

SUBCOMMISSION ON PERMIAN STRATIGRAPHY

ANNUAL REPORT 2011

1. TITLE OF CONSTITUENT BODY and NAME OF REPORTER

International Subcommittee on Permian Stratigraphy (SPS)

SUBMITTED BY:

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2. OVERALL OBJECTIVES, AND FIT WITHIN IUGS SCIENCE POLICY

Subcommission Objectives: The Subcommittee's primary objective is to define the series and stages of the Permian, by means of internationally agreed GSSP's, and to provide the international forum for scientific discussion and interchange on all aspects of the Permian, but specifically on refined regional correlations.

Fit within IUGS Science Policy: The objectives of the Subcommittee involve two main aspects of IUGS policy:

1. The development of an internationally agreed chronostratigraphic scale with units defined by GSSP's where appropriate and related to a hierarchy of units to maximize relative time resolution within the Permian System; and
2. Establishment of framework and systems to encourage international collaboration in understanding the evolution of the Earth during the Permian Period.

3. ORGANIZATION

The Subcommittee has an Executive consisting of a Chairman, a Vice-Chairman, and a Secretary; all three are Voting Members of the Subcommittee. There are seventeen total Voting Members representing most regions of the world where Permian rocks are exposed. The objectives of the Subcommittee are pursued by both stratigraphic and thematic Working Groups that are retired upon completion of their directed task. For example, the Working Groups on the Carboniferous-Permian Boundary, on the Guadalupian stages (Middle Permian), on the base-Lopingian boundary (base-Wuchiapingian Stage), and on base-Changhsingian have been retired upon the successful establishment of their defining GSSP's and ratification by IUGS. The current working groups include the following: 1. Cisuralian stages, 2. Continental Permian, 3. Transitional biotas as gateways for global correlation, 4. Neotethys, Paleotethys, and S. China Correlations, and 5. International Lopingian Working Group.

3a. Officers for 2008-2012:

Chair: Professor Charles M. Henderson, University of Calgary

Vice-Chair: Dr. Vladimir Davydov, Boise State University

Secretary: Dr. Shuzhong Shen, Nanjing Institute of Geology and Palaeontology

SPS website is located at www.nigpas.ac.cn/permian/web/index.asp . This site includes all back issues of *Permophiles* in downloadable PDF format (#1 in 1978 to #54 December 2009). A link

to *Permophiles*/Permian research has also been established at www.ucalgary.ca/conodont/sps .

4. INTERFACES WITH OTHER INTERNATIONAL PROJECTS

SPS interacts with many international projects on formal and informal levels. SPS has taken an active role on the development of integrated chronostratigraphic databases by participating with CHRONOS and PALEOSTRAT (now GeoStratSys), which are NSF funded initiatives. Vladimir Davydov and Walter Snyder are concentrating on developing their system to include improved taxonomic dictionaries, database sharing and manipulation with GeoStratSys. SPS is also involved in a NSFC supported study comparing the Proterozoic-Cambrian transition with the Permian-Triassic transition.

5. CHIEF ACCOMPLISHMENTS AND PRODUCTS IN 2011

GSSPs: Progress was made on the three remaining Lower Permian (Cisuralian) stage GSSPs including base-Sakmarian, base-Artinskian, and base-Kungurian. The section and point for the base-Sakmarian has been changed to the Usolka section in Russia and a proposal was to have been voted on in 2011, but there have been some delays. The Kondurovsky section failed to reproduce the requisite conodont results and problems about the evolution of *Sweetognathus merrilli* were discussed during ICOS2009. Fortunately, the Usolka section had been fully worked up as a potential parastratotype and we have excellent carbon isotope, U-Pb isotopic ages and abundant conodonts to define the boundary. Detailed conodont samples from the approximate GSSP interval were collected by V. Davydov and were processed in Calgary during 2011. The isotopic ages are now in press in a paper by Mark Schmitz and Vladimir Davydov in GSA Bulletin. This material will form the basis of a report that will be prepared early in 2012 and then followed by a vote. A penultimate proposal for the base-Artinskian is appeared in *Permophiles* 55, and some input was received. At both of these sections the Sr isotopes of conodonts have also been shown to be an accurate correlation tool. A revised proposal will be submitted to SPS voting members early in 2012. The Mechetlino section in Russia is not satisfactory for a base-Kungurian GSSP – samples did not yield conodonts, zircons are all reworked, and the rocks are too deeply weathered to produce meaningful carbon isotopic values. New work on a nearby section has shown better conodont recoveries and Sr-isotopic values are being analysed. It is possible that the Mechetlino section will be named as a supplementary reference section. The primary section under consideration for base-Kungurian GSSP is the Rockland section in northern Nevada, USA. The GSSP will be defined using the same point (FAD of *Neostreptognathodus pnevi*) as considered in Russia; hopefully, Sr-isotopic values will match. Funds were requested and granted from ICS for a workshop on this proposal. It was determined that June 2011 was too soon as originally planned; instead a workshop with Bruce Wardlaw, Charles Henderson, Vladimir Davydov and Mark Schmitz was held at Boise May 29 to June 3. Two sets of samples were previously collected and processed separately in Boise and Calgary. During the workshop Wardlaw and Henderson picked all samples and independently picked the same sample/point within the chromomorphocline from *N. pequopenensis* to *N. pnevi*. This narrowed the interval to about 2 metres and V. Davydov collected continuous samples later in the summer and these are currently being processed in Calgary. Invitations have gone out for an international workshop to be held June 7-10, 2012. This workshop will include presentations and a field excursion to the proposed GSSP. We anticipate that a vote can go out following this meeting. It remains the goal that this will be the last GSSP vote for the Permian System and hopefully it can be completed in time to be reported at Brisbane.

Publications: The December 2010 issue of *Permophiles* (#55) was produced online during the Fall of 2010 and was distributed as a pdf document to a mailing list of 280. Owing to reduced submissions SPS is producing only one issue in 2010 (#55), which went online early in 2011. We have a complete series of *Permophiles* on our website (1978 to 2009). Issue 56 is not complete as of this report, but is planned for December 2012.

Meetings: The SPS conducted a business meeting in association with the ICCP meeting in Perth Australia, July 2011.

Membership: There were no changes to the membership in 2011. We have 17 voting members representing Argentina (1), Australia (2), Canada (1), China (3), France (1), Germany (1), Italy (1), Japan (1), Russia (3), and United States (3). We also have five honorary Members.

6. CHIEF PROBLEMS ENCOUNTERED IN 2011

There were no major problems in 2011, but progress was slow because of sample processing delays and major commitments by all individuals associated with this work.

7. SUMMARY OF EXPENDITURES IN 2011:

INCOME

University of Calgary (1): \$1444.00

NIGPAS (2): \$1000.00

ICS (3): \$ 3000.00

TOTAL: \$5444.00 (quoted in US\$; divided by 1.02 to convert to Canadian\$). (1) University of Calgary support from NSERC grant to Charles Henderson for travel to Nanjing China March 2011. (2) NIGPAS (Nanjing Institute of Geology and Palaeontology) support from NSF-C grant to Shuzhong Shen in support of Henderson in Nanjing. (3) ICS allocation to SPS for international workshop.

EXPENDITURES

Printing, Mailing, and Web support *Permophiles*: \$196.05

Travel Costs for Henderson to Nanjing: \$2444.00

Travel costs for Boise Workshop (for Henderson and partially for Wardlaw) \$1803.20

TOTAL: \$4443.25 (quoted in US\$)

BALANCE: \$1000.75

8. WORK PLAN, CRITICAL MILESTONES, ANTICIPATED RESULTS AND COMMUNICATIONS TO BE ACHIEVED NEXT YEAR (2012):

1. Production of *Permophiles* #56 in Calgary Dec 2011 and #57 in March 2012 in Nanjing.
2. Vote on base-Artinskian in February 2012.
3. Vote on base-Sakmarian in April 2012.
4. Submit two GSSP proposals to ICS for ratification in March and May 2012.
5. Workshop for base-Kungurian in Boise Idaho and Wells Nevada June 7-10, 2012.
6. SPS business meeting during IGC meeting in Brisbane Australia during August 2012.
7. Vote for base-Kungurian late June 2012 and hopefully submit to ICS for voting at Brisbane.
8. Vote for new SPS executive in 2012. Nominating committee has been set with Bruce Wardlaw (USGS) as Chair and Galina Kotlyar (Russia) and Ausonia Ronchi (Italy) as members.

9. BUDGET AND ICS COMPONENT FOR 2012

EXPENDITURES

We have sufficient leftover funds for the minor cost of website and printing. The primary budget request for 2012 is for a workshop at Boise Idaho with field excursion to the Rockland Section near Wells Nevada. This workshop is essential if we are to convince the international Permian community that the Rockland section is appropriate for the base-Kungurian GSSP. This is the biggest hurdle confronting SPS because we have rejected a long viewed potential section in Russia. This workshop is essential for SPS to complete the GSSP process before IGC in 2012. Financial support is necessary to bring at least 3 foreign researchers (including Kotlyar, Chernykh and Biakov from Russia) to Boise Idaho by paying for airfare and subsidizing accommodation (\$5000). Other SPS members will be invited, but subsidies will be limited (\$1000). Workshop will be conducted over two days at Boise State University between June 7-10 with fieldtrip to the potential GSSP field site and a look at Carlin Canyon. Fieldtrip costs will include vehicle rentals and 2 night's accommodation in Wells Nevada (\$2000) for the group. Samples can be collected by participants. Workshop at Boise State will include presentations and viewing of conodonts and fusulinids as well as the isotope labs of Mark Schmitz. SPS Executive will attend using their research funding. They will also attend the IGC meeting in Brisbane in August 2012.

TOTAL 2012 BUDGET

(this does not include costs associated with travel to IGC in Brisbane for current Chair/executive and incoming Chair/executive)

Funds requested for SPS Workshop \$8,000.00

Funds left over from last year's contribution \$1000.75

Requested ICS contribution \$6999.25

TOTAL BUDGET REQUEST (ICS) \$6999.25

10. REVIEW CHIEF ACCOMPLISHMENTS OVER PAST FIVE YEARS (2007-2011)

The SPS has approved the general divisions of the Permian and has now had 6 GSSP's ratified by ICS and IUGS (Asselian, Roadian, Wordian, Capitanian, Wuchiapingian, Changhsingian). Proposals for the latter two stages were published in Episodes in 2006. Support for documentation (fieldwork and publications) of the various chronostratigraphic methods for the establishment of the GSSP's has been the most outstanding and differentiating character of this Subcommittee. Substantial work has been conducted toward producing excellent proposals for the remaining stages. *Permophiles* has become an internationally respected newsletter and bears an ISSN designation (1684-5927) and is deposited in the National Library of Canada; eight issues were published during the five year period.

11. OBJECTIVES AND WORK PLAN FOR NEXT 2 YEARS (2011-2013)

The primary objectives are to complete the GSSP's for the last three GSSP's (Sakmarian, Artinskian, and Kungurian). We will produce one or two issues of *Permophiles* each year depending on input. The schedule for the next year is indicated in section 8 above. The agenda for 2013 will be set by the incoming Chair and Executive, but will likely focus on testing

correlation of the GSSPs, especially in Tethys sections and extending correlations into the terrestrial realm.

12. WEBSITE STATUS AND ACTIVITIES:

SPS website is located at www.nigpas.ac.cn/permian/web/index.asp. This site is updated regularly and includes all back issues of *Permophiles* in downloadable PDF format (#1 in 1978 to #55 December 2010) as well as other information about SPS activities including annual reports, membership.... Shuzhong Shen at Nanjing China maintains the site and Henderson and Shen both have administrator rights.

13. FOUR YEAR SUMMARY OF ACTIVITIES:

GSSP's: The base-Wuchiapingian and base-Changhsingian (Upper Permian or Lopingian Series) GSSPs were published in Episodes (volume 29, No. 3&4) in 2006. Progress was made on the three remaining Lower Permian (Cisuralian) stage GSSPs including base-Sakmarian, base-Artinskian, and base-Kungurian. An international field excursion was conducted in early July 2007 (reported in *Permophiles* #49; p. 4-6) and samples for carbon isotopes, geochronology and biostratigraphy were collected and have now been processed. The geochemical samples will provide further correlation potential for the proposed GSSPs; these materials are being analyzed at Boise State University and the Nanjing Institute of Geology and Palaeontology. The biostratigraphy samples will determine reproducibility of GSSP definitions. Decisions have been made on the basis of this new work and this is described above in section 5. The most significant decision was to reject the base-Kungurian section at Mechetlino. Detailed samples were collected at the Rockland section in Nevada and a workshop is proposed to "sell" the merits of this section.

Publications: The June 2006 issue of *Permophiles* (#47) was produced at Nanjing China during June 2006 and distributed as a pdf document to a mailing list of 280. The December 2006 issue of *Permophiles* (#48) was produced at the University of Calgary during November 2006 and distributed as a pdf on our website. We now have a complete series of *Permophiles* on our website (1978 to 2006). The June 2007 issue of *Permophiles* (#49) was produced at Nanjing China during June 2007 and distributed as a pdf document to a mailing list of 280. The December 2007 issue (#50) was produced in January 2008 after a field excursion to Australia. June 2008 issue (#51) was produced in Calgary in July 2008. December 2008 (#52) was produced online in January 2009 and #53 was produced in July 2009 in Calgary and #54 was produced online. We now have a complete series of *Permophiles* on our website (1978 to 2009).

Meetings: The SPS conducted one business meeting at the 2nd International Palaeontology Congress in Beijing, China in June 2006. The SPS conducted one business meeting at the XVI International Congress on the Carboniferous and Permian in Nanjing, China in June 2007 and is reported in *Permophiles* #49. Business meetings were held in Sydney Australia (January 2008; *Permophiles* #50) and IGC in Oslo (August 2008). In 2009 business meetings were held in Trelew Argentina and at ICOS2009 in Calgary. A business meeting was held at Prague, Czech Republic in late May 2010 during the ICS workshop.

Membership: Two changes were made to voting membership in 2006. Dr. John Utting retired as a voting member and was named by the SPS Executive as a Honourary Member given his long service to SPS (past Secretary) and distinguished research record in Late Paleozoic palynology. Dr. Lucia Angiolini was nominated by the executive to fill this vacancy. This increased the

membership from Europe bringing it more in line with other major regions. Secondly, we sadly lost our distinguished colleague and friend Professor Jin Yugan who died in June 2006 (see *Permophiles* 48 for a tribute). His was a very distinguished career in Late Paleozoic paleontology and service including as a past-Secretary and past- Chairman of SPS. He has been replaced as a voting member by Professor Yue Wang. There were no changes to the membership in 2007, but as noted in the 4 year summary we have made several changes over the past four years. In addition, the current executive will continue for a second term. We currently have 16 voting members representing Australia (2), Canada (1), China (3), France (1), Germany (1), Italy (1), Japan (1), Russia (3), and United States (3). We also have five honorary Members. No changes in 2008. In 2009 we added one new voting member, Dr. Nestor R. Cuneo from Argentina to add to our complement noted above. There were no changes to the membership in 2010.

Summary (2006-2010): Two GSSP proposals for the base-Wuchiapingian (also base-Lopingian Series) and base-Changhsingian were prepared, voted, ratified and published in Episodes during the past four years. Significant progress has been made on the last three Cisuralian GSSP proposals for the base-Sakmarian, base-Artinskian, and base-Kungurian stages. An international workshop was conducted in July 2007 to determine reproducibility and accessibility as well as collect new geochemical data. During the reporting period, *Permophiles* #47 to #54 have been produced with #55 to come later this year. In addition, a website was constructed and hosted by the Nanjing Institute of Geology and Palaeontology during the reporting period. Among other items, this website has pdf versions of all issues of *Permophiles* dating back to #1 in 1978.

APPENDIX “Officers and Voting Members as of November 2011”

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