

Meteor observations and studies in INASAN

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Meteor observations have the specific property: we do not know in advance neither point on the celestial sphere, no about a moment when the event occurs. Besides, a meteor flash in the atmosphere has duration few seconds or less. Therefore the wide-field cameras are used for meteor observations.

TV camera FAVOR (FASt Variability Optical Registrator) was used for observations of meteors in 2006-2009 (13500 meteors were detected). FAVOR camera has a field of view of $18^\circ \times 20^\circ$ at the CCD 1380x1024 pixel and has a limiting magnitude of above $+8^m$ for meteors. The main meteor showers (Orionids, Taurids) were analyzed and results are discussed here.

The meteor camera "PatrolCa" (the camera Watec LCL-902HS with the objective Canon 6/0,8) are using for meteor observations in INASAN from 2011 to present days. The results of double-stations observations are presented.

The interaction of meteor particles with the atmosphere produces the optical (actually meteors) and infrasound emission. Most meteor particles do not reach the surface of the Earth, their properties (mass, size, density and etc.) are estimated based on the observational data under different assumptions. The details of meteor-atmosphere interaction are poorly known, the parameters of meteor particles are determined with large uncertainty. Simultaneous registration of meteors by different techniques provides possibility to refine both the meteor parameters and models of particle interactions with the atmosphere. Multi technique (optical and acoustical) meteor observations were organized by Institute Astronomy RAS and Institute for Dynamics of Geospheres RAS in 2014 and continued in August 2016. The multi - station optical observations are conducted on Zvenigorod observatory of INASAN (ZO INASAN), the "Istra" station, Geophysical observatory IDG RAS Mikhnevo (GPhOMikhnevo). Simultaneously infrasound meteor observations are carried out at three stations (IDG RAS, GPhOMikhnevo, ZO INASAN) in 2016 (and present time). The meteoroids mass estimations were got by these data. Comparison of masses and energies obtained at optical and acoustical observations show considerable variation of values (up to two orders of magnitude or more).