

Editorial

by Domenico Rio (SNS Chairman) and Davide Castradori (SNS Secretary)

Dear everybody, only one year has passed since our last editorial to a Neogene Newsletter, but it has been such an intense and eventful one that it really seemed much longer...

After the Erice workshop (see report in Neog. Newsl., 4) and the very successful RCMNS Meeting in Catania organized by J.P. Suc and M. Grasso, we soon started to put into practice the program agreed upon in those occasions. In fact, the two proposals on the bases of the Zanclean Stage (and of the Pliocene Series) and of the Messinian Stage were prepared, during the first months of 1998, by two different groups of scientists. The two proposals are integrally reported herein.

The first group was led by J. Van Couvering and D. Castradori, who tried to condense and homogenise the huge amount of information made available on the Rossello Composite Section over the years, while giving it the most acceptable shape and taste on the formal side. As everybody knows, fixing a GSSP at what is at least a sharp facies change (between the Arenazzolo and Trubi formations) conflicts with one of the rules to be followed in such occasions. However, the proponents strongly believed that this particular situation may deserve one of those exception provided by the "code".

The second group, led by Frits Hilgen, formulated a proposal for the Messinian GSSP to be located in the Oued Akrech section of the Atlantic Morocco. This is quite a revolutionary choice, since the Messinian Stage was surely born within the Mediterranean and even regarded by some (not by us, of course) as a "Mediterranean" Stage. The proposed location, therefore, serves two purposes: first, of course, it is believed to be the best section in terms of its integrated magnetostratigraphy, cyclostratigraphy and biostratigraphy; second, it demonstrates and exemplifies how the Messinian Stage is part of the Global Chronostratigraphic Chart and is, therefore, global in scope.

The two proposals were jointly sent to all voting members of our Subcommittee at the beginning of July, together with two separated voting forms, and the customary dead-line of sixty days was given.

Before mentioning the very positive results obtained by the two proposals in the postal ballot, we should introduce here a major objection raised by Marie-Pierre Aubry, Bill Berggren and Dennis Kent on the Zanclean proposal which is valid, in their opinion, in other similar situations.

But let us Marie-Pierre explain the matter by herself (through a synthesis of a message sent by her to many of us last August):

“[...] the base of the Trubi Marls is linked to a local tectonic event which permitted reestablishment of the flow between the Atlantic and the Mediterranean. Why should this level be used for global correlation? [...] But the Miocene/Pliocene boundary is a GLOBAL boundary, which should be defined on global criteria, and the base of the Zanclean is NOT a global criterion (by lithostratigraphic, biostratigraphic and magnetostratigraphic standards). [...] So we have a series of biostratigraphic events to bracket the interval in which to locate the M/P boundary. Aside from the miscorrelation that will result from this, I am puzzled by the discrepancy between the precision reached for the age of the base of the Zanclean and the lack of precision for correlation. Yet, there is a criterion that would not violate much current usage of the Miocene/Pliocene boundary, but would satisfy precise/unambiguous recognition of the M/P boundary in all settings, marine and continental: that is the base of the Thvera event. Yes, I would recommend that the base of the Zanclean be left where it is, i.e., at the base of the Trubi Marls, and YES, I would disconnect the definition of the base of the Pliocene from that of the Zanclean [...] This is not a horrifying proposition, is it? What have we lost: 1) the redundant duality between stage and series; 2) anything else? What would we gain: 1) a level that can be identified essentially everywhere (in marine and terrestrial stratigraphies) on the basis of magnetostratigraphy; 2) an unambiguous (=non approximate) recognition of the boundary; 3) a new understanding that stratigraphy has to avail (free) itself of the traditional approach for the sake of a healthy future [...]”.

The key-points of this position are, in our understanding: decoupling, whenever necessary, Stage boundaries from Series boundaries, leaving the first as essentially local units and giving the second the role of basic global chronostratigraphic units; locating the Series boundaries in coincidence of potentially ubiquitous events, that is (almost) always at a magnetic reversal.

There was a hot discussion by e-mail between, on one side, MPA, BB and DK and, on the other, Davide Castradori, John Van Couvering, Frits Hilgen and Domenico Rio. According to the latter members of SNS, to follow the ABK proposal would contrast with the presently accepted definition of Stage that, according to the International Stratigraphic Guide (see Salvador C-2, p. 78), “**is the smallest unit in the standard chronostratigraphic hierarchy that can be recognized at a global scale**”. However, as it appears that there is not a full agreement in our commission on the rank and scope of the stage, we should open a discussion within SNS and bring our opinion to the attention of the International Commission on Stratigraphic Classification. However, in the meanwhile, we want to make clear the strategy that we are following in defining Neogene GSSPs:

- 1) we consider the Stage the smallest global chronostratigraphic unit of the Global Chronostratigraphic Scale (GCS);

- 2) we consider, in agreement with a long lived practice confirmed in many official documents, that the historical Mediterranean Stages are the standard stage of the GCS;
- 3) we are trying to locate the GSSPs of Neogene Stages near their historical position, allowing only minor moving that can improve accuracy in definition and increase the correlation potential;
- 4) should some historical Mediterranean Stage be demonstrated not to be easily recognizable on a global scale, we will propose to abandon it, since useless in the GCS;
- 5) we are proposing to define boundaries at lithostratigraphic levels possibly well constrained by astrocylostratigraphy and bracketed by as many correlation tools as possible. Deliberately, we suggest that the GSSP should not necessarily coincide (or, better, possibly not exactly coincide) with any of them since this would practically add nothing to the correlation potential (chronostratigraphic boundaries can be only approximated outside the type section);
- 6) we are leaving the Series (and Subseries) at their role of higher-rank units, exactly encompassing the rock/time span of their constituent Stages; this procedure allow to increase chronostratigraphic resolution when the Subseries comprehend (as it is in the Miocene) more than one (global) Stage (as such the Stage is not redundant!).

We believe that this strategy is in keeping with the presently accepted definition of Stage and the procedures suggested by the International Commission on Stratigraphy. However, the discussion is open and we ask all those interested to let us know their opinion on the matter, so that we can get a clear picture of the different position within our community (send your opinion to the Secretary, by surface or electronic mail).

Now, back to the results of the ballot. Both proposals has received 29 votes out of 31 voting members (i.e. 93%). We thank all of you warmly. The proposed Zanclean (and Pliocene) GSSP has received 22 positive and 3 negative votes, with 4 abstentions. The proposal for the Messinian GSSP was appreciated by 24 members, with only one negative vote and 4 abstentions. Therefore, the two proposals, corrected according to the suggestions provided by some voting members, will be soon forwarded to the ICS Secretary General for organizing the subsequent ballot within ICS.

We should now enter a very painful matter, that made us waste a lot of time and money, but that will hopefully come to an end soon. We are talking about the never-ending story of the Pliocene-Pleistocene boundary. We refer you to the attached document prepared by us and by John Van

Coupling to know the details of the problem. Here we have only to summarize the last procedural steps of the querelle.

Following suggestions by the IUGS ad-hoc committee (see Neog. Newsl., 4), a joint postal ballot within the INQUA Commission on Stratigraphy (regretfully acting as IUGS Subcommission on Quaternary Stratigraphy) and our Subcommission was scheduled for September 1998. The Quaternary Subcommission had to provide arguments in favour of lowering the Pliocene-Pleistocene boundary down to the base of the Upper Pliocene Gelasian Stage by August 31. We asked the Chairman of ICS to give us three additional weeks to prepare a reply to their document, where we could counter their arguments and ask for the maintenance of the present Pliocene-Pleistocene boundary. Our document is enclosed herein. Of course a better document could have been prepared, but we are convinced to have raised many more valid arguments for the maintenance of the present boundary than were actually necessary to reject their proposal.

The postal ballot is taking place in these days. Should the lowering of the boundary (regretfully) win this first round, a postal ballot would then be organized within ICS. Otherwise, the matter would be (hopefully) settled "forever". We will think of a method to inform you on the results of the ballot. However, one is certainly that of writing a message to the Secretary and ask for this piece of information.

Before concluding, we would like to mention that we provided the Chairman of ICS with our help and advice in the construction of the new edition of the Global Chronostratigraphic Scale, so that the Neogene part of it could have the most updated look both in term of chronostratigraphic architecture and of geochronologic age estimates.

So, what comes next? Of course this depends on the results of the various postal ballots, that is those within ICS on our proposed Zanclean (and Pliocene) and Messinian GSSPs and that within the Neogene and Quaternary Subcommissions on the Plio-Pleistocene boundary. Should all those matters go well (from our point of view, of course!), then we could focus on the remaining part of our time slice, trying to establish a working group on the pre-Messinian Miocene time scale. Otherwise...we will come back to you, asking for suggestions!