

The reviewer noticed substantial improvement of the manuscript. However, several minor corrections/additions are necessary to meet quality of the journal.

Minor corrections

1. The remnants of the previous title (.... Central Europe) survived in the new text.

Replace central Europe to midlatitudinal Europe in the whole manuscript, e.g. I.170, 203, 204, 397.

All remnants were replaced.

2. In abstract, PL frequency is 3-5 times larger than GL (I.172) but in the main text the ratio is “about 4-6” (I.391). Which one is correct? Figure 7 provides that the ratio is around 5 for small lamina but increases for larger lamina, and for large lamina the ratio is about 10. Please provide the values of the ratio for all lamina classes. It is not enough to say that “ with the increasing lamina size the share of GL decreases and the share of PL increases” (I.174-175).

I did table which displayed the ratio of PL and GL in each month and station used in paper and the results are discussed in paper.

3. I.175-176. Consider changes in the statement: “The vertical profile of lamina occurrence is different for small planetary wave and gravity wave laminae”. Use abbreviations PL and GL. The difference concerns all (large/small) laminae. Be more precise and define what the mentioned difference is and how it depends on lamina size?

We did it

4. I. 238 “the average ozone profile (potential temperature)” Please define meaning of the “average” i.e. the mean for month, season, year etc.

5. I.245. Start new line beginning with “In each point.....”

6. I.293-294 Consider rewriting: “ If these correlations are significant the resolution influences the lamina number and vice versa”. Delete “and vice versa” In fact, number of lamina does not affect technical issue of the ozone-sonde resolution.

7. I.295. The results are shown in Table 2 not in Table 1.

8. I. 646 and I. 651. Tab.1 and Tab.2 . Term advective lamina is used. It should be PL.

9. I.301. It should be Tab.3 instead Tab.2.

10. I.308-310. Delete these lines and start with “The vertical resolution of sonde measurements must be.....” Please add “measurements” after “sonde”.

11. I.311. It should be Table 3 instead Tab.2.

Points 4-11 were changed according to reviewer suggestions.

12. I.325-326. It is better to say that “Annual variation with the maximum in winter/spring and summer/autumn minimum is clearly seen for PL but this pattern is very weak in case of GL”. Section 3.3 is very short, so add some comments that the maximum is about 4 times higher than the minimum in case of PL. Please also discuss the yearly mean values in both cases.

We did it

13. L.323 and I. 332 – It should be different numbers not both 3.3. Further changes are needed for all subsection numbers in section 3.

14. L.628. Here Figure number should be 11

15. Fig8-Fig.11 . For better comparison the range of X axis should be the same for all figures, e.g. [0,30].

Points 13-15 were changed according to reviewer suggestions.

16. Section 3.4. The results are shown for Uccle only. The reviewer would like to see results for Payerne as this station is located in the valley between the Jura Mountains and the Alps and it seems that GL profile will be different in the troposphere.

We show the results for the station Payerne, but these results were not different from the other stations.

17. There is a serious problem with section 3.5 – Trend of large laminae Why only the results from Hohenpeissenberg have been analysed? There is possibility of trend analyses of all types of laminae for Uccle and Payerne starting in 1990 and for Legionowo starting in 1995. Simple linear regression should be used in this case. For comparison purposes it is better to focus on trend for the period 1995-2016.

Piecewise approach is valid for longer data- Hohenpeissenberg 1970-2016. Here you present trend results for only one station. It is not mentioned in the abstract, conclusions, and in section 3.5. You cannot envisage that similar trend pattern appears for other stations. Moreover, the trend analysis is not mentioned in section 4 (Discussion). Your trend analysis should contain more stations even with shorter data if your interest is the long-term lamina variability over the midlatitudinal Europe. My recommendation is to delete this section and omit discussion concerning the trends (I.176-177) and I. 462. More comprehensive analysis of long-term variability of laminae over the midlatitudinal Europe is a good subject for next your paper.

Trends of laminae was deleted from the paper.

18. L.425. Be more precise. What is the meaning of small GL maximum? Another maximum or the maximum for small GL(<2hPa)?

19. L.425-427. " In summer the occurrence It is not clear what kind of laminae you describe here, GL or PL. For me it seems that is valid only for PL. It is better to limit the discussion to apparent maxima as you have a plenty of secondary extremes.

20. L.424-425 "occurrence maximum is observed in the tropopause". It is better to say near tropopause as you have no info about the tropopause height.

The paragraph concerning the vertical profile of lamina occurrence was rewritten.

21. L403-405. At this point the reviewer would like to see a discussion of gravity waves over Payerne (a site between the Jura Mountains and the Alps). See also problem no.16.

We discuss this topic in the paper.