Subject parameter distribution:

$$\underbrace{\begin{bmatrix}\text{T0m\_ly}_i\\ \text{mm\_y}_i\end{bmatrix}}_{\boldsymbol{\phi}(i)} \sim \text{tform}\left\{\text{N}\left(\begin{bmatrix}\text{raw\_T0m\_ly}\\ \text{raw\_mm\_y}\end{bmatrix}, \begin{bmatrix}\text{rawPCov\_1\_1} & \text{rawPCov\_2\_1}\\ \text{rawPCov\_2\_1} & \text{rawPCov\_2\_2}\end{bmatrix}\right)\right\}$$

Initial latent state:

$$\underbrace{[\text{ly}]\,(t_0)}_{\boldsymbol{\eta}(t_0)} \sim \text{N}\left(\underbrace{[\text{T0m\_ly}]}_{\underbrace{}_{\text{T0MEANS}}}, \underbrace{\textit{covsdcor}\left\{[\text{Pcorsqrt\_1\_1}]\right\}}_{\underbrace{\mathbf{Q^*}_{t0}}_{\text{T0VAR}}}\right)$$

Deterministic change:

$$\underbrace{\text{d}\,[\text{ly}]\,(t)}_{\text{d}\boldsymbol{\eta}(t)} = \left(\underbrace{[\text{drift\_ly}]}_{\underbrace{\mathbf{A}}_{\text{DRIFT}}}\underbrace{[\text{ly}]\,(t)}_{\boldsymbol{\eta}(t)} + \underbrace{[0]}_{\underbrace{\mathbf{b}}_{\text{CINT}}}\right)\text{d}t \quad +$$

Random change:

$$\underbrace{\textit{cholsdcor}\left\{[\text{diff\_ly}]\right\}}_{\underbrace{\mathbf{G}}_{\text{DIFFUSION}}}\underbrace{\text{d}\,[W_1]\,(t)}_{\text{d}\mathbf{W}(t)}$$

Observations:

$$\underbrace{[\text{y}]\,(t)}_{\mathbf{Y}(t)} = \underbrace{[1]}_{\underbrace{\boldsymbol{\Lambda}}_{\text{LAMBDA}}}\underbrace{[\text{ly}]\,(t)}_{\boldsymbol{\eta}(t)} + \underbrace{[\text{mm\_y}]}_{\underbrace{\boldsymbol{\tau}}_{\text{MANIFESTMEANS}}} + \underbrace{[0.2]}_{\underbrace{\boldsymbol{\Theta}}_{\text{MANIFESTVAR}}}\underbrace{[\epsilon_1]\,(t)}_{\boldsymbol{\epsilon}(t)}$$

Latent noise per time step:

$$\Delta\left[W_{j\in[1,1]}\right](t-u) \sim \text{N}(0, t-u)$$

Observation noise:

$$\left[\epsilon_{j\in[1,1]}\right](t) \sim \text{N}(0,1)$$

cholsdcor converts lower tri matrix of std dev and unconstrained correlation to Cholesky factor covariance.

covsdcor = transposed cross product of cholsdcor, to give covariance.

See Driver & Voelkle (2018) p11.