A stellar method for characterising the field of view of a Noctilucent Cloud camera

David A. Hooper[(1)]

(1) STFC Rutherford Appleton Laboratory, Chilton, Didcot, OX11 0QX, UK

The Aberystwyth MST Radar Facility operates an automatic Noctilucent Cloud (NLC) camera in connection with its mesospheric observation programme. The landscape within the camera's field of view is relatively flat. This is good from an observation point of view, since the camera's low latitude (51.15° N) means that NLCs tend to occur at low elevations. However, the lack of landscape features makes it difficult to determine the camera's pointing direction using a compass. This was the original motivation for using the known locations of stars as they pass through the images. An unexpected discovery of the analysis is that the images are affected by significant perspective distortion. This is a result of the camera being directed upwards, by approximately 20°, in order to ensure that the sky fills most of the field of view. Vertical lines converge to a vanishing point, which occurs some distance above the top of the image. A failure to take this effect into consideration can result in errors of up to several degrees in estimates of both elevation and azimuth angles. The camera has a wide angle field of view - 67.9° by 45.3° - makes this effect particularly noticeable.