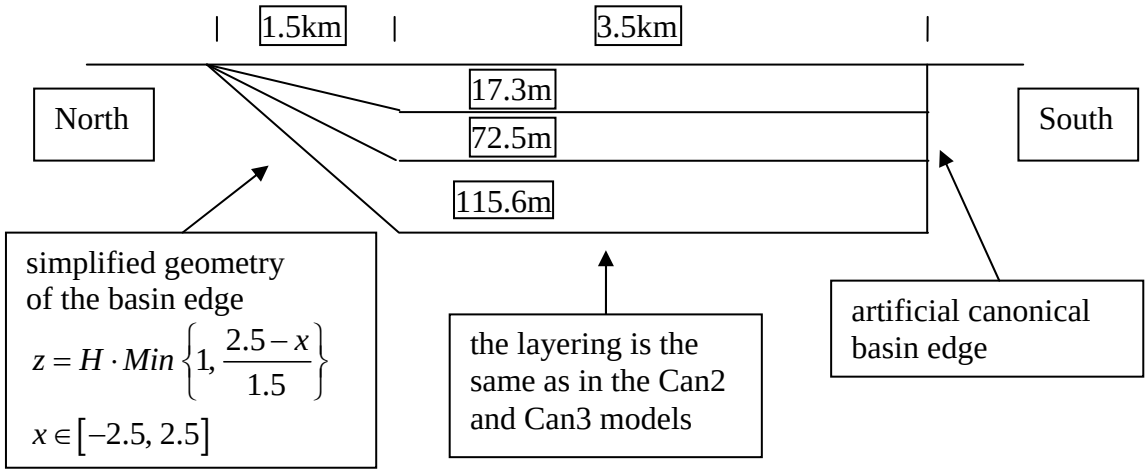
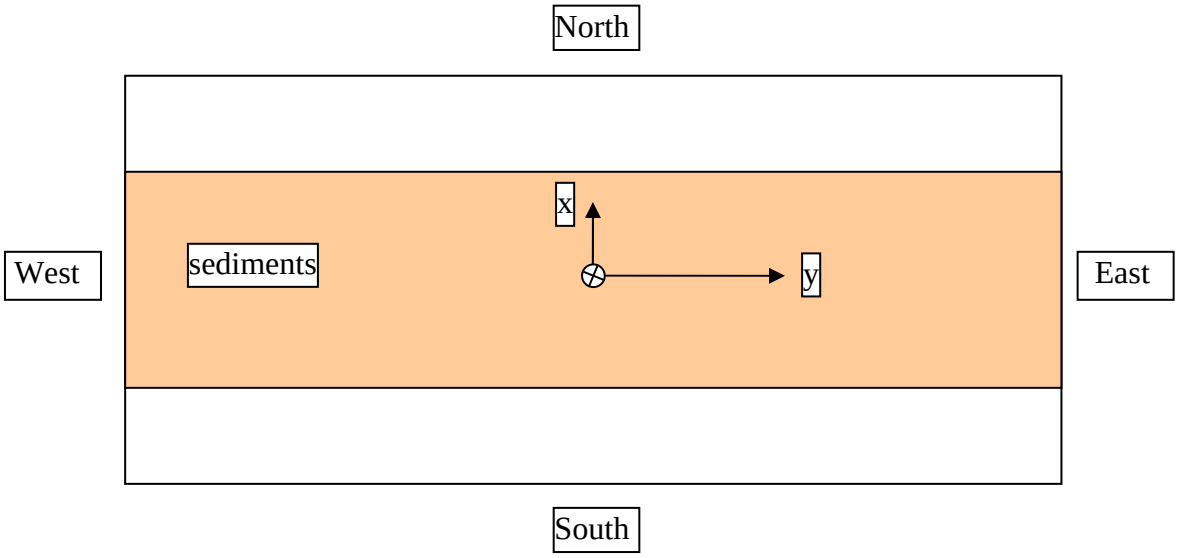
Date of Issue: 4. November 2011

Can4

Purpose

Assess the precision of modeling in a basin with homogeneous layers inside the basin with a wavefield generated by a point DC source in depth. The three layers represent the layering below the TST station in the 3D Mygdonian basin model I2c of the E2VP-I project.





Coordinate System

Right-handed Cartesian, *x* positive North, *y* positive East, *z* positive downward, all coordinates in meters.

Grid

The original reason for performing additional simulations for the set of canonical models is to clarify the differences between solutions submitted by teams for the Mygdonian basin model, mainly I2c, within the E2VP-I. Therefore the simulations for the canonical models have to be performed using the spatial discretizations used for simulating the submitted E2VP-I solutions. In particular, because the three layers represent the layering below the TST station in the 3D Mygdonian basin model I2c, the spatial discretization for the Can2 model should be identical (or, if really inevitable, at least as close as possible) with the one used originally at the TST site.

New participants of the E2VP-II may design their spatial discretization with respect to the requirement on the frequency range – see the section below.

Minimum vertical size of the model = 5000 m

Material Properties

local thickness	H [m]	v_p [m/s]	v_s [m/s]	density [kg/m^3]	Q_p	Q_s
0 – z (x, H)	17.3	1500	200	2100	Inf.	Inf.
0 – z (x, H)	72.5	1800	350	2100	Inf.	Inf.
0 – z (x, H)	115.6	2500	650	2200	Inf.	Inf.
Inf.	Inf.	4500	2600	2600	Inf.	Inf.

Tab. 1 Material parameters and thicknesses of the layers. H denotes a thickness of a layer in the flat part of the basin, the local thickness relates to a local thickness of a layer in the Northern edge with the sloping interface.

Source

Point double-couple.

Strike 22.5˚, Dip 90.0˚, Rake 0.0˚ ($\Phi_S = 22.5°, \quad \delta = 90°, \quad \lambda = 0°$)

$M_0 = 10^{18}$ Nm.

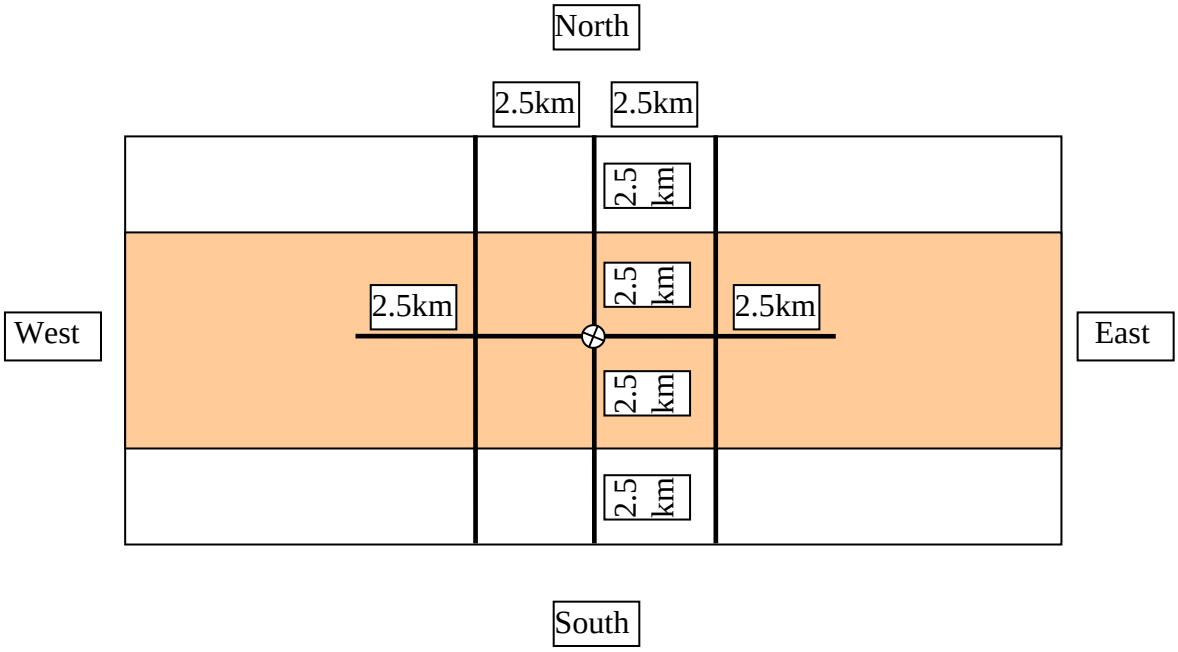
The moment time history is given in file moment_time_history_for_Can2-Can5.txt

Source depth = 3 000 m. Taking the epicenter halfway between the Northern and Southern margins of the basin as the origin of the coordinate system, the source is at (0, 0, 3 000) m.

Receivers

The receiver profiles are shown in the figure (thick lines). The receiver spacing in sediments is 100m, the one in the halfspace 500m.

The receiver positions are specified in the file rec_coordinates_for_Can4_Can5.txt



Time Window

Time window for all receivers is 0 – 50 s.

Frequency Range

Note for those who did not participate in the E2VP-I simulations for the I2c model: the simulation for I2c was required to be accurate enough up to 4 Hz.

Output Information

Time histories of particle velocities (in meters/sec) for all receivers.
Required time step is 0.05 s.
To ensure uniformity in any comparison, do not apply any additional filtering to time series apart from the specified source function.