

Logic Tree Branches Scoring System

S1 NMS

NMS of the NAF sections in the central zone

If max > 50% *True* → S1 = 0

↓ *False*

If average > 40% *True* → S1 = 0

↓ *False*

If average < 20% *True* → S1 = 1

↓ *False*

$$S1 = 2 - \frac{1}{20} \times \text{average}$$

S2

Fit to catalogue

For 40 Monte Carlo samples in the catalogue uncertainties

MFD model MFD catalogue i

S_fit_i = χ^2 test between log(MFD model) and log(MFD catalog i)

$$S2 = \text{average of } S_fit_i$$

S3

Fit to paleo

For each site

Modelled participation rate

Paleo earthquake rate with uncertainties represented as a 2D Gaussian distribution

S_fit_i = maximum value of the crossing between the participation rate and the 2D Gaussian

$$S3 = \text{average of } S_fit_i$$

S4

RSQSim analysis

MFD GR → s_mfd = 0.2

MFD TS → s_mfd = 0.8

Set 1 → s_set = 0.7

Set 2 → s_set = 0.3

$$S4 = s_mfd \times s_set$$

$$\text{Weight of the branch} = \frac{S1 \times S2 \times S3 \times S4}{\sum \text{branches of the logic tree}}$$