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Poster
The Kerguelen Plateau is a major topographic obstacle to the eastward flowing Antarctic Circumpolar Current (ACC). Whilst approximately two thirds of the ACC transport is diverted to the North, most of the remaining flow engulfs in the Fawn Trough, the only deep passage across the plateau. As part
of the TRACK (TRansport ACross the Kerguelen plateau) project, three mooring lines of current meters were deployed in the Fawn Trough for one year in February 2009, underneath ground-track 94 of the Jason-2 satellite altimeter. Full depth CTD-LADCP casts carried out during the deployment
cruise were previously analyzed to provide a comprehensive description of the regional circulation, featuring in particular a volume transport of ~43Sv across the Fawn Trough (Park et al., 2009).
Here we present a time series of the transport in the Fawn Trough estimated from current meter observations, featuring a mean eastward transport of 34 Sv (possibly biased low by at most 5 Sv) and a root mean squared variability of 6 Sv, consistent with LADCP estimates (43 Sv in February
2009 and 38 Sv in January 2010). In addition, we analyze to what extent the transport can be directly monitored from along-track satellite altimeter data, which would enable study of the variability of the Fawn Trough Current from a now 20-year long archive.

The ability to reconstruct the flow from a limited set of moored instruments as well as from altimeter derived surface geostrophic velocity is further assessed from synthetic data extracted from a high resolution peri-Antarctic simulation. While a canonical method to derive transport from altimetry, previously applied to the Malvinas Current, gives here unsatisfactory comparisons with in situ estimates, an ad-hoc approach using only the two northernmost mooring lines yields an estimate well correlated (~0.8) with in situ transport at subseasonal time scales during the one year period of observations.

At interannual time scales, however, both methods provide significantly correlated

(0.7) transports estimates, suggesting that long-term transport fluctuations across the Kerguelen Plateau can be confidently estimated from altimetry. These consistently indicate a measurable impact of the outstanding 1997-98 El Nino Southern Oscillation(ENSO) event, yielding an increase of the annual mean transport of ~3 Sv, possibly with a one year lag. The transport estimate based on the ad-hoc approach is significantly correlated (0.6) with the Southern Annular Mode (SAM) index at interannual time scales, suggesting that an intensification of the circumpolar winds drives an increase in the transport across the Kerguelen Plateau.
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