$$\mathbf{z^i_{t+1}} = \mathbf{z_{t+1}} + \eta^{\mathbf{i}}_{\mathbf{t+1}}, \quad \eta^{\mathbf{i}}_{\mathbf{t+1}} = N(0, R_{t+1})$$

$\mathbf{z^i_{t+1}}$ - vector of observations

$N()$ - Normal distribution based around (mean, std)

R_{t+1} - error covariance matrix of $\mathbf{z^i_{t+1}}$

$\theta^{\mathbf{i}-}_{\mathbf{t+1}}$ - vector of parameters

$\mathbf{x^i_{t+1}}$ - vector of states

$h()$ - masking function

$\hat{\mathbf{y}}^{\mathbf{i}}_{\mathbf{t+1}}$ - vector of predicted states ($\mathbf{x^i_{t+1}}$ masked by $h()$)

$\Sigma^{\theta,\hat{y}}_{t+1}$ - cross covariance matrix of $\theta^{\mathbf{i}-}_{\mathbf{t+1}}$ and $\hat{\mathbf{y}}^{\mathbf{i}}_{\mathbf{t+1}}$

$\Sigma^{\hat{y},\hat{y}}_{t+1}$ - error covariance matrix of $\hat{\mathbf{y}}^{\mathbf{i}}_{\mathbf{t+1}}$

t - timestep

i - ensemble number