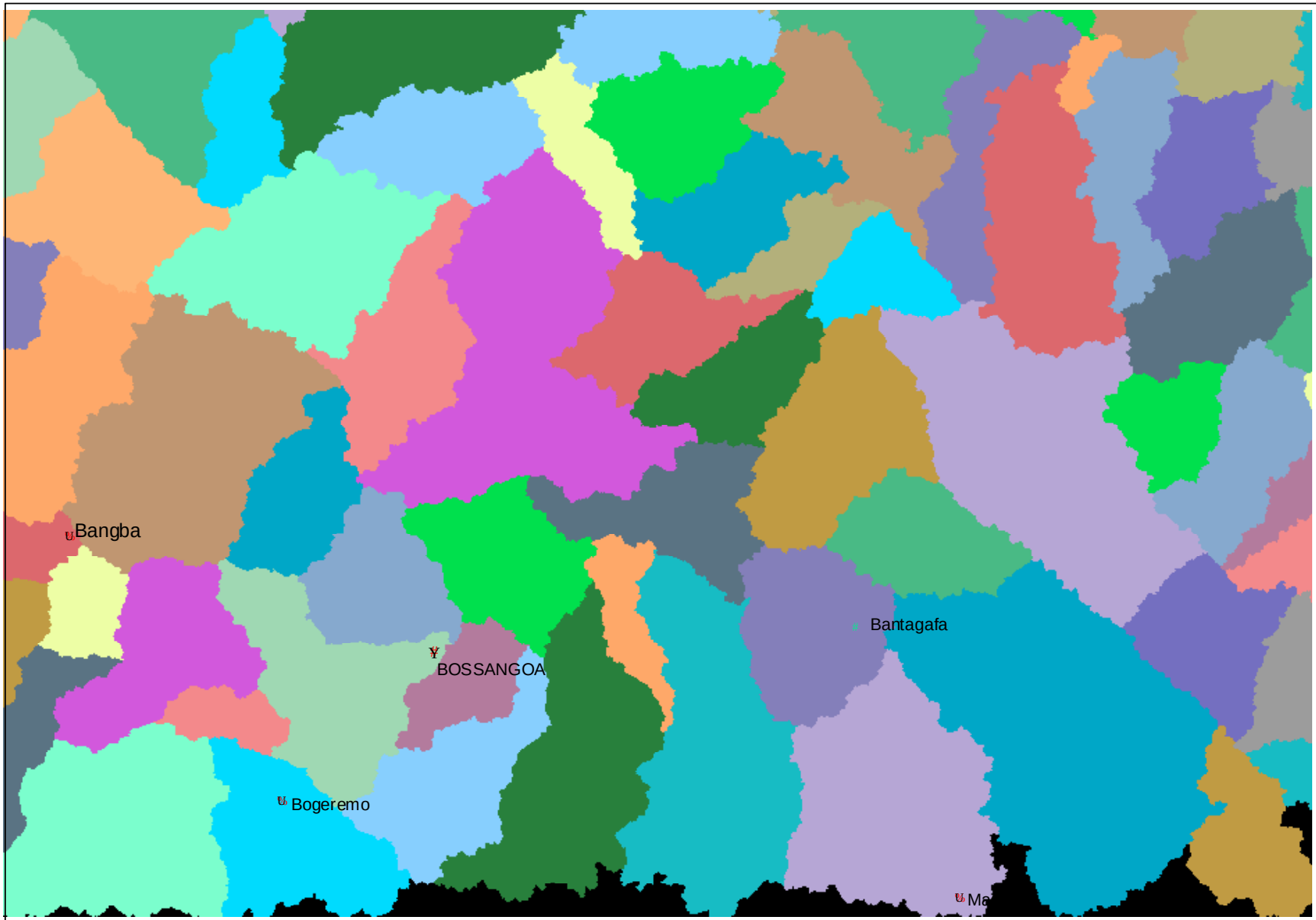


STREAM DEFINITION OPERATION



STREAM SEGMENTATION OPERATION



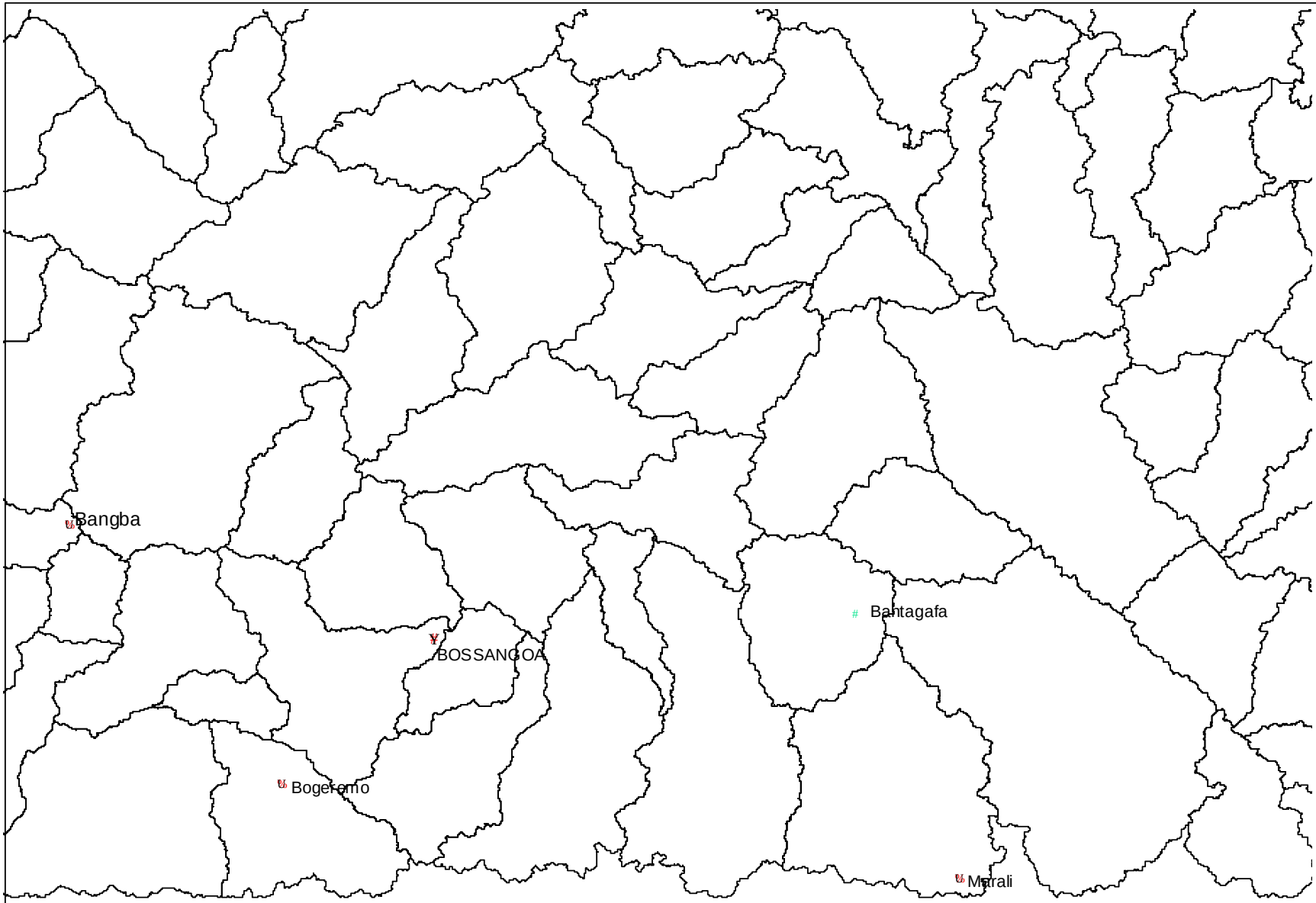


WATERSHED DELINEATION OPERATION

Subbasins Automatically Delineated

20 0 20 40 60 80 100 Kilometers

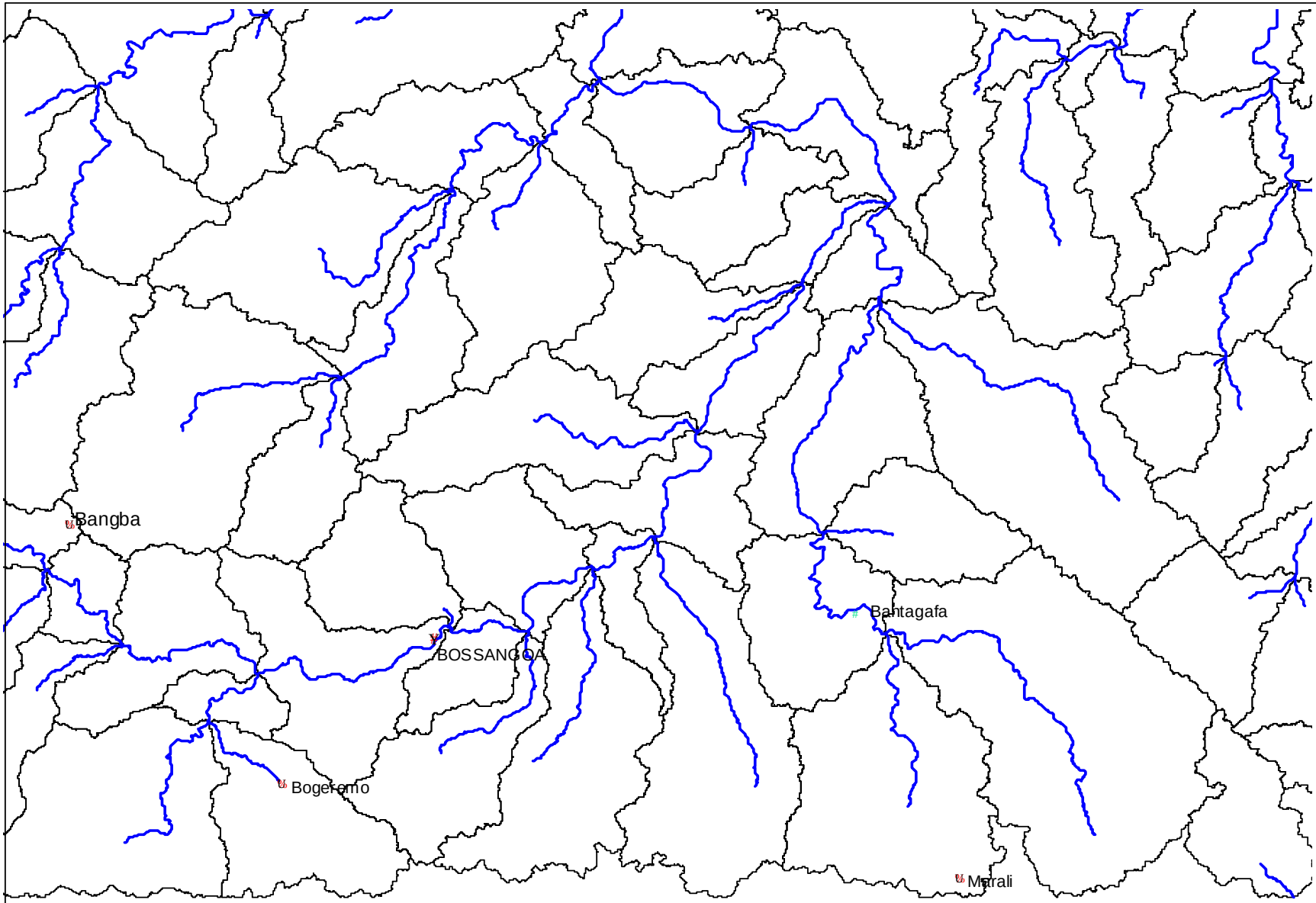
N
W E
S



WATERSHED POLYGON PROCESSING OPERATION

20 0 20 40 60 80 100 Kilometers

N
W E
S



STREAM SEGMENT PROCESSING OPERATION

N
W
E
S

20 0 20 40 60 80 100 **Kilometers**

Generated River from DEM