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Wide-field plate archives stored in the Ukrainian observatories

The latest version of the Wide-Field Plate Database Catalogue of Wide-Field Plate Archives (April 2008) contains 43 archives stored at some Ukrainian observatories, namely, at the Main Astronomical Observatory of the National Academy of Sciences of Ukraine (Golosiiv, Kyiv), at the Crimean Astrophysical Observatory (Nauchnyi and Simeiz), at the Kyiv, L'viv, and Odesa University Observatories, and at the Mykolaiv Observatory. About 126 000 plates were obtained from 1898 to 2005 in the framework of the following observing programmes: Solar System Bodies Observations, Observations of Variable Stars, Investigations of the Emission Nebulae and Connected Stars, Spectral Classification of the Stars and Determination of the Stellar Absorption in the Direction of the Emission Nebulae, Photographic Survey of the Northern Sky (FON), Investigation of the Kinematics and Structure of the Main Meridian Section of our Galaxy (MEGA), Observation of Selected Reference Stars, Artificial Satellites Observations and other. At the moment the basic information on 12609 plates from 13 plate archives of the Main Astronomical Observatory and Crimean Astrophysical Observatory is included into the Wide-Field Plate Database Catalogue of Wide-Field Plate Indexes (Sofia, Bulgaria). The plate digitization is just started with flatbed scanners. Some illustrations of the potential of the Ukrainian plate archives for future re-usage are given and some compiled plate catalogues are presented on the basis of data from the Wide-Field Plate Database.

АРХИВЫ ШИРОКОУГОЛЬНЫХ ПЛАСТИНОК ОБСЕРВАТОРИЙ УКРАИНЫ, Цветкова К. П., Цветков М. К., Сергеева Т. П., Сергеев А. В. — Последняя версия каталога архивов широкоугольных пластинок (*Catalogue of Wide-Field Plate Archives, April 2008*) содержит 43 архива, хранящихся в нескольких обсерваториях Украины: в Главной астрономической обсерватории НАН Украины (Голосиив, Киев), в Крымской астрофизической обсерватории (Научный и Симеиз), в обсерваториях Киевского, Львовского и Одесского университетов и в Николаевской обсерватории. Около 126 000 пластинок было получено в период с 1898 по 2005 гг. в рамках программ наблюдений тел Солнечной системы, переменных звезд, эмиссионных туманностей и связанных с ними звезд, спектральной классификации звезд и определения звездного поглощения в направлении эмиссионных туманностей, фотографического обзора звезд северного неба (ФОН), исследования кинематики и структуры Главного меридианного сечения галактики (МЕГА), наблюдений выбранных опорных звезд, искусственных спутников Земли и др. На настоящий момент основная информация о 12609 пластинках из 13 архивов Главной астрономической обсерватории НАН Украины и Крымской астрофизической обсерватории включена в Базу данных широкоугольных пластинок (Болгария, София). Начата оцифровка пластинок с помощью серийного планшетного сканера. Иллюстрируется потенциал украинских архивов пластинок для будущего использования. Представлены некоторые завершенные каталоги пластинок, построенные на основе выборки данных из *Wide-Field Plate Database*.

АРХІВИ ШИРОКОКУТНИХ ПЛАТІВОК ОБСЕРВАТОРІЙ УКРАЇНИ, Цветкова К. П., Цветков М. К., Сергеева Т. П., Сергеев О. В. — Остання версія каталогу архівів ширококутних платівок (*Catalogue of Wide-Field Plate Archives, April 2008*) містить 43 архіви, що зберігаються в декількох обсерваторіях України: у Головні астрономічній обсерваторії НАН України (Голосіїв, Київ), Кримській астрофізичній обсерваторії (Научний і Симеїз), в обсерваторіях Київського, Львівського й Одеського університетів і в Миколаївській обсерваторії. Близько 126000 платівок отримано з 1898 по 2005 рр. у рамках програм спостережень тіл Сонячної системи, змінних зір, емісійних туманностей і пов'язаних з ними зір, спектральної класифікації зір і визначення зоряного поглинання в напрямку емісійних туманностей, фотографічного огляду зір північного неба (ФОН), дослідження кінематики й структури Головного меридіанного перерізу Галактики (МЕГА), спостережень вибраних опорних зір, штучних супутників Землі та ін. На цей момент основну інформацію про 12609 платівок із 13 архівів Головної астрономічної обсерваторії НАН України та Кримської астрофізичної обсерваторії включено до Базу даних ширококутних платівок (Болгарія, Софія). Розпочато оцифрування платівок за допомогою серійного планшетного сканера.

Ілюструється потенціал українських архівів платівок для майбутнього використання. Представлено деякі завершені каталоги платівок, побудовані на основі даних, вибраних з Wide-Field Plate Database.

INTRODUCTION

The up-dated version of the Catalogue of Wide-Field Plate Archives from April 2008 (CWFPAs, [13]), which is a part of the Wide-Field Plate Database (WFPDB, <http://www.skyarchive.org>), contains 43 archives stored at some observatories located in Ukraine, namely, at the Main Astronomical Observatory of the National Academy of Sciences of Ukraine (Golosiiv, Kyiv), Crimean Astrophysical Observatory (Nauchnyi and Simeiz), Kyiv, L'viv, and Odesa University Observatories, and Mykolaiv Observatory. Some information on the archives is presented in [1—4, 6—12]. Except for the archives made with their own telescopes, certain of the observatories store plate archives made at other observatories, e.g., the Mykolaiv Observatory stores a plate archive made at the Pulkovo Observatory (Russia); at the Odesa University Observatory the old Simeiz Observatory plate archive is stored; the Main Astronomical Observatory stores archives from Byurakan (Armenia), Quito Observatory (Ecuador), Quito Comet Station (Ecuador), Tashkent Observatory, Kitab Station (Uzbekistan), and Engelhardt Observatory Southern Station (Russia).

About 126 000 plates were obtained from 1898 to 2005 in the framework of the following observing programmes: Small Solar System Bodies Observations, Observations of Variable Stars, Investigations of Emission Nebulae and Connected Stars, Spectral Classification of Stars and Determination of the Stellar Absorption in the Direction of Emission Nebulae, Photographic Survey of the Northern Sky (Fotografichnyi Ohliad Neba, FON), Investigation of the Kinematics and Structure of the Main Meridian Section of the Galaxy (MEGA), Selection of Reference Stars, and Artificial Satellites Observations.

WFPDB UKRAINIAN PLATE ARCHIVES

The information on the used telescopes and 43 Ukrainian wide-field plate archives sorted by the observatories where they are stored is given in Table 1 and Table 2 as an fragment from the CWFPAs (April 2008).

According to Fig. 1, where the content of each Ukrainian observatory plate collection is given in percentage of the total number of the Ukrainian wide-field plates (126319), more than one-half of all the plates are stored at the Odesa University Observatory. Figs. 2—4 give the distribution of the used telescope apertures D , the interval T covered and the distribution of the number N of plates versus the WFPDB identifier of the Ukrainian plate

Table 1. Wide-field telescopes used

WFPDB identifier	Telescope type	D , m	F , m	Scale, "/mm	Field, deg	Years of operation
CRI017A	Cam	0.17	0.75	276	13	1948—1965
CRI017B	Cam	0.17	0.75	276	13	1951—1953
CRI040A	Ast	0.4	1.60	129	10	1947—1948
CRI040B	Ast	2 0.4	1.60	129	10	1951—1965
CRI040C	Ast	2 0.4	1.60	129	10	1963—1998
BYU053	Sch	0.53/0.53	1.83	113	5	1985—1985
EAO040B	Ast	0.4	2.00	103	9	1982—1993
GUA010A	Ast	0.1	0.50	412	20	1957—1961
GUA010B	Ast	0.1	0.50	412	20	1957—1961
GUA011A	Ast	0.11	1.20	172	8	1955—1957
GUA011B	Ast	0.11	1.20	172	8	1955—1957
GUA012A	Ast	2 0.12	0.70	295	20	1949—1990
GUA012B	Ast	2 0.12	0.70	295	20	1949—1978
GUA015	Ast	0.15	1.70	121	6	1955—1961
GUA040A	Ast	2 0.4	5.50	38	3	1949—1986
GUA040B	Ast	2 0.4	5.50	38	3	1949—1986
GUA040C	Ast	2 0.4	2.00	103	8	1976—1998
GUA040D	Ast	2 0.4	2.00	103	8	1976—1997
GUA040E	Ast	2 0.4	2.00	103	6	1981—2005
GUA070	Rfl	0.7	3.15	66	1	1960—1973
QUI021A	Cam	0.21	0.74	281	16	1986—1986
QUI021B	Cam	0.21	0.74	281	16	1986—1986
TAS040A	Ast	2 0.4	3.00	69	6	1981—1989
TAS040B	Ast	2 0.4	3.00	69	6	1981—1989
KYI020	Ast	0.2	4.30	—	—	1898—2004
LAO010	Ast	0.10	0.50	412	19	1939—1976
MYK012	Ast	0.12	2.04	101	5	1961—1999
PUL012	Ast	0.12	2.04	101	5	1929—1931
CRI012	Ast	0.06	0.12	—	30	1945—1957
ODE006A	Ast	0.06	0.12	—	30	1945—1957
ODE006B	Ast	0.06	0.12	—	30	1945—1957
ODE007	Ast	0.07	0.30	—	30	1945—1957
ODE010A	Ast	0.1	0.50	—	22	1945—1957
ODE010B	Ast	0.1	0.50	—	22	1945—1957
ODE010C	Cam	0.1	0.25	288	35	1957—1990
ODE010D	Cam	0.1	0.25	288	34	1957—1990
ODE010E	Cam	0.1	0.25	288	25	1957—1990
ODE010F	Cam	0.1	0.25	288	12	1957—1990
ODE010G	Cam	0.1	0.25	288	12	1957—1990
ODE010H	Cam	0.1	0.25	288	22	1957—1990
ODE010I	Cam	0.1	0.25	288	18	1957—1990
ODE015	Ast	0.15	1.00	204	12	1945—1957
ODE020	Sch	0.2/0.4	—	474	6	1969—1980

Table 2. Ukrainian Wide-Field Plate Archives

WFPDB identifier	Archive location	Observatory	Years of operation	Plate number	
				direct	spectral
CRI017A	Crimea	Crimean Obs., Simeiz	1948—1965	516	54
CRI017B	Crimea	Crimean Obs., Nauchnyi	1951—1953	49	—
CRI040A	Crimea	Crimean Obs., Simeiz	1947—1948	59	159
CRI040B	Crimea	Crimean Obs., Nauchnyi	1951—1965	215	296
CRI040C	Crimea	Crimean Obs., Nauchnyi	1963—1998	9781	—
BYU053	Kyiv	Byurakan, Armenia	1985—1985	28	—
EAO040B	Kyiv	Zelenchuk, Russia	1982—1993	142	—
GUA010A	Kyiv	Main Astron. Obs., Kyiv	1957—1961	438	—
GUA010B	Kyiv	Main Astron. Obs., Kyiv	1957—1961	277	—
GUA011A	Kyiv	Main Astron. Obs., Kyiv	1955—1957	35	—
GUA011B	Kyiv	Main Astron. Obs., Kyiv	1955—1957	55	—
GUA012A	Kyiv	Main Astron. Obs., Kyiv	1949—1990	2041	7
GUA012B	Kyiv	Main Astron. Obs., Kyiv	1949—1978	2143	—
GUA015	Kyiv	Main Astron. Obs., Kyiv	1955—1961	162	—
GUA040A	Kyiv	Main Astron. Obs., Kyiv	1949—1986	9500	—
GUA040B	Kyiv	Main Astron. Obs., Kyiv	1949—1986	1000	—
GUA040C	Kyiv	Main Astron. Obs., Kyiv	1976—1998	4276	—
GUA040D	Kyiv	Main Astron. Obs., Kyiv	1976—1997	1834	—
GUA040E	Kyiv	Main Astron. Obs., Kyiv	1981—2005	3657	—
GUA070	Kyiv	Main Astron. Obs., Kyiv	1960—1973	566	—
QUI021A	Kyiv	Quito Obs., Ecuador	1986—1986	100	—
QUI021B	Kyiv	Quito Comet Station	1986—1986	50	—
TAS040A	Kyiv	Tashkent Obs., Kitab	1981—1989	96	—
TAS040B	Kyiv	Tashkent Obs., Kitab	1981—1989	5	—
KYI020	Kyiv	Kyiv University Obs.	1898—2004	2401	—
LAO010	L'viv	L'viv University Obs.	1939—1976	8339	—
MYK012	Mykolaiv	Mykolaiv Obs.	1961—1999	7438	—
PUL012	Mykolaiv	Pulkovo Obs., Russia	1929—1931	—	—
CRI012	Odesa	Crimean Obs., Simeiz	1909—1953	6900	—
ODE006A	Odesa	Odesa	1945—1957	2000	—
ODE006B	Odesa	Odesa	1945—1957	2000	—
ODE007	Odesa	Odesa	1945—1957	2000	—
ODE010A	Odesa	Odesa	1945—1957	2000	—
ODE010B	Odesa	Odesa	1945—1957	2000	—
ODE010C	Odesa	Odesa	1957—1990	7100	—
ODE010D	Odesa	Odesa	1957—1990	7100	—
ODE010E	Odesa	Odesa	1957—1990	7100	—
ODE010F	Odesa	Odesa	1957—1990	7100	—
ODE010G	Odesa	Odesa	1957—1990	7100	—
ODE010H	Odesa	Odesa	1957—1990	7100	—
ODE010I	Odesa	Odesa	1957—1990	7100	—
ODE015	Odesa	Odesa	1945—1957	2000	—
ODE020	Odesa	Odesa	1969—1980	2000	—

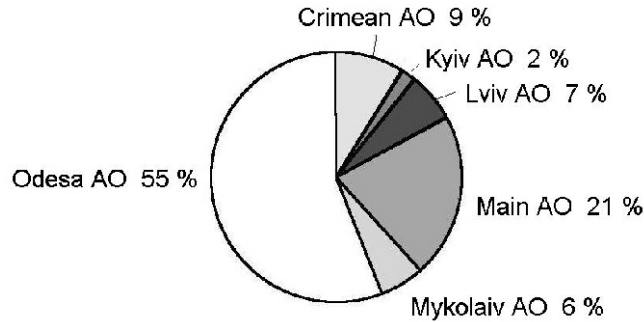


Fig. 1. Ukrainian observatories wide-field plate collections

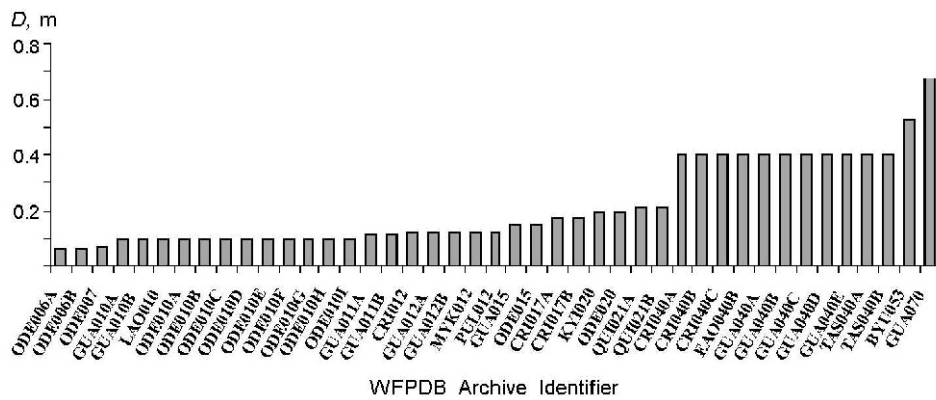


Fig. 2. Plate archive distribution versus the used telescope aperture D

archives. Basically, small telescopes were used for plate observations with the limiting stellar magnitude down to 16—17h, the time coverage is between 1898 (at the Kyiv University Observatory) and 2005 (at the Main Astronomical Observatory). The plates are mainly direct ones, since the number of spectral plates is less than 0.5 percent of the total number.

HOW THE INFORMATION FOR THE INCLUDED UKRAINIAN PLATE CATALOGUES AND THEIR CONTENTS CAN BE FOUND IN THE WFPDB

In the WFPDB, Sofia Search Page (<http://www.skyarchive.org>), the descriptive information for each archive as well as for each plate of the respective catalogue can be found using the WFPDB archive/instrument identifier. The identifier is composed of the name of an observatory (CRI for the Crimean Observatory, KYI for the Kyiv University Observatory, LAO for the L'viv University Observatory, GUA for the Main Astronomical Observatory, MYK for the Mykolaiv Observatory, and ODE for the Odesa University Observatory), respective instrument aperture, instrument aperture suffix (in the case of instruments with the same aperture) plus the original

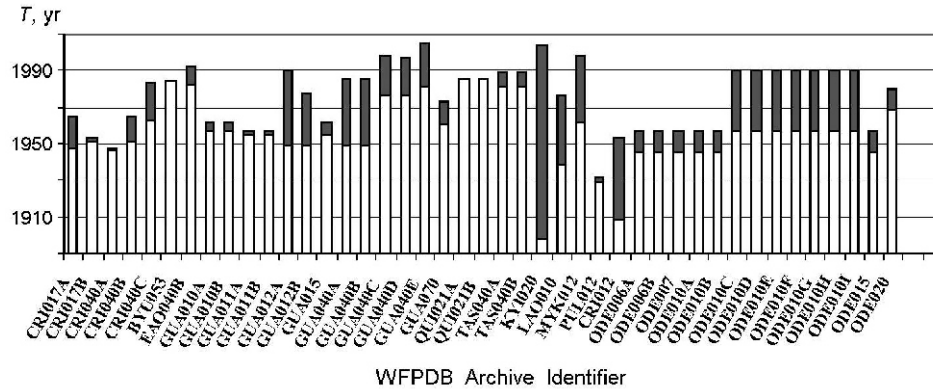


Fig. 3. Time coverage of the plate archives

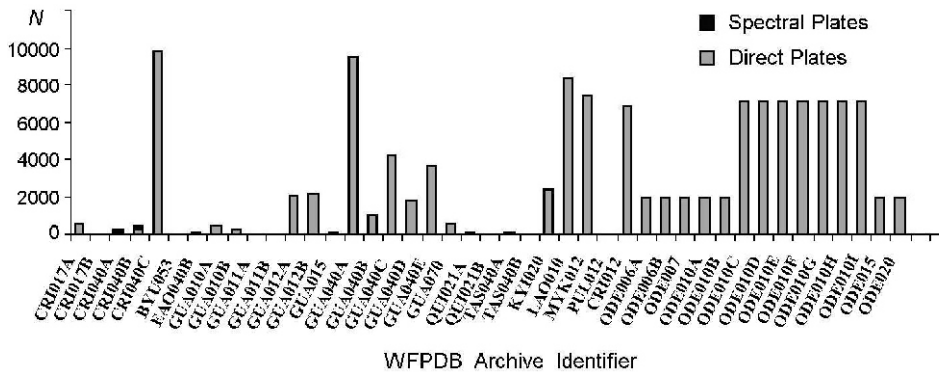


Fig. 4. Plate archive distribution versus number of plates

plate number. One can find more details relative to the location of the archives, to an observatory, to parameters of a telescope and to the period of its operation, to coordinates of the plate center for epoch J2000.0, to the date and beginning of the first exposure in UT, to an object's name and type, to an observational method, to the number of exposures and their duration, to a type of emulsion, filter and spectral band, to the size of the plate, to the quality of the plate, some notes with specific contents, the name of an observer, the place of plate storage (availability) and the status of plate digitization as well as the name of an astronomer in charge for contact.

Up to April 2008 the basic plate information for the contents of 13 plate catalogues of the Main Astronomical Observatory and Crimean Astrophysical Observatory (Nauchnyi and Simeiz) was included into the Catalogue of Wide-Field Plate Indexes, altogether for 12609 plates obtained from 1948 to 1998 (Table 3).

More information on some catalogues included in the WFPDB can be found: for GUA010A, GUA010B, GUA011A, GUA011B and GUA015 in [2], for GUA012A and GUA012B in [5], for GUA040C and GUA040D in [14].

Table 3. Ukrainian wide-field plate catalogues included in the WFPDB

WFPDB identifier	Plate storage in	Time coverage	Number of plates	Astronomer in charge
CRI017A	Crimean Obs., Simeiz	1948—1965	570	N. Bondar'
CRI017B	Crimean.Obs., Nauchnyi	1951—1953	49	N. Bondar'
CRI040A	Crimean Obs., Simeiz	1947—1948	218	N. Bondar'
CRI040B	Crimean Obs., Nauchnyi	1951—1965	511	N. Bondar'
GUA010A	Main Astron. Obs.	1957—1961	438	V. Golovnya
GUA010B	Main Astron. Obs.	1957—1961	277	V. Golovnya
GUA011A	Main Astron. Obs.	1955—1957	35	V. Golovnya
GUA011B	Main Astron. Obs.	1955—1957	55	V. Golovnya
GUA012A	Main Astron. Obs.	1949—1990	2041	L. Kizyun
GUA012B	Main Astron. Obs.	1949—1978	2150	L. Kizyun
GUA015	Main Astron. Obs.	1955—1961	162	V. Golovnya
GUA040C	Main Astron. Obs.	1976—1998	4276	V. Golovnya
GUA040D	Main Astron. Obs.	1976—1997	1834	E. Yizhakevych

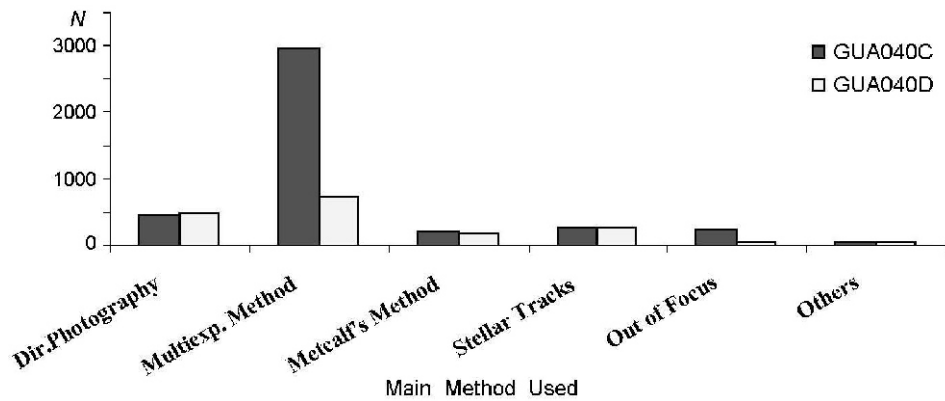


Fig. 5. GUA040C and GUA040D plate number versus method used

Figs. 5—7 give some illustrations of the potential for future plate re-usage of two catalogues (with GUA040C and GUA040D WFPDB identifiers), on the basis of data retrieval from the WFPDB. The plates were obtained with the 0.40-m double wide-angle astrograph (DWA) of the Main Astronomical Observatory. For the both tubes of the telescope the number of plates is 4276 and 1834, respectively. These plates were the basis for determination of positions, proper motions and photometric data for more than 2 000 000 stars from the FON Astrographic Catalogue (FONAC) as well as for determination of the absolute proper motions for more than 14 000 stars. The observing programme reflects the main observing method used (multi-exposure method) and also the type of the objects observed, “fields” in this case. The all-sky distribution of the plate centers for each catalogue included into the WFPDB can be found at the WFPDB-Sofia Search Page (Fig. 7 gives it for the GUA040C catalogue).

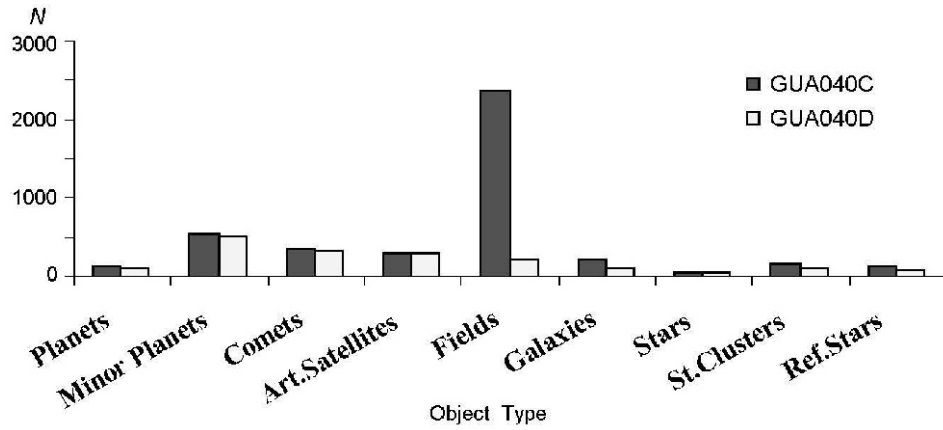


Fig. 6. GUA040C and GUA040D plate number versus object type

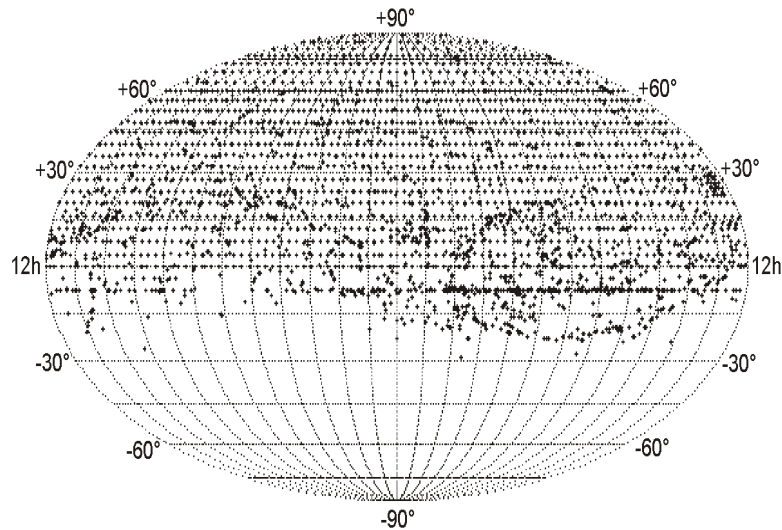


Fig. 7. All-sky distribution of the GUA040C plate centers

Plate digitization process of the Ukrainian wide-field plate catalogues has been started recently. The flatbed scanner MICROTEK ScanMaker 9800 XL with Transparent Media Adapter-1600 is used for the plate collection of the Main Astronomical Observatory and the small EPSON flatbed scanner is applied for the plate collection of the Mykolaiv Observatory.

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