A single point source generates earthquakes of magnitude M=7 at a rate of NM_{min}=2 events per year. Use the Sadigh et al. 1997 GMM (strike-slip) to compute the seismic hazard curve for Sa(T=0.001) at a rock site located 100 km from the hypocenter.

Evaluating Sadigh et al 1997 at T=0.001s leads to

$$\ln Sa(0.001) = -1.274 + 1.1M - 2.1\ln(R + \exp(-0.485 + 0.5240M)) = -3.6988$$

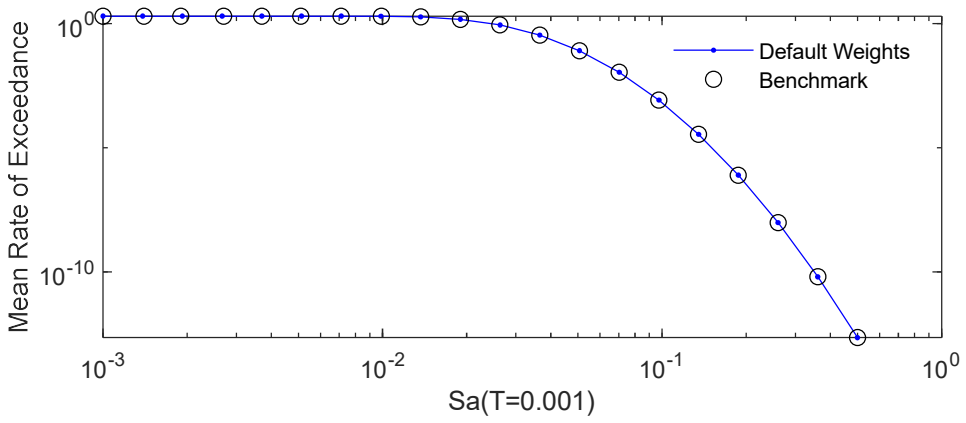
$$Sa(0.001) = \exp(-3.698) = 0.0248\ g$$

$$\sigma = 1.39 - 0.14M = 0.41$$

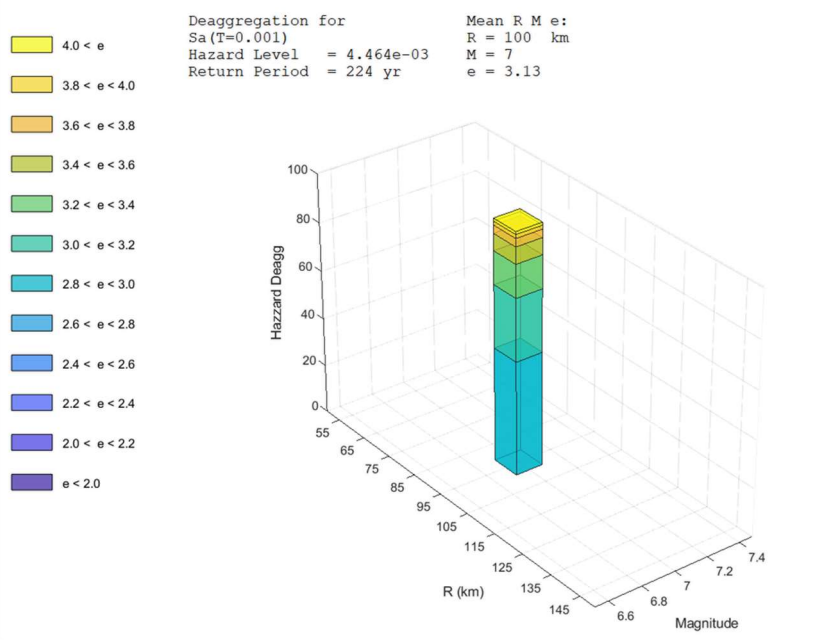
With $f_M(m) = \delta(m-7)$ and $f_R(r) = \delta(r-100)$, the hazard integral is

$$\lambda_y = NM_{min}\int P(Sa > y|m,r)f_M(m)f_R(r)dmdr = NM_{min}P(Sa > y|m=7, r=100)$$

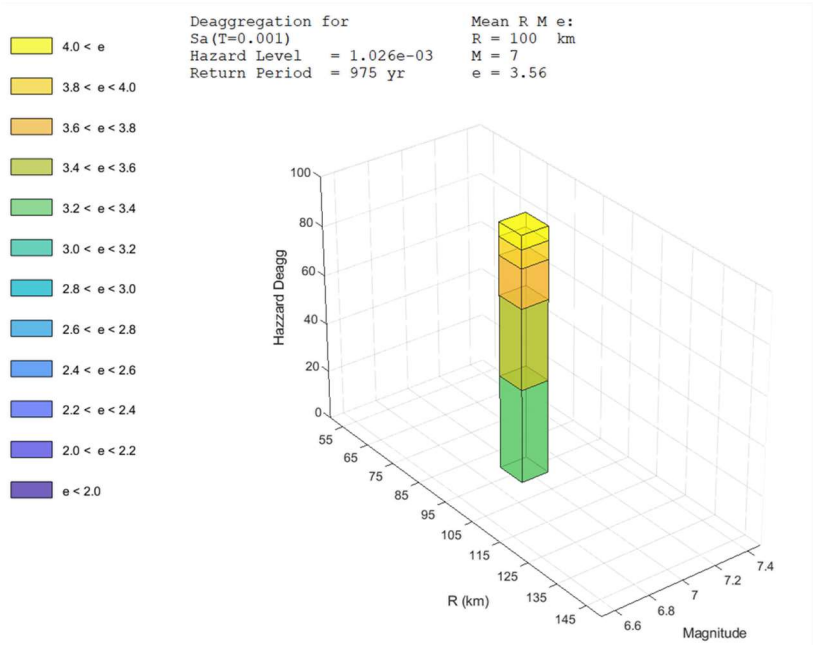
$$\lambda_y = 2\cdot\left\{1 - \Phi\left(\frac{\ln(y) - (-3.6988)}{0.41}\right)\right\}$$



Sa(0.001) Hazard Deaggregation for Tr=224 yr



Sa(0.001) Hazard Deaggregation for Tr=975 yr



Independent calculation in MATLAB:

```
NMmin  = 2;
mu     = -3.6988;
sigma  = 0.41;
y      = logsp(0.001,0.5,20);
lambda = NMmin*(1-normcdf((log(y)-mu)/sigma));
```