Land, rain and sweat: Building a database of what we need for building a temporally dynamic and a spatially-explicit agent-based model of Neolithic occupation in Languedoc-Roussillon, France
Mehdi Saqalli, Marie-Alexandrine Sicre, Odile Peyron, Pierre Sabatier, Nathalie Combourieu-Nebout, Laurent Dezileau, Matthieu Ghilardi, Catherine Kuzucuoglu, Maria-Angela Bassetti, Boris Vannière, et al.

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Land, rain and sweat: Building a database of what we need for building a temporally dynamic and a spatially-explicit agent-based model of Neolithic occupation in Languedoc-Roussillon, France.

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Objectives and challenges

Building a dynamic and spatially-explicit model is an interesting way for combining altogether:

At the operational scale, meaning the Neolithic family level, i.e. one hectare and one season

All the biophysical and socio-economic constraints and assets this family face

Along the period and the site we considered, meaning the Languedoc Roussillon during the Neolithic era

⇒ for such a model, we need to collect accurate data, meaning:

⇒ Precise enough, exhaustive both temporally and spatially

⇒ relevant, meaning having a defined impact on simulated dynamics

Reconstitute the 1-ha territory during the Neolithic era

Formalize the Neolithic manpower conditioned cropping system

Formalize the Neolithic livestock-keeping system

Simulate the farming system

Simulate the social systems and dynamics

Simulate the biophysical environment

Hunting & Gathering

Colonization & segmentation rules

Pushing factors

Local demography

Attracting factors

Local dissemination according to amenities (soil, water, resources

Field expansion based on the millennium consistent with the family rationality

Social functioning rules

Sowing

Cattle, sheep, goats, pigs

Livestock-keeping practices

Social functioning rules

Cereals, legumes & flax

A farming system based on a crop-livestock association

Formalizing the Neolithic manpower conditioned cropping system

Formalizing the livestock-keeping system

Hunting & Gathering

Colonization & segmentation rules

A long-term project to build within the PALEMEX research group

Among all data and groups of data needed for building a socially-defined multi-agent model, few are available or not-so-hard to prepare:

The white numbers (from 1 to 15) are the data or metadata available in the PALEMEX team or that can be constructed by one PALEMEX member;

The black numbers (from 2 to 15) are the ones not available for now. Their constructions need the building of a consensual agreement of several working hypotheses on their values and organizations

References

1. GOUJON, UMR 5603 CNRS Université Toulouse 3 Jean Jaurès 2. LOCEAN, Sorbonne universités 3. UMR 5248, MNHN 4. Laboratoire BETHÉ - UMR CNRS 5557, Université Victor Hugo, Montpellier 5. Géosciences Montpellier - UMR CNRS 5541 6. CREAGE UMR CNRS 7320 – Université d’Aix-Marseille 7. LUIS, UMR CNRS 5248 Université de Paris Est Créteil et Université de Versailles St Quentin-en-Yvelines 8. LERMA, UMR 7293, CNRS – Université de Lille, UMR 9. CEPS, UMR-CNRS 6651, Université de Coimbra.

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