

MEETING REPORT

THE OLENEKIAN-ANISIAN BOUNDARY FIELD WORKSHOP, ROMANIA, 26–29 MAY, 2026

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Efforts by the Subcommittee on Triassic Stratigraphy (STS) to define the base of the Anisian, the older stage of the Middle Triassic Series, began in 1991, when a working group, headed by Maurizio Gaetani, was created (Lucas, 2026). During the last decades important research and publications relevant to identifying a GSSP for the Anisian base, were produced for several sections, as GSSP candidates: Chios (Greece), Deşli Caira (Romania), Kçira (Albania), Nevada (USA), and Wantou (southern China). In 2017, the Working Group (WG) to identify and establish a GSSP for the base of the Anisian Stage was re-organized with a new chair, Spencer Lucas, and a new membership of 14. After diverse discussions of the WG via Zoom, publication of several important papers related to the subject of the GSSP for the Anisian base and after the workshop and field trip on the Kçira section (Northern Albania) in May 2025 (Horacek et al., 2026a), the WG identified four possible primary signals for a base Anisian GSSP: (1) ammonoid biotic event, (2) conodont biotic event, (3) magnetochron boundary and (4) carbon isotope event; and two candidates for the base Anisian GSSP: the Deşli Caira section in Northern Dobrogea, Romania and the Wantou section in Southern China (Lucas, 2026).

The Deşli Caira section was brought to the attention of the Triassic international community, as potential GSSP candidate for the base of the Anisian, by Eugen Grădinaru (1942-2025) (Fig. 1), former professor at the University of Bucharest, who spent more than 30 years working on the Deşli Caira section.

Eugen Grădinaru involved several specialists in the study of palaeontology and stratigraphy of the Deşli Caira section. In June, 2000, he organised the Workshop on the Lower-Middle



Figure 1 — Professor emeritus Eugen Grădinaru (1942-2025), possessed an intimate and profound knowledge of the geology of the Northern Dobrogea Orogen. Professor Eugen Grădinaru was an exceptional geologist and palaeontologist who, during a career spanning over 50 years, left his mark on our understanding of the Mesozoic stratigraphy and tectonics of Dobrogea and the Black Sea Basin.

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Triassic Boundary in Northern Dobrogea (Romania) (Fig. 2) and published the preliminary proposal of Deșli Caira as candidate for the GSSP of the Anisian base (Grădinaru et al., 2007). Several publications were produced over the years concerning the Deșli Caira section:

- Ammonoids and nautiloids: Grădinaru (2000) Grădinaru & Sobolev (2006), Grădinaru (2022), Balini et al. (2023,

2024, 2026b);

- conodonts: Mirăuță (2000), Grădinaru et al. (2006), Orchard et al. (2007), Golding (2021, 2023, 2025);
- foraminiferans: Grădinaru and Ivanova (2002);
- brachiopods: Grădinaru and Gaetani (2019);
- ostracods: Mirăuță et al. (1993), Crasquin-Soleau and Grădinaru (1996), Sebe et al. (2013), Forel and Grădinaru



Figure 2 — Participants at the Workshop on the Lower-Middle Triassic Boundary in Northern Dobrogea (Romania), June, 2000, Deșli Caira section: (in background, from the left to the right): Jerzy Nawrocki, Andrzej Gazdzicki, Alda Nicora, Milan Sudar, Elizabeth Carter, Ioan Coconu, Maurizio Gaetani, Mike Orchard, Miloš Siblik, Vladen Lozovsky, Mikhail Shishkin, Eugen Grădinaru (standing), Aleksandr Shevyrev, Iuliana Lazăr, Mihai Popa (sitting); (in foreground, from the left to the right): Tea Kolar-Jurkovšek, Kinga Hips, Daria Ivanova, Lyudmila Petrunova (sitting).



Figure 3 — Participants at the OAB workshop, Romania, May 26, 2026, one-day symposium of talks at the University of Bucharest: (in foreground from the left to the right): Marco Balini, Yan Chen, Zhong-Qiang Chen, Micha Horacek, Leo Krystyn, Sylvain Richoz, Iuliana Lazăr, Alexandra Lăcătuș, Cristian Victor Mircescu, Sam de Vries, Georgiana Joc, Andrei Zmeu, Antoneta Seghedi; (in the background from the left to the right): Martyn Golding, Mark Hounslow, Wout Krijgsman, Sebastian Buțu, Jim Ogg, Spencer Lucas, Eduard Burlacu, Marius Stoica, Radu Olaru, Daniel Stefan, Ana-Lucia Georgescu, Alexandru Andrașanu.



Figure 4 — Views during some of the presentations that were held on 25 May, 2026 at the University of Bucharest. Mesozoic stratigraphy and tectonics of Dobrogea and the Black Sea Basin.

(2021), Stoica et al. (2026);

- sedimentology and microfacies: Baud et al. (in Atudorei et al., 1997), Baltres (2000), Lazăr et al. (2026);
- chemostratigraphy: Atudorei et al. (1997), Atudorei (in Grădinaru et al., 2007), Horacek & Grădinaru (2023), Horacek et al. (2026b);
- magnetostratigraphy: Gallet et al. (in Grădinaru et al., 2007); Calibration accuracy of the magnetostratigraphy at Deșli Caira with the high-resolution log of the section was recently improved by de Vries et al. (2026).

Considering these data and the discussion of the OAB WG during the last three years, in May, 2026, the Olenekian-Anisian Boundary (OAB) Field Workshop, was organized in Romania by the Research Institute of the University of Bucharest (ICUB) and the Department of Geology, Mineralogy and Paleontology of the University of Bucharest in collaboration with the Università degli Studi di Milano, Dipartimento di Scienze della Terra "Ardito Desio", the Subcommittee on Triassic Stratigraphy (STS) and the Romanian Society of Palaeontologists (RSP). The meeting took place in Bucharest and Tulcea on May 26th to 29th, 2026 (Fig. 3).

May 26 was a day dedicated to scientific presentations and discussions. During the opening ceremony, a welcome address was given by Professor Ioan Munteanu, Vice-Dean of the Faculty of Geosciences and Geophysics and by Professor Iuliana Lazăr. Fourteen talks were organized into a plenary session: six presentations addressed general aspects related to the Stratigraphy of the Triassic System in different places in the world; two

presentations concerning the Wantou section (China), GSSP candidate for the base of the Anisian; six presentations concerning the Deșli Caira section (Romania), GSSP candidate for the base of the Anisian (Fig. 4).

Dr. Spencer Lucas (New Mexico Museum of Natural History) opened the plenary scientific session by presenting the difficult and complicated quest for the base of the Anisian GSSP, since the 1970s when the Subcommittee on Triassic Stratigraphy (STS) began its efforts to define the base of the Anisian up to the present (Lucas, 2026).

Dr. Antoneta Seghedi (GeoEcoMar Romania) presented to the participants at the workshop an overview concerning the modern litho- and biostratigraphy of the Triassic-Jurassic formations of the North Dobrogea Orogen (Seghedi, 2026).

Dr. Martyn Golding (Geological Survey of Canada) discussed the suitability of a conodont proxy for the definition of the Olenekian-Anisian Boundary, suggesting that a conodont proxy for this boundary is undesirable, with other markers having more potential for global and consistent correlation of the OAB (Golding, 2026).

Prof. Leopold Krystyn (Vienna University) taught us about the enigmatic type locality of *Chiosella timorensis* (Conodonts) in Timor Leste that was an isolated block without stratigraphic relevance to the definition of the Lower to Middle Triassic Boundary (Krystyn & Horacek, 2026).

Prof. Sylvain Richoz (Lund University) presented the sedimentary development of the Olenekian-Anisian Boundary interval along the Southern margin of the Neotethys, in Turkey, Oman and India (Richoz & Krystyn, 2026).

Nomination of the Wantou section (South China) as candidate of the GSSP for the Olenekian-Anisian Boundary was supported by Prof. Jim Ogg (Chengdu University, Purdue University) and by Dr. Yan Chen (Hubei Normal University). Dr. Yan Chen and coauthors presented an updated conodont biostratigraphy of the Wantou section (Chen et al., 2026a). Prof. Jim Ogg and coauthors presented an overview of the Wantou section and the complementary Youping section of Guangxi, which provide a detailed high-resolution, integrated calibration of the Early-Middle Triassic boundary succession for lithostratigraphy, volcanic episodes, refined conodont and ammonoid biostratigraphy, geomagnetic polarity, inorganic carbon isotopes, sea-surface temperatures derived from conodont-apatite oxygen-isotopes, and ID-TIMS U–Pb radiometric dating (Chen et al. 2020, 2026b).

Nomination of the Deșli Caira section (Northern Dobrogea, Romania) as candidate of GSSP for Olenekian-Anisian Boundary was supported by six presentations.

Prof. Marco Balini (Milano University) and coauthors provided a revision of some genera from the ammonoid family Acrochordiceratidae and new data from key stratigraphic sections (Northern Humboldt Range, Deșli Caira and Chios), discussing their stratigraphic position and their usefulness for correlations. This study improves the stratigraphic correlations between Deșli Caira, the candidate GSSP section for the Anisian stage, the Aegean type section, and North America. The correlation of the Spathian part of the Deșli Caira section is particularly important and demonstrates that the Spathian part of the Deșli Caira section



Figure 5 — A, B, Middle Anisian – Upper Ladinian succession at the Cataloi locality, the central-western part of the Tulcea Unit. C, Participants at the OAB workshop, Romania searching along with students of the Faculty of Geology and Geophysics, University of Bucharest for D, *Daonella* specimens

is not condensed (Balini et al., 2026).

Prof. Lazăr and coauthors described the carbonate microfacies across the Olenekian-Anisian Boundary in the Deșli Caira section as a succession accumulated in open-marine, pelagic environments with unusually high rates of carbonate sedimentation, which do not reveal taphonomic or stratigraphic condensation across the Spathian-Aegean succession (Lazăr et al., 2026b).

Prof. Marius Stoica (University of Bucharest) and coauthors described the Olenekian-Anisian ostracods from the Deșli Caira section across the OAB (Stoica et al., 2026).

PhD student Alexandra Lăcătuș (University of Bucharest) and coauthors presented the systematic description of new, earliest Aegean ammonoids from the Deșli Caira section (Lăcătuș et al., 2026).

Dr. Horacek (Vienna University) and coauthors investigated the carbon isotope curve of the Olenekian-Anisian Boundary

interval from different sections (Romania, Albania, China) that show very similar carbon isotope absolute values and an increase in carbon isotopes that occurred at comparable intervals. However, above the increase, the “plateau” of the positive excursion lasts for only a few meters in all investigated sections except Deșli Caira, where it remains until the top of the section, for almost 25 meters, which documents an exceptionally extended lower Aegean stratigraphic section at Deșli Caira (Horacek et al., 2026).

Masters student Sam de Vries (Utrecht University) and coauthors resampled the Deșli Caira section for paleomagnetic analysis in close coordination with new lithological and paleontological studies aiming to establish a proper, fully integrated stratigraphic framework. Demagnetisation results indicate that the Deșli Caira rocks contain two largely overlapping magnetite components; a strong normal polarity overprint and a weaker dual polarity primary signal, making polarity

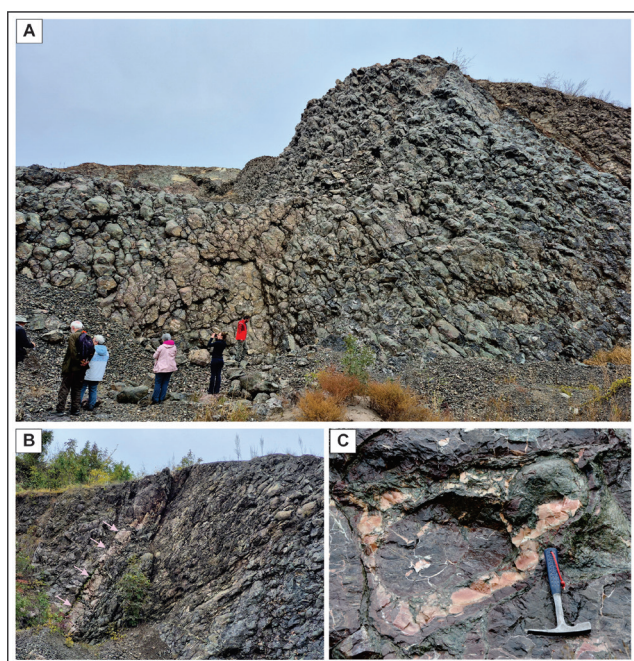


Figure 6 — The Asan Hill, Revărsarea quarry, exposes pillow basalts (A-C) of the Niculițel Formation (upper Scythian - Anisian). Note the presence of pink pelagic limestones (B, C) interbedded with the pillow basalts.

interpretation rather complex, and the new paleomagnetic analyses of the Deșli Caira section were presented. The resulting magnetostratigraphic polarity pattern may contribute to the discussion regarding the placement of the Anisian GSSP and correlations to other key localities for the definition of this GSSP, including the Wantou section in South China, and the Kçira section in Albania (de Vries et al., 2026).

The Bucharest University Press published the volume with the abstracts of the talks presented at the workshop and the guide for the fieldtrip stops Abstracts and Field Trip Guidebook OAB-FW 2026.pdf (Lazăr et al., 2026).

May 27-29, 2026 was organized as a field trip to south-eastern Romania (Northern Dobrogea) during which various Triassic outcrops were visited:

Nicolae Bălcescu locality, Upper Olenekian Hallstatt-type limestones in the Consul Unit: at the base of the section, there is only one bed containing upper Olenekian ammonoid taxa represented by *Olenekites*, *Procarnites* and *Ziyunites* (Grădinaru, 2000). The Triassic succession exposed on the western slope of this hill consists of dolomites, dolomitic limestones and limestones with calcirudite intercalations (upper Olenekian – lower Anisian).

Cataloi locality, Middle Anisian – Upper Ladinian succession from the central-western part of the Tulcea Unit (Fig. 5): The sequence is almost 160 m thick and is composed of middle Anisian nodular, cherty limestones and marly limestone followed by upper Anisian dark grey limestones with black cherts. The base of the Cataloi Formation is represented by black calcirudite followed by an alternation of grey-yellowish marly shales and marly limestones (140 m thick) with several fossiliferous levels with pelagic bivalves and rare ammonoids.

Revărsarea locality, Upper Olenekian – Anisian pillow basalts in the north-western part of the Tulcea Unit (Fig. 6):



Figure 7 — Outcrop views of the upper Olenekian – lower Anisian succession: A - the top of the Pietros Hill, Căușul Mare, Cu Cunună Hill; B-E – members of the OAB WG and students looking for ammonoids on the eastern flank of Pietros and Cu Cunună Hill.

The Revărsarea quarry exposes pillow basalts of the Niculițel Formation (upper Olenekian - Anisian), the age being constrained by the conodont assemblages recovered by Mirăuță (1982) from



Figure 8 — Enisala Fortress section: A, Outcrop views of the Enisala section: upper Ladinian - lower Carnian bedded limestones and the post-tectonic sedimentary cover represented by uppermost Albian-Cenomanian carbonates; B-D, members of the OAB WG and students looking at the Triassic succession.



Figure 9 — A, B - Southwestern views of Deşli Caira Hill, 28 May 2026; yellow dotted line in A marks the dispersion area of the members of the OAB WG on the outcrop; C, D — Prof. Marco Balini presenting the Deşli Caira section to the participants at the workshop.

the limestone interbeds in the basaltic sequence. The Niculiţel Formation consists mainly of pillow-lavas basalts associated with minor gabbro bodies and dolerite dykes (Savu et al., 1980, 1988; Savu, 1986). Basic rocks are interbedded with pelagic limestones (cherty limestones and nodular, bioturbated limestones) and with thin successions of limestone turbidites and volcanoclastic turbidites (Seghedi et al., 1990).

Agighiol Hills, Upper Olenekian-upper Carnian carbonate succession in the central part of the Tulcea Unit (Fig. 7): The Triassic faunas of the Agighiol Hills are famous in the classic geological literature for the richness of various groups of fossils described in the classical monographs of Kittl (1908) and Simionescu (1910). Over the last decades, several studies concerning the ammonoid faunas, lithofacies, microfacies and sedimentology of the Triassic deposits from this zone were performed by Baltres (1976), Atudorei et al. (1997), Grădinaru (2000), Baltres (2005), and Baltres et al. (2020). The Spathian - Middle Anisian and lower-(?)upper Carnian stratigraphical intervals were well documented by Grădinaru (2000), who identified nine fossiliferous levels containing rich and diversified ammonoid faunas.

Enisala, Wetterstein-type limestone, Upper Ladinian – lower Carnian, in the central-eastern part of the Tulcea Unit (Fig. 8): The Enisala Fortrees section is composed of several hundred meters of thick-bedded, light grey, bioclastic limestones, Wetterstein facies, which are attributed to the Popina Formation. The limestones are remarkable for their rich content of calcareous algae. They present a relatively large variety



Figure 10 — Participants at the workshop observing and discussing in detail the features of the Olenekian-Anisian carbonate succession of the Deşli Caira section.

of facies, from microbial mudstone-wackestone, to peloidal-bioclastic packstone-grainstone, to microbial bindstone and peloidal-laminitic microbialites and coarse bioclastic-oncoidal grainstone-rudstone. Bioclasts are represented by fragments of corals, sponges, brachiopods, molluscs, echinoderms, Rivularia-type cyanobacteria and microorganisms of *Tubiphytes-Crescentiella* type (Bucur et al., 2024).

On the 28th of May, the GSSP candidate at Deşli Caira section was examined in detail by the participants at the field workshop (Figs. 9, 10). At the location the section was introduced by Prof. Marco Balini and the boundary interval shown and discussed in detail with the participants.

After several hours of discussions and observations in the field and considering the new data presented in the first day of the workshop, several aspects were emphasized as strengths of the Deşli Caira section as possible GSSP:

Adequate exposure thickness: The carbonate succession at Deşli Caira Hill is approximately 60 meters thick and can be followed in two complementary sections: in section A (Grădinaru et al., 2007) the first 20–25 meters are observed on the southeastern slope of the hill, and in section B (Grădinaru et al., 2007) the next 28–35 meters are exposed on the southern slope of the Deşli Caira Hill.

Detailed sampling: The Deşli Caira section was resampled with a bed-by-bed approach, in several field trips (2023, 2024 and 2025). For the section B, two profiles B1 and B2 were sampled for ammonoid biostratigraphy, and three profiles B1-B3 were sampled for microfacies, mineralogical, geochemical and palaeomagnetism data analyses: a total of 450 rock-samples were collected bed-by-bed to prepare thin sections and polished slabs that were further examined for microfacies, mineralogical and geochemical analyses; 186 new paleomag samples were collected (in 2025) from profiles B1, B2, B3.



Figure 11 — Anisian boundary at the Dešli Caira section: (the group from the left, from the base toward the upper part of the section): Ioan Munteanu, Eduard Burlacu (on the left, standing), Alexandra Lăcătuș, Antoneta Seghedi, Sylvain Richoz, Jim Ogg, Marco Balini (sitting), Leo Krystyn, Iuliana Lazăr, Micha Horacek, Martyn Golding, Yan Chen (standing); (the group from the right, from the base toward the upper part of the section): Spencer Lucas, Zhong-Qiang Chen, Yami Lucas, Mark Hounslow (standing), Sam de Vries, Marius Stoica, Laurențiu Ene, Cristian Victor Mircescu (sitting).

Abundant and well-preserved fossils: The ammonoid record of Dešli Caira section is rich in both number of fossil-bearing beds, and number of specimens. At least 19 fossiliferous beds have been recognized, from which slightly more than 1,500 ammonoids have been collected, including both the specimens collected by the late Grădinaru (see Balini et al., 2024, 2026 for discussion) and new specimens collected bed-by-bed. The ammonoids are not reworked, as not one of the taphonomic criteria indexes of reworking, following the Fernández-López (1984) classification, has been recognized.

No major lithological changes: The Dešli Caira section consists essentially of centimetre- to decimetre-thick beds, represented by alternations of light grey, white to reddish limestones interbedded with brick-red, nodular marly limestones. These are composed of mudstone to wackestone and floatstone with packstone intercalations (pelagic bivalve microcoquina).

The microfacies succession between beds 821 and 822B (the interval of the possible boundary) is composed of wackestone to packstone with calcified radiolarians, planktonic bivalves, ostracods, micropeloidal matrix; and wackestone to floatstone with ammonoids, gastropods, pelagic bivalves, radiolarians, rare benthic foraminiferans, micropeloidal matrix and clotted micrite (Lazăr et al., 2026).

Ammonoid record and biostratigraphy: The major change in ammonoid faunas and their range chart is recorded between the top of the bed 822A1 and the base of 822A2 Lower (Fig. 11). This change represents, at a local level, a major shift in the evolution of Triassic ammonoids, namely the Olenekian/

Anisian Ammonoid Faunal Turnover (O/A AFT, Balini et al., 2024, 2026). This turnover has never been studied at the scale of the stratigraphic section, but occurs within a time window between late Olenekian and the very base of the Anisian. In such a time, six ammonoid families became extinct, while five new families appeared in the lower Anisian frame (Tozer, 1981; Balini et al., 2024, 2026b).

The possible primary marker event for the base of the Anisian has been proposed by Balini et al. (2024) and Lăcătuș et al. (2026), is the First Occurrence of *Stenopopanoceras transiens* Tozer, 1972.

Balini et al. (2024, 2026c) presented paleontological data integrated with previous magnetostratigraphic data (published by Gallet in Grădinaru et al., 2007). Based on current data, the base of the MT3 magnetochron is proposed as secondary marker, for the base of the Anisian GSSP, together with the first occurrence of *Stenopopanoceras transiens* Tozer, 1972.

Balini et al. (2024, 2026c) present a comparison of 1) the ammonoid record, 2) range of *Chiosella timorensis*, 3) conodont chronostratigraphy for the intervals with poor ammonoid records, and 4) magnetostratigraphy of the four most important sections (Chios, Dešli Caira, Kçira, Wantou) for the definition of the GSSP of the base of the Anisian. This integrated correlation chart demonstrates that the best and most complete chronostratigraphic record of the uppermost Olenekian-Aegean is the Dešli Caira section.

On the morning of May 29, the WG held a business meeting in Tulcea to discuss the results of the workshop and the plan going

forward. Members of the OAB WG Present: Marco Balini, Yan Chen, Zhong-Qiang Chen, Martyn Golding, Micha Horacek, Mark Hounslow, Leo Krystyn, Iuliana Lazăr, Spencer Lucas, Jim Ogg, and Sylvain Richoz. The summary of the discussions included:

1. Discussion of GSSP signals: The WG agreed to remove carbon isotopes and conodonts from consideration as primary signals of the OAB. They are now to be considered as secondary signals. Thus, only two possible primary signals are under consideration: a magnetochron boundary and an ammonite biotic event.

2. Deşli Caira section: (A) Develop a closer calibration of the older paleomag record of Gallet in Grădinaru et al. (2007), from the Deşli Caira section to the newly developing record of de Vries et al. (2026); (B) Further publication of ammonoids, ostracods, and microfacies analyses from Deşli Caira: in review or in press at about the end of 2026 and the beginning of 2027;

3. Wantou section: (A) Publication of the ammonites from the Wantou section; (B) Possible meeting in late 2026 to examine the Wantou section in China.

4. OAB WG next meetings by Zoom in 2026: (A) Early September—Mark Hounslow will present OAB magnetochronology, and the use of a magnetochron boundary as the primary signal will be discussed; (B) Early October—Spencer Lucas will present nonmarine correlation of the OAB; (C) Early December—Marco Balini will review OAB ammonite biostratigraphy, and the use of an ammonite biotic event as the primary signal will be discussed; (D) Spring 2027—the WG will vote on the signal and on the GSSP location!

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REFERENCES

- Atudorei, V., Baud, A., Crasquin, S., Galbrun, B., Grădinaru, E., Mirăuță, E., Maurice, R. & Zerrari, S. 1997. Extended scientific report of the Peri-Tethys project. In: Baud A. (ed.), *The Triassic of North Dobrogea*. Lausanne, Geological Museum: 64 pp.
- Balini, M., Lăcătuș, A., Grădinaru, E. & Lazăr, I. 2023. Towards the definition of the GSSP of the Anisian Stage (Middle Triassic): the ammonoid fauna of Deşli Caira section and its correlation with Chios (Greece) and Kçira (Albania). *The 14th Romanian Symposium on Palaeontology*, September 14-15, 2023, Abstract Book, pp. 21.
- Balini, M., Lăcătuș, A., Grădinaru, E. & Lazăr, I. 2024. Aegean ammonoids from the Anisian GSSP candidate section Deşli Caira (Northern Dobrogea, Romania). *Rivista Italiana di Paleontologia e Stratigrafia*, 130: 711-759. doi: 10.54103/2039-4942/24683.
- Balini, M., Horacek, M. & Lazăr, I. 2026a. Comment on "Detailed conodont data from the Olenekian–Anisian boundary interval of the GSSP candidate section at Deşli Caira, Romania" by Golding (2025). *Journal of Micropalaeontology*, 45: 27–31.
- Balini, M., Lăcătuș, A. & Jenks, J. 2026b. Revision of some Acrochordiceratidae from the Northern Humboldt Range, Deşli Caira and Chios sections and their bearing for the Spathian to Aegean chronostratigraphy and correlations. *The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook*, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 37-39.
- Balini, M., Horacek, M., Lazăr, I., Lăcătuș, A., Răuță, V., Stoica, M., de Vries, S., Mircescu, C.V. & Krijgsman, W. 2026c. Field Stop 4. Deşli Caira Hill, upper Olenekian-lower Anisian Hallstatt-type limestones in the central part of the Tulcea Unit. *The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook*, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 85-95.
- Baltres, A. 1976. Triassic, platform and basinal carbonate sedimentation in North Dobrogea. *International Colloquium on Carbonate Rocks and Evaporites, Romania, Guidebook 15*, Bucharest, pp. 43-54.
- Baltres, A. 2000. Explanation of the Deşli Caira lithostratigraphic log. In: Grădinaru, E. (ed.), *Workshop on the Lower-Middle Triassic (Olenekian-Anisian) boundary*, 7-10 June, Tulcea, Romania. Conference section, 80 p.
- Baltres, A. 2005. Unitățile litostratigrafice mezozoice, pre-Cenomaniene din Dobrogea de Nord (partea a II-a). *Studii Cercetări de Geologie, Geofizică, Geografie, seria Geologie*, pp. 35-60.
- Baltres, A., Mirăuță, E., Panin, N. & Ghenea, C. 2020. Geological Map Romania, Agighiol Sheet 135d, scale 1:50000, Geological Institute of Romania.
- Baud, A., Atudorei, V., Crasquin, S., Galbrun, B., Grădinaru, E., Mirăuță, E., Maurice, R. & Zerrari, S. 1997. Extended scientific report of the Peri-Tethys project, In: Baud A. (ed.) *The Triassic of North Dobrogea*, Lausanne, Geological Museum: 64 p.
- Bucur, I.I., Grădinaru, E., Lazăr, I., Pleș, G. & Mircescu, C.V. 2024. Dasycladalean algae from Middle-Upper Triassic limestones of North Dobrogea (SE Romania). *Micropaleontology*, 70 (5): 405–450. <https://doi.org/10.29041/70.5.01>
- Chen, Y., Jiang, H., Ogg, J. G., Zhang, Y., Gong, Y. & Yan, C. 2020. Early-Middle Triassic boundary interval: Integrated chemo-bio-magneto-stratigraphy of potential GSSPs for the base of the Anisian Stage in South China. *Earth and Planetary Science Letters*, 530: 115863.
- Chen, Y., Jiang, H.S., Ogg, J.G., Zhang, Y., Yan, C.B. & Lai, X.L. 2026a. Overview of the Early-Middle Triassic GSSP Candidate at Wantou, Guangxi, South China. *The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook*,

- Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 20-23.
- Chen, Y., Jiang, H.S., Ogg, J.G., Yan, C.B., Gong, Y.F. & Lai, X.L. 2026b. An updated of conodonts biostratigraphy at the Wantou Section (South China)– a potential Candidate of GSSP for Olenekian-Anisian Boundary. The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 27-30.
- Crasquin-Soleau, S. & Grădinaru, E. 1996, Early Anisian ostracode fauna from the Tulcea Unit (Cimmerian North Dobrogean Orogen, Romania). *Annales de Paléontologie (Vertébrés-Invertébrés)*, Paris, 82 (2): 59–116.
- Fernández López, S.R. 1984. Criterios elementales de reelaboración tafonómica en ammonites de la Cordillera Ibérica. *Acta Geológica Hispánica*: 105-116.
- Forel, M.B. & Grădinaru, E. 2021. A unique diversity hotspot for Polycopidae (Ostracoda) in the Triassic of North Dobrogea. *Historical Biology*, 34 (6): 995-1018. <https://doi.org/10.1080/08912963.2021.1959577>
- Gallet, Y., Besse, J. & Krystyn, L. 2007. Magnetostratigraphy In, Grădinaru E., Orchard M.J., Nicora A., Gallet Y., Besse J., Krystyn L., Sobolev E.S., Atudorei N.-V., Ivanova D., 2007. The Global Boundary Stratotype Section and Point (GSSP) for the base of the Anisian Stage: Deşli Caira Hill, North Dobrogea, Romania. *Albertiana*, 36: 54-71.
- Grădinaru, E. 2000. Introduction to the Triassic geology of North Dobrogea Orogene. In: Workshop on the Lower-Middle Triassic (Olenekian-Anisian) boundary, 7-10 June, Tulcea, Romania. Field Trip Section: 5-37.
- Grădinaru, E. 2022. The Olenekian-Anisian /Early-Middle Triassic boundary, and assessment of the potential of conodonts for chronostratigraphic calibration of Triassic timescale. *Acta Palaeontologica Romaniae*, 18 (2): 3-51. <https://doi.org/10.35463/j.apr.2022.02.01>.
- Grădinaru, E. & Ivanova, D. 2002. Foraminiferal biostratigraphy across the Olenekian-Anisian boundary in the Deşli Caira section (Northern Dobrogea, Romania): preliminary results. STS/IGCP 467 Field Meeting, Veszprém, Hungary, 5–8 September 2002: 10–11.
- Grădinaru, E. & Sobolev, E.S. 2006. Ammonoid and nautiloid biostratigraphy around the Olenekian-Anisian boundary in the Tethyan Triassic of North Dobrogea (Romania): correlation with the Boreal Triassic. In, Nakrem H.A. & Mørk A. (eds.), *Boreal Triassic 2006*, Longyearbyen, Svalbard, 16-19 August 2006. NGF Abstracts and Proceedings of the Geological Society of Norway, 3: 56-58.
- Grădinaru, E. & Gaetani, M. 2019. Upper Spathian to Bithynian (Lower to Middle Triassic) brachiopods from North Dobrogea (Romania). *Rivista Italiana di Paleontologia e Stratigrafia*, 125 (1): 91–123. 10.13130/2039-4942/11182
- Grădinaru, E., Kozur, H.W., Nicora, A. & Orchard, M.J. 2006. The *Chiosella timorensis* lineage and correlation of the ammonoids and conodonts around the base of the Anisian in the GSSP candidate at Deşli Caira (North Dobrogea, Romania). *Albertiana*, 34: 34-38.
- Grădinaru, E., Orchard, M.J., Nicora, A., Gallet, Y., Besse, J., Krystyn, L., Sobolev, E.S., Atudorei, N.V. & Ivanova, D. 2007. The Global Boundary Stratotype Section and Point (GSSP) for the base of the Anisian Stage: Deşli Caira Hill, North Dobrogea, Romania. *Albertiana*, 36: 54-71.
- Golding, M.L. 2021. Early Anisian (Middle Triassic) conodonts from Romania and China, with comments on their role in the recognition and correlation of the base of the Anisian. *Journal of Earth Science*, 32 (3): 573–591.
- Golding, M.L. 2023. New conodont data from the Olenekian-Anisian Boundary interval at the GSSP Candidate Section at Deşli Caira, Romania. 4th International Congress in Stratigraphy, Strati 2023, Book of Abstracts: 205 p.
- Golding, M.L. 2025. Detailed conodont data from the Olenekian-Anisian boundary interval of the GSSP candidate section at Deşli Caira, Romania, *Journal of Micropalaeontology*, 44: 365–380.
- Golding, M.L. 2026. On the suitability of a conodont proxy for the definition of the Olenekian-Anisian Boundary. The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 24.
- Horacek, M. & Grădinaru, E. 2023. The Spathian-Anisian (Lower-Middle Triassic) Boundary in the candidate GSSP section at Deşli Caira, Romania: Review of existing data, new findings, and comparison with other candidates. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 613: 111407.
- Horacek, M., Krystyn, L. & Onuzi, K. 2026a. Workshop and field trip on the Olenekian-Anisian Boundary at Kcira section (Northern Albania), 23-25 May, 2025. *Albertiana*, 50: 8- 14.
- Horacek, M., Krystyn, L. & Onuzi, K. 2026b. Comparison of the $\delta^{13}\text{C}$ curve of the Olenekian-Anisian Boundary interval from different sections (Romania, Albania, China). The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 46.
- Kittel, E. 1908. Beiträge zur Kenntnis der Triasbildungen der nordöstlichen Dobrudscha. *Denkschriften der Kaiserlichen Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Classe, Akademie der Wissenschaften*, 81: 447-532.
- Krystyn, L. & Horacek, M., 2026. The enigmatic type locality of *Chiosella timorensis* (Conodonts) in Timor Leste was an isolated block without stratal relevance for the definition of the Lower to Middle Triassic Boundary. The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 25-26.
- Lazăr I., Seghedi A., Balini M., Lăcătuş A., Horacek M., Răuţă V., Stoica M. (eds.) The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, 112 p.
- Lazăr, I., Balini, M., Lăcătuş, A., Răuţă, V., Mircescu, C.V.,

- Stoica, M. & Horacek, M. 2026. Carbonates microfacies across the Olenekian-Anisian Boundary in Deşli Caira section (North Dobrogea Orogen, Romania). The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 34-36.
- Lăcătuş (Ene), A.D., Balini, M. & Lazăr, I. 2026. Earliest Aegean ammonoids from the Anisian GSSP Candidate Section Deşli Caira (Middle Triassic Northern Dobrogea, Romania). The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook: 85-95, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 43-44.
- Lucas, S. G. 2026. Base of the Anisian (Middle Triassic)–the quest for a GSSP. The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 13-15.
- Mirăuţă, E. 1982. Biostratigraphy of the Triassic deposits in the Somova-Sarica Hill zone (North Dobrogea) with special regard on the eruption age. *Dări de Seamă ale Şedinţelor*. Institutul de Geologie şi Geofizică, Romania, 67 (4): 63-78.
- Mirăuţă, E. 2000. Conodonts biostratigraphy in the Desli Caira section. In, Grădinaru, E. (ed.) Workshop on the Lower-Middle Triassic (Olenekian-Anisian) boundary, 7-10 June, Tulcea, Romania. Field Trip Section, pp. 81-84.
- Mirăuţă, E., Gheorghian, D. & Bădiceanu, M. 1993. Données biostratigraphiques sur la Formation de Cataloi (Dobrogea de Nord, Roumanie). *Romanian Journal of Stratigraphy*, 75: 21-27.
- Orchard, M.J., Grădinaru, E. & Nicora A. 2007. A summary of the conodont succession around the Olenekian-Anisian Boundary at Deşli Caira, North Dobrogea, Romania. In, Lucas S.G. and Spielmann J.A. (eds.), *The Global Triassic*. New Mexico Museum of Natural History and Science Bulletin, 41: 341-346.
- Richoz, S. & Krystyn, L. 2026. Sedimentary development of the Olenekian-Anisian Boundary Interval along the Southern Margin of the Neotethys. The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 31-33.
- Savu, H. 1986. Triassic continental intra-plate volcanism in North Dobrogea. *Revue Roumaine de Géologie, Géophysique et Géographie*. Série de Géologie, 30: 21-29.
- Savu, H., Udrescu C. & Neacşu, V. 1980. Structural, petrological and genetic study of the ophiolites from the Niculiţel zone (North Dobrogea). *Dări de Seamă ale Şedinţelor*. Institutul de Geologie şi Geofizică, Romania, 65 (1): 41-64.
- Savu, H., Ghenea, C., Ghenea, A., Mirăuţă, E., Seghedi, A. & Panin, N. 1988. Geological map of Romania scale 1:50000, Niculiţel sheet. Geological Institute of Romania.
- Sebe, O.G., Crasquin, S. & Grădinaru, E. 2013. Early and Middle Anisian deep-water ostracods (Crustacea) from North Dobrogea (Romania). *Revue de Paléobiologie*, 32: 509–529.
- Seghedi, A. 2026. Triassic-Jurassic formations of North Dobrogea Orogen, an overview. In, Lazăr I., Seghedi A., Balini M., Lăcătuş A., Horacek M., Răuţă V., Stoica M. (eds.) *The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook: 85-95*, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 16-19; 51-74.
- Seghedi, I., Szakács, A. & Baltres, A. 1990. Relationships between sedimentary deposits and eruptive rocks in the Consul Unit (North Dobrogea) – Implications on tectonic interpretations. *Dări de Seamă ale Şedinţelor*. Institutul de Geologie şi Geofizică, 74 (5): 125-136.
- Simionescu, I. 1910. Studii geologice şi paleontologice din Dobrogea. III. Fauna triasică de la Deşli-Caira. *Academia Română, Publicaţiunile Fondului Vasile Adamachi, Bucureşti*, 4 (26): 465-486.
- Stoica, M., Daro, V., Lăcătuş, A., Răuţă, V., Lazăr, I. & Balini, M. 2026. Olenekian-Anisian ostracods from the GSSP candidate section Deşli Caira (North Dobrogea, Romania). The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 23
- Tozer, E.T. 1981. Triassic Ammonoidea: Classification, Evolution and Relationship, with Permian and Jurassic Forms. In, House M.R. & Senior J.R. (eds.) *The Ammonoidea*. The Systematic Association special volume, 18: 65-100, Academic Press.
- de Vries, S.O.M., Krijgsman, W., Balini, M., Stoica, M. & Lazăr, I. 2026. Reconstructing the magnetostratigraphy of the Deşli Caira section, Romania, 2026. The Olenekian-Anisian Boundary Field Workshop 2026, Romania, May 26th–29th, 2026 Abstracts and Field Trip Guidebook, Bucharest University Press, ISBN 978-606-16-687-472-4, pp. 41-42.