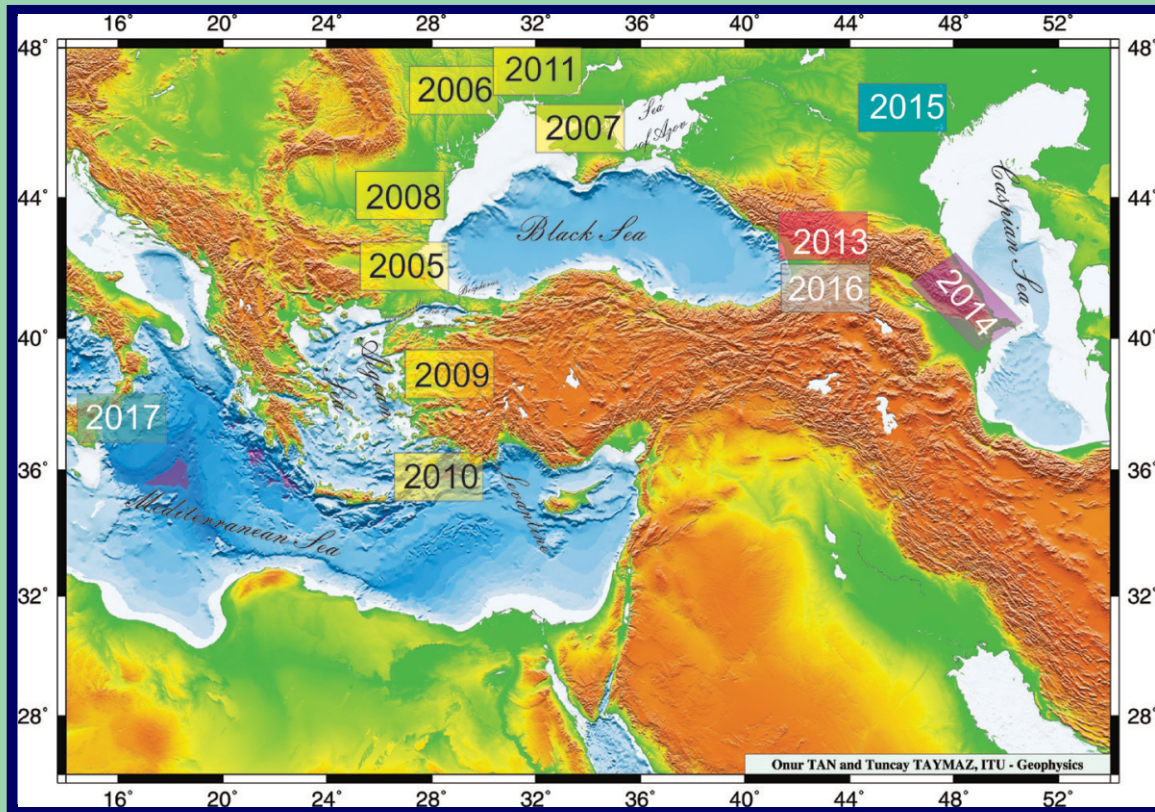




**Istanbul University-Cerrahpaşa
Department of Geology
Faculty of Engineering
Turkey
October 14-21, 2018**



INTERNATIONAL GEOSCIENCE PROGRAMME



PROCEEDINGS

**IGCP 610 “From the Caspian to Mediterranean:
Environmental Change and Human Response during the
Quaternary” (2013 - 2018)**

**INQUA IFG POCAS “Ponto-Caspian Stratigraphy and
Geochronology” (2017-2020)**



Joint Plenary Conference and Field Trip of IGCP 610 and INQUA IFG POCAS October 14-21, 2019, Antalya, Turkey

PROCEEDINGS

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**“From the Caspian to Mediterranean:
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(2013 - 2017)**

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**INQUA IFG POCAS Second Plenary
Meeting**

**“Ponto-Caspian Stratigraphy and
Geochronology”
(2017-2020)**

Istanbul ◆ Doküman Evi, Avcılar ◆ 2018

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AIMS AND SCOPE

The meetings of IGCP 610 and INQUA Focus Group POCAS (SACCOM 1709F) are carried out jointly in order to bring the international communities of both projects together to solve a number of contentious issues involving stratigraphy, geochronology, geological history, archaeology, and anthropology of the Caspian-Black Sea-Mediterranean Corridor [“CORRIDOR”].

The main goal of the IGCP 610 Project is to provide cross-disciplinary and cross-regional correlation of geological, archaeological, environmental, and anthropological records in order to (a) explore interrelationships between environmental change and human adaptation during the Quaternary, (b) create a networking and capacity-building structure to develop new interdisciplinary research initiatives, and (c) provide guidance to heritage professionals, policy makers, and the wider public on the relevance of studying the “CORRIDOR” for a deeper understanding of Eurasian history, environmental changes and their relevance, as well as past and future impacts on humans.

The main goal of the INQUA Focus Group POCAS created within the INQUA SACCOM for the term 2017-2020 is to study the geology of the Ponto-Caspian region during the Quaternary. The main activities of POCAS are oriented toward solving existing contradictions employing, if needed, new work in the field via a wide range of multidisciplinary scientists and modern research methods and equipment.

The “CORRIDOR” is perfectly suited for these purposes. (1) It encompasses the large chain of intercontinental basins—the Caspian, Black (together called Ponto-Caspian), Marmara, Aegean, and Eastern Mediterranean (Levantine) seas—with their connecting straits and coasts. Here, sea-level changes are clearly expressed due to geographical location and semi-isolation from the World Ocean, which makes the “CORRIDOR” a paleoenvironmental amplifier and a sensitive recorder of climatic events. Periodic connection/isolation of the basins during the Quaternary predetermined their specific environmental conditions and particular hydrologic regimes, and thus, the area, and especially the Ponto-Caspian, represents a “natural laboratory” to study the responses of semi-isolated and isolated basins to GCC. (2) It has rich sedimentary and geomorphologic archives that document past environmental changes. (3) It has a substantial archaeological, anthropological, and historical record. (4) It is easily accessible for study.

To achieve the main goal and objectives, the Projects incorporate six dimensions, each addressed by integrating existing data and testing of hypotheses: 1. The geological dimension examines the sedimentary record of vertical sea-level fluctuations and lateral coastline change. 2. The paleoenvironmental dimension integrates paleontological, palynological, and sedimentological records to reconstruct paleolandscapes. 3. The archaeological dimension investigates cultural remains. 4. The paleoanthropological dimension studies responses of different Homo species to environmental change. 5. The mathematical dimension provides GIS-aided mathematical modeling of climate and sea-level changes, and human dispersal linked to paleo-environmental variation that can be meaningfully compared with current global changes. 6. The geo-information dimension grasps the "big picture" of geoarchaeological events over the duration of the Quaternary. Particular attention will be given to synthesizing the wealth of literature published in local languages, stored in archives, and largely unknown or ignored in the West.

Study sites include the Caspian, Azov-Black Sea, Marmara, Eastern and Western Mediterranean. These sites are characterized by rich sedimentary, geomorphological, archaeological, paleoanthropological, and historical records providing a superb opportunity to assess the influence of climate and sea-level change on human development.

So far, five IGCP 610 Plenary Conferences and Field Trips were carried out in the following regions: 2013 – Western Georgia; 2014 – Azerbaijan; 2015 – Russia (Northern Caspian); 2016 – Eastern Georgia (Inner Kartli and Kakheti regions); 2017 – Palermo, Italy.

The final (Sixth) conference and Field Trip of IGCP 610 will be carried out together with the Second Conference and Field Trip of INQUA Focus Group POCAS in Antalya, Turkey (Mediterranean region) in 2018 (Fig. 1).

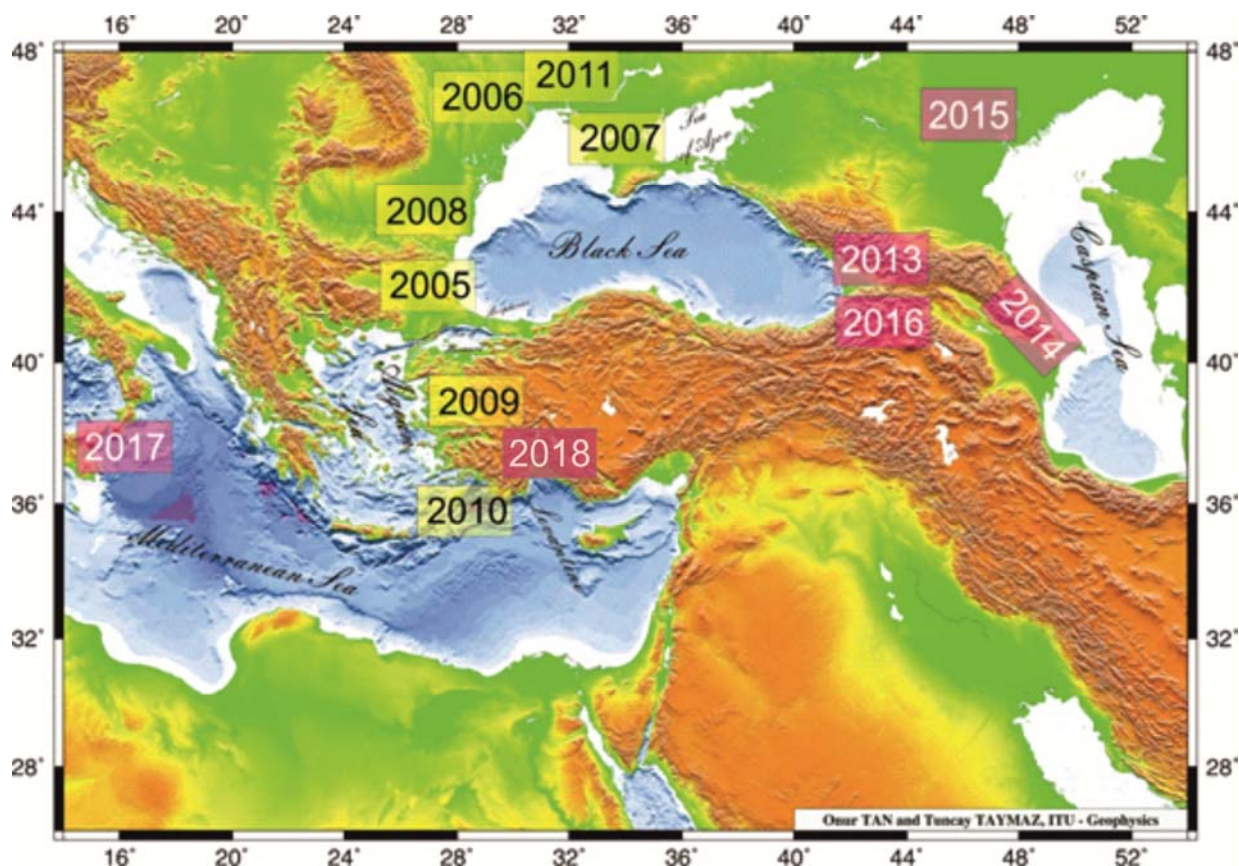


Figure 1. The Caspian-Black Sea-Mediterranean “CORRIDOR”: in yellow are the locations of IGCP 521-INQUA 501 meeting and field trip sites (2005-2011); in other colors are sites studied by the ongoing IGCP 601 Project: 2013 – Tbilisi, Western Georgia; 2014 – Baku, Azerbaijan; 2015 – Astrakhan’ (Volga Delta), Russia; 2016 – Tbilisi, Eastern Georgia; 2017 – Palermo, Italy; **2018 – Antalya, Turkey.**

The Field Trips are focused on observation of geological characteristics of Quaternary and Pliocene stratotypes as well as key archaeological and paleontological sites. All of them are easily accessible for further study and cooperative investigations in various laboratories around the world.

The Sixth Plenary Meeting and Field Trip of IGCP 610 and the Second Meeting of POCAS will focus on the late Miocene-Plio/Pleistocene geological history of the eastern Mediterranean of southern Turkey along the central Taurid Mountains. This subject is very important in shedding light and achieving a better understanding of tectonic-climatic interactions during the Plio/Quaternary period in this region.

The meeting and related activities will be held in world-popular Mediterranean coastal setting of Antalya Province located in the Active Alpine Mountain Belt, Turkey. The meeting and accommodation will be in Antalya. The meeting will be held in a centrally located a resort hotel suggested for accommodation (4 stars, <http://www.thecornerpark.com/>) on the world famous Konyaalti Beach setting of the Antalya Metropolitan Municipality (<http://www.antalya.bel.tr/?l=en>). This site offers a magnificent sea view, mountain view and city view all together.

The two days of the Conference will be devoted to oral presentations and posters, and four days will be devoted to geological field trips that focus on the field outcrops of the Miocene, Plio-Quaternary and archeological periods.

It is expected that meeting will bring together multidisciplinary scientists from all over the world to enhance the West-East scientific dialogue and provide a foundation for collaboration on correlation and integration of subjects covered by the conference as previous IGCP 610, IGCP 521, and INQUA 0501 meetings have done.

The meeting will cover eight days in total. Two days (15-16 October) will be spent in Plenary Sessions, and four days (17-20 October) will be dedicated to the Field Trips.

WELCOME

On behalf of the Organizing and Executive Committees as well as the University of Palermo, Italy, and Avalon Institute of Applied Science, Canada, we are delighted to welcome you to the Joint Meeting and Field Trip of IGCP 610 and INQUA POCAS Focus Group that will be held in Antalya, Turkey, on October 14-21, 2018.

It is expected that the joint conference will bring together multidisciplinary scientists from all over the world and in the process enhance West-East scientific dialogue by providing a supportive background for collaboration regarding the correlation and integration of discoveries on the influence of climatically/tectonically induced sea-level changes and coastline migration on humanity. This is an area of strategic importance not only for all coastal countries but also for at least 17 other countries sharing a drainage basin that is one-third the size of the European continent.

The Joint Meeting has been organized and sponsored by the University of Istanbul, Turkey, and Avalon Institute of Applied Science, Winnipeg, Canada.

We are happy to welcome to Turkey distinguished specialists and students in the Humanities, Earth, and Life Sciences from countries around the world.

We wish you a very pleasant stay in Italy.

Sincerely,
Organizing and Executive Committees

VENUE

Antalya is a city and Mediterranean Sea port in southwestern Turkey (Fig. 2).



Figure 2. View of Antalya city.

It is situated on the Gulf of Antalya. This area has been inhabited since the earliest times. Evidence of human habitation dating back to the early Paleolithic age (150,000-200,000) years has been discovered in the Karain cave, 30 km (19 mi) of the north of Antalya city. Other artifacts dating back to the Mesolithic (Beldibi Cave), Neolithic Bademağacı Höyüğü and more recent periods show that the area has been populated by various civilizations throughout the ages.

Records from the Hittite period refer to the area as part of the "Lukka Lands" (from which "Lycia" is derived) and document the lively interaction going on between provinces in the second millennium BC. Like their descendants, the Lukkans or Lycians were known for their seamanship and demonstrated a fiery independent spirit. Neither the Hittites, nor the Kingdom of Arzawa on the west coast, could ever keep them at peace for long. There are also tales of the migration of the Akha clan to the area after the Trojan war.

The western parts of the gulf was in Lycia, the east in Pamphylia. Antalya was part of the Lydian Kingdom from the 7th century BC until Lydia was defeated by the Persians during the battle of Sardis in 546 BC. The Macedonian commander Alexander the Great ended Persian rule and in around 334 BC conquered the cities of the area one by one—except for Termessos and Sillyon which managed to repulse his armies in 333 BC.

Ancient city, Attalia, was founded as a seaport in the 2nd century BCE by Attalus II Philadelphus, a king of Pergamum. It was bequeathed to the Romans by his successor, Attalus III Philometor Euergetes. The "Hadrian Gate," a marble portal of three identical arches, was built to commemorate a visit by the emperor Hadrian in 130 CE. St. Paul, the Apostle, and St. Barnabas embarked from the seaport on their evangelical mission to Antioch.

During the mid-Byzantine era (the 5th and 6th centuries), the city of Antalya grew beyond the city walls. It was a Byzantine stronghold and an important embarkation point for troops going to Palestine during the Crusades. The army of Louis VII sailed from Antalya for Syria in 1148, and the fleet of Richard I of England rallied here before the conquest of Cyprus.

The area was conquered by the Seljuk Turks and recaptured by the Byzantines again and again from 1076 onwards. It was captured by the Turkish Seljuk ruler Kay-Khusraw in 1207 and soon became the most important town and port of the region. At one stage Turkish lord Kiliç Arslan had a palace here. In 1220 Byzantine rule ended for the last time. A town to the east of the city called Alanya (Alaiye), name given by the Seljuk ruler Alaeddin Keyqubad I, also grew and thrived during 13th century in the Seljuk period.

Although it was first occupied by the Ottoman sultan Bayezid I in 1391, its incorporation into the Ottoman Empire was delayed until the late 15th century because of the disruption caused by the invasion of Timur (Tamerlane). Antalya was also occupied by the Kingdom of Cyprus between 1361 and 1373. The area passed through many hands before its final occupation by the Ottoman Empire under Murad II in 1432. Ottoman rule of the coast persisted until the end of the First World War, when Antalya was briefly occupied by Italian troops in the tripartite agreement of 1917 for the postwar division of the Ottoman Empire before becoming part of the Republic of Turkey in 1921.

Antalya is one Turkey's principal holiday resorts in the Mediterranean region. It is an attractive city with shady palm-lined boulevards, a prize-winning marina on the Mediterranean. In the picturesque old quarter, Kaleici, narrow winding streets and old wooden houses abut the ancient city walls. Lately, many foreigners have bought and continue to buy property in and around Antalya for their holidays or for the retirement. It became a popular area especially for the German and Russian nationals. During the winter months its population is around two million, but in the summer times it doubles.

It is possible to find all of the world cuisine in touristic hotels and restaurants. However, local meals special to the region are well-known such as Saç kavurması (dried lamb fried on iron plate), Tandır kebabı (Tandoor kebab), Kölle (stewed wheat, bean, pea and horsebean), and Hibeş (spread of tahin, cumin, red pepper flakes and lemon juice).

There are many sites of historical and archaeological interest all over Antalya Province (Fig. 8). They include the Pisidian city of Ariassos along the Antalya-Burdur highway; Olympos and Rhodiapolis in the district of Kumluca; Andriake, Antiphellos, Apallai, Myra, Phellos in the district of Kale; Apollonia, Hysa, Ilysa, Istloda, Teimiusa in the district of Üçağız (SW Antalya); Idyros, Chimaera (burning stone) and the Lycian city of Phaselis in the district of Kemer; The church of Saint Nicholas in Demre.

Xanthos-Letoon, listed in World Heritage list of UNESCO, is a remarkable archaeological complex, representing the most unique extant architectural example of the ancient Lycian Civilization. It was one of the most important cultures of the Iron Age in Anatolia. The inscriptions engraved in rock or on huge stone pillars on the site are crucial for a better understanding of the history of the Lycian people and their Indo-European language.

There are also many beautiful natural-cultural sites to visit in Antalya .

Düden Waterfall is one of the natural beauties that symbolizes the city is located approximately 10 km northeast of Antalya city centre. Lower part of Düden Waterfall is on the road to Lara Beach. It is on the southeast of city centre and floods from 40 metre high cliffs.

Kurşunlu Waterfall is on 7th km after the turning point to Isparta road. The waterfall is inside of the deep green valley.

Lara-Konyaalti Beaches: The Lara beach which is approximately 10 km east of Antalya city centre and the Konyaalti beach which is on the west coast of city centre are the best coasts of the city.

Yivli Minaret: First Turkish monument in Antalya according to the epigraph on the monument. It was built in the reign of Anatolian Seljukian Sultan Alaeddin Keykubat (1219 - 1236). Its brick laid body consists of 8 semicylinders. It was built by an architect named Tavaşi Balaban in the period of a Turkish principality, Hamitoğulları.

More information about Antalya and its surroundings is available at the following website:

<https://www.antalya.bel.tr/?l=en>

<https://en.wikipedia.org/wiki/Antalya>

ACKNOWLEDGMENTS

We gratefully acknowledge the support and hospitality of the Turkish organizers, the Istanbul University, for hosting the Joint Meeting and Field Trip of IGCP 610 and INQUA POCAS Focus Group. Support has also been received from the Avalon Institute of Applied Science, Canada.

We are indebted also to Prof. Dr. Hayrettin KORAL, the President and the Chairman of the Organizing Committee of the Conference, for the extraordinary efforts in organizing the conference and field trips. Particular appreciation is extended to Hakan ÖNİZ, Turkey Yildirim GÜNGÖR, Turkey for arranging the Field Trips and preparing the Field Trip Guide.

Furthermore, we are also very grateful to Duygu İŞBİL, Turkey, the Executive Secretary of the Conference.

We gratefully recognize the assistance of Prof. Allan GILBERT together with Prof. Dr. Valentina YANKO-HOMBACH for editing and layout of the Conference Proceedings.

To the Scientific Committee, we offer sincere thanks for evaluating submissions and managing the abstract review process. The Scientific Committee, in turn, wishes to thank the anonymous reviewers for their efforts in providing useful comments on submitted papers.

For her prompt action, we extend our appreciation to the Project and website administrator Dr. Irena MOTNENKO.

*Prof. Dr. Valentina Yanko-Hombach
Co-Leader of IGCP 610 and INQUA POCAS Focus Group
Executive Director of the Joint Meeting*