Reply to 'Comments on the Lurøy 1819 earthquake controversy' by E.S. Husebye.

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Bungum, H. & Olesen, O.: Reply to "Comments on the Lurøy 1819 earthquake controversy" by E.S. Husebye. Norwegian Journal of Geology, Vol. 85, pp. 257-258. Trondheim 2005. ISSN 029-196X.

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The paper by Bungum & Olesen (this issue) details a number of arguments for refuting the claim by Husebye & Kebeasy (2004) that the magnitude of the 1819 Lurøy earthquake has been significantly overestimated. It is our conclusion that the present comments by Husebye are mostly irrelevant, invoking data and arguments that to some extent are incorrect and that moreover have little or no bearing on the question under discussion. We therefore find no purpose in engaging in a detailed discussion of the comments, with some exceptions which we present below in order to substantiate our conclusions.

We would like to point out a few examples of Husebye's invalid arguments: (a) Among the arguments with no bearing on the 1819 magnitude question is the reference to the 1755 Lisbon and the other earthquakes in Husebye's Table 1 (note that Bungum & Olesen, this issue, start by pointing out that magnitudes earlier have often been overestimated); (b) Husebye argues that the Kola reports should be left out of the intensity map, but Muir Wood (1989) never included these reports in his magnitude assessment; (c) Husebye consistently, as noted also in Bungum & Olesen (this issue), selects macroseismic reports indicating a low intensity and ignores other reports pointing to a higher intensity, for example, reports from Stadsbygd outside Trondheim include shaking of the first floor of houses and even a small damage of a chimney (Rønne 1819) and not only reports from second floor as claimed by Husebye; (d) The earthquake caused church spires and chimneys to sway for over one minute in the Lycksele district in northern Sweden (Post-Tidende 22.12.1819) while Husebye argues that some of the observations stem from residents on the second floor and that the intensities therefore should be downgraded.

The conclusion here is that Bungum & Olesen (this issue) carefully evaluated the macroseismic reports from the Lurøy earthquake and concluded that the intensity values from Muir Wood (1989) should be maintained with the exception of the Stockholm observations which, with some doubt, were excluded from the intensity III area, however without affecting the estimated magnitude of 5.8.

We would also like to add that the five newspaper reports of the 1819 Lurøy earthquake in the newspaper 'Trondhjems Adressecontors Efterretninger' constitute half of the total news reports during the month following the earthquake. It is consequently meaningless to point out the lack of reports from other towns and villages in central Norway. The editor of the newspaper announced on September 3rd for `reliable reports`on the earthquake from both Trondheim, areas close to Trondheim and more remote areas, implying that the earthquake must have been felt over a large area. Normally, however, there was simply neither space nor tradition for such reports in these 4-page pamphlets which were mostly a medium for advertisements and announcements for the local merchants. The modest circulation of c. 300 copies is also quite significant in this respect. We should also keep in mind that the earthquake occurred many years before the telegraph was even invented.

Other arguments by Husebye (this issue) related to the Lurøy earthquake are reiterations from Husebye & Kebeasy (2004) and have already been refuted by Bungum & Olesen (this issue). We conclude that Husebye's comments (this issue) have in no way weakened any of the arguments by Bungum & Olesen (this issue), likewise for the paper by Wahlström (2004) and the subsequent comment by Husebye & Kebeasy (2005).

The efforts by Husebye to substantially reduce the magnitudes of historical earthquakes in Fennoscandia can therefore be considered to have failed under the impact of subsequent scientific criticism.

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