

# SUBCOMMISSION ON NEOGENE STRATIGRAPHY

ANNUAL REPORT 2006

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

Subcommission on Neogene Stratigraphy (SNS)

Frederik J. Hilgen, Chairman SNS

Faculty of Geosciences, Utrecht University

P.O. Box 80021, 3508 TA Utrecht, Netherlands. E-mail: fhilgen@geo.uu.nl.

## 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 20 voting members and 38 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](http://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 2004-2008:

**Chair:** Frits Hilgen, Utrecht, The Netherlands

**Vice-Chairs:** Francisco Javier Sierro, Salamanca, Spain

David Hodell, Florida, USA

**Secretary:** Elena Turco, Parma, Italy

Support for the SNS comes from the Chairman's Institute (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 (I)ODP 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 2006**

Preparation of the proposal for the Serravallian GSSP to be defined at the base of the Blue Clay Formation in the Ras il Pellegrin section on Malta, coincident with the younger end of the major mid-Miocene (Mi-3b) oxygen isotope event and relatively close to the *Sphenolithus heteromorphus* LO, previously considered as prime guiding criterion for the boundary. The proposal was sent out to SNS voting members by mid-June. A quorum of about **86%** (18 votes out of 21, 3 no reply) was reached and all votes were fully positive except for one which was positive but with reservations. The Working Group reacted by writing a reply to these reservations.

The revised proposal was submitted to ICS and sent out for voting to the full ICS commission by the end of September. The votes received from the ICS were **15 “Yes” (83%)**. Two members voted *No* (11%), and one *Abstained*. Our Serravallian Working Group replied to the concerns raised by the “No” and “Abstain” votes. The ICS subsequently submitted the GSSP proposal for the base of the Serravallian Stage of the middle Neogene to the IUGS for ratification at their next meeting. If ratified, then a modified form of this proposal will be published in *Episodes*. The working group on the Serravallian GSSP will “add a figure and a table which summarizes all the stratigraphic information near the GSSP” in the formal document to be published in *Episodes*, in case the proposal is ratified by IUGS.

Finally a paper on the application of Unit-Stratotypes for global stages was published in *Earth Science Reviews*. This paper discusses the potential need for a revival of the Unit Stratotype approach albeit in a modified form in defining Global Stages.

#### **6. CHIEF PROBLEMS ENCOUNTERED IN 2005**

An important signaled problem is the possible lack of suitable sections in the Mediterranean for defining the remaining Neogene GSSPs, namely the Langhian and Burdigalian GSSP. This is certainly the case if we prefer to have the boundaries defined in astronomically tuned deep marine sections that underlie the geologic time scale. One potentially suitable section for the Langhian has been identified, namely the La Vedova section near Ancona. A pilot study showed that this section is suitable for establishing a reliable magnetostratigraphy but that the microfossil preservation is only moderate. However, it will cost a considerable amount of research effort and money before this section has been studied in sufficient detail to be promoted as Langhian GSSP. An alternative section located on Sardegna (Italy) is presently being investigated. The option to have these boundaries defined in ODP cores is also being considered by the Working Group on the Langhian and Burdigalian GSSPs.

## 7. SUMMARY OF EXPENDITURES IN 2006:

Credit on July 2005	Euro	4865,00
Credit on Nov 2006	Euro	3502,59
Contribution 2006 ICS to SNS	Euro	751,17
<i>Expenditures</i>		
Working visit Malta	Euro	1350,00
Working visit Italy	Euro	662,70
Meeting	Euro	53,60

## 8. WORK PLAN, CRITICAL MILESTONES, ANTICIPATED RESULTS AND COMMUNICATIONS TO BE ACHIEVED NEXT YEAR (2007):

Intensification of the search for suitable sections and/or cores to define the remaining GSSPs of the Langhian and Burdigalian. A detailed study of the La Vedova section, a potential candidate for the Langhian GSSP, will be carried out. Although preservation is not perfect, the section is suitable for establishing a high-resolution magnetostratigraphy and a calcareous plankton biostratigraphy. A pilot study will be carried out on alternative sections located on Sardegna.

By the end of 2007 the WG on the Langhian and Burdigalian GSSP will provide a list of candidate sections and guiding criteria for the formal definition of these boundaries.

## 9. BUDGET AND ICS COMPONENT FOR 2006

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

## 10. SUMMARY OF CHIEF ACCOMPLISHMENTS OVER PAST FIVE YEARS (2002-2006)

*See Accomplishments in 2006 (above) for additional details.*

2002

Base-Tortonian field workshop in Italy. Agreement that Monte dei Corvi section near Ancona is the best choice for a Serravallian-Tortonian boundary section. Completion of Tortonian GSSP proposal.

2003

Ratification by IUGS of Tortonian GSSP at the midpoint of the sapropel of basic cycle 76 in the Monte dei Corvi section (northern Italy).

2004

Publication of a revised Neogene Time Scale (Lourens et al., 2004 in Gradstein et al., 2004. Geologic Time Scale 2004. Cambridge University Press, ~500 pages).

2005

Selection of the Ras il Pellegrin section on Malta as the most suitable (Mediterranean) section to define the Serravallian GSSP and the mid-Miocene Mi-3b oxygen isotope event as prime guiding criterion for the boundary. Preparation of the Serravallian GSSP proposal.

## **11. OBJECTIVES AND WORK PLAN FOR NEXT 2 YEARS (2007-2008)**

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. Suitable sections in the Mediterranean region that may serve as GSSP sections for these boundaries have not yet been identified although the La Vedova might be a good candidate for the Langhian GSSP. Most candidate sections specifically fail in the matter of potential for astronomical tuning. A crucial question to be answered during the workshop is whether we should abandon the ambition of having also these GSSPs directly tied within an astrochronologic framework and having them defined in landbased sections without possibilities of tuning or whether we should have these GSSPs defined 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 in 2007. Writing of proposals for the Langhian and Burdigalian GSSPs in 2008.

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**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](mailto:fhilgen@geo.uu.nl)

**Vice Chairmen:** David Hodell, Department of Geological Sciences, University of Florida, Gainesville, FL 32611, USA. Email: [dhodell@geology.ufl.edu](mailto:dhodell@geology.ufl.edu)

Francisco Javier Sierro Sánchez, Departamento de Geología, Facultad de Ciencias, Universidad de Salamanca, 37008 Salamanca, España. Email: [sierro@usal.es](mailto:sierro@usal.es)

**Secretary:** Elena Turco, Dipartimento di Scienze della Terra, Università degli Studi di Parma, Parco Area delle Scienze 157, 43100, Parma, Italia. Email: [elena.turco@unipr.it](mailto:elena.turco@unipr.it)

***List of Voting Members***

Agusti, J., Spain, [agustibj@diba.es](mailto:agustibj@diba.es)

Aubry, M.P., USA, [aubry@rci.rutgers.edu](mailto:aubry@rci.rutgers.edu)

Backman, J. Sweden, [backman@geo.su.se](mailto:backman@geo.su.se)

Berggren, W.A., USA, [wberggren@whoi.edu](mailto:wberggren@whoi.edu)

Bernor, R., USA, [rbernor@Howard.edu](mailto:rbernor@Howard.edu)

Beu, A.G., New Zealand, [a.beu@gns.cri.nz](mailto:a.beu@gns.cri.nz)

Gladenkov, Y.B., Russia, [gladenkov@geo.tv-sign.ru](mailto:gladenkov@geo.tv-sign.ru)

Hilgen, F.J., Netherlands, [fhilgen@geo.uu.nl](mailto:fhilgen@geo.uu.nl)

Hodell, D.A., USA, [dhodell@geology.ufl.edu](mailto:dhodell@geology.ufl.edu)

Iaccarino, S., Italy, [iaccarin@unipr.it](mailto:iaccarin@unipr.it)

Kent, D.V., USA, [dvk@ldeo.columbia.edu](mailto:dvk@ldeo.columbia.edu)

Meyer, K.J., Germany, ----

Nagymarosy, A., Hungary, [gtorfo@ludens.elte.hu](mailto:gtorfo@ludens.elte.hu)

Semenenko, V.N., Russia, ----

Sierro, F.J., Spain, [sierro@gugu.usal.es](mailto:sierro@gugu.usal.es)

Sprovieri, R., Italy, [rspr@unipa.it](mailto:rspr@unipa.it)

Turco, E., Italy, [eturco@unipr.it](mailto:eturco@unipr.it)

Vai, G.B., Italy, [vai@geomin.unibo.it](mailto:vai@geomin.unibo.it)

Van Couvering, J., USA, [vanc@amnh.org](mailto:vanc@amnh.org)

Wang, P., China, [pxwang@online.sh.cn](mailto:pxwang@online.sh.cn)

Zachariasse, W.J., Netherlands, [jwzach@geo.uu.nl](mailto:jwzach@geo.uu.nl)