the Southern Annular Mode (SAM).

precipitation anomalies records are mostly negatively correlated during the instrumental period interdecadal

We extract the

1.3/ interannual+interdecadal variability & climate modes

We extract the detrended JJA precipitation timeseries from GHCN stations: Cape Grim in Western Tasmania (WT) and Puerto Aysén in Western Patagonia (WP) have cool oceanic climate and influence and precipitation regimes that peak in winter (WT~340/930mm, WP~850/2800mm). Thus, JJA precipitation amounts serve as proxies for annual totals (Fig. 2). These precipitation regimes are determined by the strength and position of the westerly winds, which interact with the regional orography and lead to very dramatic zonal precipitation gradients: very humid western zones and drier regions eastwards [1,3].

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2) the modulation by enso and sam – implications for the past?

2.1/ the climate modes approaches

enso & sam: interannual variability drivers in Tasmania & Patagonia
The scatterplots suggest that the positive (negative) phases of SAM tend to induce wet (dry) conditions around lago Plomo (note: precip anomalies transition zone), while the opposite is observed for W Tasmania. ENSO-related anomalies seem to have similar effects but a lower amplitude. To assess the influence of these extratropical and tropical modes, respectively, we construct composite fields for 1906-2001 using the 20th Century Reanalysis [6] (Fig. 5). Thus, we obtain the large-scale (upper-level) circulation anomalies associated with both modes, as well as their associated surface air temperature (SAT) and precipitation fields in the two regions.

2.2/ the percentiles approach
An alternative way to explore the large-scale circulation anomalies consists in calculating the composites associated with simultaneous conspicuous precipitation departures at both regions. Fig. 6 shows cases of moderate & high opposite concomitant anomalies, considering the 10, 25, 75, and 90 percentiles at each region.

2.3/ conclusions… and a look back in time
1) UDel agrees well with instrumental data (is it just an oversimplified interpolation?)
2) winter (JJA) precipitation is a proxy for the total annual amounts,
3) interannual winter precipitation records at Rebecca Lagoon (RL) and Lago Plomo (LP) are mostly anticorrelated during the 20th century,
4) did something happen around 1970s at interdecadal and interannual timescales?
5) an overview on the 20th century’s variability seems to provide some key knowledge to interpret the past

Can we try to extrapolate the 20th century results to past climate variability? How do anomalies on different timescales propagate? Synoptic climatology perspective Using the reconstructions for JJA precipitation and the SAM index [7], we detect periods of:

a) relative high SAM index values and precipitation anticorrelation (ca. 1700s, 1810s, 1980s),

b) increasing SAM index values and decreasing correlation (ca. 1620s, 1930s).

This is work in progress!

references