



## Annual Report\* of IGCP Project No.610

**\*NOTE: MAXIMUM LENGTH OF THE TEXT REPORT IS 5 (FIVE) PAGES (starting from question 1). SINGLE SPACE, 12 POINT FONT. REPORTS EXCEEDING THIS LENGTH WILL BE RETURNED TO THE AUTHOR(S) WITH THE REQUEST OF REDUCING THE TEXT TO THE ABOVE STANDARD.**

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**by 01/12/2016**

**A LIST OF PUBLICATIONS HAS TO BE ADDED AS AN ANNEX.**

**\*REMINDER: IF THIS IS THE FINAL YEAR OF YOUR PROJECT, PLEASE SUBMIT A REVIEW ARTICLE ABOUT YOUR PROJECT TO THE IUGS JOURNAL 'EPISODES'.**

The scientific information in this report will further be used for publication on the IGCP website hosted at UNESCO (please feel free to attach any additional information you may consider relevant to the assessment of your project).

**IGCP project short title: "From the Caspian to Mediterranean: Environmental Change and Human Response during the Quaternary"**

**Duration: 2013-2017**

**Please tick this box if the report is for a Project on extended term (OET)**

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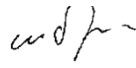

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**Date of submission of report: 5/12/2016**

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# ANNUAL REPORT

## 1. Website address(es) related to the project

<http://www.avalon-institute.org/IGCP610/index.php> – main

<http://www.geogr.msu.ru/science/projects/unesco/>

<http://www.geoecomar.ro/website/proiecte.html>

<https://www.facebook.com/groups/180481035443572/>

[http://vk.com/album115218532\\_181815723](http://vk.com/album115218532_181815723)

**2. Summary of major past achievements of the project.** Four years of IGCP 610 activity have been carried out in strict agreement with the Working Plan [[http://www.avalon-institute.org/IGCP610/work\\_plan.php](http://www.avalon-institute.org/IGCP610/work_plan.php)]. The one exception was the creation of the GIS-aided Interactive Data Base that was postponed until the end of the project. The following activities have been performed: (1) The First, Second, Third, and Fourth Plenary Conferences and Field Trips in Georgia (2013, 2016), Azerbaijan (2014), and Russia (2015). (2) Field work in various areas of the “CORRIDORS” enabled the collection of several hundred samples analyzed in different laboratories by various techniques. Without IGCP 610, no access and sampling of those geological sequences and artifacts would have been possible. (3) Summer schools for young researchers in Kalmykia (2014), Danube Delta on-board the floating laboratory boat “Halmyris” (2013-2016), and Turkmenistan (2015); (4) Winter youth expedition–field school in the Manych depression (2016); (4) Workshops in Sozopol (2013), Moscow (2014, 2015, 2016), Kirklareli (2014), and Ahtopol (2014). (5) Presentations of IGCP 610 activities during special sessions of large international fora: “Under the Sea: Archaeology and Palaeolandscapes” (Szczecin, Poland, 2013); “Recent Problems on Lithology of Sedimentary Basins of Ukraine and Adjacent Territories” (Kiev, Ukraine, 2014); “Geography and Geology at Higher School: the Modern State and Problems” (Odessa, Ukraine, 2014); the Markov Readings “Actual problems of the Pleistocene palaeogeography and stratigraphy” (Moscow, Russia, 2015); STRATI 2015 (Graz, Austria, 2015); GSA 2015 (Baltimore, USA, 2015); EGU General Assembly (Vienna, Austria, 2016); 35th International Geological Congress (Cape Town, South Africa, 2016). (6) Publications of Project results in special issues of an international scientific journal, e.g., “Stratigraphy and Sedimentology of Oil-Gas Basins,” *Quaternary International* (in press) as well as peer-reviewed Conference Proceedings (Tbilisi 2013, 183 pages), Baku (186 pages), Astrakhan (207 pages), Tbilisi (2016, 218 pages), and Field Trip Guides of the respective conferences (<http://www.avalon-institute.org/IGCP610/index.php>). (7) Disseminating the project events and activities via regular updating of Project websites, mailing list (about 1500 e-mail addresses), and social networks (Facebook and Вконтакте). (8) Linkage to a number of international projects (see 3.7 for more details).

**Scientific activities:** (1) in-depth study of the Quaternary stratotypes, archaeological monuments, and anthropological remains in countries surrounding the CORRIDORS; (2) finalizing the Reference List of main publications, a majority of which are published in Russian—their titles required transliteration and translation into English; (3) finalizing a data set on chronometric data, correlating the regional geochronological scales and establishing a general geochronological framework for correlating major events in human prehistory and history with global environmental changes; (4) establishing a reference collection of Mediterranean, Caspian, and Black Sea foraminifera (supplemented by SEM images); (5) establishing the reference collection of the Ponto-Caspian mollusks; (6) preparing a series of regional paleogeographic, tectonic, and geological maps; (7) establishing the reference collection of the Ponto-Caspian palynomorphs including NPP; (8) elaborating mathematical models for (a) the filling of the Black Sea basin by Mediterranean salt water during the Holocene, (b) the degradation of the Paratethys into the Caspian and Black Sea, (c) the evolution of the Akchagylian Sea area and coastline.

**Social benefits:** implementing cultural heritage projects, open-air site museums, training centers for conducting experimental research, working together with local Governmental and Non-

Governmental Organizations; enhancing understanding of the links between environmental change and human adaptation, promoting the wise use of the Earth as a human habitat, and preserving human heritage by addressing and clarifying existing questions about interlinks between human adaptive strategies and environmental changes.

### **3. Achievements of the project this year only.**

**3.1. General scientific achievements:** (1) complex multidisciplinary investigations of the deltaic systems of major Ponto-Caspian rivers Volga, Kuban, Don, and Danube in order to obtain new data on their evolution under climate and sea-level changes; (2) discovering ecological consequences of climate change and anthropogenic influence on ancient and recent humans; (3) determining the environmental sustainability of the Ponto-Caspian natural systems; (4) in depth study of the Khvalynian transgression of the Caspian Sea; (5) complex investigations of the of the Srednyaya Akhtuba reference section located in the Volgograd county with application of lithological, paleopedological, paleontological, paleocryological, OSL-dating, and paleomagnetic methods allowing a more fundamental approach to the chronological assessment of individual horizons; (6) in-depth study of the Lower Volga geological sequences Raygorod, Tsygan-Aman, and Seroglazovka; (7) field work in Turkmenistan; (dendrochronological investigations in Kazakhstan with the purpose of correlating climate changes with sea-level fluctuations in the Caspian Sea.

**3.2. List of IGCP project meetings/symposia and IGCP related meetings/symposia with exact attendance (if possible) and number of countries:** IGCP 610 Fourth Plenary Meeting and Field Trip in Tbilisi, Georgia, 2-9 October 2016, was attended by about 60 scientists from 9 countries, but not all of them were able to come, apparently due to understandable geopolitical reasons and absence of financial support. About 50% of the attendees were represented by young scientists and students, 70% of whom were female. IGCP 610 Special Technical Sessions were carried out at the EGU General Assembly (Vienna, Austria, 2016, 15 attendees from seven countries); 35th International Geological Congress (Cape Town, South Africa, 2016, 14 attendees from five countries); All-Russian Scientific Conference “Ways of Evolutionary Geography” (Moscow, Russia, 2016, 25 attendees from three countries).

**3.3. Educational, training, or capacity building activities related to the IGCP 610 project and IGCP project participants.** Summer field schools for young researchers were organized in the Danube Delta on-board the floating laboratory boat “Halmyris” (summer 2016, organizer N. Panin) and Turkmenistan (September 2016, organizer R. Kurbanov). Winter youth expedition–field school was organized in the Manych depression (January 27 – February 6, 2016, organizer T. Yanina). The main objective was to study the functional history of the Manych Passage during the Pleistocene and the relationship between the Caspian and Black seas during this epoch. Besides field research, an important part of this project was training students in the complex methods needed to study recent deposits and conduct paleogeographical reconstruction. The school was attended by 15 students, 3 teachers, and 3 employees from Lomonosov Moscow State University and the Institute of Geography of the Russian Academy of Sciences.

These fieldwork projects permitted the collection of several hundred samples that were treated in different laboratories by various techniques. Without IGCP 610, no access to, or sampling of, those geological sequences and artifacts would have been possible. **Involving** young researchers and students from Russia in organizing the Fourth Plenary Meeting and Field Trip to increase their experience, organizational skills, and abilities to cultivate traditions of “European style” scientific fora as well as scientific discussion and informal meetings. **Promoting** the preparation of MA (I. Mudryk, Ukraine; G. Oschepkov, N. Tkach, Russia), and PhD (N. Kerimova, Azerbaijan; O. Demchenko, T. Kondaryuk, E. Rohozin, Ukraine; H. Laermans, Germany) theses under the supervision of key IGCP 610 scientists. **Promoting** a multidisciplinary approach in paleoenvironmental studies that encourages students in geology and geography to take archaeological courses and *vice versa*, thus stimulating teachers of the universities participating in IGCP 610 to modify their CVs. **Enhancing** the direct contacts between western and eastern youth,

creating the background for better understanding of modern priorities in the developing world of science and humanities. **Exposing** the younger generation in developing countries to new analytical techniques and state-of-the-art data interpretation. **Teaching** the public about environmental evolution during the last climatic cycle and possible consequences of GCC anticipated to take full effect in this century. **Providing** consultation on stratigraphy, paleogeography, palynology, macro- and microfauna to interested parties from Ukraine, Russia, Azerbaijan, Turkey, Iran, and Georgia.

**3.4. List of countries involved in the project (please \*indicate the countries active this year (marked by asterisk):** Azerbaijan\*, Belgium, Bulgaria\*, Canada\*, China\*, Denmark\*, Georgia\*, Germany\*, Greece, France\*, Israel\*, Italy\*, Kazakhstan, Latvia, Romania\*, Russia\*, The Netherlands, Switzerland, Turkey\*, Taiwan\*, UK, Ukraine\*, and USA\*.

### 3.5. Participation of scientists from developing countries

	Total number of scientists	No of male scientists	No of female scientists
Number of participating scientists	250	130	120
Number of young scientists/students (<35 years old)	76	39	37
Number of scientists from developing countries	210	120	90

### 3.6. List of the 5 most important publications (including maps) of this year (publications marked by \* could not have been published without IGCP 610):

Arslanov, Kh.A., Yanina, T.A., Chepalyga, A.L., Svitoch, A.A., Makshaev, R.R., Maksimov, F.E., Chernov, S.B., Tertychniy, N.I., and Starikova, A.A. 2016. On the age of the Khvalynian deposits of the Caspian Sea coasts according to 14C and 230Th/234U methods. *Quaternary International* 409A: 81-87.

Esin, N.V., Yanko-Hombach, V., Esin, N.I. 2016. Evolutionary mechanisms of the Paratethys Sea and its separation into the Black Sea and Caspian Sea. *Quaternary International*. <http://dx.doi.org/10.1016/j.quaint.2016.06.019>

Kislov, A.V. 2016. The interpretation of secular Caspian Sea level records during the Holocene. *Quaternary International* 409: 39-43.

Yanko-Hombach, V. (also Yanko, V.). Editorial to IGCP 610 Special Volume of *Quaternary International* 409: 1-7.

Yanko-Hombach, V., Schnyukov, E., Pasyukov, A., Sorokin, V., Kuprin, P., Maslakov, N., Motnenko, I., Smyntyna, O. In Press. Late Pleistocene-Holocene Environmental Factors Defining the Azov-Black Sea Basin, and the Identification of Potential Sample Areas for Seabed Prehistoric Site Prospecting and Landscape Exploration on the Black Sea Continental Shelf // Chapter 16 in: *Quaternary Palaeoenvironments of the European Continental Shelf: Environments for occupation and conditions for survival or destruction of submerged prehistoric deposits*, Flemming F., Harff J., Moura D. (eds.). Chichester, UK: Wiley-Blackwell.

### Full bibliography of this year (publications marked by \* could not have been published without IGCP 610). See Annex 1.

**3.7. Activities involving other IGCP projects, UNESCO, IUGS or others:** EU-ITN programme "Drivers of Pontocaspian biodiversity rise and demise"; ISCH COST Action IS1403 Oceans Past Platform (OPP); CA COST Action CA15103 "Uncovering the Mediterranean salt giant (MEDSALT)"; EU-WAPCOAST BS-ERA.NET 076 "Water Pollution Prevention Options for Coastal Zones and Tourist Areas: Application to the Danube Delta Front Area"; ICOMOS - The International Council on Monuments and Sites; COCONET "Towards COast to COast NETworks of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential," SPLASHCOS "Submerged Prehistoric Archaeology and Landscapes of the Continental Shelf"; "Study of the formation processes and spatial distribution of methane in the Black Sea and theoretical considerations of their influence on basin eco- and geosystems,"

supported by the Ministry of Education and Science of Ukraine; and “Paleogeographical evolution of the Gulf of Taman with special regard to the underwater excavations in Phanagoria” funded by the University of Cologne and Russian Foundation for Basic Research (RFBR); and a series of projects supported by RFBR: № 14-05-00227 "Environmental evolution of the Caspian and Black Sea under the multiscale changes of climate", № 13-05-00086 “Pont-Manych-Caspian oceanographic system in the late Pleistocene: Systematics and correlation of events, evaluation of character and degree of interaction, paleogeographic consequences in the region”, № 13-05-00242 “Radioisotope stratification of age and synchronization of the Quaternary deposits of the Ponto-Caspian”, № 13-05-00625 “Peculiarities of the evolution of relief in the Northern Caspian region in the late Pleistocene: Main stages of the development, chronology, and correlation with climatic rhythms in the Black Sea-Caspian region”, № 14-05-00227 “Regularities of evolution of environment of the Caspian Sea and the Black Sea in the conditions of multi-scale climate changes.”

**3.8. Scientific Legacy:** We plan to upload a series of presentations and publications related to IGCP 610 at the main project website. The field data (e.g., field diaries, samples, maps, etc.), collections of MFO and cores are stored at the laboratories of Co-Leaders’ institutions and are available for study by IGCP 610 participants.

**3.9. What tangible improvements has your project obtained?** IGCP 610 activity has encouraged East-West dialogue by integrating eastern and western scientists into an international R&D community through scientific collaboration, workshops, and annual meetings. As a result, eastern scientists have obtained access to western laboratories and advanced scientific methods while western scientists have had access to a vast amount of material stored in the former USSR and Eastern Bloc archives or published in local languages.

**3.10. What kinds of activities in respect to the benefit of society and science outreach has your project undertaken?** Implementing cultural heritage projects, open-air site museums, training centers for school children with the possibility of conducting experimental research; working together with local Governmental and Non-Governmental Organizations across the Caspian-Black Sea-Mediterranean Corridors that we study as a single geographic unit, bypassing linguistic and political boundaries, and thus encouraging East-West dialogue, cooperation, and integration of researchers from different countries into the international R&D community; enhancing our understanding of the links between environmental change and human adaptation; contributing to an improvement in human living conditions (especially for those at risk from coastal flooding), and promoting the wise use of the Earth as a human habitat; and preserving human heritage by addressing and clarifying existing archaeological, ethnological, and paleoanthropological questions concerning the evolution of human subsistence strategies, social and ideological spheres in the light of environmental change, and human physical and cultural adaptation theory.

**3.11. What kind of public information (media reports, etc) has your project generated?** The project was highlighted at the First National television channel of Georgia and GNAS website (<http://science.org.ge/newsite>) where letters of gratitude from conference participants are uploaded. It generated much public information showing a significant impact by IGCP 610’s most recent activities.

**4. Activities planned.** **4.1. General goals:** 1) Efforts are ongoing: to maximize IGCP 610’s exposure via diffusion of results in key international journals and updates of our web pages to ensure wide accessibility and increased interactive potential for project participants, the scientific community at large, relevant agencies, and the public; to consolidate scientific achievements as a basis for developing future strategies; to continue to augment the funding base with upcoming and submitted research proposals through various funding agencies; to publish the next special volume of *Quaternary International* devoted to the achievements of IGCP 610. **4.2. Tentative list of specific meetings and field trips (please list the participating countries):** The Fifth Plenary Meeting and Field

Trip will be held at the “Dipartimento di Scienze della Terra e del Mare,” University of Palermo, Italy on 1-9 October 2017. The field trips will be focused on the study of GSSP outcrops, such as Eraclea Minoa (upper Evaporites, Messinian/Zanclean GSSP boundary), Capo Rossello (astronomical tuning of the Zanclean/Piacenzian/Gelasian outcrops, climate changes during the Plio/Pleistocene; visit to Scala dei Turchi and Punta Piccola sections, Zanclean/Piacenzian GSSP boundary); Monte San Nicola Gela (near Butera, Piacenzian/Gelasian GSSP boundary), and GSSP for Calabrian Stage - the Vrica Section.

**Other meetings** include: Special session “From the Mediterranean to the Caspian: palaeoclimate variability, environmental responses and human” will be held in the framework of the 5th PAGES OSM congress in Zaragoza, Spain on 9-13 May 2017. Co-Convener: V. Yanko-Hombach.

**5. Project funding requested:** For the year 2017, we request 10,000 USD, if possible. The conference will be held in the EU country (Italy) where prices for everything are much higher compared to those in developing countries (Georgia, Azerbaijan, Russia) where IGCP 610 conferences were carried out so far. The funds we request are needed to cover travel costs and accommodations for participants from developing countries as well as part coverage of costs for the field trip (transportation, accommodation, preparation of geological and archaeological sites for demonstration and study).

**6. Request for extension, on-extended-term-status, or intention to propose successor project:** N/A

**7. Financial statement (\$ USD only):** In 2016, we obtained 3500 USD from IGCP. The funds were used exclusively to cover registration fees as well as airfare and accommodation for a number of young researchers and students from developing countries (see Financial Report).

**8. What additional funding besides the IGCP seed funding has your project obtained thanks to the IGCP label?** Please estimate the budget received for meetings, research or other and identify the source. In the year 2016, additional funding that the IGCP 610 project obtained thanks to the IGCP label include: 5000 USD from the Avalon Institute of Applied Sciences, Canada; 7,000 USD from the Russian Foundation for Basic Research (RFBR) to cover participation of Russian scientists from Moscow State University in the Fourth Plenary Conference in Tbilisi as well as for per-conference field work; 3000 USD from the Georgian Academy of Sciences (in-kind); 1000 USD from EGU for participation in the IGCP 610 session at EGU-2016 in Vienna; and 1000 USD from sponsor to cover transportation costs and printing of the Proceedings ([http://www.avalon-institute.org/IGCP610/pdf/Proceedings\\_IGCP\\_610\\_2016.pdf](http://www.avalon-institute.org/IGCP610/pdf/Proceedings_IGCP_610_2016.pdf)) and the Field Trip Guide ([http://www.avalon-institute.org/IGCP610/pdf/Field\\_Trip\\_Guide\\_IGCP\\_610\\_2016.pdf](http://www.avalon-institute.org/IGCP610/pdf/Field_Trip_Guide_IGCP_610_2016.pdf))—in total 20,500 USD. Moreover, other scientific activities, including the summer and winter schools have been supported from other sources—National Research Programme, European Programmes (Environmental Fund, Cross-border, Regional, Structural, etc.) as well as RFBR. We believe in total it was about 30,000 USD plus very moderate (3500 USD) from IGCP.

**9. Attach any information you may consider relevant.** The paper we planned for the IUGS Journal ‘EPISODES’ is postponed to the final year of our project.

## Annex 1.

### List of selected publications (in per-reviewed journals) related to IGCP 610 published in 2015 (publications marked by \* could not have been published without project):

1. Adamia, Sh., Alania, V., Tsereteli, N., Varazanashvili, O., Sadradze, N., Lursmanashvili, N., and Gventsadze, A. In press. Post-collisional tectonics and seismicity of Georgia. In *Tectonic Evolution and Seismicity of South-West Asia*. Geological Society of America (GSA) Special Paper.
2. Alania, V., Chabukiani, A., Chagelishvili, R., Enukidze, O., Gogrichiani, K., Razmadze, A., and Tsereteli, N. 2016. Growth structures, piggyback basins and growth strata of the Georgian part of the Kura foreland fold-thrust belt: implications for late Alpine kinematic evolution. In M. Sosson, R. Stephenson, and Sh. Adamia (eds.), *Tectonic Evolution of the Eastern Black Sea and Caucasus*. Geological Society of London, Special Publications no. 428, first published on October 27, 2015, doi:10.1144/SP428.5.
3. Aparin, B.F., Babikov, B.V., Kasatkina, G.A., and Sukhacheva, E.Yu. 2016. Forestry of Lisino as the unique testing area for the soil and ecologic monitoring. *Biulleten' pochvennogo institute im. V.V. Dokuchaeva* 83: 154-155. (In Russian)
4. \*Arslanov, Kh.A., Yanina, T.A., Chepalyga, A.L., Svitoch, A.A., Makshaev, R.R., Maksimov, F.E., Chernov, S.B., Tertychniy, N.I., and Starikova, A.A. 2016. On the age of the Khvalynian deposits of the Caspian Sea coasts according to <sup>14</sup>C and <sup>230</sup>Th/<sup>234</sup>U methods. *Quaternary International* 409A: 81-87.
5. \*Bezrodnykh, Y.P., and Sorokin, V.M., 2016. On the age of the Mangyshlakian deposits of the northern Caspian Sea. *Quaternary Research* 85(2): 245-254.
6. \*Bolikhovskaya, N.S., Faustova, S.S., and Markova, A.K. 2016. Pleistocene climatic stratigraphy and environments of the Terek-Kuma Lowland (NW Caspian sea region) inferred from palynological, paleomagnetic and rodent records of the long Otkaznoye sediment sequence. *Quaternary International* 409, Part A: 16–32.
7. \*Esin, N.V., Esin, N.I., and Yanko-Hombach, V. 2016. The Black Sea basin filling by the Mediterranean salt water during the Holocene. *Quaternary International* 409A: 33-38.
8. \*Esin, N.V., Yanko-Hombach, V., Esin, N.I. 2016. Evolutionary mechanisms of the Paratethys Sea and its separation into the Black Sea and Caspian Sea. *Quaternary International*. <http://dx.doi.org/10.1016/j.quaint.2016.06.019>
9. \*Kislov, A.V. 2016. The interpretation of secular Caspian Sea level records during the Holocene. *Quaternary International* 409, Part A: 39-43.
10. \*Konstantinov, E.A., Velichko, A.A., Kurbanov, R.N., and Zakharov A.L. 2016. Middle to Late Pleistocene topography evolution of the North-Eastern Azov region. *Quaternary International* 409, Part A: 1-13.
11. \*Makshaev, R.R., and Svitoch, A.A. 2016. Chocolate clays of the Northern Caspian Sea region: Distribution, structure, and origin. *Quaternary International* 409A: 44–49.
12. \*Naidina, O.D., and Richards, K. 2016. Pollen evidence for Plio-Pleistocene vegetation and climate change in the North Caucasus, North-Western Caspian region. *Quaternary International* 409, Part A: 50-60.
13. Okrostsvaridze, A., Elashvili, M., Popkhadze, N., and Kirkitadze, G. 2016. New Data on Geological Structure of the Vardzia Cave City. *Georgia. Bull. Georg. Natl. Acad. Sciences*. In press.
14. \*Okrostsvaridze, A., Gagnidze, N., and Akimidze, K. 2016. A modern field investigation of the mythical “gold sands” of the ancient Colchis Kingdom and “Golden Fleece” phenomena. *Quaternary International* 409, Part A: 61-69.
15. \*Svitoch, A.A., Badyukova, E.N., Yanina, T.A., and Sheikhi, B. 2016. Biostratigraphy of the Marine Holocene on the Iranian coasts of the Caspian Sea. *Quaternary International* 409, Part A: 8-15.
16. \*Svitoch A.A. Regressive Periods of the Great Caspian. 2016. *Water Resources* 43(2): 270–282.



17. Tudryn, A., Leroy, S.A.G., Toucanne, S., Gibert-Brunet, G., Tucholka, P., Lavrushin, Y.A., Dufaure, O., Miska, S., and Bayon, G. 2016. The Ponto-Caspian basin as a final trap for southeastern Scandinavian Ice-Sheet meltwater. *Quaternary Science Reviews* 148: 29–43.
18. \*Voskresenskaya, E., and Vyshkvarkova, E. 2016. Extreme precipitation over the Crimean peninsula. *Quaternary International* 409, Part A: 75-80.
19. Voskresenskaya, E., Bardin, M., and Kovalenko, O. 2016. Climate variability of winter anticyclones in the Mediterranean-Black Sea region. *Quaternary International* 409, Part A: 70-74.
20. Yanko-Hombach, V. (also Yanko, V.), Kondariuk, T. (also Kondaryuk, T.), and Motnenko, I. In press. Benthic foraminifera indicate environmental stress from river discharge to marine ecosystems: example from the Black Sea. *Journal Foraminiferal Research*.
21. \*Yanko-Hombach, V. (also Yanko, V.). Editorial to IGCP 610 Special Volume of *Quaternary International* 409: 1-7.
22. \*Yanko-Hombach, V., Schnyukov, E., Pasyukov, A., Sorokin, V., Kuprin, P., Maslakov, N., Motnenko, I., Smytyna, O. In Press. Late Pleistocene-Holocene Environmental Factors Defining the Azov-Black Sea Basin, and the Identification of Potential Sample Areas for Seabed Prehistoric Site Prospecting and Landscape Exploration on the Black Sea Continental Shelf // Chapter 16 in: *Quaternary Palaeoenvironments of the European Continental Shelf: Environments for occupation and conditions for survival or destruction of submerged prehistoric deposits*, Flemming, F., Harff, J., and Moura, D. (eds.). Chichester, UK: Wiley-Blackwell.

**List of selected conference materials/abstracts presented at IGCP 610 other meetings related to the project (abstracts marked by \* could not have been published without project):**

1. \*Çagatay, M. N. 2016. Environmental changes in NW Anatolia and Eastern Europe during last glacial-Holocene period recorded in Sea of Marmara sediments. EGU General Assembly 2016, held 17-22 April, 2016 in Vienna Austria, p. 1572.
2. \*Kislov, A. 2016. On the interpretation of millennium-scale level variations of the Black Sea during the first quarter of the Holocene. EGU General Assembly 2016, held 17-22 April, 2016 in Vienna Austria, p. 5630.
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