Dynamic Surface Wave Tomography in the China North-South Seismic Belt from Ambient Seismic Noise

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The area of the China North-South seismic belt is characterized by high concentrations of shallow and intermediate depth seismicity in China, also is a natural laboratory for the geological and seismological studies. We collect continuous vertical-component seismograms, spanning the periods from October 1, 2009 to September 30, 2011 recorded by 293 broadband stations. After making instrument response calibration, de-meaning, de-trending, filtering, time-domain normalization and spectral whitening, we apply the cross correlation technique to ambient noise data for each station pairs of the North-South seismic belt array. We analyze the relationship between the SNR and the sum time, accumulate the cross correlation time series for each day and obtain 8 data sets of time series for each 3 months. Using the automatic frequency-time analysis, Rayleigh wave group velocity dispersion curves are measured. A 2-D surface-wave tomography method, is used to calculate 8 lateral variation sets in group velocity distribution at different periods in the range from 15 to 40s with a grid spacing of $1.0° \times 1.0°$. Analyzing the group velocity distribution, we obtain the preliminary recognition for the relationship between the deep structure and the seismicity.