

Interactive comment on “Quantifying mass balance processes on the Southern Patagonia Icefield” by M. Schaefer et al.

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To get the discussion going, I want to make a few fast points concerning the non-calving glaciers belonging to the Southern Patagonia Icefield (SPI):

- 1) Their overall importance for the SPI is low (less than 10% of the SPI area is constituted by non-calving glaciers).
- 2) The conclusion made in the two comments that the surface mass balance (SMB) of the non-calving glaciers has to be positive if the average SPI SMB is positive is wrong! This can be noted 2c), where several green/yellow glaciers are visible in the peripherals of the SPI.
- 3) Several glaciers that where non-calving before have developed pro-glacial lakes

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now, similarly to the observations of Loriaux and Casassa (2013) at the Northern Patagonia Icefield. For example the three glaciers classified as non-calving in the study of Rignot et al. (2003) (Bravo, Frias, Olvidado) have all developed pro-glacial lakes now. As a direct consequence Willis et al (2012) observed strongly accelerated thinning in 2000-2012 as compared to 1975-2000 (Rignot et al.) at the Glaciers Bravo (from -0.25 mweq to -1.30 mweq) and Frías (from -1.84 mweq to -4.01 mweq.)

These three points will be discussed in more detail in a newer version of the paper.

References:

Loriaux, T., and G. Casassa (2013), Evolution of glacial lakes from the Northern Patagonia Icefield and terrestrial water storage in a sea-level rise context, *Global Planet. Change*, 102, 33–40.

Rignot, E., A. Rivera, and G. Casassa (2003), Contribution of the Patagonia Icefields of South America to sea level rise, *Science*, 302, 434–437.

Willis, M. J., Melkonian, K., Pritchard, M., and Rivera, A. (2012): Ice loss from the Southern Patagonian Ice Field, South America, between 2000 and 2012, *Geophys. Res. Lett.*, 39, L17501.

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