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Supporting Information for

Temporal variation and frequency dependence of ambient noise on Mars from polarization analysis

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Introduction

This section explains how we rotate the axes of the triaxial seismometer of SEIS-VBB to construct seismic records with vertical and horizontal (east-west and north-south) components.

Text S1: Rotation of SEIS-VBB data to three orthogonal components

Table S1 shows the azimuth and dip angle of three components (U, V and W) of the triaxial seismometer of SEIS-VBB obtained from FDSN webservices of the Incorporated Research Institutions for Seismology (IRIS) (http://ds.iris.edu/mda/XB/ELYSE/). The original three components were rotated to construct seismic records with vertical and horizontal components. The relationship between original oblique components and vertical and horizontal components are given by;

$$\begin{pmatrix} D_E \\ D_N \\ D_Z \end{pmatrix} = \begin{pmatrix} -sin\,(-\varphi_U)cos(\theta_U) & cos(-\varphi_U)cos(-\theta_U) & sin(-\theta_U) \\ -sin\,(-\varphi_V)cos(\theta_V) & cos(-\varphi_V)cos(-\theta_V) & sin(-\theta_V) \\ -sin\,(-\varphi_W)cos(\theta_W) & cos(-\varphi_W)cos(-\theta_W) & sin(-\theta_W) \end{pmatrix}^{-1} \begin{pmatrix} D_U \\ D_V \\ D_W \end{pmatrix}, \quad (1)$$

where D_U, D_V and D_W are original oblique components, φ and θ are azimuth and dip angles of three axes of seismometer, respectively, and D_E, D_N and D_Z are two horizontal (east-west and north-south) and one vertical components after rotation.

Table S1. Azimuth and dip angle of U, V, W component of seismometer

	Azimuth [°]	Dip [°]
U	135.1	-29.4
V	15	-29.2
W	255	-29.7