STOCHASTIC STRONG GROUND MOTION SIMULATION OF THE SOUTHERN AEGEAN SEA BENIOFF ZONE INTERMEDIATE-DEPTH EARTHQUAKES

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Electronic supplement

In the following we list the input parameter file for program EXSIM_DMB, which can be used for the 2004/10/07 event (M=5.5, h~130Km) and two recording stations (MYKO and ZKR).

```
!Parameter file for program exsim_dmb
! Revision of program involving a change in the control file on this date:
  11/22/11
!
!-----------------------------------------------------------------------
! ******* Input parameters common to SMSIM and EXSIM (in the order in which
!        they appear in the SMSIM parameter file) *******
!-----------------------------------------------------------------------
!
!Title
  Runs for comparing EXSIM and SMSIM
!rho, beta, prtitn, radpat, fs:
3.220 4.560 0.707 0.630 2.000
!gsprd: r_ref, nsegs, (rlow(i), a_s, b_s, m_s(i))  (Usually set
!r_ref = 1.0 km)
   1.0
   1
     1.0 -1.0 0.0 5.5
!q: fr1, Qr1, s1, ft1, ft2, fr2, qr2, s2, c_q
0.4 176.9 -0.095 1 1 2 312.20 0.969 4.0
!path duration (ndur_hinges,
! (rdur(i), dur(i), i = 1, ndur_hinges), durslope)
 2
 0.0 0.0
100   49.04
 0.1563
!site diminution parameters: fmax, kappa_0, dkappadmag, amagkref
! (NOTE: fmax=0.0 or kappa_0=0.0 => fmax or kappa are not used.  I included this
!  to prevent the inadvertent use of both fmax and kappa to control the diminution
!  of high-frequency motion (it would be very unusual to use both parameters
!  together.  Also note that if do not want to use kappa, dkappadmag must also
!  be set to 0.0).
      0.00000    8.400000E-02 0.0 5.5
 !low-cut filter corner, nslope (0 ==> no filter)
```

```
   5.000000E-02          8
!window params: iwind(0=box,1=exp), taper(<1), eps_w, eta_w, f_tb2te, f_te_xtnd
! (see SMSIM manual for the meaning of the parameters)
! As of 11/25/11, I will not use the shape parameters, using the default
! parameters in the call to wind2 instead.  The only parameters I use as of this
! date are iwind and taper.
! BUT: placeholders must be included for eps_w, eta_w, f_tb2te, f_te_xtnd, because some day
! they may be used.
   1 0.05 0.5 0.05 2.0 1.0
!timing stuff: dur_fctr, dt, tshift, seed, nsims, iran_type (0=normal;1=uniform)
! NOTE: these are the SMSIM parameters, but for now (11/25/11) I will read and use
! the current EXSIM parameters, as given in the next uncommented line.
! The reason not to change to the SMSIM parameters is that I do not have the time to
! make sure that the program is revised correctly.   The tpadl and tpadt params do not
! automatically account for magnitude, and if the values are not changed each time amag
! is changed they may be unnecessarily long for small events and too short for large
! events.  It is up to the user to specify adequate values (these values are adjusted
! to appropriate sizes automatically in SMSIM).
!    1.3  0.002 7.0 123.0 100 0
!tpadl, tpadt, dt, seed, nsims
 5.0 2.0 0.002 309.0 40
!
!-------------------------------------------------------------------------
! ******* Input parameters specific to EXSIM *******
!-------------------------------------------------------------------------
!
! SOURCE PARAMETERS:
!
!MW, Stress
       5.500000      130.000000
 !lat and lon of upper edge of fault
      36.267399       26.682301
 !strike,dip, depth of fault
      75.000000       81.000000      126.000000
!fault type (S=strikeslip; R=reverse; N=normal; U=undifferentiated)
! (Only used if Wells and Coppersmith is used to obtain FL and FW).
  S
!fault length and width, dl, dw, stress_ref
!Note: Force program to use Wells and Coppersmith (WC) for FL and/or FW if
! either entry = 0.0.
! If Wells and Coppersmith are used to obtain FL and/or FW, the WC values are
! modified to account for the scaling implied by differences in the stress
! specified above and a stress that is assumed to be valid for the generic WC
! relations; this stress is stress_ref. The value of 70 bars is an educated
! guess for stress_ref, but it is not based on a quantitative analysis.
! The WC values of FL and/or FW are multiplied by the factor
```

```
! (stress_ref/stress)^(1/3).
! Note that four entries on the following line are needed as placeholders,
! even if not used)
  6.680   6.680   1.580   1.580  130.000 !
!vrup/beta
  0.8
!hypo location in along fault and down dip distance from the fault
!reference point (an upper corner)(-1.0, -1.0 for a random location);
!number of iterations over hypocenter (need an entry, but only used if
!either of the first two values are -1.0, indicating a random location)
 -1.0 -1.0 10
!Enter type of risetime (1=original, 2=1/f0)
 2
!DynamicFlag (0=no), PulsingPercent
  1   50.0
!iflagscalefactor (1=vel^2; 2=acc^2; 3=asymptotic acc^2 (dmb))
  2
!islipweight = -1  -> unity slip for all subfaults,
!islipweight =  0  -> specify slips read from text file,
!islipweight =  1  -> random weights
  -1
! Text file containing matrix of slip weights (need a placeholder
! even if do not assign the slip weights
  slip_weights.txt
!deterministic flag,gama,nu,t0, impulse peak
  0   1.0  90.0  4.0  10.
!
!-------------------------------------------------------------------------
! PARAMETERS RELATED TO PATH AND SITE:
!-------------------------------------------------------------------------
!
!Name of crustal amplification file:
MYKO.dat      # (for station MYKO)  (ZKR.dat   # for station ZKR) – See Table 2 of manuscript
!Name of site amplification file:
BGR_N.txt.mod   # (See Table S1)
!
!-------------------------------------------------------------------------
! PARAMETERS RELATED TO COMPUTATIONS OF AVERAGES:
!-------------------------------------------------------------------------
!iflagfas_avg (1=arithmetic, 2=geometric, 3=rms: USE 3!)
  3
!iflagpsa_avg_over_sims (1=arithmetic: USE 1!, 2=geometric, 3=rms)
! NOTE on 22 November 2011.  I used to advise using the geometric mean, but in
! the course of working on a paper with Eric Thompson on RV calculations in SMSIM
! I found that my TD calculations have used geoemtric averages until 03 August 1994,
! when I switched to arithmetic averages, apparently as a result of a recommendation
```

```
! by Bill Joyner.
  1
!iflagpsa_avg_over_hypos (1=arithmetic, 2=geometric, 3=rms)
! The program first computes the average ground-motion intensity measure over the number
! of simulations for a given hypocenter, and then computes an average of these over the
! hypocenters.  There might some justification to use a geometric mean for this.
  2
!-------------------------------------------------------------------------
! PARAMETERS RELATED TO THE OUTPUT:
!-------------------------------------------------------------------------
!Write acc, psa, husid files for each site?
 Y
!Output file names stem:
130.0b_0.084k_126.0MYKO (          # 130.0b_0.084k_126.0ZKR for station ZKR)
! %damping of response spectra
 5.0
!# of f and Min and Max F for response spectraut
  100 0.01   99.
!no. of frequencies for summary output (10 max):
 4
!frequency (-1.0, 99.0 for pgv, pga):
 -1.0 99.0 0.5 5.0
!-------------------------------------------------------------------------
! PARAMETERS RELATED TO THE SITES AT WHICH MOTIONS ARE COMPUTED:
! Put this last for convenience in editing the params file.  For example, the site list
! can be very long, but by inserting "stop" in the list it is easy to select a small subset
! of site at which motions will be computed.
!-------------------------------------------------------------------------
!Site coord flag (1=lat,long; 2=R,Az; 3=N,E)
  1
!If "Y" below and strike = 0.0:
!  if site coord flag = 2, move origin of the radial line to the midpoint of
!                     the top edge of the fault
!  if site coord flag = 3 and siteLocation(1) = 0, redefine
!                     siteLocation(1) = 0 to be the midpoint of the
!                     top edge of the fault (so that the sites will be
!                     along a line normal to the midpoint)
!  if site coord flag = 3 and siteLocation(2) = 0, redefine
!                     siteLocation(1) = 0 to be the far end of the fault,
!                     so that the sites are along a line along the
!                     strike of the fault
 N
!Coordinates of each site (siteLocation(1), siteLocation(2)):
      37.482201  25.384399   # For station MYKO    (35.11470     26.216999 # For station ZKR)
 Stop
```

Table S1. Site amplification file for B soil class (Klimis et al, 2006).