MKE is defined as , with and being the climatological mean of each component over the first two decades of the satellite altimeter period (hence-forth ‘long-term’; 1993-01-01 to 2012-12-31); used here, it defines the mean, quasi-stationary boundary current jet trajectory. EKE was calculated as , where and and and being either the climatological mean (as used in the MKE) or a 30-day running mean; because EKE is calculated as an anomaly, it indicates the ‘field’ of eddy propagation around the mean trajectory. Kinetic energy (KE) ~~on any individual day of the time series~~ was taken as ~~or~~ as an anomaly relative to a 5-day running mean, and daily geostrophic velocity as .

Fig00\_Aviso+\_MKE\_EKE\_v2.R

out <- ke %>%

dplyr::group\_by(lon, lat) %>%

dplyr::mutate(ugos30 = roll\_mean(ugos, n = 30, align = "center", fill = c(-999, -999, -999)),

vgos30 = roll\_mean(vgos, n = 30, align = "center", fill = c(-999, -999, -999))) %>%

na.omit() %>%

dplyr::mutate(eke = 0.5 \* ((ugos - ugos30) + (vgos - vgos30)) %>%

dplyr::summarise(mke = 0.5 \* (mean(vgos, na.rm = TRUE)^2 + mean(ugos, na.rm = TRUE)^2),

eke = mean(eke, na.rm = TRUE)) %>%

dplyr::ungroup()

Fig00\_Aviso+\_MKE\_EKE.R

out <- ke %>%

dplyr::group\_by(lon, lat) %>%

dplyr::mutate(eke = 0.5 \* ((vgosa)^2 + (ugosa)^2)) %>%

dplyr::summarise(mke = 0.5 \* (mean(vgos, na.rm = TRUE)^2 + mean(ugos, na.rm = TRUE)^2),

eke = mean(eke, na.rm = TRUE)) %>%

dplyr::ungroup()