Discovery Space

Newsletter

Nr. 2/2006

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1. Welcome

Dear D-Spacers,

The issue you are holding or reading it electronically is the 4th D-Space newsletter. The D-Space participation at Xplora Science Teachers Conference that took place at CERN on 15 – 18 June 2006, is presented. It was a great opportunity for the teachers to meet the D-Space team, and be informed and educated on D-Space service. A workshop followed the presentation where the teachers used the D-Space service.
The new user interface is presented in this issue. It consists of four simple steps in order to realize your scheduled observation. Follow this small help, and realize your 'astro-dreams'.
You can also find here information about International Astronomical Summer School that took place at Rozhen, Bulgaria. D-Space was there.

Finally the flyby of Comet 73P is presented. Till the next time the Comet will pass, have a look at our images that the D-Space telescopes provide us.

Nikos Dalamagkas
Editor of the DSpace Newsletter

2. D-Space at Xplora Science Teachers Conference, CERN

2.1 Xplora Science Teacher Conference

Xplora (www.xplora.org) organised a science teachers conference at CERN, Geneva. The conference took place from 15 to 18 June 2006, focused on open source and ICT in science education, science teaching approaches, the role of science centres in education and more. The conference was organized within the PENCIL project (Permanent European resource Centre for Informal Learning), a large scale European project, supported by the European Commission's Directorate General for Research as part of Science and Society, to develop and test innovative methods for science teaching via many pilot projects.

Xplora, together with ECSITE, other 14 science museums and research institutes, 2 universities and a teacher training institute

all around Europe, are partners in the Pencil project, to promote science education among young people. PENCIL consists of 14 pilot projects containing "The Virtual Observatory" which promotes the D-Space service.

The conference was hosted by CERN, which is one of the 7 large European Intergovernmental Research Organisations (EIROs) sponsoring the 'European Science Teaching Initiative (ESTI)', together with the European Commission. The ESTI project aims at bringing frontier science into schools, and includes the biannual 'Science On Stage' teacher festivals in 29 European Countries, as well as the new 'Science In School' journal.

D-Space project contributed with a D-Space service presentation, a teachers training workshop and the SkyWatch 2006 awards ceremony.

2.2 D-Space Service presentation

Mr. Menelaos Sotiriou of the department of international programs at QPlan presented the D-Space Service and its educational role. After the

presentation, the participants could freely use the service at D-Space's stand the rest of the day and realized their observation requests.

2.3 D-Space Workshop

The next day there was a workshop in a computer room provided by CERN. The workshop started with a presentation from Mr. Menelaos Sotiriou about the usage of D-Space service.

Dr. George Neofotistos, MENON Network EEIG, continued with a validation report and finally Dr. Ioannis Papamastorakis, professor at the University of Crete, discussed matters relating to the use of robotic telescopes and technical aspects regarding

the users' observational requests. At the end of the workshop the participants had free time in the computer room to subscribe and use the D-Space service aided by the D-Space team. The event provided additional meaningful information

for validation purposes through the developed questionnaires.

3. Comet 73P / Schwassmann-Wachmann 3

Comet 73P, also known as Schwassmann-Wachmann 3, is a periodic comet in our solar system which is in the process of disintegrating.
It has an orbital period of slightly less than 5 1/3 years so that it comes nearest to the Earth every 16 years. 73P was originally estimated to have a core diameter of 1100 meters.

In 1995, 73P did something unexpected: it fell apart. For no apparent reason, the comet's nucleus split into many "mini-comets" flying single file through space.

It was seen to break into five large pieces labeled 73P-A, B, C, D & E. As of March 2006, at least eight fragments were known: B, C, G, H, J, L, M & N. On April 18, 2006, the Hubble Space Telescope recorded

dozens of pieces of fragments B and G. It appears that the comet may eventually disintegrate completely and cease to be observable (as did 3D/Biela in the 19th century), in which case its designation would change from 73P to 73D.

On May 12, 13 and 14, 2006 the fragments were passing the Earth closer than any comet has come in more than twenty years.

The closest fragment was about six million miles away, that's twenty-five times farther than the Moon. That was a close pass in astronomical terms (0.08 AU). In 2022, the comet fragments are expected to pass nearer to the Earth than in 2006

4. New Telescopes in D-Space Network

Recently two new observatories and their telescopes have been added to our network.

4.1 Sea of Galilee Observation (SGAO)

The Sea of Galilee Observatory (SGAO) is located in the southern part of the sea of Galilee, next to the first Kibbutz in the world, Degania. The coordinates are: longitude 324 degrees, 26 arc minutes to west; latitude 32 degrees, 43 arc minutes to north, 200 meters below sea level. This location accords the observatory a unique place among all observatories in the world. The advantages are the possibilities opened up for atmospheric investigation which focuses on atmospheric transmission and its influence on stellar light.

In spite of this, the major part of the investigations at SGAO focus on the magnetic processes on stars and the Sun. The Sea of Galilee Observatory has been created in 1992 and operates as part of a national research and educational programs in cooperation with the Wise Observatory of Tel Aviv University (Prof. Noah Brosh) and Space Weather & Cosmic Ray Center of Israel Space Agency and Tel Aviv University (Prof. Lev Dorman, Dr. Lev Pustil'nik). SGAO realizes scientific educational programs in cooperation with school based observatories in Karmiel and Nazareth (North Galilee region of the Israel).

Sea of Galilee Observatory (http://www2.kinneret.ac.il/bloss/gaogen.htm#research) and accompanied scholl-based observatories includes next telescopes:

16" LX200 MEADE telescope (focus: 4064mm; f/10) with stellar UBVRI photometer, CCD camera ST-6.

Set of small telescopes: one telescope 12" LX200 MEADE (focus: 3048mm; f/10) and two telescopes MEAD 8" (both with solar filters for regular observations of sunspots).

3-m solar radio telescope (5 spectral channels of registration with wavelengths 4.6, 4.8, 5.0, 5.2, 5.4 cm and time resolution 1 millisecond).

ORT MEGADIM high school Observatory in Carmiel includes 16" LX200 MEADE telescope with 2 sets of filters UBVR and RGB and CCD camera ST-8; Emilio Segre Cosmic Ray Observatory of Israel Space
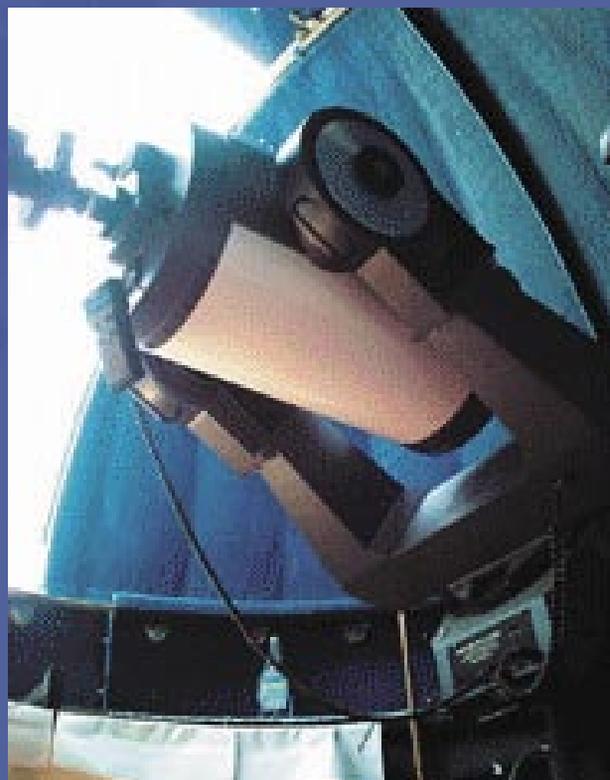
Weather & Cosmic Ray Center on the Mount Hermon has neutron super-monitor and muon multidirectional telescope (in mounting).

Tasks for astrophysical research: variable stars, atmospheric extinction, solar and flare stars activity. Tasks for education: matter for ASTROTOP projects (http://www2.kinneret.ac.il/bloss/astrotop/index. html) and for high school diploma projects with professional support of student's research (several tens participants in year), "Days of Science" and summer astronomical camps , astronomical clubs for amateur astronomers (thousands participants in year) supported by our mobile astronomical laboratory (http://www2.kinneret.ac.il/bloss/mal. htm).

4.2 Ellinogermaniki Agogi (EA)

EA Telescope has been installed and it is in the final phase of upgraded to a robotic telescope.

increases the telescope's effective image-brightness aperture over the visible spectrum to more than 17". Oversize one-piece fork mounting: The massive 16" LX200R fork system, cast in one continuous piece from one Declination housing to the other, includes a total of four 80mm roller bearings in Declination (two in each Declination housing) and two roller bearings in Right Ascension (one each 100mm and 150mm bearings in the RA housing). Such liberal usage of precision roller bearings into the telescope's design permits the addition of substantial auxiliary equipment without risk of strain on the mechanism and results in the most rigid tracking platform available on a telescope. Large DC-servo-motor-driven 11" worm gears on both telescope axes yield the smooth, precision tracking and slewing required of a professional instrument.

5. The D-Space User Interface. Go Observing

5.1 Go-observing

A new user interface of D-Space web site (www. discoveryspace.net) is on air. With 'Go Observing' button from the main menu the user can make a web-based astronomical observation. In this section the main steps of an astronomical observation are presented.

Step 1: Choose a telescope
To be able to make the observation(s) you need, the

Professional-grade optical system: Continuing the tradition of Meade 8", 10", 12", and 14" SCT optics, the 16" LX200R yields the superlative imaging required in advanced applications, whether in planetary or deep-space visual or CCD imaging, in astrophotography, or in photometry. And, with its superclear BK7 optical glass correcting plate, the 16" LX200R may be used into the ultraviolet spectral region as well. Adding the Meade Ultra-High Transmission Coatings group

D-Space service is currently offering the access to four Telescopes, for the astronomical observation, from which you need to choose. The first is the Liverpool Telescope in La Palma, the second is the Skinakas Telescope in Crete, the third is the Sea of Galilee Observation (SGAO) in Jordan Valley and finally the Ellinogermaniki Agogi (EA) in Athens Greece. In order to make that choice you can enter the respective links for each telescope and

read about the characteristics and specifications of each one. The SGAO is a new entry in the D-Space network.

Step 2: Select an object
In this section of the Interface you can observe a simulated view of the sky in real time, choose

your object of interest and find out the celestial coordinates of that astronomical object and other related information.
Select the astronomical object you would like to observe, from the object list by clicking the   . In the pop-up window you can choose a category and then an object.

**Step 3: Check the weather**
In this section you can check the actual (at present) and foreseen (in the near future) weather conditions

in the area of the telescope (i.e. Crete Island, Greece when Skinakas Telescope has been selected).
There are enough web links to additional Web pages about weather forecasts and satellite images.

Step 4: Fill in and submit the Form
In this form you can fill the details of your observation, namely title, object name, public view, date, start time, repeat count, delay, filters and duration. There is an on-line help including description of all the above fields, you can consult before using them.
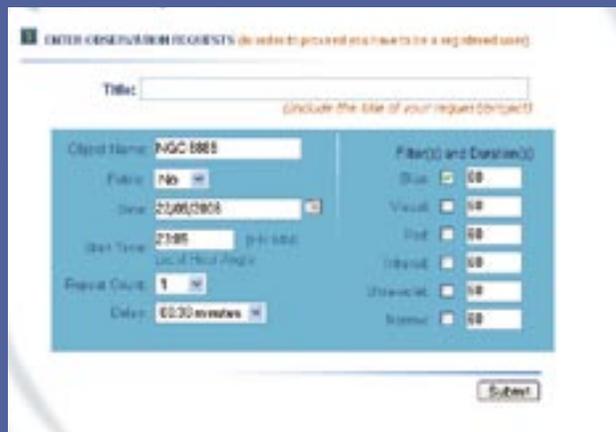
Upon submitting your requests, the system saves it in a database and an automated ftp program every night sends all the requests to the appropriate telescope. Every morning a similar ftp program retrieves the images from the telescopes' databases. Finally the pictures are placed in the D-Space Library.

5.2 The D-Space Database Library

In this section of the Interface the user can have access to all the observation images stored in D-Space database. The images are stored in JPEG and FITS format with information about the details of the

observation, like filters, date, time etc. The Library can be found upon clicking the 'Resource Centre' and then 'Library'.
At the Library all users' observations appear, for which the users had chosen to be in public view by altering the drop down list 'Public' at the submission form. Otherwise the images are stored into each user's database, called 'My D-Space'. As a result, for every observation you have requested to be not in public view (setting 'Public' to 'no'), you have to click the 'My D-Space' button to access them after having logged-in.

Pending requests are these that the telescope has not already realized, because of a big queue or bad

weather or this observation is set to a future date.
Completed requests are marked with the O.K. keyword.

It is advised to download and save an image in FITS format (right mouse click, Save target as…) and open them with LTImage program or AVIS FITS viewer program (you can find a link to download it at the library).

6. International Astronomical Summer School Rozhen 2006

Institute of Astronomy with the National Astronomical Observatory - Rozhen, Bulgaria, and the Informational Center for European Educational Programmes -Bulgaria organized International Youth Astronomical

Summer Schools. Students, interested in astronomy, had the opportunity to participate in observations of astronomical objects, listened to lectures and will made discussions in the National Astronomical Observatory- Rozhen. Together with astronomers from the Observatory the young people worked on interesting observational programmes, they have been taught in the Planetarium in Smolian town.

The students were informed about D-Space service, and its educational use. Matters about robotic telescopes and observational technical topics discussed and finally the students realized their observational requests concerning Comet C/2004 B1 using D-Space service. The next day the students logged in D-Space Library and downloaded the requested images. At the end the participants (students from high schools and universities) made astronometric and photometric analysis of the images.

The were 10 students from the University in Madrid (most of them physics and astrophysics students), 7 students from Astronomical courses in Astronomical observatory and planetarium in Varna, 1 astrophysics student from Connecticut College, USA, 1 physics student from Bremen University, Germany, 1 graduate student from the University of Maryland, USA and 3 amateur astronomers.

7. An article about D-Space

Khaled Diab, a Senior Editor at European Service Network was invited from D-Space project to participate in Xplora Science Teacher Conference, at CERN. Khaled had long discussions with the D-Space team and several participants, and he also participated in the workshop. At the end of June he wrote an article about D-Space which can be

found at a European Commission's web site dedicated to articles on research. You can read it at: http://ec.europa.eu/research/headlines/news/article_06_07_03_en.html
A more general article about the conference can be found here: http://ec.europa.eu/research/headlines/news/article_06_06_30_en.html

8. Future events

In the near future the following events will be there for you. Feel free to use D-Space network of remotely telescopes to realize your observations, if possible. Alternatively wait for our next newsletter to read more about them and find in our library images the users will request. At the next newsletter some past or just now happening events will be presented. Have an idea of next newsletter's topics:

- The Perseids meteor shower
- Partial Lunar eclipse, visible from D-Space telescopes, on the 7th of September
- Annular Solar Eclipse of 2006 September 22
- The Herstmonceux Science Centre Astronomy Festival 2006
- Transit of Mercury across the Sun

9. Editorial

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