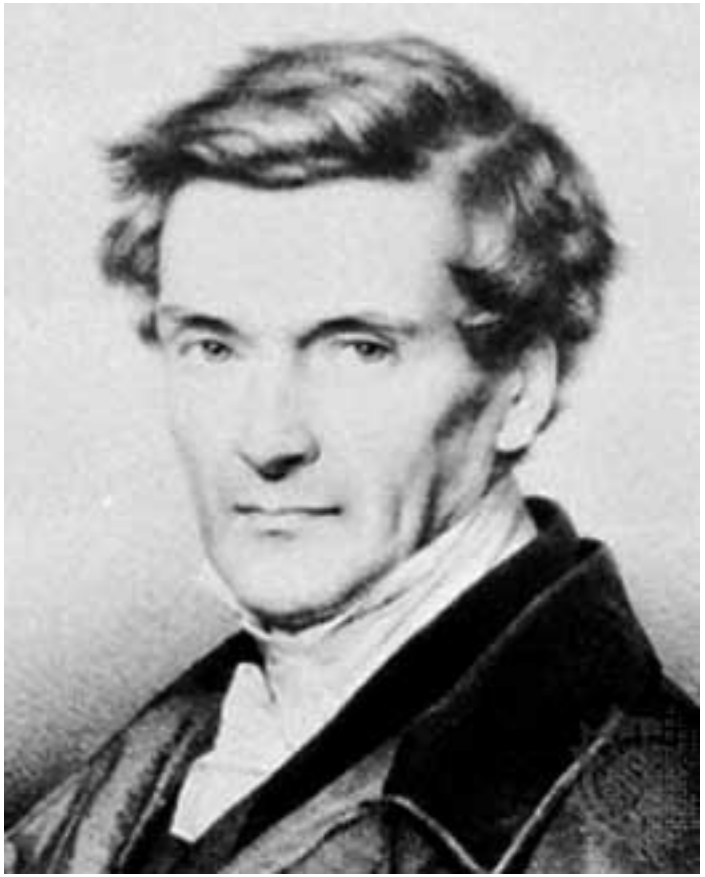
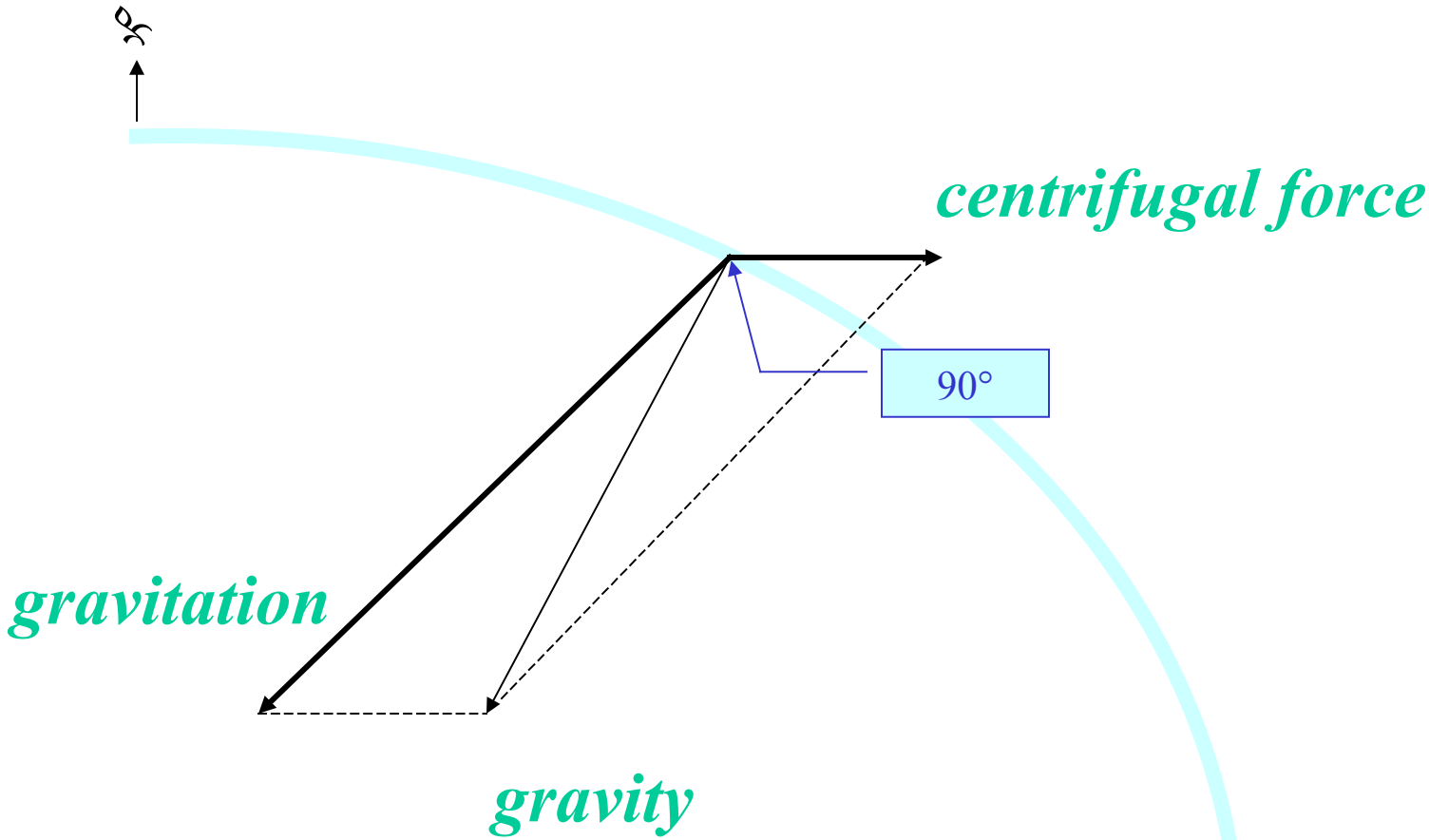
Gaspard Gustave Coriolis 1784-1843



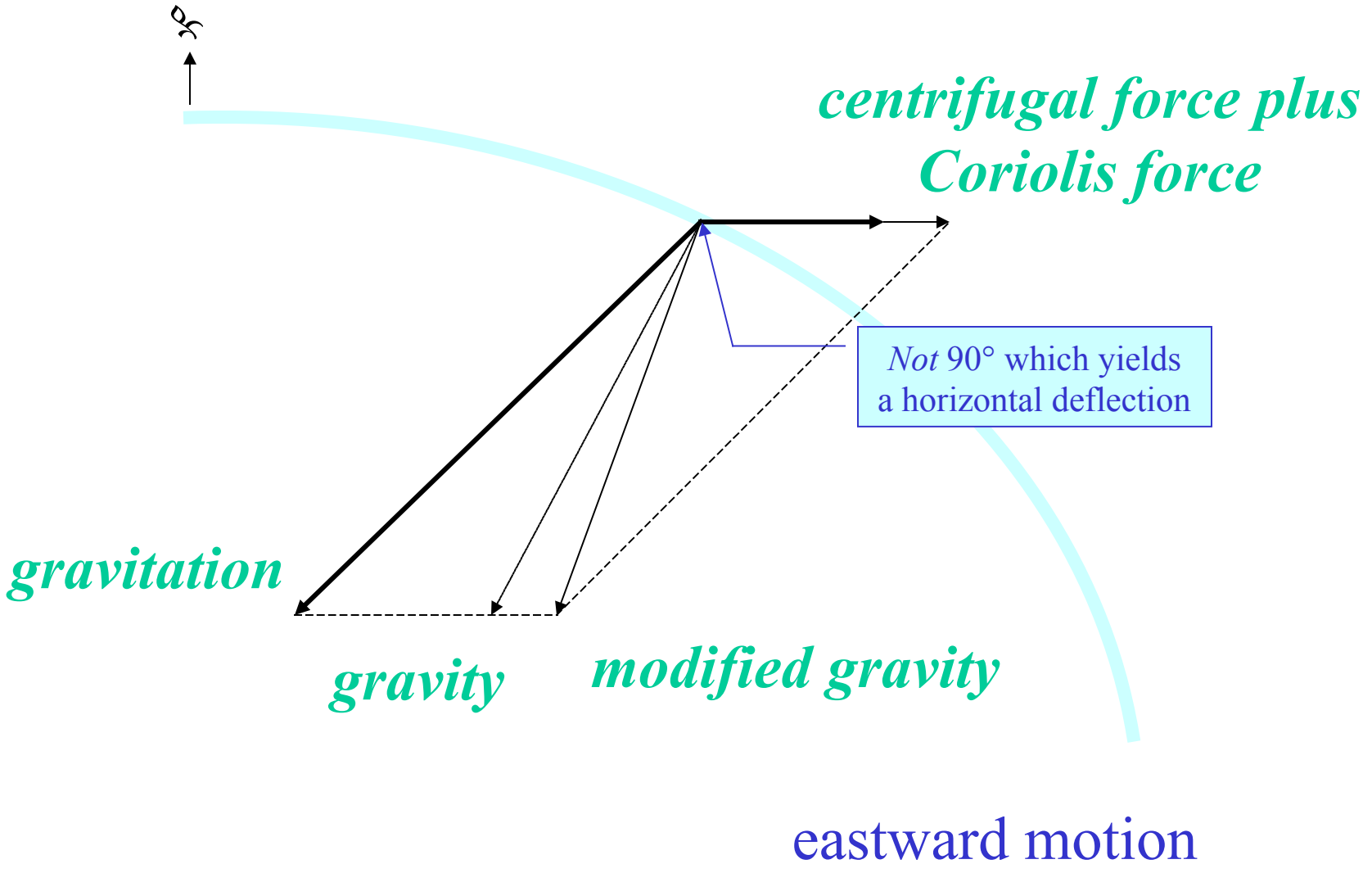
(Courtesy: Anders Persson, SMHI)



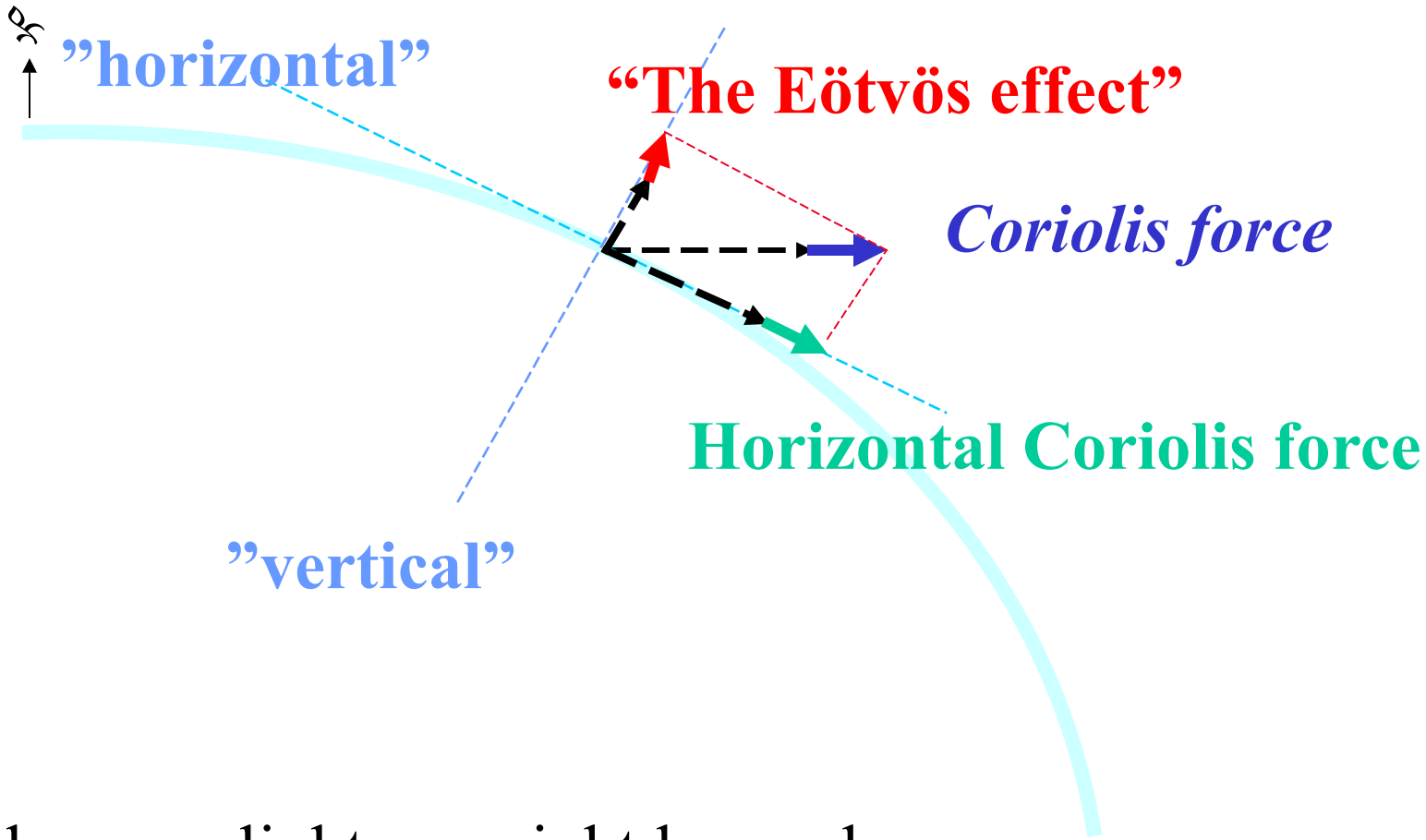
Any stationary body on the earth's surface (rotating oblate spheriod) remains stationary because effective gravity points perpendicular to the surface

(Courtesy: Anders Persson, SMHI)

… except when there is motion



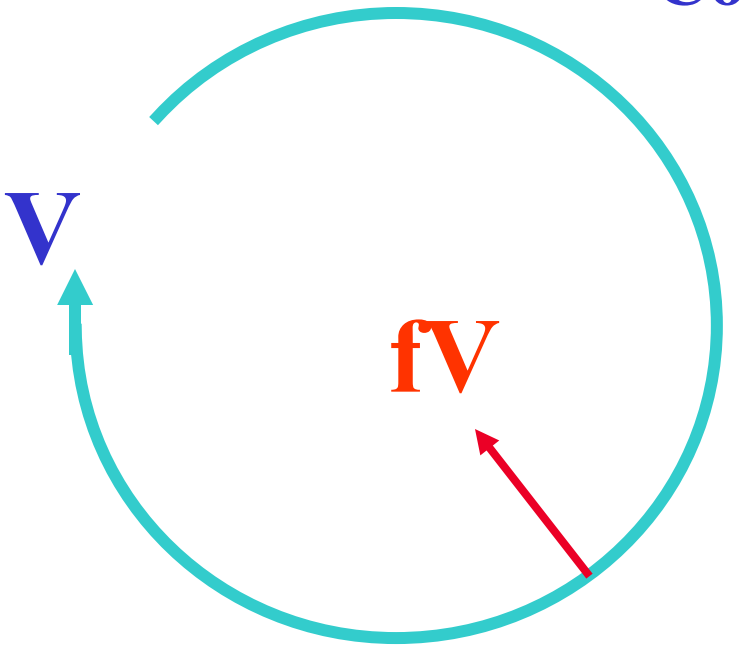
(Courtesy: Anders Persson, SMHI)



We become lighter, weight less, when we move eastward, heavier when we move westward

(Courtesy: Anders Persson, SMHI)

The "inertia circle" motion



Coriolis parameter:
$f = 2\omega \sin\Phi$

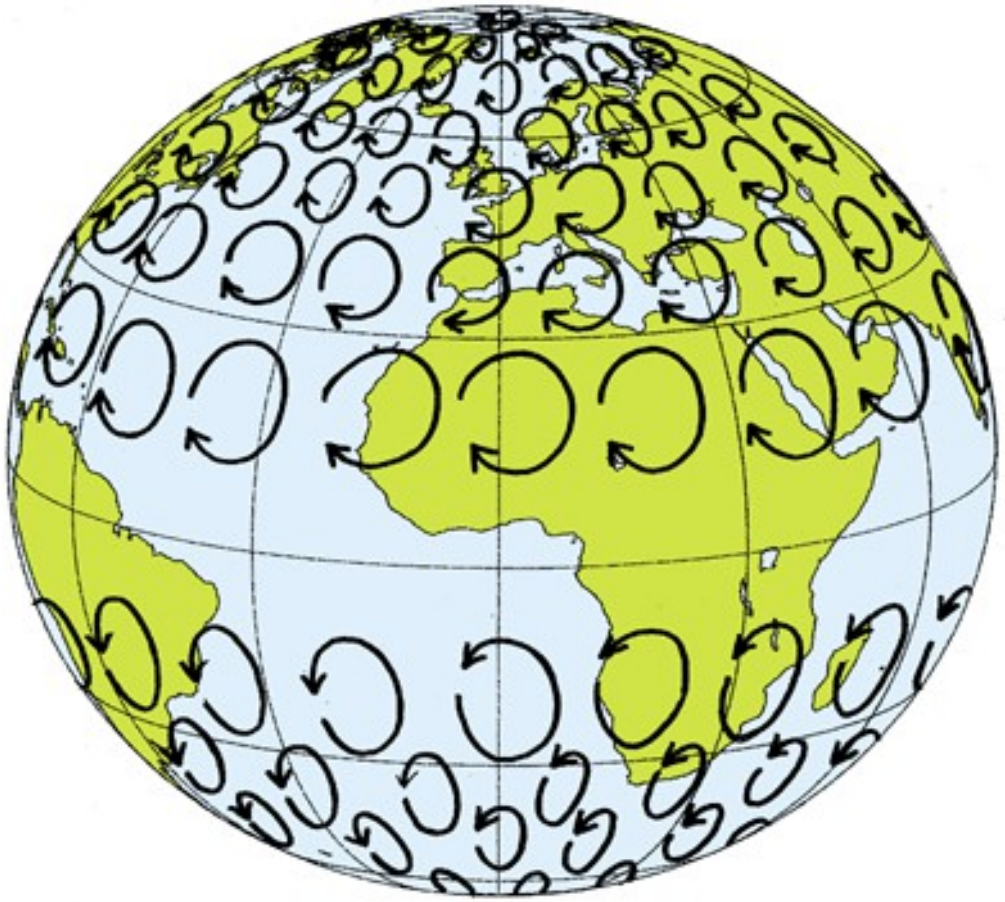
radius of the inertia circle:
$R = V/f$

period:
$\tau = 2\pi/f$

(60°N, V=10 m/s, R=80 km, τ=14 h)

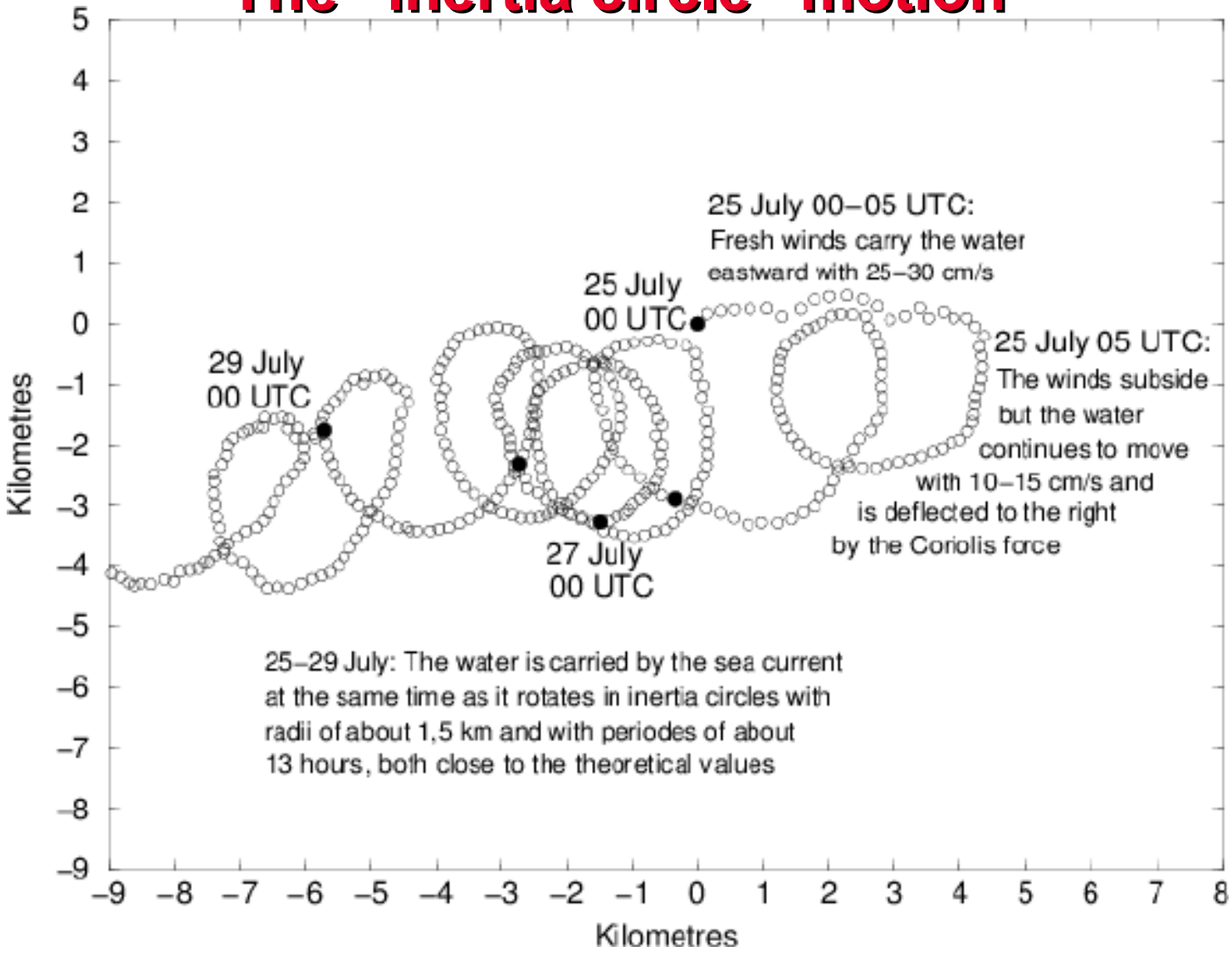
(Courtesy: Anders Persson, SMHI)

Northern Hemisphere: anticyclonic (clockwise) circles
Southern Hemisphere: cyclonic circles



(Courtesy: Anders Persson, SMHI)

The “inertia circle” motion

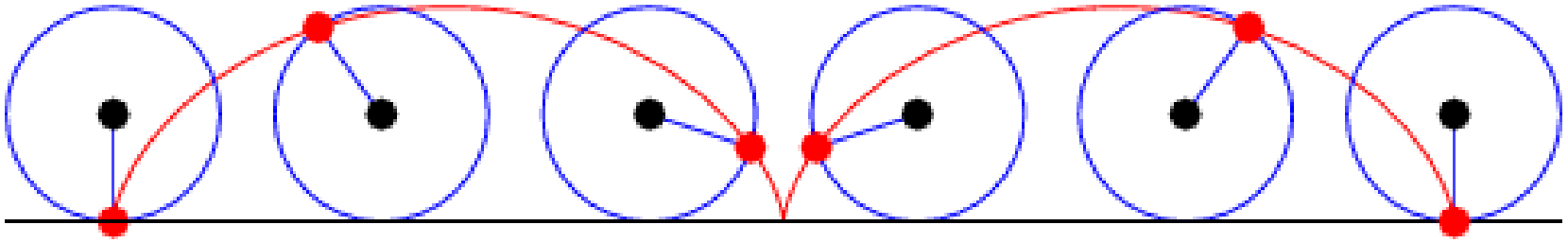


(Courtesy: Anders Persson, SMHI)

We rarely see inertia circles in the atmosphere

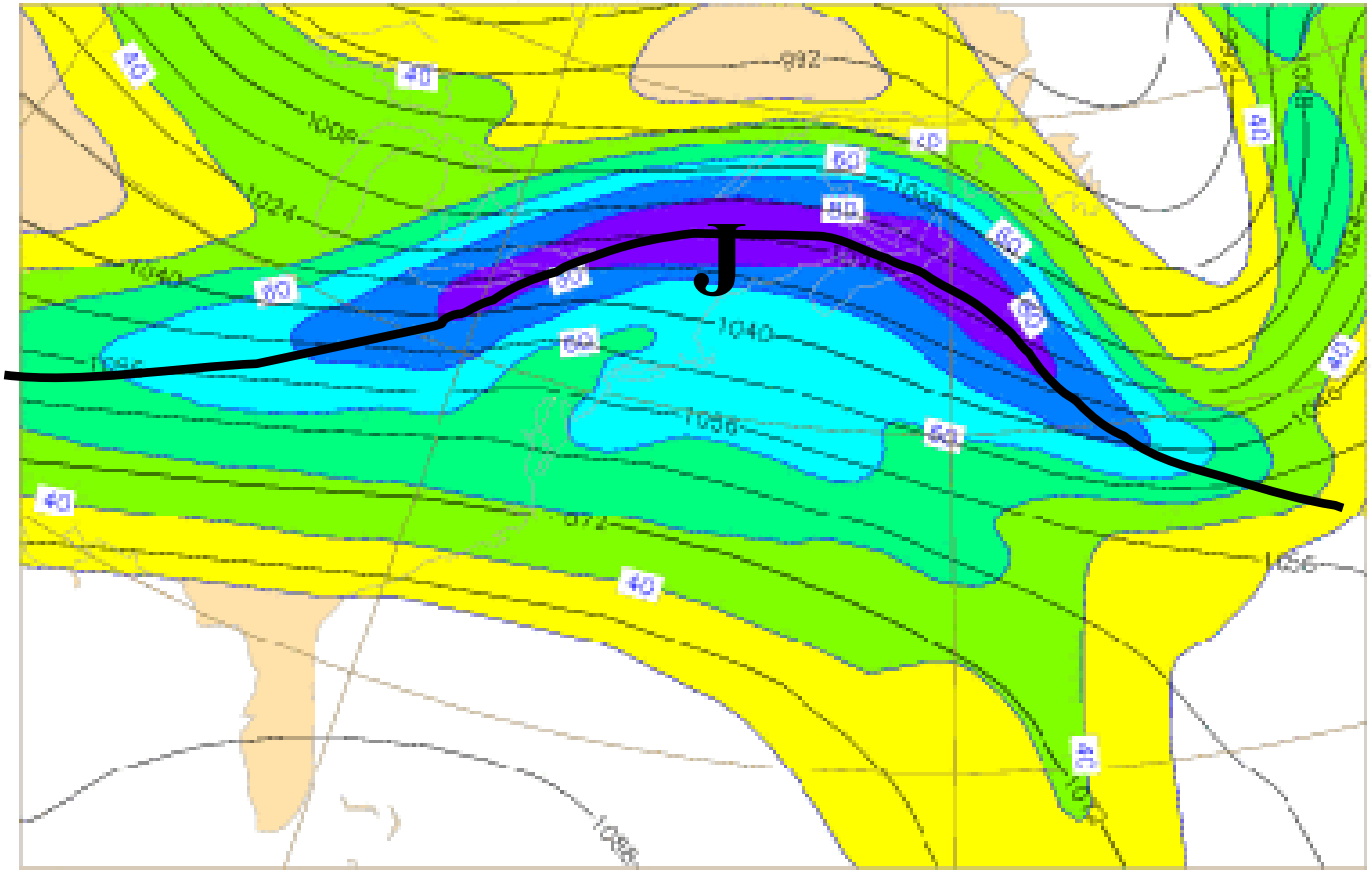
But they are there, disguised in cycloid shapes

translation + rotation = cycloids



(Courtesy: Anders Persson, SMHI)

The cycloid shaped jetstreams



(Courtesy: Anders Persson, SMHI)