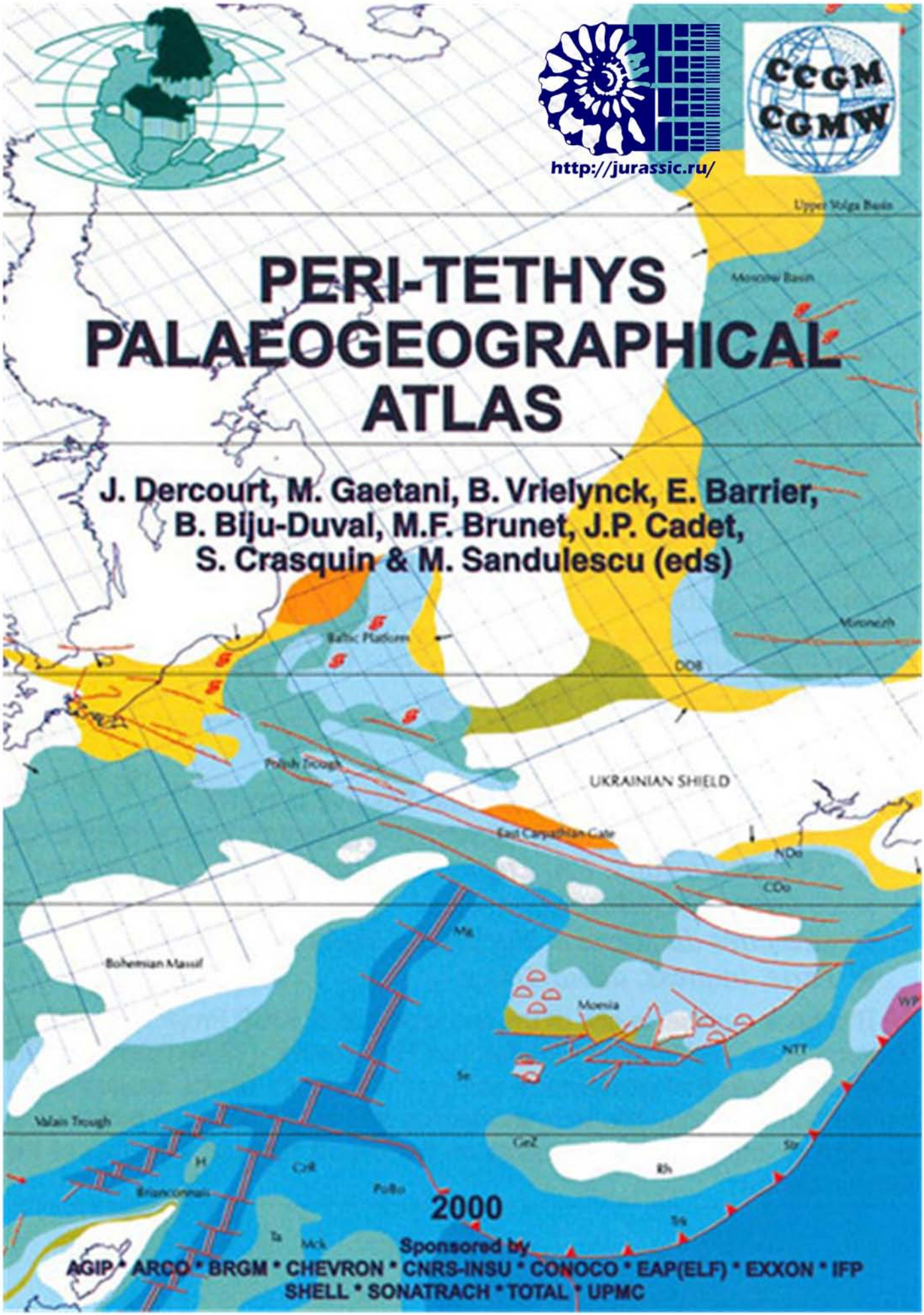


PERI-TETHYS PALAEOGEOGRAPHICAL ATLAS

J. Dercourt, M. Gaetani, B. Vrielynck, E. Barrier,
B. Biju-Duval, M.F. Brunet, J.P. Cadet,
S. Crasquin & M. Sandulescu (eds)

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 1

MOSCOVIAN
(312-305 Ma)

Author : VAI G.B.

Co-authors : IZART A. (1), BROUTIN I. (2), CHUVASHOV B.I. (3), VASLET D. (4)

Contributors : CASSINIS G., DI STEFANO P., GELUK M., GORUR R., HOEPFNER C., JOLTAEV G., MAKHLINA H., KORA M., KOSSOVAYA O., KOVACS S., MASSA D., OPLUSTIL S., NIKISHIN A. SCHNEIDER J.W., SEGHEDI A., SHEGOLEV A., VENTURINI C., VILLA E., VOZAROVA A., EL WARTITI M., YANEV S.

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator

Projection : Rectilinear

0 500 1000 km

Near Timan Archipelago
Balkash Lake
KAZAKHSTAN-WEST SIBERIA CONTINENT
Ural Basin
Pre-Ural Basin
RUSSIAN PLATFORM / EAST EUROPEAN PLATFORM
Kara-Tau Lagoon
Mogodzhary Peninsula
Aral Sea
PRECASPIAN BASIN
Bokan
SHK
Oslo Graben
BALTIC SHIELD
Voronetz High
Turan Sea
Karakum Island
Firuz Koh
Dniepr Rift Basin
Donets Rift Basin
North Caucasian Orogen
NHF
Scythian Orogen
Pre-Caucasian Orogen
North Sea Basin
PshB
Lublin
UKRAINIAN SHIELD
NHF
North German Basin
Saale
Sarre
Silesia
Dobrogea
Bohemian Massif
Hronic
Gemeric
Lorraine
Moesia
Zonguldak
Moroccan Meseta
Djerada
Alpine domains
Mitterberg
Veitsch nappe
Bukk
Brianconnais
Turrach
Cantabrian Mountains
Pyrenees
Lombardy Lakes
Ponte Gardena
P2
Zemplen Hills
MTU
Saint Etienne
Helvetic
Mallare
San Lorenzo basin
Cevennes
Mau
Iano
CDP
Tarfaya
SPZ
Ossa Morena Zone
Vil
CARBONIFEROUS TETHYS
(PALAEOTETHYS)
Catalogna
Ia
San Giorgio Basin
NC
STB
SHF
SC
Apennine basin
Gw
BeC
R
GK
PK
StPl
Seb
MaS
Va
SMM
PM
Tindouf Basin
Bechar Basin
Atlas Maghrebian domain
Hy
Le
Ougarta folds
Mezarif Basin
Chi
Reguibat High
Djeffara Basin
Taoudenni
Reggan Basin
Ahnet
Mouydir
Me
Kirsehir
Ka
Kd
Bd
Ki
Illizi
SHF
Ghadames
Bi
Murzuk Basin
ND
Cyrenaic
EIP
Djado Basin
Sawanet
Sinai
Wadi Araba
Kufra Basin
Sd
Erdis Basin
STBw
Saudi Arabia
NUBIAN SHIELD
Saudi Arabia Tillite
ARABIAN SHIELD
Yemen
Oman

-10°
-20°
-30°
-40°
-50°

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : siliciclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

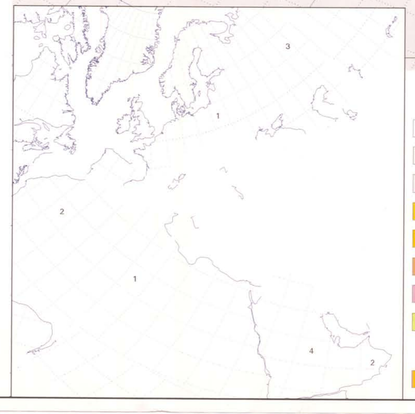
TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime

AD	Alpine Domains	Ia	Iano	Pal	Pamir Island	VorB	Voronezh High
Ahu	Ahnet (North Africa)	Il	Illizi	PcauO	Pre-caucasian Orogen	W	Wakhan (Afghanistan)
An	Andros	Iu	Iullemedden (North Africa)	PCB	Pre-caspian Basin	WA	Wadi Araba
ApB	Apennine Basin	Ja	Jadar	PG	Ponte Gardena (N Italy)	Y	Yemen
ArS	Aral Sea	Ka	Kavaklidere (Turkey)	PK	Petite Kabilie (Algeria)	Zo	Zonguldak
AtMD	Atlas Maghrebian domain	Karl	Karakum Island	PM	Pelagonian Massif		
B	Brianconnais	Kd	Karadag, Taurus (Turkey)	PshB	Polish Basin		
Bag	Baroghil (Karakorum)	Khw	Khwahan (Afghanistan)	PUB	PreUral Basin		
BaL	Balkash Lake	Kis	Kisaria (E Turkey)	Py	Pyrenees		
Bd	Bademli (Turkey)	Ks	Kirsehir (Turkey)	ReB	Reggan Basin		
BeB	Bechar Basin	KTI	Kara Tau lagoon	Reg	Reguibat High		
BeC	Betic Cordillera	KuB	Kufra Basin	Rif	Rif		
Bi	Bitlis, E Taurus (Turkey)	KWSC	Kazakhstan West Siberia Continent	SA	Saudi Arabia		
BM	Bohemian Massif	Le	Lesvos	Sal	Saale		
Bok	Bokan (Afghanistan)	LL	Lombardy Lakes	Saw	Sawanet, Syria		
Can	Cantabrian Mountains	Lo	Lorraine	SC	Southern Calabria		
CaO	Caucasian Orogen	Lu	Lublin	ScyO	Scythian Orogen		
Cat	Catalogna	M	Moesia	Sd	Sardar (Iran)		
CDP	Camic-Dinaric platform	MaS	Machtat Settifer (Algeria)	SE	Saint Etienne		
Ce	Cevennes	Mau	Maures	Seb	Serbia		
Chi	Chios	Me	Menderes	SGB	San Giorgio Basin		
Cyr	Cyrenaic	MecM	W Mecsec Mountains (Hungary)	SHF	South Hercynian Front		
DjB	Djado Basin	Mi	Mitterberg, E Grauwacken Zone (Austria)	SHK	South Hindukush (Afghanistan)		
Dje	Djerada	ML	Mallare, Liguria Maritime Alps	Sil	Silesia		
DjB	Djeffara Basin	MM	Moroccan Meseta	Sin	Sinai		
Dn	Dniepr	Mou	Mouydir (Northern Africa)	SL	San Lorenzo Basin		
Do	Dobrogea	MTU	MidTransdanubian unit (Hungary)	SMM	SerboMacedonian Massif		
Don	Donetz	MuB	Murzuk Basin	SPZ	South Portuguese Zone		
EA	Eastern Alps	MugP	Mugodzhary Peninsula	Sr	Saire		
EEP	Russian Platform/East European Platform	MzB	Mezarif Basin (Northern Africa)	STBw	STB well (Saudi Arabia)		
Eg	Egypt	NC	Northern Calabria	STB	South Tuscan Basin		
EIP	Elbourz Platform	NcaO	North Caucasian Orogen	StPl	Stara Planina (Yugoslavia)		
Er	Eritrea	ND	New Deh	TaouB	Taoudenni Basin		
ErdB	Erdis Basin	Nge	North German Basin	Tb	Tabas		
ETis	East TienShan Sea	NHF	North Hercynian front	Tl	Tarfaya (offshore)		
FK	Firuz Koh (Afghnistan)	Nr	Nurra, Sardinia	TmB	Timdouf Basin		
Gem	Gemeric unit (Slovakia)	NsB	North Sea Basin	TS	Tien Shan		
Gh	Ghadames	NTA	Near Timan archipelago	Tur	Turrach		
GK	Grande Kabilie	NVI	Near Volga island	TuS	Turan Sea		
Gu	Guadalcanal	OG	Oslo Graben	UB	Ural Basin		
Gw	Gargano 1 well	Oma	Oman	UcS	Ukrainian Shield		
Hel	Helvetic domain	OMZ	Ossa Morena Zone	Va	Vardar		
Hro	Hronic unit	Oug	Ougarta folds	Vei	Veitsch nappe		
Hy	Hydra	P2	Polgardi 2 well	Vil	Villany Mountains (Hungary)		



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- Exposed land - non-deposition: ascertained
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- Glacial and fluvio-glacial
- Hypersaline
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- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

Réalisation cartographique : IRMA - 3, avenue Claude Guillemin - 45100 ORLEANS (France). Imprimé par l'Institut Géographique National - 24, avenue Pasteur - 94165 Saint-Mandé Cedex

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 2

ARTINSKIAN
(280-273 Ma)

Author : VAI G.B.

Co-authors : IZART A. (1), BROUTIN J. (2), CHUVASHOV B.I. (3), VASLET D. (4)

Contributors : CASSINIS G., DI STEFANO P., GELUK M., GORUR R., HOEPFNER C., JOLTAEV G., MAKHLINA H., KORA M., KOSSOVAYA O., KOVACS S., MASSA D., OPLUSTIL S., NIKISHIN A. SCHNEIDER J.W., SEGHEDI A., SHEGOLEV A., VENTURINI C., VILLA E., VOZAROVA A., EL WARTITI M., YANEV S.

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

Scale : 1/10 000 000 at palaeoequator Projection : Rectilinear

0 500 1000 km

Near Timan Archipelago
UO
KAZAKHSTAN-WEST SIBERIA CONTINENT
Ural Basin
NVI
20°
BALTIC SHIELD
Oslo Graben
RUSSIAN PLATFORM / EAST EUROPEAN PLATFORM
Aral Sea
Mugodzhary Peninsula
PRECASPIAN BASIN
Voronetz High
Dniepr Rift Basin
Donets Rift Basin
NCA
Turan Sea
10°
Sco
North Sea Basin
St
Polish Basin
NHF
North German Basin
Saale
Sarre
Silesia
Lorraine
Bohemian Massif
UKRAINIAN SHIELD
Scythian Orogen
North Caucasian Orogen
Tua
Cr
Dobrogea
Pre-Caucasian Orogen
Moroccan Meseta
Khe
Mitterberg
Autun
Mof
EA
Gem
Moesia
Zonguldak
Vep
Zemplen Hills
Tarfaya
Cantabrian mountains
Brive
AD
Lombardy Lakes
Mallare
Cevennes
PP
BPP
Ek
Gu
Mau
SL
Mec
Pyrenees
Cuenca
CDP
MTU
Vil
Betic Cordillera
Nr
Per
NC
Iano
Bo
Seb
SHF
STB
CTB
Mt
PM
SMM
R
GK
PK
SC
Gw
Pw
Tindouf Basin
Berchar Basin
Atlas Maghrebian domain
PERMIAN TETHYS
(PALAEOTETHYS)
Reguibat High
Ougarta folds
Mezarif Basin
Apennine basin
MF
Hy
Le
Sam
An
Chi
NSP
Cre
Bur
ReB
Sicani Basin
Taoudenni Basin
Djeffara Basin
Me
Kirsehir
Ahnet
IOC
Ka
Kd
Mouydir
Bd
By
Na
Bi
Illizi
Ghadames
EMC
Murzuk Basin
Iu
Djado Basin
Cyrenaic
Pal
Syr
Kus
PERMO-TRIASSIC
TETHYS
Eg
Kufra Basin
Sinai
Erdis Basin
NUBIAN SHIELD
STB w
-30°
Saudi Arabia
ARABIAN SHIELD
Oman
-40°
Salt Range

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
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- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
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- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

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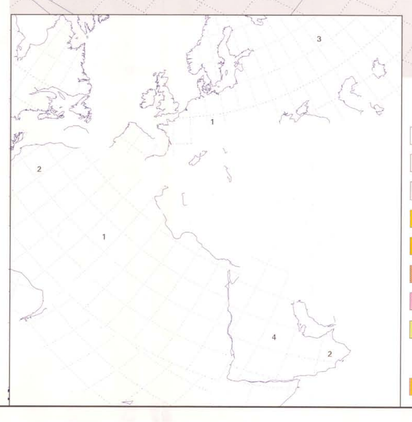
- "Post-rift" passive thermal subsidence
- Active compression

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime

AD Alpine domains
Ahn Ahnet (North Africa)
An Andros
ApB Apennine Basin
ArS Aral Sea
AtMD Atlas Maghrebian domain
Au Autun
BaL Balkash Lake
Bd Bademli (Turkey)
BeB Bechar Basin
BeC Betic Cordillera
Bi Bitlis, E Taurus (Turkey)
BM Bohemian Massif
Bo Bosnia
BPP Bolzano porphyric plateau
Br Brive
Bu Bukk
Burs Bursa (Turkey)
By Beyekeceli (Turkey)
Can Cantabrian Mountains
CaO Caucasian Orogen
CDP Camic Dinaric platform
Ce Cevennes
Chi Chios
Cor Corsica
Cr Crimea
Cre Crete
CTB Clastic Trogkofel basin
Cyr Cyrenaic
DjB Djado Basin
Dje Djerada
DjfB Djeffara Basin
Dn Dniepr
Do Dobrogea
Don Donetz
EA Eastern Alps
EEP Russian Platform/East European Platform
Eg Egypt
Ek Eisenkappel (Austria)
ElP Elbourz Platform
EMC Eastern Mediterranean crust
Er Eritrea
ErdB Erdis Basin
ETss East Tien Shan Sea
FK Firuz Koh (Afganistan)
Gem Gemeric unit (Slovakia)
Gh Ghadames
GK Grande Kabilie
Gu Guadalcanal
Gw Gargano 1 well
Hro Hronic unit
Hy Hydra
Ia Iano
IC Ionian crust
Il Illizi
Iu Iullemedden (North Africa)
Ja Jadar
Kk Kavaklidere (Turkey)
Korl Karakum Island
Kd Karadag, Taurus (Turkey)
Khe Khenifra (North Africa)
Khw Khwahan (Afganistan)
Kis Kisanta (E Turkey)
Ks Kirsehir (Turkey)
KTl Kara Tau lagoon
KuB Kufra Basin
Kus Kurdistan (NE Iraq)
KVSC Kazakhstan West Siberia Continent
Le Lesvos
LL Lombardy Lakes
Lo Lorraine
Lu Lublin
M Moesia
MaS Machtat Settifer (Algeria)
Mau Maures
Me Menderes
MeeM W Mecsec Mountains (Hungary)
MF Monte Facito, Lucania
Mi Mitterberg, E Grauwacken Zone (Austria)
ML Mallare, Liguria Maritime Alps
MM Moroccan Meseta
Mof Montafon, W Grauwacken Zone (Austria)
Mou Mouydir (Northern Africa)
Mt Montenegro
MuB Murzuk Basin
MugP Mugodzhary Peninsula
MzB Mezarif Basin (Northern Africa)
Na Namrun, central Taurus (Turkey)
NC Northern Calabria
NCA North Caspian Archipelago
NcaO North Caucasian Orogen
ND Now Deh
Nge North German Basin
NHF North Hercynian front
Nr Nurra, Sardinia
NsB North Sea Basin
NSvP N Sicilia Sosio platform
NTA Near Timan archipelago
NVI Near Volga Island
OG Oslo Graben
Oma Oman
OMZ Ossa Morena Zone
Oug Ougarta folds
Pal Palmyrides
Pal Pamir Island
PaTs Pamir Tienshan Sea
PcaO Pre-Caucasian Orogen
PCB Pre-Caspian Basin
Per Pentadetogu, Sardinia
PK Petite Kabilie (Algeria)
PM Pelagonian Massif
PP Po Plain
PshB Polish Basin
Pw Puglia 1 well
Py Pyrenees
RnB Reggan Basin
Reg Reguibat High
Rif Rif
SA Saudi Arabia
Sal Saale
Sam Salamis
Saw Sawanet, Syria
SC Southern Calabria
Sco Scotland
ScyO Scythian Orogen
Sd Sardar (Iran)
SE Saint Etienne
Seb Serbia
SHF South Hercynian Front
SHK South Hindukush (Afghanistan)
SiB Sicani basin
Sil Silesia
Sin Sinai
SL San Lorenzo Basin
SMM Serbo-Macedonian Massif
Sr Sarre
SR Salt Range
St Staffordshire
STBw ST8 well (Saudi Arabia)
STB South Tuscan Basin
Syr Syria
TaouB Taoudenni Basin
Tb Tabas
Tf Tarfaya (offshore)
TinB Tindouf Basin
TS Tien Shan
Tua Tuarkyr
Tur Turrach
TuS Turan Sea
UB Ural Basin
UcS Ukrainian Shield
UO Urals Orogen
Vb Verdar
Vei Veitsch nappe
Vep Veporic unit, Slovakia
Vil Villany Mountains (Hungary)
VorB Voronezh High
W Wakhan (Afghanistan)
WA Wadi Araba
Y Yemen
Ze Zemplen Hills (Hungary to Slovakia)
Zo Zonguldak



DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
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Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

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Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 3

WORDIAN
(266-264 Ma)

Author : GAETANI M.

Co-authors : ARCHE A. (1),KIERSNOWSKI H. (2), CHUVACHOV B. (3), CRASQUIN S. (3,8), SANDULESCU M. & SEGHEDI A. (4), ZAGORCHEV I. (5), POISSON A. (6), HIRSCH F. (7), VASLET D., LE METOUR J. & ZIEGLER M. (8), ABRATE E. (9), AIT-BRAHIM L. (a), BARRIER E. & BOUAZIZ S. (b), BERGERAT F. (c), BRUNET M.F., CADET J.P. & STEPHENSON R. (d), GUEZOU J.C. (e), JABALOY A. (f), LEPVRIER C. (g), RIMMELE G.

Contributors : BONNEAU M., GUILLOCHEAU F., GUIRAUD R., LAMARCHE J., MAMI L., MASCLE G., MOSTAFA M., OUJDI M., ROBIN C., SEBRIER M., SWIDROWSKA J.

Kinematic reconstruction : VRIELYNCK B. & OLIVET J.L.

Cartography & spatial database : VRIELYNCK B.

Tethyan area after the Late Murgabian map (Baud et al.) of the Tethys Atlas (Dercourt J., Ricou L.E. & Vrielynck B., 1993), modified

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

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- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

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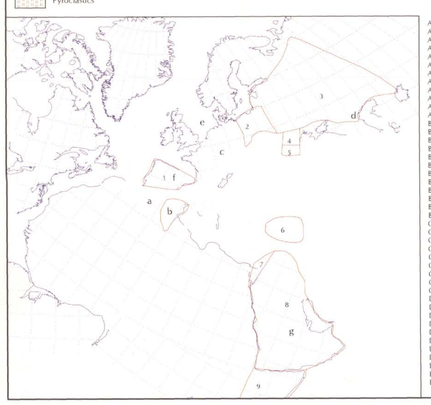
- Synclinal fold axis
- Oceanic subduction

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



A	Apulia	Emb	Emba High	Pam	Pamucak
Aba	Abadeh	Era	Erathostene	PC	Precaspian Basin
AbR	Abai Riber Basin	GNf	Great Nefud	Pin	Pinarbasi
Agh	Aghdarband	Gr	Guerrpil	Pr	Provence
AH	Altmark High	Hau	Haushi	RFH	Ring Kobing Fyn High
Alp	Albanian Alps	Huz	Huzno	RH	Rutbah High
Alp	Aleppo Plateau	Hcm	Holy Cross Mountain	Ru	Ruslaq
Alt	Altaid/Kazakh Orogen	HG	Horn Graben	SiB	Sicilian Basin
AM	Armorican Massif	HK	High Karst	SP	Serbo Pelagonian
Ap	Apuseni	Hlb	Halabija	Sta	Ste Allrique
AS	Arabian Shield	HM	Hawel Muritz Basin	Sty	Stavropol High
Ast	Assunta well	Hy	Hydra	Sum	Sumeini
B	Brianconnais	IM	Iberian Massif	Ter	Terek
Ba	Barrot	IrM	Irish Massif	Tok	Tokat
BD	Bey Daglari	Ist	Istanbul	Trk	Treldjano Graben
Bai	Bai	Kara	Karacahisar	UH	Umirma
BeR	Belaya River	Karp	Karpinsky	UkS	Ukrainian Shield
Bey	Beyshir	Kb	Kara Bogaz	UO	Uralı Orogen
Bg	Belogradcik	Kf	Kufra	Vel	Velebit
Bk	Bakony	KG	Kuhe Gakum	Vor	Voronezh High
BK	Bani Khatmah	Kh	Khuff	WA	Wadi Arabia
BM	Bohemian Massif	Kiz	Kizilseki	Wj	Wajid
BSh	Baltic Shield	Kizl	Kizilkaya	ZgH	Zagros High
Bu	Bükk	Kk	Karakum		
Cab	Central Alborz	Koy	Koycegiz		
CC	Camete Chelva rift	Krk	Karakaya		
Chi	Chios	Ks	Kirsehir		
CIB	Central Iraq Basin	L	Lombardy		
CL	Czaplinek Lods Basins	LBM	London Brabant Massif		
Cr	Crimea	Ld	Lodeve		
CSA	Central Saudi Arabia	Ln	Lagonegro		
CrT	Crediton Trough	M	Moesia		
Cyr	Cyrenaic	Ma	Mardin		
Di	Dizi	Mang	Mangyshlak		
DjA	Djebel Akhdar	Mar	Molina de Aragon		
DjT	Djebel Tebaga	MC	Massif Central		
Do	Dobrogea	Me	Menderes		
Dol	Dolomites	MM	Moroccan Meseta		
Don	Donetz	MuB	Murzuk Basin		
Dz	Dzirula	Mus	Ras Musandan		
Dzh	Dzhulfa	NuS	Nubian Shield		
Eab	Eastern Alborz	NUs	North Ustyurt		
EEP	Russian Platform/East European Platform	OB	Ogaden Basin		
EESB	East European Sedimentary Basin	PoE	Palmyra Embayment		

Réalisation cartographique : BRGM - 3, avenue Claude Guillemin - 45060 ORLEANS (France) - Imprimé par l'Institut Géographique National - 24, avenue Pasteur - 94165 Saint-Mandé Cedex

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 4

OLENEKIAN
(245-243 Ma)

Authors : GAETANI M.

Co-authors : COUREL L. (1), ARCHE A. (2), WARRINGTON G. (3), GELUK M. (4), LEPPER J. & RHOELING H-G. (5), SZULC J. (6), LOZOWSKI V. (7), SANDULESCU M. & SEGHEDI A. (8), ZAGORCHEV I. (9), NIKISHIN A., NAZAREVITCH V. & BOLOTOV S. (10), CRASQUIN S., KUKHTINOV D.A. & ZHIDOVINOV S. (11)

Contributors : BUDUROV K. & GEORGIEV G.

Kinematic reconstruction : VRIELYNCK B. & OLIVET J.L.

Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator

Projection : Rectilinear

0 500 1000 km

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : silicoclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



Agh	Aghdarband
Agi	Agighiol
AH	Altmark High
Alt	Altaid/Kazakh Orogen
AM	Armorican Massif
BBR	Bay of Biscay Rift
BeR	Belaya River
Bg	Belogradcik
BM	Bohemian Massif
BSh	Baltic Shield
Cat	Catalogna
Cb	Cornubia
CC	Canete Chelva Rift
Cel	Celtic Graben
CG	Central Graben
Chi	Chios
CL	Czaplinek Lods Basins
Cr	Crimea
Di	Dizi
Dn	Dniepr
Do	Dobrogea
Don	Donetz
Dz	Dzirula
EEP	Russian Platform/East European Platform
EESB	East European Sedimentary Basin
Emb	Emba High
EP	Eastern Pontides
Gel	Gello Bardo
Gr	Guseripl
GrH	Grampian High
Hcm	Holy Cross Mountain
He	Hebrides Platform
HeD	Hessian Depression
HG	Horn Graben
IM	Iberian Massif
IrM	Irish Massif
Ist	Istanbul
Karp	Karpinsky Swell
Kay	Kayasula Basin
Kb	Kara Bogaz
Kk	Karakum
Krk	Karakaya
Kur	Kura
LBM	London Brabant Massif
LiE	Lithuanian Embayment
M	Moesia
Mang	Mangyshlak
Mar	Molina de Aragon
MC	Massif Central
MFB	Moray Firth Basin
MNSH	Mid North Sea High
Mor	Moravian Gate
Mos	Moscow syneclise
Moz	Mozdok Basin
NUs	North Ustyurt
PC	Pre-Caspian Basin
Pr	Provence
PT	Polish Trough
RFH	Ring Kobing Fyn High
RM	Rhenish Massif
Sar	Sardinia
Stv	Stavropol High
UkS	Ukrainian Shield
UR	Ural Mountains
Vin	Vindelician High
VoR	Voronezh High
WAp	Western Approaches
WH	Welsh High

Réalisation cartographique : BRGM - 3, avenue Claude Guillemin - 45100 ORLEANS (France) - Imprimé par l'Institut Géographique National - 2/4, avenue Pasteur - 94165 Saint-Mandé Cedex

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Sponsored by :
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MAP 5

EARLY LADINIAN
(238-235 Ma)

Authors : GAETANI M.

Co-authors : COUREL L. (1, a), ARCHE A. (2), WARRINGTON G. (3), GELUK M. (4), BEUTLER G. (5), SZULC J. (6, b), LOZOWSKI V. (7), SANDULESCU M. & SEGHEDI A. (8, c), ZAGORCHEV I. & BUDUROV K. (9), NIKISHIN A., NAZAREVITCH V. & BOLOTOV S. (10), CRASQUIN S., KUKHTINOV D.A. & ZHIDOVINOV S. (11), POISSON A. (12, d), MOUTY M. (13), HIRSCH F. (14, e), VASLET D., LE METOUR J. & ZIEGLER M. (15, f), ABBATE E. (16), AIT-BRAHIM L. (a), BARRIER E. & BOUAZIZ S. (g), BERGERAT F. (c), BRUNET M.F., CADET J.P. & STEPHENSON R. (h), GUEZOU J.C. (i), JABALOY A. (j), LEPVRIER C. (f), RIMMELE G.

Contributors : AIT SALEM H., BEN ISMAIL H., BONNEAU M., DURAND M., EL MOSTAINE M., FEKIRINE B., GEORGIEV G., GUILLOCHEAU F., GUIRAUD R., KAMOUN F., LAMARCHE J., MAMI I., MASCLE G., MOSTAFA M., OUJDI M., ROBIN C., SEBRIER M., SOUSSI M., SWIDROWSKA J.

Kinematic reconstruction : VRIELYNCK B. & OLIVET J.L.

Cartography & spatial database : VRIELYNCK B.

Tethyan area after the Late Anisian map (Marcoux et al.) of the Tethys Atlas (Dercourt J., Ricou L.E. & Vrielynck B., 1993), modified

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
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- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : silicoclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sandstone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

TECTONIC SYMBOLS

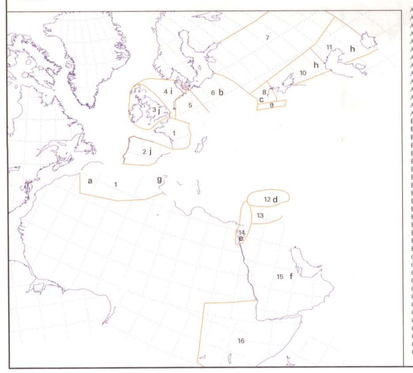
- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



A	Apulia	Cyr	Cyrenaic	Mar	Molina de Aragon	UR	Urals Mountains
Aba	Abadeh	Di	Dizi	MC	Massif Central	Vin	Vindelician High
AbR	Abai Ribeir Basin	DjA	Djebel Akhdar	Mck	Mecsek	Vr	Vrimoah
AgH	Agenemine High	Do	Dolnogna	Me	Menderes	WA	Wadi Araba
Agh	Aghdarbund	Dol	Dolomites	Mel	Meliata	WAp	Western Approaches
Agi	Aghjbel	Don	Donetz	MFB	Moray Firth Basin	WH	Welsh High
Alp	Aleppo Plateau	Dr	Drama	MM	Moroccan Meseta	Wj	Wajid
Ali	Alaid/Kazakh Orogen	Dz	Dzirula	Mn	Menderes	Zzt	Zarzaitine
AM	Armorican Massif	EAR	Eichsfeld Altmark Ridge	MNSH	Mid North Sea High	ZgH	Zagros High
Ap	Apuseni	Ebr	Ebro Massif	MuB	Murzuk Basin		
Ar	Ardeche	EcG	East Carpathian Gate	Mus	Ras Musandan		
Arg	Argolis	EEP	Russian Platform/East European Platform	Nak	Nakhlak		
AS	Arabian Shield	EIB	El Borma	Neg	Negev		
AuA	Austroalpine	Emb	Emba High	Nic	Nicultel		
B	Brianconnais	EP	Eastern Pontides	NuS	Nubian Shield		
BBR	Bay of Biscay Rift	Gal	Gasesh Island	NUs	North Ustyurt		
BD	Bey Daglari	Ge	Gefara	Og	Ogaden		
Bid	Baid	GNf	Great Nefud	Oh	Othrys		
BeR	Belaya River	Gol	Golo Bardo	Ouj	Oujda		
Bey	Beyshir	Gr	Guseinjal	PaR	Palmyra Embayment		
Bg	Belogradcik	GrH	Grampian High	PC	Precaspian Basin		
BHI	Buq Hatoli	HaB	Han Bulog	PO	Pindos-Othrys		
Bk	Bakony	HaH	Hammada al Hamra	PT	Polish Trough		
BK	Bani Khatmah	Haz	Hazro	Pv	Petvash		
BM	Bohemian Massif	He	Hebrides Platform	RFH	Ring Kobing-Fyn High		
BoT	Bosnian Trough	HG	Horn Graben	Rhe	Rhenish Massif		
BSh	Baltic Shield	Hy	Hydra	RM	Rhenish Massif		
Bu	Bukk	Ibl	Iblean Plateau	RtH	Rutbah High		
Buc	Bucovinia	IM	Iberian Massif	Sak	Sakarya		
BuG	Burgundian Gate	IrM	Irish Massif	Sar	Sardinia		
BuT	Bushui Trough	Ist	Istanbul	SDH	South Dahar High		
Cab	Central Alborz	KaP	Karst Platform	SiB	Sicanian Basin		
Cat	Catalogna	Karp	Karpinsky Swell	Soc	Socotra		
Cb	Cornubia	Kb	Kara Bogaz	SP	Serbo-Pelagonian		
CB	Cap Bon	Kf	Kufra	Stv	Stavropol High		
CC	Canete-Chelva Rift	Kk	Karakum	Sum	Sumaini		
CelS	Celtic Sea	Krk	Karakaya	Sv	Svoula		
CG	Central Graben	Ku	Kure	SyrB	Syrte Basin		
Chi	Chios	L	Lombardy	Ta	Tatric		
CIB	Central Iraq Basin	LBM	London Brabant Massif	Tb	Tabas		
CI	Central Iran	LnT	Lagonegro Trough	Ter	Terek		
Cr	Crimea	M	Moesia	Tok	Tokat		
Cre	Crete	Ma	Mardin	Ts	Transylvanids		
CSA	Central Saudi Arabia	Mang	Mangyshlak	UkS	Ukrainian Shield		

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MAP 6

LATE NORIAN
(215-212 Ma)

Authors : GAETANI M. & BARRIER E.

Co-authors : COUREL L. (1, a), ARCHE A. (2), WARRINGTON G. (3), GELUK M. (4), BEUTLER G. (5), SZULC J. (6, b), SANDULESCU M. & SEGHEDI A. (7, c), ZAGORCHEV I. & BUDUROV K. (8), NIKISHIN A., NAZAREVITCH V. & BOLOTOV S. (9), CRASQUIN S., KUKHTINOV D.A. & ZHIDOVINOV S. (10), POISSON A. (11, d), MOUTY M. (12), HIRSCH F. (13), VASLET D., LE METOUR J. & ZIEGLER M. (14, e), ABBATE E. (15), AIT-BRAHIM L. (a), BOUAZIZ S. (f), BERGERAT F. (c), BRUNET M.F., CADET J.P. & STEPHENSON R. (g), GUEZOU J.C. (h), JABALOY A. (i), LEPVRIER C. (e), RIMMELE G.

Contributors : AIT SALEM H., BEN ISMAIL H., BONNEAU M., DURAND M., EL MOSTAINE M., FEKIRINE B., GEORGIEV G., GUILLOCHEAU F., GUIRAUD R., KAMOUN F., LAMARCHE J., MAMI I., MASCLE G., MOSTAFA M., OUJDI M., ROBIN C., SEBRIER M., SOUSSI M., SWIDROWSKA J.

Kinematic reconstruction : VRIELYNCK B. & OLIVET J.L.

Cartography & spatial database : VRIELYNCK B.

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- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
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- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
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- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
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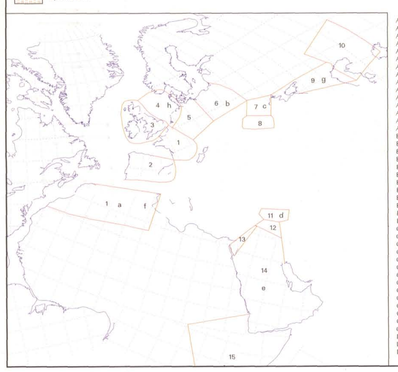
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



A Apulia
AbR Abai Riber Basin
ACP Appennine Carbonate Platform
Agh Aghderbaund
Al Alpujarrides
Alb Albanian Alps
Ald Ala Dagh
Alp Aleppo Plateau
Alt Altaid/Kazakh Orogen
AM Armorican Massif
Ap Apuseni
Ar Ardeche
Arg Argolis
AS Arabian Shield
AuA Austro-Alpine
B Brianconnais
Bai Baiq
BBR Bay of Biscay Rift
BD Bey Daglari
BeSn Beni Snassen
Bey Beyashir
BK Bani Khatmah
Bs Bissouan
BoT Bosnian Trough
Bu Bükk
Bur Burano
BuT Buzhui Trough
Cb Cornubia
CB Cap Bon
CeS Celtic Sea
CG Central Graben
Chi Chios
Chl Chelva
CIB Central Iraq Basin
CK Choch Krsna
Cod Codru
Cr Crimea
Cre Crete
CsA Central Saudi Arabia
Cyp Cyprus
Cyr Cyrenaic
De Djerba
Di Dyzi
DjA Djebel Akhdar
Do Dobrogea
Dol Dolomites
Don Donetz
Dr Drama
Dz Dzirula
EB Essaouira Basin
Ebr Ebro Massif
ECG East Carpathian Gate
EEP Russian Platform/East European Platform
EIB El Bouma
Emb Emba High
Emn Emnua Basin
EP Eastern Pontides
Ge Gefara
GNf Great Nefud
Gol Golo Bardo
GrH Grampian High
Hal Halltatt
Hau Haushi
Haz Hazro
Hrm Holy Cross Mountain
He Hebrides Platform
HG Horn Graben
HMs Hassi Messaoud
HRE Hassi R'Mel
Hw Hawasina
Hy Hydra
Ibl Iblean Plateau
IbM Iberian Massif
IrM Irish Massif
Ist Istanbul
JM Jebel Maiz
KaP Karst Platform
Karp Karpinsky Swell
Kb Kara Bogaz
Kf Kufra
Kk Karakum
KoB Kocali Basin
Kr Kermanshah
Ks Kinsehir
Kub Kuban Basin
Kur Kura
L Lombardy
LBM London Brabant Massif
LnT Lugonegro Trough
M Moesia
Ma Mardin
Mang Mangyshlak
MC Massif Central
Mck Meckek
Me Menderes
Mel Meliata
MFB Moray Firth Basin
Mlc Mallorca
Mlt Malta
MM Moroccan Meseta
MN Jebel Malah en Nelich
MNrH Mid North Sea High
MuB Murzuk Basin
Mus Ras Musandam
Nak Nakhlak
NE Nevrtz Ensitics
Neg Negev
NG Normandy Gulf
NND North Netherlands Depression
Nub Nubian Shield
NUs North Ustyurt
Ogr Ogaden
Ot Othrys
PalE Palmyra Embayment
PB Paris Basin
PC Precaspian Basin
Pic Pichakan
PO Pindos-Olonos
PT Polish Trough
Py Pelusian
QA Qatar Arch
RuD Rub al Khali Delta
RFH Ring Kobing Fyn High
Rhe Rhodopes
RM Rhenish Massif
RrH Rutbah High
Ru Rudnij
Rus Rugen Swell
Sak Sakarya
Sar Sardinia
SDH South Dahar High
Shem Shemshak
Si Silicicum
SiB Sicanian Basin
Sit Sinjar Trough
Siv Silves
SP Serbo-Pelagonian
Stv Stavropol High
Sum Sumeini
Sv Svoula
Syrt Syrte
Ta Tatric
TaB Tarfaia Basin
TD Thuringian Depression
Ter Terek
TFl Tauric Flysch
Ts Transylsanids
UkS Ukrainian Shield
Vin Vindelician High
WAq Western Approaches
WH Welsh High
Wj Wajid
ZgH Zagros High

Realisation cartographique : BRGM - J.-Jeannot Charles Gaudemont - 45100 ORLEANS (France). Imprimé par Imprimé Géographiques National - 24, avenue Pasteur - 94160 Saint-Mandé Cedex.

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 7 — LATE SINEMURIAN
(193-191 Ma)

Author : THIERRY J.

Co-authors : ABBATE E. (17, a), AIT-OUALI R. (9), AIT-SALEM H. (10), BOUAZIZ S. (11, b), CANEROT J. (1), ELMI S. (8, 9, 10, 11), GELUK M. (3), GEORGIEV G. (6), GUIRAUD R. (12, c), HIRSCH F. (13), IVANIK M. (5), LE METOUR J. (16), LE NINDRE Y.M. (15), MEDINA F. (8), NIKISHIN A.M. (7), PAGE K. (2), PANOV D.I. (7), PIQUE A. (8, 9), POISSON A. (8, 9, d), SANDULESCU M. (6, e), SAPUNOV I.G. (6, e), SEGHEDI A. (6), SOUSSI M. (11), TARKOWSKI R.A. (4), TCHOUMATCHENKO P.V. (6, e), VASLET D. (15, 16), VOLOZH Y.A. (7), VOZNESENSKI A. (7), WALLEY C.D. (14), ZIEGLER M. (15, 16, f), AIT-BRAHIM L. (g), BARRIER E., BERGERAT F. (h), BRACENE R. (g), BRUNET M.F. (i), CADET J.P. (i), GUEZOU J.C. (j), JABALOY A. (k), LEPVRIER C. (f), RIMMELE G.

Contributors : BELAID A., BONNEAU M., BOUTAKIOUT M., COUTELLE A., FEDAN B., FEKIRINE B., GUILLOCHEAU F., JULIEN M., KOKEL F., LAADILA M., LAMARCHE J., MAMI I., MANSY J.L., MASCLE G., MEISTER C., MOUTY M., ROBIN C., SIHAMDI N., SOUHEL A., STEPHENSON R., VERA J.A.

Kinematic reconstruction : VRIELYNCK B. & OLIVET J.L.

Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

GREENLAND
TERRE NEUVE
FENNO-SCANDIAN SHIELD
UKRAINIAN SHIELD
PRECASPIAN HIGH
STAVROPOL SHIELD
SAHARAN CRATON
AFRICAN CRATON
ARABO-NUBIAN CRATON
ARABIAN PLATFORM
South Viking Graben
Faeroe Trough
Faeroe High
Shetland Platform
Egersund Danish Basin
Ring Kobing Fyn High
Polish Trough
East Carpathian Gate
Kharkov Basin
Scythian Platform
Mangyshlak High
Transcaspian High
Kara Bogaz High
MFB
FSB
RT
FAB
Central Graben
Mid North Sea High
Hannover Basin
Scottish Massif
Sole Pit Basin
Bohemian Massif
Moesia
Hebrides Platform
MiB
SFT
CIB
Broad Fourteens Basin
West Netherlands Basin
Rhenish Massif
Franconian Platform
Hatton Rockall Landmass
UB
EMS
LBM
Irish Massif
WB
Swabian Platform
Channel Basin
Paris Basin
Cornubian High
Valais Trough
Porcupine High
PoB
Celtic Sea Basin
Western Approaches
Armorican Massif
Briançonnais
Massif Central
Dauphinois Basin
Bay of Biscay Trough
Aquitaine Basin
Corbières-Provence Platform
CSH
Flemish Cap
Jeanne d'Arc Basin
Iberian Massif
Iberian Range
Ebro High
Lusitanian Basin
Scotia Basin
GrB
Moroccan Meseta
MgB
AKB
Essaouira Basin
Middle Atlas
OHP
CsP
Tunisian Trough
SA
High Atlas
Atlasic Trough
Agadir Basin
Tarfaya Basin
Lower Sahara Basin
Chott Basin
d'Dahar Basin
Oued Mya Basin
Tataouine Basin
Ghadames Basin
Cargaf High
Murzuk Basin
Mid Cyrenaica Arch
Syria-Lebanon Platform
Mardin
North Sinai Platform
Tibesti
Kufra Basin
Dakhla Basin
Uwainat High
Tarfawi Qena Arch
Erdis Basin
Lakla Basin
Tim Mersoi Basin
Mosandan Platform
Oman
Dhofar High
Blue Nile Basin
Berbera Borama Basin
Ogaden Basin
Anza Basin
Bur Aqaba High

60° 50° 40° 30° 20° 10° 0° -10°

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : siliciclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

A Apulia
Ab Alborz
ACP Appennine Carbonate Platform
AfC African craton
AgB Agadir Basin
AM Armorican Massif
AnB Anza Basin
ANC Arabo-Nubian Craton
AP Arabian Platform
AqB Aquitaine Basin
At Atlas
AT Atlasic Trough
BAH Bur Aqaba High
BB Berbera-Borama Basin
BBR Bay of Biscay Rift
BCT Baltimore Canyon Trough
BD Bey Dagfari
Bel Belluno
BFB Broad Fourteens Basin
Bk Bakony
BM Bohemian Massif
Bn Bislouan
BNB Blue Nile Basin
BoT Bosnian Trough
BuT Budva Trough
Ca Calabria
CA Central Afghanistan
Cc Choc Nappe
CelS Celtic Sea
CG Central Graben
ChB Channel Basin
CHB Channel Hampshire Basin
CI Central Iran
CIB Cleveland Basin
CoH Cornubian High
CPP Corbieres-Provence Platform
Cr Crimea
CSB Celtic Sea Basin
CsP Constantine Platform
CtB Chott Basin
Cyp Cyprus
Du Ducides
DaB Dakhla Basin
DauB Dauphinois Basin
DB d'Dahar Basin
DhoH Dhofar High
Dm Dalmatia
Dr Drama
Dz Dzirula
EB Essaouira Basin
EMS East Midland Shelf
EP Eastern Pontides
Era Erathostene
ErdB Erdis Basin
ET Eastern Taurus
FAB Forth Approaches Basin
FB Fergana Basin
FBH Fezafzo-Bakantya High
FC Flemish Cap
FrP Franconian Platform
FSB Fiskebank Sub-Basin
FT Faeroe Trough
G Gavrovo
GarH Gargaf High
GCT Greater Caucasus Trough
GeZ Getic Zone
GhB Ghadames Basin
GL Greenland Landmass
GR Greenland
Gum Gumuslu
Ha Hazara
HA High Atlas
HanB Hannover Basin
HuU Hamad Uplift
Hf Hartford Basin
HP Hebrides Platform
HRL Hatton Rockall Landmass
HSaC High Saharan Craton
Hw Hawasina
I Ionian furrow
IM Iberian Massif
IR Iberian Range
IrM Irish Massif
J Jaisalmer
JAB Jeanne d'Arc Basin
JuE Judean Embayment
Kar Karakorum
KaR Kashaf Rud
KBH Kara Bogaz High
KD Kopet Dagh
KhaB Kharkov Basin
KhaP Khatatba Platform
KoB Kocali Basin
KP Kingur Peaks
Kr Kermanshah
Ks Kirsehir (Turkey)
Ku Kutch
KuB Kufra Basin
Kum Kumaon
Lab La brador
LakB Lakla Basin
LB Lusitanian Basin
LBM London Brabant Massif
LC Lesser Caucasus
Lm Licicum
LnT Lagonegro Trough
LSuB Lower Sahara Basin
Lt Lut
M Moesia
Ma Mardin
MA Middle Atlas
MaE Malta Escarpment
MarH Mangyshlak High
MC Massif Central
MCA Mid Cyrenaica Arch
Mck Mecsek
Me Menderes
Mf Misfah
MFB Moray Firth Basin
MgB Mugliad Basin
MM Moroccan Meseta
MNSH Mid North Sea High
MuB Murzuk Basin
MunP Munzur Platform
MusP Musandan Platform
NDo Northern Dobrogea
NE Neyriz Exotics
NSP North Sinai Platform
NTc Northern Transcaucasus
NTT Nis Trojan Trough
NVG North Viking Graben
OB Ogaden Basin
OHP Oranese High Plateau
Oma Oman
OMB Oued Mya Basin
Ot Othrys
P Pamassos
PB Paris Basin
Pic Pichakun
PO Pindos-Olonos
PoB Porcupine Basin
PphB Pamphylian Basin
RaP Rague Plateau
Rif Rif
RFH Ring Kobing Fyn High
Rh Rhodope Massif
RH Rhuhuh High
RM Rhenish Massif
RP Rushan Pushar
RT Rockall Trough
S Spili
SaC Saharan Craton
ScaM Scandinavian Landmass
ScB Scotia Basin
ScoM Scotish Massif
SCrf South Crimean Trough
ScyP Scythian Platform
Se Severin
ShP Shetland Platform
Shy Shyok
Si Silicicum
SmR Sulaiman Range
SP Serbo-Pelagonian
SPa Southern Pamir
SPB Sole Pit Basin
SPT South Pit Trough
SR Salt Range
StavS Stavropol Shield
SVG South Viking Graben
SwP Swabian Platform
SyLP Syria-Lebanon Platform
T Tunisia
TaB Tarfaya Basin
TaM Taira Mts
TatB Tataouine Basin
Ter Terek
Th Thakkola
Tib Tibesti
TMB Tim Mersoi Basin
TN Terre Neuve
TP Triza Plate
TQA Tarfawi Qena Arch
TrP Trento Plateau
Tr Transylvanids
TSP Trapani South Platform
TuT Tunisian Trough
UH Uwainat High
UkS Ukrainian Shield
UMB Umbria-Marches Basin
Va Vardar
Wa Waras
WAp Western Approaches
Wh Whakon
WNB West Netherlands Basin
WP Western Pontides
Z Zanskar
Za Zagros
Zh Zhob



Réalisation cartographique : EHGM 3, avenue Claude Guillemin 45100 ORLEANS (France). Imprimé par l'Institut Géographique National - 24, avenue Pasteur - 94165 Saint-Mandé Cedex

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Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 8 — MIDDLE TOARCIAN (180-178 Ma)

Author : THIERRY J. & BARRIER E.

Co-authors : ABBATE E. (17, a), AIT-OUALI R. (9), AIT-SALEM H. (10), BOUAZIZ S. (11, b), CANEROT J. (1), ELMI S. (8, 9, 10, 11), GELUK M. (3), GEORGIEV G. (6), GUIRAUD R. (12, c), HIRSCH F. (13), IVANIK M. (5), LE METOUR J. (16), LE NINDRE Y.M. (15), MEDINA F. (8), NIKISHIN A.M. (7), PAGE K. (2), PANOV D.L. (7), PIQUE A. (8, 9), POISSON A. (8, 9, d), SANDULESCU M. (6, e), SAPUNOV I.G. (6, e), SEGHEDI A. (6), SOUSSI M. (11), TARKOWSKI R.A. (4), TCHOUMATCHENKO P.V. (6, e), VASLET D. (15, 16), VOLOZH Y.A. (7), VOZNEZENSKI A. (7), WALLEY C.D. (14), ZIEGLER M. (15, 16, f), AIT-BRAHIM L. (g), BERGERAT F. (h), BRACENE R. (g), BRUNET M.F. (i), CADET J.P. (i), GUEZOU J.C. (j), JABALOY A. (k), LEPVRIER C. (f), RIMMELE G.

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Kinematic reconstruction : VRIELYNCK B. & OLIVET J.L.

Cartography & spatial database : VRIELYNCK B.

Tethyan area after the Middle Toarcian map (Bassoullet et al.) of the Tethys Atlas (Dercourt J., Ricou L.E. & Vrielynck B., 1993), modified

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

GREENLAND
FENNO-SCANDIAN SHIELD
RUSSIAN PLATFORM
UKRAINIAN SHIELD
PRECASPIAN BASIN
STAVROPOL SHIELD
ARABIAN PLATFORM
AFRICAN CRATON
ARABO-NUBIAN CRATON
SAHARAN CRATON
TERRE NEUVE
North Viking Graben
Faeroe Trough
South Viking Graben
Horda Basin
Shetland Platform
Egersund Danish Basin
Ring Kobing Fyn High
Central Graben
Mid North Sea High
Faeroe High
Hebrides Platform
Scottish Massif
Broad Fourteens Basin
Sole Pit Basin
West Netherlands Basin
Rhenish Massif
Hannover Basin
Franconian Platform
Bohemian Massif
Baltic Platform
Polish Through
Fast Carpathian Gate
Scythian Platform
Kharkov Basin
North Crimea Trough
Azov/Kuban Foredeep/Depression
Aral basin
Mangyshlak High
Kyzylkum Plateau
Transcaspian Basin
Kara Bogaz High
Moesia
Swabian Platform
Paris Basin
Channel Basin
Celtic Sea Basin/Trough
Armorican Massif
Western Approaches
Massif Central
Dauphinois Basin
Aquitaine Basin
Bay of Biscay Rift
Corbieres-Provence Platform
Valais Trough
Briancomnais
Porcupine High
Hatton/Rockall Landmass
Irish Massif
Kish Bank Basin
Baltimore Canyon Trough
Grenubian High
Flemish Cap
Jeanne d'Arc Basin
Lusitanian Basin
Iberian Massif
Iberian Range
Scotia Basin
Moroccan Meseta
Middle Atlas
Oranese Meseta
High Atlas
Atlasic Trough
Tarfaya Basin
Lower Sahara Basin
Oued Mya Basin
Ghadames Basin
Gargaf High
Murzuk Basin
Tim Mersoi Basin
Erdis Basin
Uwainat High
Tarfawi Qena Arch
Mid Cyrenaica Arch
Syria-Lebanon Platform
North Sinai Platform
Dakhla Basin
Ogaden Basin
Berbera Borama Basin
Blue Nile Basin
Bur Aqaba High
Mardin
Oman
MusP
DhofP

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- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics

- B Bauxite
- g Glauconite
- P Phosphate
- F Ironstone (ferruginous)

Examples of Mixed Lithologies

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- Oolitic Limestone
- Sulphates and Halite

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- Normal fault regime
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- Island arc

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- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

A Apulia
ACP Appennine Carbonate Platform
AfC African craton
AKF Azov-Kuban Foredeep/Depression
AM Armorican Massif
ANC Arabo-Nubian Craton
Ao Alboran
AP Arabian Platform
AqB Aquitaine Basin
ArB Aral Basin
AT Atlasic Trough
B Briancomnais
BAH Bur Aqaba High
BB Berbera Borama Basin
BBR Bay of Biscay Rift
BcP Baltic Platform
BCT Baltimore Canyon Trough
BD Bey Dagfari
Bel Belluno
BFB Broad Fourteens Basin
Bk Bakony
BM Bohemian Massif
Bn Bisitoun
BNB Blue Nile Basin
BoT Bosnian Trough
BrS Brandeburg Swell
Bu Bukk
BuT Budva Trough
Ca Calabria
CA Central Afghanistan
Cc Choc Nappe
CDo Central Dobrogea
CG Central Graben
ChB Channel Basin
CI Central Iran
CIB Cleveland Basin
Cod Codru
CoH Cornubian High
CPP Corbieres-Provence Platform
CSB Celtic Sea Basin
CsP Constantine Platform
CtB Chott Basin
Cyp Cyprus
D Danubian zone
DaB Dakhla Basin
DauB Dauphinois Basin
DB d'Dahar Basin
DhoP Dholar Platform
Dm Dalmatia
Dr Drama
EB Essaouira Basin
ECG East Carpathian Gate
EDB Egersund Danish Basin
EM Ebro Massif
EMS East Middland Shelf
EP Eastern Pontides
Era Erathosten
ErdB Erdis Basin
ET Eastern Taurus
FC Flemish Cap
FH Faeroe High
FrP Franconian Platform
FSS Fenno-Scandian Shield
FT Faeroe Trough
G Gavrovo
GarH Gargaf High
GCT Greater Caucasus Trough
GeZ Celtic Zone
GhB Ghadames Basin
GN Glockner Nappe
GR Greenland
GrB Great Bank
Gum Gumuslu
H Hochstegen
Ha Hazara
HA High Atlas
HanB Hannover Basin
HB Horda Basin
HP Hebrides Platform
HRL Hatton-Rockall Landmass
Hw Hawasina
I Ionian Iurrow
IM Iberian Massif
IR Iberian Range
IrM Irish Massif
J Jaisalmer
JAB Jeanne d'Arc Basin
JuE Judean Embayment
K Kabylia
KBB Kish Bank Basin
KBH Karabogaz High
KhaB Kharkov Basin
KhaP Khatatiba Platform
KhP Khazakhstan Plateau
Ki Kirthar
KoB Kocali Basin
KP Kiorgai Peaks
Kr Kermanshah
KRD Kabylo-Rifaine Dorsale
Ks Kirsehir (Turkey)
Kt Ketama
Ku Kutch
KyP Kyzylkum Plateau
Kz Kryzna Nappe
Lam Lamayuru
LB Lusitanian Basin
LBM London Brabant Massif
LC Lesser Caucasus
LD Le Dannois
Lm Licicum
LnT Lagonegro Trough
LSuB Lower Sahara Basin
M Moesia
Ma Mardin
MA Mayen Atlas
MaE Malta Escarpment
ManH Mangyschlak High
MC Massif Central
MCA Mid-Cyrenaic Arch
Mck Meesek
Me Menderes
Mel Meliata
Mf Misfah
Mg Magura
MG Monte Gallero
MiB Minches Basin
MM Moroccan Meseta
MNSH Mid North Sea High
MuB Murzuk Basin
MusP Musandam Platform
NcrT North Crimea Trough
NDo Northern Dobrogea
NE Neyriz Exotics
NSP North Sinai Platform
NTc Northern Transcaucasus
NTT Nis-Trojan Trough
NVG North Viking Graben
OB Ogaden Basin
OM Oranese Meseta
Oma Oman
OMB Oued Mya Basin
Ot Othrys
P Parnassos
PB Paris Basin
PC Pre-Caspian Basin
PcB Porcupine Basin
Pe Pericbetic
Pic Pichukun
PO Pindos-Olonos
PoB Porcupine Basin
PrH Porcupine High
PphB Pamphylian Basin
PT Polish Trough
RaP Raguse Plateau
RFH King Kobing-Fynhigh
Rh Rhodope Massif
RM Rhenish Massif
RuP Russian Platform
SaC Saharan Craton
ScB Scotia Basin
ScoM Scotish Massif
SCP Sardinia-Corsica Platform
SCrT South Crimean Trough
ScyP Scythian Platform
Se Sewerin
ShP Shetland Platform
Si Silicicum
SIT Slovenian Basin
SmR Sulaiman Range
So Sofs
SP Serbo-Pelagonian
SPB Sole Pit Basin
SR Salt Range
Str Stranja
StvS Stavropol Shield
SuB Subbetic Basin
SVG South Viking Graben
SwP Swabian Platform
SyLP Syria-Lebanon Platform
TaB Tarfaya Basin
TaM Taira Mts
TatB Tataouine Basin
TCsB Transcaspia Basin
Ter Terrek
TeT Tellian Trough
Tib Tibesti
Tir Tirolicum
TMB Tim Mersoi Basin
TN Terre Neuve
TP Trieze Plate
TQA Tarfawi-Qena Arch
Tra Trapani
TrG Trekljano Furrow
TrP Trento Plateau
Ts Transylvanids
TuB Tuscan Basin
TuT Tunisian Trough
UH Uwainat High
UkS Ukrainian Shield
UMB Umbria-Marches Basin
Va Vardar
VT Valais Trough
Wa Warsis
WAp Western Approaches
WH Welsh High
WNB West Netherlands Basin
WP Western Pontides
Z Zamskar
Za Zagros
Zh Zhob

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Sponsored by :
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MAP 9 — MIDDLE CALLOVIAN
(157-155 Ma)

Author : THIERRY J. & BARRIER E.

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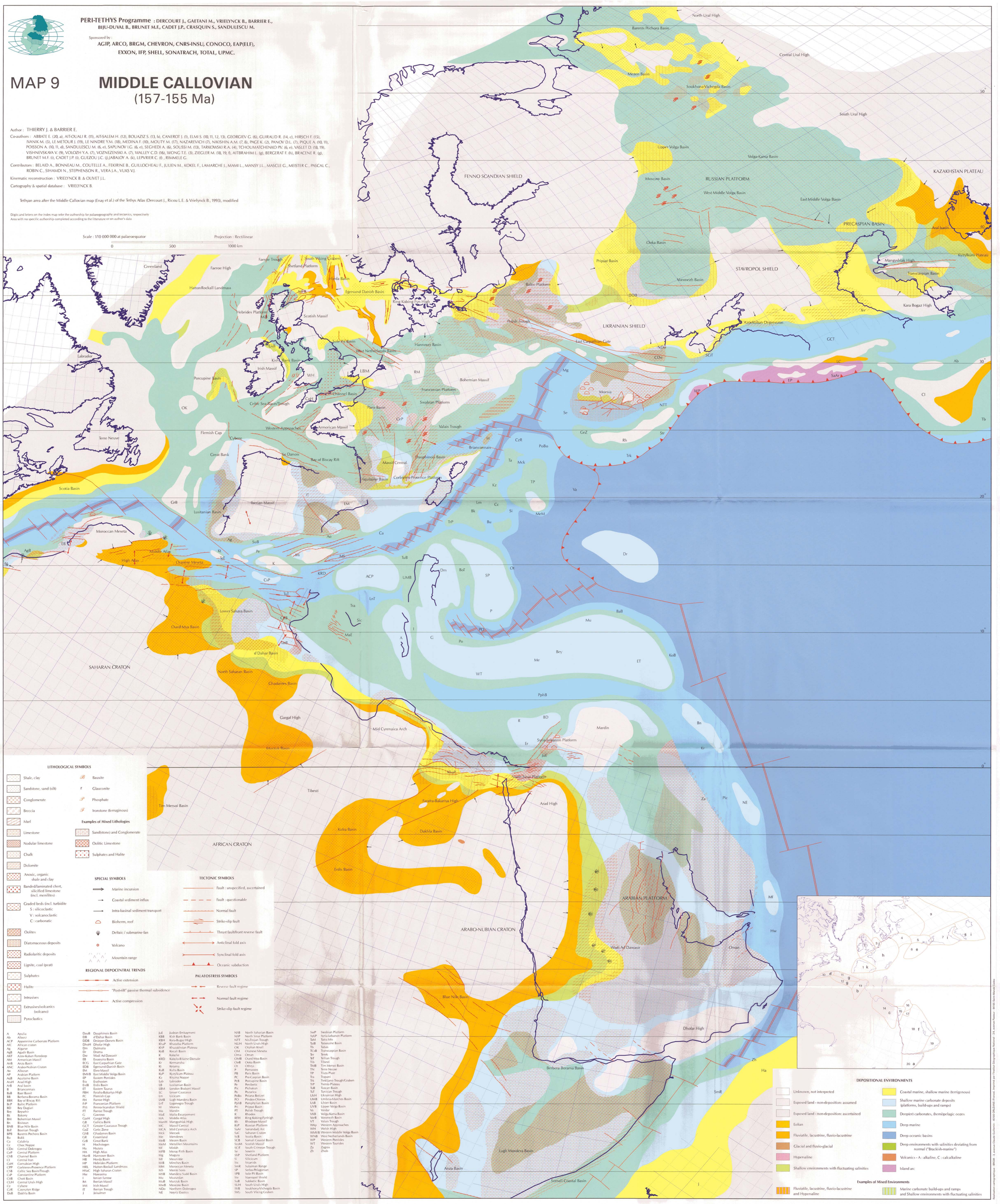
0 — 500 — 1000 km



LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidite) S : siliciclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, themilpelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

A	Apulia	DauB	Dauphinois Basin	JuE	Judean Embayment	NSB	North Saharian Basin
Ab	Alborz	DB	d'Dahar Basin	KBB	Kish Bank Basin	NSP	North Sinai Platform
ACP	Appennine Carbonate Platform	DDB	Dniepen-Donets Basin	KBH	Kara-Bugaz High	NTT	Nis-Trojan Trough
AfC	African craton	DhoH	Dhofar High	KhaP	Khatalba Platform	NUH	North Urals High
Ag	Algarve	Dm	Dalmatia	KhP	Khazakhstan Plateau	OK	Orphan Knoll
AgB	Agadir Basin	Dr	Drama	KoB	Kocali Basin	OM	Oranese Meseta
AKF	Azov-Kuban Foredeep	Dw	Wadi Ad Dawasir	K	Kabylie	Oma	Oman
AM	Armorican Massif	EB	Essaouira Basin	KRD	Kabylo-Rifaine Dorsale	OMB	Ouard Mya Basin
AnB	Anza Basin	ECG	East Carpathian Gate	Kr	Kermansha	OoB	Ooka Basin
ANC	Arabo-Nubian Craton	EDB	Egersund-Danish Basin	Kt	Ketama	Ot	Othrys
Ao	Alboran	EM	Ebro Massif	KuB	Kufra Basin	P	Pamassos
AP	Arabian Platform	EMVB	East Middle Volga Basin	KyP	Kyzylkum Plateau	PB	Paris Basin
AqB	Aquitaine Basin	EP	Eastern Pontides	Kz	Kryzna Nappe	PC	Pre-Caspian Basin
ArabH	Arad High	Era	Eratosthenes	Lab	Labrador	PcB	Porcupine Basin
ArB	Aral basin	ErdB	Erdis Basin	LB	Lusitanian Basin	Pe	Penibetic
B	Brianconnais	ET	Eastern Taurus	LBM	London Brabant Massif	Pic	Pichakun
BaB	Baer Bassit	FBH	Farafra-Bakariya High	LC	Lesser Caucasus	Pn	Prozarica
BB	Berbera-Borama Basin	FC	Flemish Cap	Lm	Licicum	PoBo	Poiana Botizei
BBR	Bay of Biscay Rift	FH	Faeroe High	LMB	Lugh Mandera Basin	PO	Pindos-Olonos
BcP	Baltic Platform	FrP	Francevian Platform	LnT	Lagonegro Trough	PphB	Pamphylian Basin
BD	Bey Dagları	FSS	Fenno-Scandian Shield	M	Moesia	Pri	Pripyat Basin
Bey	Beysehir	FT	Faeroe Trough	Ma	Mardin	PT	Polish Trough
Bk	Bakony	G	Gavrovo	MaE	Malta Escarpement	R	Rhodes
BM	Bohemian Massif	GarH	Gargaf High	MA	Middle Atlas	RFH	Ring Kobing-Fynhigh
Bn	Bisitoun	GB	Galicia Bank	MarH	Mangyshlak High	Rh	Rhodope Massif
BNB	Blue Nile Basin	GCT	Greater Caucasus Trough	MC	Massif Central	RoP	Russian Platform
BoT	Bosnian Trough	GeZ	Getic Zone	MCA	Mid Cyrenaica Arch	SaAr	Sanandadj Arc
BPB	Barents Pechora Basin	GhB	Ghadames Basin	Mck	Meesek	SaC	Saharan Craton
Bu	Bukk	GR	Greenland	Me	Menderes	ScB	Scotia Basin
Ca	Calabria	GrB	Great Bank	MeB	Mezen Basin	SCB	Somali Coastal Basin
Cc	Choc Nappe	H	Hochstegen	MeM	Metallileri Mountains	ScoM	Scotish Massif
CDo	Central Dobrogea	Ha	Hazara	Mf	Matah	SCrf	South Crimean Trough
CeP	Central Platform	HA	High Atlas	MFB	Moray Firth Basin	Se	Severin
ChB	Channel Basin	HanB	Hannover Basin	Mg	Magura	ShP	Shetland Platform
CI	Central Iran	HB	Horda Basin	Mi	Mouri-kle	Si	Silicicum
CoH	Cornubian High	HP	Hebrides Platform	MiB	Minches Basin	Sic	Sicanids
CPP	Corbieres-Provence Platform	HRL	Hatton-Rockall Landmass	MM	Moroccan Meseta	SmR	Sulaiman Range
CSB	Celtic Sea Basin/Trough	HSaC	High Saharan Craton	MS	Monte Soro	SP	Serbo-Peloponnian
CuP	Constantine Platform	Hw	Hawasina	MSB	Mandera Sudd Basin	SPB	Sole Pit Basin
CttB	Chott Basin	I	Ionian furrow	Mu	Muzundun	Stv	Stavropol Shield
CUH	Central Urals High	IM	Iberian Massif	MuB	Murzuk Basin	SuB	Subbetic Basin
Cy	Cyhere	IrM	Irish Massif	MwB	Moscow Basin	SUH	South Urals High
CzR	Czorsztyn Ridge	IT	Iberian Trough	NDo	Northern Dobrogea	SVB	Soukhona-Vichegda Basin
DaB	Dakhla Basin	J	Jaisalmer	NE	Neyriz Exotics	SVG	South Viking Graben

SwP	Swabian Platform
SyLP	Syria-Lebanon Platform
TaM	Tatra Mts
TaiB	Tataouine Basin
Tb	Tabas
TCsB	Transcaspian Basin
Ter	Terek
TeT	Tellian Trough
Tib	Tibesti
TMB	Tim Mersoi Basin
TN	Terre Neuve
TP	Tisza Plate
Tra	Trapani
Trk	Treiglano Trough/Graben
TrP	Trento Plateau
TuB	Tuscan Basin
TuT	Tunisian Trough
UkH	Ukrainian High
UMB	Umbria-Marches Basin
UsB	Ulster Basin
UVB	Upper Volga Basin
Va	Vardar
VKB	Volga-Kama Basin
VorB	Voronezh Basin
VT	Valais Trough
WAp	Western Approaches
WH	Welsh High
WMVB	Western Middle Volga Basin
WNB	West Netherlands Basin
WP	Western Pontides
WT	Western Taurides
Za	Zagros
Zh	Zhob

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Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 10 EARLY KIMMERIDGIAN
(146-144 Ma)

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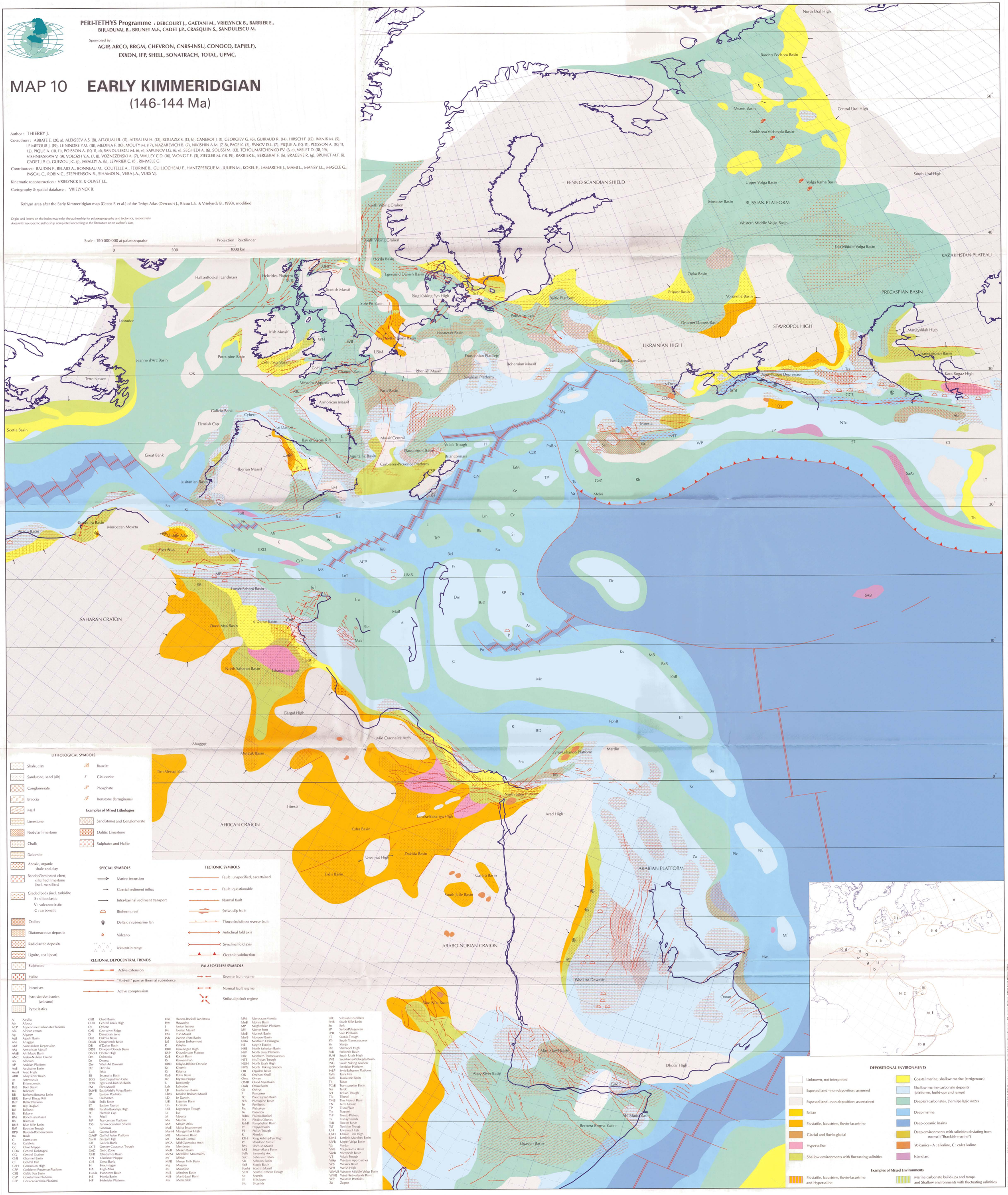
0 500 1000 km


North Ural High
Barents Pechora Basin
Mezen Basin
Central Ural High
Soukhona-Vichegda Basin
South Ural High
FENNO SCANDIAN SHIELD
Upper Volga Basin
Volga Kama Basin
Moscow Basin
RUSSIAN PLATFORM
Western Middle Volga Basin
East Middle Volga Basin
KAZAKHSTAN PLATEAU
North Viking Graben
South Viking Graben
Horda Basin
Egersund Danish Basin
Ooka Basin
Pripyat Basin
Voronezh Basin
PRECASPIAN BASIN
Ring Kobing Fyn High
Baltic Platform
Polish Trough
Dnieper Donets Basin
STAVROPOL HIGH
Hannover Basin
West Netherlands Basin
UKRAINIAN HIGH
Mangyshlak High
Transcaspian Basin
Bohemian Massif
East Carpathian Gate
Franconian Platform
Rhenish Massif
Swabian Platform
Azov-Kuban Depression
Kara Bogaz High
Paris Basin
Armorican Massif
Massif Central
Valais Trough
Dauphinois Basin
Brianconnais
Aquitaine Basin
Corbieres-Provence Platform
Bay of Biscay Rift
Iberian Massif
Lusitanian Basin
Great Bank
Moesia
ARABIAN PLATFORM
Wadi Ad Dawasir
Oman
Blue Nile Basin
Marib Jawf Basin
Dhofar High
Abay River Basin
GAdP
Ahl Madd Basin
Berbera Borma Basin
Ogaden Basin
SAHARAN CRATON
AFRICAN CRATON
ARABO-NUBIAN CRATON
Tim Mersoi Basin
Murzuk Basin
Tibesti
Kufra Basin
Farafra-Bakariya High
Arad High
North Sinai Platform
Syria-Lebanon Platform
Mardin
Uweinat High
Dakhla Basin
Erdis Basin
Garara Basin
South Nile Basin
Lower Sahara Basin
Oued Mya Basin
d'Dahar Basin
North Saharan Basin
Ghadames Basin
Gargaf High
Mid Cyrenaica Arch
Ahaggar
Tanezzuft
Hatton Rockall Landmass
Hebrides Platform
Scottish Massif
Sole Pit Basin
Labrador
Irish Massif
Porcupine Basin
Jeanne d'Arc Basin
Celtic Sea Basin
Terre Neuve
Channel Basin
Western Approaches
Scotia Basin
Galicia Bank
Cybere
Flemish Cap
Le Danois
Essaouira Basin
Moroccan Meseta
Agadir Basin
Middle Atlas
High Atlas
Tripolitaine
Sirt
Cyrenaica
Sabratah
Kufrah
Murzuq
Ghadames
Illizi
Berkine
Ghadames
Timimoun
Mouydir
Reggane
Tindouf
Taoudeni
Hoggar
Iforas
Adrar des Iforas
Aouker
Tilemsi
Gao
Iullemmeden
Air
Chad
Bongor
Doba
Salamat
Am Timan
Abu Gabra
Melut
Muglad
Baggara
Blue Nile
Abay
Mandera
Anza
Lamu
Turkana
Rift
Kenya Dome
Kenya Rift
Lokichar
Lotikipi
Lokichokio
Nyanza
Kavirondo
Victoria
Tanganyika
Rukwa
Malawi
Luangwa
Zambezi
Mozambique
Beira
Lebombo
Pafuri
Save
Limpopo
Shashe
Okavango
Kalahari
Cuvette Centrale
Congo
Kwanza
Benguela
Namibe
Walvis
Damara
Orange
Karoo
Cape
Agulhas
Falkland Plateau
Malvinas
Falkland Islands
Rio Grande Rise
Pelotas
Santos
Campos
Espirito Santo
Cumuruxatiba
Jequitinhonha
Almada
Camamu
Jacuipe
Sergipe
Alagoas
Pernambuco
Paraiba
Potiguar
Ceara
Barreirinhas
Para-Maranhao
Foz do Amazonas
Guyana
Suriname
Guyane
Demerara
Barbados
Trinidad
Tobago
Maracaibo
Falcon
Guajira
Sinu
Colombian Basin
Nicaragua Rise
Yucatan
Campeche
Tampico
Veracruz
Sabinas
Burgos
Rio Bravo
Chihuahua
Parras
Coahuila
Aguja
Rosario
Vizcaino
Magdalena
Colorado
Gulf of California
Tepoca
Upper California
Santa Maria
Los Angeles
Ventura
Santa Monica
Santa Barbara
Channel Islands
Outer Santa Barbara
Tres Marias
Jalisco
Manzanillo
Tehuantepec
Nicoya
Panama
Chocó
Cauca
Valley
Upper Magdalena
Cesar
Ranchería
Perijá
Catatumbo
Barinas
Apure
Llanos
Maturin
Columbus
Grenada
Aves Ridge
Venezuelan Basin
Curaçao
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MAP 11 EARLY TITHONIAN

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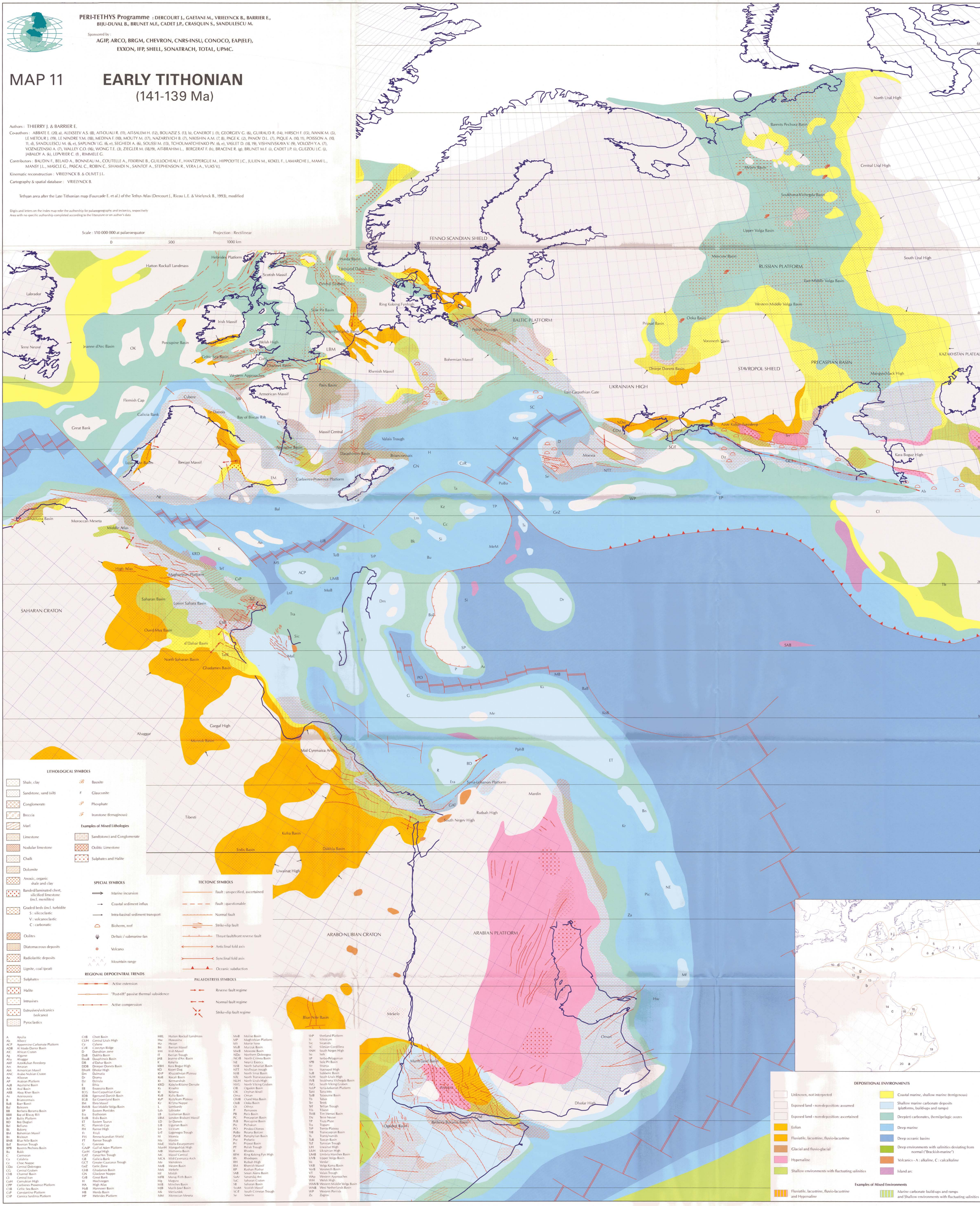

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AqB	Aquitaine Basin
ArB	Aral Basin
ARB	Abay River Basin
As	Asteroussia
B	Brianconnais
BaB	Baer Bassit
Bal	Baleares
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ChB	Channel Basin
CI	Central Iran
CoH	Cornubian High
CPP	Corbieres Provence Platform
CSB	Celtic Sea Basin
CsP	Constantine Platform
CSP	Corsica Sardinia Platform
CttB	Chott Basin
CUH	Central Urals High
Cy	Cybere
CzR	Czorztyn Ridge
D	Danubian zone
DaB	Dakhla Basin
DauB	Dauphinois Basin
DB	d'Dahar Basin
DDB	Dnieper Donets Basin
DhoH	Dhofar High
Dm	Dalmatia
Dr	Drama
Dz	Dzirula
E	Ethia
EB	Essaouira Basin
ECG	East Carpathian Gate
EDB	Egersund Danish Basin
EGB	Eat Groenland Basin
EM	Ebro Massif
EMVB	East Middle Volga Basin
EP	Eastern Pontides
Era	Erathosten
ErdB	Erdis Basin
ET	Eastern Taurus
FC	Flemish Cap
FH	Faeroe High
Fr	Friuli
FSS	Fenno-Scandian Shield
FT	Faeroe Trough
G	Gavrovo
GAdP	Gulf of Aden Platform
GarH	Gargaf High
GAT	Gevar'Am Trough
GB	Galicia Bank
GCT	Greater Caucasus Trough
GeZ	Getic Zone
GhB	Ghadames Basin
GN	Glockner Nappe
GrB	Great Bank
H	Hochstegen
HA	High Atlas
HaB	Hannover Basin
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HP	Hebrides Platform
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Hw	Hawasina
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IrM	Irish Massif
IT	Iberian Trough
JAB	Jeanne d'Arc Basin
K	Kabylia
KBH	Kara Bogaz High
KD	Kopet Dag
KhP	Khazakhstan Plateau
KoB	Kocali Basin
Kr	Kermanshah
KRD	Kabylo-Rifaine Dorsale
Ks	Kirsehir
Kt	Ketama
KuB	Kufra Basin
KyP	Kyzylkum Plateau
Kz	Krizna Nappe
L	Lombardy
Lab	Labrador
LB	Lusitanian Basin
LBM	London Brabant Massif
LD	Le Danois
LiB	Ligurian Basin
Lm	Licicum
LnT	Lagonegro Trough
M	Moesia
Ma	Mardin
MaE	Malta Escarpement
ManH	Mangyshlak High
MB	Mamonia Basin
MC	Massif Central
MCA	Mid Cyrenaica Arch
Me	Menderes
MeB	Mezen Basin
Mek	Mekele
Mf	Misfah
MFB	Moray Firth Basin
Mg	Magura
MiB	Minches Basin
MJB	Marib Jawf Basin
Mk	Meriadzek
MM	Moroccan Meseta
MoB	Molise Basin
MP	Maghrebian Platform
MS	Monte Soro
MuB	Murzuk Basin
MwB	Moscow Basin
NDo	Northern Dobrogea
NCrB	North Crimea Basin
NE	Neyriz Exotics
NSB	North Saharian Basin
NTT	Nis-Trojan trough
NSB	North Sinai Basin
NTc	North Transcaucasus
NUH	North Urals High
NVG	North Viking Graben
OB	Ogaden Basin
OK	Orphan Knoll
Oma	Oman
OMB	Oued Mya Basin
OoB	Ooka Basin
Ot	Othrys
P	Parnassos
PB	Paris Basin
PC	Precaspian Basin
PcB	Porcupine Basin
Pic	Pichakun
PO	Pindos-Olonos
PoBo	Poiana Botizei
PphB	Pamphylian Basin
Pre	Prebetic
Pri	Pripyat Basin
PT	Polish Trough
R	Rhodos
RFH	Ring Kobing Fyn High
Rh	Rhodopes
RH	Rutbah High
RM	Rhenish Massif
RP	Rushan Pushar
SAB	Sevan Akera Basin
SaAr	Sanandaj Arc
SaC	Saharan Craton
SB	Saharan Basin
ScoM	Scotish Massif
SCrT	South Crimean Trough
Se	Severin
ShP	Shetland Platform
Si	Silicicum
Sic	Sicanids
SC	Silesian Cordillera
SNH	South Negev High
So	Sofs
SP	Serbo-Pelagonian
SPB	Sole Pit Basin
Str	Stranja
Stv	Stavropol High
SuB	Subbetic Basin
SUH	South Urals High
SVB	Soukhona Vichegda Basin
SVG	South Viking Graben
SyLP	Syria-Lebanon Platform
TaM	Tatra Mts
TatB	Tataouine Basin
Tb	Tabas
Ter	Terek
TeT	Tellian Trough
Tib	Tibesti
TMB	Tim Mersoi Basin
TN	Terre Neuve
TP	Tisza Plate
Tra	Trapani
TrP	Trento Plateau
TrB	Transcaspian Basin
Ts	Transylvanids
TuB	Tuscan Basin
TuT	Tunisian Trough
UH	Uwainat High
UkH	Ukrainian High
UMB	Umbria Marches Basin
UVB	Upper Volga Basin
Va	Vardar
VKB	Volga Kama Basin
VorB	Voronezh Basin
VT	Valais Trough
WAp	Western Approaches
WH	Welsh High
WMVB	Western Middle Volga Basin
WNB	West Netherlands Basin
WP	Western Pontids
Za	Zagros

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

Réalisation cartographique : BRGM - 3, avenue Claude Guillemin - 45100 ORLÉANS (France). Imprimé par l'Institut Géographique National - 2/4, avenue Pasteur - 94165 Saint-Mandé Cedex

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 12 EARLY HAUTERIVIAN
(123-121 Ma)

Author : BULOT L.G.
Co-authors : AMON E. (1), BERGERAT F. (2), BARABOSHKIN E.J. (3), GUIRAUD R. (4), HIRSH F. (5), PLATEL J.P. (6), POISSON A. (7), SANDULESCU M. (8), ZIEGLER M., VASLET D. (9), BOUAZIZ S. (10), RIMMELE G.
Contributors : AIT OUALI R., CANEROT J., GAVRYLYSHYN V., GEORGIEV A., JABALOY A., MEMMI L, NANIK M., NIKISHIN A., PLOTNIKOVA L., REY J., ROMANIV A., TARKOWSKI R.
Kinematic reconstruction : VRIELYNCK B.
Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator
Projection : Rectilinear
0 500 1000 km

FENNO-SCANDIAN SHIELD
RUSSIAN PLATFORM / EAST EUROPEAN PLATFORM
UKRAINIAN SHIELD
SAHARIAN SHIELD
ARABIAN SHIELD
Grampian High
North Sea Basin
Danish Polish Furrow
Lower Saxony Basin
Wessex Basin
London Brabant Massif
Paris Basin
Bohemian Massif
Rhenish Massif
Helvetic Shelf
Vocontian Basin
Massif Central
Provence
Bay of Biscay
Iberian Massif
Ebro Massif
West Siberian Basin
Greater Caucasus
Moesia
Essaouira Basin
Moroccan Meseta
Idrissides High
Constantine Platform
Tellian Trough
Oued Mya Basin
Sirte Basin
Khleiss High
Rutbah High
Hoowarin Hazald High
Adamawa
Oman
Dhofar High

Ada Adamawa
BBi Bay of Biscay
BM Bohemian Massif
CsP Constantine Platform
DhoH Dhofar High
DPF Danish Polish Furrow
EB Ebro Massif
Ebr Essaouira Basin
EEP Russian Platform / East European Platform
FSS Fenno-Scandian Shield
GC Greater Caucasus
GrH Grampian High
HS Helvetic Shelf
HHH Hoowarin Hazald High
IH Idrissides High
IM Iberian Massif
KhH Khleiss High
LBM London Brabant Massif
LSB Lower Saxony Basin
MM Moroccan Meseta
NoB North Sea Basin
Oma Oman
OMB Ouard Mya Basin
PB Paris Basin
Pr Provence
RM Rhenish Massif
RtH Rutbah High
SyB Syrte Basin
TeT Tellian Trough
VoB Vocontian Basin
UkS Ukrainian Shield
WB Wessex Basin
WSB West Siberian Basin

LITHOLOGICAL SYMBOLS
- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidite S : siliciclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies
- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS
- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS
- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS
- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS
- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime

DEPOSITIONAL ENVIRONMENTS
- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments
- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

Réalisation cartographique : BRGM - 3, avenue Claude Guillemin - 45100 ORLEANS (France). Imprimé par l'Institut Géographique National - 2/4, avenue Pasteur - 94165 Saint-Mandé Cedex

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 13 — EARLY APTIAN
(112-114 Ma)

Author : MASSE J.P.
Co-authors : BOUAZIZ S. (1), AMON E.O. (2), BARABOSHKIN E. (3), TARKOWSKI R., BERGERAT F. (4), SANDULESCU M. (5), PLATEL J.P. (6), CANEROT J. (7), GUIRAUD R. (8), POISSON A. (9), ZIEGLER M. (10), RIMMELE G.
Contributors : CHARRAT F., FAURE-MURET A., IVANIK M., JABALOY A., LAMARCHE J., LE NINDRE Y., LEWY Z., NIKISHIN A.M., PLOTNIKOVA L., VASLET D.
Kinematic reconstruction : VRIELYNCK B.
Cartography & spatial database : VRIELYNCK B.

Tethyan area after the Early Aptian map (Masse J.P. et al.) of the Tethys Atlas (Dercourt J., Ricou L.E. & Vrielynck B., 1993), modified

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear
0 — 500 — 1000 km

FENNO-SCANDIAN SHIELD
RUSSIAN PLATFORM / EAST EUROPEAN PLATFORM
UKRAINIAN SHIELD
ARABIAN SHIELD
Pechora
URAL OROGEN
Moray Firth Basin
Grampian High
North Sea Basin
Sole Pit Inversion
Ringkobing-Fyn High
TORNQUIST ALIGNMENT
Polish Graben
London Brabant Massif
Rhenish Massif
Bohemian Massif
Armorican Massif
Paris Basin
Massif Central
Vocontian Basin
Galicia Bank
Bay of Biscay
South Provence Basin
Lusitanian Basin
Iberian Massif
Ebro Massif
Catalogna
Iberian Range
Pre
Essaouira Basin
Moroccan Meseta
Tan Tan Delta
Constantine Platform
Kasserine Platform
Jellian Trough
Sellaoua Basin
Crimea
Black Sea
Greater Caucasus
Moesia
Do
Pi
HgR
CzR
Ta
Bih
CeZ
Ap
AuA
SCpP
DP
PbK
SMM
Rh
Zo
WP
EP
Lm
Bu
Va
GoM
SIB
Ca
K
ACP
Ao
BoT
SP
UMB
KaP
P
PO
BuT
A
G
I
Tr
Kbu
Me
Pin
EMB
BD
MuB
PphB
Cyp
Era
Lebanon
Mardin
Rutbah High
Sinai
Kufra
Arabian Platform
Za
Pic
Hw
Bab Basin
Djebel Akhdar
Dhofar High
Haushi
10°
0°
-10°
20°
30°
40°
50°

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidite) S : silicoclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

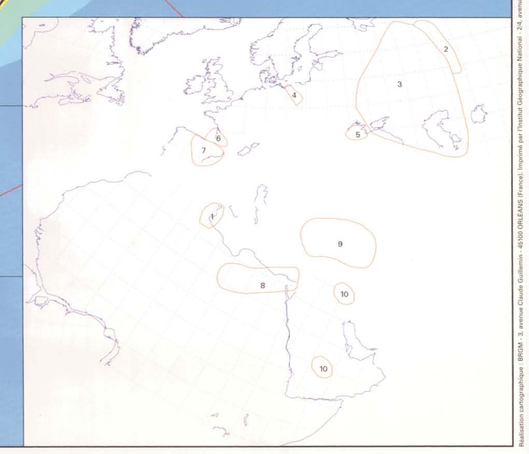
TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime

A Apulia
ACP Appennine Carbonate Platform
AM American Massif
Ao Alboran
Ap Apuseni
AuA Austroalpine
BaBa Bab Basin
BD Bey Daglari
Bih Bihar Massif
BM Bohemian Massif
BoB Bay of Biscay
BoT Bosnian Trough
Bs Black Sea
Bu Bukk
BuT Budva Trough
Ca Calabria
Cat Catalogna
CG Central Graben
Cr Crimea
CSb Corsica-Sardinia Block
CsP Constantine Platform
Cyp Cyprus
CzR Czorsztyn Ridge
DhoH Dhofar
DjA Djebel Akhdar
Do Dobrogea
DP Danubian Platform
EB Essaouira Basin
Ebr Ebro Massif
EEP Russian Platform / East European Platform
EMB Eastern Mediterranean Basin
EP Eastern Pontides
Era Erathostene Seamount
Fr Friuli
G Gavrovo
GeZ Getic Zone
GoM Golfija Massif
GrH Grampian High
Hau Haushi
HgR Haghimas Rarau Platform
Hw Hawasina
I Ionian Trough
IM Iberian Massif
IR Iberian Range
K Kabylia
KaP Karst Platform
Kass Kasserine Platform
Kbu Karaburun
Kf Kufra
LB Lusitanian Basin
LBM London Brabant Massif
Leb Lebanon
Lm Lesam
LMB Lugh Mandera Basin
M Moesia
Ma Mardin
Me Menderes
MFB Moray Firth Basin
Mk Meriazdek
MM Moroccan Meseta
MuB Murzuk Basin
Muzb Maestrazgo Basin
NPF North Pyrenean Fault
NsB North Sea Basin
P Pamassos
PB Paris Basin
PbK Prebalkan
Pec Pechora
Pf Pieniny Klippes
Pic Pichakun
Pin Pinarbasi
PO Pindos Olonos
PoG Polish Graben
PrhR Ring Kobing-Fyn High
RFH Ring Kobing-Fyn High
Rh Rhodope
RtH Rutbah High
SCpP South Carpathian Platform
Sel Sellaoua Basin
Sin Sinai
SlT Slovenian Basin
SMM Serbo-Macedonian Massif
SP Serbo-Pelagonian
SPb South Provence Basin
SPI Sole Pit Inversion
Ta Tatric
TeT Tellian Trough
Tr Tripolitza
TTD Tan Tan Delta
UMB Umbria-Marches Basin
UO Ural Orogen
Va Vardar
Vil Villany Mountains
VoB Vocontian Basin
WP Western Pontides
Za Zagros
Zo Zonguldak



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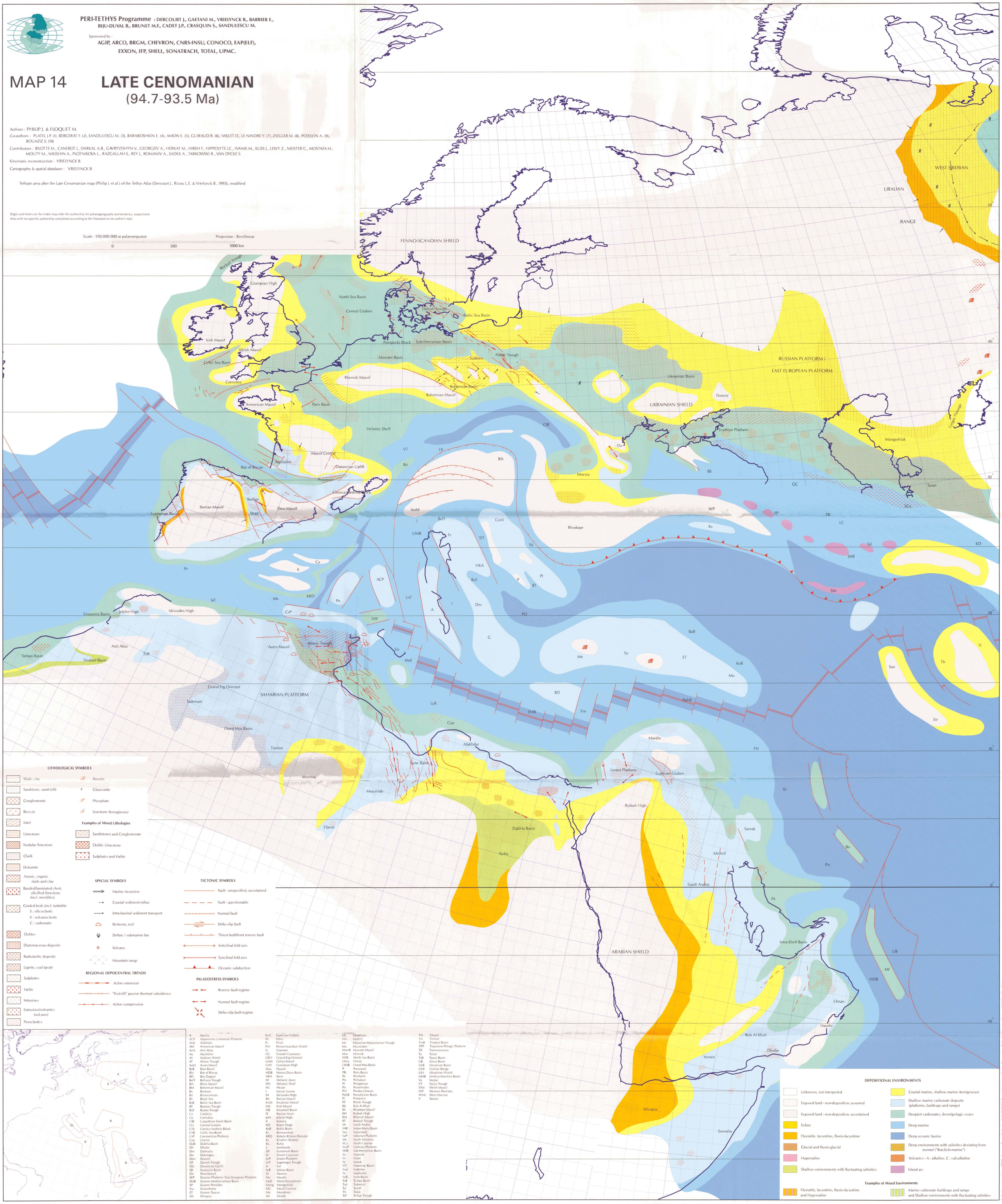
MAP 14 LATE CENOMANIAN
(94.7-93.5 Ma)

Authors : PHILIP J. & FLOQUET M.
Co-authors : PLATEL J.P. (1), BERGERAT F. (2), SANDULESCU M. (3), BARABOSHKIN E. (4), AMON E. (5), GUIRAUD R. (6), VASLET D., LE NINDRE Y. (7), ZIEGLER M. (8), POISSON A. (9), BOUAZIZ S. (10)
Contributors : BILOTTE M., CANEROT J., DARKAL A.B., GAVRYLYSHYN V., GEORGIEV A., HERKAT M., HIRSH F., HIPPOLYTE J.C., IVANIK M., KUSS J., LEWY Z., MEISTER C., MOSTAFA M., MOUTY M., NIKISHIN A., PLOTNIKOVA L., RAZGALLAH S., REY J., ROMANIV A., SADEK A., TARKOWSKI R., VAN DYCKE S.
Kinematic reconstruction : VRIELYNCK B.
Cartography & spatial database : VRIELYNCK B.

Tethyan area after the Late Cenomanian map (Philip J. et al.) of the Tethys Atlas (Dercourt J., Ricou L.E. & Vrielynck B., 1993), modified

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator
Projection : Rectilinear
0 500 1000 km



LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidite) S : silicoclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime

A Apulia	EuG Euphrate Graben	MI Mouri-Ide	Tib Tibesti
ACP Appennine Carbonate Platform	FA Fahrs	Mis Mishrif	Tin Tinrhet
Alak Alakhdar	Fr Friuli	Ms Massylian-Mauretanian Trough	TinB Tindouf Basin
AM Armorican Massif	FSS Fenno-Scandian Shield	Mu Muzurdan	TPP Trapanese Pelagic Platform
AnA Anti Atlas	G Gavrovo	MunB Munster Massif	TR Transcaucasus
Aq Aquitaine	GC Greater Caucasus	Mur Murzuk	Tu Turan
AS Arabian Shield	GEO Grand Erg Oriental	NSB North Sea Basin	TzB Taouz Basin
AT Atlasic Trough	GoM Golija Massif	Oma Oman	UB Umar Basin
AuM Aures Massif	GrH Grampian High	OMB Oued Mya Basin	UkB Ukrainian Basin
BaB Baer Bassit	Hau Haushi	P Parnassos	UkR Uralian Range
Bbi Bay of Biscay	HDB Hamra Duru Basin	PB Paris Basin	UkS Ukrainian Shield
BD Bey Daglari	HKA Karst	Pe Penibetic	UMB Umbria Marches Basin
BelT Belluno Trough	HI Helvetic Zone	Pic Pichakun	Va Vardar
Bih Bihor Massif	HIS Helvetic Shelf	Pl Pelagonian	VT Valais Trough
BM Bohemian Massif	Hz Hezan	Pn Panormides	WM Welsh Massif
Bn Bisitoun	I Ionian furrow	PO Pindos-Olonos	WP Western Pontides
Bri Brianconnais	IH Idrissides High	PphB Pamphylian Basin	WSib West Siberian
BS Black Sea	IM Iberian Massif	Pr Provence	Y Yemen
BsB Baltic Sea Basin	InsM Insubrian Massif	PT Polish Trough	
BT Beotian Trough	IrM Irish Massif	Rb Rub Al Khali	
BuT Budva Trough	ISB Intrashelf Basin	Rh Rhodope Massif	
Ca Calabria	IT Iberian Strait	RH Rutbah High	
Co Cornubia	JeH Jebilet High	RM Rhenish Massif	
CfB Carpathian flysch Basin	K Kabylia	RT Rockall Trough	
CG Central Graben	KD Kopet Dagh	SA Saudi Arabia	
CSb Corsica Sardinia Block	KoB Kotali Basin	SAB Sevan-Akera Basin	
CSB Celtic Sea Basin	Kr Kermanshah	San Sanandadj	
CsP Constantine Platform	KRD Kabylo Rifaine Dorsale	SaP Saharian Platform	
Cyp Cyprus	Ks Kirsehir (Turkey)	SAr South Armenia	
DaB Dakhla Basin	Ku Kufra	SCa South Caspian	
Dh Dhofar	L Lombardy	ScyP Scythian Platform	
Dm Dalmatia	LB Lusitanian Basin	SHB Sub-Hercynian Basin	
Do Dobrogea	LC Lesser Caucasus	Sic Sicanids	
Don Donetz	LeP Levant Platform	Sir Sirjan	
DT Danish Trough	LnT Lagonegro Trough	Sk Sarvak	
DU Durancian Uplift	Lt Lut	SlT Slovenian Basin	
EB Essaouira Basin	LyB Lybian Basin	Sud Sudestes	
Ebr Ebro Massif	M Moesia	Sy Seydisehir	
EEP Russian Platform / East European Platform	Ma Mardin	SyB Syrte Basin	
EMB Eastern Mediterranean Basin	MaE Malta Escarpment	TaB Tarfaya Basin	
EP Eastern Pontides	Mang Mangyshlak	Tad Tademait	
Era Eratosthene	MC Massif Central	Tal Talesh	
ET Eastern Taurus	Me Menderes	Tb Tabas	
Eth Ethiopia	Mf Misfah	TeT Tellian Trough	

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
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- Shallow marine carbonate deposits (platforms, build-ups and ramps)
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- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

Réalisation cartographique : BRGM - 3, avenue Claude Guillemin - 45100 ORLEANS (France). Imprimé par l'Institut Géographique National - 2/4, avenue Pasteur - 94165 Saint-Mandé Cedex

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 15 EARLY CAMPANIAN
(83-80.5 Ma)

Authors : PHILIP J. & FLOQUET M.

Co-authors : PLATEL J.P. (1), BERGERAT F. (2), SANDULESCU M. (3), BARABOSHKIN E. (4), AMON E. (5), POISSON A. (6), GUIRAUD R. (7), VASLET D., LE NINDRE Y. (8), ZIEGLER M. (9), BOUAZIZ S. (10), GUEZOU J.C. (11), LEPVRIER C. (12),

Contributors : BILOTTE M., CANEROT J., DARKAL A.N., GAVRYLYSHYN V., GEORGIEV A., HERKAT M., HIRSCH F., IVANIK M., KUSS J., LAMARCHE J., LEWY Z., MOSTAFA M., NIKISHIN A., PLOTNIKOVA L., REY J., RIMMELE G., ROMANIV A., SADEK A., TARKOWSKI R., VAN DYCKE S.

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

FENNO-SCANDIAN SHIELD
Pai-Khoy-Novozemelsky Range
Pechorian
Polar Uralian Strait
NORTH URALIAN RANGE
MIDDLE URALIAN RANGE
Middle Uralian Strait
Rockall Trough
Grampian High
North Sea Basin
Danish Trough
Baltic Sea Basin
Irish Massif
Welsh Massif
Celtic Sea Basin
Cornubia
Pompeckj Block
Polish Trough
Lower Saxony
Rhenish Massif
Bohemian Massif
Silesia
Ukrainian Basin
RUSSIAN PLATFORM / EAST EUROPEAN PLATFORM
Paris Basin
Armorican Massif
Helvetic Shelf
UKRAINIAN SHIELD
Pre-Caspian Basin
Turgay Passage
Massif Central
Aquitaine
Provence
Scythian Platform
Mangyshlak
Moesia
EBS
WBS
Turan
Iberian Massif
Ebro Massif
Idrissides High
Jebilet High
Essaouira Basin
Anti Atlas
Atlasic Trough
Tarfaya Basin
SAHARIAN PLATFORM
Tripolitaine
Lybian Basin
Tademait
Tinrhet
Alakhdar
Cyrenaic Platform
Syrte Basin
Mardin
Aleppo Plateau
Euphrate Graben
Palmyrides
Rutbah
Red Sea Graben
ARABIAN SHIELD
Nile Basin
Fiqa Basin
Oman
Masirah
Dhofar
Owen Basin
Yemen
Adamawa
Ethiopia
Somalia

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidite S : silicoclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

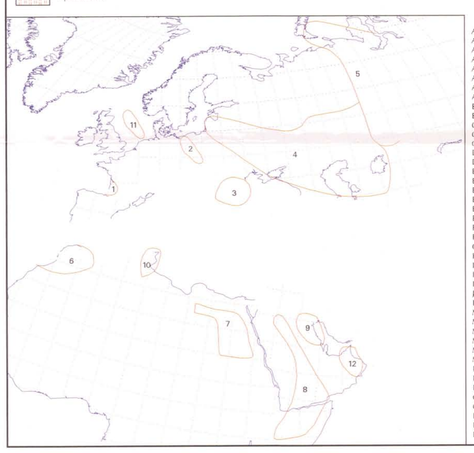
- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



Ada	Adamawa
Alak	Alakhdar
Alp	Aleppo Plateau
AM	Armorican Massif
AnA	Anti Atlas
Aq	Aquitaine
AS	Arabian Shield
AT	Atlasic Trough
BM	Bohemian Massif
BsB	Baltic Sea Basin
Co	Cornubia
CSB	Celtic Sea Basin
CyrP	Cyrenaic Platform
Dh	Dhofar
DT	Danish Trough
EB	Essaouira Basin
Ebr	Ebro Massif
EBS	Eastern Black Sea
EEP	Russian Platform / East European Platform
Eth	Ethiopia
EuG	Euphrate Graben
FiB	Fiqa Basin
FSS	Fenno-Scandian Shield
GrH	Grampian High
HelS	Helvetic Shelf
IH	Idrissides High
IM	Iberian Massif
IrM	Irish Massif
JeH	Jebilet High
LSB	Lower Saxony Basin
M	Moesia
Ma	Mardin
Mang	Mangyshlak
Mas	Masirah
MC	Massif Central
MUrS	Middle Uralian Strait
NiB	Nile Basin
NMUR	North Middle Uralian Range
NSB	North Sea Basin
Oma	Oman
OwB	Owen Basin
Pal	Palmyrides
PB	Paris Basin
PCB	Pre-Caspian Basin
Pec	Pechorian
PomB	Pompeckj Block
Pr	Provence
PT	Polish Trough
PUS	Polar Uralian Strait
RM	Rhenish Massif
RSG	Red Sea Graben
Rut	Rutbah
SaP	Saharian Platform
ScyP	Scythian Platform
Sil	Silesia
Sm	Somalia
SyB	Syrte Basin
TaB	Tarfaya Basin
Tad	Tademait
Tin	Tinrhet
Tri	Tripolitaine
Tu	Turan
UkB	Ukrainian Basin
UkS	Ukrainian Shield
WBS	Western Black Sea
WM	Welsh Massif
Y	Yemen

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

Réalisation cartographique : BRGM - 3, avenue Claude Guillemin - 45060 ORLEANS France. Imprimé par l'Institut Géographique National - 254, avenue Pateur - 94160 Saint-Mandé Cedex

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Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 17 EARLY/MIDDLE YPRESIAN
(55-51 Ma)

Authors : MEULENKAMP J.E., SISSINGH W., BENIAMOVSKII V.N.

Co-authors : ABBATE E. (8), ABDEL-GAWAD S. (10), ANDREYEVA-GRIGOROVICH A.S. (5), BEN-ISMAIL K. (12), BOUAZIZ S. (11, 12, c), CAHUZAC B. (2), CALVO J.P. (1), DAAMS R. (1), GEORGIEV G. (4), HIRSCH F. (9), LONDEIX L. (2), PLATEL J.P. (7), ROGER J. (7), SADEK A. (10), SAGRI M. (8), SCHERBA I.G. (6), STUDENCKA B. (3), ZACHIBIB-TURKI D. (12)

Contributors : ABBES C., BERGER J.P., BOHME M., CAVELIER C., LUGT I.R. de, KAROUI N., KHOKHLOVA I., KOPP M.L., LAGA P., NAGYMAROSY A., PRONIN V.G., RADIONOVA E.P., SOUSSI M., VASLET D., WONG T., YAICH C., ZAIRI A., ZHELEZKO V.I., ZOSIMOVICH V., ZOUARI H.

Co-authors for additional tectonic data : BARRIER E., BRUNET M.F., CADET J.P., JABALOY A.

Contributors for additional tectonic data : ANGELIER J. (a), DARKAL A.N. (f), GUEZOU J.C. (g), GUILLOCHEAU F. (h), JABALOY A. (j), LEPVRIER C. (i), MOSTAFA M. (l), POISSON A. (g), RIMMELE G., ROCHER M. (o), SAINTOT A. (a), VANDYCKE S. (m)

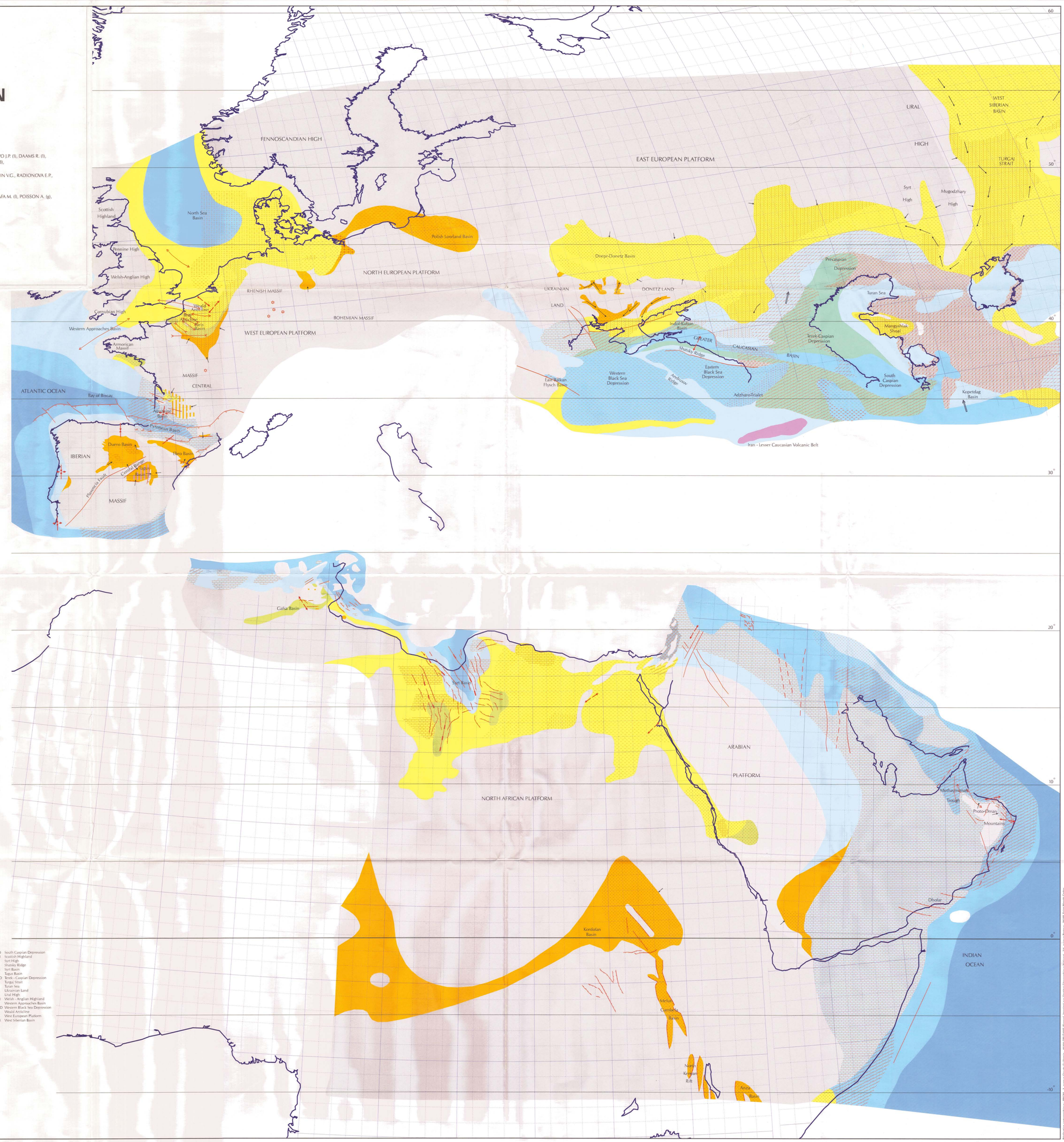
Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km



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- Hypersaline
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- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : siliciclastic V : volcaniclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
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- Bioherm, reef
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- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
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- Normal fault
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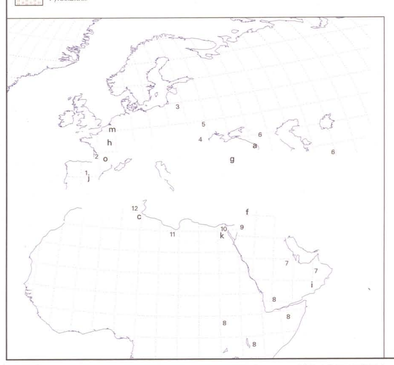
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



AC	Atlantic Ocean
AdTr	Adzharo - Trialet
AM	Armorican Massif
AnB	Anza Basin
AnR	Andrusov Ridge
AP	Arabian Platform
AqB	Aquitaine Basin
BiO	Bay of Biscay
BM	Bohemian Massif
BrA	Bray Anticline
CM	Cornubian High
CR	Central Range
DDD	Dnepr - Donetz Basin
Dho	Dhofar
DuB	Duero Basin
EbB	Ebro Basin
EBFB	East Balkan Flysch Basin
EBSD	Eastern Black Sea Depression
EEP	East European Platform
FSH	Fennoscandian High
GaRB	Galsa Basin
GCB	Greater Caucasian Basin
ICVB	Iran - Lesser Caucasian Volcanic Belt
IKB	Indol - Kuban Basin
IM	Iberian Massif
IO	Indian Ocean
KB	Kordofan Basin
KoBa	Kopetdag Basin
MC	Massif Central
MGB	Melut - Cumbeta Basin
MgS	Mangyshlak Shoal
MmT	Muthaymimah Trough
MugH	Mugodzhary High
NAP	North African Platform
NEP	North European Platform
NKR	North Kenyan Rift
NsB	North Sea Basin
PaF	Placensia Fault
PB	Paris Basin
PCD	Precaspian Depression
PH	Pennine High
POM	Proto-Oman Mountains
PyB	Pyrenean Basin
RM	Renish Massif
SCaD	South Caspian Depression
ScoH	Scottish Highland
SyH	Syrt High
SyR	Shansky Ridge
SyrB	Syrt Basin
TugB	Tugus Basin
TerC,D	Terek - Caspian Depression
TugS	Turgai Strait
TuS	Turan Sea
UkL	Ukrainian Land
UrH	Ural High
WAH	Welsh - Anglian Highland
WAp	Western Approaches Basin
WBSD	Western Black Sea Depression
WeA	Weald Anticline
WEP	West European Platform
WSiB	West Siberian Basin

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Sponsored by :
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MAP 18 — LATE LUTETIAN
(44-41 Ma)

Authors : MEULENKAMP J.E., SISSINGH W., BENIAMOVSKII V.N., BARRIER E.

Co-authors : ABBATE E. (8), ABDEL-GAWAD S. (10), ANDREYEVA-GRIGOROVICH A.S. (5), BEN-ISMAIL K. (11), BOUAZIZ S. (11, d), CAHUZAC B. (2), CALVO J.P. (1), DAAMS R. (1), GEORGIEV G. (4), HIRSCH F. (9), LONDEIX L. (2), MONZER M. (12), PIWOCKI M. (3), PLATEL J.P. (7), ROGER J. (7), SADEK A. (10), SAGRI M. (6), SCHERBA I.G. (6), STUDENCKA B. (3), ZAGHBIB-TURKI D. (11), SANDULESCU M.

Contributors : ABBES C., BERGER J.P., BOHME M., LUGT I.R. de, KAMOUN Y, KHOKHLOVA I., KOPP M.L., LAGA P., NAGYMAROSY A., PRONIN V.G., RADIONOVA E.P., SOUSSI M., WONG T., YAICH C., ZHELEZKO V.I., ZOSIMOVICH V., ZOUARI H.

Co-authors for additional tectonic data : BERGERAT F., BRUNET M.F., CADET J.P., AIT-BRAHIM L. (a), BRACENE R. (e), LEPVRIER C. (g)

Contributors for additional tectonic data : ANGELIER J. (b), BONNEAU M. (c), GUILLOCHEAU F. (i), JABALOY A. (j), MOSTAFA M. (h), RIMMELE G., ROBIN C. (i), ROCHER M. (k), SAINTOT A. (b)

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

Tethyan area after the Lutetian map (Butterlin J. et al.) of the Tethys Atlas (Dercourt J., Ricou L.E. & Vrielynck B., 1993), modified

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : silicoclastic V : volcaniclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

TECTONIC SYMBOLS

- fault : unspecified, ascertained
- Fault : questionable
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- Strike-slip fault
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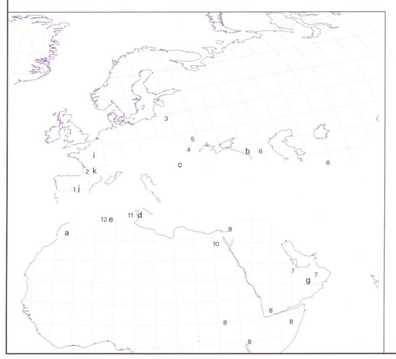
- Synclinal fold axis
- Oceanic subduction

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



A Apulia
AAx Artois Axis
AbT Abut Trough
AC Atlantic Ocean
AdTrD Adzharo - Trialet Depression
AlB Alpine flysch Basin
AM Armorican Massif
AnB Anza Basin
AnR Andrusov Ridge
AP Arabian Platform
AqB Aquitaine Basin
BB Bay of Biscay
BD Bey Daglari
BM Bohemian Massif
BR Brevoe Graben
BrA Bray Anticline
CfB Carpathian flysch Basin
ChB Channel Basin
CheB Chelif Basin
CM Cornubian Massif
CR Central Range
CSB Celtic Sea Basin
DDD Dnepr - Donetz Depression
DL Donetz Land
DuB Duero Basin
EbB Ebro Basin
EBFB East Balkan Flysch Basin
EBSD Eastern Black Sea Depression
EEP East European Platform
EP Eastern Pontides
FKB Fore-Kopetdag Basin
FtH Fennoscandian High
G Gavrovo Tripolitza
GaB Gaba Basin
GCB Greater Caucasian Basin
HD Hessen Depression
HoB Hodna Basin
I Ionian trough
IM Iberian Massif
IO Indian Ocean
IrM Irish Massif
KB Kendolan Basin
KD Kopetdag
LisB Lisbon Basin
LG Limagne Graben
Lt Lut
MC Massif Central
MdB Mondego Basin
Me Menderes
MGB Melut/Gumbeila Basin
MgS Mangyshlak Shoal
MmT Mulhaymimah Trough
MoB Moline Basin
Mu Muzurdian
MugH Mugodzhary High
NAP North African Platform
NEP North European Platform
NKR North Kerman Rift
NoB North Sea Basin
NUs North Ustyurt
PaF Placentia Fault
PCBy Precaspian Bay
PCD Precaspian Depression
PCIA Pontides - Lesser Caucasian Volcanic Belt
PH Pennine High
PLB Polish Lowland Basin
PO Pindos Othrys
POM Proto-Oman Mountains
PS Prinyat Strait
PuB Puy Basin
RhG Rhine Graben
RL Russian Land
RM Renish Massif
RoG Rhone Graben
San Sanandadj
SCaD South Caspian Depression
ScoH Scottish Highland
SG Solokija Graben
Sil Silesia
Sir Sirjan
SocP Socotra Plateau
SS Scythian Sea
SyB Syrt Basin
SyR Shatsky Ridge
TagB Tagus Basin
TaD Talysh Depression
Tb Tabas
TerCD Terek - Caspian Depression
TjS Turgai Strait
TuS Turan Sea
UkA Ukrainian Archepelago
UMB Umbria-Marches Basin
UrH Ural High
VoL Volhynian Lowland
WAH Welsh-Anglian Highland
WAp Western Approaches Basin
WBSD Western Black Sea Depression
WeA Weald Anticline
WP Western Pontides
WSiB West Siberian Basin

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

Sponsored by :
AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 19 — LATE RUPELIAN
(32-29 Ma)

Authors : MEULENKAMP J.E., SISSINGH W., POPOV S.V, KOVAC M., BERGERAT F.

Co-authors : ABBATE E. (9), ABDEL-GAWAD S. (11), ANDREYEVA-GRIGOROVICH A.S. (5), BOUAZIZ S. (12, 13, d), CAHUZAC B. (2), CALVO J.P. (1), DAAMS R. (1), GEORGIEV G. (4), HIRSCH F. (10), LONDEIX L. (2), MONZER M. (14), PLATEL J.P. (8), ROGER J. (8), SADEK A. (11), SAGRI M. (9), SCHERBA I.G. (7), STOLYAROV A.S. (6), STUDENCKA B. (3), VAICH C. (13), SANDULESCU M.

Contributors : BEN-ISMAIL K., BERGER J.P., BOHME M., CAVELIER C., LUGT I.R. de, IOSIFOVA I.I., KRHOVSKY J., LAGA P., NAGYMAROSY A., OSZCZYPKO N., PINKHASOV B.I., PRONIN V.G., ROGL F., RUSU A., VASLET D., WONG T., ZHELEZKO V.I., ZOSIMOVICH V.

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Contributors for additional tectonic data : BARRIER E., BRUNET M.F., CADET J.P., AIT-BRAHIM L. (a), ANGELIER J. (b), BONNEAU M. (c), BRACENE R. (e), DARKAL A.N. (h), GUILLOCHEAU F. (k), KOPP M. (l), LEPVRIER C. (i), MOSTAFA M. (m), RIMMELE G., ROBIN C. (k), ROCHER M. (n), SAINTOT A. (b), SEBRIER (b), VANDYCKE S. (o)

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

Tethyan area after the Late Rupelian map (Lorenz C. et al.) of the Tethys Atlas (Dercourt J., Ricou L.E. & Vrielynck B., 1993), modified

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Area with no specific authorship completed according to the litterature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

DEPOSITIONAL ENVIRONMENTS

- Unknown, not interpreted
- Exposed land - non-deposition: assumed
- Exposed land - non-deposition: ascertained
- Eolian
- Fluviatile, lacustrine, fluvio-lacustrine
- Glacial and fluvio-glacial
- Hypersaline
- Shallow environments with fluctuating salinities
- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : siliciclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

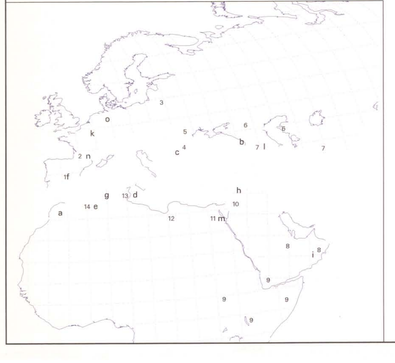
- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



A	Apulia	IrM	Irish Massif	RL	Russian Land		
AAx	Artsis Axis	K	Kalieyia	RoG	Rhone Graben		
AbT	Abat Trough	KiF	Kamchiya Foredeep	Saa	Saar		
Ac	Alpine chain	KoL	Kopetdag Land	ShR	Sheba Ridge		
AC	Atlantic Ocean	KuD	Kura Depression	SGD	South Caspian Depression		
AM	Armorican Massif	KyE	Kyzylkum Embayment	ScoH	Scottish Highland		
AnB	Anza Basin	LCL	Lesser Caucasian Land	SFB	Szolnok Flysch Basin		
Ao	Alboran	LeE	Leipzig Embayment	SmP	Somalia Plateau		
AP	Arabian Platform	LG	Limagne Graben	SvB	Sivas Basin		
AqB	Aquitaine Basin	LP	Ligerian Passage	SyB	Syrt Basin		
Bbi	Bay of Biscay	LRE	Lower Rhine Embayment	SyR	Shalsky Ridge		
BD	Bey Daglari	Lt	Lut	TagB	Tagus Basin		
BM	Bohemian Massif	LuB	Luxembourg Basin	Tal	Talysh		
BR	Brevoe Graben	Main	Main	TemD	Tenek - Mangyshlak Depression		
BuPB	Buda Paleogene Basin	MC	Massif Central	TkI	Tuarkyr Island		
Ca	Calabria	MGB	Melut - Gambela Basin	TrB	Thrace Basin		
CCPB	Central Carpathian Paleogene Basin	MnF	Mesohellenic Furrow	TsB	Transylvanian Basin		
ChaB	Chelif Basin	MntT	Muthaymiinah Trough	TuS	Turan Sea		
CM	Cornubian Massif	MoP	Moesian Platform	UkL	Ukrainian Land		
CSB	Celtic Sea Basin	Mol	Mosel	UrH	Ural High		
Cy	Cyprus	MugH	Mugodzhary High	WAH	Welsh-Anglian High		
DDD	Dnepr - Donetz Depression	Naa	Naab	WAlB	West Alpine Molasse Basin		
Dho	Dhofar	NAMB	North Alpine Molasse Basin	WBSD	Western Black Sea Depression		
DL	Donetz Land	NAP	North African Platform	WeA	Weald Anticline		
DuB	Duero Basin	NEP	North European Platform	WSiLB	West Siberian Lowland Basin		
EbB	Ebro Basin	NKR	North Kenyan Rift				
EBSD	Eastern Black Sea Depression	NP	Nevyansk Passage				
EEP	East European Platform	NPAE	North Pre-Aral Embayment				
EgG	Eger Graben	NsB	North Sea Basin				
EL	Elburz Land	NUB	North Ustjurt Embayment				
ErG	Erevan Gulf	OCFB	Outer Carpathian Flysch Basin				
FA	Fahrs	PadF	Padeh Furrow				
FKB	Foss-Kopetdag Basin	PaF	Placensia Fault				
FP	Fresville Passage	PB	Paris Basin				
FrPl	Franconian Plateau	PCE	Precaspian Embayment				
FSH	Fennoscandian High	Pel	Pelorian				
GAd	Gulf of Aden	PH	Pennine High				
GCB	Greater Caucasian Basin	PL	Pontides Land				
Har	Harz	PLB	Polish Lowland Basin				
HD	Hessen Depression	POM	Proto-Oman Mountains				
HdB	Hodna Basin	Py	Pyrenees				
IKD	Indol - Kuban Depression	ReP	Rennes Passage				
IM	Iberian Massif	Rh	Rhodope Massif				
IO	Indian Ocean	RhG	Rhine Graben				

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

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AGIP, ARCO, BRGM, CHEVRON, CNRS-INSU, CONOCO, EAP(ELF), EXXON, IFP, SHELL, SONATRACH, TOTAL, UPMC.

MAP 20 EARLY BURDIGALIAN
(20.5-19 Ma)

Authors : MEULENKAMP J.E., SISSINGH W., POPOV S.V., KOVAC M.

Co-authors : ABBATE E. (10), ABDEL-GAWAD S. (13), ANDREYEVA-GRIGOROVICH A.S. (6), BOUAZIZ S. (14), CAHUZAC B. (2), CALVO J.P. (1), DAAMS R. (1), GEORGIEV G. (5), HIRSCH F. (11), LONDEIX L. (2), MARUNTEANU M. (4), MONZER M. (12), PLATEL J.P. (9), ROGER J. (9), SADEK A. (13), SAGRI M. (10), SCHERBA I.G. (8), STOYANOV A.S. (7), STUDENCKA B. (3), YAICH C. (14), SANDULESCU M.

Contributors : BERGER J.P., BOHME M., CLAUZON G., IOSIFOVA J.I., JEDDI S., KRHOVSKY J., LAGA P., NAGYMAROSY A., OSZCZYPKO N., PINKHASOV B.I., POPA M., POPESCU G., ROGL F., WONG T., ZOSIMOVICH V.

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

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Area with no specific authorship completed according to the litterature or on author's data

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- Hypersaline
- Shallow environments with fluctuating salinities
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- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

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- Limestone
- Nodular limestone
- Chalk
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- Graded beds (incl. turbidites) S : siliciclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
- Extrusives/volcanics (volcano)
- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

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- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
- Intra-basinal sediment transport
- Bioherm, reef
- Deltaic / submarine fan
- Volcano
- Mountain range

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- Synclinal fold axis
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- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



Ahr Ahr
All Allier
AM Armorican Massif
AnB Anza Basin
Ao Alboran
AO Atlantic Ocean
API Arabian Platform
ApM Apuseni Mountains
AqB Aquitaine Basin
Bic Bay of Biscay
BD Bey Dagları
BM Bohemian Massif
BuB Burgas Basin
CAl Central Alps
CDB Calatayud-Daroca Basin
Che Cheb
CheB Chelif Basin
CM Cornubian Massif
CpF Carpathian Foredeep
CR Central Range
CSB Celtic Sea Basin
DbB Dzhan Basin
DDD Dnepr-Donetz Depression
Dho Dhofar
DL Donetz Land
DoM Dobrogea Massif
DSR Dead Sea Transform
DuB Duero Basin
EAl Eastern Alps
EbB Ebro Basin
EbH Elburz Highland
EBSD Eastern Black Sea Depression
ECp Eastern Carpathians
EEP East European Platform
EgG Eger Graben
Elb Elbe
ESB East Slovakian Basin
FCB Fore-Caucasian Basin
FdB Fulda Basin
FrPl Franconian Plateau
FSH Fennoscandian High
GAd Gulf of Aden
GCB Greater Caucasian Basin
GGa Gulf of Gabes
GHa Gulf of Hammamet
GLi Gulf of Lions
GS Gulf of Suez
Har Harz
HD Hessen Depression
HoB Hodna Basin
IBD Indol Kuban Depression
IM Iberian Massif
IO Indian Ocean
IrM Irish Massif
K Kabylia
KaF Kamchiya Foredeep
KFKG Karakum Fore-Kopendag Gulf
Khu Khur
KoL Kopendag Land
Ks Kınalı
KurB Kura Bay
LlB Lisbon Basin
LCL Lesser Caucasian Land
LG Limagne Graben
LoD Lom Depression
Loi Loire
LP Ligerian Passage
LRE Lower Rhine Embayment
Lt Lut
MaiB Mainz Basin
Mam Main
MC Massif Central
Me Menderes
MGB Melut-Gambela Basin
MoP Moesian Platform
Mol Mosel
MtB Mesta Basin
MuSB Muglad-Sudd Basin
Nau Naab
NAMB North Alpine Molasse Basin
NBA North Bulgarian High
NEP North European Platform
NGF Northern Guadalquivir Fault
NKR North Kemian Rift
NsB North Sea Basin
OmaM Oman Mountains
OMB Oued Mya Basin
PaF Placentia Fault
PCL Precaspian Land
PFB Petersvasts Fiiakovo Basin
PH Pennine High
PLB Polish Lowland Basin
Pon Pontides
PrD Pripyat Depression
PUH Pre-Ural Highland
Py Pyrenees
RhG Rhine Graben
RL Russian Land
RM Rhenish Massif
RnB Rennes Basin
RnG Roanne Graben
Saa Saar
San Sanandadj
SCaD South Caspian Depression
ScoH Scottish Highland
SI Socotra Island
Sie Sieg
Sir Sirsan
SMB South Mangyshlak Basin
SmP Somalia Plateau
SoB Sofia Basin
StrB Strimon Basin
SyB Syrt Basin
SyR Shatsky Ridge
TgB Tagus Basin
Tal Talysh
TeA Tellian Atlas
TeB Teruel Basin
TerMD Terek Mangyshlak Depression
ThB Thrace Basin
TkI Tuarkyr Island
TrB Transylvanian Basin
TugLo Turgai Lowland
UkL Ukrainian Land
UrH Ural High
UsL Ustjurt Land
VaR Valencia Trough
VaTB Valencia Trough Basin
VoL Volhynian Land
VPB Valles Penedes Basin
VRB Vah River Basin
WAH Welsh-Anglian Highland
Wal Western Alps
WBSD Western Black Sea Depression
WCp Western Carpathians
WeA Weald Anticline

PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

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MAP 21 — EARLY LANGHIAN
(16.4-15.5 Ma)

Authors : MEULENKAMP J.E., SISSINGH W., GONTSHAROVA I.A., KOVAC M., CADET J.P.
Co-authors : ABBATE E. (10), ABDEL-GAWAD S. (12), ANDREYEVA-GRIGOROVICH A.S. (6), BOUAZIZ S. (13, b), CAHUZAC B. (2), CALVO J.P. (1), DAAMS R. (1), GEORGIEV G. (5), HIRSCH F. (11), KHONDKARIAN S.O. (8), LONDEIX L. (2), MARUNTEANU M. (4), PLATEL J.P. (9), ROGER J. (9), SADEK A. (12), SAGRI M. (10), SCHERBA I.G. (7), STUDENCKA B. (3), YAICH C. (13)
Contributors : BERGER J.P., BOHME M., CLAUZON G., KRHOVSKY J., LAGA P., MONZER M., NAGYMAROSY A., OSZCZYPKO N., PAPAIANOPOL I., PINCHUK T.N., ROGL F., SEMENENKO V., WONG T., YAICH C.
Co-authors for additional tectonic data : BARRIER E., BERGERAT F., BRUNET M.F., AIT-BRAHIM L. (a), ERSHOV A. (e), JABALOY A. (g), KOPP M. (e), LEPVRIER C. (i)
Contributors for additional tectonic data : COUTELLE A. (c), DARKAL A.N. (d), FAURE-MURET A.M. (a), HIPPOLYTE J.C. (f), LAMARCHE J. (h), MOREL J.L. (a), MOSTAFA M. (m), NIKISHIN A. (e), ORSZAG-SPERBER F. (a), RIMMELE G., ROCHER M. (h)
Kinematic reconstruction : VRIELYNCK B.
Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the literature or on author's data

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- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Dead sea/Lagoons")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
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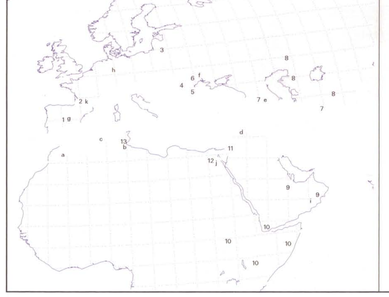

Abr Abr
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AO Atlantic Ocean
APl Arabian Platform
AsM Apuseni Mountains
AqB Aquitaine Basin
BiB Bay of Biscay
BF Black Forest
BM Bohemian Massif
BPF Bodensee Plander Fun
CAl Central Alps
CAr Greater Caucasian Archipelago
CDB Calabrysol-Dzirecz Basin
Che Cher
CM Cornubian Massif
CpF Carpathian Foredeep
CSB Celtic Sea Basin
DaB Danube Basin
DbB Daban Basin
DDD Dnepr-Donetz Depression
Dho Dhofar
DL Donetz Land
DoM Dolorogea Massif
Don Donetz
DSR Dead Sea Rift
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GAd Gulf of Aden
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GHBP Great Hungarian Plain Basin
GLi Gulf of Lions
GS Gulf of Suez
Har Harz
Hau Haushi
HD Hessen Depression
HnB Hanau Basin
Huq Huqf High
IbM Iberian Massif
Inn Inn
IO Indian Ocean
IrM Irish Massif
KaD Kamchiya Depression
KD Kopetdag
KkL Karakum Lowland
KyH Kyzylkum Land
LbB Lisbon Basin
LC Lesser Caucasus
LG Limagne Graben
LgB Ligerian Basin
LoD Lom Depression
Loi Loire
LRE Lower Rhine Embayment
MaiB Mainz Basin
Man Main
MC Massif Central
Mec Mecsek
MGB Meluli-Gambela Basin
MoP Moesian Platform
Mol Molel
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Nau Naab
NAF North African Platform
NAMB North Alpine Molasse Basin
NBH North Bulgarian High
NCG North Caspian Gulf
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PCLo Precaspian Lowland
PH Pennine High
PLB Polish Lowland Basin
Pyn Pyrénées
PrD Pripyat Depression
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TerCD Terek-Caspian Depression
ThB Thrace Basin
TkL Tuarkyr Land
Tou Toulon
TrB Tyrrhenian Basin
TTC Trans-Tethyan Trench Corridor
TugLo Turgai Lowland
UkL Ukrainian Land
UrH Ural High
ValB Valencole Basin
ViB Vienna Basin
VlB Valence Basin
Vo Vosges
WAH Welsh-Anglian Highland
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WeA Weald Anticline
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WSiL West Siberian Lowland

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PERI-TETHYS Programme : DERCOURT J., GAETANI M., VRIELYNCK B., BARRIER E., BIJU-DUVAL B., BRUNET M.F., CADET J.P., CRASQUIN S., SANDULESCU M.

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MAP 22 — LATE TORTONIAN
(8.4-7.2 Ma)

Authors : MEULENKAMP J.E., SISSINGH W., ILYINA L.B., KOVAC M., BARRIER E.

Co-authors : ABBATE E. (10), ABDEL-GAWAD S. (12), ANDREYEVA-GRIGOROVICH A.S. (6), BOUAZIZ S. (13, d), CAHUZAC B. (2), CALVO J.P. (1), DAAMS R. (1), FAURE-MURET A. (15, a), GEORGIEV G. (3), HIRSCH F. (11), IDDOU S. (13), KHONDKARIAN S.O. (8), LONDEIX L. (2), MARUNTEANU M. (4), MONZER M. (14), PLATEL J.P. (9), ROGER J. (9), SADEK A. (12), SAGRI M. (10), SCHERBA I.G. (7), STUDENCKA B. (3)

Contributors : BERGER J.P., BOHME M., CLAUZON G., KRHOVSKY J., LAGA P., NAGYMAROSY A., OSZCZYPKO N., PAPAIANOPOL I., PINCHUK T.N., ROGL F., SEMENENKO V., WONG T., YAICH C.

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Contributors for additional tectonic data : ANGELIER J. (b), BONNEAU M. (c), DARKAL A.N. (f), GUILLOCHEAU F. (h), HIPPOLYTE J.C. (i), KOPP M. (g), LAMARCHE J. (n), MATAR A. (f), MOREL J.L. (a), MOSTAFA M. (m), NIKISHIN A. (i), ORSZAG-SPERBER F. (a), PIQUE A. (a), RIMMELE G., ROBIN C. (h), SAINTOT A. (b), SEBRIER (g), VANDYCKE S. (n)

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

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- Coastal marine, shallow marine (terrigenous)
- Shallow marine carbonate deposits (platforms, build-ups and ramps)
- Deep(er) carbonates, (hemi)pelagic oozes
- Deep marine
- Deep oceanic basins
- Deep environments with salinities deviating from normal ("Brackish-marine")
- Volcanics - A : alkaline, C : calcalkaline
- Island arc

Examples of Mixed Environments

- Fluviatile, lacustrine, fluvio-lacustrine and Hypersaline
- Marine carbonate build-ups and ramps and Shallow environments with fluctuating salinities

LITHOLOGICAL SYMBOLS

- Shale, clay
- Sandstone, sand (silt)
- Conglomerate
- Breccia
- Marl
- Limestone
- Nodular limestone
- Chalk
- Dolomite
- Anoxic, organic shale and clay
- Banded/laminated chert, silicified limestone (incl. menilites)
- Graded beds (incl. turbidites) S : silicoclastic V : volcanoclastic C : carbonatic
- Oolites
- Diatomaceous deposits
- Radiolaritic deposits
- Lignite, coal (peat)
- Sulphates
- Halite
- Intrusives
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- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Marine incursion
- Coastal sediment influx
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- Bioherm, reef
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- Volcano
- Mountain range

REGIONAL DEPOCENTRAL TRENDS

- Active extension
- "Post-rift" passive thermal subsidence
- Active compression

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- Fault : unspecified, ascertained
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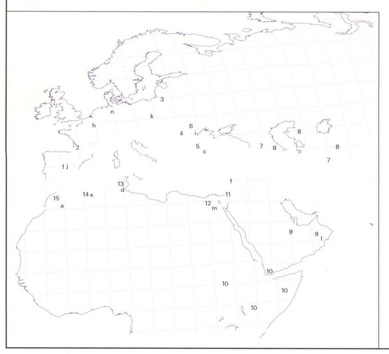
- Thrust fault/front reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Oceanic subduction

PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



Ahr Ahr
All Allier
AM Armorican Massif
Ao Alboran
AO Atlantic Ocean
AP Arabian Platform
AqM Aquseni Mountains
AqB Aquitaine Basin
Bis Bay of Biscay
BeCo Betic Corridor
BF Black Forest
BM Bohemian Massif
BR Bresse Graben
BuD Burgas Depression
CAl Central Alps
CDB Calatayud-Daroca Basin
Che Cher
CheB Cheliff Basin
CM Cornubian Massif
CR Central Range
CRH Central Russian Highland
CsB Caspian Basin
CSB Celtic Sea Basin
DaB Danube Basin
DbB Dabuor Basin
DcB Dacic Basin
Dn Dnepr
Dne Dnestr
DoM Dobrogea Massif
Don Don
DsR Dead Sea Basin
DuB Duero Basin
EAl Eastern Alps
Elb Elburz
ECp Eastern Carpathians
EEP East European Platform
Elb Elbe
Em Emis
EuB Euxinian Basin
FP Fresville Passage
FrPl Franconian Plateau
FSH Fennoscandian High
GAd Gulf of Aden
GC Greater Caucasus
GGa Gulf of Gabes
GHa Gulf of Hammamet
GHBP Great Hungarian Plain Basin
GLi Gulf of Lions
GS Gulf of Suez
HA High Atlas
Har Harz
HD Hessen Depression
HoB Hodna Basin
HrB Hurnaz Basin
IKD Indol-f Kuban Depression
IM Iberian Massif
Inn Inn
IO Indian Ocean
KpD Kamchiya Depression
KD Kopetdag
LC Lesser Caucasus
LG Limagne Graben
LoD Lom Depression
Loi Loire
Lor Lot
LRE Lower Rhine Embayment
LiA Lalium Abruzzi
MaiB Mainz Basin
Man Main
MC Massif Central
Mec Mecsek
Meu Meuse
Mn Menorca
Mol Mosel
Naa Naab
NAC North Aegean Corridor
NAF North African Platform
NBA North Bulgarian High
NGF Northern Guadalquivir Fault
NoB North Sea Basin
OmaM Oman Mountains
PaF Palermia Fault
Pal Palmyrides
PCLo PreCaspian Lowland
PDB PripyatDneprovian Lowland Basin
PH Pennine High
PLB Polish Lowland Basin
Pon Pontides
Py Pyrenees
RePr Rennes Passage
RhG Rhine Graben
Rhi Rhine
RiB Riony Bay
RiC Rhenish Corridor
RM Rhenish Massif
RnG Roanne Graben
RoG Rhone Graben
RS Red Sea
RSH Red Sea Hills
Saa Saar
Saz Salzach
SbR Sheba Ridge
ScaD South Caspian Depression
ScoH Scottish Highland
SCp southern Carpathians
SI Socotra Island
Sic Sicanids
Sie Sieg
SMG South Mangyshlak Gulf
SmP Somalia Plateau
SoB Sofia Basin
StC Stavropolian Corridor
StH Stavropolian Highland
STS South Tien Shan
SyB Syrte Basin
TaD Tadjic Basin
TagB Tagus Basin
Tal Talysh
TeA Tellian Atlas
TeB Teruel Basin
TerB Terek Bay
ThB Thrace Basin
Trai Traisen
TuB Transylvanian Basin
TugLo Turgai Lowland
TuLB Turan Lowland Basin
UKL Ukrainian Land
UrH Ural High
Ust Ustjurt
ValB Valensole Basin
VIB Vienna Basin
VlB Valence Basin
Vo Vosges
WAH Welsh-Anglian Highland
Wal Western Alps
WAp Western Approaches Basin
WCp Western Carpathians
WeA Weald Anticline

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MAP 23 PIACENZIAN / GELASIAN
(3.4-1.8 Ma)

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Co-authors : ABBATE E. (9), ABDEL-GAWAD S. (11), BOUAZIZ S. (12, d), CAHUZAC B. (2), CALVO J.P. (1), DAAMS R. (1), DAMMAK F. (12), FAURE-MURET A. (13, a), GEORGIEV G. (5), HIRSCH F. (10), KHONDKARIAN S.O. (7), LONDEIX L. (2), MARUNTEANU M. (4), PLATEL J.P. (8), ROGER J. (8), SADEK A. (11), SAGRI M. (9), SCHERBA I.G. (6), STUDENCKA B. (3)

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Contributors for additional tectonic data : ANGELIER J. (b), HIPPOLYTE J.C. (e), JABALOY A. (f), LEPVRIER C. (g), MATAR A. (h), MOREL J.L. (a), MOSTAFA M. (j), NIKISHIN A. (d), ORSZAG-SPERBER F. (a), RIMMELE G., ROCHER M. (k), SAINTOT A. (b), SEBRIER (d), VANDYCKE S. (l)

Kinematic reconstruction : VRIELYNCK B.

Cartography & spatial database : VRIELYNCK B.

Digits and letters on the index map refer the authorship for palaeogeography and tectonics, respectively
Area with no specific authorship completed according to the literature or on author's data

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

FENNOSCANDIAN HIGH
PREBALTIC LOWLAND
CENTRAL RUSSIAN HIGHLAND
EASTERN RUSSIAN LOWLAND
EAST EUROPEAN PLATFORM
DNEPROVIAN LOWLAND
SARATOV HIGHLAND
VOLGIAN GULF
URAL
MUGODZHARY
NORTH SEA BASIN
POLISH LOWLAND BASIN
NORTH EUROPEAN PLATFORM
WESTERN CARPATHIANS
EASTERN CARPATHIANS
East European Platform
UKRAINIAN LAND
DONETZ LAND
Pre-Caucasian Corridor
Ergeni Highland
Stavropolian Highland
Azov Gulf
Kubanian Delt.
Crimea Peninsula
Odessa Bay
Dobrogea Massif
North Bulgarian High
Dacic Basin
Tarn Depression
Sava Basin
Moesian Platform
Thrace Basin
Kamchiya Depression
Burgas Depression
KUJALNICIAN BASIN (BLACK SEA DEPRESSION)
PONTIDES
Rioni Bay
LESSER CAUCASUS
GREATER CAUCASUS
Terek Gulf
Kuma Gulf
AKCHAGYLIAN BASIN
SOUTH MANGYSHLAK PLATEAU
USTIURT PLATEAU
South Aral Gulf
KARAKUM HIGHLAND
Kara-Kopedag Gulf
KOPETDAG
TALYSH
SOUTH CASPIAN DEPRESSION
ELBURZ
Transylvanian Basin
Apuseni Mountains
Transcarpathian Basin
Danube Basin
Great Hungarian Plain Basin
BOHEMIAN MASSIF
FRANCONIAN PLATEAU
RHENISH MASSIF
Lower Rhine Embayment
Hessen Depression
Harz
Elbe
Hanau Basin
Rhine
Neckar
Danube
Nahe
Saar
Moselle
Meuse
Ardenne
Vosges
Black Forest
Oslo Graben
Hessian Graben
Roanne Graben
Bresse Graben
Doubs
Aare
Limagne Graben
Valdivienne Basin
Durance
Rhone Graben
Rhone
Valensole Basin
CENTRAL ALPS
WESTERN ALPS
EASTERN ALPS
Inn
Salzach
Enns
Traisen
Irish Massif
Welsh-Anglian High
Weald Anticline
Channel Basin
Cornubian Massif
Celtic Sea Basin
Western Approaches Basin
Fresville Passage
Rennes Passage
Armorican Massif
Ligerian Basin
Chef-du-Pont Sill
ATLANTIC OCEAN
Bay of Biscay
Aquitaine Basin
CENTRAL MASSIF
PYRENEES
IBERIAN MASSIF
Catalayud-Daroca Basin
Ebro Basin
Iberian Basin
Tajo Basin
Duero Basin
Central Range
Pyrenean Front
Guadix-Baza Basin
Granada Basin
Cuadalquivir Basin
Northern Cuadalquivir Fault
BETICS
Strait of Gibraltar
RIF
Moroccan Meseta
High Atlas
TELLIAN ATLAS
Gulf of Tunis
Gulf of Hammamet
Gulf of Gabes
Syrt Basin
Gulf of Sirte
Gulf of Aljughbub
NORTH AFRICAN PLATFORM
PALMYRIDES
Dead Sea Rift Basin
Aqaba Rift Basin
Gulf of Suez
Nile
RED SEA
HILLS
ARABIAN PLATFORM
OMAN MOUNTAINS
Dhofar
Sheba Ridge
Socotra Island
Gulf of Aden
Dalrymple Trough
SOMALIA PLATEAU
INDIAN OCEAN

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- Synclinal fold axis
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PALAEOSTRESS SYMBOLS

- Reverse fault regime
- Normal fault regime
- Strike-slip fault regime



Altr	Altr
All	Allier
AM	Armorican Massif
AO	Atlantic Ocean
API	Arabian Platform
ApM	Apuseni Mountains
AqB	Aquitaine Basin
AR	Aqaba Rift
Ave	Aveyron
AzG	Azov Gulf
Bbi	Bay of Biscay
Be	Betics
BF	Black Forest
BM	Bohemian Massif
BR	Bresse Graben
BSD	Black Sea Depression
BuD	Burgas Depression
CAl	Central Alps
CDB	Calatayud-Daroca Basin
ChB	Channel Basin
Che	Cher
CM	Cornubian Massif
CR	Central Range
CRH	Central Russian Highland
Cri	Crimea Island
CSB	Celtic Sea Basin
DuB	Danube Basin
Dun	Danube
DunM	Danube-Main
DtB	Dalton Basin
DcB	Dacic Basin
Dn	Dnepr
Dnel	Dneprovian Land
DoM	Dobrogea Massif
Don	Donetz
Dou	Douro
DSR	Dead Sea Rift Basin
EAl	Eastern Alps
Elb	Elburz
ECp	Eastern Carpathians
EH	Ergeni Highland
Elb	Elbe
Em	Emms
ERL	Eastern Russian Lowland
FP	Fresville Passage
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FSH	Fennoscandian High
GAd	Gulf of Aden
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Gha	Gulf of Hammamet
GHBP	Great Hungarian Plain Basin
GraB	Granada Basin
GS	Gulf of Suez
GTu	Gulf of Tunis
GuaB	Guadalquivir Basin
GuBB	Guadix-Baza Basin
HA	High Atlas
Har	Harz
HD	Hessen Depression
HnB	Hanau Basin
IM	Iberian Massif
Inn	Inn
IO	Indian Ocean
IrM	Irish Massif
JB	Jurar Basin
KaD	Kamchiya Depression
KhG	Kara Gulf
KD	Kara Kopedagh
KJB	Kujalnician Basin
KoG	Kopedag Gulf
KubG	Kubanian Gulf
LC	Lesser Caucasus
LG	Limagne Graben
LgB	Ligerian Basin
LoD	Lom Depression
Lol	Loi
LRE	Lower Rhine Embayment
MarB	Maritz Basin
Main	Main
MC	Massif Central
Meu	Meuse
MM	Moroccan Meseta
MoP	Moesian Platform
Mel	Mosel
Mug	Mugodzhary
Nau	Naab
NAF	North African Platform
Nah	Nahe
NBA	North Bulgarian High
Nec	Neckar
NGF	Northern Guadalquivir Fault
Nil	Nile
NoB	North Sea Basin
OdB	Odessa Bay
OmaM	Oman Mountains
Our	Our
PaF	Placensia Fault
Pal	Palmyrides
PBL	Pre-Baltic Lowland
PCC	Pre-Caucasian Corridor
Pln	Polish Lowland
Pon	Pontides
PrS	Pre-Sirte
Py	Pyrenees
RdP	Rennes Passage
RhG	Rhine Graben
Rhi	Rhine
RhiM	RhineMain
Rho	Rhone
RiB	Riony Bay
Rif	Rif
RM	Rernish Massif
RnG	Roanne Graben
RoG	Rhone Graben
RS	Red Sea
RSH	Red Sea Hills
Saa	Saar
SAG	South Aral Gulf
SaH	Saratov Highland
Saz	Salzach
SbR	Sheba Ridge
SCaD	South Caspian Depression
SCp	Southern Carpathians
Sl	Socotra Island
Sie	Sieg
SmP	Somalia Plateau
SMP	South Mangyshlak Plateau
SoB	Sofia Basin
SH	Stavropolian Highland
SyB	Syrt Basin
TagB	Tagus Basin
Tal	Talysh
Tam	Tarn
TCaB	Transcarpathian Basin
TeA	Tellian Atlas
TeB	Teruel Basin
TerG	Terek Gulf
ThB	Thrace Basin
Trai	Traisen
TrB	Transylvanian Basin
UkL	Ukrainian Land
UP	Ustjurt Plateau
UrH	Ural
V	Volga
VaB	Valensole Basin
VIG	Volgian Guls
Vo	Vosges
WAH	Welsh-Anglian Highland
Wal	Western Alps
WAp	Western Approaches
WCp	Western Carpathians
WeA	Weald Anticline

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MAP 24 LAST GLACIAL MAXIMUM
(20-18 ka BP)

Authors : PEULVAST J.P. & BARRIER E.
Co-authors : RAGALA R., VANNEY J.R., VERGNE N., BERGERAT F., BRUNET M.F., CADET J.P. & DOUBRE C.
Cartography & spatial database : VRIELYNCK B.

Scale : 1/10 000 000 at palaeoequator — Projection : Rectilinear

0 — 500 — 1000 km

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- Pyroclastics
- Bauxite
- Glauconite
- Phosphate
- Ironstone (ferruginous)

Examples of Mixed Lithologies

- Sand(stone) and Conglomerate
- Oolitic Limestone
- Sulphates and Halite

SPECIAL SYMBOLS

- Palaeocoastlines
- Continuous permafrost (southern or lower limit)
- Discontinuous permafrost (southern or lower limit)
- Bioherm, reef
- Main turbiditic flow pathway
- Deltaic / submarine fan
- Polar front, strong thermohaline winternal gradient
- Surface currents
- Upwelling - Downwelling

ALIS Arabian Upwelling System
CMC Canary-Moroccan Current
MUS Moroccan Upwelling System
NAD North Atlantic Drift
SUS Somalia Upwelling System

WINDS SYMBOLS

- Prevailing winds
- Limit of strong eolian supplies

LANDFORMS

- Mountains, high plateaus
- Low plateaus, plains, piedmont areas and low slopes of mountains areas

TECTONIC SYMBOLS

- Fault : unspecified, ascertained
- Fault : questionable
- Normal fault
- Strike-slip fault
- Thrust faultfront reverse fault
- Anticlinal fold axis
- Synclinal fold axis
- Volcano

WATER BUDGET SYMBOLS

1. Thermohaline convection
2. Thermohaline convection with deep stagnation in isolated basins
3. Brackish basin, stratified water column, deep stagnation
4. Hypersaline basin, stratified water column, deep stagnation

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