

Subaru Telescope Sciences Archive System: SMOKA

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<http://smoka.nao.ac.jp/>

We introduce the astronomical science data archive system, SMOKA (the Subaru-Mitaka-Okayama-Kiso-Archive). SMOKA has been developed and maintained by Astronomical Data Analysis Center of National Astronomical Observatory of Japan (NAOJ). Since astronomical data is a wealth of information, they are available for new researches from another viewpoint of observer. Astronomical data archive is the system which keeps and supplies these observational data for astronomical research or education.

SMOKA provides access to the data of Subaru Telescope, the 188 cm telescope at Okayama Astrophysical Observatory (OAO), and the 105 cm Schmidt telescope at Kiso Observatory/University of Tokyo, through the World-Wide-Web (WWW) (<http://smoka.nao.ac.jp>). Subaru Telescope is an 8.2 meter telescope at the summit of Mauna Kea, Hawaii, USA, operated by the NAOJ. Subaru telescope has 9 instruments providing imaging and spectroscopic capabilities over the full range of wavelengths from optical to mid-infrared. SMOKA also provides the CCD data of 2 instruments taken with OAO 188cm telescope and Kiso 105cm telescope. At an open use telescope, such as Subaru telescope, the observational time is allocated based on the proposal which was passed the screening. Successful observers will have exclusive access to their data for a propriety period (18 months for Subaru telescope) from the time of observation, after which the data will be freely available from the archive. SMOKA user can search and retrieve these public data online. As of Jan 31, 2006, the total data number archived in SMOKA is about 940,000 frames. The data size of a frame is about 0.5MB-16MB. SMOKA has the data taken with Subaru telescope since 1999, with OAO 188cm telescope since 1991 and with Kiso 105cm telescope since 1993.

In SMOKA system, we make a database of observation information of data (coordinates, observation time, wavelength, object name etc.) and data quality indices obtained by data analysis (sharpness of data image, background noise value etc.). This database is used for data finding. The data format which SMOKA stores and provides is FTIS (Flexible Image Transport System). FITS is the standard data format most widely used within astronomy and endorsed by both NASA and the International Astronomical Union. A FITS file is comprised of Header and Data units. FITS Header provides descriptive information about the data. The observation information of data kept in the SMOKA database is extracted from the FITS header of the data.

In order to promote astronomical researches and educations using archived data, an archive system should not only store data, but also provide the user interface to find the data of interest and give information for data analysis. While SMOKA has been in operation since June 2001, a lot of new features have been developed and implemented. Now, SMOKA provides 7 WWW search interfaces (at the beginning, only 2 interfaces). For example, there are interfaces for data search from a list of object names, for minor bodies in the solar system, for data search from various constraints (coordinates, observation time, wavelength etc.) and so on. Search results are shown in a tabulated list. SMOKA users can see the shrunk image and the FITS header of the data. Users can also see the environmental information at the observational date (weather data, sky monitor image etc.), which provides information of data quality. Users examine this information, select and request the data. Moreover, users can find out appropriate calibration data set for data analysis at data request. SMOKA provides not only raw data, but also calibrated and reduced data that we produced.

The number of SMOKA user and the scientific papers which make use of data taken with SMOKA have increased. The educational use of SMOKA data also is advanced. In this talk, we will also introduce the scientific and educational results from SMOKA data and argue the problem and future of SMOKA.