More Information on Light Pollution

About Light Pollution

Light Pollution is a form of environmental degradation. The wasteful light from outdoor manmade light sources emitted directly upwards or reflected from the ground can pollute the entire sky through scattering by clouds, fog, and pollutants like suspended particulates in the atmosphere. Thus the night sky brightness is an indicator of the level of light pollution. Light pollution not only rids us of the starry night sky, it also indicates a waste of electric energy and damages the natural and our living environment.

About Hong Kong Night Sky Brightness Monitoring Network and Sky Quality Meter

The night sky brightness data of *Hong Kong Night Sky Brightness Monitoring Network* is measured by a portable and easy-to-use instrument called the Sky Quality Meter (SQM). Imported from Canada, the SQM is a playing-card size device which instantly gives accurate sky brightness values. Started in May 2010, the data are taken with 17 SQMs collected every minute at 18 observing sites.

About the international standard of dark sky

The international standard of dark sky was established by the International Astronomical Union in 1979 and refers the brightness of a dark moonless sky not suffering from light pollution by artificial lightings. It is defined to be a night sky brightness level at zenith of 21.6 mag/arcsec². The 12 urban stations of NSN reported an average sky brightness of 15.6 mag/arcsec², between 8:30-11:00pm, while the 6 rural stations reported an average of 18.0 mag/arcsec².

About mag/arcsec²

 $mag/arcsec^2$ (magnitude per arc second square) is an international unit of sky brightness. The brighter the sky, the smaller is the magnitude and vice versa. This unit is in logarithmic scale, meaning that 1 unit difference implies a brightness ratio of about 2.512 while difference of 5 magnitudes is defined to imply a brightness ratio of exactly 100.

Remark:

The *Hong Kong Night Sky Brightness Monitoring Network* was organized by the Department of Physics of The University of Hong Kong and the co-organizers include the Hong Kong Observatory, Hong Kong Space Museum, Hong Kong Astronomical Society, Ho Koon Nature Education cum Astronomical Centre (Sponsored by Sik Sik Yuen), and The Camping Association of Hong Kong, China, Ltd.

Figure Captions





This plot shows the average nightly variation of night sky brightness in Hong Kong as measured by the NSN. The average urban night skies (solid curves) were brighter than the international standard of dark sky by 100 to 1,000 times during 8:30-11pm, while the rural night skies (dash curves) were brighter than the standard by 20-40 times over the same period. Sky brightness in urban areas, such as Tsim Sha Tsui and King's Park, can be seen to drop near 11pm, 12am, and 1am every night, similar to the timing pattern of manmade lightings.



