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New constraints on the age and geometry of alluvial fills in the valley bottoms of the Seine River catchment (France)

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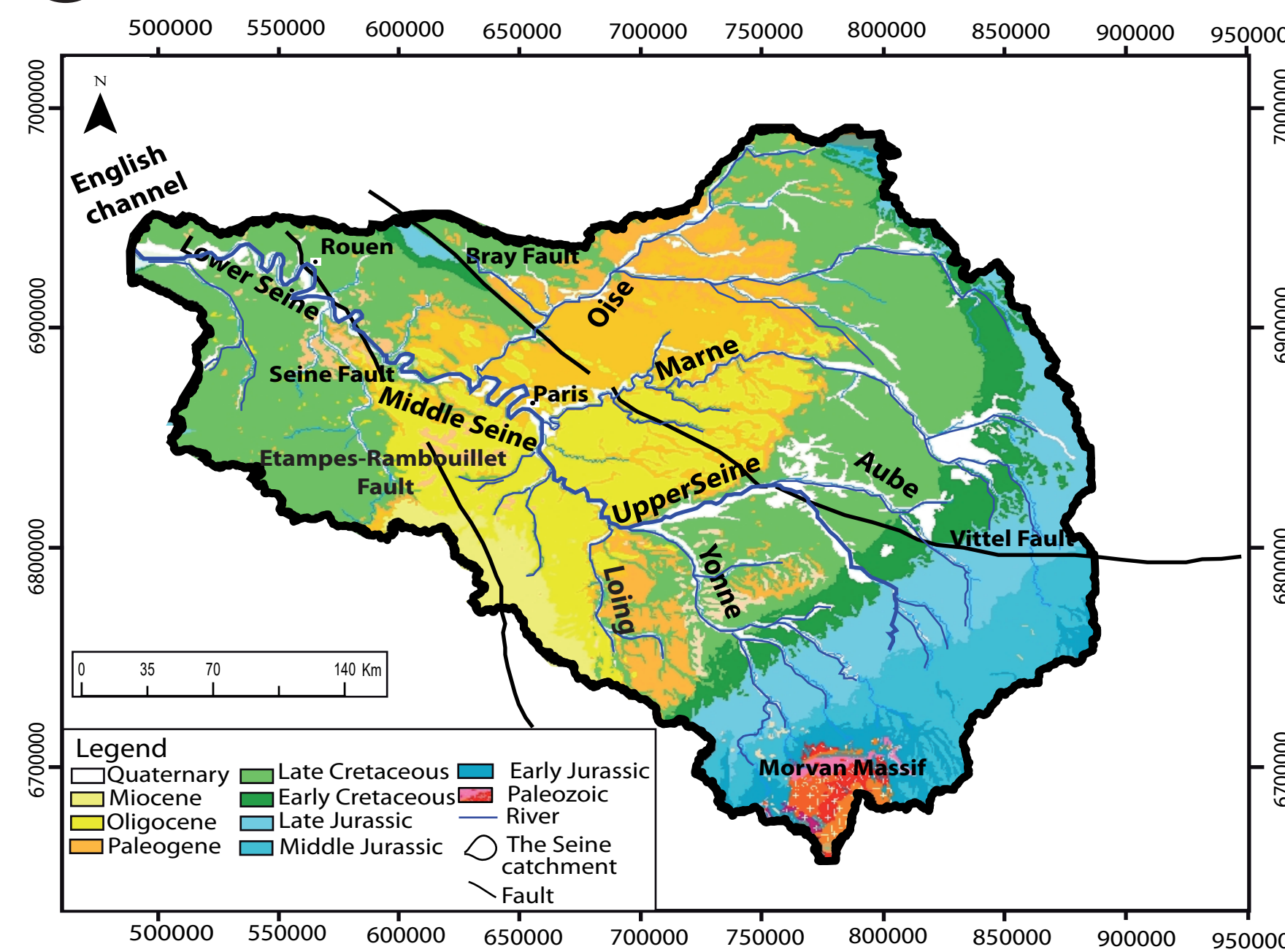
ABSTRACT

Valley bottom fill deposits and alluvial terraces contain sedimentary archives for paleoenvironmental reconstructions in relation with changes in climate, bedrock lithology, and tectonics deformation. In the Paris basin, the geometry of the valley bottom is inherited from the Quaternary period. Thus, understanding how alluvium infill valley bottoms is fundamental to better understand the transient storage of sediments associated with landscape evolution.

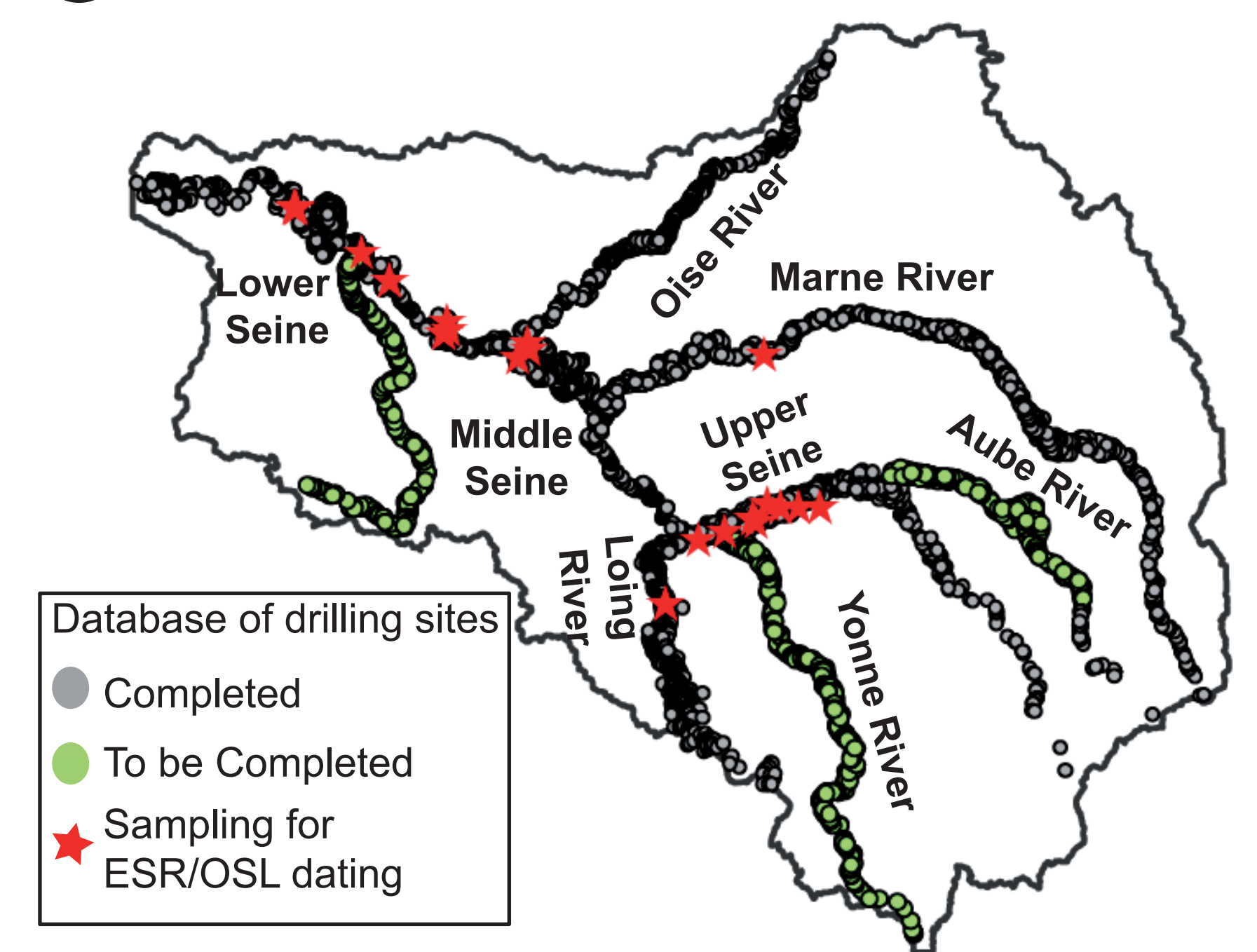
The aim of this study is (i) to reconstruct the large-scale geometry of the interface between the bedrock and the alluvium of the Seine watershed (ii) to quantify the alluvium volume stored at the bottom of major valleys of the Seine watershed. For this purpose, a database consisting of thousands of boreholes that intersect the alluvium at the bottom of valleys was created from the Banque du Sous-Sols dataset while a harmonization of valley bottom infill mapping was realized. A first restitution of valley bottom geometry using a new directional kriging has been applied in the Oise Valley.

To reconstruct the evolution of the Seine River and the timing of sediment deposition, we analyse the geochronological ages on fluvial deposits by OSL and ESR.

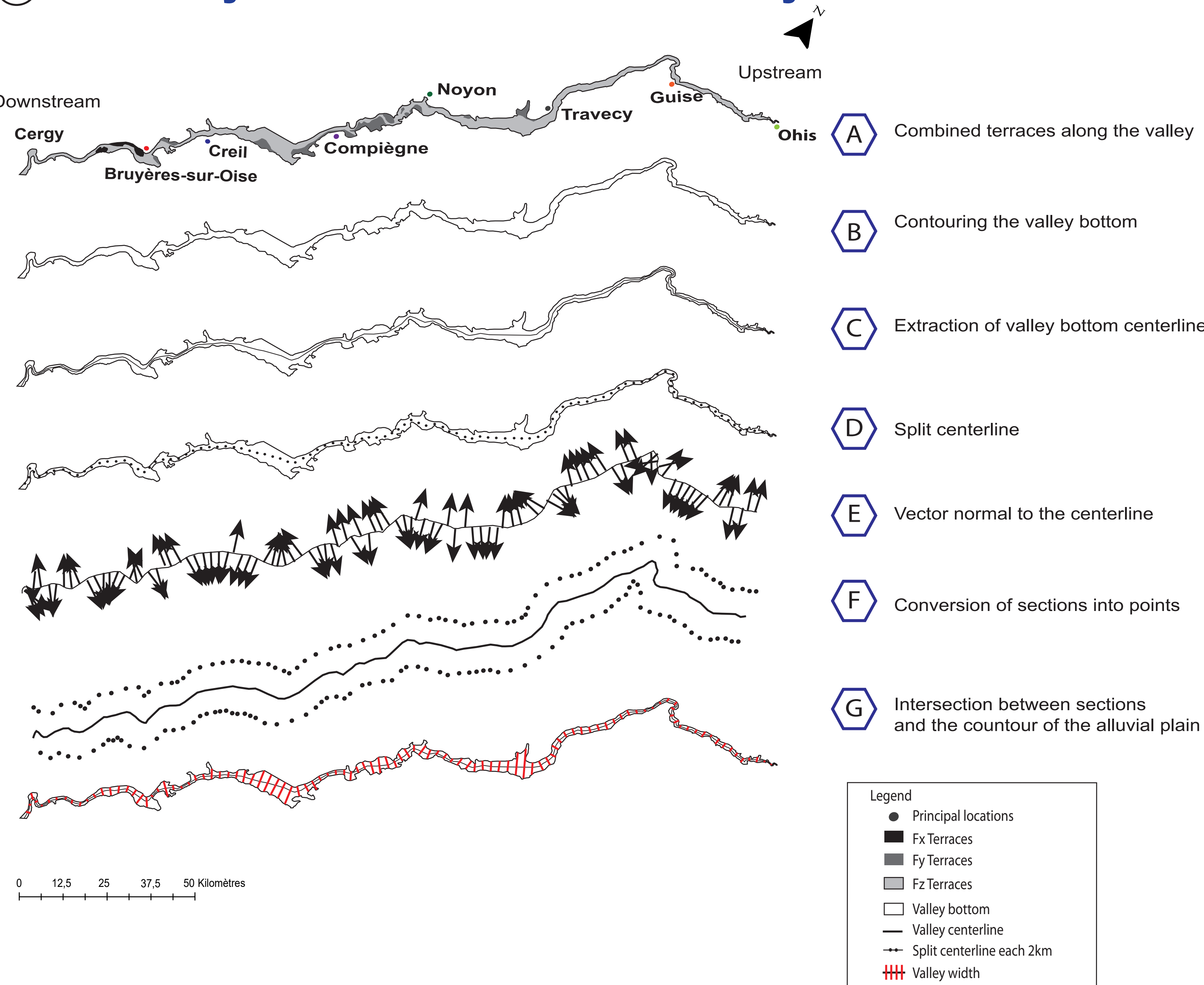
1 The Paris basin



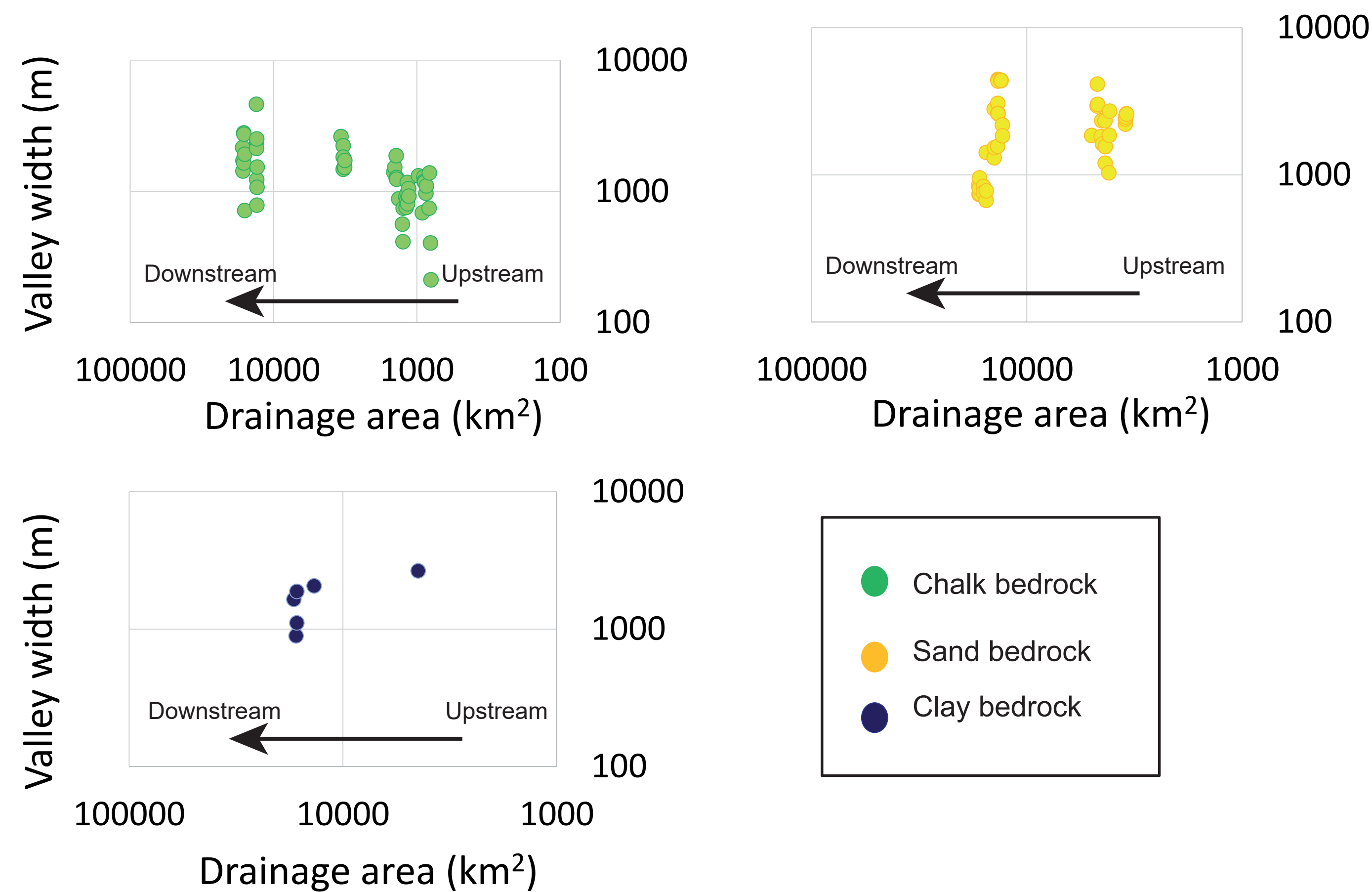
2 Database



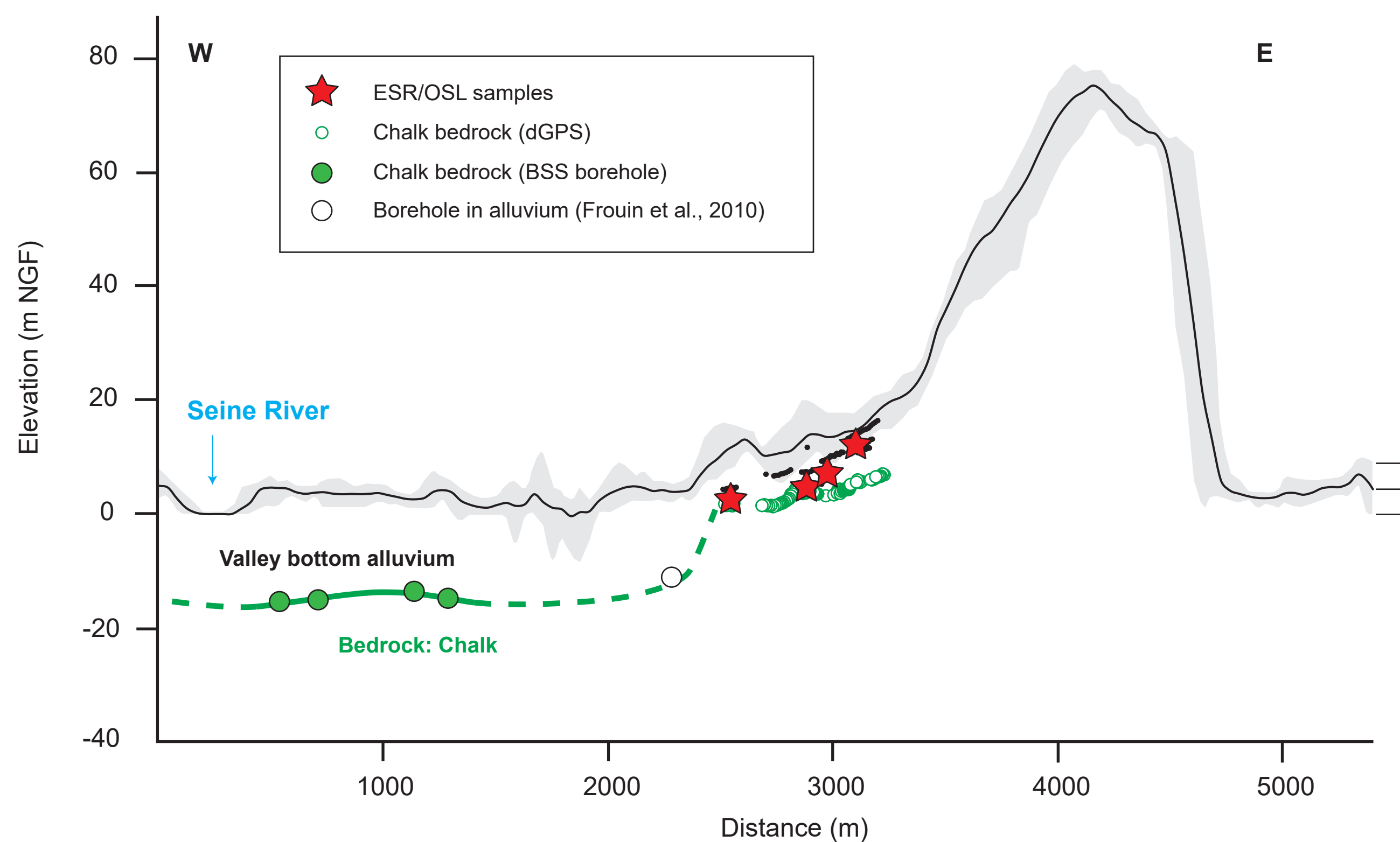
3 Geometry reconstitution of Oise valley



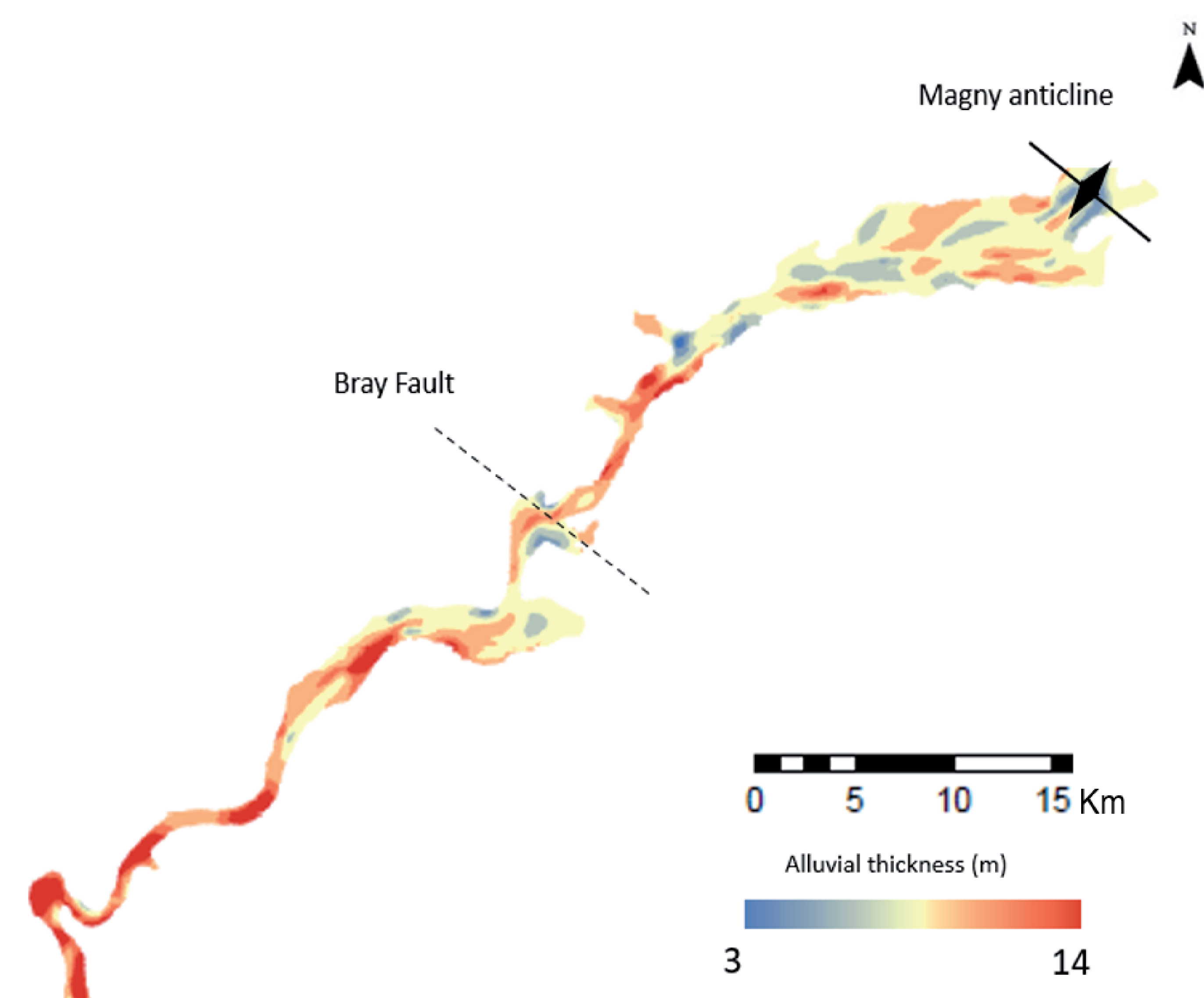
4 Valley width vs Drainage area



6 Topography of the bedrock an example of Manoir Brésil (Lower Seine)



5 First restitution of Oise valley bottom geometry using a new directional kriging



7 ESR/OSL dating

