🟧 MAINLY CONTINENTAL CLASTICS

🟪 EVAPORITES, CLASTICS AND CARBONATES

🟨 DELTAIC-SHALLOW MARINE, MAINLY SANDS

🟪 EVAPORITES AND CARBONATES

🟩 SHALLOW MARINE, MAINLY SHALES

🟫 DEEPER MARINE CLASTICS AND/0R CARBONATES

🟦 SHALLOW MARINE, CARBONATES AND CLASTICS

🟫 DEEPER MARINE, MAINLY SANDS (FLYSCH)

🟦 SHALLOW MARINE, MAINLY CARBONATES

🟩 BASINS FLOORED BY OCEANIC CRUST

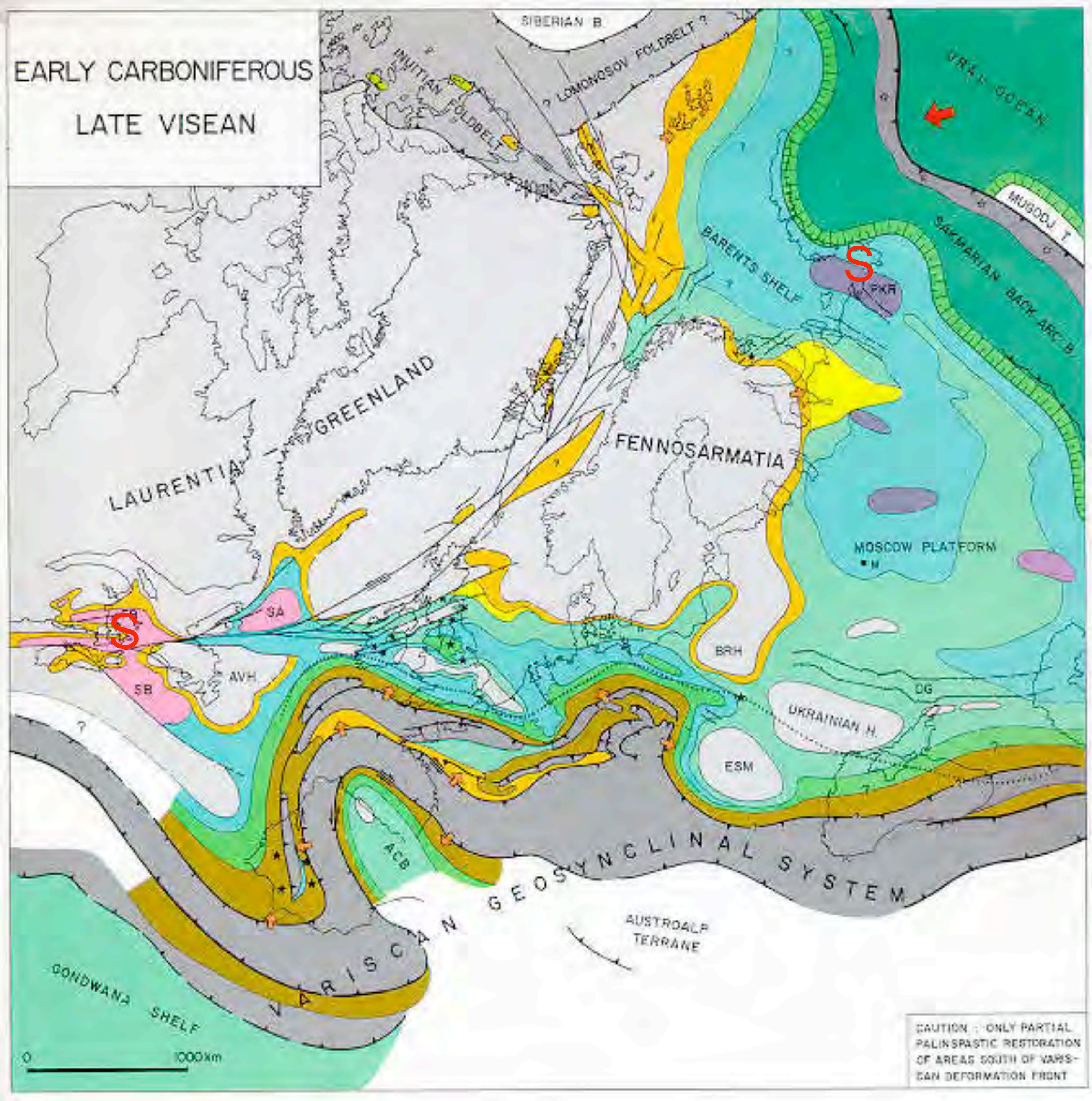
🟧 EVAPORITES AND CLASTICS

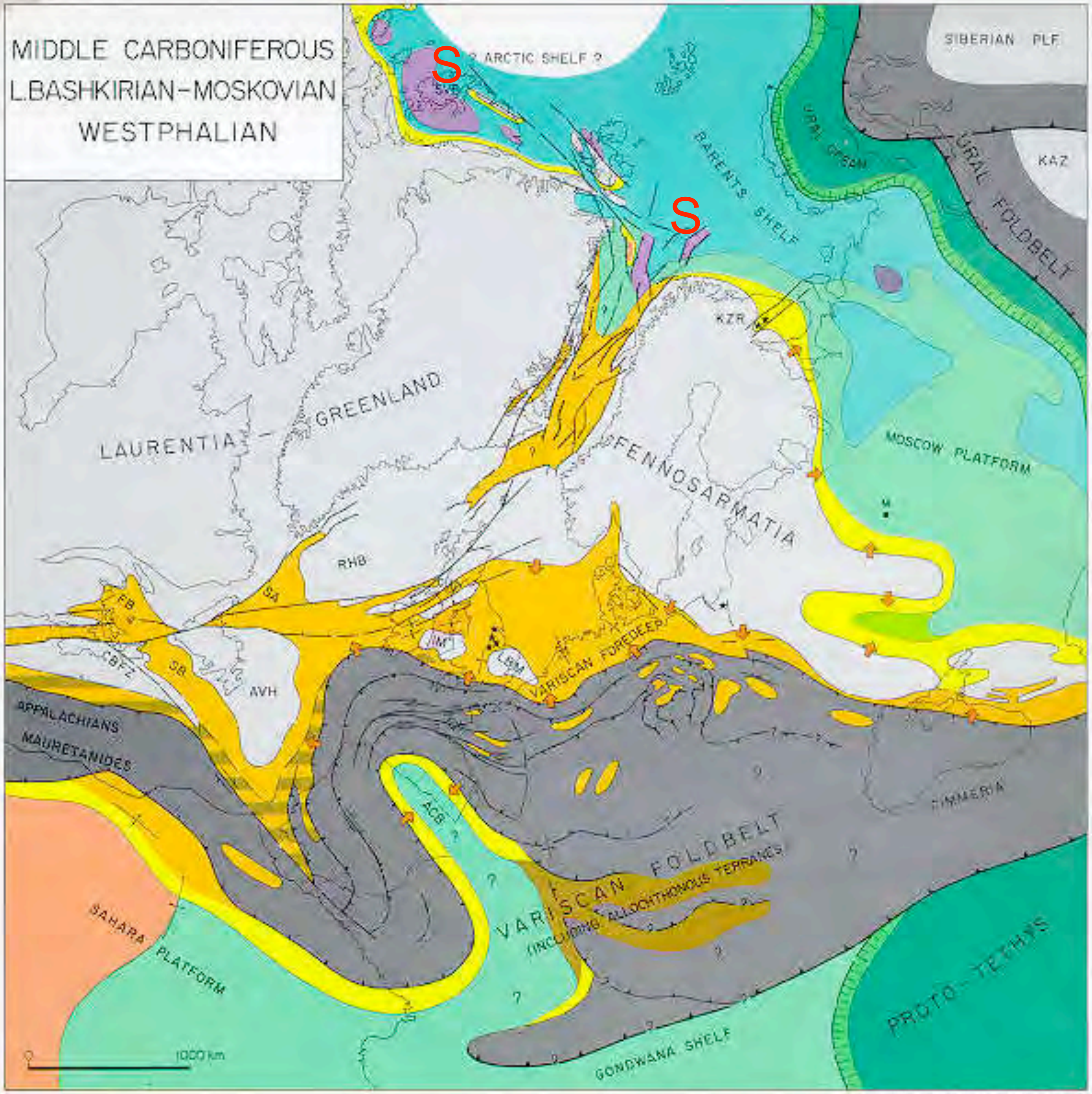
▨ BASINS FLOORED BY OCEANIC CRUST CONTAINING THICK SEDIMENTS

🟧 MAINLY EVAPORITES

EVOLUTION OF THE ARCTIC-NORTH ATLANTIC AND THE WESTERN TETHYS--A VISUAL PRESENTATION OF A SERIES OF PALEOGEOGRAPHIC-PALEOTECTONIC MAPS*, by Peter A. Ziegler

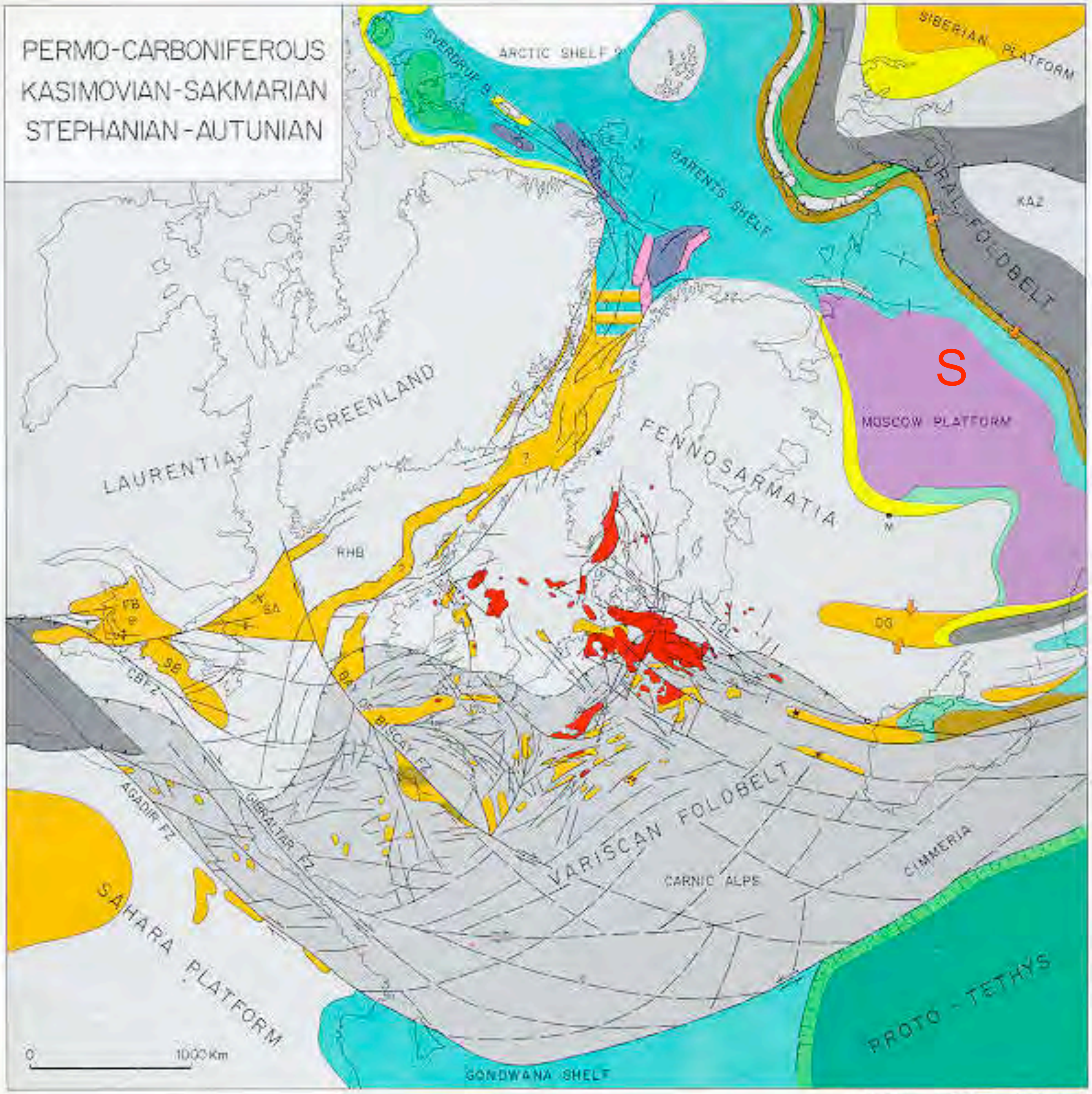
http://www.searchanddiscovery.com/documents/97020/

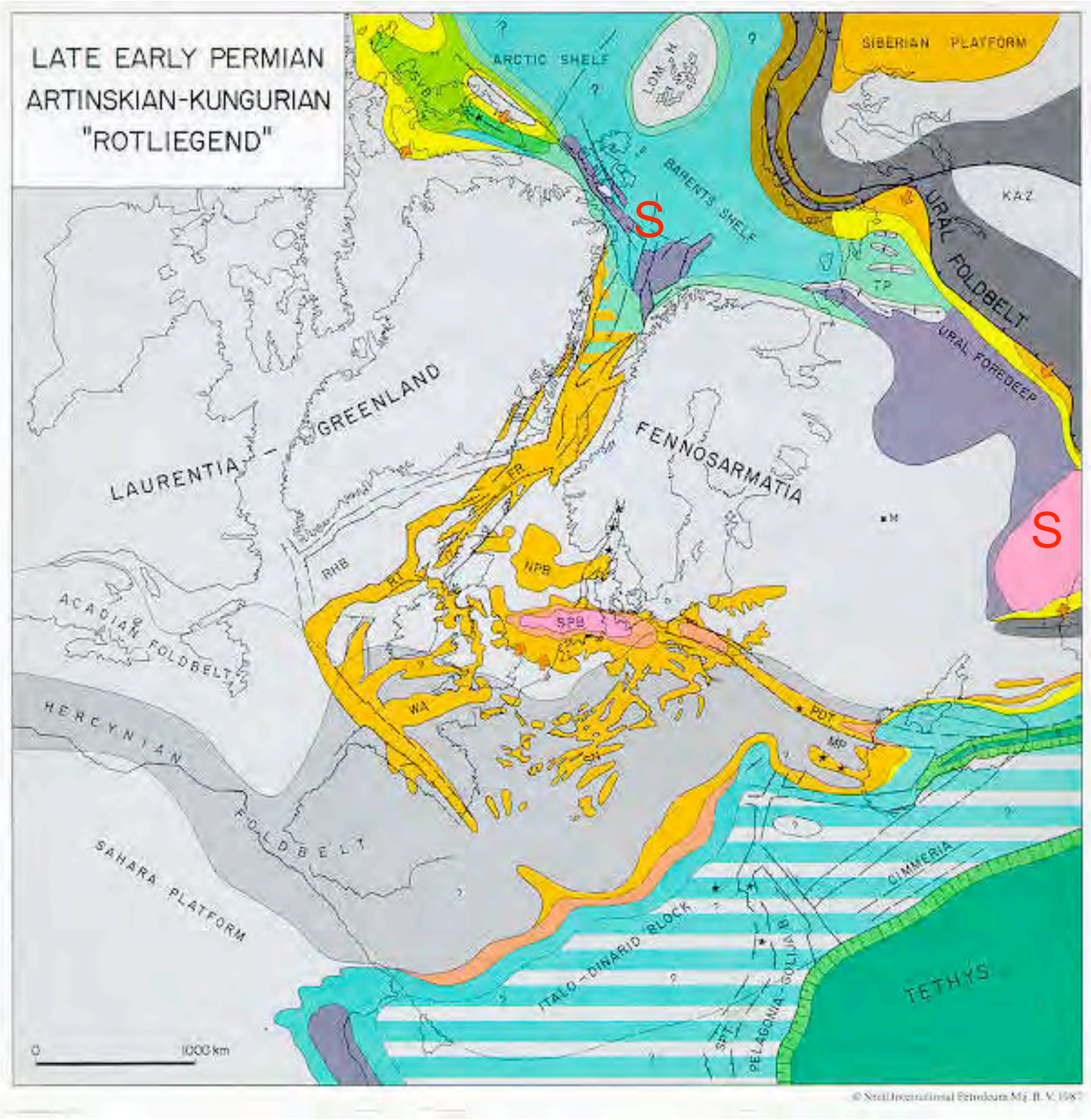

EARLY CARBONIFEROUS
LATE VISEAN
SIBERIAN B.
LOMONOSOV FOLDBELT ?
INUITIAN FOLDBELT
URAL OCEAN
MUGODJ. T.
SAKMARIAN BACK ARC B.
BARENTS SHELF
S
PKR
GREENLAND
LAURENTIA
FENNOSARMATIA
MOSCOW PLATFORM
M
S
SA
SB
AVH
BRH
DG
UKRAINIAN H.
ESM
ACB
VARISCAN GEOSYNCLINAL SYSTEM
AUSTROALP TERRANE
GONDWANA SHELF
?
0
1000 km
CAUTION : ONLY PARTIAL PALINSPASTIC RESTORATION OF AREAS SOUTH OF VARIS-CAN DEFORMATION FRONT



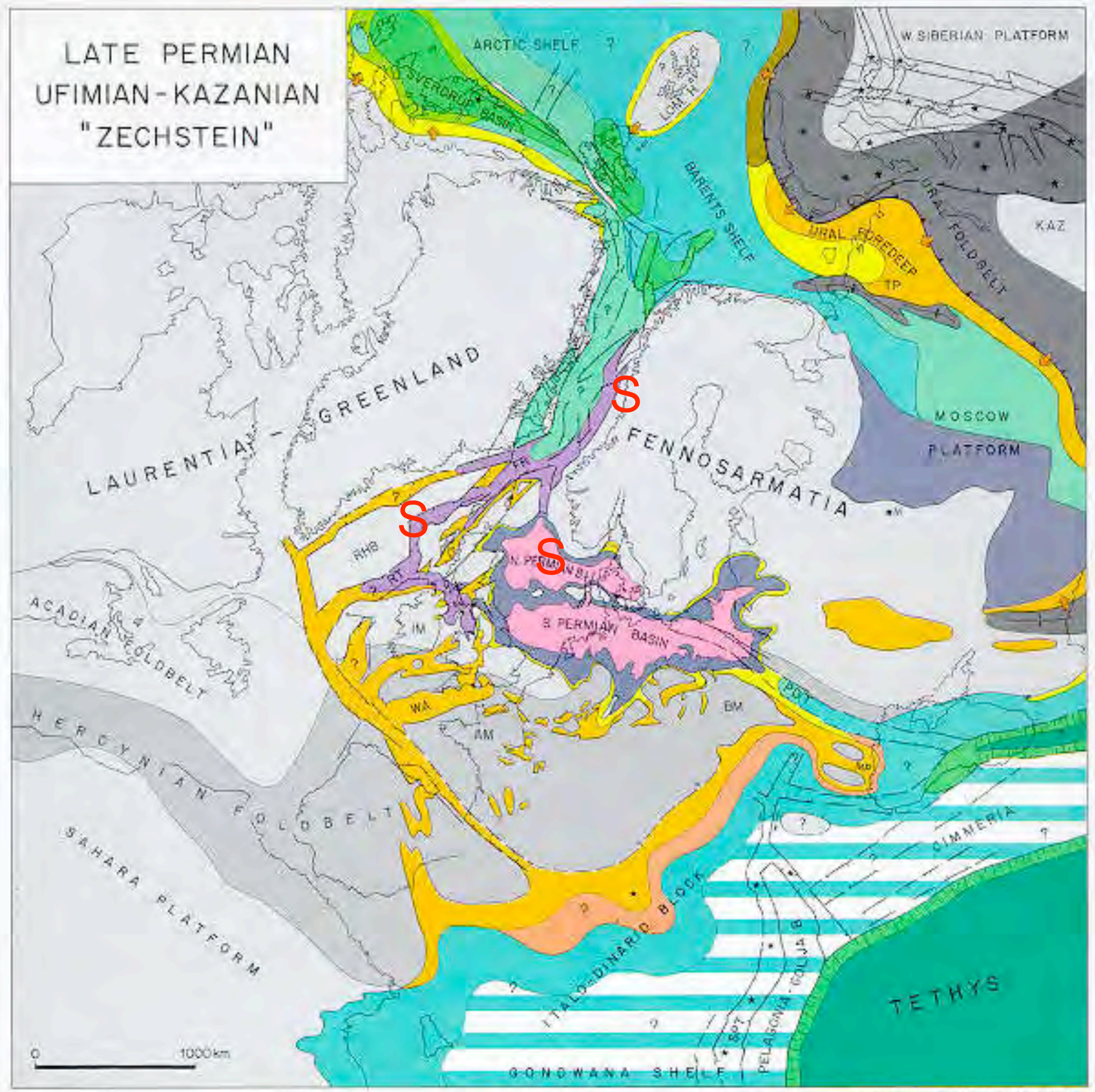
MIDDLE CARBONIFEROUS
L.BASHKIRIAN-MOSKOVIAN
WESTPHALIAN

© Shell Internationale Petroleum Mij B.V. 1987


PERMO-CARBONIFEROUS
KASIMOVIAN-SAKMARIAN
STEPHANIAN-AUTUNIAN
SVERDRUP B
ARCTIC SHELF
BARENTS SHELF
SIBERIAN PLATFORM
URAL FOLDBELT
KAZ
S
MOSCOW PLATFORM
GREENLAND
LAURENTIA
FENNOSARMATIA
M
RHB
FB
SA
SB
CBFZ
BA
DG
VARISCAN FOLDBELT
CARNIC ALPS
CIMMERIA
AGADIR FZ
GIBRALTAR FZ
SAHARA PLATFORM
PROTO - TETHYS
GONDWANA SHELF
0
1000 Km

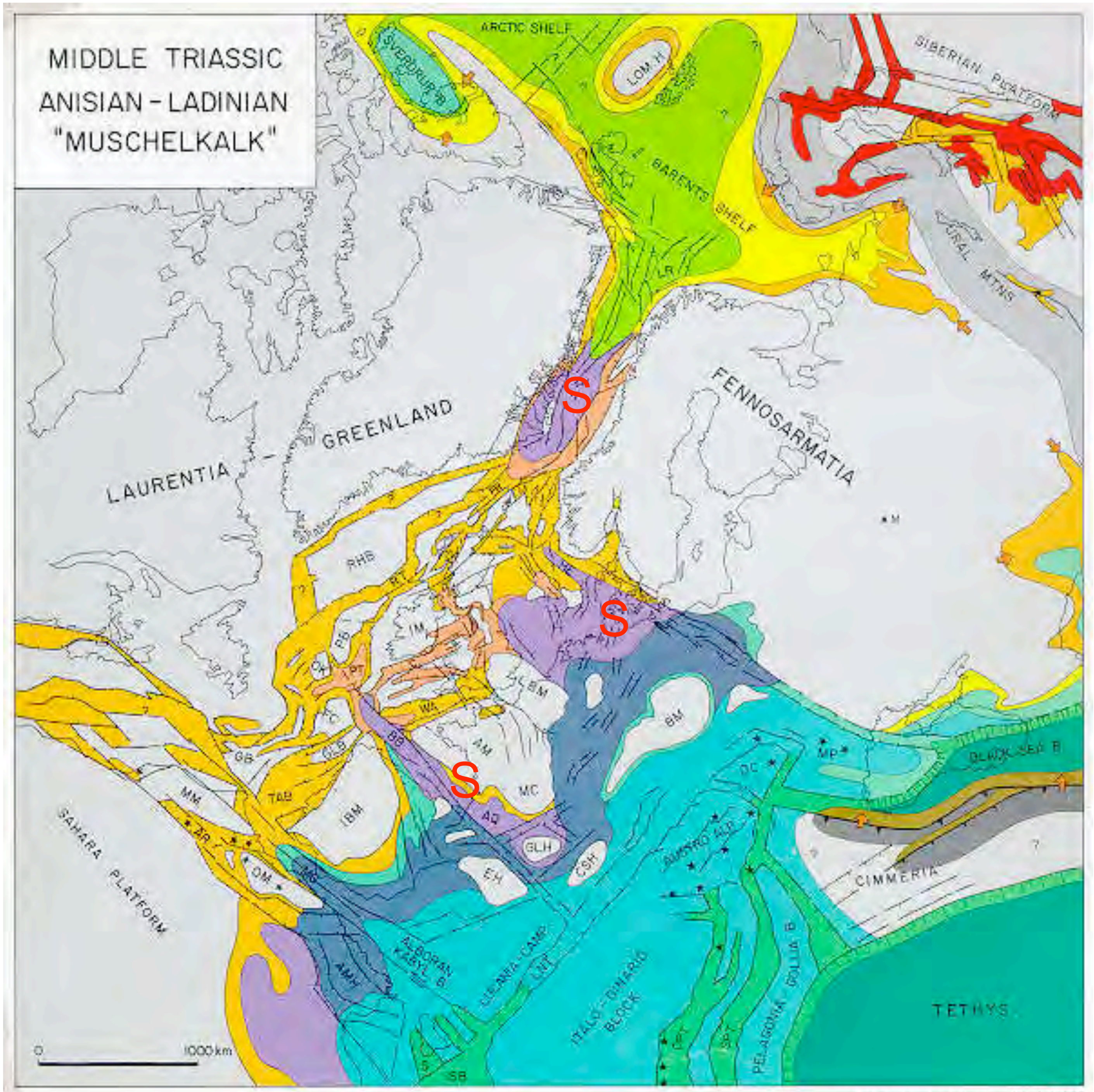


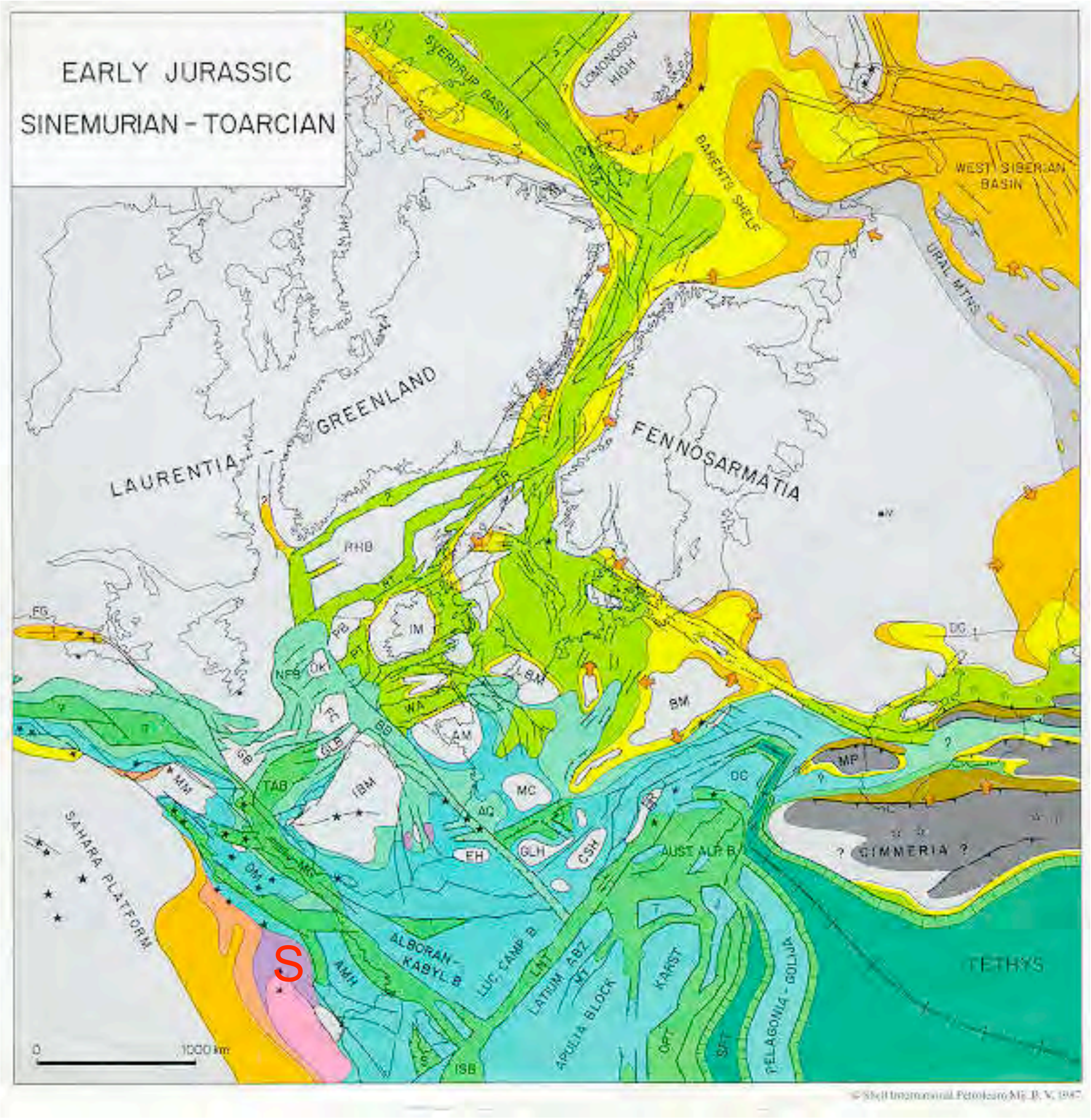
LATE EARLY PERMIAN
ARTINSKIAN-KUNGURIAN
"ROTLIEGEND"

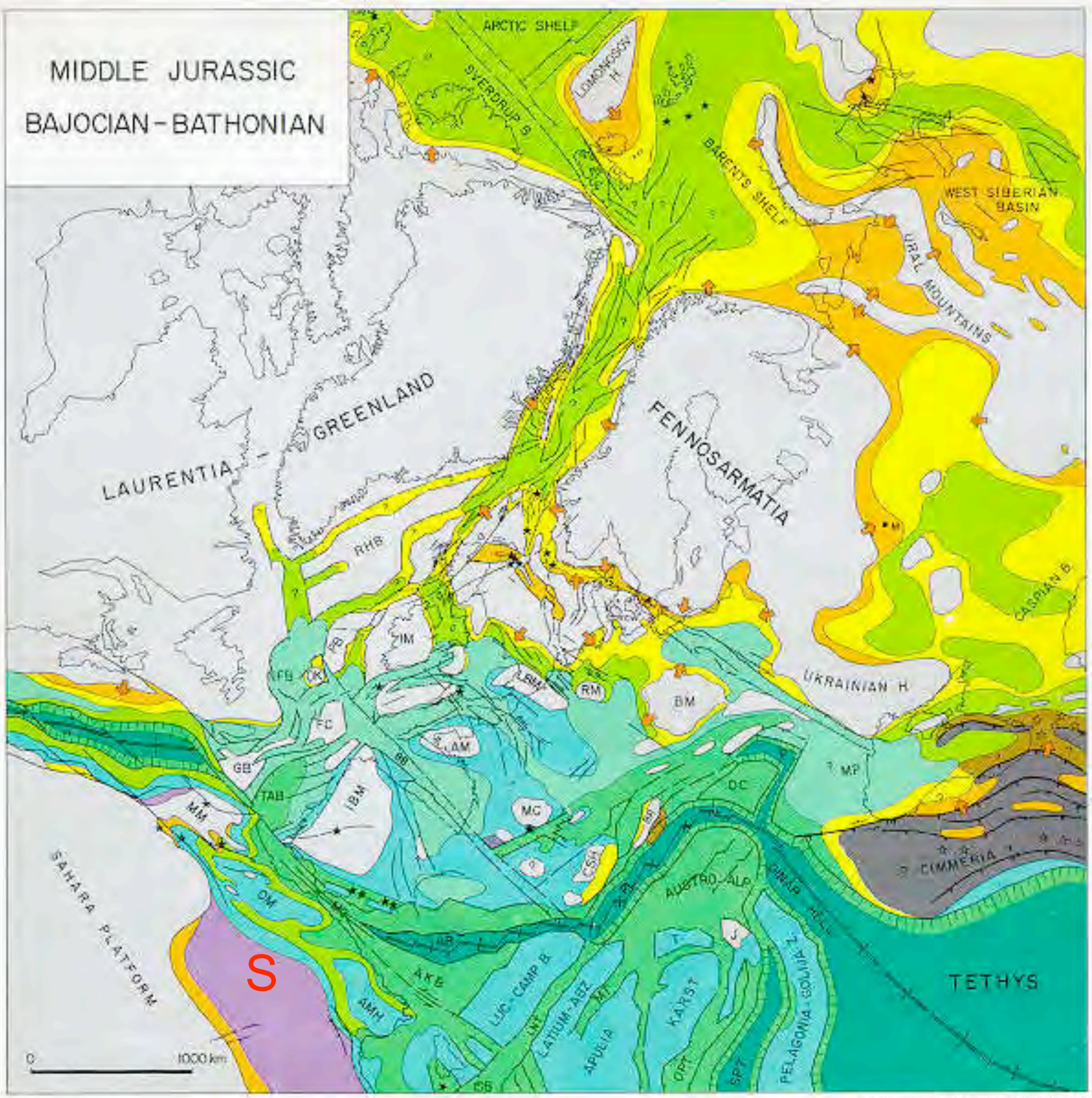


LATE PERMIAN
UFIMIAN - KAZANIAN
"ZECHSTEIN"

© Shell Internationale Petroleum Mij. B.V. 1987


MIDDLE TRIASSIC
ANISIAN - LADINIAN
"MUSCHELKALK"
ARCTIC SHELF
SVERDRUP B
LOM. H
BARENTS SHELF
LB
SIBERIAN PLATFORM
URAL MTNS
LAURENTIA - GREENLAND
FENNOSARMATIA
S
S
S
RHB
PB
IM
PT
LBM
WA
FC
BB
AM
MC
GB
GLB
TAB
IBM
BM
MP
DC
BLACK SEA B
MM
AR
OM
AQ
GLH
EH
CSH
AUSTRO ALP
CIMMERIA
SAHARA PLATFORM
ALBORAN KABYL B
LUCANIA - CAMP
ITALO - DINARID BLOCK
PELAGONIA - GOLIJA B
AMH
SB
S
TETHYS
0
1000 km


EARLY JURASSIC
SINEMURIAN - TOARCIAN


MIDDLE JURASSIC
BAJOCIAN - BATHONIAN
ARCTIC SHELF
SVERDRUP B
LOMONOSOV R
BARENTS SHELF
WEST SIBERIAN BASIN
URAL MOUNTAINS
GREENLAND
LAURENTIA
FENNOSARMATIA
RHB
M
CASPIAN B
FB
IM
LFB
UK
LBM
RM
BM
UKRAINIAN H
FC
AM
GB
TAB
IBM
MP
MM
MC
DC
CSA
AUSTRO-ALP
DINAR. HELL
CIMMERIA
SAHARA PLATFORM
OM
S
AKB
AMH
LIG.-CAMP B
LATIUM-ABZ
APULIA
KARST
PELAGONIA - GOLIJA Z
TETHYS
0
1000 km

Great Salt Lake: internally
Drained basin

Trucial coast (UAE) sabhka salt
Pans on margin of Arabian Sea

Two modern evaporite
environments

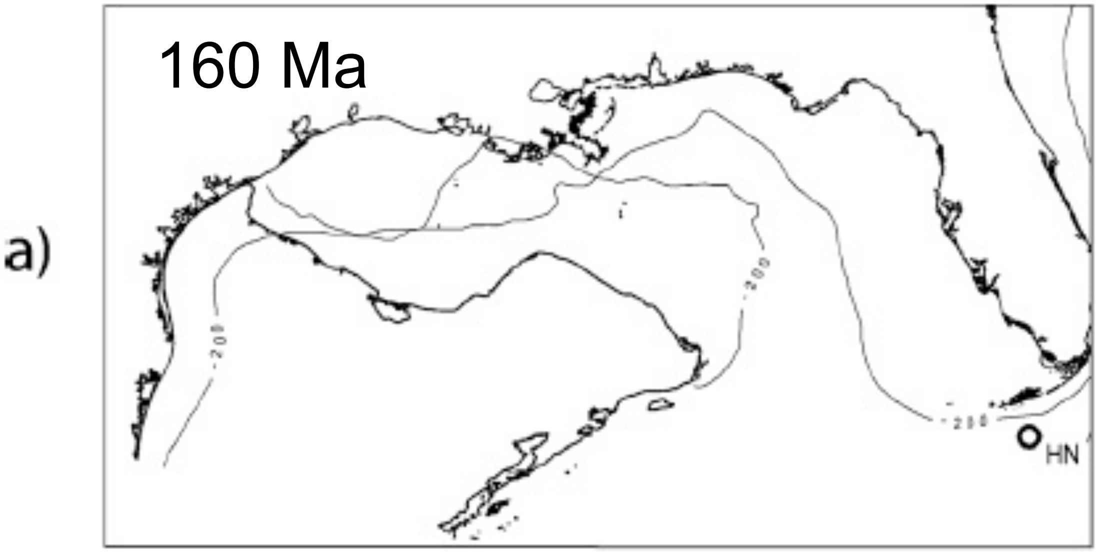
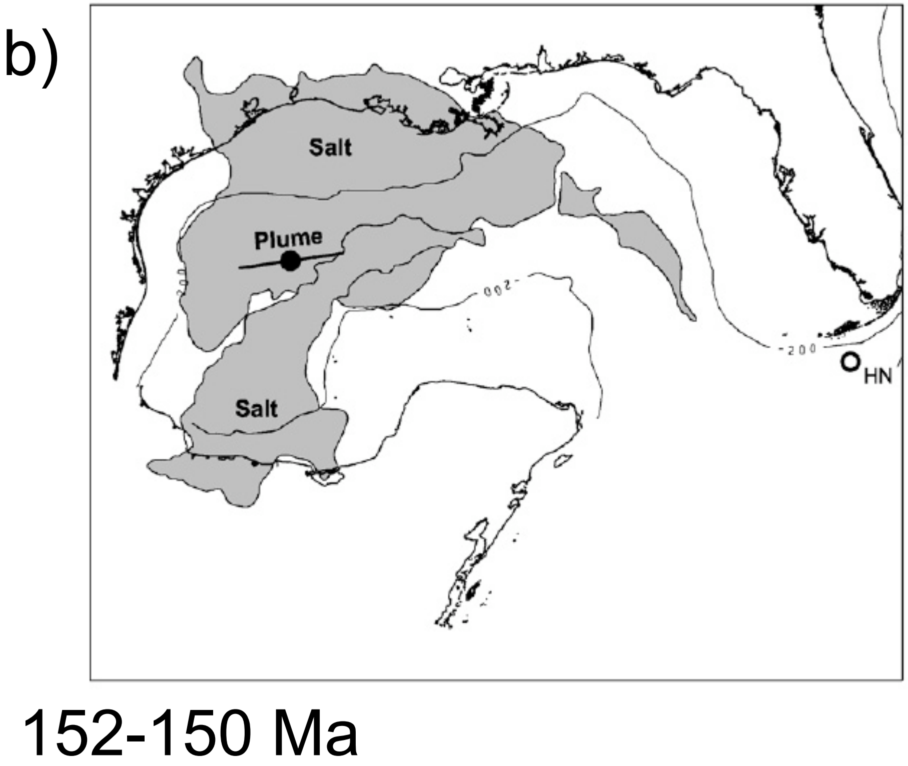
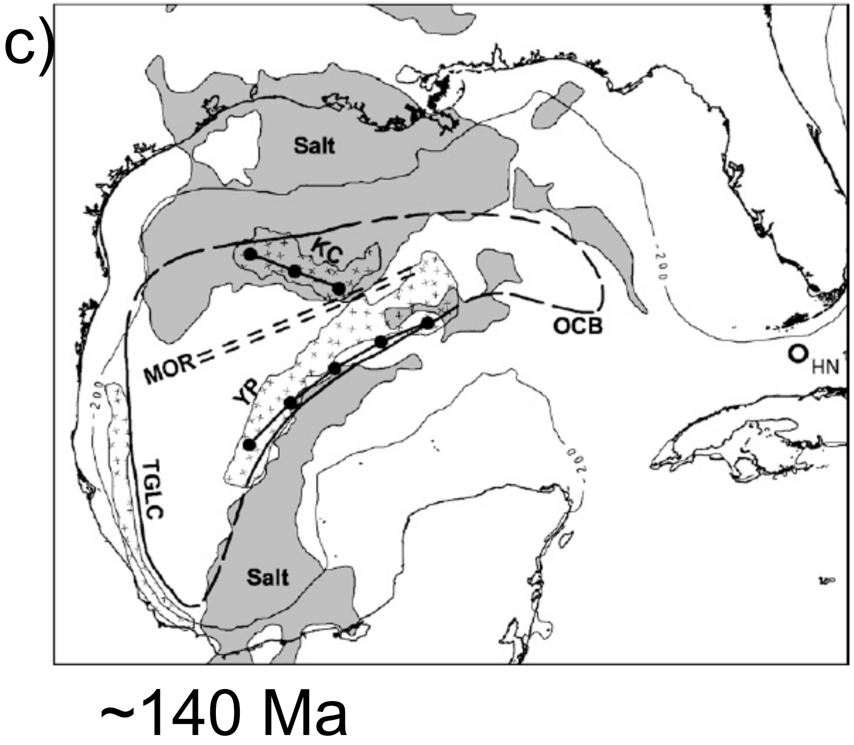


Figure 7. Reconstruction of Gulf of Mexico, 20-m.y. evolution of Yucatan motion. Pole used by Hall and Najmuddin (1994) = HN. (a) Initial position: about 160 Ma (exact age unknown). Yucatan occupies what is the Gulf of Mexico Basin now. Because the Yucatan was probably longer at that time, no gap was present between the peninsula and western Florida (Burke, 1988). (b) 10–12 m.y. coinciding with 22° of rotation and continental crust extension (about 150–152 Ma). Sea-floor spreading began at the end of this time when the plume became active. (c) 20 m.y. and 42° total rotation (adding 20° by rotation of sea-floor spreading), present position achieved (about 140 Ma).





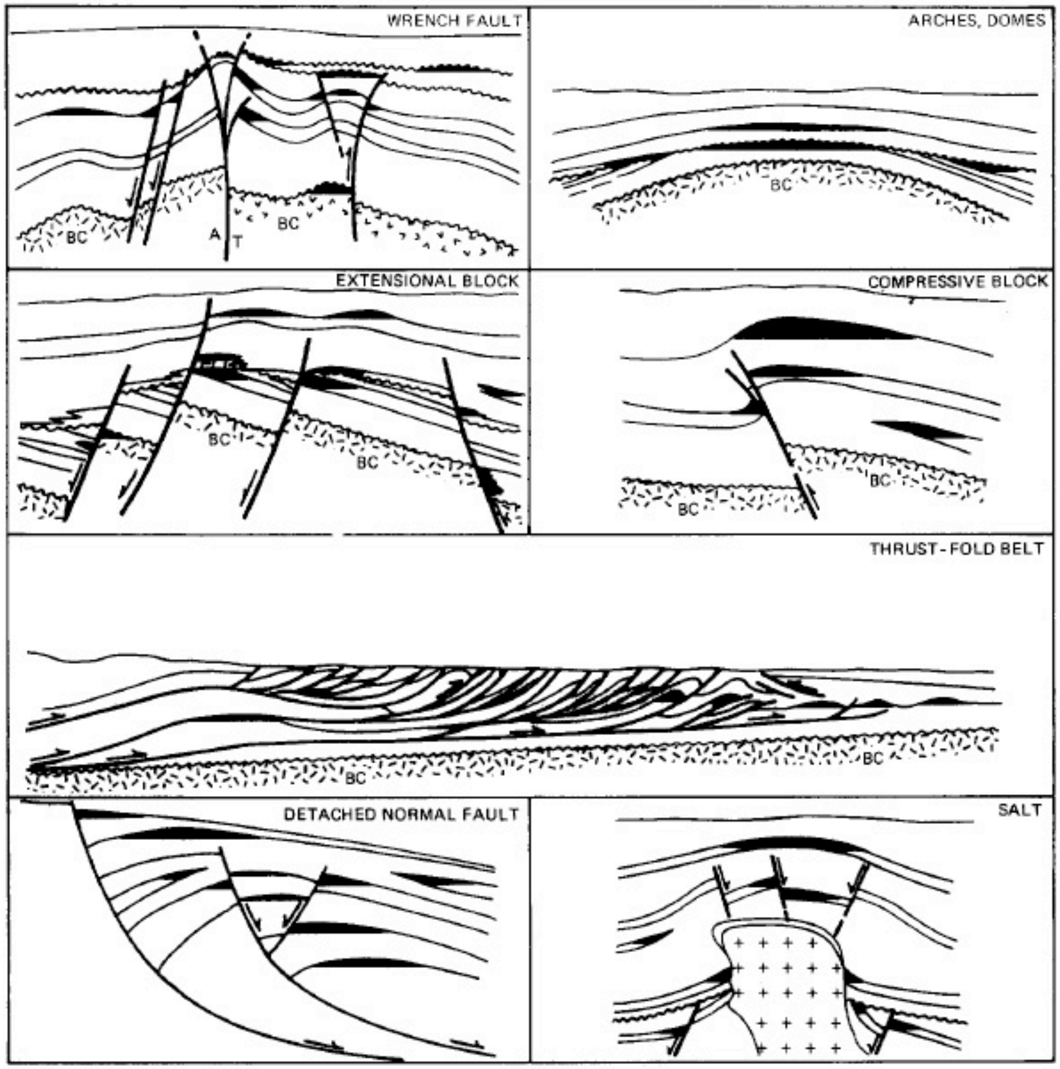
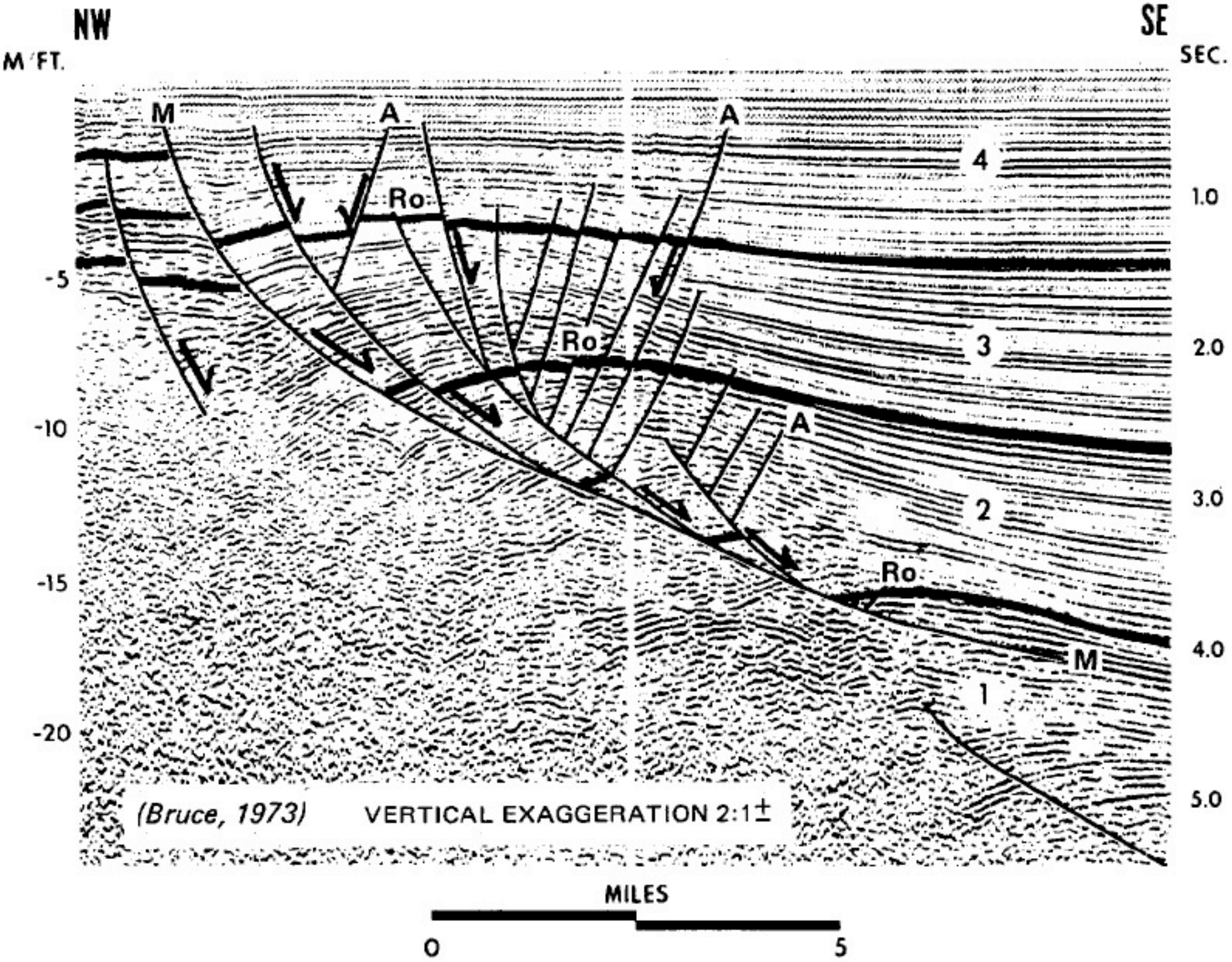


FIG. 1—Schematic diagrams of hydrocarbon traps (black areas) most commonly associated with structural styles of sedimentary basins. Purely stratigraphic type traps and traps associated with basement thrusts are omitted. Salt-related closures modified after Halbouty (1967, Fig. 6). *BC*, basement complex; *T*, displacement toward viewer; *A*, away from viewer.

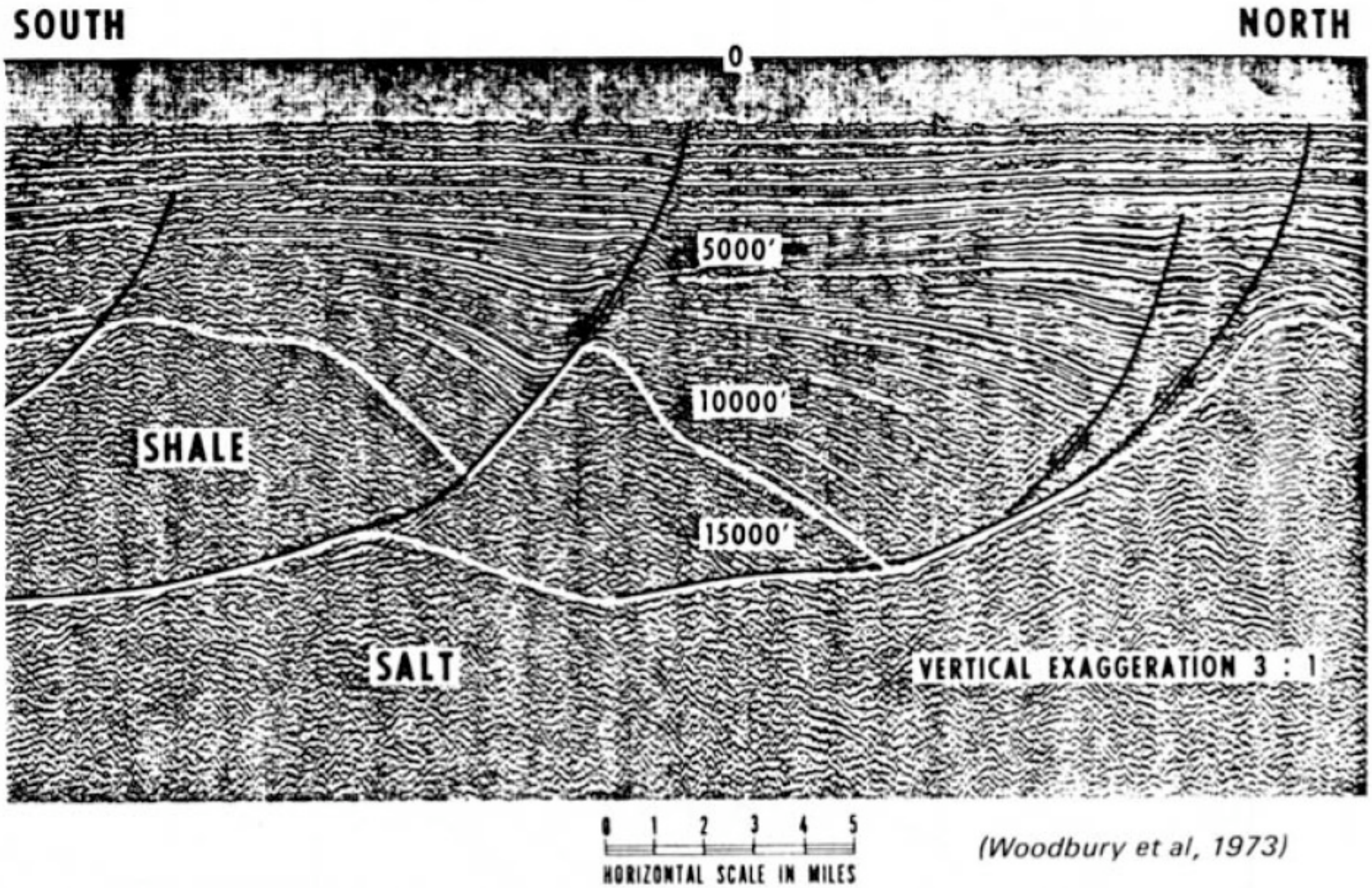
Grove fault of the southern Illinois basin appears to be a characteristic example (Wilcox et al, 1973). Not all midplate wrench faults developed

style and include most elements that are fundamental to other styles. Wrench assemblages have both compressional and extensional features



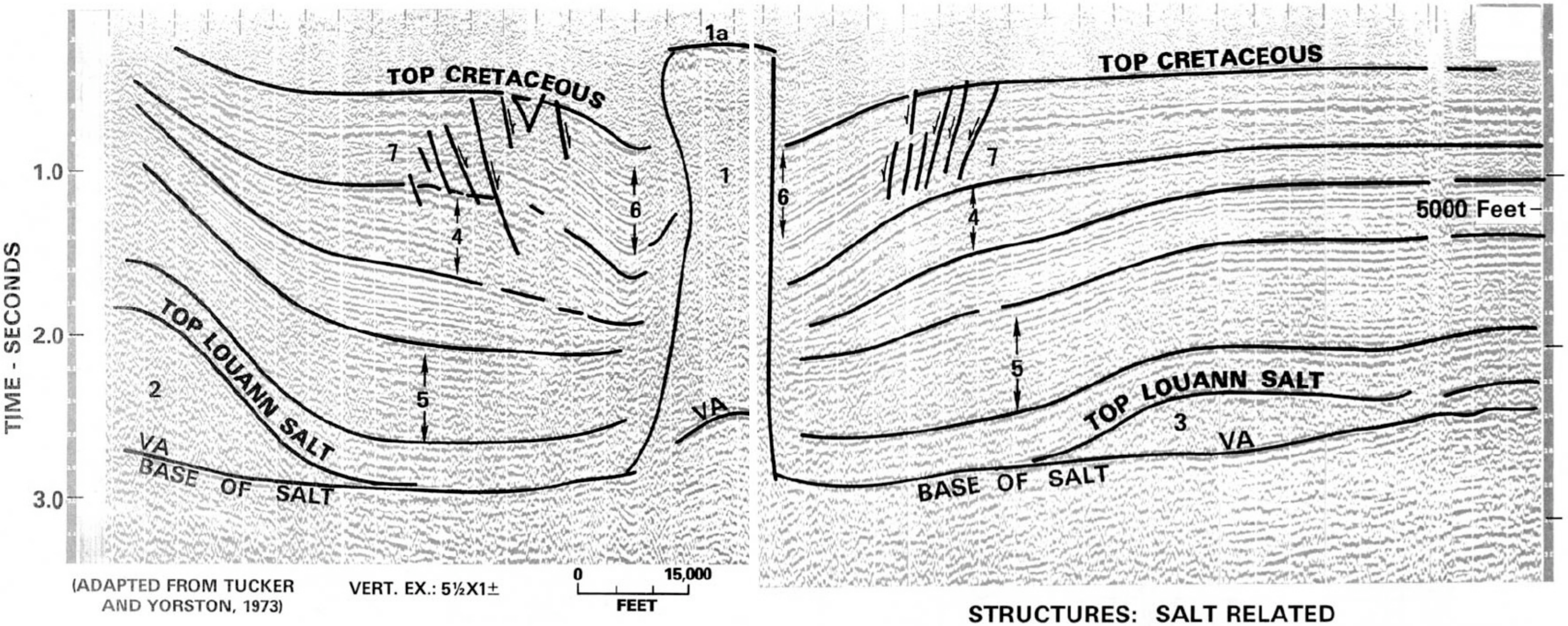
(Bruce, 1973) VERTICAL EXAGGERATION 2:1±

FIG. 21—Syndepositional, detached normal fault assemblage in Tertiary sediments of south Texas part of Gulf Coast basin. *M*, master down-to-basin synthetic fault. *A*, antithetic faults. *Ro*, rollover anticline with basinward migration of crest at depth. Northwest-dipping events beneath *M* fault would migrate to right to form part of rollover anticline. Some assemblages have only synthetic faults.



(Woodbury et al, 1973)

FIG. 22—Syndepositional detached normal faults in outer continental shelf of Gulf Coast basin, Louisiana and Texas. Faults sole out at salt-overburden contact identified by strong reflector and associated diffractions below 15,000 ft (4,500 m) in center of cross section. Presence of diapiric shale core (center) or salt diapir (right) below upthrown side of large growth fault is reported to be very common in this province (Woodbury et al, 1973).



(ADAPTED FROM TUCKER AND YORSTON, 1973)

FIG. 26—Seismic section across Hainesville dome (center), east Texas, with structures as indicated. Higher velocity of salt relative to surrounding rocks at velocity anomalies at left and center results in "pull-up" of time section. Velocity anomaly at right shows as depression, because salt here has lower velocity than laterally adjacent rocks.

STRUCTURES: SALT RELATED

1. PIERCEMENT SALT DOME (1a. CAP ROCK)
2. NON - PIERCEMENT SALT ANTICLINE
3. RESIDUAL SALT HIGH
4. TILTED TURTLE STRUCTURE
5. PRIMARY SALT WITHDRAWAL SYNCLINE
6. RIM SYNCLINE
7. NORMAL FAULTS

VA - VELOCITY ANOMALY


EXCELLENT