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The use of Kriging to interpolate GPS velocity field and its application to the Arabia-Eurasia collision zone

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Strain-rate tensors computed from GPS measurements have been widely used to specify the style, the direction and the amplitude of the deformation of a given region. However, due to the irregularly spacing (and sometimes the lack) of the GPS stations, it is difficult to get a regional idea of the strain-rate tensors while doing the calculation over large areas. To cope with this problem, we chose to interpolate the velocity field then determine the strain-rate tensors using the spatial derivatives of the collocated motion vectors. To realise the interpolation, we use the kriging method which was developed especially for irregularly scattered data. Some tests to validate the method are presented. This analysis is done using 365 data from Western Turkey to Southeast Iran to monitor the Arabia-Eurasia collision zone. It conducts to a new image of the strain rate of the Arabia-Eurasia collision zone which can be compared to the seismicity.