During October to December 2003 we carried out experiments to assess the impact of high solar radiation levels (as normally occurring in a tropical region of Southern China) on the cyanobacteria *Nostoc sphaeroides* and *Arthrospira (Spirulina) platensis*. Two types of experiments were done: a) Short-term (i.e., 20 min) oxygen production of samples exposed to two radiation treatments (i.e., PAR+UVR—280–700 nm, and PAR only—400–700 nm, PAB and P treatments, respectively), and b) Long-term (i.e., 12 days) evaluation of photosynthetic quantum yield (Y) of samples exposed to three radiation treatments (i.e., PAB; PA (PAR+UV-A, 320–700 nm) and P treatments, respectively). *N. sphaeroides* was resistant to UVR, with no significant differences ($P>0.05$) in oxygen production within 20 min of exposure, but with a slight inhibition of Y within hours. A fast recovery of Y was observed after one day even in samples exposed to full solar radiation. *A. platensis*, on the other hand, was very sensitive to solar radiation (mainly to UV-B), as determined by oxygen production and Y measurements. *A. platensis* had a circadian rhythm of photosynthetic inhibition, and during the first six days of exposure to solar radiation, it varied between 80 and 100% at local noon, but cells recovered significantly during afternoon hours. There was a significant decrease in photosynthetic inhibition after the first week of exposure with values less than 50% at local noon in samples receiving full solar radiation. Samples exposed to PA and P treatments recovered much faster (within 2–3 days), and there were no significant differences in Y between the three radiation treatments when irradiance was low (late afternoon to early morning). Long-term acclimation seems to be important in *A. platensis* to cope with high UVR levels however, it is not attained through the synthesis of UV-absorbing compounds but it seems to be mostly related to adaptive morphological changes.