

# UPPER-RHINE-GRABEN STRONG-MOTION SEISMIC NETWORK IN GERMANY AND FRANCE

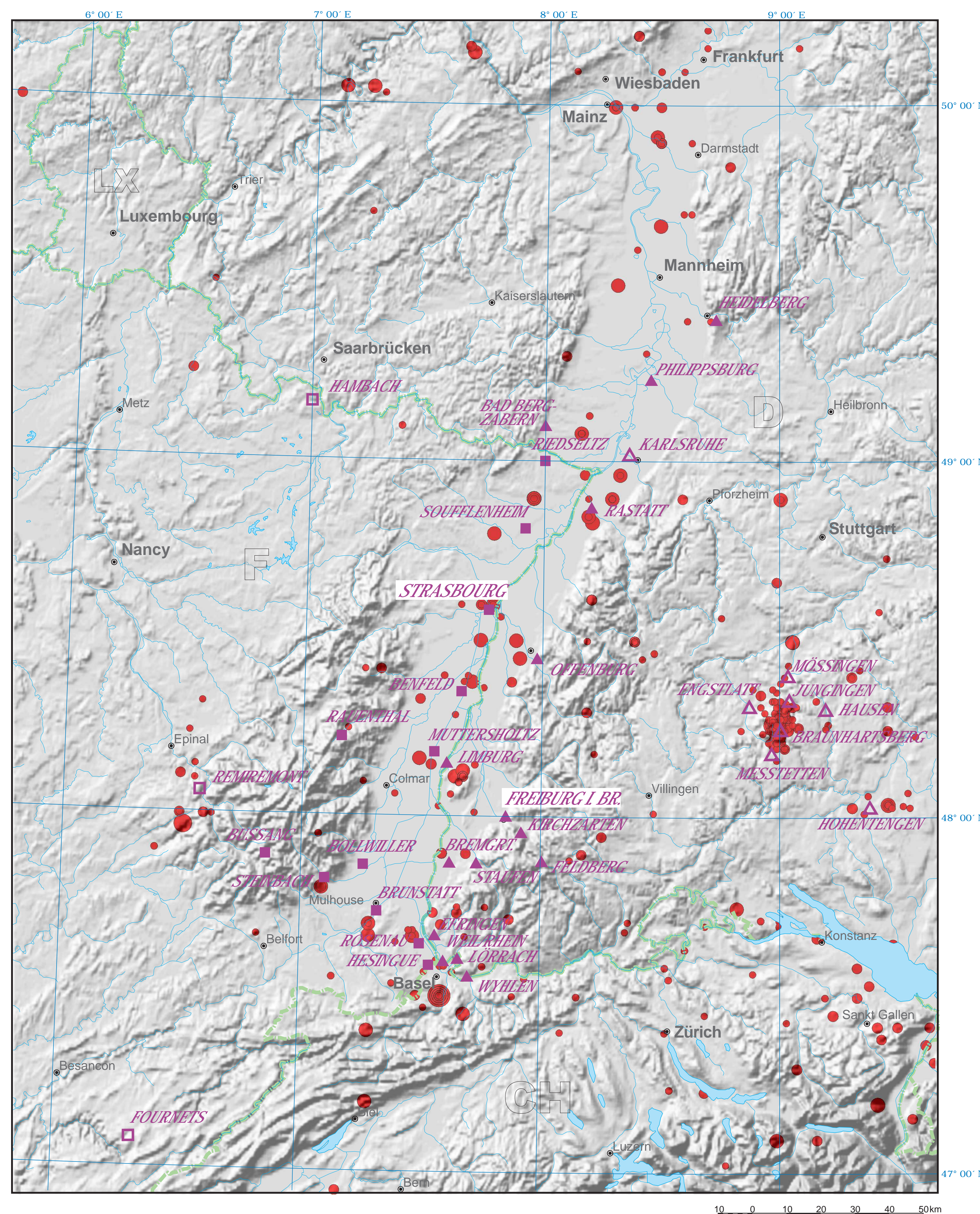
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The Rhine Graben is the most prominent tectonic feature in Central Europe north of the Alps. Earthquake hazard is considered to be moderate. Historical data (Basel 1356 and Düren 1756, for example) and recent paleoseismic results, however, point to infrequent occurrences of magnitudes up to about 6.5. Thus a substantial earthquake risk for this densely populated region is implied.

A 30 station strong motion seismic network has recently been established in and around the Upper Rhine Graben in its segment from Heidelberg via Karlsruhe, Strasbourg, Freiburg, Mulhouse to Basel. This novel network is run in co-operation of the earthquake services of the Geological Survey of Baden-Württemberg at Freiburg / Germany (LED) and of the Ecole et Observatoire des Sciences de la Terre at Strasbourg / France (ReNaSS). It complements the ordinary seismic survey networks of both institutions in recording local earthquakes above magnitude 3. Clipping of strong motion recording is currently set to 1 g ground acceleration. 20-bit data technology of KINEMETRICS and AGECODAGIS data loggers together with the three component EPISENSOR are installed mostly in freefield locations. Data sampling ensures recording of seismic signals up to frequencies of at least 40 Hz. All instruments have been thoroughly tested and data correctness has been verified. Data transfer to the headquarters at Strasbourg and Freiburg is partly achieved by telephone links, data may be obtained from there in GSE format. A station map is provided in the figure.



Strong motion station sites cover the Upper Rhine Graben area now with a spacing of about 20 km and thereby allow to study amplitude distance relations in the graben environment over a length of 250 km. Emphasis has been put to form a station cluster in an area of increased seismicity in the southern part around the city of Basel to supplement the strong motion network in Switzerland (not shown in the figure) and to support microzonation efforts. A station profile crossing the graben sediments in East-West direction from the Feldberg in the crystalline Black Forest to its counterpart, the Grand Ballon in the Vosges Mountains will reveal the influence of geological structures and of local site effects on ground motion amplitudes. These influences originate from topography, soft soil layering and from the basin structure within the graben, which is filled with Tertiary sediments extending to 1-2 km depth. Typical acceleration response spectra within the graben and on its shoulders will yield improvements to building design spectra with special regard to subsurface structures.

Station sites of the German(D)-French(F) strong motion seismic network along the Upper Rhine Graben (filled symbols mark stations of the INTERREG project) and historical earthquakes ranging from V to IX MSK/EMS intensity.

## REFERENCE

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