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RESEARCH ARTICLE

Volcanoes Denominations

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Abstract:

This study highlights the denominations used for currently dormant volcanoes, as well as the names used for some of them in the Hashemite Kingdom of Jordan as a case study. This study also explains the nature of these volcanoesas natural phenomena playing a major role in most geological processes contributing in the formation and development of the earth crust. On the other hand, this studyhas focused on identifying and analyzing some currently dormant volcanoes sites and their extension to the surface. This study used computerized programs, such as the World Geodetic System (WGS84), as well as the (ERDASIMAGINE) system to determine the volcanic sites in order to collect and analyze data. It has reached a few findings and recommendations regarding the denomination of volcanoes, the population's safety guarantee, the resources of such areas, as well preserving the country's landmarks

Keywords: volcanoes' denominations, volcanic activity, Jordanian basaltic stones, Central Jordan's basalt, Rift Valley.

Introduction

This study focused on currently dormant volcanoes, as well as the names used for some of them by the population in official circles and scientific forums in the Hashemite Kingdom of Jordan as a case study as in many sites in the world. This study also explains the nature of volcanoes where they are considered natural phenomena that play a major role in most geological processes contributing in

the formation and evolution of the earth crust. Most of the earth crust components were affected by magma currents' eruption processes to the surface forming new terrains and conical volumes of various forms that resemble hills forms or mountains and slope-like valleys in their general appearance. This study also focused on analyzing the components and locations of some of the currently dormant volcanoes in the Hashemite Kingdom of Jordan, as well as their sloping extension on the surface. Our study was cited by satellite and aerial images (the Royal Jordanian geographic Center), as well as geological maps (Natural Resources Authority NRA). Also there was a focus on terms used for these currently dormant volcanoes.

Literature Review

The volcano is acrack in the earth or any other planet crust through which magma comes out (lava containing various metal compounds) and gases, volcanic ash, and igneous magma from the igneous chamber under the ground to the surface of this planet and the atmosphere surrounding it forming floor features and different elevations from the cracking level and / or sea level, according to quantities slope percentage.

It was noted that the ignorance of the nature of some areas led to denominate them with names that do not indicate to their reality, which in turn, led to the spread and inhabiting these areas, as well as erasing their features. On the other hand, these areas could be unsafe and exposed to natural disasters that may lead to great human and material losses. The designation of these areas by using names that do not show their reality may mislead decision-makers in any decisions regarding human and / or economic development in these areas.

This study has identified some of the currently dormant volcanoes in the Hashemite Kingdom of Jordan as a case study through satellite images and aerial images using the World Geodetic System (WGS84), as well as the (ERDAS IMAGINE) system. Then the (Arc GIS) system was used to determine the currently dormant volcanoes in reality. A study of the components of these volcanoes been conducted through geological maps (NRA), and the volcanic study areas were divided into three main zones:

1. The Jordanian basaltic stones in the Northern East Badia, which contains three volcanic fields that are: RamahVolcanic Field, Alashaf Volcanic Field, and Hassan volcano.
2. Mid Jordan basalt that extends from Tafileh through Shobak and Petra.
3. Rift Valley, from Umm Qais to Aqaba.

Study problem and questions

Calling some areas (volcanoes) using names that do not denote their reality, and being unaware of the fact how these areas were formed, led the population to utilize and invest some of these areas, which in turn caused to blur their

landmarks as they are susceptible to natural disasters that may result in great humanitarian and financial catastrophes.

1. Does naming volcanoesas mountains, hills or valleys indicate the origin, fact and reality?
2. Is utilizing and investing these areas safe?
3. Does blurring these areas have any pros?

Study Significance and Reasons

(A) Studying geographical areas terminologies is one of the vital topics that captivated researchers in earth sciences and geography fields.

(B) Population calling currently dormant volcanoes using irrelevant names that are related to people's names, or because of shape or color.

(C) Expanding life scope and the spread of population in the areas of currently dormant volcanoes would hide the volcano landmarks.

(D) Human safety and security, and state resources preservation.

Study Objectives

1. Denominating currently dormant volcanoes using significant names that indicate the original geneses in the region, and disseminating this concept to include all currently dormant volcanoes.
2. Identification of currently dormant volcanoes sites.
3. Revealing the key components of some of the currently dormant volcanoes.
4. Maintaining currently dormant volcanoes landmarks.

Study Data

Secondary Data Sources

These sources are related to the theoretical framework and the information that has been obtained from libraries and Internet-documented sources of scientific books and articles, and scientific publications.

Primary Data Sources

Satellite images and aerial photographs were collected from the certified source at the Royal Jordanian Geographic Centre through the Remote Sensing Department, and the electronic gate Department, while the geological maps were

obtained from the Geographical Royal Jordanian Center archives, which were officially released in collaboration with the Natural Resources Authority.

Types of Used Software and Data

Spatial data, related to the location, was used within the geographic or spatial reference of satellite images, aerial photographs, geological maps, digital data and also descriptive data associated with shape and color represented on satellite and aerial images that define the database using the World Geodetic System (WGS84), as well as the (ERDAS IMAGINE) system.(Arc GIS) system was also used to determine the currently dormant volcano sites in reality in the selected area for this study and the denominations currently used.

Data Preparation

The computerized program (ERDAS IMAGINE) was used for the preparation and analysis of the satellite and weather images used for this study by using the available devices in the Remote Sensing Department, as well as the computerized system (Arc GIS) and the devices at the portal section of the Royal Jordanian Geographic Center.

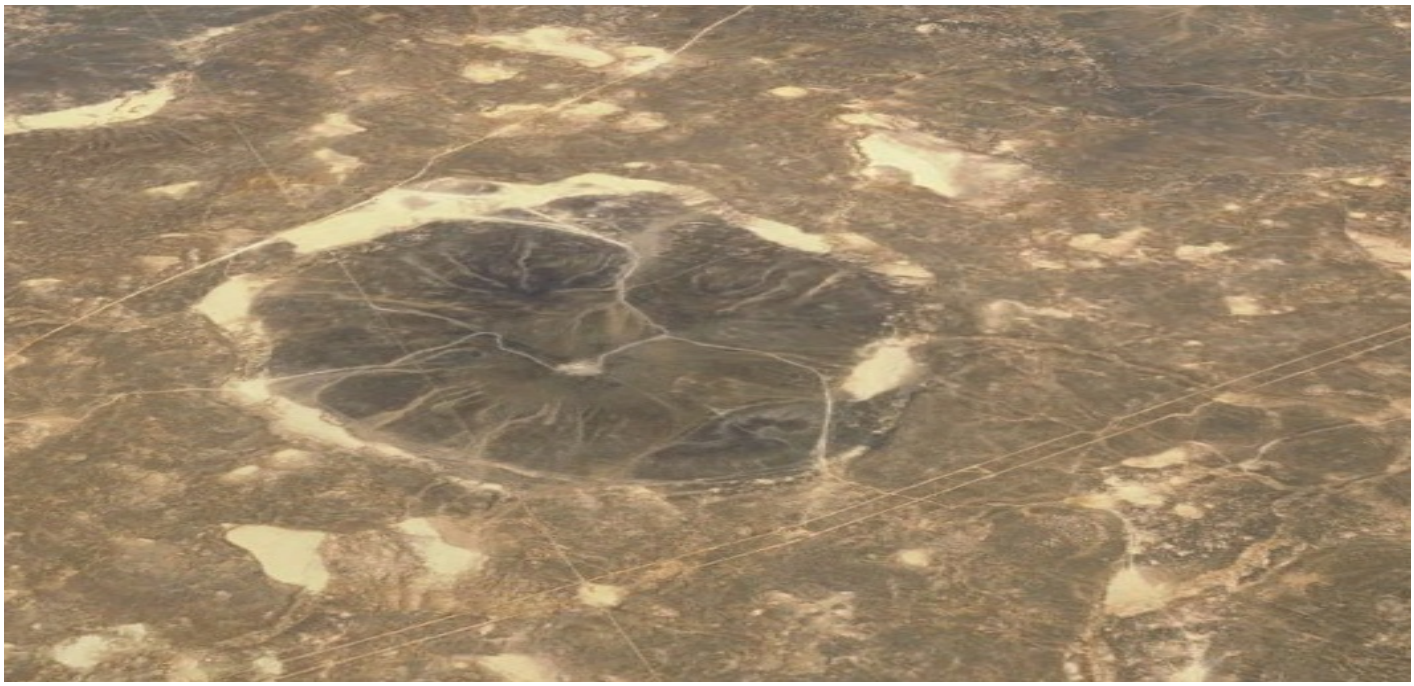
Study Methodology

This study is based on the descriptive and analytical approach, which doesn't only rely on the collection of metadata about the currently dormant volcanoes names and locations, but it also extended to analysis and linkage of this data, classification and drawing conclusions from them (Mursi, 1986: 96)· Descriptive and spatial data has been collected through satellite images and aerial geological maps (Royal Jordanian geographic Center) for some currently dormant volcanoes in the identified study various sites in the Hashemite Kingdom of Jordan. This data has been analyzed using (ERDAS IMAGINE) and (Arc GIS) systems, and the certification of the geological maps to match the metadata about the names, components and locations of the currently dormant volcanoes.

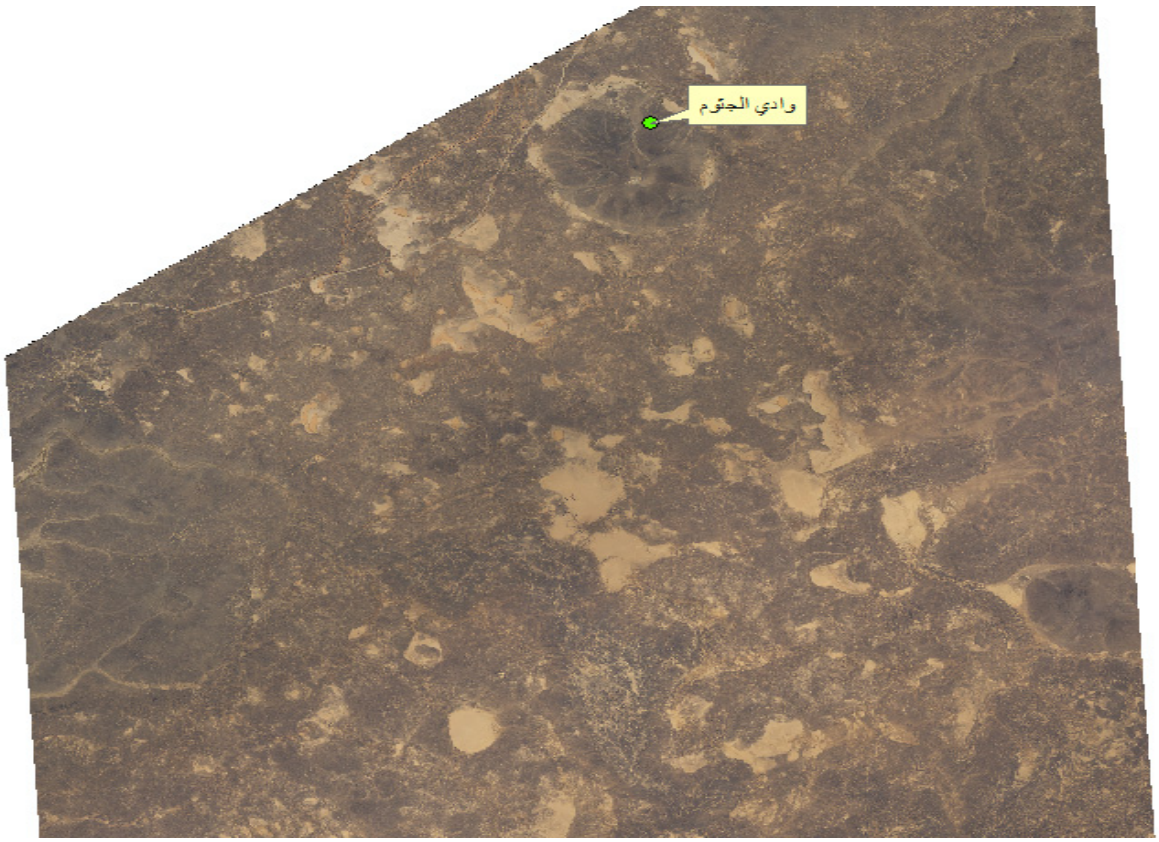
Data Cartographic Analysis

Five sites were identified in this study as a case study to show their forms, origin and composition through pictures, maps, which were as follows:
1. Mount Aljathoom (as it is currently called) whose position has been identified through satellite image (picture 1) using the World Geodetic System (WGS84), with the following coordinates (32 ° 35'7.87 "N, 37 ° 27'16.41" E) was reviewed by using (ERDAS IMAGINE) using a software that showed the location as a dim color object (Daoud, 2013). The aerial photo found (picture 2) for the same location with the same coordinates, confirmed the information sent from satellite

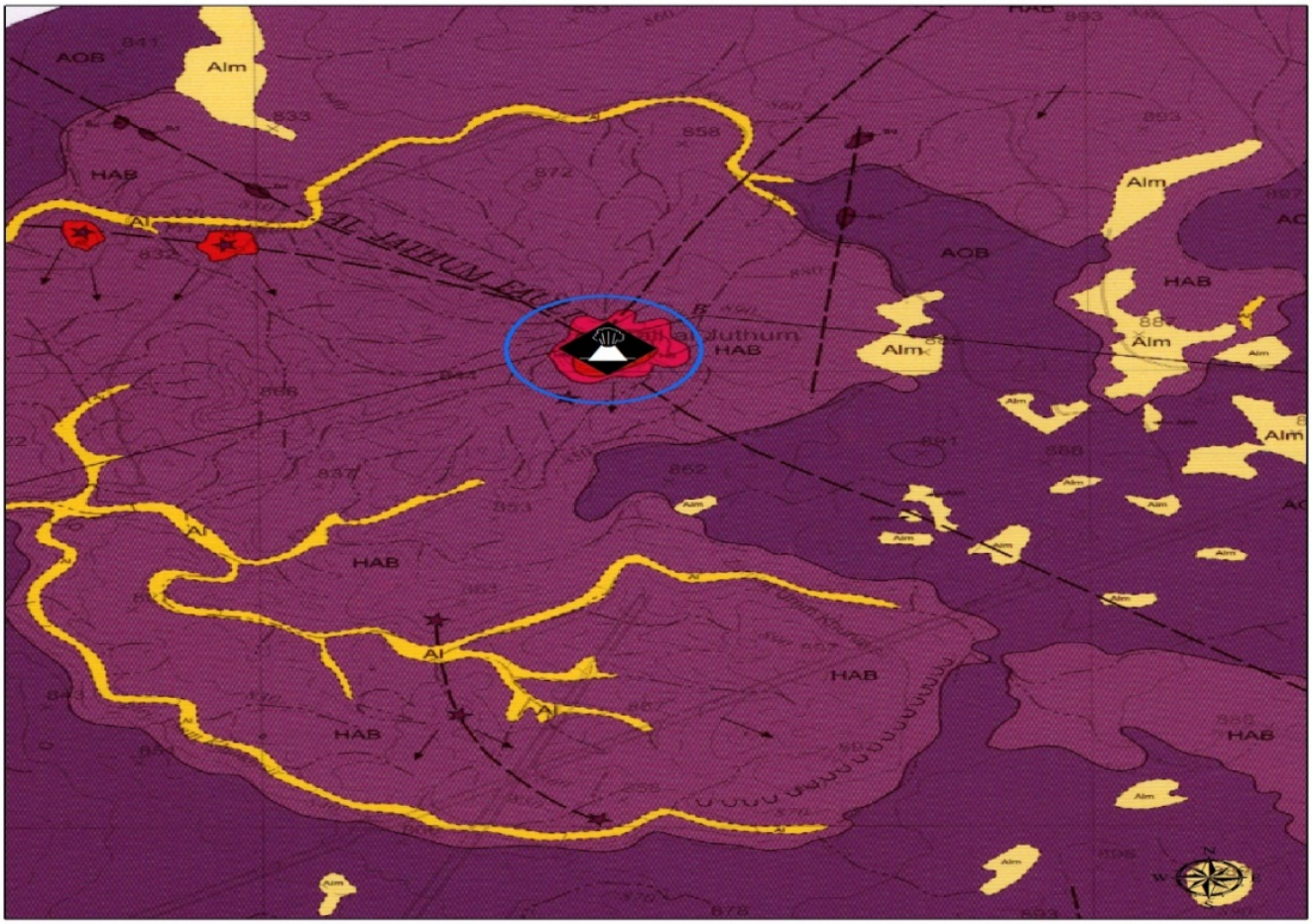
image. By detecting the geological map (Map 1), it was found that basalts, belonging to the Levant basalt cover the study area and, thesebasalticingots consist of basaltic sequences dominated by olivine alkaline basalt which is derived from the top of the earth plate, (NRA)(Aldgstani, 2005).



Picture 1: Satellite Image of Mount Al Jathoom

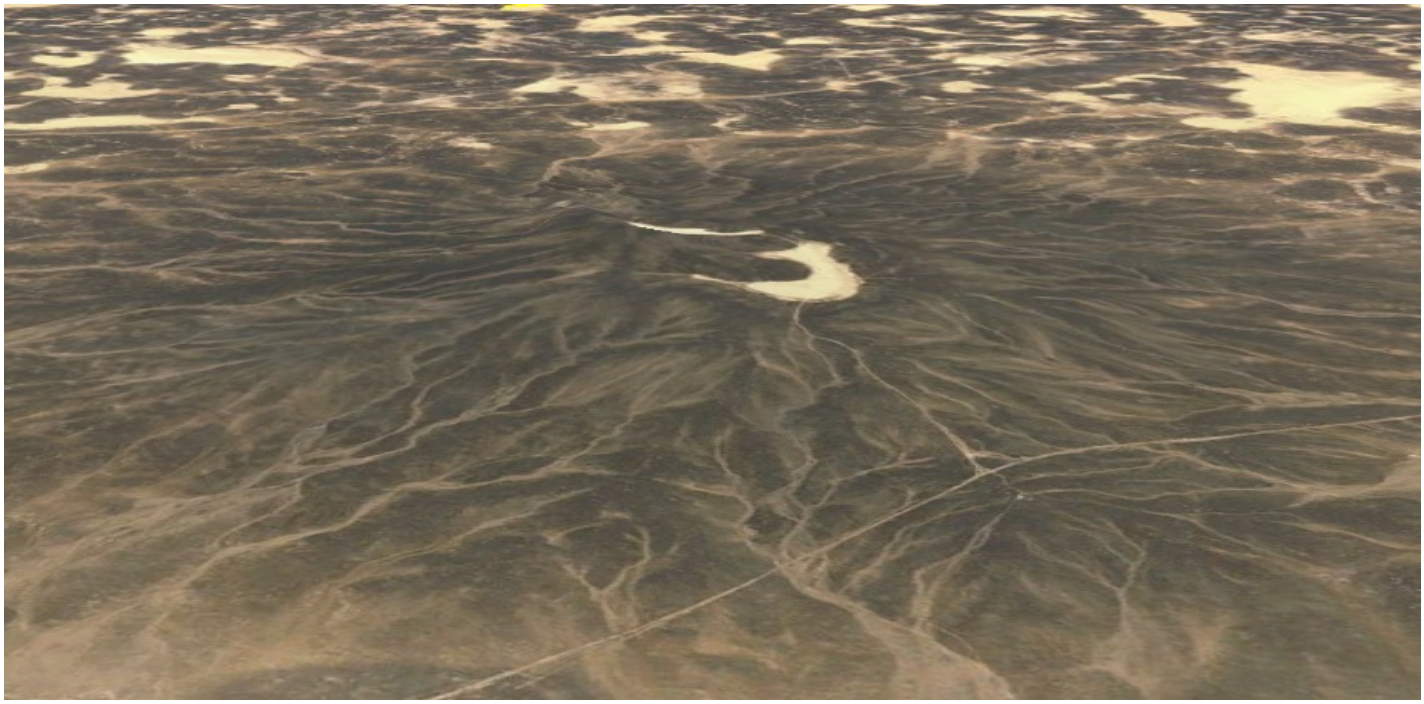


Picture 2: Aerial View of Mount Al Jathoom

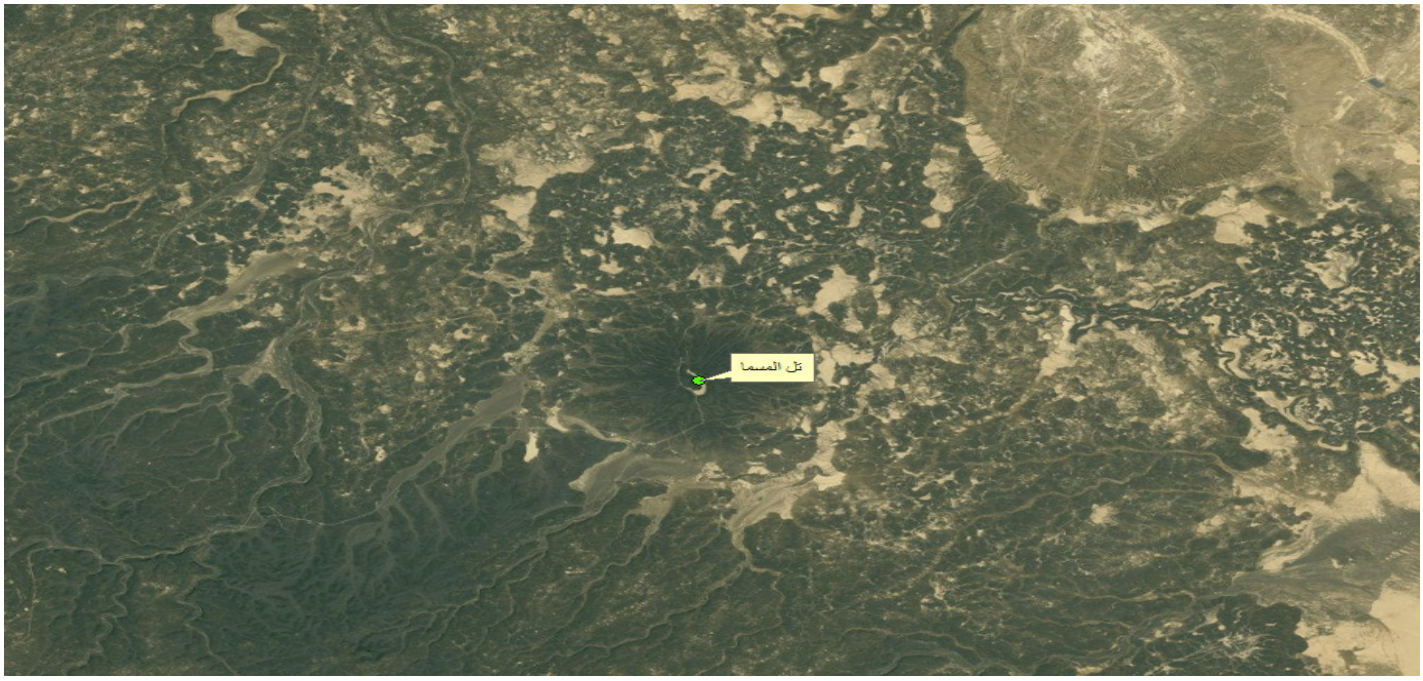


Map 1: Geological Map of Mount Aljthoom

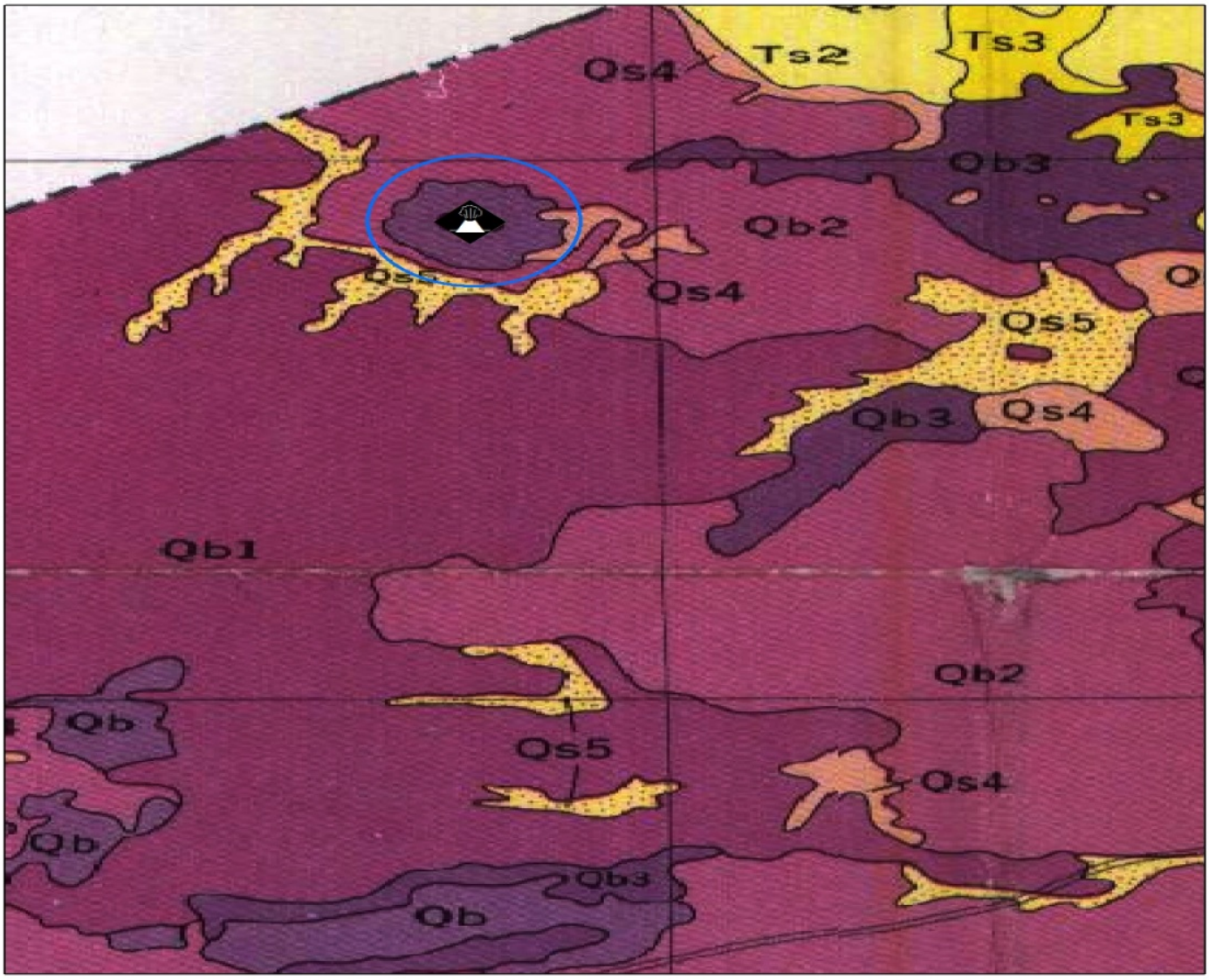
2. Tel Almsma (as it is currently called), whose location was identified by the satellite image (picture 3) using the same system mentioned-above with the same coordinates (32 ° 42'53.43 "N, 37 ° 40'34.94" E)was reviewed by using the software (IMAGINE ERDAS), which showed the location as a dim colored object (Daoud, 2013). The aerial photo was found (picture 4) for the same location and with the same coordinates confirmed the information sent from satellite image. By detecting the geological map (Map 1), it was found that basalts, belonging to the Levant basalt cover the study area and, these basaltic ingots consist of basaltic sequences dominated by olivine alkaline basalt which is derived from the top of the earth plate (NRA)(Aldgstani, 2005).



Picture 3: Satellite Image of Tel Almasma

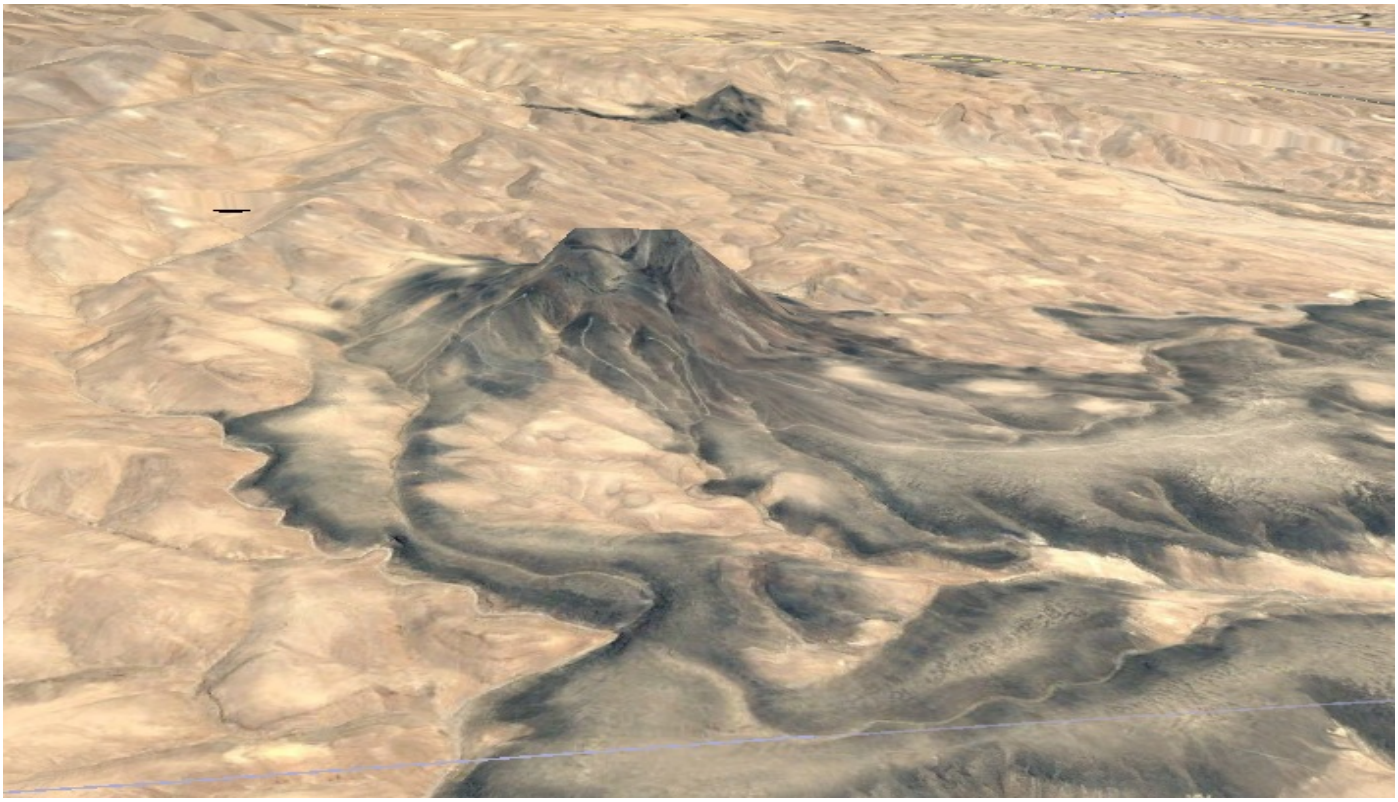


Picture 4: An Aerial View of Tel Almasma

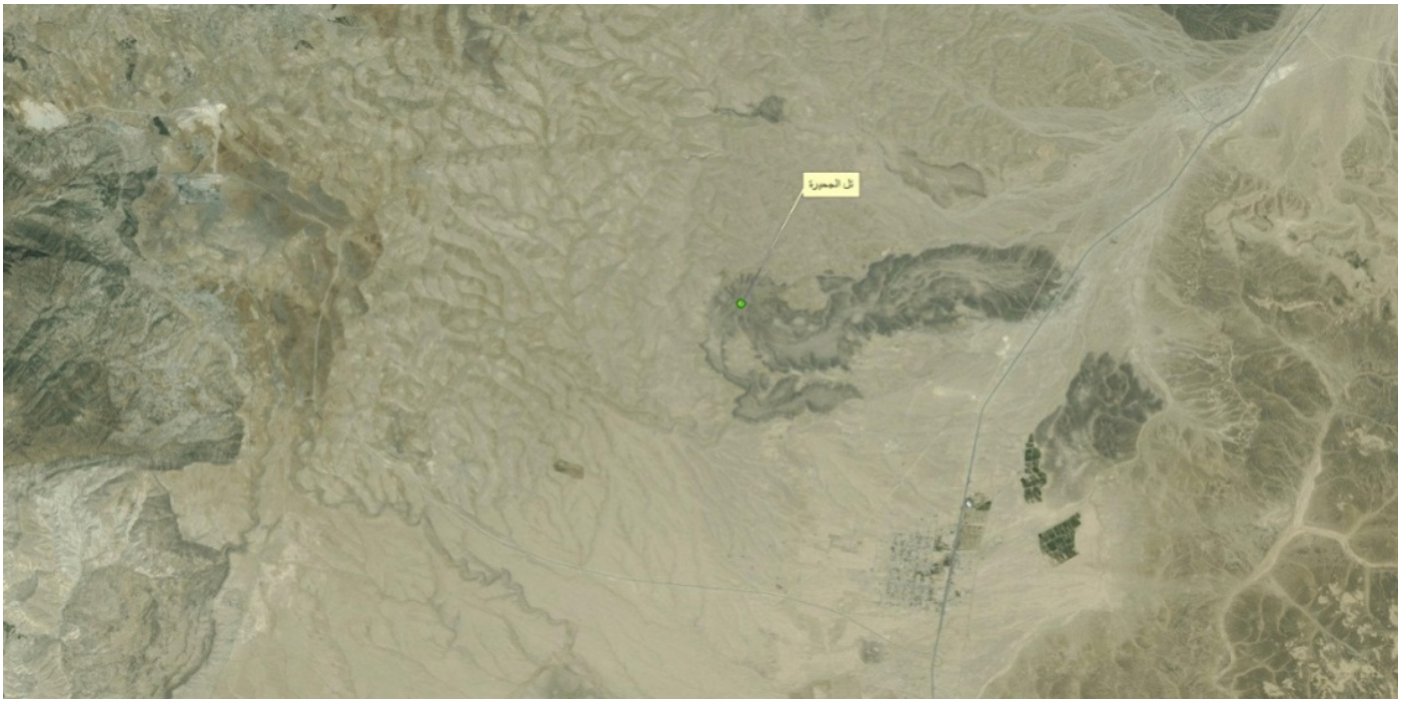


Map 2: Geological Map of Tel Almsama

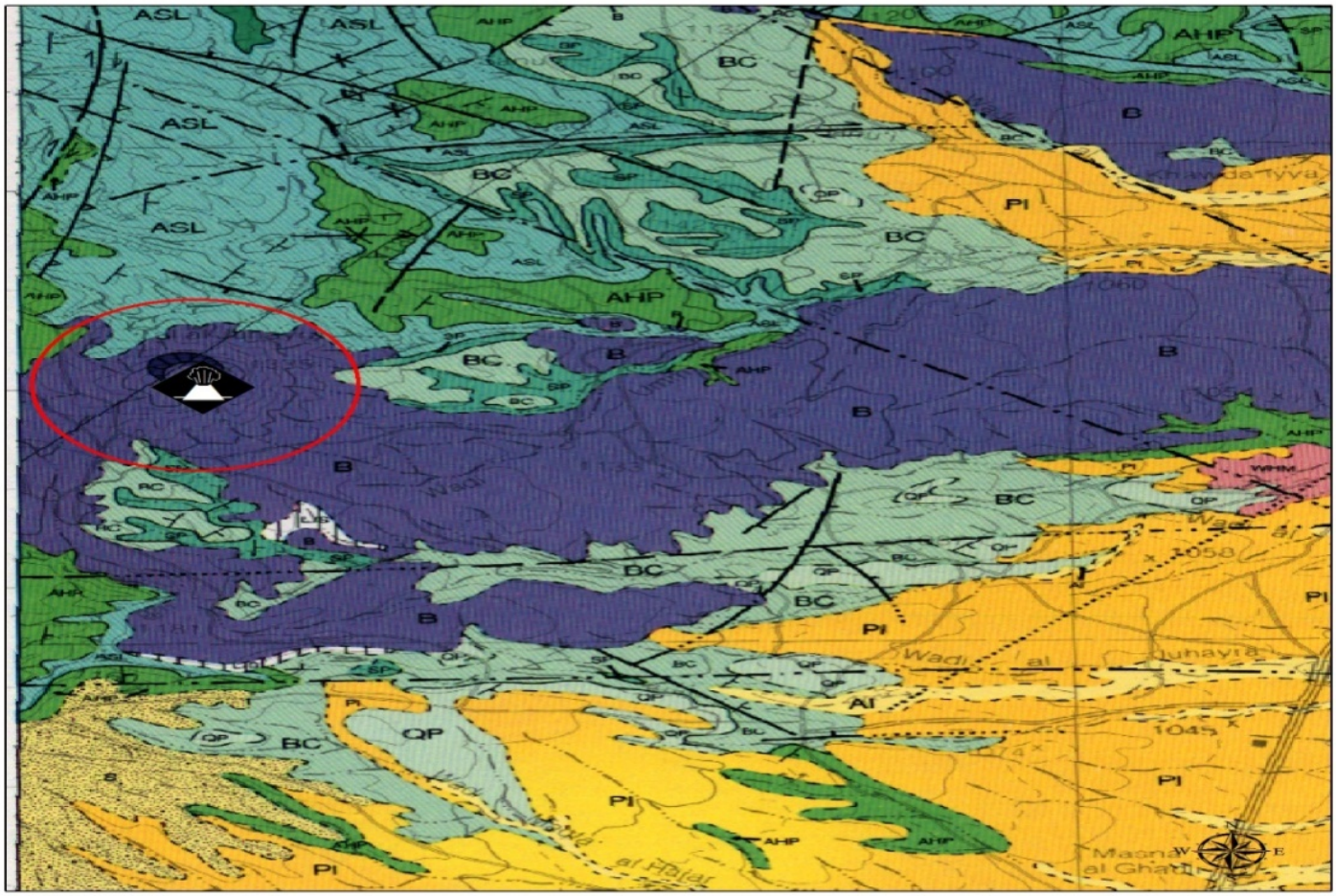
3. Tel Al-jeharah (as is it currently known) whose location was identified by the satellite image (image 5) using the same system and the and the same mentioned coordinates (30 ° 39 '07.27 "N, 35 ° 45' 24.63" E), by using the site software (ERDAS IMAGINE) showed the site as a dim colored object (Daoud, 2013), as was found in the aerial photo (image 6) of the same location and with the same coordinates, which confirmed the information that came from the satellite image. By studying the geological map (Map 3), it was found that there are two volcanic eruptions in the region. The first was at the crossroads of Wadi Al-Hasa with Wadi Al-Alia which is characterized by a basaltic column with five to six aspects, while the other eruption was Faliq Al-Alia (NRA)(Aldgstani, 2005). Byreferring to the satellite and aerial images of the study location, we find that Tel Aljeharahis located within the mentioned volcanic eruption areas, where the basaltic alkali olivine which is derived from the top of the earth plate is the main component of the research site.



Picture 5: Satellite Image of Tel Aljeharh

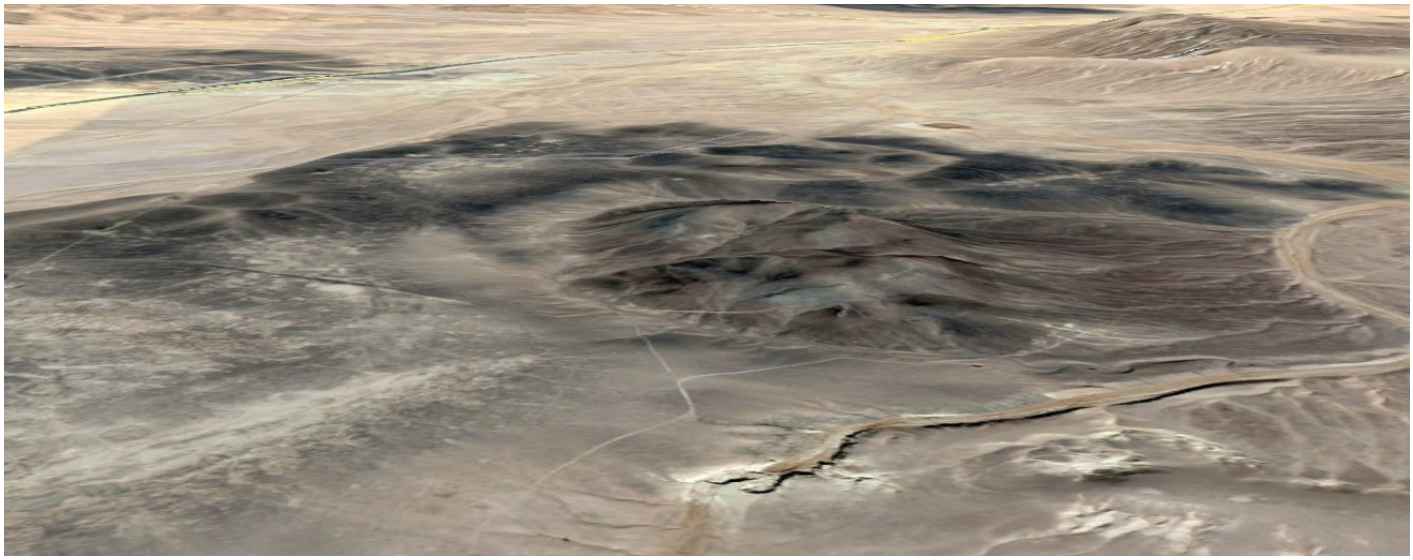


Picture 6: Aerial View of Tel Aljeharah



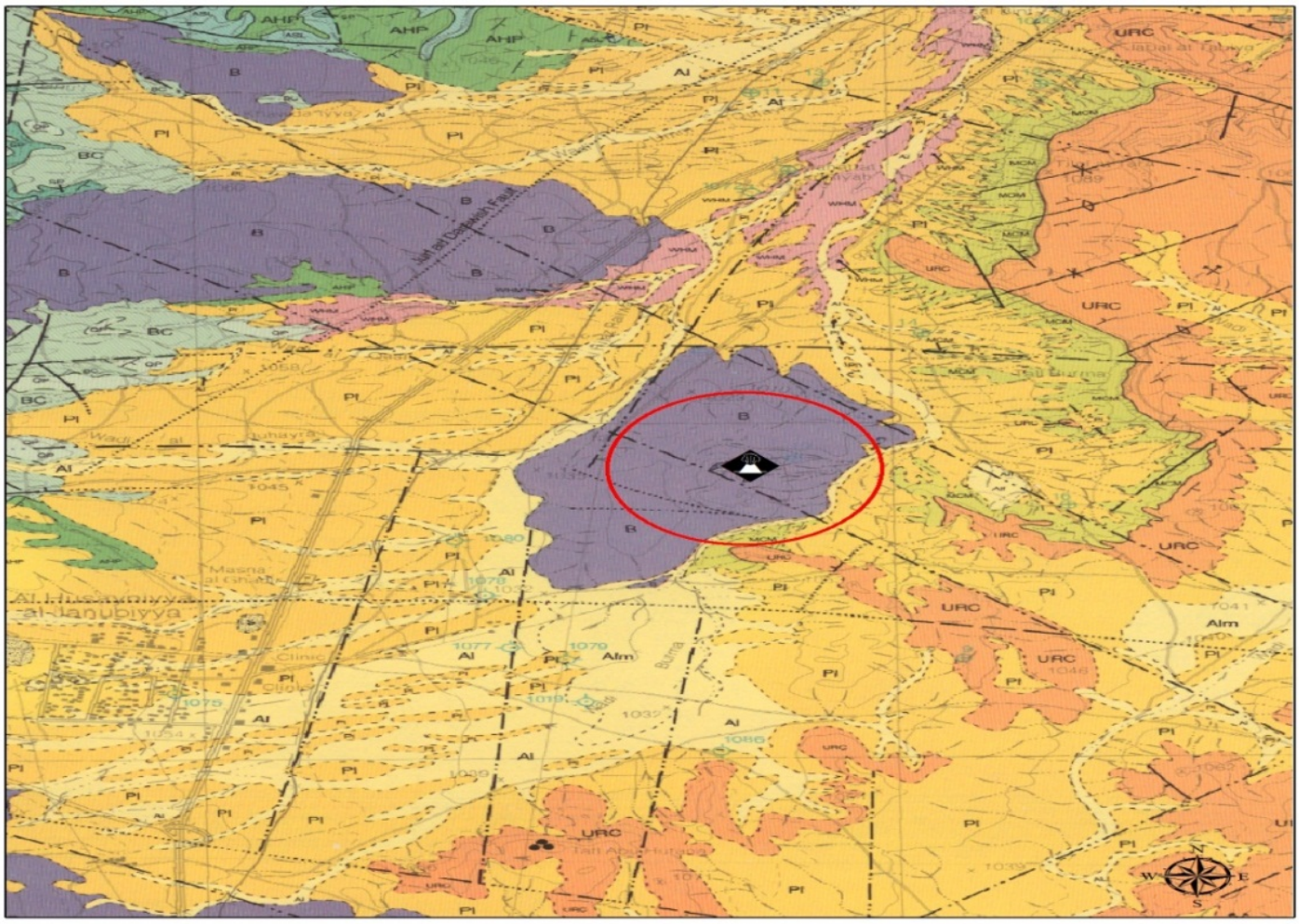
Map 3: Geological Map **of** Tal Alhajarah

4- Tel Parma (as it is currently called), Aldarawish, whose location has been identified by the satellite image (picture 7) using the same system with the same above mentioned coordinates (30 ° 37 '25.69 "N, 35 ° 50' 24.26" E). The site was reviewed by using the software (ERDAS IMAGINE), which showed the site as a dim colored object (Daoud, 2013). The aerial photo (image 8) for the same site was found with the same coordinates, which confirmed the information taken from the satellite image. While searching the geological (4 map), we found two volcanic eruptions. The first one was at the crossroads of Wadi Al-Hasa with Wadi AL-Alia and characterized by a basaltic column with five to six aspects .The other eruption is at Wadi Al-Alia (NRA)(Aldgstani, 2005). By referring to the satellite aerial images and our own study location, we found that Tel Parma is located within the volcanic eruptions mentioned area.



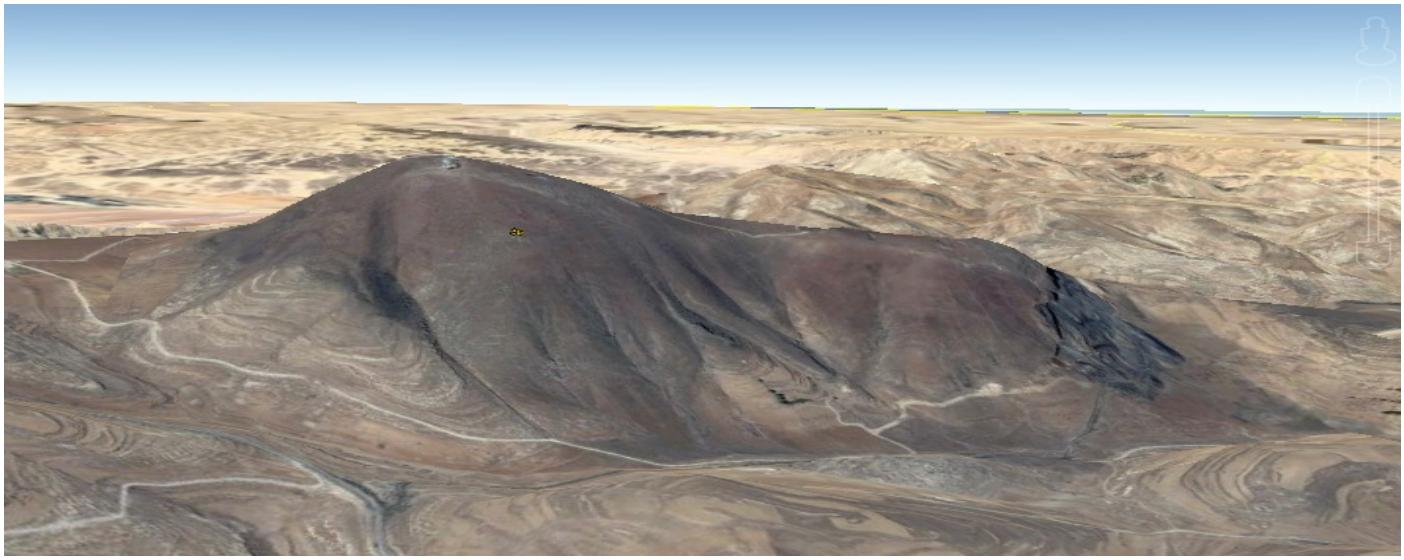
Picture 7: satellite image of Tel Burma / cliff dervishes

Picture 8: Aerial View of Tel Burma / Cliff Dervishes

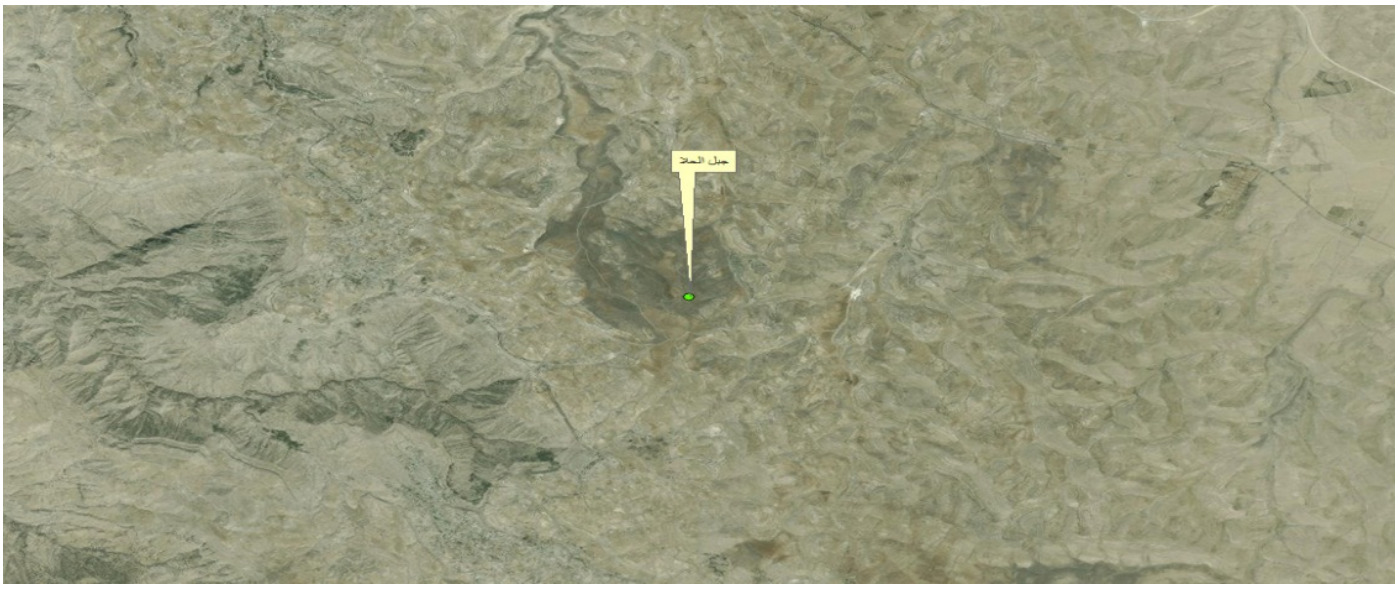


Map 4: Geological Map of Tel Parma

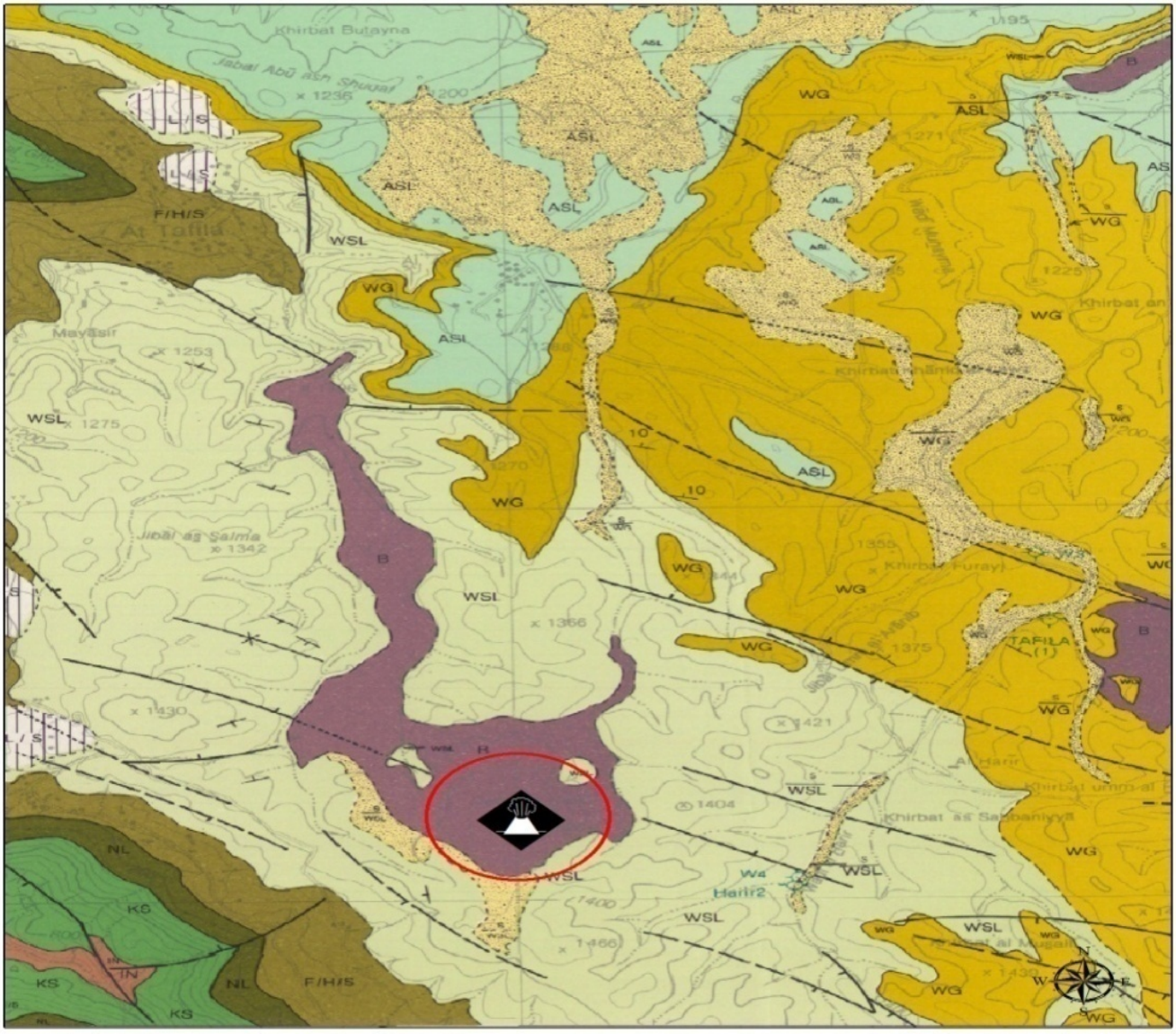
5. Mount Al-Helal in Tafileh (as it is currently called), whose location was identified by the satellite image (picture 9) by using the same system with the same mentioned coordinates (30 ° 37 '25.69 "N, 35 ° 50' 24.26" E). The site was reviewed by using the software (ERDAS IMAGINE), which showed the site in a form of a dim colored object (Daoud, 2013) as was shown in the aerial photo (image 10) for the same site with the same coordinates. This confirmed the information that was taken from the satellite image. While looking at the geological map (Map 5), basalt blocks were found in the south-east and north-east of the region, as well as the basalt slopes in the water drains dug in a non steep manner found in the eastern and southern sides as well as filling valleys and craters on the hills surfaces. On the other hand, the basalt is found parallel to and along the apparent cracks (NRA)(Aldgstani, 2005).



Picture 9: Satellite Smage of Mount Halal / Tafeileh



Picture 10: Aerial View of Mount Halal / Tafeileh



Map 5: Geological Map of Mount Halal / Tafeileh

Findings and Recommendations

This study reached a number of conclusions and recommendations represented by the need to nominate volcanoes by their geneses and distinctive names, as well as the need to avoid creating cities or communities, factories or plants in these areas, as well as raising the population's consciousness about the nature of these areas, and the preservation of volcanic regions landmarks. It also recommended expanding this study to include all currently dormant volcanoes in the region and the world.

Conclusion

This study reached a number of conclusions and recommendations. It concluded that there is a need to nominate volcanoes with their geneses and distinctive names, as well as the need to preserve the volcanic regions landmarks, and also to avoid the establishment of cities or communities, or create any factories or plants that could increase the disaster in case a volcanic activity occurs in these areas. There are also recommendations to expand this study to include all currently dormant volcanoes in the region and in the world.

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