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Evidence for a highly non-dipolar character of the European 800 AD event

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Over the last years new evidences of several short-lived regional maxima of the geomagnetic field intensity at various times and locations have been defined. These features have important implications both for geomagnetic field modeling and for Earth′s dynamo simulations. However, the nature, extent and underlying causes of these variations are still poorly understood. Here we present a detailed analysis of the sharp abrupt intensity change that took place in Western Europe around 800 AD, the most significant geomagnetic field intensity feature observed in Europe over the last two millennia. For this purpose we present an up-to-date regional intensity reconstruction for Western Europe and compare the results with other regional and global geomagnetic field reconstructions. The results indicate that the 800 AD event is mainly controlled by non-dipolar geomagnetic sources.