

Radiometer orientation

I had noticed earlier in the day that the NR01 at tnw05 looks directly down on the solar panels. Later today, I saw that the radiometers at tse01 and tse02 are similarly oriented (though not as obvious, since these are 30m towers). I assume that the set-up crew was following standard procedure to point both the panels and the radiometer to the south. Our panels are 1.5mx0.7m each, so two at an angle of 60 degrees would have the same cross-section – an area of 1.05m^2 . At a distance of 5m, the total area seen by a hemispheric radiometer is $2 \cdot \pi \cdot R^2 = 157.08\text{m}^2$. Thus, the panels influence 0.7% of the incoming radiation. If they were 15 degrees warmer than the ambient surface, they would emit about $75\text{W}/\text{m}^2$ higher, but this would be only a $0.5\text{W}/\text{m}^2$ error on $R_{lw,out}$, which is within measurement error. I note that there will be some influence from the panels anywhere they are deployed on the tower (and shading from the tower if they aren't pointed south).

Thus, even though it seems bad, I am inclined to leave these sensors as installed.