

## Historical GIS in the Brazilian Amazon

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Historical GIS presents new possibilities for conceptualizing the relationship between the available historical documents and the geographical spaces of a region. The map shown here is a georeferenced map from 1868 (Candido Mendes' Atlas do Imperio do Brasil), layered beneath a GIS map of the port city of Belém do Pará, in the Brazilian Amazon. I am using this methodology in my dissertation research on 18th- and 19th-century fluvial networks (commercial, political, and social) in the lower Amazon Valley and am in the process of mapping historical census data for the region.

The larger area that I am mapping is too large for a very precise rectification of the historical map; but overlaying them is still useful for the purpose of making comparisons and for creating a GIS map that is more historically accurate. One can see that the features of the 1868 map roughly correspond to those of the modern map, especially the towns and coastlines; while there is much less correspondence between the rivers of the two maps. This is partly due to the imprecision of 19th-century surveying techniques, but it is also a result of the rapidly changing state of waterways: A GIS map shows the locations of present-day rivers and streams, but one must take into account the dramatic changes wrought by the hydrographic industry in the 20th century.

Another uniquely Amazonian source of cartographic confusion is that settlements in this region tend to be quite mobile: For example, a town might move to the other side of a river or 10 km upriver, based on changing soil conditions or flood patterns, while keeping the same name. In such circumstances, the town's location on the modern map will not correspond at all to its location on the 1868 map, and one must turn to other historical documents (i.e., 19th century travel narratives) to determine whether the town actually moved or whether the discrepancy is due to cartographic imprecision on the historical map. Therefore, although I am trying to establish the historical locations of settlements as precisely as possible, there is a significant margin for error -- as with all historical GIS projects. This margin increases as one moves away from the capital and principal arteries of transportation.