SUBCOMMISSION ON SNS
ANNUAL REPORT 2004

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. In 2004, the executive bureau of the SNS changed composition with Willem Jan Zachariasse (chair) and Davide Castradori (vice-chair) leaving. Frits Hilgen (Netherlands) became the new chair whereas two new vice-chairs (Javier Sierro, Spain and David Hodell, USA) and a new secretary (Elena Turco, Italy) were appointed. 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 3 working groups: 1) WG on Miocene Time Scale chaired by Nick Shackleton, 2) WG for defining GSSP sections for the Tortonian and Serravallian chaired by Frits Hilgen, and 3) WG for defining GSSP sections for the Langhian and Burdigalian chaired by Isabella Raffi. The SNS web site (www.geo.uu.nl/SNS) is used for news release.

3a. Officers for 2004-2008:

Chair: Frits Hilgen (Netherlands)
2 Vice-Chairs: Javier Sierro (Spain) and David Hodell (USA)
Secretary: Elena Turco (Italy)

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

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

5. 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.

6. CHIEF ACCOMPLISHMENTS AND PRODUCTS IN 2004

Progress has been made in the integrated stratigraphy and astronomical tuning of the Ras il Pellegrin section on Malta set to become the prime GSSP candidate for the Langhian-Serravallian boundary. This progress followed significant publications by Italian research groups in the "Rivista Italiana di Paleontologia e Stratigrafia" in 2002 (vol. 108). Uncertainties in the tuning of the upper Blue Clay part of the section have been reduced to ± 1 precession cycle due to optimizing the cyclicity using chemical element analysis and by calibrating the Maltese section to the partly time-equivalent and well-tuned Italian sections of Monte dei Corvi and Tremiti. Tuning of the lower Upper Globigerina Limestone part of the section is complicated and not yet achieved but highly desirable. The Ras il Pellegrin section in addition yielded some well-delineated and identified magnetic reversals, and the excellent preservation of the calcareous microfossils will allow the retrieval of first rate stable isotope data. High-quality carbonate and (bulk) stable isotope records have already been published by John and others (Geol. Soc. Am. Bull., v. 115, 2003) for parallel sections located on the nearby island of Gozo. These records allow the straightforward identification of the main mid-Miocene oxygen isotope shift towards heavier values across the formation boundary, which culminates in the Mi-3 event. The new tuning indicates that the event corresponds to the marked coincidence of minimum amplitude variations in obliquity related to the 1.2 myr cycle and minimum eccentricity related to the 400-kyr cycle (Abels et al., submitted), i.e. similar to orbital configurations found for other glacial isotope events during the Oligocene-Miocene time interval. This Mi-3 event is proposed to serve as the prime criterion to delineate the boundary.

Members of the SNS actively contributed to the completion of a revised standard geological time scale for the Neogene underlain by the astronomical dating method (Lourens et al., 2004 in Gradstein et al., 2004. Geologic Time Scale 2004. Cambridge University Press, ~500 pages). The publication of this Neogene time scale is considered a major achievement since it is the first time that the time scale of an entire system is based on astronomical tuning.

The fieldtrip guide of post-IGC excursion P56 “Milankovitch cycles as a geochronometric tool to construct geological time scales” was published even though the fieldtrip itself was cancelled. It can be downloaded from the web and will also be made available on the SNS website:

(At: http://www.apat.gov.it/site/it-IT/APAT/FieldtripGuidebooks/Post Congress_Field_Trips_(from_P40_to_PW06)/)

7. CHIEF PROBLEMS ENCOUNTERED IN 2004

The Neogene was extended up to the Recent in the Geologic Time Scale 2004 (Gradstein et al., 2004) with the Quaternary being eliminated as formal chronostratigraphic unit. A task force was set up that will make a recommendation to ICS on the definition of the Quaternary 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 in case we prefer to have the boundaries defined in astronomically tuned deep marine sections that underlie the geologic time scale. The option to have these boundaries defined in ODP cores is presently under study.

Finally, the planned post-IGC field trip to Sicily was cancelled due to lack of participation.

8. SUMMARY OF EXPENDITURES IN 2004:

Credit on July 2004	Euro 3430
Contribution 2004 ICS to SNS	Euro 1500 ($ 1900)
Expenditures	
Contribution 2004 SNS to RCNPS	Euro 300
Contribution 2004 SNS to RCMNS	Euro 300
Finalizing measuring and sampling of candidate section base-Serravallian on Malta (early 2005)	Euro 2500

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

It is still our intention to organize a WG meeting on Malta in 2005 during which the candidate section for the base-Serravallian will be visited and the pros and cons as well as the guiding criteria will be discussed. Nevertheless it is considered likely that a formal proposal to define the Serravallian GSSP at the formation boundary between the Globigerina Limestone and the Blue Clay in the Ras il Pellegrin section on Malta will be submitted to SNS voting members before the end of 2005.

The SNS bureau is considering organizing the cancelled post-IGC field trip to Sicily in 2005 linked to the ICS meeting to be held in Leuven September 2005. The trip focuses attention on the astronomical dating method that underlies the age calibration of the new Neogene Time Scale (Lourens et al., 2004). During this trip the by now classical sections will be visited which constitute the backbone of the Pliocene Astronomical (Polarity) Time Scale and in which all Pliocene stage boundaries are defined.

10. BUDGET AND ICS COMPONENT FOR 2005

Organization field meeting on Malta (base-Serravallian)	Euro 2400
Contribution 2004 to RCPNS and RCMNS	Euro 600

Potential funding sources outside IUGS

11. REVIEW CHIEF ACCOMPLISHMENTS OVER PAST FIVE YEARS (2000-2004)

See Accomplishments in 2004 (above) for additional details.

2000
Ratification by IUGS of Zanclean and Messinian GSSPs
Publication in Episodes 23
Reorganisation of SNS completed

2001
Establishment of WG for base Tortonian and Serravallian (chaired by F.J.Hilgen)
Establishment of WG for base Langhian and Burdigalian (chaired by I. Raffi)
Launching of the SNS web-site

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).

12. OBJECTIVES AND WORK PLAN FOR NEXT 4 YEARS (2005-2008)

Submission of a proposal for the Serravallian GSSP - 2005.
Organization of a workshop on the selection of boundary criteria and sections for the definition of the 2 remaining Miocene stage boundaries, namely the base-Langhian and base-Burdigalian. Suitable sequences in the Mediterranean region that may serve as GSSP sections for these boundaries have not yet been identified. Candidate sections specifically fail in the matter of potential for astronomical tuning. A crucial question to be answered during the workshop(s) is whether we should abandon the ambition of having also these GSSPs directly tied within an astrochronologic framework and having these GSSPs defined in land-sections without possibilities of tuning or whether we should have these GSSPs defined in the drilled sequence at Ceara Rise or any other tuned sequence drilled by (I)ODP.

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Appendix

Subcommission officers

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