Evaluation data

• Two Orchards – ~7% and ~60% veg. fraction cover, respectively

• R3 wheat site: two TIR datasets (simultaneously observed: oblique & nadir)

Methods: SPARSE & UFR97

• SPARSE (Soil Plant Atmosphere Remote Sensing Evapotranspiration, Boulet et al., 2015, HESS):
  - Two sources - soil/veg. thus 2 EB expressions:
    \( R_{n,xx} - G^* = \lambda E_{xx} + H_{xx}; xx = \text{soil (g), veg. (v)} \)
  - RTM: out-of-canopy TIR formulation:
    \( T_{\text{rad}}(\theta_v) = f(T_g, T_v) \)

• Extended and coupled with the Unified François model (UFR97; Bian et al., 2018, RSE) – sunlit/shaded elements of soil/veg. sources:
  - Sunlit/shaded soil/veg. elements thus 4 EB eqs.:
    \( R_{n,xx} - G^* = \lambda E_{xx} + H_{xx}; xx = \text{soil (s), veg. (h)} \)
  - RTM: out-of-canopy TIR formulation:
    \( T_{\text{rad}}(\theta_v \Phi_v) = f(T_{gs}, T_{gh}, T_{vs}, T_{vh}) \)

Conclusions

• With nadir \( T_B \) forcing, satisfactory overall fluxes are - as expected - estimated by both algorithms as anisotropic effects are negligible
• Inclusion of the solar direction (thus partitioning between diffuse/direct rad.) appears to improve the partitioning of overall LE
• Sensitivity of flux retrievals to direction of view is reduced; assessments encompassing a broad-range of viewing angles (including the hotspot region) are nonetheless necessary