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**UISPP**

Union Internationale  
des Sciences Préhistoriques  
et Protohistoriques

**XVIII<sup>e</sup> Congrès**



Session IX – 1:

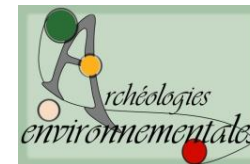
*Resilience and Landscape:  
The Use of Resilience Framework in  
Landscape Archaeology and  
Archaeogeography*

# USING THE CONCEPT OF RESILIENCE TO UNDERSTAND PROTOHISTORICAL ROAD NETWORK THE LOW VALLEY OF THE SEINE RIVER (NORMANDY, FRANCE)

Jérôme SPIESSER, PhD candidate,

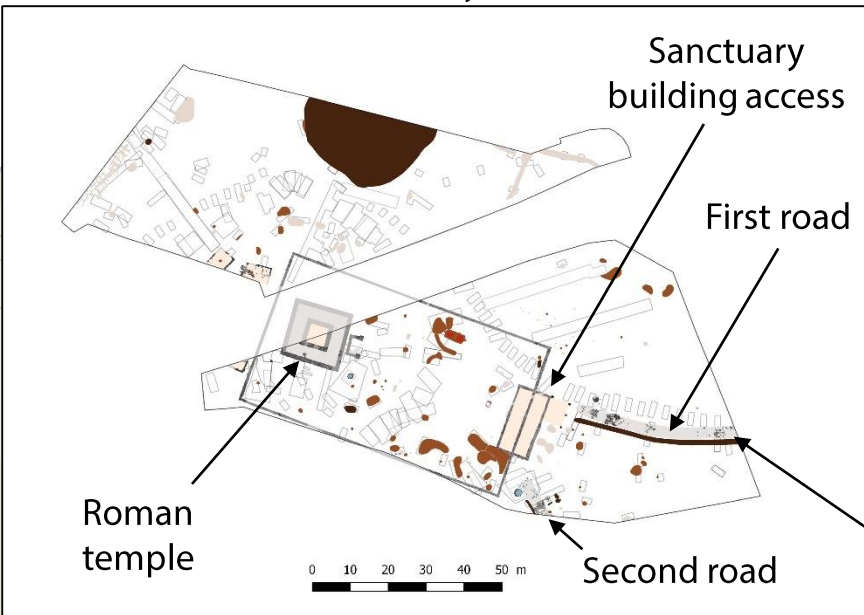
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# Did road networks emerge during the Roman period?

II<sup>d</sup> century AC



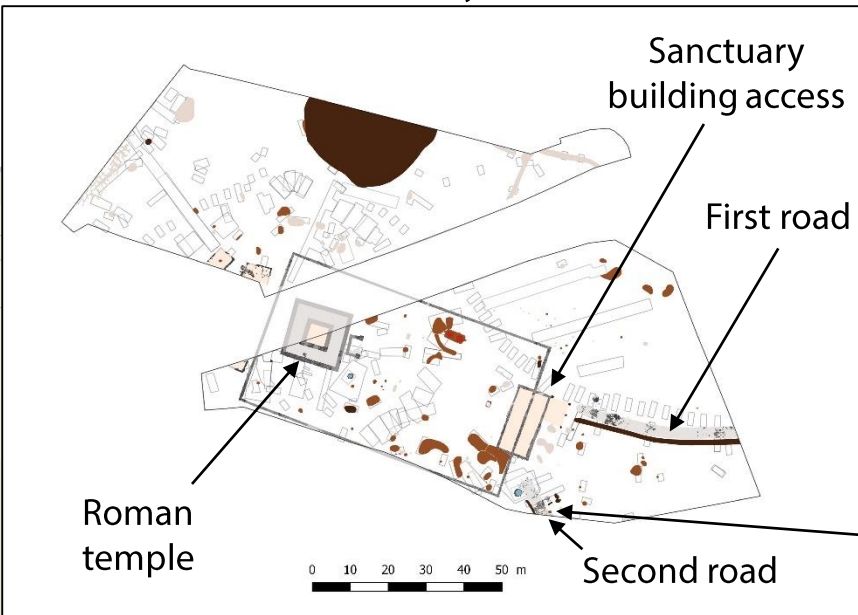
Map of the roman sanctuary of « Herouvillette »  
(J. SPIESSER)



Photography of the roman road of « Herouvillette » (J.SPIESSER)

# Did road networks emerge during the Roman period?

II<sup>d</sup> century AC



Map of the roman sanctuary of « Herouvillette »  
(J. SPIESSER)

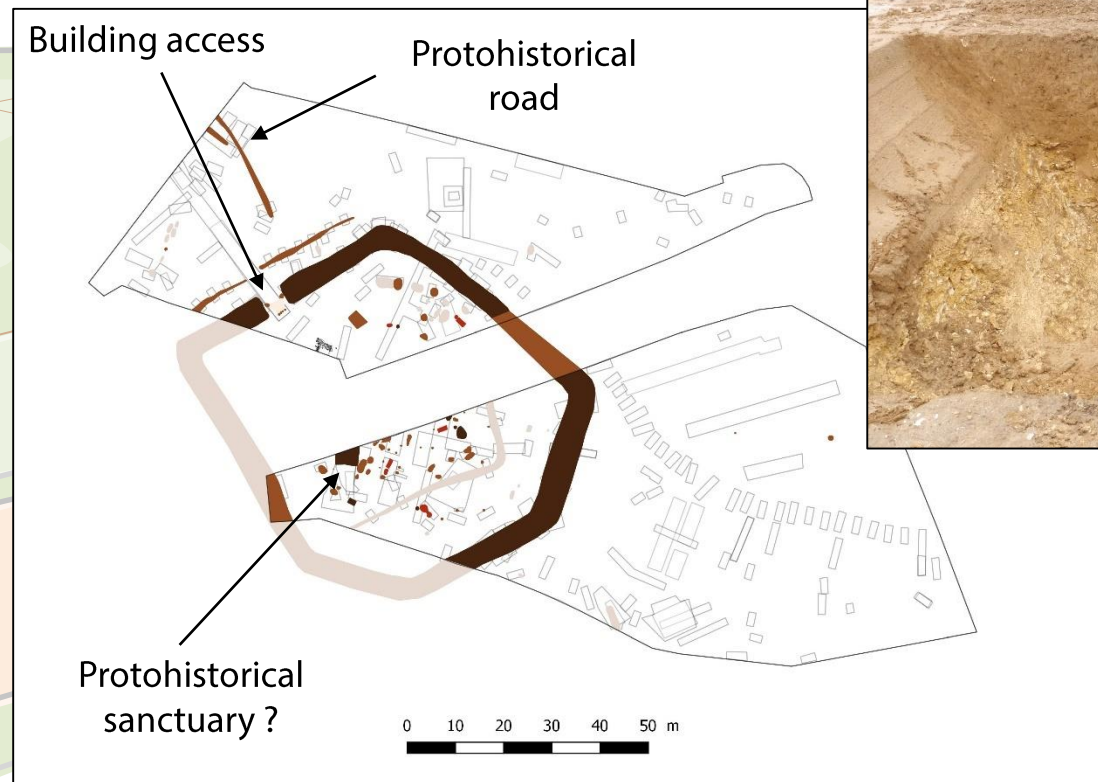
Road during the II<sup>d</sup> century AC



Road during the I<sup>st</sup> century AC

Photography of the second roman road of « Herouvillette » (J.SPIESSER)

# Did road networks emerge during the Roman period?



Photography of the protohistoric ditch of « Herouvillette » (J.SPIESSER)

Map of the probable protohistoric sanctuary of « Herouvillette » (J. SPIESSER)



# Protohistorical roads exist, but do they form a network ?

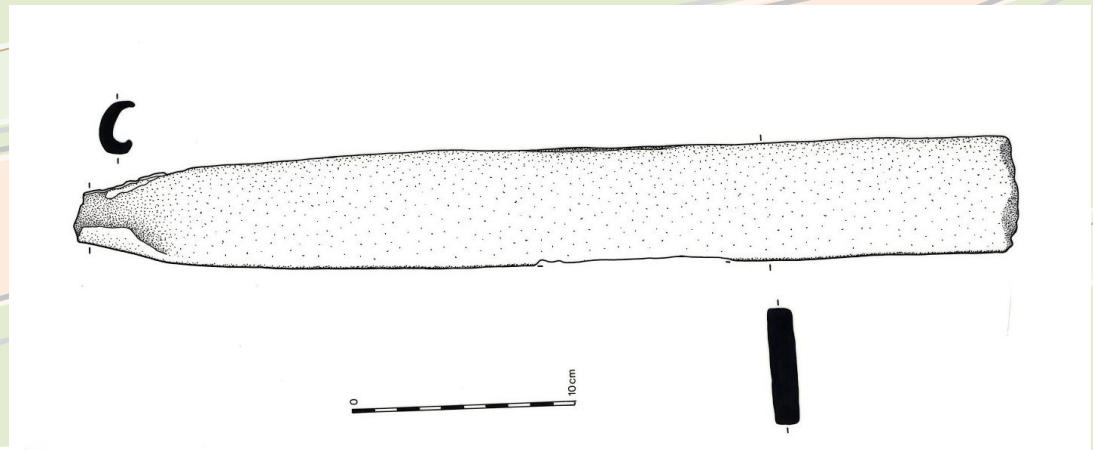
At the beginning of the 1st century (18 AC), Strabon wrote that freight transport crossed Gauls using vehicles  
(Strabon, *Geography*, IV, 1, 2)

A small excavation revealed 268 Italic *amphorae*



LiDar of the « Orival » oppidum  
(C. BASSET 2014)

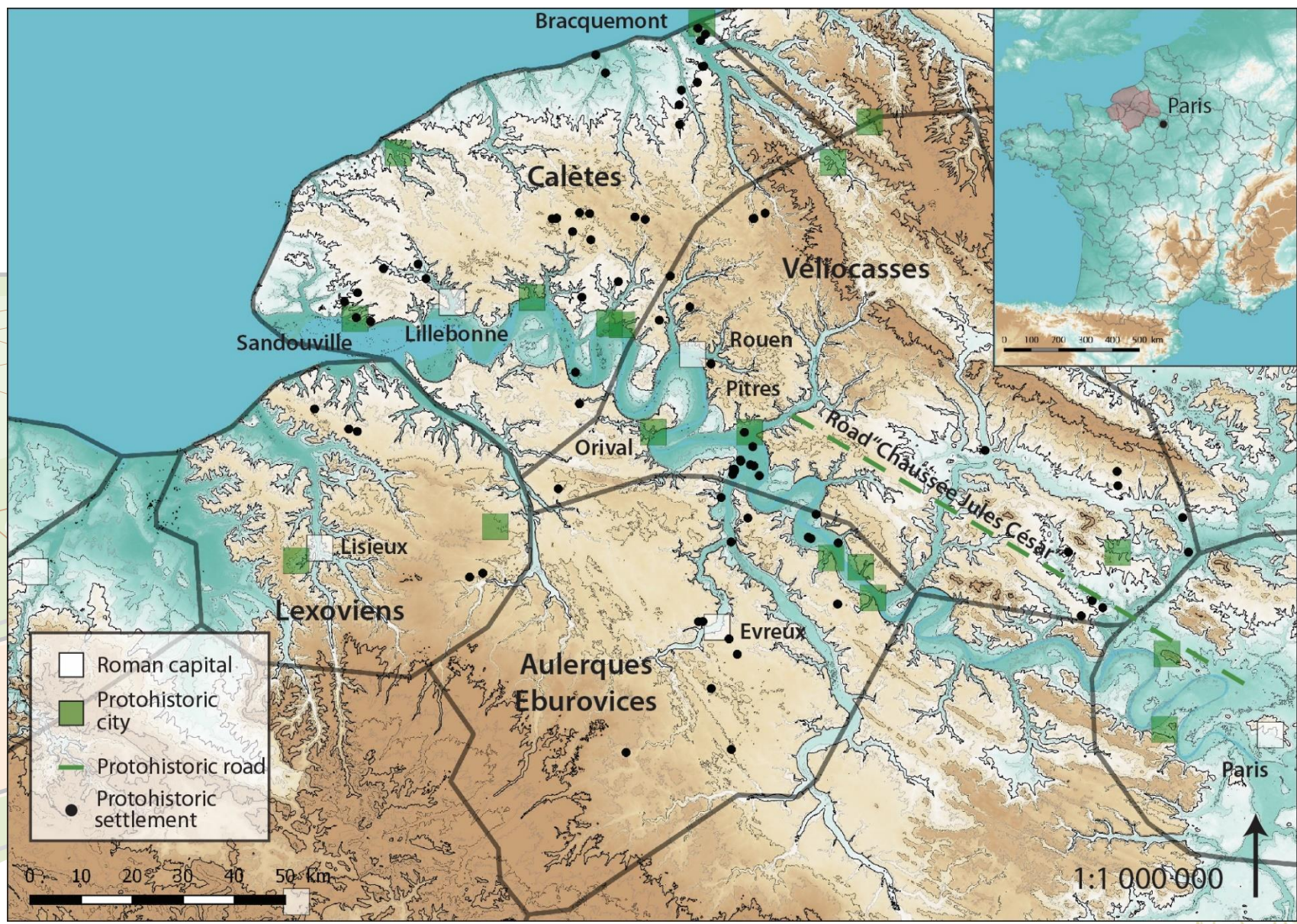
Briton currency bar



Drawing of a currency bar discovered on the protohistoric farm  
of « Hautot-le-Vatois » (Normandy)  
(G. BLANCQUAERT 2003)

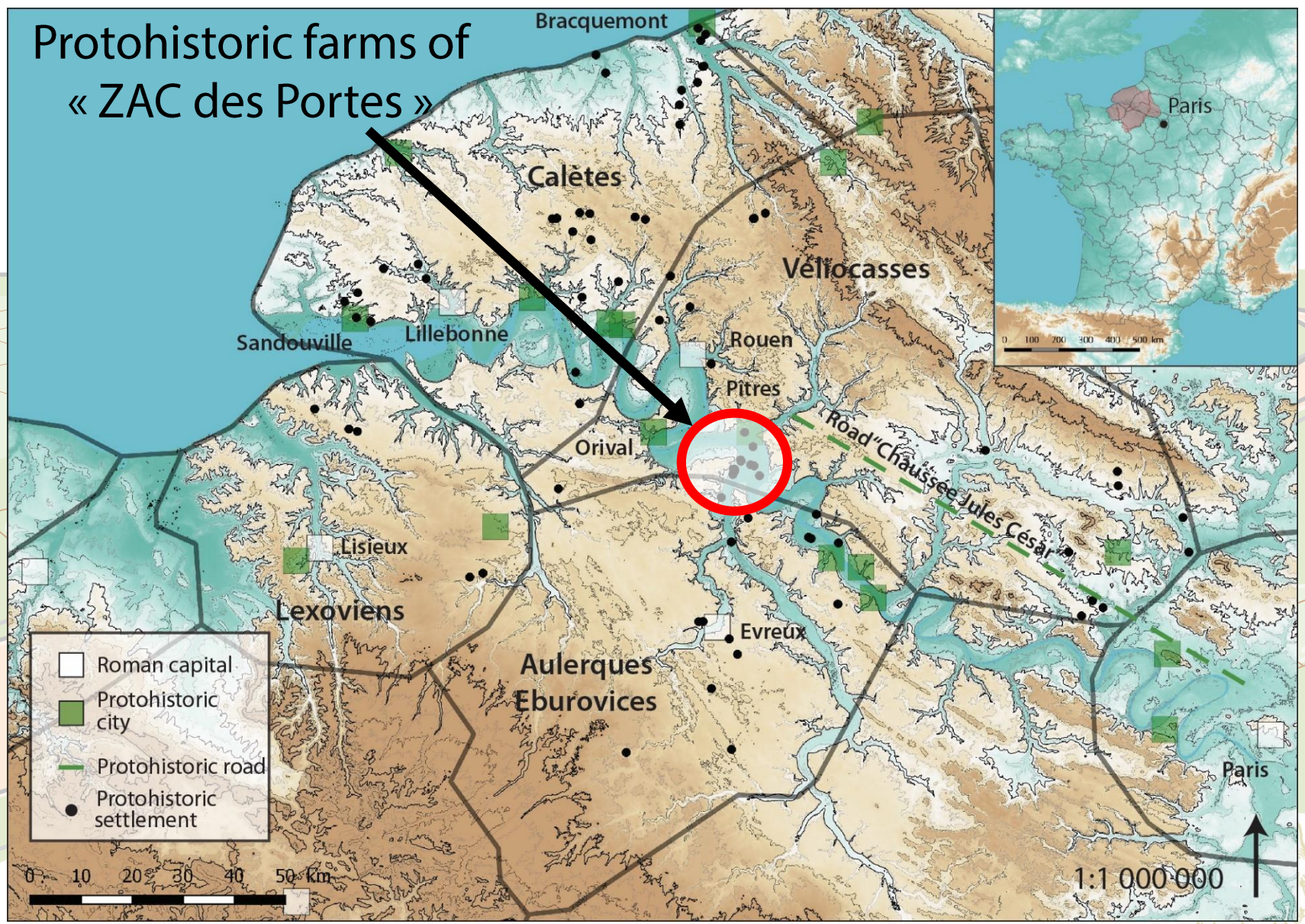


# The Low valley of the Seine (Normandy, France)



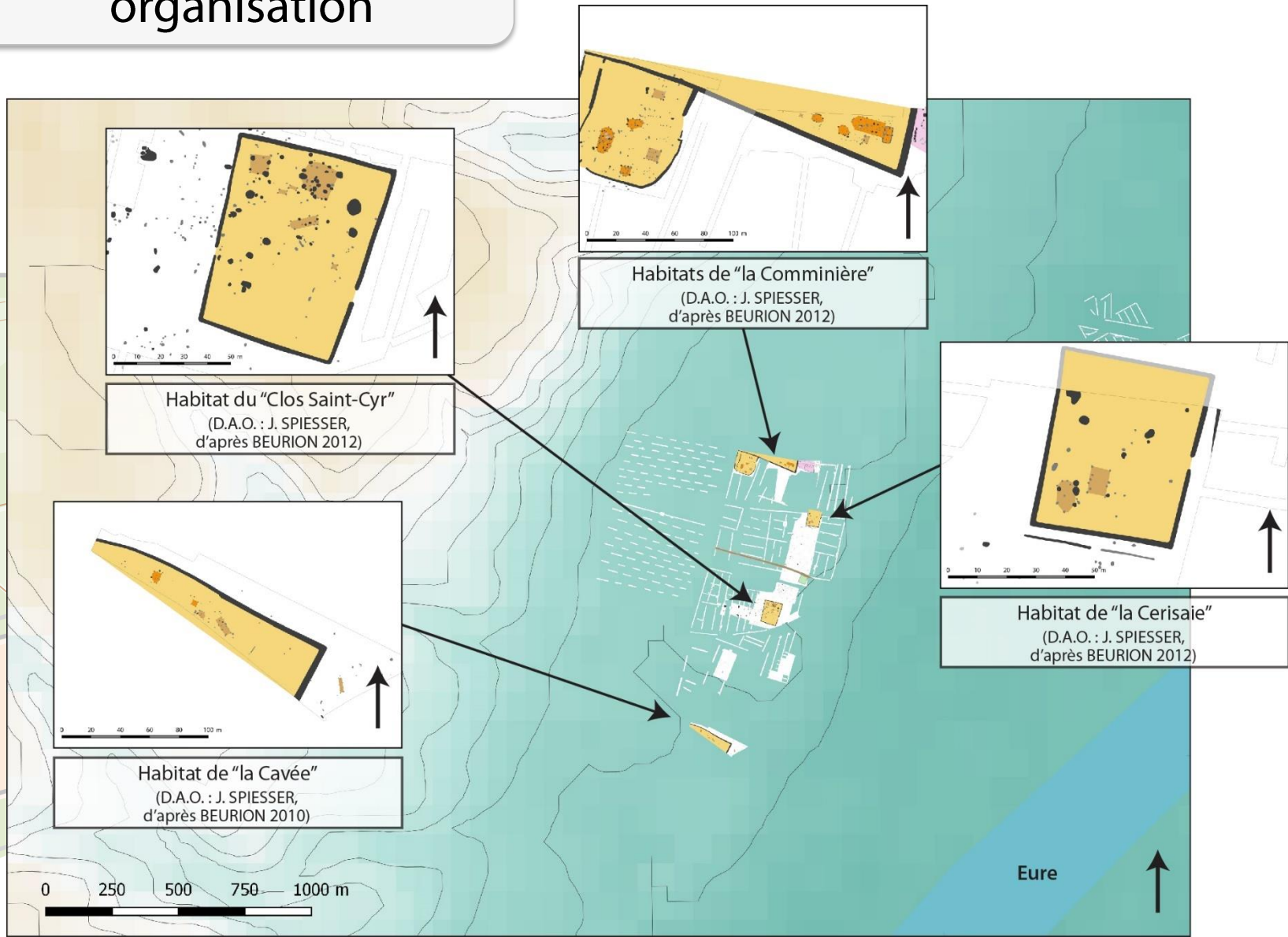
Protohistoric cities around the low valley of the Seine (J. SPIESSER)

# The Low valley of the Seine (Normandy, France)



Protohistoric cities around the low valley of the Seine (J. SPIESSER)

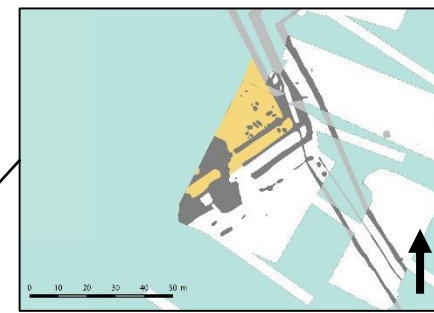
# Common Protohistoric organisation



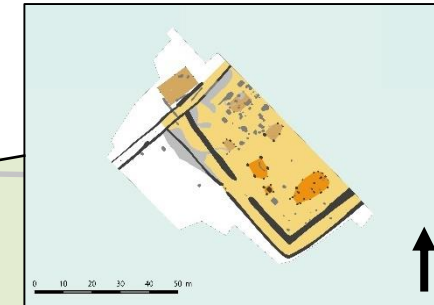


# Common Protohistoric organisations

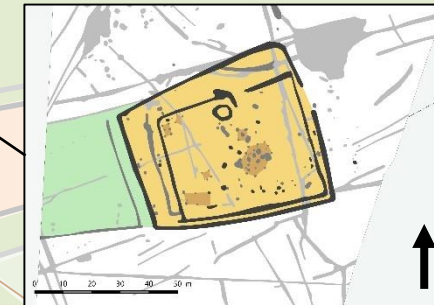
The protohistoric farm of « Manéhouville » (J. SPIESSER according to BRETON 2011)



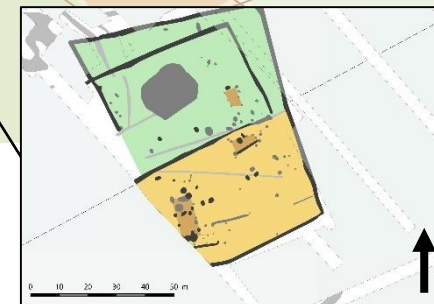
The protohistoric farm of « Dieppe » (J. SPIESSER according to CHOLET 2013)



The protohistoric farm of « Martin-l'Eglise » (J. SPIESSER according to MERLEAU 2000)

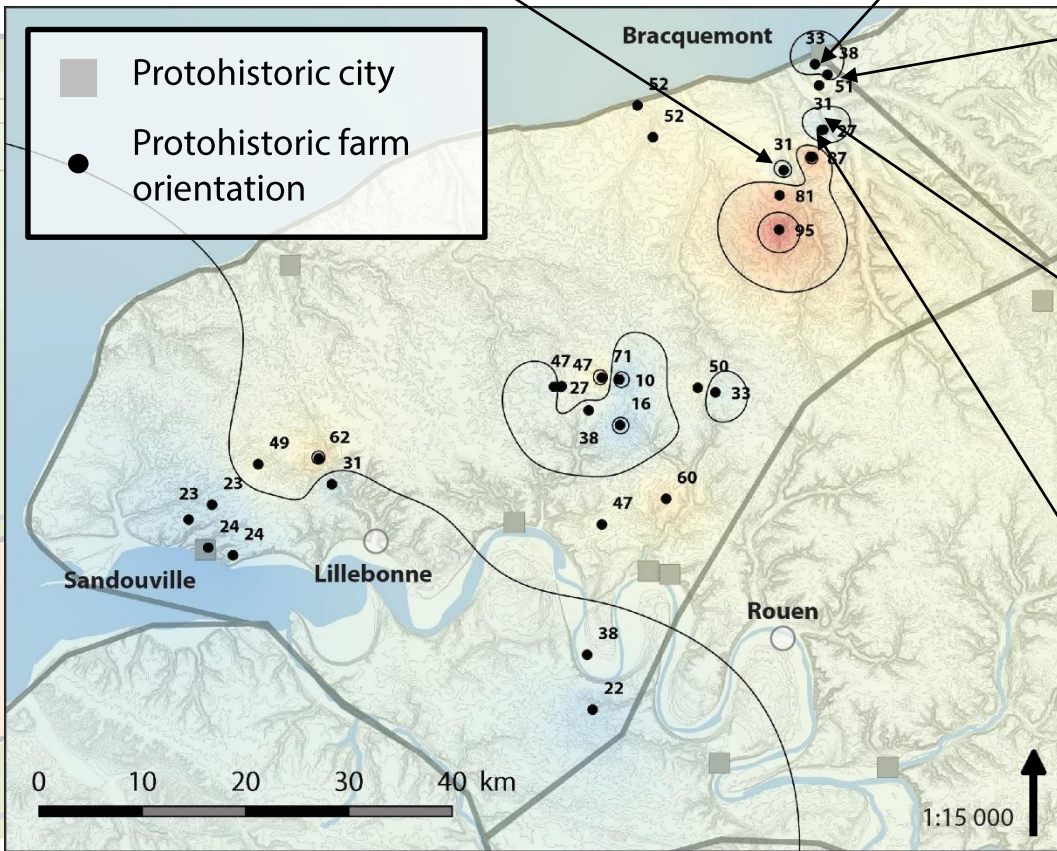


The protohistoric farm of « Arques-la-Bataille 2 » (J. SPIESSER according to BRETON 2015)



The protohistoric farm of « Arques-la-Bataille 1 » (J. SPIESSER according to BRETON 2015)

■ Protohistoric city  
● Protohistoric farm orientation

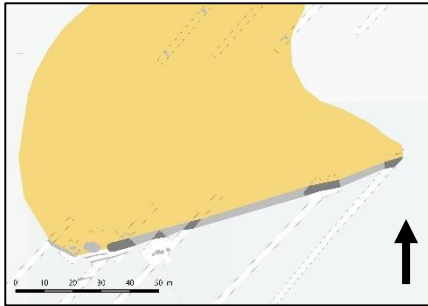


Protohistoric orientations in the city of *Caletii* (J. SPIESSER)

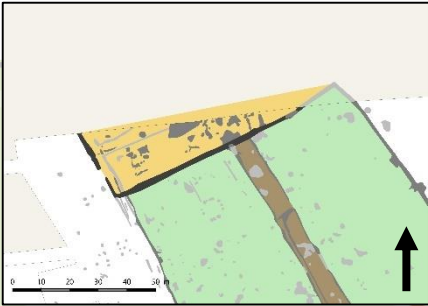


# Common Protohistoric organisations around « Sandouville » oppidum

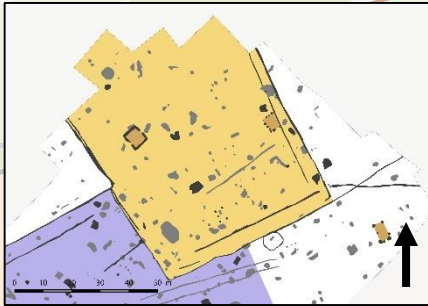
The protohistoric farm of « Saint-Aubin Routot, Le Four à chaux » (J. SPIESSER according to BLANCQUAERT 1994)



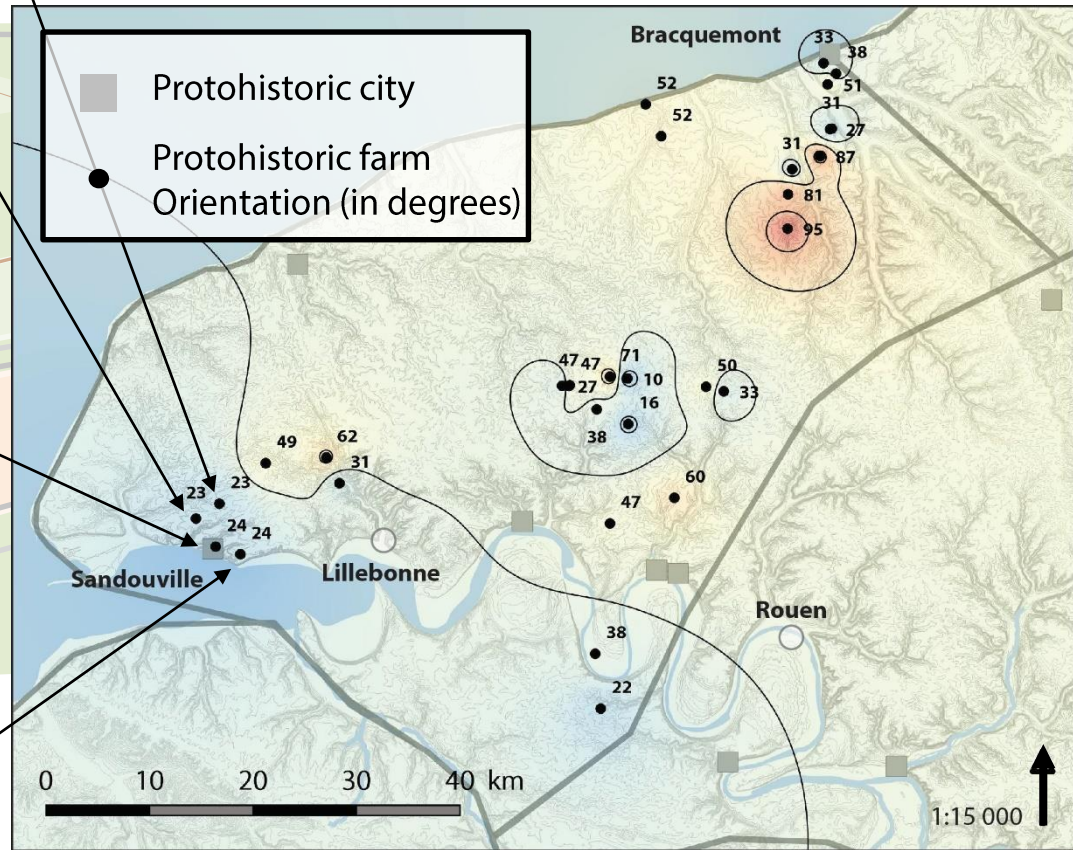
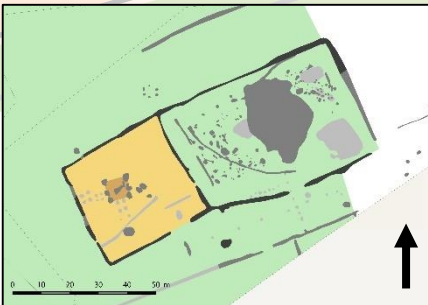
The protohistoric farm of « Saint-Aubin Routot, Maison d'Arret » (J. SPIESSER according to MICHEL 2008)



The oppidum of « Sandouville » (J. SPIESSER according to MICHEL 2008)

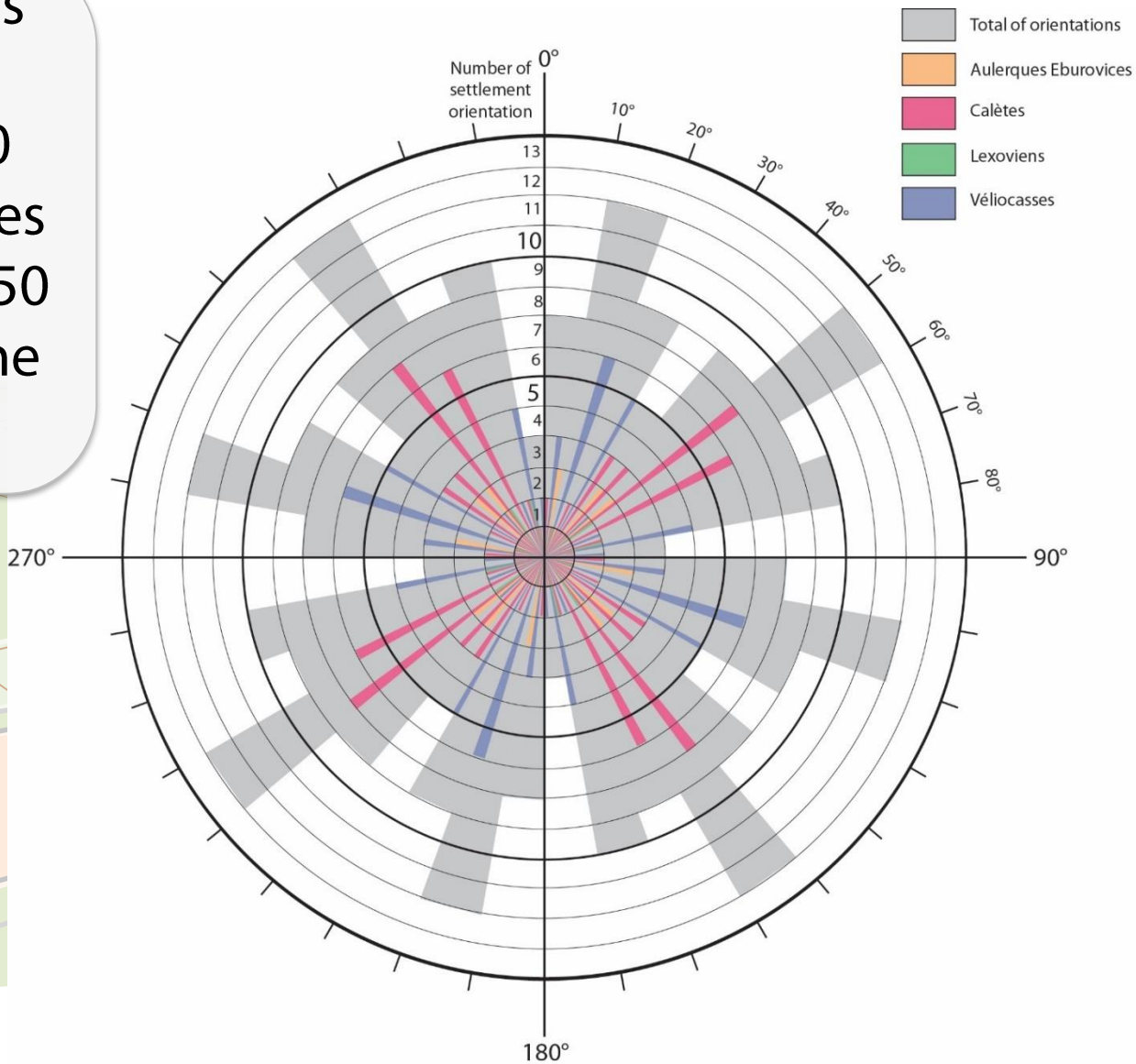


The protohistoric farm of « Saint-Vigor d'Ymonville » (J. SPIESSER according to GUBELINI 2008)



Protohistoric orientations in the city of *Caletii* (J. SPIESSER)

These structurations are essentially between 10 and 30 degrees in Vellocasses cities, and between 50 and 70 degrees in the *Caletii*.

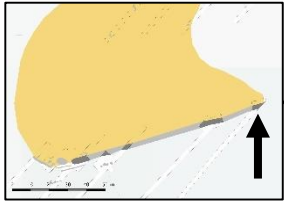
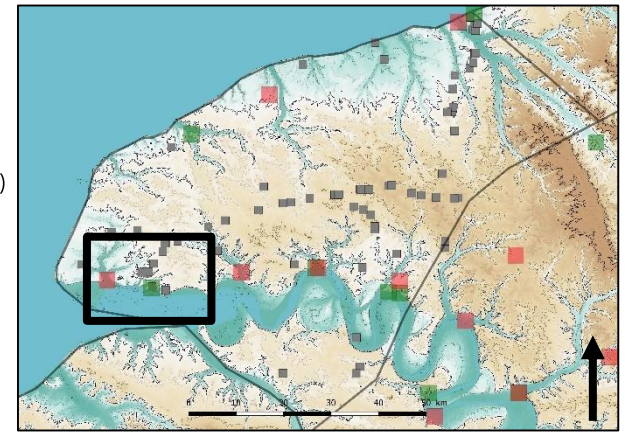


Common farm orientations in the four cities (J. SPIESSER)

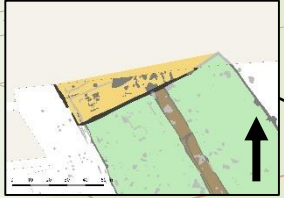


# Resilience of protohistoric organisations

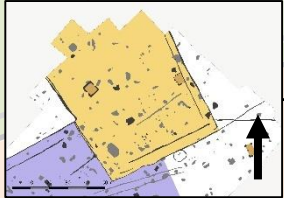
The roman farm of « Rolleville» (J. SPIESSER according to DELAUNAY 2011)      The roman farm of « Fontaine-la-Mallet» (J. SPIESSER according to MICHEL 2011)



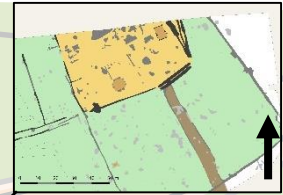
The protohistoric farm of « Saint-Aubin Routot – Le Four à chaux» (J. SPIESSER according to BLANQUAERT 1994)



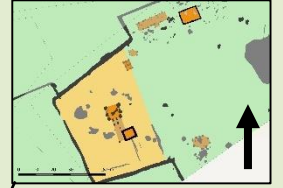
The protohistoric farm of « Saint-Aubin Routot – Maison d'Arret» (J. SPIESSER according to MICHEL 2008)



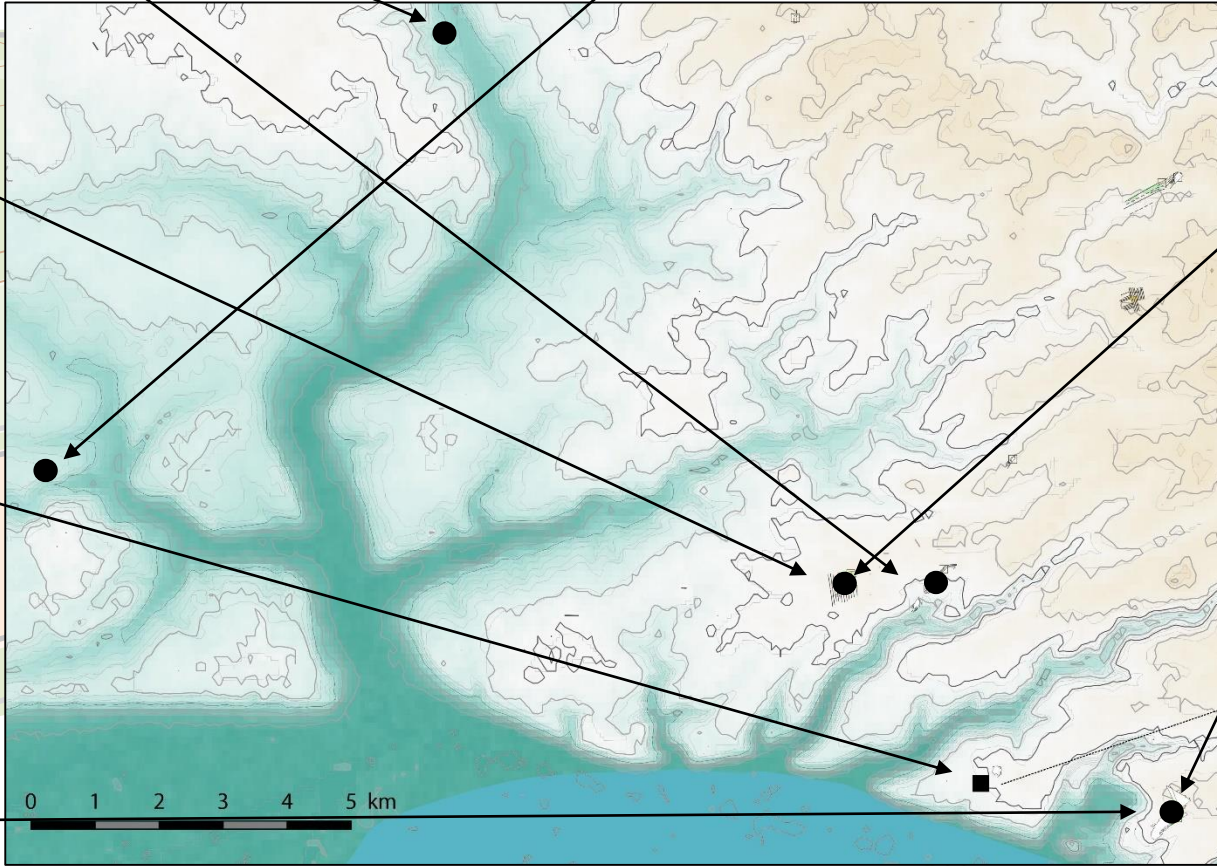
The oppidum of « Sandouville» (J. SPIESSER according to MICHEL 2008)



The roman farm of « Saint-Aubin Routot – Maison d'Arret» (J. SPIESSER according to MICHEL 2008)

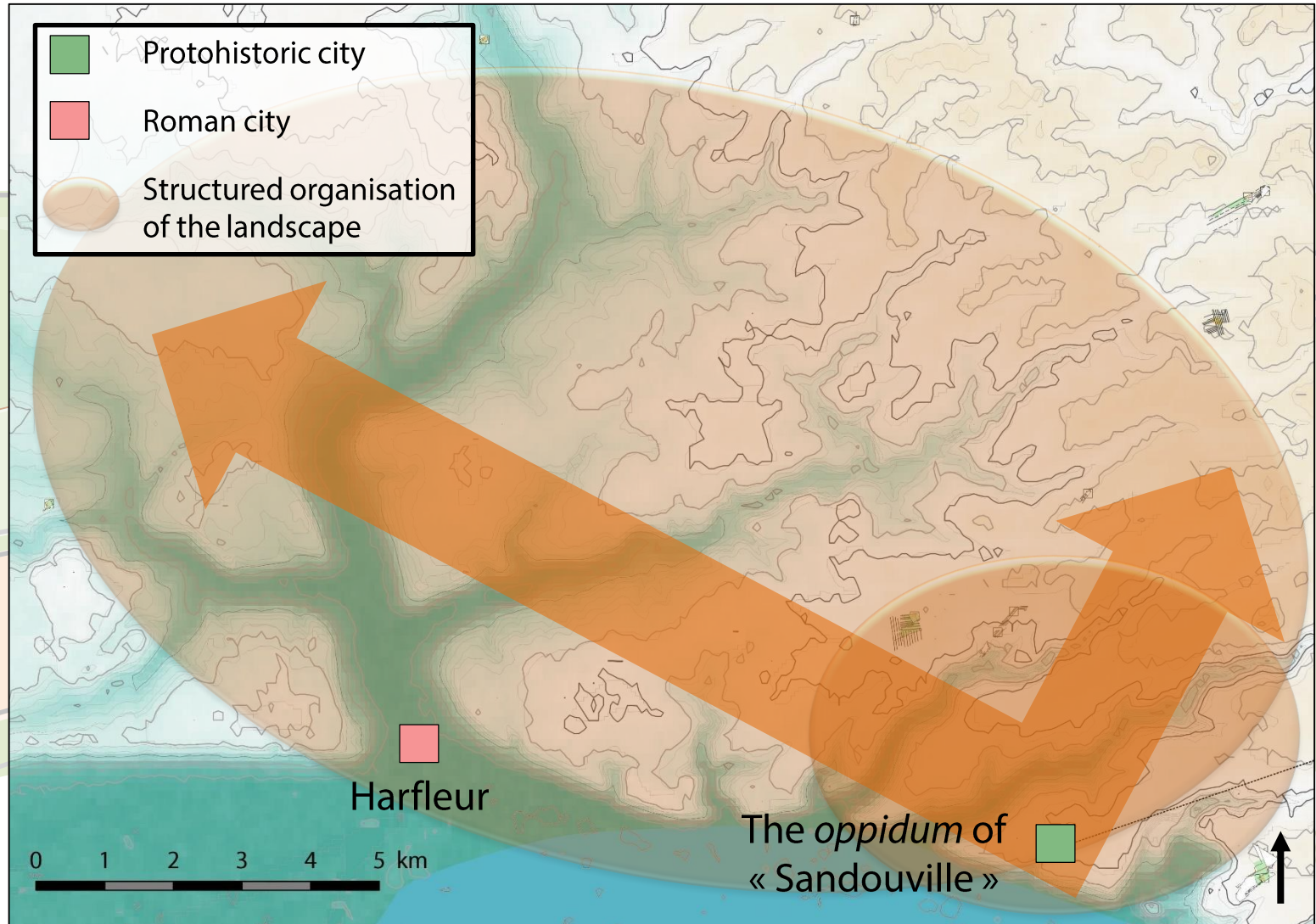


The roman farm of « Saint-Vigor d'Ymonville» (J. SPIESSER according to GUBELINI 2008)



Protohistoric and roman orientations around the oppidum of « Sandouville» (J. SPIESSER)

Protohistoric landscape organisation around the *oppidum* are maintained and developed during the roman period, particularly nearby new towns.

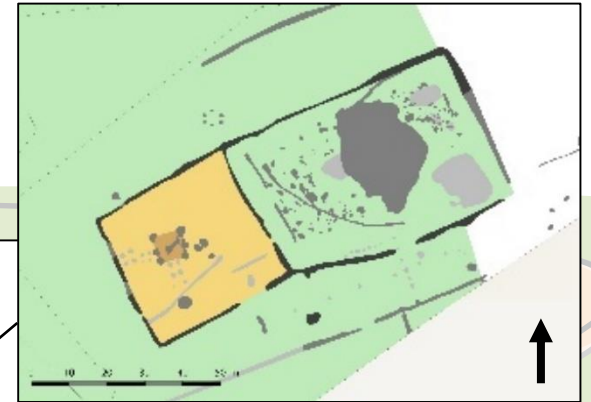


Landscape evolution around the *oppidum* of « Sandouville » (J. SPIESSER)

Resilience of protohistoric orientation during roman period could be an argument for the identification of a potential protohistoric road in place of a roman road.



Roman farm



Protohistoric farm

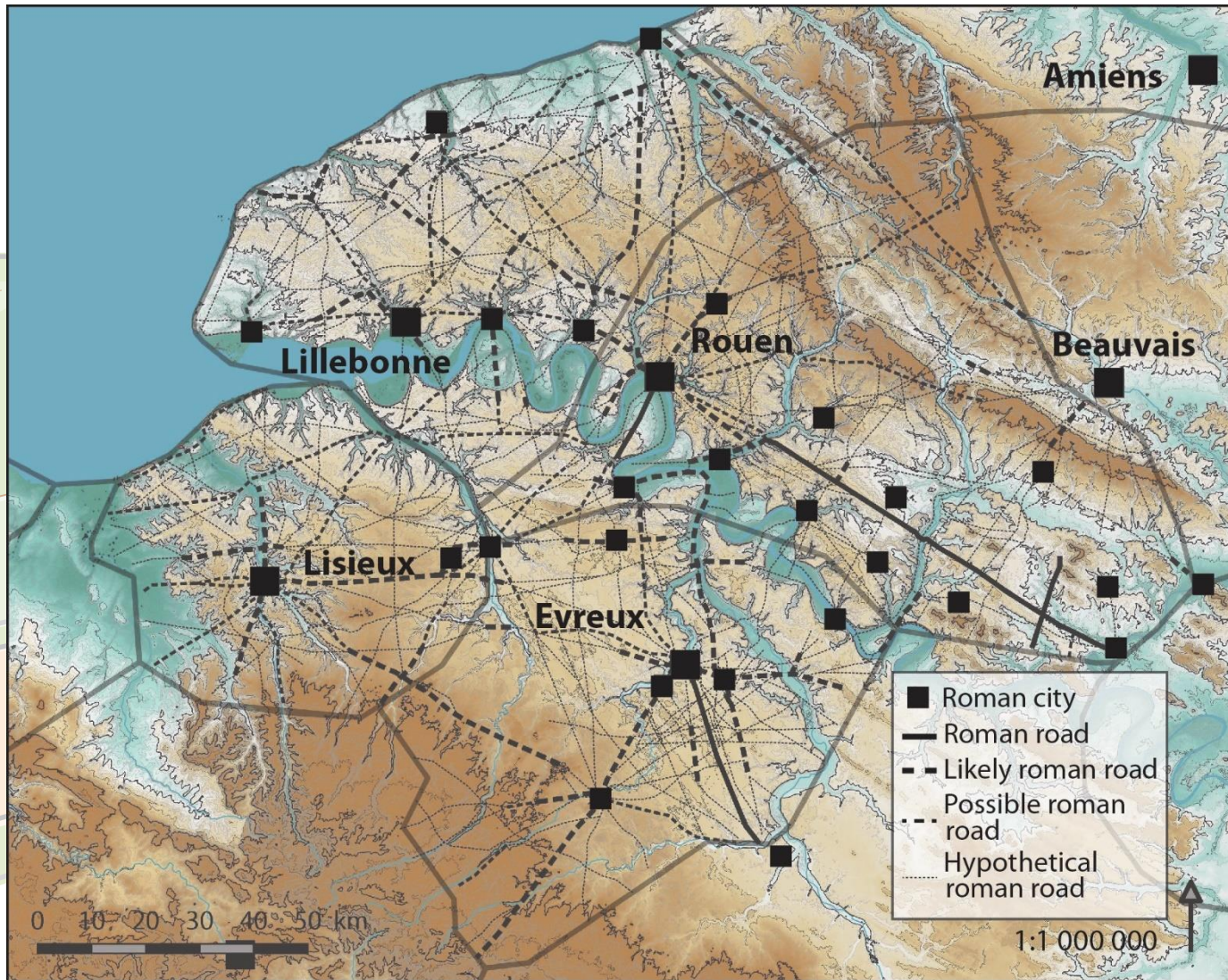


Roman and  
protohistoric  
road ?

The protohistoric and roman farms of « Saint-Vigor d'Ymonville »  
(J. SPIESSER according to GUBELINI 2008)



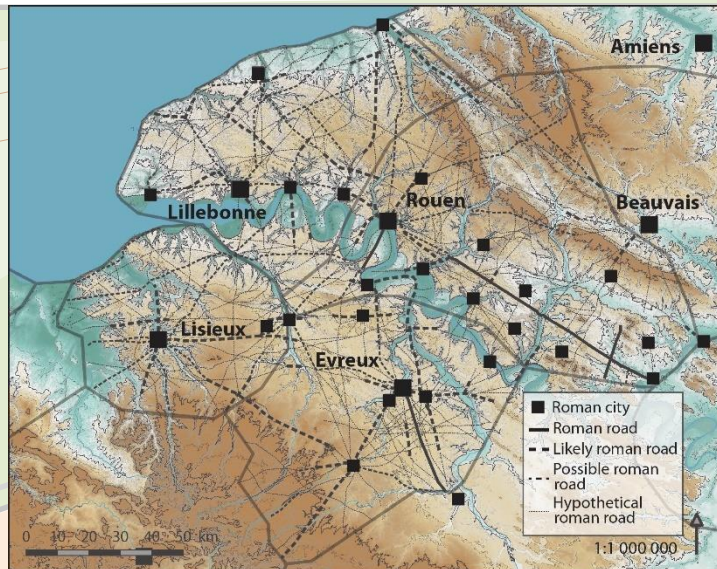
Roman roads have been well documented for two centuries, by a total of 33 scientists.



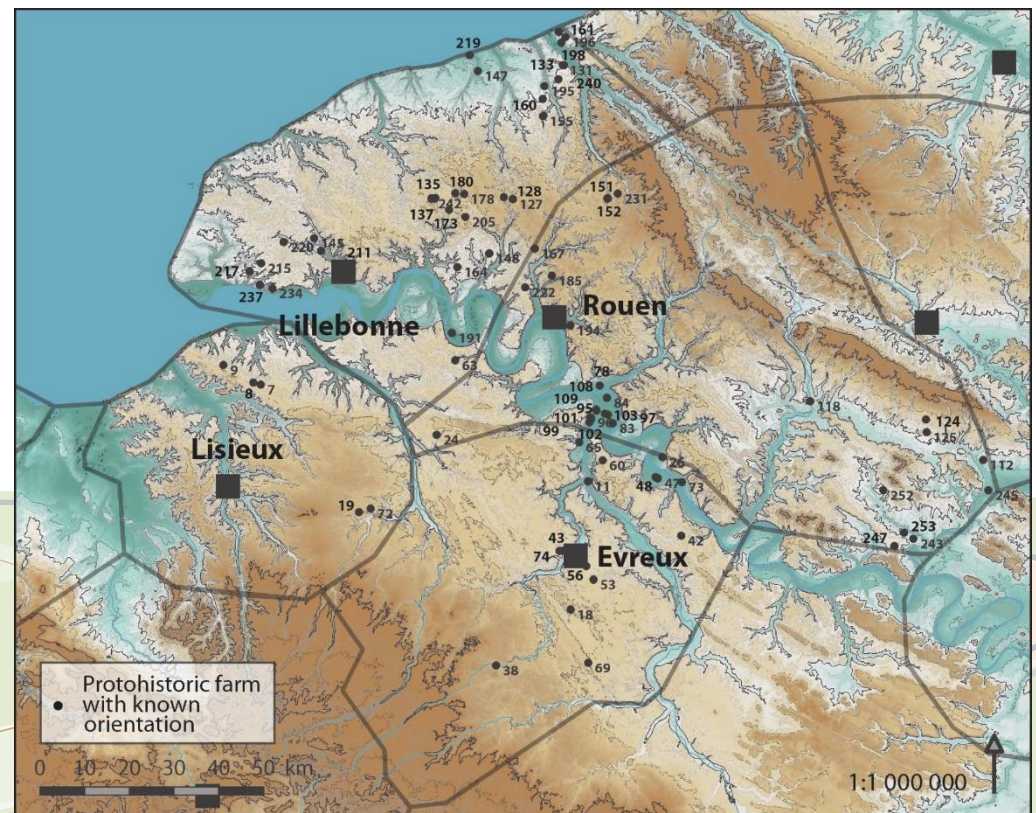
State of research on roman roads (J. SPIESSER)



# Comparison of roman roads orientations and protohistoric farms orientations.



State of research on roman roads (J. SPIESSER)

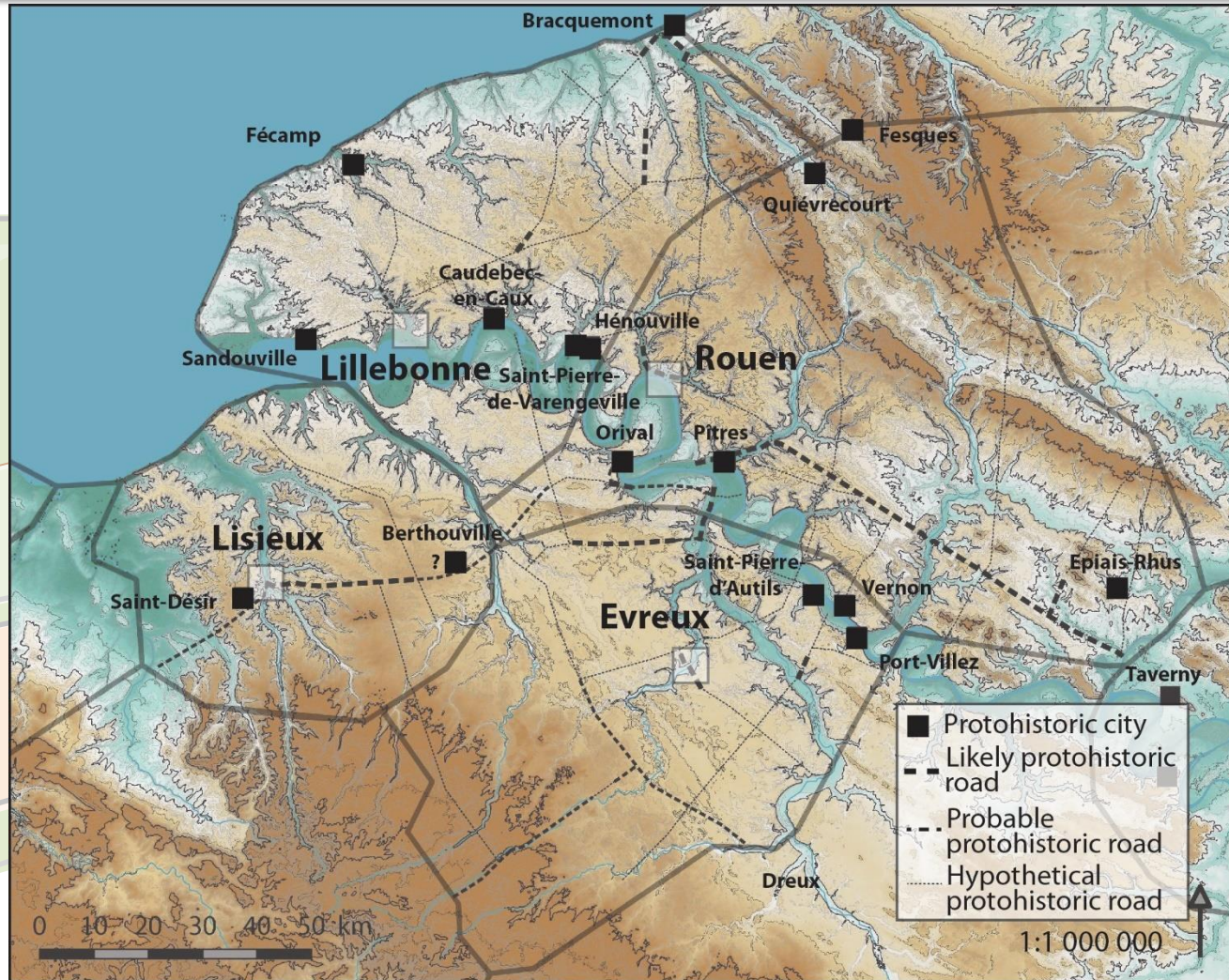


- |    |   |     |  |     |   |
|----|---|-----|--|-----|---|
| 7  | Quetteville « La Gohaigne »                         | 96  | Val-de-Reuil « La Cominière » 2                | 167 | Esettes « Le Manoir Bosquet »                   |
| 8  | Quetteville « Les Heurtres » 2                      | 97  | Val-de-Reuil « Le Chemin des Errants » 1       | 173 | Flamanville « A150 Tranche 1A »                 |
| 9  | Saint-Gatien-des-Bois « Le Vert Buisson »           | 99  | Val-de-Reuil « Le Clos Saint-Cyr »             | 178 | Grémondville « Le Bois Thillant »               |
| 11 | Acquigny « Les Diguets »                            | 101 | Val-de-Reuil « La Cerisaie »                   | 180 | Grémondville « Le Gal » 1                       |
| 18 | Avrilly « Le Clos des Forges »                      | 102 | Val-de-Reuil « La Cavée »                      | 185 | Houpeville « Rue de la Voie Maline »            |
| 19 | Bernay « La Rangée Boivin »                         | 103 | Val-de-Reuil « La Salle »                      | 191 | Jumièges « Le Marais de Jumièges »              |
| 24 | Bosrobert « La Métairie »                           | 108 | Val-de-Reuil « Le Raquet » 1                   | 194 | Le Mesnil-Esnard « Route de Darnétal »          |
| 26 | Bouafles « Carrière RD313 »                         | 109 | Val-de-Reuil « Le Raquet » 2                   | 195 | Manéhouville « RN27 Partie 1-1A »               |
| 38 | Condé-sur-Iton « Le Moulin Renault »                | 112 | Belle-Eglise « Le Bois Saint-Ladre »           | 196 | Martin-l'Eglise « Rue Louis Lumières »          |
| 42 | Douains « Normandie Parc »                          | 118 | Eragry-sur-Epte « Le Pâtis aux Moines »        | 198 | Martin-l'Eglise « Chemin des Meuniers »         |
| 43 | Evreux « ZAC Cambolle »                             | 124 | Saint-Crépin-ibouvillers « Le Tabary »         | 205 | Motteville « A150 Site 10 »                     |
| 47 | Gaillon « La Garenne »                              | 125 | Villeneuve-les-Sablons « Le Bois des Saules »  | 211 | Saint-Antoine-la-Forêt « Le Clos Pestel »       |
| 48 | Gaillon « Le Pot à l'Eau »                          | 127 | Ancretieville-Saint-Victor « La Crevonnerie »  | 215 | Saint-Aubin-Routot « Le Four à Chaux » 1        |
| 53 | Guichainville « Devant-de-la-Garenne »              | 128 | Ancretieville-Saint-Victor « Le Bois Boulan »  | 217 | Saint-Aubin-Routot « Maison d'Arrêt »           |
| 56 | Guichainville « Le Long Buisson »                   | 131 | Arques-la-Bataille « RN27 Zone 1 »             | 219 | Saint-Aubin-sur-Mer « Plaine de Saussemare »    |
| 60 | Heudebouville « La Butte Colas »                    | 133 | Arques-la-Bataille « RN27 Zone2 »              | 220 | Saint-Gille-de-la-Neuville « La Chouette »      |
| 63 | Honguemarre « Le Moulin Vaquet »                    | 135 | Baons-le-Comte « Les Baons » 1                 | 222 | Saint-Jean-du-Cardonnay « Le Petit Mont »       |
| 65 | Louviers « Rue des Oiseaux »                        | 137 | Baons-le-Comte « Les Baons » 2                 | 231 | Saint-Saëns « La Plaine du Pucheuil »           |
| 69 | Marcilly-la-Campagne « Les Longs Champs »           | 145 | Bolbec « Les Maréchaux »                       | 234 | Saint-Vigor-d'Ymonville « La Mare des Mares »   |
| 72 | Menneval « Le Pré Hardy Ouest »                     | 147 | Bourg-Dun « Route de Beaufournier »            | 237 | Sandouville « La Route du Vachat »              |
| 73 | Notre-Dame de l'Isle « La Plaine du Moulin à Vent » | 148 | Bouville « A150 Site 6B »                      | 240 | Tourville-les-Arques « RN27 tranche2 ZoneB »    |
| 74 | Parville « Le Bois de Parville »                    | 151 | Cottevarard « La Plaine de la Bucaille » 1     | 242 | Veauville-lès-Baons « D37 »                     |
| 78 | Pîtres « Le Fossouin »                              | 152 | Cottevarard « La Plaine de la Bucaille » 2     | 243 | Cergy « ZAC des Limandes »                      |
| 83 | Porte-Jolie « Les Pérelles »                        | 155 | Criquetot-sur-Longueville « Les Rouges Monts » | 245 | Champagne-sur-Oise « Les Basses Coutures »      |
| 84 | Poses « Sur la Mare »                               | 160 | Crosville-sur-Scie « La Plaine de Crosville »  | 247 | Courdimanche « La Touffe » 1                    |
| 95 | Val-de-Reuil « La Cominière » 1                     | 161 | Dieppe « Le Val d'Arquet »                     | 252 | Marines « La Pièce du Tonnerre »                |
|    |   | 164 | Epinay-sur-Duclair « Le Hameau des Hayes »     | 253 | Puiseux-Pontoise « ZAC de la Chaussée Puiseux » |

Protohistoric farm with a known orientation (J. SPIESSER)



Probable protohistoric road sections appeared in roman network, as the sections follows protohistoric landscape structuration.



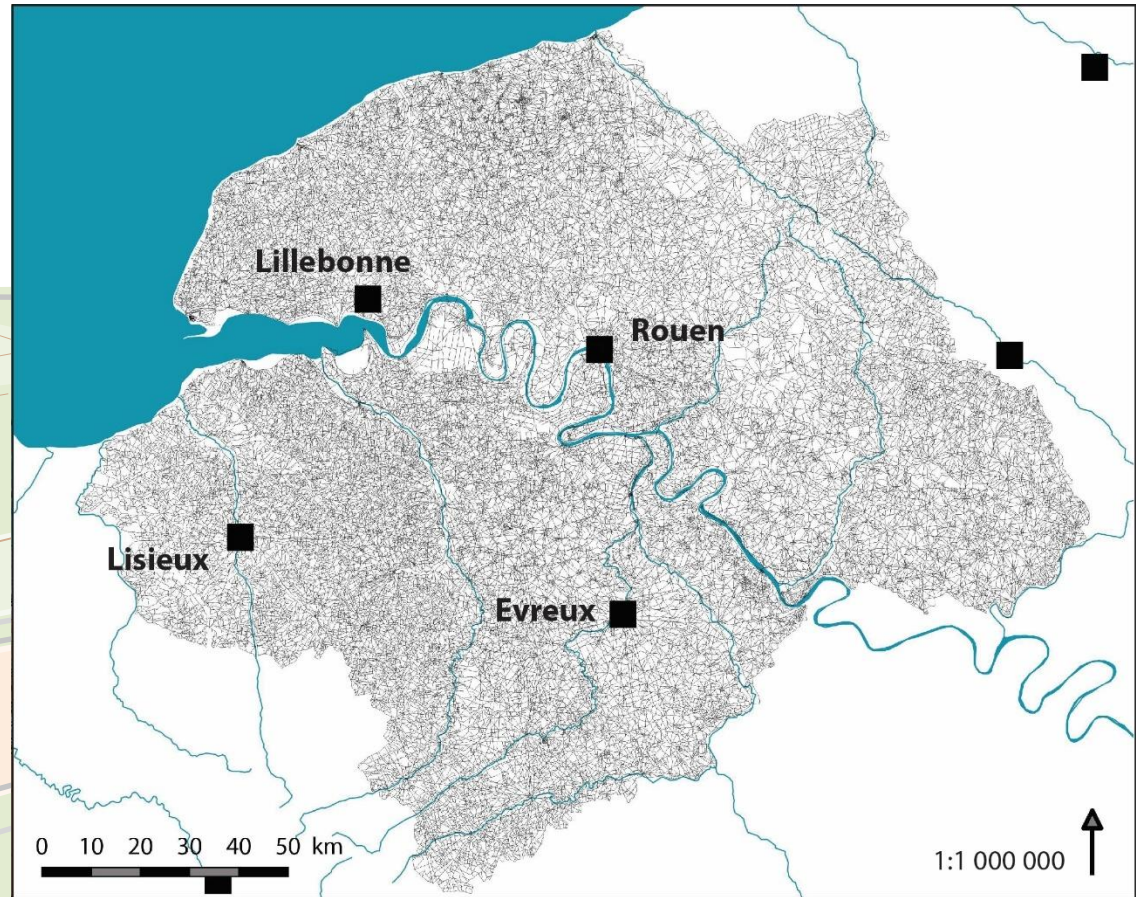
State of research on protohistoric roads after analysis (J. SPIESSER)



Complementarily :  
Protohistoric farm  
orientations were  
compared to 332 383  
modern road sections.



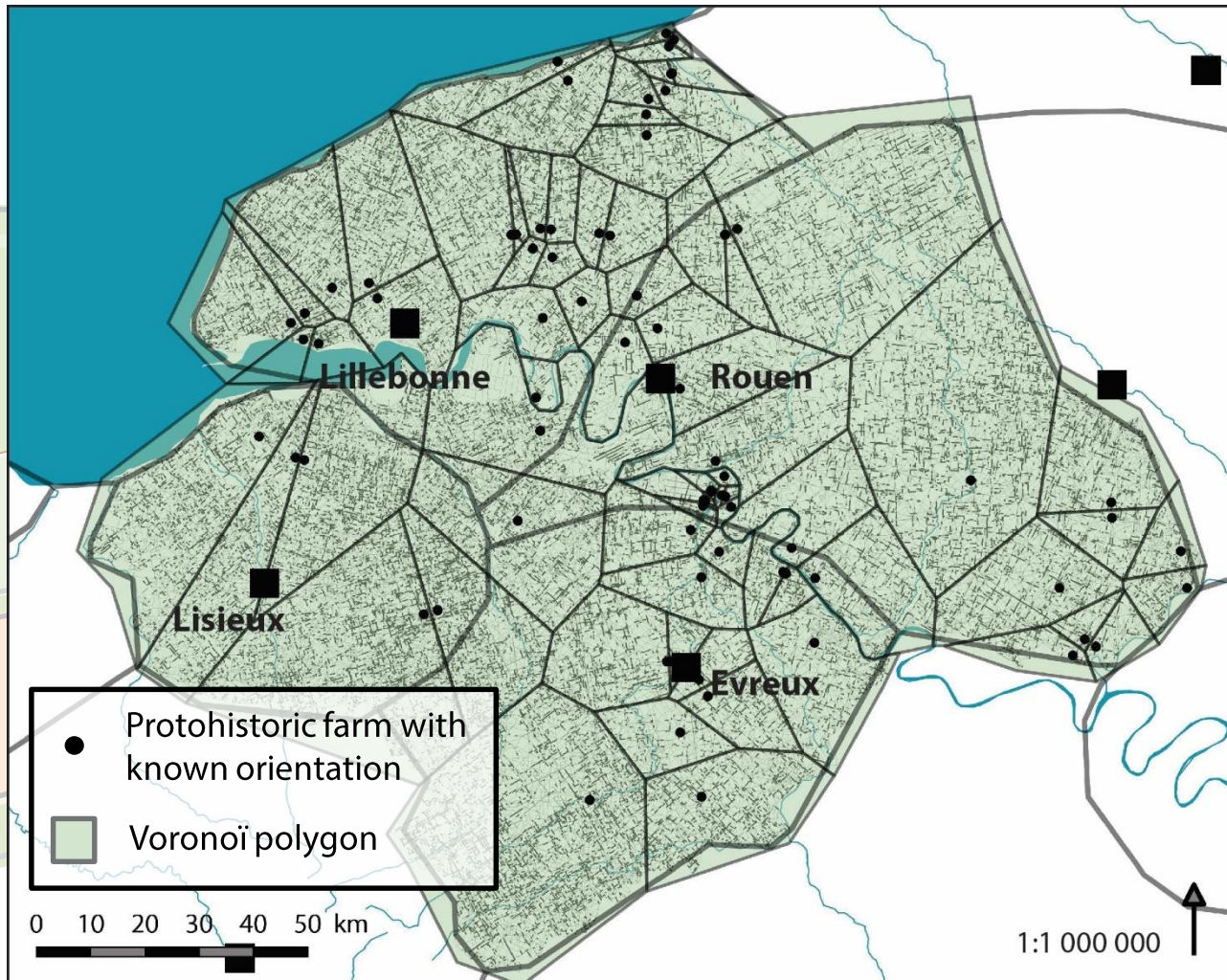
The ordonnance survey map (1818-1854)



Map of modern road (J. SPIESSER)

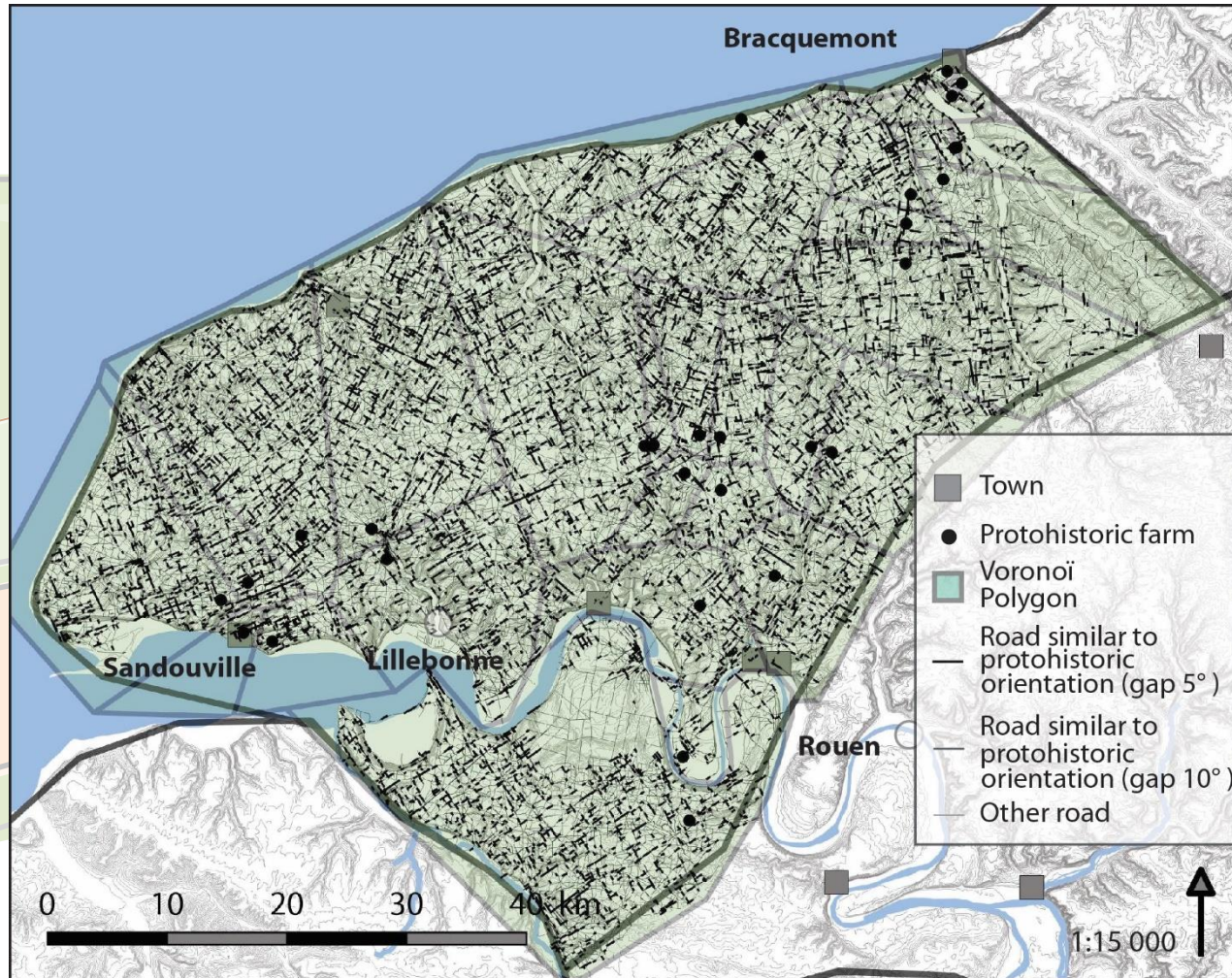


Every modern road sections are compared with protohistoric farm orientation located nearby.



Map of modern road (J. SPIESSER)

After the creation of Voronoi polygons around protohistoric farms, modern road sections have been analyzed in order to highlight potential ancient road.



Comparison between protohistoric orientations and modern roads in the city of *Caletii* (J. SPIESSER)

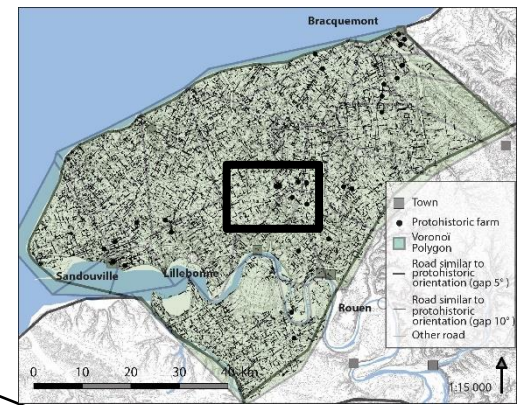


The protohistoric farm of « Baons-le-Comte 2 »  
(J. SPIESSER according to DEFOSSÉS 1993)

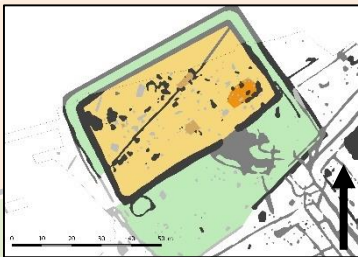


The protohistoric farm of « Grémonville »

(J. SPIESSER according to ROUGIER 1996)



The protohistoric farm of « Baons-le-Comte 1 »  
(J. SPIESSER according to DEFOSSÉS 1993)

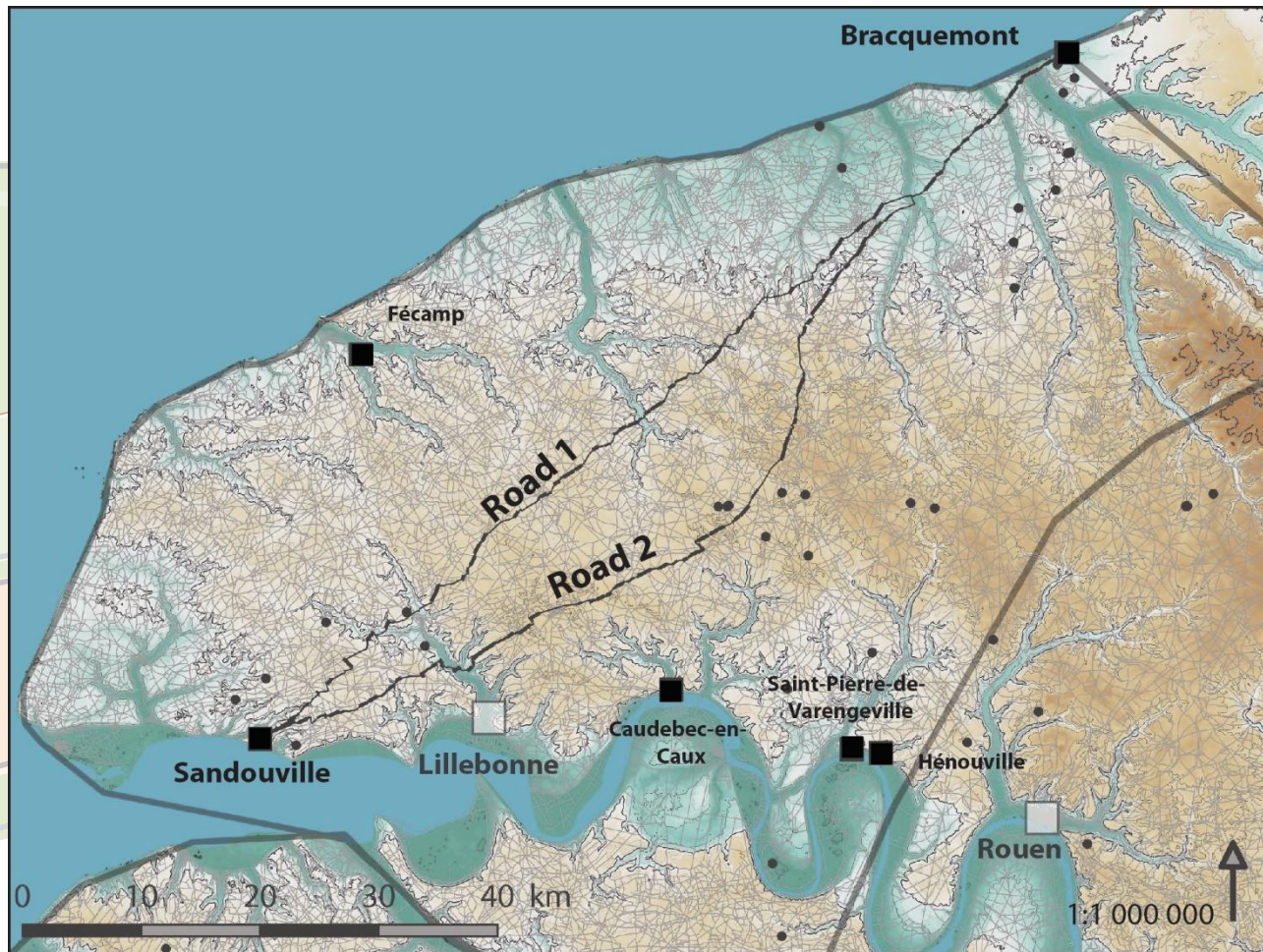


The protohistoric farm of « Veuville-lès-Baons »  
(J. SPIESSER according to DEFOSSÉS 1993)



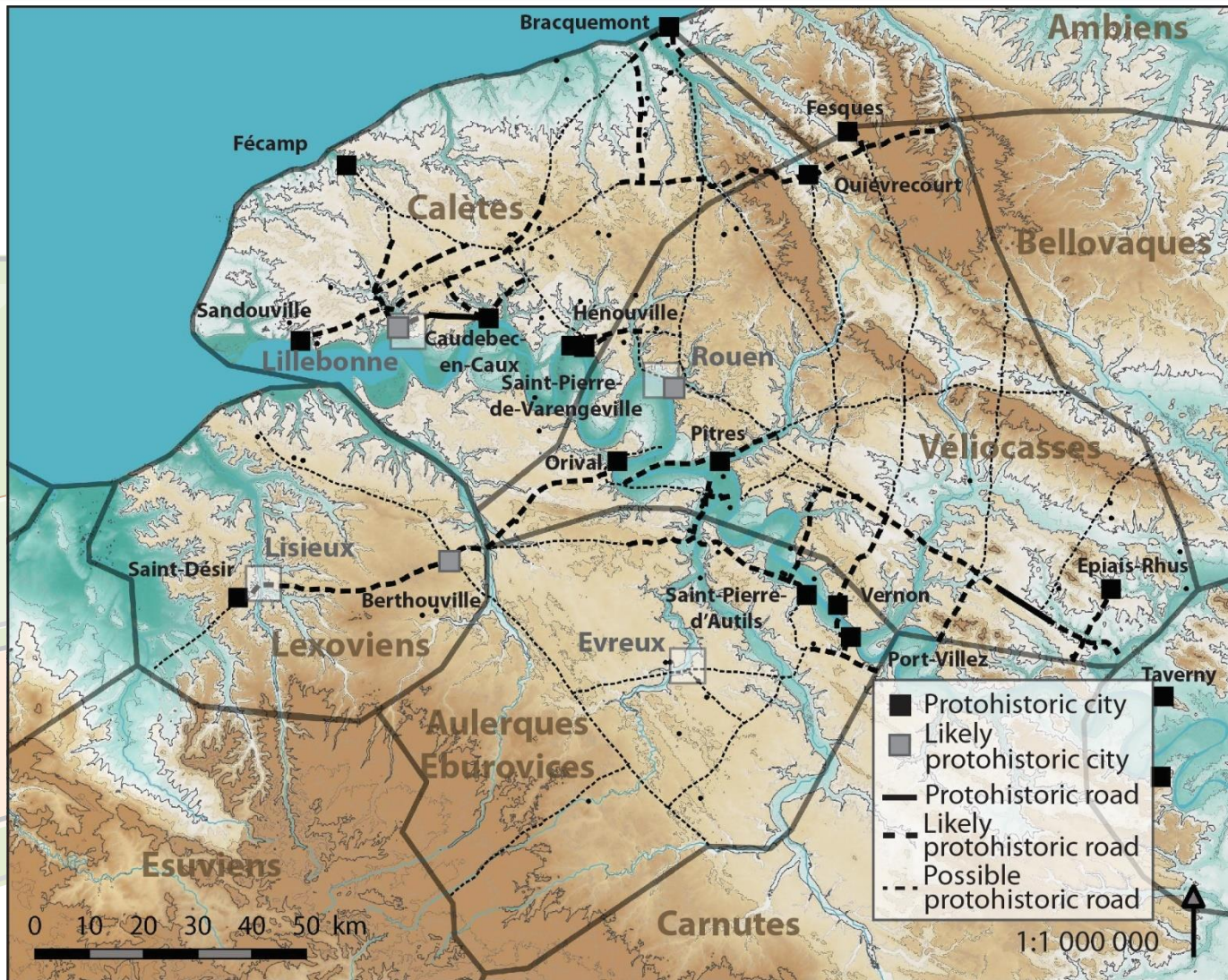
Potential protohistoric road on the plateau (J. SPIESSER)

Between « Sandouville » and « Bracquemont » *oppida*, only 20,8 % of the length of the straightest road is in adequacy with the orientation of protohistoric farms, whereas it amounts to 42,6 % of the second road. Therefore, the second road has twice the chance of being the protohistoric path between these *oppida*.



Comparison between protohistoric orientations and modern roads in the city of *Caletii* (J. SPIESSER)

To conclude with, we are able to identify protohistoric road in roman and modern network by their resilience in the landscape.



State of research on protohistoric roads (J. SPIESSER)

# Thank you for your attention !

For more informations : [jerome.spiesser@hotmail.fr](mailto:jerome.spiesser@hotmail.fr)



The low valley of the Seine (J. SPIESSER)

