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The Pre-Mesozoic basement of the SW Paris Basin (France) revisited using combined seismic, aeromagnetic and gravimetric methods - Focus on the Stephano-permian basins.

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Stephano-permian basins are found in several rather small places in and around the present-day French Variscan basement. They are mostly considered as intramontane post-orogenic (Variscan) basins, developing in close relationships with crustal to lithospheric geological events. On the other hand, little is known about their occurrences under their post depositional sedimentary covers.
Our study addresses the Stephano-permian basins located in the south-western part of the Paris Basin. We use combined subsurface tools, such as boreholes, newly reprocessed seismic lines (about 1300 km length), recent high-resolution aeromagnetic surveys, and ground gravimetry data.
Our main observations and results can be summarized as follow: (1) the Stephano-permian sedimentary sequences can reach thicknesses up to 2800 m; (2) the primary Stephano-permian structural signal is strongly disturbed by post Permian tectonic activity (polyphase and late strike-slip faults); the latter has therefore to be removed to get the former; (3) the sedimentation took place under 2 successive phases, with a clear structural control at the initiation of the basin, preceding a more diffuse subsidence pattern; (4) the map view of the structural pattern shows the predominant role of strike-slip structures during the sedimentation; and (5) the basins are wider than previously described, what may interest companies dealing with subsurface resources. Finally, our first attempts to extend our observations to the rest of the Paris Basin provide comparable results.