

The earthquake of 1356 and seismic risk today

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On 18 October 1356, an earthquake destroyed much of Basel. Contemporary sources describe the collapse of churches, towers and houses, followed by a fire that burned for days in the wooden city. The magnitude of the earthquake has been estimated at about 6.6, which makes it the strongest historically documented earthquake in central Europe north of the Alps.¹ The city was rebuilt within a few decades, which Part A described as part of its medieval history.

Seismologists agree that an earthquake of similar strength could occur again in the region, although its timing cannot be predicted. The Upper Rhine Graben, on which Basel lies, is a tectonically active zone, and the hazard maps of the Swiss Seismological Service place the Basel region among the areas of highest hazard in Switzerland, together with the Valais.² The damage that an earthquake comparable to that of 1356 would cause today has been estimated in scenarios at tens of billions of francs, because the region is densely built and contains industrial installations, infrastructure and cultural assets of great value.

Basel had an unexpected reminder of seismic risk in December 2006, when a geothermal project in the Kleinhüningen district triggered a series of small earthquakes. The strongest of these reached a magnitude of about 3.4 and caused minor damage to buildings in the city and the surrounding area.³ The project was suspended and later abandoned after a risk analysis concluded that continued operation would carry unacceptable risks. The damage claims, which were paid through the liability insurance of the project operator, showed how even a minor seismic event in a densely built city could produce thousands of claims.

1 Notes

1. On the Basel earthquake of 18 October 1356, its estimated magnitude (about 6.6) and its effects, see the publications of the Swiss Seismological Service and the historical literature, e.g. the studies published on the occasion of the 650th anniversary in 2006. To be verified. ↩
2. On the earthquake hazard model of Switzerland and the classification of the Basel region, see the Swiss earthquake hazard model published by the Swiss Seismological Service (SED) in 2015 and its updates. To be verified. ↩
3. On the induced seismicity caused by the Deep Heat Mining project in Basel in December 2006 (strongest event magnitude about 3.4), the subsequent suspension of the project and the damage claims, see the reports of the Swiss Seismological Service and the risk analysis commissioned by the canton (SERIANEX, 2009). Figures to be verified. ↩

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