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Review

"Dr. Fawaz Azki" Geological Museum, Kismin - Lattakia, Syria: Research Habitation of Geology and Paleontology, and the Creation of A Geo-Archaeo-Tourism, Worldwide

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Abstract: "Dr. Fawaz Azki" Geological Museum is located in Kismin Village - Lattakia District, Lattakia Guvernorate - Syria. It is the only museum of its kind in the Syrian Arab Republic and the first museum of geology established in the Middle East. There is on the UNESCO list and Google Earth. This paper is a description of the museum, and an overview of the scientific and geo-archaeo-touristic activities carried out under it, from its creation until today (2017).

Keywords: Geological museum, Scientific research, Geo-archaeo-tourism, Kismin-Lattakia, Syria.

INTRODUCTION

Lattakia is one geographical region located in Middle East, Asia and on the eastern coast of the Mediterranean Sea. This region is distinguished by spectacular landscape beauty and are characterized by rich and diverse assemblage, with many rare, endemic, relict species specific to the Western Arabian Province. Its particular scientific significance also is derived from its geological, geomorphologic, and paleontological characteristics (Al-Azki, 2003, 2006, 2007, 2010-2011a, b, 2012d).

In this geographical region, Kismin Village is located in the north-eastern part of Latakia City (Latakiyah, often locally transliterated as Lattakia), in Lattakia Mountains - coastal mountains disposed parallel to the Syrian Mediterranean coast.

Kismin Village (also named Kesmin, Kesmine, Kasmin, Qasmin, Qasmine, Qosmine, Masmin) is divided in two parts by Mashqita Lake. It shows forested limestone ribs, with altitudes between 100 and 300 m that descends gently toward the lake.

The "Dr Fawaz Azki" Geological Museum is located about 20 km from the Lattakia Town, in the west of the Kismin Village.

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The museum was opened in July 2002. It is the only private museum in Syria, arranged in the own parents` house (Al-Azki, 2011).

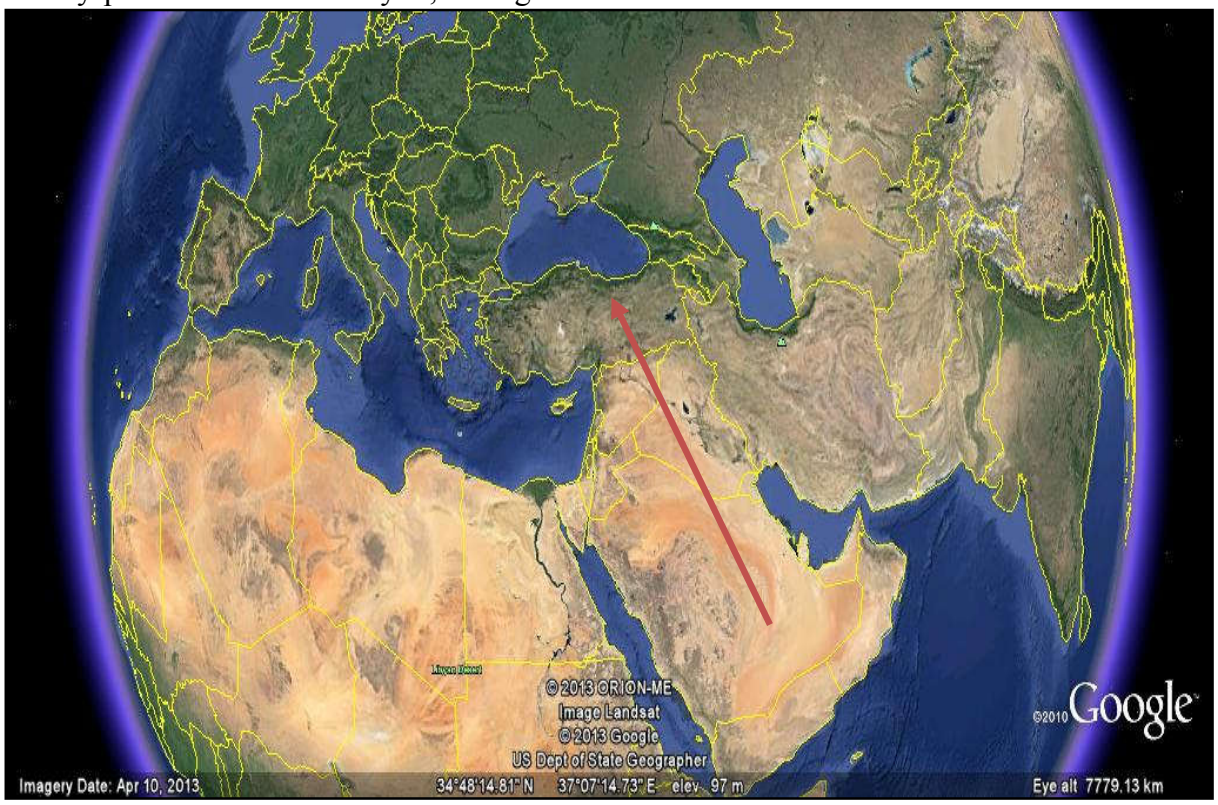

Figure 1: Earth map emphasizing the position of Syria in the Middle East – Asia (from Google Earth, accessed: January 19, 2017)

DISCUSSIONS

The "Dr. Fawaz Azki" Geological Museum ($35^0$38`00.62``N, $35^0$54`20.68``E) - Kismin Village ($35^0$37`56.85``N, $35^0$54`43.09``E) (Figures 1; 2 A, B; 3), part of the scientific and cultural heritage of Syrian Arab Republic, is the rarest museum in Syria. It was opened after the completing our own research in the coastal mountains series of Syria. It consists of two parts: the Open-Air Museum and the Closed Museum (Museum Building) (Al-Azki, 2012c).

The Open-Air Museum (Figure 4), spread over 1.500 m^2, is located in the courtyard of the museum. Here, there are over 60 rock samples of huge size (between 50- 200 cm and 75-1.500 tons) which are the dominant rocks in Syria.

Here, in the Open-Air Museum, there are samples of dinosaur species in their natural size: a herbivorous dinosaur from the Jurassic (with a height of 7 m and a length of 23 m), a carnivorous dinosaur from the Cretaceous time (with a height of 3 m and a length of 5 m) and a flying dinosaur with a length of 4 m.

Also, in the Open-Air Museum, there is the reply of a volcano in Qatar. The entrance is through a gate located at its base. Inside the volcano, there are six samples of different depths volcanoes, over 30 km, and a copy of the internal structure of the Earth.

In the Open-Air Museum, there are the 3D geological map of Syria, 330 cm, and a reply of the Earth Globe with a diameter of 2 m.

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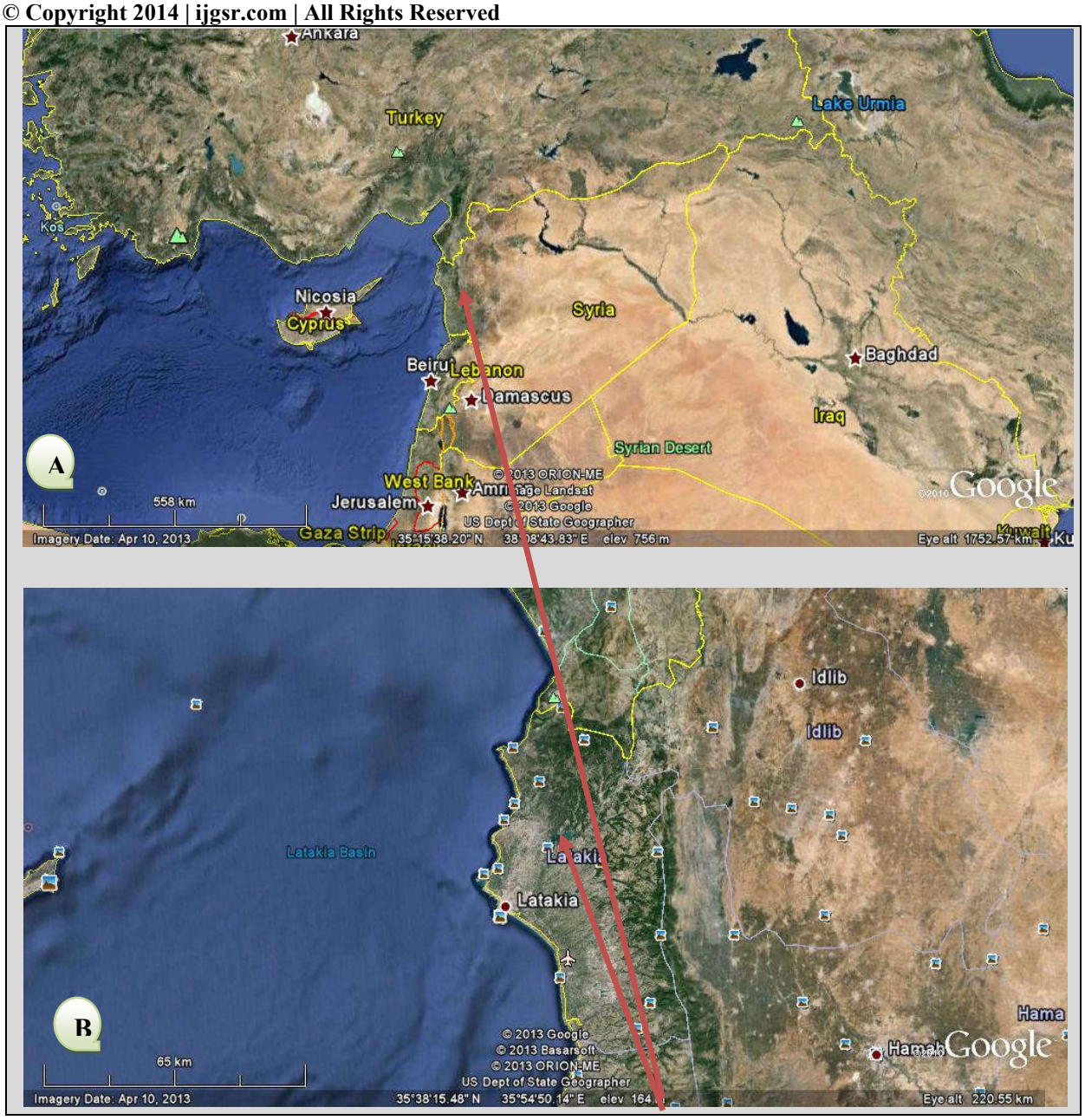

Figure 2: A, B - Geographical position of Kismin Village in Lattakia Mountains (from Google Earth, accessed: January 19, 2017)

The Museum Building (Figure 5), spread over 130 m^2, is built in the Syrian architectural style from boulders brought from Lattakia Mountains ($35^0 29` 21.76`` N$, $41^0 25` 58.97`` E$), and covered only with stones. It is divided into seven sections:

1. The Fossils Section has a circular shape; on this roof, there is a starfish, as hologram. It houses more than 120 fossils found on the whole territory of Syria and other parts of the world. The museum houses a beautiful collection of microorganisms, plants, invertebrates (mollusks, etc.) and vertebrates (dinosaur embryos in open eggs and adult specimens of dinosaurs, etc.) fossils, collected and classified - all the fossils

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discovered in Syria; they are placed in wooden boxes fitted with window for viewing.

2. The Minerals Section has a prismatic form (quartz crystal system), on top of which it is written in stone SIO_2 (chemical formula of quartz – the symbol of the Syrian mineral). This section houses over 100 kinds of minerals and ores, representing all the minerals of Syria and in the world.

3. The Innate Geology Section is built in the shape of a hemisphere. It includes a collection of some rock tools (by clay, basalt, onyx, sandstone, etc.) which are handmade by ancient Syrian peoples – Syrian cultural heritage pieces.

4. The Black Hole Section is a lobby with curved roof. It is a cosmic black hole which makes the transition to the fifth section.

5. The Cave Section shows the types of caves within the territory of Syria. It includes stalagmites and stalactites.

6. The Rocks Section accommodates all existing rocks in Syria and the other regions of the worlds - sedimentary, magmatic and metamorphic rocks.

7. The Seventh Section includes the library, the maps and epitomes hall, the research laboratory of the museum and administrative halls.

The Museum Library includes more than 1000 scientific papers in Arabic, Romanian, English and French languages.

The Maps and Epitomes Hall houses many geological charts and maps for Syria, the most ancient and important of which is the one drawn in 1945, and many representations of the tectonic phenomena.

The research laboratory houses samples of raw materials. Here, samples are examined and cut.

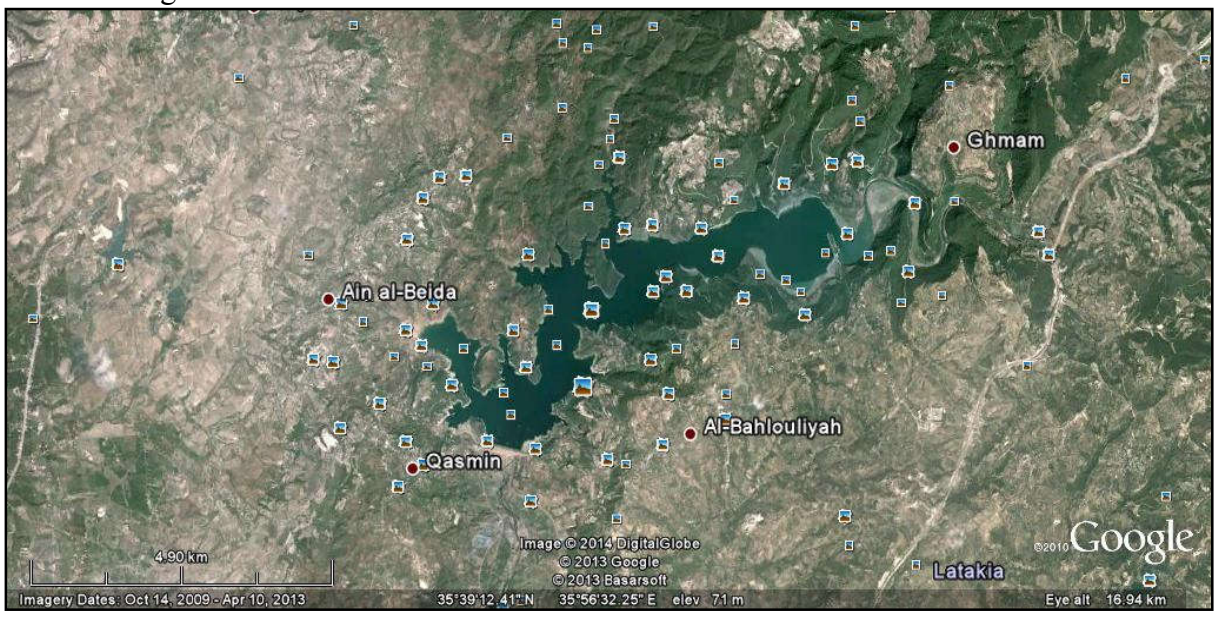

Figure 3: "Dr Fawaz Azki" Geological Museum in Kismin Village (from Google Earth, accessed: January 19, 2017)

In October 2007, on the roof of the museum, it was founded the first and unique Astronomical Observatory in Syria. Since 2002 until now, in the museum there were conducted several research programs and projects on education, culture, tourism,

alone or in collaboration with various scientific research, educational or cultural institutions in Syria or aboard - activities within it being good role models (Al-Azki and Axini, 2013).

Figure 3: "Dr Fawaz Azki" Geological Museum in Kismin Village (from Google Earth, accessed: January 19, 2017)

Figure 4: Overview from the Open-Air Museum (photo. Al-Azki F, 2008)

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Figure 5: Entrance to the Museum Building (photo. Al-Azki F, 2007)

In the museum laboratory, there were conducted numerous research projects that focused on field and laboratory research. Here, numerous research on palaeo-diversity/palaeo-ecology and zoo-archaeology of Syria were held: research on the origin and evolution of man; methods of conservation and protection of nature (bio- and geo-diversity) of the ancestral population of the current territory of Syria; perception of primitive man on climate change; research of dinosaur fossils discovered in marine and continental sediments belonging to the Late Cretaceous and the Middle Jurassic of Lattakia Mountains, Syria (Axini and Al-Azki, 2014a, b).

Figure 6: Impressed dinosaur embryo in open egg (Al-Azki F, 2001)

One of the most significant discoveries and scientific research conducted in the laboratory museum is the discovery of the first amphibious dinosaurs in the world. On March 6, 2001, we discovered in marine rocks belonging Cenomanian Age, the first dinosaurs in Syria (being the first dinosaurs from the Middle East) - one of the most important discoveries of our. This discovery was made in the current mountains of Lattakia Region, Syria. Research began in 1996 in marine and continental sediments belonging to the Cretaceous Upper from Al-Amood Village in Lattakia Mountains, where we discovered impressed dinosaur embryos in open eggs (Figure 6). The research has continued throughout the Lattakia Mountains, discovering further evidence (concretions humerus bone) in Bismalekh and Khraieb Salem Villages, in Middle Jurassic deposits (according to Research program: research marine sediments belonging to the Upper Cretaceous and Middle Jurassic Mountains Lattakia, aimed discovery of dinosaur fossils - Unique in Syria. Period: 1996 – 2001: www.fawazazki.com/explore.html). In the Cenomanian time, the current territory of Syria today was covered by the sea (Al-Azki, 2002, 2013, 2016).

Also, in the museum, there were held research studies on fossils species diversity identified across Syria and the Mediterranean coast. Lattakia Region hosts many species of invertebrates and vertebrates fossils, of which, so far, we have identified over 135 species and genera, belonging to 4 classes and 2 phyla of invertebrates (Trilobita – Arthropoda; Gastropoda, Bivalvia, Cephalopoda – Mollusca) and 3 classes and 1 phylum of vertebrates (Osteichthyes, Reptilia, Mammalia – Chordata). Of these fossil mollusks, gastropods (16 genera including taxa belonging to 16 families grouped in 5 orders) occupy the first place, followed by ammonites and bivalves. The fossil and actual species that have been discovered in this area gives us the possibility of palaeo-environments reconstitution in this region (and also in the whole Syria) correlated with current environments, and also of the natural history of extinct and existing species in Lattakia. Research conducted field and laboratory, unique in Syria, have allowed us to do a reconstruction of paleo-environment of the Levantine Basin and Western Arabian Province (Al-Azki, 2012a, b; Axini and Al-Azki, 2014c). These fossils are part of the collections of the "Dr Fawaz Azki" Geological Museum, Kismin - Lattakia, Syria (Al-Azki and Axini, 2012a, b).

Here, there were conducted hydro-geology, geophysics, climate change and global warming, environment pollution, geo-archaeology, etc. research studies.

On the basis of this research, there were gathered the fossils, rocks and minerals species and stone tools discovered within the territory of Syria, and existing in the museum sections.

The best results of this research were presented in various scientific events, and subsequently published in scientific journals – national (Syria / Romania) and international.

The museum is the organizer of the International Scientific Symposium *Bio-diversity Conservation "in situ" and "ex situ" (*BCIS) (2011-2013)/ International Scientific Symposium *Geo-Bio-diversity Conservation "in situ" and "ex situ"* (GBCIS) (2014-present), which takes place annually in Constanța, Romania (by Monachus Group of Scientific Research and Ecological Education, 2014: http://www.facebook.com/G.C.E.E.Monachus?fref=ts).

From the beginning until now, the museum has been a partner of many geo-archaeo-tourist programs, and its activities represent an example to follow (according to Project of DMA UPD "The second phase of the project started". Ministry of Local Administration (MoLA), Damascus Guvernorate (DG), Rural Damascus Guvernorate (RDG). *DMA-UPD*, Newsletter vol. 4 January 2011. Damascus: 1-4: http://www.dma-upd.org).

In the museum (the open-air museum or the closed museum), many educational and scientific projects with pupils and students were held. During scientific and educational lectures, the visitors / tourists of the museum (pupils, students, etc.) can listen or take notes on specially designated banks in the museum courtyard with 80 stay places (Figures 7, 8).

From the beginning until present, in the Astronomical Observatory, there have been made astronomical observations both scientific and educational – the last achieved by various visitors of the museum, eager to know the Universe.

From 2002 until now, the museum and hence the observatory was visited by over 74,000 visitors, of all ages and professions, from Syria and abroad – the museum being on the list of the tourist circuits of the Ministry of Tourism of Syria (by Syria-news.com, 2013: http://www.Syria-news.com/articlem.php?i).

Figure 7: With students at the museum during practical scientific applications (photo. student, 2012)

The museum hosted several environmental education documentaries made in collaboration with the Syrian media. The documentaries themes included: knowledge of the museum and its collections, lectures on astronomy, knowledge of Syria geology (explorations in nature) – the geology TV program named "Geology of Syria" with over 66 episodes, program release in Syria (according to Prof Dr. Eng Fawaz Al-Azki, 2015:http://www.facebook.com/prof.dr.eng. fawazalazki).

In the museum, many scientific monographs were edited, unique in the geology field, and educational publications (brochures and flyers). Also, the museum is the editor of the international scientific journal of geo-bio-diversity – *Romanian Journal of Biodiversity (RJB)* (2011-2013), and *Romanian – Syrian Journal of Geo-Bio-diversity (RSJGB)* (2014-present).

Conclusions: The museum is part of the cultural, educational and scientific heritage of Syria and of the whole world.

It is a scientific and cultural institution and geo-touristic place with international fame, with role in the development of science and cultural-geo-tourism in Syria and the Middle East and around the globe, placed on the UNESCO list.

This museum aims at serving children, students, researchers, and other interested persons.

Entrance is free for all visitors, because AZKI opinion is: "if I don't add something to this Universe, I am just an addition in it"!!!

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Figure 8: Group of tourists, after visiting the museum (photo. tourist, 2009)

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