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## Formation age and state of soil organic carbon in the wetlands of northern Tibet

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Wetlands are the largest carbon storage in the tundra zone of the Tibetan Plateau (amsl >4500 m), and the stored carbon is highly vulnerable to global warming. We selected two major wetland types in northern Tibet, lacustrine wetland (NC) and intermountain wetlands (NB), and took one soil profile each for soil organic carbon (SOC) content and carbon isotopes ( $\delta^{13}\text{C}$  &  $^{14}\text{C}$ ) analysis. The results showed that the deepest thickness of the soil was 60 cm and 65 cm, respectively, and the oldest soil organic matter was formed at about 3200 yr BP. The content of soil organic carbon was as high as 8% - 20% in the layer above 50 cm, and was higher than 2% in the layer below 50 cm. The  $\delta^{13}\text{C}$  values of soil organic carbon in the lacustrine wetland varied from -24.0‰ to -27.0‰, and those in the mountainous wetland varied from -22.0‰ to -25.0‰. Both of them showed that the  $\delta^{13}\text{C}$  values of soil organic carbon near the bottom were more negative, and the change occurred significantly at a depth of about 45 cm, with a corresponding  $^{14}\text{C}$  age of 2.0 ka BP. In conclusion, it is likely that the soil organic matter in the wetlands of northern Tibet was generally formed since the middle-late Holocene about 3.2 ka. They were preserved with high soil organic carbon content and no obvious decomposition feature of organic carbon  $\delta^{13}\text{C}$ . Changes in the content and  $\delta^{13}\text{C}$  values of the soil organic matter around 2.0 ka BP was probably related to the shift of climate and environment at that time.

### Student Submission

No

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