

Observations of the inner satellites of Jupiter and faint satellites of Saturn on Pik Terskol: Method of observation

K. Jockers¹, I. Kulyk², N. Karpov³, A. Sergeev³

¹*Max-Planck-Institut für Aeronomie,*

D-37191 Katlenburg-Lindau, Germany. E-mail: jockers@linmpi.mpg.de

²*Main Astronomical Observatory of the National Academy of Science,*

252650 Kyiv, Golosiiv, Ukraine. E-mail: kulyk@uct.kiev.ua

³*International Center for Astronomical and Medico-Ecological Studies,*

252650 Kyiv, Golosiiv, Ukraine. E-mail: karpov@mao.kiev.ua, sergeev@mao.kiev.ua

Ground-based astronomical observations of the inner moons of planets suffer from the proximity of the satellites to the bright disk of the planet. We have explored the possibilities to observe the inner moons of Jupiter and Saturn from Pik Terskol Observatory (Northern Caucasus). The observations were performed with the Two-Channel Focal Reducer of the Max-Planck-Institute for Aeronomy at the 2m Zeiss Telescope of Pik Terskol. This site is at an altitude of 3100 m. Therefore we frequently profit from a coronal sky. In addition, as the focal reducer provides a real image of the telescope entrance pupil, a Lyot stop can be put at this exit pupil and eliminates the diffraction produced by the spider holding the telescope's secondary mirror. To eliminate the glare of the planet we use anti-reflection coated black glass in the Cassegrain focal plane, i. e. before the light enters the focal reducer. This is more efficient than any black metal surface. The observations are performed in the methane band at 890 nm. Because of Saturn's bright ring the methane band is much less useful in case of Saturn than in case of Jupiter. Last not least, much can be achieved with proper image processing applied after the observations have been performed. We will present images of the neighborhood of Jupiter and Saturn which demonstrate the difficulties of the observations and how they can be overcome.