

Expected Dose Igneous Intrusive Scenario Class \mathcal{A}_{II} : $[0, 2 \times 10^4 \text{ yr}]$

(Primary source: WIS-MD-PA-000005 REV 00 AD 01 Sect. J7)

Formal representation conditional on fixed $\mathbf{e} = [\mathbf{e}_A, \mathbf{e}_M]$:

$$E_A[D_{II}(\tau | \mathbf{a}, \mathbf{e}_M) | \mathbf{e}_A] = \int_{\mathcal{A}_{II}} D_{II}(\tau | \mathbf{a}, \mathbf{e}_M) d_A(\mathbf{a} | \mathbf{e}_A) dA = \int_0^\tau D_{II}(\tau | t, 11629, \mathbf{e}_M) \lambda_I dt \quad \mathbf{a}_{II} = [n_{II}, t_1, t_2, \dots, t_{n_{II}}]$$

λ_I : rate igneous intr. (yr^{-1})

event time (yr)

WPs destroyed

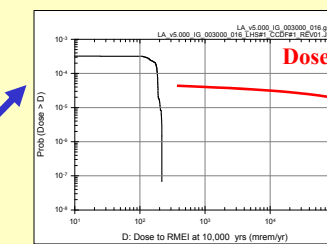
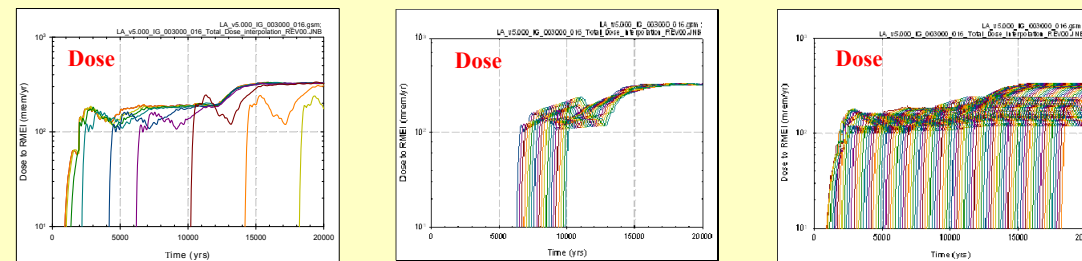
Numerical approximation conditional on fixed $\mathbf{e} = [\mathbf{e}_A, \mathbf{e}_M]$:

$$E_A[D_{II}(\tau | \mathbf{a}, \mathbf{e}_M) | \mathbf{e}_A] \cong \begin{cases} p_A(\mathcal{A}_{II} | \mathbf{e}_A) \sum_{i=1}^n D_{II}(\tau | \mathbf{a}_i, \mathbf{e}_M) / n & \mathbf{a}_i \text{ sampled from } \mathcal{A}_{II} \text{ consistent with } d_A(\mathbf{a} | \mathbf{e}_A) \\ \sum_{i=1}^n D_{II}(\tau | t_i, 11629, \mathbf{e}_M) \lambda_I \Delta t_i & 0 = t_0 < t_1 < \dots < t_n = \tau \end{cases}$$

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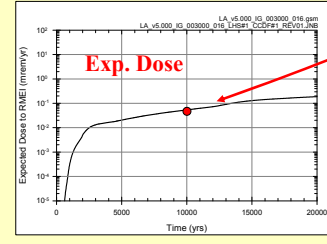
QUADRATURE

Numerical implementation conditional on fixed $\mathbf{e} = [\mathbf{e}_A, \mathbf{e}_M]$:



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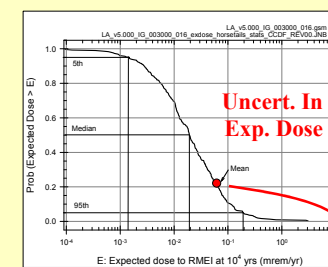
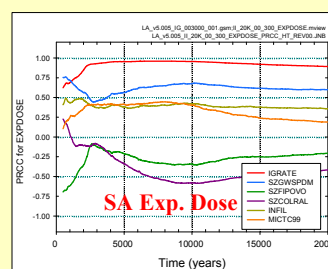
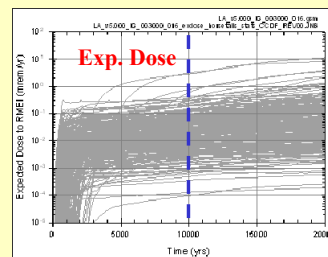
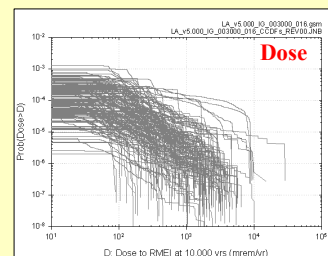
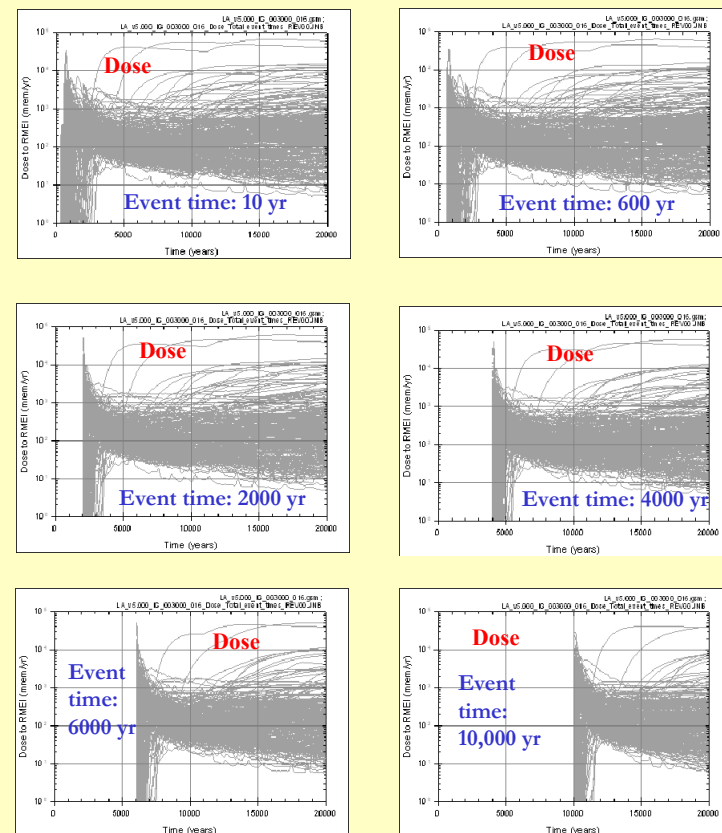
CCDF reduces to



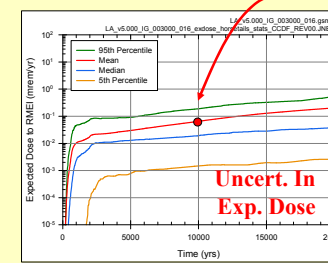
QUADRATURE

(Primary Computational Procedure)

Numerical implementation including epistemic uncertainty in $\mathbf{e} = [\mathbf{e}_A, \mathbf{e}_M]$ (based on LHS of size 300 sampled from \mathcal{E} consistent with $d_E(\mathbf{e})$)



CCDF reduces to



Sensitivity Analysis

REPLICATION

