

**Paleozoik  
SILUR**

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**Silur**

- ~ podjela:
- . landoveri: 444 - 428 mil. god.
  - . venlok: 428 - 423 mil. god.
  - . ladlov: 423 - 419 mil. god.
  - . pridolij: 419 - 416 mil. god.

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**Silur**

- ~ važniji biološki događaji
- . središnji silur: prve čeljusne ribe (plakodermi)
  - . viši silur: prve kopnene biljke
  - . konac silura: dvodihalice

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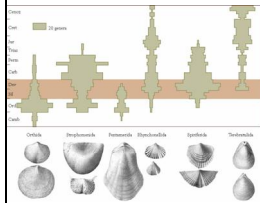
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## Silur

- ~ važniji paleogeografski događaji
- . najniži silur: Gondvana se pruža na južnoj hemisferi, traje glacijacija
- . gornji silur: Reički ocean veže lapetus i Paleotethys

## Obnova života



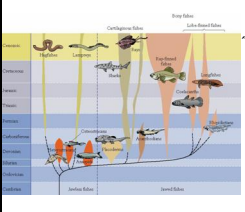
- ~ evolucijska radijacija nakon ordovicijskog izumiranja
- ~ obnovili se:
- . brahiopodi
- . bivalve
- . graptoliti s naglim razvojem - gotovo izumrli krajem ordovicija

## Obnova života



- ~ snažan razvoj euripterida
- . počeli razvoj u ordoviciju
- . plivajući člankonošci

### Ribe



**razvoj riba**

- . prve potpuno sačuvane vrste
- . egzistirale i slatkovodne

Stanley, 2005, Freeman

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### Ribe

" razvoj ostrakoderma -  
beščeljusnice

- . velike ploče prekrivaju prednji dio  
tijela
- . par očiju, mala usta

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### Ribe



- " srednji silur - ribe s  
čeljusti ("prave  
ribe")
- " plakodermi
- " akantodiji

Stanley, 2005, Freeman

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**Kopnene biljke**



~ konac silura -  
polumočvarne  
kopnene biljke

~ vaskularne biljke

*Baragwanathia*

Stanley, 2005, Freeman

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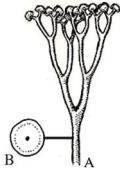
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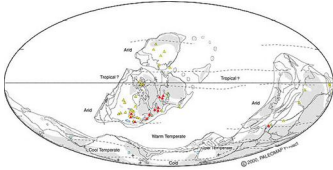
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**Kopnene biljke**



Cooksonia - najstarija  
kopnena biljka na  
sjevernoj hemisferi.

**Klima**



Silur  
Topla klima

## Paleogeografija

~ porast razine mora nakon glacijacije  
krajem ordovicija

~ topla klima  
· rast grebena

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## Paleogeografija



Granica između ordovicija i silura.

Stanley, 2005, Freeman

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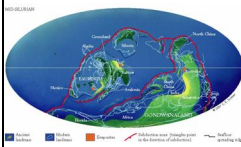
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## Paleogeografija



~ rub na istočnoj  
obali Sj. Amerike  
· erozija ublažila  
reljef  
~ plitka mora na  
zapadu

Stanley, 2005, Freeman

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### Paleogeografija

~ srednjesilurski grebeni na području Velikih jezera

~ gornji silur evaporiti prevladavaju u Mičigenskom bazenu

Stanley, 2005, Freeman

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### Paleogeografija

~ Thornton greben. Profil stromatoporidnog grebena

Stanley, 2005, Freeman

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### Grebene

**Grafton**

**Thornton**

- reef core
- flank beds
- interreef deposits
- pre-reef deposits

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### Grebeni i život



Stromatoporidni greben

Stromatoporidi

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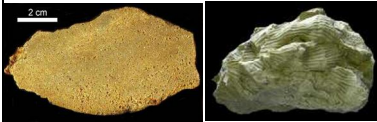
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### Podgreben



Podgrebenski doloston.  
Ranije vapnenački pijesak.

Tabulatni koralji.

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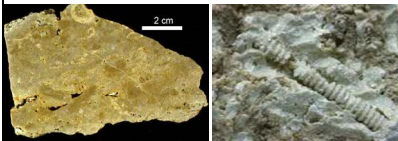
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### Prijelaz podgreben - greben



Sitnozrnasti dolomitični kalkarenit. Onkoliti. Plitka voda. Fotosinteza.

Nautilid

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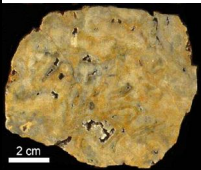
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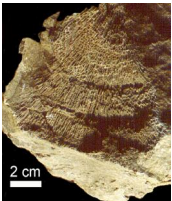
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**Greben**



**Grebenski vapnenac**



**Tabulatni korajji**

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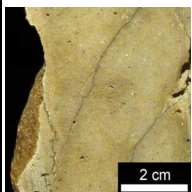
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**Nadgreben**



**Sitnozrnasti dolostone.  
Ranije karbonatni mulj.**



**Nautilid**

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**Orogeze**

- ~ orogeneze rezultirale u suturaciji (spajanju) kontinenata
- ~ Europa
  - . kaledonska orogeneza (silur - donji devon) - kolizija Laurencije i Baltike - formiranje kontinenta Laurazija
- ~ Sjeverna Amerika
  - . akadijska orogeneza

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### Kaledonska orogeneza

- ~ sjeverozapadna Skandinavija, Velika Britanija
- ~ velika područja bez značajnih strukturnih promjena (Kordiljera, Tasmanija)

### Kaledonska orogeneza

- ~ britanski i skandinavski kaledonidi
  - . niži silur: sitnozrnasti klastiti s graptolitima, manje pješčenjaci, konglomerati i vapnenci
  - . središnji silur: sitnozrnasti klastiti s graptolitima, više vapnenaca (i grebenski)
  - . viši silur: klastiti s graptolitima, bočno vapnenci i konglomerati; završetak sa šarenim kopnenim pješčenjacima

### Kaledonska orogeneza

- ~ Praški bazen
  - . sitnozrnasti klastiti s graptolitima
- ~ Karničke Alpe
  - . vapnenački i graptolitni facijesi
- ~ Bosna i istočni Balkan
  - . škriļjavci i vapnenci s graptolitima i konodontima
- ~ Medvednica
  - . silursko-devonski šejlovi s graptolitima (Climacograptus)
- ~ Psunj, Papuk
  - . Psunjski metamorfni kompleks
    - ~ Kutjevačka serija
  - . ali i karbon i perm

## Akadijska orogeneza

~ 2. faza izgradnje planina u Apalačima

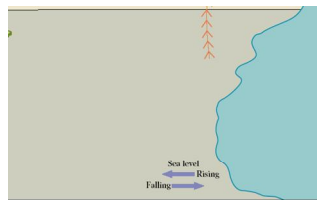
~ dvostruka kolizija duž istočnog ruba Laurencije: na sjeveru s Baltikom, na jugu s mikrokontinentom Avalonijom

~ suturacija proizvela orogeni pojas danas smješten u Sj. Americi i na Grenlandu (u Norveškoj kaledonidi)

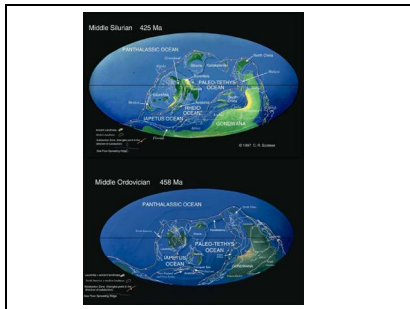
## Akadijska orogeneza

~ u siluru erozija bitno snizila visinu planina izdignutih takonskom orogenezom

~ postanak karbonatnih platformi i grebena



Stanley, 2005, Freeman



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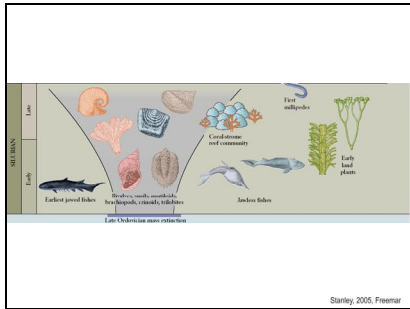
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### Mineralne sirovine

- ~ soli: Sj. Amerika, Sibir
- ~ sedimentne rude željeza: Sajan (Azija), Sj. Amerika
- ~ magmatske rude željeza: Apalači, Norveška, Češka
- ~ bakar, kromit: Norveška



Stanley, 2005, Freeman