



*Supplement of*

**Brief communication: Identification of 140 000-year-old blue ice in the Grove Mountains, East Antarctica, by krypton-81 dating**

**Zhengyi Hu et al.**

*Correspondence to:* Guitao Shi (gtshi@geo.ecnu.edu.cn)

The copyright of individual parts of the supplement might differ from the article licence.

Table S1 Stable isotopes of water in the snow and ice from different sites in Antarctica

Sites	$\delta^{18}\text{O}(\text{H}_2\text{O})$ /‰	$\delta^2\text{H}(\text{H}_2\text{O})$ /‰	Elevation/m	References
Blue ice in Grove Mountains	-40.3	-321.2	~2000	This study
Surface snow near Grove Mountains <sup>a)</sup>	-37.0±1.6	-289±14.8	2556	(Ma et al., 2020a)
Dome A	-58.5±2.3	-449.4±17.0	4089	(Ma et al., 2020b)
Dome A	-58.4	-450	4093	(Xiao et al., 2008)
Dome C	-50.1	-390	3240	(Stenni et al., 2001)
Vostok	-56.4	-440	3490	(Ekaykin et al., 2004)
Dome Fuji	-54.9	-425	3810	(Watanabe et al., 2003)
Dome B	-55.2	-430	3650	(Masson et al., 2000)

<sup>a)</sup> Surface snow samples were collected on the Chinese inland Antarctic expedition traverse route from Zhongshan Station to Dome A (Figure 1a), about 65 km from the Grove Mountains.

#### References:

- Ekaykin, A.A., Lipenkov, V.Y., Kuzmina, I.N., Petit, J.R., Masson-Delmotte, V., Johnsen, S.J., 2004. The changes in isotope composition and accumulation of snow at Vostok station, East Antarctica, over the past 200 years. *Ann. Glaciol.* 39, 569-575.
- Ma, T., Li, L., Li, Y., An, C., Yu, J., Ma, H., Jiang, S., Shi, G., 2020a. Stable isotopic composition in snowpack along the traverse from a coastal location to Dome A (East Antarctica): Results from observations and numerical modeling. *Polar Sci.* 24, 100510.
- Ma, T., Li, L., Shi, G., Li, Y., 2020b. Acquisition of Post-Depositional Effects on Stable Isotopes ( $\delta^{18}\text{O}$  and  $\delta\text{D}$ ) of Snow and Firn at Dome A, East Antarctica. *Water* 12, 1707.
- Masson, V., Vimeux, F., Jouzel, J., Morgan, V., Delmotte, M., Ciais, P., Hammer, C., Johnsen, S., Lipenkov, V.Y., Mosley-Thompson, E., 2000. Holocene climate variability in Antarctica based on 11 ice-core isotopic records. *Quaternary Res.* 54, 348-358.
- Stenni, B., Masson-Delmotte, V., Johnsen, S., Jouzel, J., Longinelli, A., Monnin, E., Röthlisberger, R., Selmo, E., 2001. An oceanic cold reversal during the last deglaciation. *Science* 293, 2074-2077.
- Watanabe, O., Kamiyama, K., Motoyama, H., Fujii, Y., Igarashi, M., Furukawa, T., Goto-Azuma, K., Saito, T., Kanamori, S., Kanamori, N., 2003. General tendencies of stable isotopes and major chemical constituents of the Dome Fuji deep ice core. *Memoirs of National Institute of Polar Research Special Issue No.57*. Tokyo: National Institute of Polar Research,.
- Xiao, C., Li, Y., Hou, S., Allison, I., Bian, L., Ren, J., 2008. Preliminary evidence indicating Dome A (Antarctica) satisfying preconditions for drilling the oldest ice core. *Chin. Sci. Bull.* 53, 102-106.