$$\underbrace{\mathrm{d}\begin{bmatrix}\text{ss\_level}\\ \text{ss\_velocity}\end{bmatrix}(t)}_{\mathrm{d}\boldsymbol{\eta}(t)} = \left(\underbrace{\begin{bmatrix}0 & 1\\ -0.367 & -0.336\end{bmatrix}}_{\underbrace{\mathbf{A}}_{\text{DRIFT}}}\underbrace{\begin{bmatrix}\text{ss\_level}\\ \text{ss\_velocity}\end{bmatrix}(t)}_{\boldsymbol{\eta}(t)} + \underbrace{\begin{bmatrix}0\\ 0\end{bmatrix}}_{\underbrace{\mathbf{b}}_{\text{CINT}}}\right)\mathrm{d}t \quad +$$

$$cholsdcor\left(\underbrace{\begin{bmatrix}0 & 0\\ 0 & 19.8\end{bmatrix}}_{\underbrace{\mathbf{G}}_{\text{DIFFUSION}}}\right)\underbrace{\mathrm{d}\begin{bmatrix}W_1\\ W_2\end{bmatrix}(t)}_{\mathrm{d}\mathbf{W}(t)}$$

$$\underbrace{\begin{bmatrix}W_1\\ W_2\end{bmatrix}(t+u)}_{\mathbf{W}(t+u)} - \underbrace{\begin{bmatrix}W_1\\ W_2\end{bmatrix}(t)}_{\mathbf{W}(t)} \sim \mathrm{N}\left(\begin{bmatrix}0\\ 0\end{bmatrix}, \begin{bmatrix}\text{u-t} & 0\\ 0 & \text{u-t}\end{bmatrix}\right)$$

$$\underbrace{\begin{bmatrix}\text{sunspots}\end{bmatrix}(t)}_{\mathbf{Y}(t)} = \underbrace{\begin{bmatrix}1 & 0\end{bmatrix}}_{\underbrace{\boldsymbol{\Lambda}}_{\text{LAMBDA}}}\underbrace{\begin{bmatrix}\text{ss\_level}\\ \text{ss\_velocity}\end{bmatrix}(t)}_{\boldsymbol{\eta}(t)} + \underbrace{\begin{bmatrix}42.019\end{bmatrix}}_{\underbrace{\boldsymbol{\tau}}_{\text{MANIFESTMEANS}}} + \underbrace{\begin{bmatrix}29.757\end{bmatrix}}_{\underbrace{\boldsymbol{\Theta}}_{\text{MANIFESTVAR}}}\underbrace{\begin{bmatrix}\epsilon_1\end{bmatrix}(t)}_{\boldsymbol{\epsilon}(t)}$$

$$\underbrace{\begin{bmatrix}\epsilon_1\end{bmatrix}(t)}_{\boldsymbol{\epsilon}(t)} \sim \mathrm{N}\left(\begin{bmatrix}0\end{bmatrix}, \begin{bmatrix}1\end{bmatrix}\right)$$

cholsdcor = Function converting lower tri matrix of std dev and unconstrained correlation to Cholesky factor.

See Driver & Voelkle (2018) p11.