COMPILATION OF A GLOSSARY ON INTERNATIONAL TERMS RELATED TO PLANETARY CARTOGRAPHY

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Application of cartographical methods for display on the information of Solar system bodies has got a long history. First of the Moon maps which had reached us was dated about 1603. Later with the help of telescopic supervision tens maps of the visible part of the Moon have been made, attempts to present on maps the surface of Mercury, Venus, Mars were done too. This was promoted, in particular, by application of a photo and development of ground telescopic mapping. Last decades of the last century the planetary cartography has received a powerful source of the information due to flights of space vehicles and spacecrafts.

Within 40 years there was an intensive drawing up as general geographic and thematic maps of extraterrestrial objects. It has led to that the planetary cartography could be issued finally as an independent field of cartography. The official recognition has been received in 1999 on the Congress of International Cartographical Association (ICA) in Ottawa (Canada) where the International Commission on Planetary Cartography is legalized. Before within four years there was a Working Group on the given subject in ICA.

The activity of this group, and then the commission developed in two basic directions, namely popularization of the results achieved in the field of planetary cartography during space researches in the countries which are not participating in these works, and support of researches in the given area attracting in it young scientists. In this connection there were generated such projects as creation of a multilingual maps series of terrestrial group planets and their moons, developing on the base of planetary cartography, drawing up the explanatory terminological dictionary all over again in English with the subsequent translation of the fulfilled maintenance into a number of other languages.

Necessity of drawing up of an international explanatory dictionary has come to light already during the first sessions of working group. At discussion of the cartographical products used for representation of space researches results, and for maintenance of space flights constantly there were disagreements and different interpretations both in terminology and in names of objects.

For example, divergences in understanding of such concepts as a photomap, a topographical map, a hypsometric map, etc. in Russian, English and German languages have been found out. In definition of scales of a map use of terms "trillion" and "million" can cause mistakes. So in the USA and in France trillion means 1000 million (1x10 in 9), and in England and Germany it is one million millions (1x10 in 12). It has been solved as a first step to develop structure of the dictionary and to start to collect terms which, first of all, require interpretation.

That is why one of the on-going projects of the ICA Commission on Planetary Cartography is devoted to the compilation of a "Multilingual Glossary on Planetary Cartography". The preliminary version was introduced at the ICA Conference in Beijing (2001). The Commission on Planetary Cartography has compiled a glossary of terms frequently used on planetary maps, as well as a list of terms from various countries that can be used to identify features on planetary maps, sometimes with very different meanings. It was the first attempt to collect these terms and give them some corresponding definitions. This preliminary version includes about 150 terms, the number of which will be constantly growing. The glossary contents have been written in English and it also exists in Russian but these versions exist in parallel without close connection to each other. They do not give to users a possibility to come from one meaning in English to the same meaning in Russian or some other language. Today we can inform the community about the next step in this direction, vis. about the concept for constructing a full multilingual glossary.

This step is very close to another project of the ICA Commission on Planetary Cartography. It means the compilation and printing of the multilingual maps series on planets and their moons. The series maps have information printed in 5 languages, namely English, German, Russian, French and Spanish. That is why the same group of languages was selected for the preliminary version of the glossary. It will be possible in future to expand this experience to other groups of languages.

At first the main idea of the concept was to introduce English terms with their definitions in alphabetic order with successive numbers together with their foreign equivalents arranged in five respective columns. For example, we shall have in the English list:

Number 18. "Extraterrestrial territories". ***Territories located off the Earth and have a solid surface or separate segments of a rigid surface***. (5, 12, 23, 17)
The numbers of this word in alphabetic lists on German, French, Spanish and Russian are 5, 12, 23, 17 correspondingly because the corresponding terms in the other languages are also given in their separate lists in alphabetic order with the number from the English list. For example, we shall have, in this case, in the German alphabetic list:

5. Ausserirdische Territorien, 18 (number 18 in English)

It would be possible to distinguish these language lists by different colors.

At the very beginning we were satisfied with the concept. Later it became clear that we have not enough adequate terms in different languages, but it is necessary to have all the equivalents there. For example it is not an exact boundary between terms “mapping” and “cartography” in English. In general the first means some production, the second means

the process of map compiling itself. In Russian we have “Cartography” and “Cartographiering” as the process. In German we have ”Cartography” in both cases or last time it is possible to use “Kartografierung” as the process. That is why it must be somewhere taken into account in new version of this dictionary. It was a new argument for the further consideration.

During some discussions it was born another idea which main argument was that it had to be not an ordinary dictionary for several languages. It would be a glossary but with the same goal. It meant that it was necessary to give some explanation for every term in every language. It convinced us that such a structure would be more substantiated. That is why now we propose the follows. The final structure of the glossary must consist of three columns for each language, namely the order number of the term, the alphabetic order of terms in definite language, numbers of this word in the other language lists and the description of this term meaning. In our case it must be in the whole five numbers after the five languages. It means English, German, French, Spanish and Russian. All the numbers can be given in different colors, moreover each of them belongs to definite language. The main language is given every time in alphabetic order. Now we consider some examples as a table (Fig.1):

Order number	Words in English alphabet	An explanation in English
18 (III)	*extraterrestrial territories* 15, 12, 25, 38	*Territories located off the Earth and have a solid surface or separate segments of a rigid surface*
23 (V)	*facula* 1 6, 43, 35, 124	*Light spot on the Jupiter moons surface*

Order number	Words in German alphabet	An explanation in German
15 (III)	*ausserirdische Territorien* 18, 12, 25, 38	*Territorien, die sich ausserhalb der Erde befinden und Flaeche oder einzelne Segmente fester Flaeche haben.*
1 6 (V)	*facula* 23, 43, 35, 124	*Der heller Fleck auf dem Jupitermondoberflaeche*

Order number	Words in Russian alphabet	An explanation in Russian
38 (III)	*внеземные территории* 18,15, 12, 25,	*Территории, которые находятся вне Земли и имеют твердую поверхность или отдельные сегменты твердой поверхности.*
124 (V)	*факула* 23, 16, 43, 35	*Светлое пятно на поверхности спутника Юпитера*

Fig.1 Some examples from Glossary lists (English, German and Russian versions)

In these examples the number 23 means the number of this word in English alphabet, the number 15 means the number of the same word in German alphabet, the number 12 means the same in French alphabet, the number 25 means the same in Spanish alphabet and the number 38 means the same in Russian alphabet and in the second case (numbers 23, 16, 43, 35, 124) correspondingly. Besides these figures it is possible to see Roman figures in brackets. They point out to the part of Glossary to which this word belongs. All the information in Glossary it is possible to divide to 6 parts according to its meanings.

It is necessary to mention that the structure of the glossary proposed for the first version does not use the alphabetic order for the terms. This means that the contents was divided and subdivided in some parts. That is why it seems useful to add some indexes for the terms in the first column and also to place the contents, with terms in alphabetic order, separately for each part as an attachment. There were follows parts:

(I). The first (general) section contains the basic terms outlining a circle of objects, directly connected with planetary cartography. There are such terms as space, Near space, Far space, Solar system, a planet, a satellite, a moon, etc.
(II). The second section defines the cartographic products representing objects with a rigid surface, excepting the Earth. These are various kinds and types of general geographic and thematic maps, and also globes, models of separate celestial bodies and parts of their surface. Here it is necessary to bring in a number of specifications and updating to terminology. For example, as it is known, the globe is defined as the cartographic image on surfaces of the sphere, keeping geometrical similarity of contours and a parity of the areas. However at creation of the globe on Phobos as a basis it was used tri-axial ellipsoid, at asteroids modeling in general it is necessary to refuse from an analytical representation of a surface, etc.
(III). The third section contains the basic terms which describe cartographic products in general and have been not intended only for extraterrestrial objects. There are such terms as a scale, a cartographical projection, conventional signatures, etc. Certainly, it is the settled terms available in many sources, but here they will be pertinent, that the user has not to waste time on additional searches.
(IV).The fourth section (for today the most extensive) represents the terms used for relief forms of extraterrestrial objects represented on maps and not having terrestrial analogues with the instruction of corresponding celestial bodies. It is necessary to notice, that by tradition these terms are taken from Latin language. For example, for Mars there are such terms as chaos, domes, labyrinth, for Venus there are terras, tesseras, coronas, for Jupiter's moons there are maculas, faculas, lines etc. Practically on all the bodies there are found out lineaments.
(V). The fifth section includes the terrestrial terms used for relief forms of the extraterrestrial objects represented on maps and having terrestrial analogues. There are craters, ridges, canyons, plateau, plains etc. However it is necessary to note, that in case of celestial bodies it is essentially important to emphasize, for example, an origin of craters (shock, volcanic, primary, secondary, craters - holes, etc.) by term explanation .
(VI). The sixth section contains the terms reflecting some specific peculiarities of physical properties for celestial bodies, which are frequently shown by their thematic mapping. For example, albedo, isostatic anomaly, mascons, masmins, geoids, etc. belong to such terms.

At the first stage this work was carried out by scientists of Russia (K.B.Shingareva, B.V.Krasnopevtseva,MIIGAiK) and the USA (Jim Zimbelman, Smithsonian Institution) at participation of experts from Germany (Manfred Buchroitner, the Dresden University, Egon Dorrer, the Munich Bundeswehr University). Then representatives of Hungary (Henrik Hargetai,Elte University) and Canada (Philip Stooke, University of the Western Ontario) have joined. We hope, that this list will constantly extend. With the purpose of the international discussion and attraction of experts of other countries the first version of an explanatory dictionary up to the end 2001 will be already placed on the Internet on a site of the commission (http://www.nasm.edu/ceps/ica). His constant specification and expansion, translation into other languages, and also the edition of the printed version is supposed.

A currently state of glossary is follows. Its prepared version includes three alphabet lists on English, German and Russian which are compiled according our new concept. Every version contains about 200 terms. There is a new reduction of the whole content given in separate parts too. The next step will consist in addition of versions in French and in Spanish which are in preparation now.