

Two large earthquakes in western Switzerland in the sixteenth century: 1524 in Ardon (VS) and 1584 in Aigle (VD)

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Abstract The Valais is the most seismically active region of Switzerland. Strong damaging events occurred in 1755, 1855, and 1946. Based on historical documents, we discuss two known damaging events in the sixteenth century: the 1524 Ardon and the 1584 Aigle earthquakes. For the 1524, a document describes damage in Ardon, Plan-Conthey, and Savièse, and a stone tablet at the new bell tower of the Ardon church confirms the reconstruction of the bell tower after the earthquake. Additionally, a significant construction activity in the Upper Valais churches during the second quarter

of the sixteenth century is discussed that however cannot be clearly related to this event. The assessed moment magnitude M_w of the 1524 event is 5.8, with an error of about 0.5 units corresponding to one standard deviation. The epicenter is at 46.27 N, 7.27 E with a high uncertainty of about 50 km corresponding to one standard deviation. The assessed moment magnitude M_w of the 1584 main shock is 5.9, with an error of about 0.25 units corresponding to one standard deviation. The epicenter is at 46.33 N and 6.97 E with an uncertainty of about 25 km corresponding to one standard deviation. Exceptional movements in the Lake Geneva wreaked havoc along the shore of the Rhone delta. The large dimension of the induced damage can be explained by an expanded subaquatic slide with resultant tsunami and seiche in Lake Geneva. The strongest of the aftershocks occurred on March 14 with magnitude 5.4 and triggered a destructive landslide covering the villages Corbeyrier and Yvorne, VD.

Virgilio Masciadri is deceased. This paper is dedicated to his memory.

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1 Survey of historical data for the Valais in the sixteenth century

The Valais is the most active seismic region of Switzerland. Three strong damaging events happened in the last 300 years (1755, [Gisler et al. (2004)], 1855 [Fritsche et al. (2006)], 1946 [Fritsche and Fäh (2009)]). But a complete record of strong events is only available after