



الجمهورية العربية السورية
(Syrian Arab Republic)

سورية
(Syria)



Oil Geology And Tourism In Syria

Ludovic Mocochain
Olivier Peyronel
Jean-Yves Bigot



Total Petroleum



Ecole Normale Supérieure

*Geological reconnaissance
in the Latakia Basin (Syria)*

14th to 26th October 2010

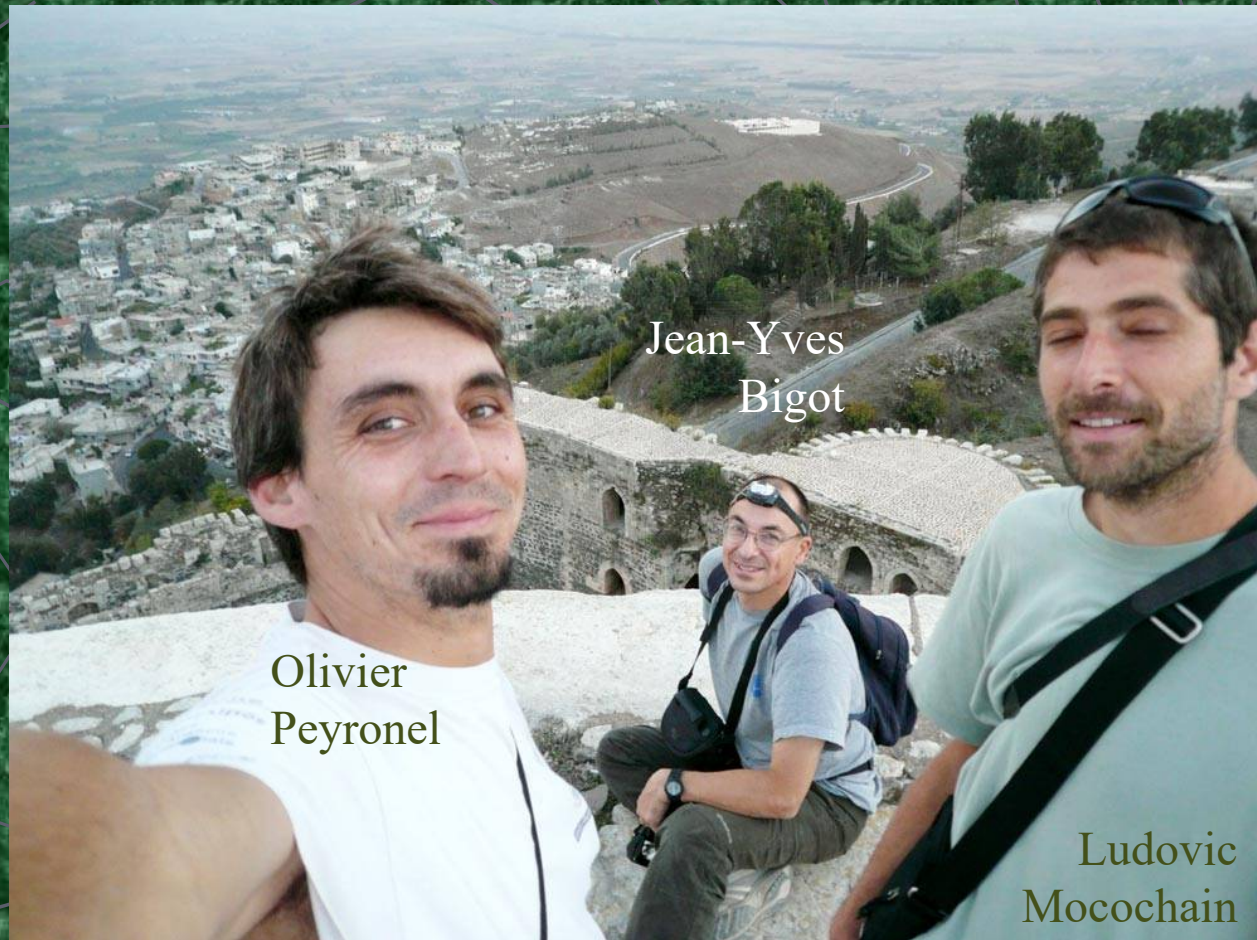
2 – The Team

The team made up of :

- **Ludovic Mocochain**, in mission for TOTAL Petroleum and the ENS (Univ. Paris 6), begins his third mission en Syria. After Cyprus and Turkey, now he refines his knowledge on the sedimentary basin of Latakia (Syria),

- **Olivier Peyronel**, guide and botanist en the Natural Reserve of Ardeche Canyon,

- **Jean-Yves Bigot**, rather specialized in caves and karst.



Jean-Yves Bigot

Olivier Peyronel

Ludovic Mocochain

3 – Lay-Over In Prague

Departure from Marignane (Marseilles), flying over the Sainte Victoire mountain, then Alps and lay-over in Prague.

Sainte Victoire Mountain (France)



Prague
(Czech
Republic)



Prague



Cheap fly and Czech company...
Yes, we must stop in Prague.

14-10-2010

4 – Rock'Elections

Prague (*Praha*) is in election campaign; the Republic square is full by the stands of political parties.



One of them is the Anti-Dinosaur Party « Praha není Jura ! ». It seems more attractive, in other words, more Rock'n'roll.

5 – Damascus



دِمَشق (Damascus)



From the large balcony of *Orient Gate Hotel*, we can see one of the oldest town of the world: Damascus. Little by little, this old district of Sarouja disappear behind the modern buildings.

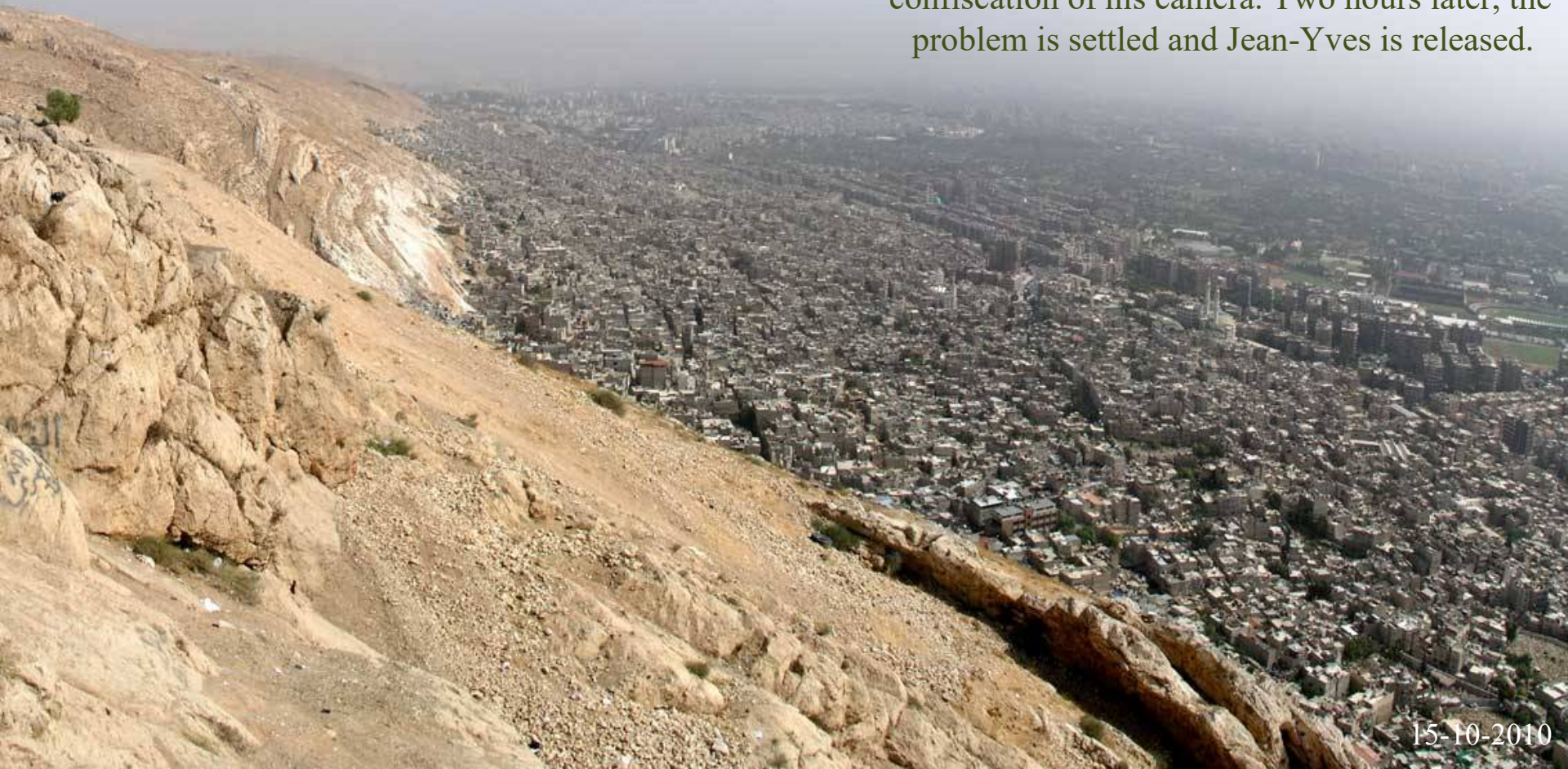
6 – Damascus

The next picture, taken near Bachar Palace, will be too much...

Cham (Damascus) panorama from the Mont. Qassioun.

جبل قاسيون (Jabal Qasioun)

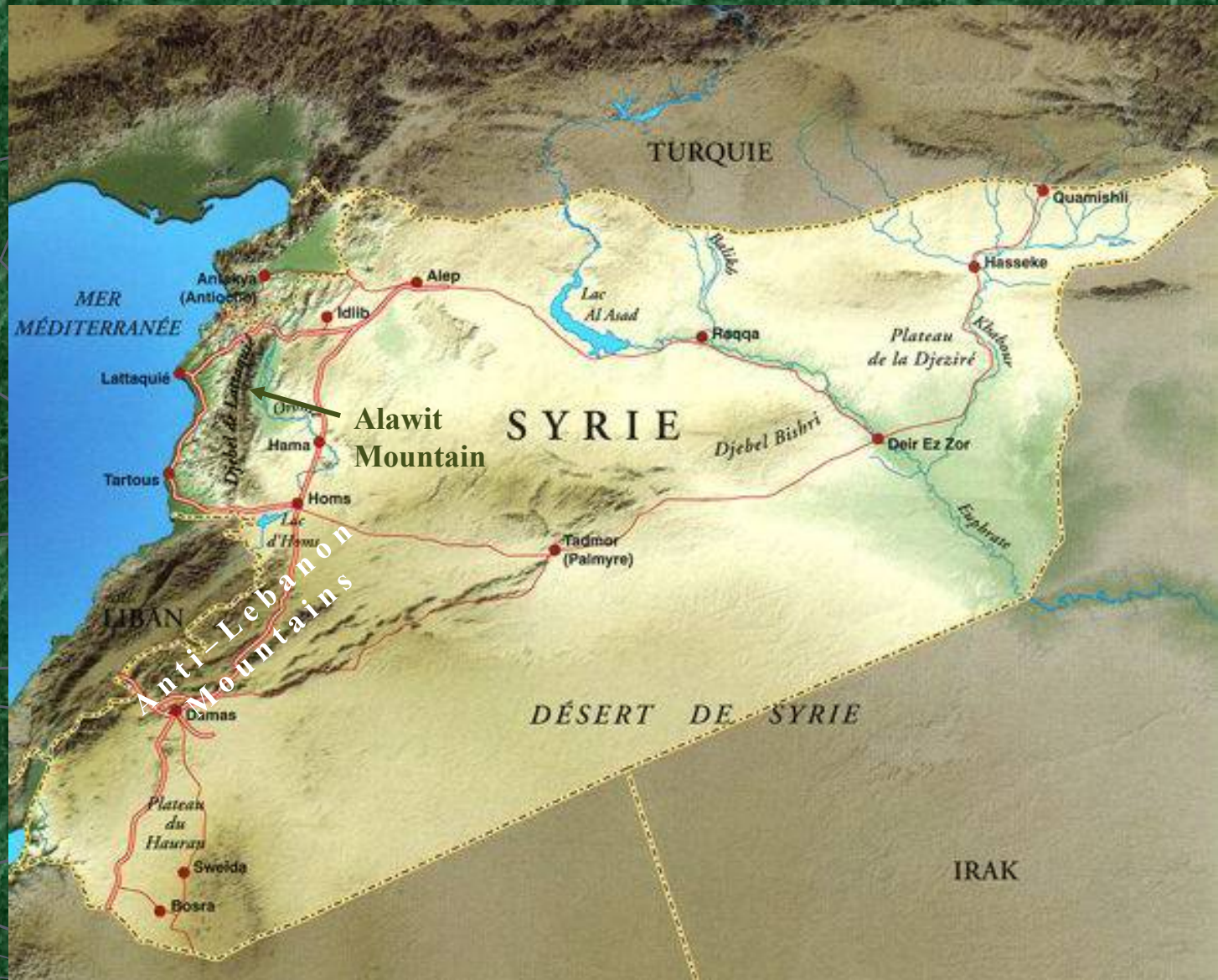
Jean-Yves, arrested by the Syrian Army, will be taken in Jeep to the barracks for checking and confiscation of his camera. Two hours later, the problem is settled and Jean-Yves is released.



7 – Syria Country

The physical map of Syria shows a important variability of landscapes (deserts, fertile plains), climates (arid or mediterranean) or relieves as a mountain range in west part of the country (Anti-Lebanon Mountains, and Alawit Mountain).

We will travel from Damascus to Latakia through Hims.



8 – Vicinity Of Damascus

Kalamoun Mountain

Aïn Tina



Maaloula



In these foothills of Kalamoun mountain (Maaloula), Aramaic language is spoken yet :
the Christ's language.

Jabal Sumajkat



15-10-2010

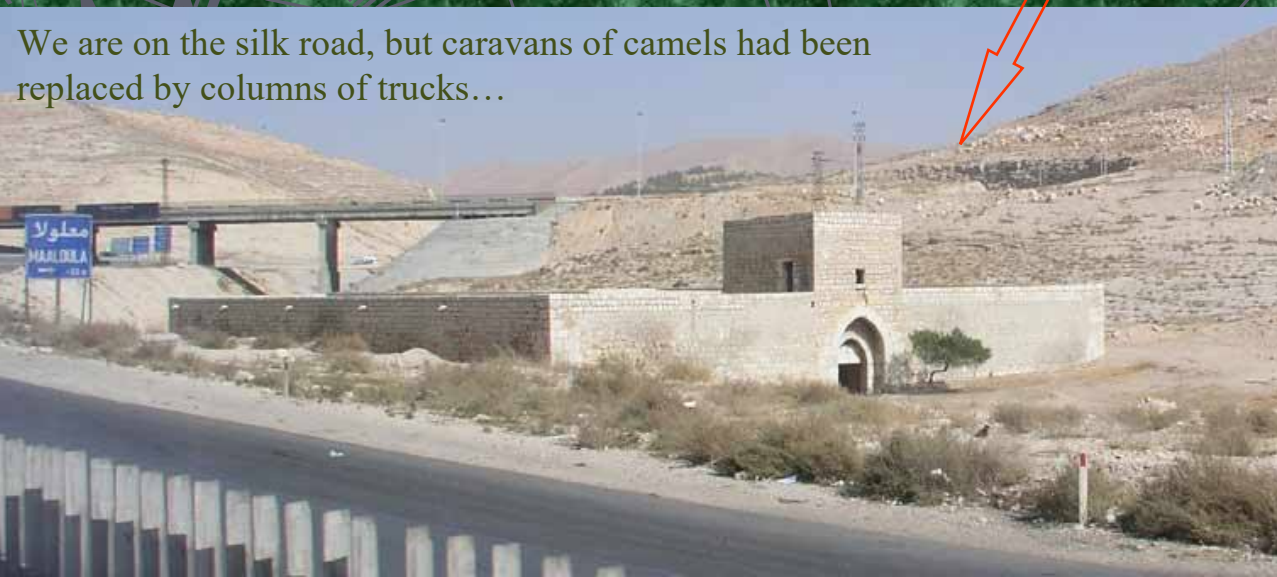
Pasture area in the vicinity of Damascus.

9 – Khan Al-Arous

The Damascus road crosses the mountain by a pass long-time known where has been built the caravanserai of Khan al-Arous (*khan* = inn).



We are on the silk road, but caravans of camels had been replaced by columns of trucks...



10 – Semi-Desert Climate

In the desert, the trees are rare near Damascus, but appear towards Hims.



Maarounah, in the north of Damascus

Sud de Homs



On the road to Hims.

11 – Bachar El-Assad

The portraits of potent Syrian men often are exposed on the sides of the main roads and official



12 – Basaltic Plain Of Hims

In west of Hims, the arid landscape is uninhabited excepted by a few Bedouins.



In the down slope, a murky pool supplied by un small river is a place of life improbably...

13 – Caspian Turtles

In this marshland, a ten of turtles, called Caspian Turtles (*Mauremys rivulata*), attempt to tear a bag up.



15-10-2010



The Caspian Turtles are carnivorous and feed little aquatic invertebrates, insects, amphibians... and of course carcass.

14 – Krak Des Chevaliers



Krak des Chevaliers

15-10-2010

The Krak des Chevaliers is a great castle but will not resist a very longtime against Muslim army...

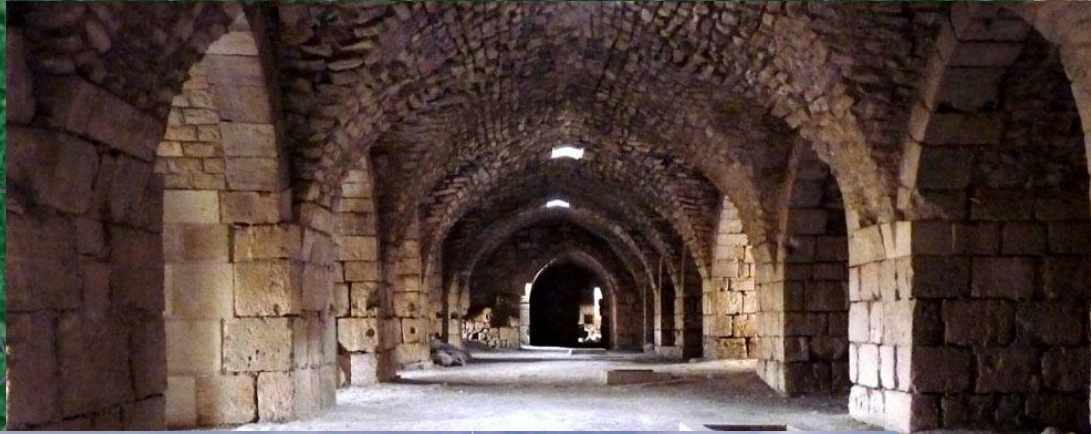
The name of Krak come from Syriac language « Kerak » means fortress.



Krak des Chevaliers

15 – Krak Des Chevaliers

Of course, the
entrance of
castle is paying,
but inside all is
free.



You must hold on tightly
to guardrail, but the
problem is...
There is no guardrail...

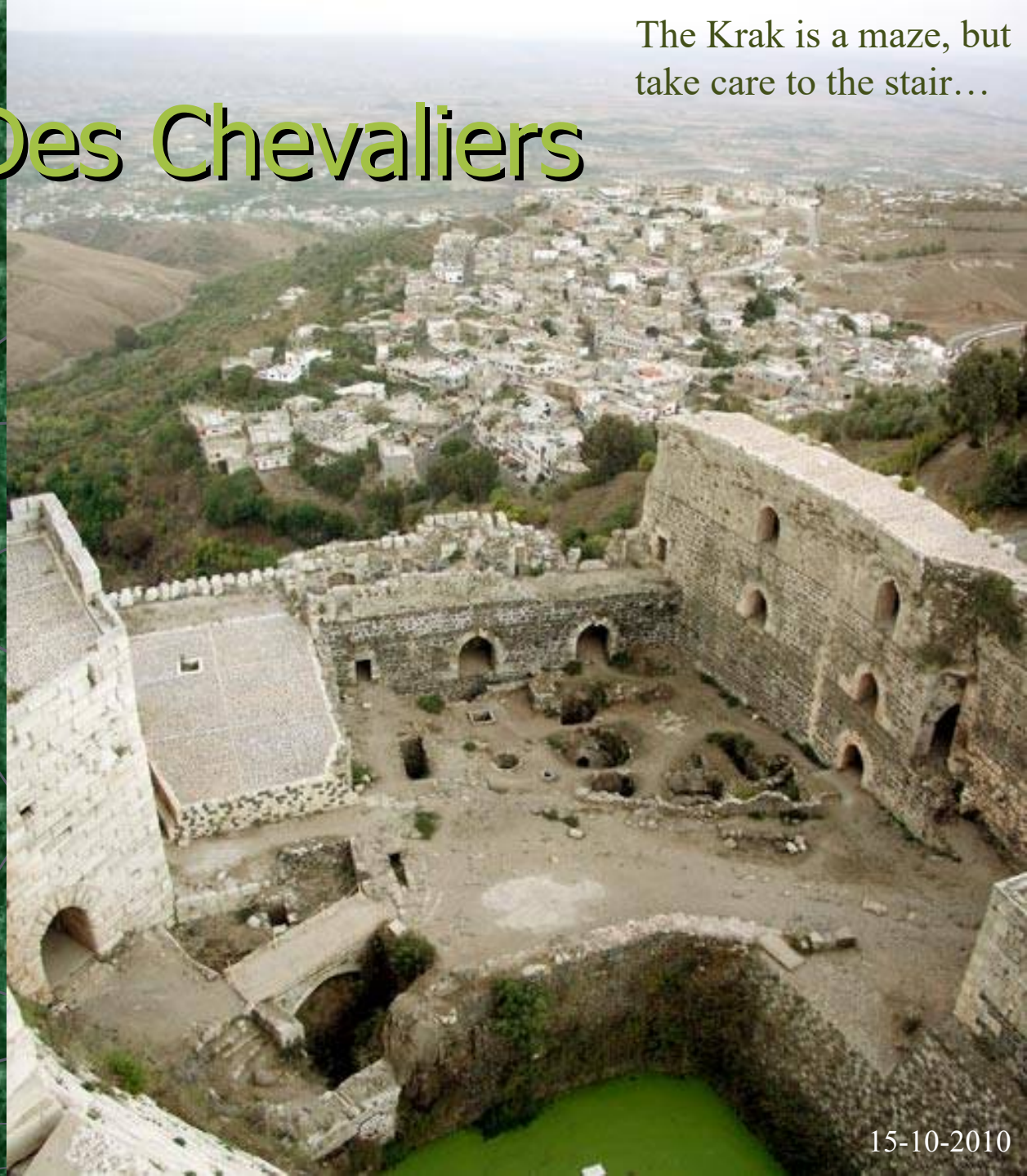
16 – Krak Des Chevaliers



No guardrail, but a very good wonderland.

The Krak is a maze, but
take care to the stair...

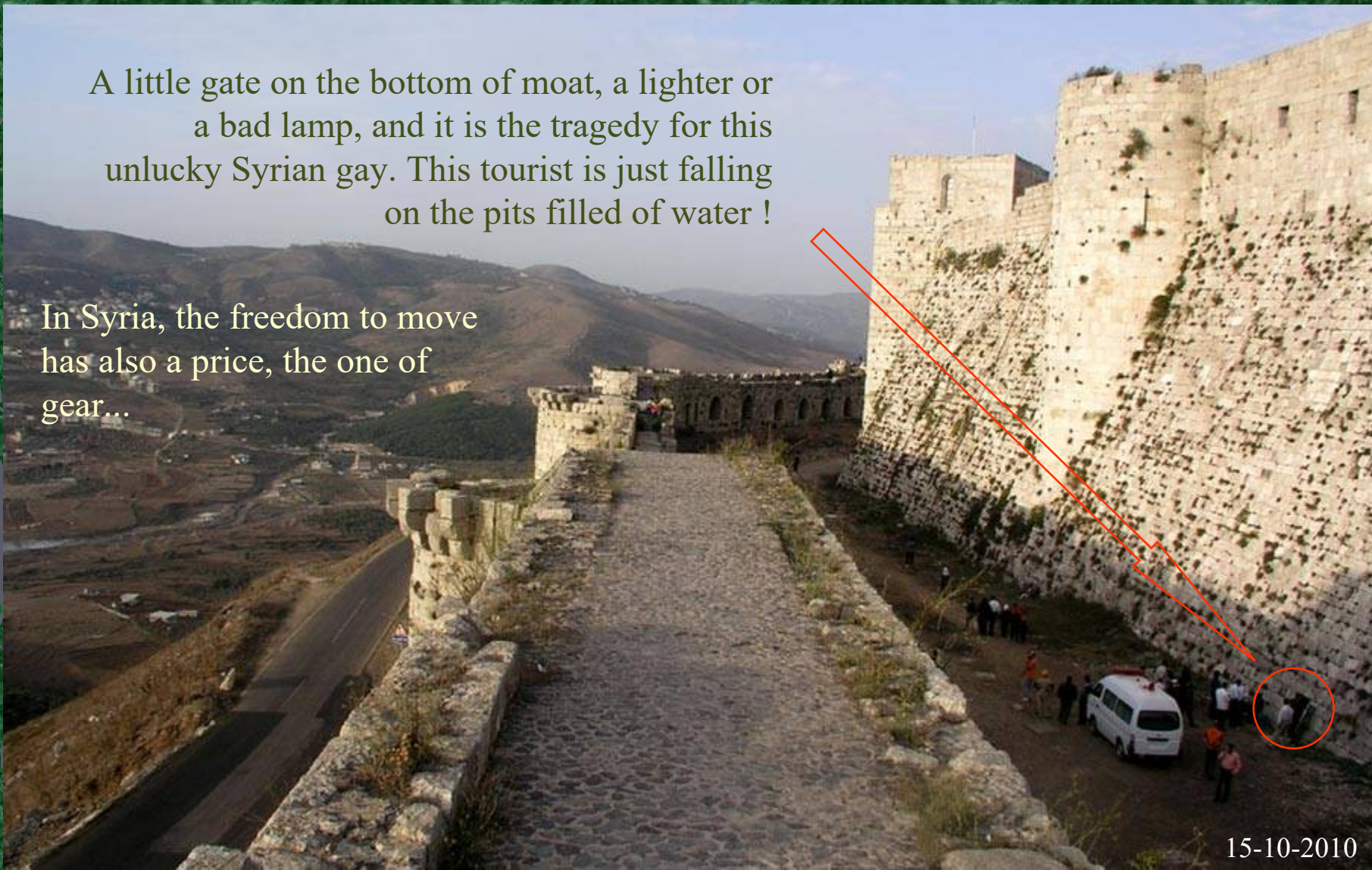
17 – Krak Des Chevaliers



18 – Tragedy In Krak

A little gate on the bottom of moat, a lighter or a bad lamp, and it is the tragedy for this unlucky Syrian gay. This tourist is just falling on the pits filled of water !

In Syria, the freedom to move has also a price, the one of gear...



19 – Fastfood

Exceptionally, we bought some food in Latakia. We arrived and we ate in Quismeen in Geological Museum.



Except the packaging, the food keeps its exotic aspect.

20 – In The Field

The geological basin of Latakia will be our field trip, it corresponds to the catchments area of Nahr al-Kabir river of which flows from NE to SO towards the Mediterranean Sea.



The catchments area of the river is limited in east by the *Coastal Mountain* (geographic official name of « *Alawit Mountain* »). Actually, it's the *Jebel Sahiliyé* (جبال النصيرية) parallel to the coast; it extends from Lebanon Mount. northward.



21 – Breakfast In Museum

Abdelkarim Al Abdalla will come with us in the field, he knows very well the Latakia Basin because he has defended a geological thesis in France (Paris VI).

Karim



We are accommodated for a couple of days in Geological Museum of Quismeen. This Museum, unique in Syria, has been invented by the Doctor Fawaz Azki of Latakia University.



Actually, he has changed his home for museum: incredible !



22 – Oil Indications

The first site of this morning is located in the forest massif of Baër in the north of Latakia.



The geological unit, called Baër-Bassit and mainly composed of ophiolites, thrusts by obduction the sedimentary deposits. This site allows to see basaltic intrusions contaminated by the oil rising to the surface. In the jargon when it smelts « oil indication » : often a good indicator for oil workers.

23 – Stopping In Slunfah



We decide to eat on the road a few local specialties.



The bread is baking into a oven where the past is stickled on the hot walls.

24 – Housing

If the building doesn't know the crisis, the environment suffers a little bit...

Slunfah (alt. 700 m) is a mountain village very appreciated by the rich foreigners (Saudi people) which come in the summer to look for a little bit cool air in the Coastal Mountain.

صانفة



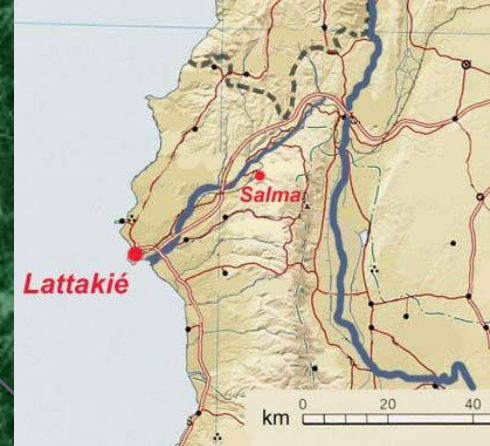
Drying of chili pepper.

The soaring demography changes the old buildings for family housing : 3 to 4 children by household.

25 – Freshwater Crabs



The freshwater crabs are colonized the Syrian rivers as Zgarro valley.



As well as marine crabs, they always are on defensive attitude...



Potamon sp.

It's amazing because, this crabs doesn't exist in France, except in Alps-Maritims district where it was brought from Italy.

16-10-2010

26 – The Chameleons



In Salma, we found a strange
reptile : *Chamaeleo chamaeleon*
recticrista, male.

The map allows to see dispersion
area of this Mediterranean
chameleon



27 – The Lizards

A skink (*Ablepharus budaki budaki*).



A stellion lizard (*Laudakia stellio ssp.*) with its impressive claws.

A endemic lizard of Syria and Turquia
Phoenicolacerta cyanisparsa.



A little gecko of Syria : *Mediodactylus kotschy syriacus*

A few Syrian lizards.

28 – Arthropods



Tarantula, bug
and
grasshopper
well hidden.



Head of
grasshopper



29 – Nahr Al-Kabir

النهر الكبير الجنوبي



17-10-2010

The Nahr al-Kabir Valley (the « great river ») flows in the centre of Latakia Basin and entrenches Miocene deposits.

30 – Messinian Canyons



But these Miocene deposits have been entrenched by Messinian Canyons in later Miocene (Messinian period) and filled by pebbles : a interesting indication clarifying the past of this region.



31 – Nahr Al-Kabir

Of course,
the Nahr al
Kabir river
isn't a wide
river, we can
cross it
without to
get wet
shoes...
Almost...



32 – A Wadi



Levant Water Frog
(*Pelophylax bedriagae*)



The big trees
grow often near
the river in
which Levant
Water Frog are
hidden.

33 – Triassic Conglomerate



In the edges of Baër forest, we found an old conglomerate dated Triassic period. The gradual scale in cm allows to imagine the size of pebbles.



Of course, the Syrian figures (oriental figures) do not correspond to our occidental « Arabic figures » ! But we can read easily the yellow numbers droning out from 60 to 70.

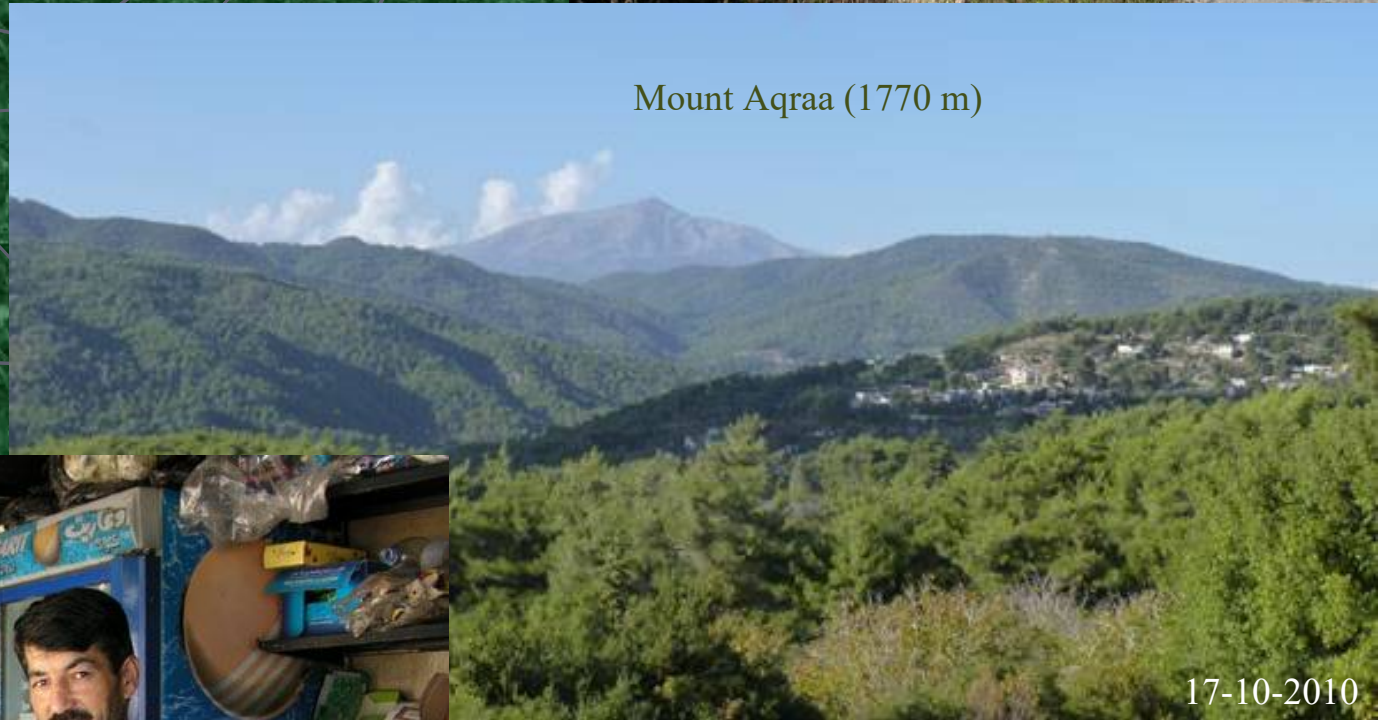
34 – Baër-Bassit

The Mount Aqraa (Cassius in Greek), dominating both Baër and Bassit Regions (Syria), is located today in Turkey.

In a village, near the border, a people speaking Turkish language indicates us that the both linguistic communities coexist.



Mount Aqraa (1770 m)



17-10-2010



This man claims to be Turkish people and doesn't look like to his fellows human being. According him, Arabic people is different et the features of face occur peculiar characteristics.

35 – The First Geological Museum

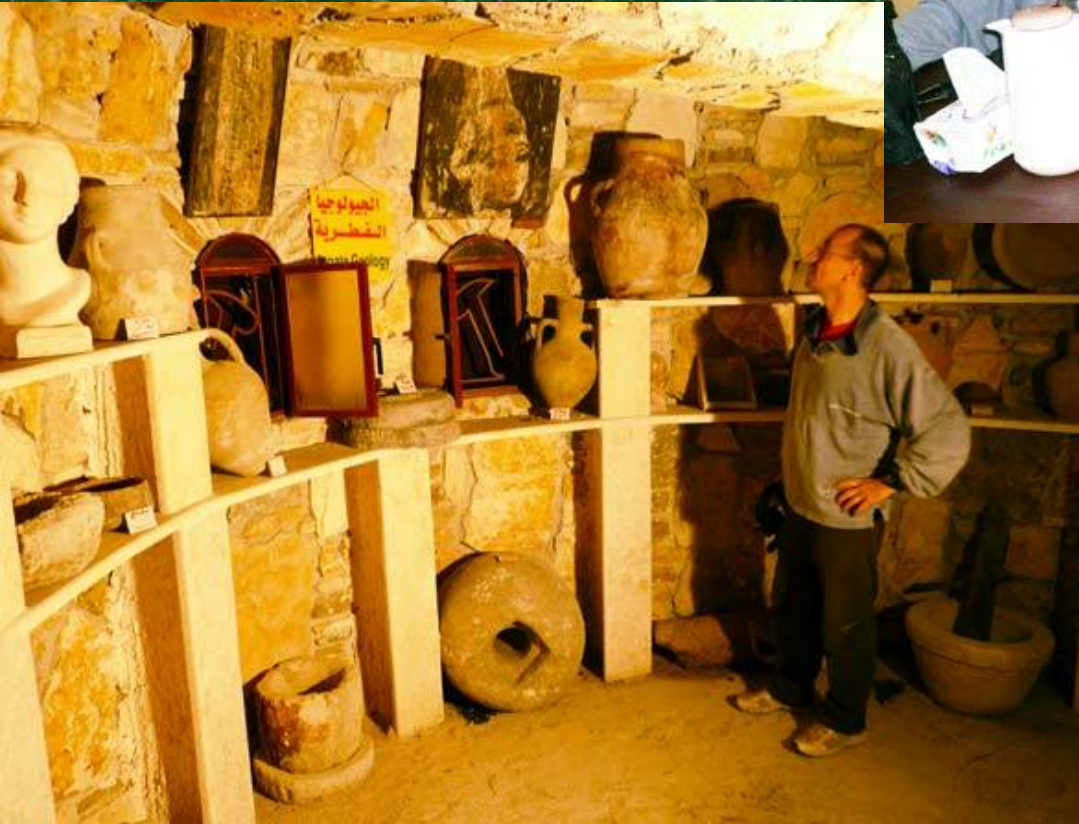
The first geological museum of Syria has been invented in Quismeen by the Dr Fawaz Azki. It's a great honor to be welcome by the famous and endearing Doctor.



J.-Y. Bigot

Doctor Fawaz Azki and his wife

L. Mocochain



F. Azki

O. Peyronel

17-10-2010

36 – Coastal Mountain Range



18-10-2010

The dip of coastal ranges deposits (*Alawit Mountains*) is emphasized by cultivated terraces.

The calcareous layers are inclined towards the sea that we guess distantly.

37 – The Terraces

The lapiaz occurs a few interesting shapes clearly karstic, but this relief doesn't constitute economic value for Syrian people...

The American embargo has forced Syrian people to make a new terraces (using bulldozers), extending the areas cultivated on the wooded slopes of the coastal range.



New terraces created on the mountain slopes

38 – Malek

The mosque of Malek is located on the crests of Coastal Mountain Range. They dominate the Ghab Plain.



Sacred site of Malek



39 – Ghab Plain

The Coastal Mountain Range dominate Ghab Plain where flows Orontes River.



Malek Mosque

East

West

Coastal Mountain Range
(*Alawit Mountains*)

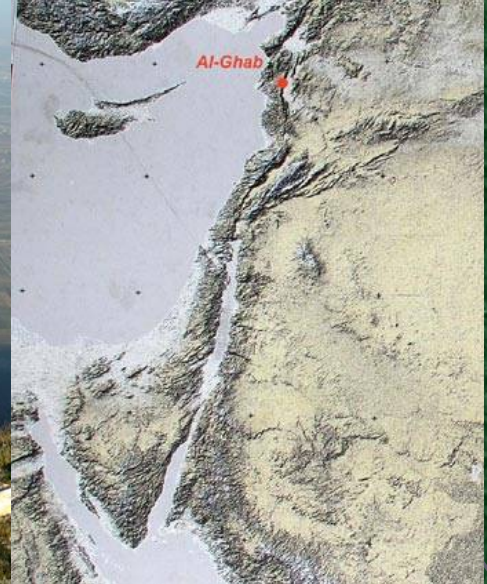
Ghab Graben



18-10-2010

40 – Ghab Plain

Actually the Ghab Graben is a rift valley (Levant Fault) crossed by Orontes River. This is a dry plain well irrigated where tobacco is cultivated.



سهل الغاب



41 – Freeway Latakia - Aleppo

The GPS (forbidden in Syria) allows to move without map (that cannot be found) and invent new routes seen on satellite-pictures (*Google map*). We can also drive at night on the freeway during road works...

But only if you have marked (GPS) some points as expansion joints opened yet or piles of rubbish...



42 – Syrian Time



Tabbouleh and chicken brochettes followed by cardamom coffee : it's the Syrian Time.

Coffee and Cardamom



Under the marsh roof during the hot hours.

43 – Lapiaz

The grass snake (*Platyceps najadum*) lives in the rocks of limestones carved by erosion called lapiaz.

Platyceps najadum najadum



Sisyphus rolling his rock ?



44 – Be Cool Attitude

Here it is an interesting store in
Slunfah...

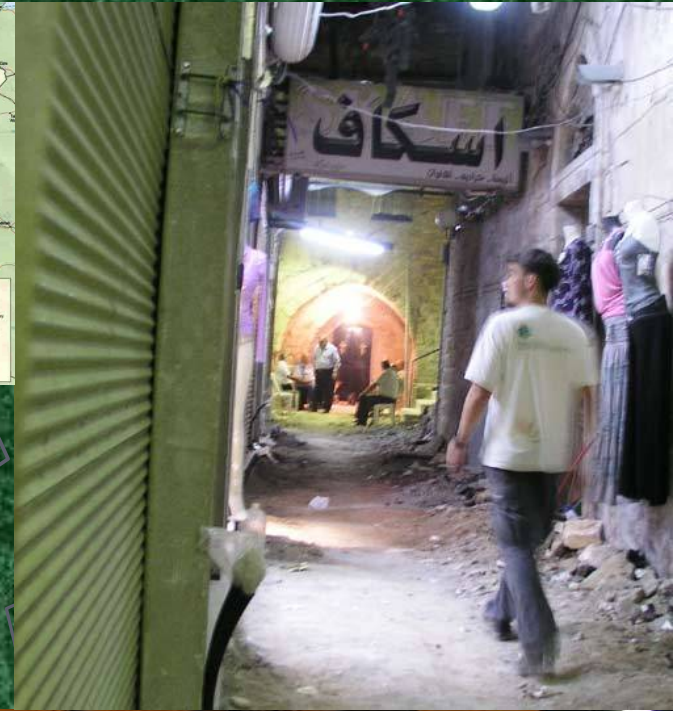


Why not ?
We could change for
the « Be Cool Attitude »
suitable to hot Syrian nights.

45 – Latakia



Checking products in store...



اللاذقية Al-Ladhiqiyah (Latakia)

19-10-2010

46 –Aleppo Soap

The herbalist will finish to show his better soap that we negotiated 200 Syrian Pounds (SYP) for 500 g.

ان كلمة صابون هي واحدة من المفردات العربية التي ادخلت الى اللغات الاوروبية .
يتكون الصابون من مواد قلوية ود هنية ، وما زالت مدينة حلب تشتهر بصناعة الصابون الذي يدخل في تركيبه زيت الزيتون .
ومنذ القدم يعتبر الصابون مادة مطهرة جيدة ، وقد اوصى ابن سينا باستعماله كضاد للقضاء أو الحصف (مرض جلد ي معة) ومبيد للعدل وببوضه ، ووزيل للقتشه .

SAVON

LE SAVON (MOT QUI VIEN DE L'ARABE SÂBUN) EST OBTENU PAR L'ACTION D'UN ALCALI SUR UN CORPS GRAS. ON FABRIQUE ENCORE AUJOURD'HUI À ALEP UN SAVON RÉPUTÉ À PARTIR DE L'HUILE D'OLIVE. C'EST UN BON DÉSINFECTANT DONT IBN SINA RECOMMANDE L'UTILISATION CONTRE LES DARTRES OU L'IMPÉTIGO. « IL FAIT PÉRIR LES LENTÈS, TUÉ LES POUX ET ENLÈVE LES SQUÂMES. »

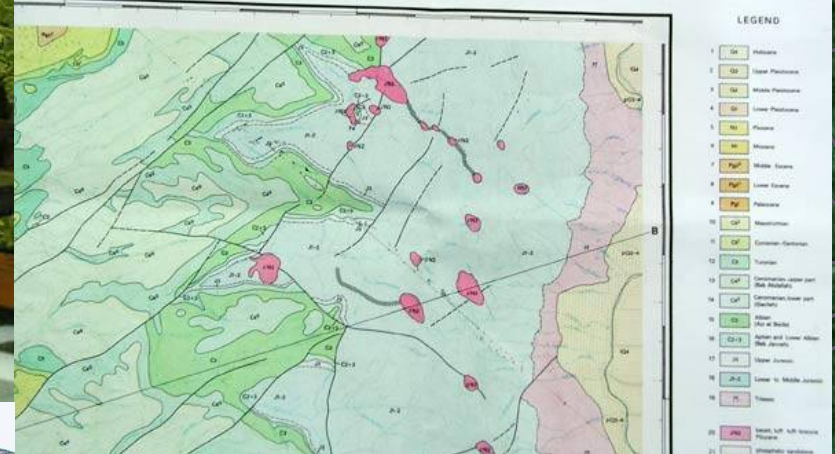


19-10-2010

47 – Dolines And Basalt



خريطة جيولوجية
GEOLOGICAL MAP OF SYRIA
SCALE 1:50 000
القياس
QERDAHA القرداحة
NI-37-S-1-c



We decide to clarify the formation of great dolines with basaltic bottom (*in pink on the geological map*). Ludovic propose to visit one of them that he already recognized : Malek Doline. In addition, this site is grandiose and occurs an archeological interest...

48 – Malek Megadoline

The enormous closed depression (megadoline) of Malek is located on the top of Coastal Mountain Range. In the bottom of this megadoline, appear the altered basalt. In the sixties, Russian geologists has believed see a volcanic chimney... We will propose an hypothesis more geological than Russian gays.

And yet, the descent to the bottom doesn't look like - not at all - one of Professor Lindenbrock in the Sneffelds crater !

Basalt



49 – The Basalt



The fault contact between basalt and limestone is proved by striates. Actually, the position of basalt is the result of faulted contact do not as magmatic chimney. According Jean-Yves « *la messe est dite* » (“the mass is told » means it’s clear), the interpretation of Russian geologists is a *geopoetic* view, in no case geological.



50 – Ruined Village

Another enigmatic question is raised
in the bottom of Megadoline...

An abandoned strange village looks
like first cities of the world...



A forgotten archeological site,
invisible from the road excites our
curiosity.

51 – Forgotten Village

The site is exotic and really strange; we are not in the Middle West Plains, but only in the bottom of big depression of Syria !



52 – Funny Set

Before to clarify this question of ruined village,
we decide to eat.
Olivier wants to use his new teapot for the first
time; he kindles a fire in place without wind.



53 – Hollywood ?

And then Olivier said us : « If we were in set of cinema ? »



54 – End Of Myth



Old inflatable for
archeological remains...

Dry-stones walls
cemented by concrete
and covered by soil...

Pine lintels
bending...

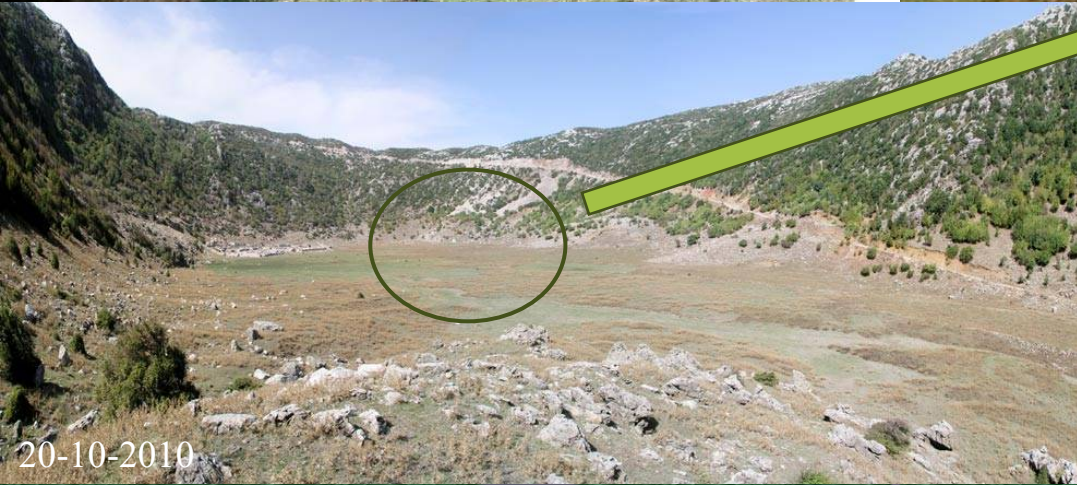
Yes, we are in a
cinema set !



Buried plastic pots...



55 – Sacred Site



But the site is grandiose, a small building indicates that it's located near the sacred site of Malek, just over the megadoline.

56 – Society Events



After the visit of Karim and Fawaz at home, we are invited by our owners for smoking the chicha : a perfumed tobacco.

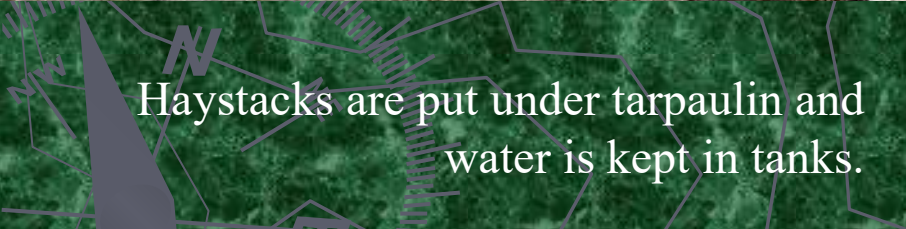
57 – Bedouins



Bedouin people lives yet in the countryside or suburbs.
Their way of life is ancestral but settled people respects it.

58 – Bedouins

Bedouins in the vicinity of Al-Haffah



59 – Bedouins



Today, the Bedouin people of Slunfah mountains moves house for settle more far further.

Slunfah is a summering on mountain where grows a peculiar specie of oaks.



The Bedouins live mainly on livestock farming.

60 – Bedouins



Bedouin camp near Saladin's Castle.



The livestock is penned in tents.

21-10-2010

61 – At Home In Shikh Hossamo

View on the Aqraa Mountain from the balcony



We have preferred to rent an accommodation at *Shikh Hossamo*, a little village located 5 km from Al-Haffah and 3 km from Saladin's Castle.

62 – Saladin's Castle

قلعة صلاح الدين



21-10-2010

The Saladin's Castle is located between two valleys, the third side is bared by a moat cut into the rock. At first, it was the « Château of Saone », and then this crusader fortress has been ceded to the Mamluk Sultan Baibars in 1188.

63 – Saladin's Castle



65 – Sunny Beach

The development of seaside resorts in north of Latakia is the reason why many archeological sites have been found.



The Meridian Hotel



A beach of Ibn Hani Cape in north of Latakia

21-10-2010



66 – Garbage Recycling



The problem of garbage is a real problem in Syria as well as in developing nations. The beach located near the Meridian Hotel (a standing hotel) is strewn with garbage (plastic bags).

Despite the efforts of government (advertising campaign), few people is sensible yet of the ecological attitude.



67 – Basalt

The great doline of Djoubé (Djoubit Bourgal) occurs a basaltic bottom that is cultivated.

The age of basalt is dated of Cretaceous (Aptian), it contains fossil wood.



68 – Pictures



22-10-2010

The crazy men of
photography in action...

Following a van for take
some pictures : a hawker
transporting plastic
trinkets...



Khalib Taha with
his five children
front of the
school of Djoubé
near Djoubit
Bourgal Village

69 – Apamea and Ghab Plain

From the promontory of Coastal Mountain, we can see the surrounding walls and the colonnade of roman city Apamea (*Afamia* in Arabic).



North

South

Djebel Zawiye

Orontes River

Ghab Plain

70 – Orontes River

Orontes River originates in Lebanon, crosses the Ghab Plain and Turkey before reaches the Mediterranean Sea. Orontes River has been canalized in the goal to irrigate the Ghab Plain. With its Mediterranean climate, the population of this part of the Syria grows quickly.



نهر العاصي

22-10-2010

Orontes River canalized.

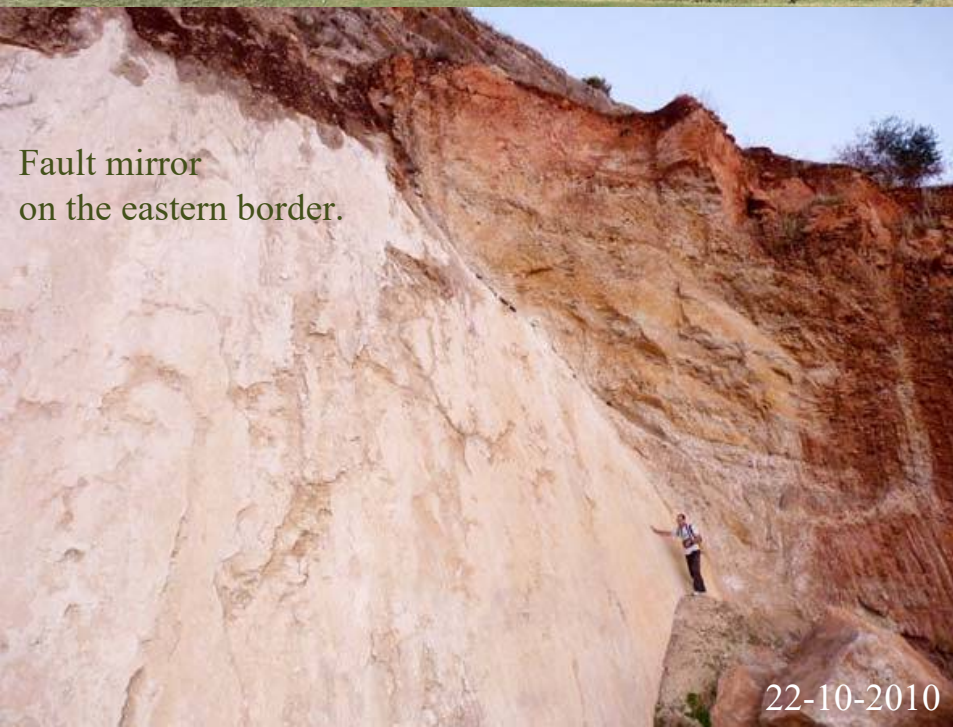
71 – Ghab Graben



The Coastal Mountain, forming the western border of the graben.



Muslim cemetery on the East side graben.



Fault mirror on the eastern border.

The Ghab Plain is a graben, sort of collapse trench filled by alluvial deposits brought with Orontes River. The west slope is very steep, whereas eastern slope (*Djebel Zawiyé*) is less marked. But this side occurs faults mirror very smooth visible in quarries.

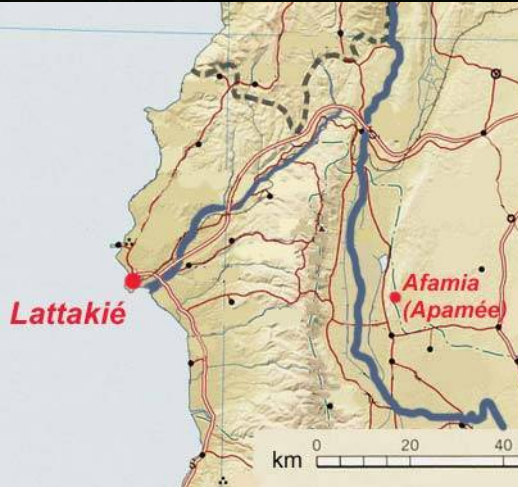
22-10-2010

72 – Apamea

Roman ruins of Apamea, the colonnade corresponds to the main street, the *cardo maximus*, crossing the city defended by surrounding walls of 8 km long.



آثار افاميا



22-10-2010

73 – Apamea



22-10-2010

The *cardo maximus* (or Great colonnade) is 1,8 km long.

74 – Apamea

Fluted cable columns

Zeus Temple



22-10-2010

75 – Swindling

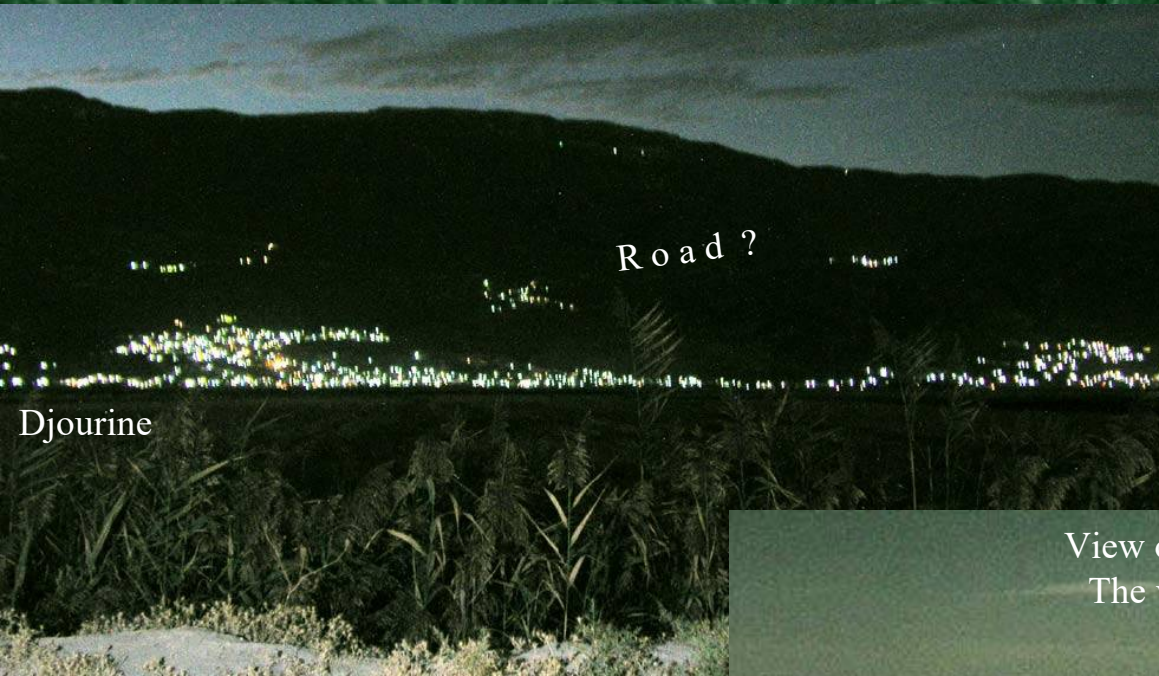


The strange noise of motorcycles rolling on the *cardo* evokes the economical reality.

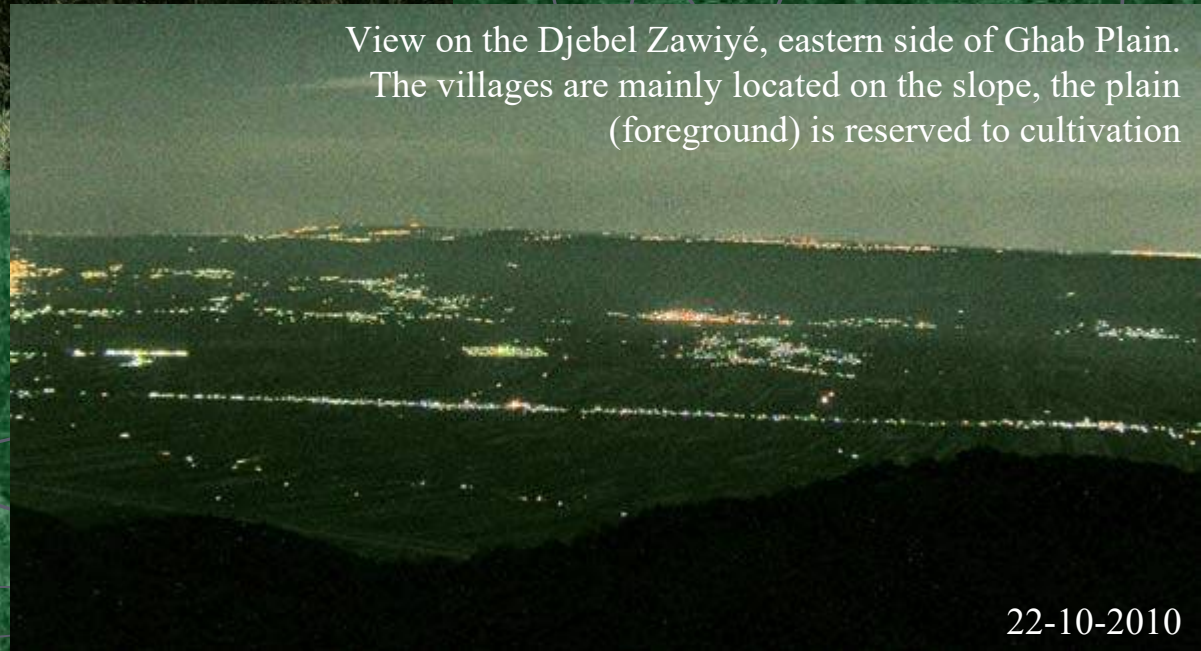
A Syrian gay on motorcycle came to Ludovic for to show a sculpted ivory lamb (price 20 euros). Ludovic pretended that he's an official archeologist in mission fighting against illegal trade. Our trader went away without to ask his registration number... Of course, these archeological objects are copies of museum...



76 – Ghab By Night



The night came on Apamea ruins and we decided to back home by a road more direct. We haven't got map, but we can see northward the lights of antenna tower of Slunfah dominating Ghab Plain...



View on the Djebel Zawiyé, eastern side of Ghab Plain. The villages are mainly located on the slope, the plain (foreground) is reserved to cultivation

A cross the plain, we look for our route, rolling on the track and then a cross the fields, straight on the lights of a village (Djourine), because it seems that a road draws on the slope of the mountain...

77 – Al-Haffah Gypsum

Near Al-Haffah, badlands are developed where nothing grows. The rock shows on the surface, it's gypsum rock dating Miocene (Messinian period): a evaporitic rock, a type as well as salt.



78 – Fast Solution



The superficial solution features of gypsum are the result of a long exposition to the rain.

In a few years, fluted appear and the dissolve matter is get away.



79 – Gypsum Tomb

In the messinian gypsum of Al-Haffah, we make out a black hole, it's a ancient tomb with sarcophagus carved.



The gypsum being extremely soluble, the rain and the time had begun the destruction of this tomb. The erosion shows a ancient tomb in the origin more deeply buried. Then, we can measure the very speed solution of gypsum...

80 – Ugarit

Syrian Banknote of 50 pounds showing the Ugarit Tablets.



Ugarit Site



On the shelves of Mediterranean Sea was born the Ugarit City...



رأس شمرا

Here, in the end of Bronze Age, the « Sea people » invented cuneiform alphabet attested to Ugarit tablets.



A square in Royal Palace of Ugarit

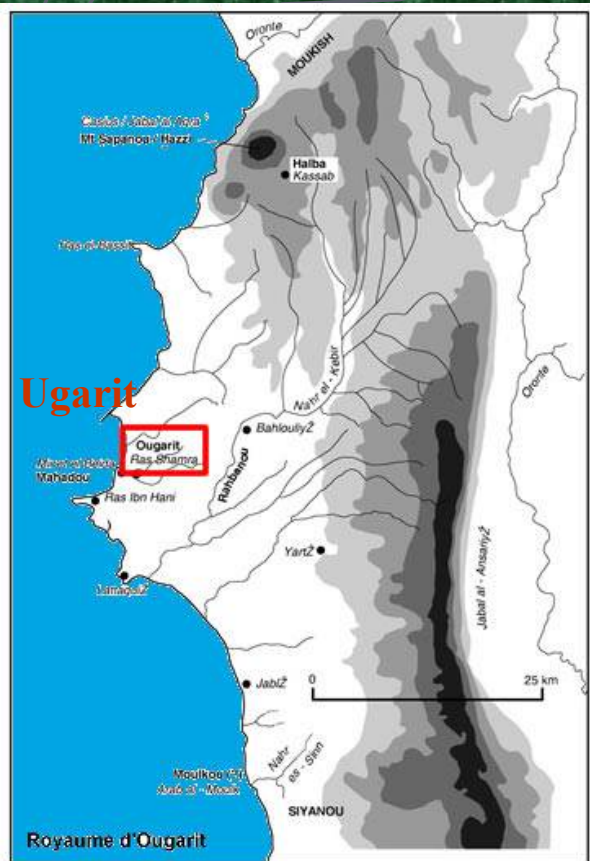


81 – Ugarit

The first excavation of Tell Ras Shamra (Ugarit City) began in 1929.



The borders of Ugarit Kingdom correspond *grosso modo* to Latakia Basin delimited by the natural frontier: Coastal Mountain and Jabal Aqraa.



The Ugarit Kingdom.

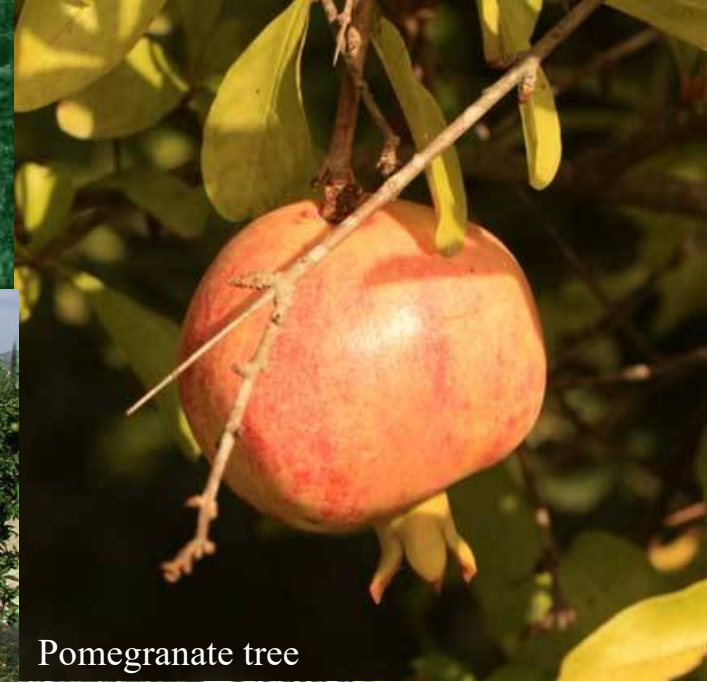


The postern

82 – Fruit-Trees



Orange trees plantations



Pomegranate tree

The fruit-trees are numerous.



Strawberry tree



Orange tree

83 – Oaks

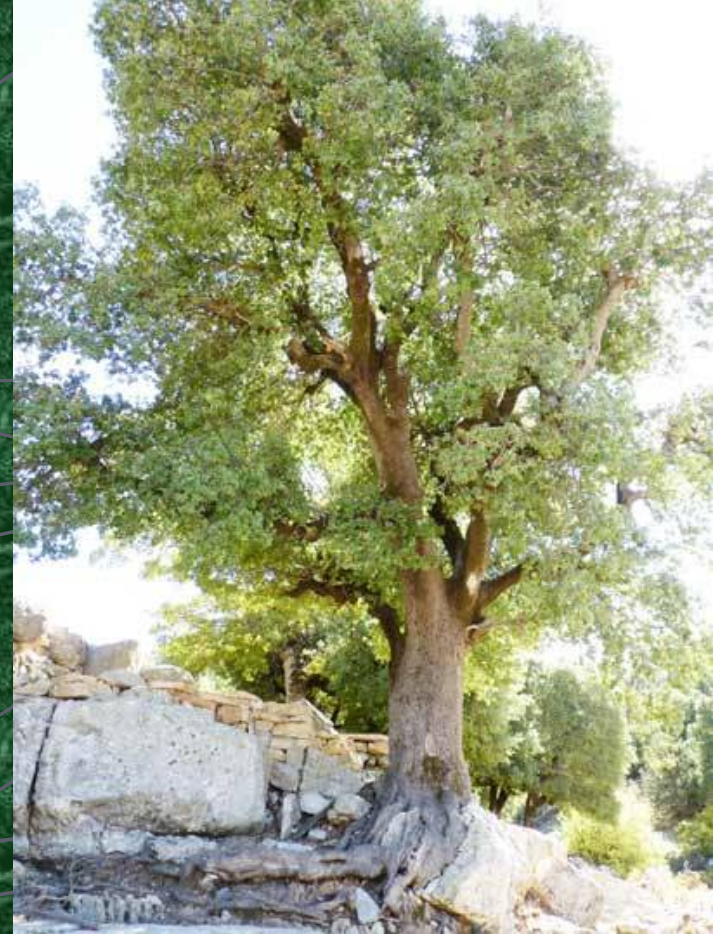


Holm oaks or Shrub oaks

It exists many varieties of oaks rising on the slope of the mountain.



In dry atmosphere, we can see Holm oaks with acorns well protected of desiccation.



Oak leaves of Slunfah forest

84 – Cedars

The Lebanon Cedar (*Cedrus libani*) grows on the slope of Slunfah Mountains, but the wind often changes it in Bonzäi.

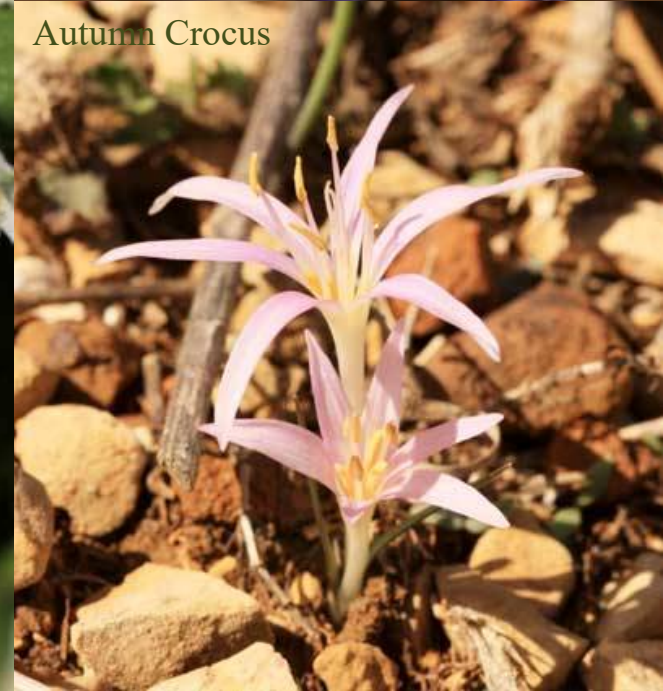


85 – Flowers

Indeterminate...



There are many flowers in Syria.



Autumn Crocus

Crocus

Jasmine

Thistle

86 – Goodbye Latakia



This is our last evening together, Karim and Fawaz invite us in the *Venus* Restaurant of Latakia.

To morrow morning, Olivier and Jean-Yves will take the bus to Damascus.

Anti-Lebanon Mountains near Damascus



Ludovic will stay in the Latakia region until 10th November and go on the geological reconnaissance.

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87 – Back to Damascus



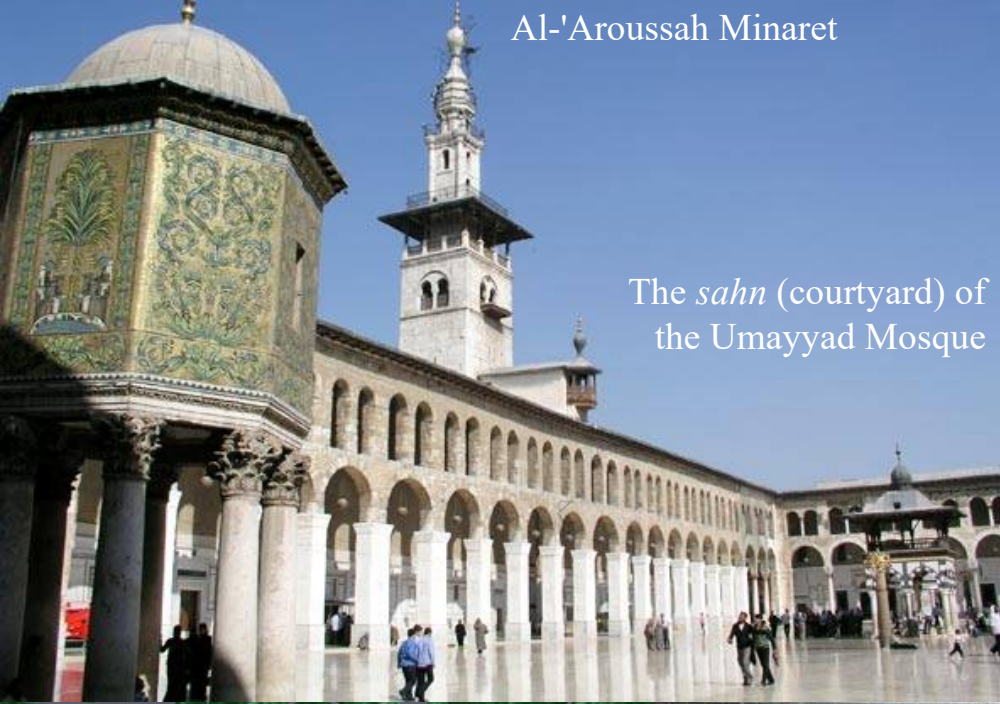
The old city of Damascus contains a few roman columns.

Columns of Jupiter Temple

Near the both main axis (the *cardo* and the *decumanus*), we find the great mosque (Umayyad Mosque).

88 – The Great Mosque

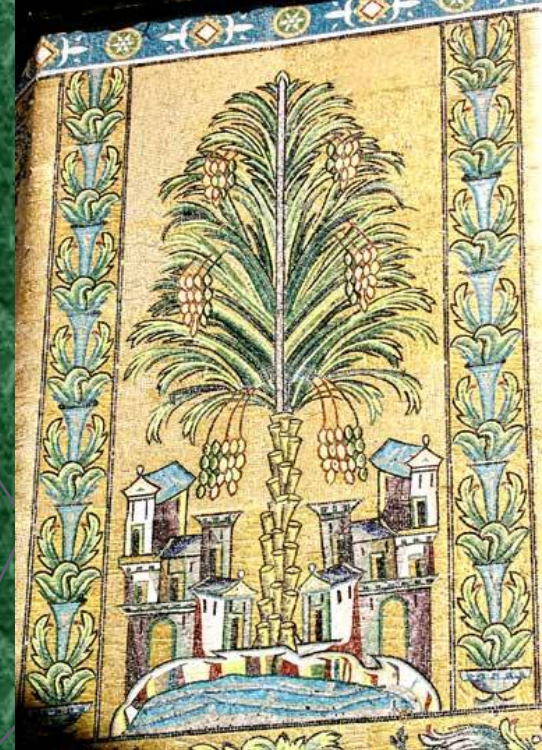
The Treasure



Al-'Aroussah Minaret

The *sahn* (courtyard) of the Umayyad Mosque

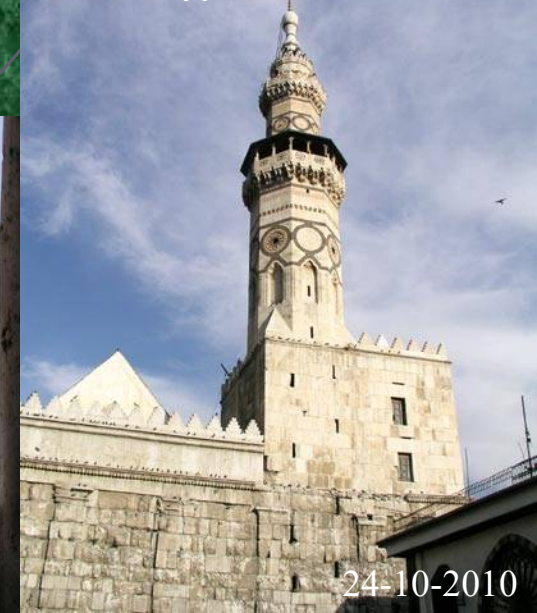
The ideal city according the Omayyad view: water, dates, in other words the Paradise.



The « Treasure House » is supported by eight Corinthian columns (used again of course).



Al-Gharbyyah Minaret



89 – Hamidieh Souk



90 – Stalls



The Syrian patisserie always is great



Perfect stall

Near the Orthodox District, we found a maker of boxes specialized in marquetry.



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91 – Perfumers

The reputation of this perfumer, located in the Damascus Souk, had displaced yesterday a Syrian TV team ! So, today we ask him to prepare us a special cocktail: jasmine, rose, etc... But he will keep his trade secret secret.



Fabrication of the Rose water

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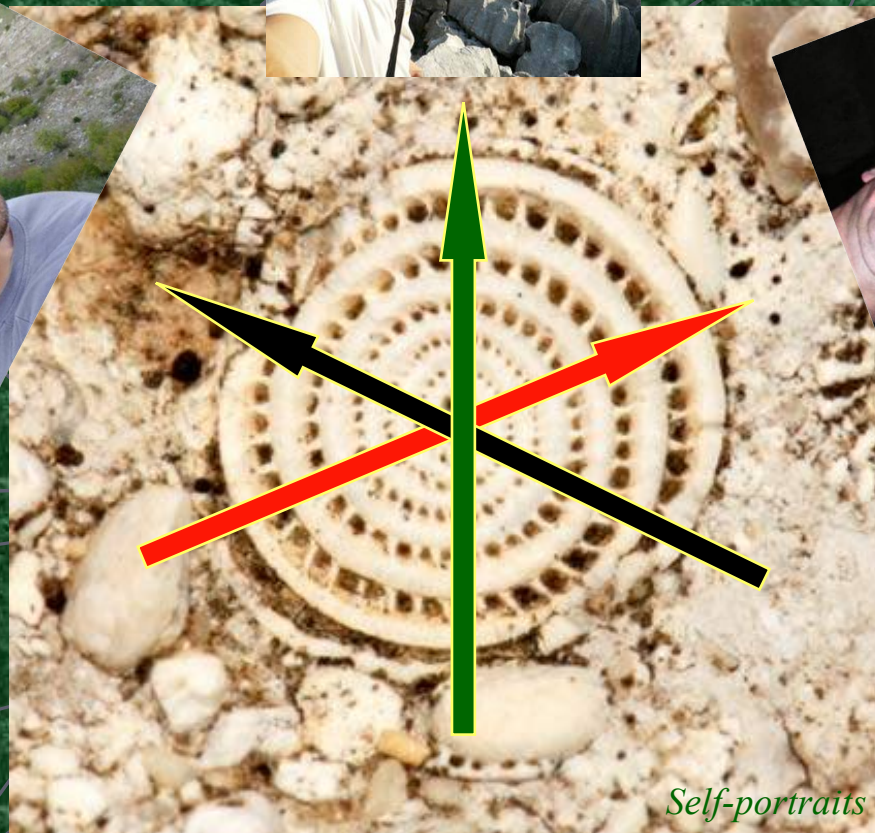
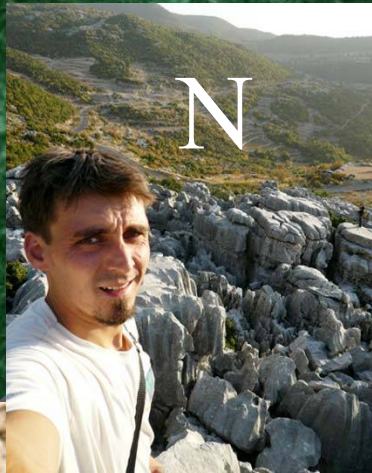
92 – Stall Put Together



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In more popular souk, we can find a produce department
and of course lower prices.

93 – End



Self-portraits

