

# **SUBCOMMISSION ON TRIASSIC STRATIGRAPHY**

## **ANNUAL REPORT 2003**

### **1. TITLE OF CONSTITUENT BODY and NAME OF REPORTER**

**Subcommission on Triassic Stratigraphy (STS)**

#### ***SUBMITTED BY:***

**Michael J. Orchard**

*Chairman, STS*

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**26 November 2003**

### **2. OVERALL OBJECTIVES, AND FIT WITHIN IUGS SCIENCE POLICY**

- Rationalization of global chronostratigraphical classification.
- Intercalibration of fossil biostratigraphies, integrated zonations, and recognition of global datums.
- Establishment of magneto- and chemo-stratigraphic scales.
- Definition of Stage boundaries and selection of global stratotype sections.
- Correlation of Triassic rock successions and events, including marine to non-marine.
- Climatic evolution and modeling.

The objectives satisfy the IUGS mandate of fostering international agreement on nomenclature and classification in stratigraphy; facilitating international co-operation in geological research; improving publication, dissemination, and use of geological information internationally; encouraging new relationships between and among disciplines of science that relate to Triassic geology world-wide; attracting competent students and research workers to the discipline; and fostering an increased awareness among individual scientists world-wide of what related programs are being undertaken.

### **3. ORGANIZATION**

STS is a Subcommission of the Commission on Stratigraphy.

Officers (chairman, two vice-chairmen, past chairman, secretary), web-master/ editor of newsletter, voting members (21), and corresponding members (103). (*see Appendix for complete listing*)

Subcommission members represent a broad spectrum of specialized stratigraphical disciplines from

those countries or regions where Triassic rocks are extensively studied in relation to fundamental and/or applied geological research. Current research activities and future plans are communicated through publication of a bi-annual STS newsletter *Albertiana* in both hardcopy and as a web release. For election of the new executive (below), titular members were invited to propose candidates for Chair and Vice Chair. The incumbent was proposed as continuing Chair and one candidate as Vice Chair; the Chair invited a new secretary to stand. A postal vote was arranged by the present Secretary amongst the titular members and each candidate received at least 60% approval.

### **3a. Nominated Officers for 2004-2008:**

Chair: M.J Orchard,,Vancouver, Canada.

Vice-Chair: M. Balini, Milan, Italy.

Vice Chair: Y. Hongfu, Wuhan, China.

Secretary: C.R. McRoberts, Cortland, USA

## **4. EXTENT OF NATIONAL/REGIONAL/GLOBAL SUPPORT FROM SOURCES OTHER THAN IUGS**

Collaboration and meeting co-sponsorship through IGCP 467.

Grant from the Canadian National IGCP committee towards travel expenses to attend Vancouver meeting.

A Japanese Fellowship for Research (JSPS) grant to Chair.

In kind support of the Chairman's Institute (GSC Vancouver), and of the Earth Science Sector of Natural Resources Canada.

## **5. INTERFACES WITH OTHER INTERNATIONAL PROJECTS**

IGCP Project 467: Triassic time and trans-Panthalassan correlations. Co-sponsored meetings in Vancouver and the Dolomites.

IGCP Project 458: Triassic/ Jurassic Boundary Events. Joint meeting held May 2003 at the Geological Association of Canada annual meeting in Vancouver, BC, Canada.

Nanpanjiang Basin project: A China-USA-Canada collaboration on an integrated biostratigraphy and chronostratigraphy of Triassic sections in Guizhou and Guangxi Provinces, South China. New data and publications on P-T thru L-M Triassic boundaries.

Monbusho project and Interrad group: A Japan-New Zealand collaboration of 13 Universities studying Southern High Latitude Radiolarian Faunas. Joint meeting planned for 1996.

Secada working group: 15 scientists in 5 countries studying the mid Triassic core from the Secada boring in Bolzano/Bozen, Italy. Co-sponsored meetings in the Dolomites.

## 6. CHIEF ACCOMPLISHMENTS AND PRODUCTS IN 2002

**Joint meeting with IGCP projects 458 and 467 at the GAC annual meeting in Vancouver, Canada, May 25<sup>th</sup> -28<sup>th</sup>, 2003. Thematic session on AExtinction events, faunal turnovers, and natural boundaries within and around the Late Triassic.@**

**Co-sponsoring of meeting in Italy on ATriassic geochronology and cyclostratigraphy B a field symposium@, September 11<sup>th</sup> -15<sup>th</sup> 2003. Focus on Secada core research and Middle Triassic time scales.**

**Conodont workshops on both the Olenekian-Anisian (in Italy) and Carnian-Norian (In Canada) boundary in order to agree on taxonomic issues.**

**A new proposal for a base Olenekian at Chaohu, China is based on a broad dataset. Sampling and study of ammonoids and conodonts is substantially completed, the latter resulting from work by a Chinese student during a visit to Canada. The Task Group Chair is completing ammonoid studies and other collaborators are completing magnetostratigraphic studies. The FAD of the conodont *Neospathodus waageni* is proposed as the GSSP datum. It corresponds to the base of the *Flemingites-Euflemingites* ammonoid zone and falls within a brief zone of normal magnetic polarity.**

**At the field workshop in St Christina, after a conodont workshop, the Task Group for base Anisian agreed that the appearance of the conodont *Chiosella timorensis* was the best datum for GSSP definition. This corresponds to the base of Abed 7@ at Desli Caira, in Dobrogea, Romania. A formal proposal is being prepared. Further results from the Nanpanjiang Basin in South China fix this boundary at about 247 Ma.**

An initial vote within the Anisian-Ladinian task group between two candidates for the placement of the boundary GSSP during January-February 2004 was inconclusive with 9 votes in favor of the base of the Curionii Zone, and 5 in favor of the base of the Reitzi Zone s.s.; 3 members abstained. In order to overcome this historical impasse, the Chairman canvassed the titular members of the STS for their view on whether it was appropriate to accept the majority task group view. Those results became available in May with 68% of respondents supporting this approach. Therefore, the proponents of the Curionii datum were invited to prepare a full and final proposal for the GSSP and this was sent out to voting members of the Subcommittee by the new Secretary in early September. The vote closed on 28 November with a xx% of respondents in favor of the GSSP as defined thus:

The Global boundary Stratotype Section and Point (GSSP) of the Base of the LADINIAN STAGE (Middle Triassic) is defined at the top of a distinctive 20-cm-thick groove ("*Chiesense* groove") of limestone nodules in a shaley matrix, located about 5 m above the base of the Buchenstein Beds in the Caffaro river bed (45°49'09.5''N, 10°28'15.5''E), south of the village of Bagolino (Province of Brescia, northern Italy). The lower surface of the overlying thick limestone bed has the lowest occurrence of the ammonoid *Eoprotrachyceras curionii* (base of the *E. curionii* zone; onset of the Trachyceratidae ammonoid family). Secondary global markers in the uppermost Anisian include the lowest occurrence of conodont *Neogondolella praehungarica* and a brief normal-polarity magnetic zone. The GSSP level is bracketed by U-Pb single zircon age data, indicating that the boundary age is ~ 240 to 242 Ma.

Three widely separated areas are providing essential data on the Ladinian-Carnian boundary – the Dolomites in Italy, Spiti sections in India, and South Canyon in Nevada, USA. The section at Stuoures in Italy, the subject of an existing proposal, is now supplemented by new data from other

sections in the Dolomites. Studies in Spiti are nearly over, with conodont sampling across the boundary interval having been made a total of four times, and no new ammonoid discoveries having come to light during the last two expeditions. South Canyon remains to be fully documented to test the suitability of bioevents established in the other areas.

**New conodont data from a potential base Norian GSSP at Black Bear Ridge, Western Canada was discussed during a conodont workshop in Vancouver that addressed taxonomic and nomenclatural difficulties. Collections from a second candidate section at Pizzo Mondello were compared with the Canadian material. Significant progress was made towards a consensus on North American-European faunal differences. Final results from Canada will be presented at a formal workshop at the IGC in Florence, Italy next year.**

**The task force on base Rhaetian has been active in the Tethyan region. A multidisciplinary documentation of the time interval is being prepared: it includes bio- (incl. palynology), magneto- and chemostratigraphic data from several sections.**

A tour of Triassic localities and research centres in Japan was undertaken by the Chair during the month of November 2003. This afforded an opportunity to discuss Subcommittee plans and priorities with Japanese Triassic researchers, as well as understand more about provinciality in Triassic faunas.

*Albertiana* **27** (97 pages) was published in December 2002 and *Albertiana* **28** (112 pages) in July 2003. Each issue was larger than all those previously published B an illustration of greater activity within the Subcommittee. The newsletter remains an indispensable resource for identifying STS members, contact numbers, and research activities. Both issues are now available on the web.

## **7. CHIEF PROBLEMS ENCOUNTERED IN 2002**

**The current secretary retired from the British Geological Survey in July but was denied facilities to continue his work with STS (and SJS). He is no longer in email contact and is unable to fulfill his secretarial duties.**

**A vote on the single candidate for the base Anisian GSSP awaits completion of formal proposal which has been delayed due to personal problems experienced by Task Group Chair.**

**The base Anisian deliberations remained contentious and opinions are strongly polarized around two candidates. It is hoped that the decision to go to a vote within the Task Group will resolve the choice through a 60% majority.**

**Organization of Triassic session at GSA, Seattle during November, 2003 was abandoned due to clash with Japan trip.**

***Albertiana* production costs increased as did the pressure for additional financial subsidy.**

**8. SUMMARY OF EXPENDITURES IN 2002 (ANTICIPATED THROUGH MARCH 2003):**

Joint meeting & workshop, IGCP 458-467, Vancouver, Canada:	\$ 640
Field workshop in St. Christina. Italy:	\$1,900
<i>Albertiana</i> cost subsidy:	\$1,500
<b>TOTAL</b>	<b>\$ 4,040</b>

**9. WORK PLAN, CRITICAL MILESTONES, ANTICIPATED RESULTS AND COMMUNICATIONS TO BE ACHIEVED NEXT YEAR:**

Final vote on two remaining candidates for the contentious A-L boundary GSSP within the task group. In the event of no majority decision, the group will likely be reconstituted under a new Chair.

Formal proposal and for base Anisian anticipated.

June 25-July 10, 2004. Spiti, India. Co-sponsorship (with IGCP 467) of field workshop on Triassic Time. Spiti-Himalayas, Himajal Pradesh, India, approx. June 25 to July 10, 2004. The workshop will be organized jointly by members of Vienna, Milano, and Delhi Universities, with the official support of the state of Himajal Pradesh government. It will start with a 2-days working session with the main emphasis on Triassic stage boundaries and will be followed by an 8-day bus/jeep tour to examine famous and classical Triassic sections at Muth, Kuling and surroundings areas.

Formal proposal for base Olenekian anticipated.

August 20-28, 2004. Florence, Italy. International Geological Congress. Several symposia and a workshop proposed by or involving STS members:

- T-04-02. Permian-Lower Triassic events
- T-04-03. Triassic-Jurassic boundary events
- G-05-09. Tethys reconstruction
- G22-06. Triassic in Tethys Realm
- DWO-09. Upper Triassic workshop

Progress and possible agreement on the base for the Carnian, Norian, and/or Rhaetian stages at IGC.

Publication of *Albertiana* 29, and compilation of *Albertiana* 30.

## 10. BUDGET AND ICS COMPONENT FOR 2003

(a) General office expenses	100
(b) Subsidy to <i>Albertiana</i> :	2,000
(c) Support for workshop in Spiti	1,000
(d) Support for IGC, Florence.	1,500
<b>TOTAL 2003 BUDGET REQUEST</b>	<b>\$4,600 US</b>

### Potential funding sources outside IUGS

Cost sharing with IGCP Project 467, *ATriassic time and trans-Panthalassan correlation*.

Department of Geosciences at the University of Utrecht provides facilities for the production of *Albertiana* and hosts the STS web-site.

Earth Science Sector of Natural Resources Canada has provided support to the Chair. General support for equipment including computers, email access and telephones anticipated. Canadian IGCP committee.

## 11. REVIEW CHIEF ACCOMPLISHMENTS OVER LAST FIVE YEARS (1999-2003)

*See Accomplishments in 2003 (above) for additional details.*

- Permian-Triassic boundary in China agreed and ratified.
- Induan-Olenekian boundary -- Working group established. A promising GSSP candidate at Chaohu, China is being proposed.
- Olenekian-Anisian boundary -- Field workshop in Romania to view boundary candidate, now characterized by ammonoid, conodont, chemo- and magneto-stratigraphic profiles. Choice of position and now index fossil for base-Anisian agreed.
- Anisian-Ladinian boundary -- Additional work done on 2 competing candidates in Italy and Hungary. Schedule for choice of base-Ladinian was agreed. A third candidate was eliminated during a vote within the task group and a further vote is underway to decide between the final two.
- Ladinian-Carnian boundary -- Field workshop in Italy viewed Ladinian-Carnian boundary candidate and published of a comprehensive volume on its character and attributes. Workshop in Spiti will afford comparative data, as will Nevadan research.
- Carnian-Norian boundary -- New working group established. Data from 2 candidate sections in Canada and Sicily published. Conodont taxonomic issues addressed in workshop.
- Norian-Rhaetian boundary -- New working group established and new data acquired. Non-marine auxiliary GSSP sections identified.

## 12. OBJECTIVES AND WORK PLAN FOR NEXT 5 YEARS (2003-2007)

### *Meeting/field workshop schedule with themes and anticipated results:*

- 2004, June-July. Field workshop in Spiti-Himalayas, Himajal Pradesh, India.  
Base Carnian deliberations, and classic Triassic sites. Co-sponsored with IGCP 467
- 2004, August. IGC, Florence, Italy B August 20th B28th, 2004 et seq. Upper Triassic GSSP decisions.
- 2005, summer. International Symposium. Triassic Chronostratigraphy and Biotic Recovery. Wuhan, China B 2005. Joint meeting with IGCP 467. Base Olenekian workshop.  
2006, March. Circum-Panthalassa Triassic Faunas and Sequences. Wellington, New Zealand. Joint meeting with IGCP 467 & the International association of radiolarian workers. Southern high latitudes correlations.
- 2006, late summer. The Boreal Triassic. Longyearbyen, Svalbard, Arctic Norway. Joint meeting with IGCP 467. Northern high latitudes correlations.
- 2007, May. The Global Triassic. New Mexico Museum of Natural History, Albuquerque, NM, USA. Publication of the symposia proceedings, a volume on the Triassic timescale.

## APPENDICES [Names and Full Addresses of Current Officers and Voting Members

### *Subcommission officers*

Chairman: M. J. Orchard, Geological Survey of Canada, 101-605 Robson Street, Vancouver, B.C. V6B 5J3, Canada, e-mail: [morchard@nrcan.gc.ca](mailto:morchard@nrcan.gc.ca)

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### *List of Task Groups and their officers*

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