

Instantaneous blocking (IB)

$$GHGN(\theta_0, \lambda_0) = \frac{Z_{500}(\theta_N, \lambda_0) - Z_{500}(\theta_0, \lambda_0)}{\theta_N - \theta_0}$$

$$GHGS(\theta_0, \lambda_0) = \frac{Z_{500}(\theta_0, \lambda_0) - Z_{500}(\theta_S, \lambda_0)}{\theta_0 - \theta_S}$$

$$GHGS(\theta_0, \lambda_0) > 0; GHGN(\theta_0, \lambda_0) < -10 \text{ m/}^\circ\text{lat}$$

Connected component analysis for each day

50 % overlap in
time with
previous day

no

Different label

yes

persistence > 5 d

no

Discard the event

yes

area > $5 \times 10^5 \text{ km}^2$

no

Discard the event

yes

Center of mass trajectory computation

Loop over time