Importance of using Geographic Information System for extensive Middle Palaeolithic open air sites in northern France. The example of Caours (Somme, France) and Beauvais (Oise, France).

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Abstract: In Northern France, during the Middle Palaeolithic, the human settlement was difficult because of the alternation between glacial and interglacial periods. Neandertal had to struggle with important and climatic changes. Mobility was important to find rich resources and subsistence behaviors, but thanks to the work of Jean-Luc Locht, Pierre Antoine and the team, the chronostratigraphic framework of this region is excellent and well describe with an important number of sites on a large time and geographic scale (Fig 2). Many of the important sites in this region are open air sites. Some of them show an exceptional preservation of archaeological levels in terms of area and number of artefacts (Fig 3). Moreover, thanks to a fine and well-preserved, we have an important number of faunal assemblages - analyzed by Patou-Mathis (4) and Auguste (5). When a Middle Palaeolithic site is excavated, most of the time, we can’t directly see structures. Like on the fourth figure we only have a dot cloud with artefact concentration area. It’s why we need Geographic Information System (GIS) to go further, to modelization method.

Introduction: Why Middle Palaeolithic open site in Northern France?

In Northern France, during the Middle Palaeolithic, the human settlement was difficult because of the alternation between glacial and interglacial periods. Neandertal had to struggle with important and climatic changes. Mobility was important to find rich resources and subsistence behaviors, but thanks to the work of Jean-Luc Locht, Pierre Antoine and the team, the chronostratigraphic framework of this region is excellent and well describe with an important number of sites on a large time and geographic scale (Fig 2).

References:


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Different archaeological and geographical data

- We can’t have absolute coordinate for every small artefact, specially burned and fractured one, so we have to deal with it (Fig 5).
- We have to do with the fact that we can’t have absolute coordinate for every small artefact, specially burned and fractured one. Different kind of artefact bring informations about different aspects of Neandertal behaviour.

Spatial analysis protocol

This method, commonly used by archaeologists, consist in a count per mesh of the number of artefact (8). But there are some problems with it, like arbitrary choice of analysis mesh and subdivision by unreliable walls between some artefact.

The Kernel Density Estimation is a quantitative method calculating the artefact density. It consider distances between artefact (9) (Fig 8). In that way it takes into account the spatial relationship between artefact.

Distribution of faunal remains by KDE method

The existence of faunal remains concentration area for the layer 4 of Caours. There are two main high density zones (in red on the map) and some of lower density.

The importance of faunal remains concentration zones correspond to the high density of burned and fractured remains. Those zones are human activity zones. Furthermore, high food utility remains are concentrated in the faunal remains high density areas. Those areas are butcher zones.

Some fractured remains zones regroup only cranial skeleton and limb bones, some others regroup only autopods bones. This suggests the existence of specific butcherzy area.

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Distribution of faunal remains by KDE method

The existence of faunal remains concentration area for the layer 4 of Beauvais. There is one main high density zone at the north (in red on the map) and some of lower density.

The important faunal remains concentration zones correspond to the high density of burned and fractured remains. Those zones are human activity zones. Furthermore, high food utility remains are concentrated in the faunal remains high density areas. Those areas are butcher zones.

The main fractured remains zones regroup only cranial skeleton and limb bones and very few autopods bones. This suggests the existence of specific butcherzy area.