The tomographic image of the Emeishan LIP in southwestern China, is explained by “melting of delaminated lower crustal and/or lithospheric components and associated plume-like upwelling from the mantle transition zone”. In other words, a shallow origin. Such a surprising conclusion requires a scrupulous argumentation, based on verifiable predictions and hard evidence. I am afraid I do not quite see that in this paper, which presents the results of a new tomographic study with some differences with earlier images (that seems to have used more stations than this study). The argumentation is less than compelling, it does not clearly argue how today’s tomographic images can give relevant information for an eruption that occurred more than 250 my ago. Laurasia at the time was certainly not at the same location, between 200-160 my ago it moved rapidly northwards, its earlier history is not solidly documented as far as I know (see Seton et al., Earth-Science Reviews 113:212–270, 2012). Anything visible below the lithosphere at its present location is therefore irrelevant for the interpretation of the Emeishan LIP.

1. Huang et al. (2015) carried out a tomographic study used 411 temporary stations within 20-33° N and 95-110° E with 45751 relative travel time residuals. Here, we extended study region northward and eastward within 20-35° N and 97-111° E so that we can cover all region of the Emeishan LIP. We used almost same amount data with Huang et al. (2015) with 42500 relative travel time residuals, moreover, our teleseismic data is high quality and recorded by 228 permanent stations. The target of this study is with a view to construct the velocity structure and investigate mantle dynamics of the upper mantle beneath the Emeishan area, and further discuss the Emeishan LIP formation. Especially, some data recorded by the temporary stations can be opened to obtain.
2. The south China block docked with the Indochina Block on the southwest in the Triassic along the Ailaoshan-Red River fault-Song Ma suture, on the west along the Longmenshan fault, and on the north with the North China Craton along the Qinling–Tongbai–Hong'an–Dabie–Sulu orogenic belt in the early Triassic (Li et al., 2002; Zhou and Zhu, 1993; Mao et al., 2013; Zheng et al., 2013). The Emeishan LIP is considered to have formed in the Permian-Triassic (Song et al., 2013; Chung and Jahn, 1995). The LIP was broken up by the Red River fault (Xiao et al., 2004) and Longmenshan fault (He et al., 2007). However, the ~260-Ma Emeishan LIP in SW China and northern Vietnam includes voluminous continental flood basalts that are believed to have formed from same upwelling mantle (Chung and Jahn, 1995; Xu et al., 2004; Zhou et al., 2006; Wang et al., 2007; Tien, 2000; Shi and Shen, 1998). Later even located at western side of the Red River fault in the early Triassic and was displaced several hundred kilometers to the southeast by Oligo-Miocene sinistral motion along the Ailao Shan-Red River fault (Ali et al., 2005), which provides a solid evidence that the Emeishan LIP was generated after the amalgamation of the south China block and Indochina Block in the early Triassic along the Ailaoshan-Red River fault-Song Ma suture. Since then or the early Triassic, no any documents demonstrated the Emeishan LIP location change. On the other hand, a receiver function study revealed a felsic lower crust in the Emeishan area, which imply there are deep process of the crustal delamination

(He et al., 2014), at same time, the MTZ show a cold domain beneath the Emeishan LIP (He et al., 2014), which imply the delamination material (or cold material) delaminated into the upper MTZ. Generally, the crustal delamination can induce the mantle upwelling (Schott and Schmeling, 1998; Elkins-Tanton and Hager, 2000; Elkins-Tanton, 2005). Finilly, it lead to a convective circulation system between the lower crust and the MTZ beneath the Emeishan area (He et al., 2014), which also imply the Emeishan LIP still located at its formation location or present location.

3. Generally, high and low velocity relics generated by subduction slab or crustal and mantle lithospheric delamination and upwelling mantle in the asthenospheric mantle can be retained for over tens of millions of years (Cook et al. 1999; Balling 2000; Svenningsen et al., 2007; Zhai et al., 2007; He et al., 2015). These low and high velocity structure can be image by tomography (D. Zhao et al., 1992, 1994; L. Zhao et al., 2016).

On page 2 the authors do not clearly distinguish between the causes of seamounts and LIPS, which is confusing. Whereas seamounts are often thought to be caused by secondary or shallow, lasting plume activity, the volume erupted in the short time span observed for LIPS are probably caused by the impact of a large head from a massive (and supposedly deep) plume, not the plume tail. The volume of a LIP is of the order of 10ˆ6 kmˆ3, very much larger than that of a seamount, their causes must thus be very different. Eimashan is characterized by a rapid, large volume (0.25*10ˆ6 kmˆ3) eruption, typical for a LIP. Being accessible by land-based seismic stations, it could thus be a prime candidate for testing of the plume head impact hypothesis if one can clearly link this to present day lithospheric structure. This missing link might be provided by geodynamical calculations leading to predictions for the present day, but that obviously introduces a whole new class of degrees of freedom, so it is not obvious how to interpret even the shallow tomography in terms of the causes of an ancient LIP.

1. In order to avoid confusing, we have replaced "It is now widely recognized that upwelling mantle plumes generate many LIPs and numerous small chains of seamounts" with "It is now widely recognized that upwelling mantle plumes generate many LIPs".
2. Generally, high and low velocity relics generated by subduction slab or crustal and mantle lithospheric delamination and upwelling mantle in the asthenospheric mantle can be retained for over tens of millions of years (Cook et al. 1999; Balling 2000; Svenningsen et al., 2007; Zhai et al., 2007; He et al., 2015). These low and high velocity structure can be image by tomography (D. Zhao et al., 1992, 1994; L. Zhao et al., 2016).

The authors use the stations from the CSN, but not of the Chin array project or other temporary deployments, for reasons not discussed. The span of the array is thus comparable to that used by Huang et al. (2015), but the station density is inferior. The span is not very large, it covers an area of about 600x800 km. Not surprisingly the resolution is therefore limited to the upper mantle (fig 5), as was the result by Huang et al. (2015). There are a few small but interesting differences between the two solutions, for example at 500 km depth where He finds a strong low velocity anomaly beneath the Jiangnan orogenic belt, unlike Huang. And at 700 km Huang finds a plume-like anomaly beneath the Yangtze block that is absent in He's analysis. But here we are at the limit of resolution, so one wonders if these differences are significant. And, as I argued before, the deeper structure at this location cannot be linked to the LIP because that event must have taken place at a much lower latitude.

1. Although we used seismic station is less than that of Huang et al. (2015), but, the relative travel-time residuals almost is equal, moreover, our data recorded by permanent seismic station is high quality data. We consider the resolution shouldn't have any different.
2. Above, we have explained the location of the Emeishan LIP formation.

Unfortunately, even the resolution test leaves questions. Were any errors added to the synthetic data? If not, the test is too optimistic and the level of 10% adopted for whitening out of the solution (figure 8-10) is probably far to low. If they did include errors in the test, what standard error was adopted for the delay times? Figure 4 seems to indicate that an error of about 0.4s is realistic.

We haven't added errors to the synthetic data, in this version, we increase the level of 20% adopted for whitening out of the solution. We have even added 0.1 s errors to synthetic data, but, it almost hasn't any effect on the results.

The discussion of the mechanism for the LIP formation is not very transparent and mixes several possible scenarios. The absence of evidence for an uplift and for underplating is used to question the plume hypothesis. This is the closest the authors come to formulating a testable prediction.

The rise and impingement of mantle plumes on continental and oceanic lithospheric plates would lead to the formation of mafic/ultramafic lower crust (Pirajno, 2007). However, the dominantly felsic to intermediate lower crust in this area identified from receiver function analyses (He et al., 2014, 2009; S.S. Sun et al., 2012) do not favor any large-scale underplating in the Emeishan LIP area. Alternate models consider that the LIP magmatism was triggered by decompression-induced melting of upper mantle beneath zones of lithospheric extension or fractures (Uenzelmann-Neben, 2013) which does not require any upwelling mantle plume.

Both studies detect high velocity zones near 300 km depth. He et al. argue for a role of delamination in the Eimashan eruption. However, this leaves me again with a question about timing. If the delaminated slab has anything to do with causing the LIP 260my ago, it would by now surely have sunk deep into the mantle further south. He et al. speculate that a water-rich transition zone might stop it, but (1) the high velocities are shallower and

(2) wouldn't water lower the density of the surrounding mantle and have a slab sink even faster? Slabs normally dehydrate when sinking, and surely the water cannot diffuse back so quickly into the slab that it lowers its density? And (3) it is at the wrong location.

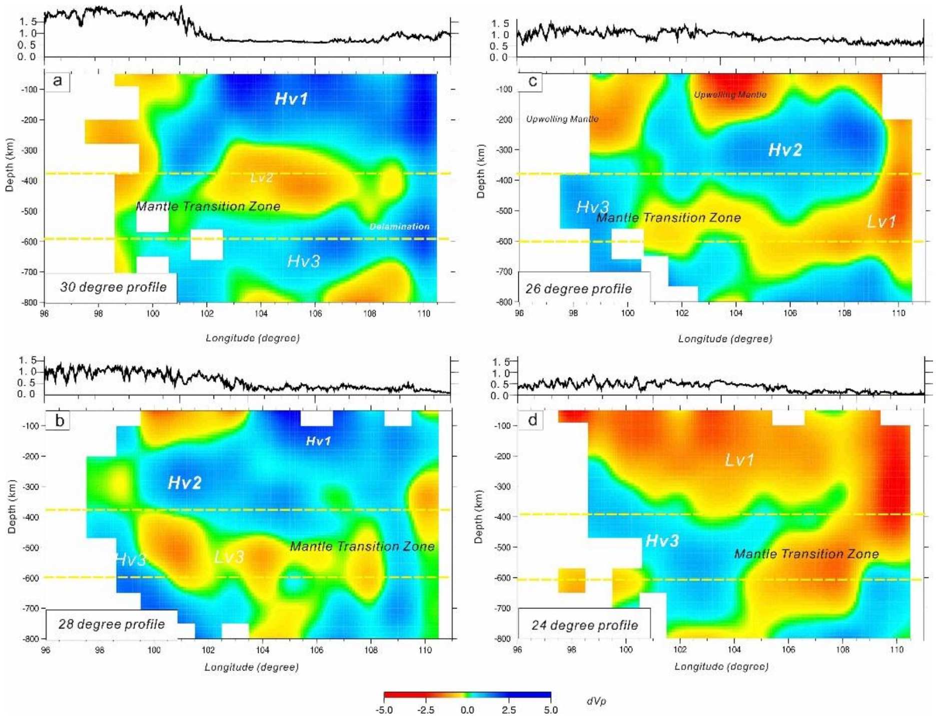

Fig. 9 P-wave velocity perturbation profiles along the west-east direction (a, b, c, and d is latitude 24° N, 26° N, 28° N and 30° N direction, respectively) (see Fig. 1 for profile location). Portions of the model where the recovery of the starting model in the CRT was below 20% are not shown (see Fig. 6).

1. Please Fig. 9, there is a high velocity perturbation (Hv3) in the mantle transition zone.
2. In this study, we suggest the high velocity perturbation may be associated with the large-scale crustal and lithospheric delamination induced by the assemble of the south China block and Indochina Block in the early Triassic. We don't exclude the dehydration of the delamination material, however, our results show the high velocity perturbation still exists at upper mantle, which imply Hv2 can sink into deep location.
3. Geological study and previous receiver function demonstrated the Emeishan LIP location isn't changed.

In summary, it does not become clear why these tomographic images should be preferred to those of Huang (where they differ). And one cannot link images of the transition zone with the Eimashan.

1. The target of this study is with a view to construct the velocity structure and

investigate mantle dynamics of the upper mantle beneath the Emeishan area, and further discuss the Emeishan LIP formation.

2. A large-scale lower crustal and (or) mantle lithospheric delamination or sinking (Hv3) may get arrested at the 660 km discontinuity identified by this study, where crustal and lithospheric components would be melted (Lustrino, 2005) because the MTZ is a potential water reservoir in the Earth's interior (Karato, 2011; Kuritani et al., 2011). Accumulation of delaminated crust and (or) lithosphere at the MTZ are speculated to give rise to 'second continents' on the bottom of the upper mantle (Kawai et al., 2013; Korenaga, 2004, Lustrino, 2005). The minerals in Earth's MTZ as 'water tanks' might trigger dehydration melting of vertically flowing mantle (Schmandt et al., 2014). Because of their buoyancy, crustal and (or) mantle lithospheric melts rise up as plume-like upwelling instead of being dragged down to the convecting lower mantle (Lustrino, 2005). Thus, lower crustal and (or) mentle lithospheric delamination and mantle inflow are considered to set the ideal scene for plume-like upwelling from the MTZ (He et al., 2014), which contribute to the Emeishan LIP formation.

A final, serious, remark: the number of references is very excessive (more than one hundred!), and this smells suspiciously like manipulation of the citation indices. It can be reduced substantially. Just to give one example, the authors state (line 104) that the velocity is determined by linear interpolation among eight nodes (more accurate would be to say "trilinear interpolation"). This is such an elementary operation that it could be stated with one or even without any reference, but it is followed by no less than ten references. And each of these references is to the same person: : :

Sorry, this have been revised, please see references.