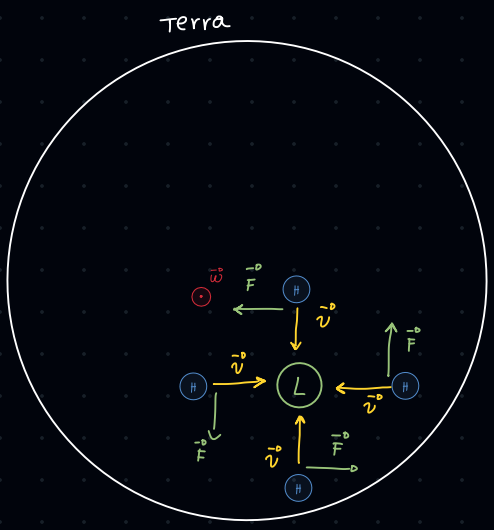
Forza di Coriolis

Abbiamo Trovato che $\vec{a}_{co} = 2(\vec{\omega} \wedge \vec{v})$

$\Rightarrow \vec{F} = m \cdot \vec{a}$ $\rightarrow$ $\vec{F} = m(\vec{a} + 2(\vec{\omega} \wedge \vec{v}))$ $\Rightarrow \vec{F} = m\vec{a} + 2m(\vec{\omega} \wedge \vec{v})$

$\rightarrow \vec{F} - 2m(\vec{\omega} \wedge \vec{v}) = m \cdot \vec{a}$ poniamo $-2m(\vec{\omega} \wedge \vec{v}) = 2m(\vec{v} \wedge \vec{\omega}) = \vec{F}_{co}$

Perché si creano i Tornado

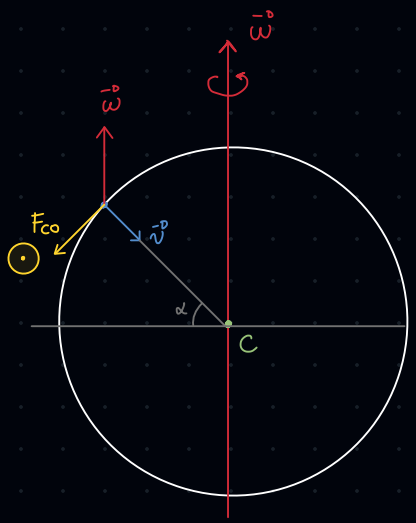


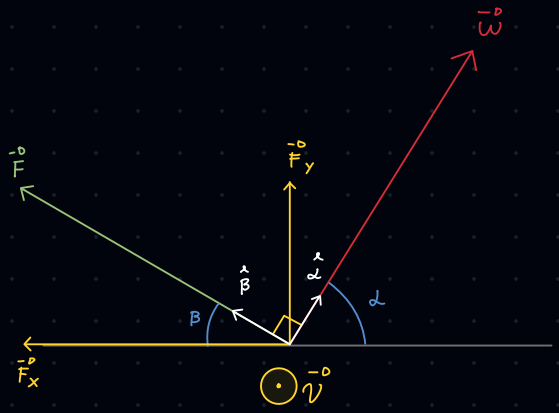
L Bassa pressione $\xrightarrow{\vec{v}}$ H Alta pressione

Siccome $\vec{F}_{co} = 2m(\vec{v} \wedge \vec{\omega})$ Troviamo il campo vettoriale di $\vec{F}_{co}$ con la regola della mano destra

$\Rightarrow$ Sommando le forze si crea un Vortice!

Corpo in caduta libera





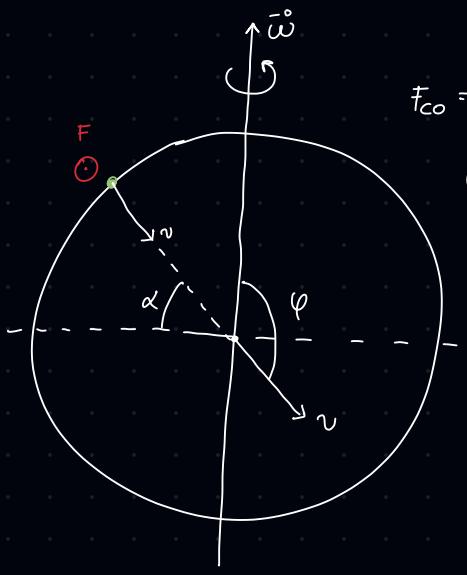
Siccome $\vec{F} = \vec{F}_x + \vec{F}_y + \vec{F}_z$ (↑ Trascurabili)

$\rightarrow \vec{F}_x = \vec{F}_{co} \cdot \cos\beta$ $\rightarrow$ Max quando $\cos\beta = 1$

$\beta = 180 - 90 - \alpha = 90 - \alpha$ $\Rightarrow \cos(90 - \alpha) = \sin(\alpha)$

quando $\sin(\alpha) = 1$? $\rightarrow$ $\alpha = 90^\circ$ $\Rightarrow \vec{F}_{co}$ = Max Ai poli

Dim. Alternativa



$F_{co} = 2m(\vec{v} \times \vec{\omega}) = 2m\ v\ \omega \cdot \sin\varphi$

$\varphi = 180 - \alpha \Rightarrow \sin\varphi = \sin\alpha$

$\Rightarrow \sin\alpha = \text{Max} \Rightarrow \alpha = 90$

0.422