Ambient Seismic Noise Tomography of Kumaon Himalaya

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In recent years serious effort is underway to use the continuous surface displacements recorded by seismometers for probing the shallow lithosphere of the earth. These displacements are caused by wind, atmospheric pressure variation, ocean waves etc and have time period in the range from 5-25 s. The displacement has both the deterministic and stochastic components. Between the two recording stations the Green's function is computed using cross-correlation of the recorded wave pattern. We investigate here the crustal structure of Kumaon Himalaya and the adjoining Ganga basin using over a year's data recorded by a network of 31 broadband seismic stations. Rayleigh wave empirical Green's function from 350 inter-station paths were used to generate the tomographic image of surface wave group velocity of the region at time periods from 8-25 s. The data was translated in terms of shear wave veloc ity variation with depth. We shall discuss the details of results and the contrasting velocity signatures of the Kumaon Himalaya compared to those of the Nepal Himalaya.