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An up-to-date GNSS velocity field of the Upper Rhine Graben: an active seismic region without observed present deformations?

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The Rhine Graben is the central, most prominent segment of the European Cenozoic rift system (ECRIS) of Oligocene age, which extends from the North Sea through Germany and France to the Mediterranean coast over a distance of some 1000 km. Within GURN the focus will be on the Upper Rhine Graben (URG). The URG is a 300 km long and 40 km wide SSW-NNE trending rift, extending from Basel (Switzerland) to Frankfurt (Germany). It is limited to the west by the Vosges mountains and to the east by the Black Forest. The graben is bounded to the north by the uplifted area of the Rhenish Massif. To the south, the Leymen, Ferrette and Vendlincourt folds represent the northern-most structural front of the Jura fold and thrust belt.

In this study, we will present an up-to-date GNSS velocity field of the area based on a network of about 70 stations older than 5 years and ranging up to 12 years. The processing of the final velocity field go through some of corrections due to the use of a permanent GNSS network. An antenna switch generally induce a jump in the data which we have to correct. We also have to correct the outliers in the time series. The last step is to analyze the quality of the series based on the support and environment of the site, if the series is too biased by a flicker noise, we decide to reject it. The results seem to clearly indicate the lack of consistent horizontal velocities (on average 0.38mm/yr) in the URG, which could be not true fort vertical velocities.