

Fig S1: Jun-Jul composite daily time series during fast and slow trade winds in north-of-Andes area (as in Fig 6): net solar radiation Q_s and latent heat flux Q_e (evaporation) with means (W/m^2) by legend, indicating minor differences in the heat balance. Note that ‘fast’ uses Jun-Jul 1986, 1992, 1994, 2014, 2015, ‘slow’ uses Jun-Jul 1979, 1988, 2005, 2010, 2011, from the U wind EOF-1 time-score Fig 1c.

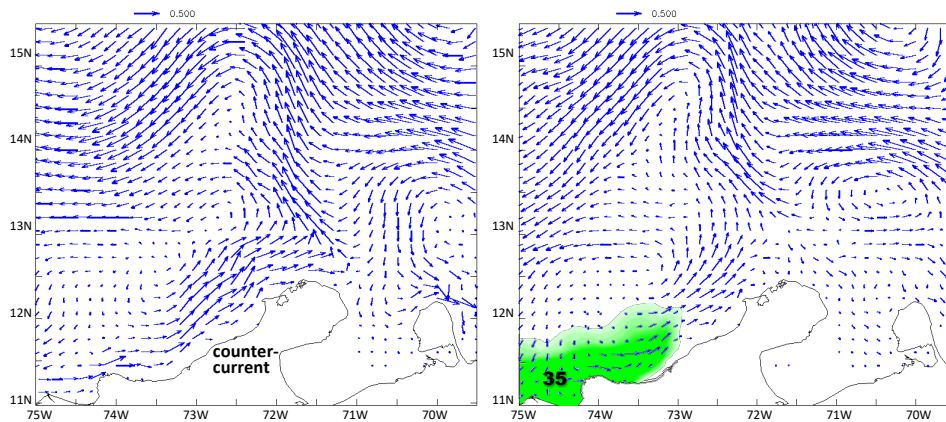


Fig S2: Another example of HYCOM3 upper ocean currents during slow trade winds: 18 Jul (left) 22 Jul 2010 (right; similar to Fig 8b), illustrating how the Colombian counter-current infiltrates the Caribbean. In this case Cartagena sea level rose from 279 to 437 cm and Magdalena River discharge increased from 22,238 m^3/s to 31,460 m^3/s generating a low salinity plume < 35 ppt (green).

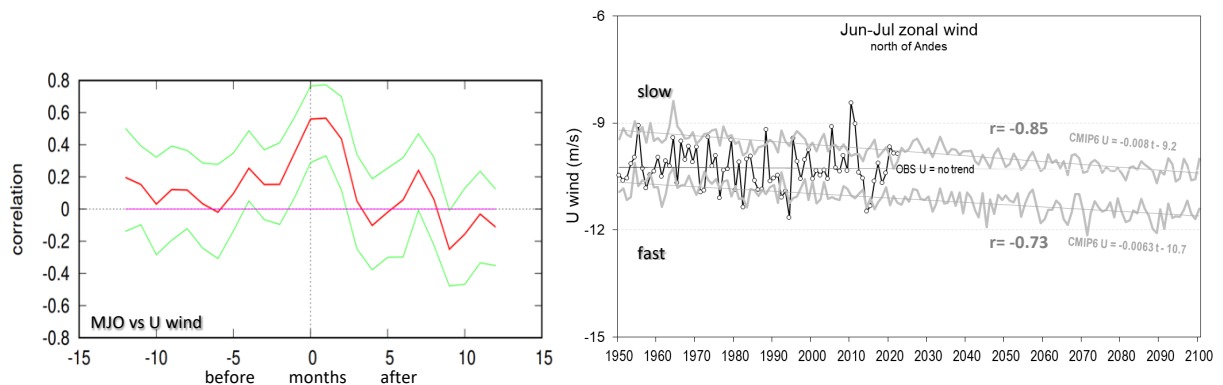


Fig S3: (left) Lag-correlation of Jun-Jul U wind EOF-1 time-score and East Pacific MJO amplitude. (right) Long-term trends of U wind north of the Andes in ERA5 ‘observed’ and upper and lower tercile of the CMIP6 all-model ensemble projection.