Worldwide outlook of geology journals: challenges in South America

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There are several surveys on different aspects of Latin American scientific journals as a whole (see for instance Krauskopf and Vera, 1993; Cetto and Alonso Gamboa, 1998; Fernández et al., 1998; Krzyzanowski and Ferreira, 2001; CAICYT, 2006a; Luna-Morales and Collazo-Reyes, 2006), and some dedicated to particular scientific fields, but none has been carried out with respect to Earth Sciences.

The purpose of this article is to present an up-dated evaluation of the situation of Earth Science-related scientific publications from South America. A quick survey provides data from about 400 formal scientific publication titles related to the Earth Science in South America. Yet, only two of these are regularly covered by the Science Citation Index, although about a half are considered by other indices.

The survey includes journals published by professional associations, universities and government institutions. They range from those exclusively local in scope, of irregular appearance and hardly to be regarded as periodicals, to those that are indistinguishable in coverage and editorial quality from similar ones produced in developed countries.

Materials

A comprehensive data-base was compiled and updated to June, 2009. It contains scientific journals published in South America (Guyanas excluded) by South American institutions or societies, most of them having an ISSN identification number. The survey does not include data from Mexico and the Caribbean region. All journals which may contain full articles on Earth Science subjects were included, and also both currently published and discontinued publications. On the other hand, conference proceedings, abstracts volumes and other occasional publications were not considered. Changes of journal title through time have been recorded if possible. Each entry includes data on name of journal, editor, country of production, main subjects covered, ISSN number, year of first publication, year of last publication (for closed series), periodicity, support, on-line data and indexing.

The main sources are on-line data bases, such as GeoRef (http://www.agiweb.org/geo/geoindex.html), Latindex (http://www.latindex.unam.mx/) and Periódica (http://132.248.9.1:8891/F-/?func=find-b-0&local_bases=PER01), some good local university libraries: Biblioteca Florentino Ameghino, Museo de La Plata (http://www.bfa.fcnym.unlp.edu.ar/), and Biblioteca Leloir, Universidad de Buenos Aires (http://www.bl.fcen.uba.ar/catalogos.php) and printed data bases (ICSU AB, 1978).

The complete data-base is available on request from the author.

Characteristics of journals

The total number of journals arranged by countries (Fig.1A) were

Introduction

Global trends in scientific publishing are changing many aspects of research and publication worldwide, but their effects are not equal around the world. Developed and developing regions differ considerably in their response to such trends and their level of adaptability to new publishing models. To understand these differences is important for an adequate evaluation and use of the existing sources of scientific knowledge. South American scientific periodicals are usually regarded as “obscure journals” due to their low visibility and difficult access. The unfortunate result in an increasingly globalized and web-dependent world is that a large amount of science produced locally is effectively “lost” (Gibbs, 1995).
also discriminated according to their actual continuity, a very difficult aspect to assess precisely, either because discontinued irregular series may be reinitiated at any moment, or because journal name changes are frequent for journals published by government organizations, such as geological surveys.

The publishers of Earth Science South American journals are mostly government organizations, such as geological surveys, academies, universities and museums (Fig.1B), followed by professional societies; private publishers are almost non-existent.

Local publication of geology-related scientific journals started in the second half of the 19th century in academic institutions, decades before the establishment of geological surveys: Anales del Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Argentina (1864), Arquivos do Museu Nacional, Brazil (1876), Anales del Museo Nacional de Chile, Tercera Sección: Mineralogía, Geología y Paleoantropología, Chile (1883), Boletín de la Sociedad Geográfica de Lima, Perú (1891), Anales del Museo Nacional de Historia Natural y Antropología, Uruguay (1894), Boletín de la Sociedad Geográfica, Bolivia (1898). Historically, the appearance rate of these journals (Fig.2) shows three periods of unusual growth: (a) in the 1920’s, just after the First World War, mainly due to the rapid increase in journal numbers in Argentina and Brazil and the establishment of local geological surveys; (b) in the 1950’s and 1960’s, just after the Second World War, due to the appearance of new journals in Venezuela, Bolivia, Chile and Colombia, and rapid growth in Brazil; and (c) in the 2000’s, due to the rapid growth in numbers of (mainly electronic) journals from Brazil. Although there are not enough data to quantify this aspect adequately, there is a steady rate of journal disappearance, especially during the last decade. On the other hand, on-line journals are gradually increasing.
Contents quality

The quality of contents is very uneven. In some countries, great efforts are being made by local science organizations to overcome this situation and promote their best scientific journals to increase their quality and their national and international visibility. The scientific councils in some countries have developed local ranking systems for their journals, each with a large set of tight conditions, and they periodically follow a journal’s performance according to periodicity and regularity, quality of editorial staff, editorial quality, formal aspects, distribution and access.

- Brazil: FINEP (Financiadora de Estudos e Projetos, Ministério da Ciência e Tecnologia), http://www.finep.gov.br, and CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico, since 1980), www.cnpq.br/ (Vessuri, 1995; Cetto and Alonso-Gamboa, 1998). No detailed data are available. Also CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, Ministério da Educação) classifies scientific periodicals in several categories according to quality criteria, http://www.periodicos.capes.gov.br.
- Venezuela: Programa de subvención y evaluación del CONICEIT (Machado Alison, 1996), Revencyt: Índice y Biblioteca Electrónica de Revistas Venezolanas de Ciencia y Tecnología, Universidad de Los Andes (Revenycyt, 1997) http://www.revenycyt.ula.ve. Includes Acta Científica Venezolana, Boletín de la Sociedad Venezolana de Espeleología, Boletín de la Sociedad Venezolana de Geólogos, Geominas, Memoria de la Fundación La Salle de Ciencias Naturales and Revista Geográfica Venezolana.
- Colombia: Publindex: Sistema Nacional de Indexación y Homologación de Revistas Especializadas de Ciencia y Técnica Colombianas (Colciencias) (Gómez et al., 1998; COLCIENCIAS, 2005), http://scienti.colciencias.gov.co:8084/publindex. It includes a permanent indexation service in three categories: A: Dyna; B: Boletín de Ciencias de la Tierra; Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales; Suelos Ecuatoriales; and C: Avances en Recursos Hidráulicos; Boletín Científico CCCP; Geología Colombiana.
- Argentina: Núcleo Básico de Revistas (CONICET, Centro Argentino de Información Científica y Tecnológica) (CAICYT, 2006b) http://www.caicyt.gov.ar. Includes Ameghiniana, Ciencia del Sueño, Geoacta, Latin American Journal of Sedimentology and Basin Analysis, Meteorológica, Publicación Especial de la Asociación Paleontológica Argentina, Revista de la Asociación Geológica Argentina, Serie Correlación Geológica.

These ranking systems include only a very low proportion of all published journals (Fig.3). They are being used to choose which journals receive financial support by local science agencies, but they are not used to evaluate scientists’ performance, as ISI indices are. The development and application of local ranking systems for science journals by national scientific agencies in Argentina, Brazil, Colombia and Venezuela has indeed resulted in better products, since editors try to meet the quality requirements.

Periodicity

Most items included in this survey are not periodical but irregular series (Fig.1C). Regular publication according to schedule is rare, even within the so-called periodicals, and regularity is highly correlated with journals published by professional associations or societies. This is one of the basic conditions to be included in the local ranking systems, so this aspect is improving.

Change of journal name is also common, especially in publications of government organizations, like geological surveys or universities. The changes in name may be slight or more radical, and may be accompanied by a change of ISSN number or not. They are recorded and followed as far as possible in the present survey. Furthermore, it is very difficult to know when a certain irregular journal or series is definitively closed. All these issues complicate bibliographic search and jeopardize visibility and access.

Indexing

Only two of the South American scientific periodicals related to Earth Sciences are indexed by Thomson Scientific-ISI (Ameghiniana and Revista Geológica de Chile, now Andean Geology). Several other South American journals meet the requirements (Testa, 2001) and yet they are not included.

ISI and other impact factors (IF) are currently being used to qualify the scientists’ personal performance, and sometimes even to evaluate institutes and laboratories. The use and misuse of impact factors has been debated at length previously, especially in sciences characterized by territoriality, as geology clearly is (Kimley, 1994; Moed and Leeuwen, 1996; Avila, 1997; Hecht et al., 1998; Rey-Rocha et al., 1999, 2001; Riccardi, 2001; and many others) and is an important issue in itself. Riccardi (2001) and Granier (2007) discuss the matter specifically in relation to South American geological journals. This deflection from the original objectives of the indices has produced many unwelcome consequences for academic life in South America and elsewhere. There is pressure on local scientists to publish their results in the “listed” international journals, if they want to succeed in their academic goals. Thus, local geoscientists compete for the same editorial space with scientists from all over the world (Avila, 1997), although their results are commonly dismissed as being “only local interest”. This in turn produces a situation in which funds and efforts are channeled to “internationally interesting” fashionable subjects, neglecting the development of research areas which may have high local interest and social benefit.

This goes clearly against open access journals (see strong arguments referred to paleontology journals in Bengtson, 2000). To convince authors to publish good papers in local open access journals is a challenge for editors, especially in journals published by professional societies, which are cheap, have high technical quality and good IFs. The real presence and impact of these journals locally, regionally and internationally is not measured by currently used IFs (Urbizagastegui and Cortés, 1998; Martín-Sempere et al., 2000; Riccardi, 2001) and a new measuring method to evaluate this is badly needed. Cetto and Alonso-Gamboa (1998) have lucidly argued for
the need of developing standards and criteria that can realistically be used to measure or qualify our journals.

Visibility

The problem of visibility regarding Latin American scientific periodicals in general was acknowledged several years ago and has been the subject of many contributions (see for instance Ochoa-Henríquez, 2004). Global, regional and even national visibility of many of these journals is very poor, making access to the contents difficult and thus losing the main purpose of publication, i.e. to make the geological knowledge of our countries available to the world. Our publications are absent or very poorly represented in international databases and abstracting services, GeoRef includes about a third of the journals, and they are far less represented in other services (such as Geobase, Geological Abstracts, Pascal, INIS Atomindex, etc).

Some regional quality-selective data bases specialized in Latin American literature, on the contrary, have a good representation of Earth Science journals. These have recently been developed from Mexican initiatives, and comprise two data bases:

(a) **Latindex**: Developed from Periódica (Cetto, 1998; Ratto and Dellamea, 2001) from an initiative during a meeting in 1994, member of the International Society of Science, Technology and Information (ICSTI), http://www.latindex.unam.mx/. It includes a directory of journal titles, a catalogue with selected journals and an index with bibliographic information. Member countries are Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Perú, Uruguay and Venezuela from South America (plus Costa Rica, Cuba, Guatemala, México, Nicaragua, Panamá, Puerto Rico, República Dominicana, Portugal and Spain), and it is sponsored by UNESCO and ICSU. It includes 259 South American Earth Science journals (updated to July 2009, see Fig. 4).

(b) **Periódica**: Produced by the Universidad Nacional Autónoma de México from 1978 to 1997 in printed form (quarterly), online remote access from 1986 to 1993, in compact-disc from 1989 to 1994, and from 1997 in Internet http://132.248.9.1:8991/F/-/func=find-b-0&local_base=PER01 (Alonso-Gamboa, 1998). It has very good coverage of Mexican literature, and is the base for the development of Latindex.

A summary of the visibility by country according to different sources (GeoRef, Latindex, and the La Plata Museum library (Fig. 4) shows that Latindex has a fairly good coverage of Earth Science-related journals in the region.

Access

**Distribution of hard copies**: Usually distribution of hard copies of these local journals is restricted and irregular and does not reach the large libraries (see Fig. 4 for one sample library). This is made worse by the recent increase in postal fees, which may reach (or even surpass) the publishing costs.

**On-line access**: A simple frequency diagram shows that the proportion of publications available on-line is higher than expected (Fig.1D), and that Brazil is doing significantly better than other countries. The situation is continuously changing and thus difficult to analyze quantitatively.

There are several types of on-line access for scientific journals: either the full text of printed journals is made available through on-line libraries or institutional websites which provide PDF files, or fully electronic journals are produced. All these types are found related to South American journals. Access can be unrestricted, free restricted, or paid, but it is free and unrestricted for all journals listed (Table 1).

Though few people would disagree with the principle of open access (OA), the practical question is how to make it work, since any publication system has costs (Butler, 2003; Grivell, 2004). Recent studies in particular scientific fields have shown that OA status of an article alone has little or no effect on citations (Craig et al., 2007).

Freely accessible geology journals on-line are usually heavily subsidized. According to the Budapest Open Access Initiative (2002) of the 43 Earth Science journals then freely accessible on-line, 7 (16%) were South American (either via SciELO or institutional web sites). Today (only seven years later) there are at least 100 South American Earth sciences journals freely accessible on-line (Table 1). This is relatively a very high proportion, considering the total contribution of South America to the publication in the field. Open access was received with high expectations in the developing world (BIREME/PAHO/WHO, 2005) but although these countries are making great efforts to provide open access to the scientific information they produce, they are still far behind the others in their own access to information produced in the rest of the world.

**Libraries on-line**: There are two regional virtual libraries which have a set of high quality standards equivalent to those used by the international indexing organizations for the inclusion of journals.

- **SciELO** (http://www.scielo.org): Scientific Electronic Library On-line. Originated in Brazil, now includes publications from Argentina, Brazil, Chile, Colombia, Perú and Venezuela (also Cuba, Spain and Portugal) (Packer et al., 2001; Packer, 2002), and is now expanding to include Paraguay, Uruguay and also Costa Rica, México and South Africa. It includes only 22 South American Earth Science journals from a total of 630 items and provides free access to PDF and HTML formats. In general, coverage is limited to a few recent issues, but is slowly growing. SciELO includes 4 Earth Science journals from Argentina, 7 from Brazil, 5 from Chile, 3 from Colombia, 2 from Venezuela and 1 from Perú.

- **RedALyC** (www.redalyc.org): Red de Revistas Científicas de América Latina, el Caribe, España y Portugal. With the rather radical moto “La ciencia que no se ve no existe” (science which is not seen does not exist), this project originated as a means to
### Table 1. List of Earth sciences South American journals which are currently freely available on-line (most provide PDF files of published articles of at least some volumes) and their links updated to June 2009. When two ISSN numbers are available, only the on-line version ISSN number is listed.

| Name                                      | Country | ISSN                        | Link                                                                 |
|-------------------------------------------|---------|-----------------------------|----------------------------------------------------------------------|
| Acta Científica Venezolana                | VEN     | 0001-5504                   | http://acta.ivic.ve/; http://www2.scielo.org.ve/cielo.php?script=sci_issues&píd=0001-5504&lng=en&nrm=iso |
| Acta Geológica Lilloana                   | ARG     | 0567-7513                   | http://lillo.org.ar/content/blogcategory/93/318/                      |
| Acta Limnológica Brasiliense              | BRA     | 0102-6712                   | http://ecologia.icb.ufmg.br/~joseneto/Acta_Home/web/acta_limnologica.htm |
| Acta Scientiarum. Agronomy                | BRA     | 1807-8621                   | http://periodicos.uerm.br/ojs/index.php/ActaSciAgron                  |
| Águas Subterrâneas                         | BRA     | 0101-7004                   | http://ojs.c3sl.ufpr.br/ojs2/index.php/asubterraneas/issue/archive     |
| Ameghiniana                                | ARG     | 1851-8044                   | http://www.scielo.org.ar/scielo.php?script=sci_issues&píd=0002-7014&lng=en&nrm=iso; http://www.apaleontologia.org.ar/contenido/Inscripcion%20pag.php |
| Anais da Academia Brasileira de Ciências  | BRA     | 0001-3765                   | http://www.scielo.br/scielo.php?script=sci_issues&píd=0001-3765&lng=es&nrm=iso |
| Anales - Museo Nacional de Historia Natural y Antropología (Uruguay) | URY | 0797-6828 | http://www.mec.gub.uy/munhina/anales_lista.htm |
| Anales del Instituto de la Patagonia, Serie Ciencias Naturales | CHL | 0716-6486 | http://www.umag.cl/facultades/INSTITUTO2008_2.php |
| Andean Geology                             | CHL     | 0718-7106                   | http://www.scielo.cl/scielo.php?script=sci_serial&píd=0718-7106&lng=es&nrm=iso |
| Anuario de la Minería de Chile             | CHL     | 0066-5096                   | http://www.sernageomin.cl/index.php?plantilla=categoría&option=com_content&task=section&id=5&Itemid=0 |
| Anuário do Instituto de Geociências - Universidade Federal do Rio de Janeiro | BRA | 0101-9759 | http://www.anuario.igeo.ufrr.br/ |
| Anuário Mineral Brasileiro                 | BRA     | 0100-9303                   | http://www.dnpm.gov.br/conteudo.asp?ISDNcoa=66&IDPagina=66              |
| Aquatec                                    | ARG     | 0327-7755                   | http://www.zipla.edu.ar/zipla/revistas.php?aq=1                      |
| Área Mineria                               | CHL     | 0718-3704                   | http://www.aminera.cl/home/                                          |
| Arquivos do Museu Nacional                 | BRA     | 0365-4508                   | http://acd.ufrrj.br/~museuhp/CP/cp-arquivos.html                      |
| Avances en Recursos Hidráulicos            | COL     | 0121-5701                   | http://www.minas.unalmed.edu.co/index.php?option=com_content&task=view&id=95&Itemid=223 |
| BioScriba.org.ar                           | ARG     | 1850-4639                   | http://www.bioscriba.org.ar                                          |
| Boletín de Ciencias Geodésicas             | BRA     | 1982-2170                   | http://ojs.c3sl.ufpr.br/ojs2/index.php/bcp                          |
| Boletín de Geociencias da Petrobrás        | BRA     | 1982-2170                   | http://www2.petrobras.com.br/pagina=tecnologia2/port/publicacoes_hgeociencia.asp |
| Boletín de Pesquisa e Desenvolvimento - Embrapa Solos | BRA | 1678-0892 | http://www.cnps embrapa.br/ |
| Boletín de Pesquisa e Desenvolvimento Online - Embrapa Trigo | BRA | 1677-8901 | http://www.cnpt embrapa.br/biblio/                                    |
| Boletín de Pesquisa Online - Embrapa Trigo | BRA | 1518-6504 | http://www.cnpt embrapa.br/biblio/                                    |
| Boletín do Museu Paraense Emílio Goeldi.    | BRA     | 1981-8114                   | http://www.museu-goeldi.br/editora/boletim_antiores.html             |
| Ciências Naturais                           |         |                             |                                                                      |
| Boletín Goiano de Geografía                | BRA     | 1984-8501                   | http://www.revistas.ufg.br/index.php/hgg                              |
| Boletín IG - USBP. Publicación Especial    | BRA     | 0102-6275                   | http://geologiausp.igc.usp.br/geologiausp/arq/as_especial.htm         |
| Boletín IG-USP. Serie didática              | BRA     | 0102-6291                   | http://geologiausp.igc.usp.br/geologiausp/sd2v2.php                  |
| Boletín Paranaense de Geociencias          | BRA     | 0067-964x                   | http://calvados.c3sl.ufpr.br/ojs2/index.php/geociencias/             |
| Boletín Tecnico de Petrobras               | BRA     | 0006-6117                   | http://www2.petrobras.com.br/pagina=tecnologia2/port/publicacoes_hgeociencia.asp |
| Boletín - Instituto Geológico del Perú (IGP) | PER |                      | http://www.ingemnet.gob.pe/form/plantilla01.aspx?option=104          |
| Boletín Antártico Chileno                 | CHL     | 0716-0763                   | http://www.inach.inachwebne.com/index.aspx?channel=6212              |
| Boletín Científico CCCP                    | COL     | 0121-3423                   | http://www.cccp.org.co/modules.php?name=Content&amp;page=showpage&amp;pid=218 |
| Boletín de Ciencias de la Tierra           | COL     | 0120-3630                   | http://www.minas.unalmed.edu.co/index.php?option=com_content&amp;task=view&amp;id=96&amp;Itemid=223 |
| Boletín de la Sociedad Venezolana de Espeleología | VEN | 0583-7731 | http://www2.scielo.org.ve/scielo.php/script_sci_serial/píd=0583-7731lng_en/nrm_iso |
| Boletín del Cuerpo de Ingenieros de Minas del Perú (CIMP) | PER | 0366-1636 | http://www.ingemnet.gob.pe/form/plantilla01.aspx?option=97 |
| Boletín Minero - Sociedad Nacional de Minería | CHL | 0378-0961 | http://www.sonami.cl/ |
| Bragantia                                   | BRA     | 1678-4499                   | http://www.scielo.br/scielo.php?script=sci_serial&píd=0006-8705&lng=en&nrm=iso |
| Brasil Mineral                              | BRA     | 0102-4728                   | http://www.brasilmineral.com.br/                                 |
| Ciencia del Suelo                           | ARG     | 1850-2067                   | http://www.suelos.org.ar/publicaciones.htm                           |
| Comunicaciones Paleontológicas - Museo Nacional de Historia Natural y Antropología | URY | 0374-7123 | http://www.mec.gub.uy/munhina/compaleo.htm |
| Name                                                      | Country | ISSN           | Link                                                                 |
|-----------------------------------------------------------|---------|----------------|----------------------------------------------------------------------|
| Dyna                                                      | COL     | 0012-7353      | http://www.minas.unalmed.edu.co/index.php?option=com_content&task=view&id=367&Itemid=223 |
| Earth Sciences Research Journal                           | COL     | 1794-6190      | www.geociencias.unal.edu.co/ESRJ.htm                                  |
| Energética                                                | COL     | 0120-9833      | http://www.minas.unalmed.edu.co/index.php?option=com_content&task=view&iid=9&Itemid=223 |
| Estudos Geográficos: Revista Eletrônica de Geografia      | BRA     | 1678-698x      | http://cecemca.rc.unesp.br/ojs/index.php/estgeo/index                 |
| Estudos Geológicos                                       | BRA     | 1980-8208      | http://www.ufpe.br/estudosgeologicos/                                 |
| FACENA                                                    | ARG     | 1851-507x      | http://exa.unme.edu.ar/revisfacena/                                   |
| GAEA                                                      | BRA     | 1808-5261      | http://www.geociencias.unal.edu.com/publicaciones/detalle_dep.php?id=9&publicacion=250 |
| Geobr                                                     | BRA     | 1519-5708      | www.degeo.ufop.br/geobr/                                             |
| Geoquimica Brasiliensis                                  | BRA     | 0102-9800      | http://www.sbg.org.br/geochim/busca.php                              |
| Geociências (São Paulo)                                   | BRA     | 1980-900x      | http://jasper.rc.unesp.br/revistageociencias/                         |
| Geografia (Londrina)                                      | BRA     | 0102-3888      | http://www2.uel.br/revistas/geografia/; http://www.uel.br/revistas/uel/index.php/geografia |
| Geología Colombiana                                       | COL     | 0072-0992      | http://wwwunal.edu.co/geociencias/RevistaGeologia.htm                 |
| Geología USF . Serie Didactica                            | BRA     | 1677-7549      | http://geologiasusp.igc.usp.br/geologiausp/sd1/v.php                 |
| Geología USF . Publicación Especial                       | BRA     | 1676-7829      | http://geologiasusp.igc.usp.br/geologiausp/pe/v.php                  |
| Geología USF . Serie Cientifica                           | BRA     | 1519-874x      | http://geologiasusp.igc.usp.br/geologiausp/scl/v.php                 |
| Geonamos                                                  | BRA     | 0104-4846      | http://www.ige.ufmg.br/geonamos/                                      |
| Holos Environment                                         | BRA     | 1519-8634      | http://cecemca.unesp.br/ojs/index.php/tilos                           |
| INGEMINAS al Día                                          | COL     |                | http://www.ingeminas.gov.co/content/view/868/360/                     |
| Latin American Journal of Sedimentology and Basin Analysis| ARG     | 1851-4979      | http://www.scielo.org.ar/scielo.php/script_sci_serial/pid_1851-4979/lng_es/nrm_iso |
| Memorando - Instituto Nacional de Investigación y Fomento Minero (INIFM) | PER | | http://www.ingemnet.gob.pe/form/plantilla01.aspx?option=105 |
| Memoria Anual - INGEMMET                                  | PER     |                | http://www.ingemnet.gob.pe/form/plantilla01.aspx?Opcion=77             |
| Minerales (Santiago)                                      | CHL     | 0026-458x      | http://www.imich.cl/index.php?option=com_remosity&Itemid=39&func=fileinfo&oid=5 |
| Miscelánea - INSUGEO                                      | ARG     | 1514-4836      | http://digsrvr15.unt.edu.ar/fcsnat/insugeo/publicaciones.htm           |
| Multiquina (Mendoza)                                     | ARG     | 0327-9375      | http://www.ircyct.edu.ar/multiquina                                   |
| Natura Neotropicalis                                      | ARG     | 0329-2177      | http://www.acnl.santafe-conicet.gov.ar/edic_nat.html                  |
| Páramo                                                    | ECU     | 1390-1222      | http://paramosecuador.org/ec/component/option,com_remosity/Itemid,26/func,select/id,2/ |
| Pesquisas en Geociencias                                 | BRA     | 1807-9806      | http://www.pesquisasemgeociencias.ufrjs.br/index.htm                  |
| Publicación especial - Asociación                        | ARG     | 0328-347x      | http://www.apaleontologica.org.ar/contenido/Indice%20Publicaciones%20especiales.php |
| Paleontológica Argentina                                 |         |                | http://www.scbg.org.br/publicacoes/multipojo.php/link=RBG&título=Revista%20Brasileira%20de%20Paleontologia%201982-4351&lng=en&nrm=iso |
| Publicaciones Avulsas do Museu Nacional                   | BRA     | 0100-6304      | http://acu.ufpr.br/~museuhp/CPP/Aculos/aulas.html                     |
| Revista Ambient e Agua - An Interdisciplinary Journal of Applied Science | BRA | 1980-993x | http://www.agro.unitau.br/seer/index.php/ambio-agua/index |
| Revista Brasileira de Agrociencia                        | BRA     | 0104-8996      | http://www.ufpel.tche.br/faem/agrociencia                              |
| Revista Brasileira de Cartografia - RBC                  | BRA     | 0560-4613      | http://www2.prudente.unesp.br/rcb/rcb.htm                             |
| Revista Brasileira de Ciência do Solo                    | BRA     | 1806-9657      | http://sceio.is.br/sceio.php?script=scei_serial&pid=0108-0683&lng=en&nrm=iso |
| Revista Brasileira de Geociencias - RBG                  | BRA     | 0375-7536      | http://www.sbg.org.br/sbg_online.html; http://ojs.s-l.ufpr.br/ojs2/index.php/rdg/index |
| Revista Brasileira de Geofisica                          | BRA     | 0102-261x      | http://www.sceio.is.br/sceio.php?script=scei_serial&pid=0102-261X&lng=en&nrm=iso |
| Revista Brasileira de Geografia                          | BRA     | 0034-723x      | http://biblioteca.ibge.gov.br/colecao_digital_publicacoes_multiple.php/link=RBG&title=Revista%20Brasileira%20de%20Geografia%201982-4351&lng=en&nrm=iso |
| Revista Brasileira de Meteorologia                       | BRA     | 0102-7786      | http://www.sceio.is.br/sceio.php?script=scei_serial&pid=0102-7786&lng=en&nrm=iso |
| Revista Brasileira de Paleontologia                      | BRA     | 1519-7530      | http://www.sbpbrasil.org/revista/index.htm                            |
| Revista Brasileira de Geomorfologia                      | BRA     | 1519-1540      | http://www.sbg.org.br/home/?pg=10                                    |
| Revista Chilena de Historia Natural                      | CHL     | 0717-6317      | http://www.sceio.is.br/sceio.php?script=scei_serial&pid=0716-078X&lng=en&nrm=iso |
| Revista de Biología Marina y Oceanografía                 | CHL     | 0717-3326      | http://www.revbiolmar.cl/                                            |
| Revista de Geografía Norte Grande                        | CHL     | 0379-8682      | http://www.sceio.is.br/sceio.php?script=scei_serial&pid=0718-3402&lng=en&nrm=iso |
| Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales | COL | 0370-3908 | http://www.accefyn.org.co/PubliAcad/Periodicas/revista.htm |
| Revista de la Asociación Geológica Argentina              | ARG     | 1851-8249      | http://www.geologia.org.ar/; http://www.sceio.is.br/sceio.php/script_scei_serial/pid_0004-4822&lng es/nrm iso |
| Revista de la Ciencia del Suelo y Nutrición Vegetal      | CHL     | 0718-2791      | http://mimaonline.uach.cl/revistas/csueldoeaboutj.htm; http://mimaonline.uach.cl/revistas/csueldoeaboutj.htm |
increase the visibility of Iberoamerican scientific production (Aguado-López and Rogel-Salazar, 2006). It has been developed since 2002 by the Universidad Nacional Autónoma de México, and includes complete texts of scientific articles published in the most important regional journals. It began covering only social sciences but from 2006 it includes also exact and natural sciences. It adheres to the Open Access initiative (RedALyC, 2007). The articles are all in PDF format.

Institutional free access: In many cases on-line access is made available by the publishing institutions directly. Again Brazil is leader in this aspect (Table 1), and there are Brazilian on-line libraries which facilitate quick access, such as Diretório de Revistas Brasileiras em SEER:http://seer.ibict.br/index.php?option=com_mtree&Itemid=109; and Portal LivRe do Centro de Informações Nucleares (Brazil): http://livre.cnen.gov.br/Inicial.asp.

Discussion

The situation of Earth Science journals in South America is not good. It is not simply a question of low resources, but a serious issue of poor administration. Costs of publication of scientific results are only rarely included in science budgets, and thus the gap in scientific output between developed and developing countries is in fact greater than the input gap (King, 2004; Dickson, 2004).

Difficult access and low visibility are often closely related to (and may even be a consequence of) other serious structural deficiencies. Tackling these shortcomings is here regarded as the main challenge for editors of such journals: to obtain good manuscripts from local authors is certainly a key issue today. To create the conditions for authors to prefer local journals for publication of good Earth Science papers is not an easy task, due to the widespread misuse of international “impact factors” (originally designed to evaluate journal impact) for the evaluation of scientists’ personal performance, paradoxically by the same national science organizations that try to promote the local journals.

Since local evaluating organs favor publication in indexed media, some authors have even questioned if it is sensible to continue the struggle to publish in local journals. Others, including myself, believe that local Earth Science journals had and still have an important role in the development of regional geological knowledge (which is highly territorial by nature) and every effort should be made to preserve them, increase their quality and upgrade them to the current international publication trends. High quality journals published by learned societies should receive all available support.

Other important challenges for the continuity of local scientific publishing in Earth Sciences are to find a way of effectively measuring the real impact in the regional and international field, and to keep pace with new advances in publishing and communications technologies.

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