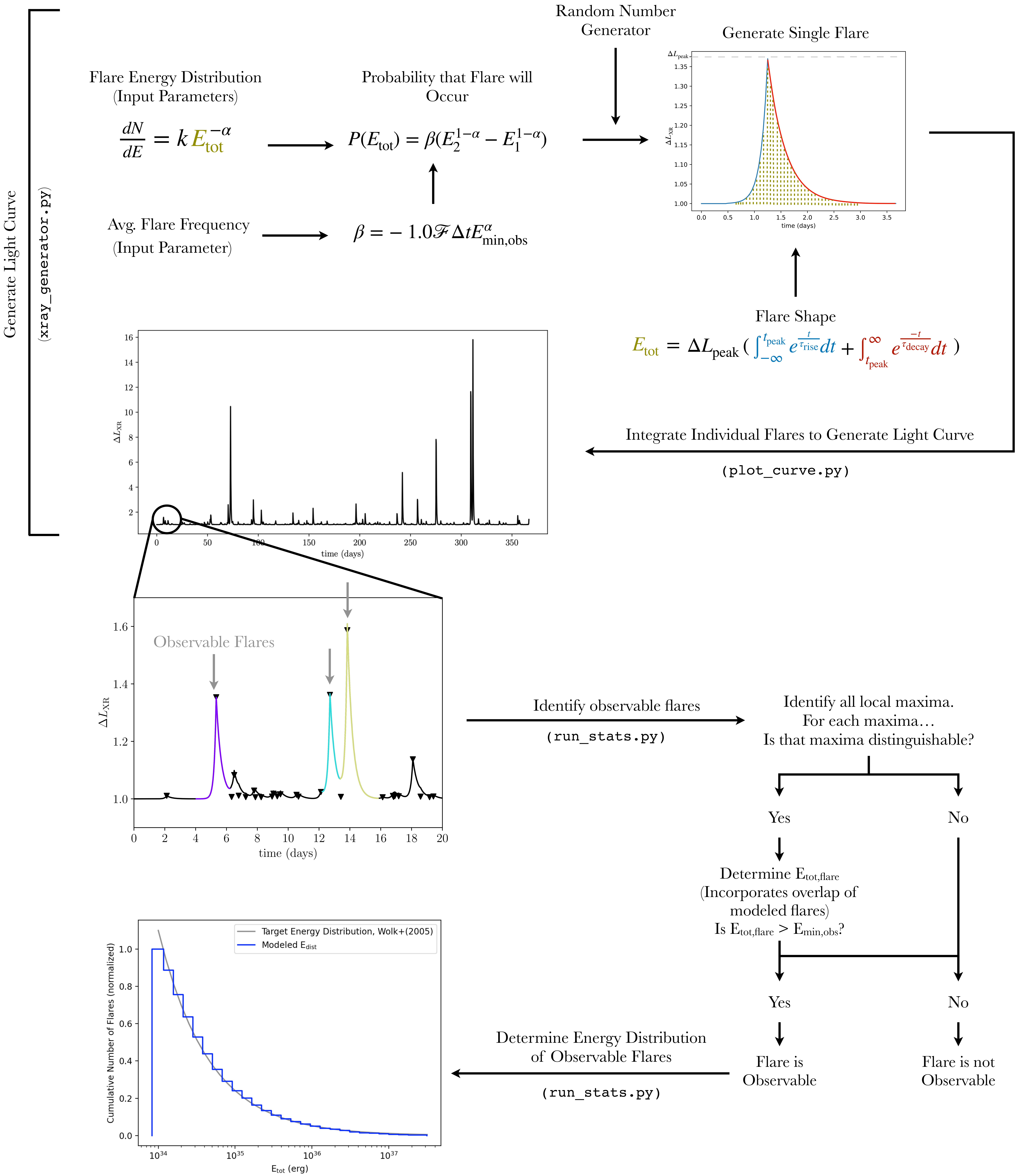
Generate Light Curve
(xray_generator.py)
Flare Energy Distribution
(Input Parameters)
$\frac{dN}{dE} = k\,E_{\mathrm{tot}}^{-\alpha}$
Probability that Flare will
Occur
$P(E_{\mathrm{tot}}) = \beta(E_2^{1-\alpha} - E_1^{1-\alpha})$
Avg. Flare Frequency
(Input Parameter)
$\beta = -1.0\mathscr{F}\Delta t E^{\alpha}_{\mathrm{min,obs}}$
Random Number
Generator
Generate Single Flare
$\Delta L_{\mathrm{peak}}$
$\Delta L_{\mathrm{XR}}$
time (days)
Flare Shape
$E_{\mathrm{tot}} = \Delta L_{\mathrm{peak}} \left( \int_{-\infty}^{t_{\mathrm{peak}}} e^{\frac{t}{\tau_{\mathrm{rise}}}} dt + \int_{t_{\mathrm{peak}}}^{\infty} e^{\frac{-t}{\tau_{\mathrm{decay}}}} dt \right)$
Integrate Individual Flares to Generate Light Curve
(plot_curve.py)
$\Delta L_{\mathrm{XR}}$
time (days)
Observable Flares
$\Delta L_{\mathrm{XR}}$
time (days)
Identify observable flares
(run_stats.py)
Identify all local maxima.
For each maxima…
Is that maxima distinguishable?
Yes
No
Determine $E_{\mathrm{tot,flare}}$
(Incorporates overlap of
modeled flares)
Is $E_{\mathrm{tot,flare}} > E_{\mathrm{min,obs}}$?
Yes
No
Flare is
Observable
Flare is not
Observable
Determine Energy Distribution
of Observable Flares
(run_stats.py)
Target Energy Distribution, Wolk+(2005)
Modeled $E_{\mathrm{dist}}$
Cumulative Number of Flares (normalized)
$E_{\mathrm{tot}}$ (erg)