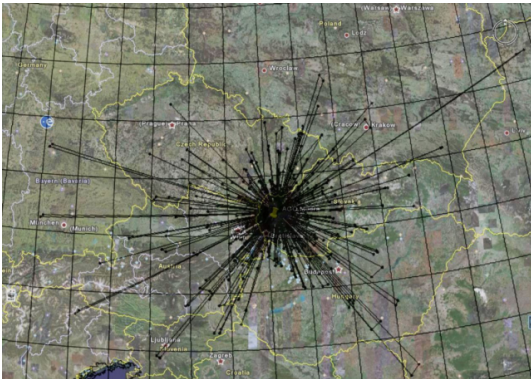


**ALL-SKY VIDEO OBSERVATIONS OF METEORS OVER CENTRAL EUROPE FROM MODRA.** J. Toth<sup>1</sup>, L. Kornos<sup>1</sup>, P. Spurny<sup>2</sup>, S. Gajdos<sup>1</sup>, D. Kalmancok<sup>1</sup>, P. Zigo<sup>1</sup>, J. Vilagi<sup>1</sup>, P. Veres<sup>1</sup>, M. Hajdukova Jr.<sup>3</sup> and P. Harvan<sup>1</sup>, <sup>1</sup>Department of Astronomy, Physics of the Earth and Meteorology, Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava, Mlynska dolina, 842 48 Bratislava, Slovak Republic. [toth@fmph.uniba.sk](mailto:toth@fmph.uniba.sk), Astronomical Institute AV CR, Fricova 298, 25165 Ondrejov, Czech Republic, <sup>3</sup>Astronomical Institute of Slovak Academy of Sciences, Dubravská cesta 9, 845 04 Bratislava, Slovak Republic.

**Introduction:** The new fish-eye video meteor system covering substantial part of Central Europe (Fig. 1) has started regular observations on April 1, 2007 from the Astronomical Observatory in Modra, Comenius University, Slovakia. The system consists of a fish-eye Canon 2.4/15 mm objective, image intensifier, Meopta 1.9/16 mm lens and a Watec 120N camera. The analog video signal is digitized in real time and analyzed by “UFOCapture” software (author Sonotaco, [http://www.sonotaco.com/e\\_index.html](http://www.sonotaco.com/e_index.html)), which is able to detect any moving object including meteors. The resolution of the system is 720x540 (15 arcmin/px), corresponding to a field of view of 170x140 degree (Fig. 2). The limiting stellar magnitude is +5.5 and meteors up to magnitude +3 are detected. The system operates almost autonomously.



**Figure 1:** Map of the topographic positions of recorded meteors by TV system from Modra in September 2007.

**Astrometric precision:** The astrometry precision of this intensified fish-eye TV system is quite good. The standard deviation for more than 50 stars reduced by the “UFOAnalyserV2” is less than 0.05 degree for zenithal distances up to 60 degree. Also we have tested the position accuracy for several stars and planets near the horizon, where the astrometry precision of the measurement decreases to 0.5 degree. The fourth order polynomial expansion used by UFOAnalyserV2 is insufficient to correct fish-eye projection, especially near horizon [1]. Also, we present results from the astrometry and velocity reduction of the video system for several fireballs simultaneously observed by pre-

cise photographic cameras of the European Fireball Network coordinated by Spurny, Ondrejov Obs., Czech Rep.



**Figure 2:** Composite all-sky image obtained by TV system in Modra. Bright meteor and background stars were recorded on March 6, 2008. North is down and West is on the left.

**Conclusions and future work:** We described our experience with the new fish-eye TV system as well as the UFOCapture and UFOAnalyser. We are able to capture meteor activity under suitable conditions and provide reliable data, although we do not have permanent and identical second station yet. We will be able to provide TV meteor orbital data on the regular bases in the near future.

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#### References:

- [1] Toth J., Kornos L., Gajdos, S., Kalmancok D., Zigo P., Vilagi J., Hajdukova, M. Jr. (2007) *Earth Moon Planet*, DOI 10.1007/s11038-007-9160-8