

## **Supplementary Materials**

### **Determination of long-term soil apparent thermal diffusivity using near-surface soil temperature on the Tibetan Plateau**

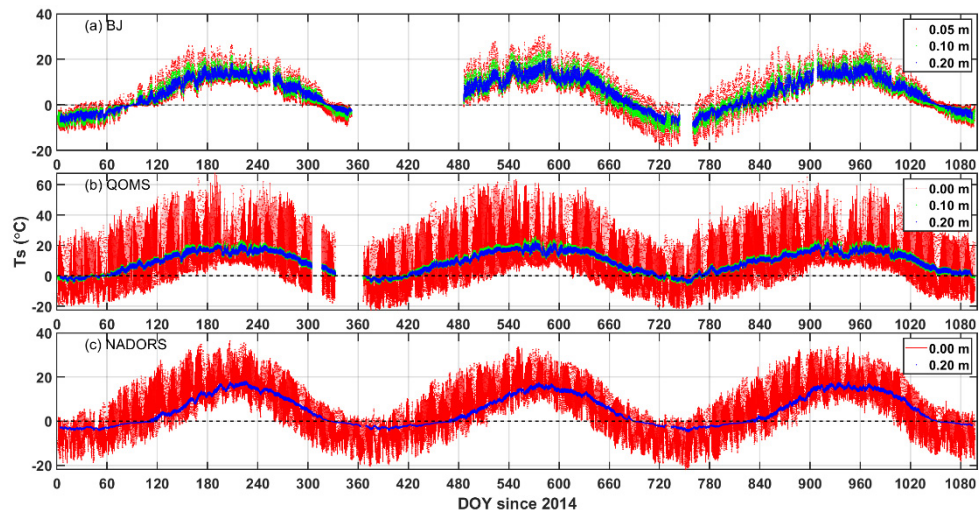
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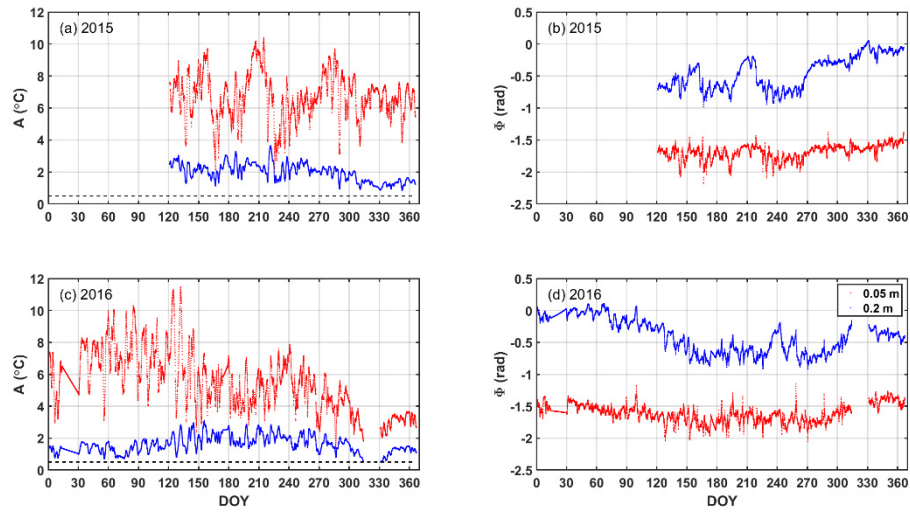
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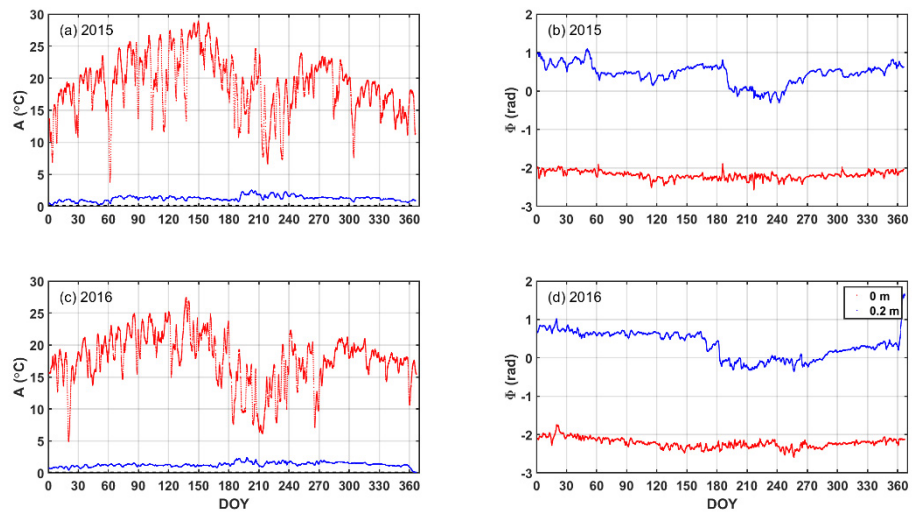
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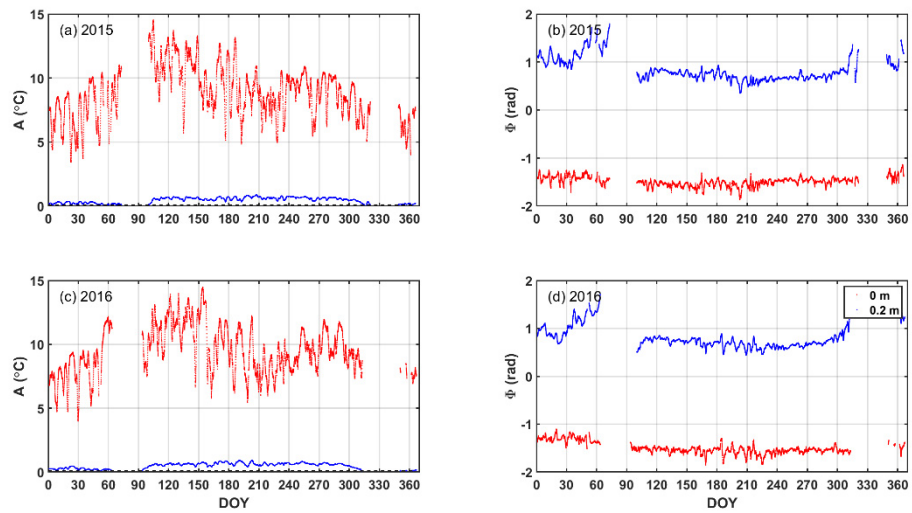
**Figure S1.** The variations of soil temperature at (a) BJ, (b) QOMS, (c) NADORS, respectively.



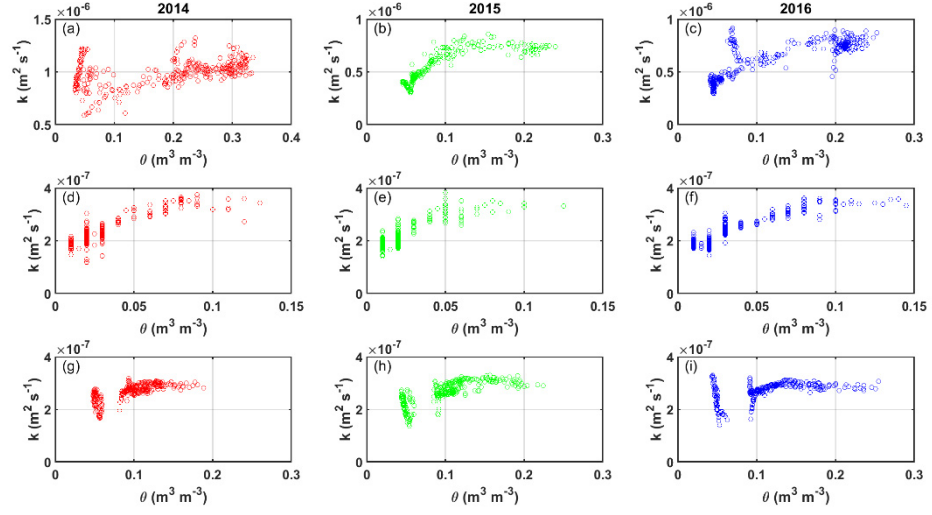
**Figure. S2.** The amplitude ( $A$ ,  $^{\circ}\text{C}$ ) and phase ( $\Phi$ , rad) of soil temperature 2015-2016 at BJ.



**Figure. S3.** The amplitude ( $A$ , °C) and phase ( $\Phi$ , rad) of soil temperature 2015-2016 at QOMS.



**Figure. S4.** The amplitude ( $A$ , °C) and phase ( $\Phi$ , rad) of soil temperature 2015-2016 at NADORS.



**Figure. S5.** The variation of soil apparent thermal diffusivity ( $k$ ,  $\text{m}^2 \text{s}^{-1}$ ) with soil moisture ( $\theta$ ,  $\text{m}^3 \text{m}^{-3}$ ) on a daily timescale in 2014 (in the 1<sup>st</sup> column), 2015 (in the 2<sup>nd</sup> column) and 2016 (in the 3<sup>rd</sup> column) at (a-c) BJ, (d-f) QOMS, and (g-i) NADORS, respectively.