

Interactive comment on “Retention time of lakes in the Larsemann Hills oasis, East Antarctica” by Elena Shevnina et al.

Elena Shevnina et al.

elena.shevnina@fmi.fi

Received and published: 19 October 2020

The referee links comments to the text line, therefore we will follow them while answering.

L22: we agree, corrected.

L27: typo is corrected.

L30: the reference is added to the text.

L34: we agree, corrected.

L37: we agree, corrected.

C1

L70-71: the text was corrected as follow: ... most of precipitation falls as snow (Word atlas, 1997). Rain is rarely observed over the continental coastal areas and ice-free oases.”

L80: we corrected the list by putting the references in alphabetic order.

L80-81: to mention a phenomena of thermal stratification in Lake Reid we corrected the test as follow: “... Most of these lakes are well mixed during the summer seasons (Shevnina and Kourzeneva, 2017), and an exception is only Lake Reid, which has saline water. In this lake, the thermal stratification resistant to the katabatic winds of over 14 ms⁻¹ is observed in January 1993 (Kaup and Burgess, 2003).”

L105: we would suppose such height range may occur due to various geodesic systems used to measure the elevation of lake tables/stages, however further discussion with Boronina et al., 2020 may help to understand the case.

L142: we agree, that the snow measurements do not give true values for the LRT because of various errors, and not accounting for the sublimation from the snow cover is among others.

L228: it is good to know that such data exist! We will address our next study to lakes located in the Schirmacher oasis.

L249: we agree, that the abrupt level drops in Lake Nella is happen due to melting of the snow dam formed in previous winter(s), and it is not necessary that such drops occur every year (Klokov, 1978).

L272-273 and L277: we corrected the text as follow: “... The hydrological observations on 6 lakes and streams located in the Shirmacher oasis (East Antarctica) date back to early 1980s. These observations cover whole hydrological season lasting from November, 1983 – March, 1984, and further they are used by Loopman and Klokov (1988) to estimate for... In these cases, the estimated LRT are 1 and 2.4 years for Lake Smirnova and Lake Pomornik correspondingly (Kaup, 2005). The volume

C2

of these lakes is much less than the volume of Lake Nella/Scandrett/LH72 and Lake Progress/LH57. The LRT of Lake Glubokoe is estimated as 2.6 year, and it is almost three times less than for Lake Progress/LH57 which is comparable of volume...”

L371: corrected.

L372: corrected.

We thank our Anonymous Referee for the comments, suggestions, and a new (for us) knowledge on a phenomena of thermal stratification observed in the lakes located in the Larsemann Hills.

Elena Shevnina, from behalf of the authors

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2020-205>, 2020.