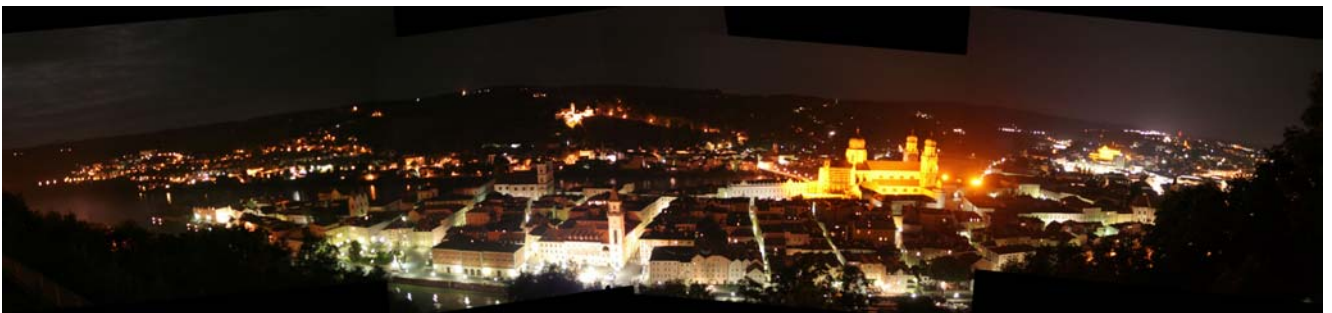
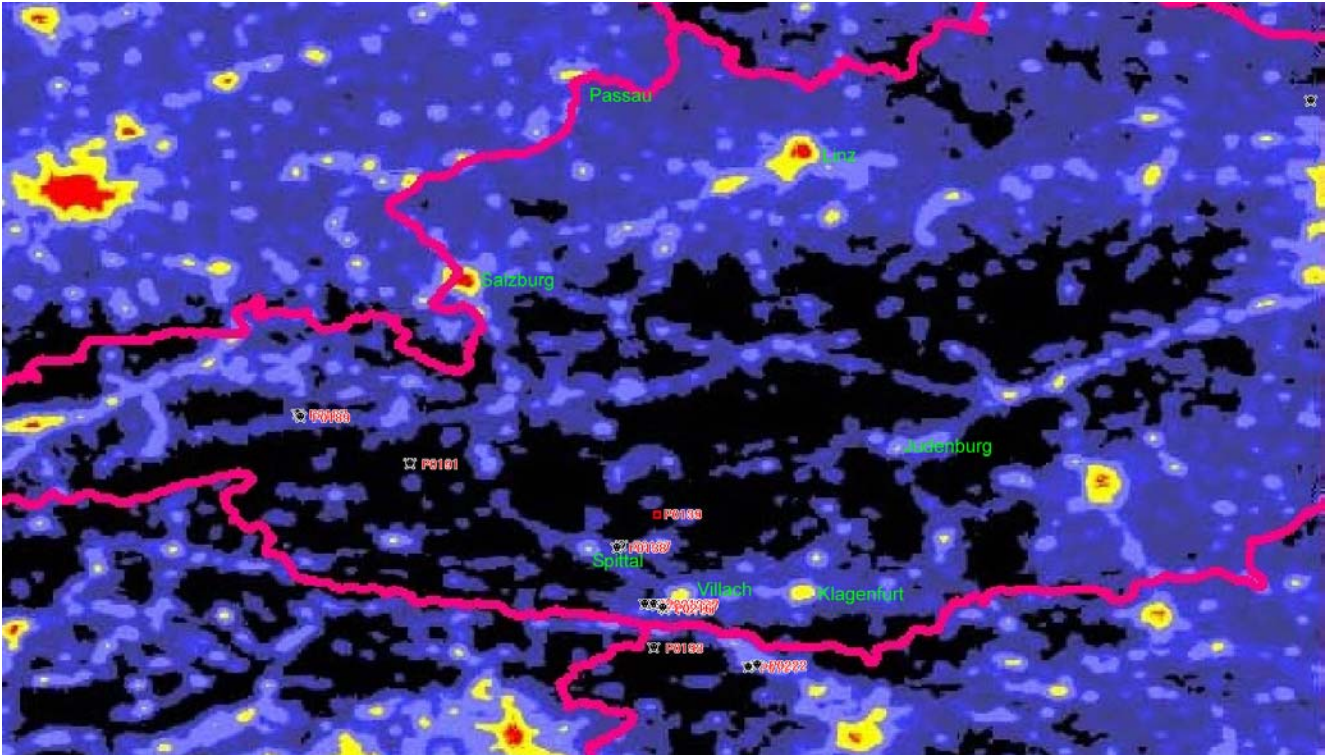


Light Pollution excursion to Vienna and the Alps

A report about the travel to the 8th European Dark Sky Symposium Aug 22/23 2008 in Vienna
Andreas Hänel

1. Passau

Passau is a small city (50.000 inh.) in the southeast of Germany close to the Austrian border. It is situated in a relatively dark region as can be seen on the DMSP satellite images.



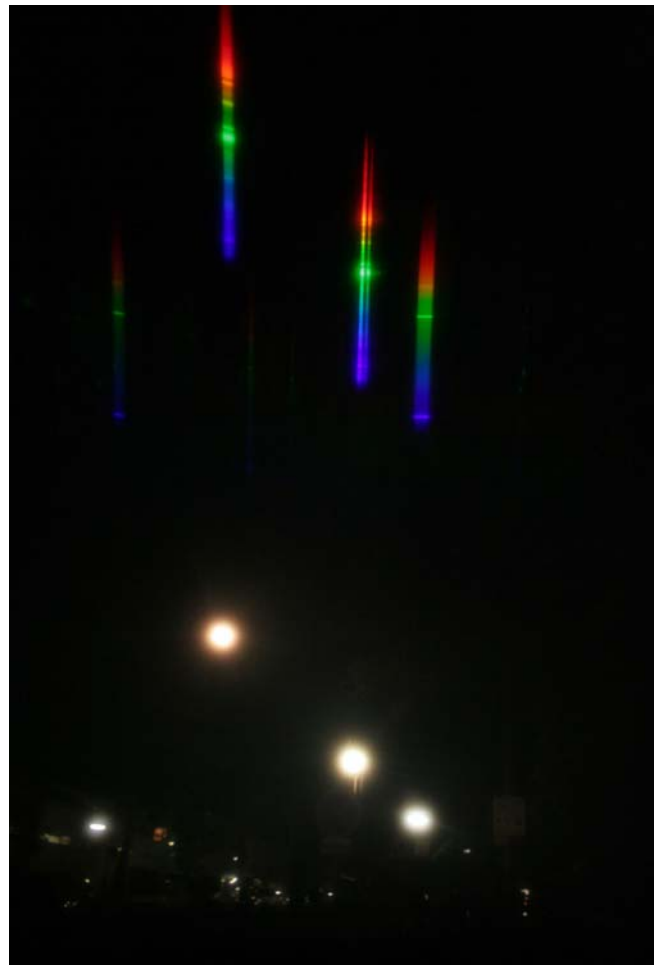
From Veste Oberhaus one can look over the old city center (110 m high). While nearly no light comes from the roads, the cathedral Stephansdom and the road along the Donau shine up bright, as well as the industrial and commercial areas in the south-west. (exposure time 1 s, 1:1,8, ISO 800)

The Austrian lighting planner Martin Klingler has removed the luminaries in the main road Ludwigsstraße in 2007. Instead he installed 70W flood lamps that illuminate the road from the roofs. People living there complain that the illuminates their rooms, but upward light is largely reduced.

2. Wien Kuffner-Sternwarte

Aug 22 and 23, 2008, the 8th European Symposium for the Protection of the Night Sky took place at the Kuffner Observatory in Wien-Ottakring, which was founded as a private observatory in 1884. Scientific work at the observatory stopped in 1917 due to World War I and now it is used as a public observatory.

The municipality of Wien had installed just some days before the symposium some new full cut-off lighting fixtures around the observatory to reduce light pollution. At least glare has been reduced significantly as the astronomical users of the observatory stated. The fixtures have metal halide lamps installed giving a white light, comparable to the fluorescent lamps around on the main street in front of the observatory. This can be seen in the spectra of the two lamps in the foreground, the left one having more red ("warmer") light in the spectral distribution. The lamp on the right is a fluorescent tube.



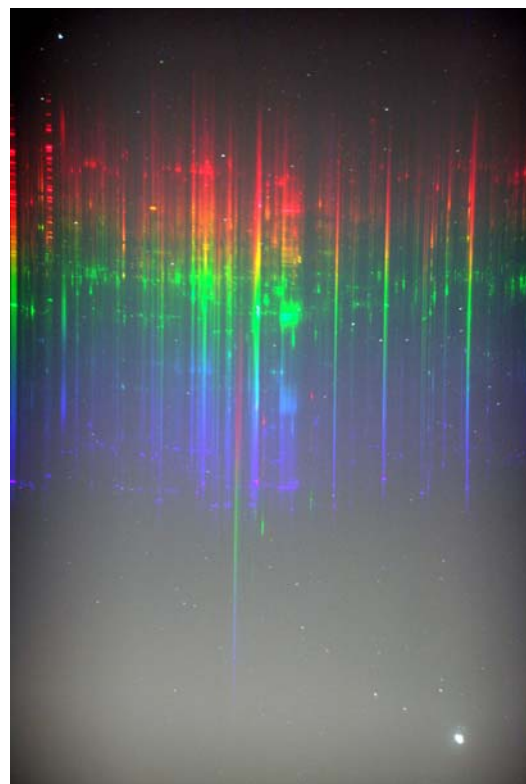
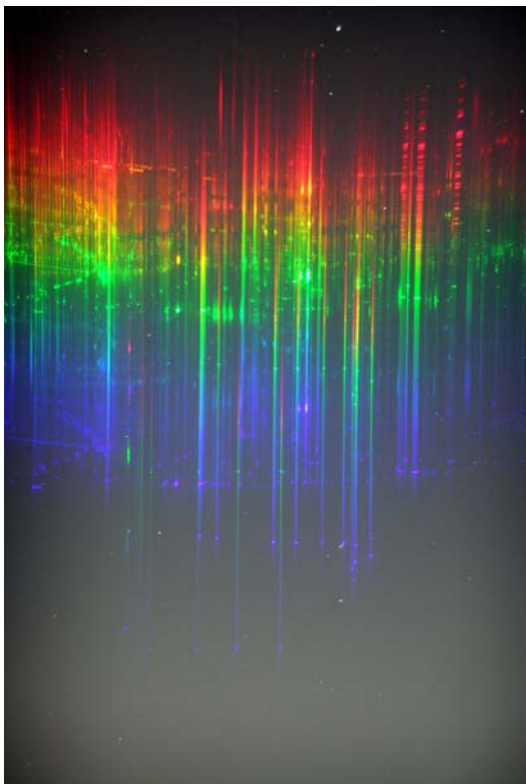
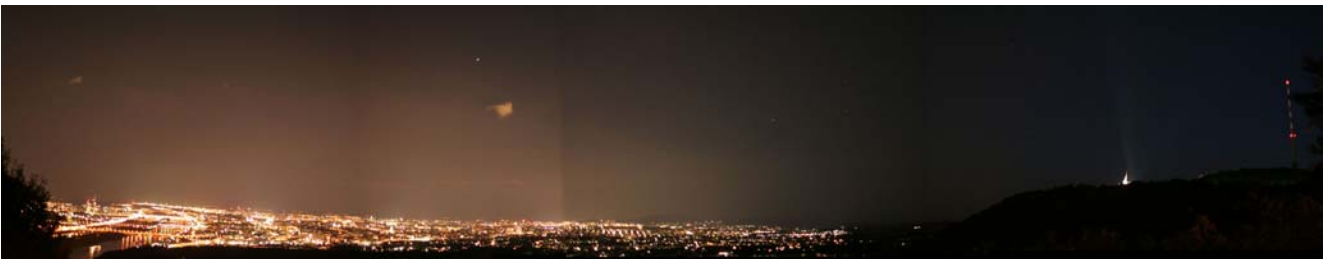


The same was done in the small street, where two luminaries had been replaced. They direct the light very well towards the street, only few light is projected on the walls of the surrounding houses. However due to the high compact intensity of the HID lamps, they are very glaring, especially if the luminary is a bit inclined, as one has been shocked by a crash.

3. Wien Leopoldsberg

From the Wienerwald in the west of Vienna one has a good look over the Vienna Basin (Wiener Becken). as the mountains are about 3-400m higher. The main panorama views are from the Leopoldsberg (420m, from North), Kahlenberg (450m), Cobenzl (377m), Wilhelminenberg (360m).

View from Leopoldsberg (exposure time 2s, 1:1.8, ISO 400) towards Wien. The illumination of the church disturbed a little bit, sky background was $19.2 \text{ mag/arcsec}^2$ (SQM-L) on Aug 24th. The very badly directed illumination of the church St. Joseph on the Kahlenberg can be recognized by the light beam towards the sky.

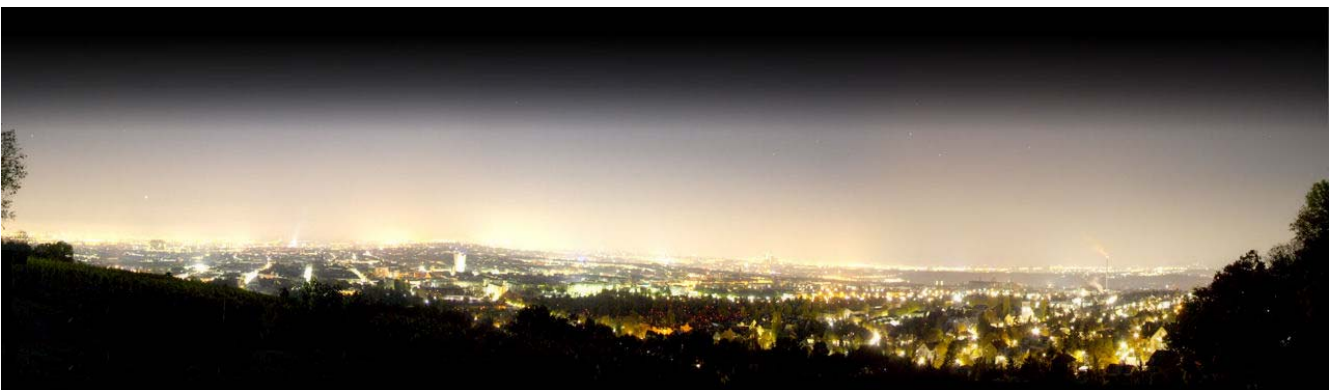


Some spectra of the city light have been photographed, they demonstrate that mainly fluorescent (continuum with emission lines) and metal halide lamps (broad emissions in the red/yellow and green) are used.

From Leopoldsberg one has also a good view towards the west and north and the Weinviertel. (exposure time 2 sec)



The title picture of the symposium has been taken from Wilhelminenberg, it shows very well the inversion layer above the city (no exposure data known, photos by Christoph Goldberg):



4. Millstädter See

The Millstadt lake is situated in Kärnten (Carinthia) at the south of one of the darkest regions of the Austrian Alps, but it is an intensively used tourist region. The lake is at an height of 590 m to the south a chain of mountains rises to about 870 m, before falling down to the Drau valley at 520 m altitude with the city of Spittal. To the north the Millstätter Alpe rises to 2100 m and is the southern extension of the Nockalmberge. 4 streets go up to the Alpe and offer an easy access to the higher regions: Tschiernockalm (1700 m), Millstädter Alm (1600m), Lammersdorfer Alm (1644m), Sappler-Alm (1300m). While Tschiernockalm is oriented more towards the south-west, the others offer a free view towards the south and therefore towards the lake, but also towards the culminating point of the celestial objects. This and their easy access would make them ideal astronomical observing places, though the region is developed for touristic reasons and appears quite bright on the DMSP maps.



However, at the Lammersdorfer Hütte in the early evening of 2008, Aug 28th 3 skybeamers disturbed and shone up from the valley, but they were switched off after about 30 minutes. Sky background could not be measured because clouds remained during the observing time near the zenith. On the way back, at an altitude of 950m 21.2 mag/arcsec² were measured.



5. Nockberge

The Nockberge National Park is in a relatively dark area, though influenced by the nearby touristic regions. It is crossed by the 35 km long Nockalmstrasse with the highest point at the Eisentalhöhe (2049m). This parking is far away from artificial lights, in the zenith the starry sky is magnificent, and a hut protects against the wind.

But close to the horizon, especially towards the south, the glow of the cities can be seen very well (emphasized by some cirrus clouds):

towards the southeast (azimuth 127°) Klagenfurt 55 km away, more towards the south (168°) Villach in 37 km distance and towards the southwest (230°) Spittal 25 km away. Towards the west and north the horizon is dark.

The sky brightness was measured at 21.4 towards the Milky Way and 21.65 mag/arcsec² west of the Milky Way. This value is comparable to those that have been measured on the Edelweisspitze at the Grossglockner.



On the way back, one could observe very well the bad lighting in the small village Innerkrems, directly to the north of the observing place: unshielded globe luminaires with high pressure mercury vapour lamps shine into the night sky – this should be changed!

