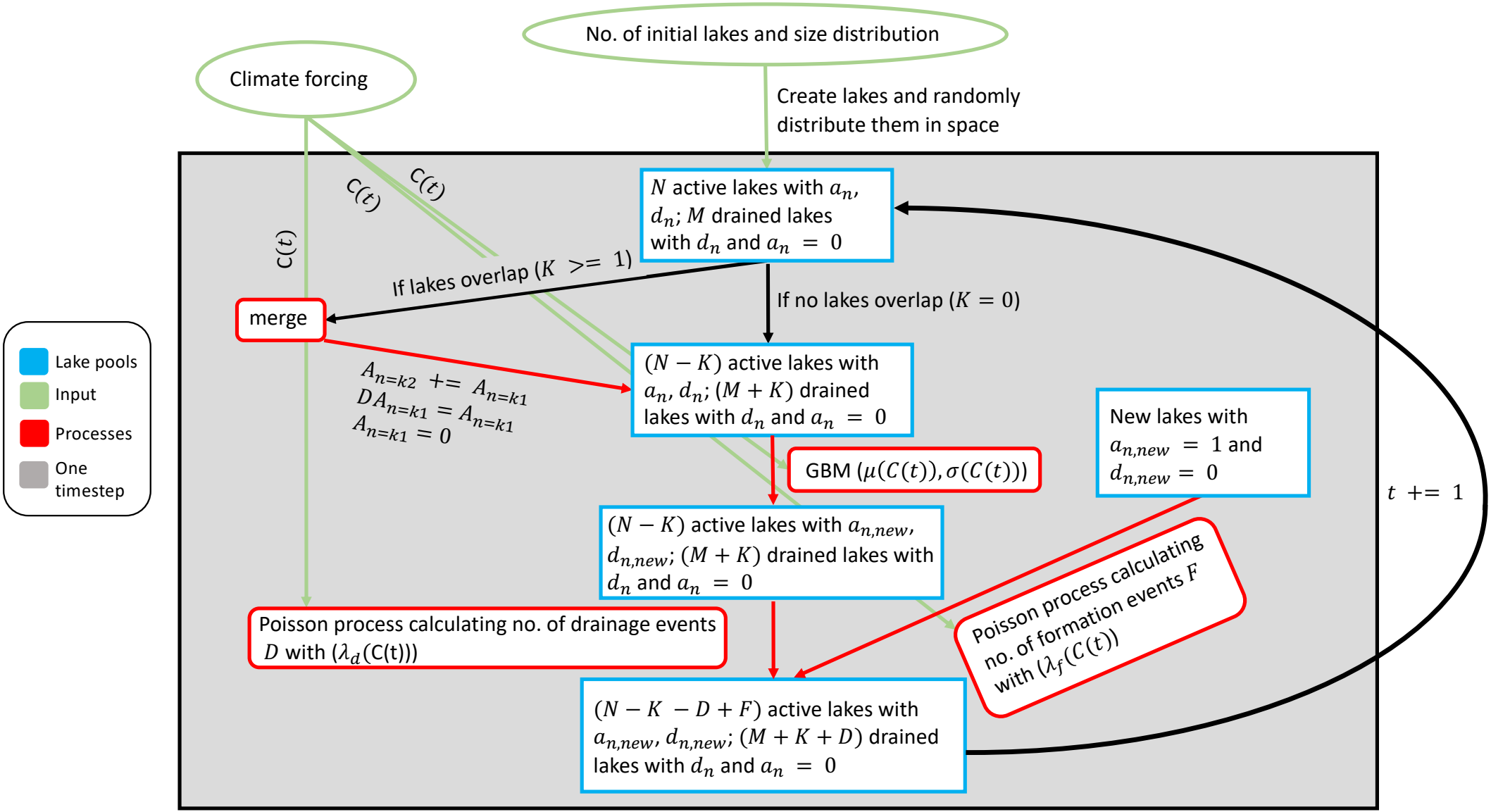
No. of initial lakes and size distribution
Climate forcing
Create lakes and randomly distribute them in space
$C(t)$
$C(t)$
$C(t)$
N active lakes with a_n, d_n; M drained lakes with d_n and $a_n = 0$
If lakes overlap ($K >= 1$)
If no lakes overlap ($K = 0$)
merge
$A_{n=k2} += A_{n=k1}$
$DA_{n=k1} = A_{n=k1}$
$A_{n=k1} = 0$
$(N-K)$ active lakes with a_n, d_n; $(M+K)$ drained lakes with d_n and $a_n = 0$
GBM ($\mu(C(t)), \sigma(C(t))$)
New lakes with $a_{n,new} = 1$ and $d_{n,new} = 0$
$t += 1$
$(N-K)$ active lakes with $a_{n,new}$, $d_{n,new}$; $(M+K)$ drained lakes with d_n and $a_n = 0$
Poisson process calculating no. of formation events F with ($\lambda_f(C(t))$)
Poisson process calculating no. of drainage events D with (λ_d(C(t)))
$(N-K-D+F)$ active lakes with $a_{n,new}$, $d_{n,new}$; $(M+K+D)$ drained lakes with d_n and $a_n = 0$
Lake pools
Input
Processes
One timestep