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 is 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(eke = 0.5 \* ((ugos - roll\_mean(ugos, n = 30, align = "center", fill = **c**(-999, -999, -999)))^2 +

(vgos - roll\_mean(vgos, n = 30, align = "center", fill = **c**(-999, -999, -999)))^2)) %>%

**na.omit**() %>%

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

eke = **mean**(eke)) %>%

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()