

Fig. 5. Extraction image of artificial lakes.

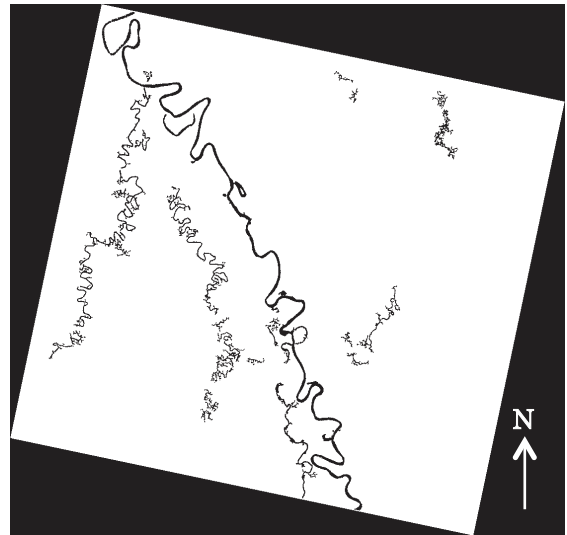


Fig. 6. Extraction image of river systems.

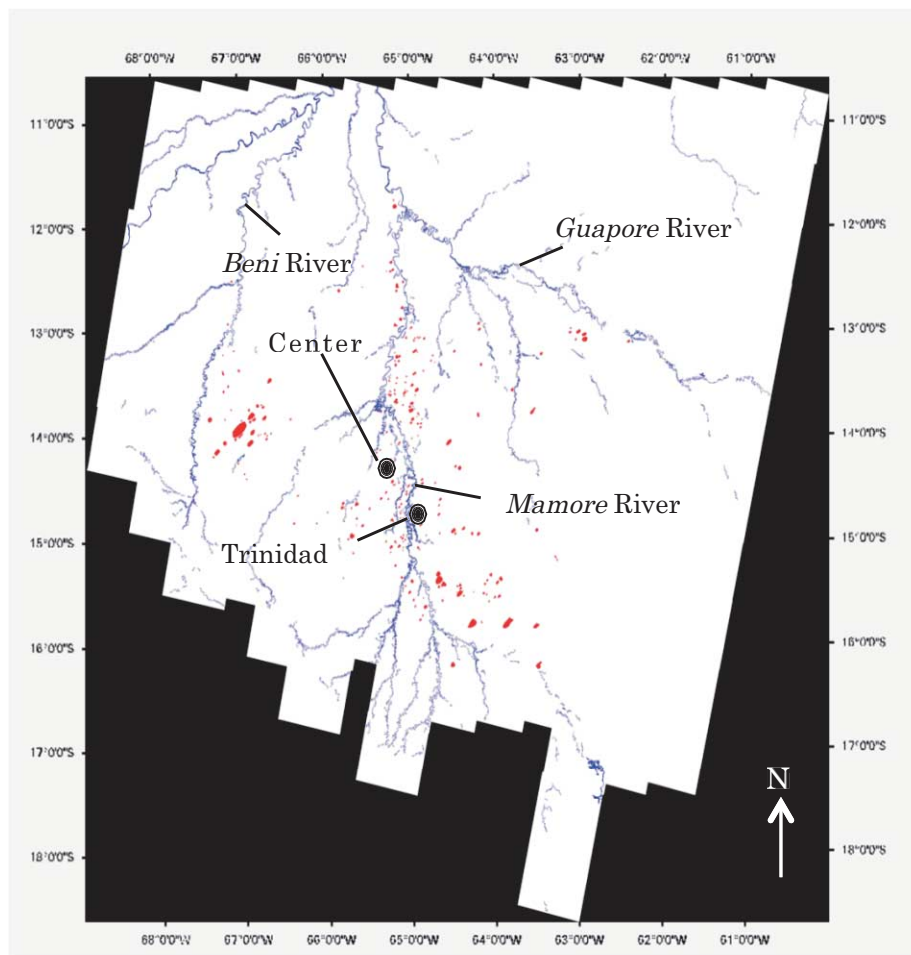


Fig. 7. Center location of the artificial lakes. It was at  $14^{\circ}25'S$  and  $65^{\circ}15'W$ , 60 km northwest of Trinidad, the capital of *Beni* State. Red objects are artificial lakes and blue lines are extracted rivers.

formed in images resized in  $1/2$ . In this case, the threshold was determined by subtracting the standard deviation from the average. For the purpose of removal of noises, isolated points were removed. Next, the reduction and expansion processes (Takagi and Shimoda, 2004) were performed for

connection of the divided objects. The labeling was performed in the picture and the object with over 13000-pixel area and over 30 of the shape factor was extracted. Finally left noises were deleted visually. The threshold used for extraction in the main and tributary river systems was cal-