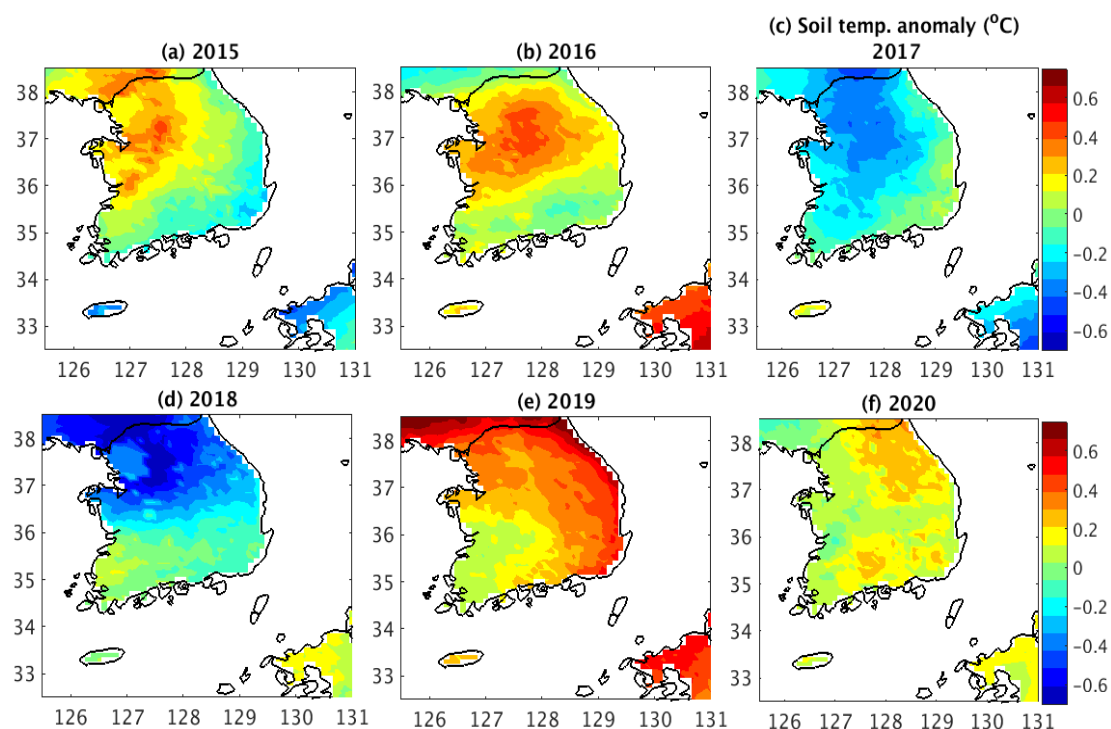
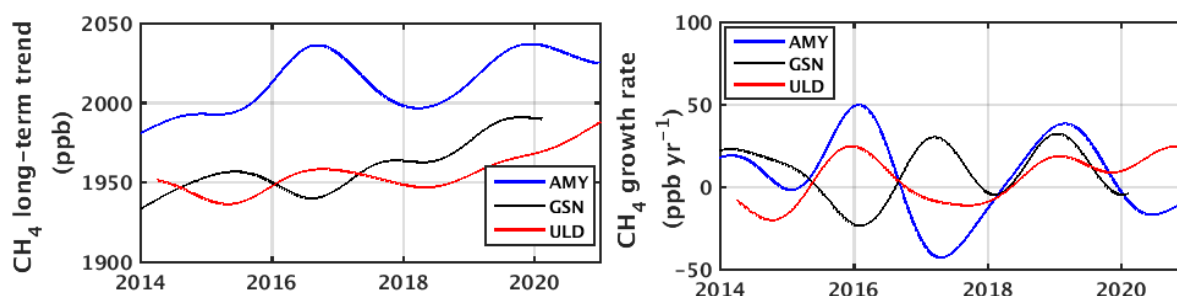


## Supplementary



**Figure S1.** Spatial plot of soil temperature (10 cm depth) anomaly (°C) during 2014-2020 (a-f).



**Figure S2.** The plot demonstrates de-seasonalized long-term trend (left panel) and instantaneous growth rates (right panel) for AMY, Gosan (GSN 33.3°N, 126.16°E, 71.47 m) during Jan. 2014-Feb. 2020, and Ulleungdo (ULD, 37.48°N, 130.9°E, 220.9 m) during Jan. 2014-March 2021.