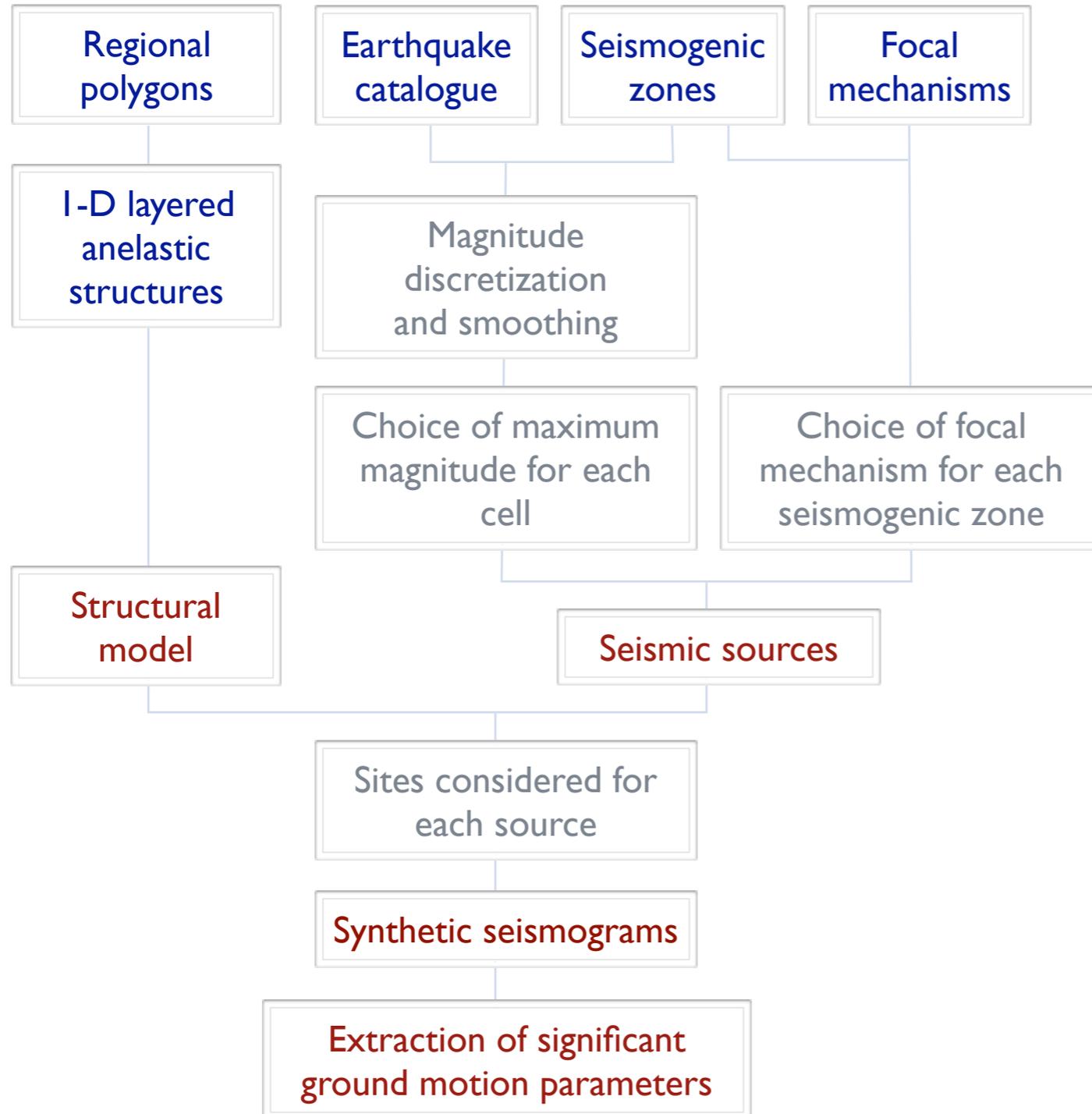


Multiscale Hazard Scenarios

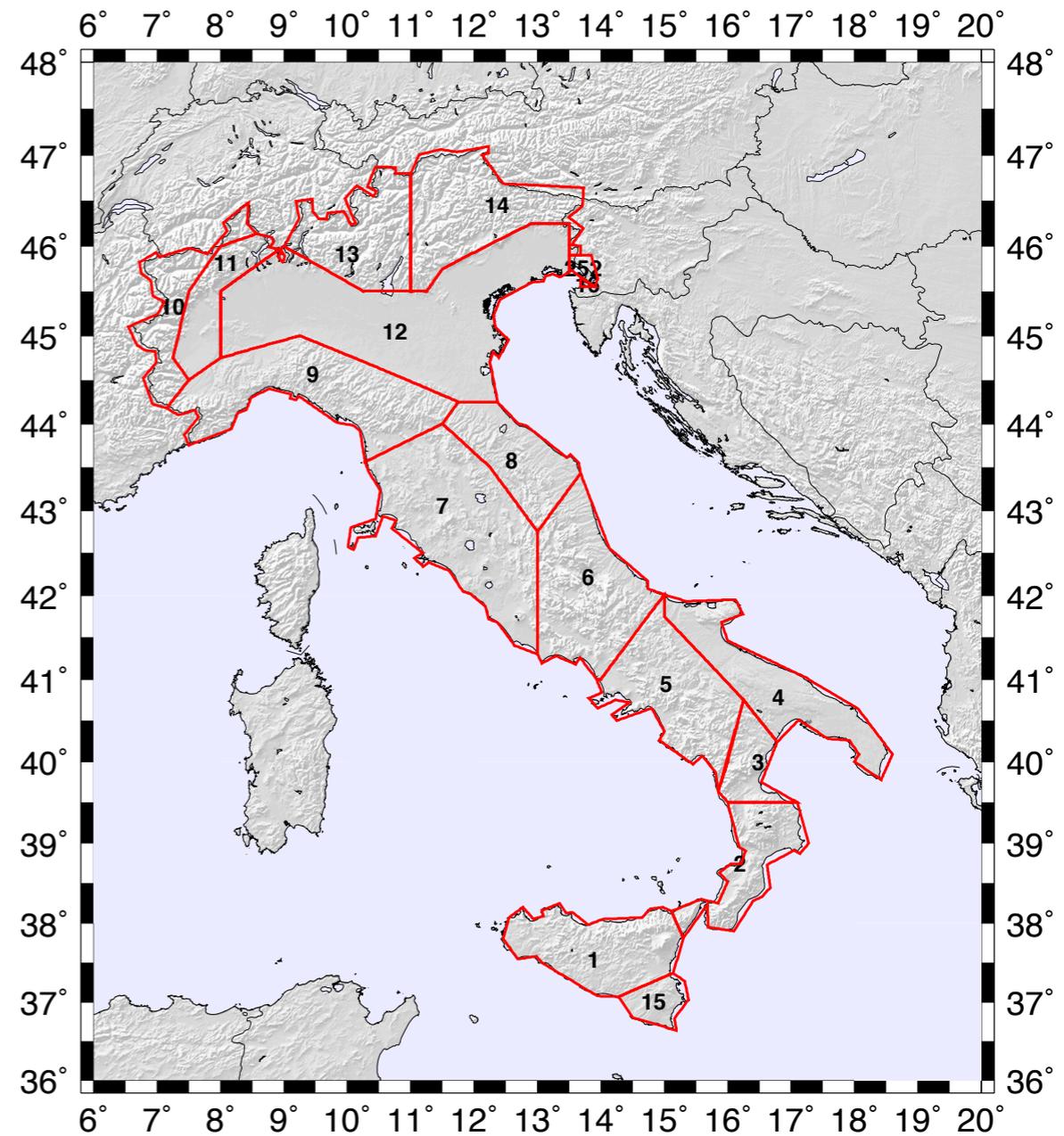
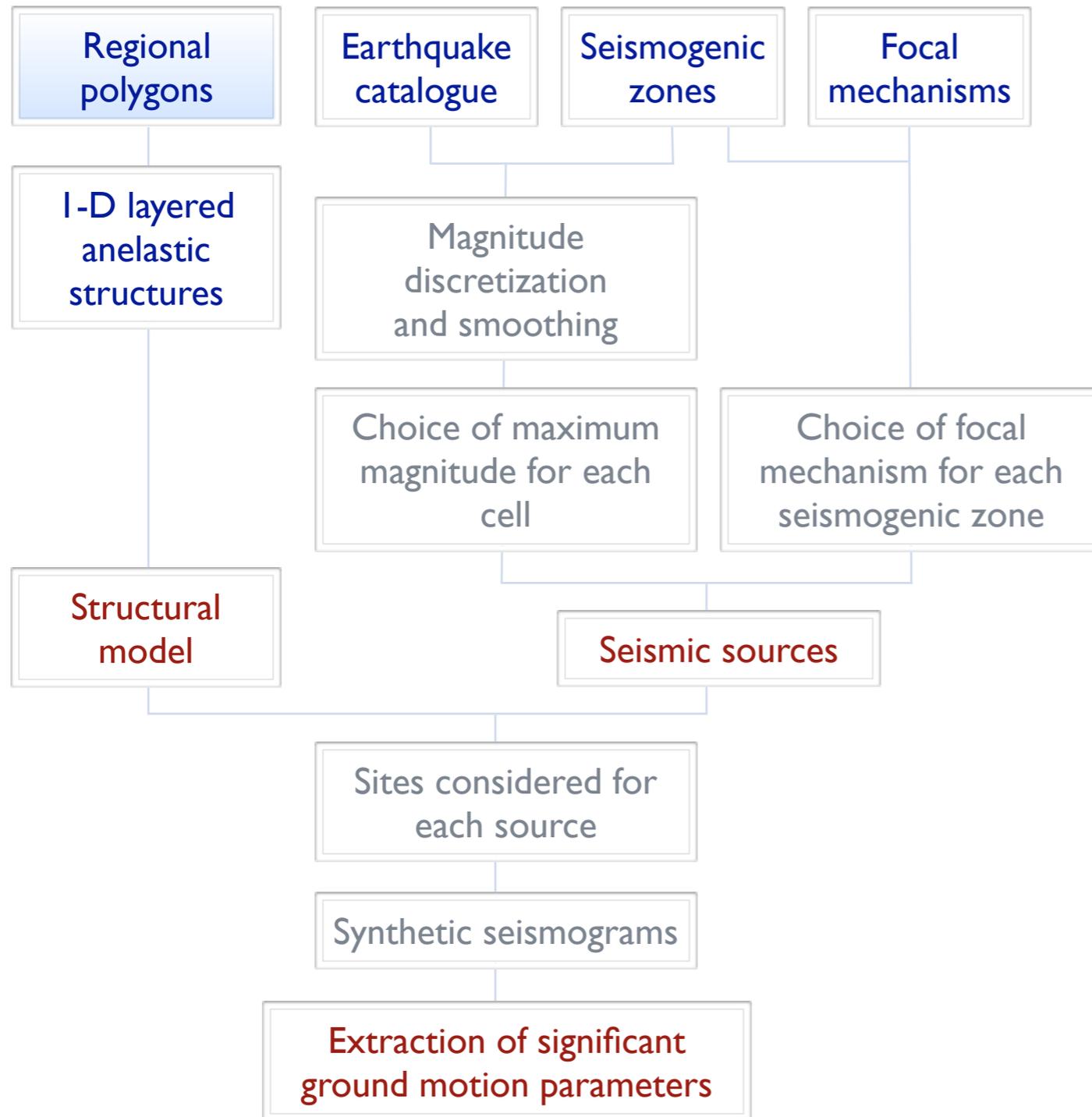
Regional seismic hazard scenarios
(ground motion at bedrock)

Regional Scale - NDSHA

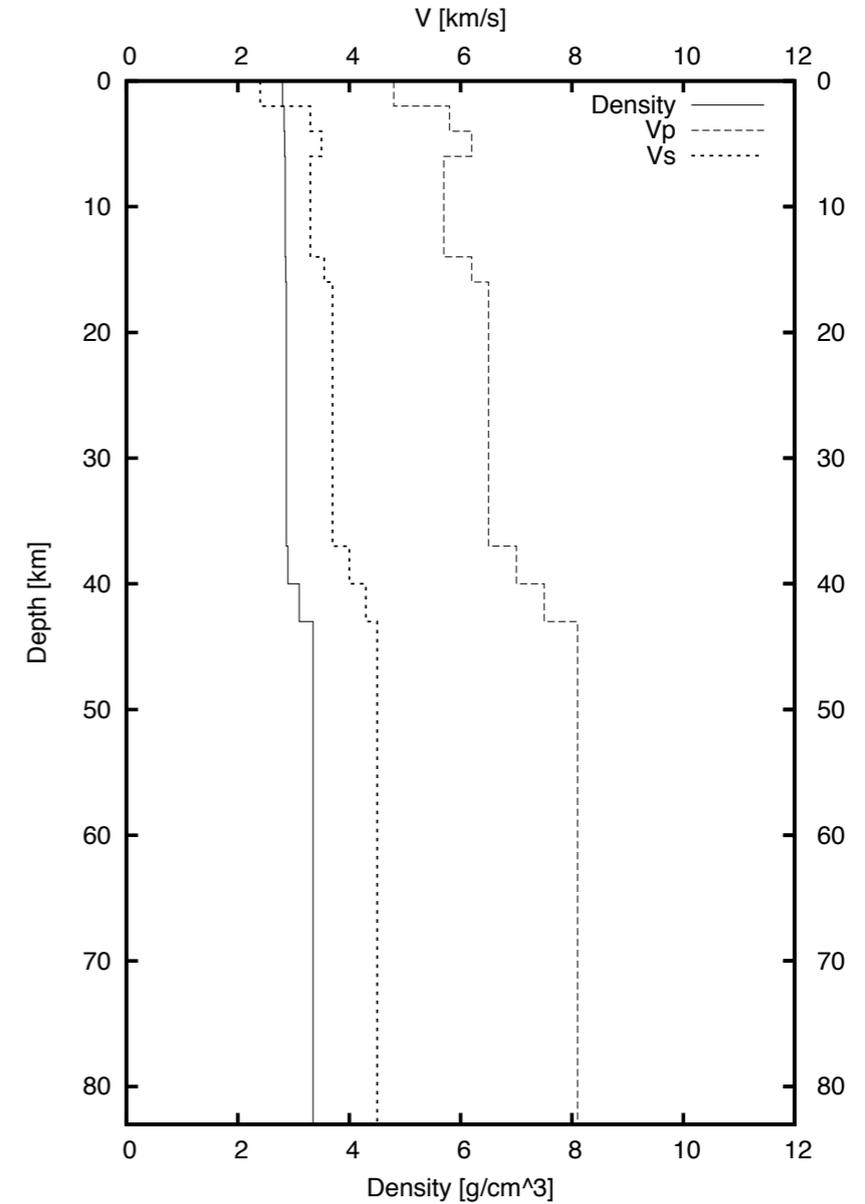
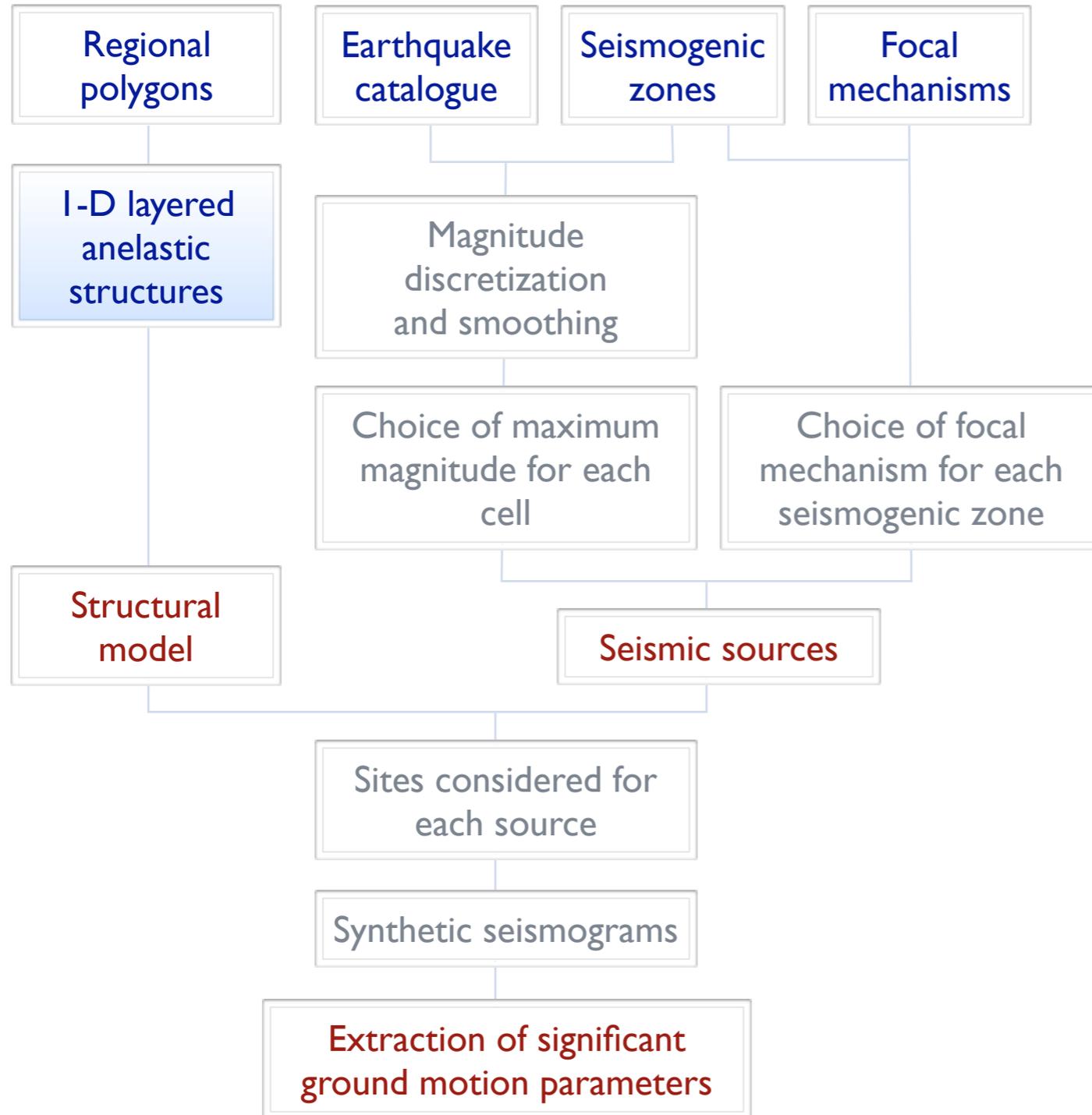


- Seismic zonation based on the computation of synthetic seismograms on the nodes of a grid that covers the study area
- Average structural properties
- Simple source model (scaled point source)
- Cut-off frequency 1 Hz
- Maps of peak displacement, velocity and Design Ground Acceleration

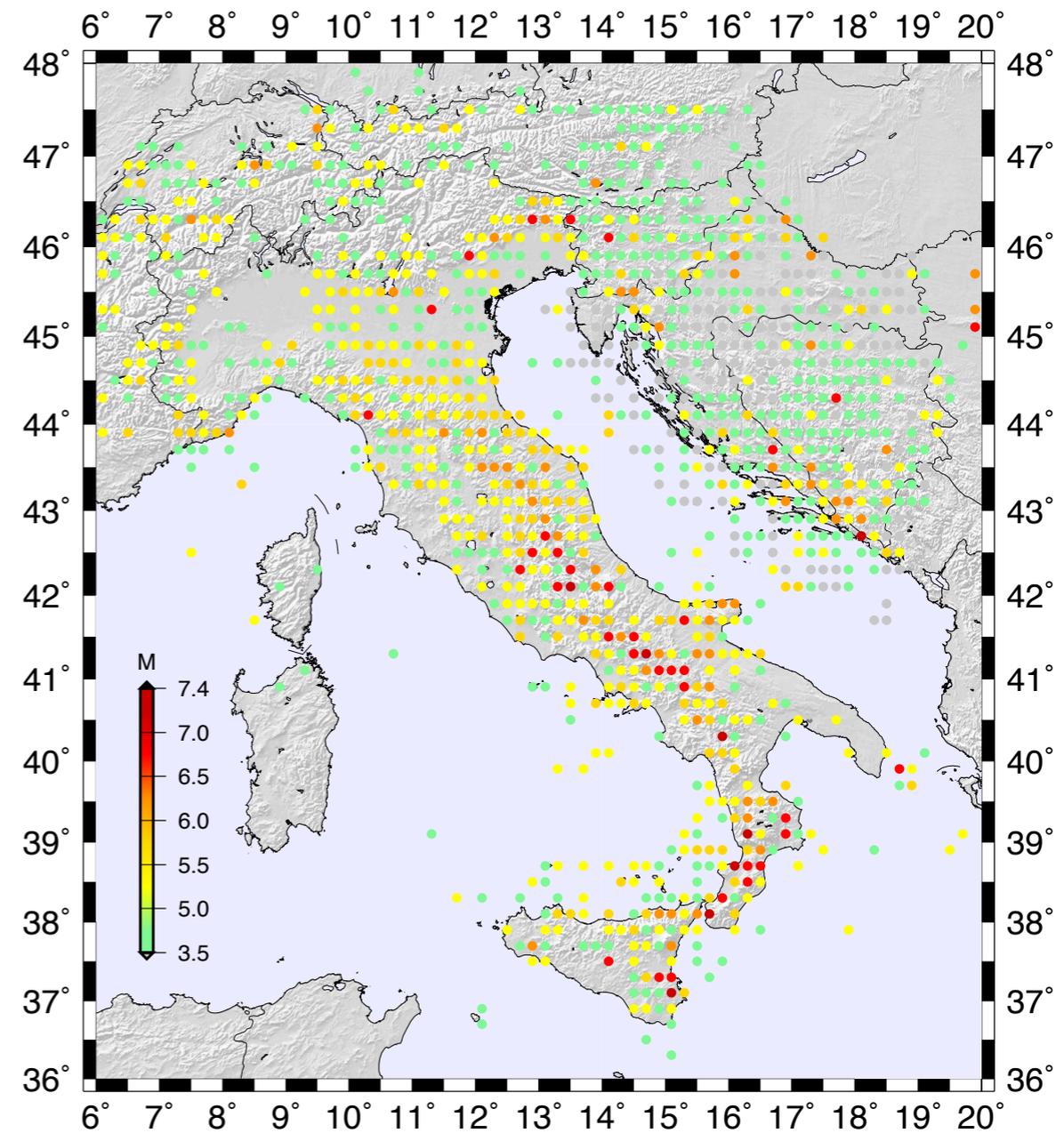
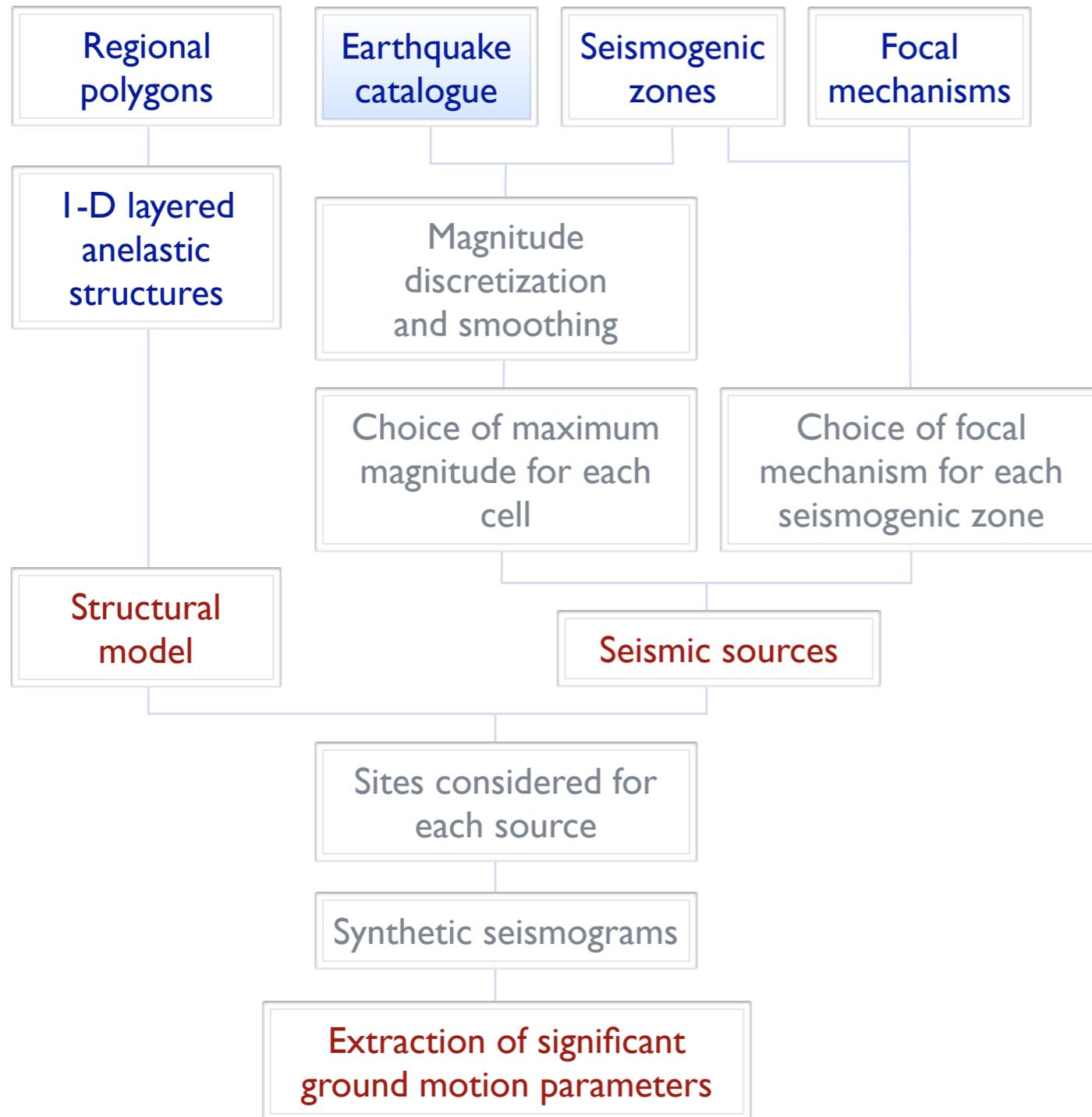
Regional Scale - Structural models



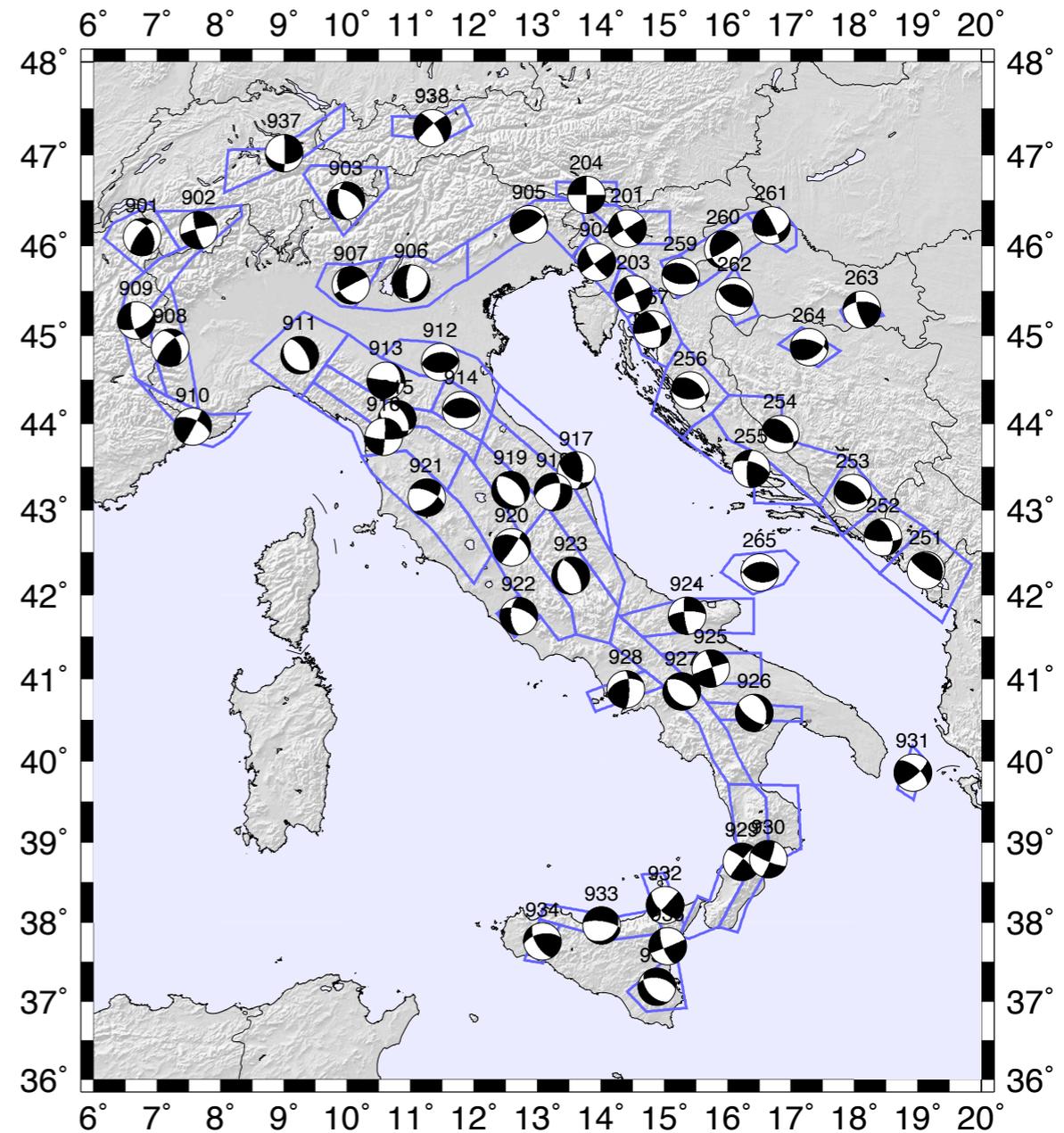
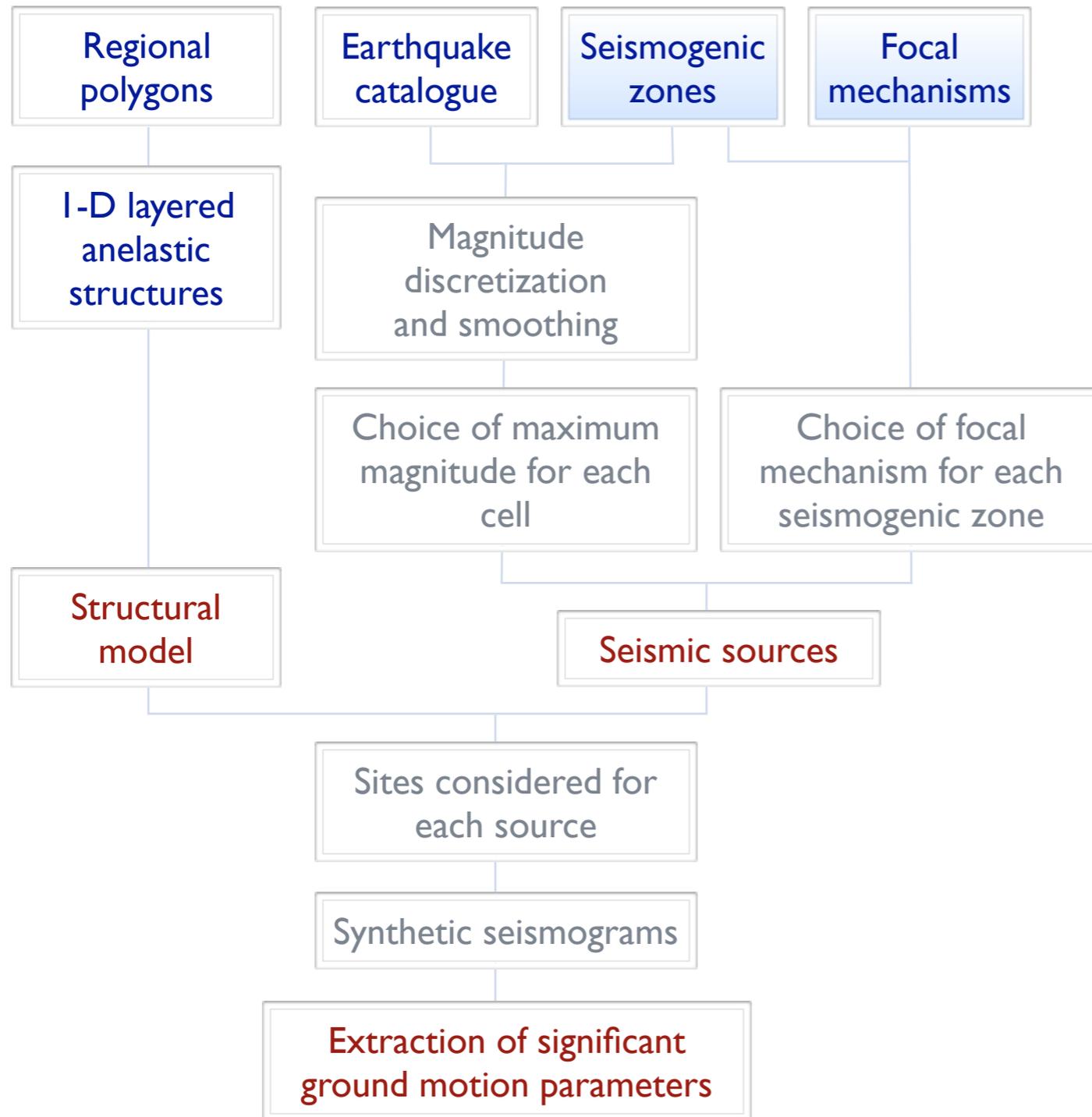
Regional Scale



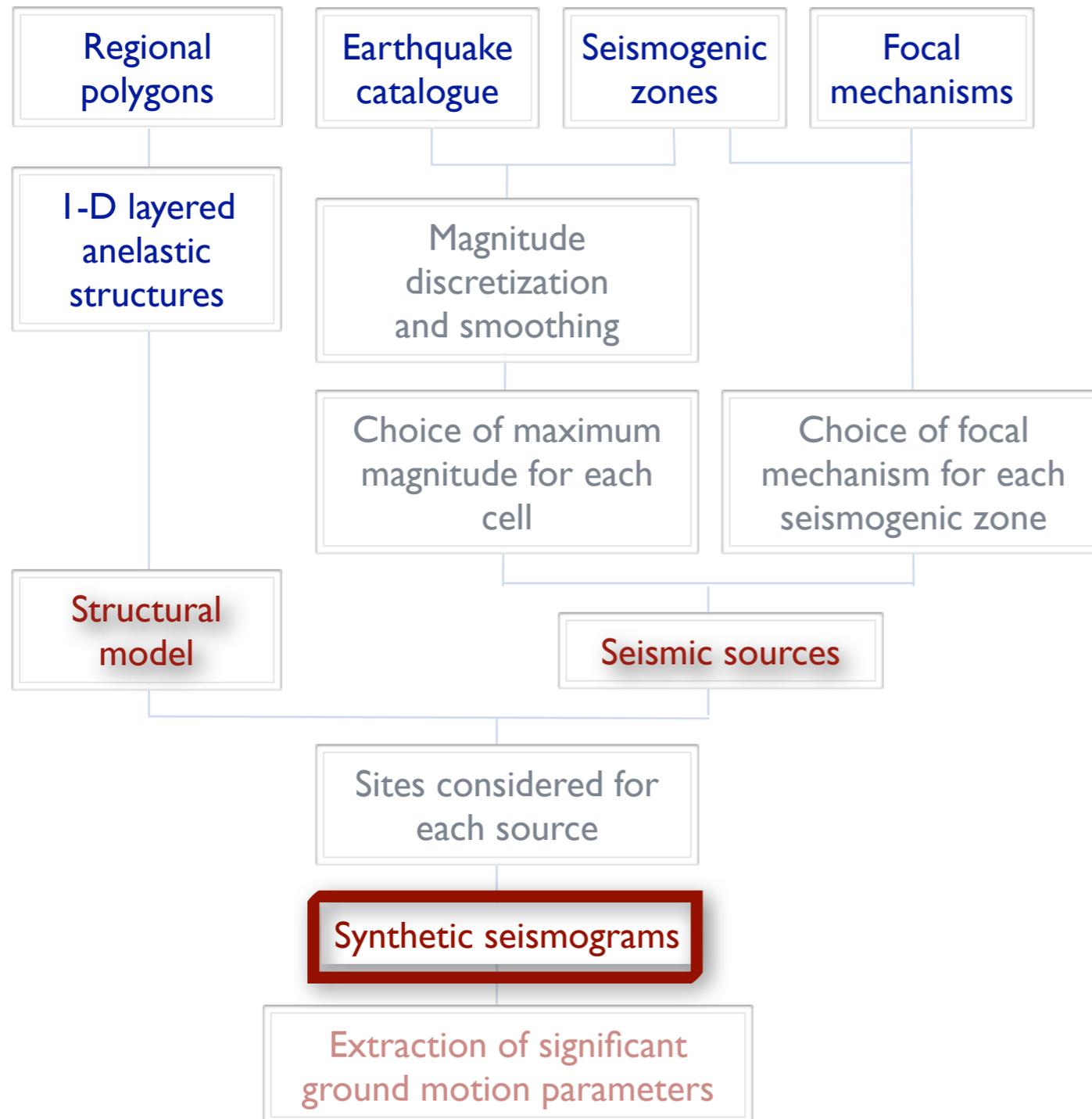
Regional Scale - Historical seismicity



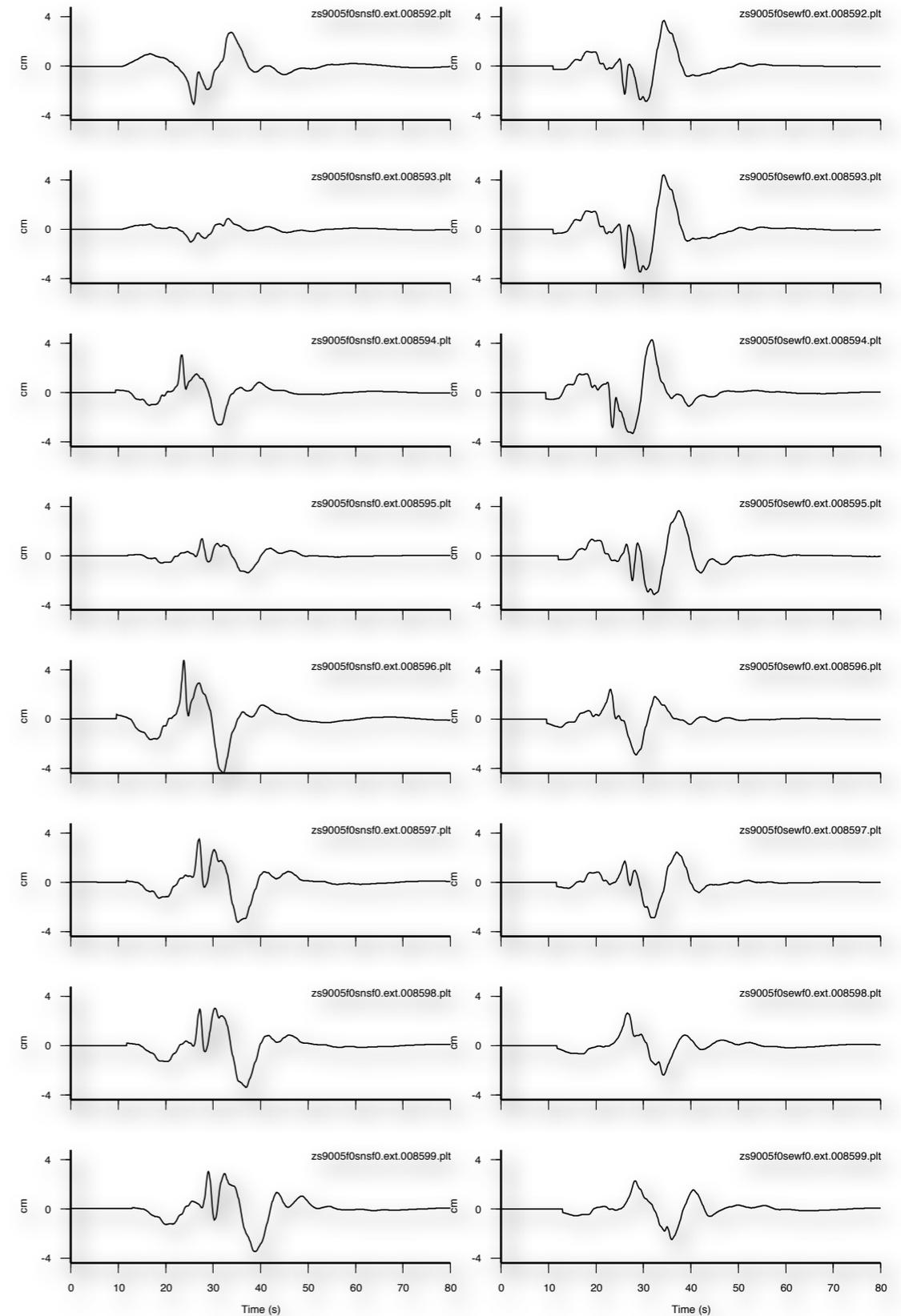
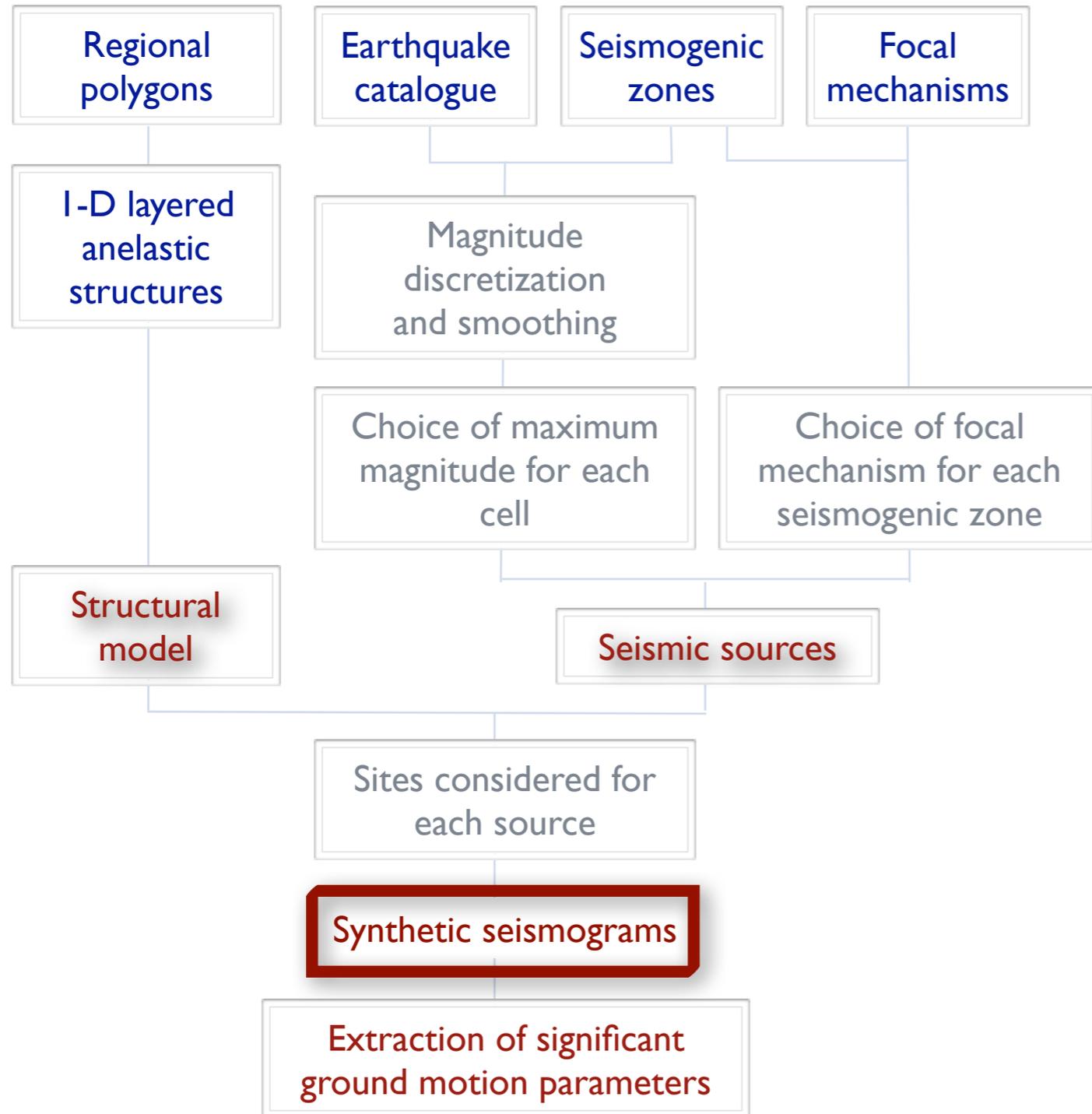
Regional Scale - Tectonic setting



Regional Scale - Seismograms computation

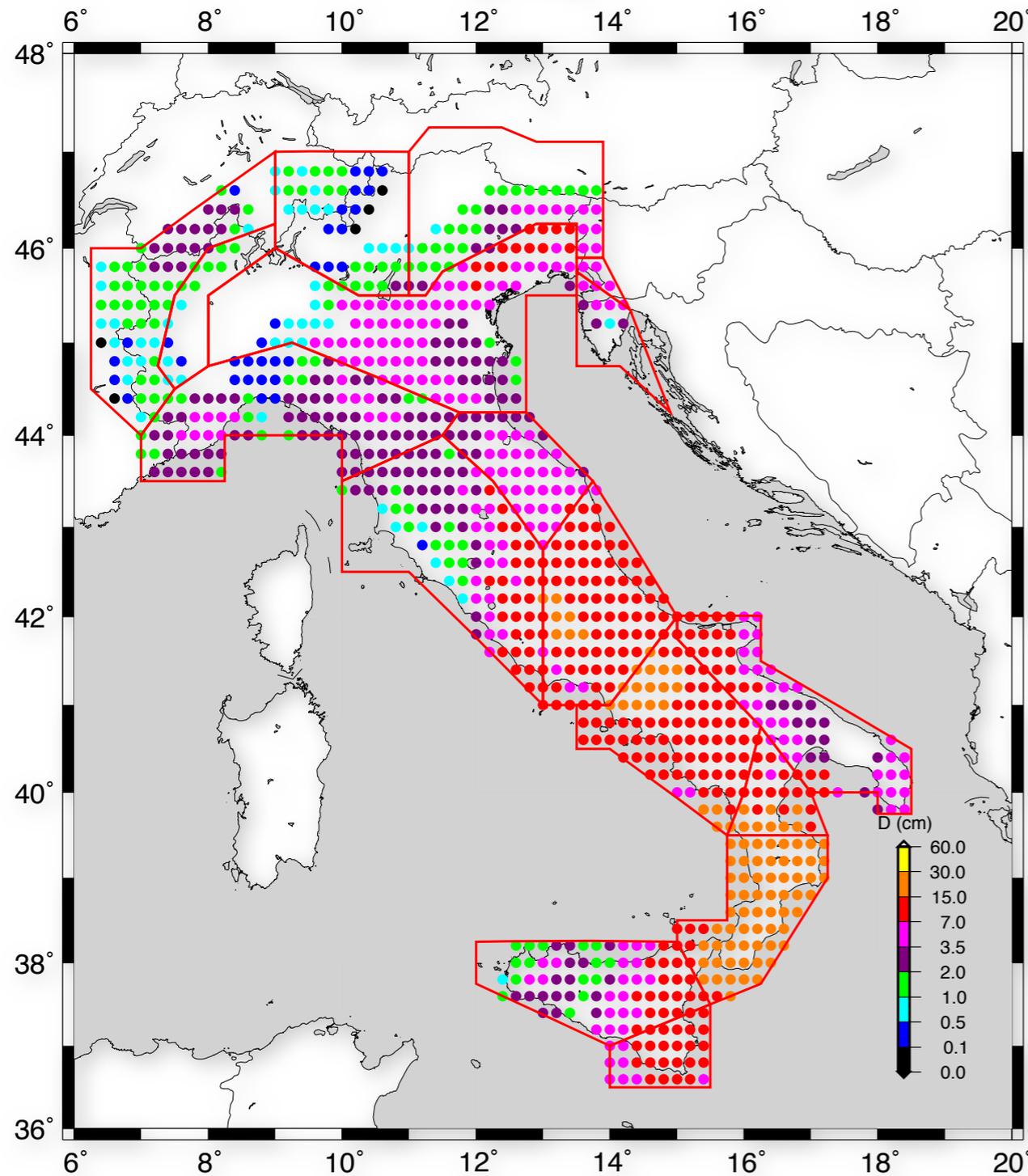


Regional Scale - Seismograms computation

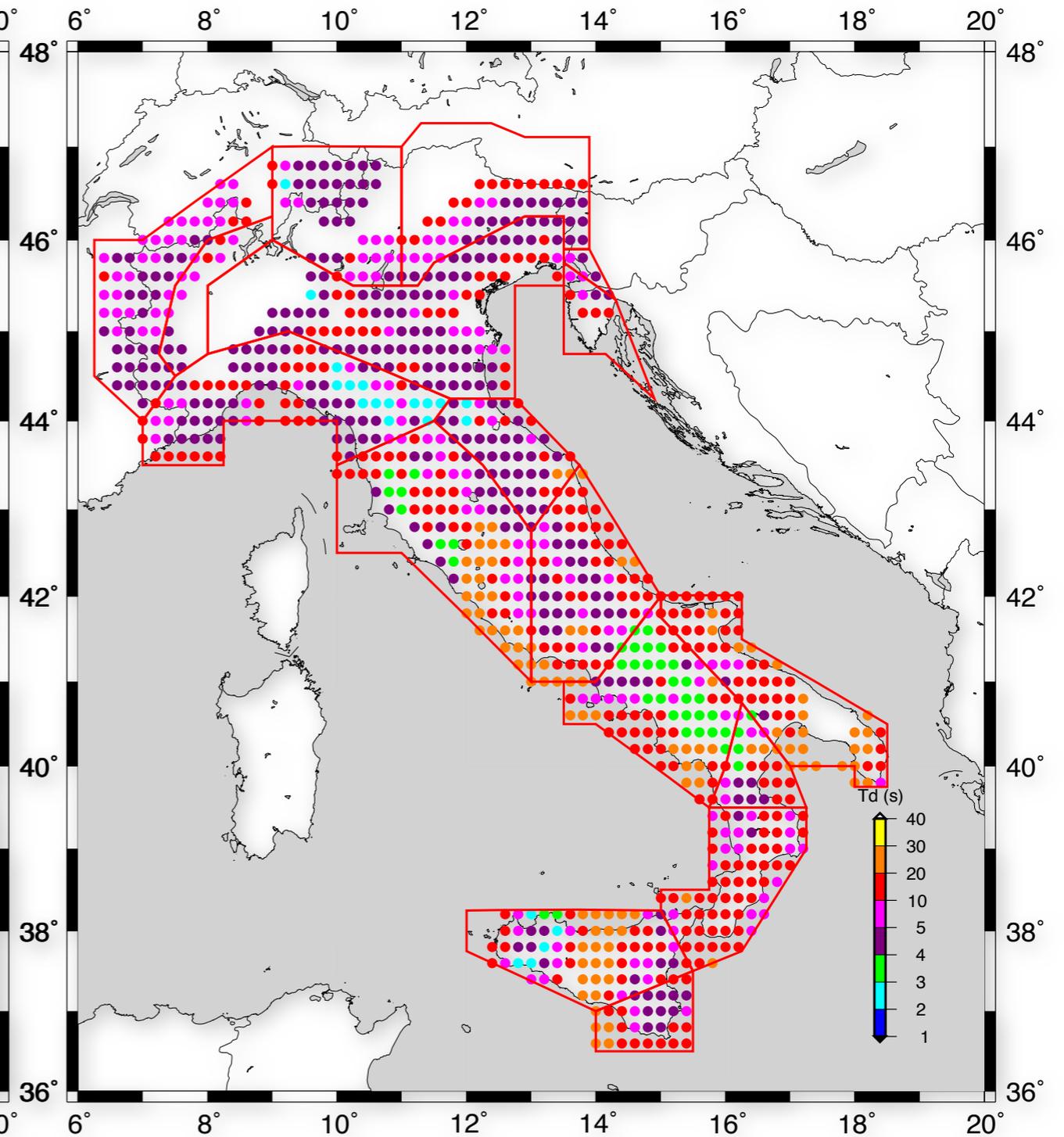


Regional Scale - Displacement hazard map

Amplitude of Peaks from Time Series
(1Hz)

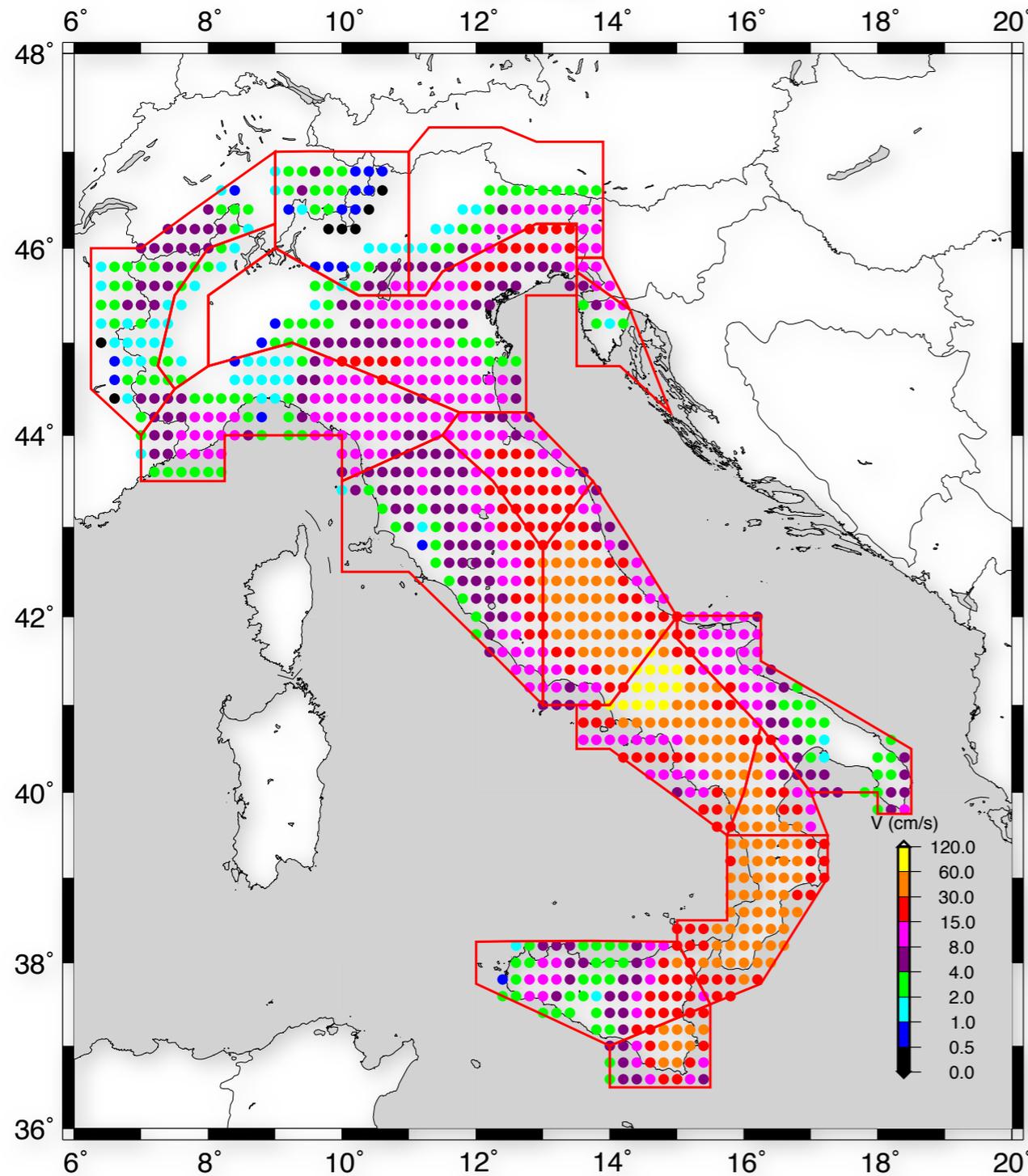


T of Peaks from Fourier Spectra

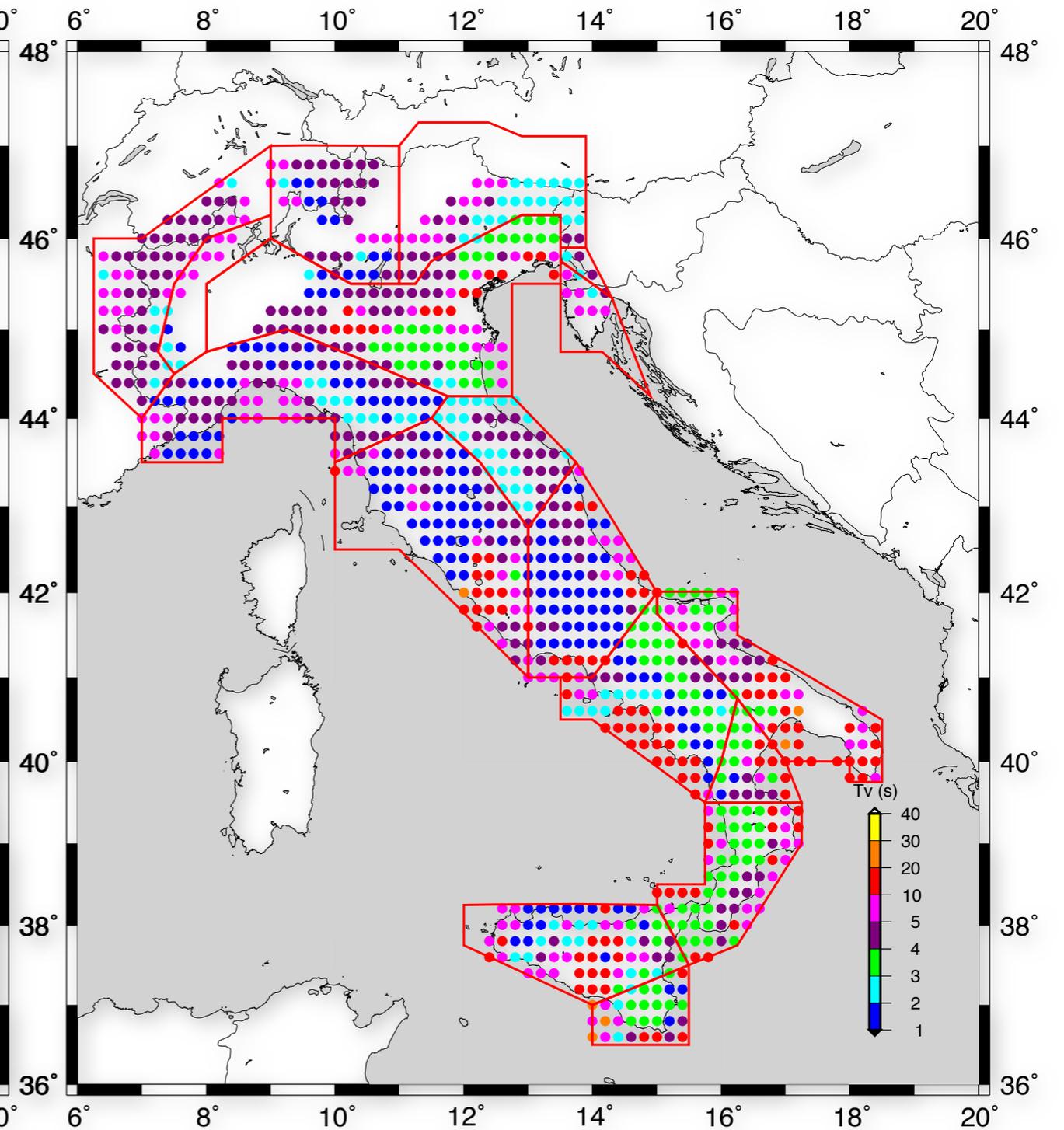


Regional Scale - Velocity hazard map

Amplitude of Peaks from Time Series
(IHz)

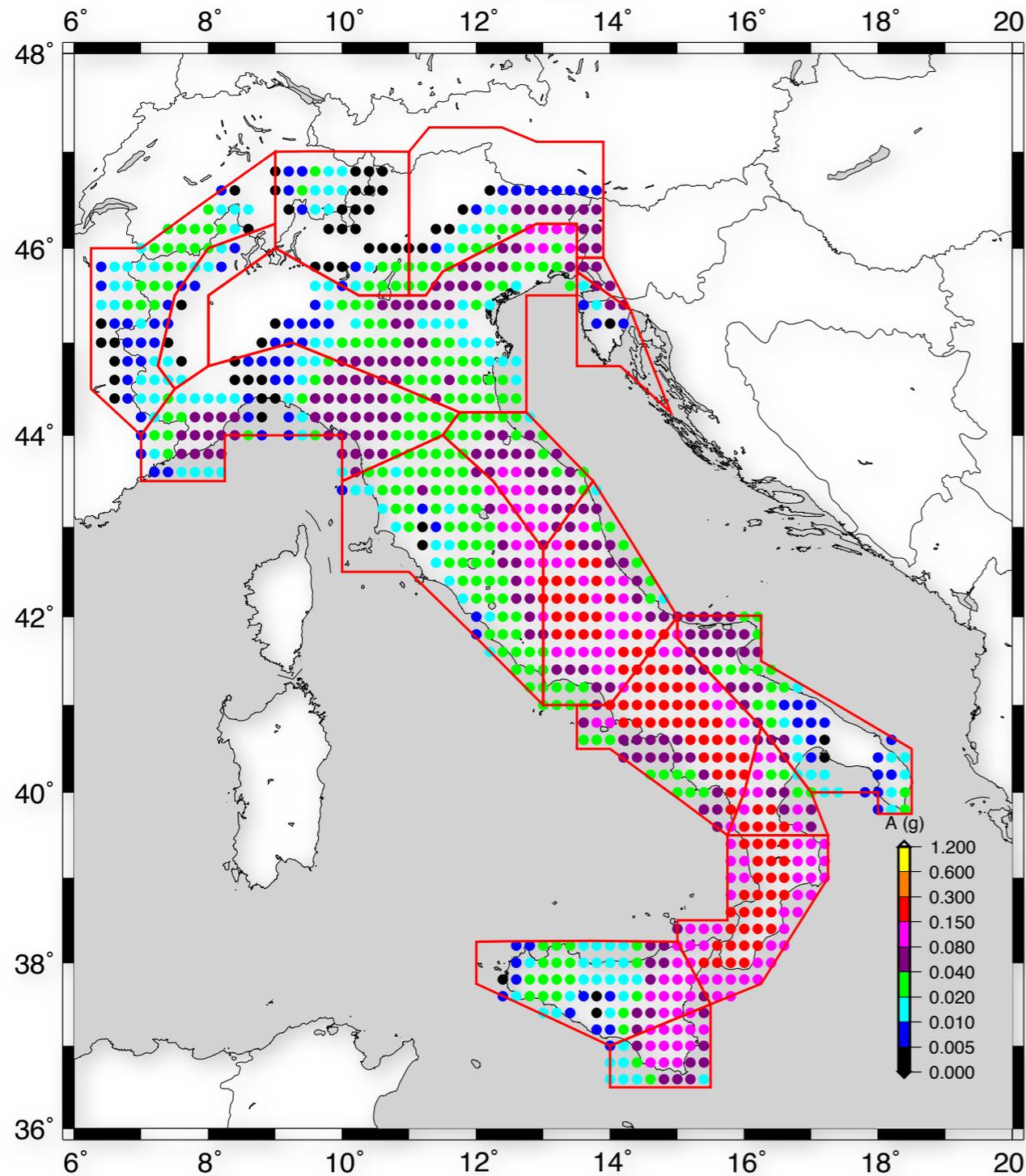


T of Peaks from Fourier Spectra

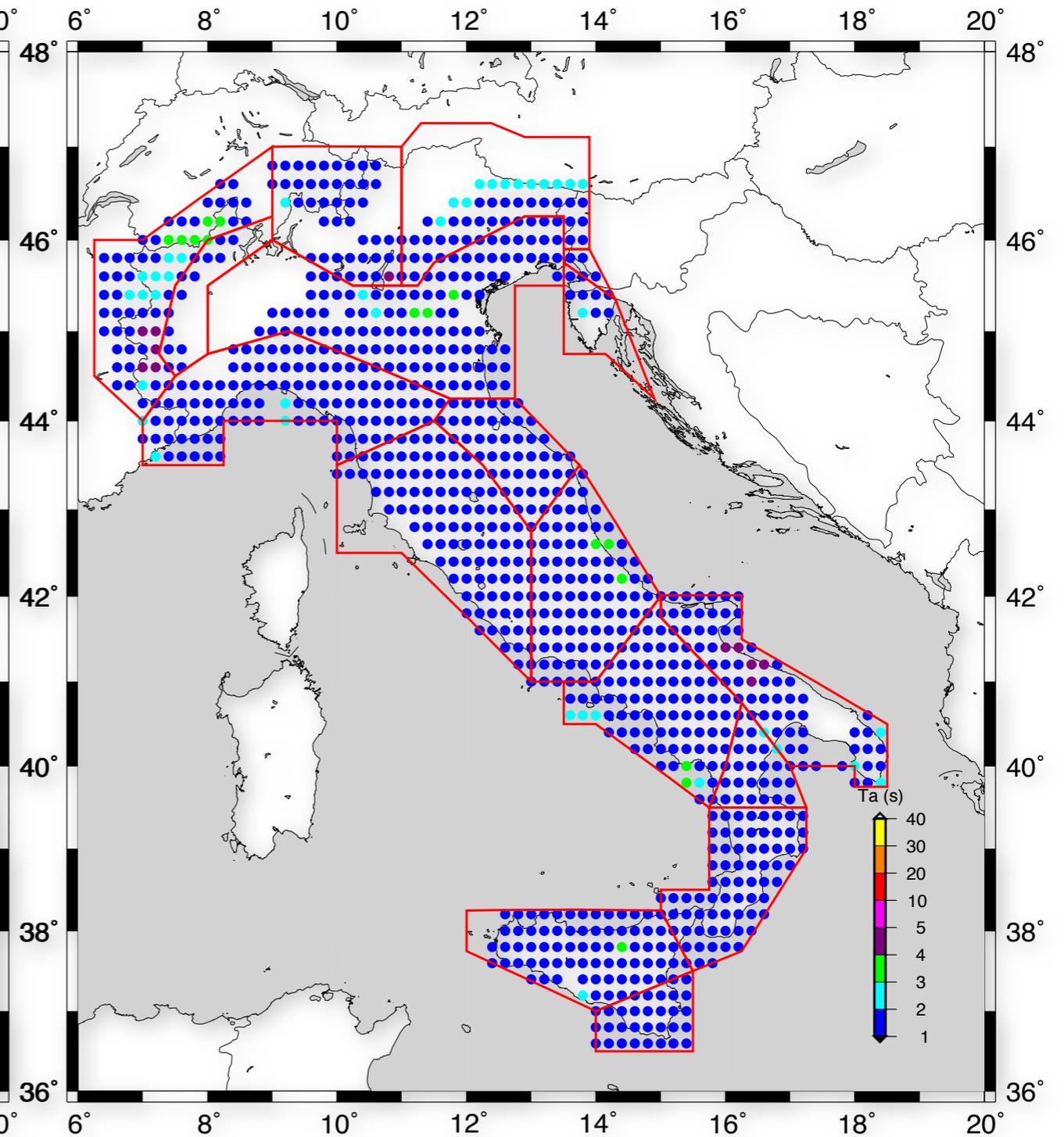


Regional Scale - Acceleration hazard map

Amplitude of Peaks from Time Series
(1Hz)

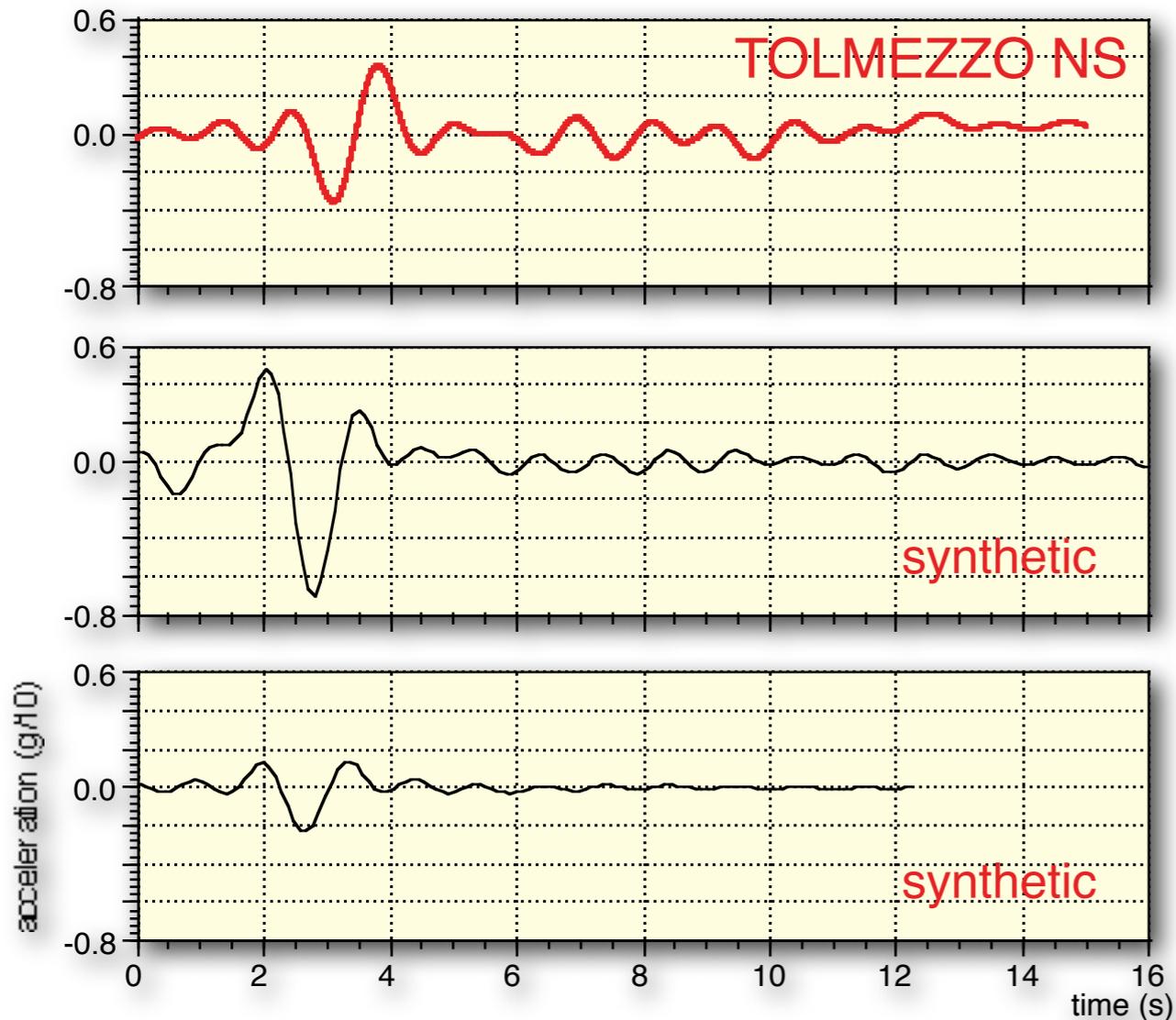


T of Peaks from Fourier Spectra



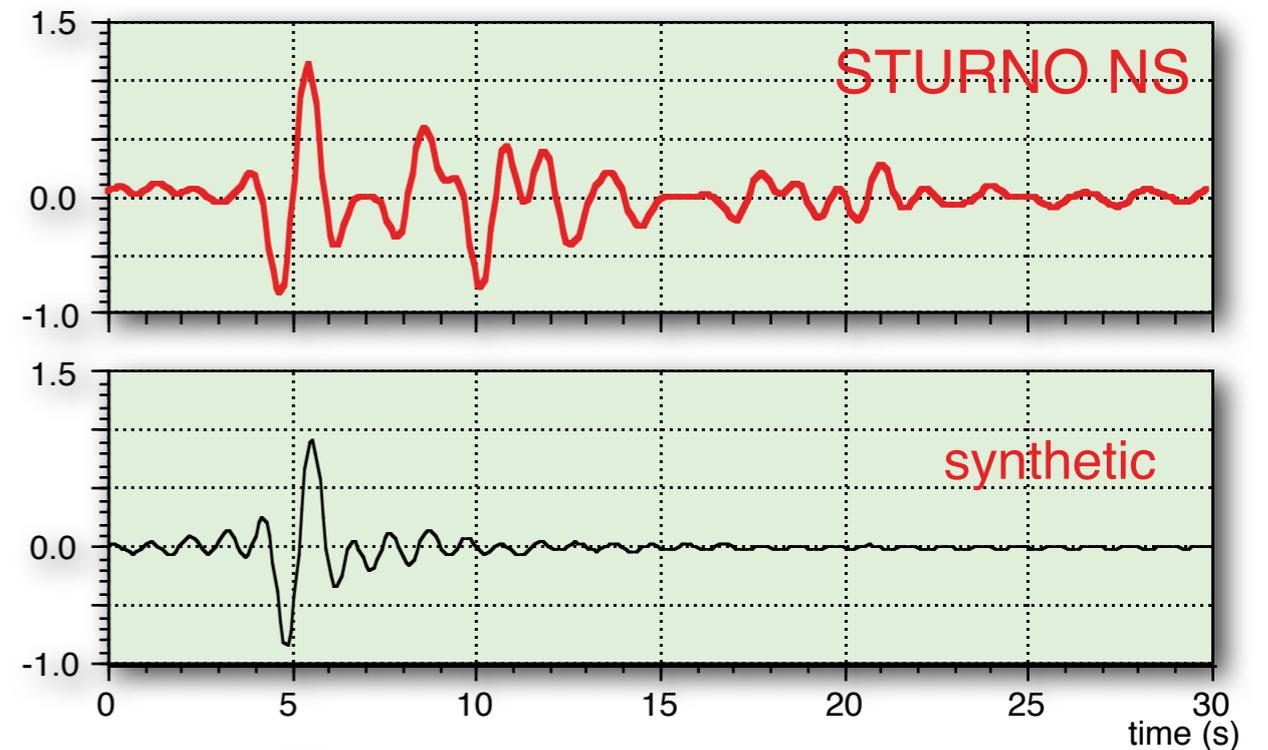
Regional Scale - Check (1 Hz cutoff)

Friuli, 6 May 1976 (North-Eastern Italy)



Comparison with two grid nodes close to the Tolmezzo station

Irpinia, 23 October 1980 (Southern Italy)

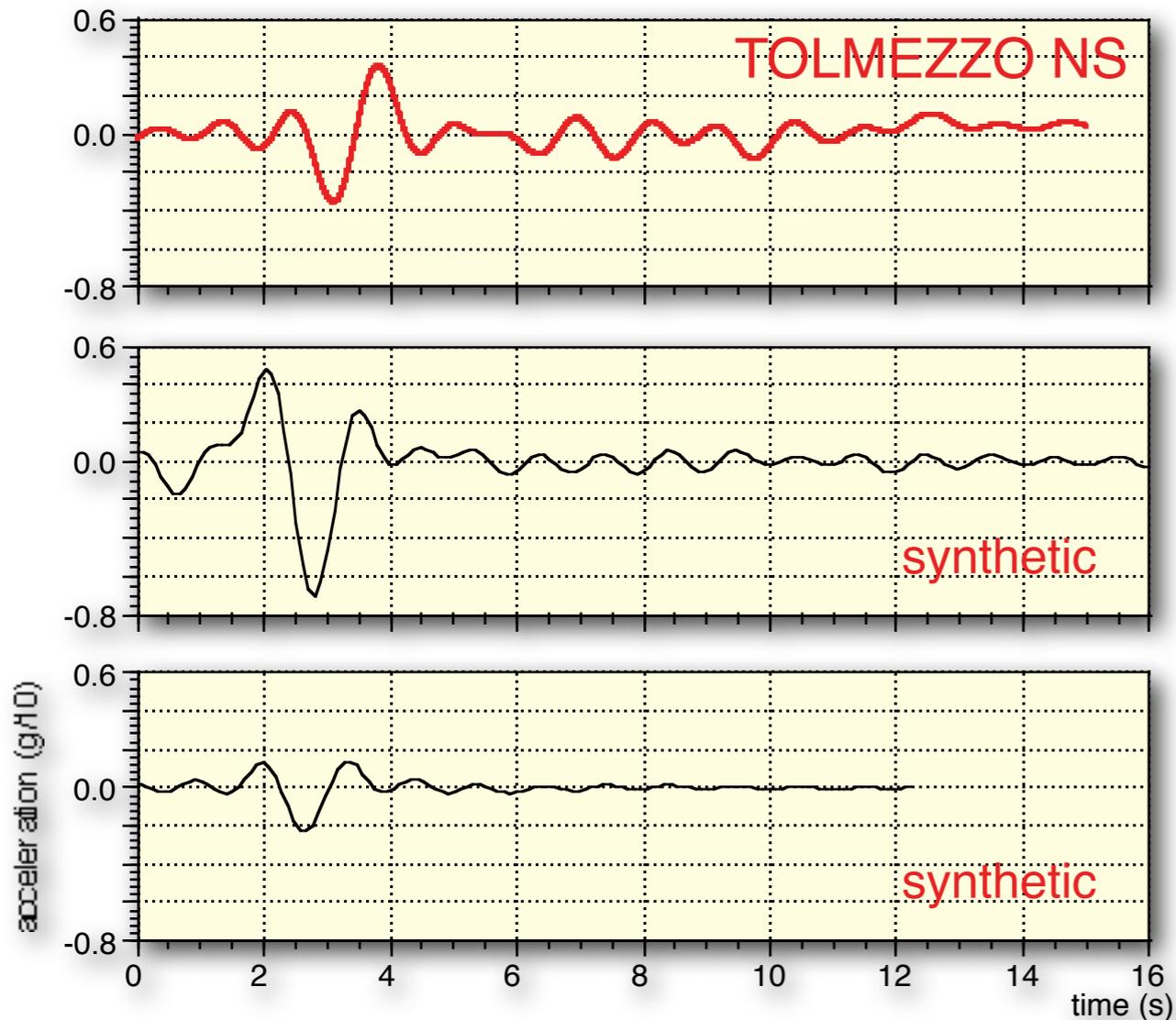


VERY complicated source model

Point-source inadequate to reproduce duration, but peak value is OK

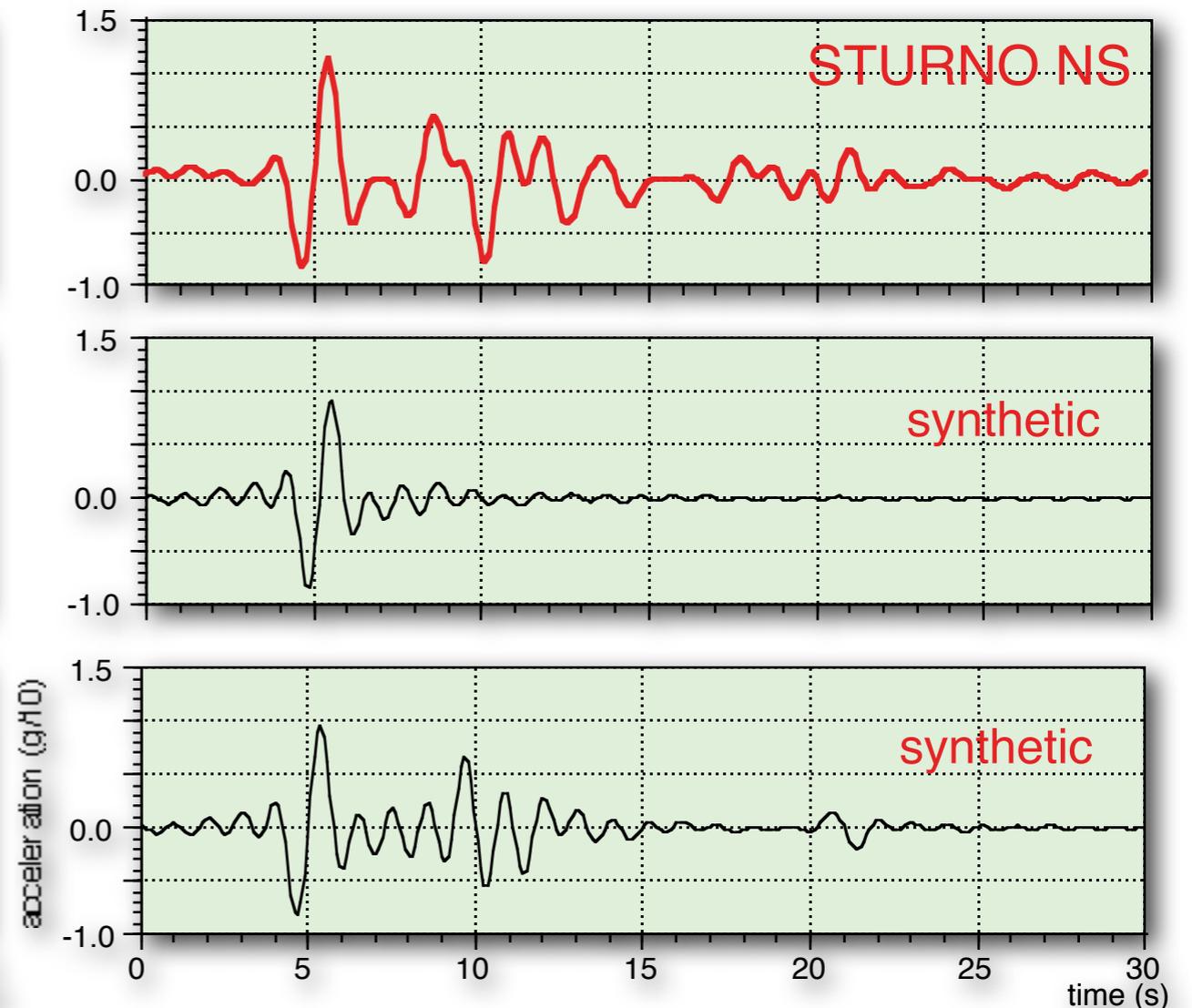
Regional Scale - Check (1 Hz cutoff)

Friuli, 6 May 1976 (North-Eastern Italy)



Comparison with two grid nodes close to the Tolmezzo station

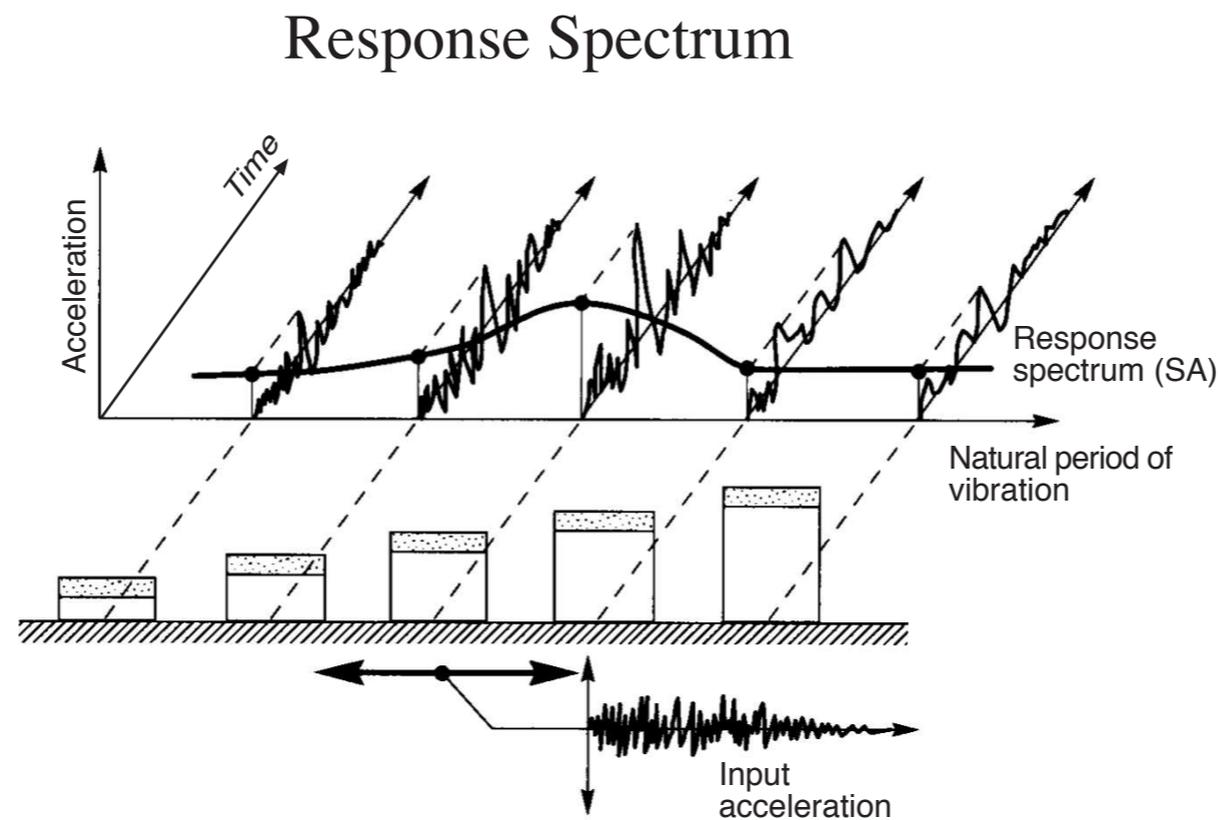
Irpinia, 23 October 1980 (Southern Italy)



With a sequence of point sources the duration can be reproduced but this is deliberately neglected since rupturing process is not known a priori

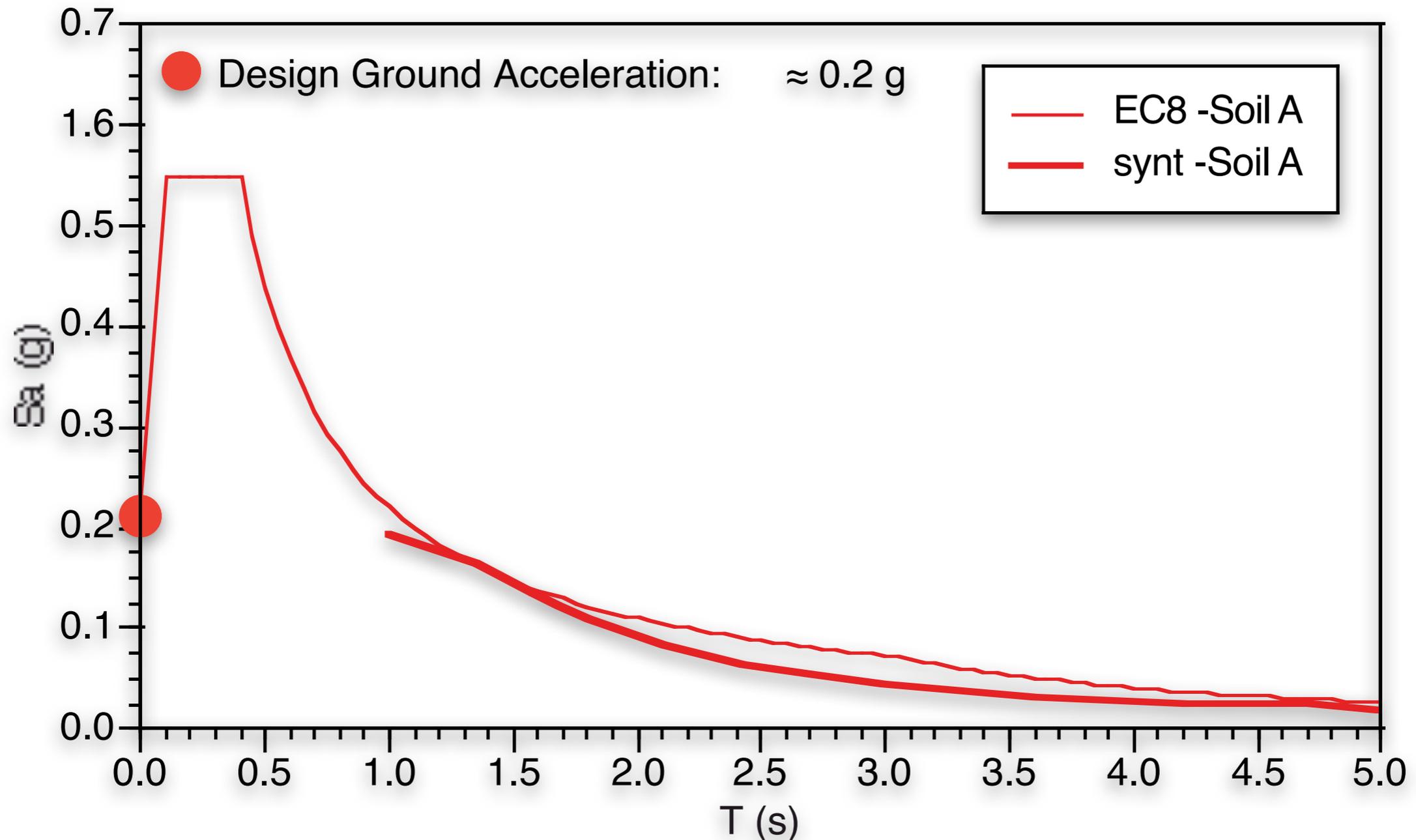
Design Ground Acceleration (DGA)

- To obtain an estimate of PGA, overcoming the 1 Hz limitation chosen in the modelling, the shape of Design Spectra can be used



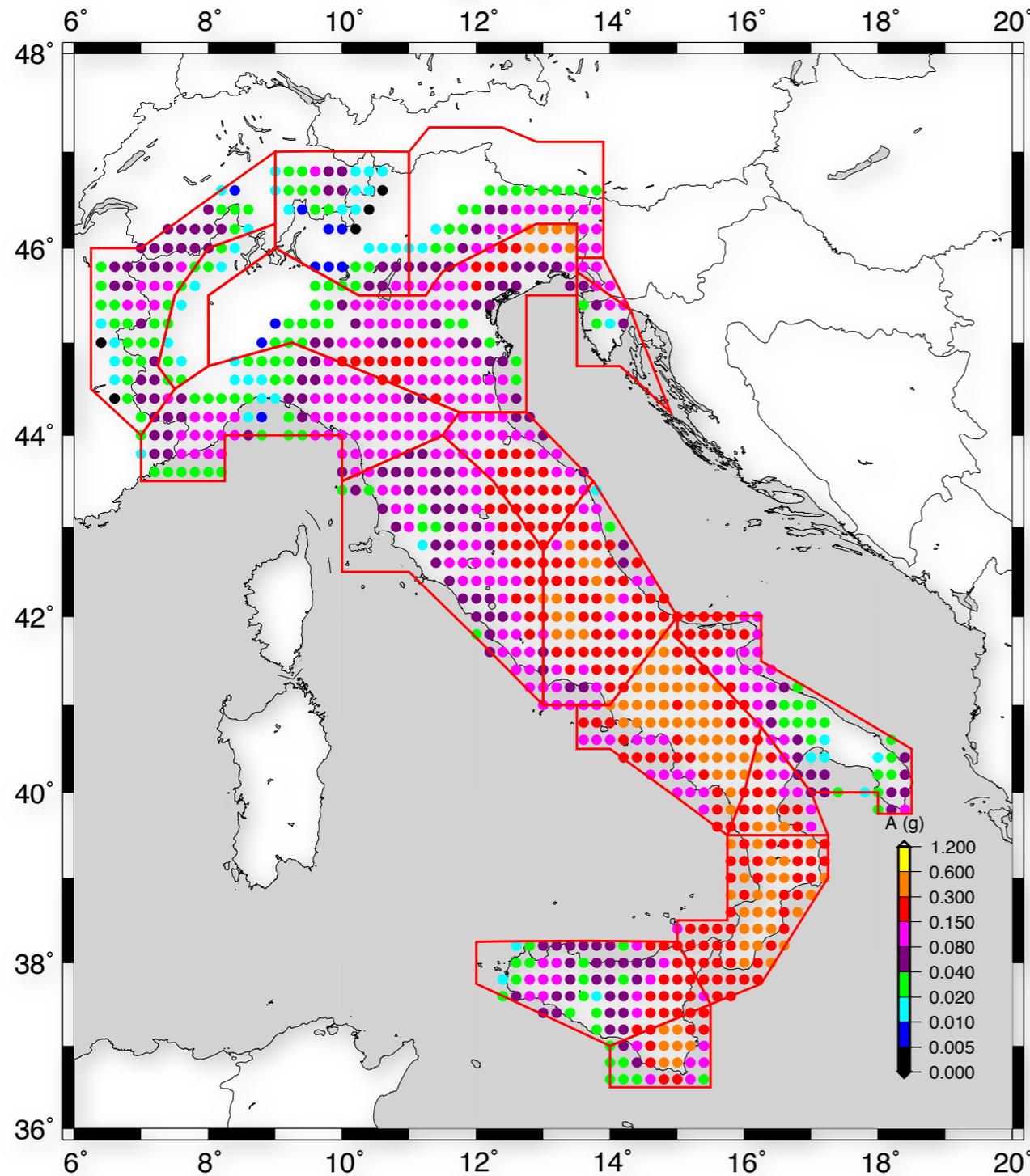
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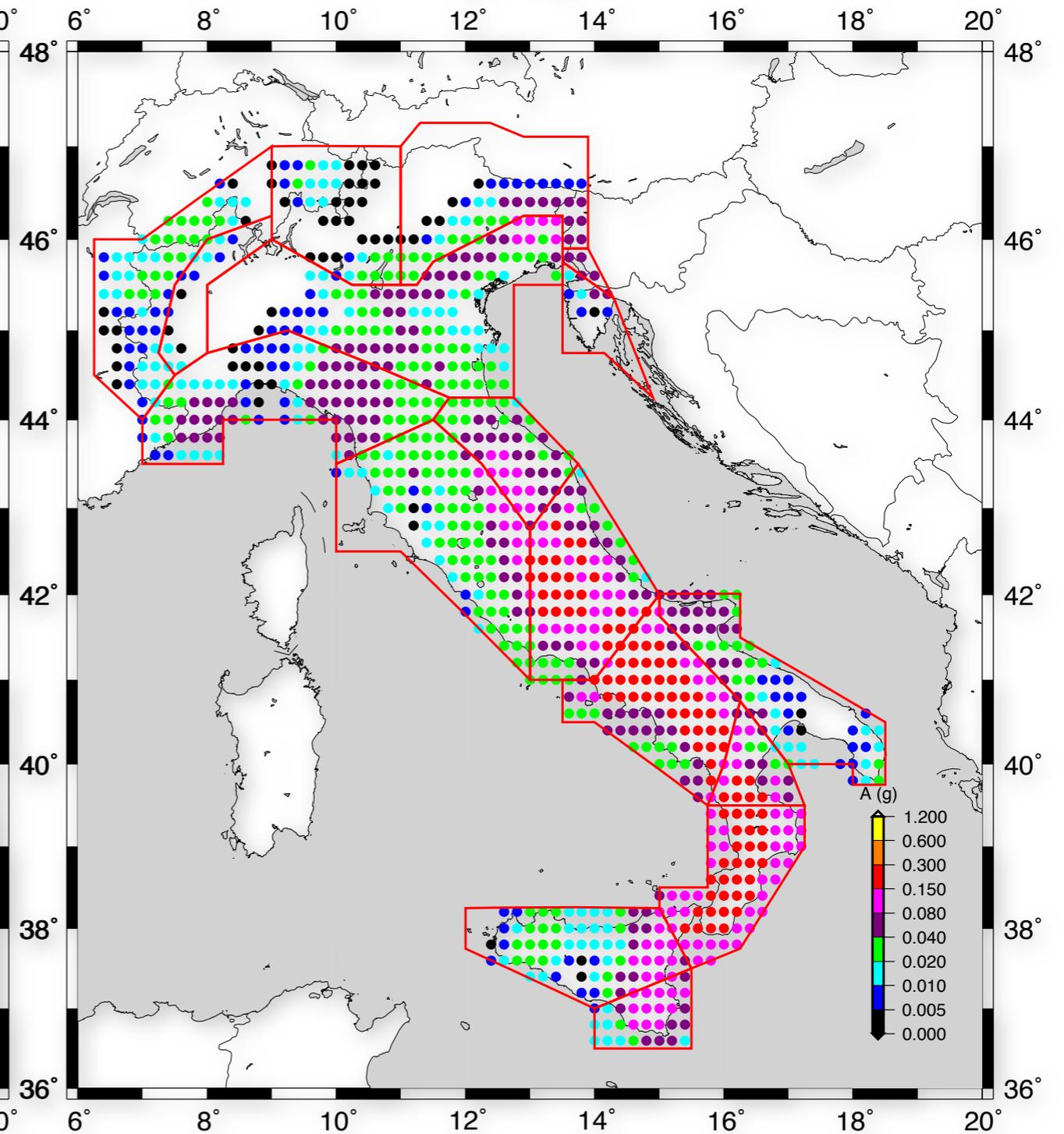


Acceleration

DGA Extrapolated by Means of Design Spectrum



Amplitude of Peaks from Time Series (1Hz)



Design Ground Acceleration (DGA)

- The procedure gives good results when applied to the case of the Irpinia 1980 earthquake. The DGA predicted by the modelling is similar the actual DGA obtained from recordings

