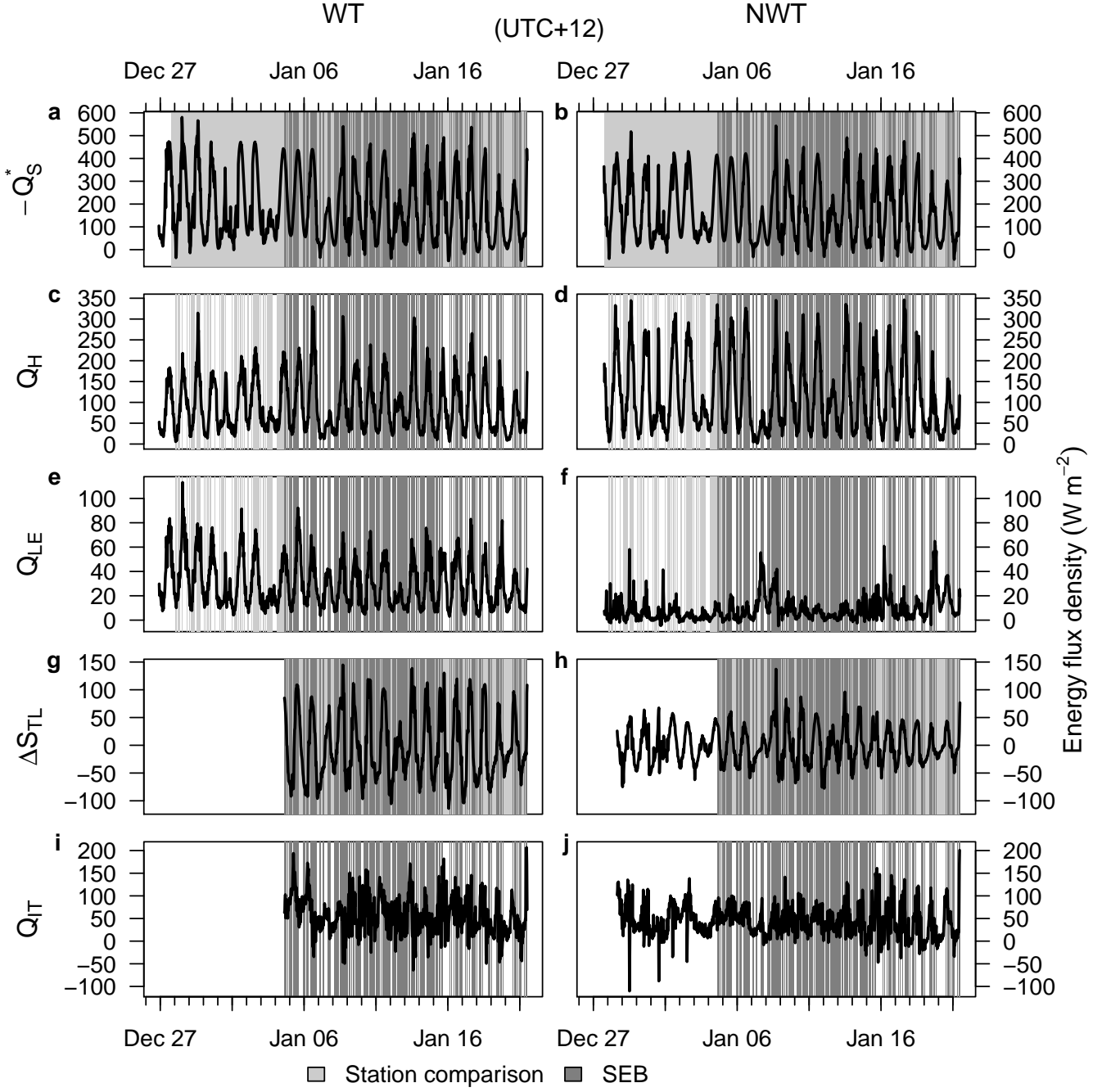
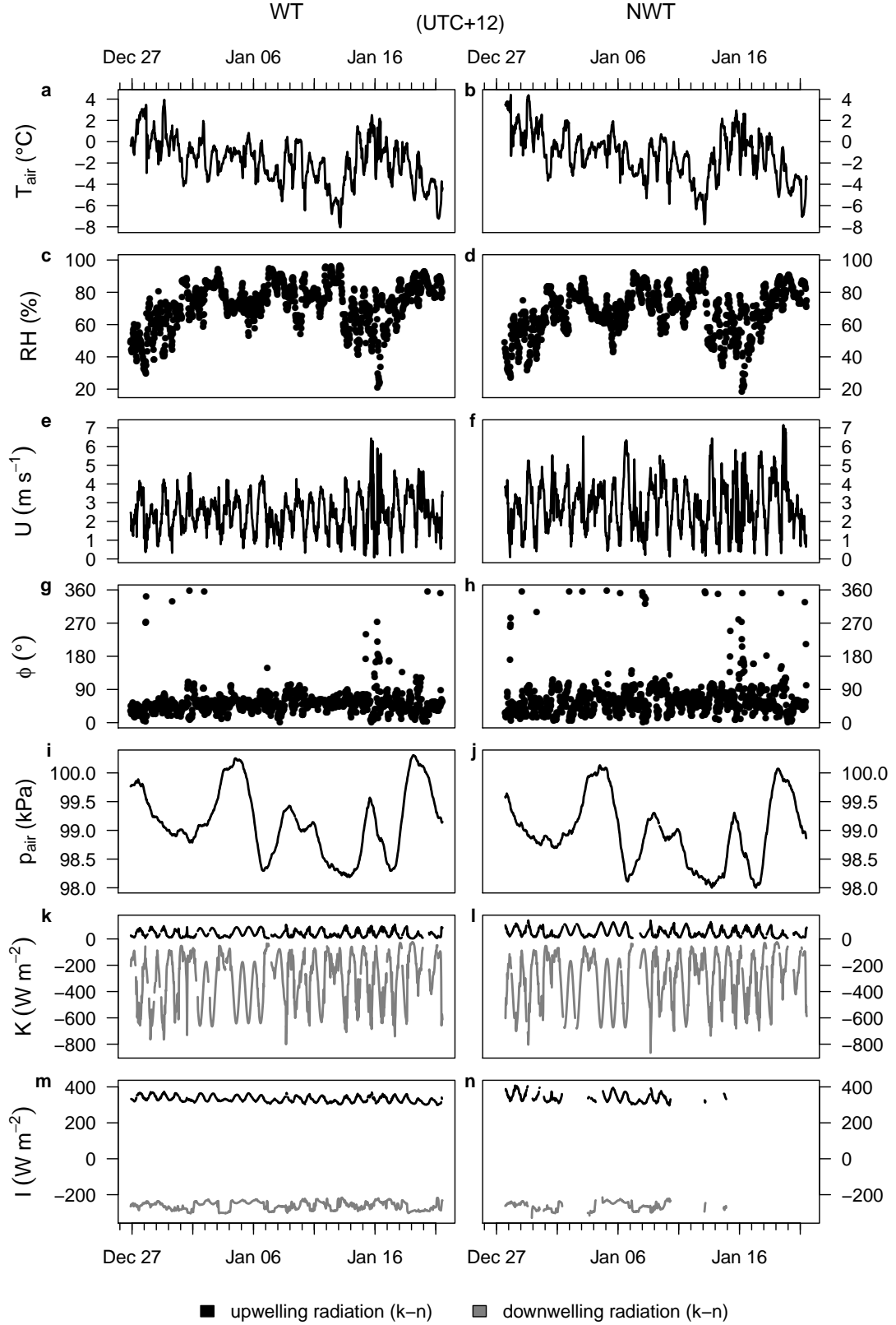


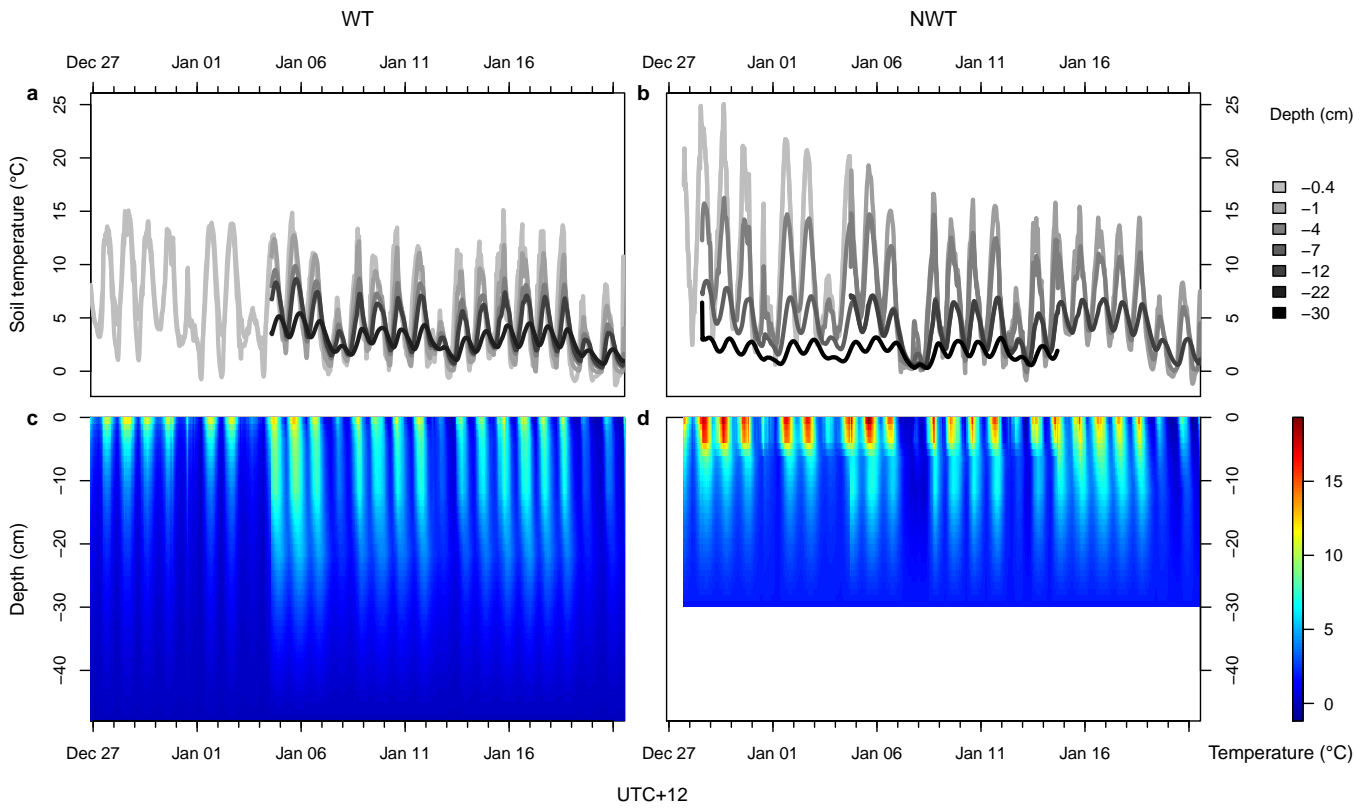
**Figure 1** Slope map showing experimental sites in lower Taylor Valley, with slopes denoted for each site. LIDAR data are taken from *Fountain et al.* (2017). WT (Water Track), PLD (Reference 1, paleolake delta) and GT (Reference 2, glacial till).



**Figure 2** Time series of gap-filled surface energy balance components over the whole measurement period for WT (water track) and NWT (non-water track). Bright gray shading denotes data used for inter-station comparison of individual surface energy balance components. Dark gray shading shows data used for calculation of surface energy balance, which is the same selection for all energy fluxes. Net radiation  $-Q_S^*$  (a–b), sensible heat flux  $Q_H$  (c–d), latent heat flux  $Q_{LE}$  (e–f), heat storage change in thawed layer  $\Delta S_{TL}$  (g–h), soil heat flux at ice table depth  $Q_{IT}$  (i–j).



**Figure 3** Time series of meteorologic measurements over the whole recording period for WT (water track) and NWT (non-water track). Air temperature  $T_{\text{air}}$  (a–b), relative humidity  $RH$  (c–d), mean horizontal wind speed  $U$  (e–f), mean azimuth wind direction  $\phi$  (g–h), barometric air pressure  $p_{\text{air}}$  (i–j), up- and downwelling shortwave radiation  $K$  (k–l) and longwave radiation  $I$  (m–n).



**Figure 4** Time series of soil temperatures over the whole recording period for WT (water track) and NWT (non-water track). Soil temperature measurements (a–b) and soil temperature profiles with logarithmic interpolation between measurements (c–d).

## References

Fountain, A. G., J. C. Fernandez-Diaz, M. Obryk, J. Levy, M. Gooseff, D. J. van Horn, P. Morin, and R. Shrestha, High-resolution elevation mapping of the mcmurdo dry valleys, antarctica, and surrounding regions, *Earth System Science Data*, 9(2), 435–443, doi:10.5194/essd-9-435-2017, 2017.