

PALEONTOLOJİ

14. Hafta

M.Görmüş

Konular

Fosillerle taşların yaşlarının, ortamlarının verilmesine örnekler

Jeolojik kesitlerin yorumlanmasında fosiller ve örnekler (uyumsuzluk, fay, kıvrım)

Dinar Gezisi ile ilgili ayrıntılar

Laboratuvar örneklerinin tekrarı

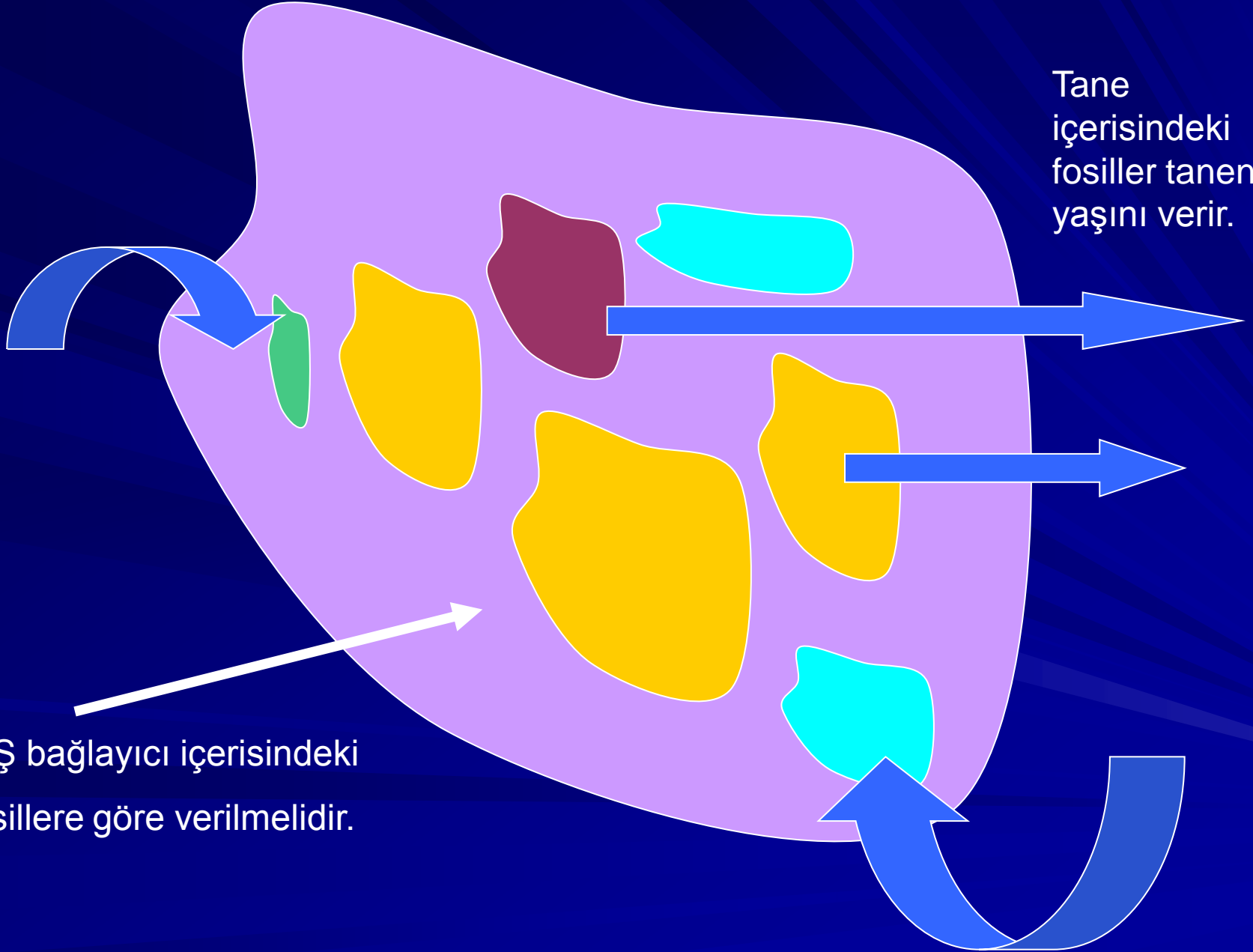
Yaşların verilmesi

Karakteristik fosil

- Belirli bir zamanı işaret eden,
 - Belirli bir ortamda yaşayan,
 - Belirli bir coğrafik yayılım gösteren,
 - Bol bulunan ve
 - Kolay tanınabilir
- Organizmalara denilir.

Bir kumtaşı, konglomera (çakıltaşı) örneği

Tane içerisindeki fosiller tanenin yaşını verir.

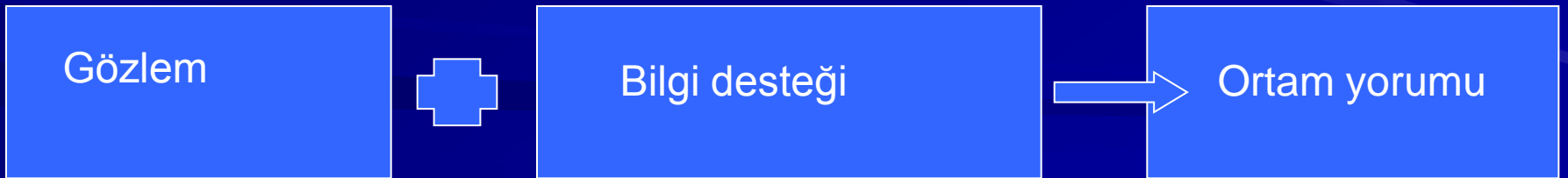


YAŞ bağlayıcı içerisindeki Fosillere göre verilmelidir.

Sedimenter yapılar ve fosil gözlemlerinde

1. Kavkı yönlenmeleri
2. Kavkı içerisinde kristallenme – jeopetal yapı
3. Kavkı içi ve dışındaki kristallenme özellikleri
4. Fosil kırıklığı
5. Fosillerin kırıntı ya da bağlayıcı içerisinde gözlenmesi-reworking
6. Stilolitik yapılar

Gibi bir çok özellik fosilleşme öyküsünde değerlendirilmelidir. Bunlar, ortam yorumunu etkileyebilecek özelliklerdir. Bu nedenledir ki; ortam yorumlarında;



Kumtaşları: *Arca* sp. *Chlamys* sp. *Exogyra* sp. *Nummulites* sp.
Assilina sp. *Quinqueloculina* sp.

Kalın tabakalı kçt: *Ostrea* sp. *Chlamys* sp.
Inoceramus sp. *Orbitoides apiculatus*,
Loftusia sp.
Quinqueloculina sp.

Alüvyon

İnce-orta tabakalı kçt: Fusulinler bol
miktarlarda bulunur. *Schwagerina* sp.

SORU: Birimlerin yaşları ve ortamlarını yazınız.

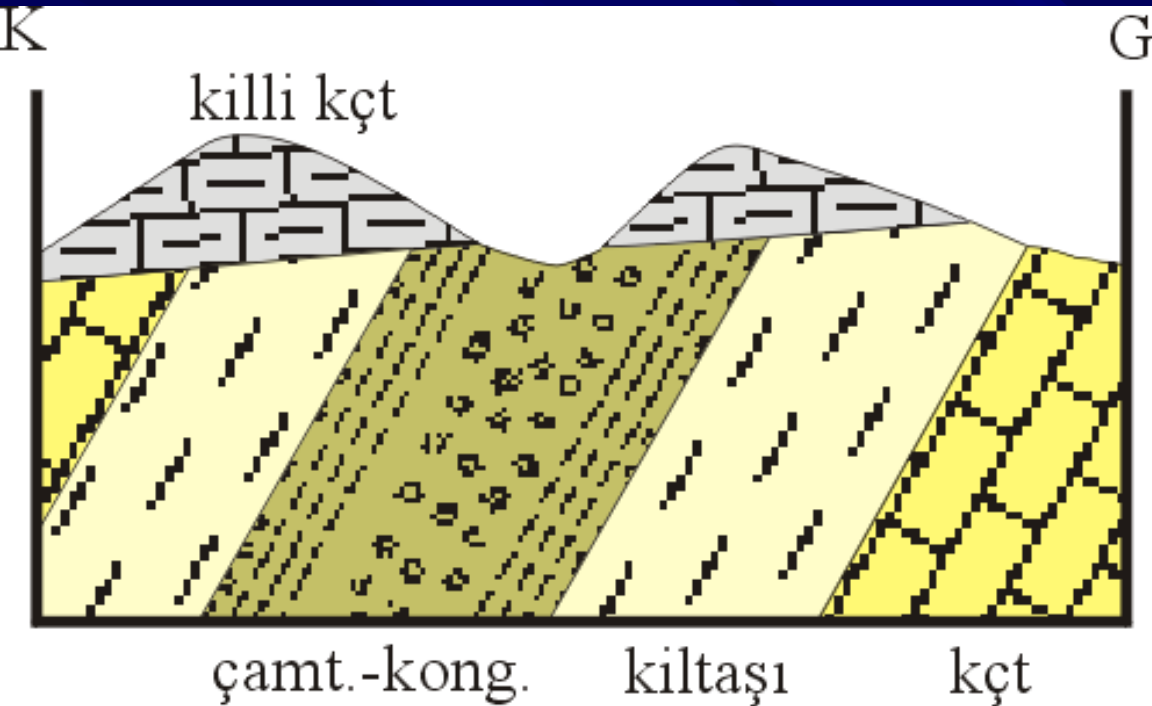
ÜST ZAMAN	ZAMAN	DEVİR	DEVRE	MİLYON YIL	
FANEREZOYİK	SENOZOYİK	KUVATERNER	HOLOSEN	0.8	
			PLEYİSTOSEN	1.8	
		TERSİYER	NEOJEN	PLİYÖSEN	5
				MİYOSEN	25
				OLİGOSEN	40
				EOSEN	65
			PALAJOJEN	PALEOSEN	65
				ÜST	100
				ALT	140
				MESOZOYİK	JURA
	DOGGER	180			
	TRİAS	LİYAS	200		
		ÜST			
	PALEOZOYİK	PERMİYEN	ORTA		
			ALT	230	
		KARBONİFER	ÜST		
			ALT	280	
		DEVONİYEN	ÜST		
ORTA			400		
SİLÜRİYEN		ALT	430		
		ÜST			
ORDOVİSYEN		ALT	500		
		ÜST			
KAMBİYEN	ORTA				
	ALT	570			
PRETEREZOYİK	PREKAMBİYEN	ALGONKİYEN		2 600	
KRİPTOZOYİK ARKEOZOYİK AZOYİK		ARKEEN		2 600 den önce	

Arca sp.
Chlamys sp.
Exogyra sp.
Nummulites sp.
Assilina sp.
Quinqueloculina sp.

Ostrea sp.
Chlamys sp.
Inoceramus sp.
Orbitoides
apiculatus,
Loftusia sp.
Quinqueloculina sp.

Fusulinler
Schwagerina sp.

Kesişim yerleri dikkate alındığında kumtaşlarının Eosen, kalın tabakalı kçtlarının Üst Kretase, ince-orta tabakalı kçtlarının Karb.-Perm. Olduğu söylenir. Alüvyon Kuvaterner yaşlıdır.



Kireçtaşı: *Loftusia* sp.,
Orbitoides sp., *Triloculina* sp.,
Alg

Kıltaşı: *Globotruncana* sp.,
Heterohelix sp.,

Çamurtaşı-Konglomera: Altta;
Globegerina sp. (bol), Üstte;
Nummulites sp., *Assilina* sp.,
Peneroplis sp.

Killi kireçtaşı: *Miogypsina* sp.,
Lepidocyclina sp., fosilleri
içermektedir.

SORU: Birimlerin yaşları ve ortamlarını yazınız. Yapısal özellikleri gösteriniz.

Yaşlandırma

ÜST ZAMAN	ZAMAN	DEVİR	DEVRE	MİLYON YIL	
FANEREZOYİK	SENOZOYİK	KUVATERNER	HOLOSEN	0.8	
			PLEYİSTOSEN	1.8	
		TERSİYER	NEOJEN	PLİYÖSEN	5
				MİYÖSEN	25
				OLİGOSEN	40
				EOSEN	65
			PALAJOJEN	PALEOSEN	65
				ÜST	100
				ALT	140
				MESOZOYİK	KRETASE
	DOGGER	180			
	JURA	LİYAS	200		
		ÜST			
	TRİAS	ORTA			
		ALT	230		
		ÜST			
	PALEOZOYİK	PERMİYEN	ALT	280	
			ÜST		
		KARBONİFER	ALT	350	
			ÜST		
		DEVONİYEN	ORTA		
			ALT	400	
			ÜST		
		SİLÜRİYEN	ALT	430	
ÜST					
ORDOVİSYEN		ALT	500		
		ÜST			
KAMBİYEN		ORTA			
		ALT	570		
		ÜST			
PRETEREZOYİK	PREKAMBİYEN	ALGONKİYEN		2 600	
KRİPTOZOYİK ARKEOZOYİK AZOYİK		ARKEEN		2 600 den önce	

Loftusia sp.,
Orbitoides sp.,
Triloculina sp.,
Alg

Globotruncana sp.,
Heterohelix sp.,

Globogerina sp.,
Nummulites sp.,
Assilina sp.,
Peneroplis sp.

Miogypsina sp.,
Lepidocyclina sp.,

Kesişim yerleri dikkate alındığında kçtlarının Ü.Kretase, kilaşlarının Üst Kretase, çamurtaşı-konglomeraların Paleojen, killi kireçtaşlarını Miyosen olduğu görülür.

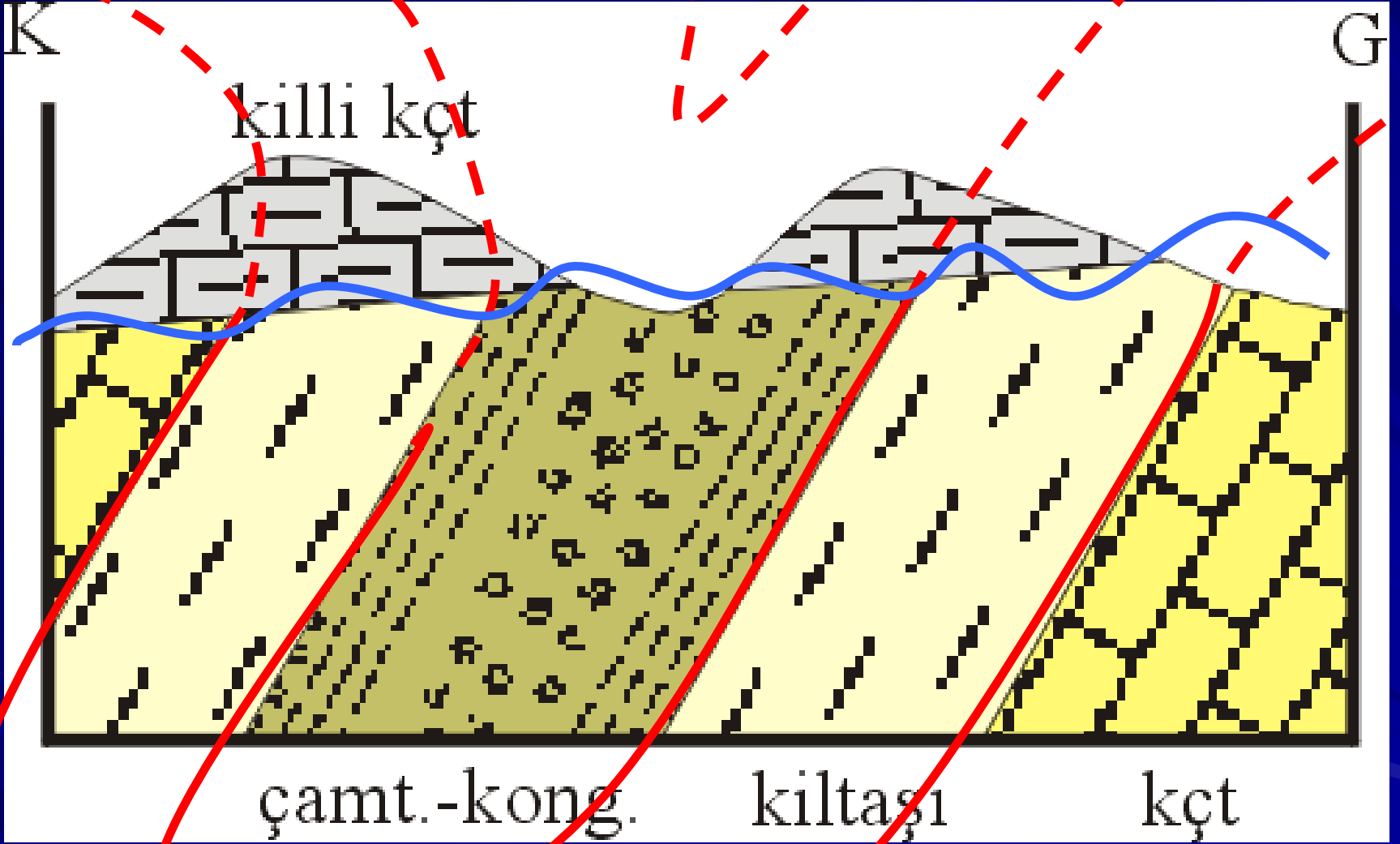
Ortamsal yorumları:

Kireçtaşları içerisindeki *Loftusia* sp., *Orbitoides* sp., *Triloculina* sp., Alg sığ denizel fosiller olarak bilinir. *Triloculina* ve alg çok sığ-gelgit ve lagün ortamlarını da işaret ederler. Fosillerin bolluk oranları verilmediğinden sığ denizel ortam söylenebilir.

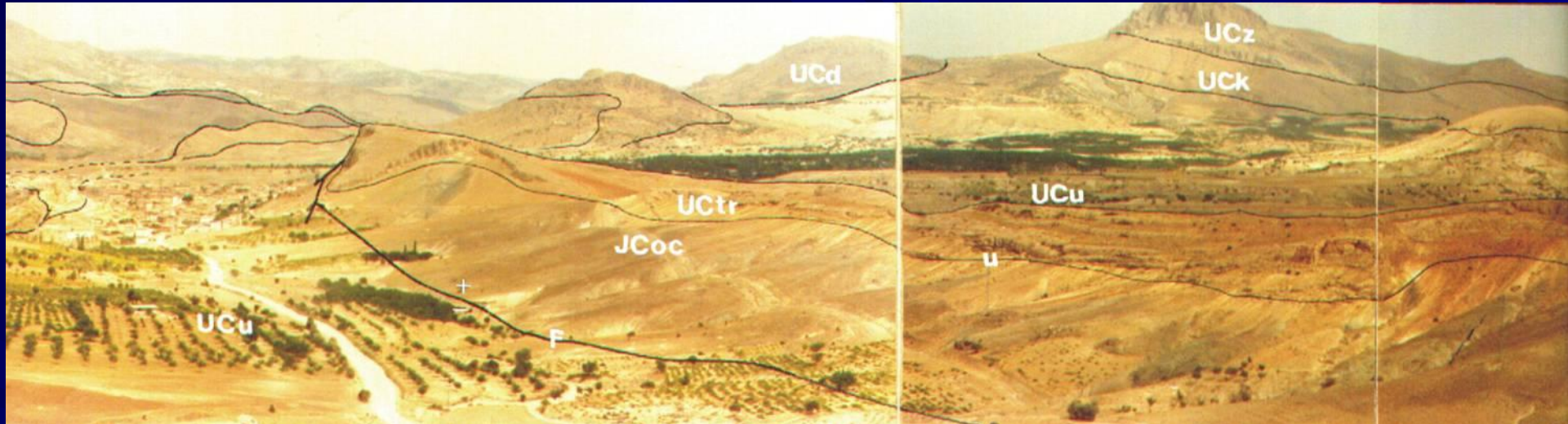
Kiltaşları içerisindeki *Globotruncana* sp., *Heterohelix* sp., planktik açık denizel fosillerdir. Litoloji ve fosil kapsamı ortamın derinleştiğini ve kiltaşlarının çökeldiğini gösterir.

Çamurtaşı-konglomeralardaki bol miktarlarda *Globegerina* sp. Açık denizi işaret eder. Üste doğru *Nummulites* sp., *Assilina* sp., *Peneroplis* sp. ortamın sığlaştığını belirtir.

Killi kireçtaşlarındaki *Miogypsina* sp., *Lepidocyclina* sp., sığ denizel bentik foraminiferlerdir.



Hekimhan



F. Fay

JCoc. Jura-Kretase ofiyolitik kayalar

u- uyumsuzluk

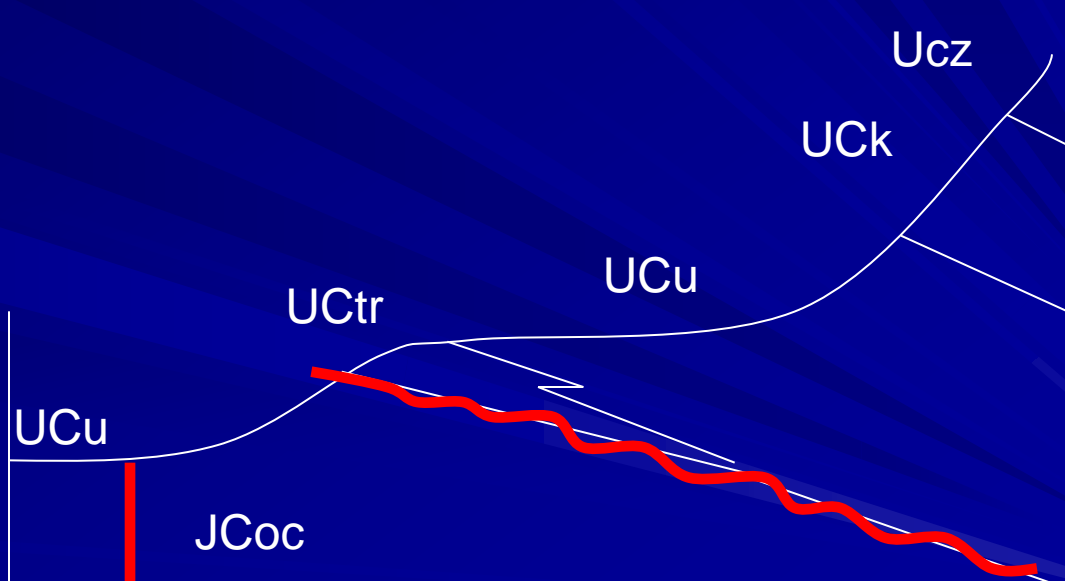
UCtr. Tohma resifleri (bol rudistli)

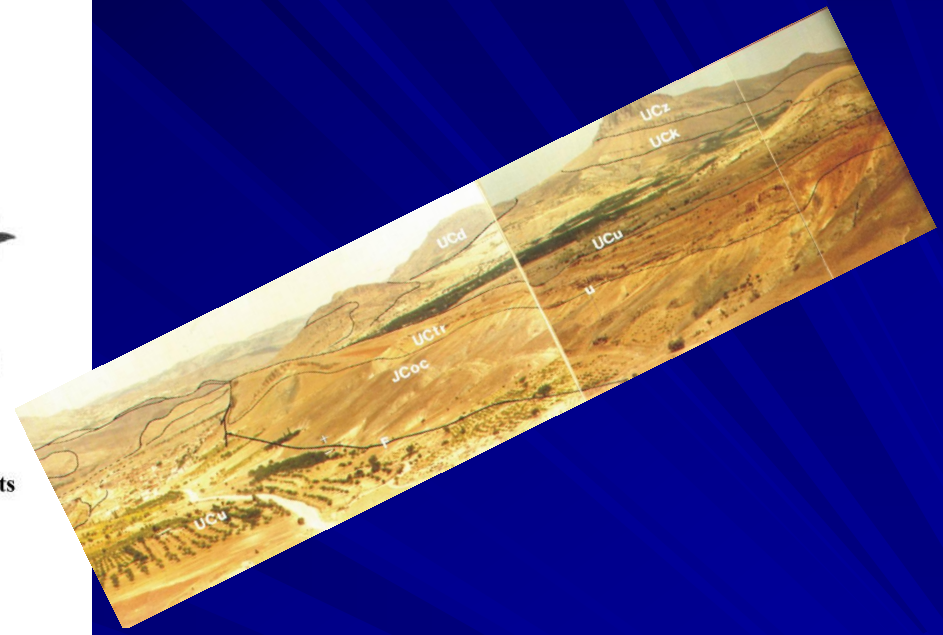
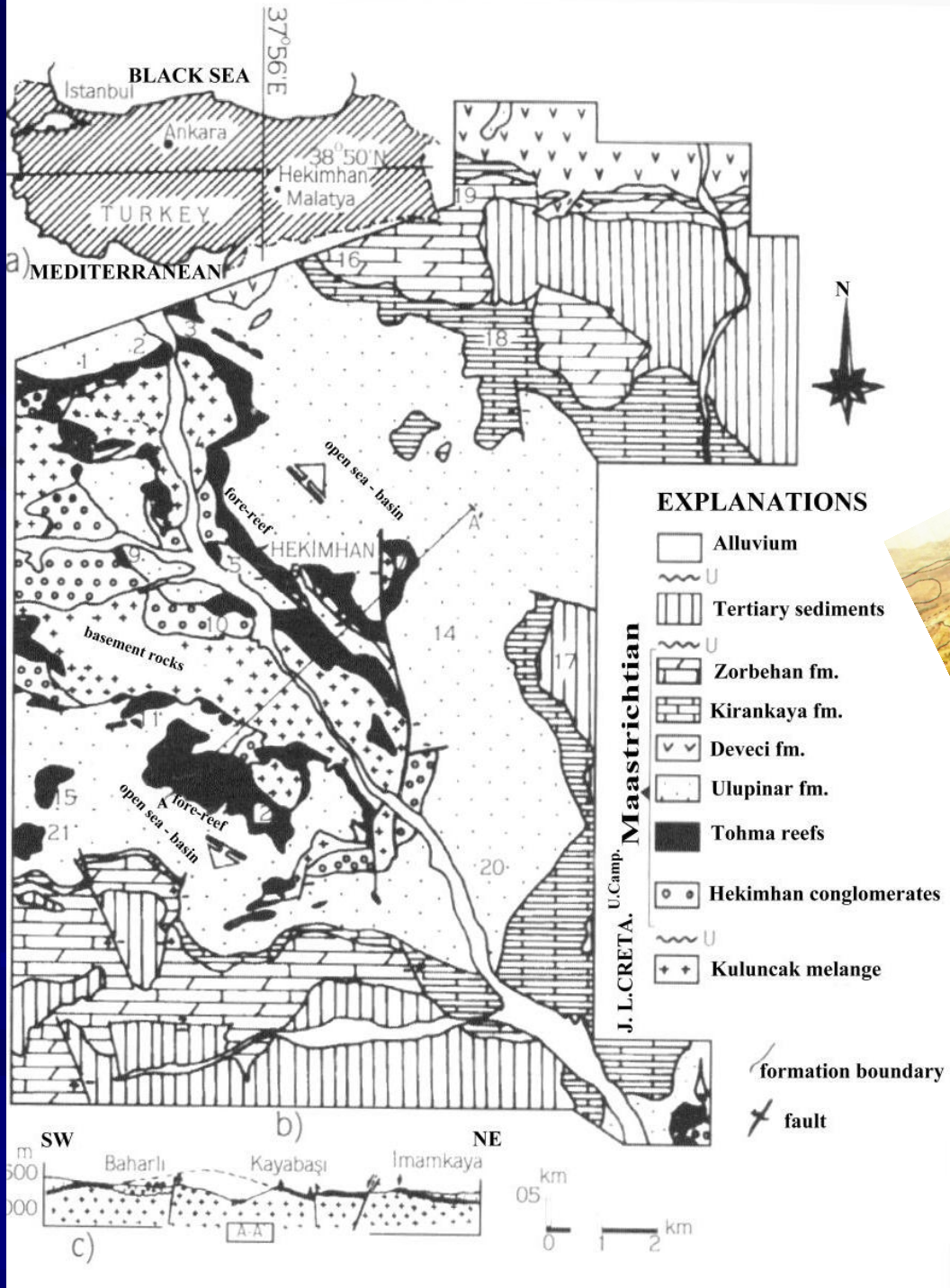
Ucu. Ulupınar fm.-kıltaşı-kumtaşı ar dalanması (altta *Orbitoides*, *Siderolites*, *İnoceramus*, üste doğru *Globotruncana*)

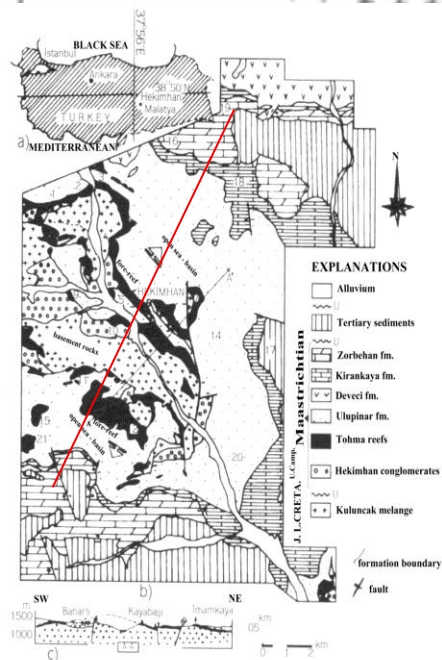
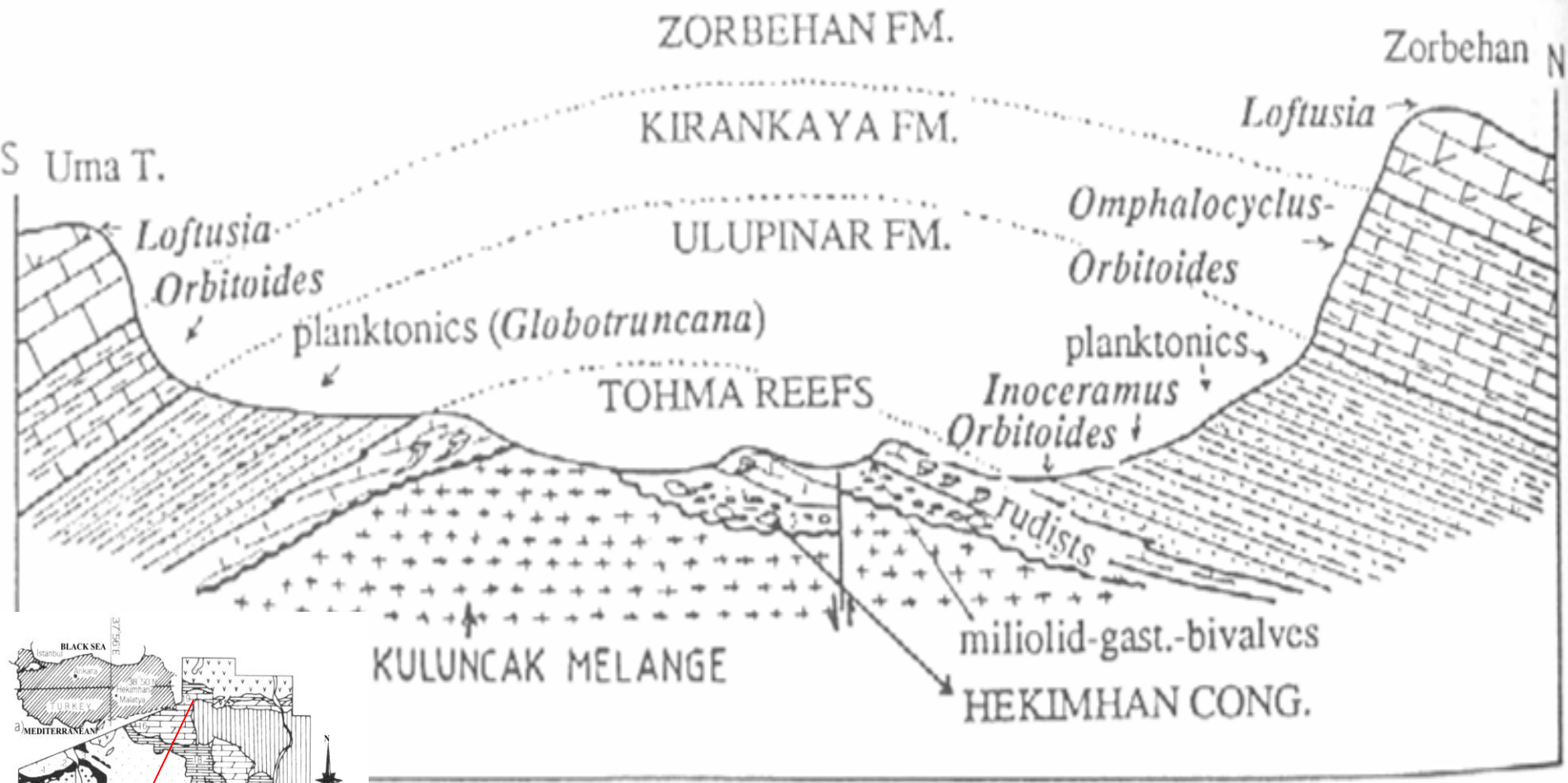
UCd. Deveci Volkanikleri

UCK. Kırankaya Fm. Killi kireçtaşları (*Orbitoides*, *Lepidorbitoides*)

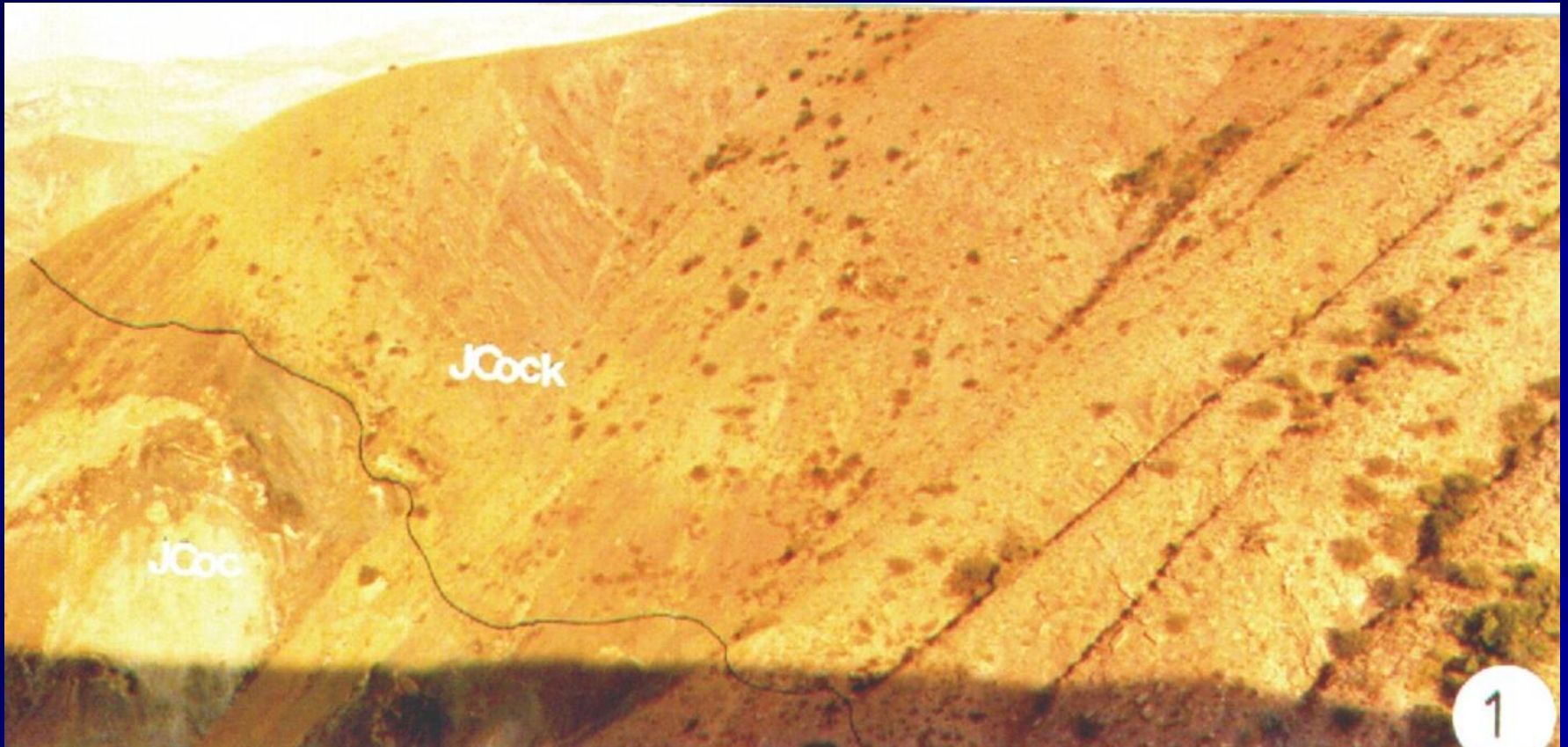
Ucz. Zorbehan Fm. Dolomitik kçt (*Loftusia*)







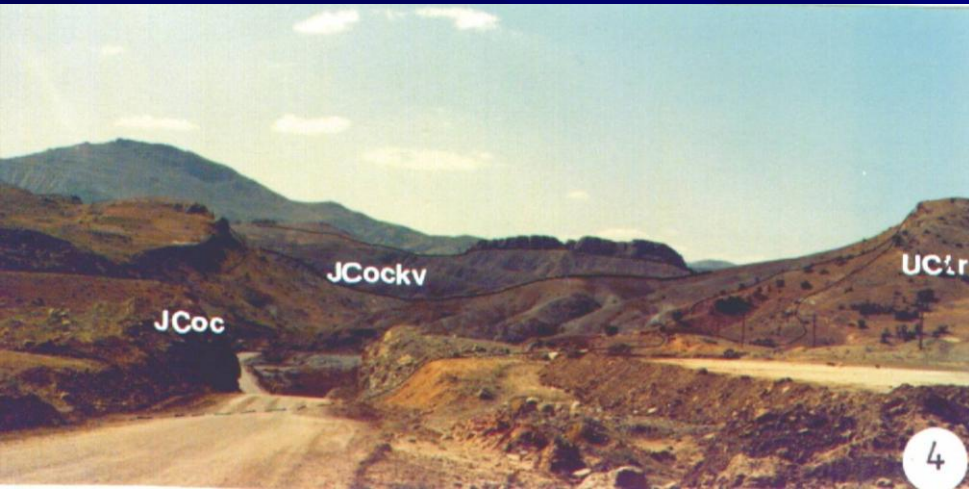
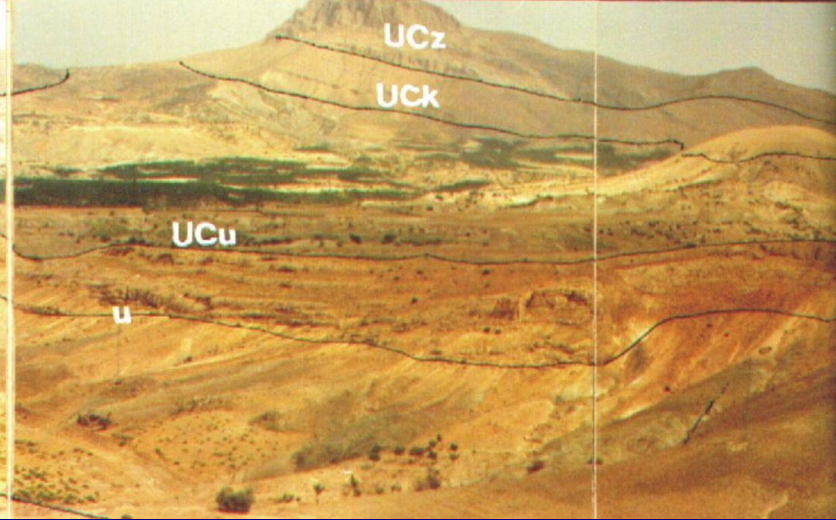
A schematic geological cross-section, S-N in direction showing a large anticline and transgressive to regressive succession in the area during the Campanian to Maastrichtian times.



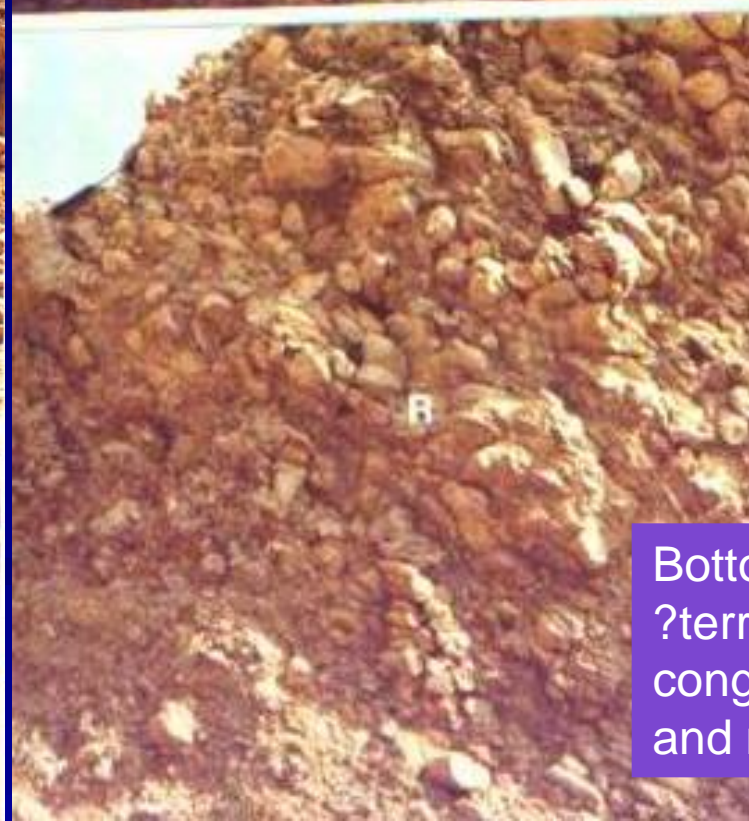
Basement units (Kuluncak melange rocks including deep sea sediments).

At the bottom: ophiolites

At the top: radiolarite-cherts and fine clastics



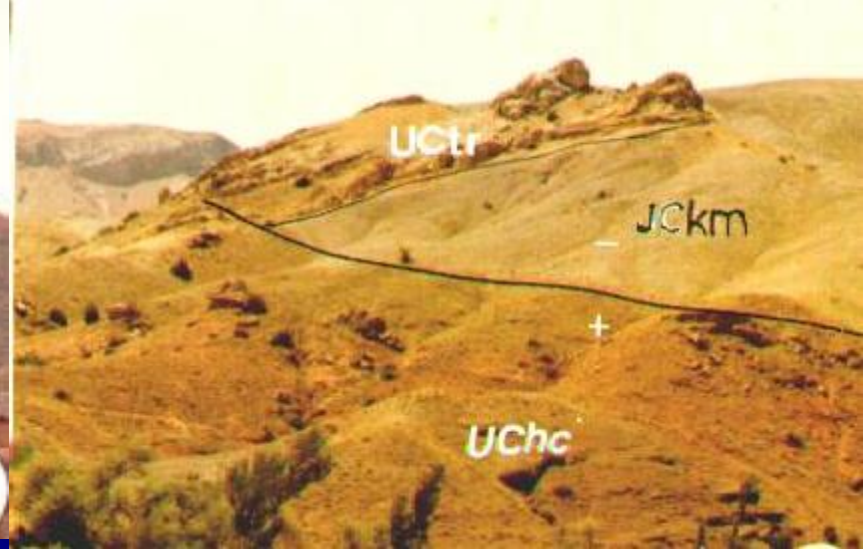
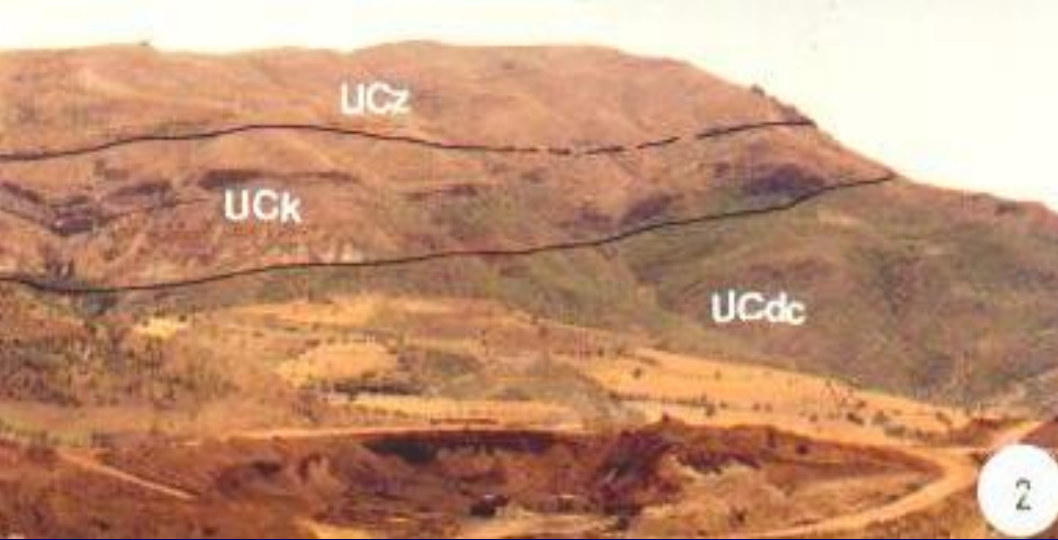
Campanian to Maastrichtian sequence overlying unconformably the melange



Bottom
?terrestrial
conglomerates
and reef views



Lateral facies changes with volcanoclastics of the Deveci Fm., F. Faults



Top units

Maastrichtian in age

Bottom units

Pre-Maastrichtian in age



Eocene sequences overlying the Maastrichtian sediments



A grabene system, light unit is Eocene, the others are Maastrichtian sediments



Miocene carbonates showing a large scaled cross bedding



Carbonates of Miocene transgression on the Cretaceous (left side) and Eocene (right side) sediments

Migypsina, Lepidocyclina'lı Miyosen kçtları

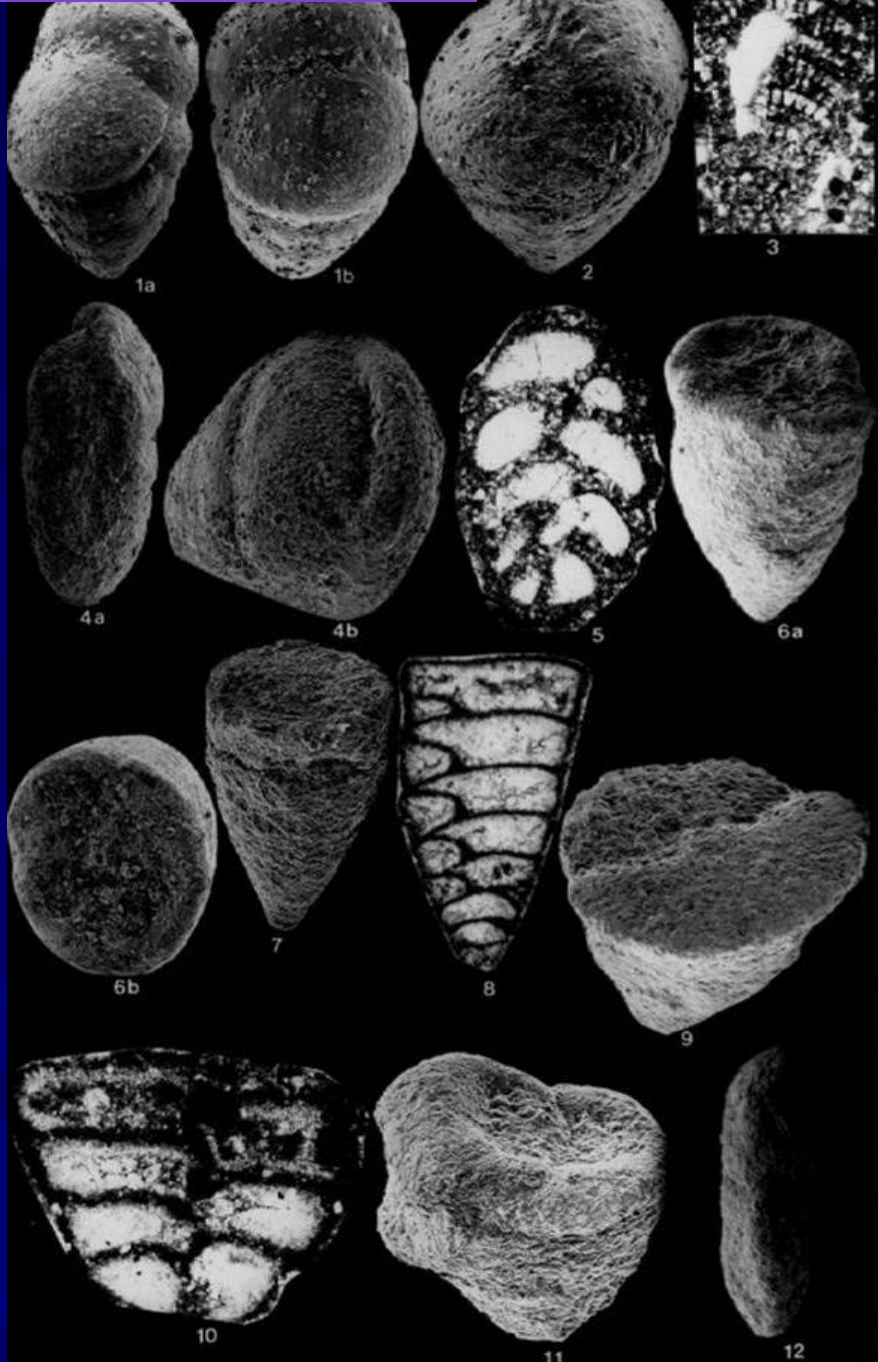


Orbitoides'li Üst Kretase kçtları

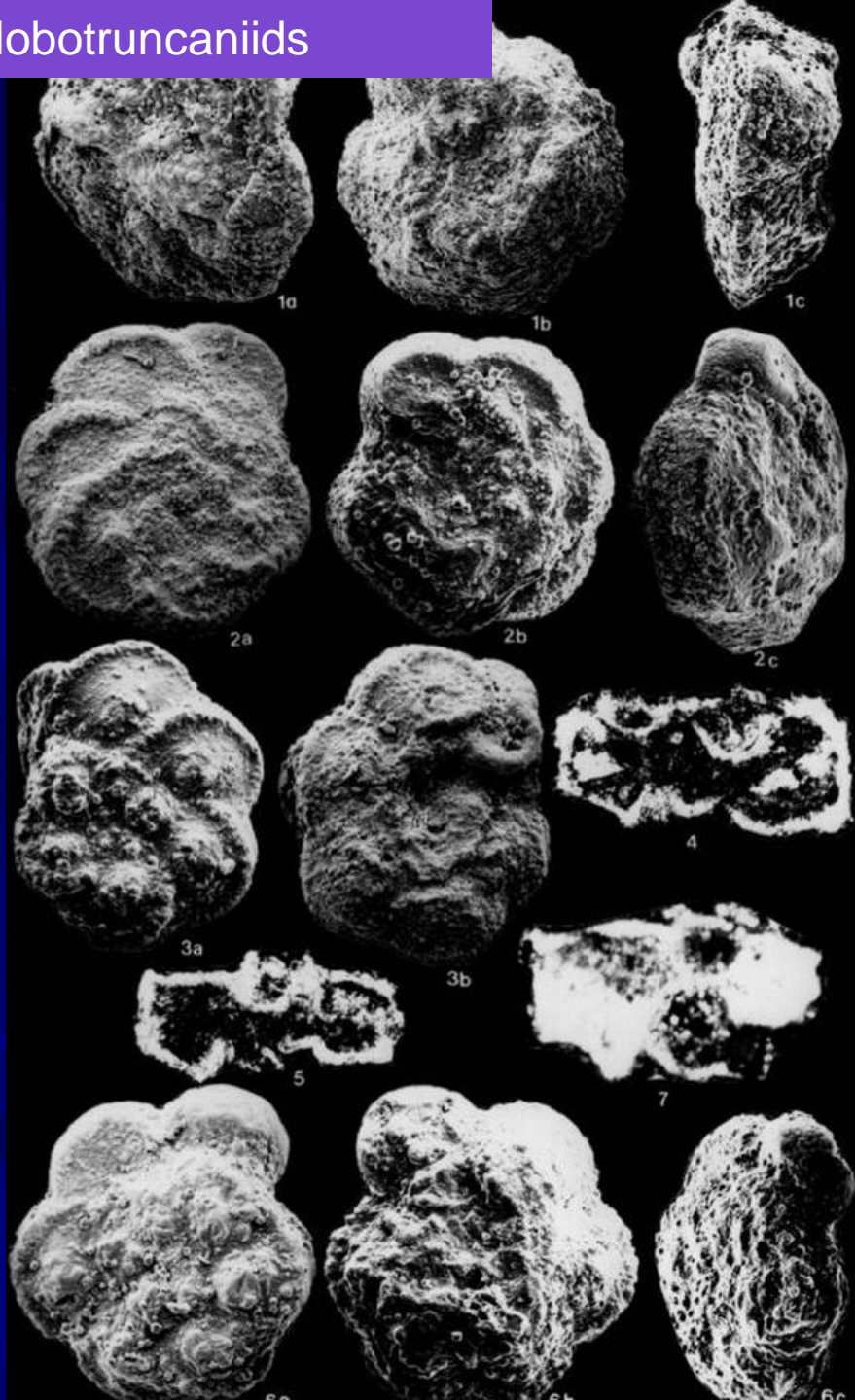
Nummulites'li Eosen killi kireçtaşları

Textulariids

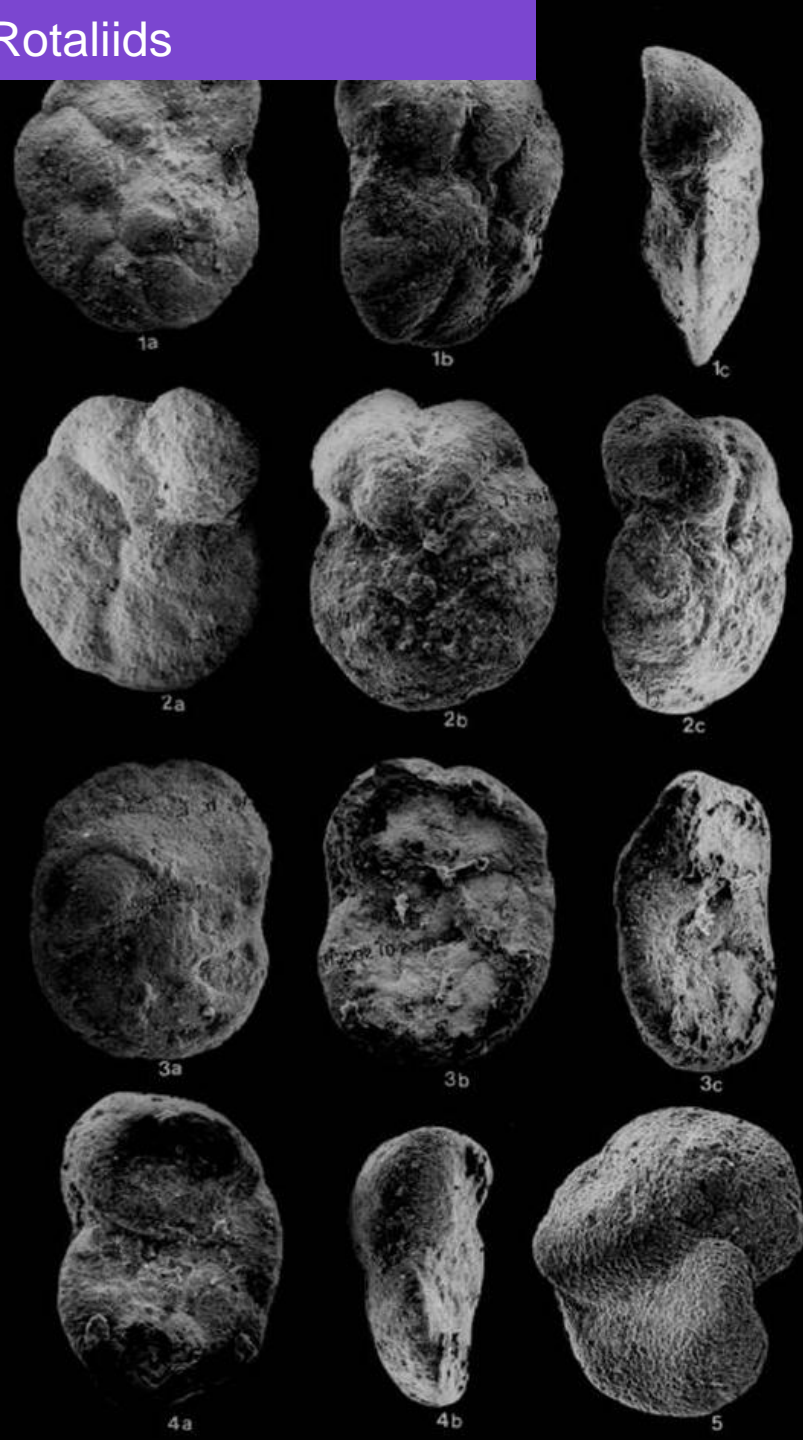
Miliolids & lageniids

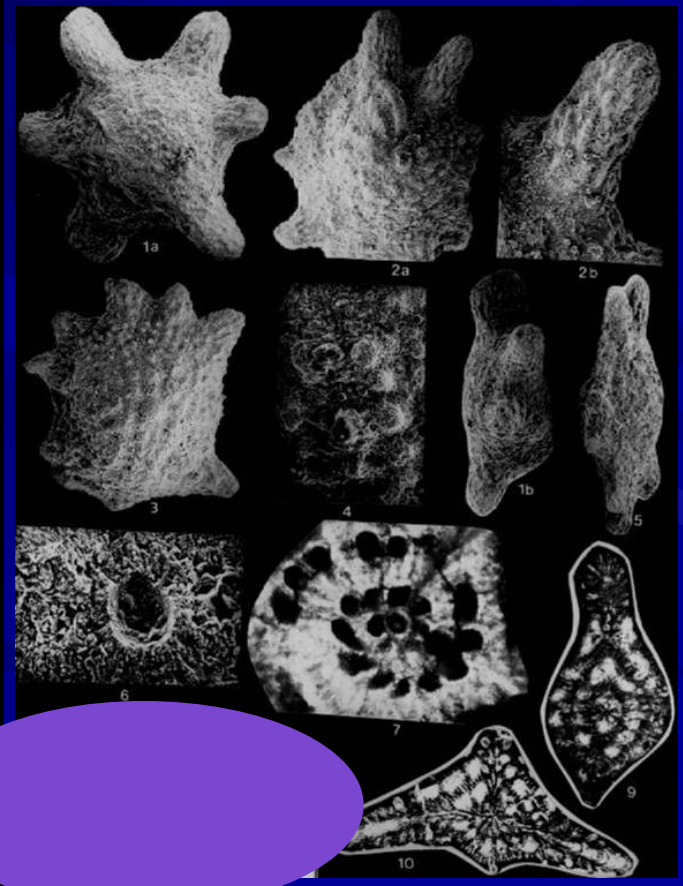
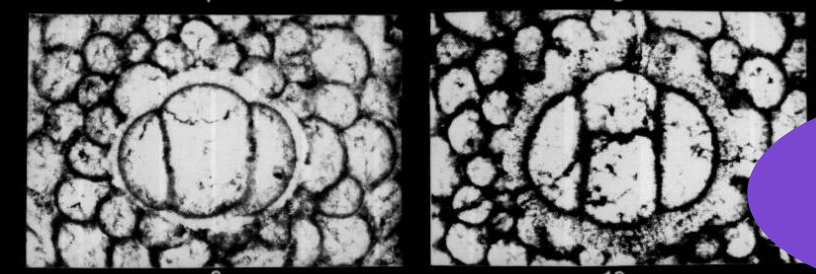
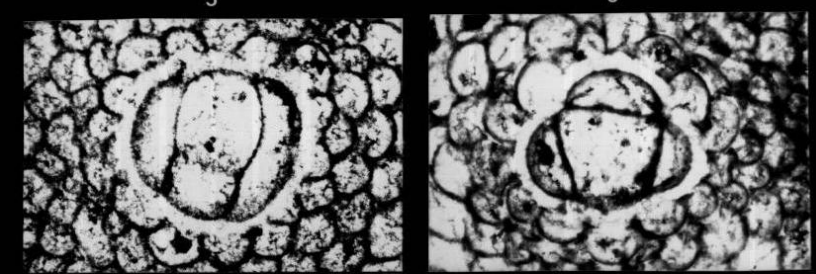
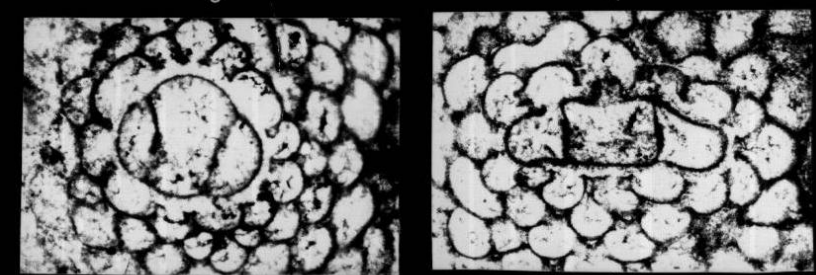
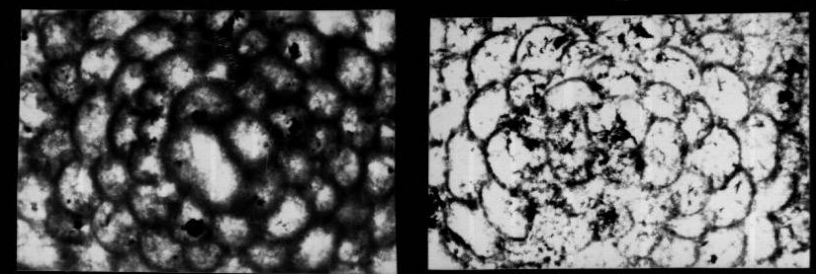
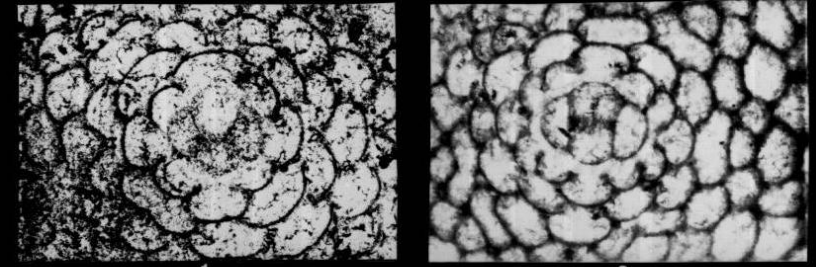


Globotruncaniids

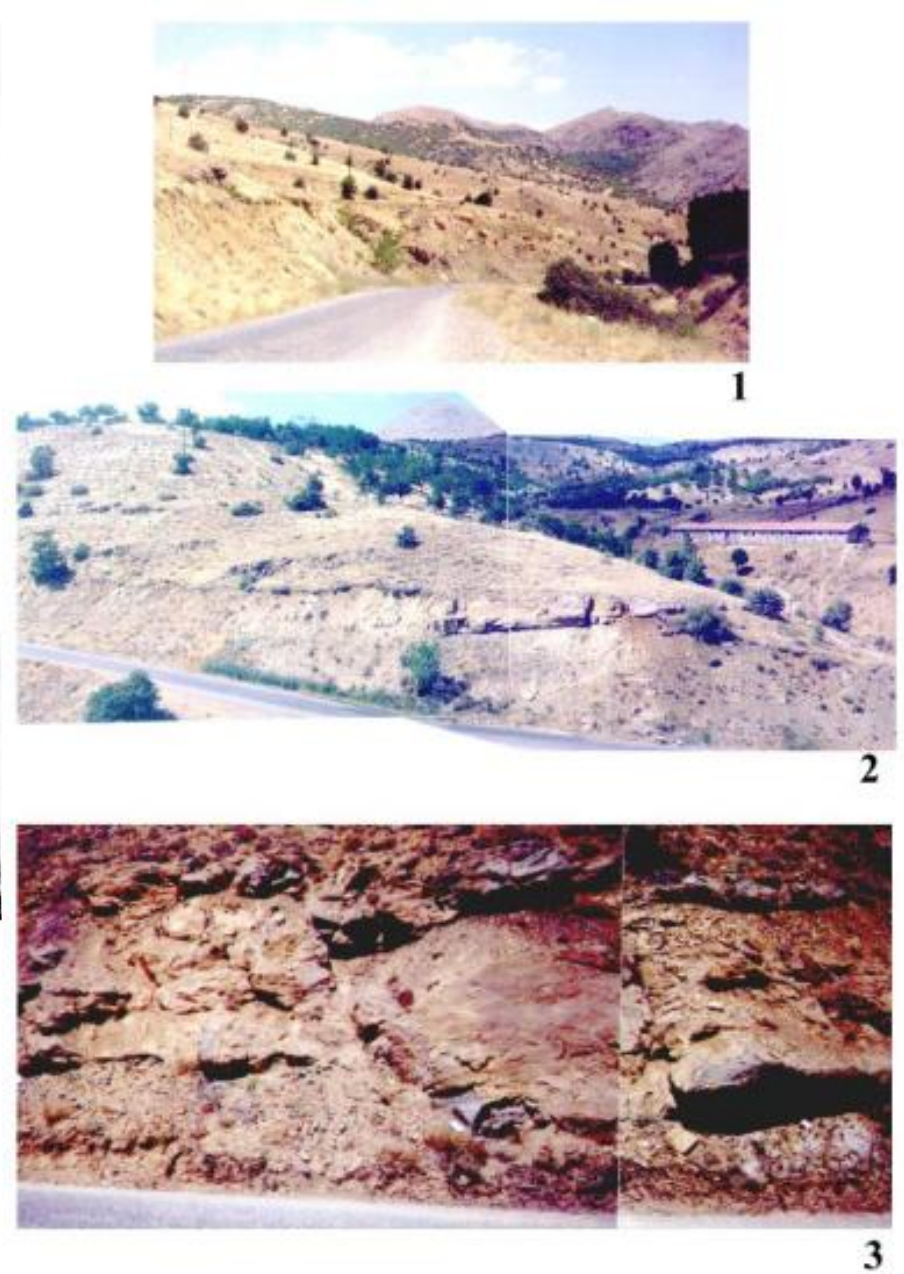
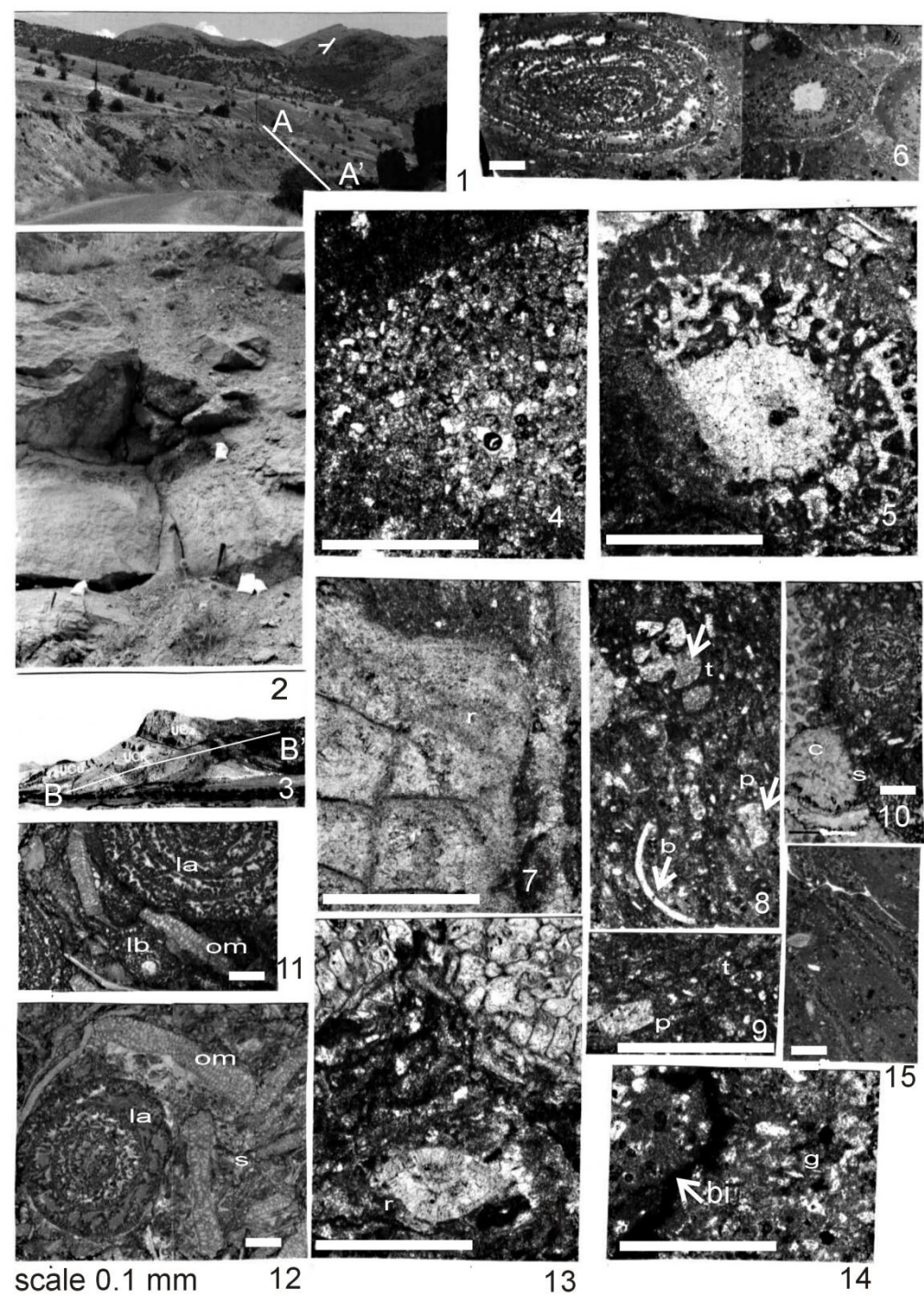


Rotaliids



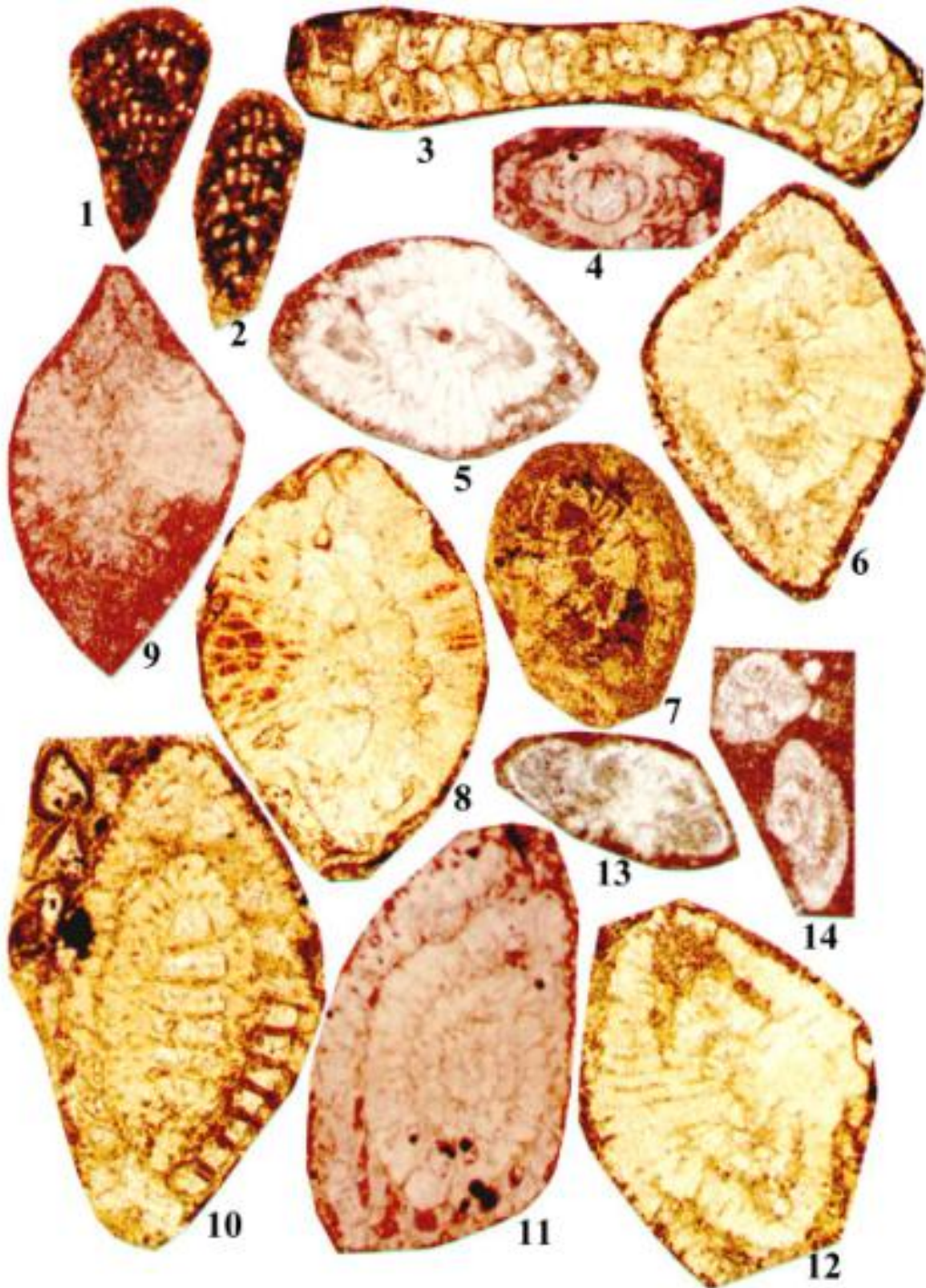


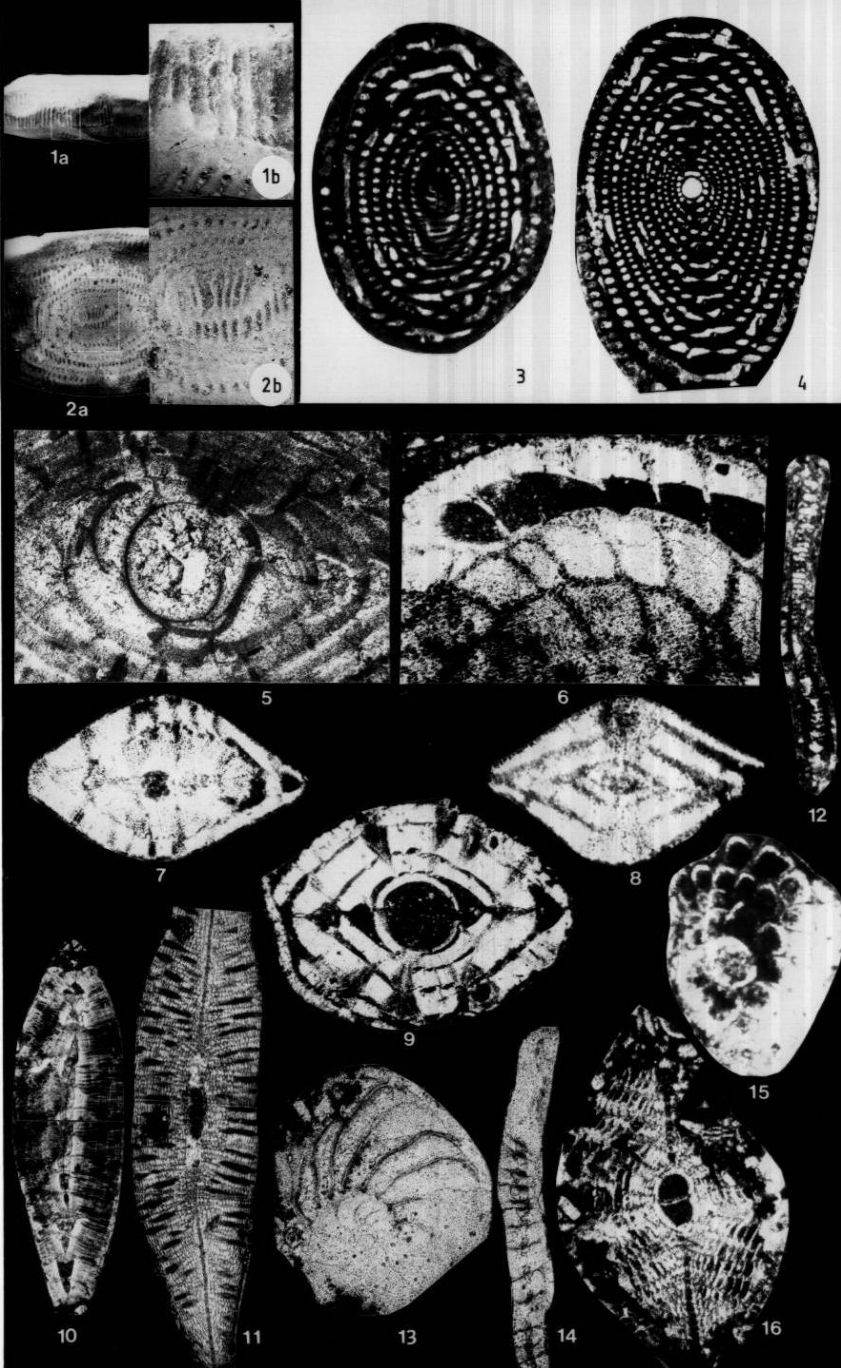
Orbitoides
Embryo views
on the left,
Siderolites on
the right
Location of the
fauna
asociation at
the top,



Maastrichtian loftusiid ant their locations

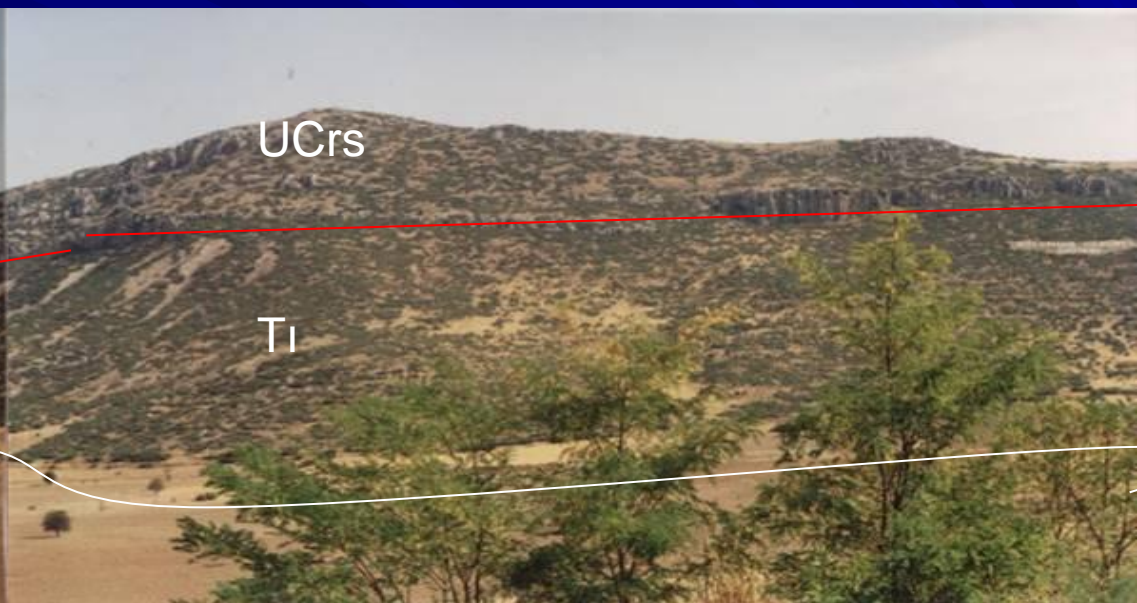
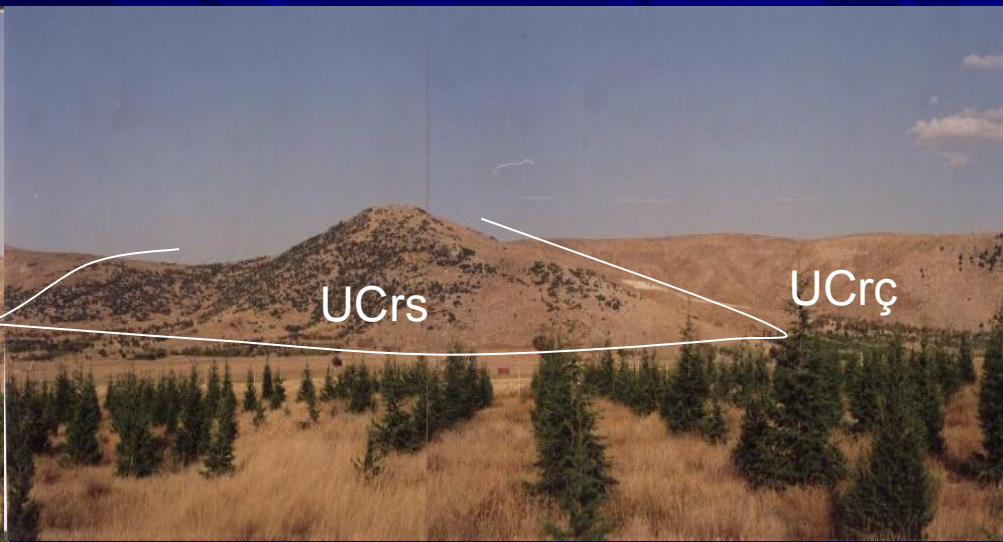
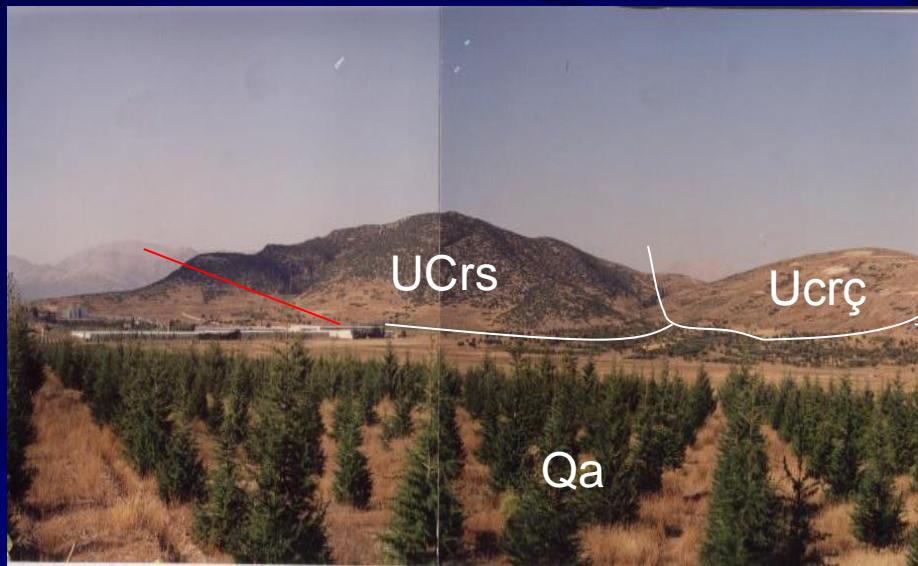
Upper Maastrichtian fauna
views



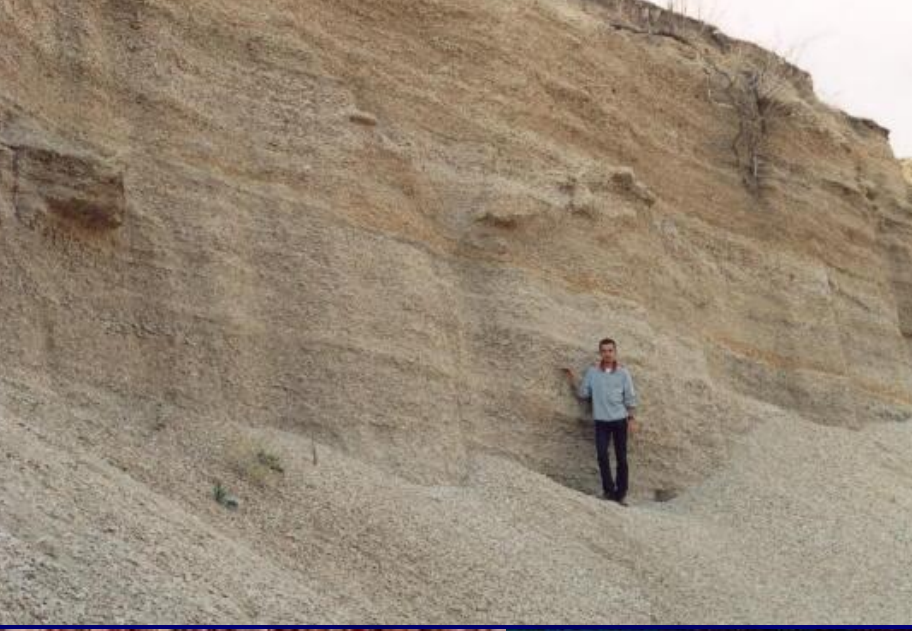


Eocene and Miocene benthic fauna

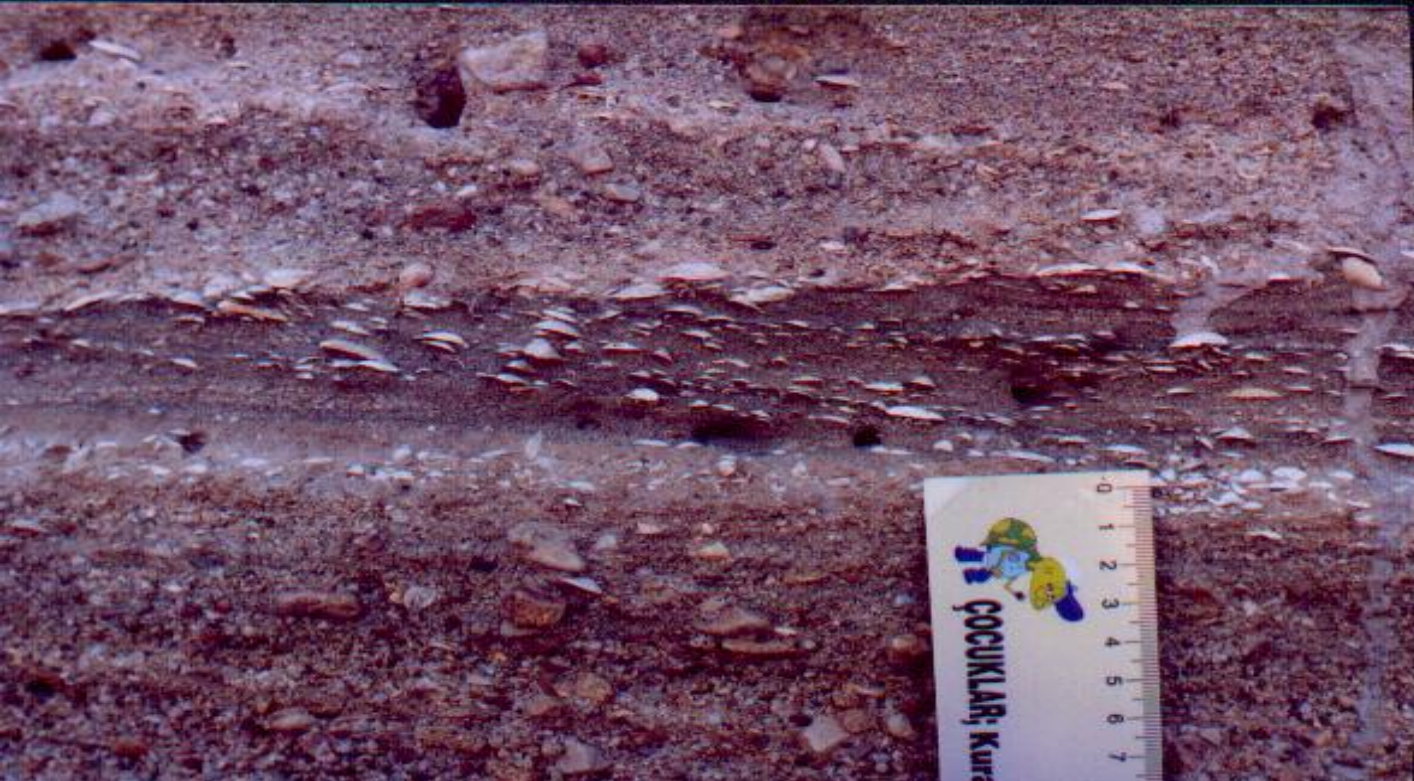
Kampus

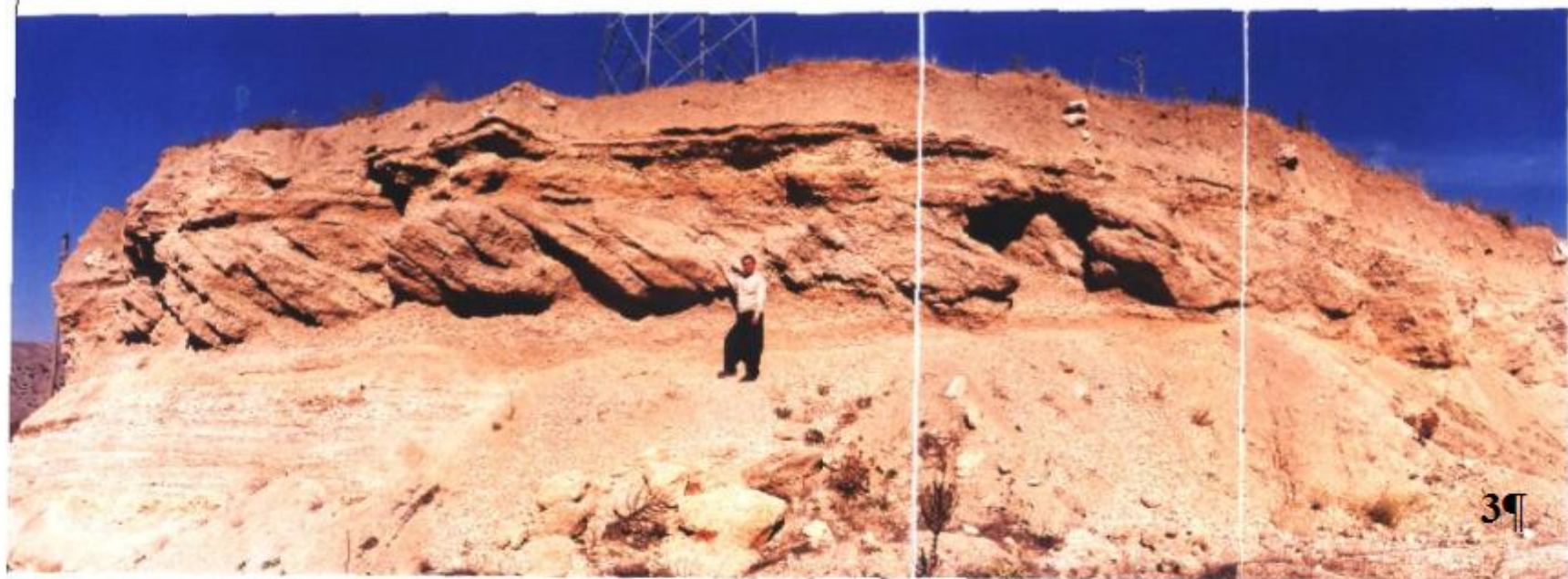


Views from Cretaceous aged carbonates (UKrs. Söbüdağ Imst. UKrç. Çiğdemtepe Imst.) and Lower Tertiary aged clastics (Isparta Fm.), red lines show normal faults.



Plio-Quaternary
aged lacustrinal
sediments





Sagalassos-Dereboğazi

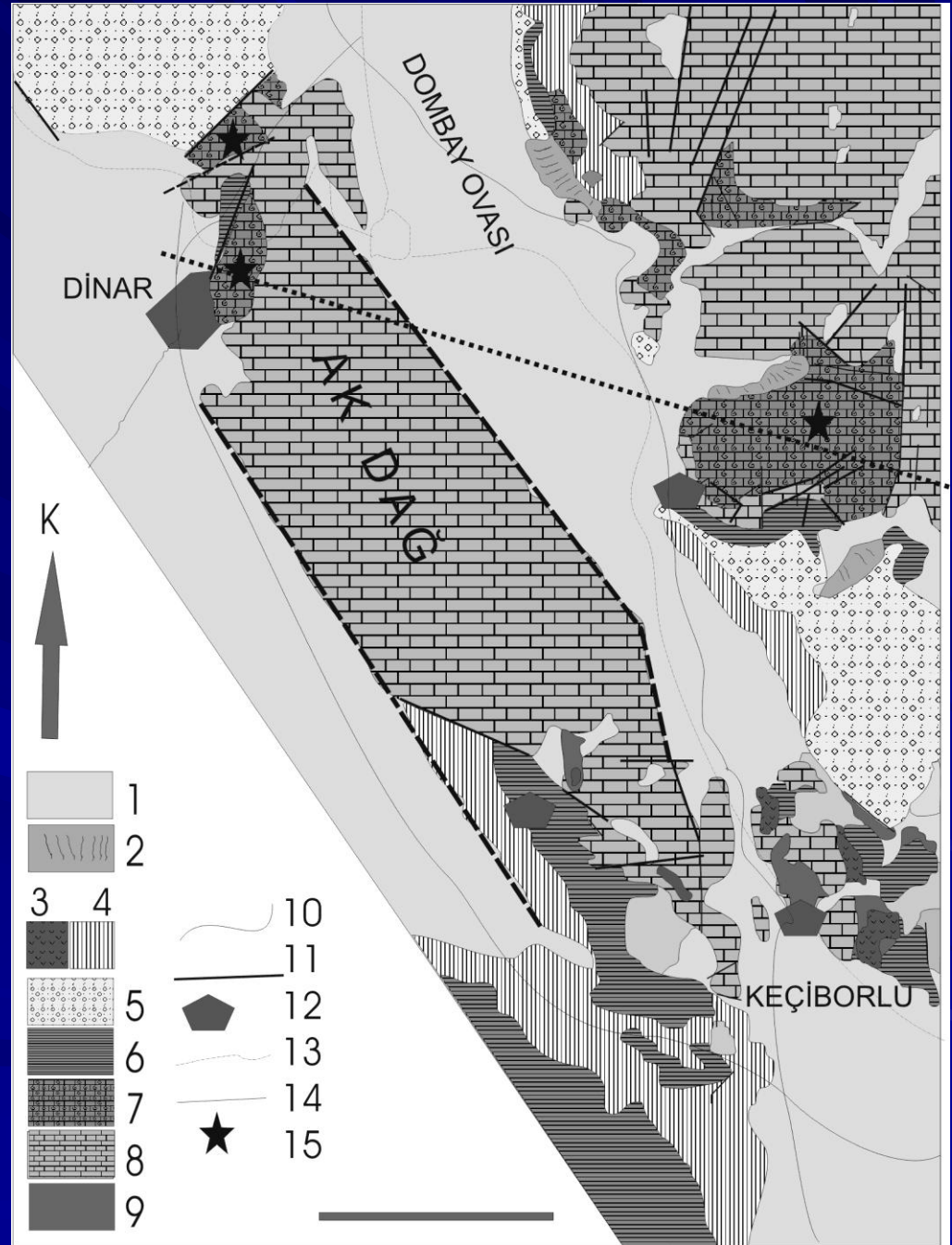
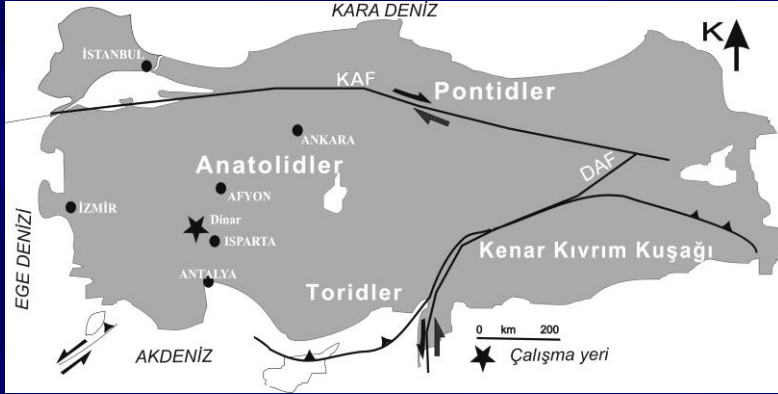


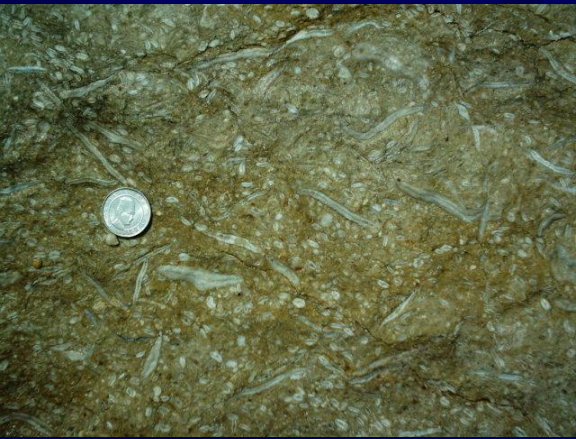
Clay material area around Canaklı for Sagalassos settlement place showing autochthonous Cretaceous aged Erenlerdag limestone and Tertiary sediments (C/T boundary) and allochthonous carbonates in Akdağ, namely Lycien nappes, looking towards the north.



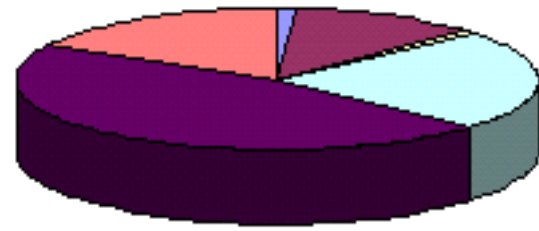
Unconformity between Ispartaçay (TrJ1) and Karabayır (Mk) formations, Mk1. conglomerates, Mk2-3. algal, miliolid bearing carbonates (Görmüş & Hançer, 1997), İmrezi Village around.

Dinar





Suçkan sert düzeyler



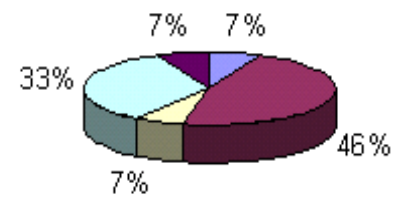
- N. millecaput (B)
- N. millecaput (A)
- A. exponens (B)
- A. exponens (A)
- N. aturicus (A)
- N. aturicus (B)

Alveolina'lı düzeyler

N. aturicus bolluğu

N. millecaput – *A. exponens* bolluğu

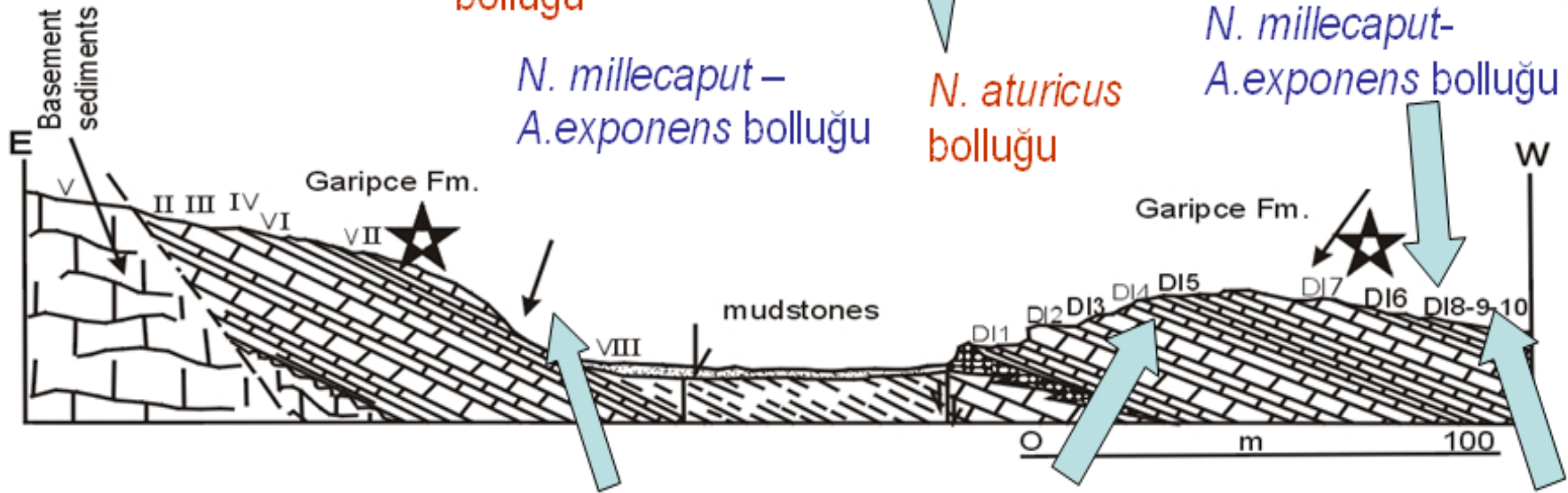
Suçkan üst düzeyler



- N. millecaput (B)
- N. millecaput (A)
- A. exponens (B)
- A. exponens (A)
- N. aturicus (A)

N. millecaput – *A. exponens* bolluğu

N. aturicus bolluğu



Bağlayıcı % 20
Fosil % 80

Bağlayıcı % 95
Fosil % 5

Bağlayıcı % 80
Fosil % 20

N. praeaturicus

A formu

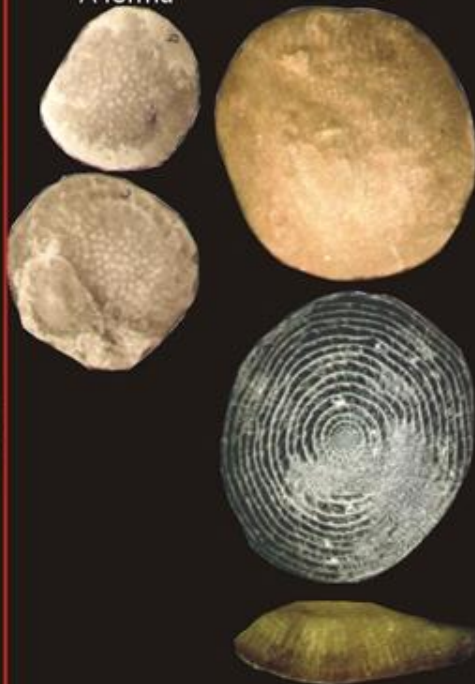
B formu



N. aturicus

A formu

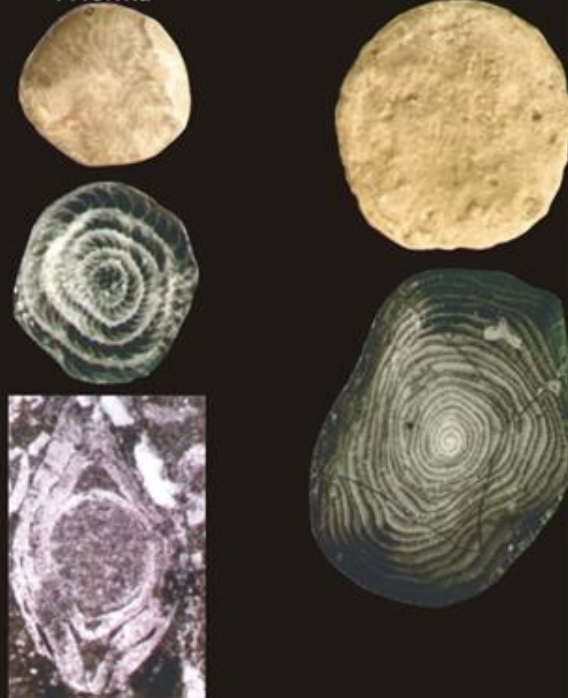
B formu



N. millecaput

A formu

B formu



N. beaumonti
A formu

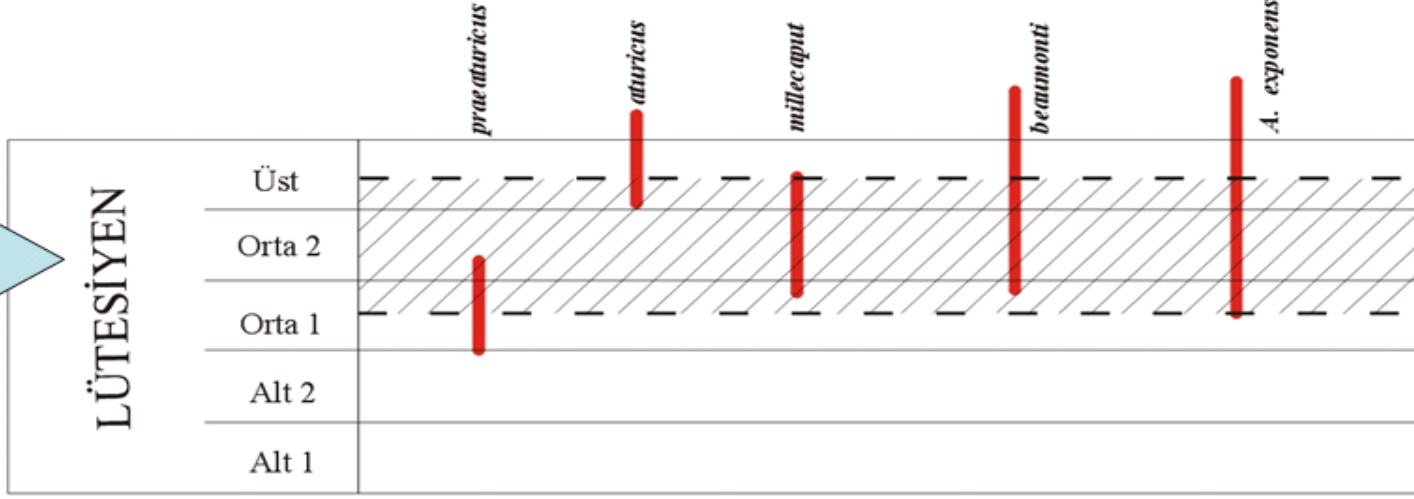
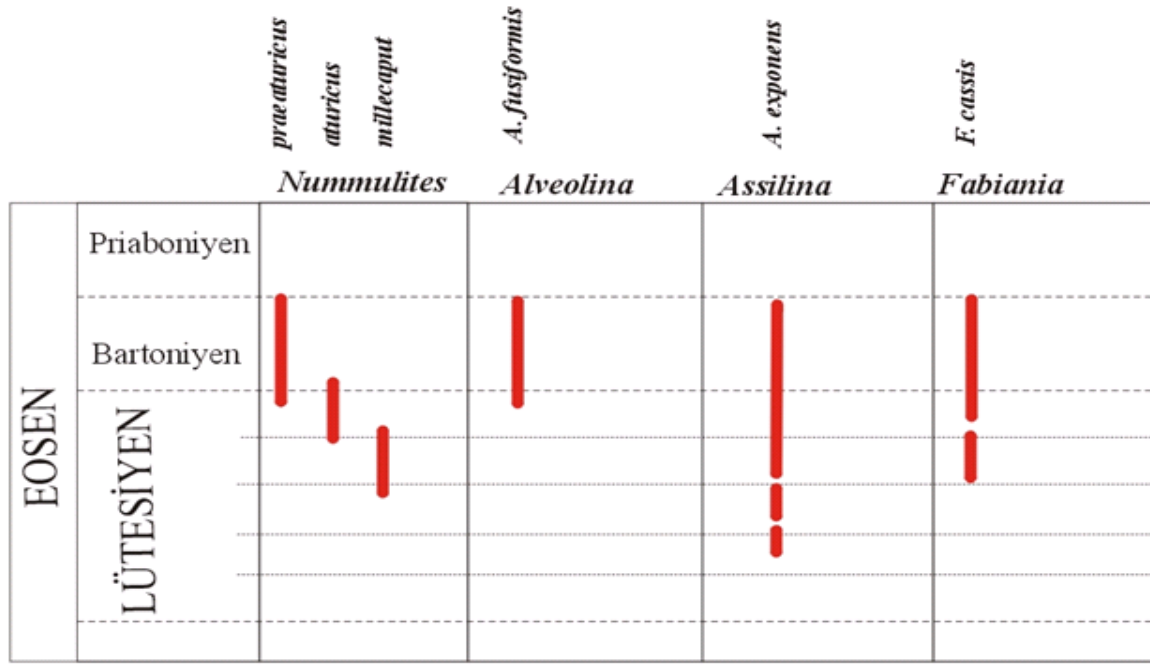


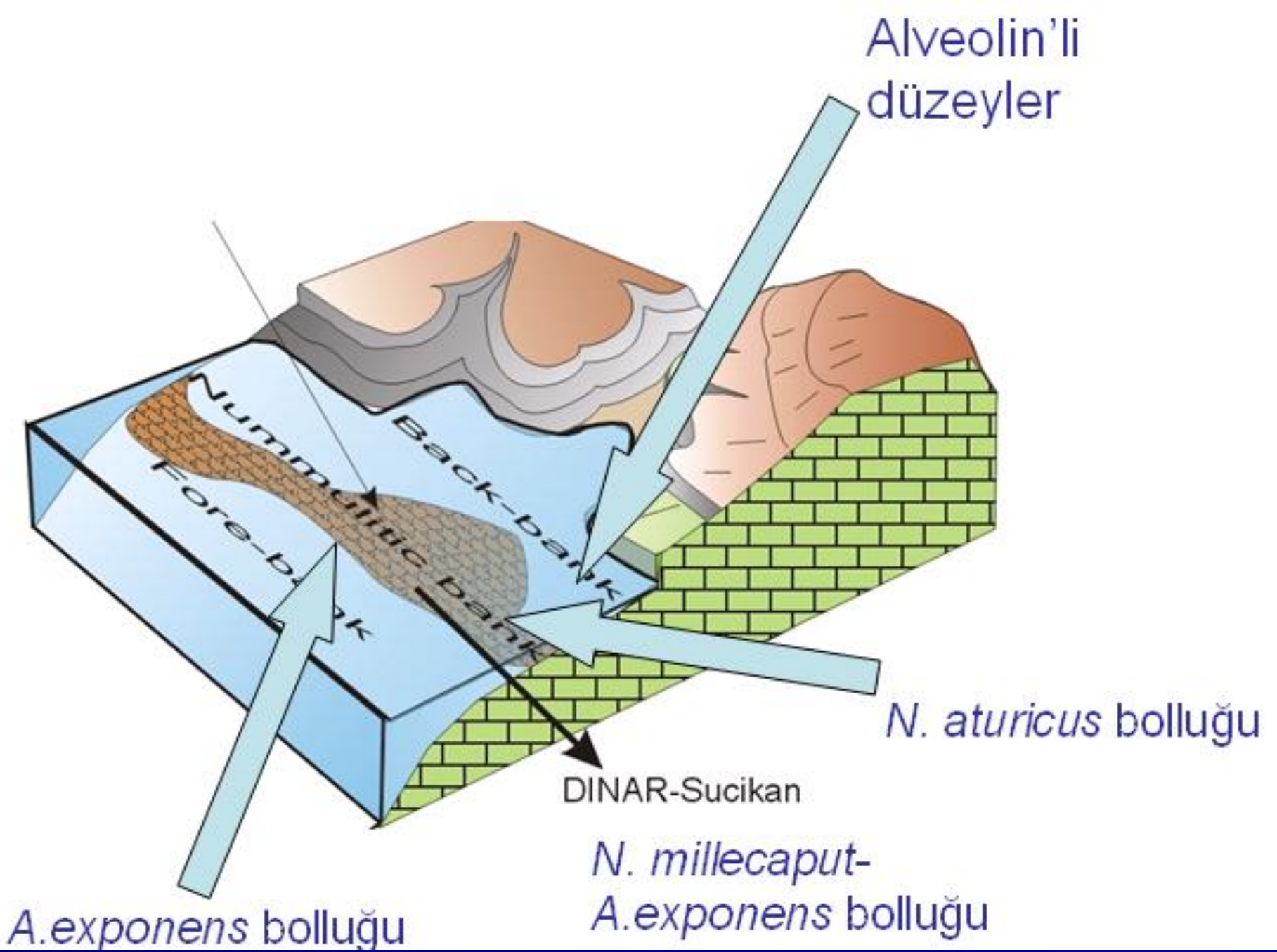
A. exponens

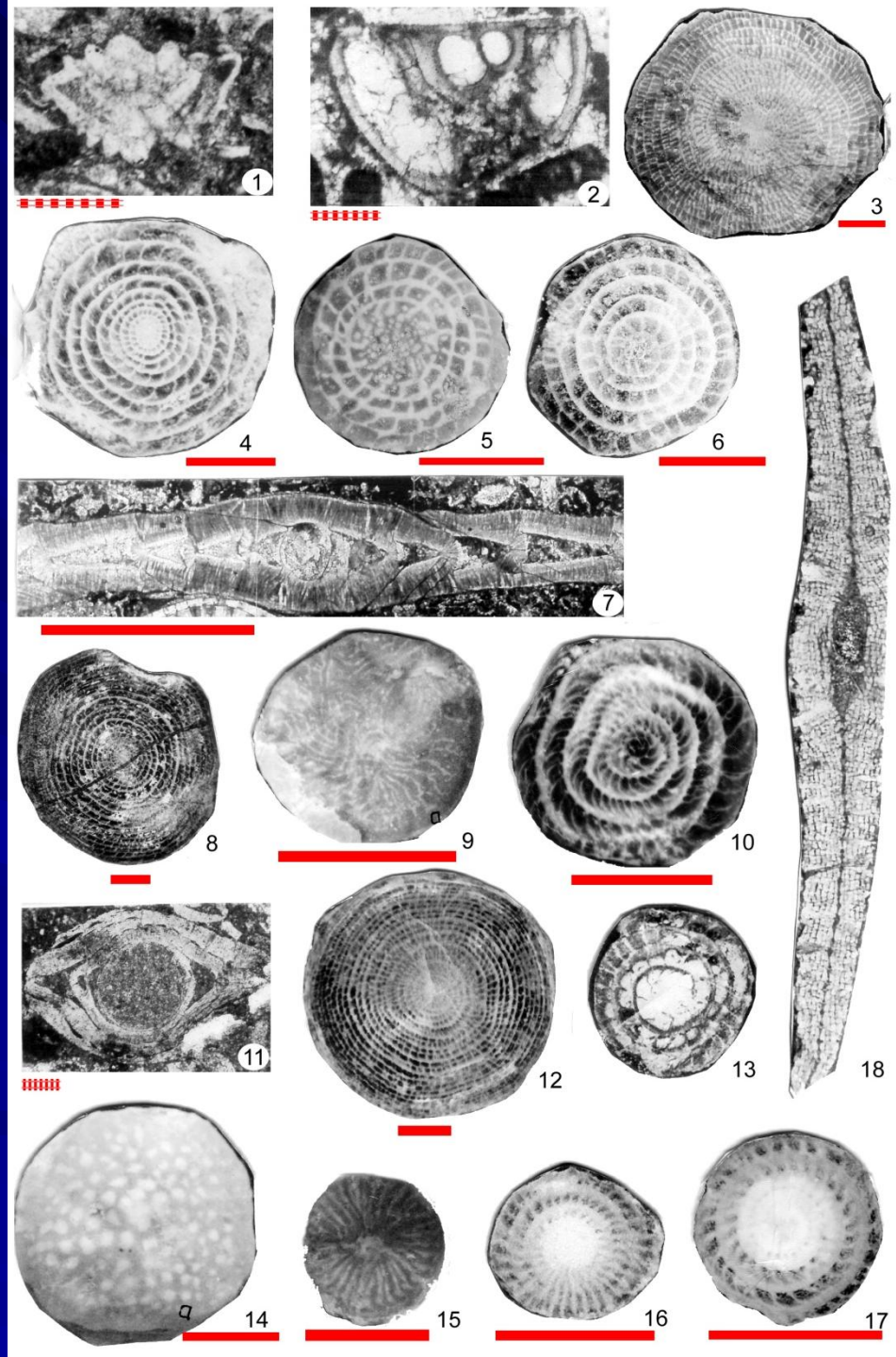
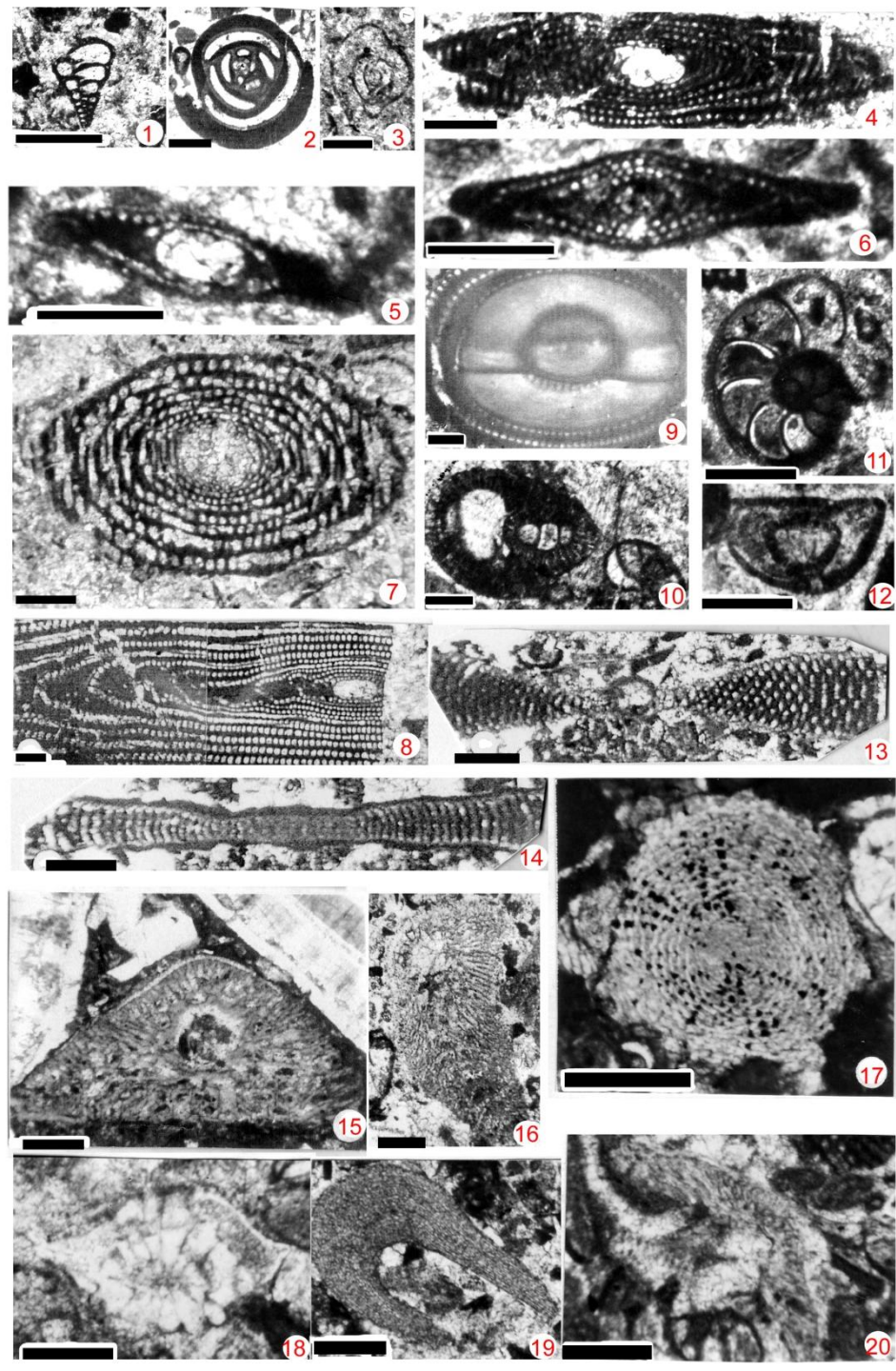
A formu

B formu

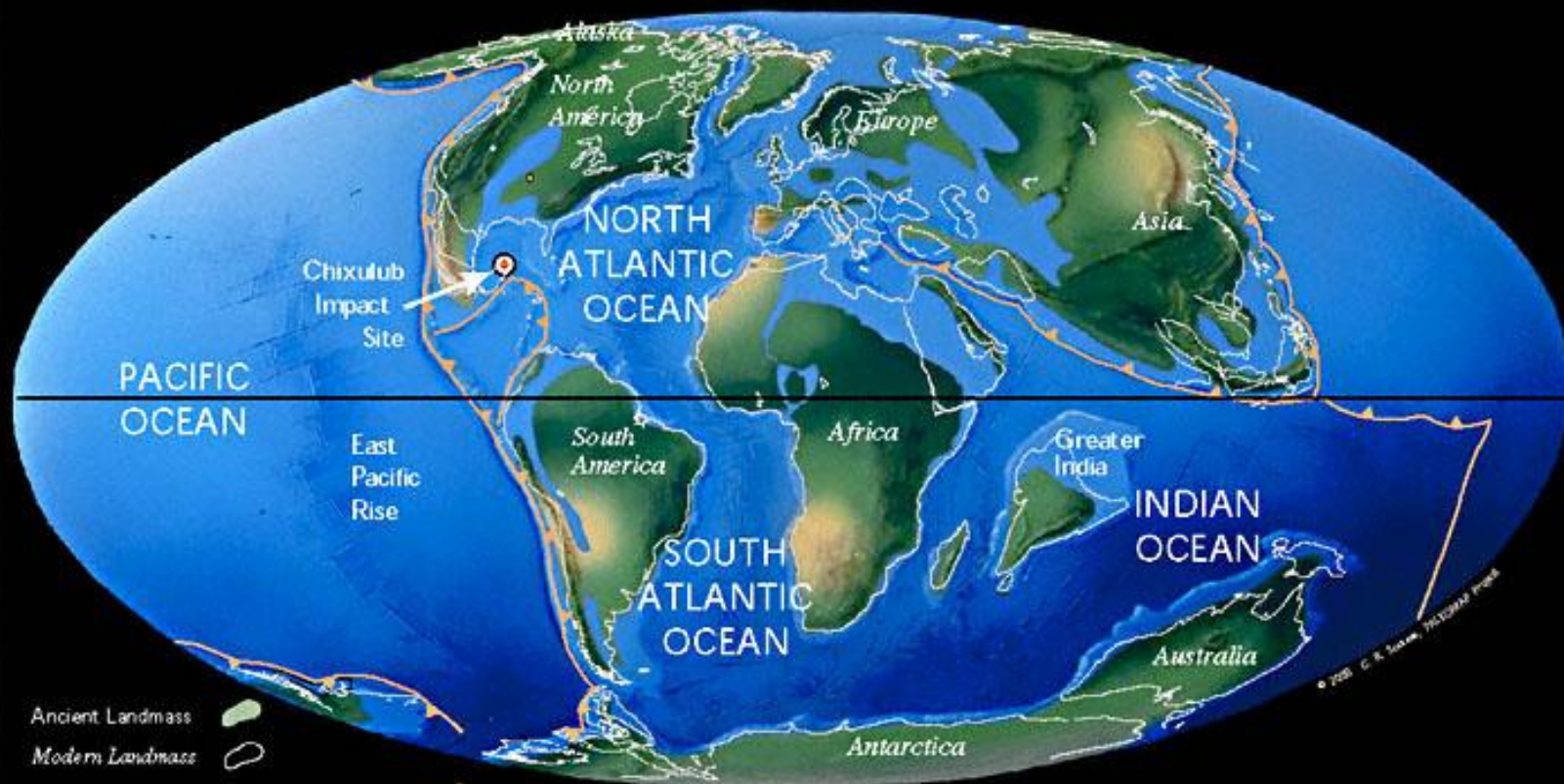








K/T Boundary 66 Ma



- Ancient Landmass 
- Modern Landmass 
- Subduction Zone (triangles point in the direction of subduction) 
- Sea Floor Spreading Ridge 

© 2005, C. R. Scotese, "Paleogeographic Project"

Middle Eocene 50.2 Ma



Ancient Landmass

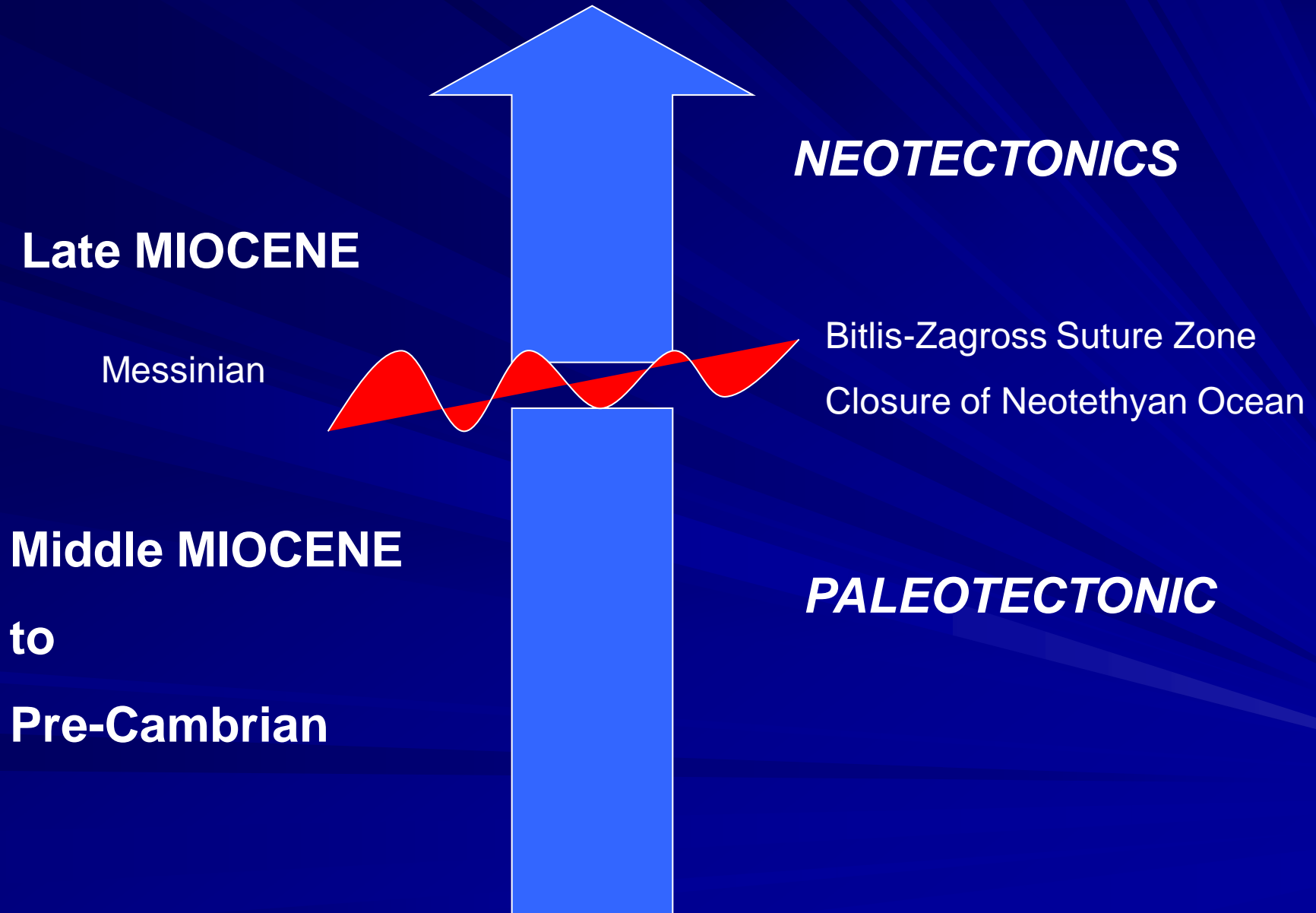
Modern Landmass

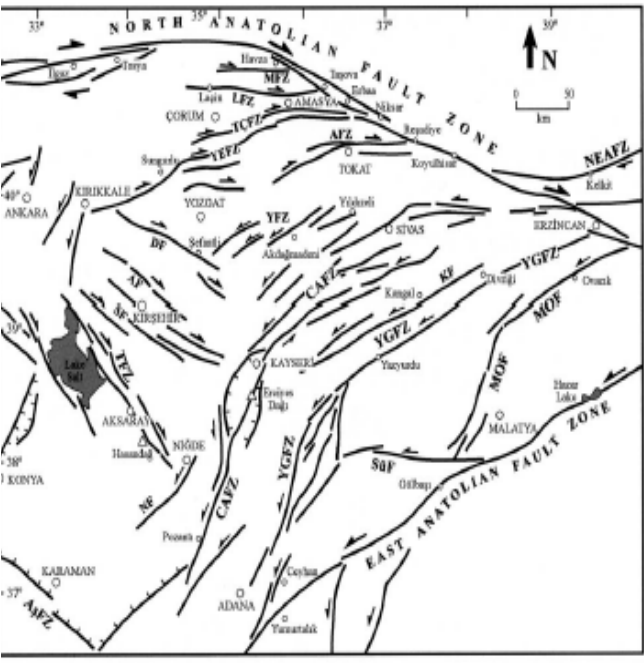
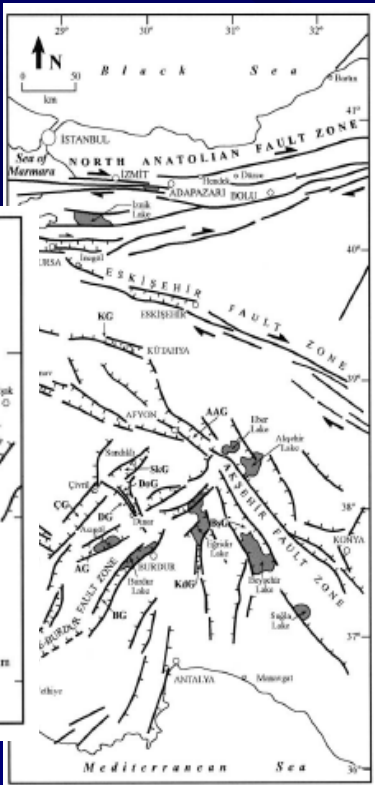
Subduction Zone (triangles point in the direction of subduction)

Sea Floor Spreading Ridge

© 1995 C. R. Scotese, Paleogeographic Images

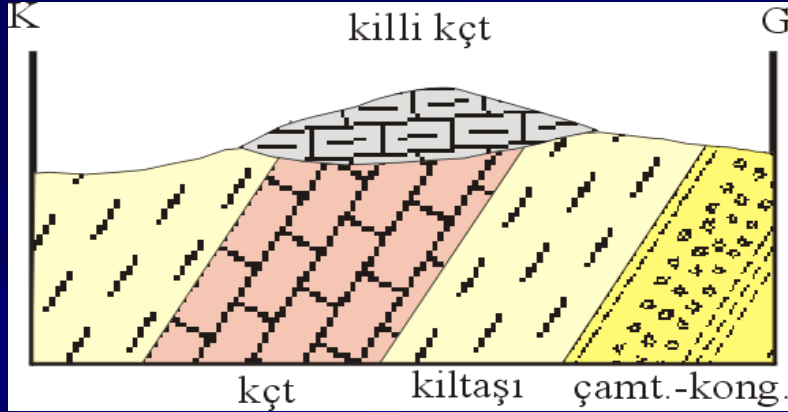
Approach to geological history





Bozkurt, 2001

ÖDEV:



Kireçtaşı: *Siderolites* sp., *Orbitoides* sp., *Hippurites* sp. *Quinqueloculina* sp., Alg

Kıltaşı: *Globotruncana* sp., *Heterohelix* sp.,

Çamurtaşı-Konglomera: Altta; *Globigerina* sp. (bol), Üstte; *Nummulites* sp., *Discocyclina* sp., *Peneroplis* sp.

Killi kireçtaşı: *Schwagerina* sp., fusulin, *Lithostratton* sp. *Syringopora* sp. fosilleri içermektedir.