**Figure Captions**

Fig. 1 Location of SAYR on the QTP and the sampling sites in the SCG basin

Fig. 2 Landscapes for the two permafrost profiles (2a; 2b) and sampling pictures (2c; 2d)

Fig. 3 Variations in DOC and δ13CDOC of ground ice and (total organic carbon) TOC of soil along depth in P-1. The pink bars represent four peaks of DOC in ground ice and the corresponding values of δ13C and TOCsoil. And the blue bars denote the lower DOC and more negative δ13C values.

Fig. 4 Variations in DOC and δ13CDOC of ground ice and (total organic carbon) TOC of soil along depth in P-2. The pink bars represent four peaks of DOC in ground ice and the corresponding values of δ13C and TOCsoil. And the blue bars denote the lower DOC and more negative δ13C values.

Fig. 5 Comparison of DOC in different water components on the QTP

Fig. 6 Boxplot of DOC concentrations in different ground-ice types in northern Hemisphere permafrost regions. Plot shows minimum, maximum and median values, and the sample sizes in each category.

Fig. 7 Comparison of δ13CDOC in different water components on the QTP

Fig. 8 The DOC behaviors of ground ice along depth in both profiles. The grey bars represent the prominent DOC accumulation areas

Fig. 9 Conceptual diagram of DOC dynamics under permafrost thaw in the SAYR.

The BD and PD stands for the biochemical degradation and photo degradation