

Vorlesungsressource  
Farbabbildungen und Zusatzabbildungen

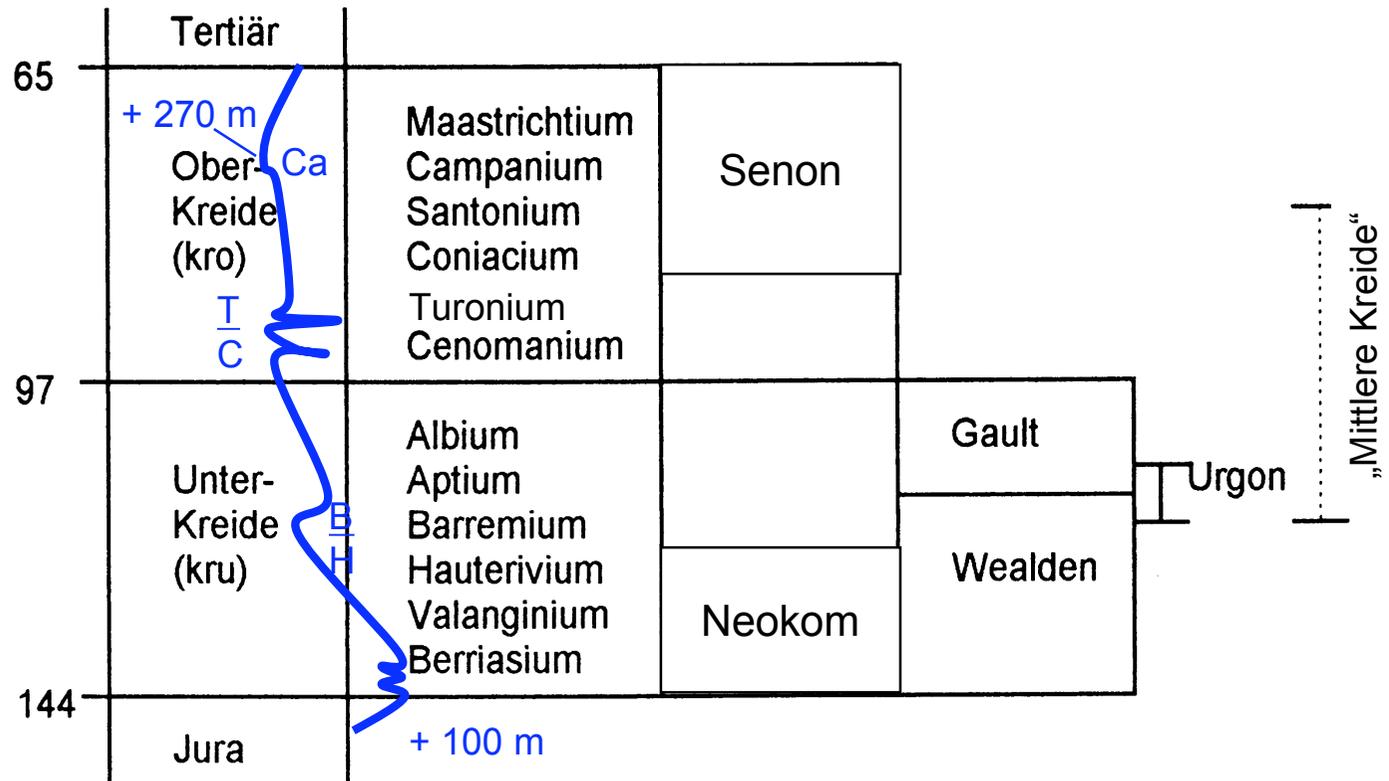
**Historische Geologie**  
Teil 8: Kreide

von Reinhold Leinfelder  
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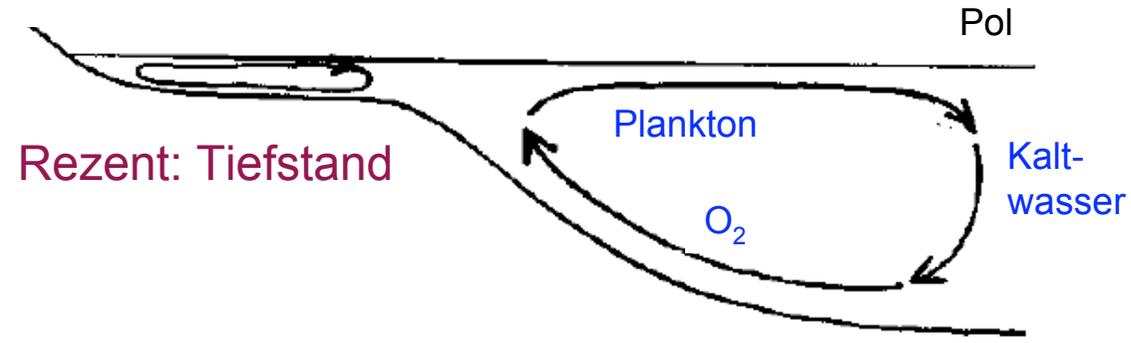
(Teil von [www.palaeo.de/edu/histgeol](http://www.palaeo.de/edu/histgeol))

Teil 2 (Events, Klima, Paläogeographie, regionale Beispiele)

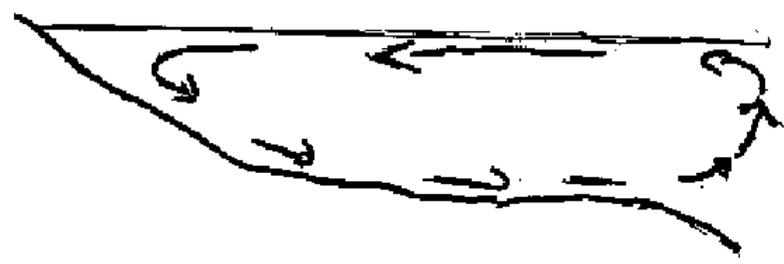
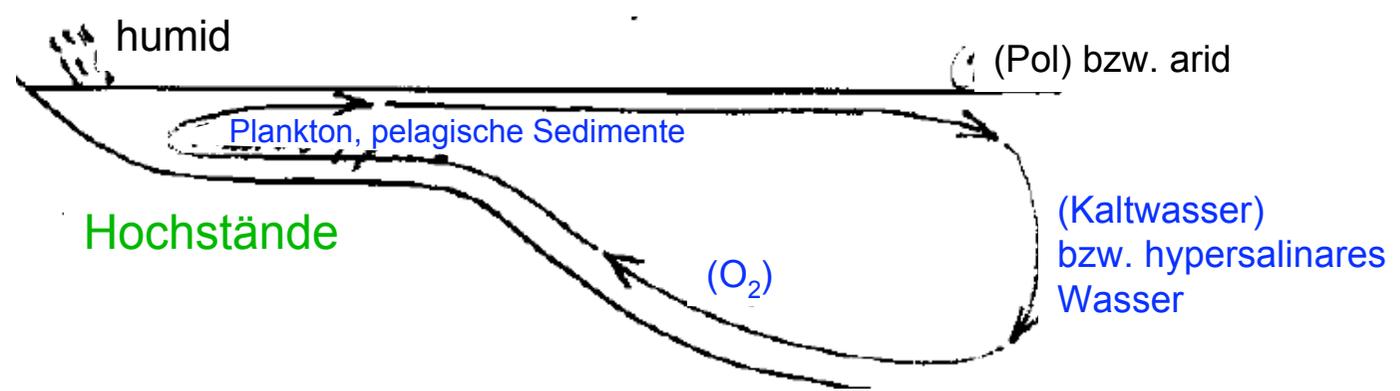
Meeresspiegel:

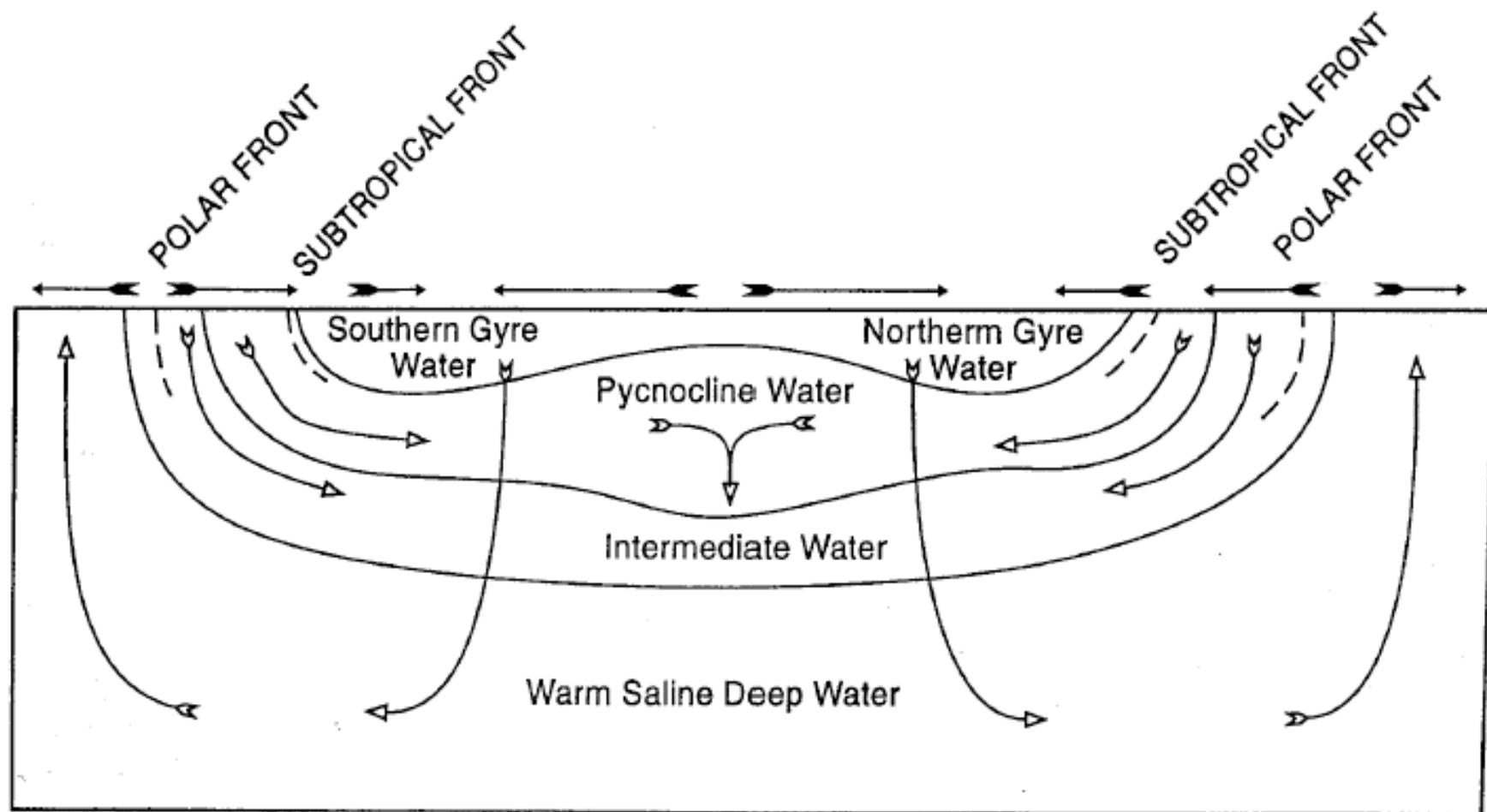


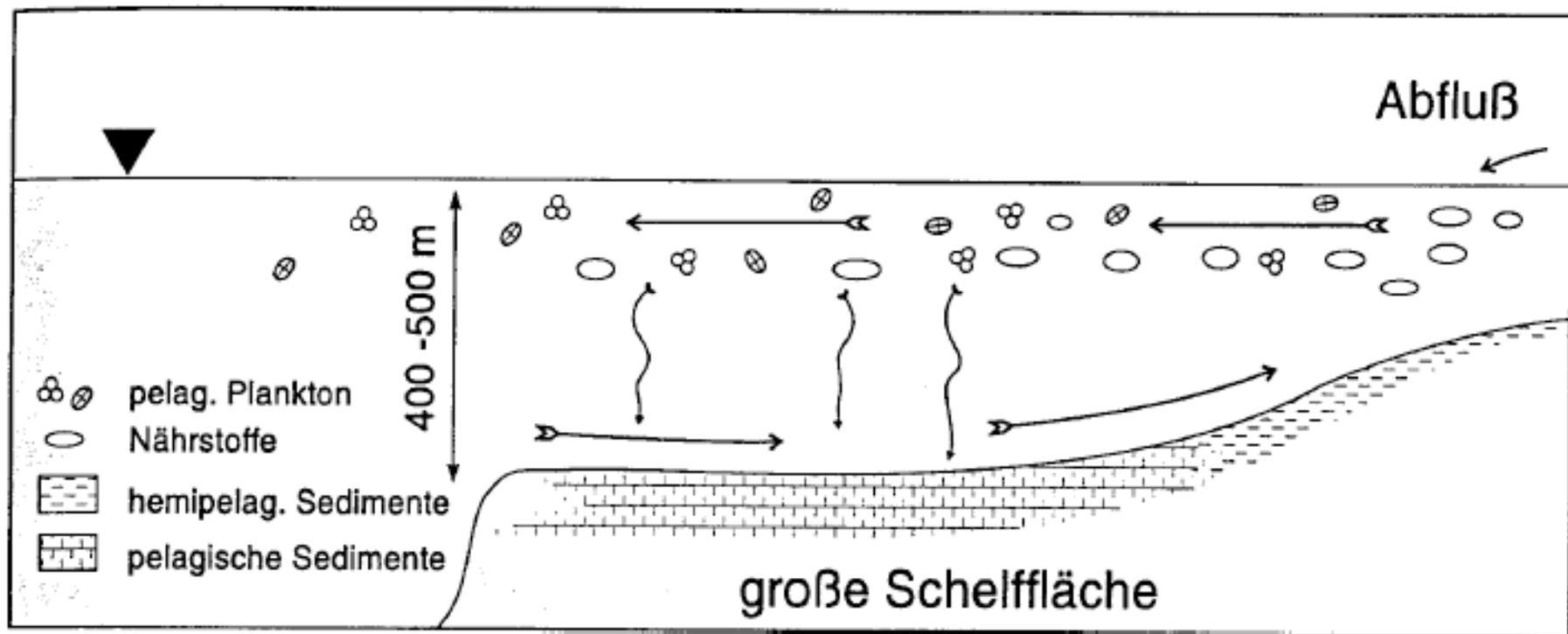
### Entkoppelte Schelfsysteme



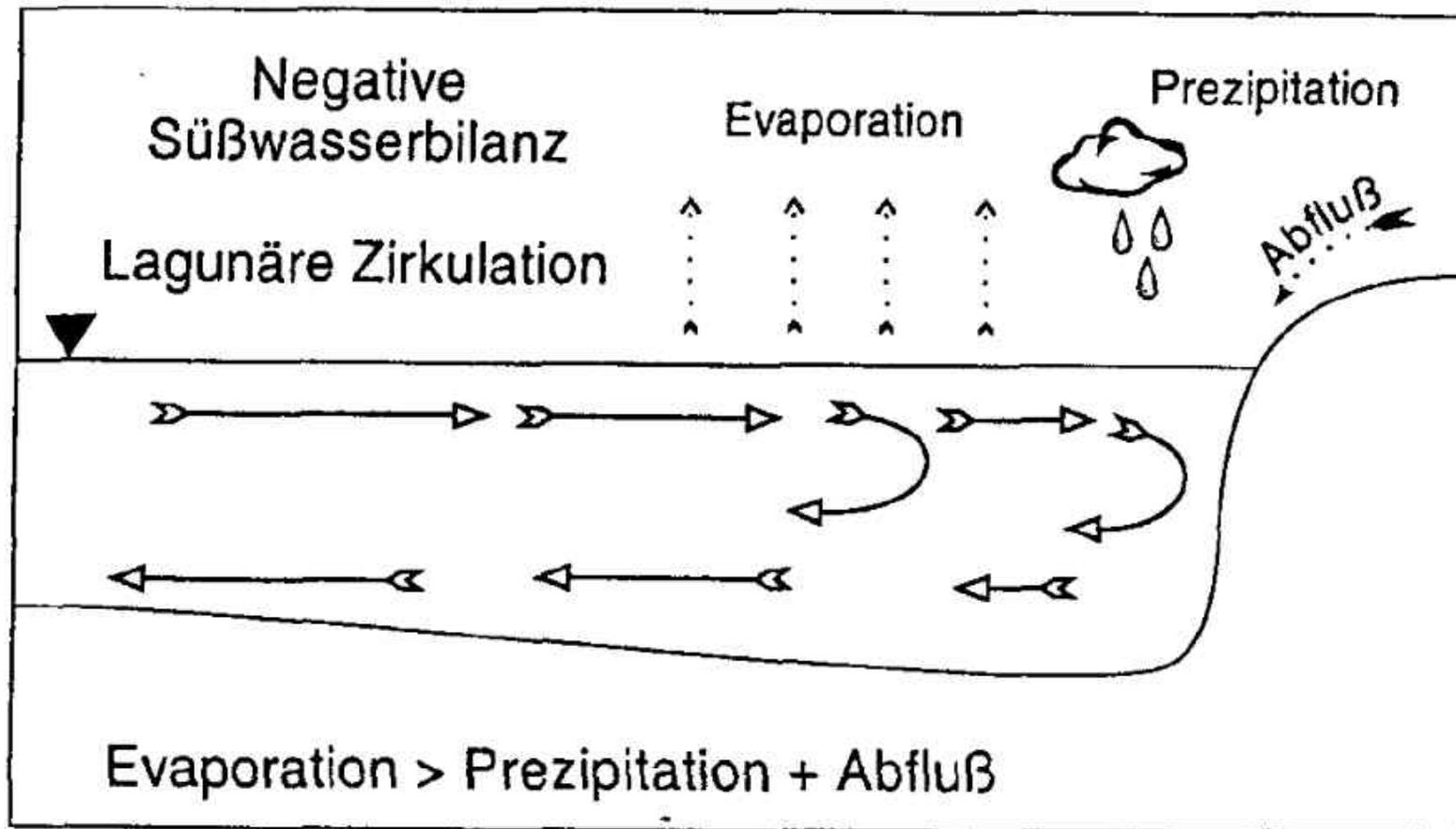
### Gekoppelte Schelfsysteme





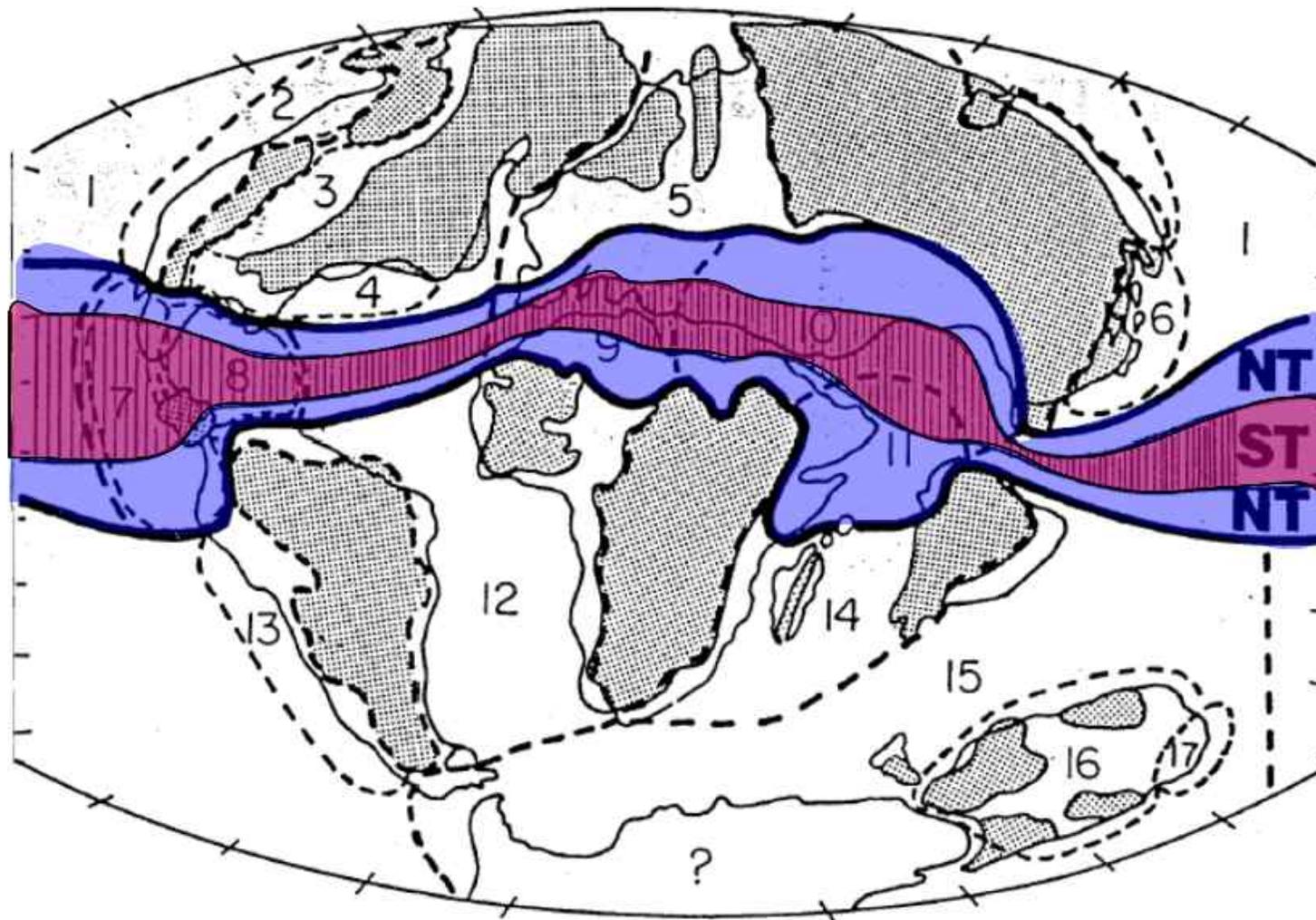


**Abb. 11:** Das Oberflächenwasser der Schelfe in der Oberkreide war nicht von dem des offenen Ozeans getrennt. Pelagisches Plankton konnte sich auf den Schelfen ausbreiten.



**Abb. 55:** Lagunäre Zirkulation bei negativer Süßwasserbilanz (nach Hay, 1994).

„Mittlere“ Kreide: „Supertethys“



aus Kauffman & Johnson 1988



*LAYERS OF CONTROVERSY* surround a thin band of gray clay scrutinized by scientists on this seaside cliff in Zumaya, Spain. Found worldwide, the layer marks the boundary between the Cretaceous and Tertiary periods. Experts studying the clay see clear

evidence of an impact—including high levels of iridium. Debate rages over the connection between the impact and the death of dinosaurs. But few scientists deny that extraordinary events are recorded in that narrow layer of sediment.

2034: K/T-Grenze bei Zumaya, Baskenland

# Ammoniten

# Inoceramen

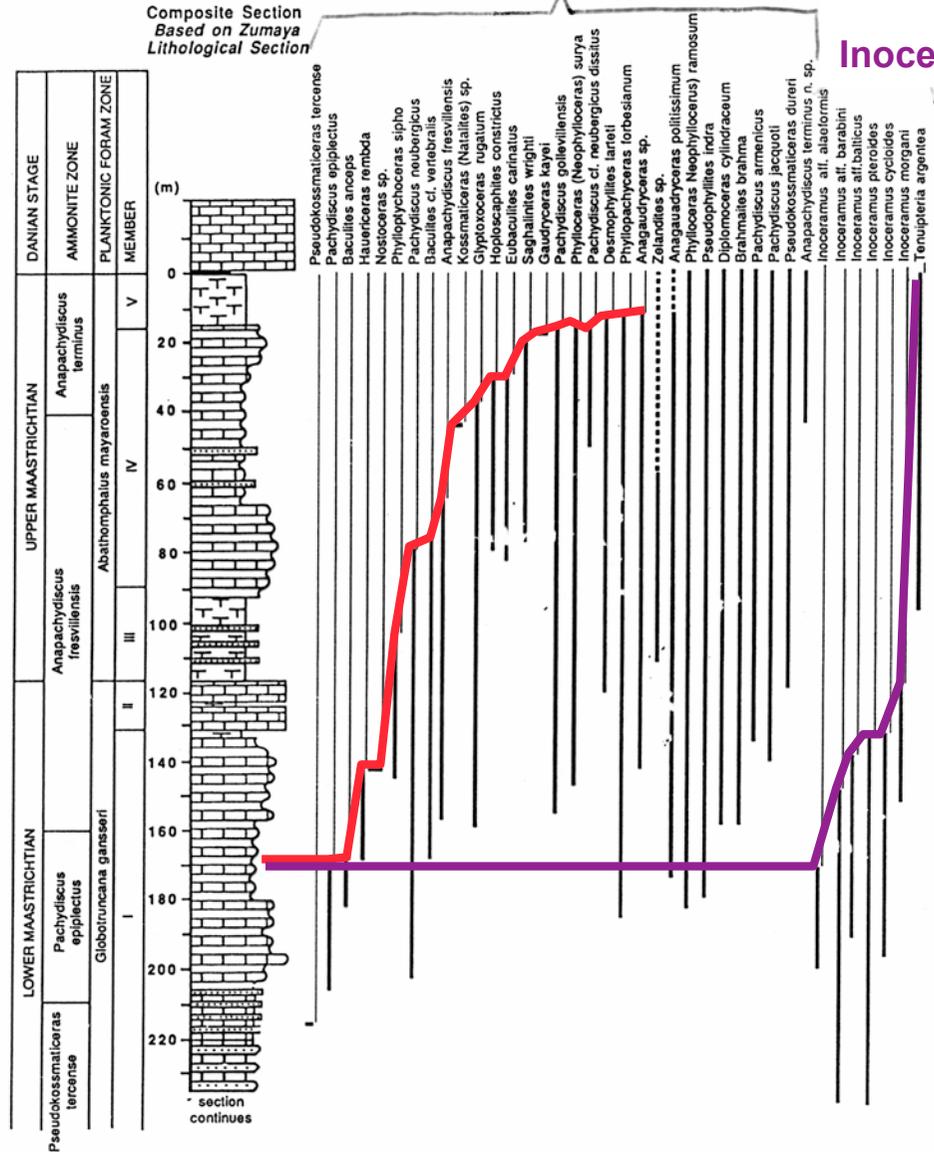
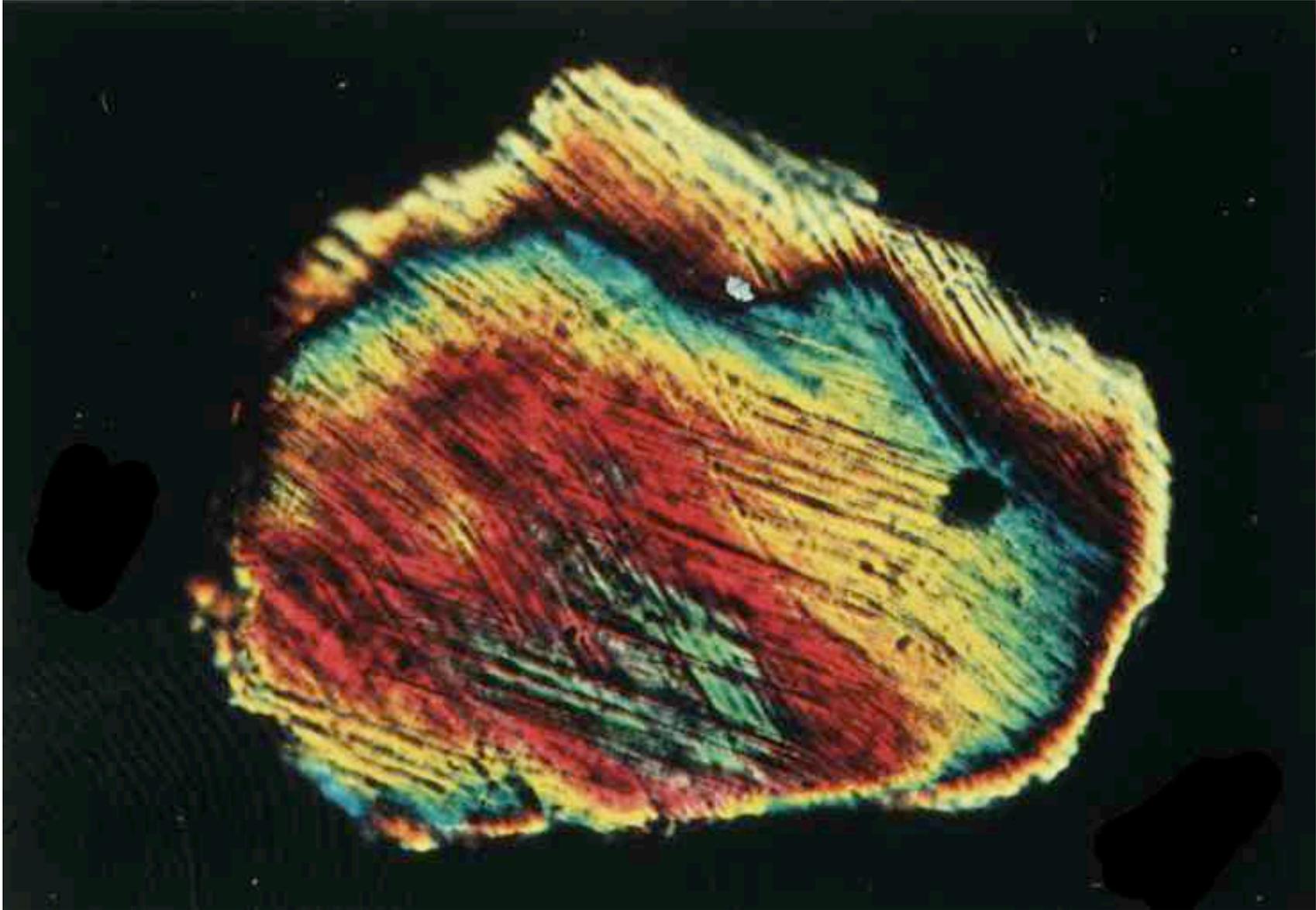
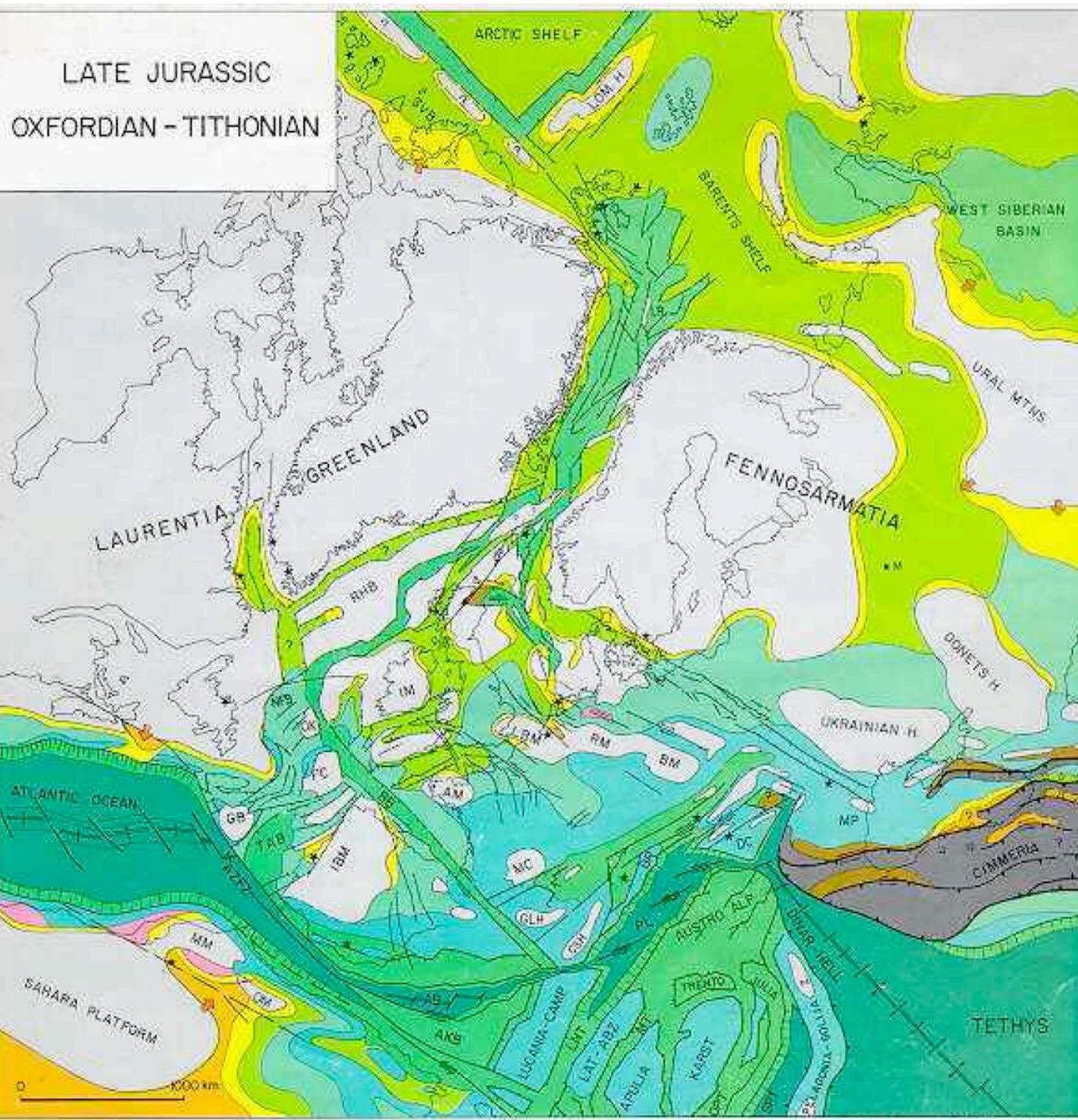


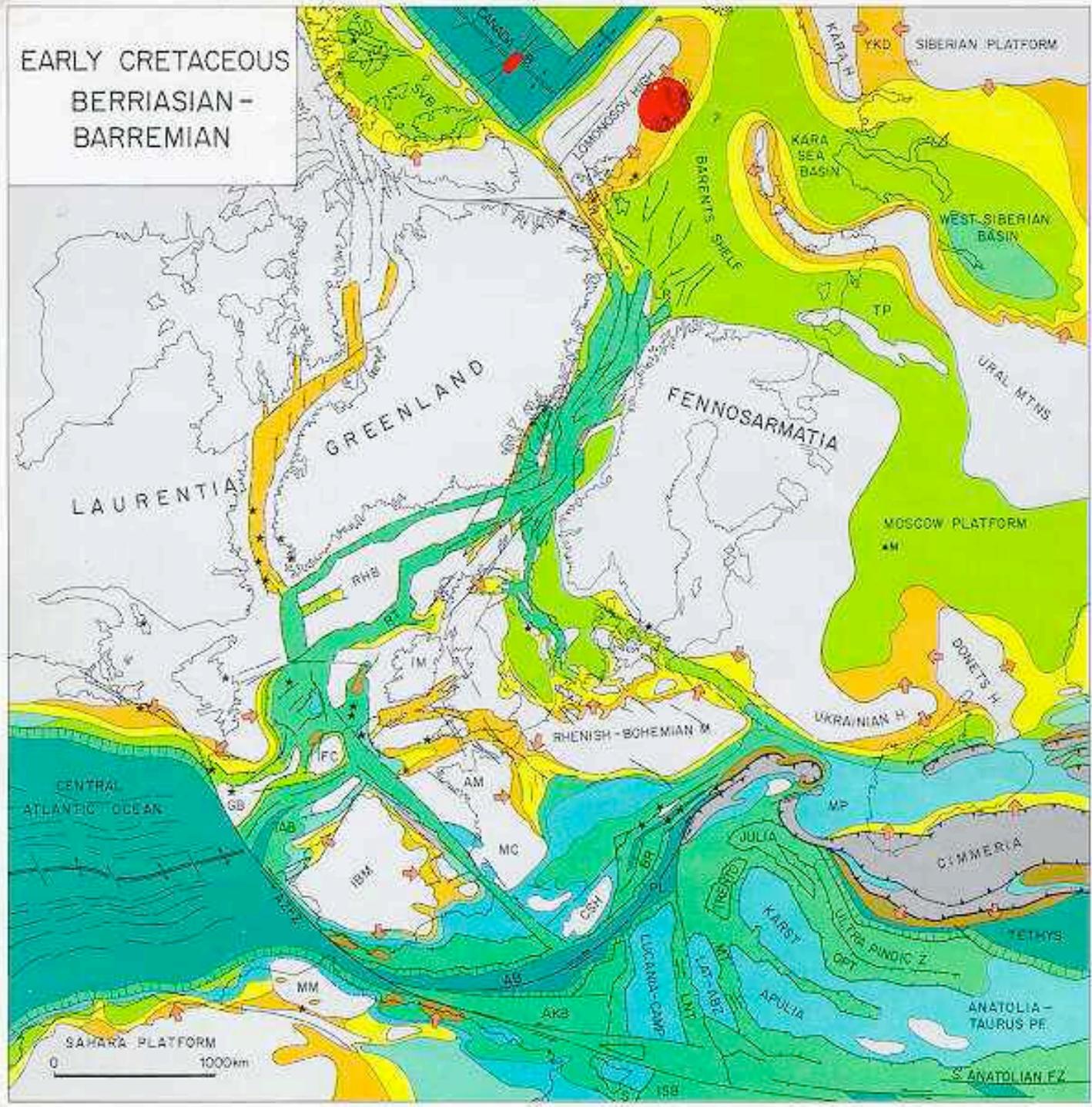
FIGURE 1—Ranges of ammonites and inoceramid bivalves from Bay of Biscay sites, France and Spain. The inoceramid extinction takes place near the base of the *A. mayaroensis* Zone, approximately 2 million years prior to the impact of the Chicxulub comet. This figure demonstrates the multicausal nature of the K/T extinctions. The lower extinction, involving the inoceramid bivalves and two ammonite species is clearly unrelated to the K/T boundary extinction.

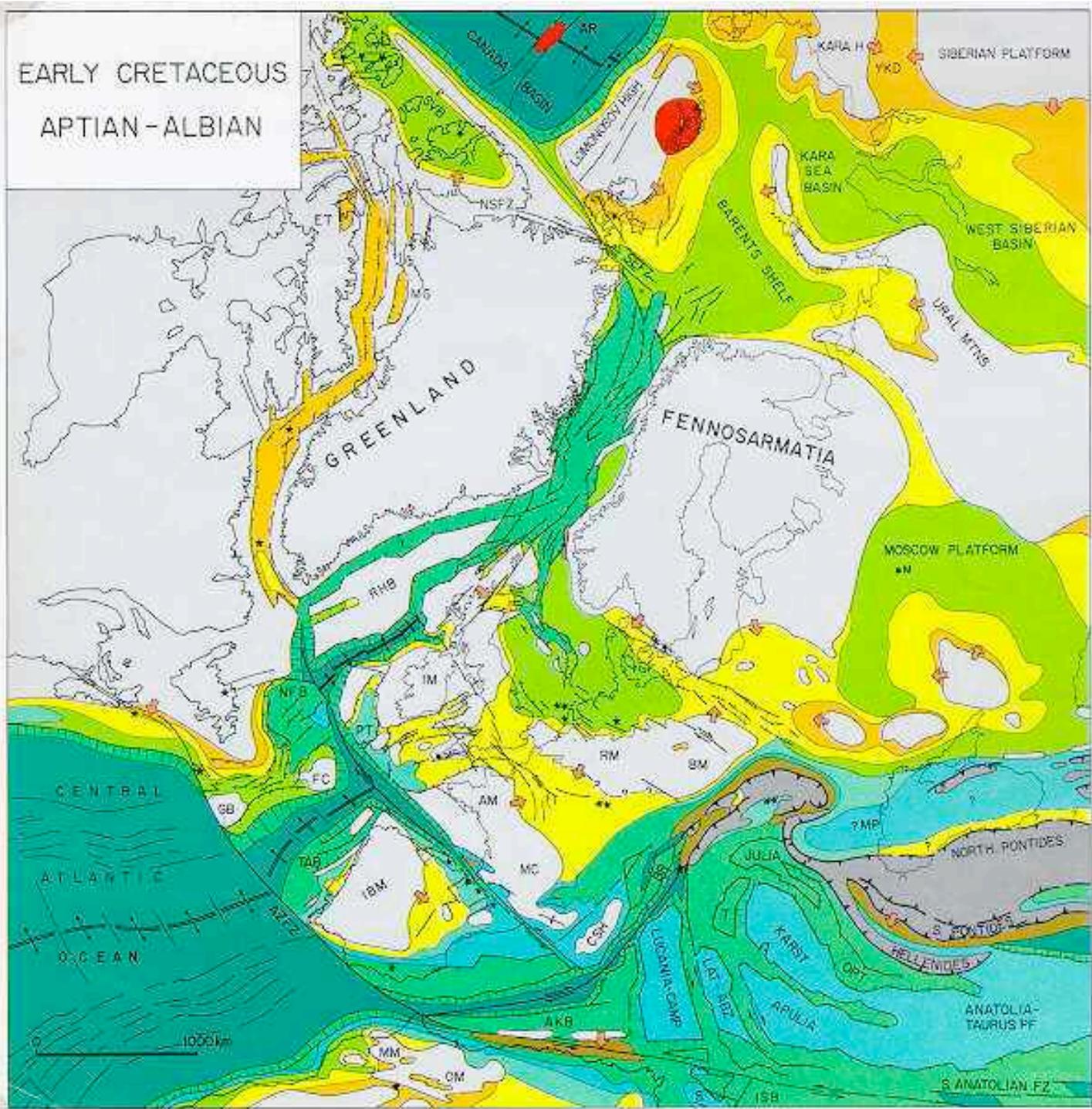


2035: geschockter Quarz

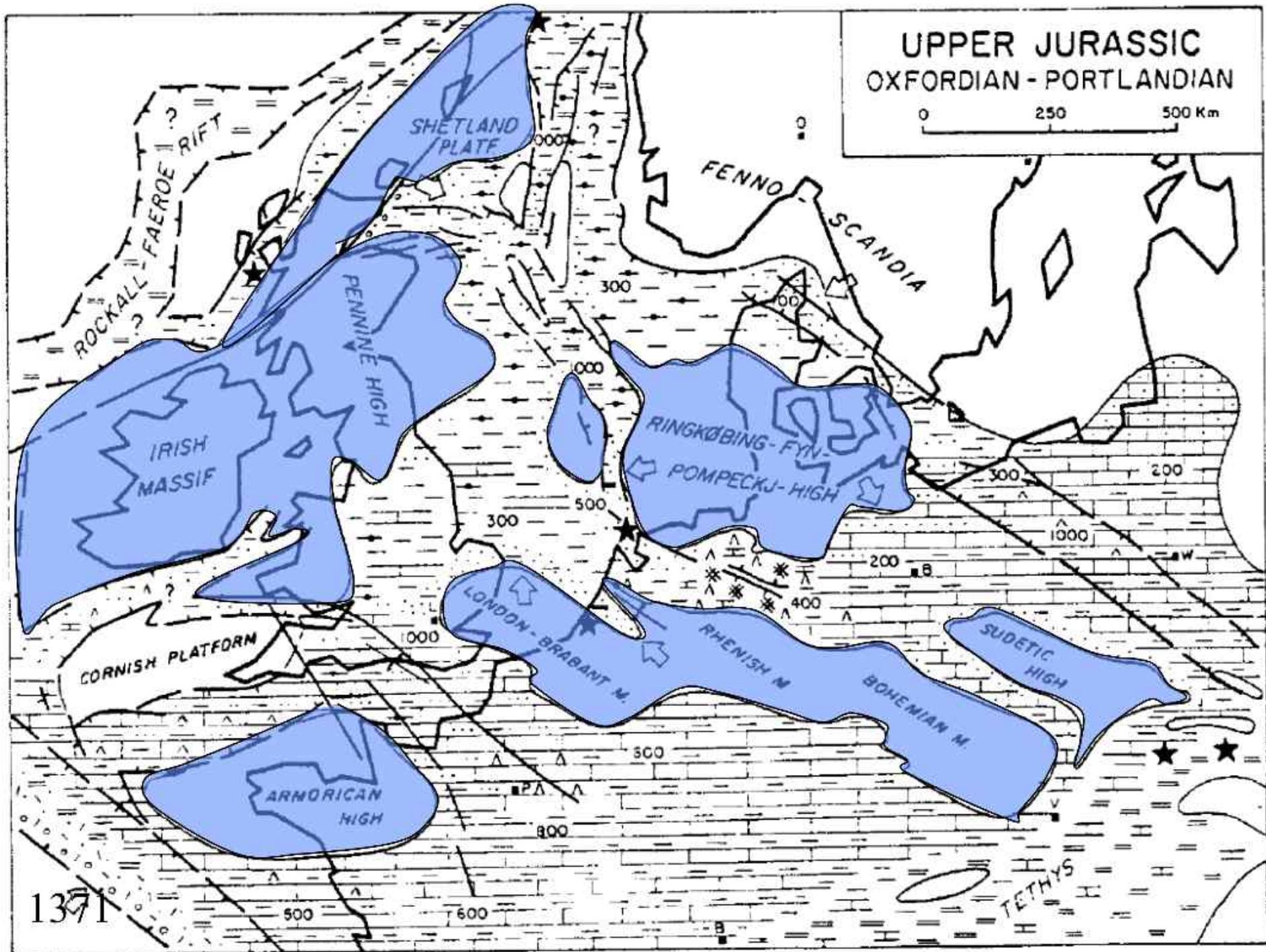


© Shell International Petroleum Mij B.V. 1987

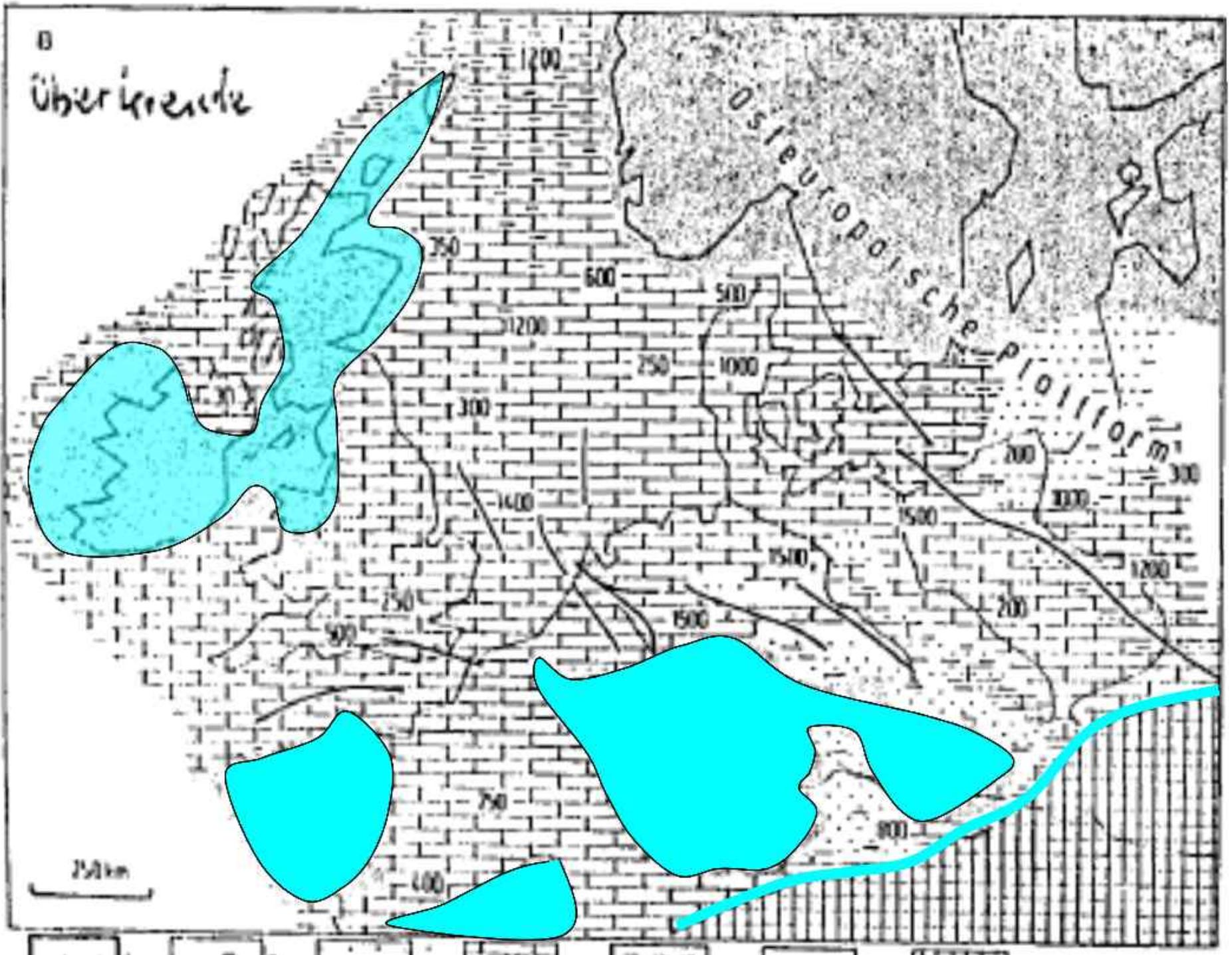


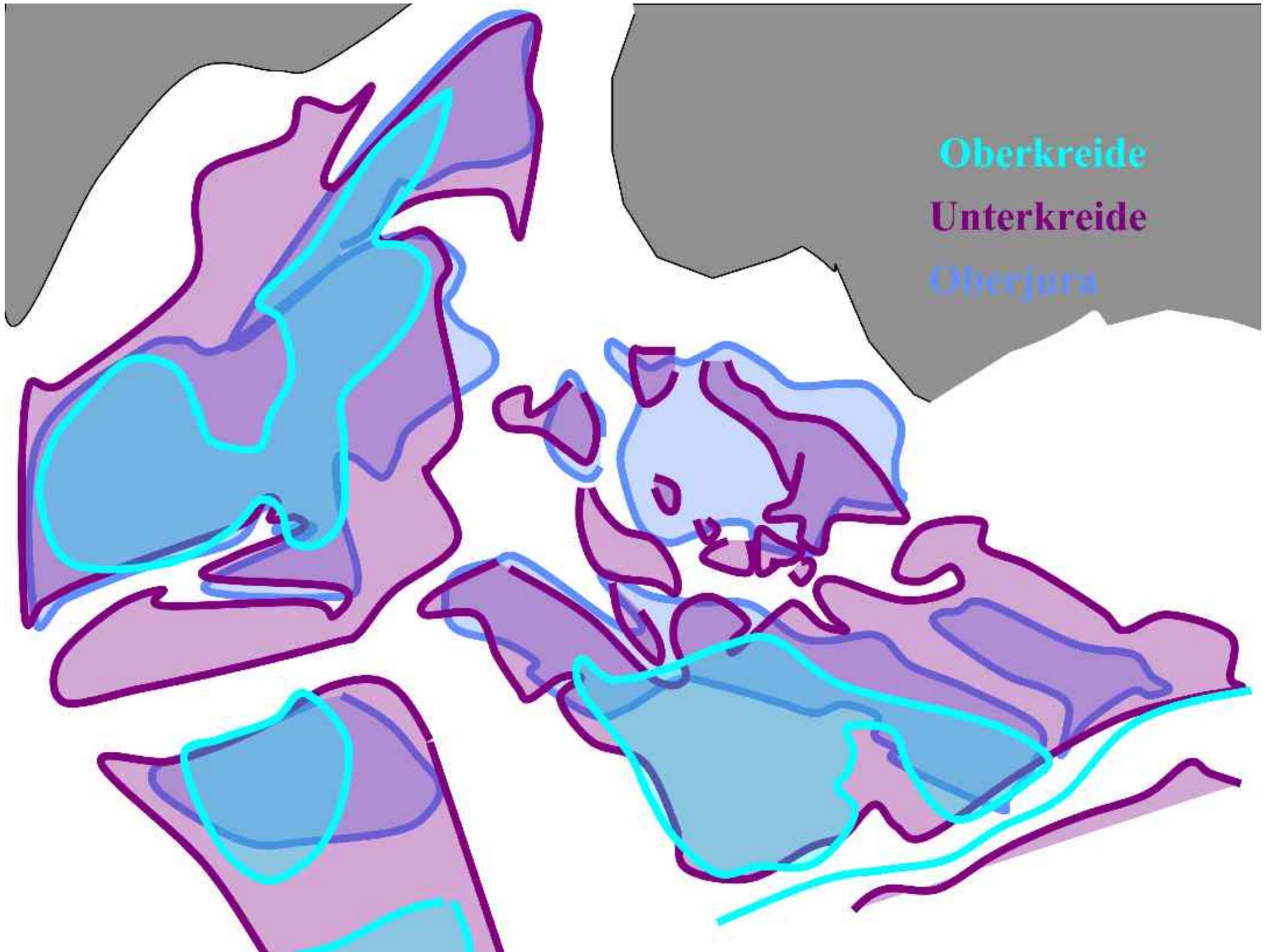




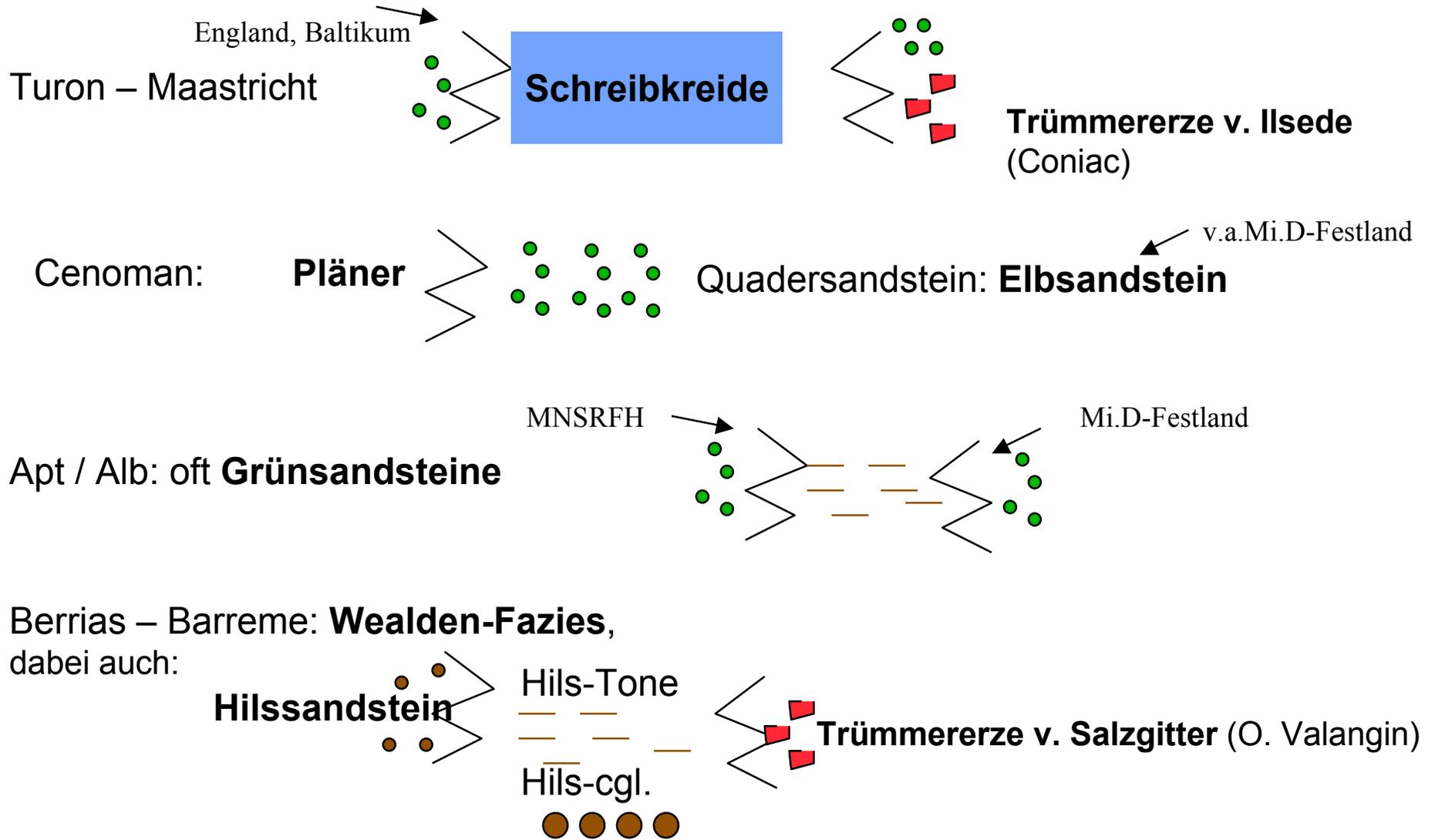








# Norddeutschland:



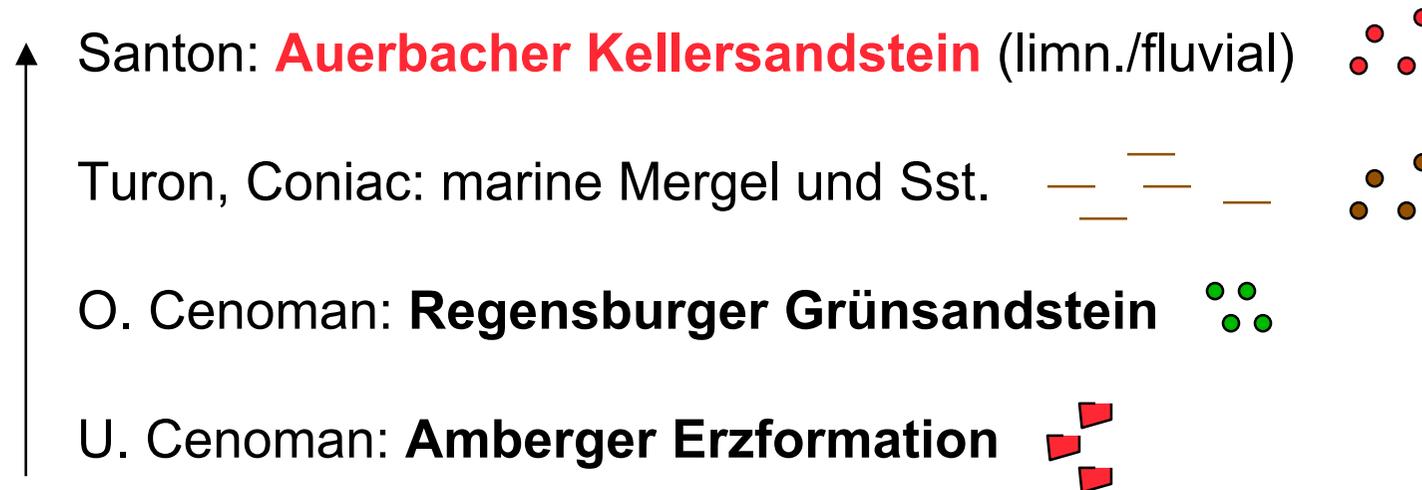


1884

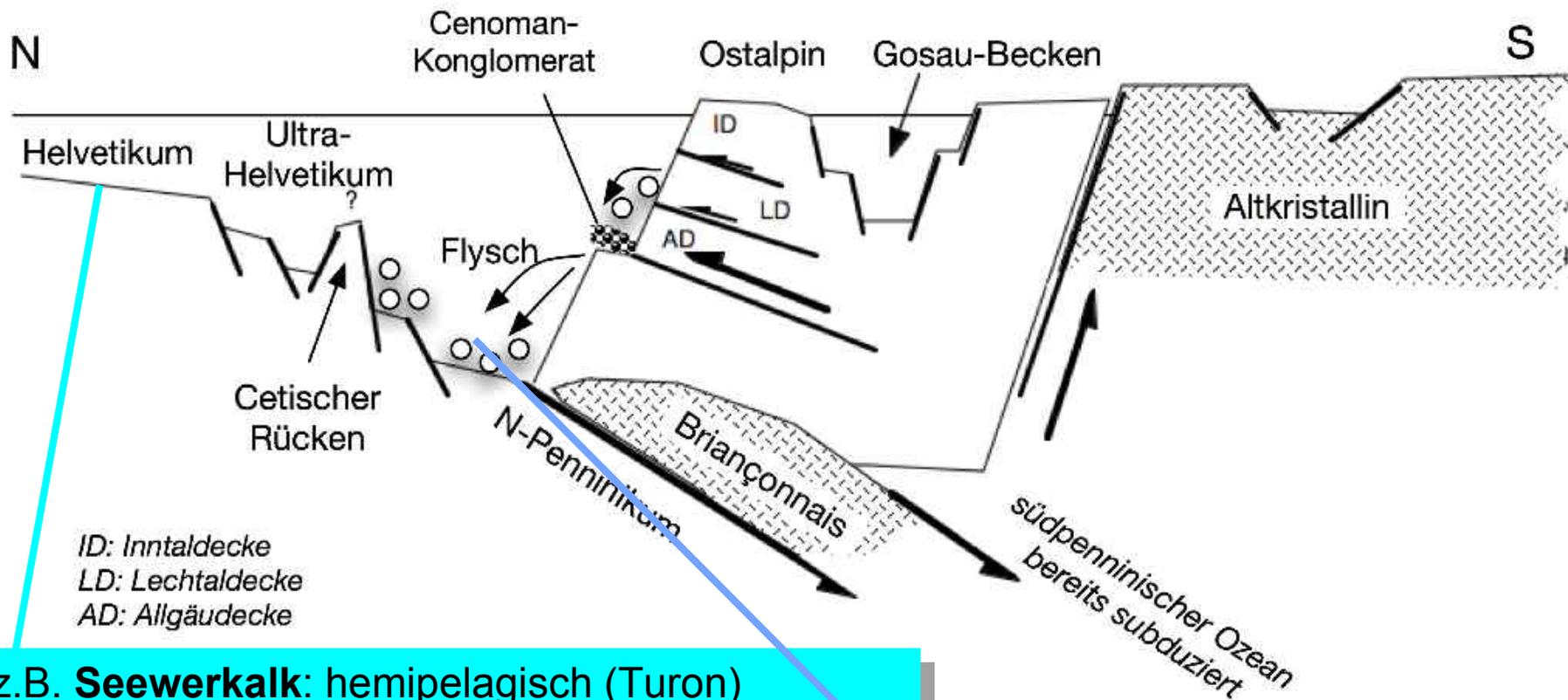
## Süddeutschland:

- Ende Jura: **Verwitterung, Karst, Bohnerzbildung**
- **Meeresvorstöße:**
  1. Hauterive (bis München; heute unter Molasse)
  2. Cenoman - Santon: Regensburger Bucht

Vereinfacht zu 2:

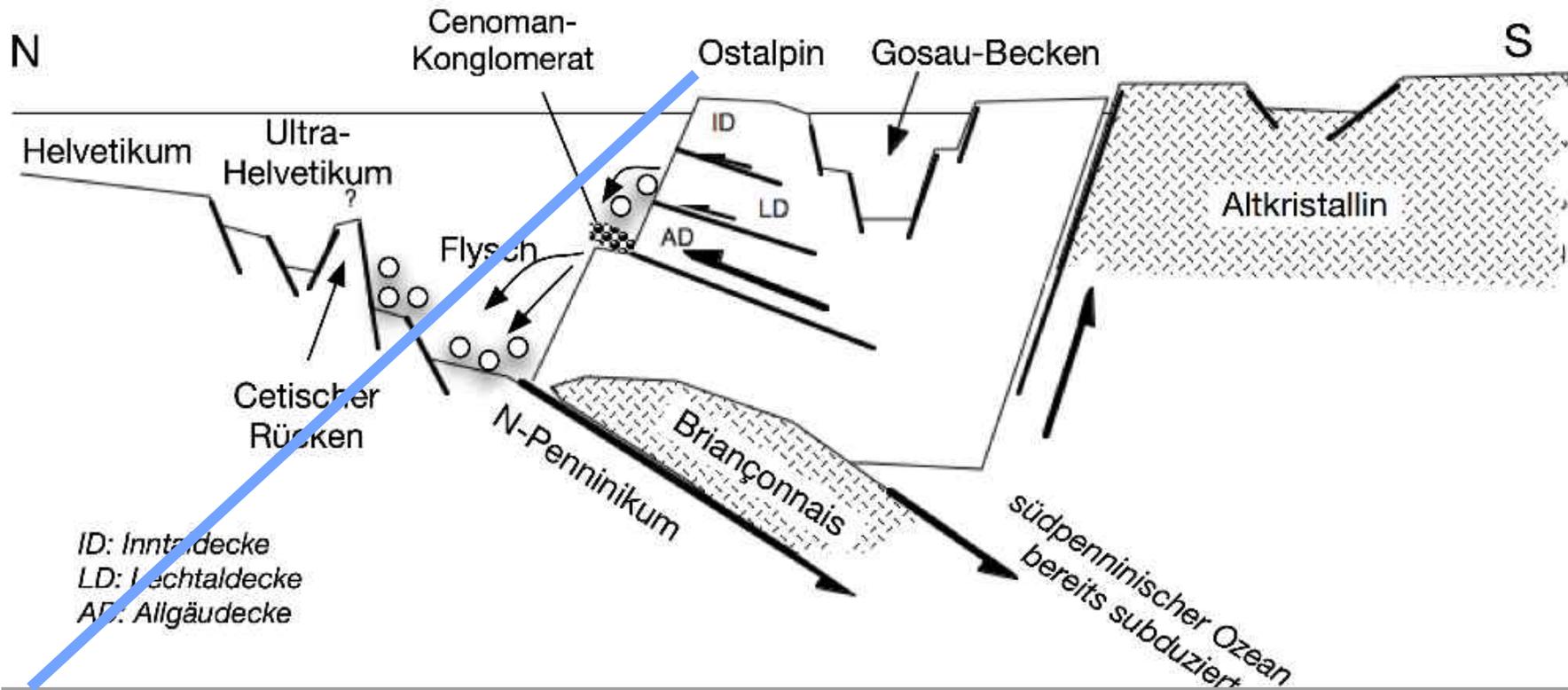


Die Alpen in der Oberkreide-Zeit (stark vereinfacht)



z.B. **Seewerkalk**: hemipelagisch (Turon)  
**Gault Grünsst. + Mergel** (Apt)  
**Schrattenkalk** (Barr./Apt: Urgonfazies mit Riffen)  
Mergel und Kieselkalke der tieferen Kreide

Ab „mittlerer“ Kreide z.B.:  
**Reiselsberger Sst** (Cen./Turon)  
**Flysch-Gault/Quarzitserie** (Alb)  
Serien mit Kalkturbiditen, zB.: **Tristelschichten** (Barreme/Apt)



Coniac-Maastricht (bis Paläozän): **Gosau**

*O. Turon/U. Coniac: **Prägosauische Orogenphase**: Schichtlücke, faltet Penninikum, Kollision mit Briançonnais*

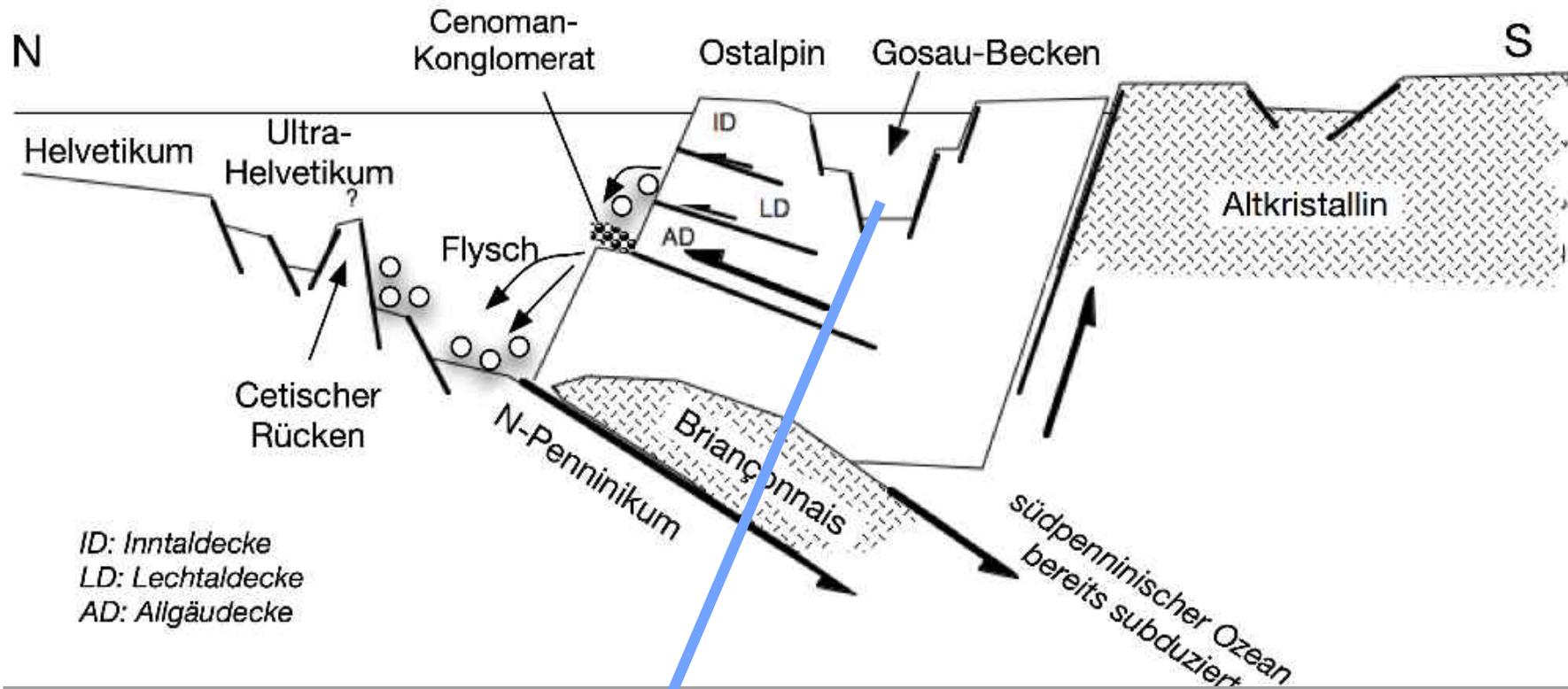
*O. Cenoman – U. Turon: Schichtlücke oder Mergel (Losensteiner Schichten) sowie **Cenoman-Konglomerat***

*Apt/Alb: **Austrische Phase**: Weitere Deckenabscherung*

Barreme: Schichtlücke oder **Tannheimer Schichten** (sandige Mergel)

Hauterive: **Roßfeld-Schichten** (u.a. Megabrekzie aus Triasblöcken).

Tiefere Unterkreide: **Neokom-Aptychenschichten**



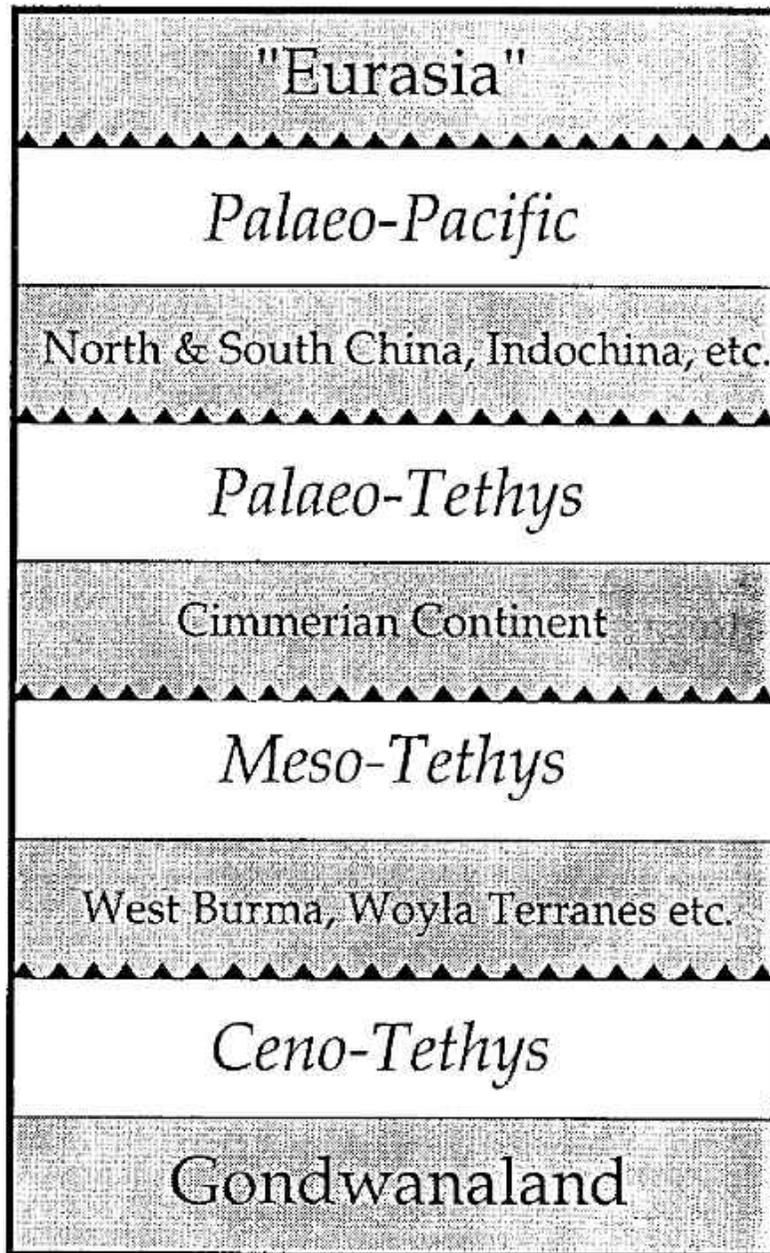
Coniac-Maastricht (bis Paläozän): **Gosau**

(Meer aus SE): Rucksack- bzw. Pull-Apart-Becken, stark differenziert: u.a.

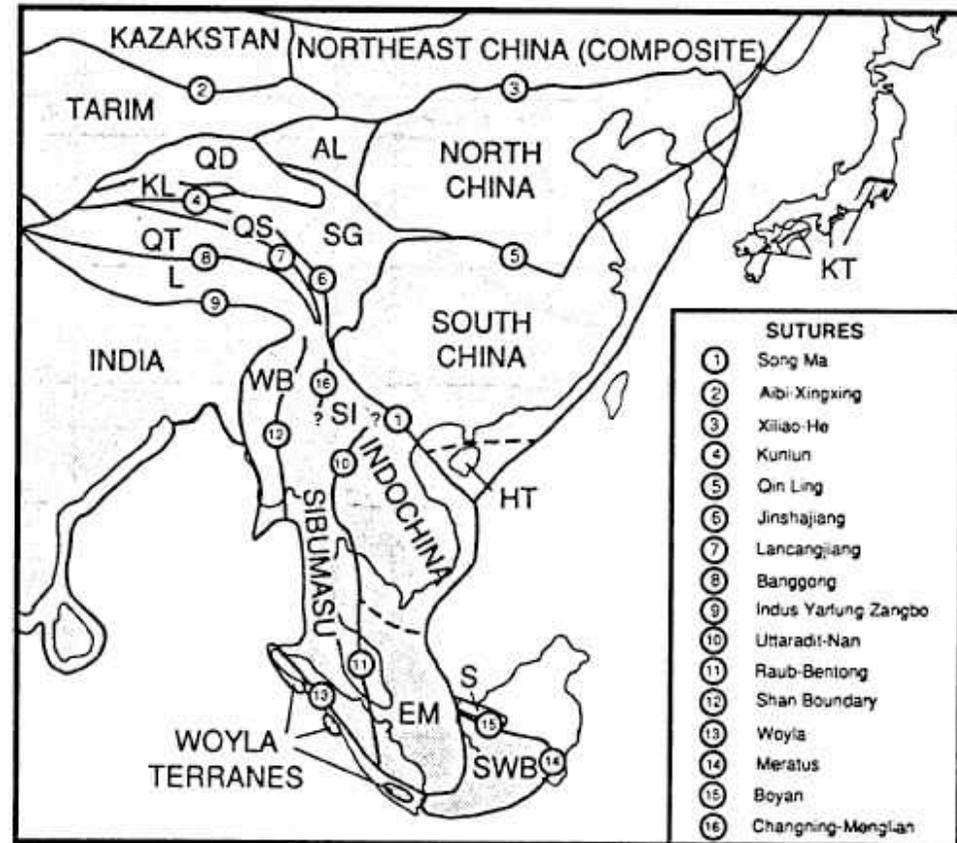
Bauxit, Schuttkalke (**Untersberger Marmor**), Riffkalke (**Rudisten, Korallen**), Lagunäre Kalke, pelagische Sedimente, Schuttfächer, Turbidite, Versturzböcke aus Trias etc.), z.B.

- Nierentaler Schichten
- Brandenberg-Schichten
- Muttekopfgosau
- Actaeonellenkalke

# Terrane und Transferplatten



**Fig. 4.** Schematic diagram showing the three continental slivers/collages of terranes, rifted from Gondwanaland and translated northwards by the opening and closing of three successive oceans, Palaeo-Tethys, Meso-Tethys and Ceno-Tethys.



**Fig. 1.** Distribution of principal continental terranes and sutures of East and Southeast Asia. EM = East Malaya, WB = West Burma, SWB = Southwest Borneo, S = Semitau Terrane, HT = Hainan Island terranes, L = Lhasa Terrane, QT = Qiangtang Terrane, QS = Qamdo-Simao Terrane, SI = Simao Terrane, SG = Songpan Ganzi accretionary complex, KL = Kunlun Terrane, QD = Qaidam Terrane, AL = Ala Shan Terrane, KT = Kurosegawa Terrane.

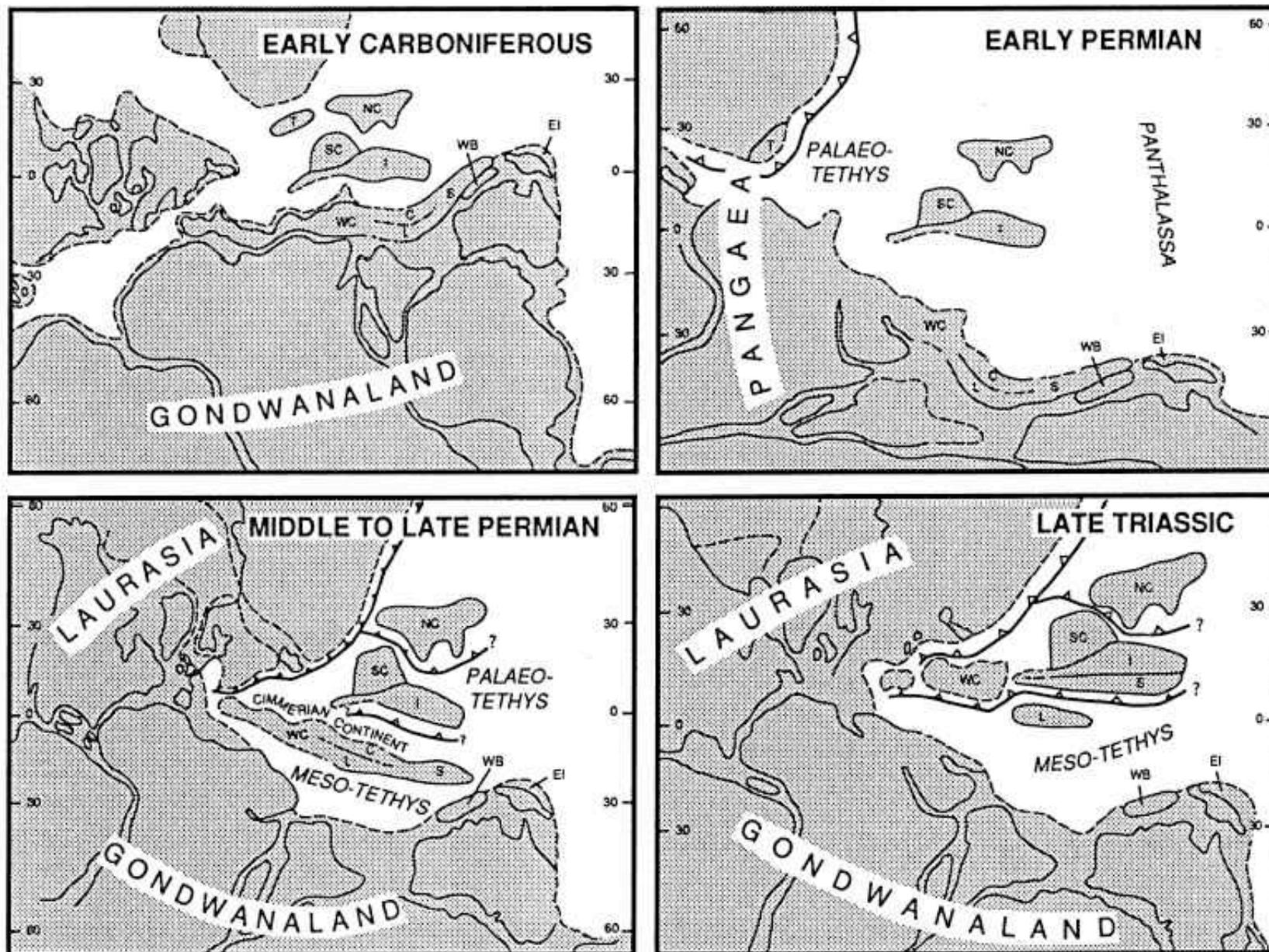
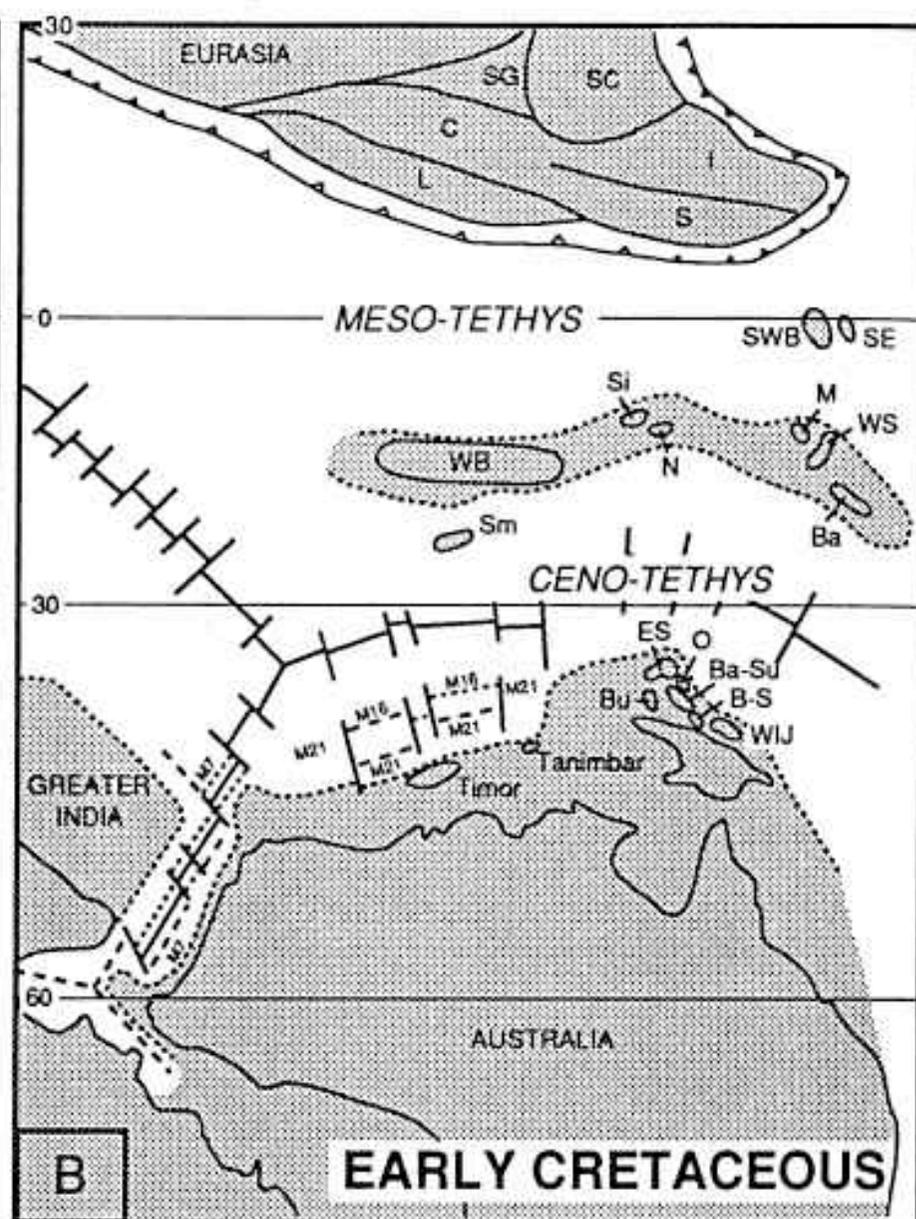
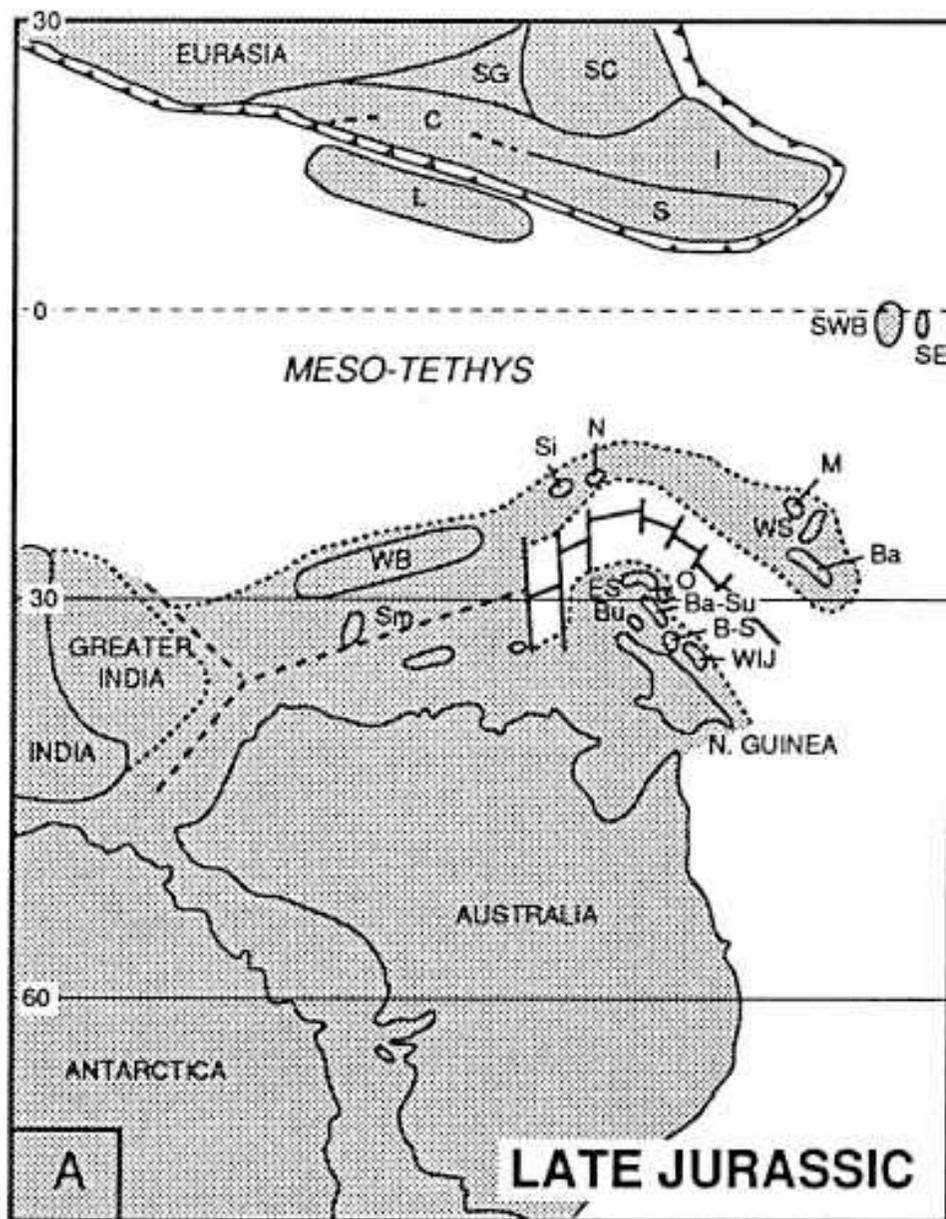
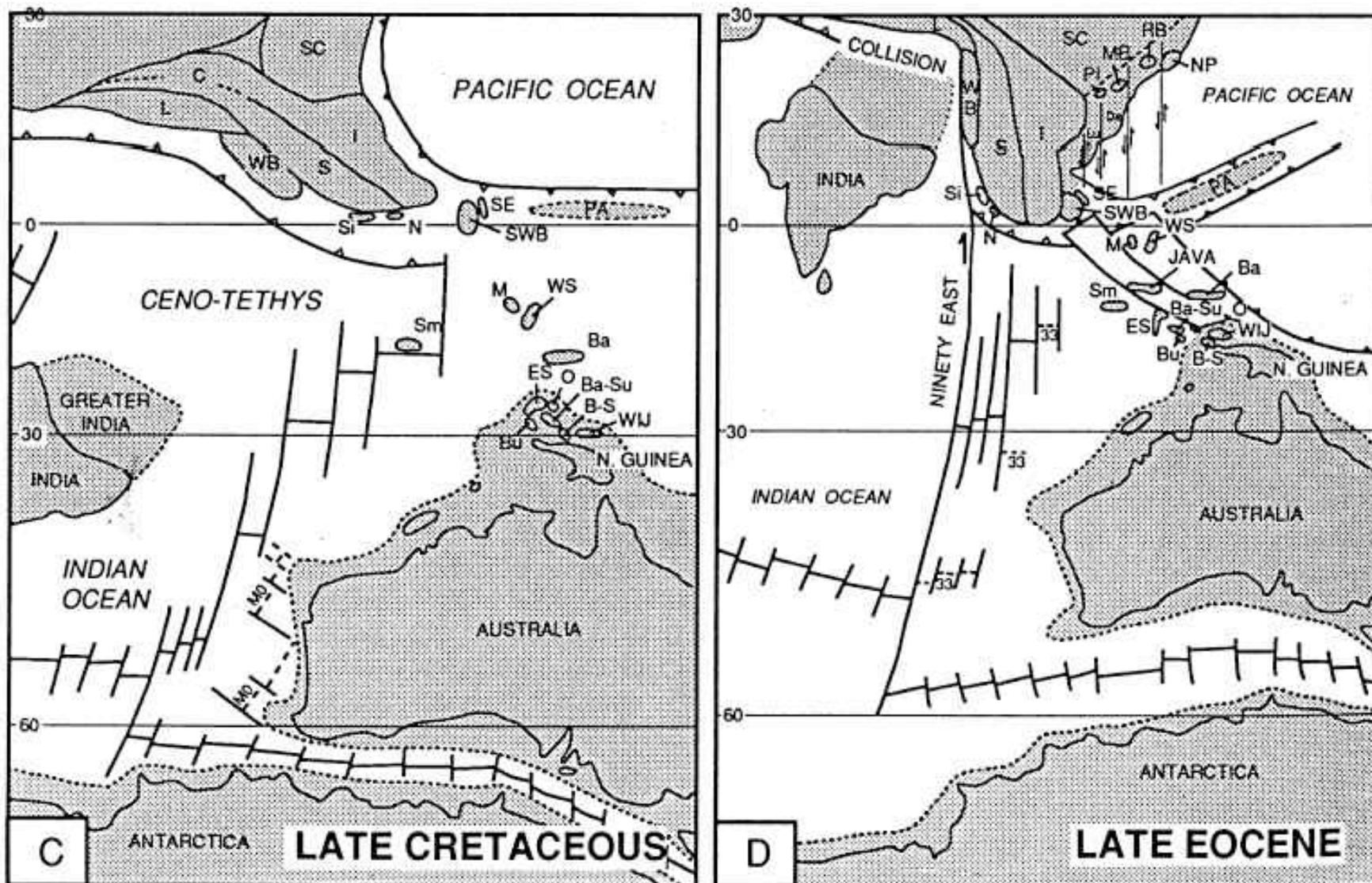


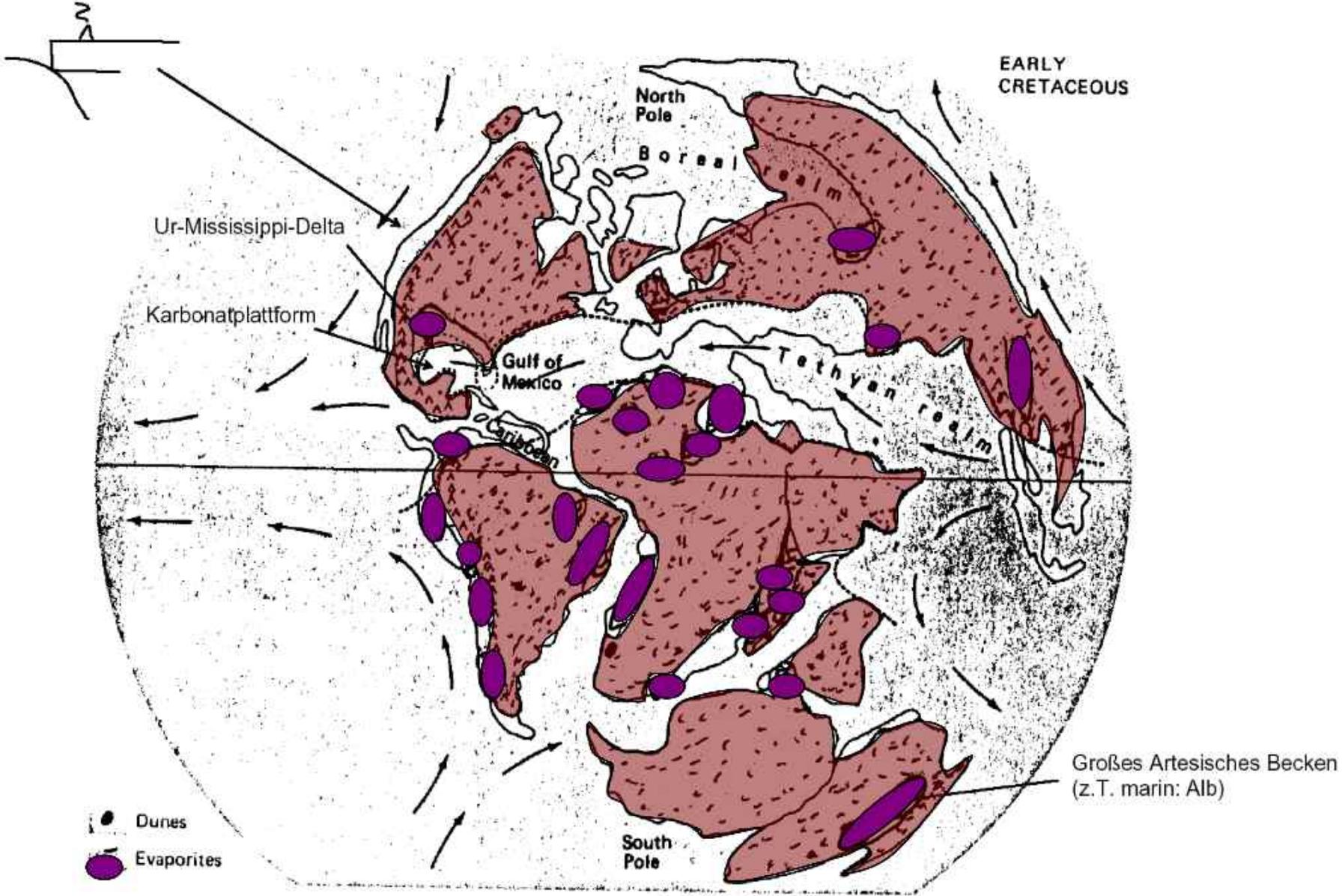
Fig. 7. Palaeogeographic reconstructions of the Tethyan region for Early Carboniferous, Early Permian, Middle-Late Permian and Late Triassic. Modified after Metcalfe (1988, 1990). Present day outlines are for reference only. EI = Eastern Indonesian terranes, other symbols as for figure 5. WC; Wester Cimmerian Continent, L: Lhasa, C: Qiangtang, S: Sibumasu, WB: West Burma, SC: South China, NC: North China, I: Indochina, T: Tarim





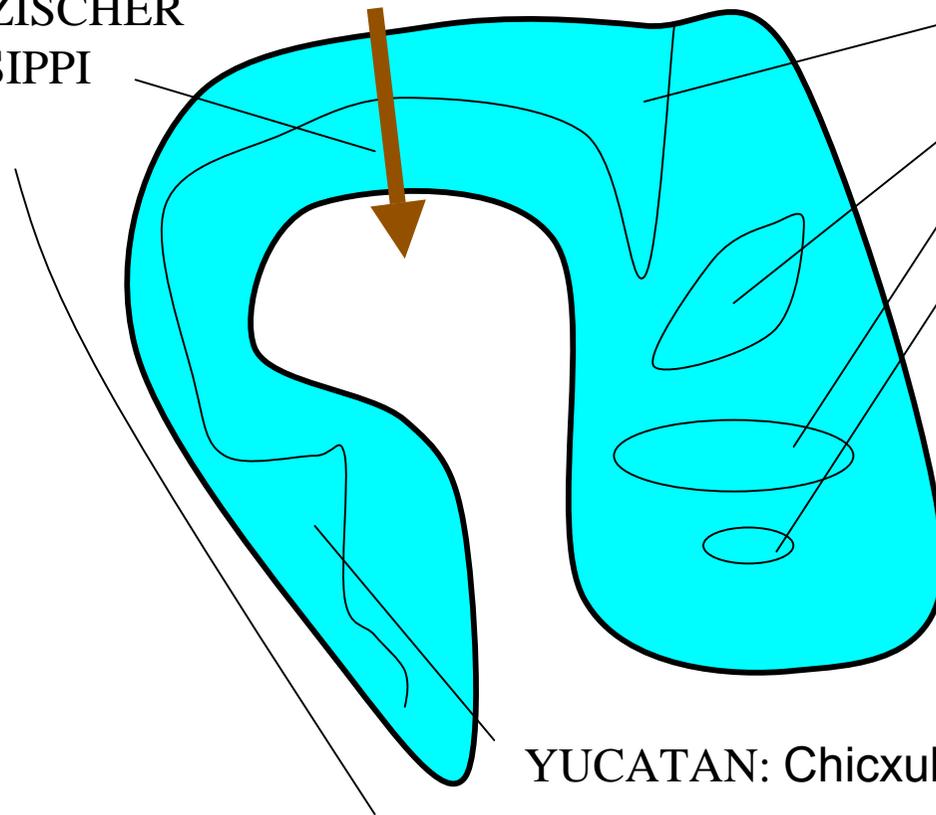
**Fig. 9.** Palaeogeographic reconstructions for Eastern Tethys in A: Late Jurassic, B: Early Cretaceous, C: Late Cretaceous and D: Late Eocene times. SG = Songpan Gangzi accretionary complex SWB = Southwest Borneo SE = Semitau Si = Sikuleh N = Natal M = Mangkalihat WS = West Sulawesi Ba = Banda Allochthon ES = East Sulawesi O = Obi-Bacan Ba-Su = Banggai-Sula Bu = Buton B-S = Buru-Seram WIJ = West Irian Jaya Sm = Sumba PI = Paracel Islands MB = Macclesfield Bank RB = Reed Bank NP = North Palawan Lu = Luconia Da = Spratley Islands-Dangerous Ground PA = Philippine Arc. M numbers represent Indian Ocean magnetic anomalies. Other terrane symbols as in figures 5 and 6. Modified from Metcalfe (1990) and partly after Smith et al. (1981), Audley-Charles (1988) and Audley-Charles et al. (1988). Present day outlines are for reference only.

# Kreide: Restliche Welt



KRETAZISCHER  
MISSISSIPPI

FLORIDA  
BAHAMAS  
KUBA  
JAMAICA



YUCATAN: Chicxulub-Krater

# Kreide: Restliche Welt

