



/1      **3)** derive the formulation of the meridional variation of the Coriolis force  $\beta$  (also called the Rossby parameter).

/2      **4)** Compute  $\beta$  at the equator and at  $45^\circ N$ .

/1      **5)** Plot  $\beta$  in function of the latitude (from  $-90^\circ S$  to  $90^\circ N$ ).

/2      **6)** Compute the distance between  $150^\circ E$  and  $90^\circ W$  at the equator and then at  $45^\circ N$ .

/1      **7)** Which formula would you use if you had to compute the distance between Paris ( $[48^\circ N; 2^\circ E]$ ) and Rio de Janero ( $[23^\circ S; 43^\circ W]$ )?