water

MDPI

Glacial Lake Outburst Flood (GLOF) Events and Water Response in a Patagonian Fjord

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To determine the vertical variation of density, several CTD casts were carried out in austral fall (June) and austral spring (November and December) to summer (January) of 2014. Between 11 and 12 June, six CTD profiles were collected over various tidal cycles (Figure 1a–c) near the location of the ADCP mooring (Figure S1). At the same location, one CTD profile was collected on 29 November, 2014, two profiles on 12 December, 2014, and one profile on 28 January, 2014 (Figure S1d–f). Comparing the profiles from austral fall and spring to summer, the fresh water layer is more uniform (from the surface to ~9 m depth) transitioning over ~1 m (by 10 m depth) to a salty bottom layer during the spring and summer (Figure S1f) due to enhanced glacial melt and precipitation. During the fall, the pycnocline occupies a larger vertical extent in the water column (from ~3–12 m depth) and the fresh, surface layer is thinner than during spring and summer (from surface to ~5 m depth Figure S1c). Further, there is an instability in the upper 2–3 m of the water column during the fall, which could be an effect of the glacial water that is denser yet less salty.

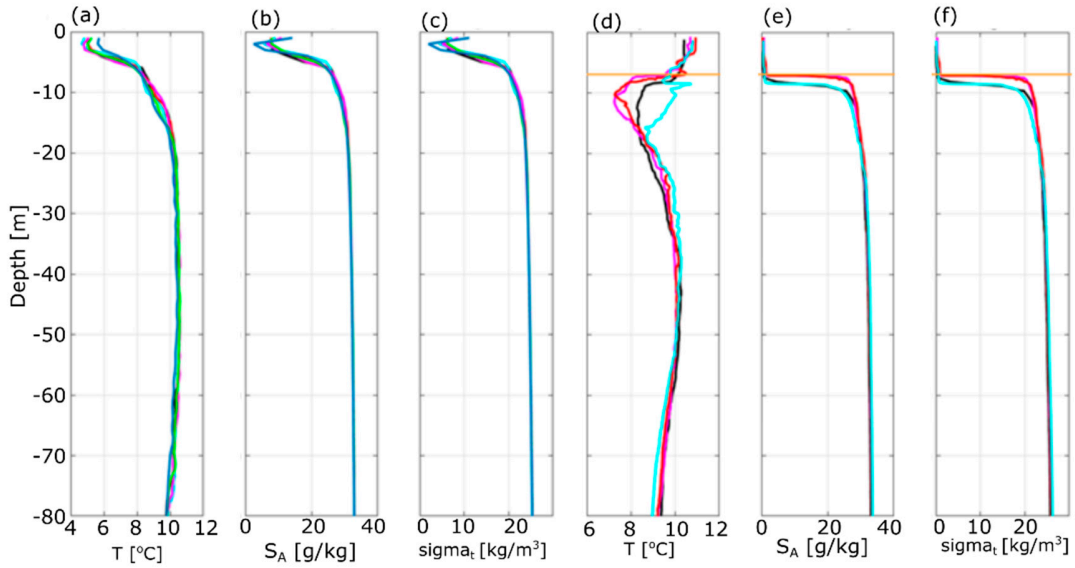

Figure S1. (**a**) Profiles of conservative temperature collected during austral fall from 11 June to 12 June, (**b**) same as (a) but for absolute salinity, (**c**) same as (a) but for sigma$_t$. (**d**) Profiles of conservative temperature collected during austral spring (29 November, black line; 12 December, pink and red line) and austral summer (28 January, cyan line), (**e**) same as (d) but for absolute salinity, (**f**) same as (d) but for sigma$_t$. The orange line in (d–f) indicates the density interface.