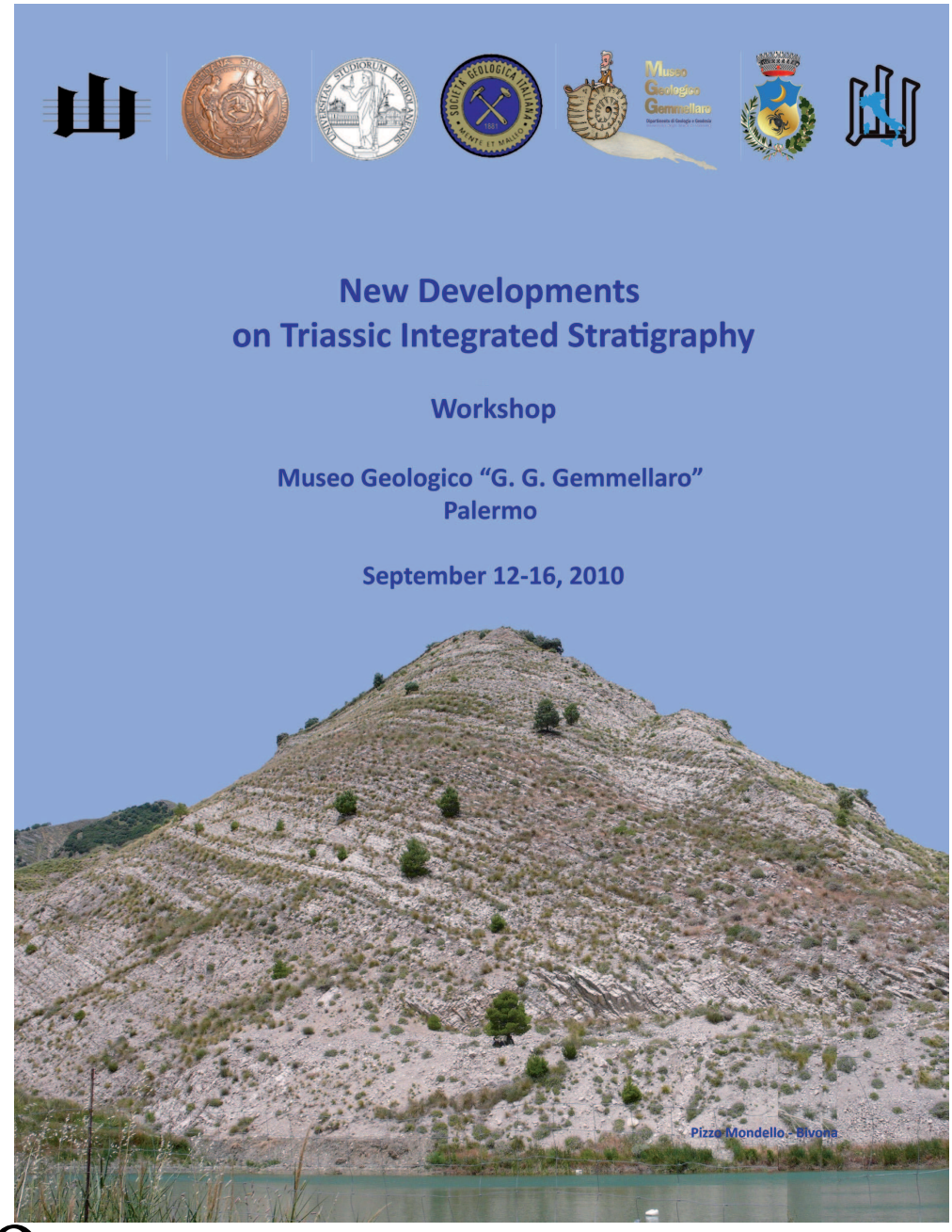
ALBERTIANA

Excursion Field Guide and Abstract Volume



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December 2010

ISSN 0619-4324

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The primary aim of ALBERTIANA is to promote the interdisciplinary collaboration and understanding among members of the I.U.G.S. Subcommission on Triassic stratigraphy. Within this scope ALBERTIANA serves as the newsletter for the announcement of general information and as a platform for discussion of developments in the field of Triassic stratigraphy. ALBERTIANA is available as PDF at the STS website. Please send your manuscript to albertiana2010@gmail.com .

Cover: The Pizzo Mondello section.

"New Developments on Triassic Integrated Stratigraphy "

Organizing Committee

Marco Balini, Carolina D'Arpa, Carolina Di Patti, Pietro Di Stefano,
Alda Nicora, Simona Cacciatore, Antonio Cusumano, Marco Levera, Michele Mazza, Manuel Rigo, Angelo Tripodo, Giuseppe Zarcone.

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Patronage

Società Geologica Italiana
Società Paleontologica Italiana
Commissione Italiana di Stratigrafia.

Co-sponsors

Subcommission on Triassic Stratigraphy (ICS)
Università degli Studi di Milano
Università degli Studi di Palermo
Università degli Studi di Palermo, Dipartimento di Geologia e Geodesia
Museo Geologico "G.G. Gemmellaro"
MIUR-PRIN 2008 Project "Upper Triassic integrated stratigraphy: GSSP and auxiliary sections in Italy"
Comune di Bivona.

Workshop Program

September 12, Sunday

from 19,00 registration.

19,30 Ice Breaker party.

September 13, Monday

9,00-9,20, Opening ceremony

Session 1. ***Western Tethys stratigraphy, dedicated to the memory of the late Giovanni Viel (1944-2009)*** .

9,20-9,30 Farabegoli E. — Dedication to Giovanni Viel.

9,30-9,50 Farabegoli E. — Anisian lithostratigraphy of the Dolomites: a 40-years-long debate.

9,55-10,15 Binda M., Berra F. and Jadoul F. — Calcare Rosso: key witness of the Ladinian carbonate platform exposure (Pegherolo Massif, Southern Alps).

10,20-10,40 Balini M., Nicora A. & Larghi C. — Biochronostratigraphic revision of the Wengen Formation (Ladinian-earliest Carnian) in the central Southern Alps.

10,45-11,05 Gianolla P., Mietto P., Rigo M., Roghi G. & De Zanche V. — Carnian-Norian paleogeography in the eastern Southern Alps.

11,10-11,30 *Coffee break*

11,30-11,50 Martin-Rojas I., Somma R., Delgado F., Estévez A., Iannace A., Perrone V. & Zamparelli V. — Sequence stratigraphy analysis of Triassic carbonate platform. An example from the Betic Cordillera Internal Zone (Spain).

11,55-12,15 Somma R., Martin-Rojas I., Zamparelli V., Delgado F., Estévez A., Iannace A., & Perrone V.— Significance of Ladinian foraminifer-rich guide levels in the Betic Internal Zone (Spain).

12,30-14,30 *Lunch*

14,30-14,50 Gale L. — Upper Triassic sedimentation of the Slovenian Basin (eastern Southern Alps, Slovenia) and its foraminiferal assemblage.

14,55-15,15 Cacciatore M. S., Di Stefano P., Zarcone G.— Carbonate Platform-Basin Transition in SW Sicily. Implications for the paleogeographic reconstruction of the Central Mediterranean area.

Session 2. ***Biostratigraphy, integrated stratigraphy and Triassic scales***

15,20-15,40 Bachmann G. H. & SPBA Triassic Working Group—Triassic Stratigraphy and Facies of the Southern Permian Basin Area (England to Poland).

15,45-16,10 Farabegoli E. & Perri M.C. — The end-Permian mass extinction.

16,15-16,30 *Coffee break*

16,30-18,00 *Poster session*

Balini M., Krystyn L., Levera M. & Tripodo A.— Late Carnian-Early Norian ammonoids from the GSSP candidate section Pizzo Mondello (Sicani mountain, Sicily).

Bertinelli A. & Giordano N. — Radiolarian assemblages from the Norian GSSP candidate Pizzo Mondello section (Sicani Mountains, Sicily).

Cacciatore M.S., Todaro S., Zarcone G. & Di Stefano P. — *Triasina hantkeni* limestones from Sicily.

Golding M.L., Zonneveld J.-P., Orchard M.J., Mortensen J.K. & Ferri F.— Lower and Middle Triassic Stratigraphy of the Western Canada Basin and Implications for Timing of Terrane Accretion.

Levera M. & McRoberts C.A. — *Halobiid* bivalves as a tool for high resolution correlation between Carnian-Norian successions in Tethys and Panthalassa: a potential datum for a base-Norian GSSP.

Preto N., Rigo M., , Agnini C., Guaiumi C. , Borello S. & Westphal H. — Triassic and Jurassic calcareous nannofossils of the Pizzo Mondello section: potential for biostratigraphy.

Rigo M., Preto N., Boscaini N., Cognolato A., Franceschi M., Guaiumi C. & Osti G. — Stratigraphy of the Carnian – Norian Carcari con Selce in the Lagonegro Basin (Southern Apennines) and correlation with the Sicani Basin.

Tripodo A., Balini M. & D'Arpa C. — The revision of *Pinacoceras* (Ammonoidea, Upper triassic) of the Gemmellaro Collection.

Zarcone G. Cacciatore M.S., Todaro S., & Di Stefano P. — End Triassic karstification of a south Tethyan carbonate platform: the genesis of the "Libeccio Antico" a famous Baroque dimension stone.

September 14, Tuesday

Session 2. Biostratigraphy, integrated stratigraphy and Triassic scales.

9,00-9,20 Kozur H.W. & Bachmann G.H. — Correlation of the predominantly continental Upper Triassic of the Germanic Basin with the Tethyan scale.

9,25-9,45 McRoberts C. — Paleoecological controls on Triassic flat clam biochronology.

9,50-10,10 Kozur H.W. & Weems R.E — The conchostracan zonation of the Upper Triassic and basal Jurassic. Age of the CAMP volcanics in the Newark Supergroup.

10,15-10,40 *Coffee break*

Session 3. Towards the definition of the GSSP of the Norian stage.

10,40-11,00 Guaiumi C., Preto N. & Westphal H. — Origin of Upper Triassic deep water carbonate at Pizzo Mondello (Sicily).

11,05-11,25 Levera M.— An overview of the Sicilian halobiids from the Carnian-Norian boundary interval through the Pizzo Mondello fauna: useful proxies for the Norian GSSP.

11,30-11,50 Balini M., Bertinelli M.A., Di Stefano P., Guaiumi C. , Levera M., Mazza M., Muttoni G., Nicora A., Preto N., Rigo M., Krystyn L. & McRoberts C. — Bio-chronostratigraphic calibration of the Upper Carnian-Lower Norian magnetostratigraphic scale at Pizzo Mondello (Sicani Mountains, Sicily).

11,55-12,15 Mazza M., Cau A. & Rigo M.— Application of numerical cladistic analyses to the Carnian-Norian conodonts: a new approach for phylogenetic interpretations.

12,30-14,30 *Lunch*

14,30-14,50 Krystyn L.— Long distance marine biotic correlation events around the Carnian-Norian boundary: choice of Halobia austriaca as the defining boundary marker

14,55-15,15 Zonneveld J.P., Orchard M.J. , Beatty T.W., McRoberts C.A. & Williford K.H. — Stratigraphic architecture of Upper Triassic strata in the Williston Lake area, northeastern British Columbia: Implications for the Carnian-Norian GSSP.

15,20-15,40 Orchard M.J. — An exceptional conodont succession from the Carnian-Norian boundary of the Western Canada Sedimentary Basin, northeastern British Columbia.

15,45-16,05 Orchard M.J. & Carter E. S. —The Carnian-Norian boundary in Haida Gwaii: preliminary observations on the conodont faunas and their calibration with radiolarians.

16,10-16,30 *Coffee break*

16,30-18,00 Business Meeting of the STS

Evening: Social Dinner (Please contact the workshop desk for information).

Field excursion
The Triassic of western Sicily

September 15, Wednesday, Day 1 of the excursion

8,30 Meeting point Museo Gemmellaro.

8.45 Departure by bus.

Carnian to Lower Jurassic successions from the Panormide Platform and Imerese Basin (Palermo Mountains). The following outcrops will be visited:

- Cozzo di Lupo, the Late Triassic shelf-edge of the Panormide Carbonate Platform;

- Billiemi quarry, synsedimentary tectonics along the

Panormide Carbonate Platform margins;

- Cozzo Paparina, Carnian deposits (Mufara Formation) with megabreccia intercalations;

Monte Genuardo, tectonic retreat of a segment of the Triassic paleomargin of the Saccense carbonate platform around the T/J boundary.

Field leaders: Di Stefano P., Cacciatore M. S., Scopelliti G. and Zarcone G.

Dinner and overnight: Convento dei Cappuccini (Bivona).

September 16, Thursday, Day 2 of the excursion

Carnian to Rhaetian succession of the Sicanian Basin at Pizzo Mondello.

Four intervals will be visited: the Late Carnian-Early Norian, that is of great interest for the definition of the C/N boundary, the Middle Norian, the Late Norian and the Rheatian.

On the way to Palermo, panoramic views of some other successions of the "cherty limestone" will be observed.

Field leaders: Balini M., Bertinelli A., Guaiumi C., Levera M., Mazza M., Muttoni G., Nicora A. , Preto N. and Rigo M.

Arrival in Palermo in mid-late afternoon (approximately 18.00).

presence of moderate-scale, olistolith-bearing debris flow deposits (debrites) as well as small-scale slumps/slides in the Ludington Formation adjacent to the inferred scarp margin support the interpretation that this scarp was active during the Upper Triassic.

The Carnian-Norian boundary interval is particularly well represented at Williston Lake. In eastern locales, such as East Carbon Creek and McLay Spur, the Carnian-Norian boundary occurs within bioclastic packstone and grainstone beds of the uppermost Baldonnel Formation (Zonneveld and Orchard, 2002). Further to the west, at Pardonet Hill, Juvavites Cove and Black Bear Ridge, the Carnian-Norian boundary occurs within heterolithic carbonate strata of the lower Pardonet Formation.

Black Bear Ridge, a candidate locality for the base-Norian Global Boundary Stratotype Section and Point (GSSP) occurs on the western side of the hingeline within the depositional sub-basin (Orchard et al., 2001; Orchard 2007; Zonneveld et al., 2010). The Black Bear Ridge section is apparently continuous, with no evidence for either subaerial exposure or submarine erosion. The absence of erosional scours in the study interval confirms emplacement of these strata well below both fair-weather and storm wave base. Evidence for continuous & relatively rapid sedimentation through the C-N boundary interval at this locality as well as minimal alteration by tectonic disturbances & lack of metamorphism make this locality an excellent GSSP candidate.

References

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Orchard M.J., Zonneveld J-P., Johns M.J., McRoberts C.A., Sandy M.R., Tozer E.T., and Carrelli G.G., 2001b. Fossil succession and sequence stratigraphy of the Upper Triassic of Black Bear Ridge, northeast British Columbia. *Albertiana* 25: 10-22.

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Zonneveld J-P., Beatty T.W., Williford K.H., Orchard M.J. and McRoberts C.A. 2010. Stratigraphy and sedimentology of the lower Black Bear Ridge section, British Columbia: candidate for the base-Norian GSSP. *Stratigraphy* 7: 61-82.

Poster presentations:

Late Carnian-Early Norian ammonoids from the GSSP candidate section Pizzo Mondello (Sicani Mountains, Sicily)

Balini M.[1], Krystyn L.[2], Levera M.[1] & Tripodo A.[3]
marco.balini@unimi.it

[1] Dipartimento di Scienze della Terra "Ardito Desio", Università di Milano. Via Mangiagalli 34, Milano, Italy 20133

[2] Institut für Paläontologie, Althanstrasse 14, A-1090 Vienna, Austria.

[3] Dipartimento di Geologia e Geodesia, Università di Palermo, via Archirafi 22, 90123 Palermo, Italy.

The Cherty Limestone of Western Sicily is known since the XIX century for the rich record of Carnian to Norian pelagic bivalves (halobiids) and ammonoids, which were monographed by Gemmellaro (1882, 1904). Since Gemmellaro's time, the knowledge on halobiids has been improved mostly by De Capoa (Cafiero & De Capoa Bonardi, 1982; De Capoa Bonardi, 1984), while no new data has been published for the ammonoids. Gemmellaro's collection, consisting of 780 specimens classified into 230 taxa, has come from several localities, but without stratigraphic control on the fossil-bearing levels. For this reason Gemmellaro's collection has never been taken into account for the refinement of the Upper Triassic chronostratigraphic scale, despite of the very good quality of the specimens.

Here we present the results of very dense bed-by-bed sampling carried out on the GSSP candidate section Pizzo Mondello within the last 4 years, in the framework of an integrated bio-chronostratigraphic research aimed to support the magnetostratigraphic scale provided by Muttoni et al. (2001, 2004).

Though ammonoids are relatively rare in the section, the possibility to follow the beds along strike for longer distance allowed us to collect about one hundred specimens in situ from the Carnian-Norian boundary interval. About 2/3 of them are of small to very small size, but the remaining specimens are large and complete enough for a classification at least at a generic level. *Gonionotites*, *Projuvavites*, "*Anatomites*", *Dimorphites* are the most frequent genera together with Arcestidae, and more rare *Discotropites*, *Anatropites* and Phylloceratina. The relatively abundant "trachyostracaean" ammonoids document the *Discotropites plinii* and the *Gonionotites italicus* Subzones of the latest Carnian *Anatropites spinosus* Zone and the *Guembelites jandianus* Zone of the earliest Norian.

The *D. plinii* Subzone is recognized in the lower part of the section by the occurrence of the index species, together with some early *Gonionotites*. The *G. italicus* Subzone is

characterized by *Gonionotites* gr. of *italicus*, *G. maurolicoi*, *Projuvavites*, "*Anatomites*" and a single *Anatropites*. *Gonionotites* is especially frequent in this zone that is recognized between about 50 to about 82m from the base of the section, with the single *Anatropites* found nearly on top of this interval.

After about 18 m without ammonoids *Dimorphites* has been found, with several small specimens from at least 3 levels. Comparison of these specimens with a large collection of *Dimorphites* n. sp. 1 of Krystyn (1980) and *D. selectus* from Feuerkogel lead to refer by *confronta* the Pizzo Mondello specimens to *Dimorphites* n. sp. 1. This identification suggests the attribution of this interval to the first subzone of the *Gumbelites jandianus* Zone, the first zone of the Norian Stage. Moreover, these specimens are also very close to *Dimorphites pardonetiensis* sensu Tozer, 1994, pl. 114, fig. 1, allowing thereby a cross-correlation of this interval with Subzone 1 of the basalmost Norian *Stikinoceras kerri* Zone of British Columbia (Canada).

The new data, although based on relatively sparse ammonoids, provide a high resolution calibration for the conodont and halobiid bioevents, as well as for the magnetostratigraphic scale. New investigations at two other fossil-rich sites in the surroundings of Santo Stefano Quisquina and Castronuovo di Sicilia are in progress, in order to test and to integrate the ammonoid record at Pizzo Mondello.

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Radiolarian assemblages from the Norian GSSP candidate Pizzo Mondello section (Sicani Mountains, Sicily)

Angela Bertinelli & Nicola Giordano
angela.bertinelli@unipg.it

Dipartimento di Scienze della Terra, Università degli Studi di Perugia

Pizzo Mondello section (Sicani Mountains, Western Sicily) is one of the best localities in the world for the definition of the Carnian/Norian boundary and presents a combination of features to be candidate as GSSP section for the base of the Norian. The exposed succession is made of 450 m thick pelagic-hemipelagic limestones (*Calcari con selce* or *Halobia limestone Auctt.*). The *Calcari con selce* of Pizzo Mondello were divided by Muttoni *et al*. (2001, 2004) in four lithozones. The Carnian/Norian boundary interval occurs into the lower part of the section (140 m thick, lithozones I and II), consisting of well bedded white to yellow calcilutites, with black chert nodules. Pizzo Mondello section is well known for the different analysis carried out in the past: primary magnetostratigraphic record and stable isotope variations (Muttoni *et al*., 2001, 2004), lithological and sedimentological investigations (Guaiumi *et al*., 2007, Nicora *et al.,* 2007) and biostratigraphic calibration integrating conodonts, ammonoids, pelagic bivalves and radiolarians, still in progress. In the 140 m thick lower part of the section the Carnian/Norian boundary interval is 30 m thick and lies magnetozones PM4n and PM4r as well the positive shift of $\delta^{13}C$. Conodonts are the most promising tool for the definition of the base of the Norian and two major events were identified with the FAD of *Epigondolella quadrata* Orchard and the FAD of *Metapolygnatus communisti* Hayashi (Nicora *et al*., 2007, Balini *et al.,* 2008, Mazza *et al*., 2010). Conodont biostratigraphy and taxonomy around the Carnian/Norian boundary is rather problematic because of the apparent provincialism of most of the conodont species (Kozur, 2003; Mazza and Rigo, 2008). An additional tool for global correlations is represented by radiolarians, found in several samples with rich and diversified assemblages. Radiolarian assemblages permit to improve the biostratigraphic resolution of the Carnian and Norian stages, and allow to discriminate between the two proposed FAD for the base of the Norian.

In the 30 m thick Carnian/Norian boundary interval the first Early Norian radiolarian assemblage occurs about 4 m above the FAD of *Epigondolella quadrata* Orchard and about 14 m below the FAD of *Metapolygnatus communisti* Hayashi. This radiolarian assemblage is referable to Early Norian for the presence of *Blechschmidtia raridenticulata*