



You have downloaded a document from
RE-BUŚ
repository of the University of Silesia in Katowice

Title: What is hot in sedimentary research over the millennium crossroad?

Author: Grzegorz Racki

Citation style: Racki Grzegorz. (2002). What is hot in sedimentary research over the millennium crossroad? "Acta Geologica Polonica" (2002, vol 52, No. 4, pp. 577-584).



Uznanie autorstwa - Użycie niekomercyjne - Bez utworów zależnych Polska - Licencja ta zezwala na rozpowszechnianie, przedstawianie i wykonywanie utworu jedynie w celach niekomercyjnych oraz pod warunkiem zachowania go w oryginalnej postaci (nie tworzenia utworów zależnych).



UNIwersYTET ŚLĄSKI
W KATOWICACH



Biblioteka
Uniwersytetu Śląskiego



Ministerstwo Nauki
i Szkolnictwa Wyższego

What is hot in sedimentary research over the millennium crossroad?

GRZEGORZ RACKI *Department of Earth Sciences, Silesian University, Będzińska 60, PL-41-200 Sosnowiec, Poland.*

The world-wide and multidisciplinary *Science Citation Index* (SCI), available presently online as *SCI Expanded* via *Web of Science* from the Institute for Scientific Information (ISI) in Philadelphia, has been applied as a powerful and reliable tool for the comprehensive study of citation patterns (GARFIELD 1979). Introductory bibliometric analyses for sedimentological literature were already presented in *Journal of Sedimentary Petrology* many years ago (MIDDLETON 1974, PILKLEY & WILCOX 1981, BODINE 1982).

Hot Papers Database contains data on highly cited papers processed in the ISI databases during the last two years. Current information on the publication 'hits' in physics, chemistry, biology and medicine are regularly presented as *What's hot in Research?* at the ISI homepage (www.isinet.com). For the geosciences, the list of most cited articles from 1981 was published by GARFIELD (1983), but contained almost exclusively papers in geophysics. The article presents this kind of updated ISI data (i.e., based on *SCI Expanded*) for the closely linked geological topics of sedimentology, sedimentary geology and sedimentary geochemistry, and is thought to be a continuation of the previous search by MIDDLETON (1974). *SCI Expanded* includes modern papers only (since 1996), having been indexed from ca. 5900 source 'master' journals. The identification of the highest cited references (as an important part of the intellectual essence of the discipline) and dynamic, rapidly developing research fronts are major tasks of the recent bibliometric studies, as is well shown in a refined approach to interdisciplinary climate research by SCHWECHHEIMER & WINTERHAGER (1999).

PRINCIPLES OF THE RATING

Understanding of the Earth history contained within sedimentary rocks becomes a highly advanced, inte-

grative branch of geological sciences, as was predicted 40 years ago (BROUWER 1962). Thus, sedimentary research over the millennium crossroad compiles not only stratigraphy and sedimentology in a conceptual framework of event, cyclo- and sequence stratigraphies (after the third revolution in sedimentary studies in the late 1970s; MIALL 1995), but also geochemistry, palaeoecology, geophysics, tectonics, marine geology, climatology, hydrology and environmental sciences. Three of the world-renowned periodicals that ISI registers on an annual basis bear names directly referred to this segment of geology:

Sedimentology, The Journal of the International Association of Sedimentologists (IAS), published by Blackwell Science;

Journal of Sedimentary Research (JSR), the journal of the Society for Sedimentary Geology (SEPM);

Sedimentary Geology, International Journal of Pure and Applied Sedimentology (Elsevier Science BV).

They are considered herein as the core journals (the 'Big Three') in this field of geosciences, due to the high quality of their publishing (annually 275-310 articles), derived from a rigorous peer review system. The scope of *Sedimentary Geology* is especially broad and encompasses all the aspects of research into sediments and sedimentary records, from analytical techniques to regional or geodynamical aspects of sedimentary systems and basin analysis, subsurface analysis of sedimentary sequences, diagenesis, chemical sedimentology and numerical modeling. Their importance as a main communication channel, coupled with a conceptual/thematic link, is evidenced by a cross-citation pattern, i.e., the papers being most frequently quoted by authors in *Sedimentology*, *JSR* and *Sedimentary Geology*, and vice versa; this contribution ranges from 5.8% (*JSR*) up to 10.4% (*Sedimentology*) per year (Table 1). As a distinct rule, however, an internal article 're-cycling' (self-citation) is more efficient within the particular maga-

TABLE 1. Cross-citation distribution (in % per year) among three core journals in sedimentary geology according to JCR 1998-2000

Journal citing	Journal cited	<i>Journal of Sedimentary Research*</i>	<i>Sedimentary Geology</i>	<i>Sedimentology</i>	Total % of the 'Big-Three' citations
<i>Journal of Sedimentary Research</i>		8.3**	2.1	3.7	14.1
<i>Sedimentary Geology</i>		6.1	4.8**	3.7	14.7
<i>Sedimentology</i>		7.3	3.1	6.6**	17.0
Total % influence		21.7	10.0	14.0	average 15.3

*Combined data for *Journal of Sedimentary Research*, *Journal of Sedimentary Research Journal Section A - Sedimentary Petrology and Processes*, *Journal of Sedimentary Research Section B - Stratigraphy and Global Studies*, and *Journal of Sedimentary Petrology*

**The journal self-citations (articles from the journal cited in the next issues of this journal)

zine, especially in the more closed *JSR* (8.3%). First published in 1931, *JSR* is the oldest earth science journal dedicated to the field of sedimentology, and more influences the younger European journals, founded in the 1960s. In general, American scientists use North American literature to a much greater extent than other sources (see the palaeontology example in HANER 1994), even if this 'semi-isolation' is distinctly decreasing (see former patterns of geological journal citations in WOODFORD 1969, MIDDLETON 1974, GARFIELD 1979, pp. 183-184, and PILKLEY & WILCOX 1981).

I generally agree with PILKLEY & WILCOX (1981) that a sedimentology article could be subjectively defined as one which might be considered appropriate for publication in these three principal journals. Thus, the most cited articles from several geosciences journals with related and/or broad scope have been surveyed as well, but such a filtering search is impossible in *SCI Expanded* in the case of large (above 250 articles per year) multidisciplinary, weekly-issued periodicals, like *Nature* and *Science*. According to data from the statistical ISI database *Journal Citation Reports* (JCR) 1994-2000, the thematically allied periodical set comprises, among others, *AAPG Bulletin*, *GSA Bulletin*, *Geology*, *Marine Geology*, *Journal of Geology*, as well as *Palaeogeography*, *Palaeoclimatology*, *Palaeoecology* and *Facies*, and some review journals (e.g., *Earth Science Reviews*). For example, the most highlighted recent paper published in *Facies* by MÜNNECKE & SAMTLEBEN (1996) was quoted 17 times (but including 10 self-citations). On the other hand, the highest cited paper from *Basin Research* (64 citations) appears to fulfil the above defined sedimentological criteria: this impressive review paper by DECELLES & GILES (1996) deals with sequence stratigraphic models of foreland basin systems. Also several successful articles in *GSA Bulletin*

focused on sequence stratigraphy and depositional cyclicity, of which the most effectively employed (25 citations) is the New Zealand work by NAISH & KAMP (1997). However, any selection within this continuous gradation would be highly subjective, and I have finally decided to rank only 25 papers from the three core journals (Table 2) cited over 20 times. Altogether, this list is only a fraction of the hot themes and articles in recent literature, but I believe in its representative status. Because author self-citations are included in the counts (but given in the Table 2), the bibliometric statistics record in part also continuity and excessive visibility of some topics in vogue in the journals indexed by ISI; when the filtered citation numbers are considered, the four lower-impact articles, having less than 18 citations *sensu stricto*, would be outside the list.

Sedimentological journals belong to the relatively high-impact geological sources, placed at 5th (*Sedimentology*), 8th (*JSR*) and 10th (*Sedimentary Geology*) positions in the Impact Factor ranking (see Text-fig. 1), according to JCR 2000. It is necessary to note, however, that Geology is one of the smallest (36 journals only) among the 171 fields covered by *SCI*, even if a strict definition of geosciences coverage in *ISI* databases remains equivocal (see discussion in KLIMLEY 1993). Thus, this discipline does not generate as many articles or citations, as, for example, biomedicine and physics. In fact, the hot papers in physics are quoted 30-40 times during two-month periods, whilst the leaders among sedimentary references attracted the same figures during at least 5 years. The citation frequency of the highest ranked papers is essentially between 4 and 8, averaged over 5.5 years. This is well comparable with the citation counts of the 'best JSP papers' (i.e., awarded) listed about 30 years ago by MIDDLETON (1974, Table 1). However, not all SEPM

TABLE 2. Twenty five hot papers in sedimentary geology (published since 1996; *JSR* – *Journal of Sedimentary Research*; *S* – *Sedimentology*, *SG* – *Sedimentary Geology*)

Rank*	Cited Paper [A-Article; R- Review]	Authors (affiliations)	Source	No. of citations ***
1	High-density turbidity currents: Are they sandy debris flows? [A]	Shanmugam G. (Mobil Explorat. & Prod. Serv. Inc., Dallas, USA)	<i>JSR</i> 1996 (I**), Vol 66, Iss 1, pp 2-10	47 (5s)
2	Annually laminated sequences in the internal structure of some Belgian stalagmites – Importance for paleoclimatology [A]	Genty D. & Quinif Y. (Univ. Paris 11, Orsay, France; Fac. Polytech., Mons, Belgium)	<i>JSR</i> 1996 (I) Vol 66, Iss 1, pp 275-288	46↑ (12s)
3	Texture of microbial sediments revealed by cryo-scanning electron microscopy [A]	Defarge C., Trichet J., Jaunet A.M., Robert M., Tribble J. & Sansone F.J.(Univ. Orleans, France; INRA, Versailles, France; Univ. Hawaii, Manoa, Honolulu, USA)	<i>JSR</i> 1996 (IX), Vol 66, Iss 5, pp 935-947	38 (6s)
4	Classification of offshore mass movements [R]	Mulder T. & Cochonat P. (Inst. Français Rech. Exploitat. Mer, Plouzane, France; Ecole Natl. Super. Geol., (I), Vandoeuvre Nancy, France)	<i>JSR</i> 1996 (I) Vol 66, Iss 1, pp 43-57	37↑ (8s)
5	Biogenicity of silica precipitation around geysers and hot-spring vents, North Island, New Zealand [R]	Jones B., Renaut R.W. & Rosen M.R. (Univ. Alberta, Edmonton, Canada; Univ. Saskatchewan, Saskatoon, Canada; Wairakei Res. Ctr., Taupo, New Zealand)	<i>JSR</i> 1997 (I), Vol 67, Iss 1, pp 88-104	34 (13s)
6	Petrogenesis of sediments in the absence of chemical weathering: Effects of abrasion and sorting on bulk composition and mineralogy [A]	Nesbitt H.W. & Young G.M. (Univ. Western Ontario, London, Canada)	<i>S</i> 1996 (IV), Vol 43, Iss 2, pp 341-358	34 (12s)
7	Comparison of laser grain size analysis with pipette and sieve analysis: A solution for the under-estimation of the clay fraction [A]	Konert M. & Vandenberghe J. (Free Univ. Amsterdam, Amsterdam, Netherlands)	<i>S</i> 1997 (VI), Vol 44, Iss 3, pp 523-535	33↑ (5s)
8	Was Phanerozoic reef history controlled by the distribution of non-enzymatically secreted reef carbonates (microbial carbonate and biologically induced cement)? [R]	Webb G.E. (Univ. Queensland, Brisbane, Australia; Texas A&M Univ., College Stn, USA)	<i>S</i> 1996 (XII), Vol 43, Iss 6, pp 947-971	32 (5s)
9	Microbial mediation of modern dolomite precipitation and diagenesis under anoxic conditions (Lagoa Vermelha, Rio de Janeiro, Brazil) [A]	Vasconcelos C. & McKenzie J.A. (ETH Zurich, Switzerland; Univ. Fed. Rj, Brazil)	<i>JSR</i> 1997 (V), Vol 67, Iss 3, pp 378-390	31↑ (3s)
10	A composite reference section for terminal Proterozoic strata of southern Namibia [A]	Saylor B.Z., Kaufman A.J., Grotzinger J.P. & Urban F. (Case Western Reserve Cleveland, USA; Harvard Univ, Cambridge, USA; Hobart Coll, Geneva, USA; MIT, Cambridge, USA)	<i>JSR</i> 1998 (XI), Vol 68, Iss 6, pp 1223-1235	30↑ (3s)
11	Sedimentological evaluation of general circulation model simulations for the "greenhouse" earth Cretaceous and Jurassic [A]	Price G.D., Sellwood B.W. & Valdes P.J. (Univ. Reading, Great Britain)	<i>SG</i> 1995 (XII), Vol 100, Iss 1-4, pp 159-180	29↓ (8s)
12	Downstream changes in alluvial architecture: An exploration of controls on channel-stacking patterns [A]	Heller P.L. & Paola C. (Univ. Wyoming, Laramie, USA; Univ. Minnesota, Minneapolis, USA)	<i>JSR</i> 1996 (III), Vol 66, Iss 2, pp 297-306	27 (4s)
13	Salt-marsh growth and fluctuating sea level: Implications of a simulation model for Flandrian coastal stratigraphy and peat-based sea-level curves [A]	Allen J.R.L. (Univ. Reading, Great Britain)	<i>SG</i> 1995 (XII), Vol 100, Iss 1-4, pp 21-45	27 (9s)
14	Stratigraphy, sedimentology, and isotopic geochemistry of Australian Neoproterozoic postglacial cap dolostones: Deglaciation, delta C-13 excursions, and carbonate precipitation [A]	Kennedy M.J. (Univ. Adelaide, Australia)	<i>JSR</i> 1996 (XI), Vol 66, Iss 6, pp 1050-1064	26 (2s)

TABLE 2. Twenty five hot papers in sedimentary geology (published since 1996; *JSR* – *Journal of Sedimentary Research*; *S* – *Sedimentology*, *SG* – *Sedimentary Geology*) (continued)

Rank*	Cited Paper [A-Article; R- Review]	Authors (affiliations)	Source	No. of citations ***
15	Tempestite deposition [A]	Myrow P.M. & Southard J.B. (Colorado Coll., Colorado Springs, USA; MIT, Cambridge, USA)	JSR 1996 (IX), Vol 66, Iss 5, pp 875-887	24↓
16	Postglacial colluvium in western Norway: depositional processes, facies and palaeoclimatic record [R]	Blikra L.H. & Nemeč W. (Geol. Survey Norway, Trondheim, Norway; Univ. Bergen, Norway)	S 1998 (X), Vol 45, Iss 5, pp 909-959	24↑ (3s)
17	Numerical modelling of a mid-sized gravity flow: The 1979 Nice turbidity current (dynamics, processes, sediment budget and seafloor impact) [A]	Mulder T., Savoye B. & Syvitski J.P.M. (Univ. Wales Coll. Cardiff, Great Britain; IFREMER, Ctr Brest, Louzane, France; Univ. Colorado, Boulder, USA)	S 1997 (IV), Vol 44, Iss 2, pp 305-326	24↓ (10s)
18	Tsunami sedimentary facies deposited by the Storegga tsunami in shallow marine basins and coastal lakes, western Norway [A]	Bondevik S., Svendsen J.I. & Mangerud J. (Univ. Bergen, Norway) Vol 44, Iss 6, pp 1115-1131	S 1997 (XII), Vol 44, Iss 6, pp 1115-1131	22↑ (2s)
19	Lower Jurassic epicontinental carbonates and mudstones from England and Wales: chemo-stratigraphic signals and the early Toarcian anoxic event [A]	Jenkyns H.C. & Clayton C.J. (Univ. Oxford, Great Britain; Kingston Polytech., Kingston-on-Thames, Great Britain)	S 1997 (VIII), Vol 44, Iss 4, pp 687-706	22 (3s)
20	Evidence for Milankovitch periodicities in Cenomanian-Turonian lithologic and geochemical cycles, western interior USA [A]	Sageman B.B., Rich J., Arthur M.A., Birchfield G.E. & Dean W.E. (Northwestern Univ., Evanston, USA; Penn State Univ., University Pk., USA; US Geol. Survey, Denver, USA)	JSR 1997, (VIII) Vol 67, Iss 2, pp 286-302	22↑ (2s)
21	Illitization of diagenetic kaolinite-to-dickite conversion series: Late-stage diagenesis of the Lower Permian Rotliegend sandstone reservoir, offshore of the Netherlands [A]	Lanson B., Beaufort D., Berger G., Baradat J. & Lacharpagne J.C. (IRIGM, Grenoble, France; Univ. Poitiers, France; Univ. Toulouse, France; Elf Aquitaine Prod., Pau, France)	JSR 1996 (V), Vol 66, Iss 3, pp 501-518	22↑ (6s)
22	How important is pressure in causing dissolution of quartz in sandstones? [A]	Bjorkum P.A. (Statoil, Stavanger, Norway)	JSR 1996 (I), Vol 66, Iss 1, pp 147-154	22↑ (4s)
23	Precambrian clastic sedimentation systems [R]	Eriksson P.G., Condie K.C., Tirsgaard H., Mueller W.U., Altermann W., Miall A.D., Aspler L.B., Catuneanu O. & Chiarenzelli J.R. (Univ. Pretoria, South Africa; New Mexico Inst. Min. & Technol., Socorro, USA; Maersk Oil & Gas AS, Copenhagen, Denmark; Univ. Quebec, Chicoutimi, Canada; Univ. Munich, Germany; Univ. Toronto, Canada; Rhodes Univ., Grahams-town, South Africa; SUNY Coll. Oswego, USA)	SG 1998 (IX), Vol 120, Iss 1-4, pp 5-53	21↑ (8s)
24	Experimental soft-sediment deformation: Structures formed by the liquefaction of unconsolidated sands and some ancient examples [A]	Owen G. (Univ. Coll. Swansea, Great Britain)	S 1996 (IV), Vol 43, Iss 2, pp 279-293	21↑
25	Lower Permian (Wolfcampian) paleosol- bearing cycles of the US midcontinent: Evidence of climatic cyclicity [A]	Miller K.B., McCahon T.J. & West R.R. (Kansas State Univ., Manhattan, USA)	JSR 1996 (I), Vol 66, Iss 1, pp 71-84	21↓ (5s)

*Classified according to total citation numbers, followed by 'article age' (younger papers ranked higher)

**Nominal publication month; note that listed papers from the end of 1995 (rank 11 and 13) were in fact registered by ISI in 1996

*** Total citations to 9th June 2002; s – self-citations (at least one co-author's name is joint in cited and citing articles); arrows show changes exceeding 3 ranks in the classification stated between 2000, July and 2002, June

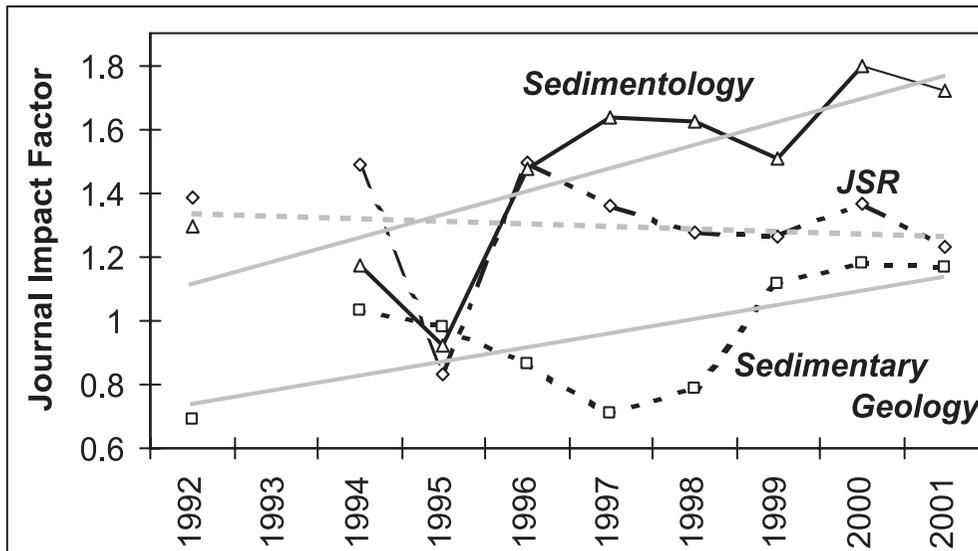


Fig. 1 Journal Impact Factors (IF) of the three core periodicals in sedimentary research between 1992 and 2000 (no data for 1993). IF is a number which gives a ratio between papers published in a journal and their subsequent citations during the two next years. Linear trends are marked as well, showing the increasing significance of the two European journals (grey continuous lines), particularly *Sedimentology* (grey triangles) in contrast to the stabilised position of the SEPM journal (broken lines); it should be noted that the IF of *JSR* was as high as 2.0 in the latest 1960s (MIDDLETON 1974)

decisions are subsequently confirmed by citation prosperity: the 1996 Outstanding Paper by WILKINSON & *al.* (1996) obtained merely 11 citations. In these quantitative impact terms, sedimentary research belongs to a highly stabilised category of geosciences in ISI databases. Among principal references, the comprehensive Springer monograph *Cycles and Events in Stratigraphy* (edited by EINSELE & *al.* 1991) probably belongs to the most influential non-serial lectures for sedimentologists in last years (average 110 citations per year).

HOT ARTICLES AND THEMES

At the top of the citation rating (Table 2) is the ground-breaking article by SHANMUGAM (1996) on turbidite depositional systems. It reached the fundamental conclusion that the so called high-density turbidite currents represent a continuous spectrum of processes between cohesive and cohesionless debris flows, and the preserved characters may evidence only the final depositional stages. However, there are no reliable criteria to identify mechanisms of the sand transport from the sedimentary record. The outstanding karst work by GENTY & QUINF on the palaeoclimatic meaning of internal lamination in stalagmites is the second prominent leader. The French & Belgian author pair demonstrated that the successive growth microsequences have recorded climatic variations with a time resolution of 0.5 year, as well as very regular climatic cycles of 11 years.

The facies and processes spectrum of 25 hot articles in modern sedimentary geology is markedly extensive (Table 2): from various carbonates to silica precipitates to a broad diversity of siliciclastic deposits: alluvial, glacial, aeolian, tsunami, and deep-marine. In general, the depositional meaning of microbial activity and genetic interpretation of flysch facies are the two most widely explored modern fields of study, augmented by experimental and theoretical studies of grain transport and deformation mechanisms. Several papers reveal conspicuous petrogenetic and/or methodological aspects, best exemplified by the far-reaching application of cryo-scanning electron microscopy (DEFARGE & *al.*; 3rd rank) and laser grain size analysis (KONERT & VANDENBERGHE; 7th rank). Actualistic observations, compiling data from the Holocene and Pleistocene, and experimental works resulted in the refined conceptual models for, among other topics, dolomite formation and diagenesis (microbially mediated under anoxic conditions), ancient, non-actualistic storm processes and vertical growth of high tidal mudflats and marshes (under the varying sea-level); this also resulted in a revised classification scheme of offshore mass-movements by MULDER & COCHONAT (at 4th position). The still escalating, quantitative dynamic-stratigraphic field (see MIALL 1995) focused primarily on mathematical modeling and numerical simulations of depositional events, processes and responses in natural systems, with facies-climatic feedbacks for greenhouse settings as representative example (PRICE & *al.* at 11th position).

In chronostratigraphic terms, the main emphasis seems to have been recently paid to Precambrian clastic (mostly glacial) and carbonate successions to reflect a complex interplay of unique controls on the carbon cycle and global climate during that period. The high ranking 'young' article (from the end of 1998; 10th rank) by SAYLOR & *al.* presents sequence stratigraphic and chemostratigraphic reference data from Namibia for calibrating terminal Proterozoic chronostratigraphy. Less prominent status is taken by Mesozoic carbonate facies, analyzed in high-resolution cyclostratigraphic and/or geochemical terms toward better insight into oceanic anoxic events and biotic crises; in the latter context, WEBB (8th rank) discussed the Phanerozoic reef history.

SUMMARY AND FINAL REMARKS

Merely 6 of the key papers listed are single-authored, but the author sets are usually not very numerous. Only 5 of them are classified by ISI as reviews. The Special Millennium Reviews of *Sedimentology* will probably be hits in the first decade of the 21st century, as proved by the paper of BLUM & TÖRNQVIST (2000), a constructive synopsis of crucial matters for the understanding of fluvial systems (already 14 citations!). More than half (14) of the 25 papers being widely utilized by sedimentary geologists were published in *JSR* (see Table 3). This periodical takes also the 5 top ranked positions (Table 2), and continues its long tradition of publishing papers that quickly become benchmark contributions. Surprisingly, these renowned articles are (co)authored more frequently by French (3 hits) than the American sedimentologists (only 2 such cases). Moreover, the *SEPM* journal is apparently losing its major outlet status among the 'Big Three' sedimentary journals, and the *IAS* periodical exhibits higher 'average' citation rate of recent articles (i.e., the journal Impact Factor) since 1997 (Text-fig. 1). In fact, a progression of European Union geologists (Table 3) in the increasing 'competition for attention' (FRANCK 1999), particularly from Norway (three articles appearing in the ranking as late as in 2002), has been obvious for the last two years (see Table 2). This seems to be a confirmation of the overall modern trend in the developing World science (PISTOI 2002): merely 6 articles are written exclusively by American geologists, and a chief role of French and British workers may be also confirmed in the summary rankings (Text-fig. 2). A progressive internationalization of the more important sedimentary studies is clearly manifested by the author's affiliations, because they include scientific institutions from 14 countries and 5 continents. In addi-

Interval	Journal of Sedimentary Research	Sedimentary Geology	Sedimentology
1996-2000, July	16	3	6
1996-2002, June	14	3	8
Interval	Authors from USA	European authors	Authors from other countries
1996-2000, July	11.33	8.67	5
1996-2002, June	6.83	13.17	5

Table 3. Changes in journal and geographic distribution [total counts estimated from (co)author's institutional affiliations] of 25 hot papers in sedimentary geology between 2000 and 2002

tion, the foremost Asiatic papers (19 citations) from India (MOHINDRA & BAGATI 1996) and Korea (SOHN 1996) are placed just behind the presented rating list.

The Polish author with highest citations is NEMEC from Bergen University, the co-author of an useful analysis of post-glacial colluvial systems (at 16th position), a sedimentologist who was originally based at Wrocław University. On the other hand, the best known among 15 Polish papers from the three journals under discussion are: (1) the Spanish-Polish article (ROSELL & *al.* 1998, with contribution by KASPRZYK and PERYT) on comparative strontium geochemistry of Miocene primary gypsum facies (12 citations, but 3 self-citations), and (2) a detailed documentation of intermittently drowned Devonian carbonate platform by SZULCZEWSKI & *al.* (1996, 11 citations; see also the Polish articles ranking in RACKI 2001).

Similar newly opening frontiers of integrative sedimentary geology toward the Earth-system science (cf. MIALL 1995) are visible in other geo-journals specializing in 'softrock' geology, especially well manifested by *Paleoceanography* and *Palaeogeography, Palaeoclimatology, Palaeoecology*. In this evolving context of the world geology, it is interesting to note the most successful articles published in *Acta Geologica Polonica (AGP)*, the leading Polish journal focused thematically on stratigraphy, facies analysis and paleontology. Among 350 regis-

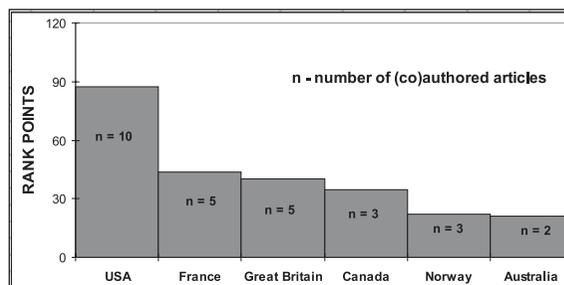


Fig. 2. Top countries in sedimentary research, classified according to total rank counts of the hot articles (25 points for the 1st position, 24 points for 2nd, 1 point for 25th rank; Table 2)

TABLE 4. The most cited papers from *Acta Geologica Polonica*

Rank*	Authors	Cited Paper	Source issue of AGP	No. of citations
Articles published since 1951				
1	Gradziński R., Kielan-Jaworowska Z. & Maryńska T.	Upper Cretaceous Djadokhta, Barun Goyot and Nemegt formations of Mongolia, including remarks on previous subdivisions	1977; 27 (3),281-311	17 (2s)
2	Szulcowski M.	Upper Devonian conodonts, stratigraphy and faunal development in the Holy Cross Mts	1971; 21 (1), 1-129	14 (1s)
3	Borkowska M., Hameurt J. & Vidal P.	Origin and age of Izera gneisses and Rumburk granites in the Western Sudetes	1980; 30 (2), 121-146	11
4	Walaszczyk I.	Turonian through Santonian deposits of the central Polish Upland: their facies development, inoceramid paleontology and stratigraphy	1992; 42 (1-2), 1-122	10 (1s)
5	Narkiewicz M. & Hoffman A.	The Frasnian/Famennian transition: the sequence of events in southern Poland and its implications(1s)	1989; 39 (1-4), 13-28	8
6	Abdel-Gawad G.I.	Maestrichtian non-cephalopod mollusks (Scaphopoda, Gastropoda and Bivalvia) of the middle Vistula Valley, central Poland	1986; 36 (1-3), 69-224	8
7	Pszczółkowski A.	Cretaceous sediments and paleogeography in the western part of the Cuban Miogeosyncline	1978; 32 (1-2), 135-161	8 (1s)
8	Hoffman A.	Synecology of macrobenthic assemblages of the Korytnica Clays (middle Miocene; Holy Cross Mountains, Poland)	1977; 27 (2), 227-275	8
9	Hoffman A., Pisera A. & Ryszkiewicz M.	Predation by muricid and naticid gastropods on the Lower Tortonian mollusks from the Korytnica clays	1974; 24 (1), 249-260	8
10	Hoffman A., Gruszczyński M., Małkowski K., Hałas S., Matyja B.A. & Wierzbowski A.	Carbon and oxygen isotope curves for the Oxfordian of Central Poland	1991; 41 (3-4), 157-164	7
Articles published since 1996				
1	Kaplan U. & Kennedy W.J.	Upper Turonian and Coniacian ammonite stratigraphy of Westphalia, NW-Germany	1996; 46 (3-4), 305-352	6 (1s)
2	Marcinowski R., Walaszczyk I. & Olszewska-Nejbert D.	Stratigraphy and regional development of the mid-Cretaceous (Upper Albian through Coniacian) of the Mangyshlak Mountains, Western Kazakhstan	1996; 46 (1-2), 1-60	6
3	Küchler T.	Upper Cretaceous of the Barranca (Navarra, northern Spain); integrated litho-, bio- and event stratigraphy. Part I: Cenomanian through Santonian	1998; 48 (2), 157-236	5

*Classified according to total citation numbers, followed by 'article age' (younger papers ranked higher)

tered articles in *SCI Expanded* from all (52) *AGP* volumes, the most frequently quoted works (Table 4) deal with the vertebrate-bearing Cretaceous clastic sequence in Mongolia (GRADZIŃSKI & *al.*) and the Upper Devonian carbonate complex of Holy Cross Mts (SZULCZEWSKI). The reference studies from the 1970s still receive 2-3 citations per year in 1996-2002. Other 'hotter' matters from the Polish journal include manifold Devonian, Jurassic, Cretaceous and Miocene (event-)stratigraphic, paleoecological and geochemical topics, supplemented by genetic aspects of crystalline rocks in the Western Sudetes. Conversely, world-wide Cretaceous biostratigraphy has been the main factor in the increasing international impact of *AGP* since 1996 (see RACKI 2000).

Acknowledgements

I thank A.D. MIALL and T. ZIELIŃSKI for their reviews of the manuscript.

REFERENCES

- BLUM, M.D. & TORNOVIST, T.E. 2000. Fluvial responses to climate and sea-level change: a review and look forward. *Sedimentology*, **47** Supplement, 2-48.
- BODINE, M.W. 1982. Citation analysis of principal sedimentology journals – Discussion. *Journal of Sedimentary Petrology*, **52**, 673.
- DECELLES, P.G. & GILES, K.A. 1996. Foreland basin systems. *Basin Research*, **8**, 105-123.
- EINSELE, G., SEILACHER, A. & RICKEN, W. (Eds), 1991. Cycles and Events in Stratigraphy, 1-955. *Springer*, Berlin-Heidelberg.
- FRANCK, G. 1999. Scientific communication – a vanity fair? *Science*, **286**, 53, 55.
- GARFIELD, E. 1979. Citation indexing - is heory and applicaion in science, technology and humanities. 274 pp. *J. Wiley*; New York
- 1984. The 1981 geosciences articles most cited from 1981 through 1983. In: E. GARFIELD (Ed.), *Essays of an Information Scientist*, pp. 251-263. *Institute for Scientific Information*, Philadelphia.
- HANER, B.E. 1994. The Recent literature citing habits of Canadian and U.S. paleontologists. In: *Proceedings of the 4th International Conference on Geoscience Information*, Ottawa, 1990. *Geological Survey of Canada, Open File*, **2315**, Vol. 2, 175-184. Ottawa.
- JOURNAL CITATION REPORTS, 1994-2000, Science Edition. *Institute for Scientific Information*, Philadelphia .
- KLIMLEY, S. 1993. Limitations of *Science Citation Index* in evaluating journals and scientists in geology. In: C. WICK (Ed.), *Geoscience Information Society, Twenty-eighth Meeting*, Boston. *Proceedings of Geoscience Information Society*, **24**, 23-31.
- MIALL, A.D. 1995. Whither stratigraphy? *Sedimentary Geology*, **100**, 5-20.
- MIDDLETON, G.V. 1974. Citation patterns of papers published in the *Journal of Sedimentary Petrology*. *Journal of Sedimentary Petrology*, **44**, 3-6.
- MOHINDRA, R. & BAGATI, T.N. 1996. Seismically induced soft-sediment deformation structures (seismites) around Sumdo in the lower Spiti valley (Tethys Himalaya). *Sedimentary Geology*, **101**, 69-83.
- MÜNNECKE, A. & SAMTLEBEN, C. 1996. The formation of micritic limestones and the development of limestone-marl alternations in the Silurian of Gotland, Sweden. *Facies*, **34**, 159-176.
- NAISH, T. & KAMP, P.J.J. 1997. Sequence stratigraphy of sixth-order (41 ky) Pliocene-Pleistocene cyclothems, Wanganui basin New Zealand: a case for the regressive systems tract. *Geological Society of America Bulletin*, **109**, 978-999.
- PIKLEY, O.H. & WILCOX, M. 1981. Citation analysis of principal sedimentology journals. *Journal of Sedimentary Petrology*, **50**, 1044-1045.
- PISTOI, S. 2002. Mind the gap - Is the US starting to lose its edge in basic research? *Scientific American*, **286** (4), 25.
- RACKI, G. 2000. The evolving international impact of *Acta Geologica Polonica* 1995-1999. *Acta Geologica Polonica*, **50**, 501-505.
- 2001. Najczęściej cytowane polskie publikacje z dziedziny nauk o Ziemi z lat 90. (na podstawie *National Citation Reports – Poland* 1999). *Przegląd Geologiczny*, **49**, 584-590.
- ROSELL, L., ORTI, F., KASPRZYK, A., PLAYA, E. & PERYT, T.M. 1998. Strontium geochemistry of Miocene primary gypsum: Messinian of southeastern Spain and Sicily and Badenian of Poland. *Journal of Sedimentary Research*, **68**, 63-79.
- SCHWECHEHEIMER, H. & WINTERHAGER, M., 1999. Highly dynamic specialities in climate research. *Scientometrics*, **44**, 547-560.
- SZULCZEWSKI, M., BELKA, Z. & SKOMPSKI, S. 1996. The drowning of a carbonate platform: an example from the Devonian-Carboniferous of the southwestern Holy Cross Mountains, Poland. *Sedimentary Geology*, **106**, 21-49.
- WILKINSON, B.H., DIEDRICH, N.W. & DRUMMOND, C.N. 1996. Facies successions in peritidal carbonate sequences. *Journal of Sedimentary Research*, **B66**, 1065-1078.
- WOODFORD, A.O. 1969. Serial literature used by American geologists, 1967. *Journal of Geological Education*, **17**, 87-90.

Manuscript submitted: 10th April 2002

Revised version accepted: 15th June 2002