

θ parameter level: ice viscosity and basal sliding



$f(\theta, j, S_0, b)$ numerical solver for the SIA PDE.

Time

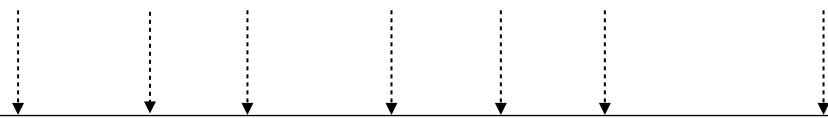
t_0 $t_0+\Delta t$ $t_0+2\Delta t$ $t_0+3\Delta t$ $t_0+4\Delta t$ $t_0+5\Delta t$ $t_0+T\Delta t$



X_j, Σ error correcting statistical model.

Time

t_0 $t_0+\Delta t$ $t_0+2\Delta t$ $t_0+3\Delta t$ $t_0+4\Delta t$ $t_0+5\Delta t$ $t_0+T\Delta t$



S_j physical process level: glacier thickness values at discrete time points.



Y_0

Y_5

.....

Y_T

Y, σ data level: glacier thickness at regularly spaced time intervals and sparsely sampled and fixed spatial locations.