

## ***Interactive comment on “Brief Communication: New radar constraints support presence of ice older than 1.5 Ma at Little Dome C” by David A. Lilien et al.***

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### General Comments

With very deep layers captured by the grounded ice penetrating radar survey at the Little Dome C, this work further confirms the existence of an old ice there extends into the past of 1.5 Ma through a modified D-J model with the new constraints of the radar data. It shows great values on evaluating deep ice age and locating a deep ice core for the oldest ice. \

### Specific Comments

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Lines 21 – 23, can the authors give some more references here? It should help people to extend and understand recent progresses on searching for the oldest ice in Antarctica by the international groups (e.g. for Dome A, Liyun Zhao, et al., 2018, Where is the 1-million-year-old ice at Dome A; for Dome F, Nanna B. Karlsson, et al., 2018, Glaciological characteristics in the Dome Fuji region and new assessment for “Oldest Ice”; for Ridge B, Xiangbin Cui et al., 2020, The Scientific Operations of Snow Eagle 601 in Antarctica in the Past Five Austral Seasons; for Titan Dome, Lucas H Beem, et al., 2020, Characterization of Titan Dome, East Antarctica, and potential as an ice core target; or others more suitable)

Does the star in Fig.1 note the position of BELDC? It should be better to highlight the profile of AB (Fig. 2) in Fig.1 with thick black lines or color lines. The radar profile presented in Fig. 2 should not a direct line between EDC and BELDC, and should have many turns. In addition, too many lines are placed in a very small area, so the authors may need zoom in the area to show clearly the distribution of the radar lines.

If there's no figure number limitation or page limitation, please provide a field operation figure.

Line 104-106, the bed reflection coefficient should be analyzed to verify the basal melt. “... the shallowest subglacial lake...” should mean the buried depth of the lake is the smallest.

Figure2, I am not clear how to know the age of the deep layers with 517, 539, 561, and 616 ka, because there's no link between these layers with EDC.

### Technical corrections

Line 164, should be “intact”

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