



International Commission on Stratigraphy Subcommission on Quaternary Stratigraphy

ANNUAL REPORT 2013

1. TITLE OF CONSTITUENT BODY

Subcommission on Quaternary Stratigraphy (SQS)

2. OVERALL OBJECTIVES, AND FIT WITHIN IUGS SCIENCE POLICY

- Chronostratigraphic subdivision of the Quaternary System/Period facilitated by the intercalibration of biostratigraphies, construction of integrated zonations, and recognition of global datum points, allowing correlation worldwide and between terrestrial and marine sequences.
- Definition of Series/Subseries/Stage/and where appropriate Substage boundaries through the selection of recommended GSSPs.
- Promoting SQS's activities within the wider Quaternary geoscience community through publications, symposia, and the SQS website, and creating opportunities to study and compare stratigraphic sections by means of field meetings.

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 Quaternary geology world-wide; attracting competent students and research workers to the discipline; and fostering an increased awareness among individual scientists world-wide of those related programs being undertaken.

3a. CHIEF ACCOMPLISHMENTS AND PRODUCTS IN 2013

- “The Quaternary System and its formal subdivision”. A one-day special symposium held during the First International Congress on Stratigraphy, STRATI 2013, Universidade Nova de Lisboa, Lisbon, July 1–7. Coordinators of symposium: M.J. Head (Chair SQS), P.L. Gibbard, and T. van Kolfschoten. Symposium co-sponsored by SQS.
- Business meeting of SQS held during the First International Congress on Stratigraphy, STRATI 2013, Universidade Nova de Lisboa, Lisbon, Portugal, July

1–7; chaired by M.J. Head. Minutes published on SQS website:
<http://quaternary.stratigraphy.org>.

- “The Early–Middle Pleistocene transition: significance of the Jaramillo Subchron in the sedimentary record”. European Science Foundation Earthtime – European Union Scientific Meeting. Centro Nacional de Investigación sobre la Evolución Humana (CENIEH), Burgos, Spain, 25–27 September, 2013. Symposium co-sponsored by SQS.
- The following paper published last year invited discussion: Walker, M.J.C., Berkelhammer, M., Björck, S., Cwynar, L.C., Fisher, D.A., Long, A.J., Lowe, J.J., Newnham, R.M., Rasmussen, S.O. & Weiss, H. 2012. Formal subdivision of the Holocene Series/ Epoch: a Discussion Paper by a Working Group of INTIMATE (Integration of ice-core marine and terrestrial records) and the Subcommission on Quaternary Stratigraphy (International Commission on Stratigraphy). *Journal of Quaternary Science*, 27, 649–659. Valuable feedback was received throughout 2013, including contributions to a new online Discussion Forum hosted by the publishers of JQS (John Wiley).

3B LIST OF MAJOR PUBLICATIONS OF SUBCOMMISSION WORK (BOOKS, SPECIAL VOLUMES, KEY SCIENTIFIC PAPERS)

- Waters, C. N., Zalasiewicz, J. A., Williams, M., Ellis, M. A. & Snelling, A. M. (eds) A Stratigraphical Basis for the Anthropocene. *Geological Society, London, Special Publications*, 395, <http://dx.doi.org/10.1144/SP395.8>. Edited by members of the Anthropocene Working Group and contains numerous papers authored or coauthored by members of the Anthropocene Working Group. First batch of papers published online 2013.
- Head, M.J., Gibbard, P.L., and van Kolfschoten, T., 2013. The Quaternary System/Period: current status and future challenges. *Ciências da Terra*, 18: 77–80.

3C. PROBLEMS ENCOUNTERED, IF APPROPRIATE

The Working Group on the Upper Pleistocene Subseries Boundary has been inactive for five years. This followed notification by the IUGS EC (22nd September 2008) that a GSSP proposal it had initiated on a borehole section from Amsterdam terminal did not fulfill all requirements for a GSSP. Dr Jan Zalasiewicz has now joined the Working Group as co-convenor (with Prof. Thomas Litt), and a broadening of the Working Group membership is underway.

4a. OBJECTIVES AND WORK PLAN FOR NEXT YEAR (2014)

- Assemble and edit a special issue of *Quaternary International* based on papers presented at “The Quaternary System and its formal subdivision” during STRATI

2013 (above). Editors: M.J. Head (Chair SQS), P.L. Gibbard, and T. van Kolfschoten.

- Comments on the proposed subdivision of the Holocene (Walker et al., 2012, section 3B above) are being considered by the Working Group, and involve reformulating (where necessary) the proposals outlined in Walker et al. (2012). This work will continue during 2014, the aim being to bring forward a formal proposal for submission, in the first instance, to the SQS.
- Reinvigorate the Working Group on the Upper Pleistocene Subseries Boundary by broadening its membership. In addition to two potential candidate sections, the Amsterdam terminal (Netherlands) and Fronte section, Taranto (Italy), additional potential candidate sections will be sought (see Section 3C, above).
- SQS to support a field workshop organized by the *Associazione Italiana per lo Studio del Quaternario* (AIQUA) in October, 2014 to visit two sections proposed for the Early–Middle Pleistocene Subseries boundary, Montalbano Jonico and Valle di Manche, both in southern Italy. The third such section currently under consideration, the Chiba section in Japan, will be the subject of a field workshop during the INQUA Congress in the summer of 2015. Proposals for all three sections will be solicited and evaluated soon thereafter.

5. SUMMARY OF EXPENDITURES IN 2013 (Can \$)

	Payment	Deposit	Balance
Carried forward			2754.79
Prof. S. Finney (ICS funds for 2013)		3011.99	5766.78
Prof. M.J. Head (attendance STRATI 2013*)	1553.40		4213.38
Dr. Osamu Kazaoka (attendance STRATI 2013*)	2000.00		2213.38
Dr. Jan Zalasiewicz (attendance STRATI 2013*)	520.00		1693.38
Balance at November 28, 2013			<u>1693.38</u>

*= First International Congress on Stratigraphy, STRATI 2013, Universidade Nova de Lisboa, Lisbon, Portugal, July 1–7.

6. BUDGET REQUESTS AND ICS COMPONENT FOR 2014

Funds are requested to help support a one-week field workshop in mid-October, 2014, organized by the *Associazione Italiana per lo Studio del Quaternario* (AIQUA), to discuss and visit two candidates for the Lower Pleistocene Subseries GSSP, Montalbano Jonico and Valle di Manche, both in southern Italy. A maximum of 30 participants is planned, and the field trips will be organized by Prof. Adele Bertini (President AIQUA), Prof. Neri Ciaranfi (lead proponent for Montalbano Jonico), and Prof. Luca Capraro (lead proponent for Valle di Manche). The third candidate, the Chiba section, will be visited

the following summer during the INQUA congress in Japan, completing the three sections under consideration. All members of the SQS Lower/Middle Pleistocene Boundary Working Group will be invited, along with two members of the Chiba section working group. This GSSP is presently the main priority of SQS, and all three candidate sections are being researched with considerable energy and focus.

A total of \$5500 is requested for 2014 to assist the chair of SQS (Canada) and two members of the Chiba working group (Japan) in attending this one-week field workshop to southern Italy. The chair of SQS (M.J. Head) is also co-convener of the SQS Lower/Middle Pleistocene Boundary Working Group, and has not seen either section.

APPENDICES

7. CHIEF ACCOMPLISHMENTS OVER PAST FIVE YEARS (2009–2013)

1. Quaternary System/Period and Pleistocene Series/Epoch defined/redefined and ratified in June 2009. References:

Gibbard, P.L., Head, M.J., Walker, M.J.C. and The Subcommittee on Quaternary Stratigraphy, 2010. Formal ratification of the Quaternary System/Period and the Pleistocene Series/Epoch with a base at 2.58 Ma. *Journal of Quaternary Science*, 25(2): 96–102.

Gibbard, P.L., and Head, M.J., 2010. The newly-ratified definition of the Quaternary System/Period and redefinition of the Pleistocene Series/Epoch, and comparison of proposals advanced prior to formal ratification. *Episodes*, 33: 152–158.

Finney, S.C. 2010. Formal definition of the Quaternary System/Period and redefinition of the Pleistocene Series/Epoch. *Episodes* 33, 159–163.

2. Calabrian Stage/Age ratified in December 2011. Reference:

Cita, M.B., Gibbard, P.L., Head, M.J., and The Subcommittee on Quaternary Stratigraphy, 2012. Formal ratification of the base Calabrian Stage GSSP (Pleistocene Series, Quaternary System). *Episodes* 35(3): 388–397.

8. OBJECTIVES AND WORK PLAN FOR NEXT 4 YEARS (2014–2018)

1. GSSP definition for the Middle Pleistocene Stage/Subseries boundary.
2. GSSP definition for the Upper Pleistocene Subseries boundary.
3. GSSP definitions for the Upper Pleistocene Stage boundaries.
4. Subdivision of the Holocene Series.
5. Explore further chronostratigraphic subdivision of the Quaternary System/Period, including the duration and status of the “Anthropocene”.

9. ORGANIZATION AND SUBCOMMISSION MEMBERSHIP

9a Names and Addresses of Current Officers and Voting Members

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9B LIST OF WORKING (TASK) GROUPS AND THEIR OFFICERS

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9C INTERFACES WITH OTHER INTERNATIONAL PROJECTS

The Subcommittee on Quaternary Stratigraphy (SQS) maintains close ties with The International Union for Quaternary Science (INQUA) through its Commission on Stratigraphy and Chronology (SACCOM). Prof. Phil Gibbard is both president of SACCOM and a voting member of SQS, and five other members of SACCOM are also members of SQS. This has led to several co-sponsorships of meetings/symposia by SQS and SACCOM.

Respectfully submitted:

Martin J. Head

St. Catharines, 10th December, 2013