TEKTONIKA

Wykład 5

Systemy uskokowe

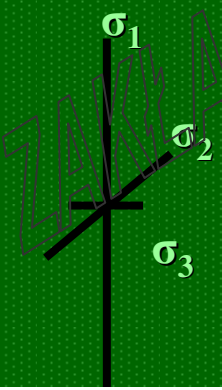
dr hab. Edyta Jurewicz

pok. nr 1055

UKŁAD NAPRĘŻEŃ A USKOKI

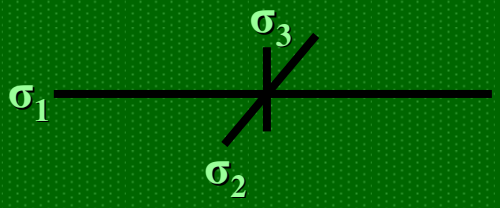
uskoki normalne

60°



uskoki odwrócone

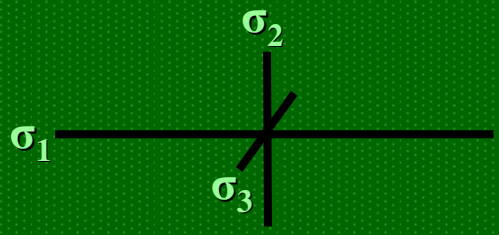
30°



uskoki przesuwcze

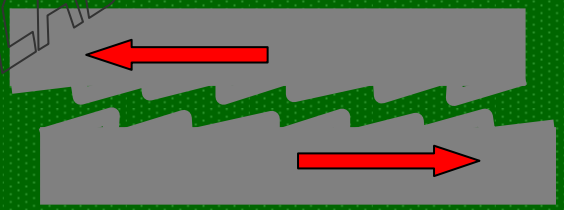
www.tesla.jcu.edu.au

90°

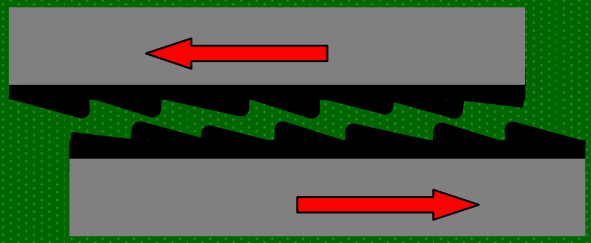


TEKTOGLIFY
STRUKTURY ŚLIZGOWE

z wcięcia



z oderwania



RODZAJE USKOKÓW

uskoki normalne
uskoki odwrócone
} uskoki zrzutowe

uskoki przesuwcze (prawoskrętne, lewoskrętne)

uskoki zrzutowo-przesuwcze (normalne i odwrócone)
uskoki przesuwczo-zrzutowe

uskoki pierwotne
uskoki wtórne (odmłodzone)

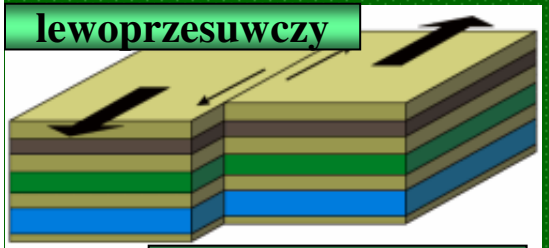
uskoki podatne
uskoki kruche

uskoki połogie
uskoki strome

uskoki nożycowe, zawiasowe, listryczne (rotacyjne)

USKOKI

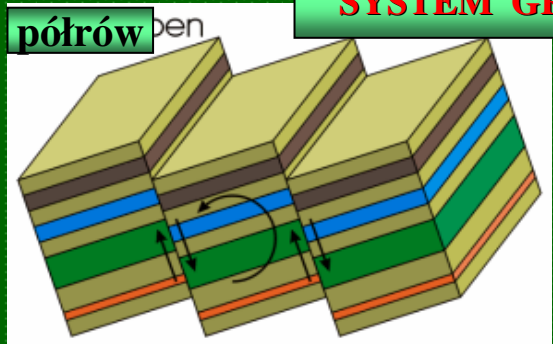
lewoprzesuwczy



prawoprzesuwczy

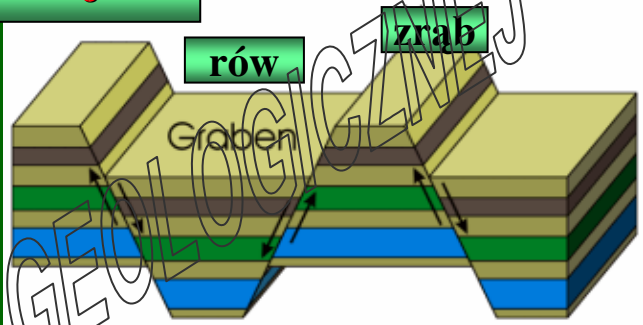
SYSTEM GRAWITACYJNY

półrów



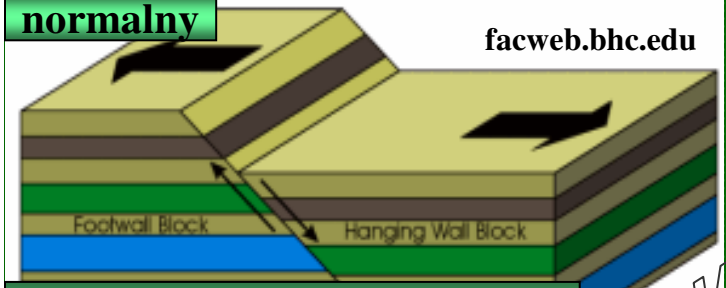
rów

zrąb

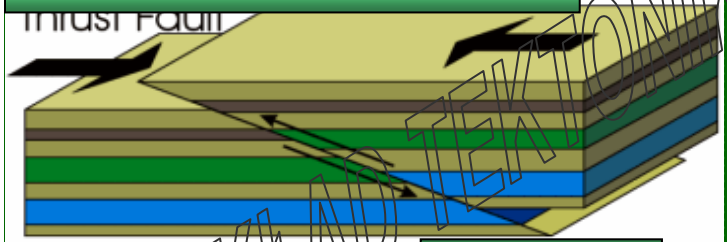


normalny

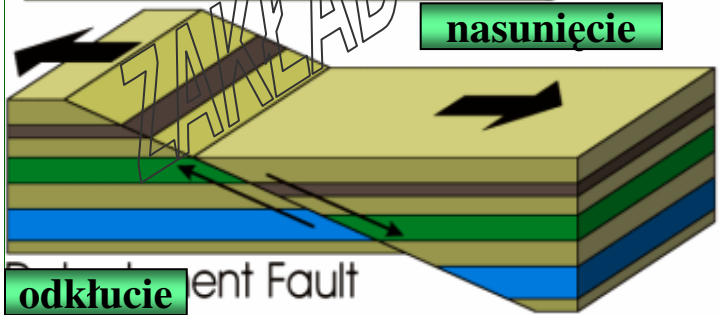
facweb.bhc.edu



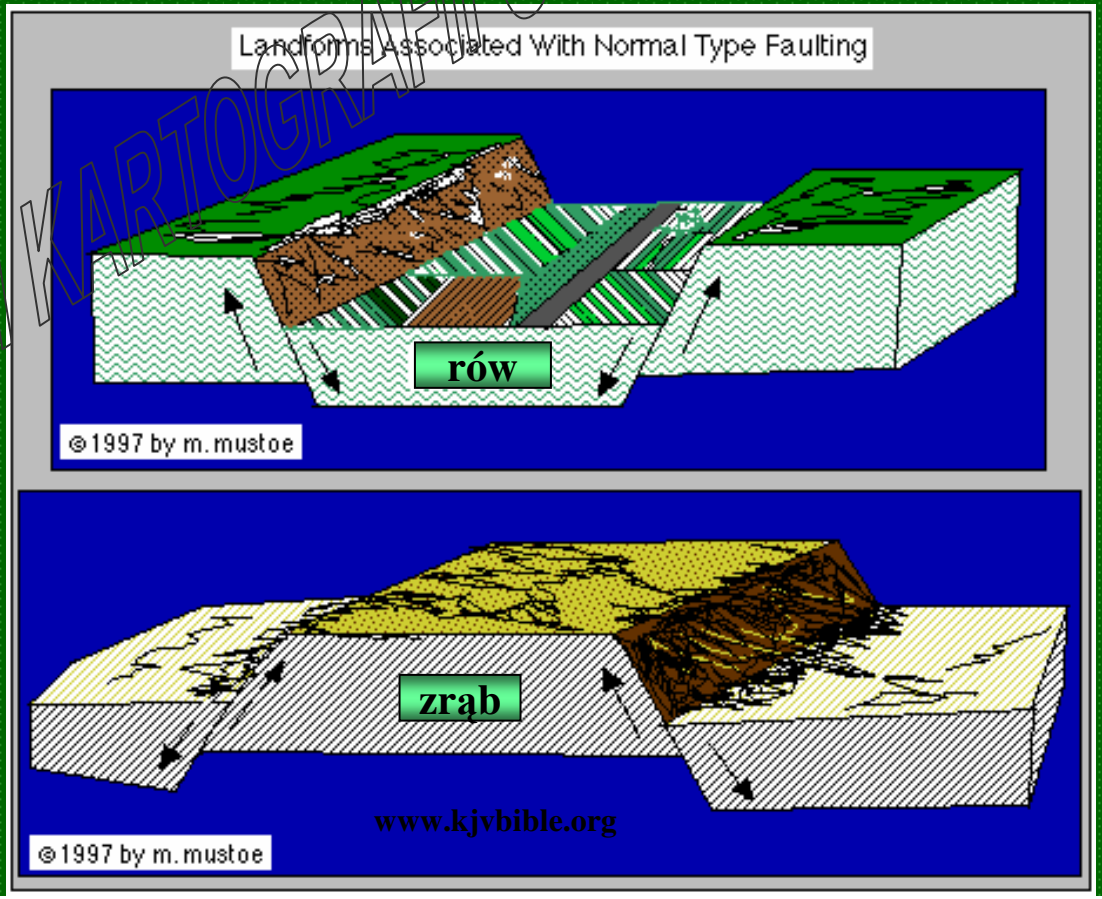
SYSTEM KONTRAKCYJNY



nasunięcie

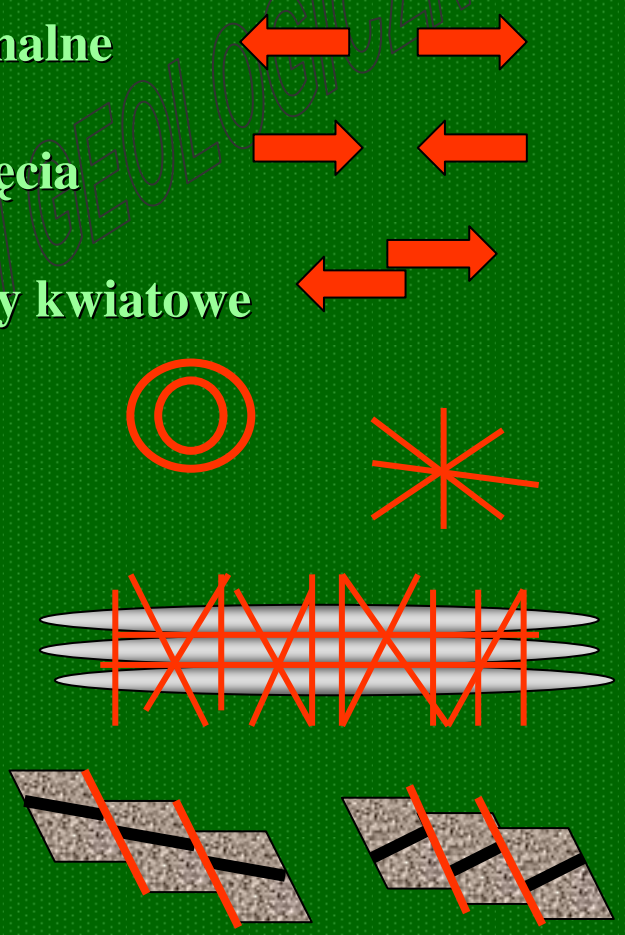


odkłucie

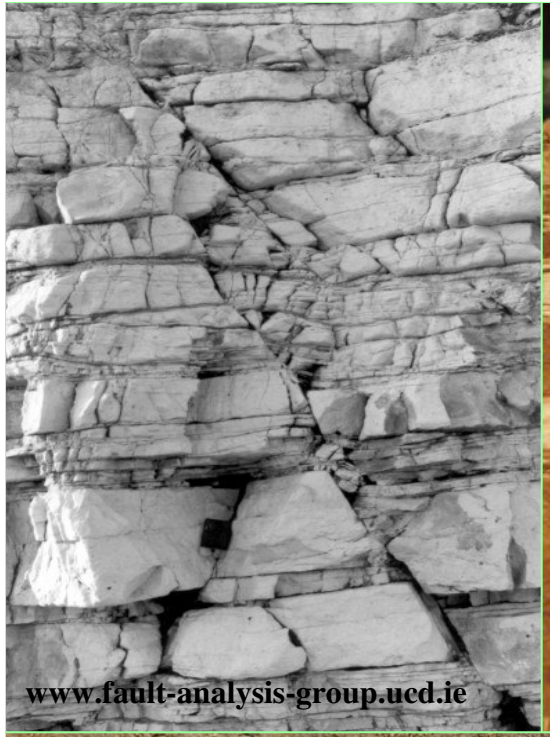


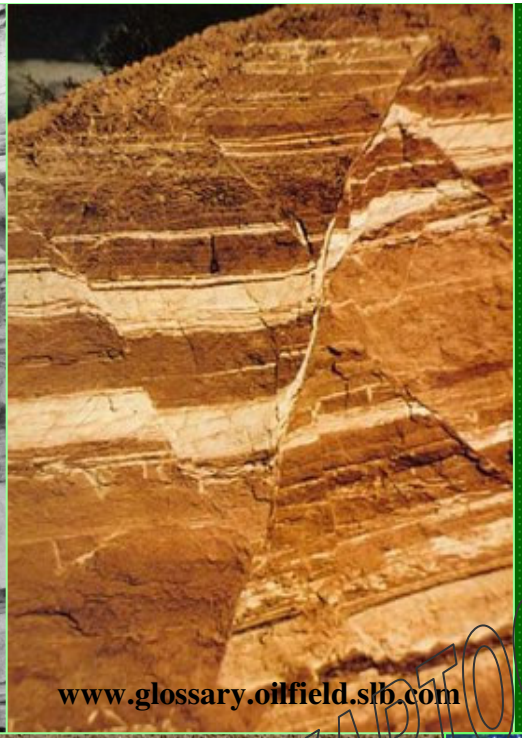
SYSTEMY USKOKOWE

- system grawitacyjny – rowy i zręby – uskoki normalne
- system kontrakcyjny – uskoki odwrócone, nasunięcia
- system przesuwczy – kulisy, pull-aparty, struktury kwiatowe
- system koncentryczny
- system promienisty
- uskoki podłużne, poprzeczne, skośne
- uskoki homotetyczne, antytetyczne

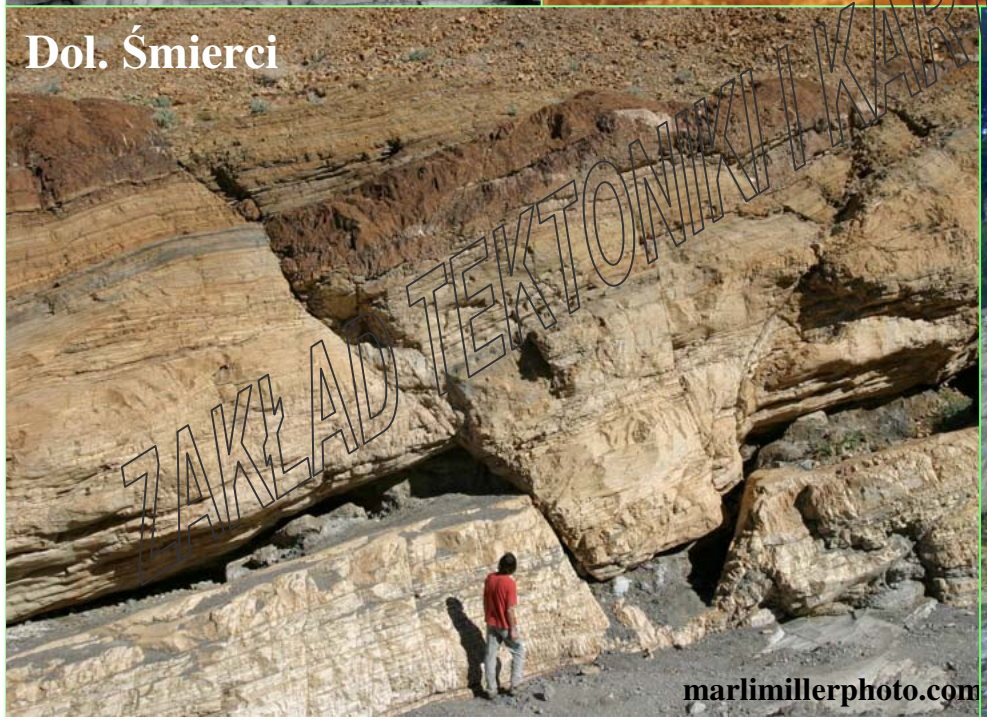


Zespół – szereg równoległych do siebie spękań, uskoków
System – złożony z dwóch lub więcej zespołów


www.fault-analysis-group.ucd.ie

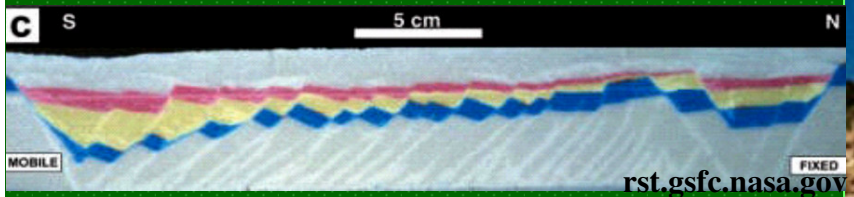

www.glossary.oilfield.slb.com

SYSTEM USKOKÓW KOMPLEMEN-TARNYCH


Dol. Śmierci

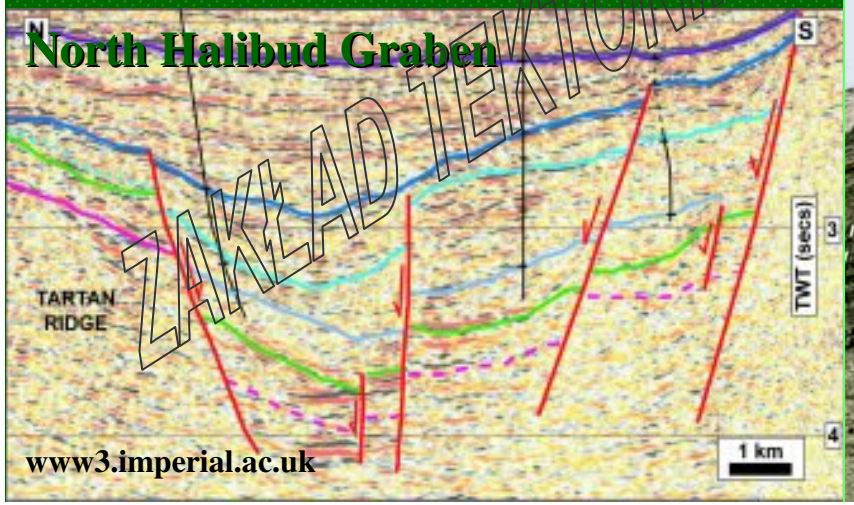
marlimillerphoto.com

SYSTEM GRAWITACYJNY



rst.gsfc.nasa.gov

meije.univ-savoie.fr

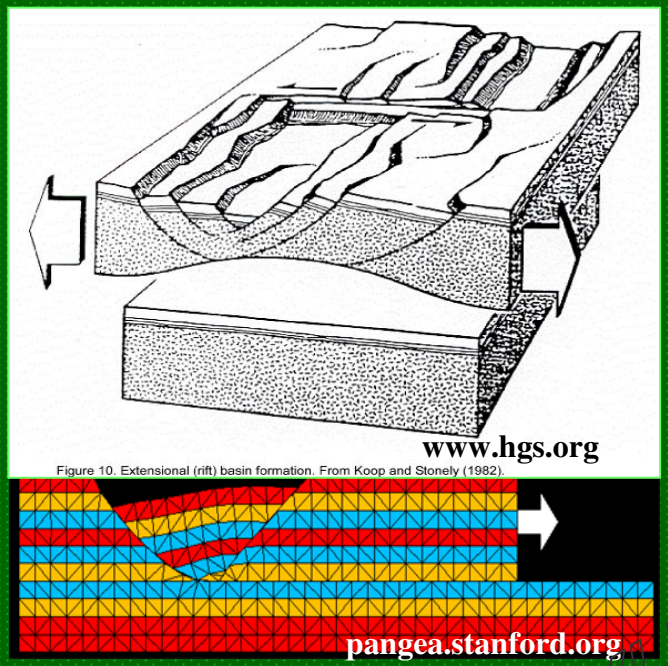


www3.imperial.ac.uk

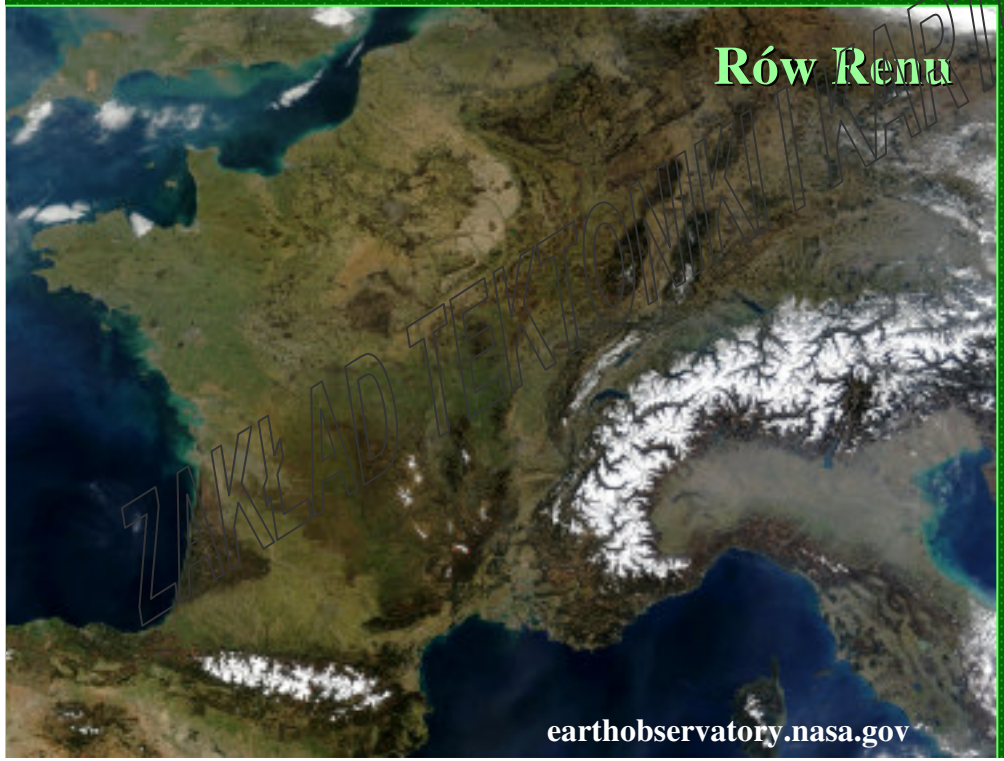
www.swri.edu

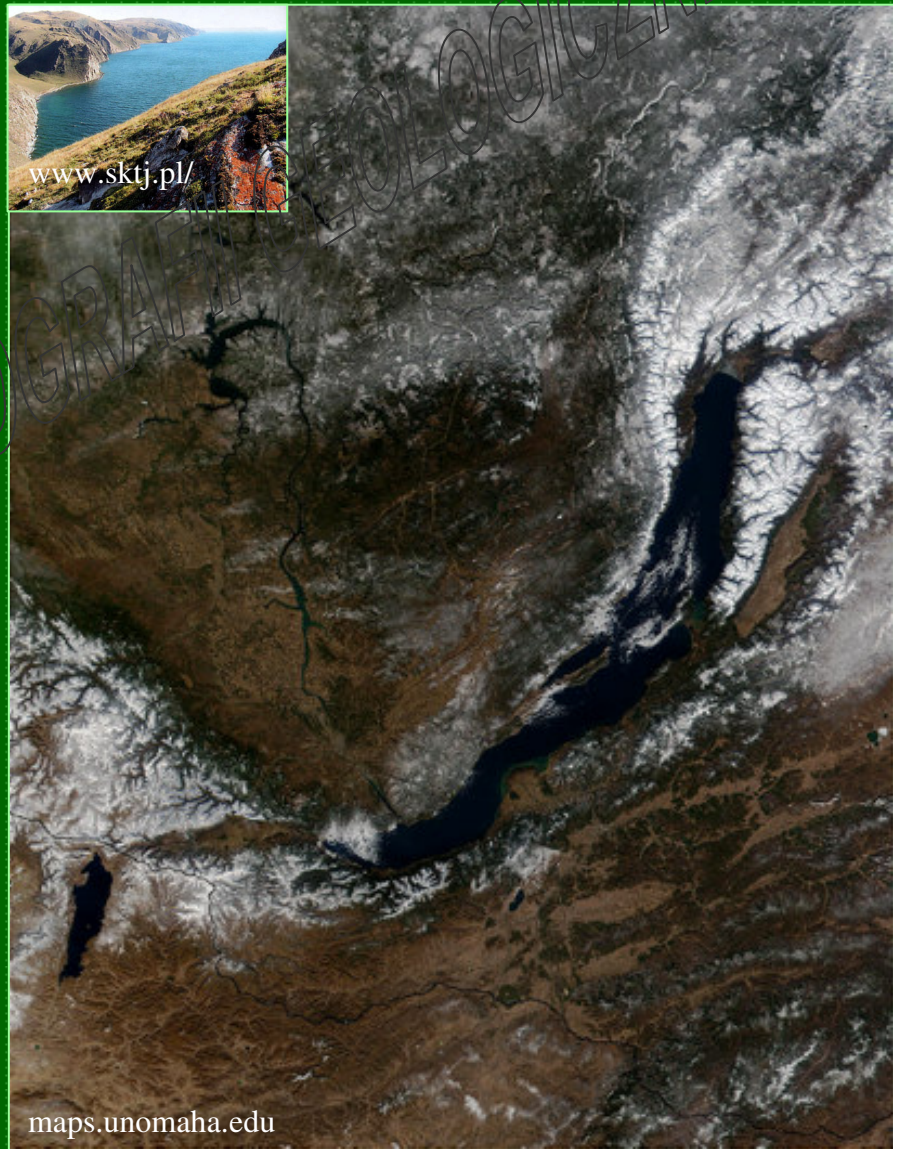
www.geus.dk

SYSTEMY GRAWITACYJNE



ROWY TEKTONICZNE





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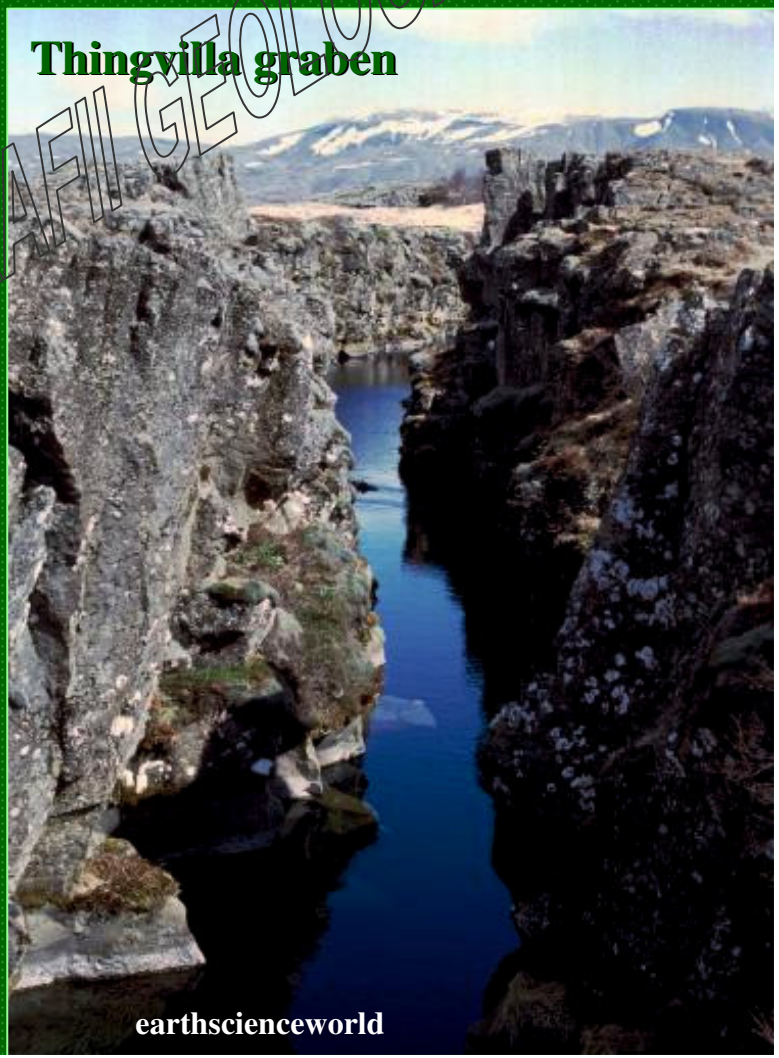
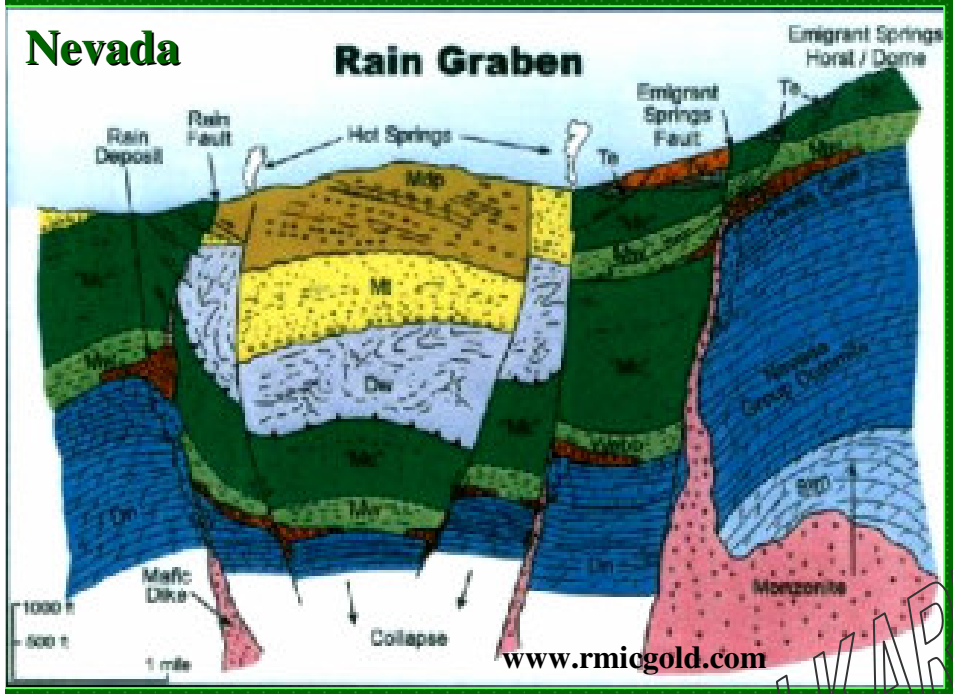
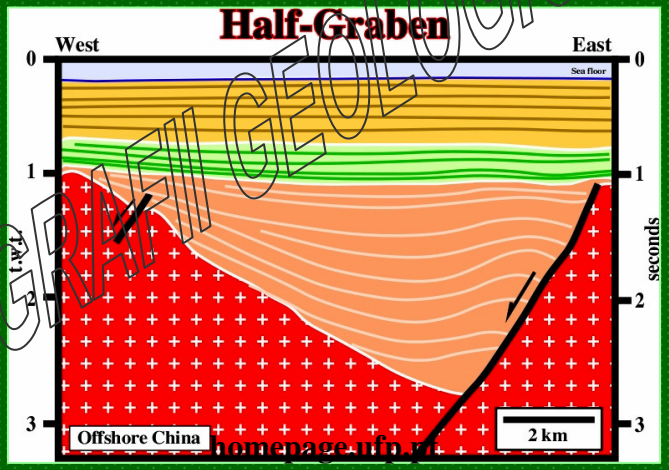
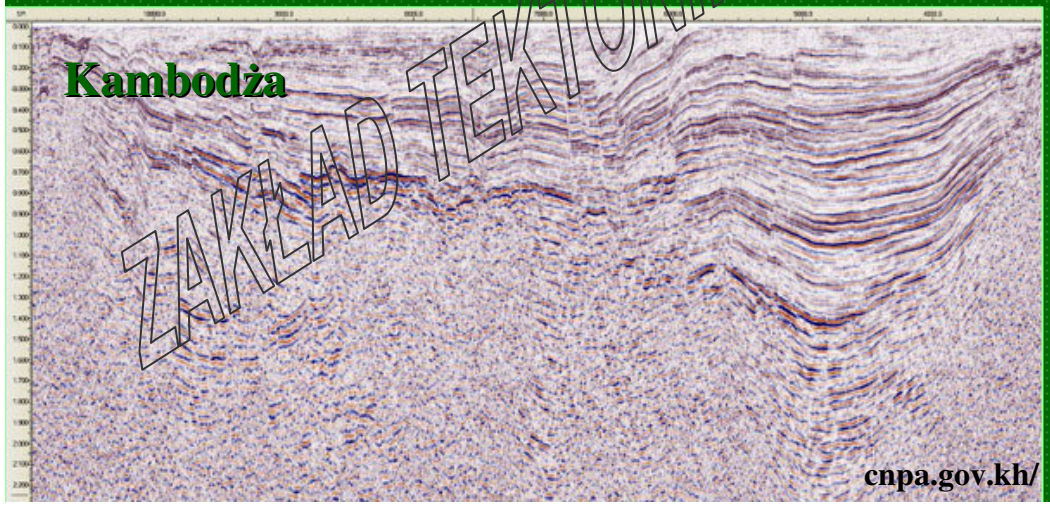
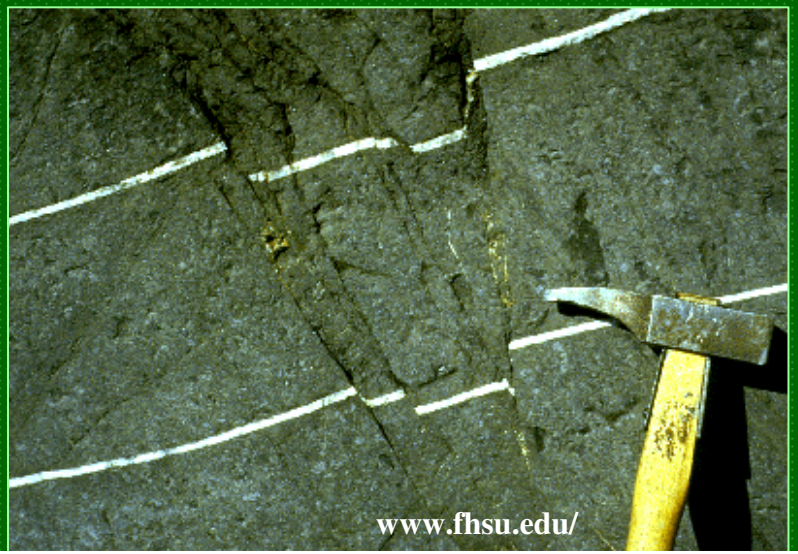


ROWY TEKTONICZNE

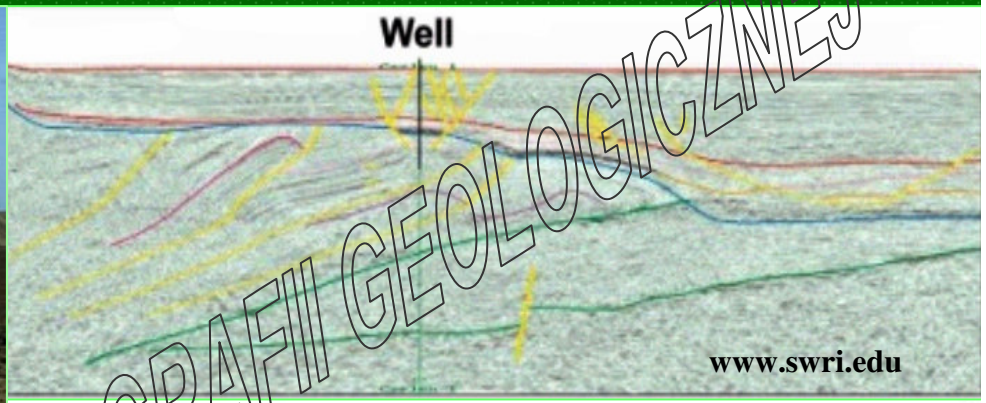


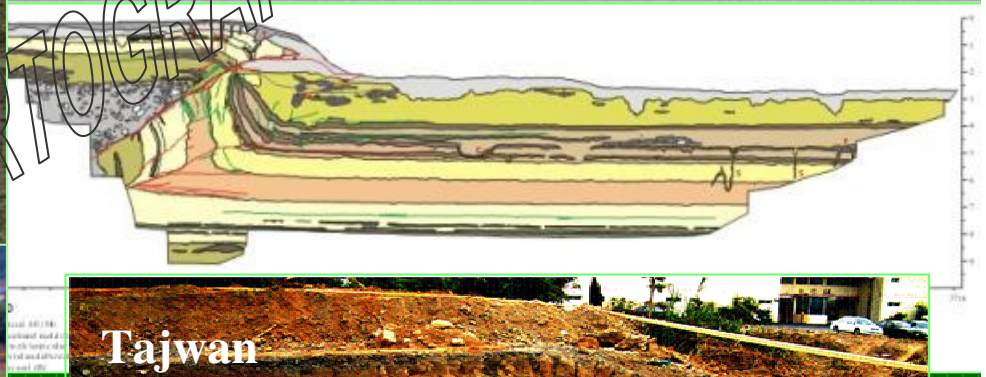


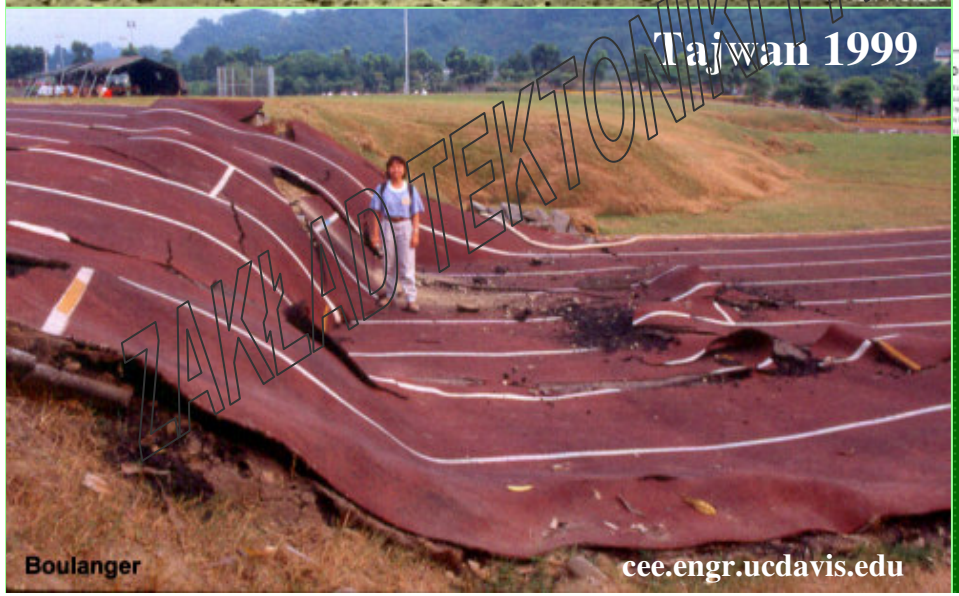




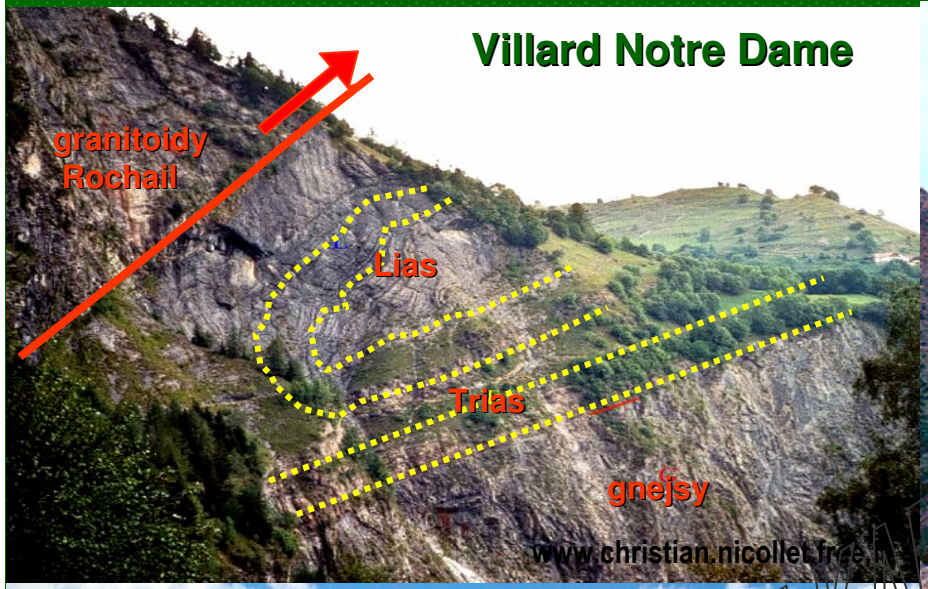
SYSTEMY KONTRAKCYJNE



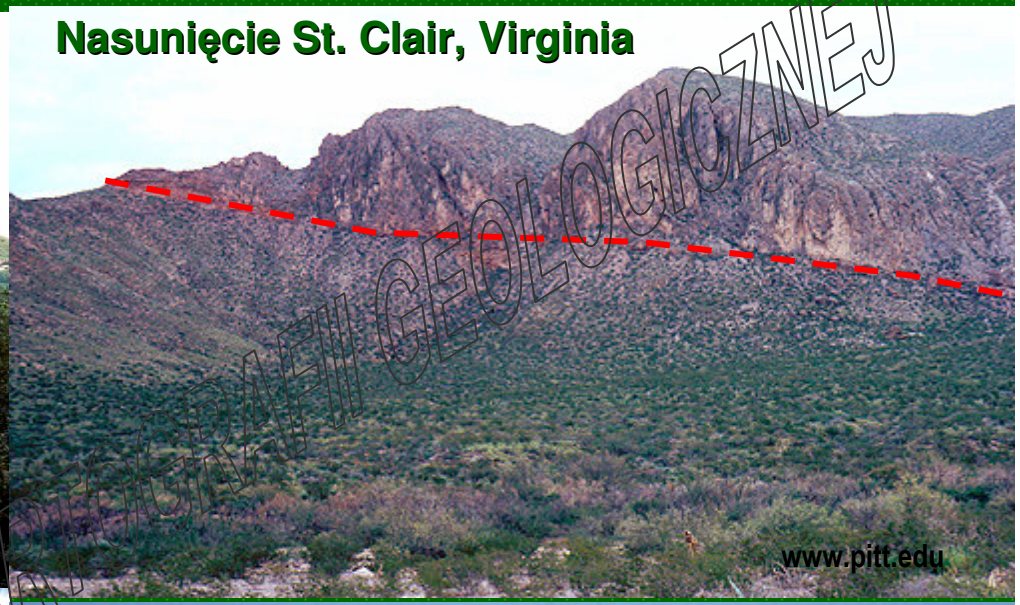




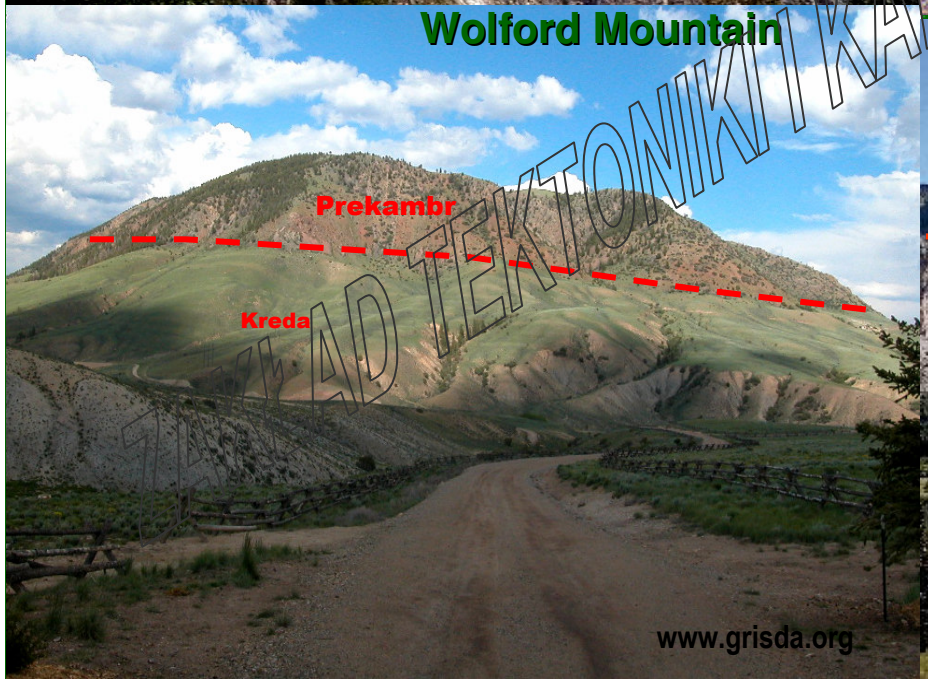
NASUNIĘCIA



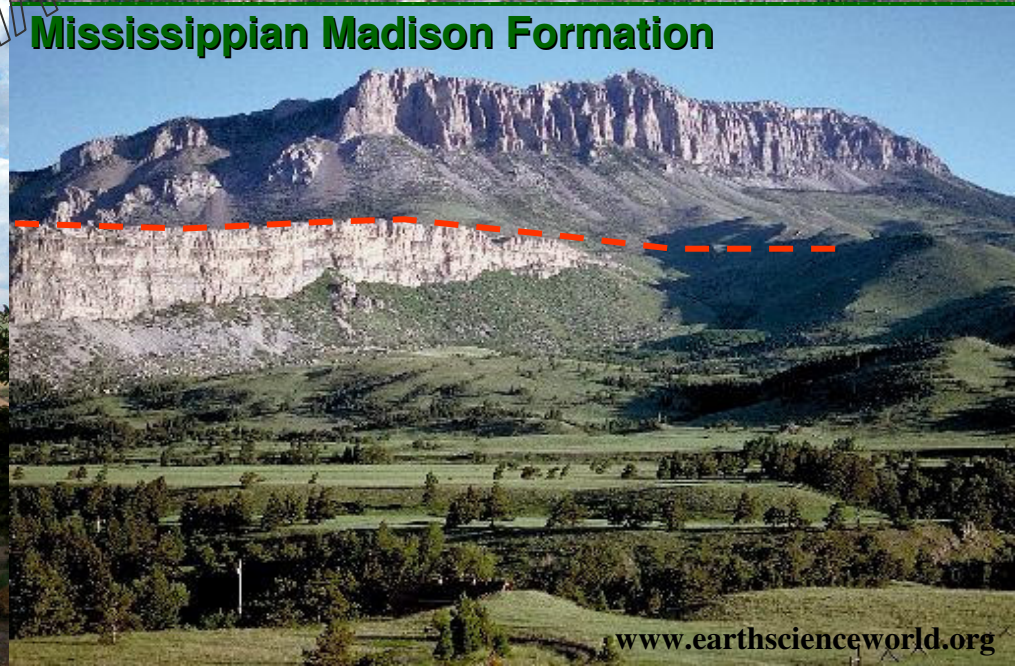
Villard Notre Dame



Nasunięcie St. Clair, Virginia



Wolford Mountain

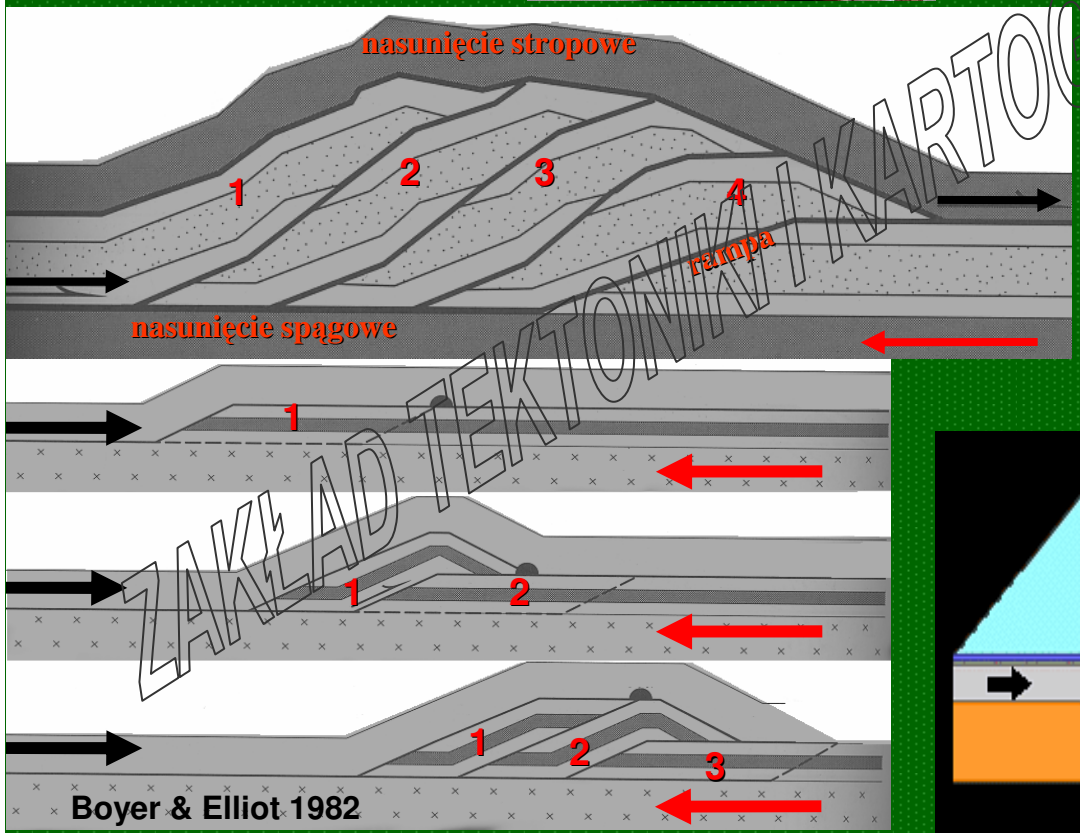


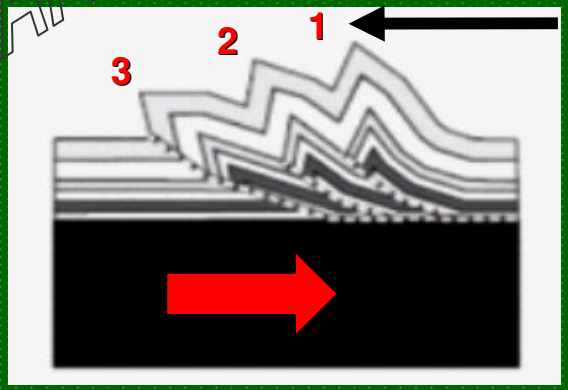
Mississippian Madison Formation

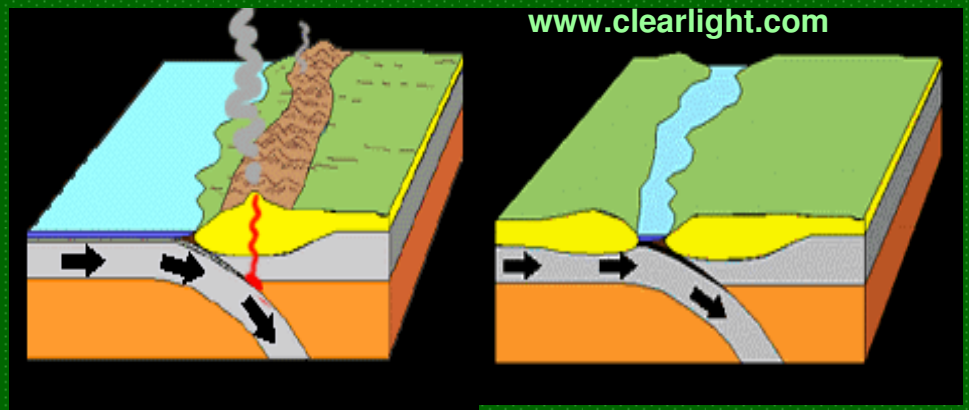
STRUKTURY IMBRYKACYJNE
DUPLEKSY

duplexing
piggy back mechanism

„skiby”







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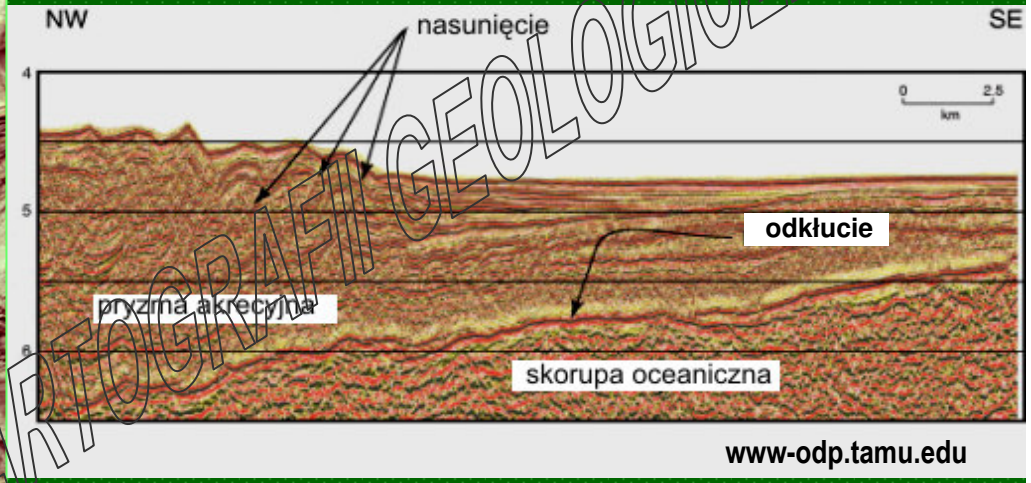
DUPLEKSY



DUPLEKSY SYNSEDYMENTACYJNE

Appalachy

ic.ucsc.edu

Tokio, pliocen

ic.ucsc.edu

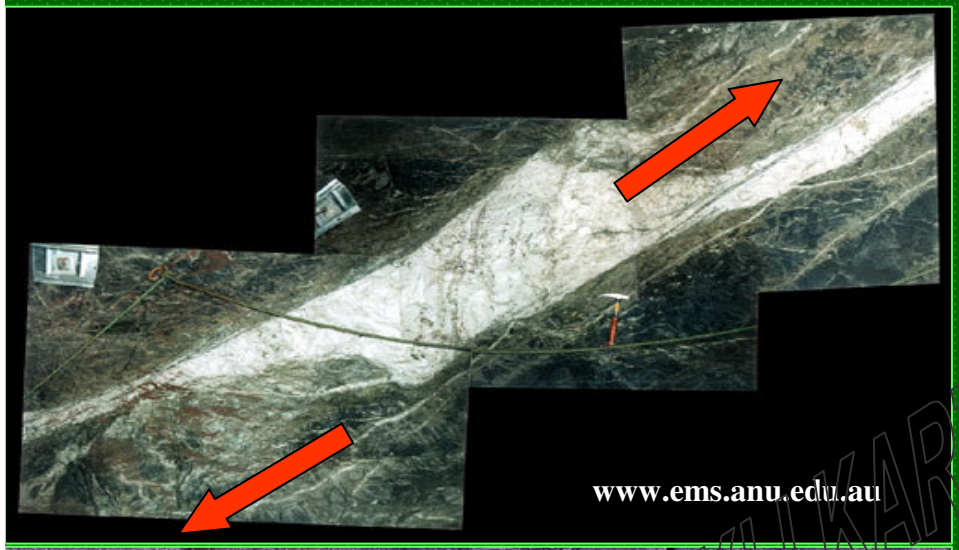
Stożek inbrykacyjny, Dania

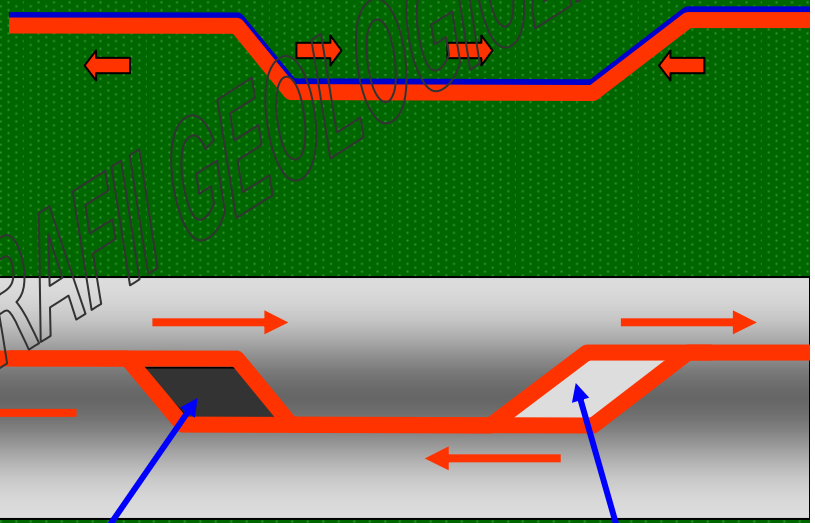
www.geus.dk

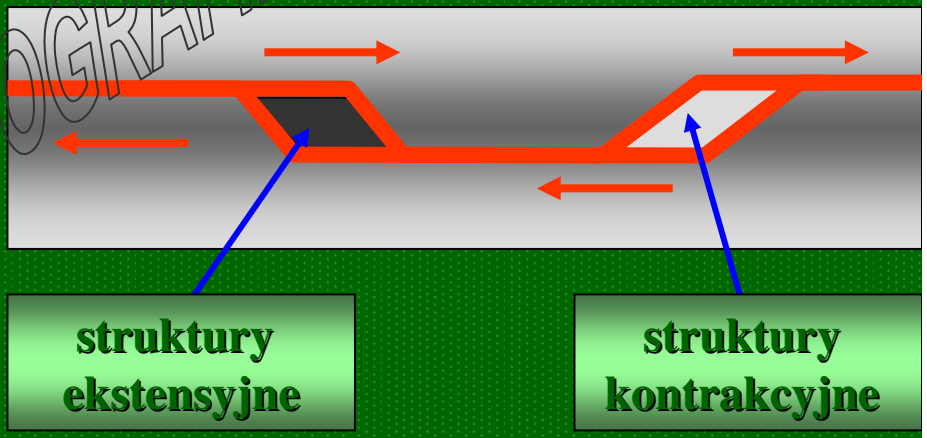
USKOKI LEWOPRZESUWCZE

www.earthsciences.org

PULL - APART

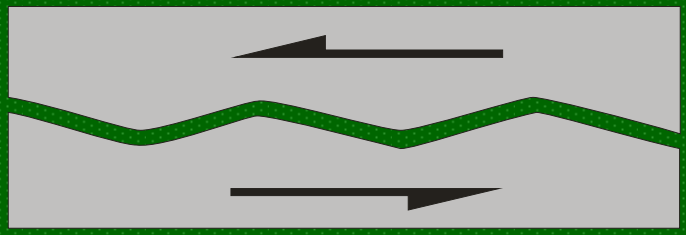






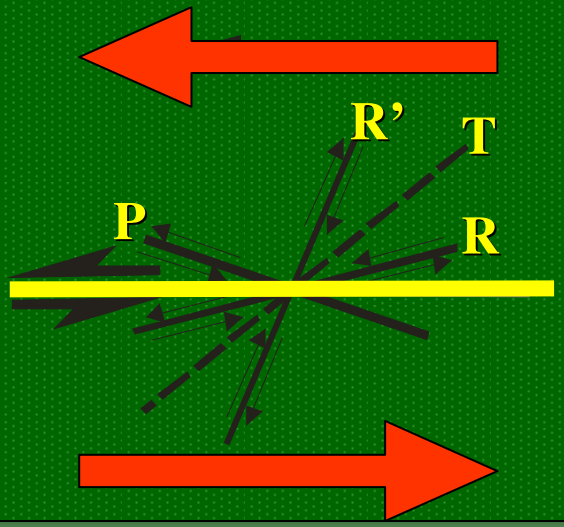
struktury ekstensyjne

struktury kontrakcyjne



USKOKI/SPĘKANIA OPIERZAJĄCE

SPĘKANIA RIEDLA
(W. Riedel 1920)



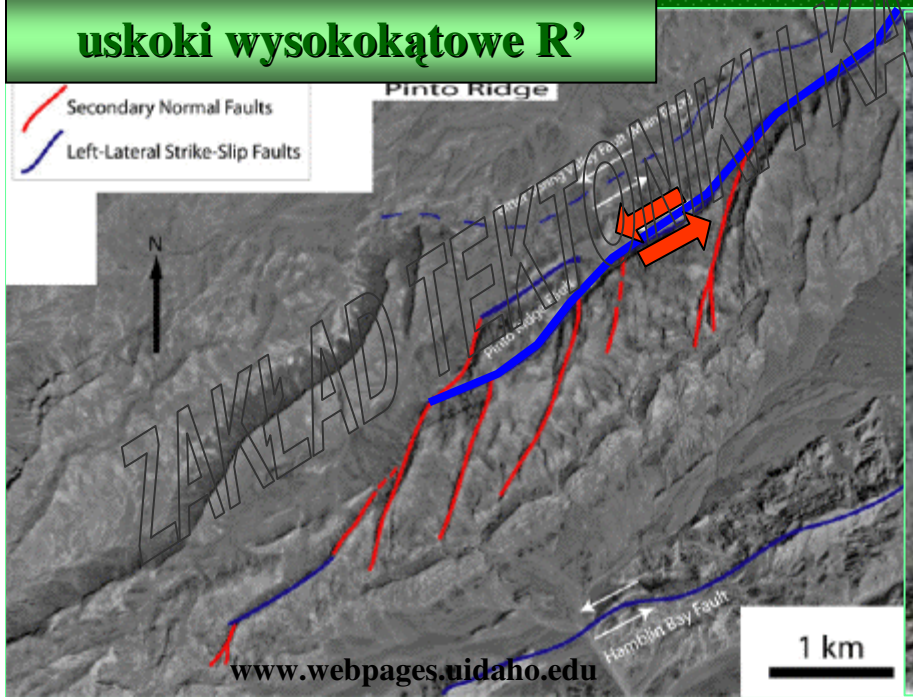
R – niskokątowe

R' – wysokokątowe

T – tensyjne

P – podatne

uskoki wysokokątowe R'

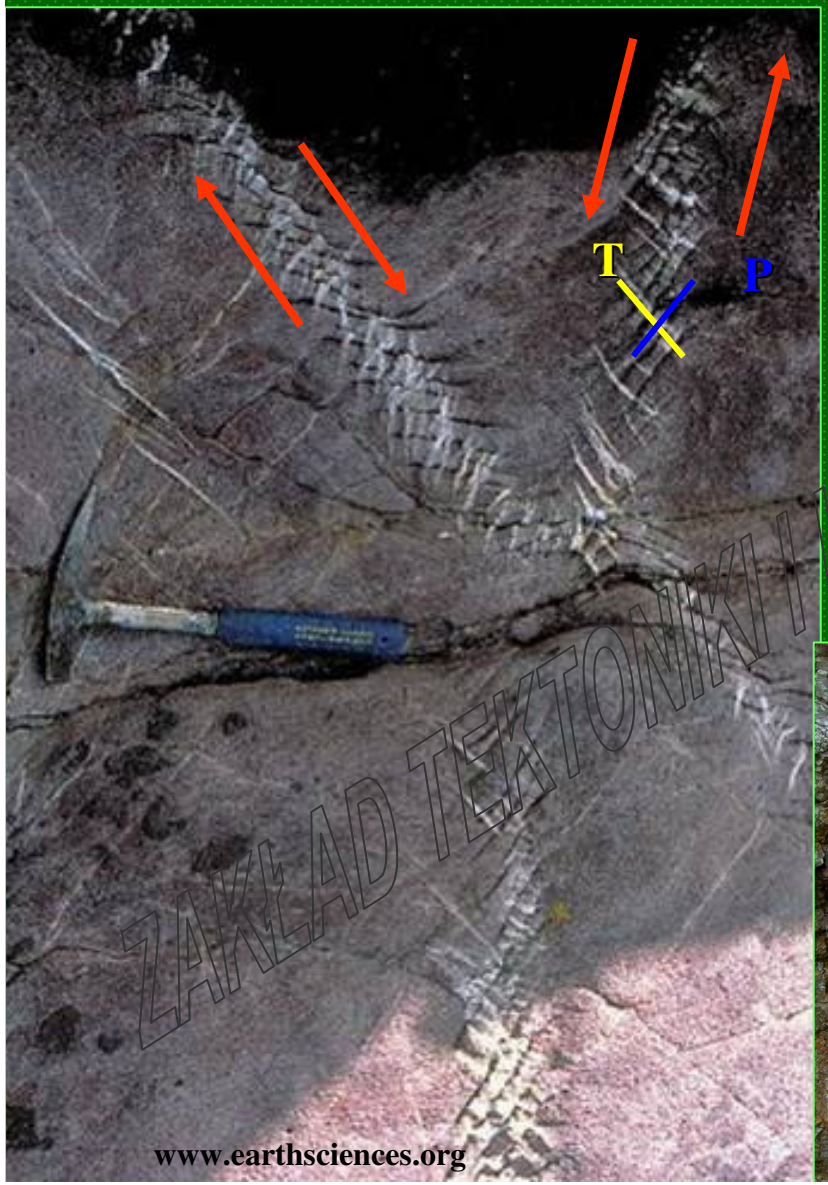


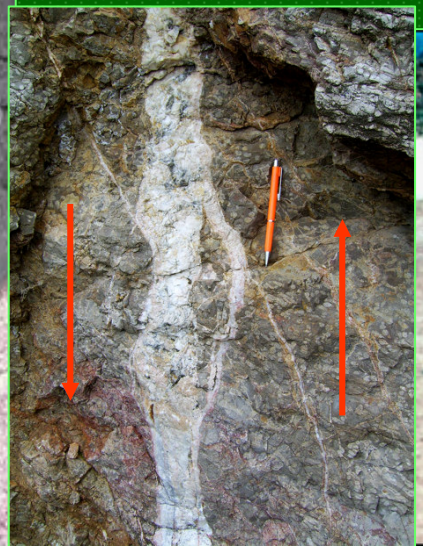
www.webpages.uidaho.edu

uskoki niskokątowe R

www.crystalinks.com

USKOKI OPIERZAJĄCE





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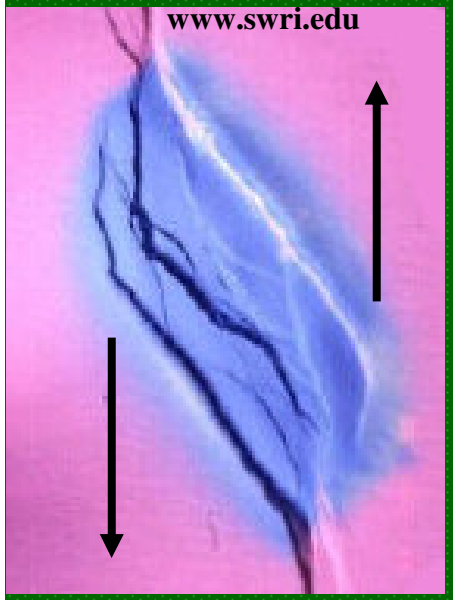
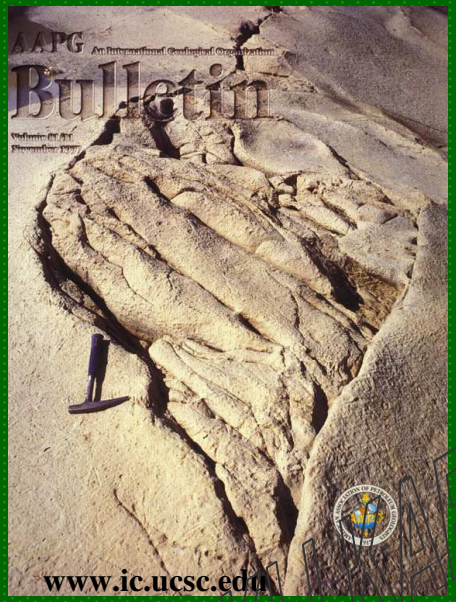
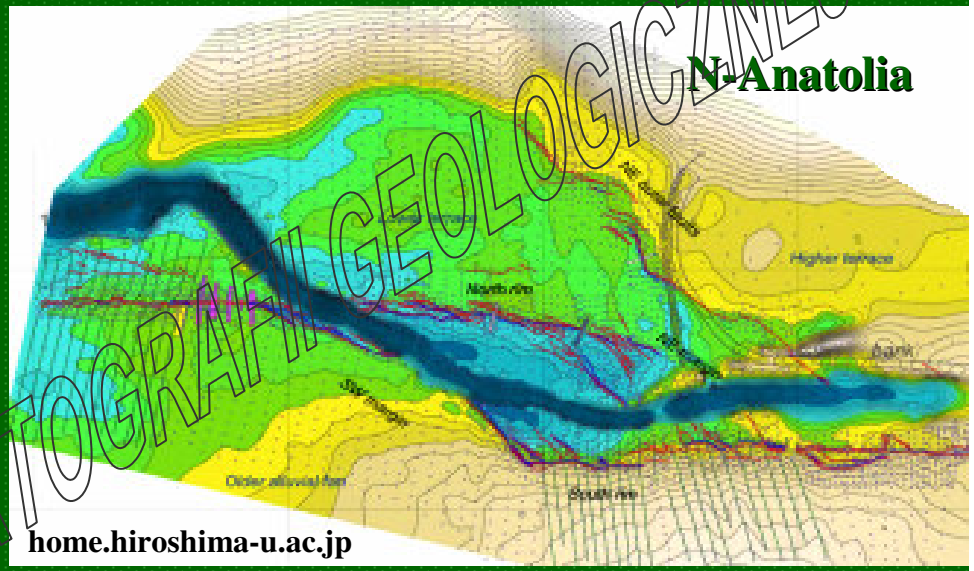
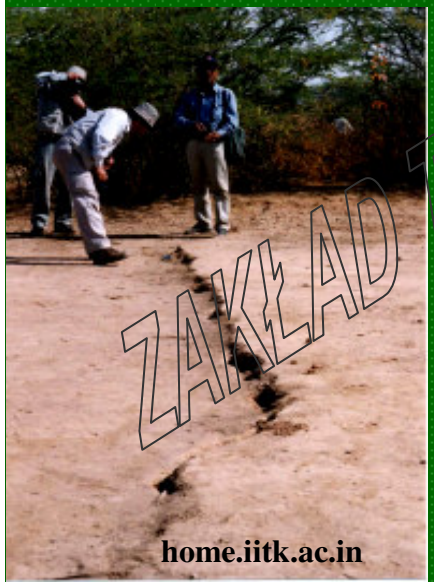
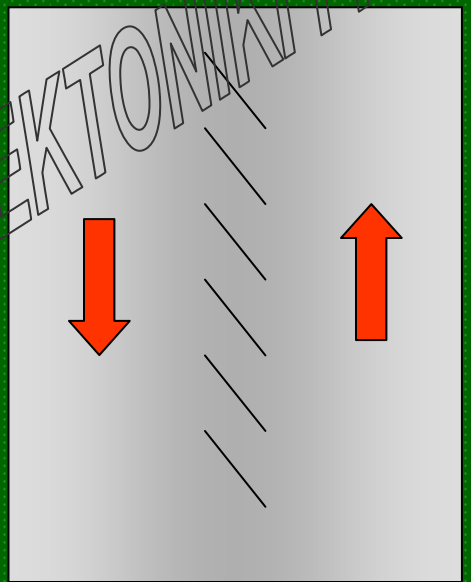
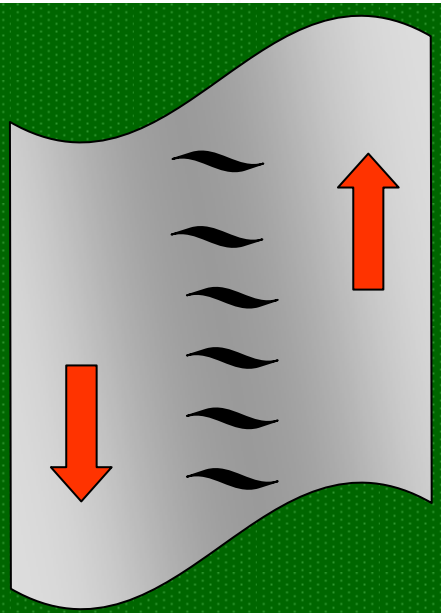








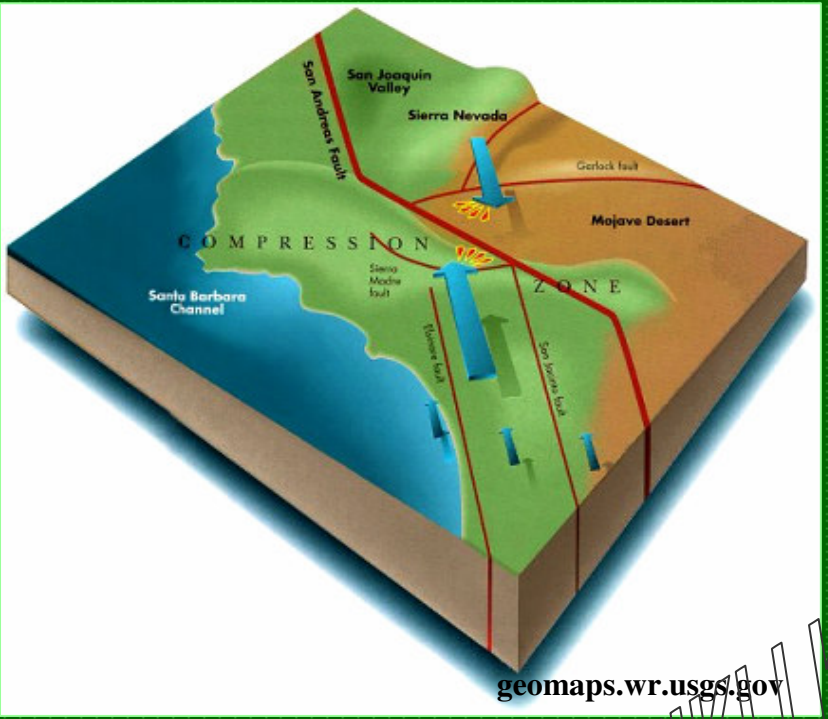




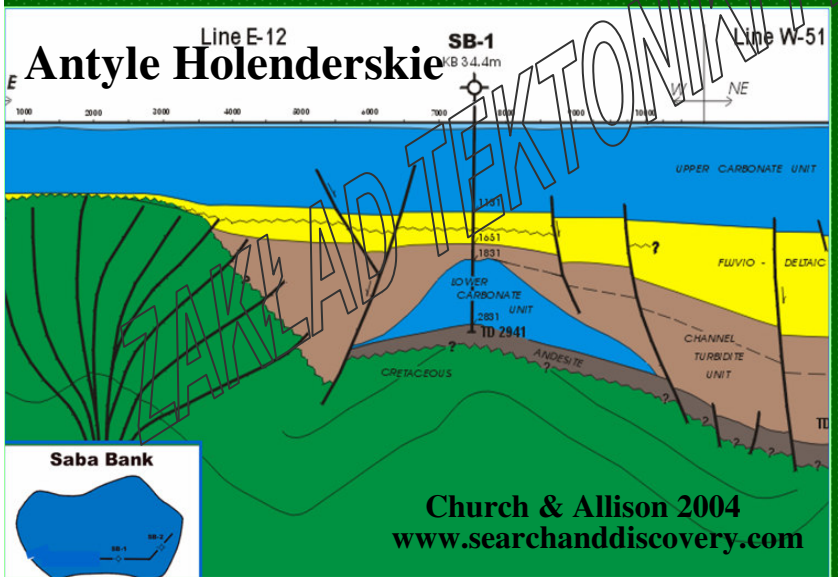
szeregi kulisowe
(en échelon)

STRUKTURY KWIATOWE

(flower structures)



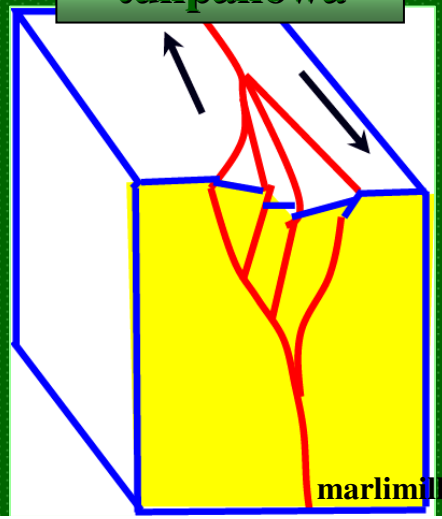
geomaps.wr.usgs.gov

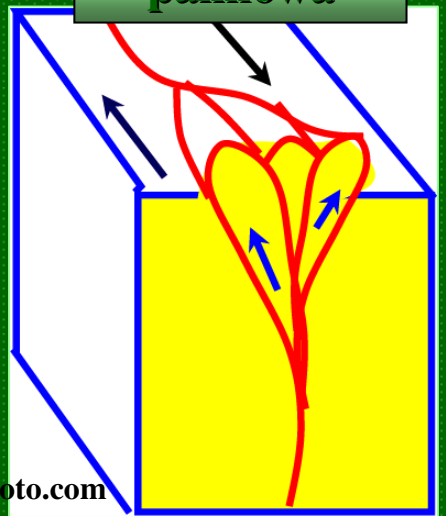


Church & Allison 2004
www.searchanddiscovery.com

transtensja

transpresja

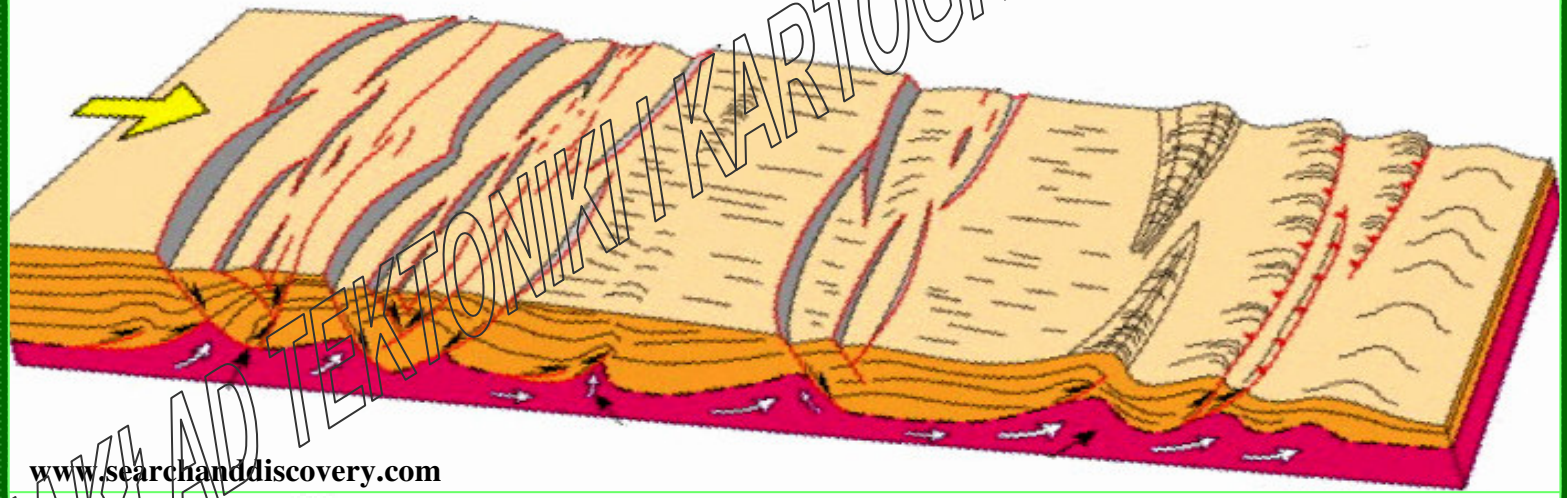




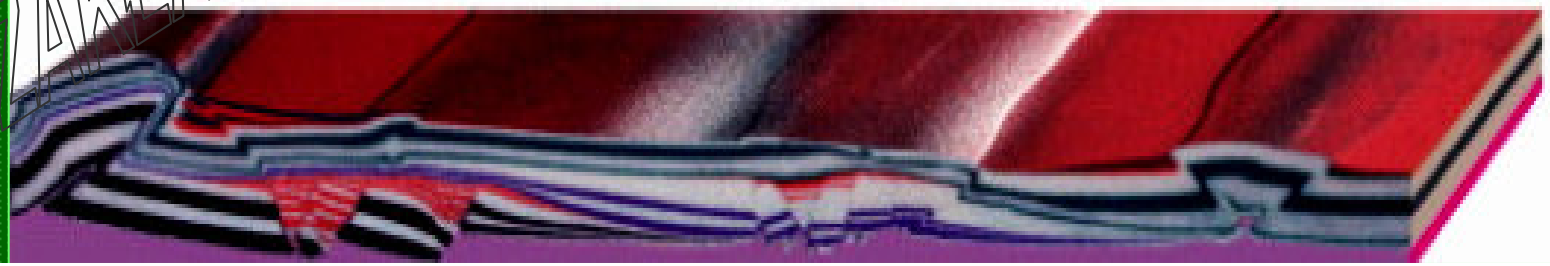
marlimillerphoto.com

SYSTEMY MIESZANE

www.geography.vt.edu

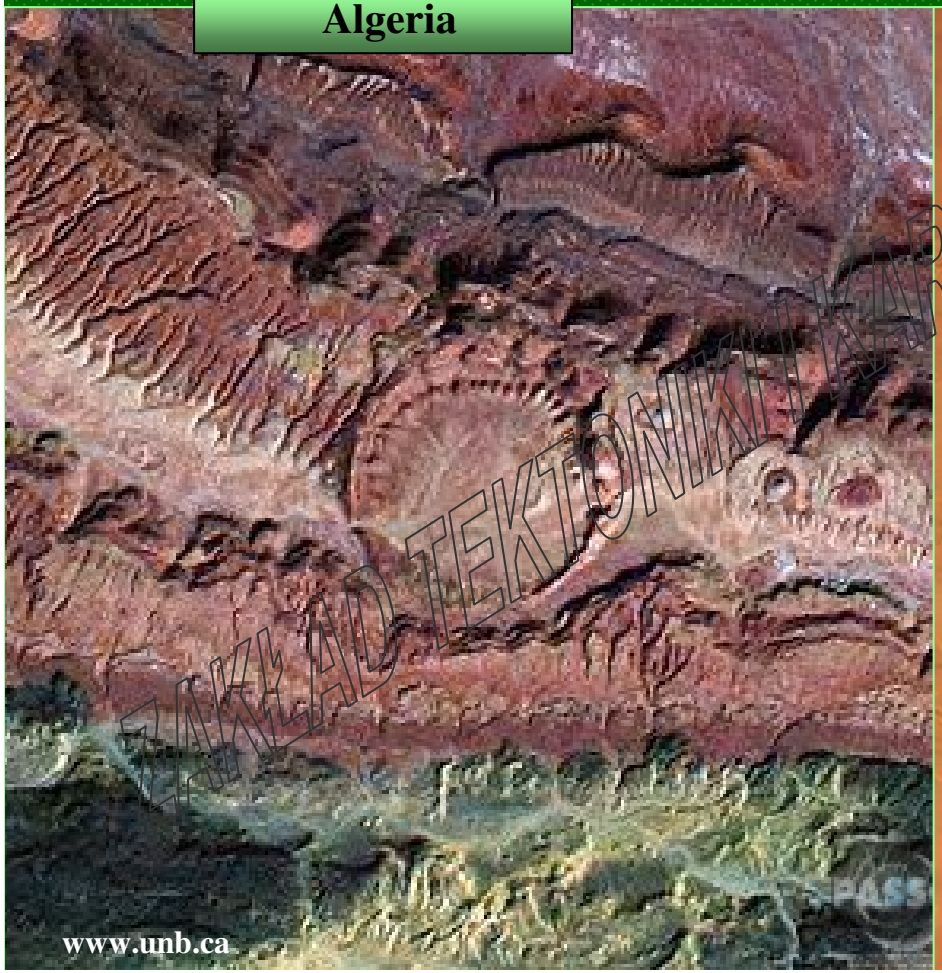


www.searchanddiscovery.com



USKOKI KONCENTRYCZNE

krater Ouarkziz
Algeria



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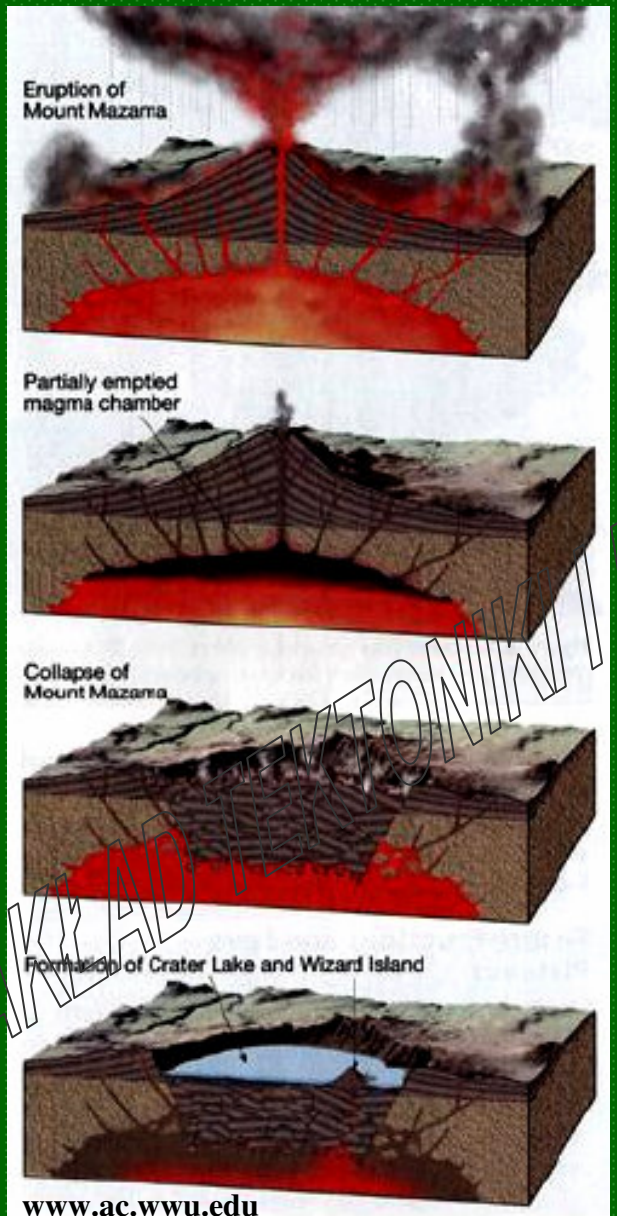
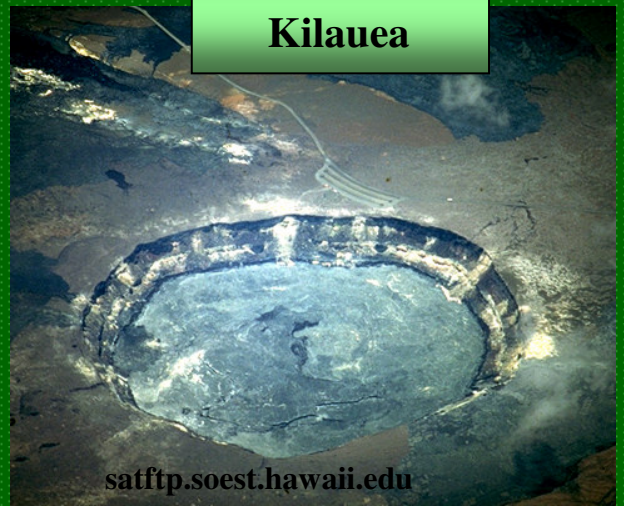


www.ac.wwu.edu

krater Manicouagan

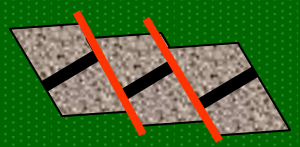
neo.jpl.nasa.gov

krater Kilauea

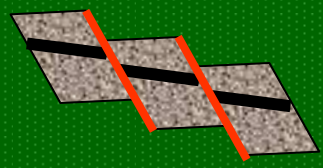


satftp.soest.hawaii.edu

USKOKI ANTYTETYCZNE
USKOKI HOMOTETYCZNE

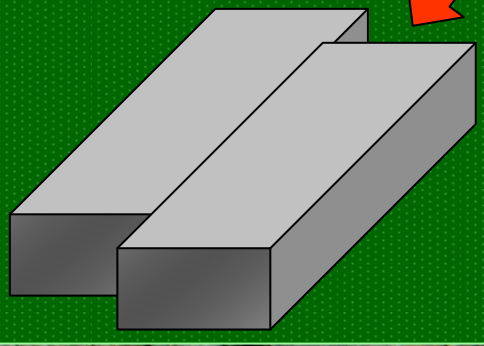


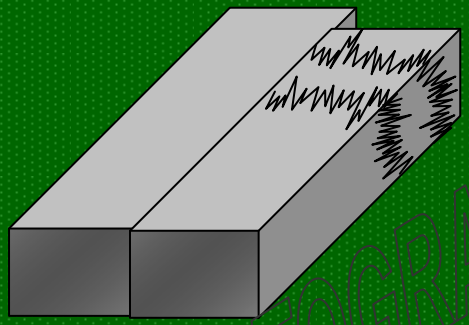
uskoki antytetyczne



uskoki homotetyczne

KOMPENSACJA RUCHU PRZESUWCZEGO

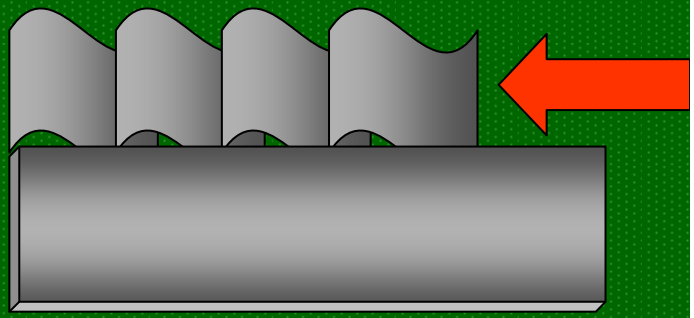




fałdowanie

rozpuszczanie pod ciśnieniem
stylolity
slikolity

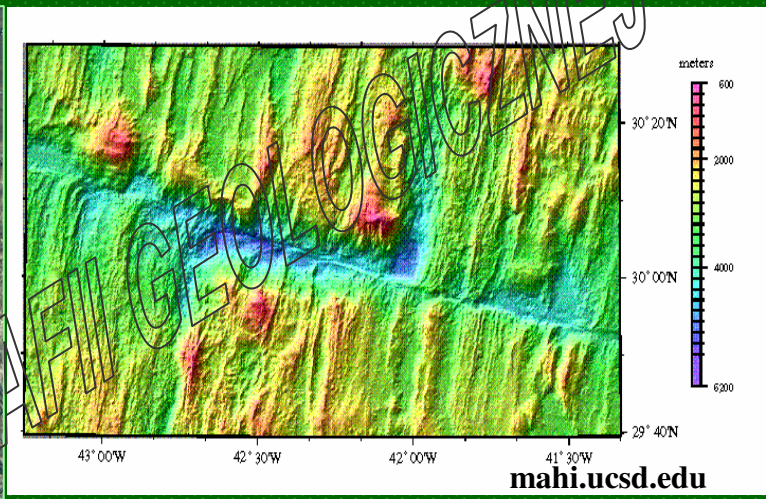
tektoglify

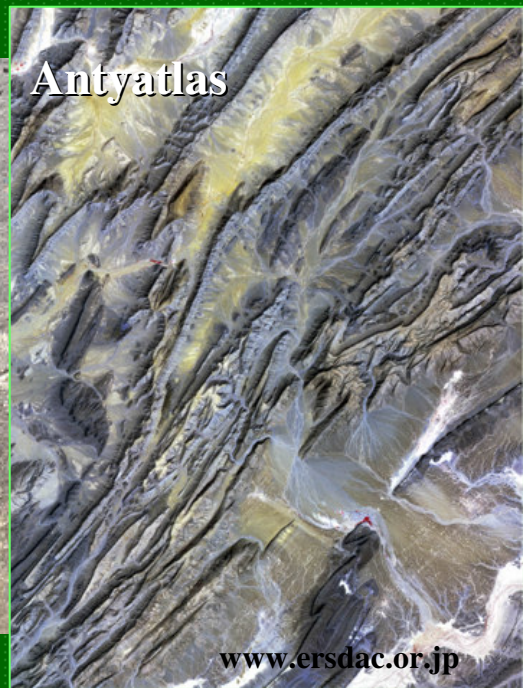


nasunięcia

KRYTERIA ROZPOZNAWANIA USKOKÓW

- strukturalno -kartograficzne
- fizjograficzne
- teledetekcyjne



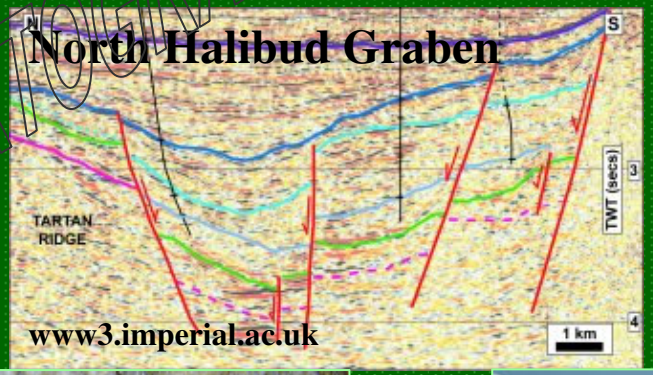


KRYTERIA ROZPOZNAWANIA USKOKÓW

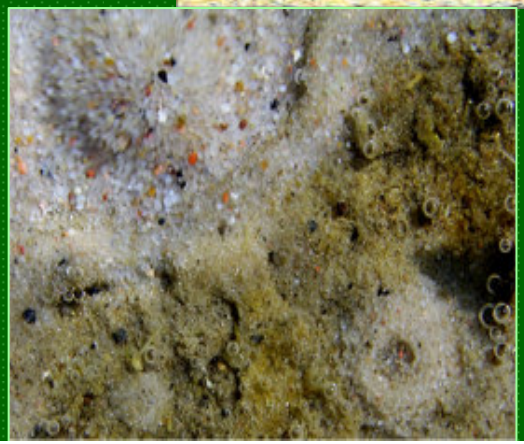
- mezostrukturalne
- petrograficzno -mineralogiczne
- geofizyczne
- geochemiczne


fdrg.rhul.ac.uk


www.ldeo.columbia.edu



www3.imperial.ac.uk

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Pytania:
1. Zdefiniuj terminy: uskoki homotetyczne i antytetyczne.
2. Wyjaśnij rysunkiem, jak powstaje pull-apart.
ZAKŁAD TEKTONIKI I KARTOGRAFII GEOLOGICZNEJ