

# AGS Activities and Mining Opportunities

Younusi- Director of Mineral Survey

- Established in 1955 as a small entity of then ministry of mines and industries
- Promoted to directorate in 1963
- Joint geological activity with international experts till 1979
- More than 2 decads stagnation of activities during invasion and civil war
- A big gap of knowledge and experience
- Restarting international cooperation - field and office work in 2002

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New phase of capacity building and strengthening AGS

International technical supporters:  
BGS , USGS , GTK- GIZ, MIDAS'

cooperation with MoMP and AGS

Brought AGS to expanded general  
directorate

# Major Department of AGS

- Directorate of Mineral Survey
- Directorate of Environmental Geology
- Directorate of Geoinformation
- Directorate of Laboratories

# AGS' current and coming activities are focused on:

- Coal – Jurassic, Cretaceous
- Chromite
- Marble and decorative stones
- construction materials
- Polymetallic mineralizations
- REE minerals
- Phosphate mineral occurrences
- Seeking opportunity to perform detailed geological mapping in whole country.

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- Environmental Issues
- Annual regime of u.water in Kabul and surrounding area+physical,bac.and min.tests (hydrogeology team)
- Geohazards – landslides and suspending stones
- Installation of seismometer stations Kabul - Heart - Badakhshan are done
- New branch- Geotechnics

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- geoinformation: geology archive-  
museum of geology- GIS and spatial team
- Site reports collection
- Availability of digitized data on web page
- Easy access to report and maps for client
- Prepared comprehensive information on  
specific mater to the ministry –if order
- Museum of geology - enrichment

# Laboratory

- Equipped gradually in the past 8 years – still needs more
- BGS involved in Lab training
- Performance of routine tests : chemical ,mineralogical and petrography analysis
- Analyses samples from provinces based on official request



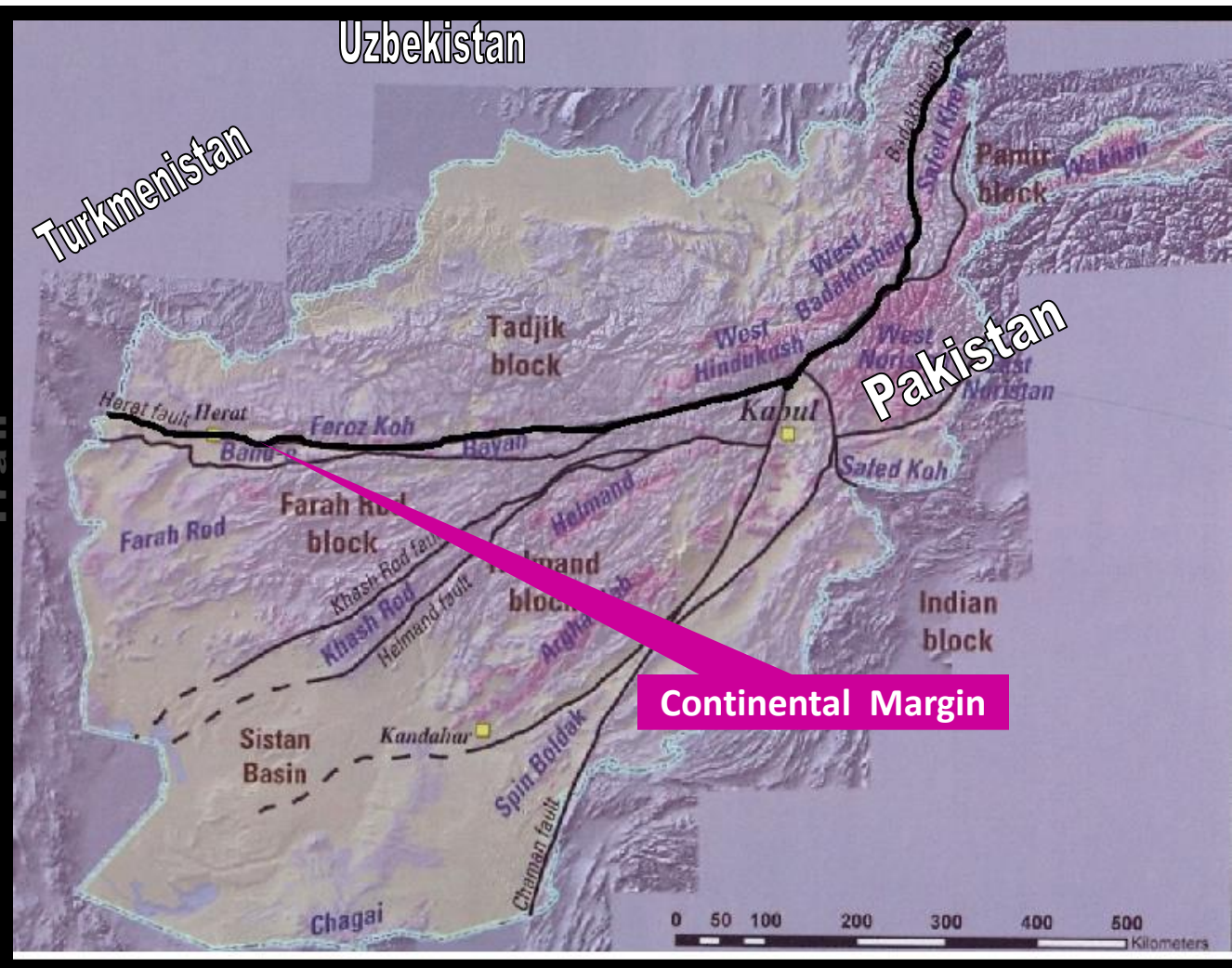
# Late years achievements

- 9 coal deposits studied with reserve estimation
- One iron ore deposit-estimated reserve 500 m.t.Fe-several iron mineralization masses with rather low content-separate location
- A couple set of pod form chromite of different location are sampled and mapped
- Geological mapping of copper mineralization site (Balkhab) with grid smpling
- Geological mapping and sampling gold mineralization (Panjshir)

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- Billions ton of high quality limestone and hundreds thousand ton of gypsum (Herat-Parwan- Samangan )
- White and colored marble layers – different province
- Afghanistan geological survey is providing preliminary data to attract investors in mining sector- further study /exploitation

# Geology of Afghanistan



Afghanistan has complex geology

Northern part belongs to Eurasia

The south is made up of accreted fragments of Gondwana Land

Each block is separated by deep seated faults

There were different geological activity in each zone which resulted in formation of very rich mineral assemblages

Coal and oil/gas are found on the Eurasian plate or its margin



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- **MOUNTAINOUS COUNTRY- 70 %**
- **EXISTENCE OF ALL GEOLOGICAL PERIODS IN THE TERRITORY**
- **GEOLOGICAL DIVERSITY**
- **TECTONIC DEFORMATION, MAGMATIC AND EXOGENOUS FACTORS HAVE MADE A MINERAL RICH COUNTRY**
- **ABUNDANT MINERALIZATION OCCURRENCES**
- **ANCIENT FURNACE AND SLAGS**
- **FAMOUS LAPIS LAZULI-MORE THAN 3000 YEARS**

# Geological study background

- Geological map 1:500,000-entire country-1980
- local g. map 1:100,000 –some regions
- 21 metallogenic zones,37- ore districts ,1428 mineral deposits, occurrences and showings
- Airborne geophysical survey USGS-AGS
- 27 tracts (boxes)-different mineralization area
- Probability of additional Lithium sites
- Cretaceous Coal –NCA program

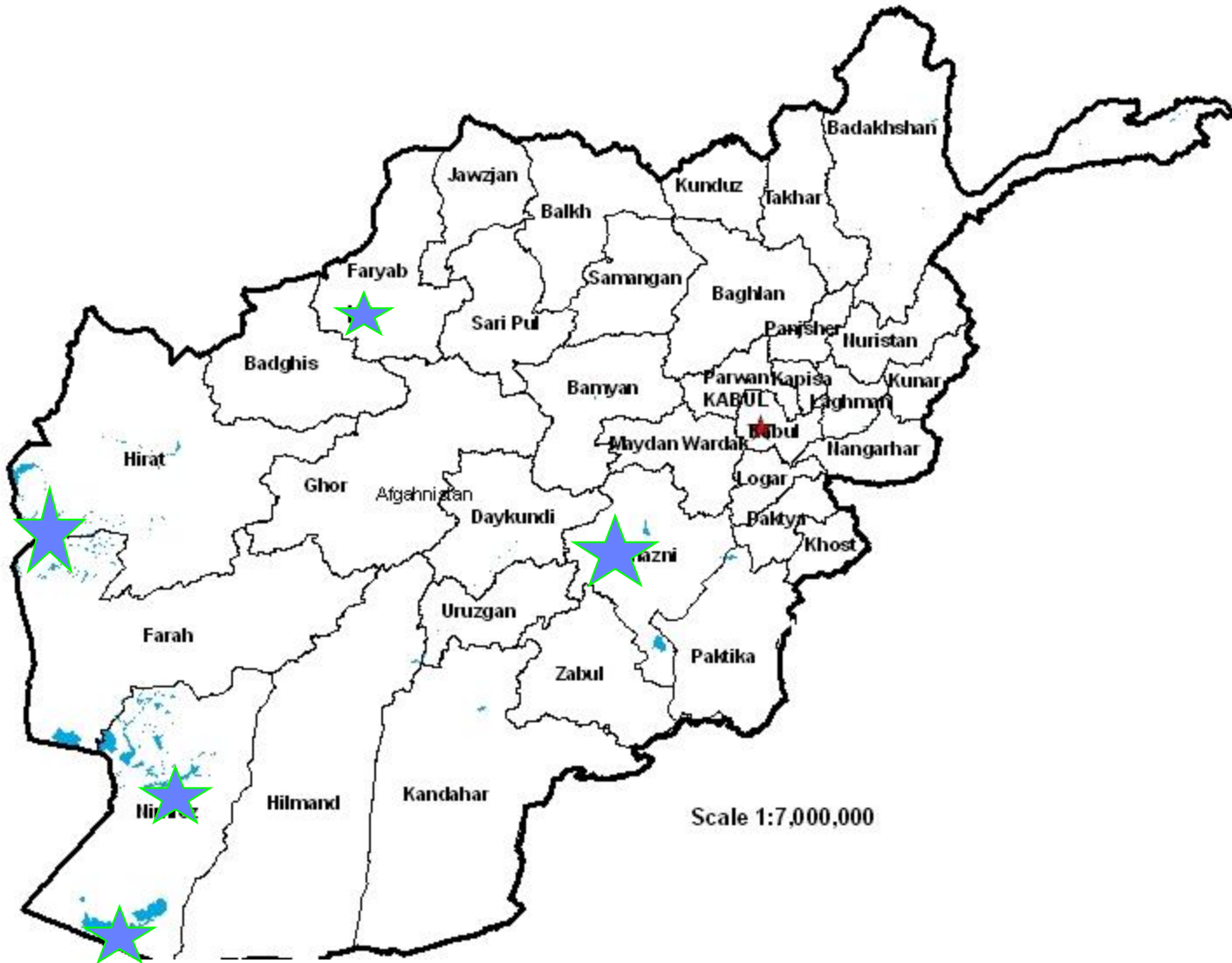


# Airborne Geophysical Survey

- Magnetometry (subsurface geology)
- Gravity meter (subsurface Geology)
- Photogrammetric camera (surficial geology)
- Hyper-spectral imaging (surficial minerals)
- Synthetic aperture radar (surficial geology)



# Evaporate Lithium Sites



# 9- Dry Lakes in Afghanistan

- 1- Dasht-e-Nawar
- 2- Namaksar-e-Andkhoy
- 3- Namaksar-e-Heart
- 4- Ab-e- Istada
- 5- Chakhansur
- 6- Farah
- 7- Godzara-e-West
- 8- Godzara-e-Central
- 9- Godzara-e-East

# Sample's Lithium Content

Lake	Average Li (ppm)	Concentration range(ppm)	# samples
Chakhansur	42	42	1
Dasht-e-Nawar	74	67-77	6
Godzareh East	27	12-50	10
Godzareh West	24	4-61	11
Namaskar-e-Herat 1	6	1-59	8
Namaskar-e-Herat 2	14	1-41	12

# Locations of Sample Sites

May-June, 2010

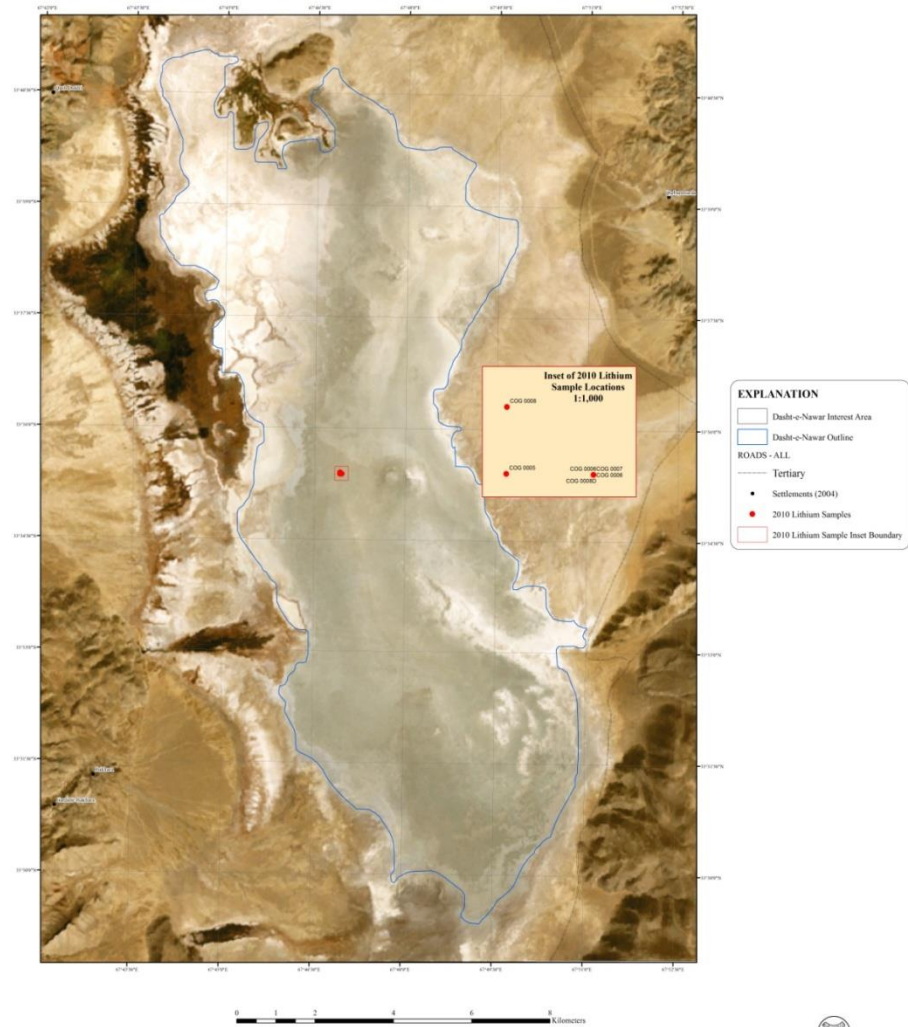
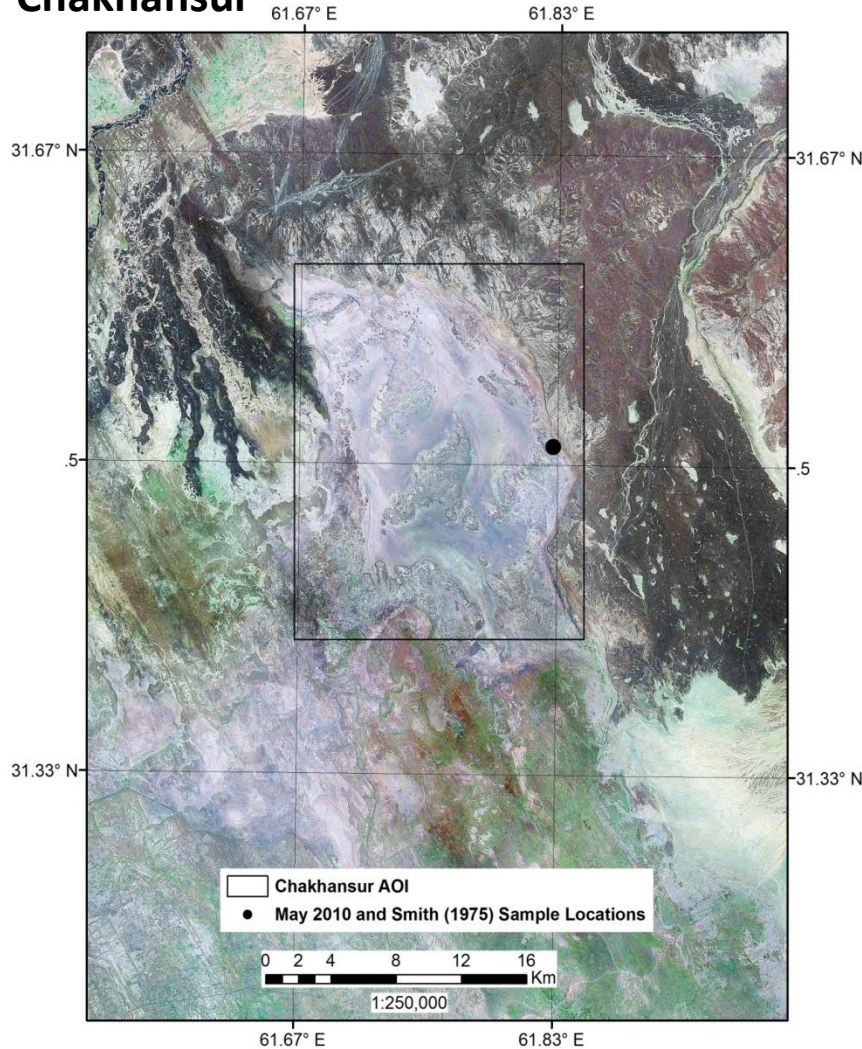


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## Dasht-e-Nawar



### Chakhansur



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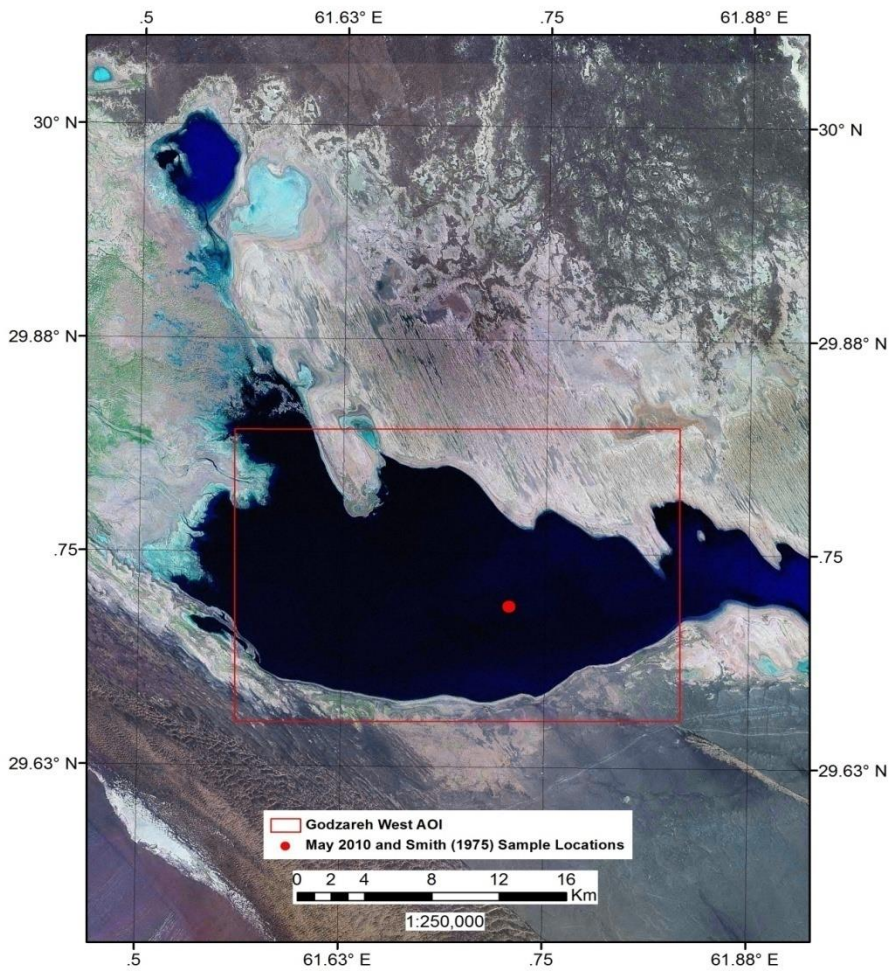
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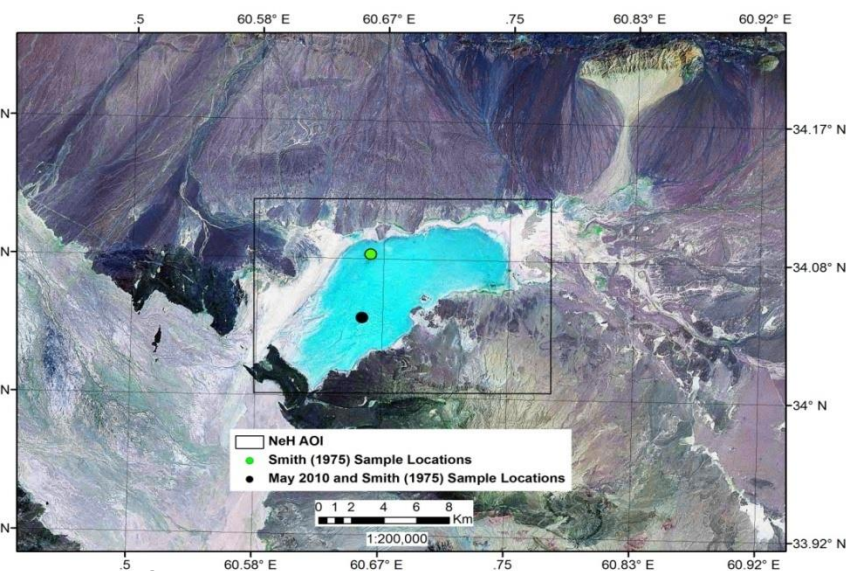
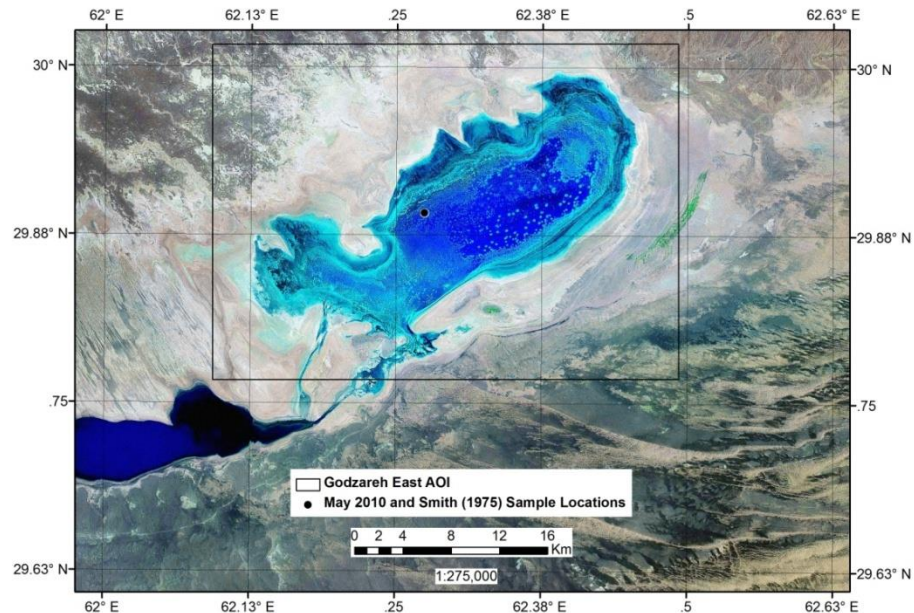
# Locations of Sample Sites

May-June, 2010  
Chakhansur

## Godzareh West



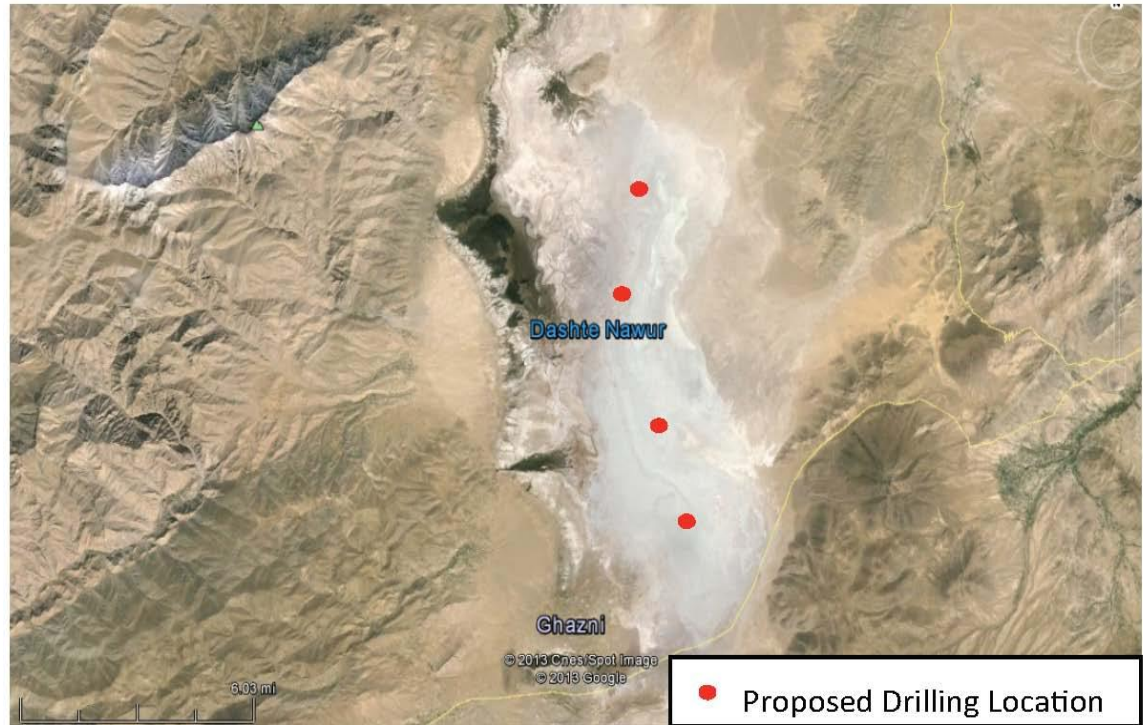
## Godzareh East



## Namaksar-e-Herat

# Proposal from Center American Technical Services:

1. Exploratory drilling at Dasht-e-Nawar
2. Use sonic drilling technology
3. Drill 4 holes, 100 m each, in center of basin
4. Collect brines and sediments for analysis



Dasht-e-Nawar

## **Dasht-e-Nawar is a good choice for continued exploration for Lithium brine because:**

- 1) highest Lithium concentrations of brine samples
- 2) the dry lake is in the southern part of a volcanic caldera, with extrusive volcanic rocks on the floor and the south rim of the caldera. Cinder cones and lava are found in the north of the caldera. Volcanic rocks may be a source of Li to basin brines;
- 3) thermal springs on the west of the depression- flow to the east. Thermal waters , more evidence of waning volcanism- a mechanism for Li to be leached from volcanic rocks and dissolved into groundwaters and brines;
- 4) geographic and geologic settings similar to dry lakes in Chile and Argentina, which are being mined for Li brine.

# Cretaceous Coal

## Steal Theory

- Generally Jurassic coal layers in the country
- Remote sensing detected sign of cretaceous c.
- Red rocks Sign of burned coal on surface
- These coals are not discovered, because they are burned in the outcrop or covered by slumping sediments from above
- Mapping and sampling for analysis and age determination of rocks



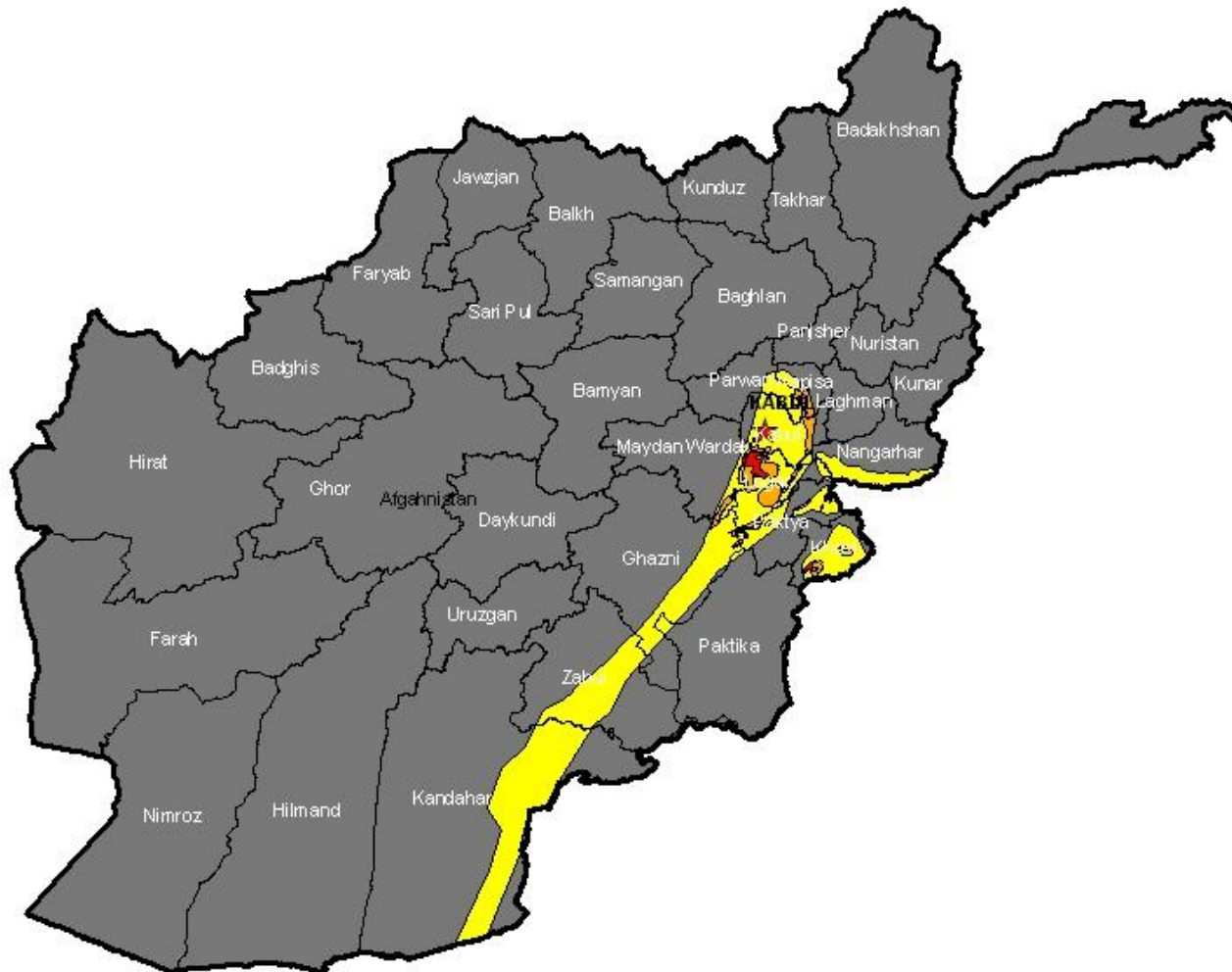


# Distribution of NCA Sections Across Northern Afghanistan

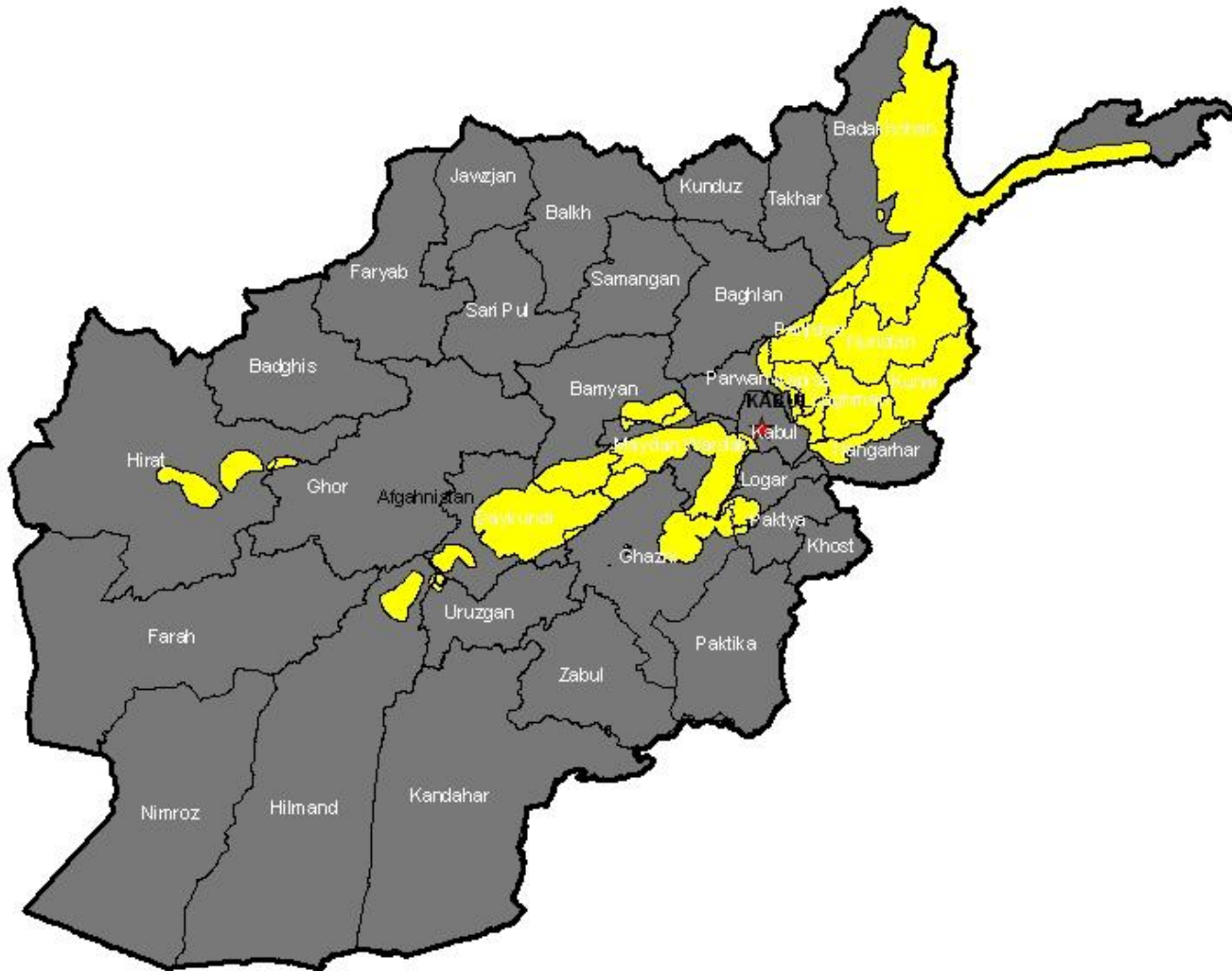


“Red Dog”  
produced  
by coal  
burning in  
the  
outcrop

# Chromite ,Talk-Magnesite

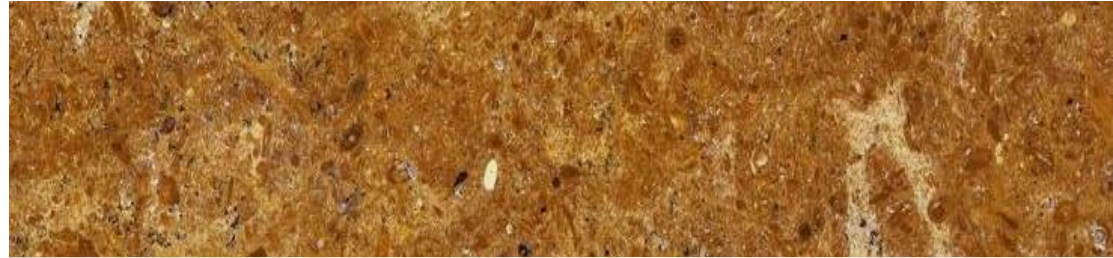


# Pegmatites with Nb,Ta, Be and Li

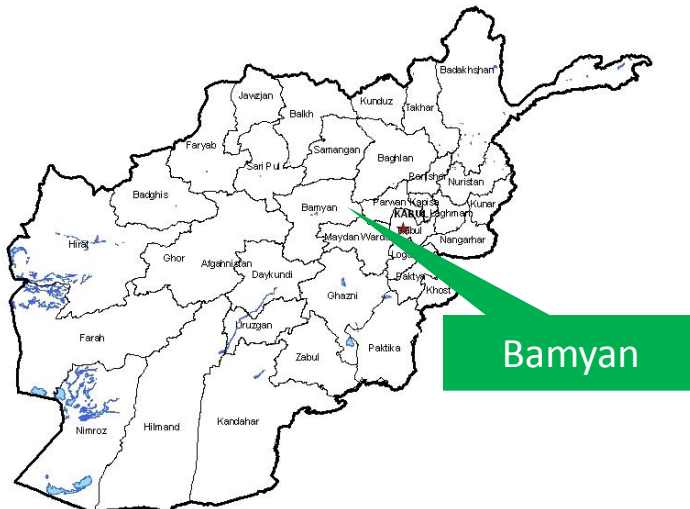
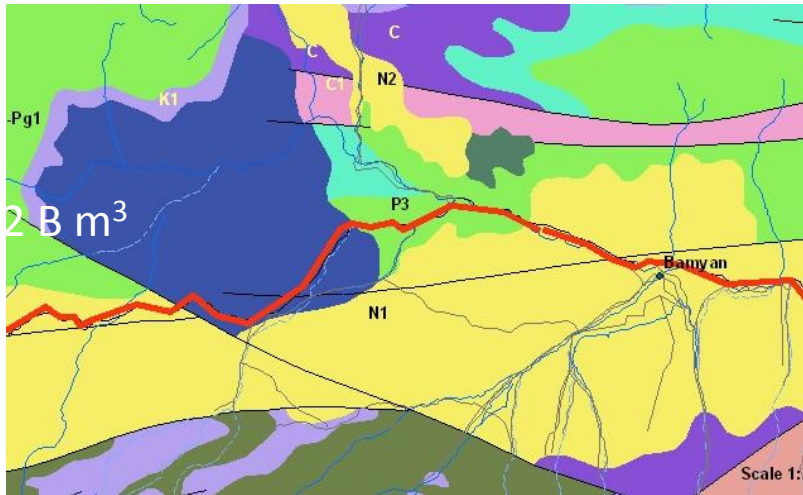


# Afghan Marble Varieties

- 34 Colors
- 40 varieties
- Billion tons Resources



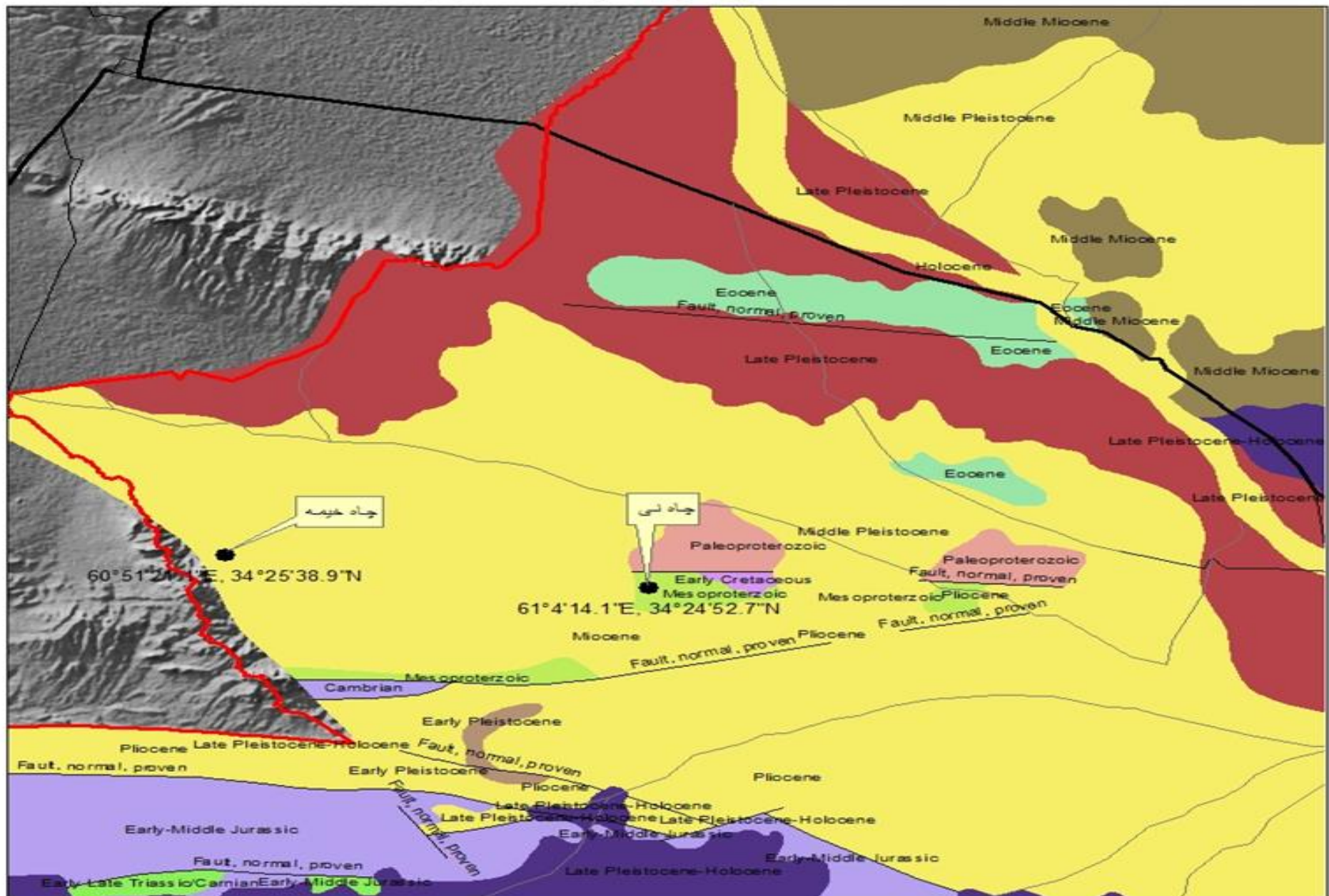
# Bamyan Granite



# Ghoryan Iron Mineralization in Heart province

- **To the Iran side across the border located Sangan famous iron mine**
- **2 iron bearing outcrops with similar Fe content**
- **Rest of the area covered by N-Q sediments**
- **Geophysical investigation needed (firs aerial)**
- **By contract with a qualified company**

# Ghorian





**THANK YOU**