Whereas Xie et al., 2013 used their phase-velocity measurements from 10 to 65 seconds to invert for shear-velocities for depths between 10 and 85 km, Cheng et al. only used velocities from 10 to 35 seconds to invert for Moho depth.

In this region, as shown in their results, the Moho depth very from 30 km to 75 km.

Do Rayleigh-waves sampled up to 35s have enough sensitivities at depth of 75 km?

Maybe the author can provide some sensitivity kernels to convince the readers.

Eastern Tibet is highlighted by very slow velocity anomalies, whereas very fast velocities are found beneath the Sichuan Basin (Figure 4).

However, in Figure 6, a thick crust is found beneath eastern Tibet, but the crustal thickness beneath the Sichuan basin seems similar to its surrounding.

Recent papers on Sichuan basin show a relatively thick crust beneath the Sichuan basin (Shapiro & Ritzwoller, 2002; Wang et al., 2003; Xie et al. 2013; Legendre et al., 2014).

Legendre, C. P., F. Deschamps, L. Zhao, S. Lebedev, and Q.F. Chen (2014), Anisotropic Rayleigh wave phase velocity maps of eastern China, J. Geophys. Res. Solid Earth, 119, 4802-4820, doi:10.1002/2013JB010781.

Wang, C., Wu, J., Lou, H. et al. Sci. China Ser. D-Earth Sci. (2003) 46(Suppl 2): 254. https://doi.org/10.1360/03dz0020

In addition, I would suggest to the authors to expand a bit their bibliographic record for this region.

Many papers have been published in recent years but only few have been properly cited.

In some part of the manuscript, some rephrasing seems necessary:
- page 1, line 34 "the nature of the two blocks is different, especially the special topography". What is the special topography?
- page 2, lines 10-13.
- page 2, line 47: stacked Sparse Auto-encoders (sSAE) --> stacked Sparse Auto-Encoders (sSAE).
- page 9, caption of figure 10: estimted --> estimated
- page 10, line 32: xie --> Xie

References:
There are many problems with the references, a few are listed below and need to check carefully.
In addition, several papers are in Chinese, and would not be helpful to the international community. Please find some references in English in addition whenever it is possible.

Liu et al.(2015) - page 3, line 54
--> doesn't appear in the references
Gao X., Wang W.M, Yao, Z. X.: Crustal structure of China mainland and its adjacent regions. Chinese J .Geophys, (in Chinese) , 48,3,591-601,2005.
--> doesn't appear in the text
Huang J. P., Fu R. S. Xu P., et al.: Inversion of gravity and topography data for the crust thickness of China and its adjacency, Acta Seismologica Sinica(in Chinese),28,3,250-258,2006.

--> doesn't appear in the text
Huang et al., 2008
--> doesn't appear in the references
Lampinen, J. &Vehtari, A.: Bayesian approach for neural networks -review and case studies, Neural Networks, 14(3), 257â€"274,2001.
--> doesn't appear in the text