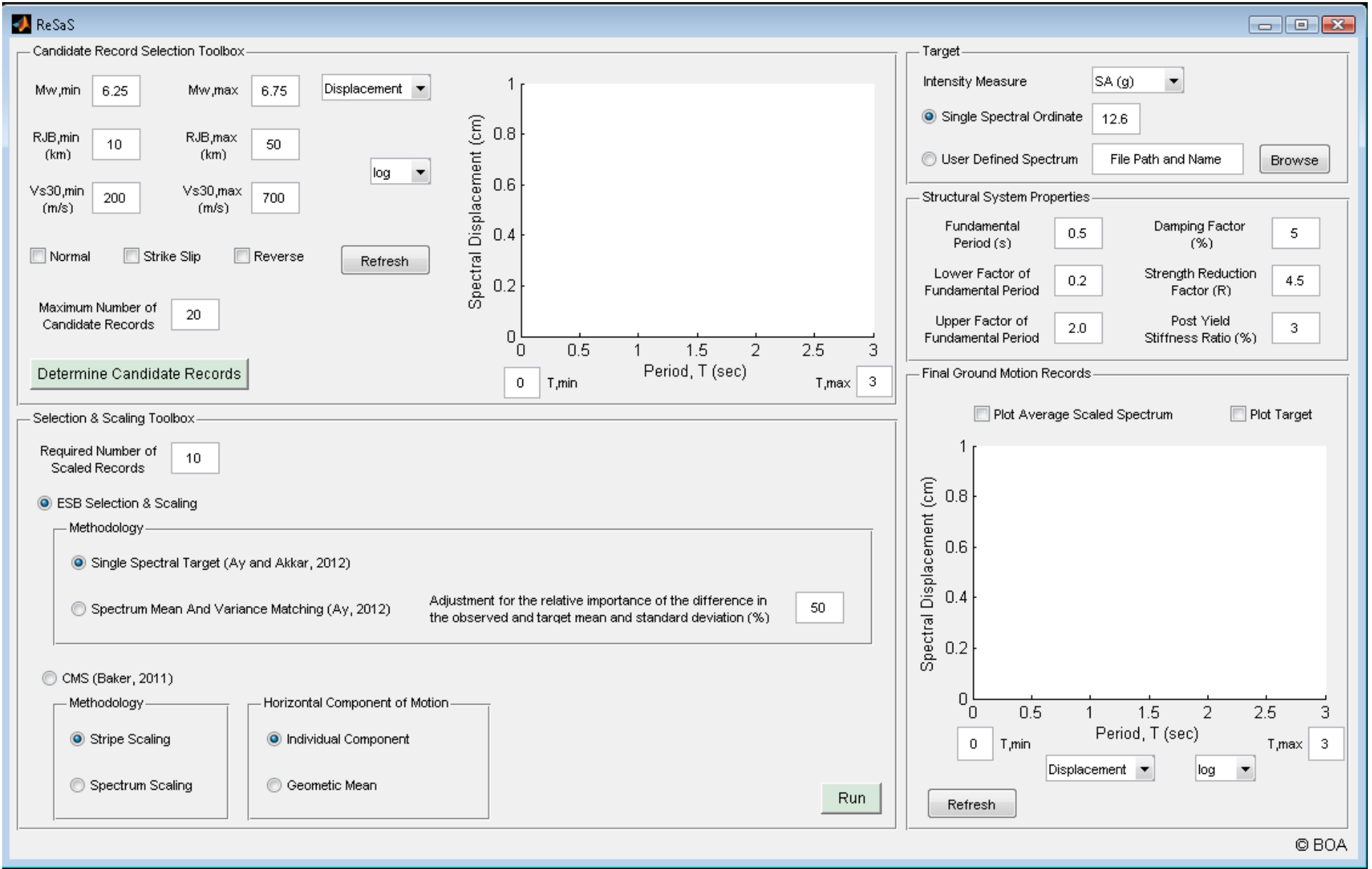
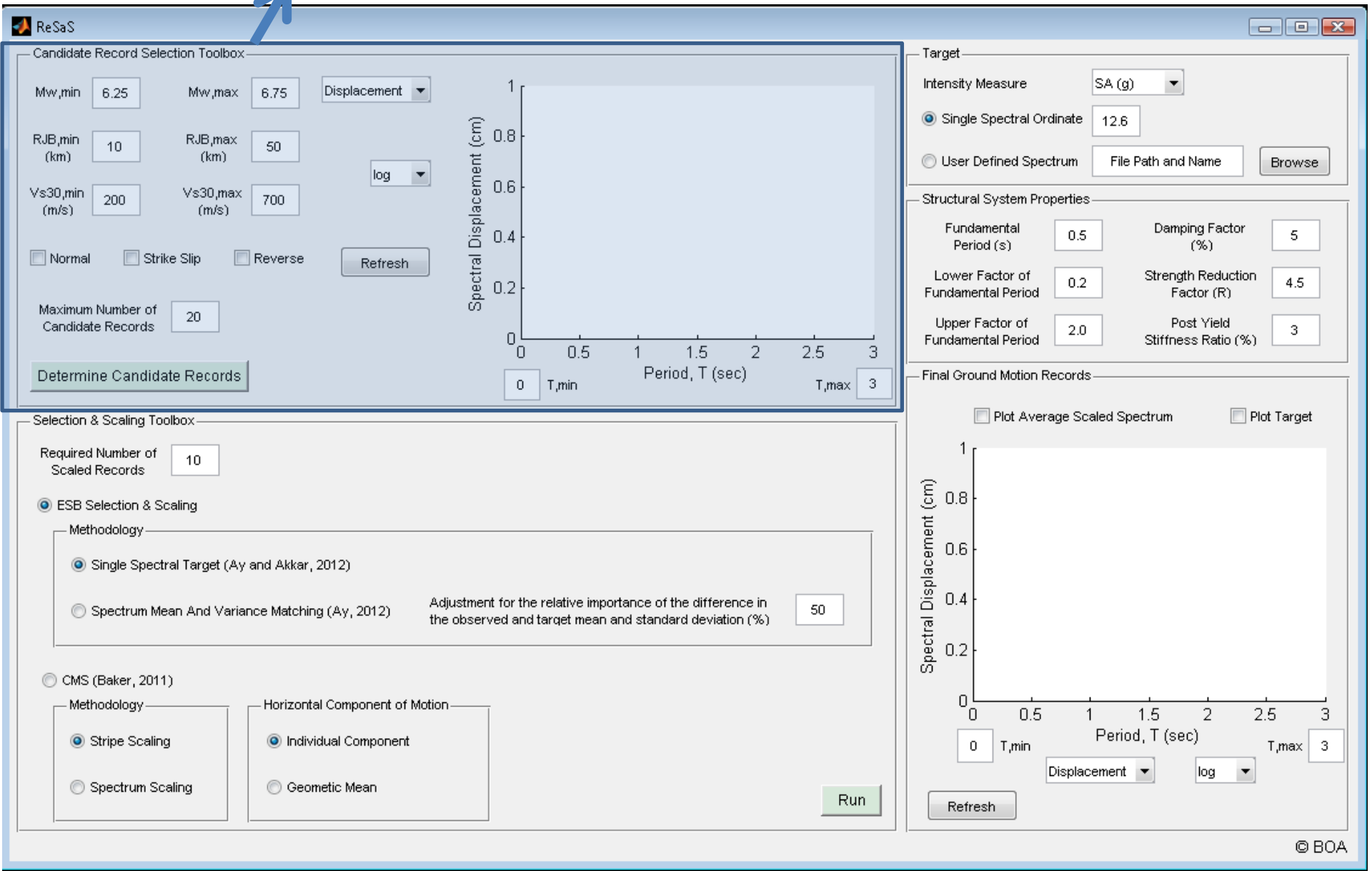
Record**S**election**a**nd**S**caling Program

A MATLAB based GUI (Graphical User Interface) to select & scale ground motion records for nonlinear RHA of Structural Systems

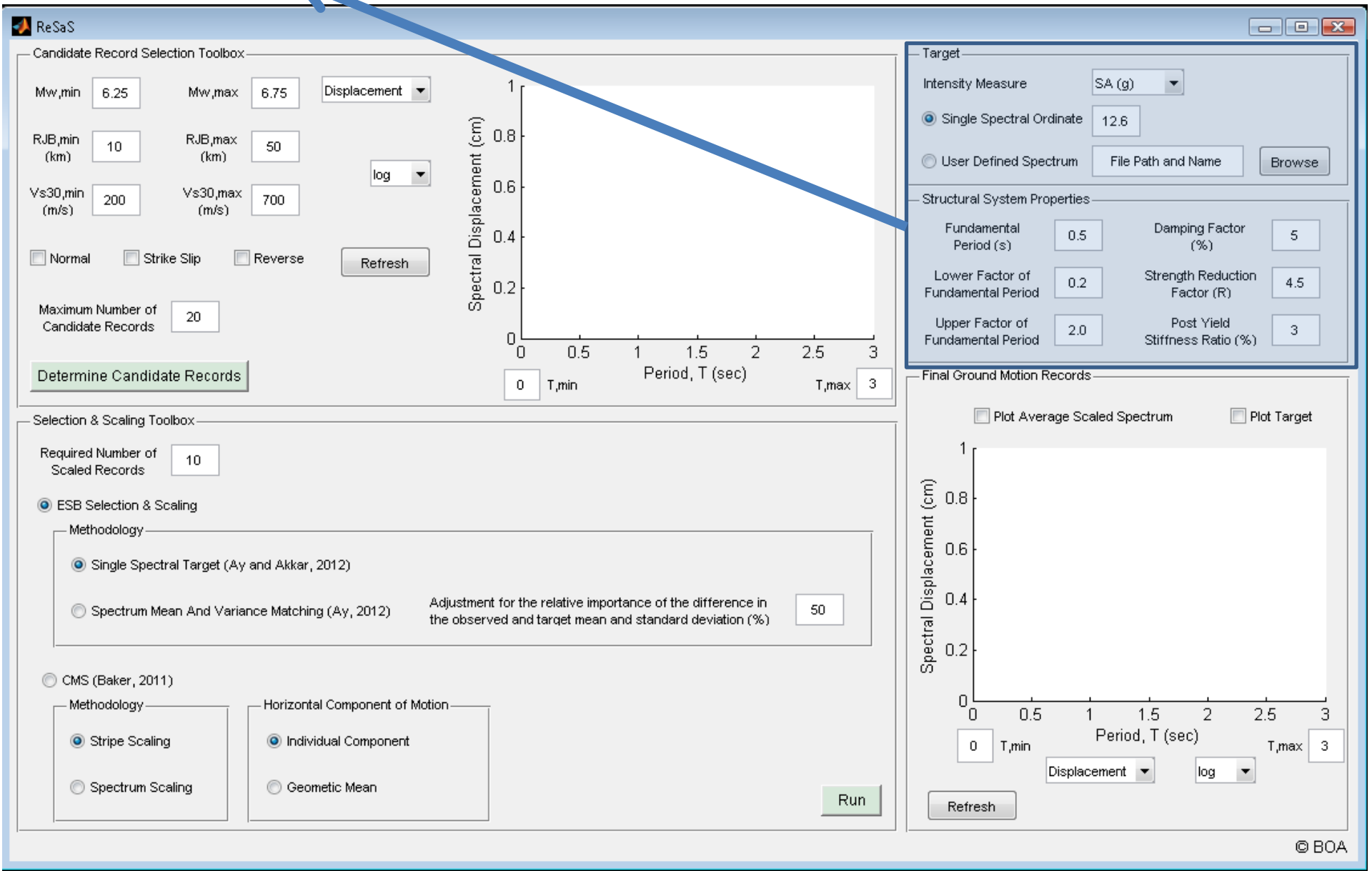
ReSaS – Main Window



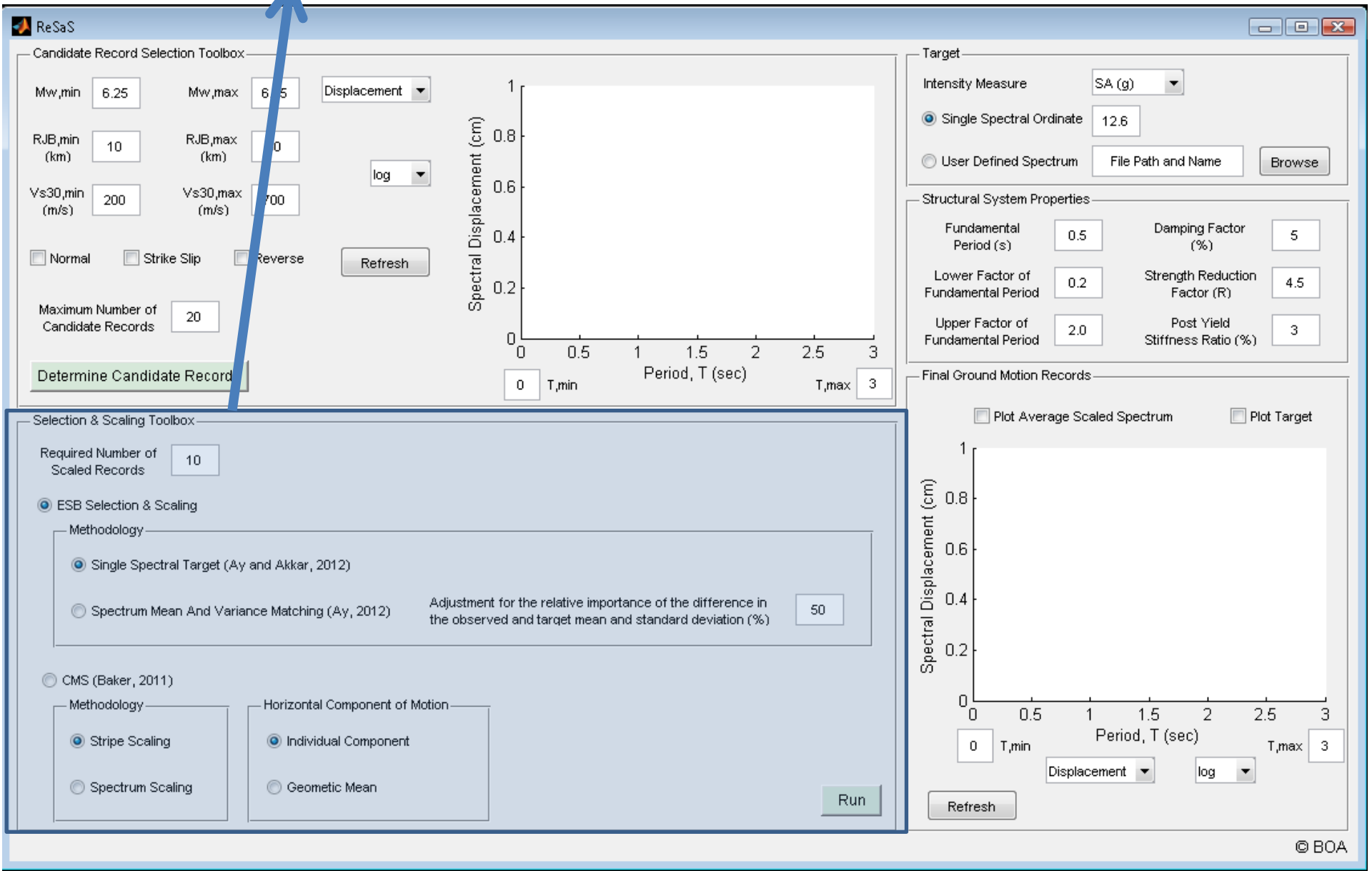
Candidate Record Selection Toolbox



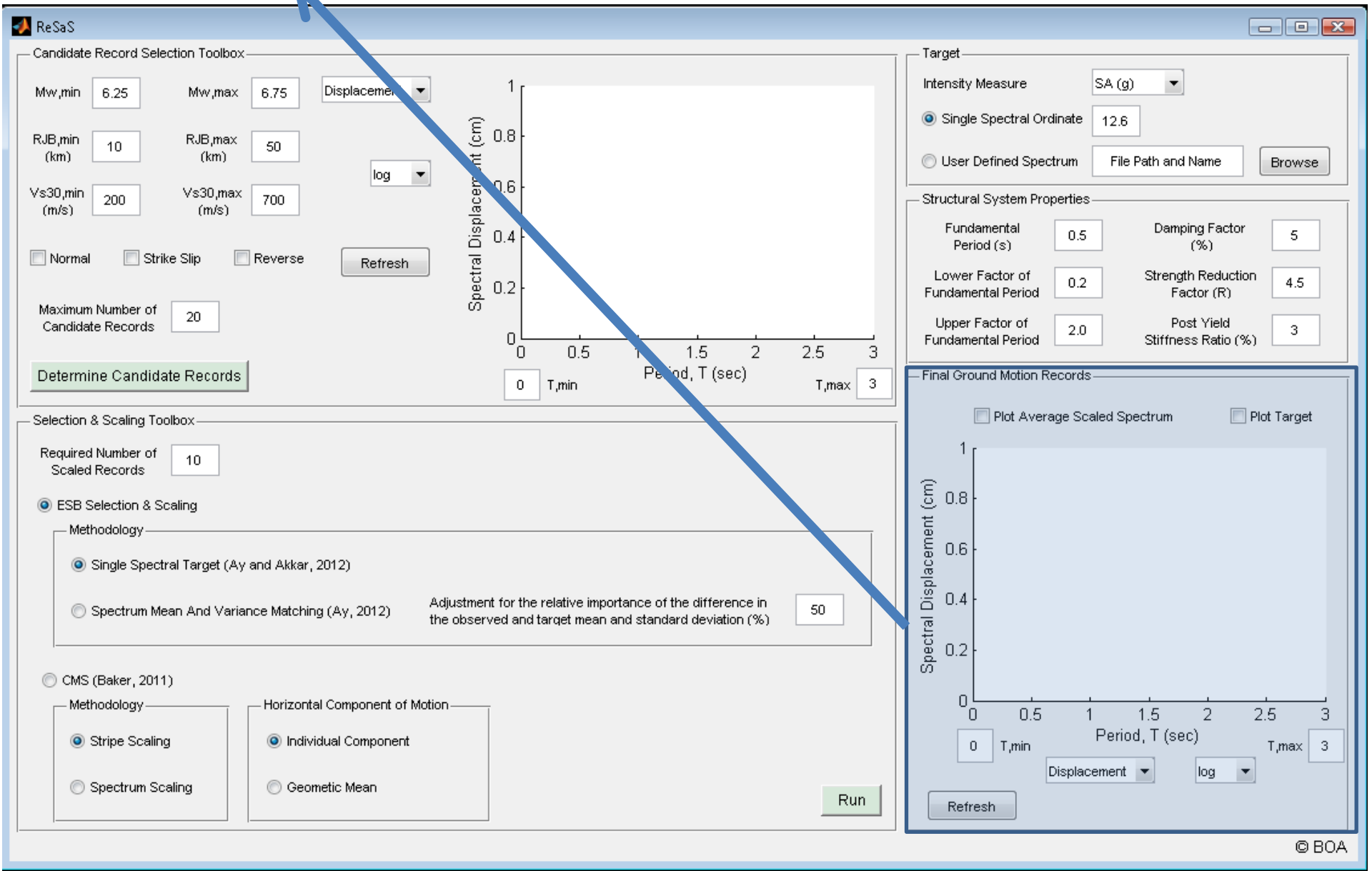
Input: Target & Structural Parameters



Selection and Scaling Toolbox

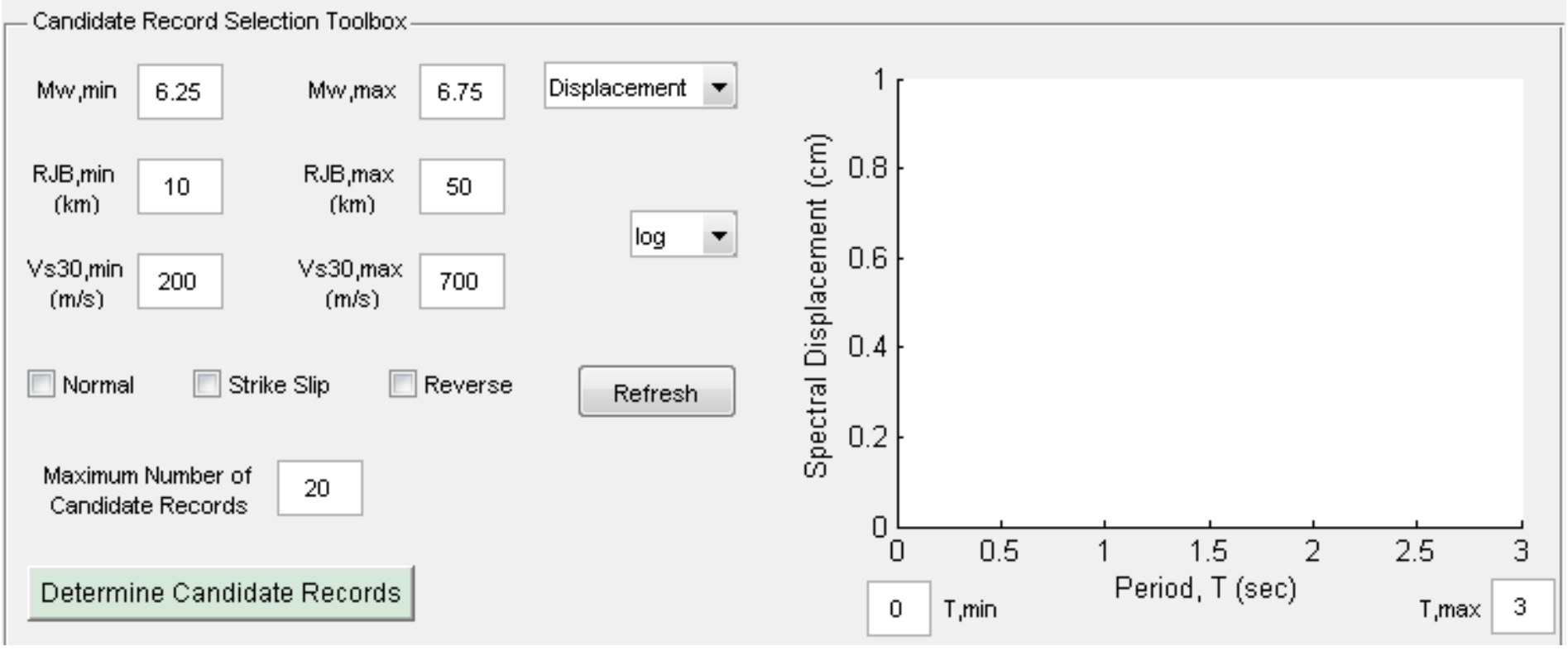


Output: Final Ground Motion Records



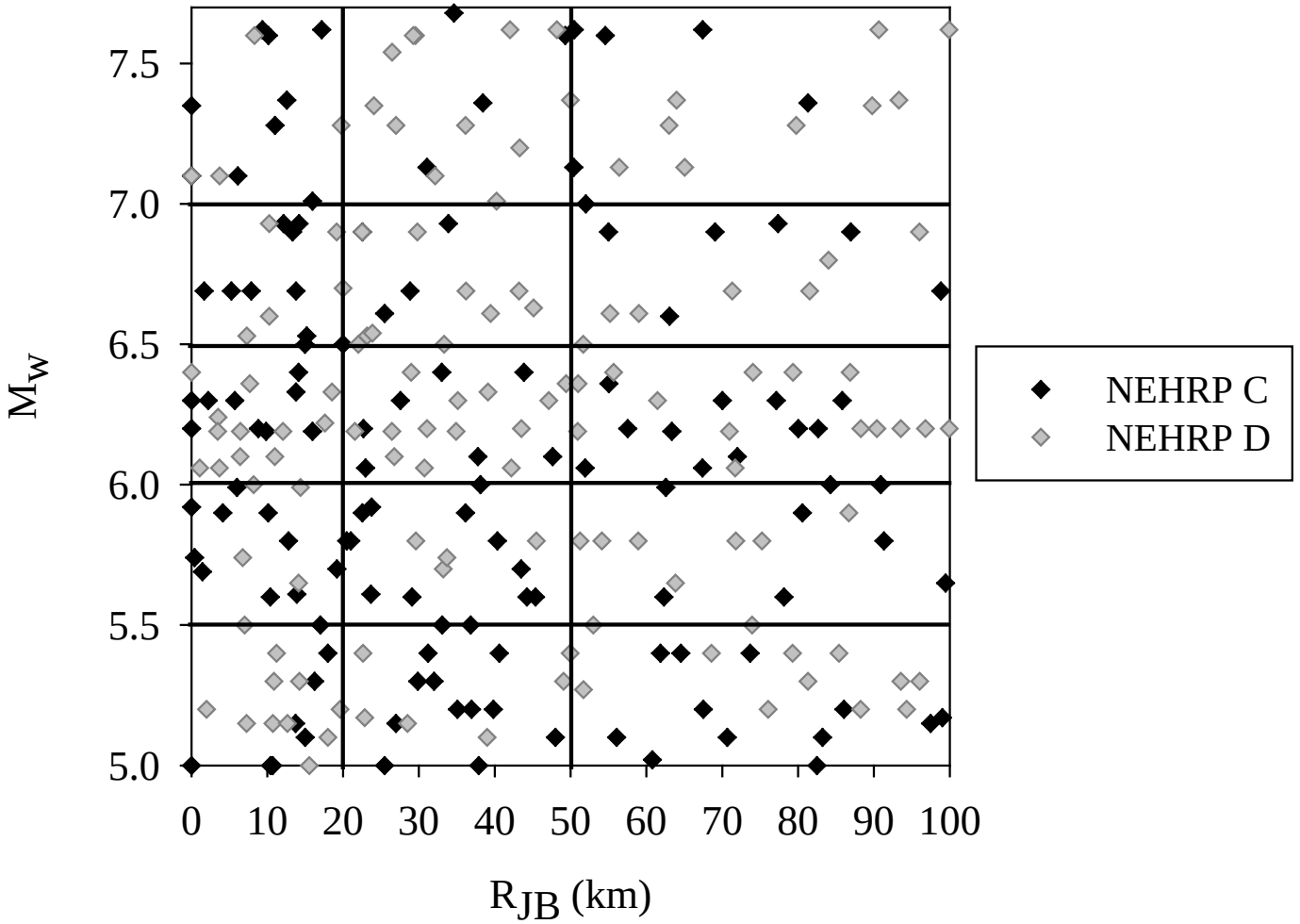
Candidate Record Selection Toolbox

- The program includes 260 ground motion records
- Among these the required number of candidate records can be selected according to the ground motion parameters; M_w, R_{JB}, V_{S30}, Style-of-Faulting



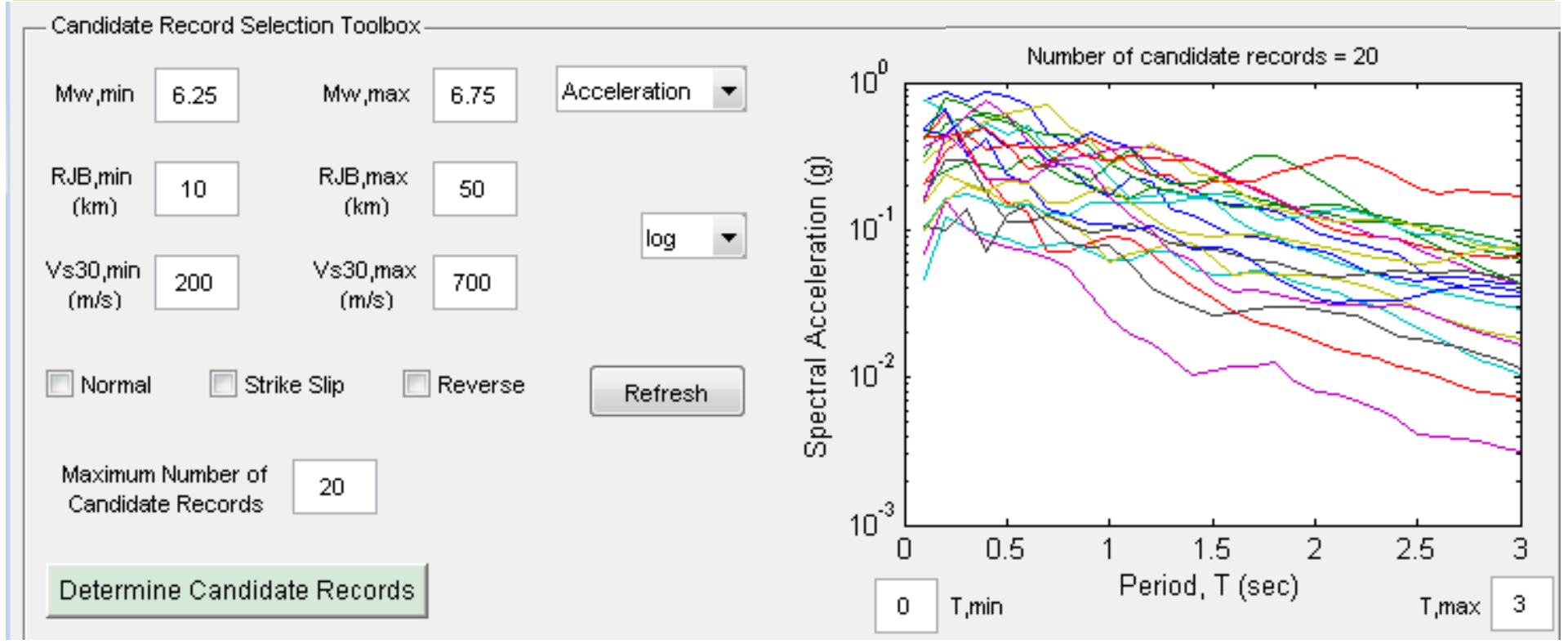
Candidate Record Selection Toolbox

- The program provides relatively homogeneus GM Database to the user

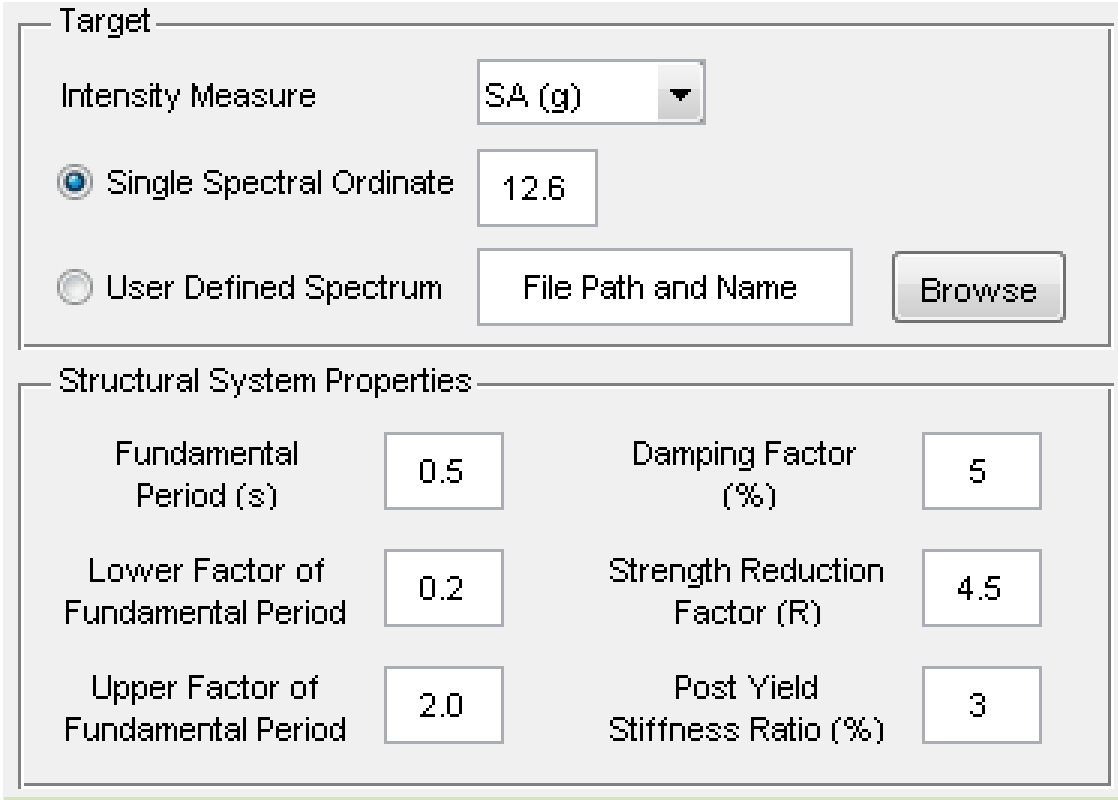


Candidate Record Selection Toolbox

- For the sake of speed, the number of candidate records can be limited by the user



Input: Target & Structural Parameters

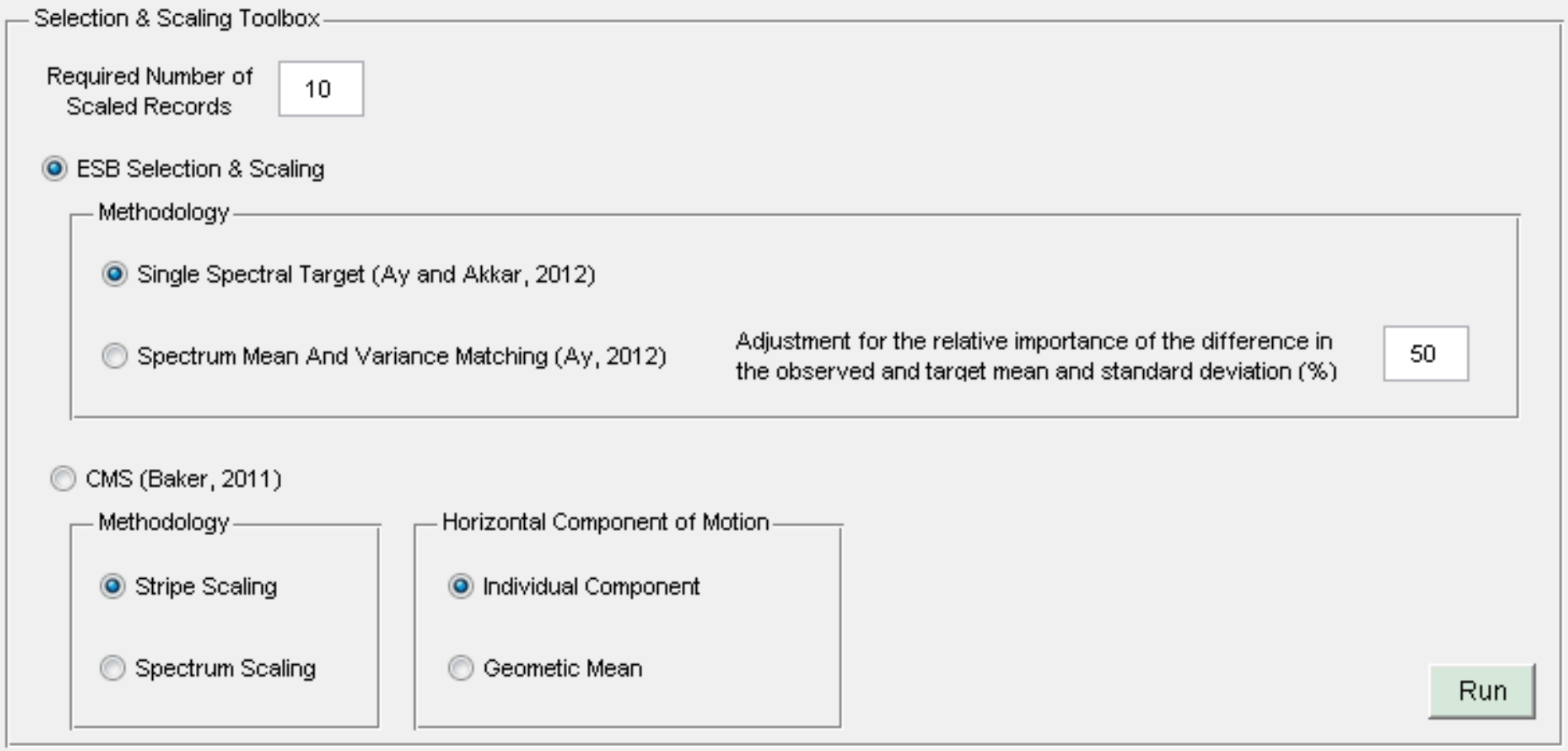


- Target;
  either **single spectral ordinate** or **user defined spectrum** (UHS, CMS, design spectrum, etc.) in terms of **SA** or **SD**

- Structural System Properties
- Period, Upper and Lower boundaries of period
- Strength Reduction and Post-yield stiffness ratio

Selection and Scaling Toolbox

- The main engine use either ESB (EpsilonSigma Based; Ay and Akkar, 2012) or CMS (Baker, 2011) based selection & scaling methodology



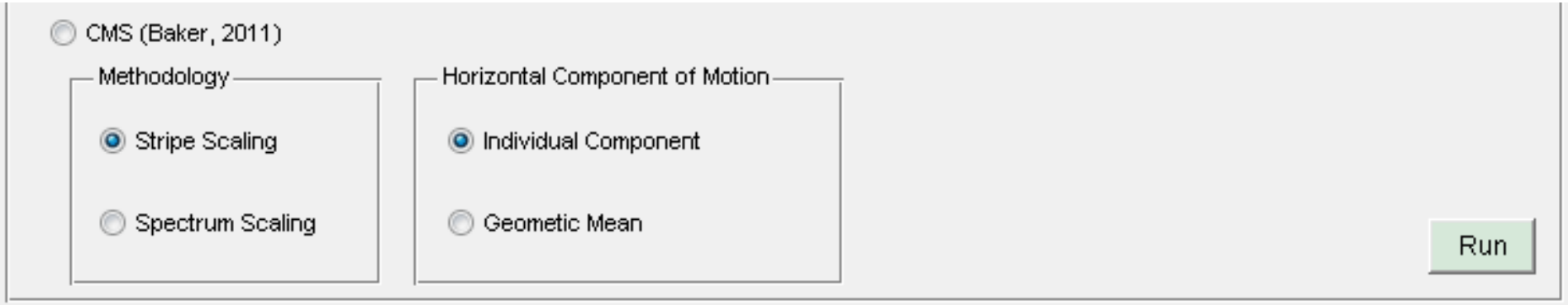
Selection and Scaling Toolbox

- ESB Selection and scaling Toolbox
- Single Spectral Target Matching
- Spectrum Mean and Variance Matching

- Relative importance of the difference in
  Scaled mean & Target Mean vs.
  Scaled variance & Target Variance

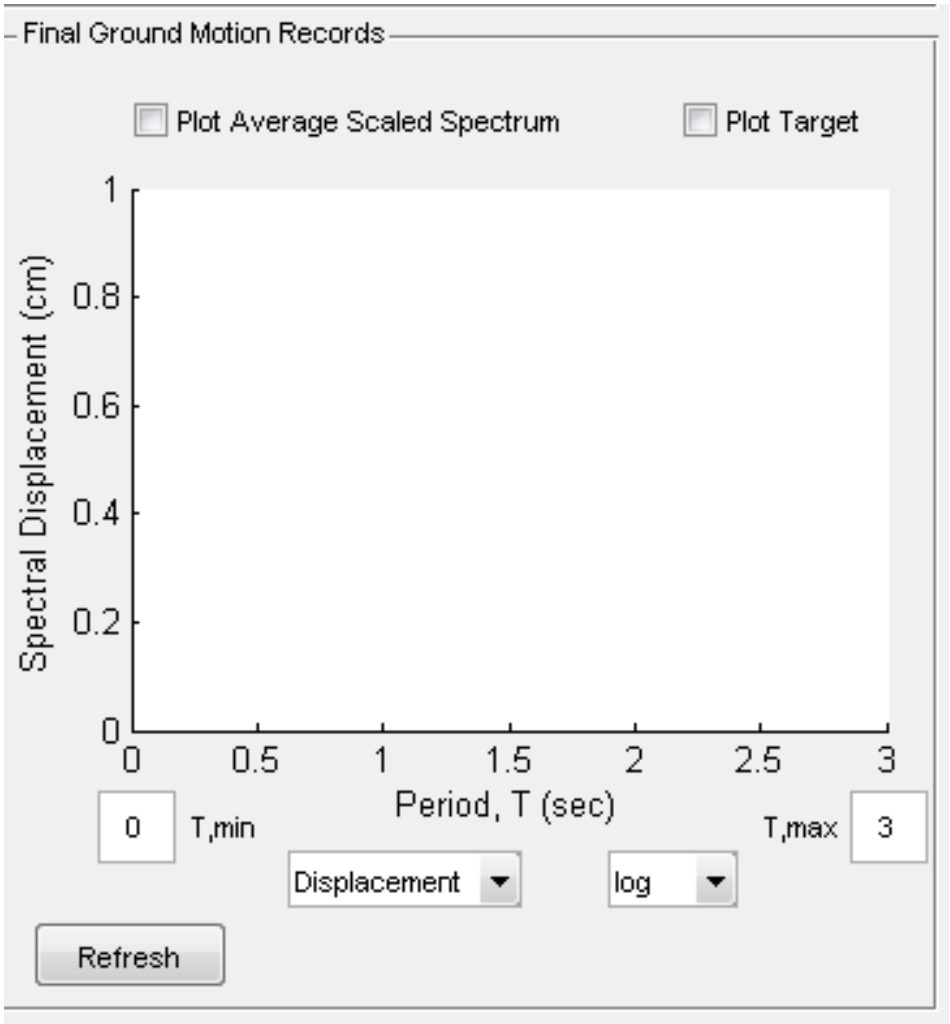
Selection and Scaling Toolbox

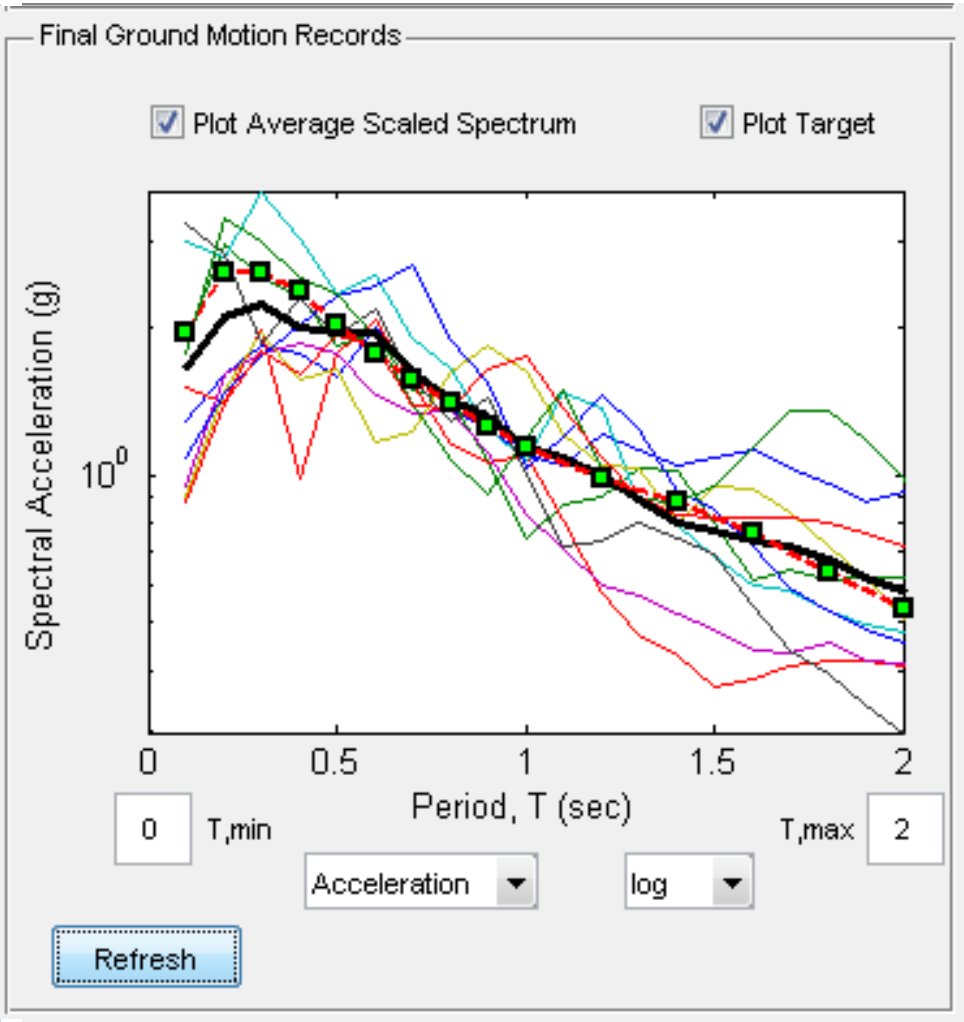
- CMS based selection and Scaling
- Either Stripe or Spectrum Scaling
- Individual or Geometric Mean as the horizontal component definition



Output: Final Ground Motion Records

- To observe the spectra (individual spectrum and corresponding average) of final ground motion recordings
- Also to observe the Target spectrum



Output: Final Ground Motion Records

- To observe the spectra (individual spectrum and corresponding average) of final ground motion recordings
- Also to observe the Target spectrum