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

$$\text{Initial latent states: } \underbrace{\left[\text{ly}\right]\left(t_0\right)}_{\boldsymbol{\eta}(t_0)} \sim \text{N}\left( \underbrace{\underbrace{\left[\text{T0m\_ly}\right]}}_{\text{T0MEANS}}, \underbrace{\mathit{covsdcor}\left\{\left[0.01\right]\right\}}_{\underbrace{\mathbf{Q^*}_{t0}}_{\text{T0VAR}}} \right)$$

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

$$\text{Random change: } \underbrace{\mathit{cholsdcor}\left\{\left[\text{diff\_ly}\right]\right\}}_{\underbrace{\mathbf{G}}_{\text{DIFFUSION}}} \underbrace{\text{d}\left[W_1\right]\left(t\right)}_{\text{d}\mathbf{W}(t)}$$

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

$$\text{Latent noise per time step : } \Delta\left[W_{j\in[1,1]}\right](t-u) \sim \text{N}(0, t-u) \quad \text{Observation noise: } \left[\epsilon_{j\in[1,1]}\right](t) \sim \text{N}(0,1)$$

*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.