Sustainable Competences in Higher Education.

‘SustainComp Curriculum’

MUNI Masaryk University

UCL University College

SustainComp

UiA University of Agder

University of Ljubljana

Erasmus+

SustainComp

Step 2.

Resources, inequality, and sustainability.

Sustainable Competences in Higher Education

- *How to develop intercultural competence through a project about the use of sand*

Progression of the sub-module

1. Engage and noticing - Introduction to the socio-scientific issues.
2. **Exploring and noticing/comparing the socio-scientific issues.**
3. Explaining, reflecting and interacting with the socio-scientific issues.
4. Elaborate on the socio-scientific issues as a teaching method.

Outline

- Lecture about "Intercultural competences"
  - Group summary

- Lecture about "The world's resources"
  - Group summary

- 6 sharp pointers from each group

- Group work

Intercultural competence

- Lecture (30 min)
    - Group summary (15 min)

Intercultural competence - how is this related to the socio scientific issues and Sustain Comp?

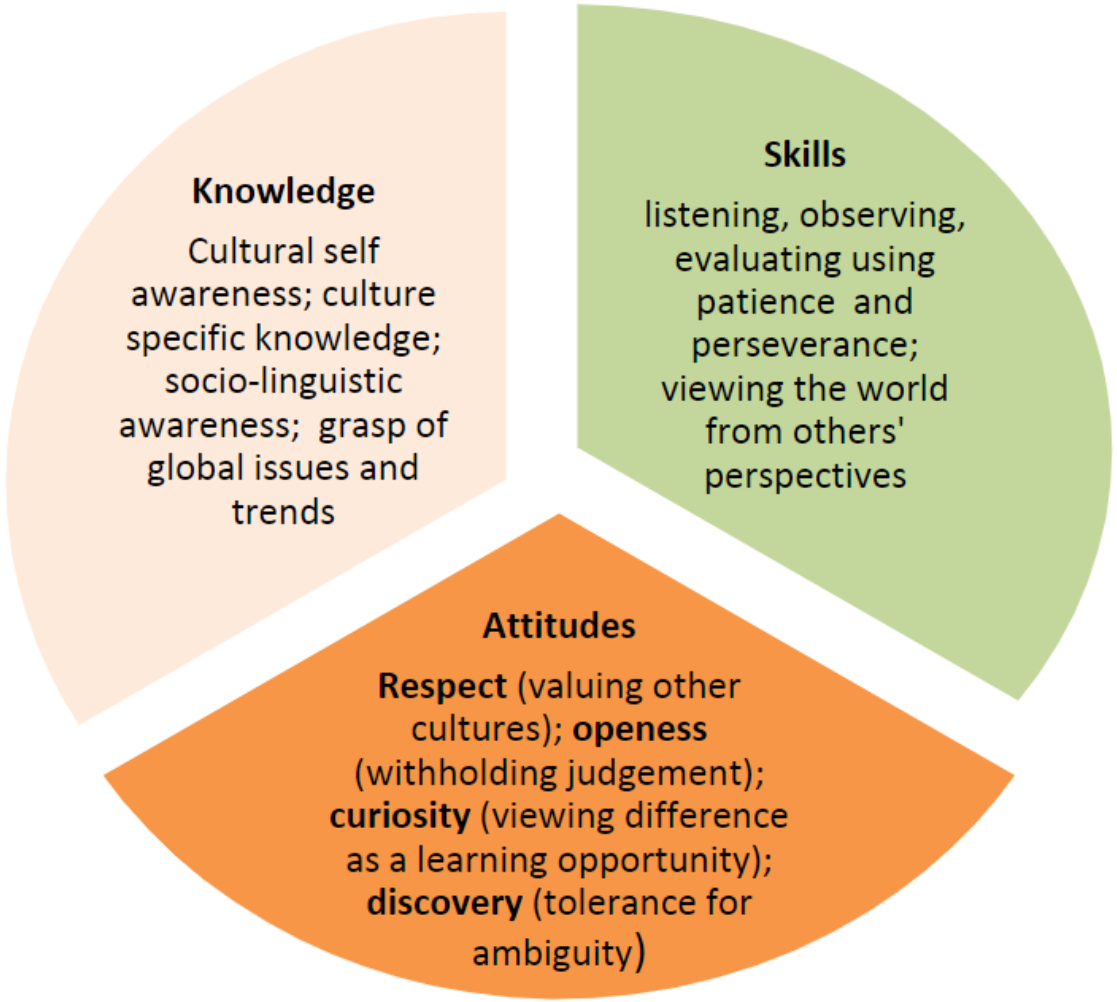
Intercultural competence

Intercultural competence:

"Is the ability to develop targeted knowledge, skills and attitudes that lead to visible behavior and communication that are both effective and appropriate in intercultural interactions "

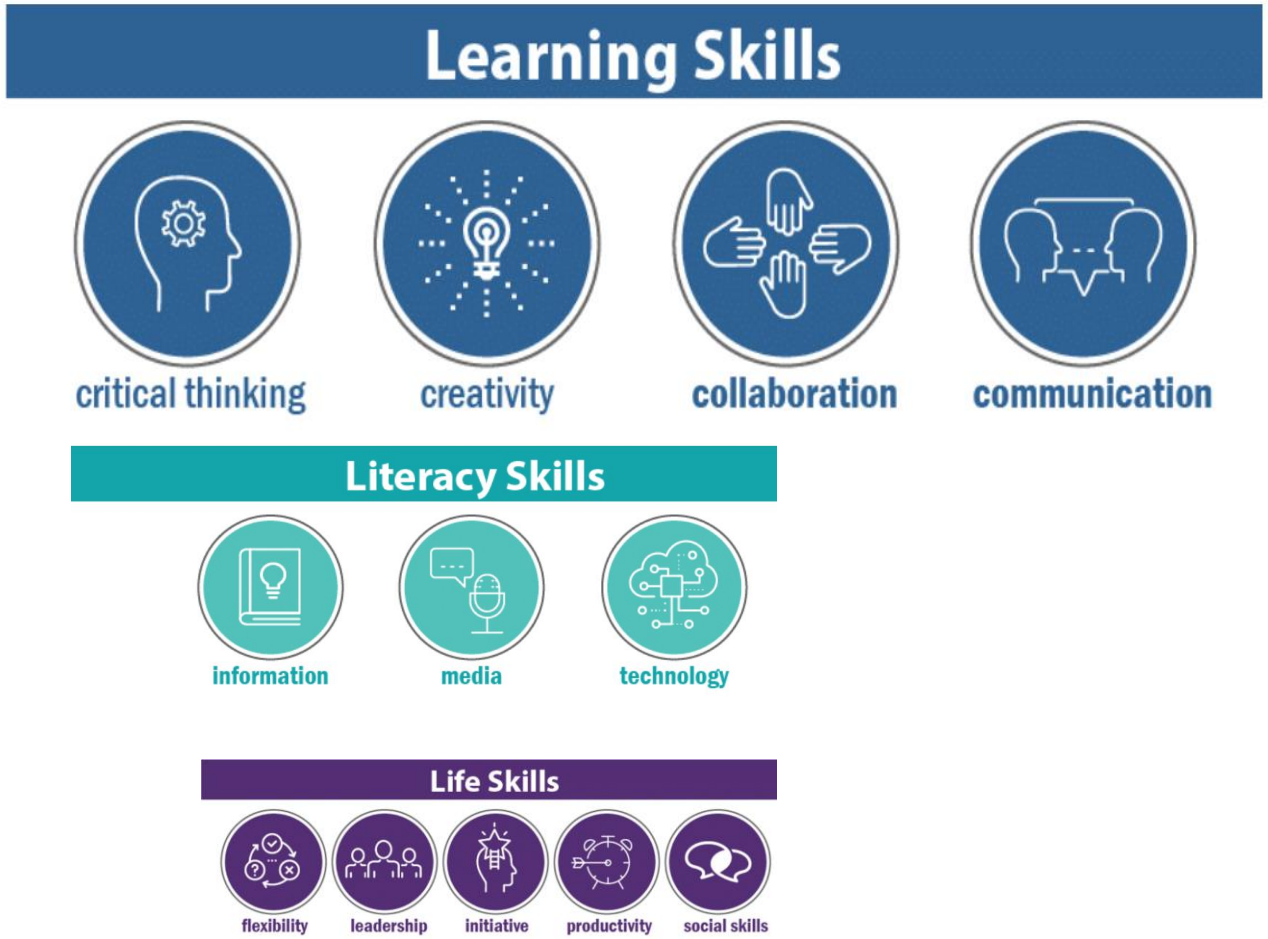
McKinnon, S. (2017). Foregrounding intercultural learning during study abroad as part of a modern languages degree.

In *Intercultural interventions in study abroad* (pp. 103-118). Routledge.



McKinnon, S. (2017). Foregrounding intercultural learning during study abroad as part of a modern languages degree. In *Intercultural interventions in study abroad* (pp. 103-118). Routledge.

What does intercultural competence encompass as well?



21st century skills

How to develop intercultural competences didactically?

The cycle model of intercultural learning

The world's resources

- Lecture (30 min)
  - Group summary (15 min)

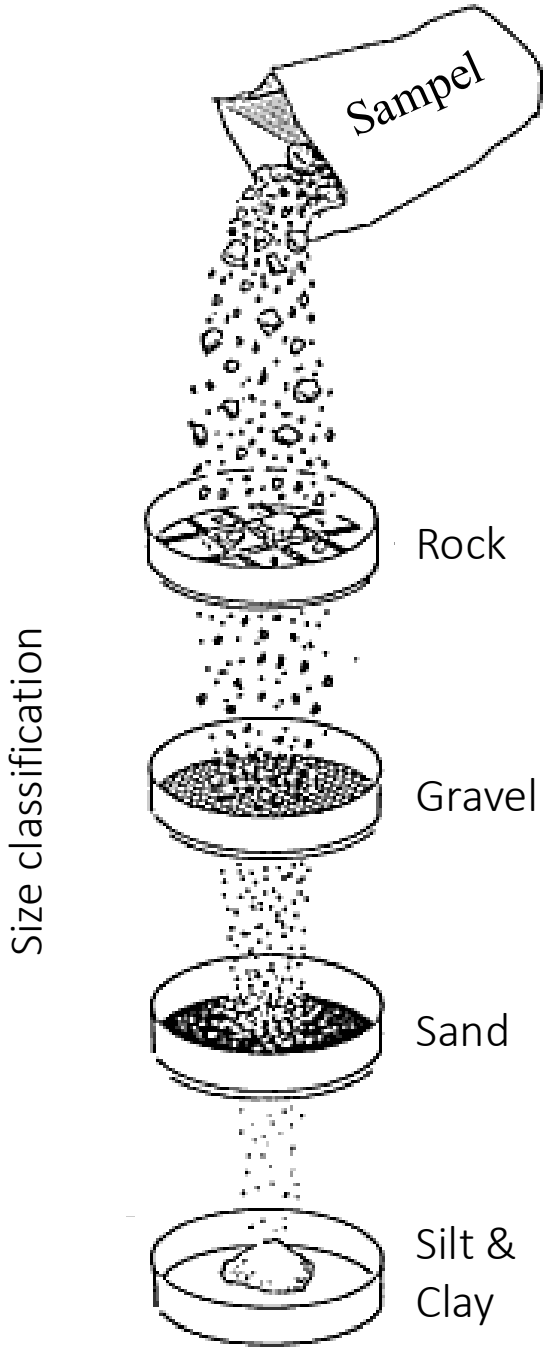
The world's resources

Sand,

-what is it?

-where is it?

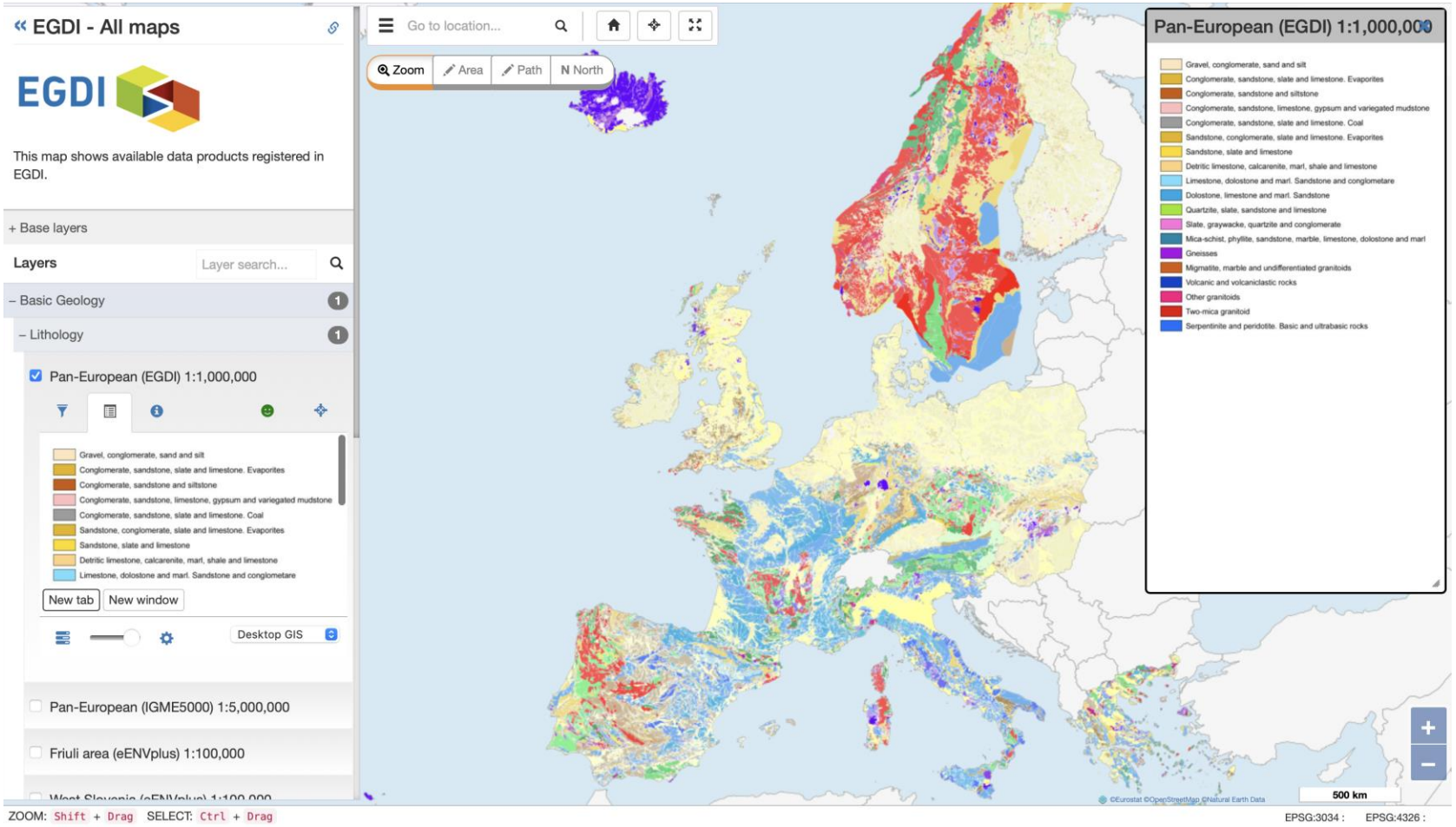
-and where does it come from?



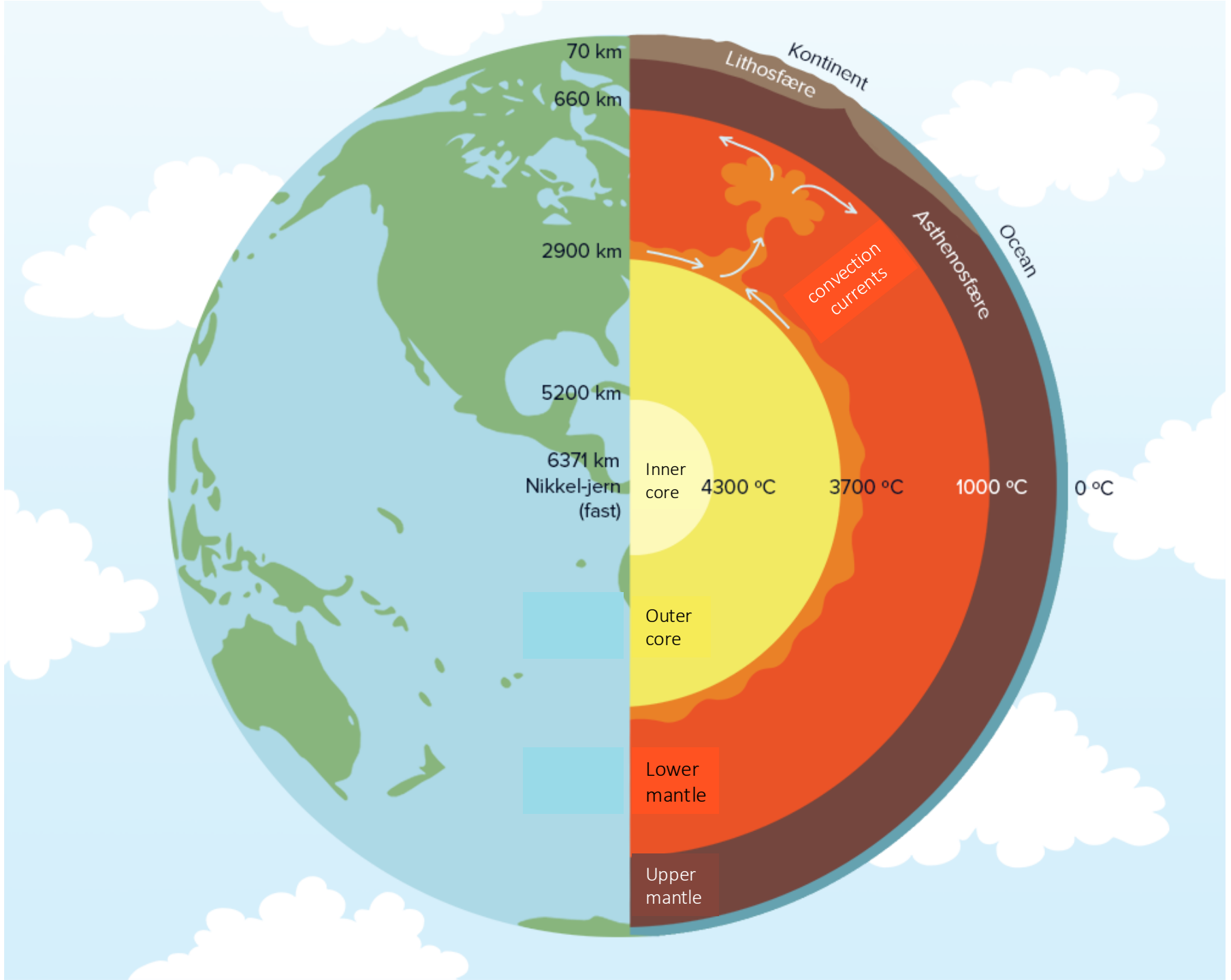
Categories	Subcategories	Grain size
Blocks		Bigger than 200 mm
Rock		20 – 200 mm
Gravel	Pebbles	4 – 20 mm
	Granules	2 – 4 mm
Sand	Coarse sand	0,6 - 2 mm
	Medium sand	0,25 – 0,6 mm
	Fine sand	0,06 – 0,25 mm
Silt	Coarse silt	0,02 - 0,06 mm
	Medium silt	0,006 – 0,02 mm
	Fine silt	0,002 – 0,006 mm
Clay		Smaller than 0,002 mm

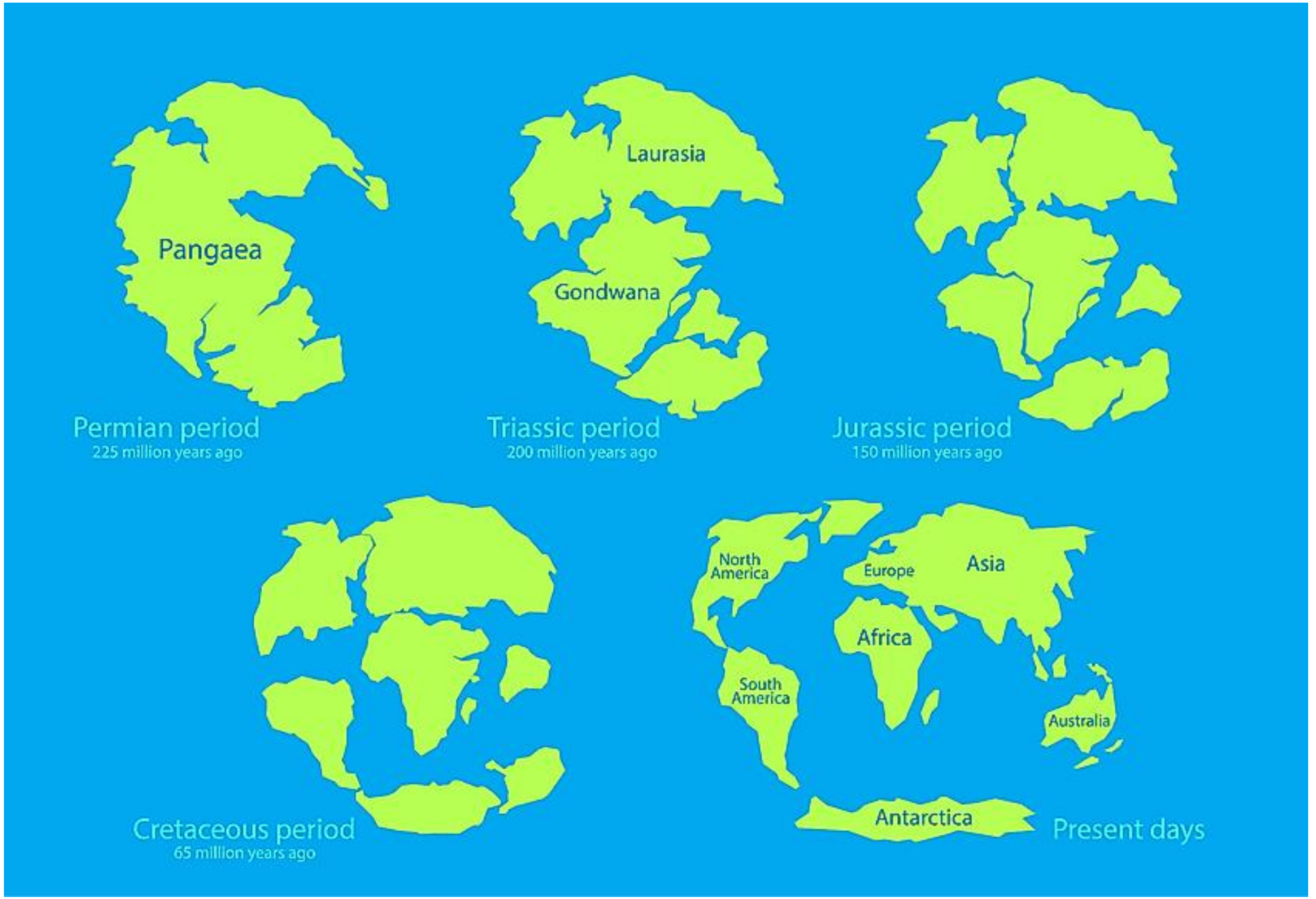
Larsen, G., Frederiksen, J, Villumsen, A., Fredericia, J., Gravesen, P., Foged, N., Knudsen, B. & Baumann, J., 1988, 1995: Vejledning i Ingeniørgeologisk prøvebeskrivelse. Dansk Geoteknisk Forening, Bulletin 1, 135 sider.

European Geological Data Infrastructure



https://data.geus.dk/egdi/?mapname=egdi_new_structure#baslay=baseMapGEUS&extent=-231780,1109820,6637740,4926220&layers=onegeoeuro_surface_lithology


70 km
660 km
2900 km
5200 km
6371 km
Nikkel-jern
(fast)
Kontinent
Lithosfære
Asthenosfære
Ocean
convection currents
Inner core
Outer core
Lower mantle
Upper mantle
4300 °C
3700 °C
1000 °C
0 °C


Pangaea
Permian period
225 million years ago
Laurasia
Gondwana
Triassic period
200 million years ago
Jurassic period
150 million years ago
Cretaceous period
65 million years ago
North America
Europe
Asia
Africa
South America
Australia
Antarctica
Present days

TECTONIC PLATES

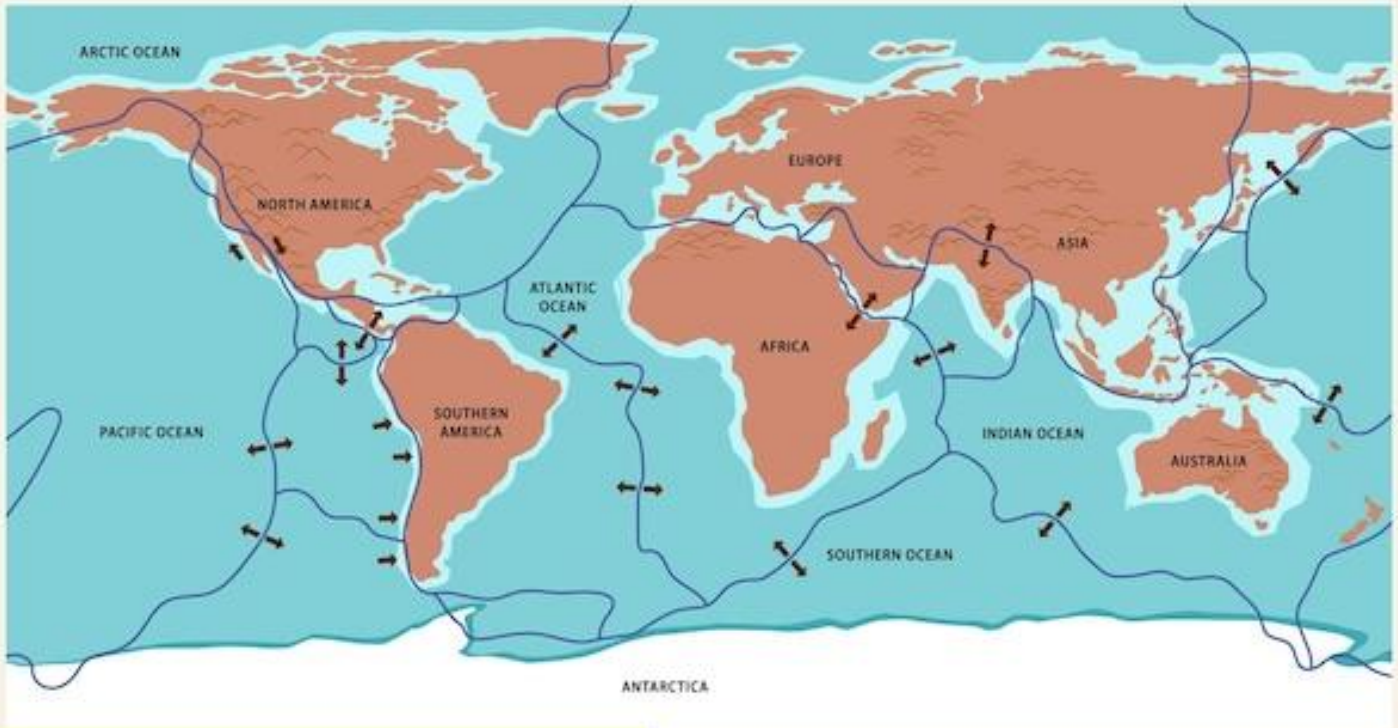


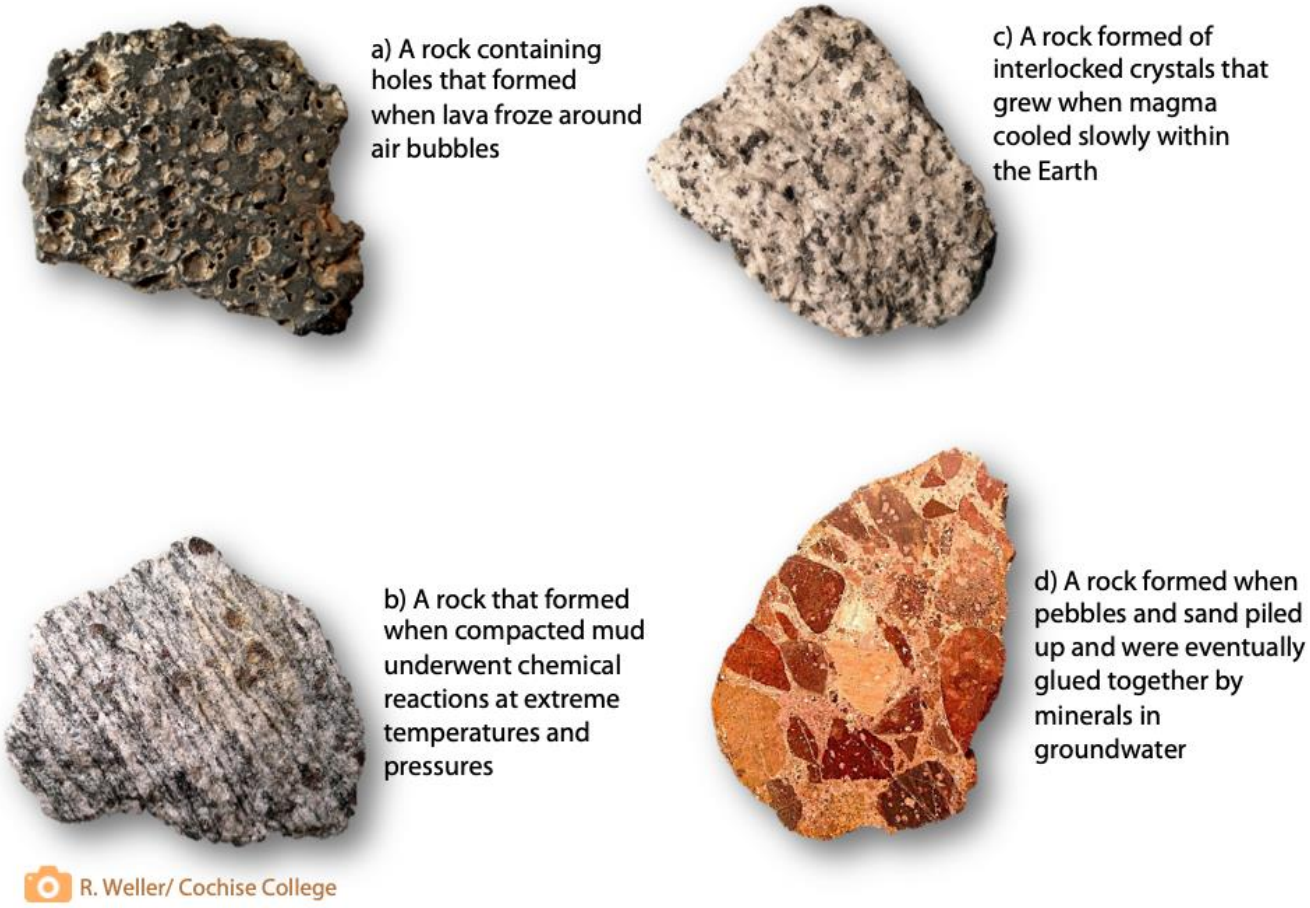
PLATE TECTONICS

Three main types of rock

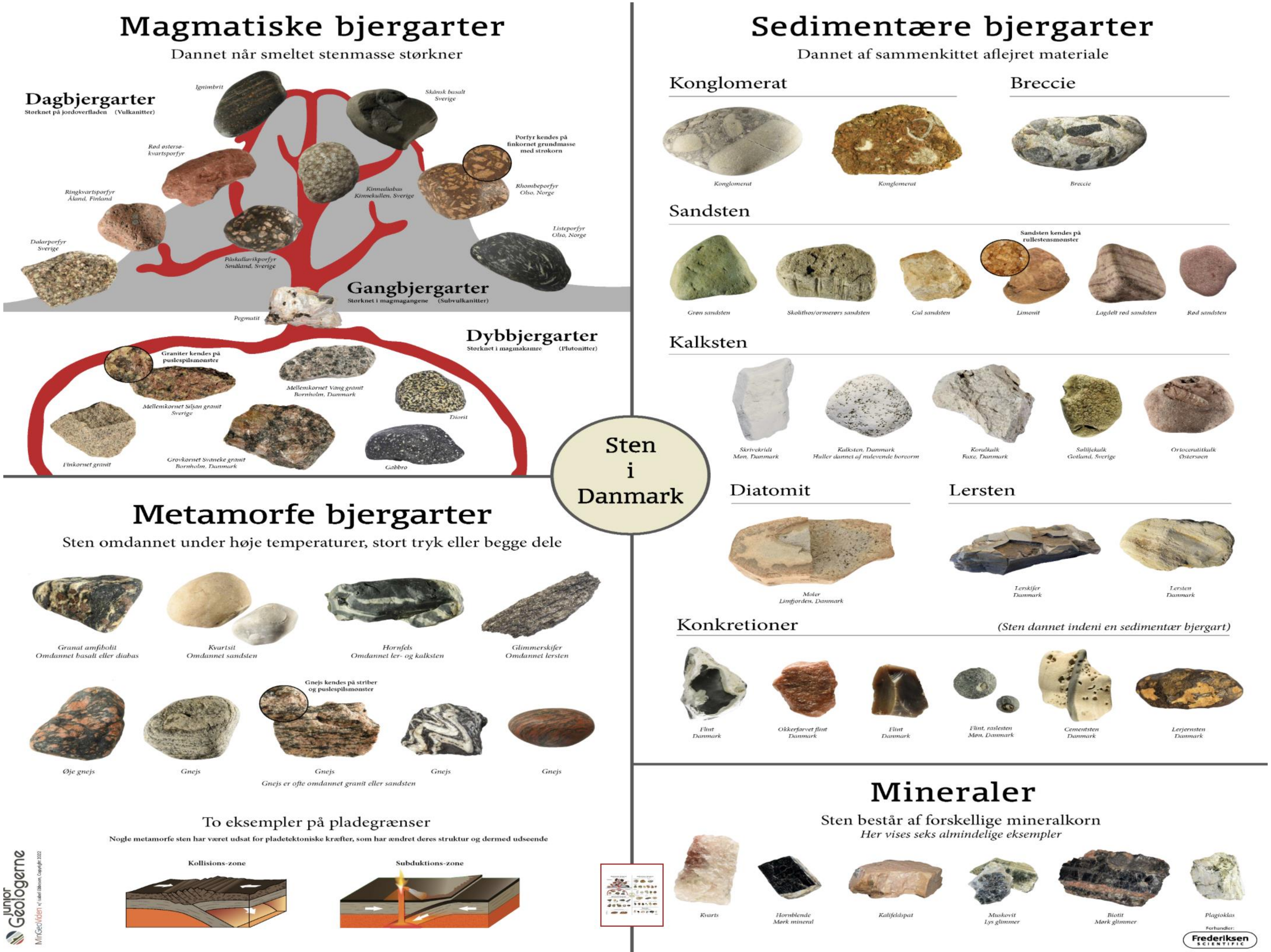
Igneous rocks form when melted rock cools and solidifies.

Sedimentary rocks form when fragments of other rocks are buried, compressed, and cemented together; or when minerals precipitate from solution, either directly or with the help of an organism.

Metamorphic rocks form when heat and pressure alter a pre-existing rock. Although temperatures can be very high, metamorphism does not involve melting of the rock.

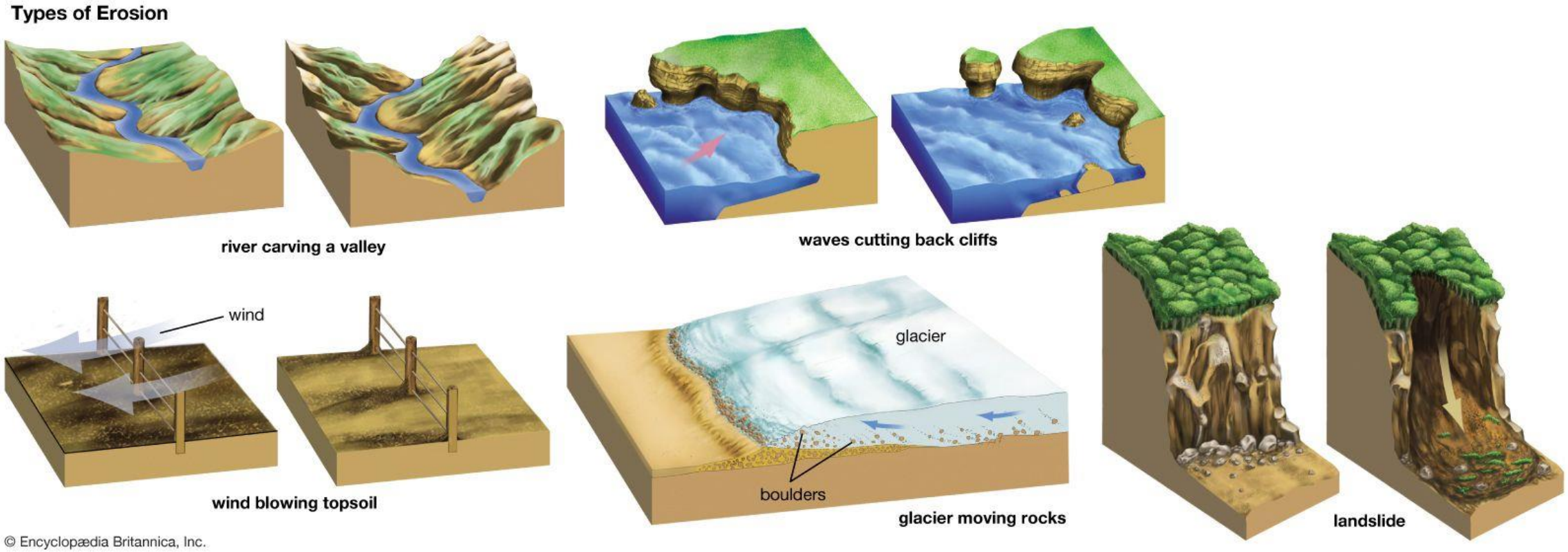


https://opentextbc.ca/physicalgeologyh5p/chapter/what-is-a-rock/



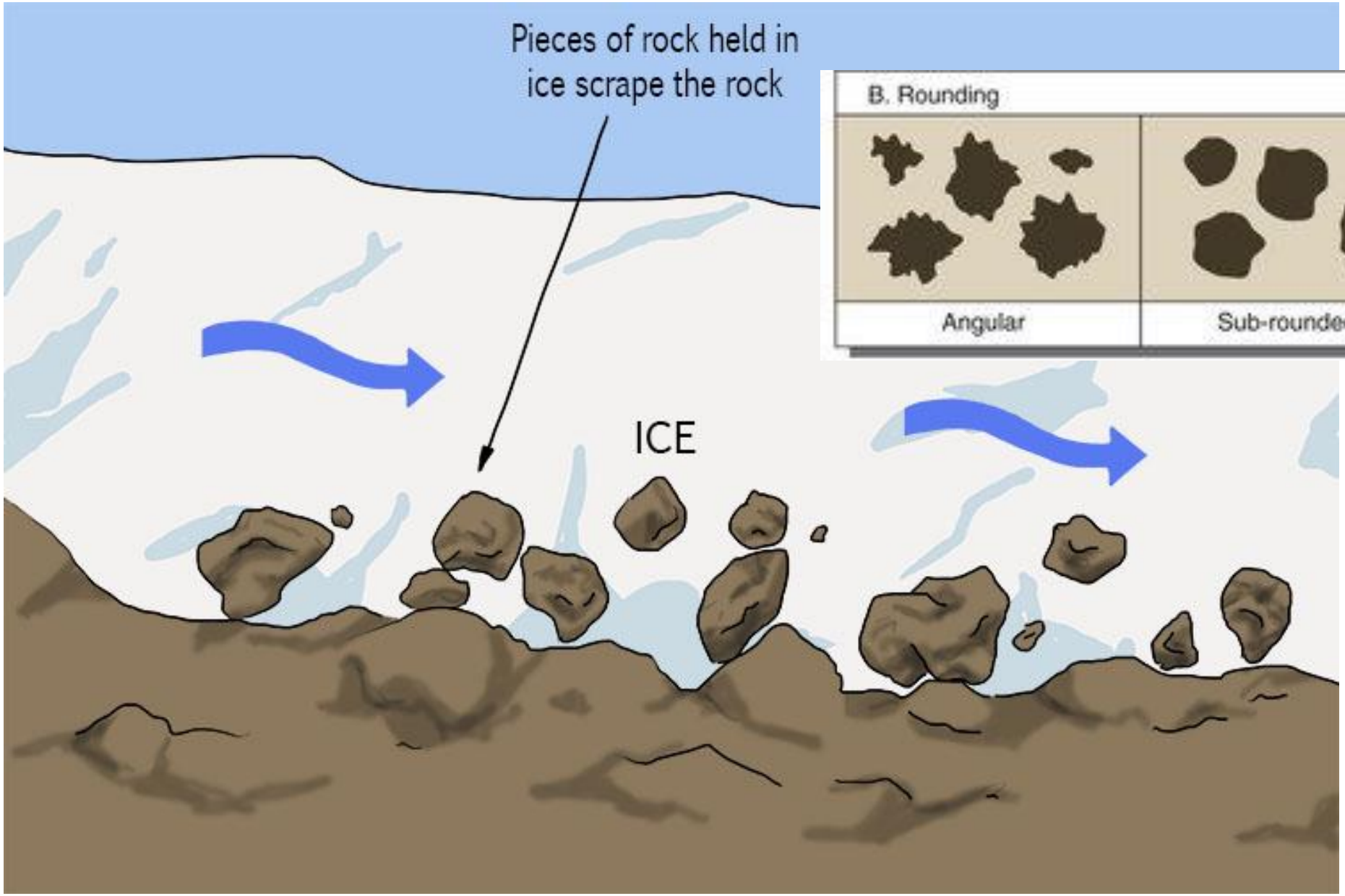
Magmatiske bjergarter
Dannet når smeltet stenmasse størkner
Dagbjergarter
Størknet på jordoverfladen (Vulkanitter)
Ignimbrit
Skånsk basalt
Sverige
Rød østersø-
kvartsporfyr
Porfyr kendes på
finkornet grundmasse
med strøkorn
Ringkvartsporfyr
Åland, Finland
Kinnediabas
Kinnekullen, Sverige
Rhombeporfyr
Olso, Norge
Dalarporfyr
Sverige
Listeporfyr
Olso, Norge
Påskallavikporfyr
Småland, Sverige
Gangbjergarter
Størknet i magmagangene (Subvulkanitter)
Pegmatit
Dybbjergarter
Størknet i magmakamre (Plutonitter)
Graniter kendes på
puslespilsmønster
Mellemkornet Vang granit
Bornholm, Danmark
Mellemkornet Siljan granit
Sverige
Diorit
Finkornet granit
Grovkornet Svaneke granit
Bornholm, Danmark
Gabbro
Sten
i
Danmark
Metamorfe bjergarter
Sten omdannet under høje temperaturer, stort tryk eller begge dele
Granat amfibolit
Omdannet basalt eller diabas
Kvartsit
Omdannet sandsten
Hornfels
Omdannet ler- og kalksten
Glimmerskifer
Omdannet lersten
Gnejs kendes på striber
og puslespilsmønster
Øje gnejs
Gnejs
Gnejs
Gnejs
Gnejs
Gnejs er ofte omdannet granit eller sandsten
To eksempler på pladegrænser
Nogle metamorfe sten har været udsat for pladetektoniske kræfter, som har ændret deres struktur og dermed udseende
Kollisions-zone
Subduktions-zone
Junior Geologerne
MinGeoViden v/ Isabel Ebbesen, Copyright 2022
Sedimentære bjergarter
Dannet af sammenkittet aflejret materiale
Konglomerat
Breccie
Konglomerat
Konglomerat
Breccie
Sandsten
Sandsten kendes på
rullestensmønster
Grøn sandsten
Skolithos/ormerørs sandsten
Gul sandsten
Limonit
Lagdelt rød sandsten
Rød sandsten
Kalksten
Skrivekridt
Møn, Danmark
Kalksten, Danmark
Huller dannet af nulevende boreorm
Koralkalk
Faxe, Danmark
Søllijekalk
Gotland, Sverige
Ortoceratitkalk
Østersøen
Diatomit
Lersten
Moler
Limfjorden, Danmark
Lerskifer
Danmark
Lersten
Danmark
Konkretioner
(Sten dannet indeni en sedimentær bjergart)
Flint
Danmark
Okkerfarvet flint
Danmark
Flint
Danmark
Flint, raslesten
Møn, Danmark
Cementsten
Danmark
Lerjernsten
Danmark
Mineraler
Sten består af forskellige mineralkorn
Her vises seks almindelige eksempler
Kvarts
Hornblende
Mørk mineral
Kalifeldspat
Muskovit
Lys glimmer
Biotit
Mørk glimmer
Plagioklas
Forhandler:
Frederiksen
SCIENTIFIC

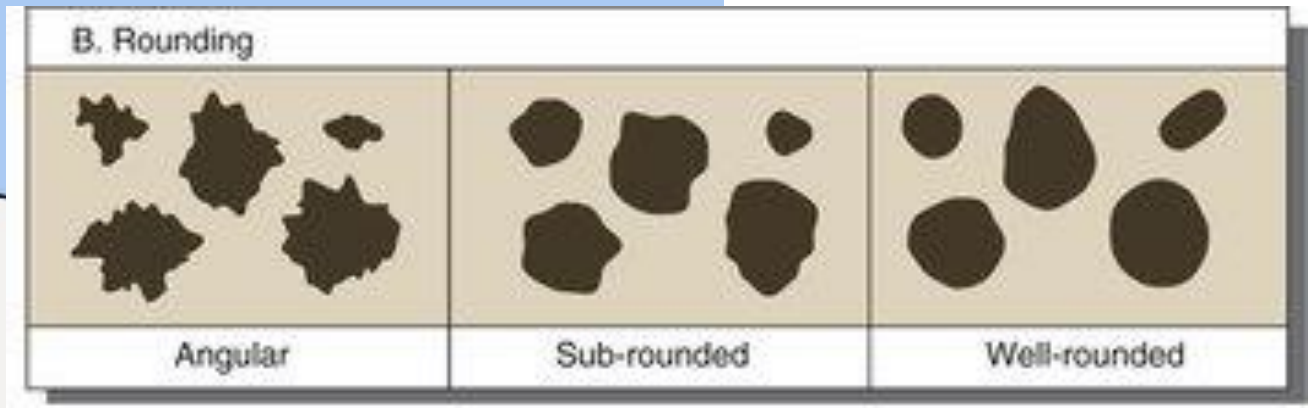
Types of Erosion



Ledeblokke -
hvor kommer stenene fra?


058800





https://mammothmemory.net/geography/geography-vocabulary/glacial-landscapes/abrasion.html

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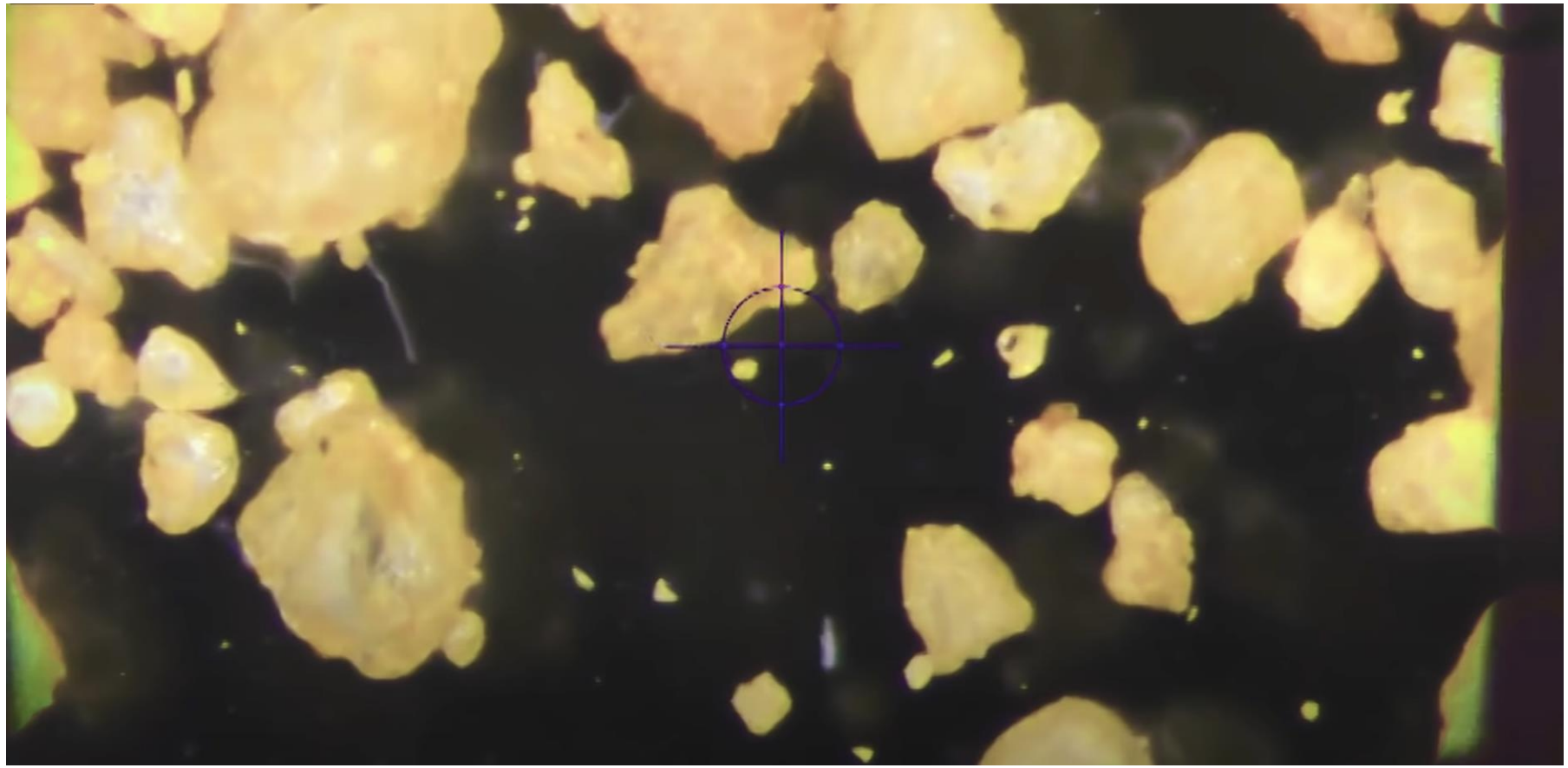
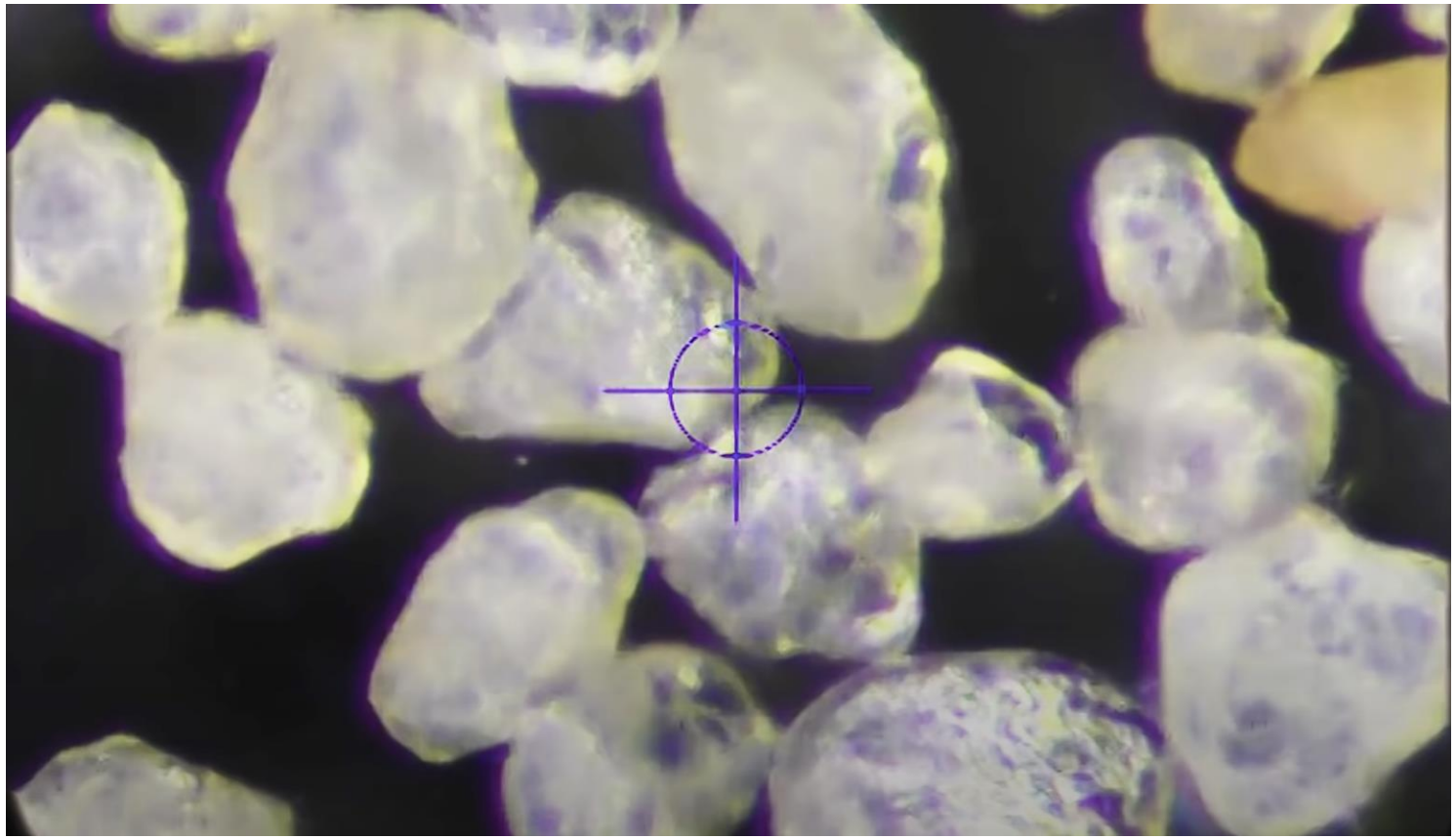
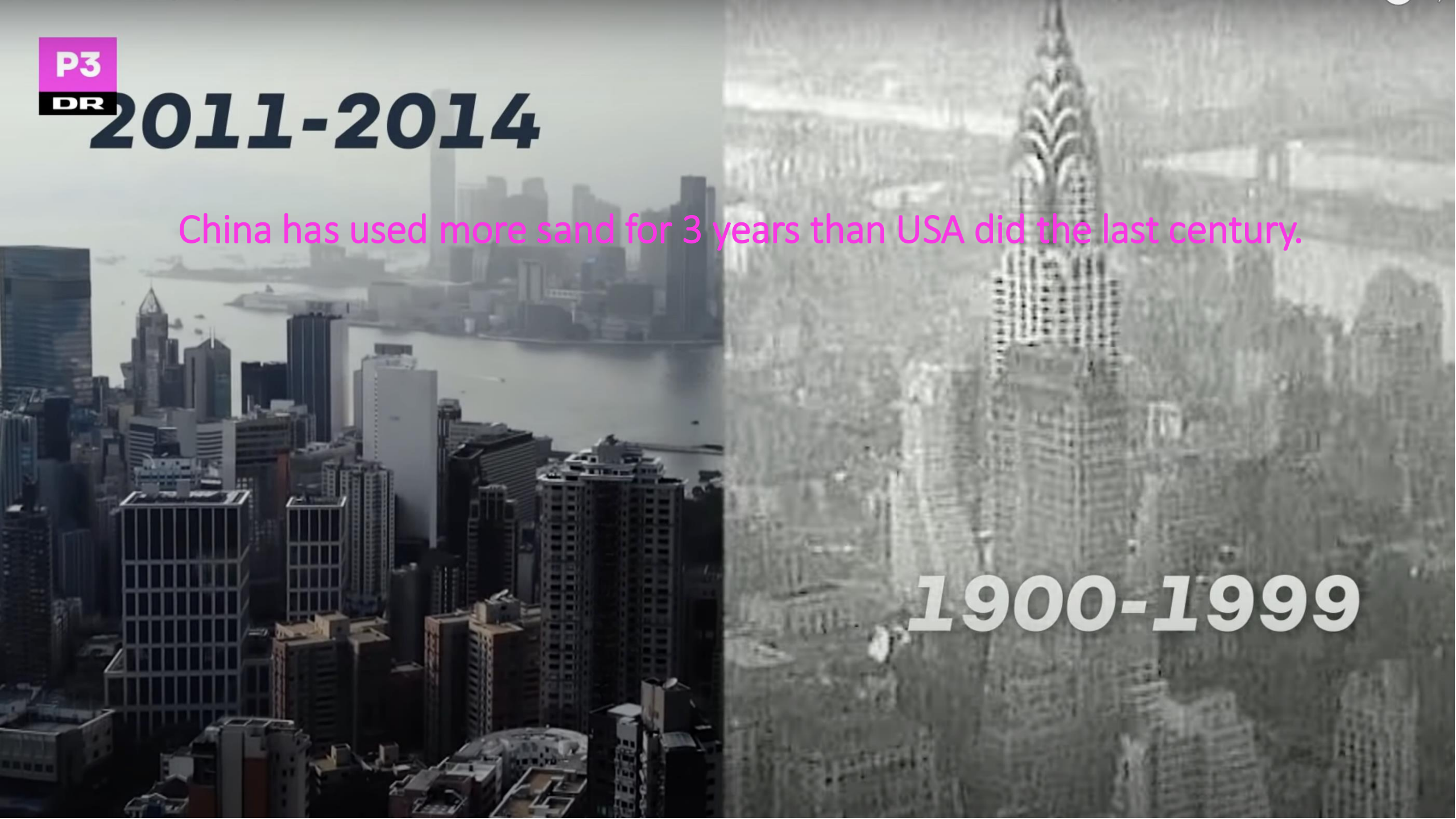
Angular sand



Round sand




P3
DR
2011-2014
China has used more sand for 3 years than USA did the last century.
1900-1999

6 sharp pointers

Each group must narrow down 6 sharp pointers (3 from each lecture) that are to be shared in class.

- What have you gained from the lectures?
  - Write notes collectively, e.g. in a Padlet

Brainstorm from yesterday

Look at your brainstorm from yesterday:

- Where did you lack the knowledge prior to this moment and what do you know now?

- What are you still in need of knowing?

Plan for the next progressive steps

Lesson 3:

- Lecture from Mette Bendixen, Research further on the matter and obtain more knowledge

Lesson 4:

- Discuss and reflect upon the obtained knowledge.

Lesson 5:

- Preparing a lesson plan for pupils (Sustainability, interculturality, common goals).

Lesson 6:

- Presentation of your lesson plan in matrix groups.
- Give feedback to each other's lesson plan.

Preparation for lesson 3:

- Watch the video by Mette Bendixen on your own.
- Reflect on the new input from the video in writing (0,5 page). For example: What surprised you? What made you wonder? What did you not know of beforehand? What do you extract as the focal points in the video?
- Consider how you think we ought to relate to the world's sand shortage?
- + do the post processing task.

Post-processing task:

After today's lecture, the objective is for you to search for and obtain information on the issue of sand in order to expand your knowledge. You decide the format of the source. However, you are to watch, listen and/or read what corresponds to 18 pages of 2400 keystrokes.

You may look for materials online on your own. Otherwise, look into the supplementary materials folder in which you can get inspired by the content.

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