

Ifigenia Vardakosta\*, Sarantos Kapidakis\*\*

## Current use and trends of Geospatial Collection Development Policies (GCDPs) in Map/GIS Libraries

*Keywords:* geospatial collections, geospatial collection development policies (GCDPs), Map/GIS libraries

*Summary:* The rapid increase of publications both in print and digital form raises costs while academic libraries budgets are constantly decreasing. At the same time academic libraries cannot ignore the continuous spread of open geographical data on the web. The construction of policies consists a major and substantial function for any library in order to develop geospatial collections and provide added value services to its users.

Based on this rationale, the purpose of the current research is to determine the availability of geospatial collection policies and identify their specific characteristics as they emerge through their published texts.

The population of these policy texts comes from the U.S.A., Canada, Australia and Europe, e.g. regions where the libraries have developed similar collections. In order to approach the topic of geospatial collection policies, two methodologies were used: a) research on libraries' websites and b) content analysis. The sample of libraries that has been surveyed included 136 libraries with geospatial collections. In order to draw conclusions, it was necessary to determine the connection of the sample of libraries by participating in Map/GIS Libraries Associations such as ARL, MAGIRT, WAML, ANZMaps and MAGIC Group.

From the sample of 136 libraries with collections and services regarding geographic information 53 (39%) policy documents were collected. The study of policy texts resulted their classification in six categories and relating to their extent they were divided into three types. After the examination of each text, the results were organized in tables and therefore eight major categories emerged.

The results of the research established a baseline information about the current use and trends of collection development policies in Map/GIS libraries and lead to some conclusions regarding the geospatial collection development environment.

### Introduction

In a library environment collection development policy according to ALA (1987) is the *“text that defines the scope of a library’s existing collection, plan for the continuing development of resources, identify collection strengths, and outline the relationship between selection philosophy and the institution’s goals, general selection criteria and intellectual freedom”*. Accordingly, geospatial collection development policy, is the written document agreed to be sustained by a library regarding the specific issues related to the management of geospatial information (e.g. Purpose of the collection, audience, material, geographical areas, dates, scale, data format etc.). For developing GCDPs librarians should take into account the existing collection development policy, users’ needs as well as library’s infrastructure. Policies have always been a librarian’s tool for the development of library collections, as well as the information point for library collection to a range of stakeholders (users, administration, other libraries, institution’s members). Lately, library community recognizes that the significant changes in scholarly publishing, the technology

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\* Laboratory on Digital Libraries and Electronic Publishing, Department of Archive, Library and Museum Sciences, Faculty of Information Science and Informatics, Ionian University, Corfu, Greece [ifigenia@ionio.gr] and Harokopio University, Library and Information Centre, [ifigenia@hua.gr]

\*\* Laboratory on Digital Libraries and Electronic Publishing, Department of Archive, Library and Museum Sciences, Faculty of Information Science and Informatics, Ionian University, Corfu, Greece [sarantos@ionio.gr]

achievements, the collection of the locally produced geospatial data and the collaborations among libraries calls for a well-established collection development.

### **Geospatial Collection Development Policies: a literature review**

International literature related to geographic information policies can be divided into two categories: 1) Articles related to the installation of GIS in libraries, containing references about policies necessities in their content, and 2) Articles that have policies as sole object. In the above context the first category of articles appeared after 1992, i.e. the year that ARL GIS Literacy project initiated in USA and Canada.

Abbott & Argentati (1995) point out collection development policies because “*management and effective access to geospatial data is one of the main challenges that librarians have to deal with as GIS service providers*” while Longstreth (1995) states that “in a university with active GIS actions, the academic library needs to identify and establish contact with faculty in order to determine educational and research needs”. Adler & Larsgaard (2002) suggest that in a geospatial collection development staff and users must be aware of the established policy.

Early researches, as the one that ARL conducted in 121 library members (1997) highlighted that users except their growing interest in geospatial information noted the necessity for a policy revision in order to achieve the consolidation and proper use of geospatial resources. Sorice (2006) examined 69 academic library websites and concluded that the regular assessment of policy texts will be beneficial for those academic libraries offering GIS services in maintaining a balance between the different needs that arise for users, staff, equipment and economic sources. University of Santa Barbara at California and Stanford University collaborated for the implementation of National Geospatial Digital Archive project<sup>1</sup> and deployed 3 separate development policies as in the long term this kind of strategy will support the archive efficiently and it will affect the advantages of each institution (Erwin, & Sweetkind-Singer, 2010). ARL’s 1997 follow-up survey on the use of geospatial data and technologies in the academic community and in the way that libraries support this use was conducted by Holstein (2015) in 115 libraries. In her results, except the obvious importance of policies for the efficient development of the geospatial collection and services, connects them with the open data challenge.

In the second category of articles related to policies Walters (1999), underlines that policies can be applied in many types of information centers especially as a step for the identification and standardization of effective practices<sup>2</sup> in Mann Library of Cornell University were based on them in order to develop their collections. Boxall (2005, 2006) in his articles regarding policies for geospatial collections emphasizes their necessity focusing on important areas of interest for geospatial community such as prices, copyright, privacy, security, licensing, access and use. In the same philosophy, Steinhardt (2006) describing collection development policy for Cornell University Geospatial Information Repository (CUGIR) clarifies that “libraries in developing policies are encouraged to consider issues as copyright, reliability matters, methods of diffusion and services, data and metadata, management practices, security practices and restrictions on use that may arise”. Literature related to the library’s involvement in the development of geospatial collections has been increased significantly the recent years (Wolf, 2011) making policies’ content a topic for further exploration.

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<sup>1</sup>The project was funded by the Library of Congress and the aim of the collaboration was to collect, maintain, and provide access to geospatial data at risk <http://www.ngda.org/>

## Methodology of the research

### *Research question*

The rapid increase of global publications raises costs in all formats while at the same time libraries' budgets are constantly decreasing. In this unstable environment libraries should develop innovative collections and services in order to respond to their user's growing needs. Academic libraries that sustain geospatial collections or plan to developing such services could not ignore open and locally produced geospatial data while at the same time they have to provide added value services to their users in order to cover their constantly growing needs in a financial distress era. Based on this, the purpose of the study is to identify the specific features of individual policies as suggested through their texts.

Results will determine what libraries consider as valuable issues for their geospatial collections. Additionally, results may act as a base for compiling a guide for those libraries that want to develop geospatial collections in order to fulfill their users' information needs.

### *Research criteria*

The population of the examined texts comes from USA, Canada, Australia, New Zealand and Europe e.g. countries that their libraries have developed such collections (Vardakosta & Kapidakis, 2016) and have implemented innovations such as ARL GIS Literacy project. As search option the alternative use of "geographical" and "geospatial" contributed to search both of them in policy texts.

Those policy texts that were located in libraries with geospatial collections and were related to guidelines and user's obligations to the library's environment and to library's material without mentioning geographical/geospatial material were not included in the research.

### *Research methods*

In order to reach geospatial collections development policies, two methodologies were chosen: research in libraries' websites and content analysis. Since the purpose of the research was to investigate policies texts, content analysis method was considered as the most appropriate one. Consequently, the objective was to the identification of specific words that represent libraries' specific activities (e.g. acquisition) or issues (e.g. purpose) and contribute to their operational harmonization in a particular way which is easily understandable by their users. Additionally, in many cases e-mail to stakeholders was used as method for locating texts in order to ensure results validity.

The focus on the texts of the geospatial collection development policies is the element that distinguishes the present study form others related to policies established in Map/GIS libraries in USA, Canada, Europe, Australia and New Zealand.

### *Sample*

The sample of libraries that participated in the survey was used in a previous research to locate libraries with geospatial collections (Vardakosta & Kapidakis, 2016). For being the data updated the 136 libraries that were used, examined all over again. Since the aim of the present study was

different than the initial one, e-mail method to the person related to the collection was used. Additionally, it was considered necessary to determine the connection of the sample libraries with their participation in Map/GIS Libraries Associations like MAGIRT<sup>2</sup>, ARL<sup>3</sup>, WAML<sup>4</sup>, ANZMaps<sup>5</sup>, MAGIC<sup>6</sup>, and ACMLA<sup>7</sup>.

These decisions were taken in the light of the varied representation of policy types in shaping a final guide of a “geocollection development policy” since this is the final goal of the present study. So, a total of 136 libraries were examined in the survey from November 2013-April 2014.

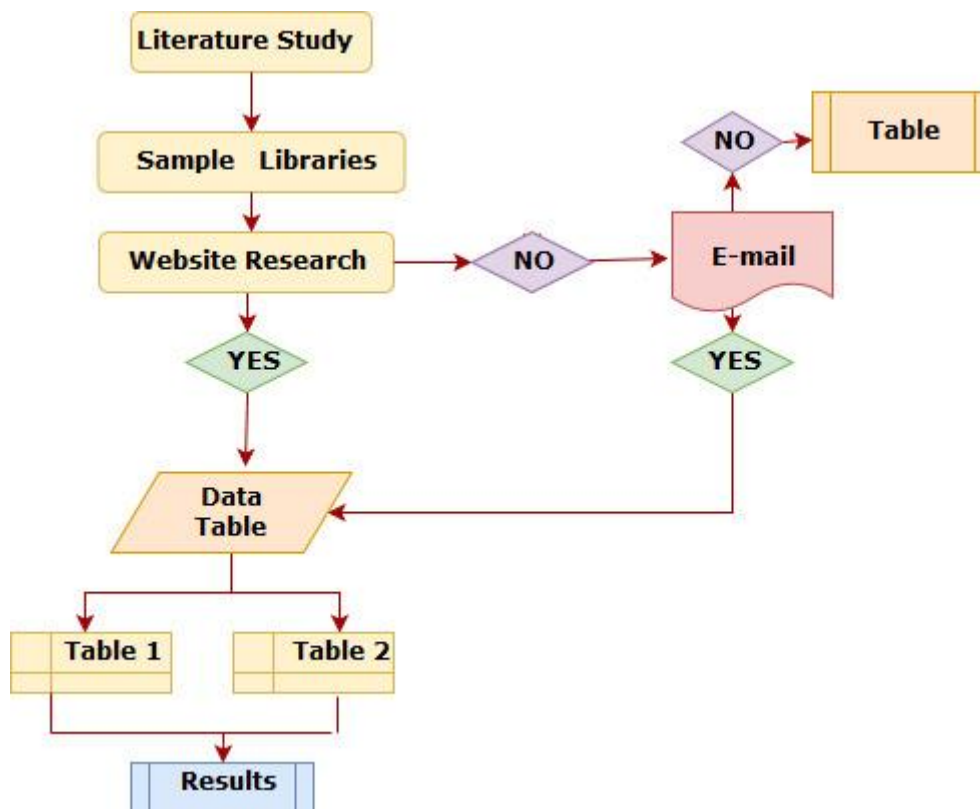


Figure 1. Methodology of the research.

## Results

### *Demographics*

From the sample of 136 libraries that had collections and GIS services 86 (63.2%) come from USA, 30 (22.1%) come from Canada, 12 (8.9%) from Europe, 7 (5.1%) from Australia and 1 from New Zealand (0.7%).

Out of these, 98 libraries (72%) were members of at least one Map/GIS Library Association, unlike 38 that did not belong to any Association.

<sup>2</sup> <http://www.ala.org/magirt/>

<sup>3</sup> <http://www.arl.org>

<sup>4</sup> <http://www.waml.org>

<sup>5</sup> <https://www.anzmaps.org>

<sup>6</sup> <http://cartography.web.auth.gr/ICA-Heritage/MAGIC?index.html>

<sup>7</sup> <http://www.acmla-acacc.ca>

*Geospatial Collections Policies in Map/GIS Libraries*

As a result, the research located **53 (39%)** policy texts for geospatial material (44 located through libraries’ websites and 9 were kindly sent by the librarians after the e-mail they received), 28 (21%) libraries respond that they did not sustain geospatial collection policies, while 55 (40.5%) libraries did not respond at all (Fig.2).

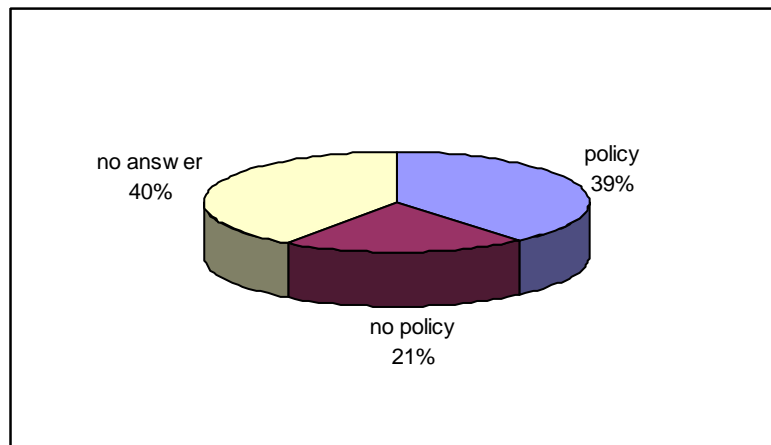


Figure 2. Geospatial Collections Development Policies in Map/GIS Libraries.

Geographically, 69.8% (n=37) of libraries that sustained policies come from USA, 22.6% (n=12) are from Canada, 3.9% (n=2) from Europe and 1.9% (n=1) from Australia and New Zealand as well.

Out of libraries that sustained geospatial collection development policies 13% (n=7) are not members in any Map/GIS Library Association, 47% (n=25) are members in one Map/GIS Library Association, 34% (n=18) are members in 2 Map/GIS Library Associations, while 6% (n=3) are members to 3 Map/GIS Library Associations (Fig.3).

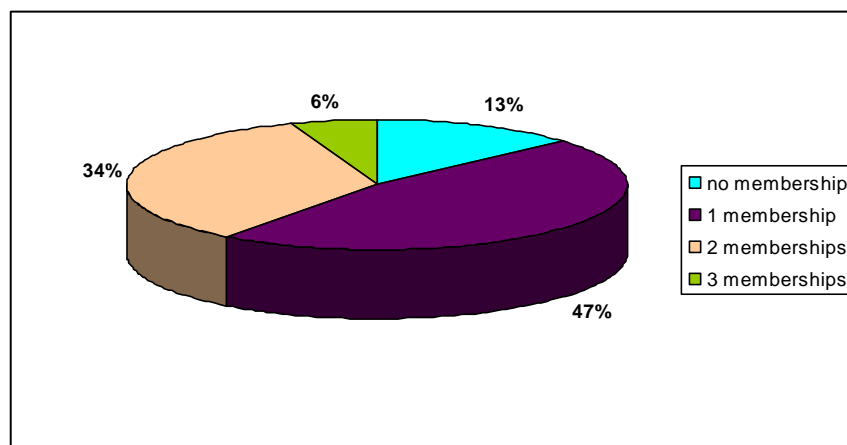


Figure 3. Map/GIS Libraries with policies membership in Map/GIS Library Association/s.

The gathered texts meet two basic conditions:

- clearly indicate geospatial collection as scope
- they have been suggested by the Map/GIS Librarians we approached as the ones followed in their institutions for the proper operation and communication of the collection to the public.

After studying the texts, the following categorization emerged (Fig.4):

1. **Geospatial Collection Development Policy:** Policy text that comprises features exclusively related to the library's available information (e.g. *Collection Development: GIS Resources*).
2. **Cartographic and Geospatial Material Collection Development Policy:** Policy text that geospatial data either mentioned to the title of the text (e.g. *Map and GIS Collection Development Policy Statement*) or refer to the cartographic material of the library but include in their texts those characteristics referring to geospatial information<sup>8</sup> (e.g. data in common GIS formats).
3. **Geographical Sources Development Policy:** Policy text referring to all geographic sources that the library has or intends to acquire.
4. **Subject Categories Development Policy:** Policy text developed to cover a broader subject (e.g. geography, environmental sciences e.tc) including geospatial material (e.g. *Collection Development for Geosciences*)
5. **Data Collection Development Policy:** Policy text that refer to the data collection which mention geospatial material (e.g. *Data Acquisition Policy*).
6. **Library's Collection Development Policy:** Policy document that refer to all collections of the library and which refer to geospatial material.

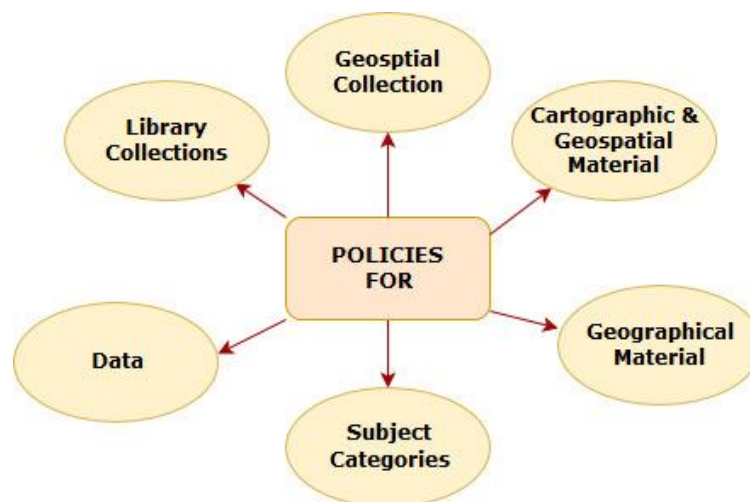


Figure 4. Policy texts categorization.

Based on the above categorization the survey highlighted 20 policy texts (37.7%) in Category no2 (*Cartographic and Geospatial Material Policy Development*), 15 policy texts (28.3%) in Category no4 (*Subject Categories Policy Development*), 8 policy texts (15.1%) in Category no1 (*Geospatial Collection Policy Development*), 5 policy texts (9.5%) in Category no6 (*Collection Development Policy*), 3 policy texts (5.6%) in Category no3 (*Geographical Sources Policy Development*), and only 2 policy texts (3.8%) in Category no5 (*Data Policy Development*).

<sup>8</sup> For example as appears in Duke University policy: «*Data in common GIS formats (e.g., Shapefiles, ArcInfo Interchange format, GeoTIFF) or ASCII formats are collected on CD-ROM when meeting geographic, subject, and budgetary constraints and when not available for free on the web*».

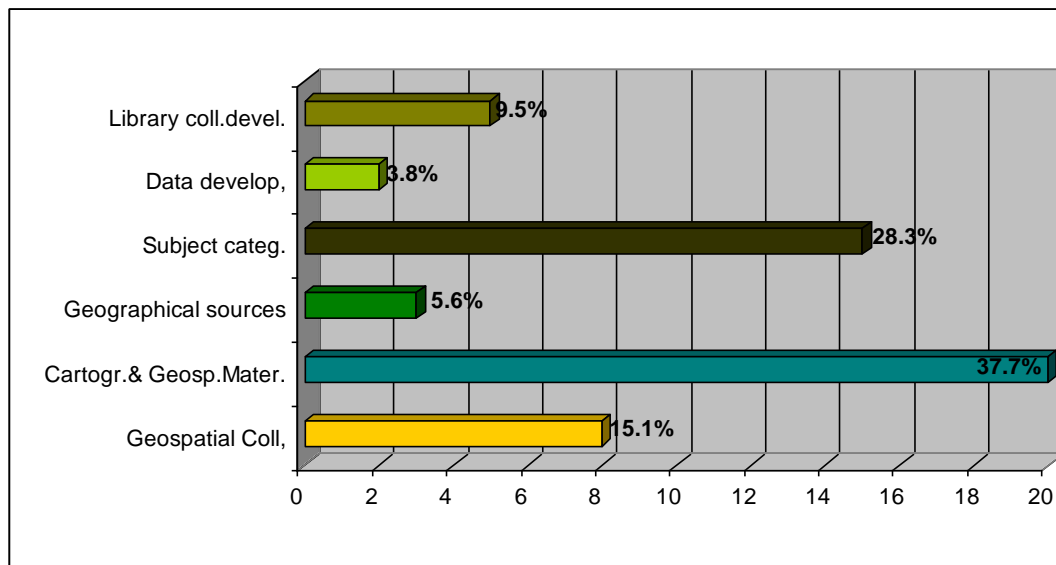


Figure 5. Policies' Categories in Map/GIS Libraries.

Texts were irregular in the terms of extent and features provided. Some policy texts are lengthy, while others are abbreviated references to specific points of interest (e.g. acquisition of material), which was also pointed out in previous research (Vardakosta & Kapidakis, 2012a).

Following Straw's ranking (2003, p.80) resulting from his research on identifying library development policies for ARL libraries online, the geospatial collections policies identified in this research are categorized into three types in terms of their extent as follows:

1. **Extensive Policy:** includes those policy documents that give details of the efforts and orientation of the library for the development of its geoscience collection. In this case, there are a lot of details for the conspectus model<sup>9</sup> that most of them apply to their collections.
2. **Concise Policy:** includes the text describing the scope of the collection with a comprehensive and sometimes narrative way. They outline the collection's development parameters without providing detailed profiles and are usually texts that do not exceed four pages. In many cases they indicate the main points of the collection, as well as the topics or users served by the library. Summarized policies in many cases include a range of information including a "mission statement" describing the purpose of collection in a broader sense. Still, the scope of coverage is specified which indicates the type of material to be included or excluded from the collection. It is also worth noting that in this case, as in the extensive policy, the name of the person (s) who either has / have written the text or is responsible for collecting the collection is mentioned.
3. **Outline Policy:** Unlike the two previous types of policies, "outline policy" usually consists of a single-page or even smaller text, which gives a limited presentation of the geospatial collection, or refers to specific functional aspects such as, the acquisition of the material or the type of material involved in the collection.

<sup>9</sup> The conspectus model was developed by the Research Libraries Group (RLG) in the early 1980s, and was the outcome of a six-year endeavor to create a system for coordinating collection management activities among the members of Research Group. The conspectus is based upon the Library of Congress (LC) classification scheme. The model became widely recognized as an evaluation tool as it provided a common language for describing collections and collecting level of any material for the library. The conspectus model came to fill a gap in the field of collections development as there was no equivalent tool until then (<http://oclc.org/research/activities/conspectus.html>). Collection levels are: 0: *Out of Scope*, 1. *Minimal Level* 2. *Basic Information Level*, 3. *Instructional Support Level*, 4. *Research Level*, 5. *Comprehensive Level*

In this case, the name "outline"/abbreviated to the "autonomous mission statement" used by Straw (2003) was used as a result of this survey on geospatial harvesting policies, did not produce a similar result.

Based on the above categorization, it emerged that the majority of research libraries had a "Concise policy" at 56% (n=30). 38% (n=20) of libraries had "Extensive policy", while only 6% (n=3) had an "Outline policy" for the development of its geological collections.

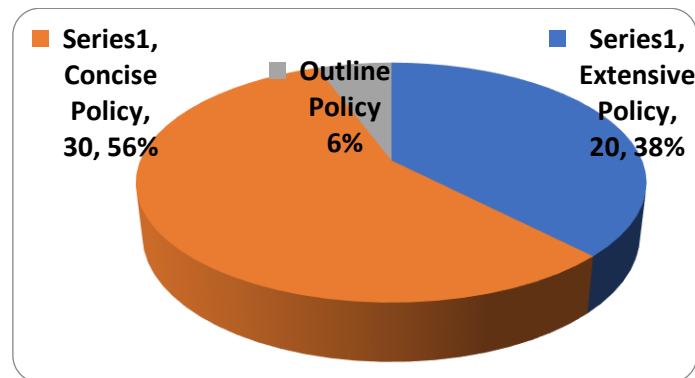


Figure 6. Policy types in terms of extent.

#### *Geospatial Collections Development Policies Characteristics*

As mentioned above, the results were organized into tables. Therefore, the main categories of information observed in geo/geospatial collections are:

1. General information (Table 1)
2. Information about the "Collection"(Table 2)
3. Information about "Data"(Table 3)
4. Information about "Data availability and Open Access" (Table4)
5. Information about "Partnerships" (Table 5)
6. Information about "Other Sources" (Table 6)
7. Information about the "Geographic/Geological Collection Assessment" (Table 7)
8. Information about "Related Policies" (Table 8)

Analyzing each of the above categories, the following characteristics were recorded in the first category "General Information" (Table1) depending on the theme and the range of their appearance<sup>10</sup>:

The "Creation/Approval/Update Date" (71.7%, n=38), the "Policy Text Author/Contact person/Subject Librarian" (58.5%, n=31), the "Academic Program Information" (30.2%, n=16), the "Collection History" (13.2%, n=7), the "Special Policy Issues" (7.5%, n=4) the "Geocollection's Location" (5.7%, n=3), the "Policy Purpose" (5.7%, n=3) and "Policy Review" (1.9%, n = 1).

<sup>10</sup>In the present work the order of occurrence of the subcategories relates not to their arithmetic appearance in the political texts, but to their order of appearance in the majority of the texts of the policies.



<b>Table 1.</b>			
<b>General Information</b>			
<b>No</b>	<b>Characteristics</b>	<b>No of texts</b>	<b>Percentage (n=53)</b>
1	Creation Date/Approval/Update Date	38	71.7%
2	Policy Text Author/Contact person/Subject Librarian	31	58.5%
3	Policy Purpose	3	5.7%
4	History of the Collection	7	13.2%
5	Academic Program Information	16	30.2%
6	GeoCollection's Location	3	5.7%
7	Special Policy Issues	4	7.5%
8	Policy Review	1	1.9%

Table 1. General Information.

Under “Information about Collection” (Table 2) a set of features is included which constitute, first of all, the “Guidelines for Collection”. These Guidelines include the “*Subject Priorities*” (54.7%, n=29), the “*Language*” (58.5%, n=31), the “*Dates of publication*” (30.2%, n=16), the “*Geographical range*” (62.3%, n=33), the “*Types of file formats*” (39.6%, n=21), the “*Types of material included/excluded*” (58.5%, n=31), the “*Chronological range*” (39.6%, n=21), and the “*Scale range*” (3.8%, n=2).

Subsequently, this category includes the “*Collection Scope*” (62.3%, n=33), the “*Audience*” (20.8%, n=11) the “*Collection Description*” (26.4%, n=14), the “*Selection/Evaluation & Priorities*” (26.4%, n=14), the “*Acquisition*” (9.4%, n=5), the “*Costs*” (7.5%, n=4), the “*Strengths of the Collection*” (5.7%, n=3) and finally the “*Classification and Intensity level*” (20.8%, n=11).

<b>Table 2.</b>			
<b>Information about Collection</b>			
<b>No</b>	<b>Characteristics</b>	<b>No of texts</b>	<b>Percentage (n=53)</b>
1	Collection Guidelines:		
	Subject Priorities	29	54.7%
	Language/s	31	58.5%
	Publication Dates	16	30.2%
	Geographical priorities/range	33	62.3%
	File Formats and Types	21	39.6%
	Material type included/excluded	31	58.5%
	Chronological Range	21	39.6%
	Scale range	2	3.8%
2	Collection Scope	33	62.3%
3	Audience	11	20.8%
4	Collection Description	14	26.4%
5	Selection/Evaluation & Priorities	14	26.4%
6	Acquisition	5	9.4%
7	Costs	4	7.5%
8	Collection's Strengths	3	5.7%
9	Classification and Intensity level	11	20.8%

Table 2. Information about Collection.

In the “Information about Data” category (Table 3), the characteristics that included in policies and were related to the digital geospatial material, recorded. In particular, “*Use/Licensing Agreements*” (22.6%, n=12), and “*Data*” (9.4%, n=5). The “*Weeding*”, the “*Software*” and the

“*Metadata/Documentation*” features appear at 11.3% (n=6) of libraries respectively. Finally, the “*Reports*” appear at 1.9% (n=1) of libraries.

<b>Table 3.</b>			
<b>Information about Data</b>			
No	Characteristics	No of texts	Percentage (n=53)
1	Use/Licensing Agreements	12	22.6%
2	Data	5	9.4%
3	Metadata/Documentation	6	11.3%
4	Software	6	11.3%
5	Weeding	6	11.3%
6	Reports	1	1.9%

Table 3. Information about Data.

The fourth category “Information about Data Availability and Open Access” was ranked with the following characteristics: “*Public sources*” (26.4%, n=14), “*Deposit Programs*” (22.6%, n=12), “*Commercial Companies*” (20.8%, n=11), “*Free Data Sources*” (7.5%, n=4), “*Donations*” (24.5%, n=13), “*Consortium Agreements*” (45.3%, n=24), while “*Non-Profit Organizations*” and “*Locally Produced Data*” appears in 1.9% (n=1) of libraries respectively.

<b>Table 4.</b>			
<b>Information about Data Availability and Open Access</b>			
No	Characteristics	No of texts	Percentage (n=53)
1	Government/Public Sources (e.g. Municipalities)	14	26.4%
2	Deposit Programs (e.g. FDLP, USGS, Canadian Topographic maps & data)	12	22.6%
3	Commercial Vendors	11	20.8%
4	Free Data Sources	4	7.5%
5	Donations	13	24.5%
6	Consortium Agreements	24	45.3%
7	Non-Profit Agencies	1	1.9%
8	Locally produced Data	1	1.9%

Table 4. Information about Data Availability and Open Access.

In the category “Information about cooperation”, the policy features related to the collaborative actions of the library were gathered. In particular, the “*Cooperative Arrangements*” (41.5%, n=22), and the “*Interdisciplinary Relations*” (5.7%, n=3) were recorded.

<b>Table 5.</b>			
<b>Information related to Cooperation</b>			
No	Characteristics	No of texts	Percentage (n=53)
1	Cooperative Arrangements	22	41.5%
2	Interdisciplinary Relations	3	5.7%

Table 5. Information related to Cooperation.

“*Other collections in the library*” (17%, n=9), “*Other collections in the area*” and “*Special Collections-Digital cartography*” were gathered in the category “Other Sources” with 3.8% of libraries (n=2) respectively.

<b>Table 6. Other Sources</b>			
No	Characteristics	No of texts	Percentage (n=53)
1	Other related collections in the Library	9	17%
2	Other related collections in the area	2	3.8%
3	Special Collections o Digital Cartography	2	3.8%

Table 6. Other Sources.

In the category "Information about Geographical/Geological Collection Evaluation" the "Collection Maintenance" and the "Deselection" features were collected with a percentage of 1.9% in policies (n=1) respectively, while "Collection assessment" appeared in the 7.5% of policy texts (n=4).

<b>Table 7. Information about Geographical/Geospatial Collection Evaluation</b>			
No	Characteristics	No of texts	Percentage (n=53)
1	Collection Maintenance	1	1.9%
2	Deselection	1	1.9%
3	Collection assessment	4	7.5%

Table 7. Information about Geographical/Geospatial Collection Evaluation.

Finally, "Information about Related Policies" with the "Related Policies" feature was recorded as a separate category in 1.9% (n=1) of policy texts.

<b>Table 8. Information about Related Policies</b>			
No	Characteristics	No of texts	Percentage (n=53)
1	Related Policies	1	1,9%

Table 8. Information about Related Policies.

## Discussion

The purpose of researching the academic libraries' main sites was to identify the development policies of their geospatial collections and to highlight their main features. The research revealed the availability of geospatial library development policies by a minority of libraries. These policies are observed in a variety of kinds and types. Abresch et al. (2008) link the development policy of geospatial collections with the carefully designed identification of the needs of geospatial users.

Apart from the small number of texts, it is worth highlighting the existence of a large number of libraries that do not have written policies for the development of their geospatial collections. Reasons such as time, staff and resources availability may affect the develop or the publication of written policies. That's why in the present study some of the texts were sent by email after our communication with the person in charge (when the texts were not detected through the methodology described above).

Also, another reason that acts in favour of not posting the texts on the web pages is the general treatment of policies by libraries. While research has found that many libraries have dynamic pages with a large amount of information regarding directories, databases, e-books, digital collections, in many cases, it was observed that policies were on many internal pages of their

websites and were identified after persistent and time-consuming efforts. Perhaps those libraries that do not post their policies or post them on pages that will be identified after a thorough investigation, consider their content as a purely internal affair of the library (Johnson, 2009, p.76) and not as a priority to keep the user posted. Similarly, they may also appreciate that users during their visit to the library site will not have as a priority to learn about their policies, but the content of their collections.

The assessment of linking the participation of Map/GIS libraries to relevant Professional Map/GIS Libraries' Associations in policy development has been verified since the majority of policy libraries belong to at least one Union. These associations facilitate communication between librarians interested in geography and maps, and their sites are a useful resource for librarians who need guidance in the development of their cartographic collections, such as educational programs, but also as forums for the exchange of ideas by professionals working in cartographic collections (Abresch et al., 2008, p.210).

In Abresch et al. (2008, p.204) states that Evans & Saponaro had set three main categories of policy synthesis: "policy review", "details of issues and forms of acquisition material", and "various issues". While the categories that emerged from the survey could be incorporated into the above, it was considered more useful to formulate a proposal for the development of a geological collections policy to provide a more detailed record of the characteristics, which is also reflected in proposals by Libraries and Researchers Associations.

Another feature observed by the survey results is the variety of types of policies mentioned in the geological collections. The categorization that was carried out has highlighted six different types of policies. More specifically: 1) geospatial collections development policies: which include features exclusively for the geospatial information of the library 2) cartographic and geospatial material development policies in which the geospatial data are either referred to in the title of the text or refer to the library's cartographic material but include in their text characteristics related to geospatial information (e.g. data in common GIS formats) and geospatial material available to the library, 3) geographic resource development policies that refer to all geographic sources that the library has or intends to acquire 4) the thematic development policies developed to cover a broader thematic category (e.g. geography, environmental sciences, etc.), including geospatial material (e.g. Collection Development for Geosciences) 5) data development policies that refer to the data collection and these texts refer to geospatial material (e.g. Data Acquisition Policy), and finally 6) library development policies of the library which refer to all library collections and to the texts referring to the geospatial material.

The examination of the texts shows that the majority of the information presented in the policy texts corresponds to most of the guidelines given by Larsgaard (1998, p.6) such as the objectives, the statement of the responsible persons, the registration of the geographical areas of the collection, types of maps (e.g. thematic maps, continents, topographic surveys on various scales), aerial photographs, etc.

The majority of libraries seem to choose to manage geospatial collections along with cartographic material supporting the view of many researchers (Abresch, et al., 2008, p.207) that the basic knowledge and skills related to the maps apply in the use of geospatial information, and that clustering of the research questions of map collection users is a useful strategy for the evaluation of geospatial users.

The categorization of policies in types reveals a large number of "*Subject Categories Policies*". They appear in libraries of large major institutions and usually include as many policies as the subject categories of the institution that serves the library. For example, Pickett et al. (2011) report

that in 2008 their library had 70 policies, of which 55 were thematic, while Torrence, Powers & Sheffield (2012) showed that 76.5% of the policies used in their research were thematic.

As Ward Aber & Ward Aber (2016, p. 214) report, Larsgaard has urged the use of policies for digital geospatial data on the basis of their rapid production and dissemination to support education and research. This point of view is reinforced by the use of institutional repositories by many academic institutions for the dissemination of their digital collection, as well as the fact that large amounts of geospatial information are now freely available via the Internet. Many geospatial data are available through web pages which often change, making development of collection based on electronic public resources a challenge. The extension of this fact is the control of the sources by the human resources of the library. In addition, each item collected requires maintenance beyond its original acquire to ensure its preservation (Demas & Miller, 2012). As in this case the weight shifts from the natural environment to the digital one, it is necessary to take into account infrastructure issues related to facilitating the user to access the geographic / geospatial material.

Mangrum & Pozzebon (2012), in their research into 23 academic libraries policies resulted in nine criteria<sup>11</sup> reflecting the management of their electronic resources, which were identified and ranked in this research. Although numerically the present survey outweighs, the percentages gathered in these criteria are lower than the original ones. The categories of policies recorded by the survey revealed the information available to the texts concerning digital material. However, there is a limited numerical approach to this material from libraries despite the widespread dissemination of digital geospatial data. Instead, most have extensive details on the collection level according to the conspectus model<sup>12</sup> which is based on the thematic analysis and is linked to the information provided by libraries for the taxonomic numbers collected in accordance with the Library of Congress.

Policies, as highlighted by the research, largely reflect the availability of libraries' outreach and the development of collaborations. The categorization of policies according to the range of their content has highlighted that the majority of libraries choose the "concise policy" to communicate the characteristics of the geospatial collection.

Commenting on the variety of policy agendas, Magnum & Pozzebon (2012) expresses the view that the outline texts or those relating solely to acquisitions of the collection are not documents describing the functions of the library in relation to the user community it serves, losing the opportunity to yield, clearly and consistently, the strategic development of collections, workflows as well as the outreach actions.

### **Limitations of the research**

Although in the present study it was chosen to use the e-mail for the final classification of libraries in "Libraries with geospatial collections" and "Libraries without geospatial collections", as well as the identification of their texts, however, this method did not perform as expected, since a great number of libraries did not respond. Many libraries had an automated way of communication addressed solely to their academic community. Furthermore, in many cases it was impossible for us to monitor the progress of the message.

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<sup>11</sup>These criteria were: 1) Costs 2) Consortia 3) Responsible parties 4) Content 5) Access 6) Usability 7) Assessment 8) Licensing (on the user side) 9) Licensing (library management)

<sup>12</sup>As Abresch et al. (2008, p.205), Larsgaard uses the Mosher & Pankake conspectus model as a basis for a geospatial data development policy

## Conclusions

The analysis of the existing geospatial collection development policies texts in Map/ GIS libraries emerged the following conclusions:

- Despite the significant percentage of identified policies, Map/GIS libraries do not use or publish policy texts. It seems to be a lack of use of library policies as a collection development tool for managing geospatial information. On the other hand, the enormous communicative power of the internet is not exploited since libraries do not post policy texts on their web pages.
- The participation of libraries in Map/GIS Libraries Associations seems to enhance the geospatial collection development policies.
- From the texts of the geospatial collections development policies identified in the Maps / GIS libraries of the research, six types of policies emerged (“Geospatial Collection Development Policy”, “Cartographic and Geospatial Material Development Policy”, “Geographical Resources Development Policy”, “Subject Categories Development Policy”, “Data Collection Development Policy” and “Library’s Collection Development Policy”), while three categories of policies in terms of their extend occurred (“Extensive Policy”, “Concise Policy” and “Outline policy”).
- From the match of kinds with the types of policies it seems that there is no particular dependence between them. Therefore, it is estimated that an opinion that estimates e.g. that "geospatial collections development policy is extensive" or "the subject categories policy development are brief" cannot be generalized.
- The policy texts largely reflect the availability of libraries' extroversion and the development of collaborations.
- The formulation of geospatial collections seems to have been affected by open access and digital data format. Although numerically not to the extent required by the widespread dissemination of digital geospatial information in education and research.
- Locally produced geospatial data seems to be of no concern to professionals in policy development.
- Tables with the “Information Categories” and “attributes” of each policy highlight the use of policies as a strategic tool for librarians, but also as a communication medium for geospatial library collection.

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