

SUBCOMMISSION ON NEOGENE STRATIGRAPHY

ANNUAL REPORT 2010

1. TITLE OF CONSTITUENT BODY and NAME OF REPORTER

Subcommission on Neogene Stratigraphy (SNS)

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2. OVERALL OBJECTIVES, AND FIT WITHIN IUGS SCIENCE POLICY

The SNS is the primary body responsible for providing optimum clarity and stability in the Neogene Chronostratigraphic Scale by selecting and defining Global Stratotype Sections and Points (GSSPs) for Series and Stages.

3. ORGANIZATION

The SNS is a subcommission of the ICS, founded in 1971. Reference is made to the annual report of 1995 for a brief historical resume of the SNS. The subcommission has four regional committees (Mediterranean, Pacific, Atlantic and Nordic) and keeps close contacts with the Russian Neogene Commission chaired by Prof. Yuri B. Gladenkov. Apart from the executive bureau, the SNS has 21 voting members and 35 corresponding members (*see Appendix for full list of officers and voting members*). The SNS has presently one active working group for defining the GSSP remaining for the Langhian and Burdigalian chaired by Isabella Raffi. The SNS web site (www.geo.uu.nl/SNS) is used for news release and contains the following sections: Home, News, Board, Members, Newsletters, GSSP's, and Links.

3a. Officers for 2008-2012:

Chair: Frits Hilgen, Utrecht, The Netherlands

Vice-Chairs: Francisco Javier Sierro, Salamanca, Spain
David Hodell, Cambridge, UK

Secretary: Elena Turco, Parma, Italy

Support for the SNS comes from the Chairman's Institute in the Netherlands (Faculty of Geosciences, Utrecht University). This institute also hosts the SNS web-site.

4. INTERFACES WITH OTHER INTERNATIONAL PROJECTS

There is a close link with (IODP) because of its important role in the development of integrated time scales for the Neogene, in testing the global correlation potential of bio-events, and in a better understanding of climate and ocean history during this time span.

5. CHIEF ACCOMPLISHMENTS AND PRODUCTS IN 2010

A short paper about the formal definition of the Serravallian GSSP following ratification by IUGS was published in *Episodes* last year (Hilgen et al., 2009).

Italian research teams are working on a special volume in *Stratigraphy*, which will contain papers about the two main candidate sections for defining the Langhian GSSP, namely the La Vedova section in central Italy and St. Peter's Pool on Malta. Both sections were presented in considerable detail at the RCMNS congress last year in Naples. The study of these sections is part of the ongoing Italian research project (PRIN 2006 - prot. 2006047534 - "In search of the Global Stratotype Sections and Points of the Burdigalian and Langhian Stages and paleoceanographic implications") directed at defining the remaining GSSPs (Langhian and Burdigalian) in the Neogene.

The papers (Foresi et al., *subm*; Turco et al., *subm.*) dealing with the integrated stratigraphy (magnetostratigraphy and calcareous plankton stratigraphy) of the two candidate sections have been submitted. A main point of discussion among specialists remains the taxonomic concept of the *Globigerinoides trilobus* - *Praeorbulina* lineage, which has consequences for positioning the *Praeorbulina* datum, traditionally associated with the base of the Langhian.

The La Vedova section is the downward extension of the La Vedova beach section which has already been studied in detail and for which an astronomical tuning has been established (Hüsing et al., 2009). The alternative section is St. Peter's Pool on Malta. Both sections are continuous across the boundary interval. The La Vedova section has a

reasonably good magnetostratigraphy which allows detection of the C5Br/C5Cn reversal boundary (the other criterion for recognizing the base Langhian), while the preservation of the calcareous plankton is better at St. Peter's Pool. The final proposal for the Langhian GSSP has to await further studies directed at the astronomical tuning and stable isotope stratigraphy of the sections. These studies are currently being carried out. No suitable sections have yet been identified for defining the Burdigalian GSSP.

6. CHIEF PROBLEMS ENCOUNTERED IN 2010

A remaining problem is the possible lack of suitable sections in the Mediterranean for defining the Burdigalian GSSP. This is certainly the case if we prefer to have the Burdigalian GSSP defined in an astronomically tuned deep marine section in the Mediterranean that directly underlies the geologic time scale. The alternative option to have this boundary defined in (I)ODP cores is being seriously considered by the Working Group on the Langhian and Burdigalian GSSPs, and a decision about this issue will probably be made the coming year.

The other problem that remains is the outcome of the ICS vote on the Quaternary issue and the formal ratification by IUGS which is unacceptable for many SNS members, including the chair.

7. SUMMARY OF EXPENDITURES IN 2010:

Credit on Nov 2009	Euro	3738,85
costs SNS publications	Euro	-773,50
Credit on Nov 2010	Euro	2965,35

8. WORK PLAN, CRITICAL MILESTONES, ANTICIPATED RESULTS AND COMMUNICATIONS TO BE ACHIEVED NEXT YEAR (2011):

The study of the two potential boundary stratotype sections of La Vedova and St. Peter's Pool for defining the Langhian GSSP will be continued and it is anticipated that a workshop will be held next year about the definition of the Langhian and Burdigalian GSSPs. The search for suitable sections and/or cores for defining the Burdigalian GSSP will continue. In absence of suitable Mediterranean sections for defining the Burdigalian GSSP, the option to formally designate this boundary in an ODP core will be seriously considered.

9. BUDGET AND ICS COMPONENT FOR 2011

Organization workshop on Langhian and Burdigalian GSSPs, Italy	Euro 2500
Optional: Fieldtrip to the La Vedova section (base-Langhian)	Euro 1500

10. SUMMARY OF CHIEF ACCOMPLISHMENTS OVER PAST FIVE YEARS (2006-2010)

See Accomplishments in 2010 (above) for additional details.

2006

Serravallian GSSP proposal was sent out to SNS voting members; a quorum of about 86% was reached and all votes were positive except for one which was positive but with reservations. Submission of revised proposal to ICS and acceptance of proposal by ICS with a 83% majority. Submission of the Serravallian GSSP proposal to IUGS for formal ratification.

2007

Ratification of the Serravallian GSSP proposal by IUGS. Pilot study of the La Vedova section, a candidate section for the Langhian GSSP. Revision and update of SNS website.

2008

Integrated stratigraphic studies of the La Vedova section and its downward extension by Italian and Dutch research teams, the latter section being candidate for defining the Langhian GSSP. Revision and update of SNS website. Preparation of several papers on the definition and status of the Quaternary and Neogene. Preparation of a "Neogene" proposal for the formal ICS voting procedure on the Quaternary-Neogene issue.

2009

Publication of several papers by members of SNS on the issue of the Quaternary issue (Aubry et al., 2009; McGowran et al., 2009; Van Couvering et al., 2009). Publication in Episodes about the formal definition of the Serravallian GSSP (Hilgen et al., 2009). Ongoing research on the La Vedova and St. Peter's sections.

2010

Preparation of papers on the two candidate sections for defining the Langhian GSSP for publication in a special volume of Stratigraphy.

11. OBJECTIVES AND WORK PLAN FOR NEXT 2 YEARS (2011-2012)

Organization of a workshop on the selection of boundary criteria and sections for defining the 2 remaining stage boundaries in the Miocene, namely the base-Langhian and the base-Burdigalian. Potentially suitable sections in the Mediterranean region that may serve as Langhian GSSP have been identified (La Vedova; St. Peter's Pool). Crucial questions to be addressed during the workshop are: 1) which section is most suitable to be proposed as Langhian GSSP, 2) which prime guiding criterion should be selected, and 3) should we abandon the ambition of having the Burdigalian GSSP directly tied within an astrochronologic framework in order to have the GSSP defined in a Mediterranean land-based section, or should we define this GSSP in drilled ODP sequences at Ceara Rise or any other tuned sequence drilled by (I)ODP.

Selection of most suitable section/ODP core and guiding criteria for defining the Langhian and Burdigalian GSSPs before 2012. Writing of proposals for the Langhian and Burdigalian GSSPs in 2011-2012.

APPENDIX [Names and Full Addresses of Current Officers and Voting Members]

Subcommission officers

Chairman: Frederik J. Hilgen, Faculty of Geosciences, Utrecht University, P.O. Box 80021, 3508 TA Utrecht, The Netherlands, e-mail: fhilgen@geo.uu.nl

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