

## CLEP PLANETARY SCIENCE DATA ARCHIVING AND SERVICE SYSTEM.

W. ZUO<sup>1,2</sup>, C.L. LI<sup>1,2</sup>, X.G. ZENG<sup>1</sup>, Z.B. ZHANG<sup>1</sup>, X.Y. GAO<sup>1</sup>, L. GENG<sup>1</sup>, Y.Y. XIONG<sup>1</sup>,<sup>1</sup>Key Laboratory of Lunar and Deep Space Exploration, National Astronomical Observatories, Chinese Academy of Sciences, Beijing 100101, China.([zuowei@nao.cas.cn](mailto:zuowei@nao.cas.cn), [licl@nao.cas.cn](mailto:licl@nao.cas.cn), [zengxg@nao.cas.cn](mailto:zengxg@nao.cas.cn), [zhangzb@nao.cas.cn](mailto:zhangzb@nao.cas.cn), [gaoxy@nao.cas.cn](mailto:gaoxy@nao.cas.cn), [gengliang@nao.cas.cn](mailto:gengliang@nao.cas.cn), [liuyx@nao.cas.cn](mailto:liuyx@nao.cas.cn), and [xiongyy@nao.cas.cn](mailto:xiongyy@nao.cas.cn))<sup>2</sup>College of Astronomy and Space Sciences, University of Chinese Academy of Sciences, Beijing 100049, China.([zuowei@nao.cas.cn](mailto:zuowei@nao.cas.cn), [licl@nao.cas.cn](mailto:licl@nao.cas.cn))

**Introduction:** The Planetary Data Archiving and Service system (PDAS) is an information system repository of management and release scientific data for all Chang'E missions of China's Lunar Exploration Program (CLEP). The system consists of two parts: data archiving and management system, data publishing and information service system. System first released in 2006, it went through a completely renewed user interface and system architecture, with the "new" PDAS v4.0 released early 2019 and can be accessed at <http://moon.bao.ac.cn>(Figure1).



Figure.1 The Web homepage of PDAS

The PDAS is being developed and operated within the Ground Research&Application System (GRAS), which located at the National Astronomical Observatories of Chinese Academy of Sciences in Beijing.

**PDAS content:** The PDAS is a multi mission archive containing science datasets from Chang'E missions (CE-1, CE-2, CE-3, CE-4) and will include science data holdings from future Lunar and Mars missions (CE-5 and HX-1). All data sets are compliant with the Planetary Data System (PDS) standards.

**PDAS architecture:** The PDAS is based on a modular and flexible 4-tier architecture. Hardware infrastructure platforms include server clusters, high-capacity disk arrays, automated tape libraries, and business network environments. The system software and data resource platform includes operating system, database, SNFS Shared file system and various data information stored in file system and databases. The technical support platform consists of job scheduling, storage management, GIS, operation monitoring, content management and other platforms. The application software system is divided into five subsystems: data archiving and management, data retrieval and ordering, spatial database and WebGIS publishing, operation monitoring and statistics, user service and support.

**PDAS interfaces:** The primary way to access CLEP planetary science data holdings is through the PDAS GUI, which offers a powerful and user friendly faceted search web interface. Lots of work has been done to ensure homogenous metadata across the many instruments, to enable science driven searches across instruments across missions.

Login is required for proprietary data download for users, but most of the data is public and accessible without requiring to login. Although planetary scientists represent the main users of the PDAS, there are many spectacular images that can also be of interest of the general public and the media. To facilitate access to these, an archive image browser is also available to quickly search and visualize Rosetta browse products. Plans for a map browser using GIS technologies are on-going, based on a still to be defined uniformed geometry information across mission's datasets.

## References:

- [1] ZUO Wei, LI Chunlai, and ZHANG Zhoubin.: Scientific data and their release of Chang'E-1 and Chang'E-2, *Chin.J.Geochem*, Vol. 33, pp. 024-044, 2014.
- [2] Zuo Wei, Liu Yang, Ren Xin, and Li Chunlai.: Design and Implementation of Three-dimensional Visualization of the Moon Based on Chang'E-1 Data of CCD Camera and Laser Altimeter, *Journal of Computer-Aided Design & Computer Graphics*, Vol. 24, No.1,pp. 37-43,2012[in Chinese].
- [3] R. Castroa, L. Abadieb, Y. Makushok, et al. :Data archiving system implementation in ITER's CODAC Core System, *Fusion Engineering and Design*, 96-97,pp. 751-755, 2015.
- [4] José Cavalheiro, Paulo Carreira.: A multidimensional data model design for building energy management, *Advanced Engineering Informatics*,Vol.30,pp.619-632,2016.
- [5] Simon Li, Sébastien Besson, Colin Blackburn, et.al.: Metadata management for high content screening in OMERO, *Methods*, Vol. 96,pp.27-32,2016.