

Budowa geologiczna okolic Riyadu (Arabia Saudyjska)

Geology of the Riyad vicinity (Saudi Arabia)

(PART I)

**Jurand Wojewoda
Abdallah Memesh
Sallah Dini**

**Wszystkiego w sam raz i ...
... na czas!**

All just right in just time!

last one...

**Bóg lub Ewolucja
tak ukształtowała
umysły niektórych ludzi,
że ich instynktowna zdolność
do rozpoznawania piękna jest
praktycznym instrumentem do
znajdowania prawdy...**

John Wheeler



*Mapping Department
Wrocław University*



*Mapping Department
Saudi Geological Survey*



*Mapping Department
Saudi Geological Survey*

**Jurand Wojewoda
Abdallah Memesh
Sallah Dini**





Seek simplicity, and distrust it...

Poszukaj prostoty, lecz jej nie dowierzaj...

Alfred Whitehead





Seek simplicity, and distrust it...

Poszukaj prostoty, lecz jej nie dowierzaj...

Alfred Whitehead

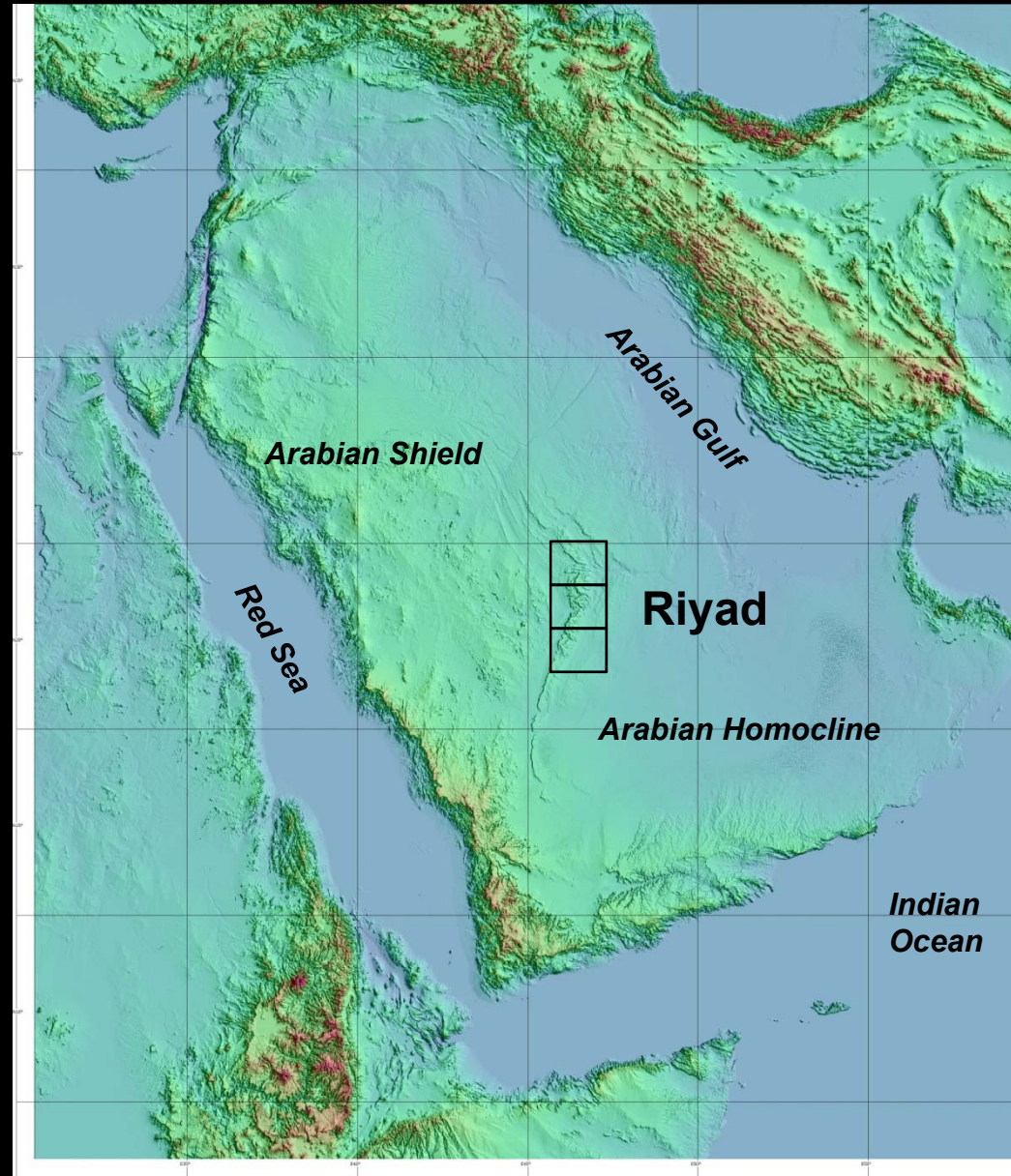


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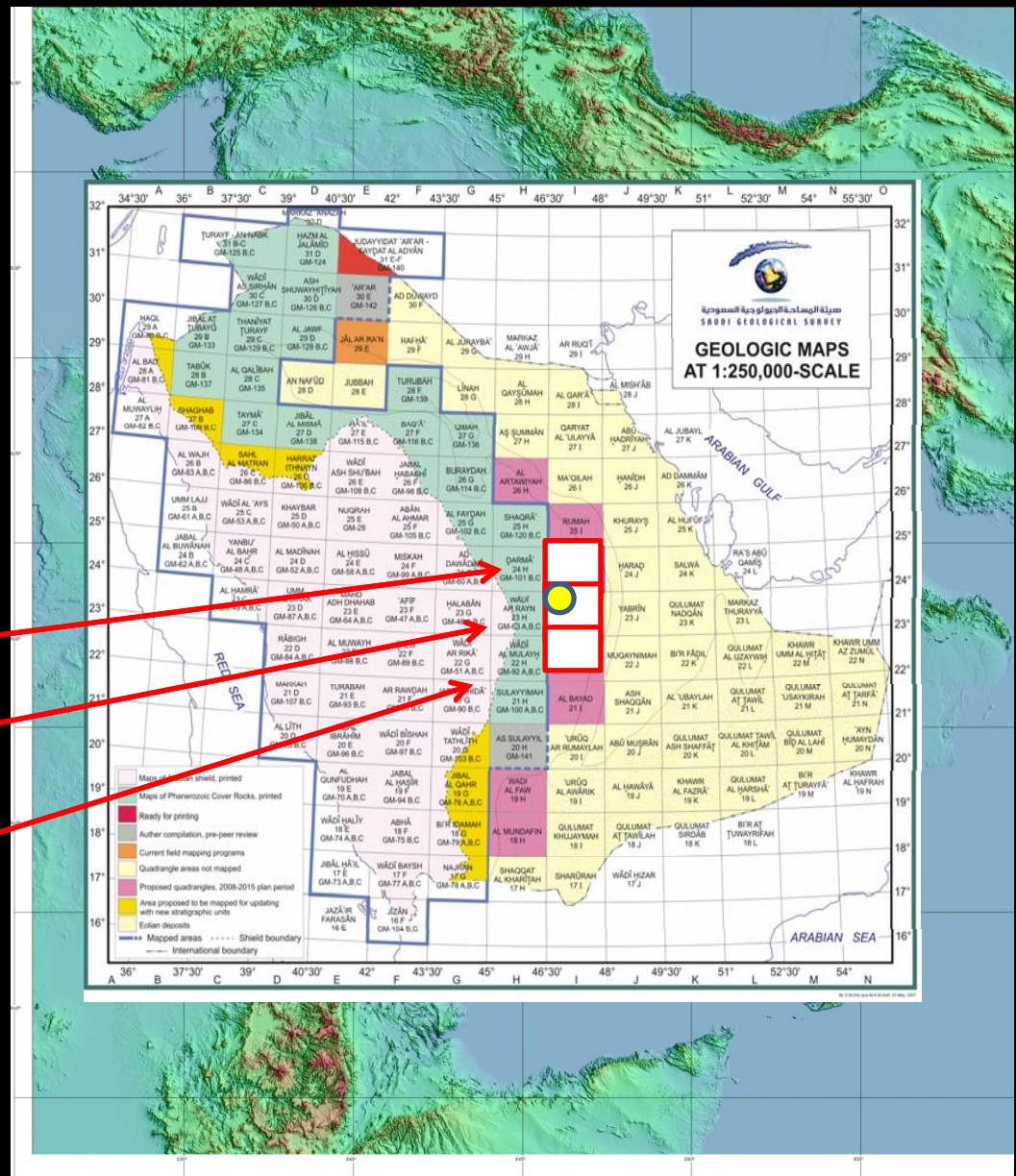
- *regional geological & topographic setting*
- *sedimentary & palaeogeographic context*
- *disasters & civilization*
- *geohazards*



- regional geological & topographic setting



geologic maps at 1 : 250 000 - scale



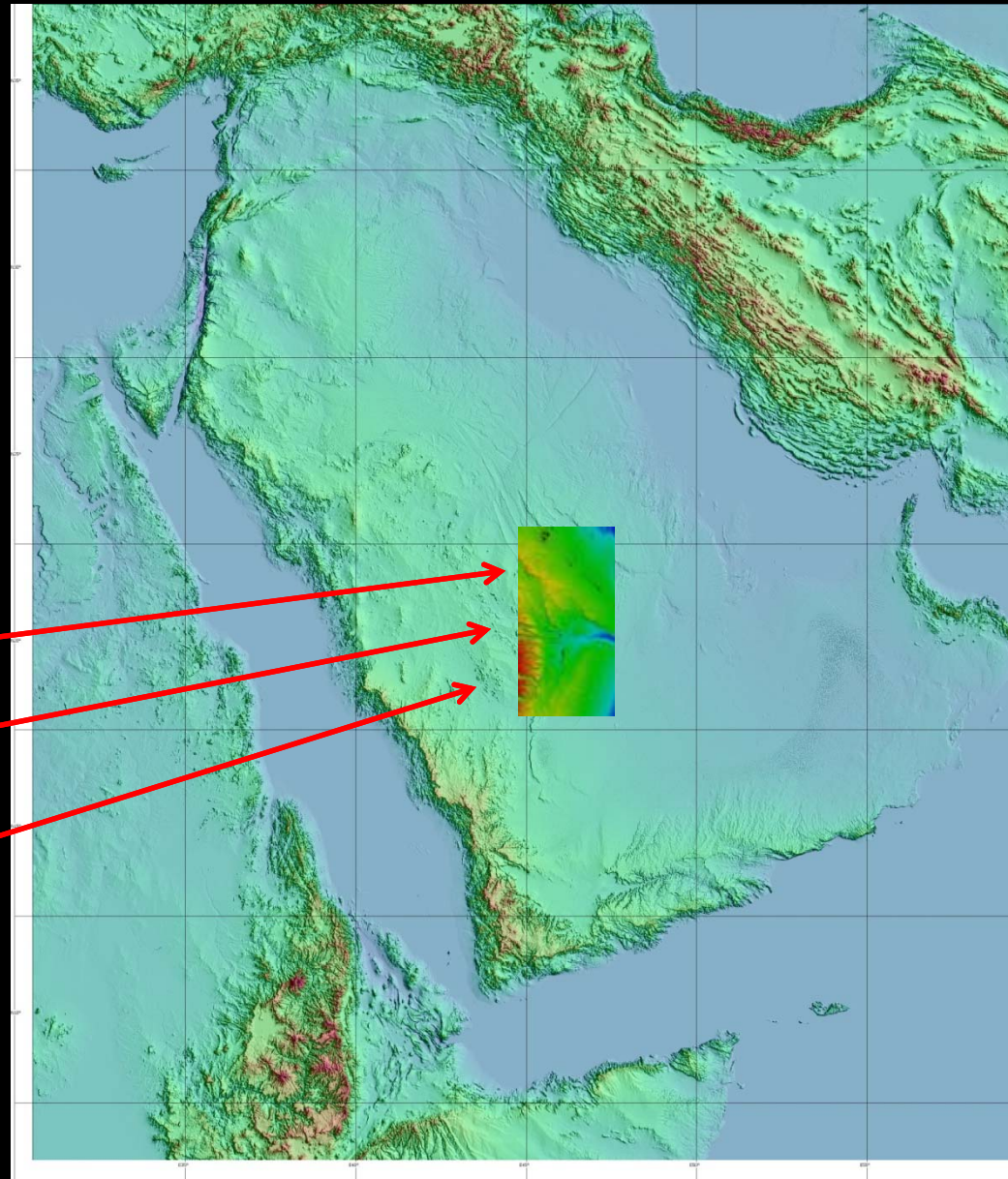
Rumah (251)

Ar Riyadh (241)

Al Hawtah (231)

Indian Ocean

Półwysep Arabski, SRTM 300, DEM
Arabian Peninsula, SRTM 300, DEM



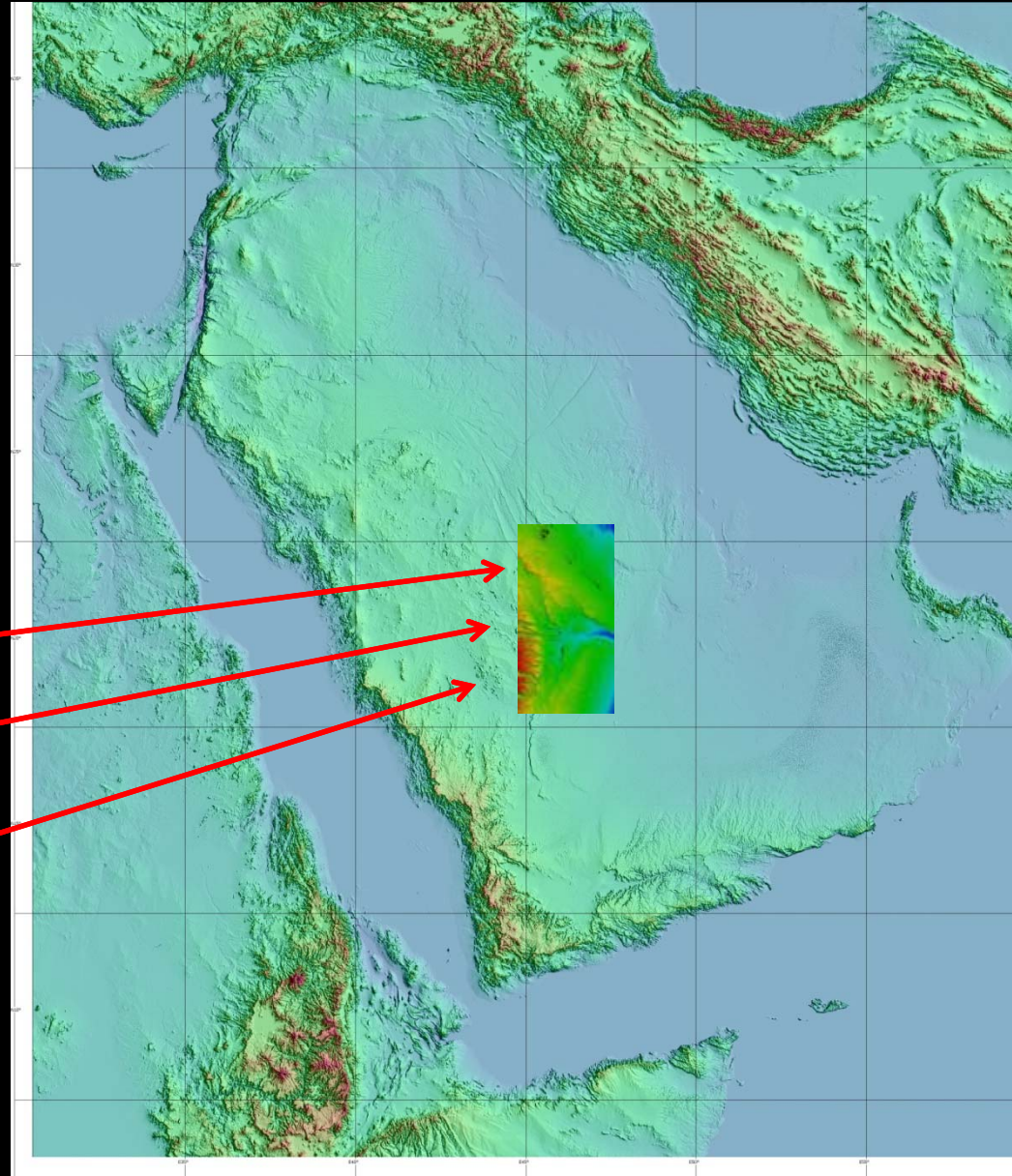
Rumah (251)

Ar Riyad (241)

Al Hawtah (231)

*Indian
Ocean*

Półwysep Arabski, SRTM 300, DEM
Arabian Peninsula, SRTM 300, DEM



Rumah (251)

Ar Riyad (241)

Al Hawtah (231)

*Indian
Ocean*

Półwysep Arabski, SRTM 300, TREND 1 rzędu

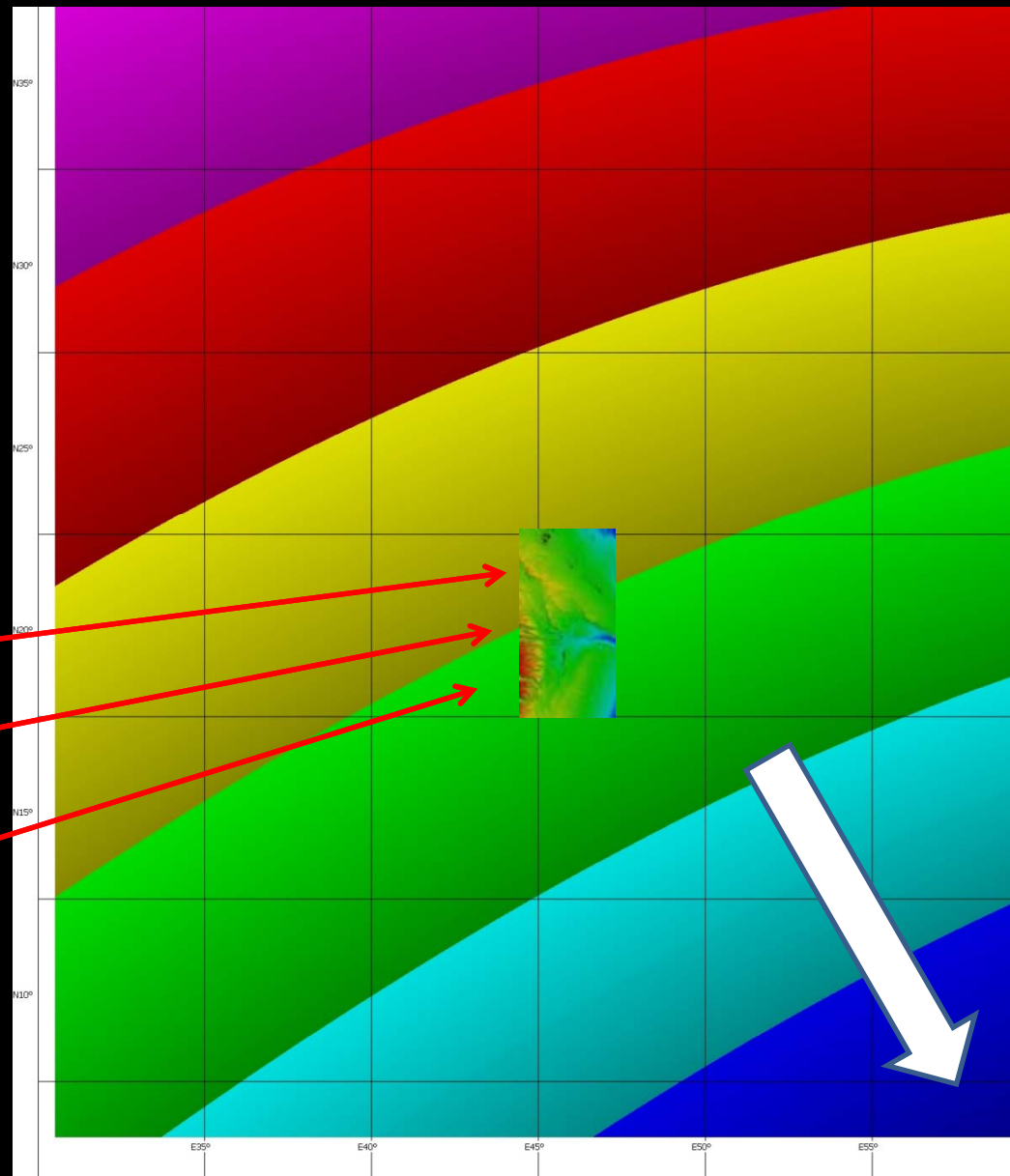
Arabian Peninsula, SRTM 300, TREND 1-order



Rumah (251)

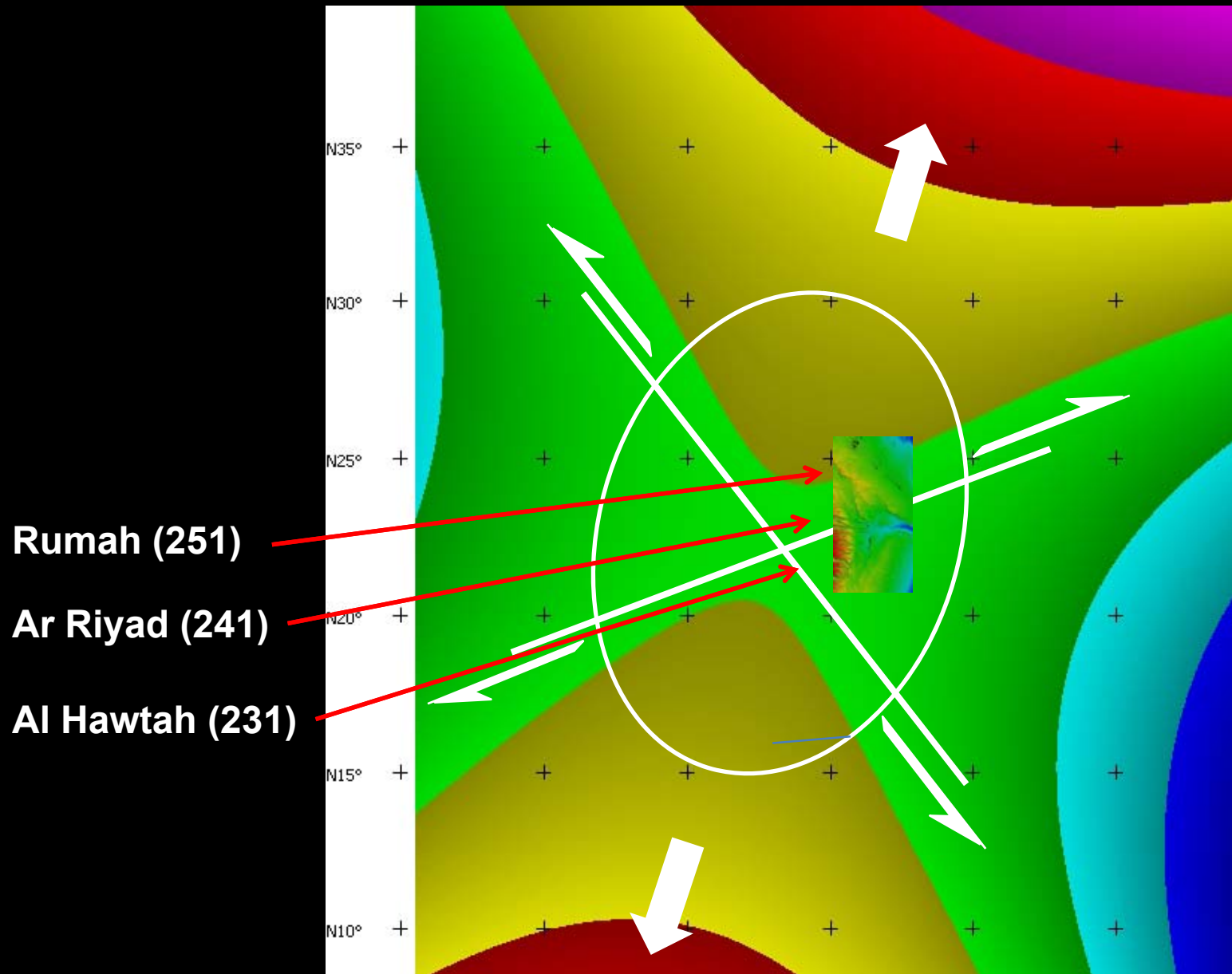
Ar Riyad (241)

Al Hawtah (231)

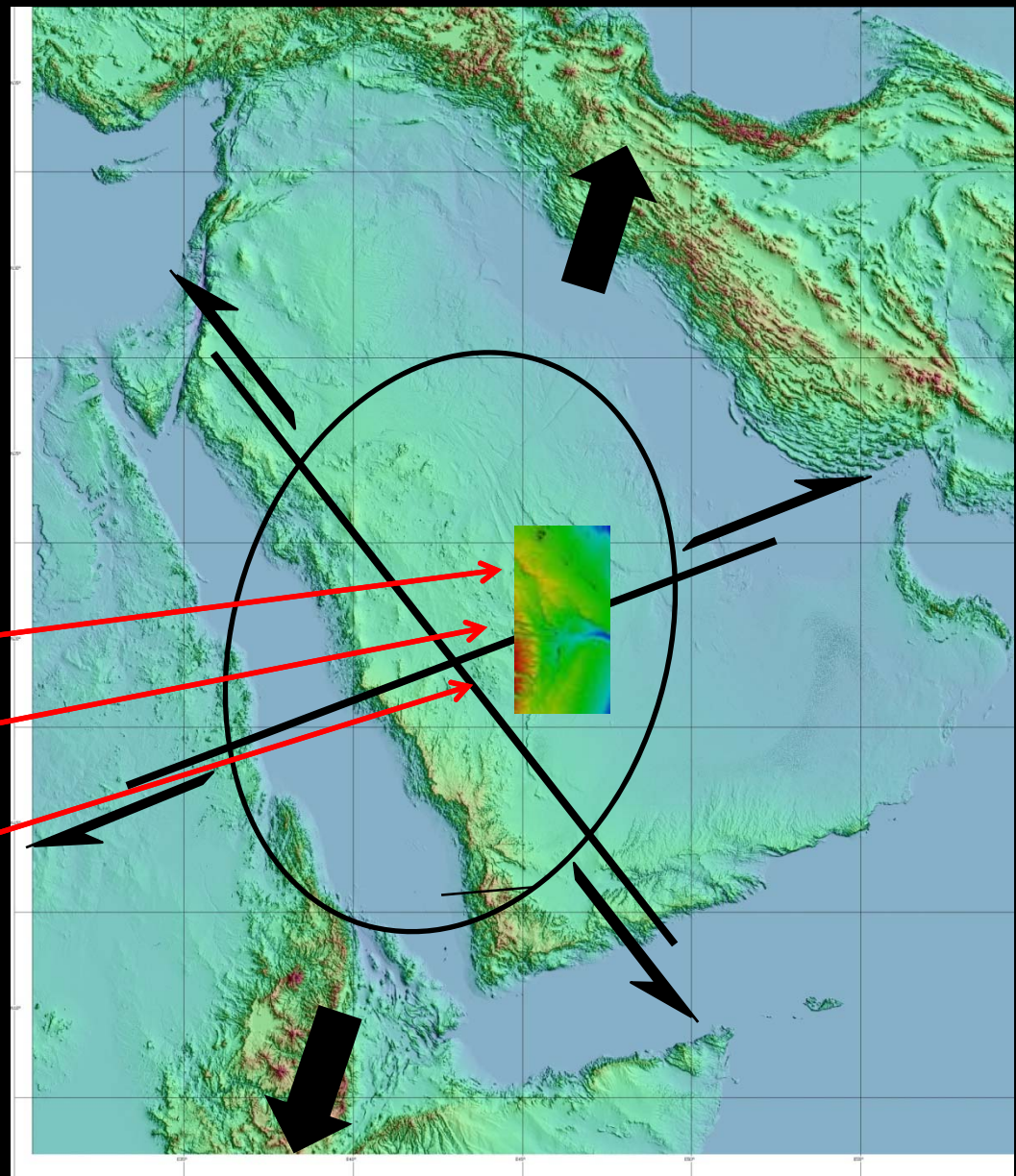


Ocean
Indyjski

Półwysep Arabski, SRTM 300, TREND 2 rzędu
Arabian Peninsula, SRTM 300, TREND 2-order



Półwysep Arabski, SRTM 300, DEM
Arabian Peninsula, SRTM 300, DEM



Rumah (251)

Ar Riyad (241)

Al Hawtah (231)

**Ocean
Indyjski**

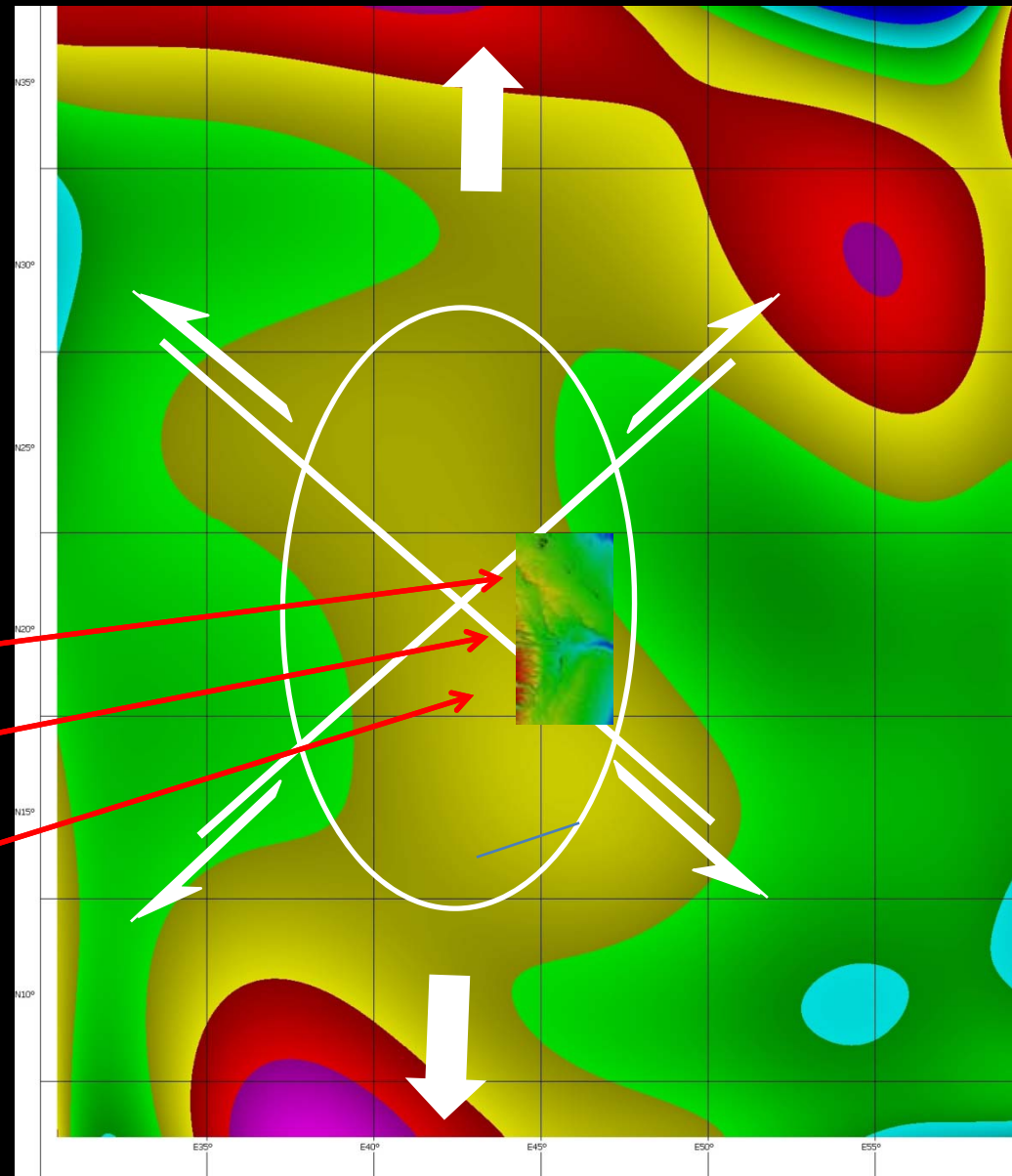
Półwysep Arabski, SRTM 300, TREND 8 rzędu
Arabian Peninsula, SRTM 300, TREND 8-order



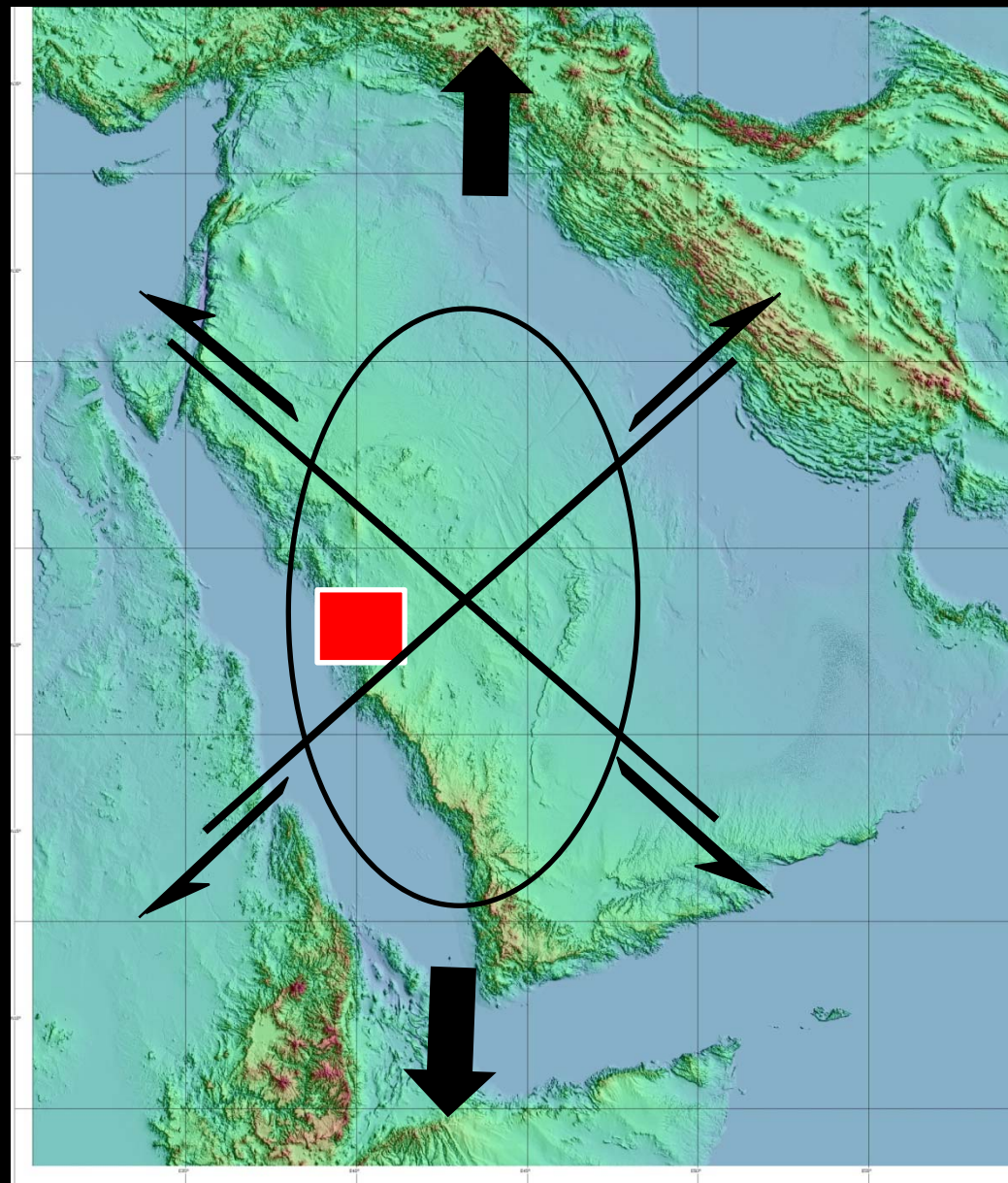
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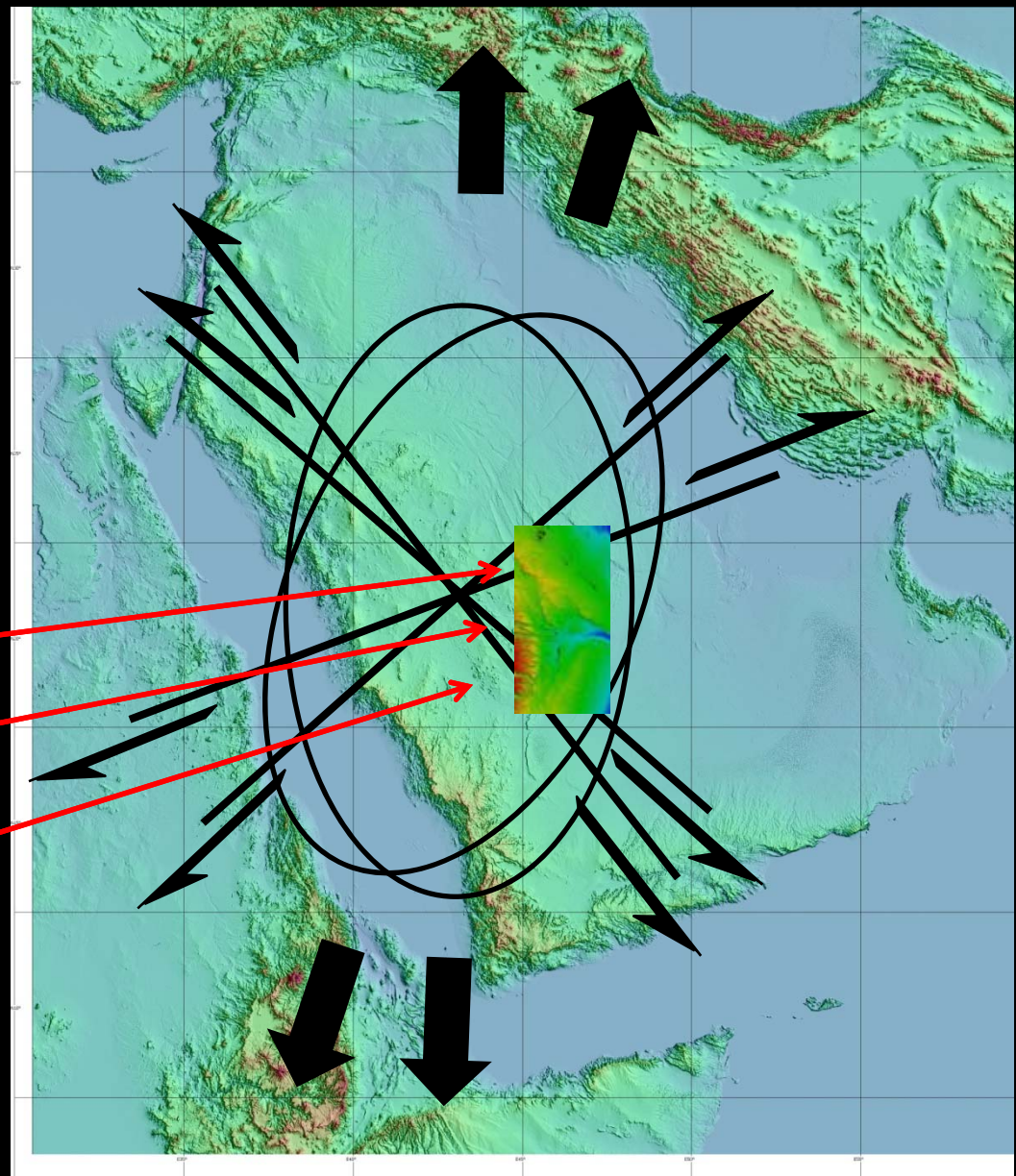


Półwysep Arabski, SRTM 300, DEM
Arabian Peninsula, SRTM 300, DEM



**Ocean
Indyjski**

Półwysep Arabski, SRTM 300, DEM
Arabian Peninsula, SRTM 300, DEM



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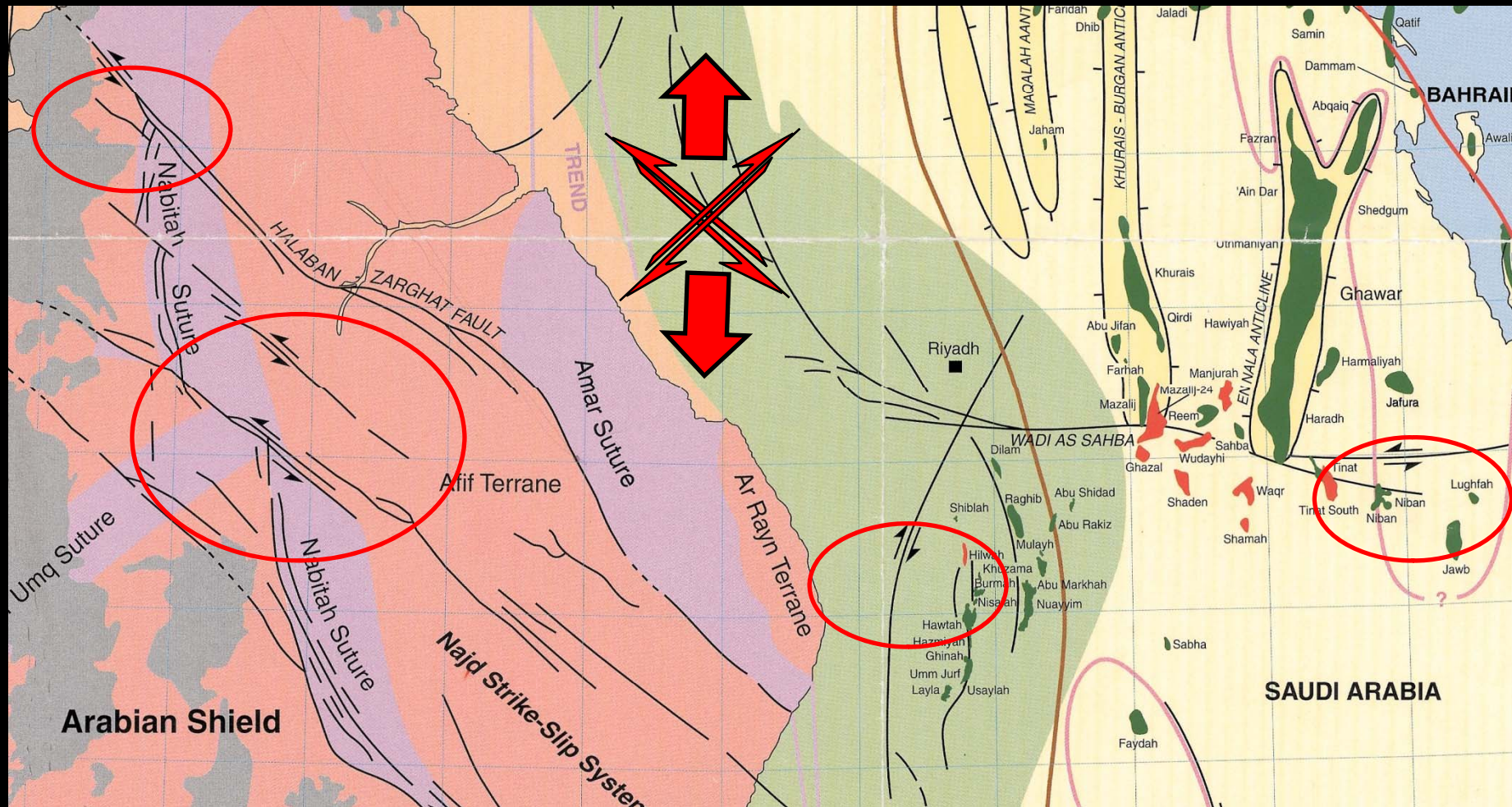
Ar Riyad (241)

Al Hawtah (231)

**Ocean
Indyjski**

Półwysep Arabski, mapa tektoniczna (fragment)

Arabian Peninsula, tectonic map



GEOLOGY OF THE NORTHERN TUWAYQ QUADRANGLE, KINGDOM OF SAUDI ARABIA

By Richard A. Bramkamp and Leon F. Ramirez

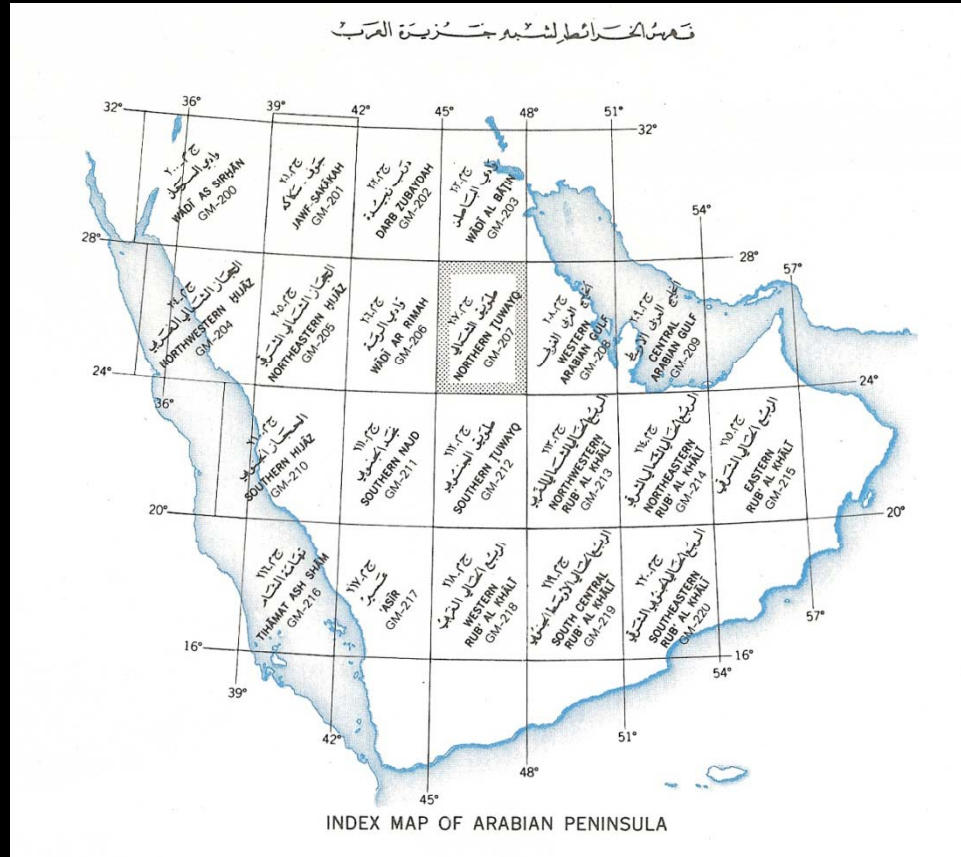
خريطة جيولوجية لمربع طويق الشمالي بالملكة العربية السعودية
 السيدين ريتشارد برامكامب وليون راميرز

Półwysep Arabski, mapa tektoniczna (fragment)

Arabian Peninsula, tectonic map



خريطة جيولوجية
١٢٠٧-٢٤
GEOLOGIC MAP
GM-207 A



أعدت هذه الخريطة أساساً في ١٣٧٨ من قبل مصلحة المساحة الجيولوجية الأمريكية كخريطة أبحاث جيولوجية متنوعة برقم أي-١٢٠٧ ضمن برنامج إعداد الخرائط التعاونية بأشراف المملكة العربية السعودية. خريطة ج-٣-١٢٠٧ طبعة ثنائية للخريطة أي-١٢٠٧

This map was originally published in 1958 by the U.S. Geological Survey as Miscellaneous Geologic Investigation's Map I-207 A as part of a cooperative mapping program, sponsored by the Kingdom of Saudi Arabia. GM-207 A is a reprint of I-207 A.

GEOLOGY OF THE NORTHERN TUWAYQ QUADRANGLE, KINGDOM OF SAUDI ARABIA
By Richard A. Bramkamp and Leon F. Ramirez

خريطة جيولوجية لمربع طويق الشمالي بالمملكة العربية السعودية
السيدان ريتشارد برامكامب وليون راميرز

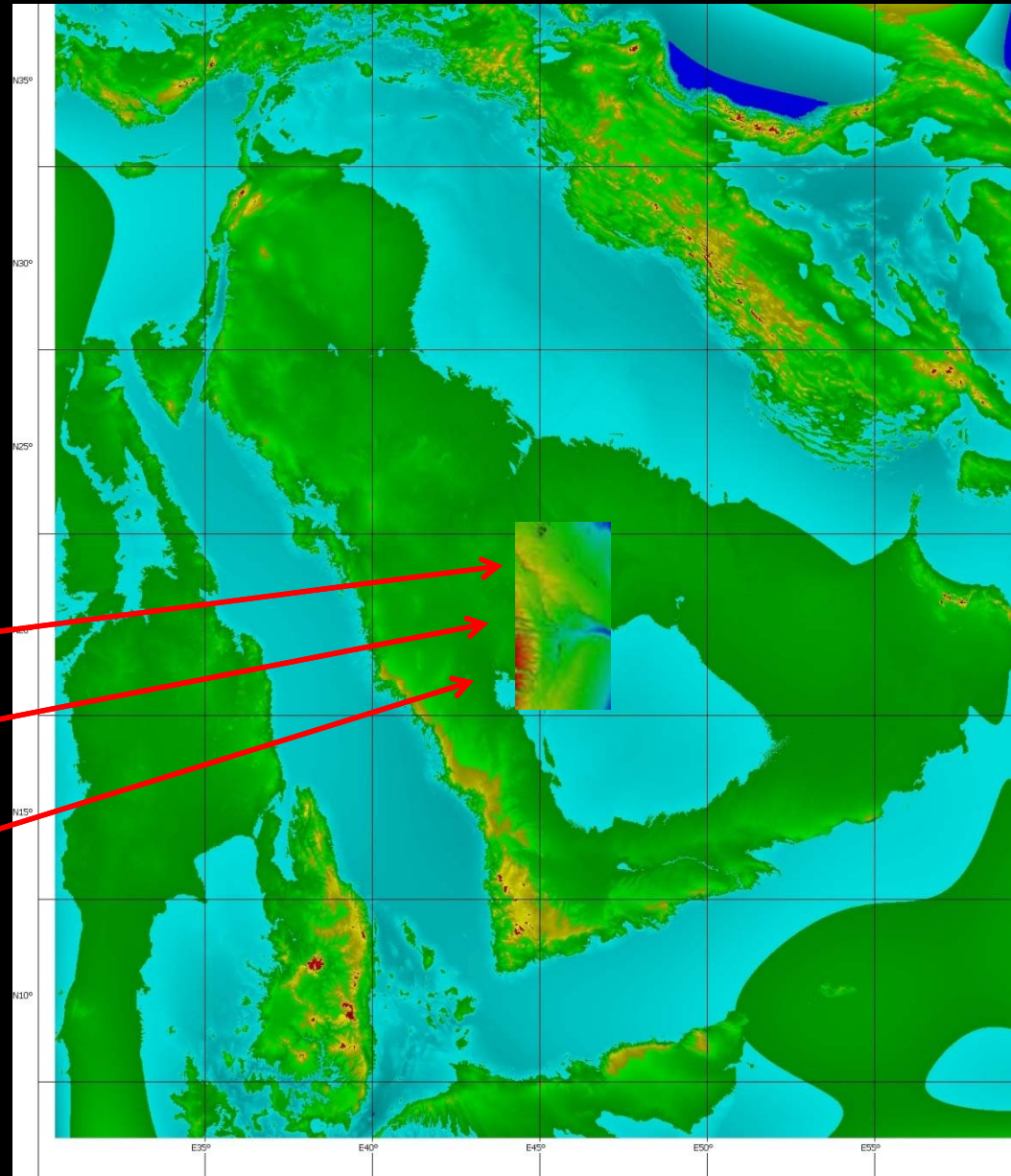
Półwysep Arabski, SRTM 300, DEV
Arabian Peninsula, SRTM 300, DEV



Rumah (251)

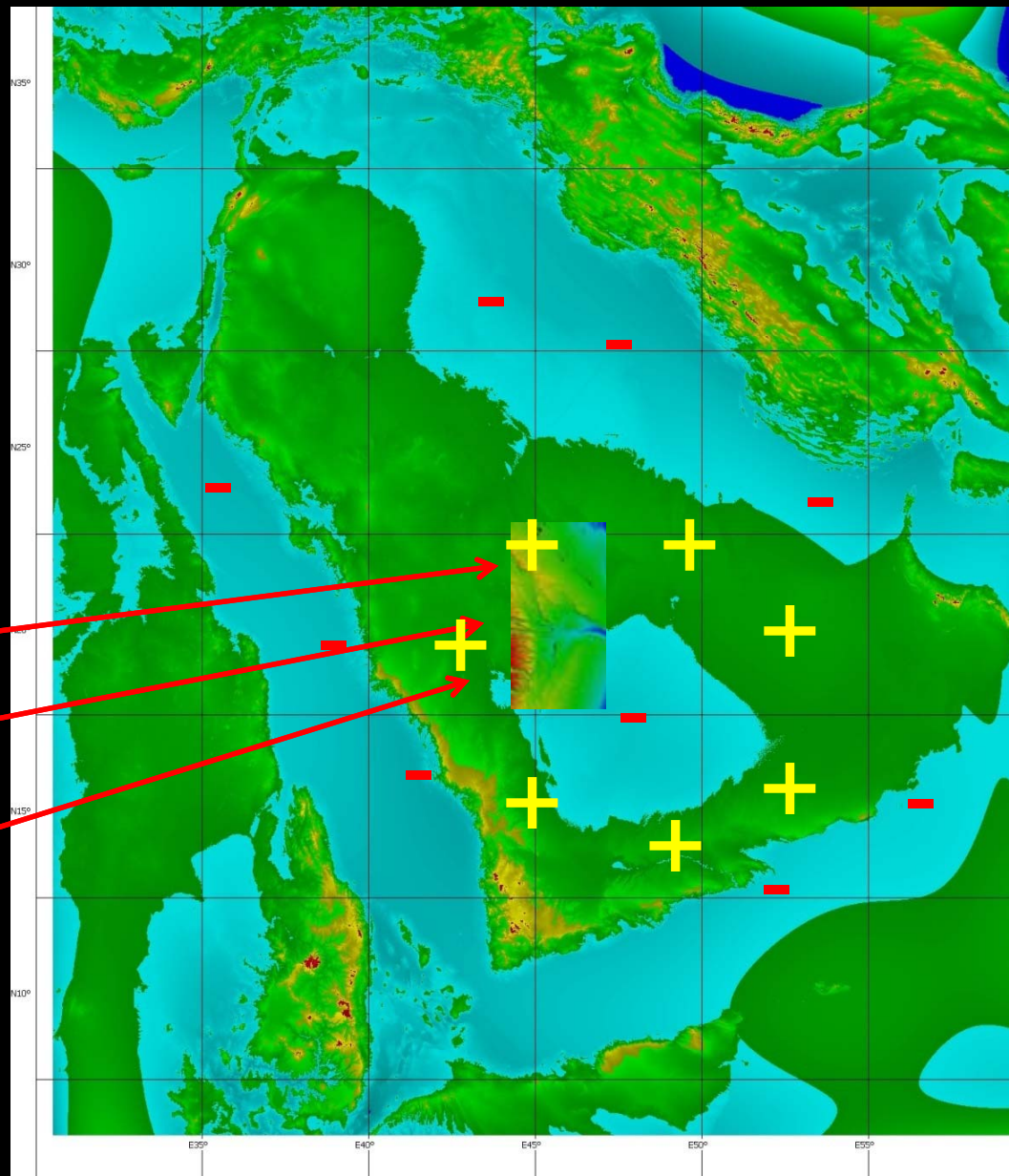
Ar Riyad (241)

Al Hawtah (231)



Półwysep Arabski, SRTM 300, DEV

Arabian Peninsula, SRTM 300, DEV

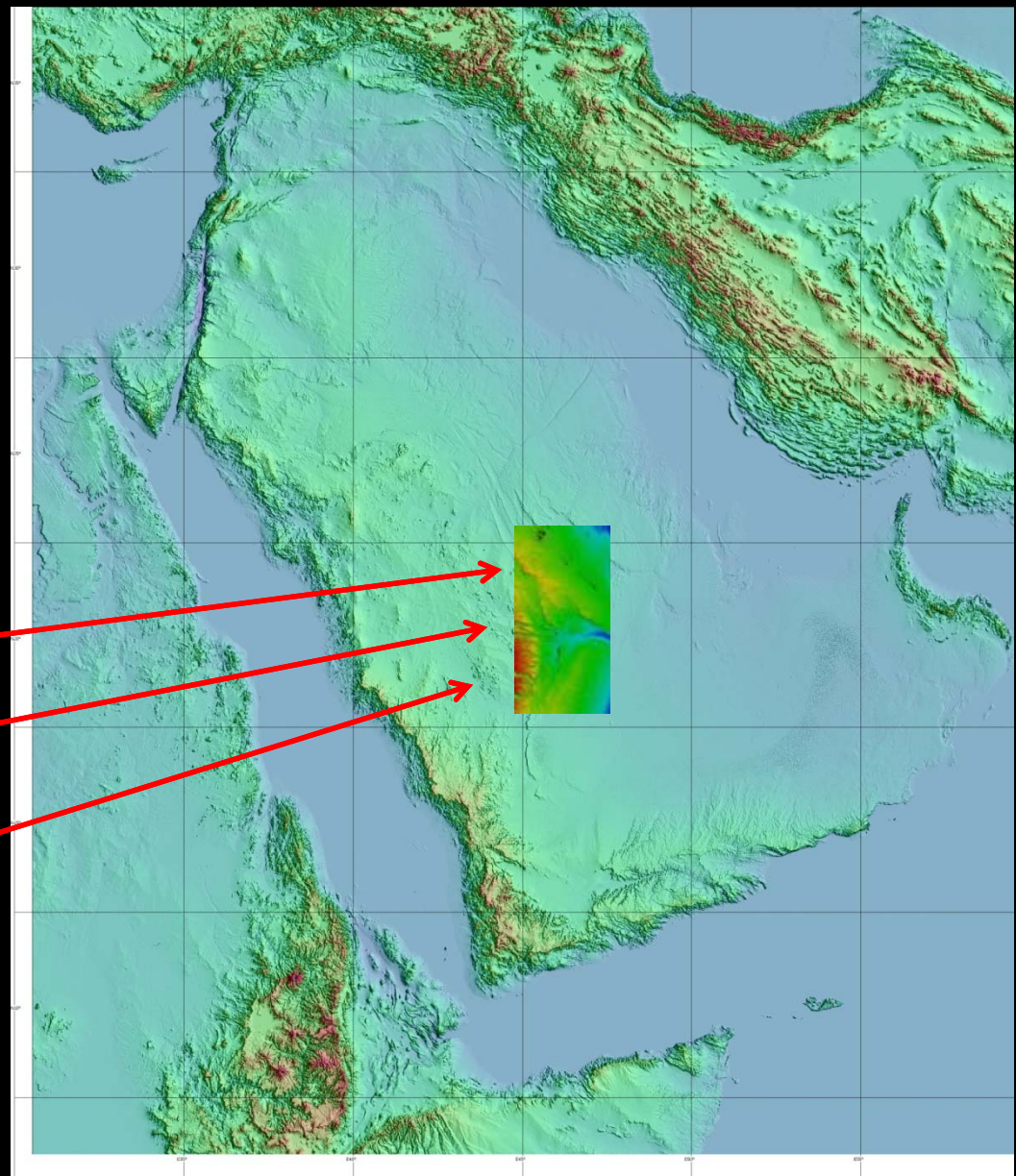


Rumah (251)

Ar Riyad (241)

Al Hawtah (231)

Półwysep Arabski, SRTM 300, DEM
Arabian Peninsula, SRTM 300, DEM



Rumah (251)

Ar Riyad (241)

Al Hawtah (231)

*Indian
Ocean*

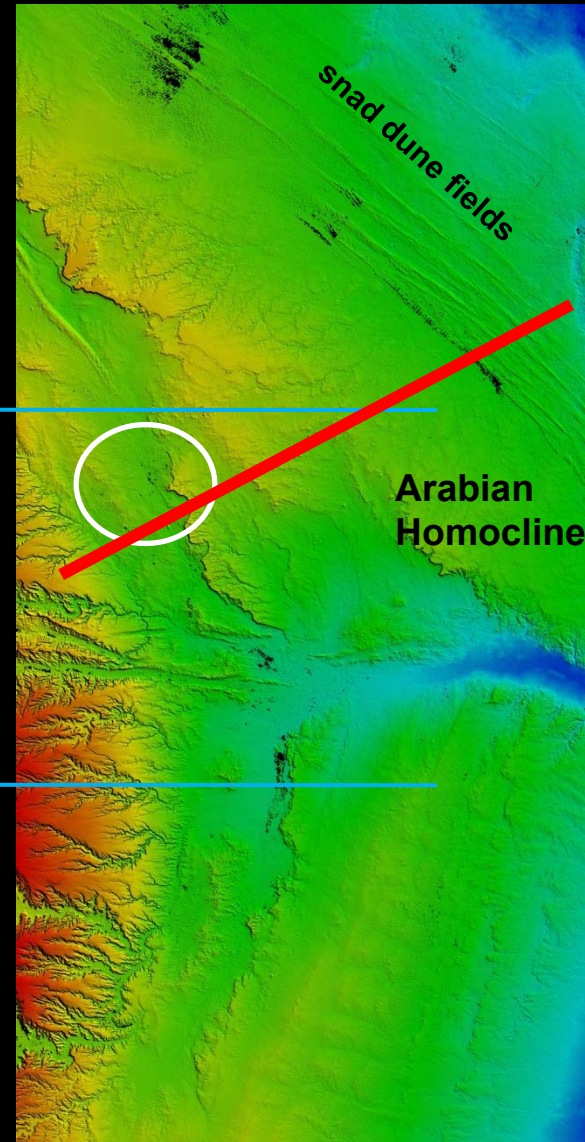
Półwysep Arabski, SRTM 90, DEM
Arabian Peninsula, SRTM 90, DEM



**Rumah
(251)**

**Ar Riyad
(241)**

**Al Hawtah
(231)**



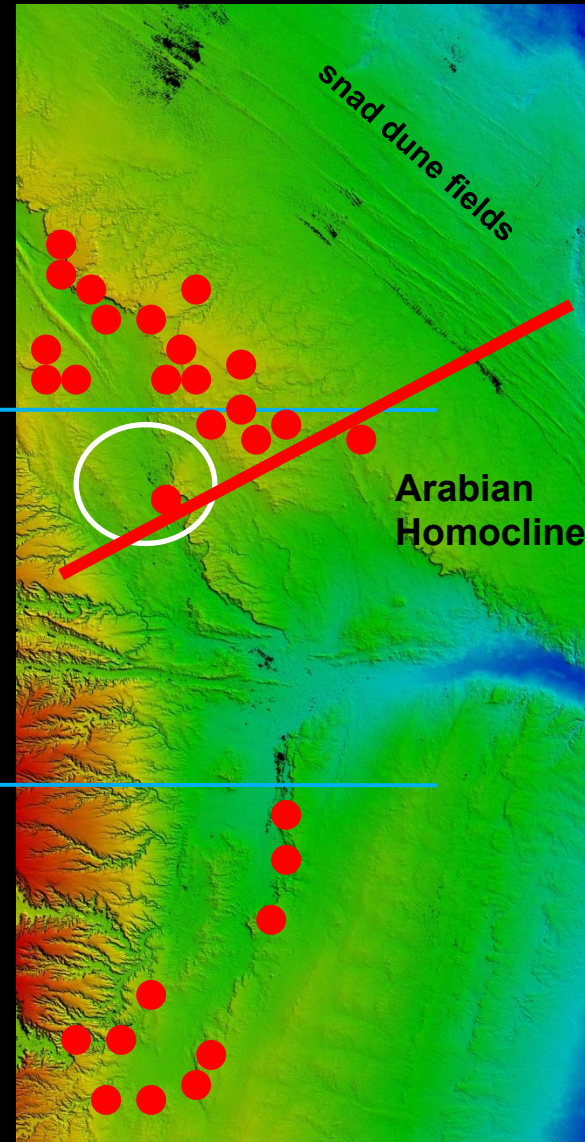
- *sedimentary & palaeogeographic context*



Rumah
(251)

Ar Riyad
(241)

Al Hawtah
(231)



● *the stops presented here*

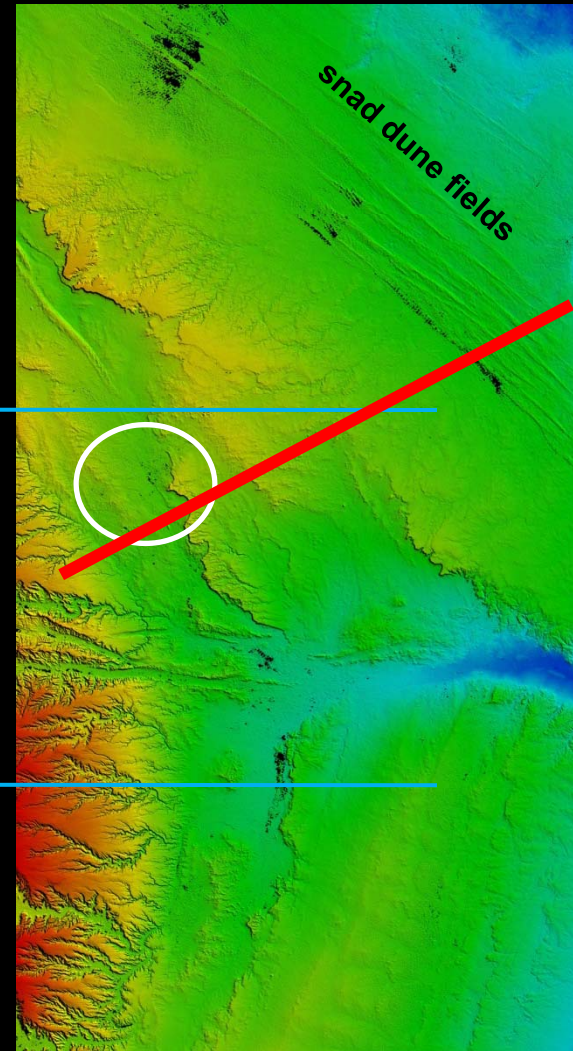
- sedimentary & palaeogeographic context



Rumah
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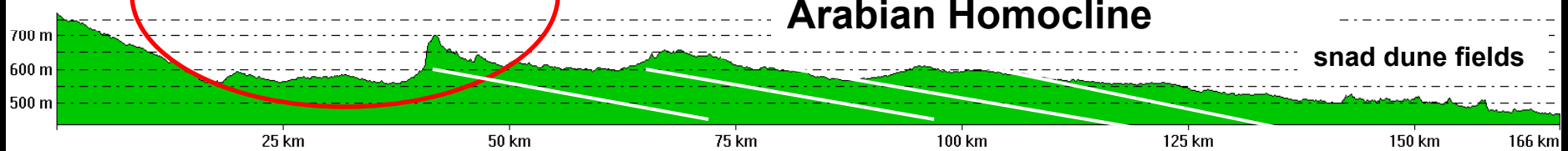
Riyad

From Pos: 0.1070399372, 1.5034267589

Pos: 1.4892388736, 2.0665448441

Arabian Homocline

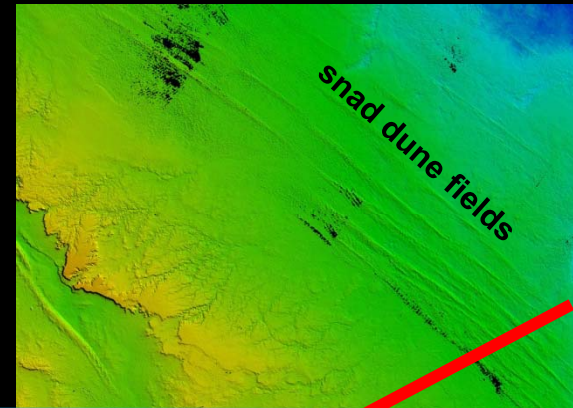
snad dune fields



- sedimentary & palaeogeographic context



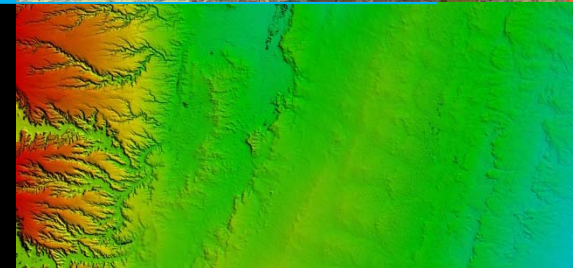
Rumah
(251)



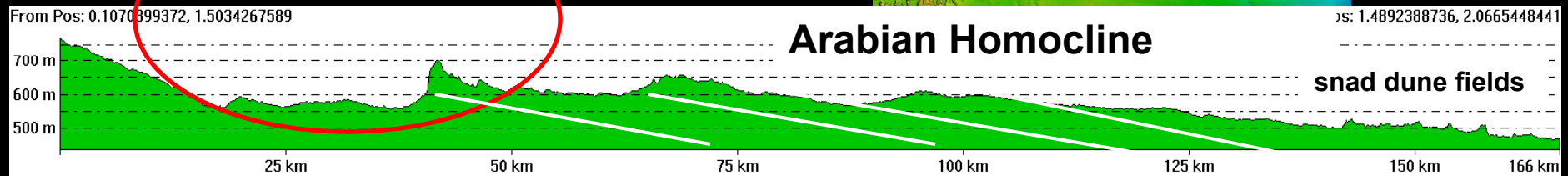
Ar Riyad
(241)

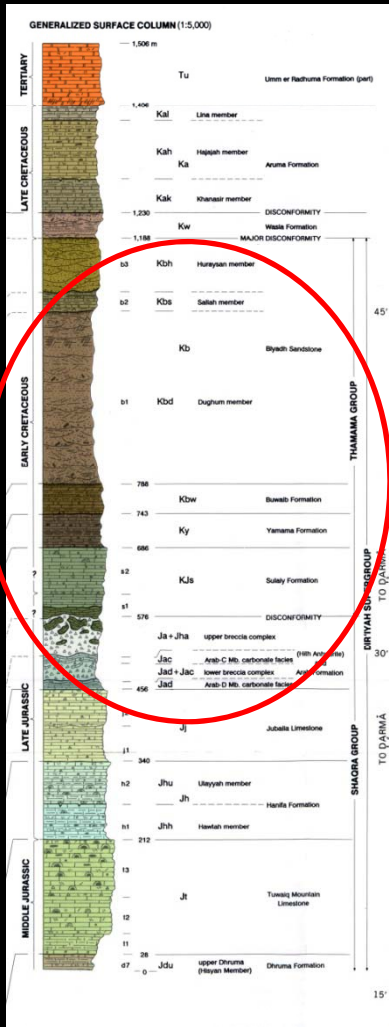


Al Hawtah
(231)



Riyad

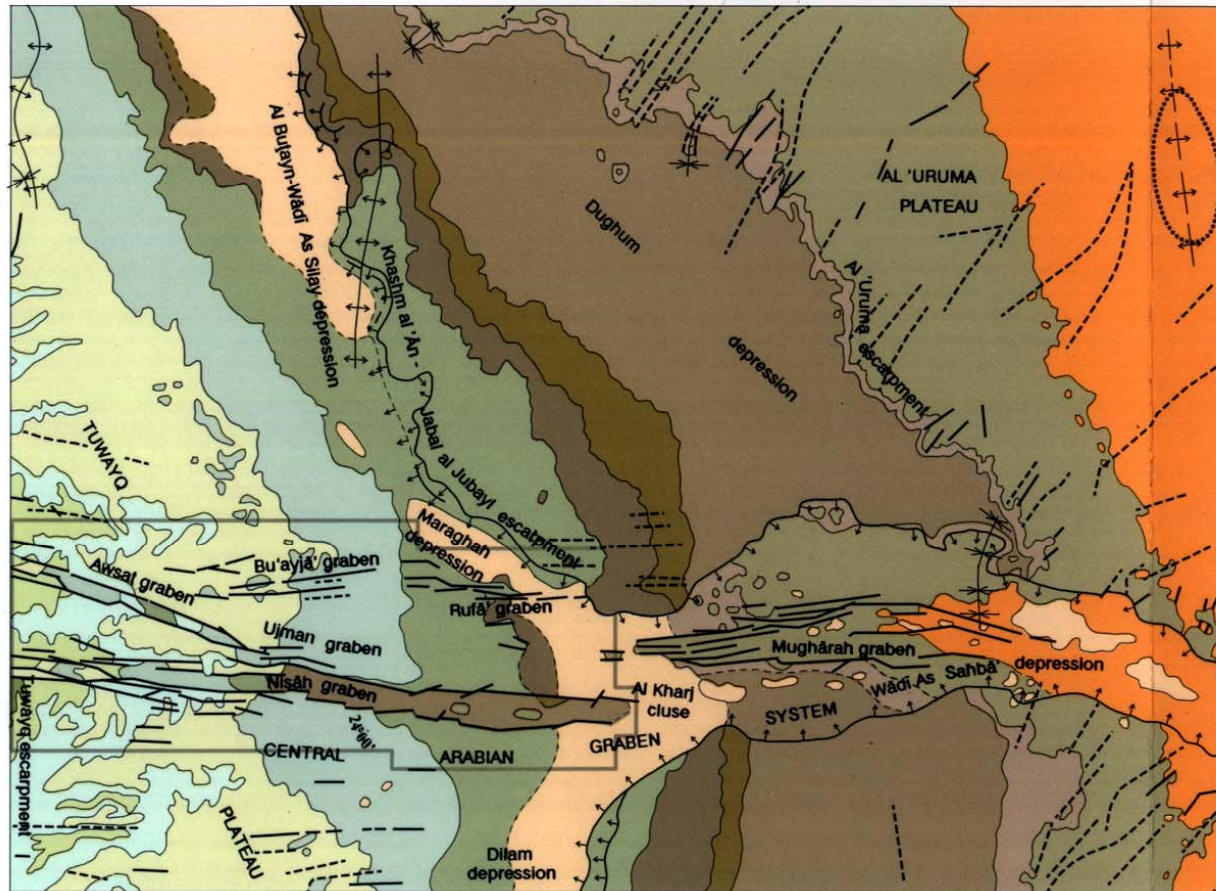




















GEOLOGIC MAP OF THE AR RIYAD QUADRANGLE, SHEET 24 I, KINGDOM OF SAUDI ARABIA
 By Denis Vaslet, Mohammed S. Al-Muallem, Sami S. Maddah, Jean-Michel Brousse, Jackie Fourniguet, Jean-Paul Breton, and Yves-Michel Le Nindre
 A. H. 1412, A. D. 1991

STRUCTURAL SKETCH MAP

Scale 1:1,000,000

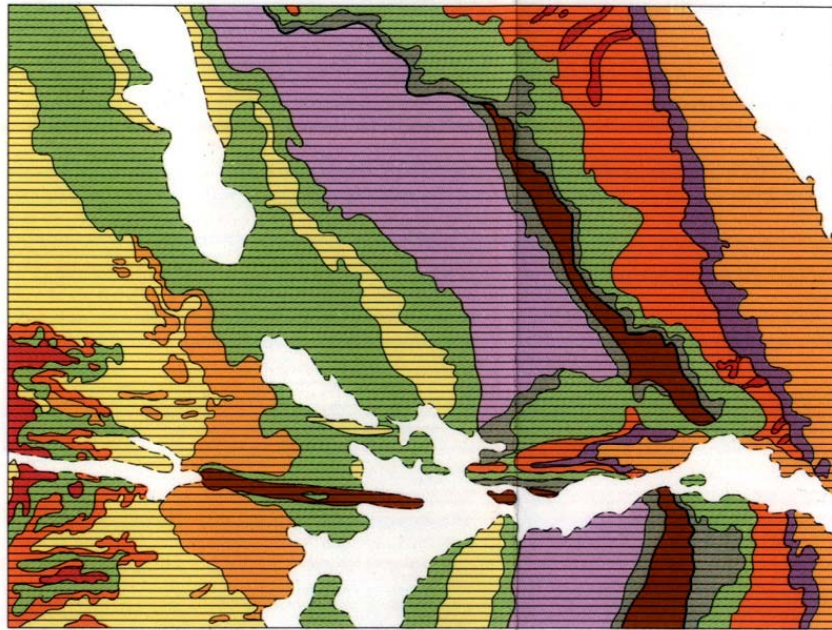


-  Sha'al Formation
-  Conglomerates (unnamed)
-  Umm er Radhuma Formation
-  Aruma Formation
-  Wasia Formation
-  Biyadh Sandstone
-  Buwaib Formation
-  Yamama Formation
-  Sulaiy Formation
-  Arab Formation and Hith Anhydrite
-  Jubaila Limestone
-  Hanifa Formation
-  Tuwaiq Mountain Limestone
-  Dhurma Formation
-  Abū Jifān oil field (approximate boundary)
-  Location of accompanying 1:100,000 - scale map of graben system



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PALEOENVIRONMENTAL SKETCH

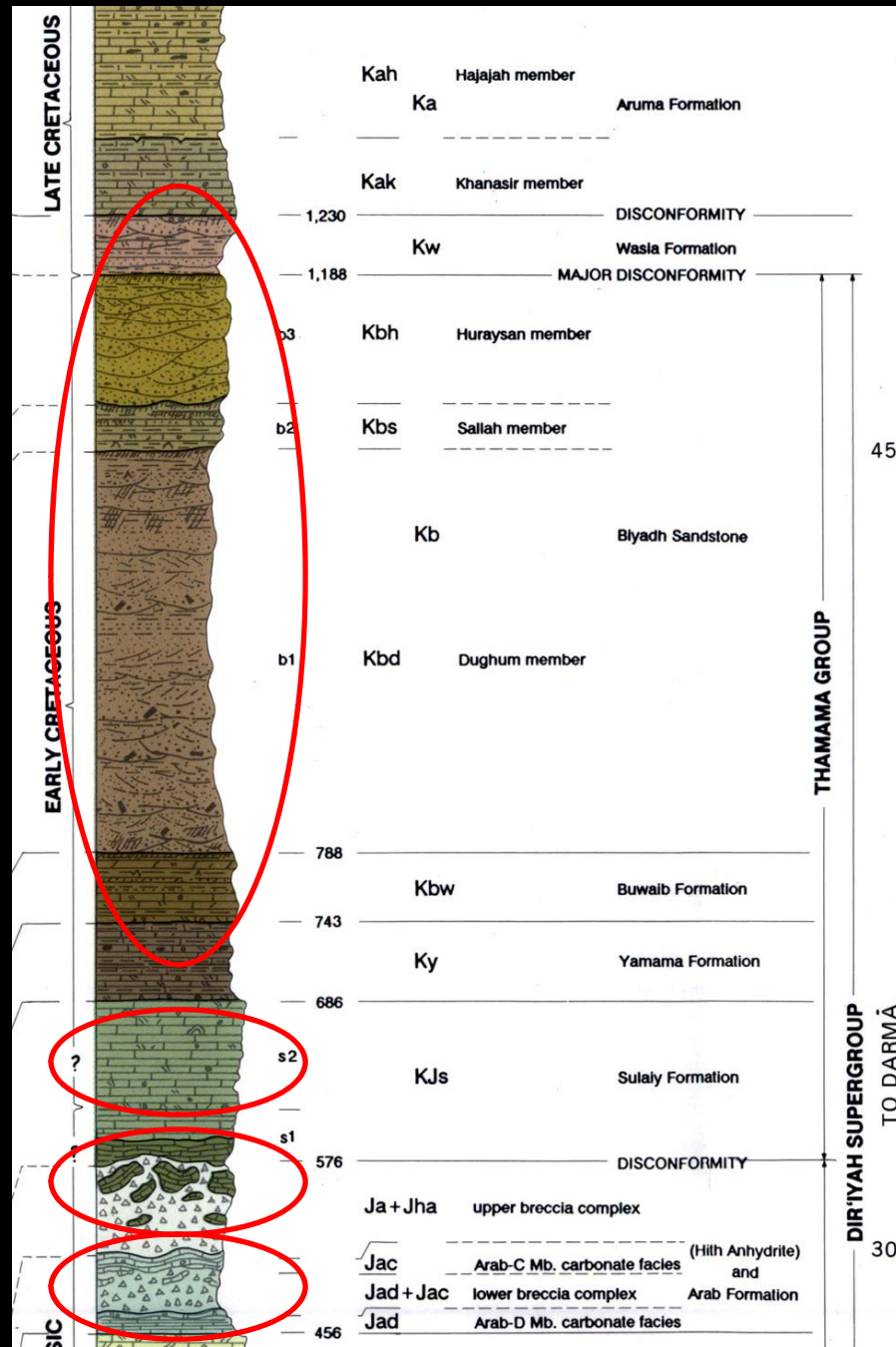


- | | | | | | |
|--|------------------------|-------------|--|------------------------------------|----------|
| | Fluvial braided stream | Continental | | Upper infralittoral, inner lagoon | Subtidal |
| | Coastal-plain clastics | | | Middle infralittoral, outer lagoon | |
| | Marsh sabkha | Supratidal | | Patch reef, biostromal boundstone | Barrier |
| | Intertidal clastics | | | Reef, subtidal channel | |
| | Intertidal carbonates | Intertidal | | Paleosurface | |



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Wasia Formation
(weathering)

Huraysan Formation
(continental)

Dughum Formation
(continental)

Sulayy Formation
(collapse, gravitational tectonics, strike slip regime)

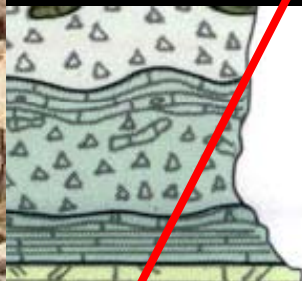
Hit Anhydrite
(dissolution, collapse)

Arab Formation

Jubaila Formation

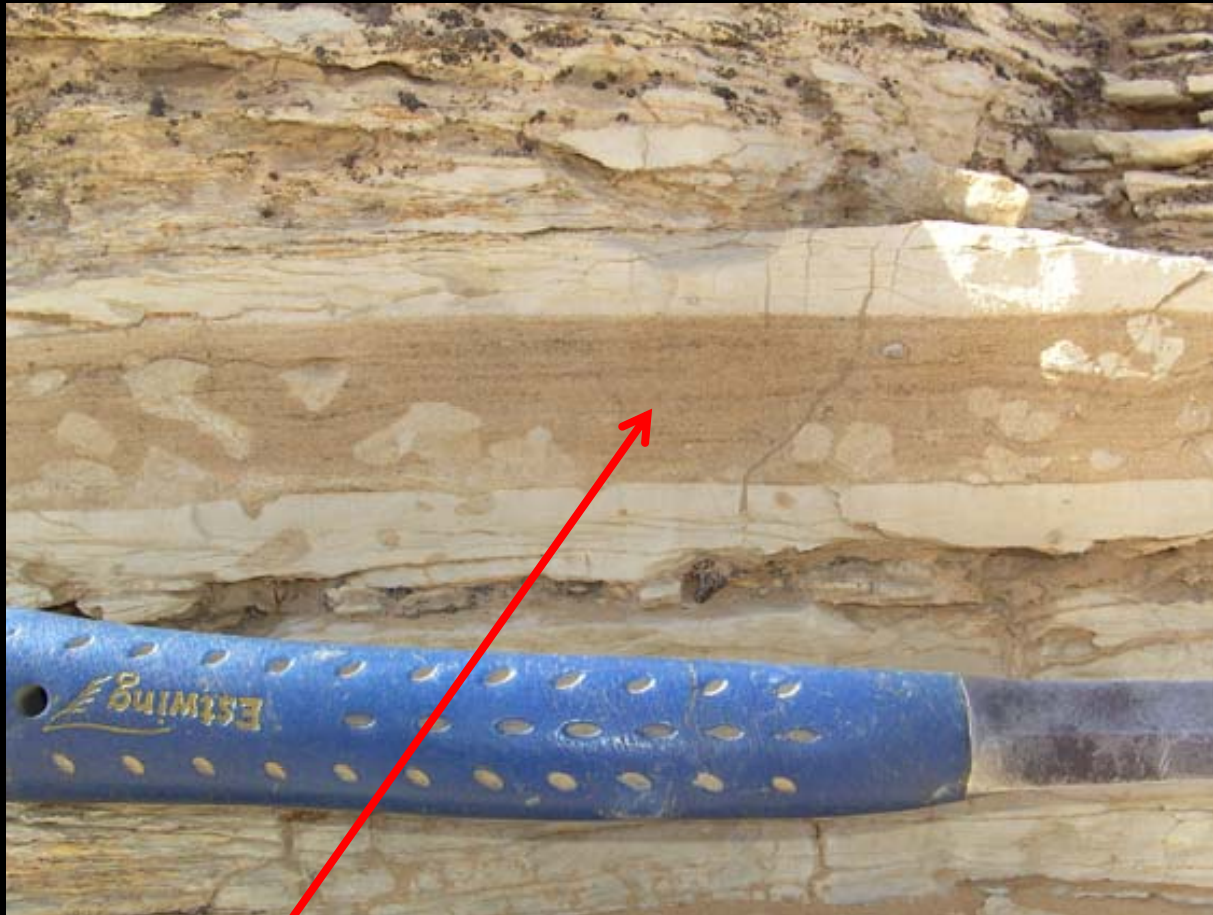


bioturbated calcarenite

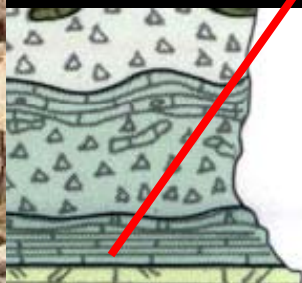


—	Jac	Arab-C Mb. carbonate facies	(Hilh Anhydrite)
—	Jad + Jac	lower breccia complex	and Arab Formation
—	Jad	Arab-D Mb. carbonate facies	
—	456		

Jubaila Formation



bioturbated hcs

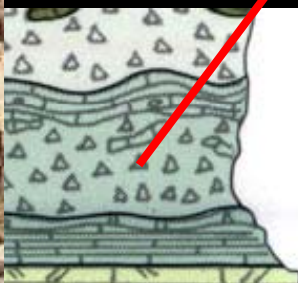


—	Jac	Arab-C Mb. carbonate facies	(Hilh Anhydrite)
—	Jad + Jac	lower breccia complex	and Arab Formation
—	Jad	Arab-D Mb. carbonate facies	
—	456		

Arab Formation



brecciated calcarenites (dissolution breccia)

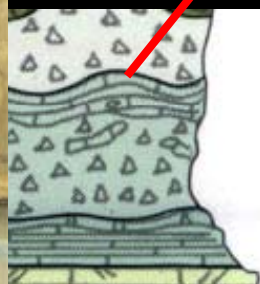


—	Jac	Arab-C Mb. carbonate facies	(Hilh Anhydrite)
—	Jad + Jac	lower breccia complex	and Arab Formation
—	Jad	Arab-D Mb. carbonate facies	
—	456		

Arab Formation



hummocky landscape over the lower breccia complex



—	Jac	Arab-C Mb. carbonate facies	(Hilh Anhydrite) and
—	Jad + Jac	lower breccia complex	Arab Formation
—	Jad	Arab-D Mb. carbonate facies	
—	456		

Arab Formation



coquinoide calcrudite, tempestite



—	Jac	Arab-C Mb. carbonate facies	(Hilh Anhydrite) and
—	Jad + Jac	lower breccia complex	Arab Formation
—	Jad	Arab-D Mb. carbonate facies	
—	456		

Arab Formation



extensional seismic cracks



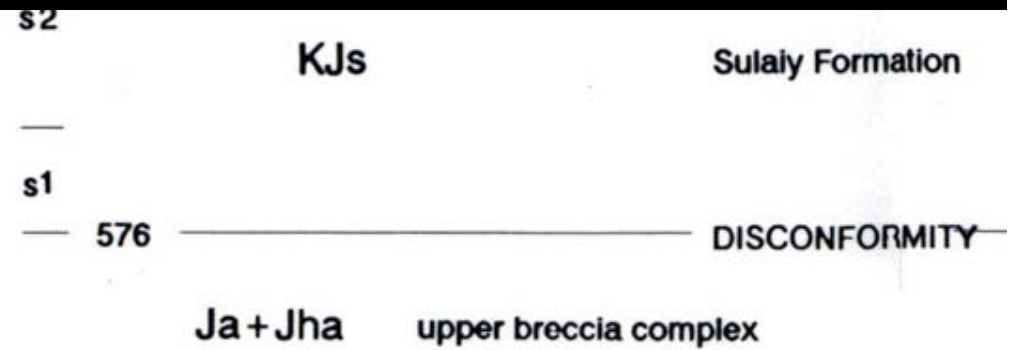
balls-and-pillows



Arab & Sulay Formations



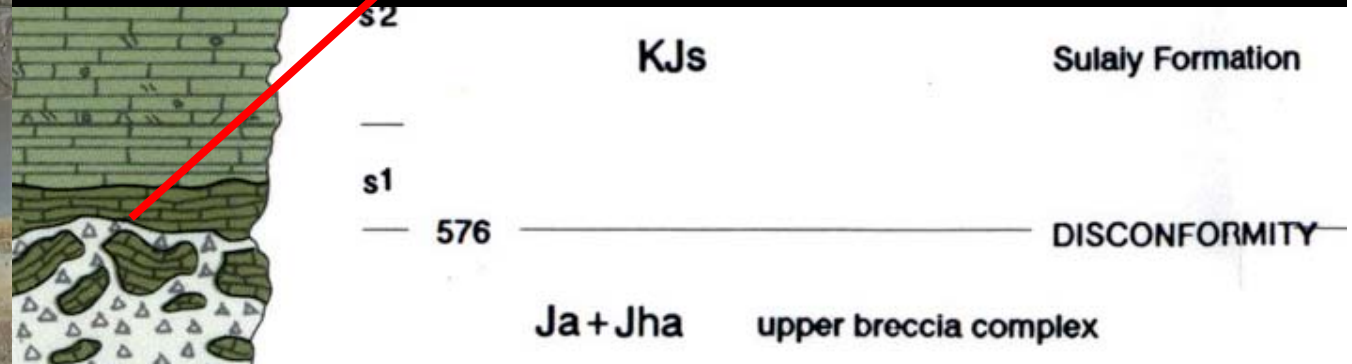
Al Uyun sink hole



Arab & Sulay Formations



sink hole



Arab & Sulay Formations



sink hole



Arab & Sulay Formations



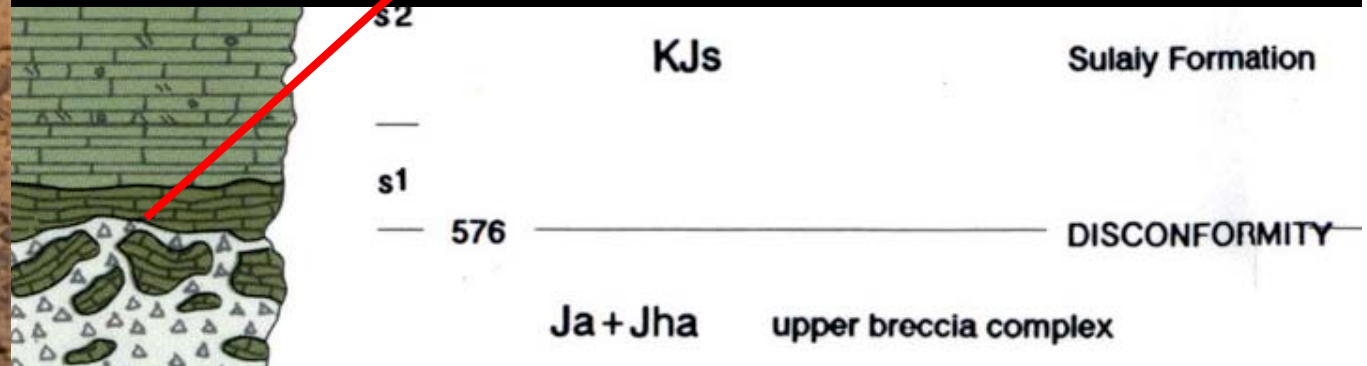
collapsing area, slumping slopes



Arab & Sulay Formations



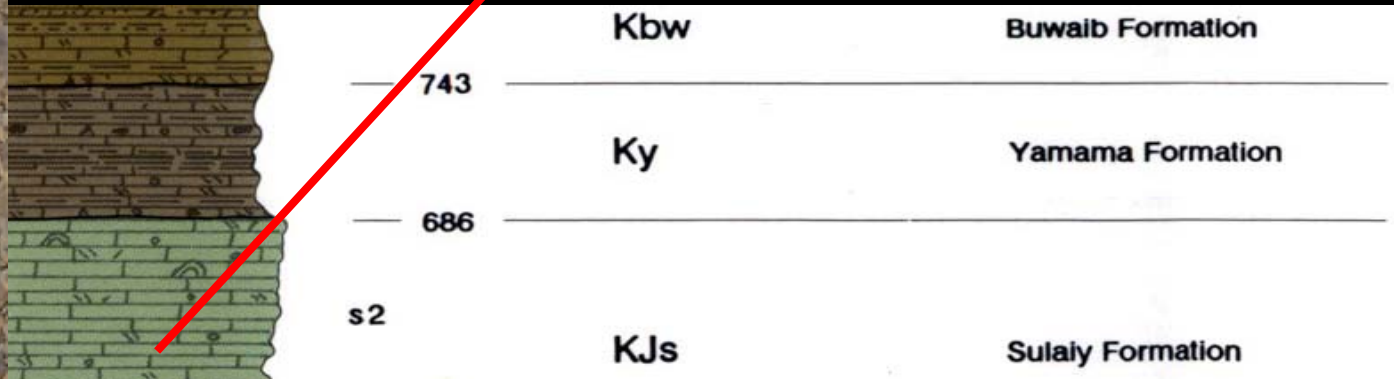
slumping mixture of debris and gypsum, colluvium



Sulay Formation



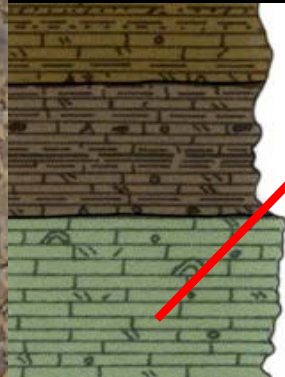
breccia or conglomerate?



Sulay Formation



breccia or conglomerate?

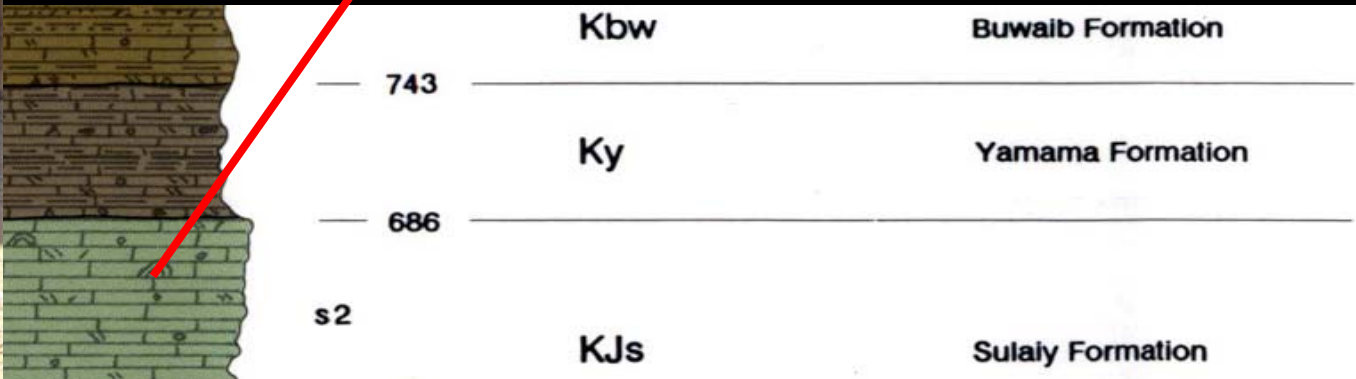


	Kbw	Buwaib Formation
743		
	Ky	Yamama Formation
686		
s2	KJs	Sulay Formation

Sulay Formation



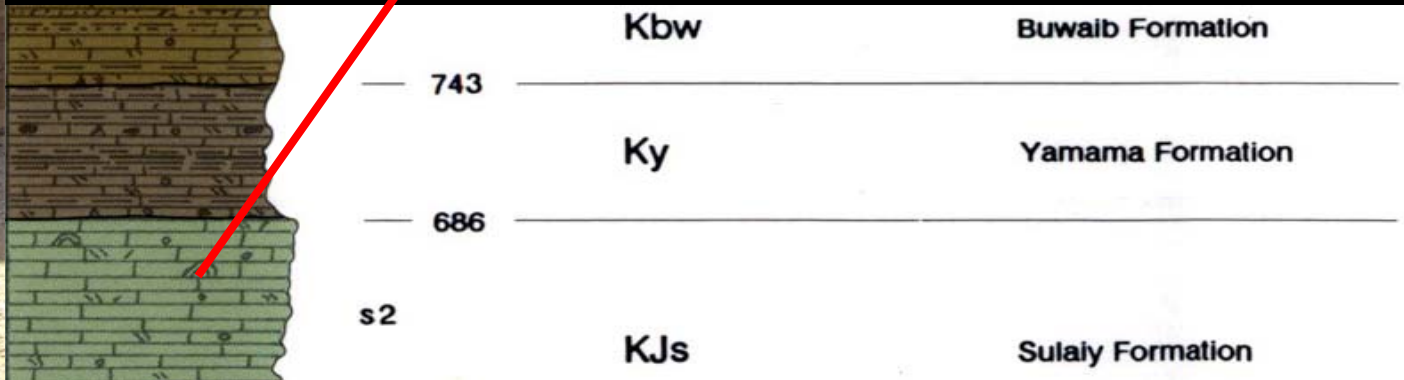
breccia or conglomerate?



Sulay Formation



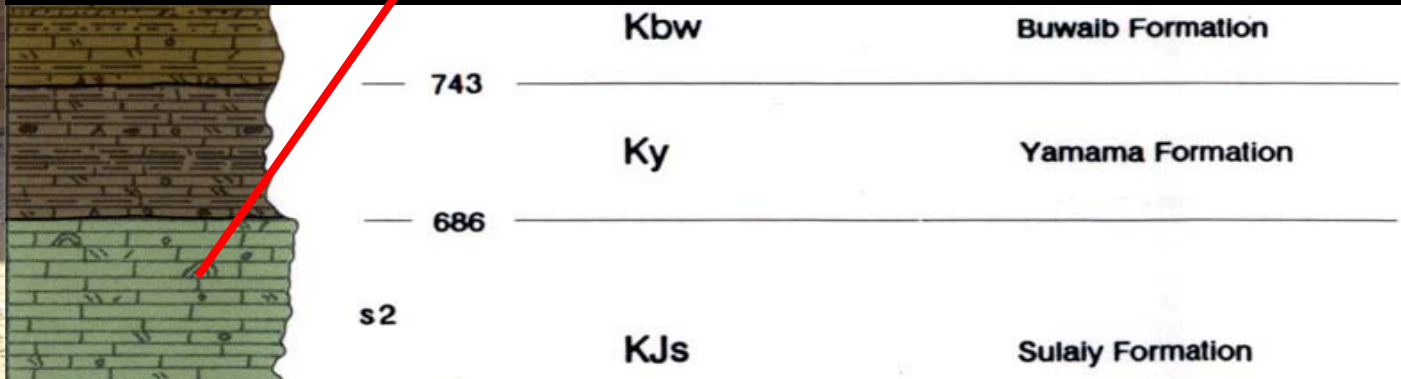
breccia or conglomerate?



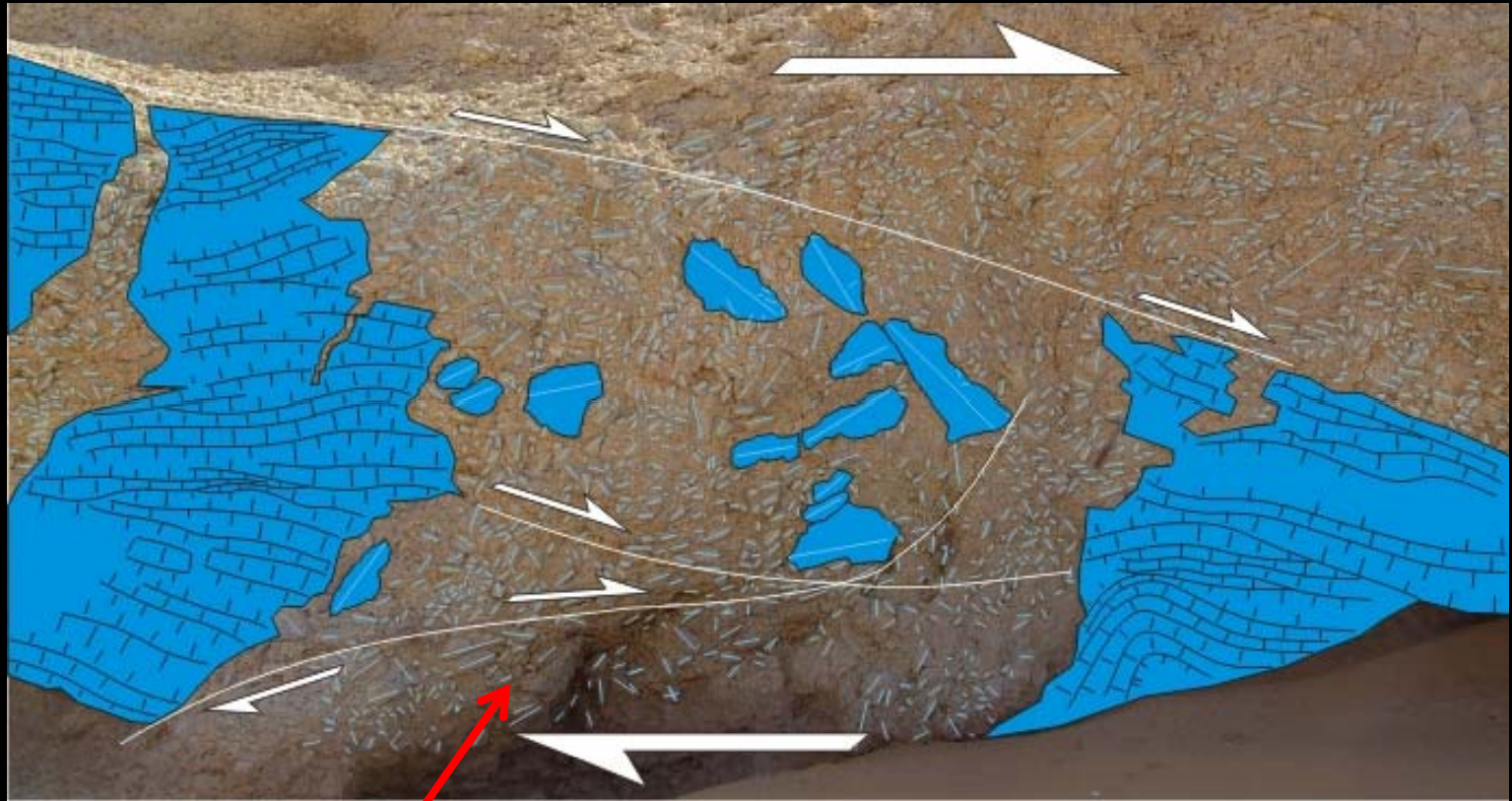
Sulay Formation



breccia or conglomerate?



Sulay Formation



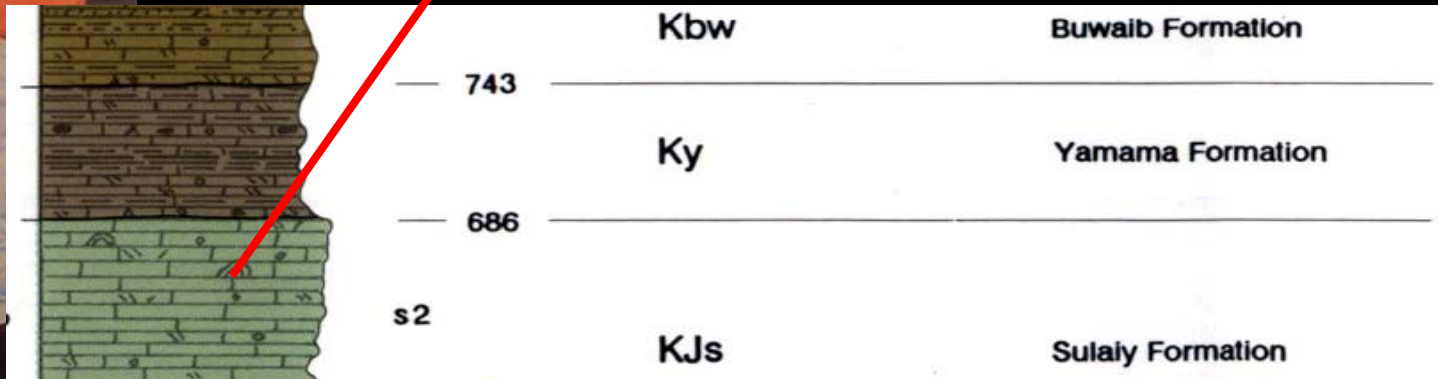
breccia or conglomerate?

	Kbw	Buwaib Formation
— 743		
	Ky	Yamama Formation
— 686		
s2	KJs	Sulay Formation

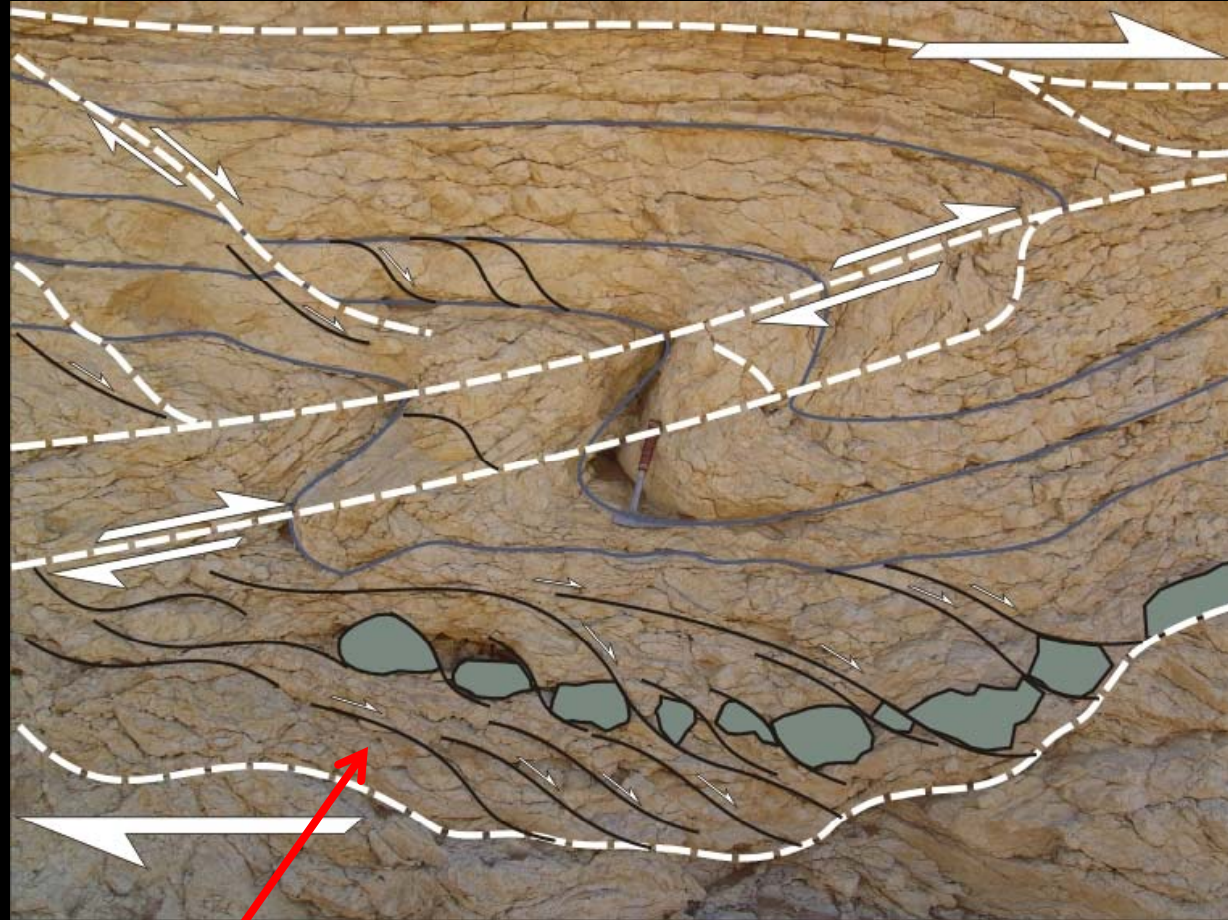
Sulay Formation



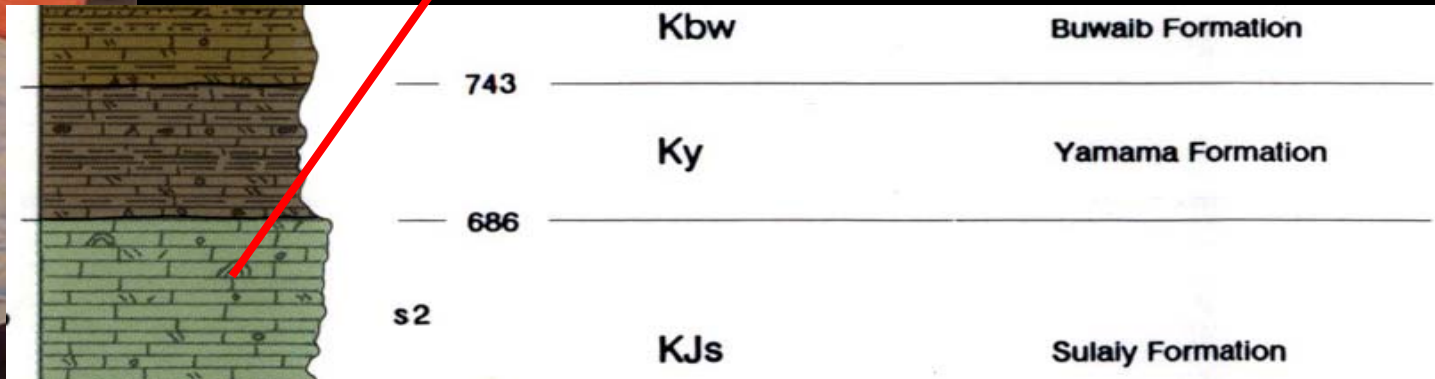
breccia or conglomerate?



Sulay Formation



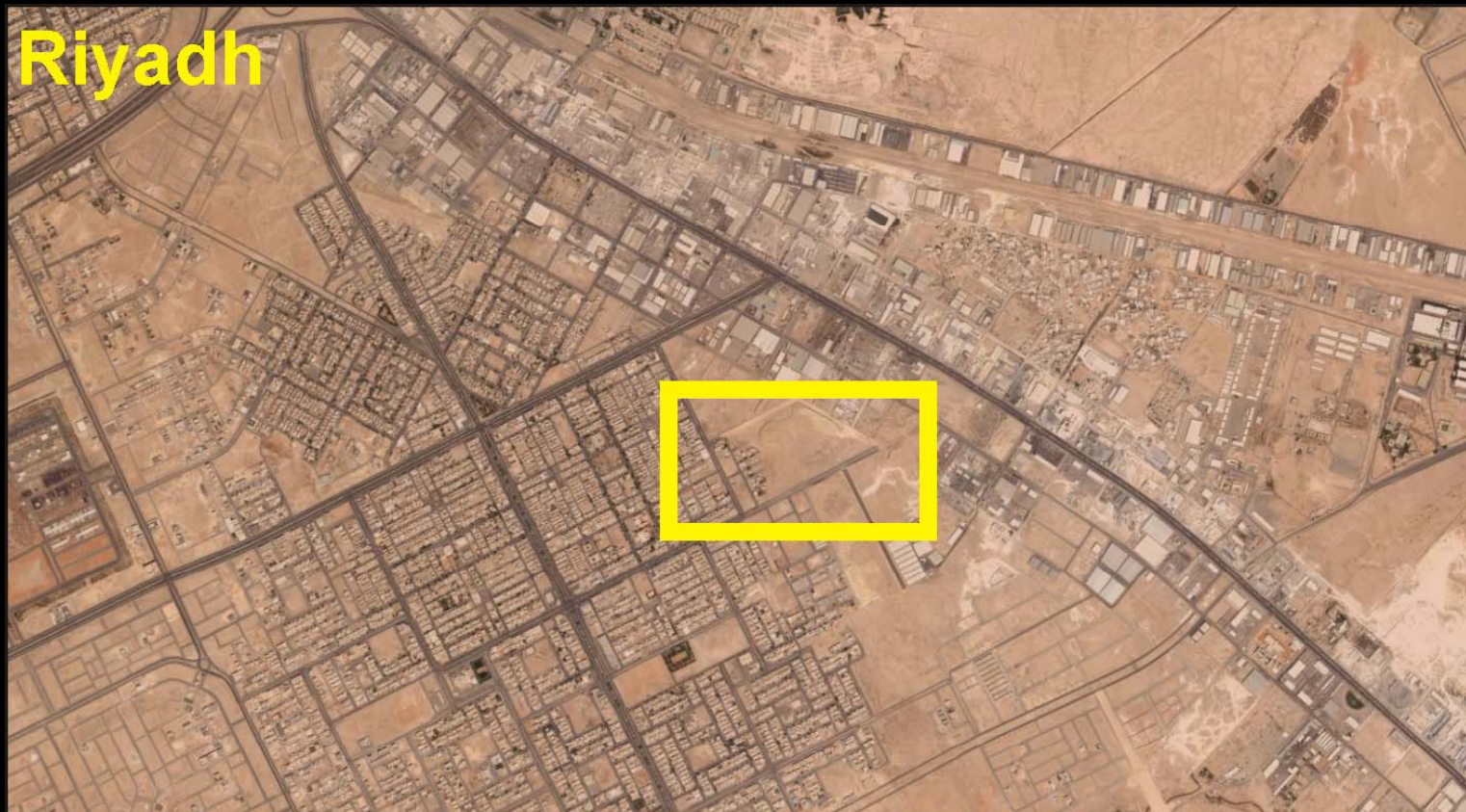
breccia or conglomerate?



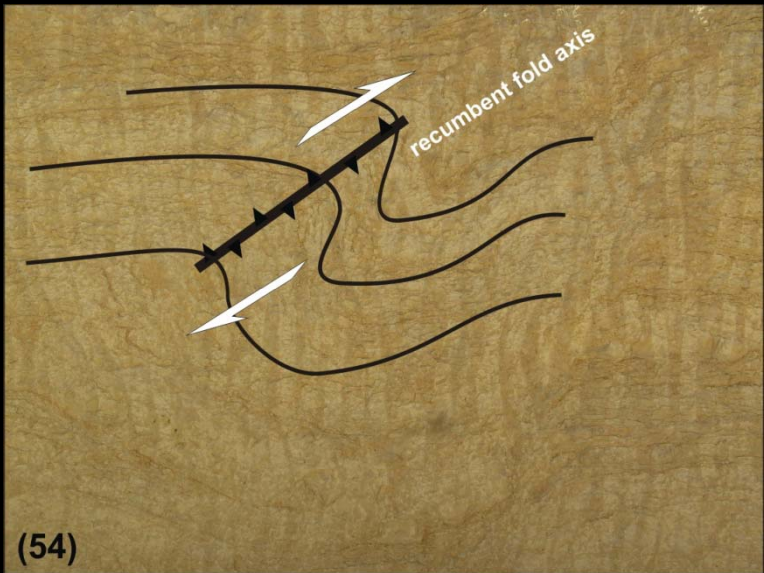
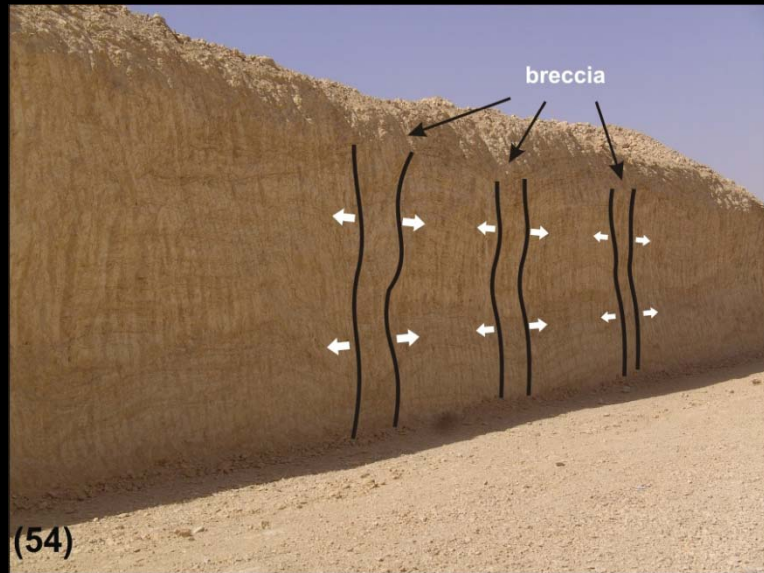
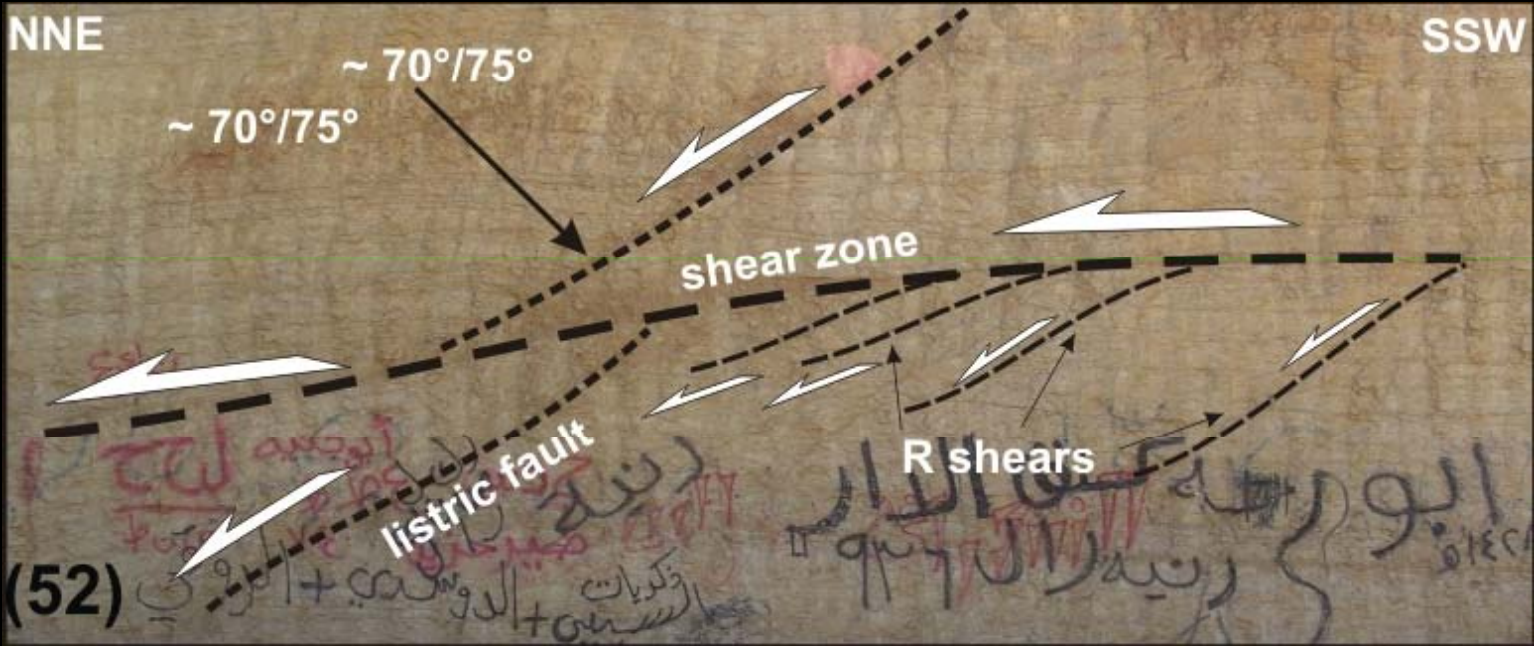
Sulay Formation



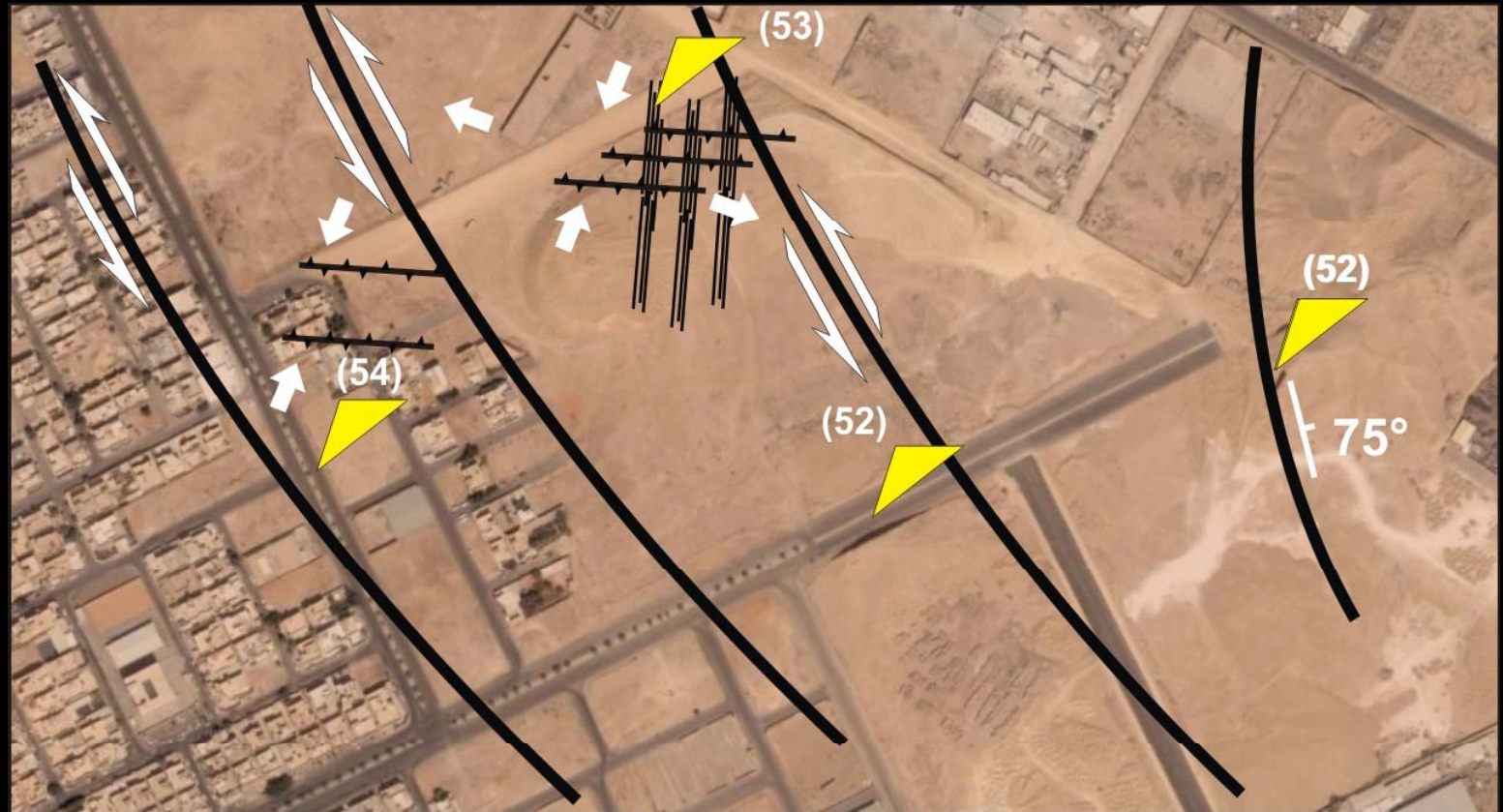
Riyadh



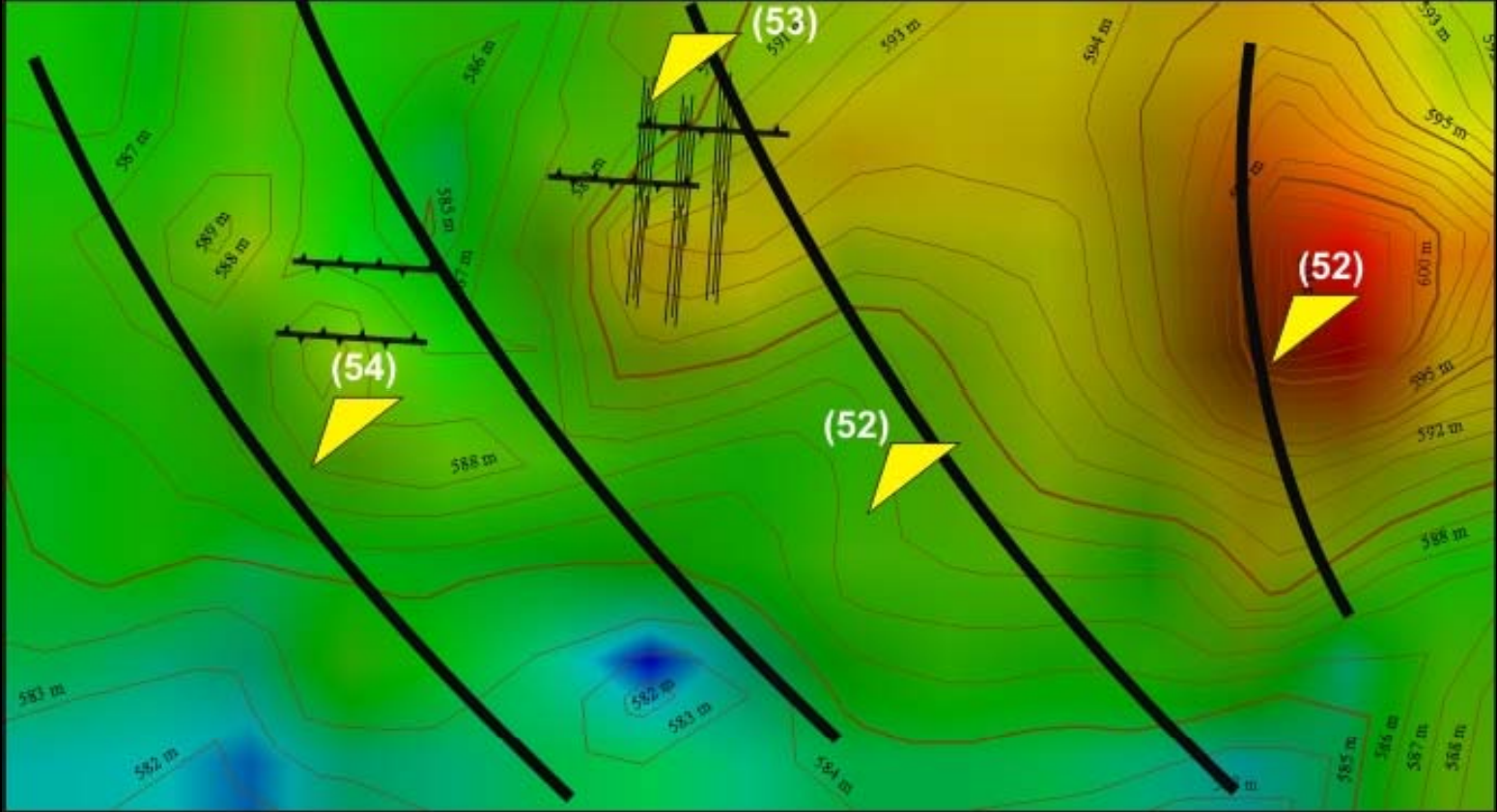
Sulay Formation



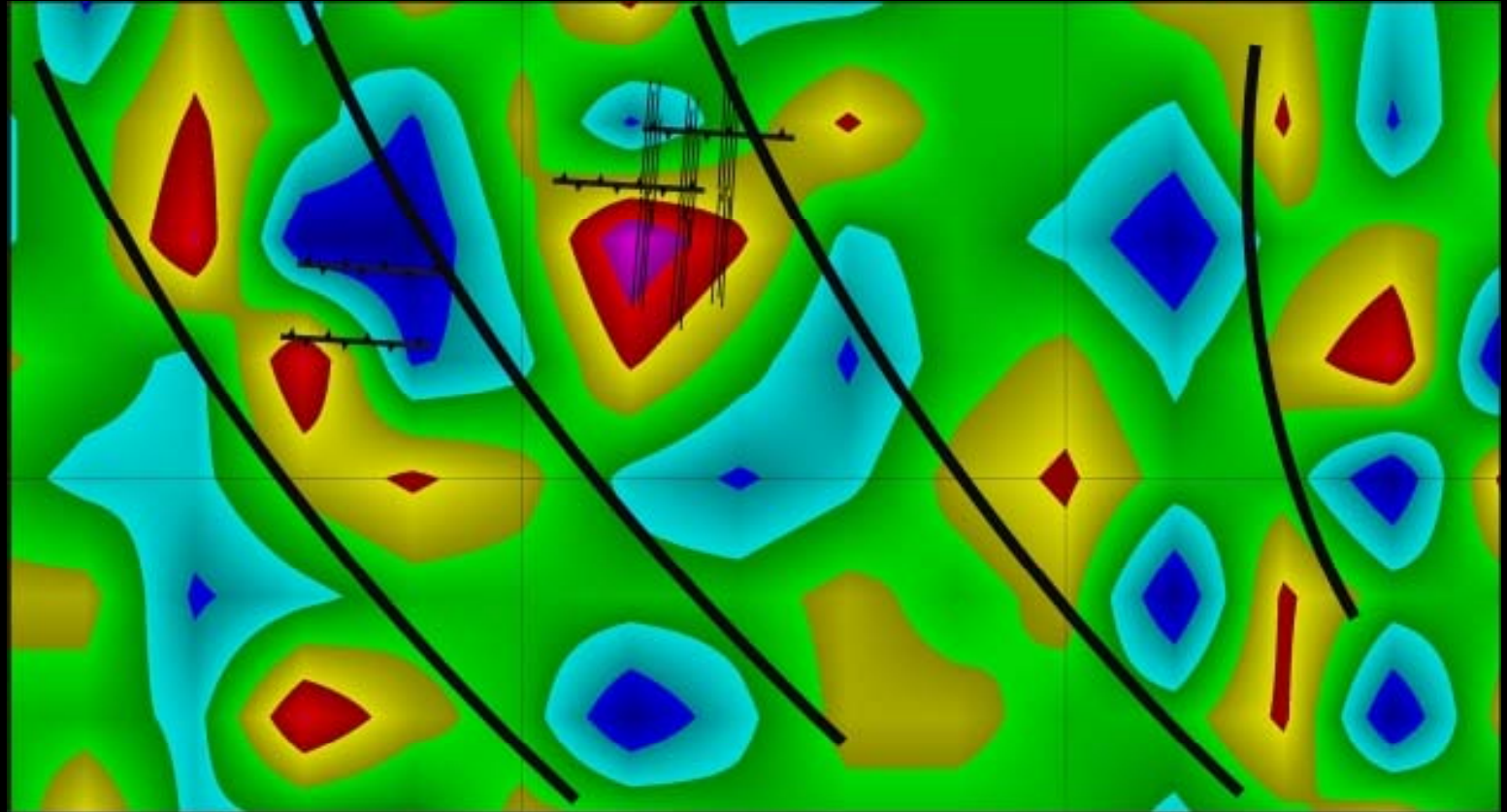
Sulay Formation



Sulay Formation



Sulay Formation



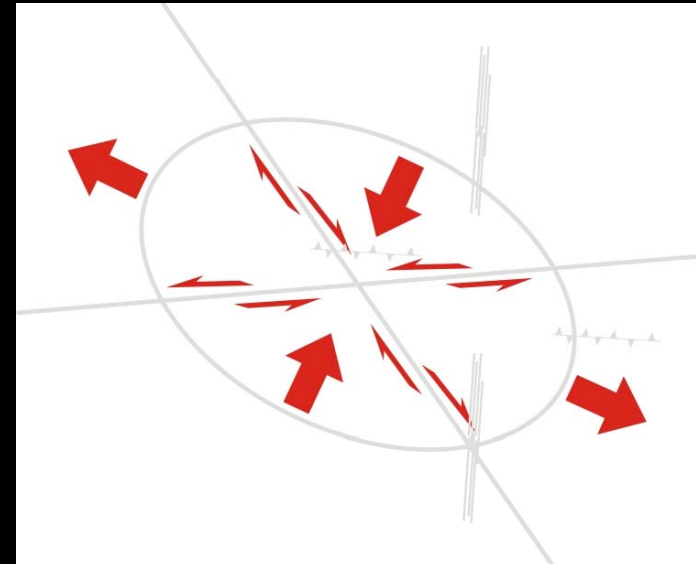
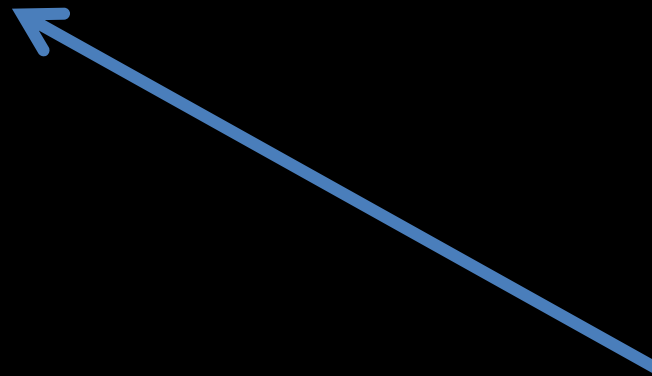


Sulay Formation

regional stress setting



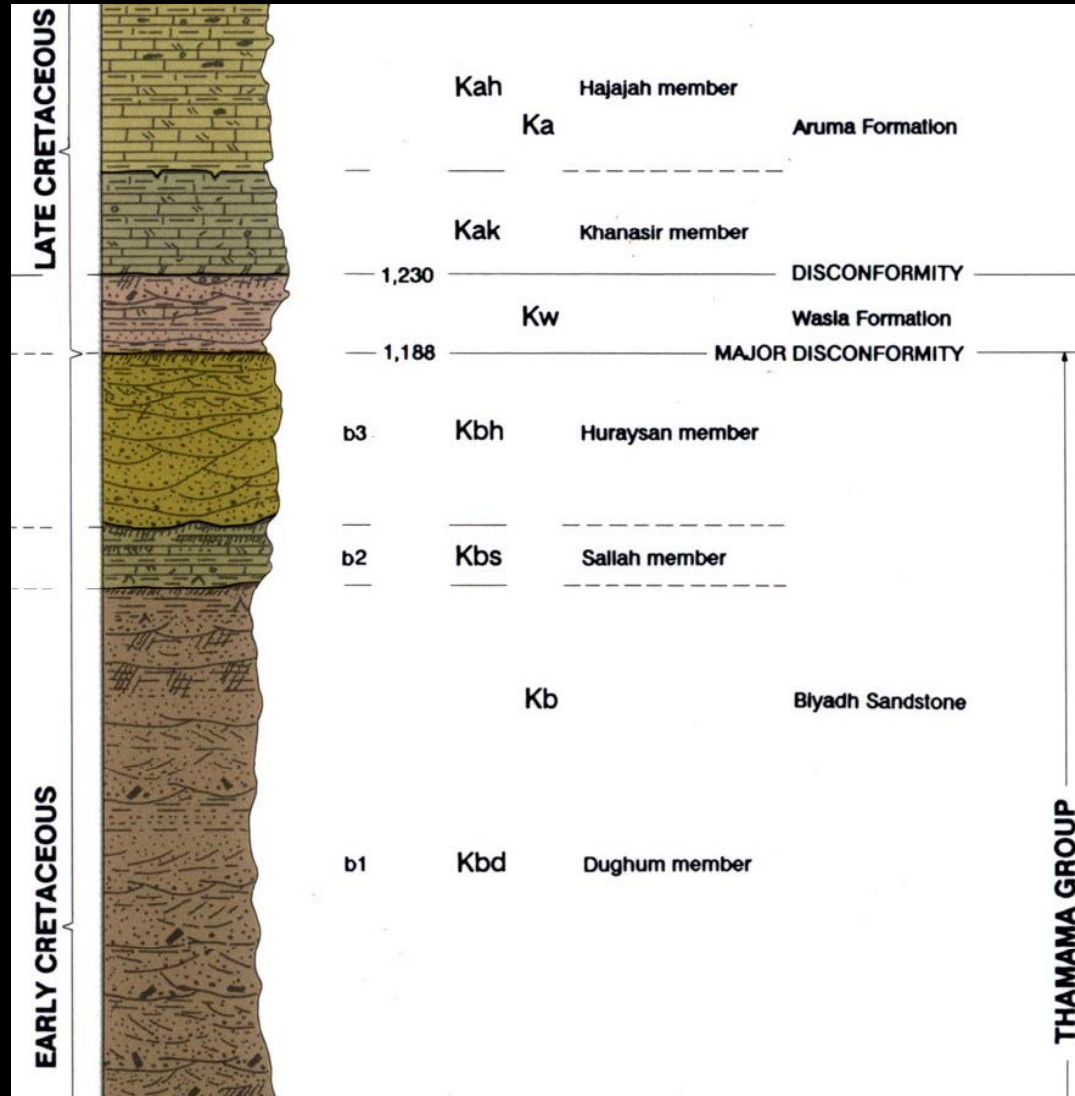
ground water depression

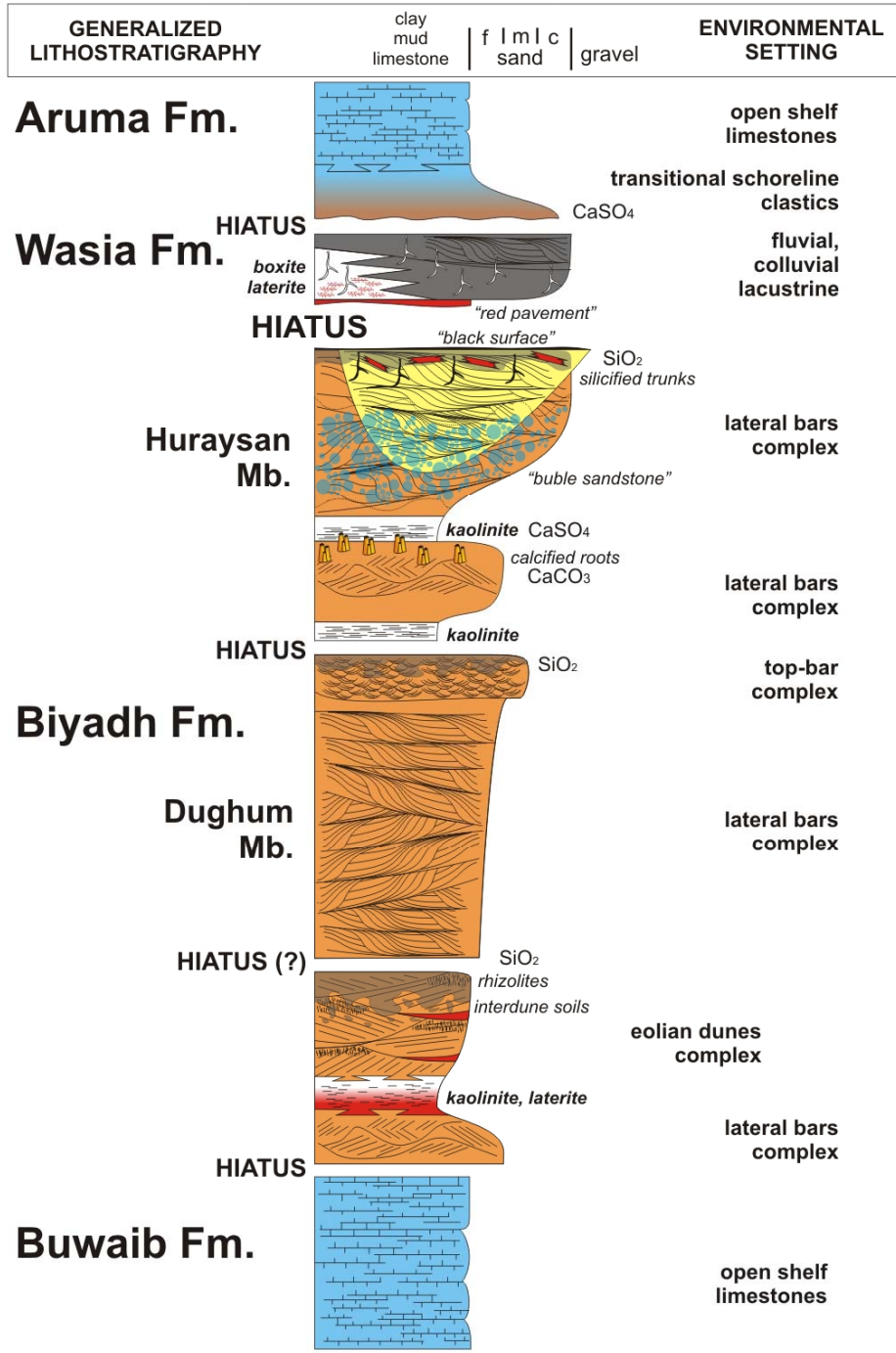


local stress setting



Dziękuję za uwagę i zapraszam na część II!





SGS French Camp (Jeddah)



SGS French Camp (Jeddah)



SGS YTDP (Jeddah)

