

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

### **Anonymous Referee #1**

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L. 22: pro ...ice sheets, shelf ices, glaciers... & ...World... 27: ...epishelf... 30: Leppäranta et al., 2020 is missing in References 34: ...lasting for December–January (rather -February) 37: ...are ice-free for a period of 3–4 months (rather 2-3 months) 70-71: Authors are citing that "85 % of precipitation falls as snow (World atlas, 1997)". 15 % of precipitation as rain is a strong overestimation not only for Larsemann Hills but for many if not all East Antarctic oases. Rain is extremely rare in East Antarctica.

80: Stüwe et al., 1989 is missing in References 80-81: However, Lake Reid was thermally and chemically stratified also during open water period in Jan. 1994 (Kaup, E., Burgess, J.S. (2003). Natural and human impacted stratification in the lakes of the Larsemann Hills, Antarctica. In: Huiskes, A.H.L., Gieskes, W.W.C., Rozema, J., Schorno, R.M.L., van der Vries, S.M. & Wolff, W.J. (Editors). Antarctic Biology in

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a Global Context (313–318).. Leiden, The Netherlands: Backhuys Publishers.

105: ...14.5–15.0 m higher... - Sic!?

142: Using these SWE differences ignores ablation/sublimation of snow cover between the two surveys. Therefore the real water incomes are smaller and the LRTs respectively longer.

228: Still, data exist, f. ex. from the Schirmacher Oasis that ablation from lake's ice surface may reach 25 cm/year (Kaup, E., Haendel, D. (1995). Snow and ice cover of water bodies. In: P. Bormann & D. Fritsche (Eds.). The Schirmacher Oasis, Queen Maud Land, East Antarctica (279–285). Gotha: Justus Perthes Verlag. (Petermanns Geographische Mitteilungen; 289

249: Interestingly, the level of Lake Nella remained stable f. ex. in summers 1993/94 and 1997/98 until the first week of February after having reached the outflow threshold level at the end of December/beginning of January. There was no abrupt level drop these years. Obviously, the condition of abrupt level drop is the build-up of snow dam in previous winter.

272-73: Episodic hydrological observations on the lakes and streams located in the Schirmacher oasis (East Antarctica) date back to late 1980s. In fact, these 1983/84 runoff measurements for 6 lakes covered the full hydrological season from November until March.

277: Kaup 2002 and Loopmann & Klovov are missing in Reference List. In Kaup 2005 there are data that would result LRT in lakes Smirnova and Pomornik ca 1 and 2,4 years, respectively. In Lake Glubokoye (volume comparable to Lake Progress) the LRT would be 2.6 years.

371: ...out in 1986–1987 to estimate... pro 1983–1984

372: Kaup, 2002 pro Kaup, 2005

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