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GIS and vector cadastral map: a tool to detect and study Roman cadastral frames

The French Rhône valley has traces of ancient Roman parcels, testified by antique land registers, which are called “Orange cadastre.” This organization was highlighted on the left bank of the river. It seems to extend to the other side, in the Tave and Cèze valleys. All these researches were conducted in the 80’s from IGN (French National Institute of Cartography) aerial missions, with the method of optical filtering. In this study, we intend to use a GIS and the cadastral map in vector format. Indeed, the cadastrist enables the study of limits that have no materialization in the current landscape. The aerial photographs or topographical maps only give incomplete information, i.e. the perennial human forms: roads, paths, fences, channels, ditches. These documents are selective. The tool used in this study is the histogram of directions. It consists in calculating the azimuth of each parcel boundary and drawing a histogram: the number of boundaries or their total length are shown as a function of azimuth. The interests of working with the cadastral are all information contained in these documents, whose precision allows a detailed study of cadastral frames.

This method was first validated on previously studied areas, and then extended to the Cèze and Tave lower valleys. This helped to detect the presence of “Orange cadastre” in these two valleys, where the method by optical filtering had not delivered convincing results. The use of these vector data for the detection of ancient cadastral frames remains to this day unique in France. However, its implementation is simple and permits a detailed study of the boundaries structure. The results are encouraging and allow considering new approaches. It would be interesting to combine elevation and topographic data as well as ancient “Napoléonic cadastre,” in the aim to eliminate 19th and 20th century boundaries. This will be the next step of this work.