

The manuscript by Janis Kaulins is the reference for the Latvian NLC observation programme starting in 1957 that was continued to 1983. The author reconstructed all information from archive material stored at the university and from unpublished or not-any-more-available reports and thus makes a historic, valuable dataset available to the scientific community that would otherwise have been lost. Many thanks to the author, and to the scientists and observers who were involved back then.

The abstract should be shortened to the main points of the manuscript. It repeats some sentences of the introduction which is not necessary.

The abstract is shortened and URL of repository included

The spreadsheets available in the e-repository are the core of the work and the URL should be given in the abstract. The spreadsheets are in Latvian, at first I was disappointed about this fact but it turned out that with the help of translators it was possible to read and extract the relevant information.

OK. Possibility to use translators will be noted, too.

A large part of text is dedicated to the camera technology. Notes of taken photos have been made in the logs, according to Table 4 and 5, however, only a part of them have been found in the archives. Those have not been digitized yet. In Table 4 and 5, the number of photographs that have been lost or not been found yet could be set in brackets.

A note has been added that numbers in brackets are for photographs that have not survived.

Regarding the photograph pairs that could be used for height triangulation, the author mentions 53 pairs in Sigulda-Riga and Sigulda-Vecauce. The latter however has no temporal overlap (Sigulda 1961-1976 and Vecauce 1958). In line 261 it could be added that from 53 pairs of photographs, 53 measurements of NLC height could be derived, in the timeframe 1961-1964.

OK

A conclusion section is missing. lines 250-259 should be moved to "3. Discussion and results" section. Some more text interpreting the findings presented in Table 4 and 5 could be added, as they make up all of the scientific results presented in this manuscript.

OK, moved

Fig. 4. A detailed description of the columns and values in the columns must be added. It should be in such a way that the reader of the spreadsheets knows exactly what values are which, translating the Latvian terms, letters and numbers used in the observation logs.

OK, explained

line 29-34. Another reference is Thomas, G. E. (2003). Are noctilucent clouds harbingers of global change in the middle atmosphere?. *Advances in Space Research*, 32(9),

1737-1746. It is difficult to establish long-term trends, as all measurement techniques have error margins (especially the triangulations from photographs), and different parameters may respond differently. Most importantly, all changes occurring on sub-decadal timescales must be accounted for, which is very difficult as e.g. the response of NLC to the solar cycle has been shown to have changed with time. In this sense, the addition of another historic dataset is very valuable. It could also be mentioned that Latvia is at an optimal latitude for noctilucent cloud observations.

OK, source is not included, but a note has been added regarding the difficulty of determining trends in NLC elevation changes.

line 6. I would recommend to use the term "noctilucent clouds (NLC)" only, instead of PMC or MC or MM. It was the commonly used term at the time when only ground-based observations were available (e.g. the reference by Fogle and Haurwitz, 1966). It is used today for ground-based camera and lidar observations. The term polar mesospheric clouds came up when they were sounded by satellite. It is not wrong to say "mesospheric clouds", but the term is not commonly used and it is hard enough with two terms describing the same thing, and not really a need to add a third.

OK, terminology will be unified; NLC will be used as recommended.

The author states in a few places (e.g. l. 28) that interest in NLC research was lost in the second half of the 1980's. I'm not sure this is true. Scopus lists 44 documents on "noctilucent clouds" in 1980-1985 and 42 for 1985 to 1990. It is true however that numbers of publications increased in the mid 1990s, owing to novel observation methods, and interest in the amateur community has increased with the availability of digital cameras.

With this pretext, the Central Council of the All-Union Astronomical and Geodesic Society stopped funding NLC observations in 1984. The justification was cited as the numerous observations from satellites, which were not affected by weather conditions and which allowed for a wider geographical coverage. It can be agreed that at the amateur level the advent of digital technologies significantly renewed this interest.

The reference to <http://ed-co.net/nlcnet> is not an official site, I couldn't find out who owns it. It should be removed and replaced by e.g. Gadsden, Michael, and Pekka Parviainen. Observing noctilucent clouds. International Association of Geomagnetism & Aeronomy, 2006. <https://www.iaga-aiga.org/data/uploads/pdf/guides/onc.pdf>

OK, changed

Some abbreviations are undefined (or hard to find), e.g. RB in line 90, LB in line 66, MM in line 68, AO in line 97, AMSL in Table 1, LLA in line 114, SSR in line 118.

Explained. SSR was an official abbreviature of Latvian Socialistic Soviet Republic.

line 5. Instead of 75-85 km as cloud altitude I would just say "at about 83 km altitude", especially as no altitude measurements are included in the manuscript.

OK, I have used the more common value 82 km

The location "Vecauce" in line 189 was not mentioned before and is not in Fig. 1 and Table 1.

Corrected. "Vecauce" was an error; it is another settlement near Lielaucē

line 176. It should be explained what E/10/10 means.

Explained

The manuscript requires copy-editing as some sentences are incomplete, e.g. in line 23, and a number of minor issues with English language.

Sentence in line 23 corrected.

Comments on Observations of mesospheric clouds in Latvia 1957–1983 by Janis Kaulins.

This manuscript contains details of visual and photographic NLC observations in Latvia from 1957-1983. It is very technical and lacks examples of observations. The style is not up to international standards, but this can be fixed by later copy editing (generally performed by COPERNICUS staff). The author uses mostly the abbreviation „MC“ for the mesospheric clouds, but sometimes „NLC“, and even „MM“. It is recommended to use either NLC or PMC (polar mesospheric clouds) throughout the manuscript which are the generally accepted abbreviations by the scientific community.

Corrected. The term NLC is used in all article.

The manuscript contains many tables, but no examples of a photographic observation.

Unfortunately, the photo archive has not yet been digitized, so I have not included examples, only information about the contents of this archive and in what form it is currently stored.

From line 50 on the author mentions some work performed with the data, Even if these works are no longer available it would be interesting for the reader to know about their content and results. This manuscript contains otherwise no scientific results.

The purpose of the article was to introduce interested parties to the contents of the NLC observation archive, the possibility of accessing it and conducting such research.

The author should also explain, why the observations stopped in 1983 and why they are not continued. As the author pointed out, the archived material may be useful for further studies on NLC. Therefore this manuscript can be published in HGSS after considerable revision.

It was briefly explained in the abstract.

Detailed criticism and suggestions:

line 30: I suggest to cite „Hodorenko, 2020“ as „Ходоренко, 2020“ in order to locate it easier in the ref. list

OK

line 42: what means LAB? Should it read LAS?

OK, corrected

line 46: same as line 30 - cite it as “Гришин, 1957“.

OK

line 48: same as line 30 - „Ромейко, 1990“

OK

line 48: „Romeyko et al.“ is written „Romejko et al.“ in the reference list

OK, corrected

line 52: since Mukin's article is no longer available, the author should include a few words about its content and results

line 58: cite „Gadsden and Taylor, and „Olivieiro and Thomas“

OK

line 71: same as line 30 - „Дирикис М., 1957“ and „Дирикис and Берзиньш Я., 1958“

OK

Table 1: it should be explained what the 4th column „AMSL,m“ means

Explained

lines 130-141: the EXEL tables contained in the e-source repository (<https://dspace.lu.lv/dspace/handle/7/61099>) are not very useful to interested international scientists, because the columns and explanations are only in Latvian. If the author wants to provide this material for the international scientific community, English translations should be added. This should be mentioned in the manuscript.

Moved to abstract and fixed because the repository maintainer has changed the URL address. Added footnote that online translators can be used successfully.

Fig. 4: This photo is hardly readable. The authors should provide a better reproduction and also explain the meaning of the columns. The author may consider to omit this figure and instead include a few lines from the archived EXEL table as example.

Thank you, very valuable suggestion. I have attached a digitized version of the same page as shown in fig.4. Table columns are explained now. Numbers of other tables are changed.

line 160: cite „Bronshtein and Grishin“

OK

line 170: what means „AVRM“?

Model of aviation chronometer. Deleted as insignificant.

line 187: are the images made in color?

No, images themselves are in greyscale.

Fig. 8: This figure does not contain useful information. Instead, examples of photos should be included. Perhaps a very good observation with pronounced structure and a „dubious“ one (as listed in Table 4).

There is no fig.8 in this article! About examples – see explanation in the beginning of review.

line 206: can the author give an estimate, when the digitized images will be available?

Unfortunately, we do not have adequate funding at the moment. If we had, this work could be completed in a few months.

line 208: cite „Eglitis and Eglite, 2016“

OK

section 2.5.2: this section can be shortened, it would be sufficient to give the details of the used Russian cameras (incl. Fig 6) with the given Russian reference. What means FED-3 and Viliya?

35 mm film cameras, as written in text before (a little bit corrected). I will not shorten the text, because access to Russian Internet resources may be difficult at the moment.

lines 217 and 221: same as line 30 - „Абрамов“

OK

line 261: „MC height information should be taken...“ Does this mean, the archived date do not contain height information?

The archived date do not contain height information, but it should be processed where is possible.

line 265: „... shows an apparent inverse...“. Can a reference be given for this result?

Unpublished information. Added one more sentence.

line 307: I suggest to insert a subheading here: „References in Russian

Inserted