Meteoritter

-Og hvad deraf følger

Vendsyssel Stenklub

24. oktober 2012

Sven Madsen

Simon fikk nesten meteoritt i hodet

Image is of the Time-Life meteorite woman, Ann Hodges from Alabama.
She was struck by a 4 kg meteorite (chondrite) one evening in 1954, while lounging on her couch listening to the radio.

1. **Hvad er en meteorit?**
2. **Hvad består de af?**
3. **Hvor kommer de fra?**
4. **Hvad sker ved et meteoritnedslag**
5. **Eksempler**

En meteorit er et naturligt objekt fra det ydre rum, der overlever turen gennem Jordens (eller et andet himmellegemes) atmosfære og rammer overfladen.

På vej gennem atmosfæren kaldes fænomenet for et stjerneskud eller en meteor.

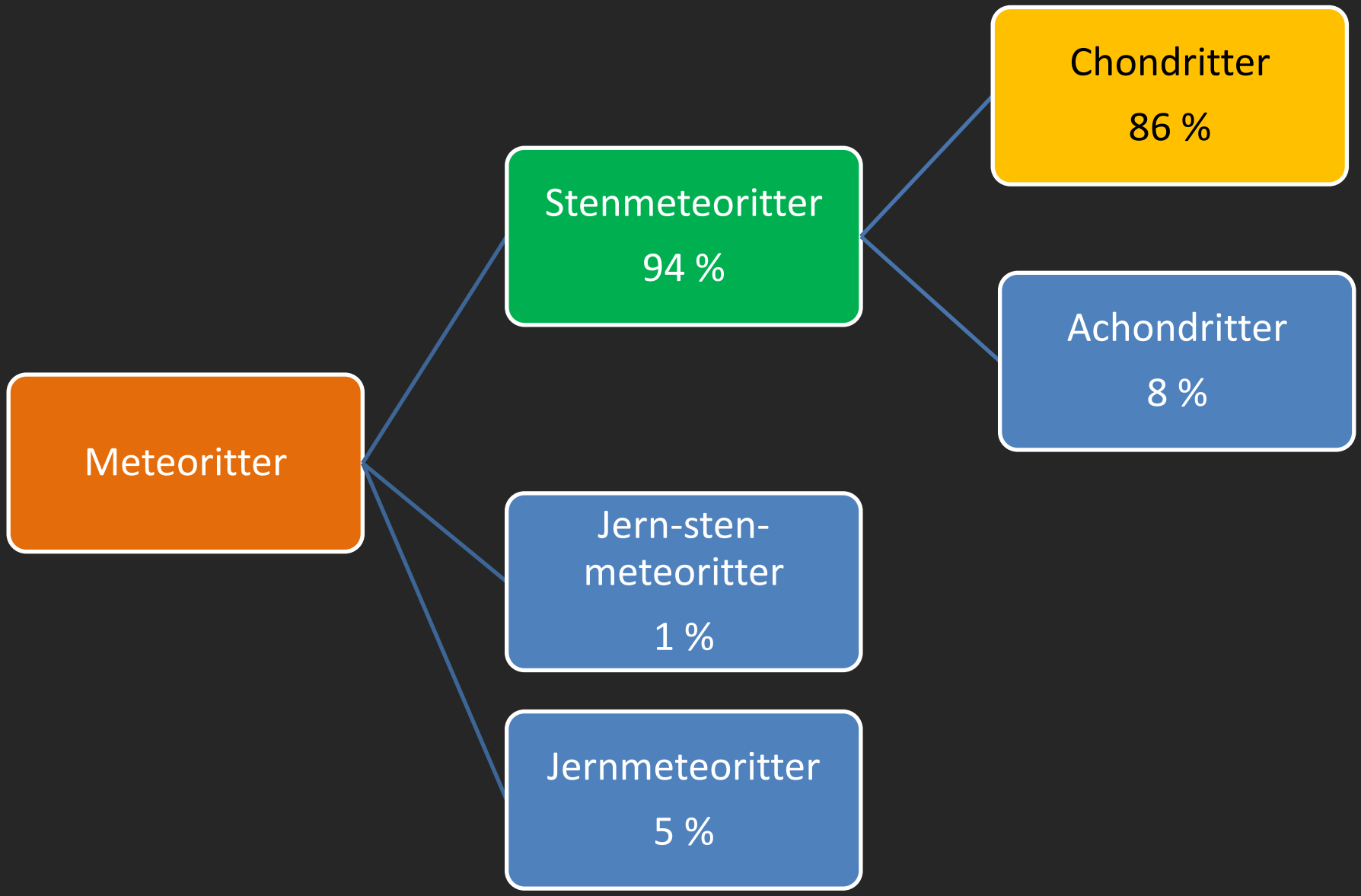
Meteorider: Klippe/jern, <50m
Asteroider: Klippe/jern, >50m
Kometer: Is, støv, klippe

Hvordan genkender man en meteorit?

Sort smelteskorpe
Afrundede former
Tiltrækkes af magnet (langt de fleste)
Høj vægtfylde
Ingen bobler eller gasblærer

> 30.000

1. Hvad er en meteorit?
2. Hvad består de af?
3. Hvor kommer de fra?
4. Hvad sker ved et meteoritnedslag?
5. Eksempler

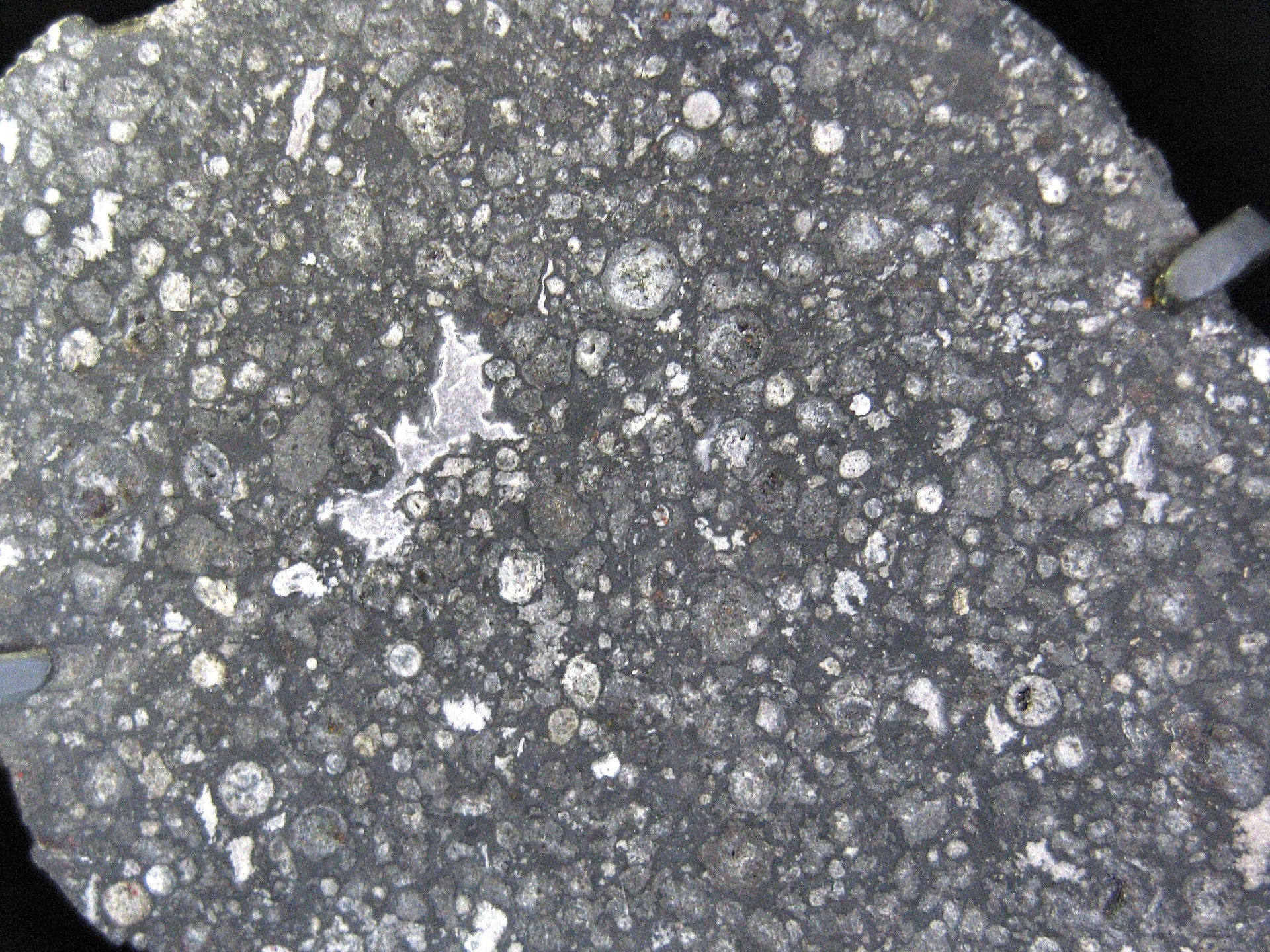

Meteoritter
Stenmeteoritter
94 %
Chondritter
86 %
Achondritter
8 %
Jern-sten-
meteoritter
1 %
Jernmeteoritter
5 %

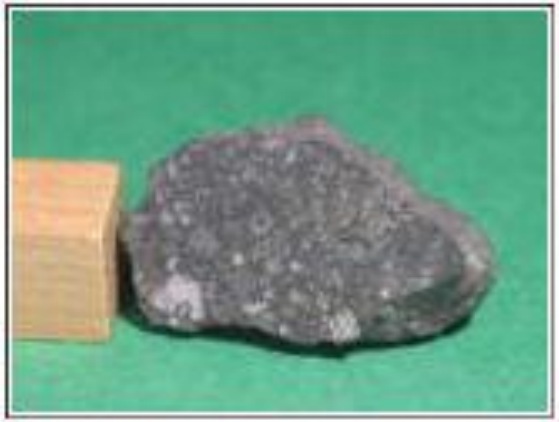
Chondritter

Består af klumper af det første faste stof, der dannedes i vores solsystem for 4567 millioner år siden.

Ved at studere dem kan vi lære om de første 5-10 millioner år efter solsystemet blev skabt.

Allende-meteoritten
8. Februar 1969 – Mexico – 250 km^2
2 tons indsamlet - Dette fragment 520 g
Kulchondrit - aminosyrer



		
# **AM5-73**	# **AM5-83**	# **AM5-84**
Weight: **5.7 gm**	Weight: **5.8 gm**	Weight: **5.8 gm**
Features: **Slice**	Features: **Cut fragment, no crust**	Features: **Cut fragment, no crust**
Price: $100	Price: sold	Price: $102

Ikke-chondritter

Stammer fra himmellegemer, som under dannelsen har været så varme, at de har dannet en kerne af jern/nikkel.
Ved kollisioner med hinanden sprænges de i mindre stumper, som bliver til **jernmeteoritter**, hvis materialet stammer fra kærnen, **sten-jernmeteoritter**, hvis det er fra overgangszonen og **achondritiske stenmeteoritter**, hvis det det stammer fra den ydre del.

Piece of the moon from the Sahara Desert - Found in Algeria 2005
Achondrite (Lunar Feldspatic breccia) - 538 g
Fully crusted and minimally weathered stone. In addition, the assemblage appears to be characterized by large amounts of breccias within breccias: at least 4 generations of brecciation were observed in one cm-sized breccia clast.
0.350 mm sized grain of meteoritic Ni, Fe metal (Ni = 6.3 Co = 1.0, both wt %)

Jernmeteoritter

Består af en jern-nikkel-legering (FeNi) med små koncentrationer af andre grundstoffer. Selve FeNi-legeringen forekommer i to faser, kamacit (Ni < 7,5%) og tænit (Ni > 30%). I visse typer af jernmeteoritter er kamacit og tænit blandet i et oktaederlignende Widmanstättenmønster, der fremtræder, når man ætser en poleret jernmeteorit med svag syre.

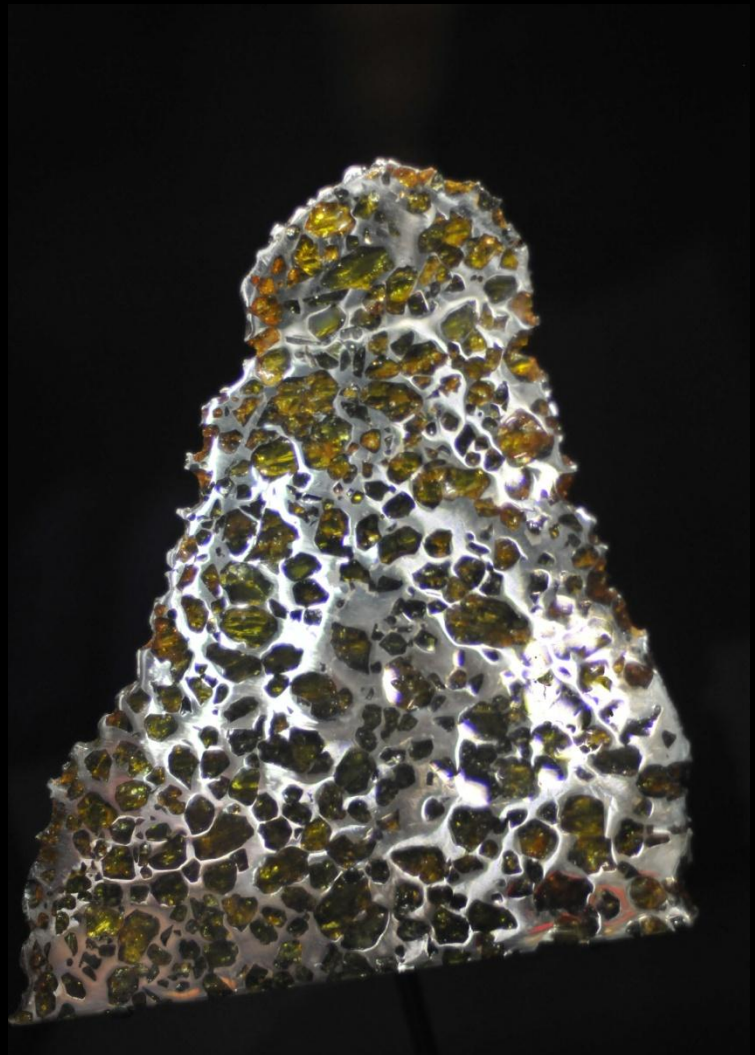
		
#SA19-63	**#SA20-72**	**# SA35-7**
Weight: **19.6 gm**	Weight: **20.7 gm**	Weight: **35.7 gm**
Features: **Whole Specimen. Thumbprinted and fusion crusted individual.**	Features: **Whole Specimen. Thumbprinted and fusion crusted individual.**	Features: **Whole Specimen. Thumbprinted and fusion crusted individual.**
sold	$56	$76

Jern-sten-meteoritter

Jern-sten-meteoritter omfatter grupperne mesosideritter og pallasitter. Begge grupper består af relativt store mængder metal fordelt i en silikatmatrix. Oprindelsen af jern-sten-meteoritterne er stadig uklar.

Pallasites consists of cm-sized olivine crystals of peridot quality in an iron-nickel matrix. Coarser metal areas develop Widmanstätten patterns upon etching.

Mesosiderites are a class of stony–iron meteorites consisting of about equal parts of metallic nickel-iron and silicate. They are breccias with an irregular texture; silicates and metal occur often in lumps or pebbles as well as in fine-grained intergrowths. The silicate part contains olivine, pyroxenes, and Ca-rich feldspar and is similar in composition to eucrites and diogenites



Krasnojarsk Meteorite

Krasnojarsk Meteorite *found 1749, Russia.* A mass of material of about 700 kg was discovered in 1749 on the side of Mount Bolshoi Imir, about 235 km (145 miles) south of Krasnojarsk

Krasnojarsk Meteorite

Large end cut with typical "iron sponge" shape

Weight: 73.30 g

Size: 65 x 40 x 25 mm

More details

~~$14,293~~

(price reduced by 10 %)

Now $12,863.70

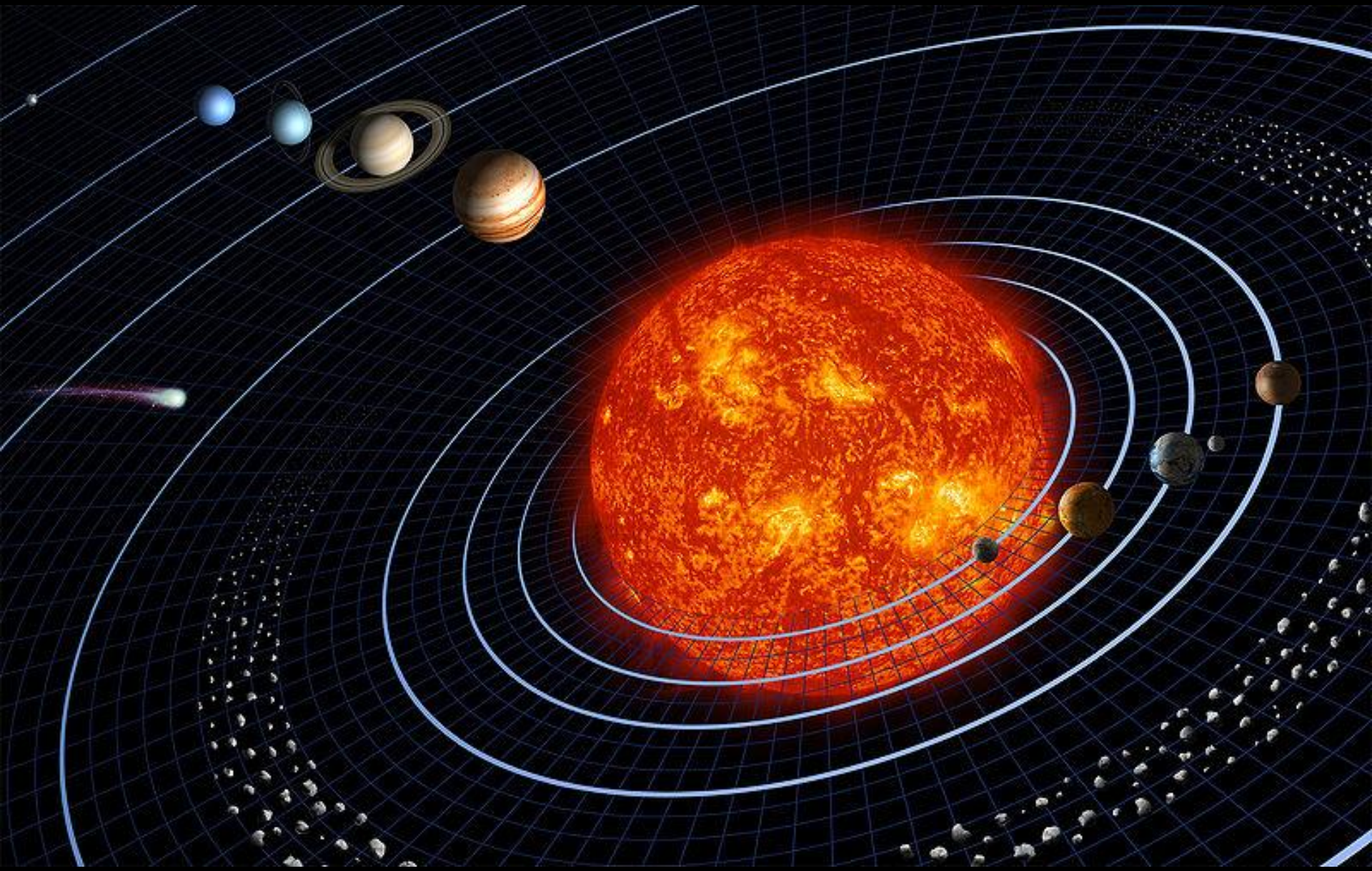
Quantity : 1

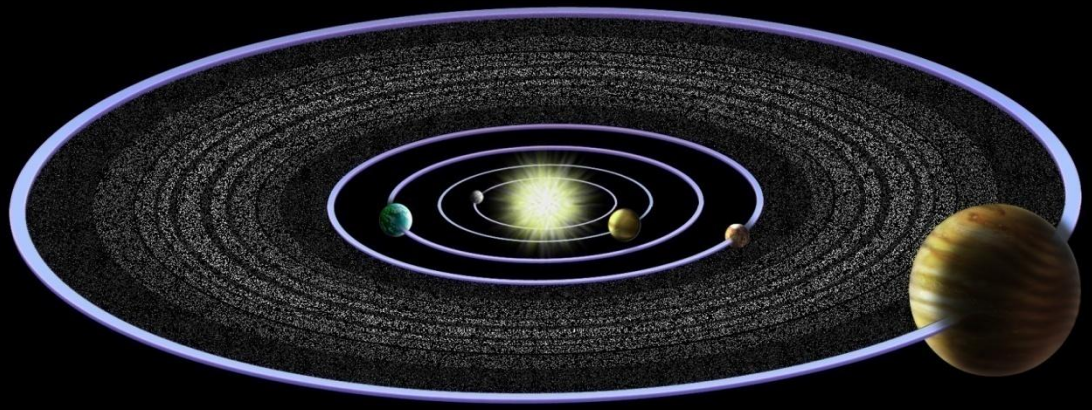
Add to cart

By buying this product you can collect up to **1287 loyalty points.** Your cart will total **1287 points** that can be converted into a voucher of $257.40.

1. Hvad er en meteorit?
2. Hvad består de af?
3. Hvor kommer de fra?
4. Hvad sker ved et meteoritnedslag?
5. Eksempler

Asteroidebæltet

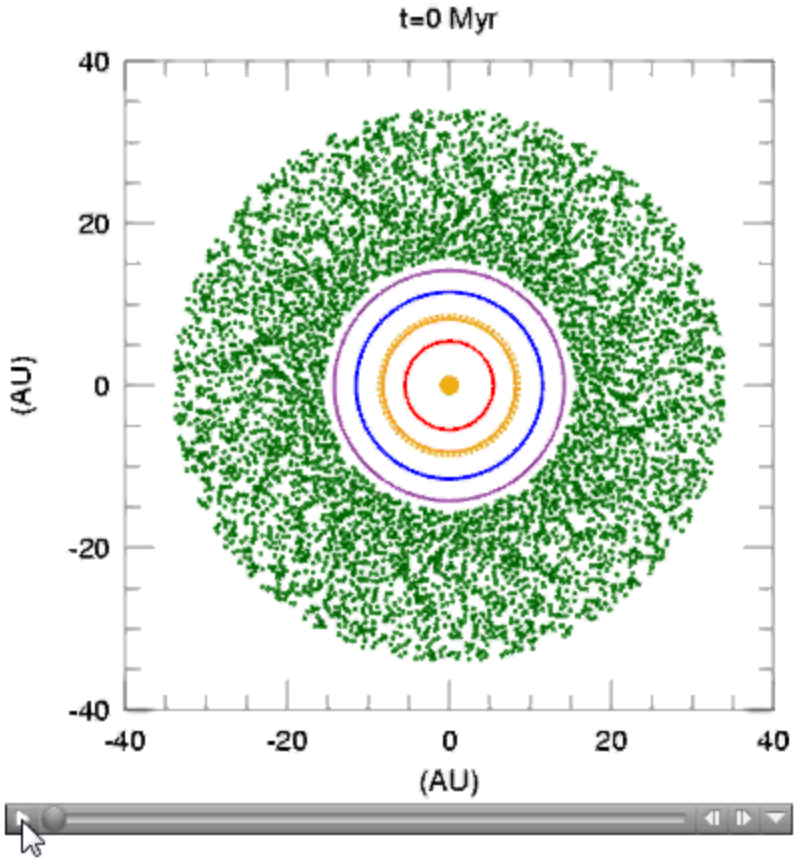


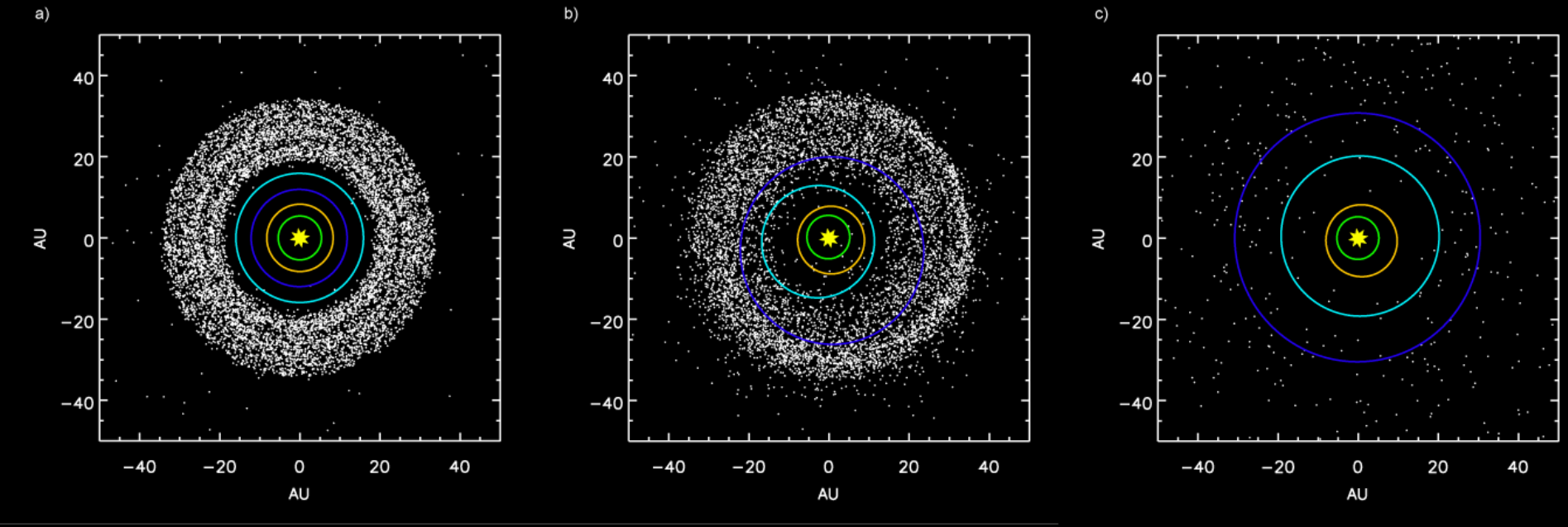


Kirkwood gaps


Oort cloud:
•Extends out to about 50,000 AU
•Contains a trillion comets
•Comets formed near jovian planets but were flung into large, random orbits by gravitational encounters
Neptune's orbit
Kuiper belt:
•About 30–100 AU
•100,000 comets more than 100 km across
•Comets orbit in the same plane and direction as planets
•Comets still in the region in which they formed
•Comets covered with dark carbon-rich compounds
•Many comets in orbital resonances with Neptune
•Pluto largest member of the group?

simulation




a)
b)
c)
40
20
0
−20
−40
AU
−40
−20
0
20
40
AU

Late Heavy Bombardment

4,0 – 3,8 mia år siden

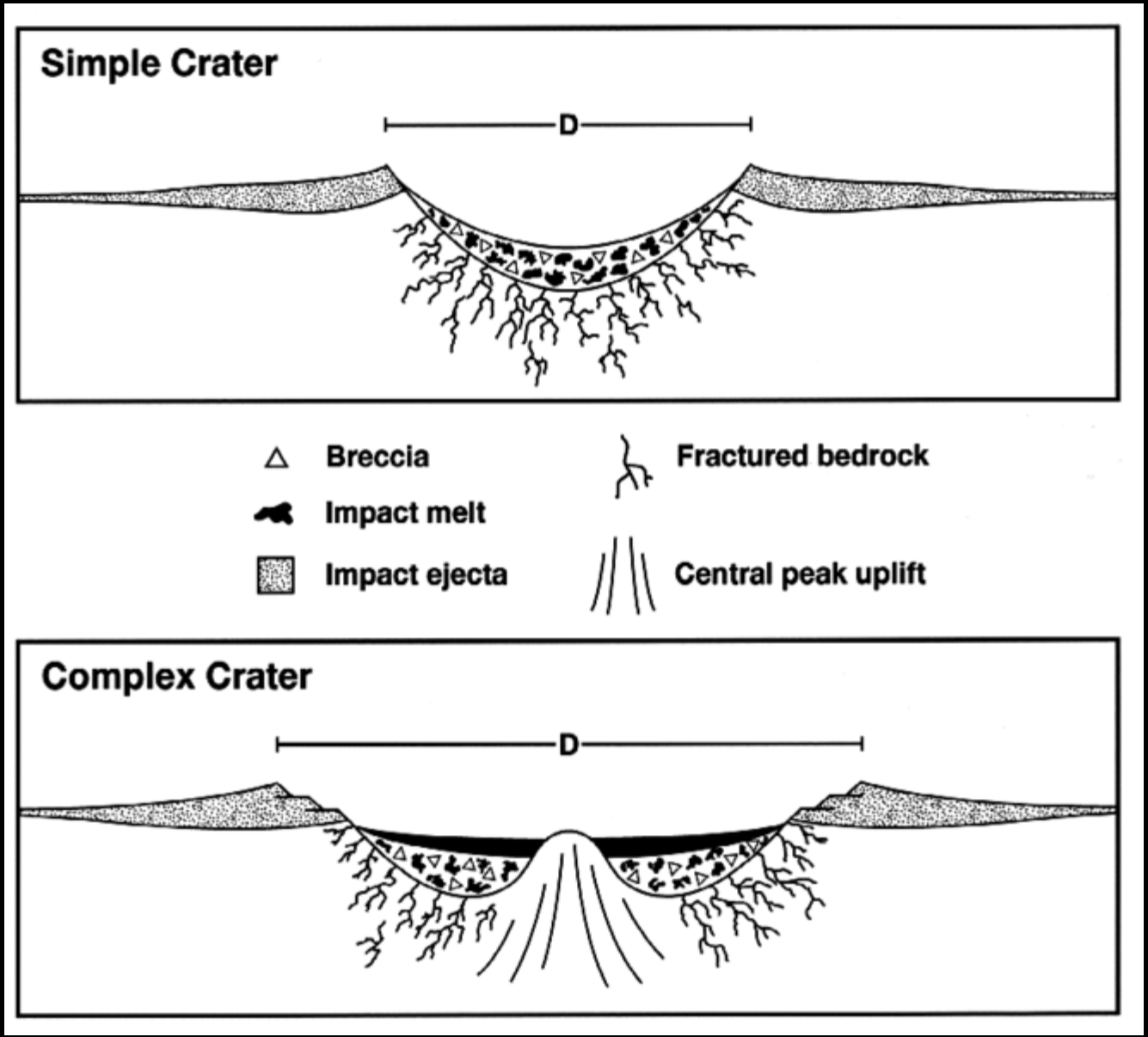
1. Hvad er en meteorit?
2. Hvad består de af?
3. Hvor kommer de fra?
4. Hvad sker ved et meteoritnedslag?
5. Eksempler

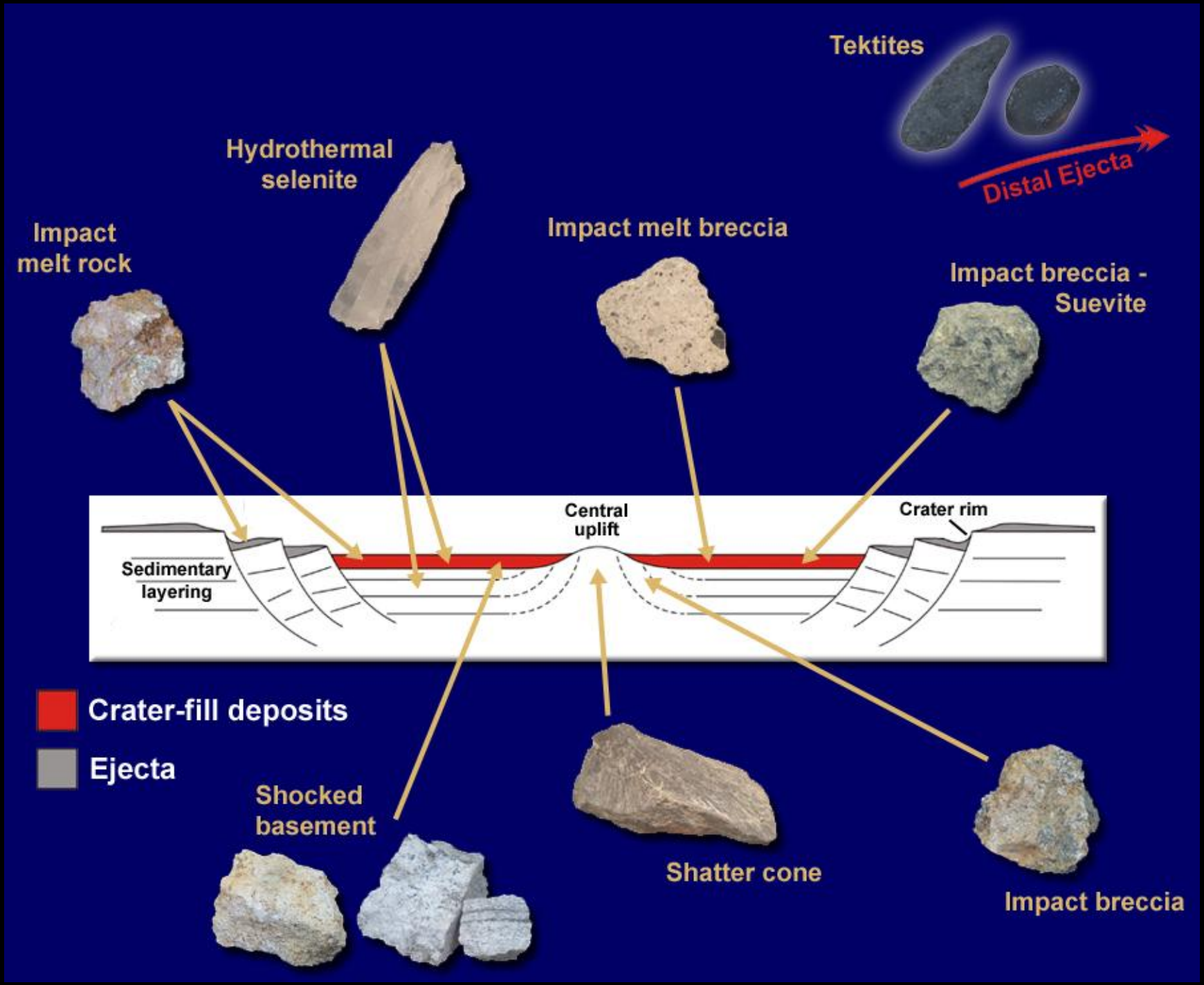
Små objekter bremses og fordamper evt. helt

Større objekter (op til 50 m for stenmeteoritter) eksploderer i atmosfæren. Afhængigt af højden kan det medføre store skader.

Hvis objektet ikke bremses eller eksploderer i atmosfæren får vi et meteornedslag: impact.

1. Kontakt kompression
2. Excavation
3. Modifikation




Tektites
Distal Ejecta
Hydrothermal selenite
Impact melt rock
Impact melt breccia
Impact breccia - Suevite
Central uplift
Crater rim
Sedimentary layering
Crater-fill deposits
Ejecta
Shocked basement
Shatter cone
Impact breccia

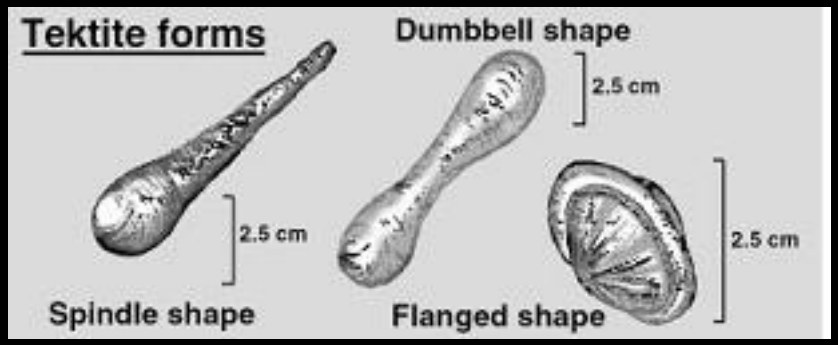
Shatter cones = “slagkegler” are distinctive cone or fan-shaped features in rocks, with radiating **fracture** lines that resemble a horsetail. They are found in only two places on Earth, 1) in nuclear test sites and 2) **meteorite** impact structures. They are formed as a result of the high pressure, high velocity shock wave produced by a large impacting object or a large explosion. They range in size from less than 1 centimeter to more than 5 meters across and indicate that the original rock was shattered – somewhat like a car's windshield hit by a stone. Shatter cones are the only shock indicators that can be seen with the naked eye
Shatter cones can be found within the central uplifts of large impact structures and occasionally within the crater-fill deposits.

IMPACT BRECCIAs are extremely common in **meteorite** impact craters and attest to the destructive power of the impact event. **Impact melt breccias** and **suevites** both contain melt derived from the melting of target rocks, however, not all breccias contain melt. The breccia shown in the photo below (right) contains no melt and is simply termed an **impact breccia**. It contains fragments of **gneiss** and **granite** surrounded by a fine-grained matrix of pulverized grains from the same rocks. Impact breccias can be found in many different settings within impact structures; for example, in the central uplift, in crater-fill deposits, and in the **ejecta** blanket.

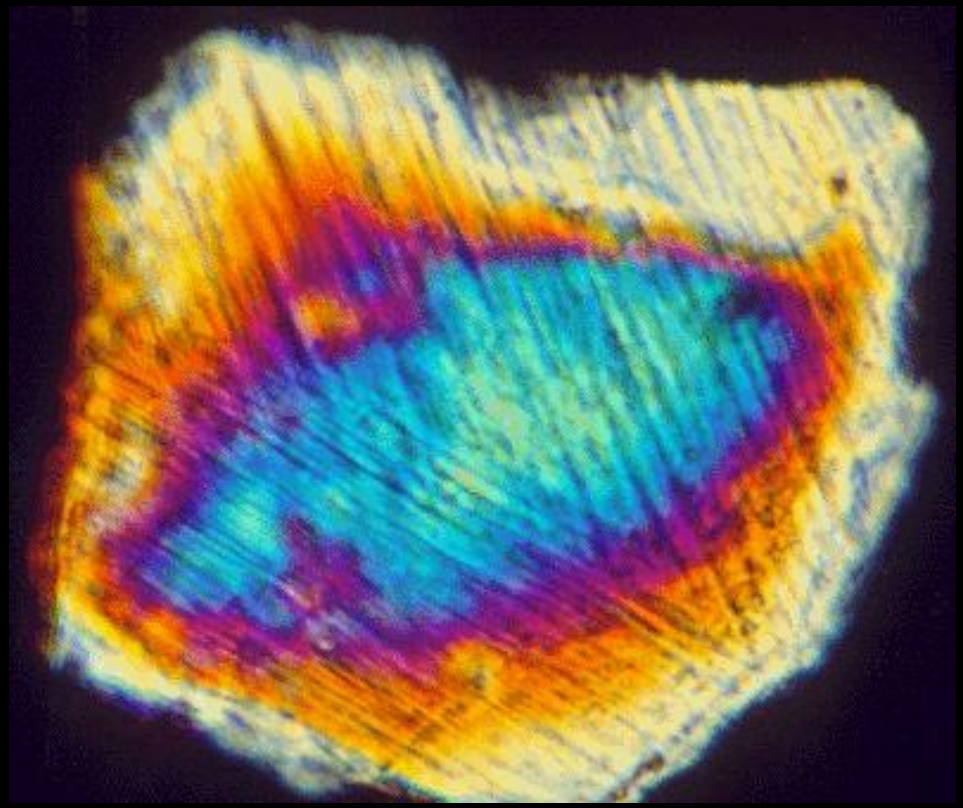
impact melt breccia is similar to a breccia, but slightly different in that the matrix cementing the fragments is from crystallized impact melt. The melt is the primary evidence for a cataclysmic impact event, where the heat generated from the impact shatters and melts the target rock.

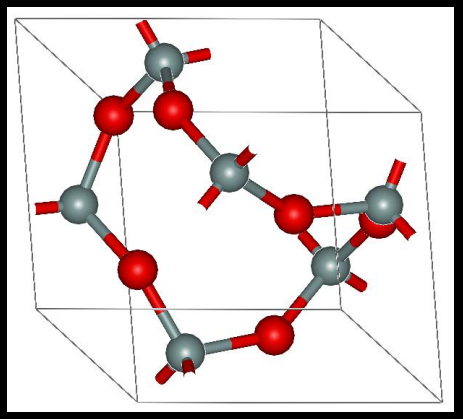
Suevite is an **impact breccia** composed of angular fragments of different rock types as well as glass inclusions, set in a fine-grained **matrix**. In the suevite photos below, you can see lots of black glassy fragments (generally smoother than typical rock fragments) and white speckled crystalline fragments. The glasses are derived from rocks that were heated to such high temperatures during the impact event that they melted and then cooled very rapidly (quenched) to form **glass**. If a melt cools slowly, it can form an impact melt rock. Suevites at the Ries impact structure form the crater-fill deposits and are also found in the **ejecta**blanket.

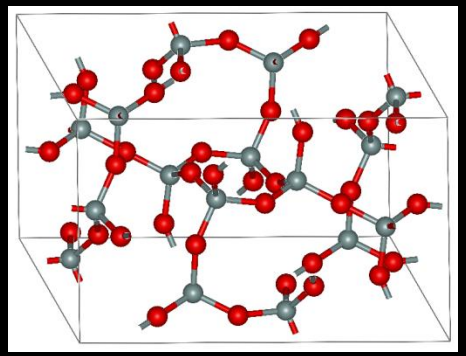
Tektites are small, glassy pebble-like objects that form during a **meteorite** impact. Their name comes from the Greek word "tektos", meaning molten. They represent droplets of molten target rock that are ejected up into the Earth's atmosphere and then fall back to the surface several hundred kilometers away from where the impact took place. They often acquire aerodynamic shapes flying through the atmosphere (left).

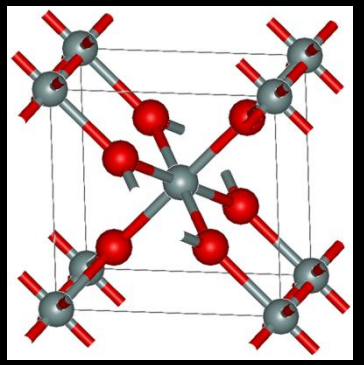


Shocked quartz is a form of quartz that has a microscopic structure that is different from normal quartz. Under intense pressure (but limited temperature), the crystalline structure of quartz will be deformed along planes inside the crystal. These planes, which show up as lines under a microscope, are called planar deformation features (PDFs), or shock lamellae. Shocked quartz is associated with two high pressure polymorphs of silicondioxide: coesite and stishovite. These polymorphs have a different crystal structure than standard quartz. Again, this structure can only be formed by intense pressure, but moderate temperatures. High temperatures would anneal the quartz back to its standard form. Coesite and stishovite are also indicative of impact.









Pseudotachylit

Pseudotachylite is a fault rock that has the appearance of the basaltic glass, tachylyte. It is dark in color and has a glassy appearance. However, the glass has normally been completely devitrified into very fine-grained material with radial and concentric clusters of crystals. It may contain clasts of the country rock and occasionally crystals with quench textures that began to crystallize from the melt.

Pseudotachylite is also associated with impact structures such as that which formed the Vredefort crater, South Africa. In an impact event, the melting forms part of the shock metamorphic effects.[5] The pseudotachylite veins associated with impacts are much larger than those associated with faults and are thought to have formed by frictional effects within the crater floor and below the crater during the initial compression phase of the impact and the subsequent formation of the central uplift.[6] The most extensive examples of impact related pseudotachylites come from impact structures that have been deeply eroded to expose the floor of the crater, such as Vredefort crater, South Africa and the Sudbury Basin, Canada.

Pseudotachylit

Erich Spicar

1. Primary impactites (melts formed during the impact of the impacting body and/or from local bedrock)

1.1 Impact>melt breccias
1.2 Suevites
1.3 Pseudotachylites
1.4 Reconstructed granite with bulbs of glass or melt.

2. Secondary impactites (these are formed after the impact)

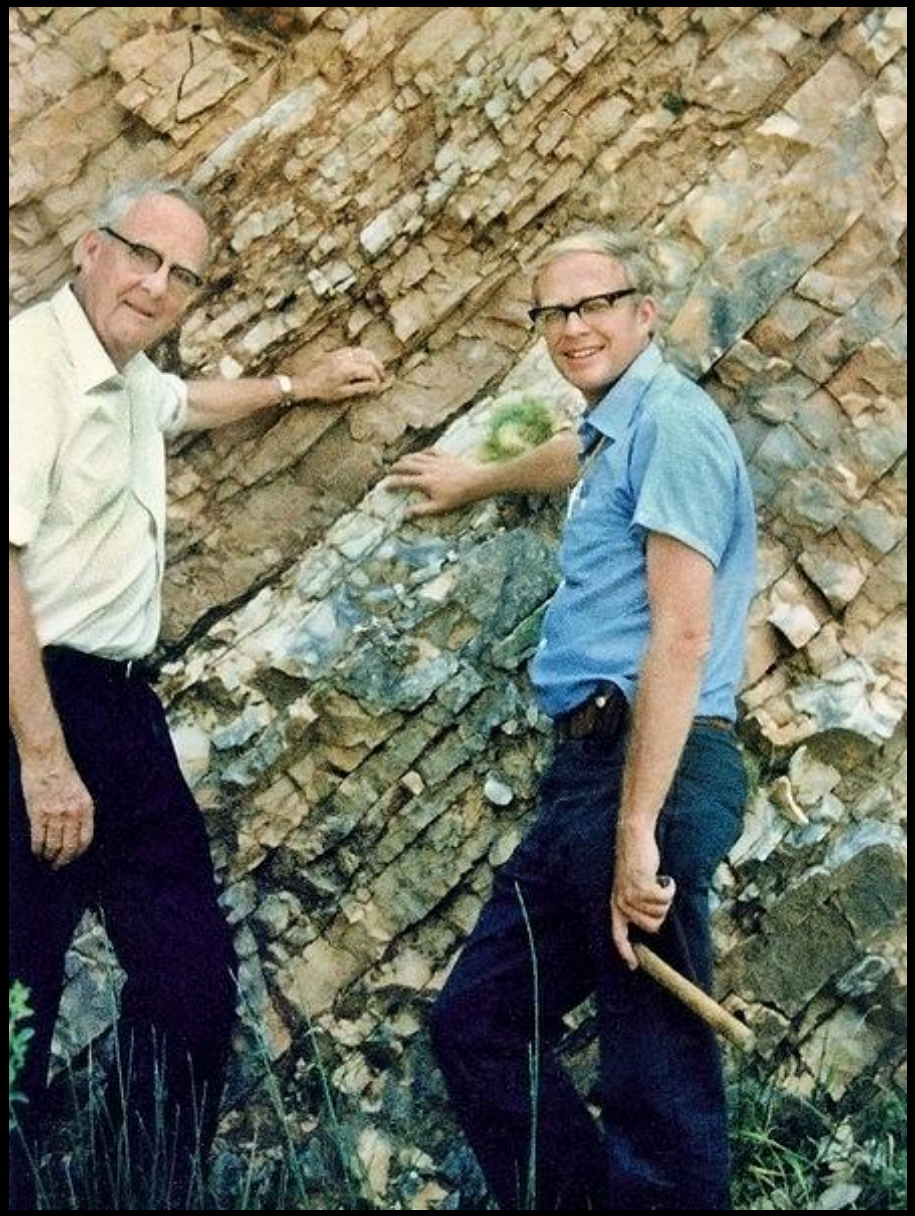
2.1 Quartzcured original crushed rock
2.2 New rock, mainly consisting of coloured quartz.
2.3 In water settled material, possibly sub aquatic slumps, which has been metamorphosed
2.4 Hardened slurry of mainly carbonate dust, converted to carbonate siliceous rock
2.5 Mylonites, similar to red>brown porphyries, consisting of potassium feldspar, free from the glass phase of a porphyry. The “best” samples consist of intergrown microcline crystals, without any free quartz (=syenites), see 7.8.

1. Hvad er en meteorit?
2. Hvad består de af?
3. Hvor kommer de fra?
4. Hvad sker ved et meteoritnedslag?
5. Eksempler

Earth Impact Database: 178 craters

diameter	navn
300	Vredefort
250	Sudbury
170	Chicxulub
100	Popigai
100	Manicouagan
90	Chesapeake Bay
90	Acraman
80	Puchezh-Katunki
70	Morokweng
65	Kara
60	Beaverhead
55	Tookoonooka
54	Charlevoix
52	Siljan
52	Kara-Kul
45	Montagnais
40	Woodleigh
40	Saint Martin
40	Mjølnir
40	Araguainha
39	Carswell
36	Clearwater West
35	Manson
30	Keurusselkä
30	Yarrabubba

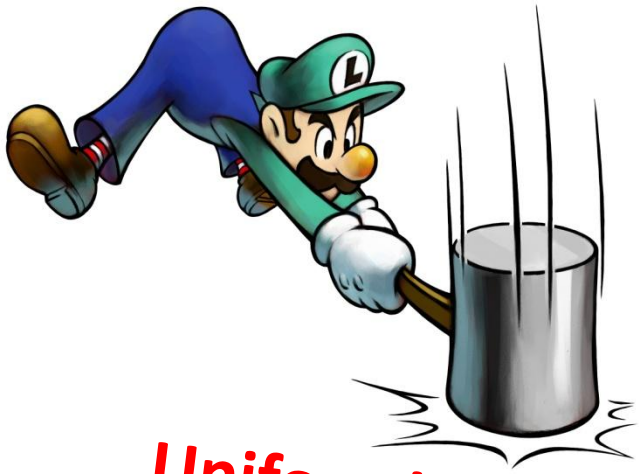
diameter	navn
30	Slate Islands
30	Shoemaker (formerly Teague)
28	Mistastin
26	Clearwater East
25	Kamensk
25	Strangways
25	Steen River
24	Boltysh
24	Ries
24	Presqu'ile
23	Rochechouart
23	Lappajärvi
23	Haughton
22	Gosses Bluff
20	Amelia Creek
20	Obolon'
20	Logancha
19	Glikson
19	Dellen
18	Oasis
18	Lawn Hill
18	El'gygytgyn
16	Suavjärvi
16	Ames
15	Logoisk



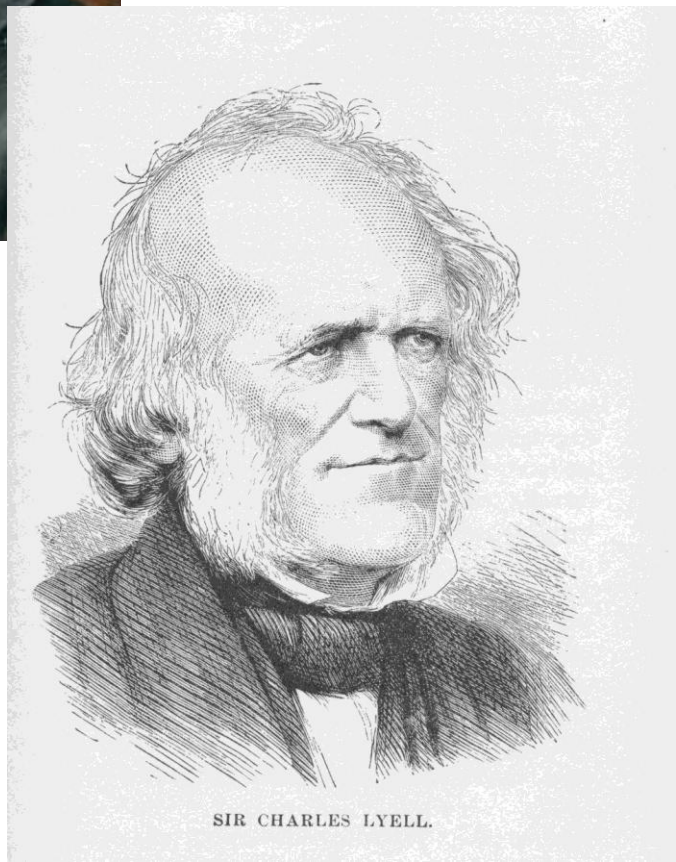
Alvarez impact hypothesis

In 1980, a team of researchers consisting of Nobel prize-winning physicist Luiz Alvarez, his son, geologist Walter Alvarez, and chemists Frank Asaro and Helen Michels discovered that sedimentary layers found all over the world at the Cretaceous–Tertiary boundary contain a concentration of iridium many times greater than normal (30 times background in Italy and 160 times at Stevns).

1726-1797



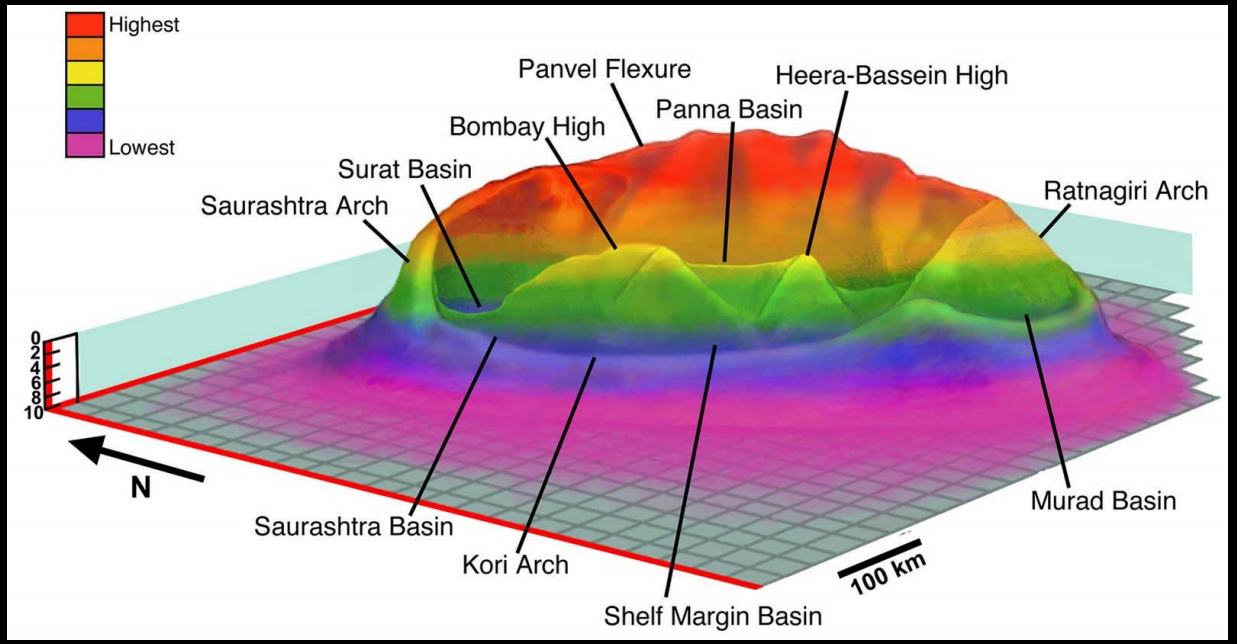
Uniformitarianisme
Gradualisme



1797-1875

Multiple impact event

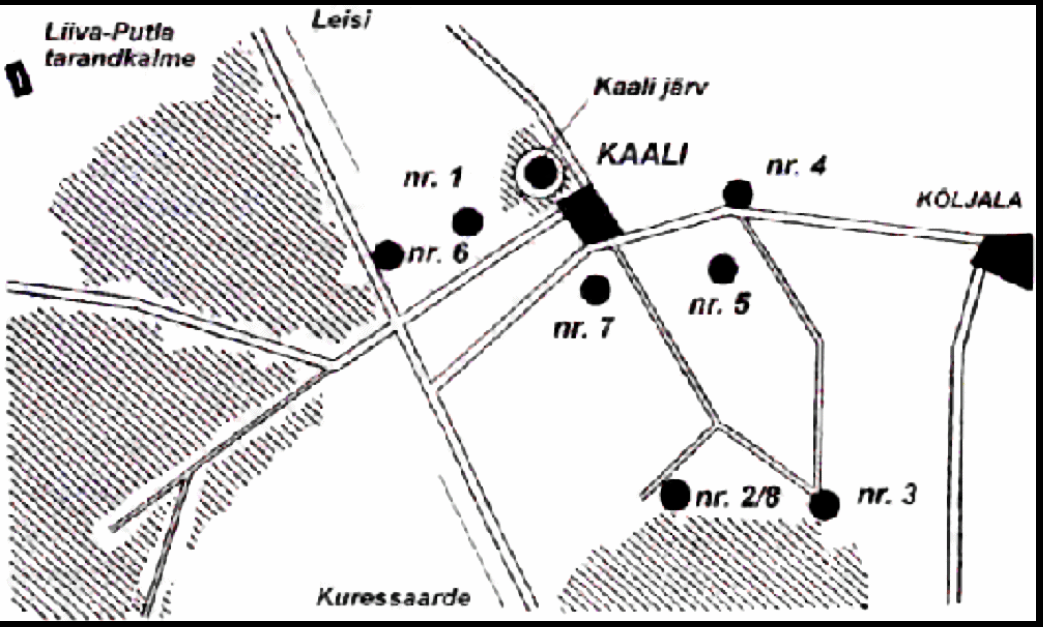
Several other craters also appear to have been formed about the time of the K–T boundary. This suggests the possibility of near simultaneous multiple impacts, perhaps from a fragmented asteroidal object, similar to the Shoemaker-Levy 9 cometary impact with Jupiter. In addition to the 180 km Chicxulub Crater, there is the 24 kilometers Boltysh crater in Ukraine (65.17 ± 0.64 Ma), the 20 kilometers Silverpit crater, a suspected impact crater in the North Sea (60–65 Ma), and the controversial and much larger 600 kilometers **Shiva crater**. Any other craters that might have formed in the Tethys Ocean would have been obscured by tectonic events like the relentless northward drift of Africa and India.



“If we are right, this is the largest crater known on our planet,” Chatterjee said. “A bolide of this size, perhaps 40 kilometers in diameter creates its own tectonics.”


Barringer Crater, Arizona
The crater was created about 50.000 years ago during the Pleistocene
The object that excavated the crater was a nickel-iron meteorite about 50 m
1.200 m in diameter, some 170 m deep
Surrounded by a rim that rises 45 m above the surrounding plains.

Kaali is a group of 9 meteorite craters located on the Estonian island of Saaremaa. Formed in the 7th century BC or about 4000 years ago, it is one of the most recent craters created by an impact event and the only known major impact event that has occurred in a populated area.
The craters were formed by an incoming meteor with an estimated impact velocity of between 10 and 20 km/s with a total mass of between 20 and 80 tons.
At an altitude of 5–10 km, the meteorite broke into pieces and fell to the Earth in fragments, the greatest of which produced a crater with a diameter of 110 m and a depth of 22 m. Kaali Lake (Estonian: Kaali järv) exists in the bottom of this crater. Eight smaller craters are also associated with this bombardment. Their diameters range from 12 to 40 meters and their respective depths vary from one to four meters. They are all within one kilometer of the main crater.
At the time of the impact, Estonia was in the Nordic Bronze Age and the site was forested with a small human population. The impact energy of about 80 TJ (20 kilotons of TNT) is comparable with that of the Hiroshima bomb blast. It incinerated forests within a 6 km radius.



Crater nr. 1 is approximaterly 300 meters northwest from the main crater and is the largest aside from the main crater. Today it is a brush-filled depression four meters in depth and 39 meters in diameter.

Craters nr. 2/8 are twin craters. They are located about 600 meters south from the main crater, on a flat hillock. Nr. 2 crater's north diameter is 25 meters and southside diameter 76 meters, its depth is 3.5 meters (the depression is clean of brush and can be easily observed). This is the crater from which I. Reinwald found the first pieces of meteor in 1937.

Crater nr. 3 is 250 meters east from the previous one. This is the best preserved of the dry depressions. Its diameter is 33 meters and its depth is 3.5 meters.

Crater nr. 4 is on the north side of the Kaali to Kõljala road, 300 meters east of the main crater. Its diameter is 20 meters and the depth is 1.25 meters. This craters is almost no longer discernible.

Crater nr. 5 is 170 meters south from the previous one. Its original diameter was 13 meters and its dpeth .9 meters. This crater has yielded the largest number of meteorite pieces, including the largest one found, which weighed almost 40 grams.

Crater nr. 6 is 450 meters northwest from the main crater. This is a barely discernible depression, by the side of the road. Its diameter is 26 meters and its depth is .6 meters.

Crater nr. 7 is located opposite the Kaali store. That this is a meteorite crater was only discovered in l965. Its measurements are 15 meters diameter and one meter in depth.

Crater nr. 9 is 100 meters northwest from crater nr. 6. Its diameter is 12 meters and its depth is almost one meter.

One of the best preserved craters yet found on Earth, the **Kamil crater** was initially discovered in February during a survey of satellite images on Google Earth. Estmated less than 5,000 years old.

The Italian-Egyptian team that found the crater in pictures recently visited and studied the 45-meter-wide, 16-meter-deep hole. The team also collected thousands of pieces of the space rock that littered the surrounding desert.

Based on their calculations, the team thinks that a 1.3-meter-wide solid iron meteor weighing 5,000 to 10,000 kilograms smashed into the desert—nearly intact—at speeds exceeding 2.1 miles (3.5 kilometers) a second.


N
Image © 2011 DigitalGlobe
©2010 Google

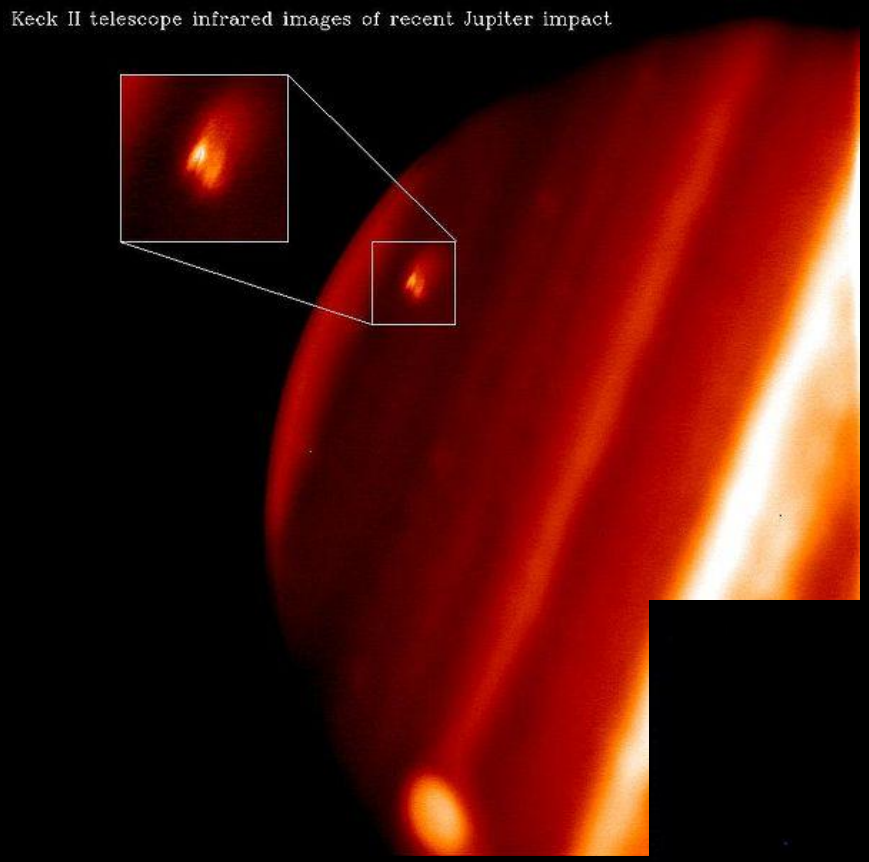
The **Tunguska** event was an enormously powerful explosion that occurred near the Podkamennaya Tunguska River in what is now Krasnojarsk, Russia, at about 7:14 a.m. on June 30, 1908.

The explosion is believed to have been caused by the air burst of a large meteoroid or comet fragment at an altitude of 5–10 kilometres above the Earth's surface. There is general agreement that it was a few tens of metres across.

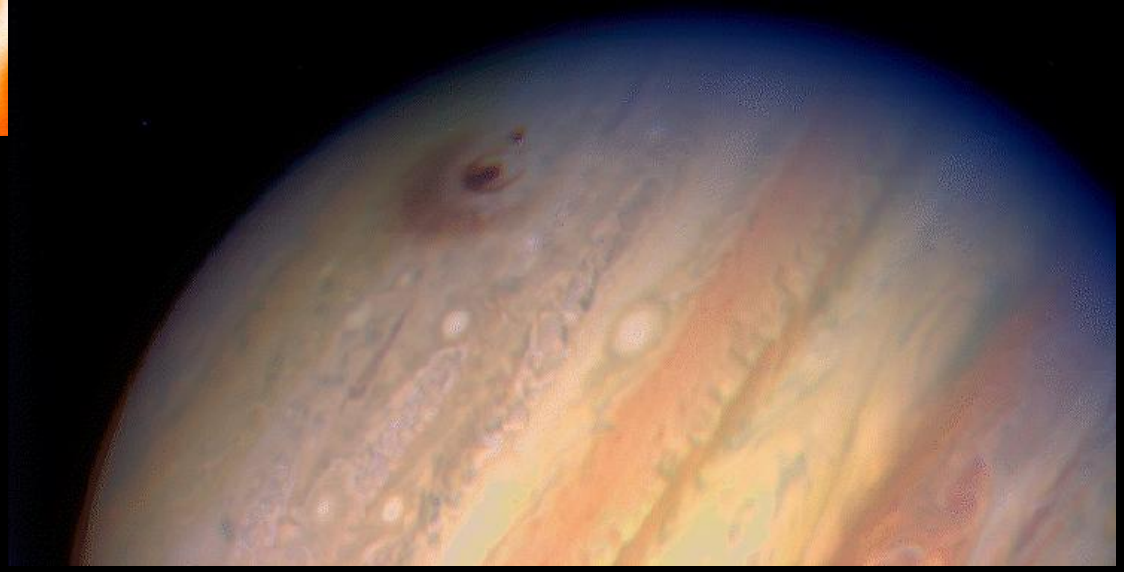
Først undersøgt 1927

2000 km^2

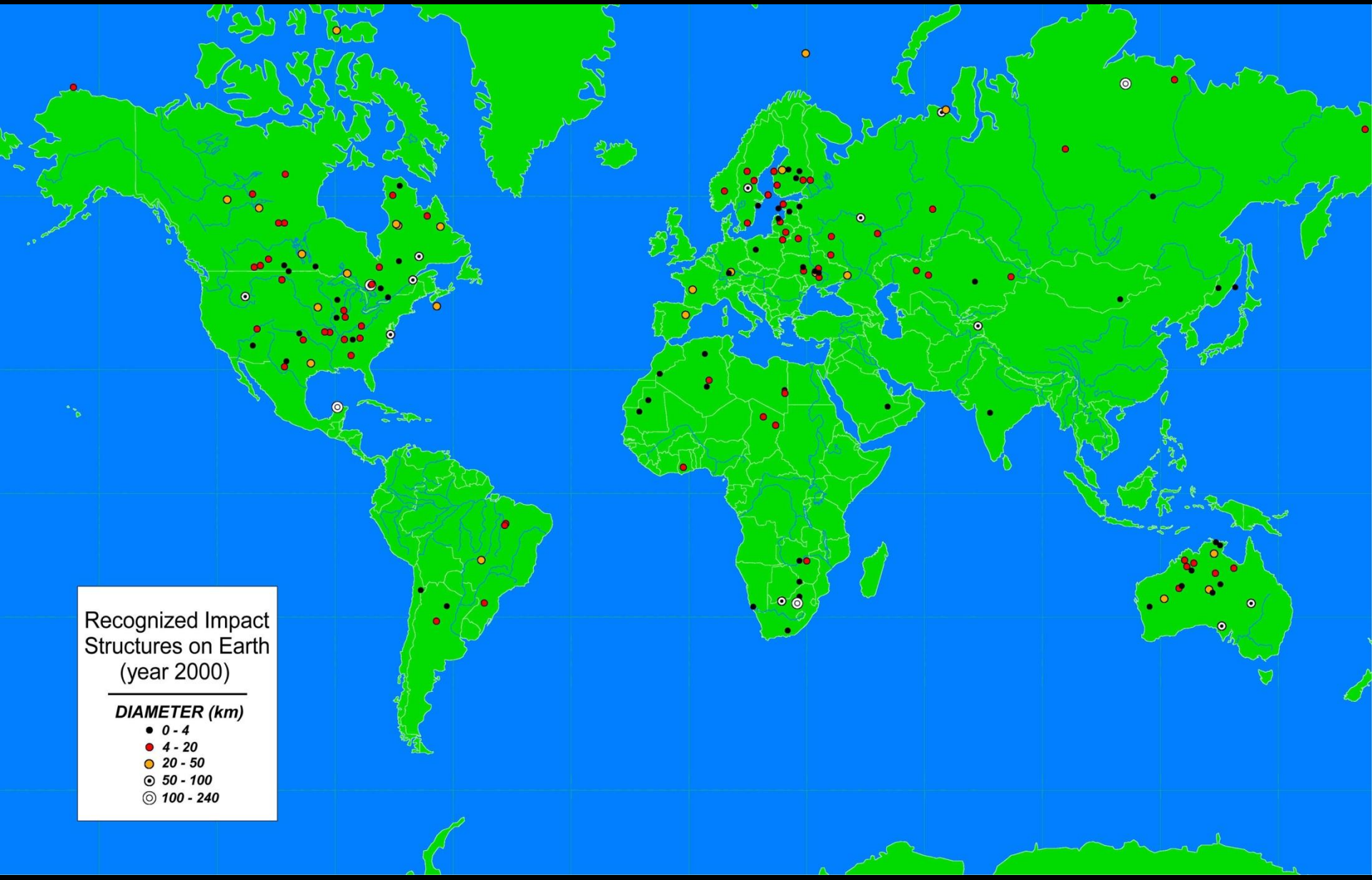
80 mill træer

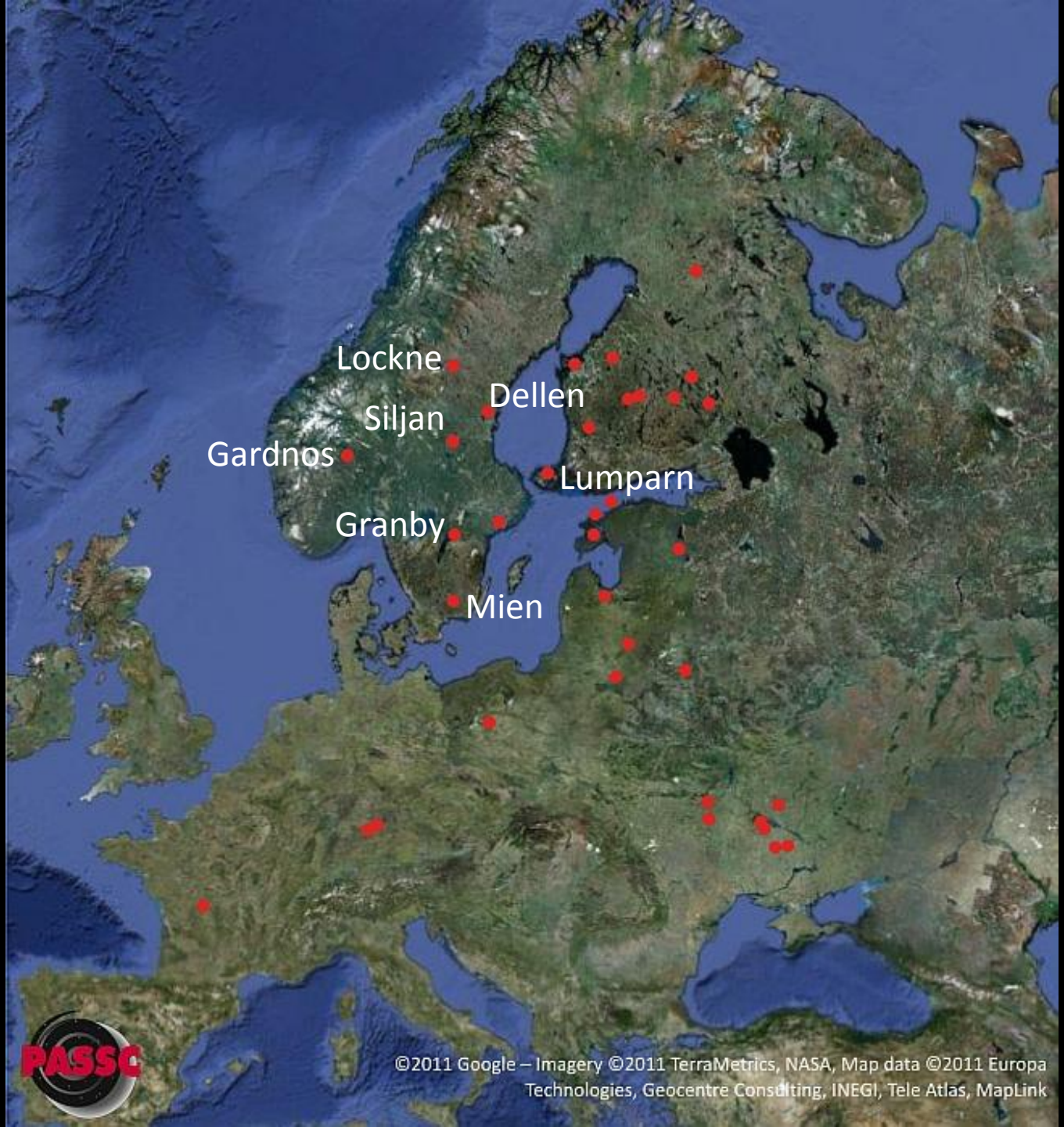


Comet Shoemaker–Levy 9
July 1994



September 15, 2007, a chondritic meteorite crashed near the village of **Carancas** in the Puno Region, Peru, near the Bolivian border and Lake Titicaca.
The impact created a crater larger than 4.5 m (15 ft) deep, 13 m (43 ft) wide, with visibly scorched earth around the impact site.
The researchers found that the fragments from the crater zone had a chondritic texture.


Recognized Impact Structures on Earth (year 2000)
DIAMETER (km)
0 - 4
4 - 20
20 - 50
50 - 100
100 - 240


Lockne
Dellen
Siljan
Gardnos
Lumparn
Granby
Mien
PASSC
©2011 Google – Imagery ©2011 TerraMetrics, NASA, Map data ©2011 Europa Technologies, Geocentre Consulting, INEGI, Tele Atlas, MapLink

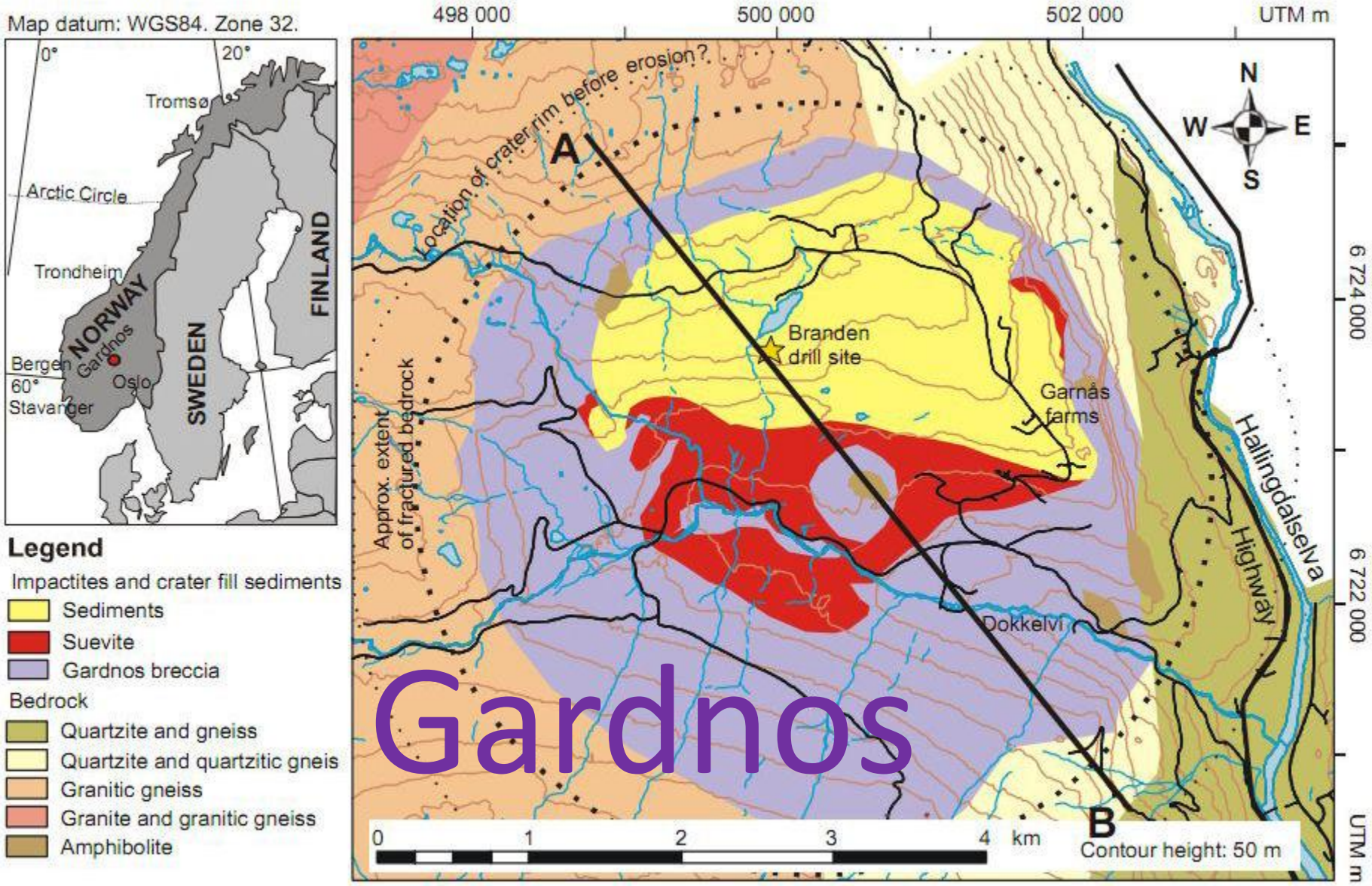


Figure 2: Geological map of the Gardnos impact structure. Line from A to B shows the position of cross secton in later figures.

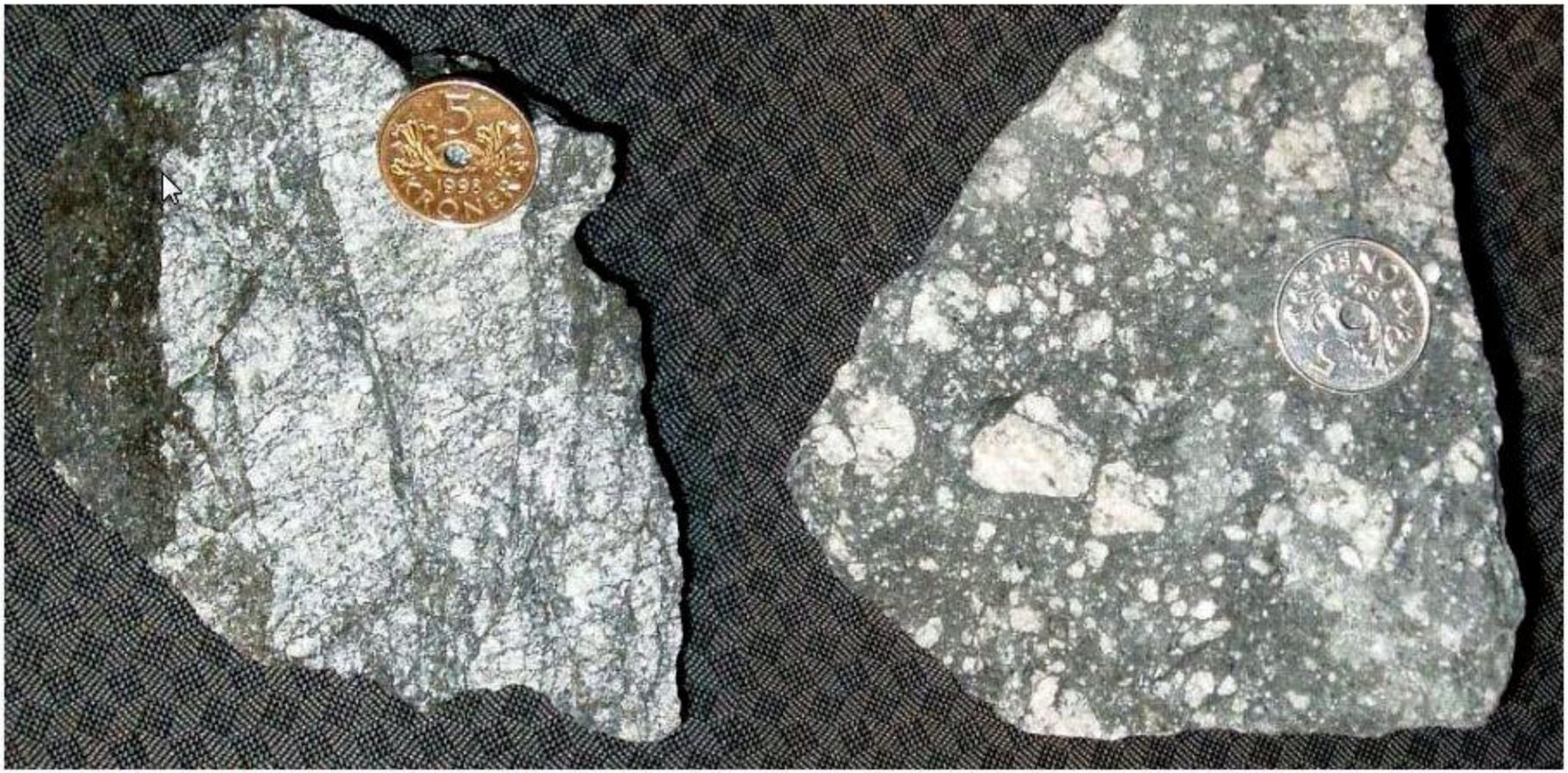
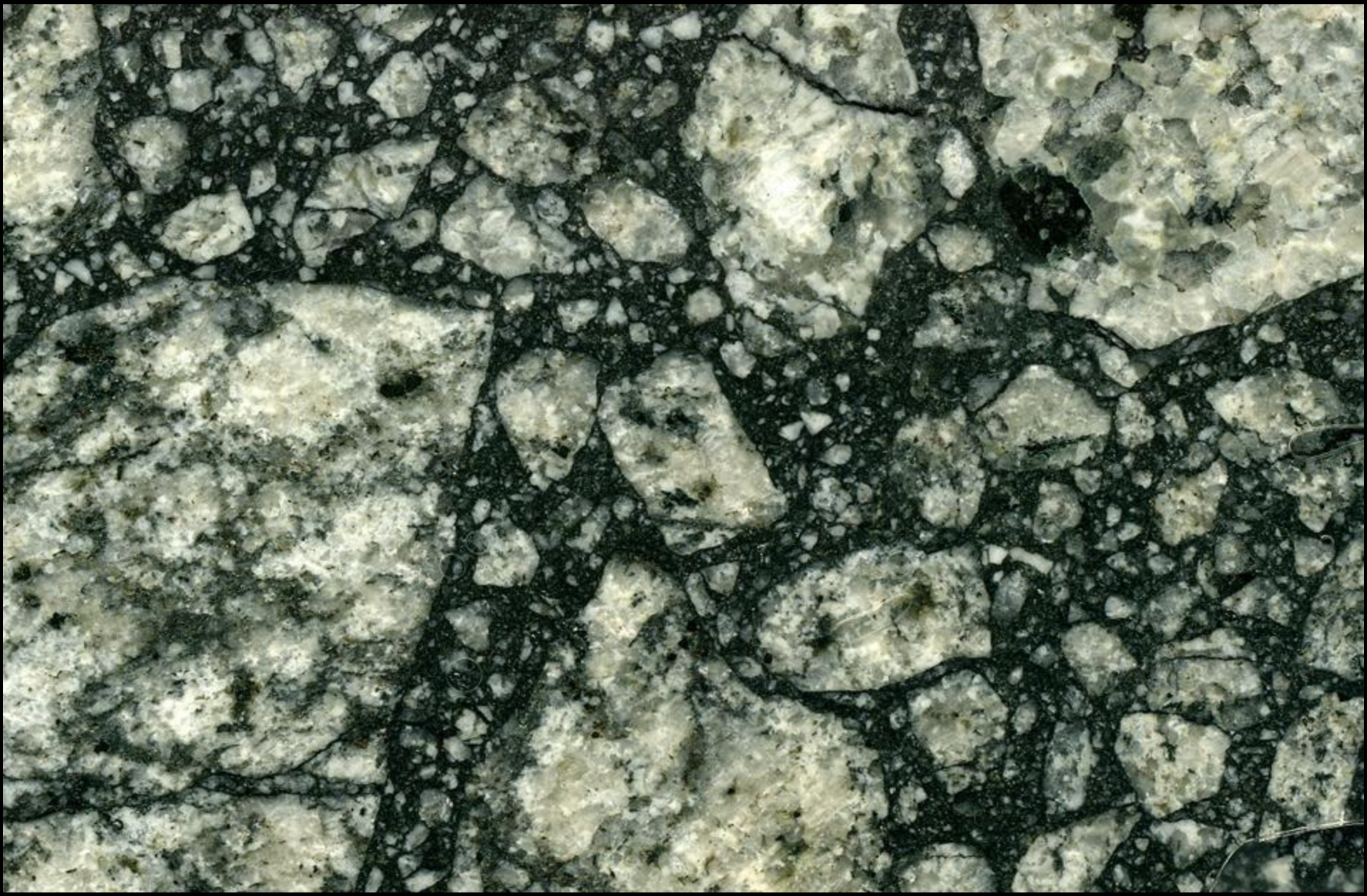


Figure E3: Patterns of the Gardnos breccia:
– from large breccia clasts but still largely in place, to matrix-dominated breccia with minor, shortly transported fragments.



The Suevite

The suevite is most easily recognized on slightly weathered surfaces, as on the boulders below the wooden bridge at locality E. Figure E4 shows grey, solidified, molten, twisted rock fragments in a red-weathering matrix. In the suevite you may spot melted or half-melted fragments.

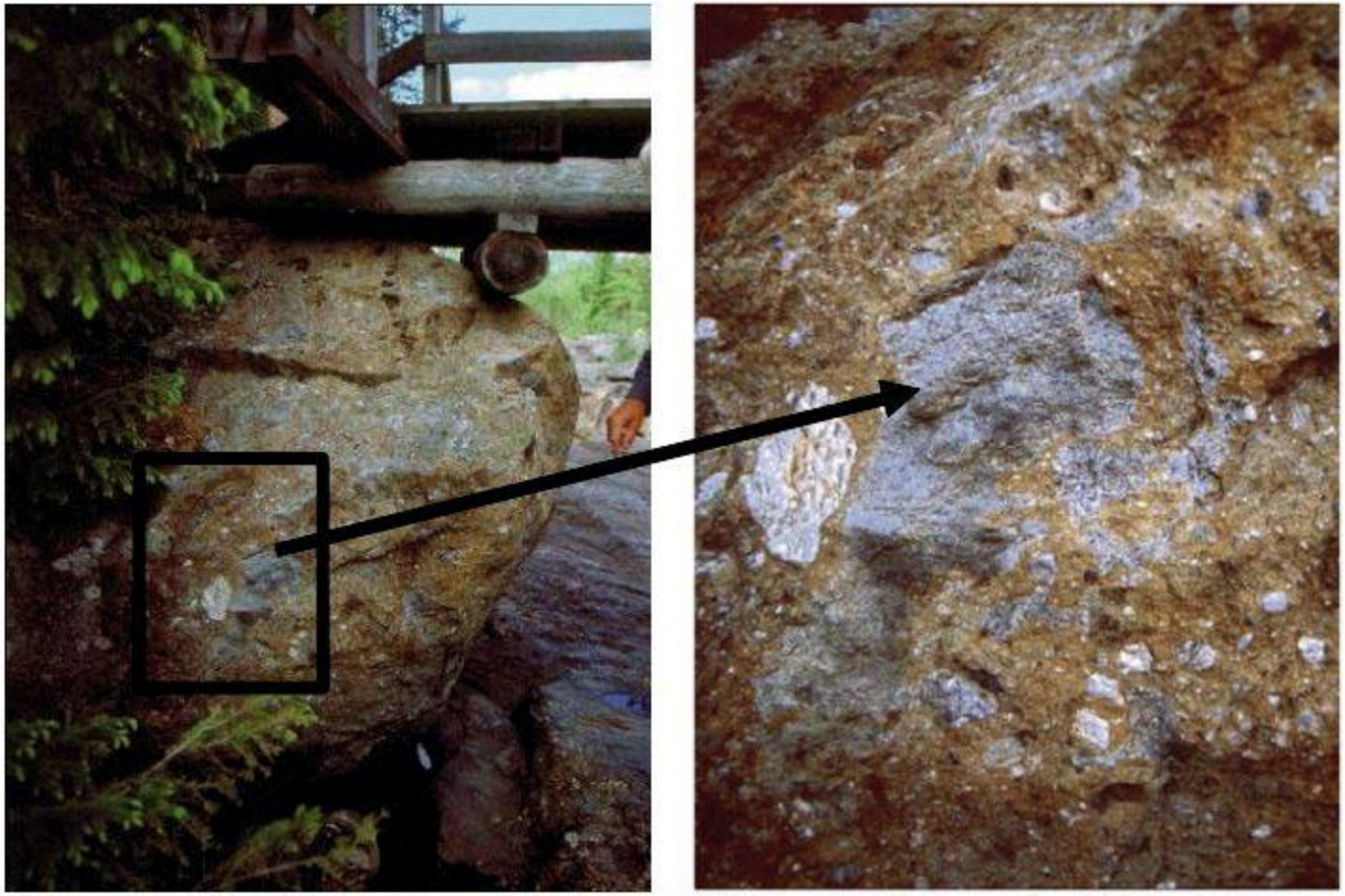
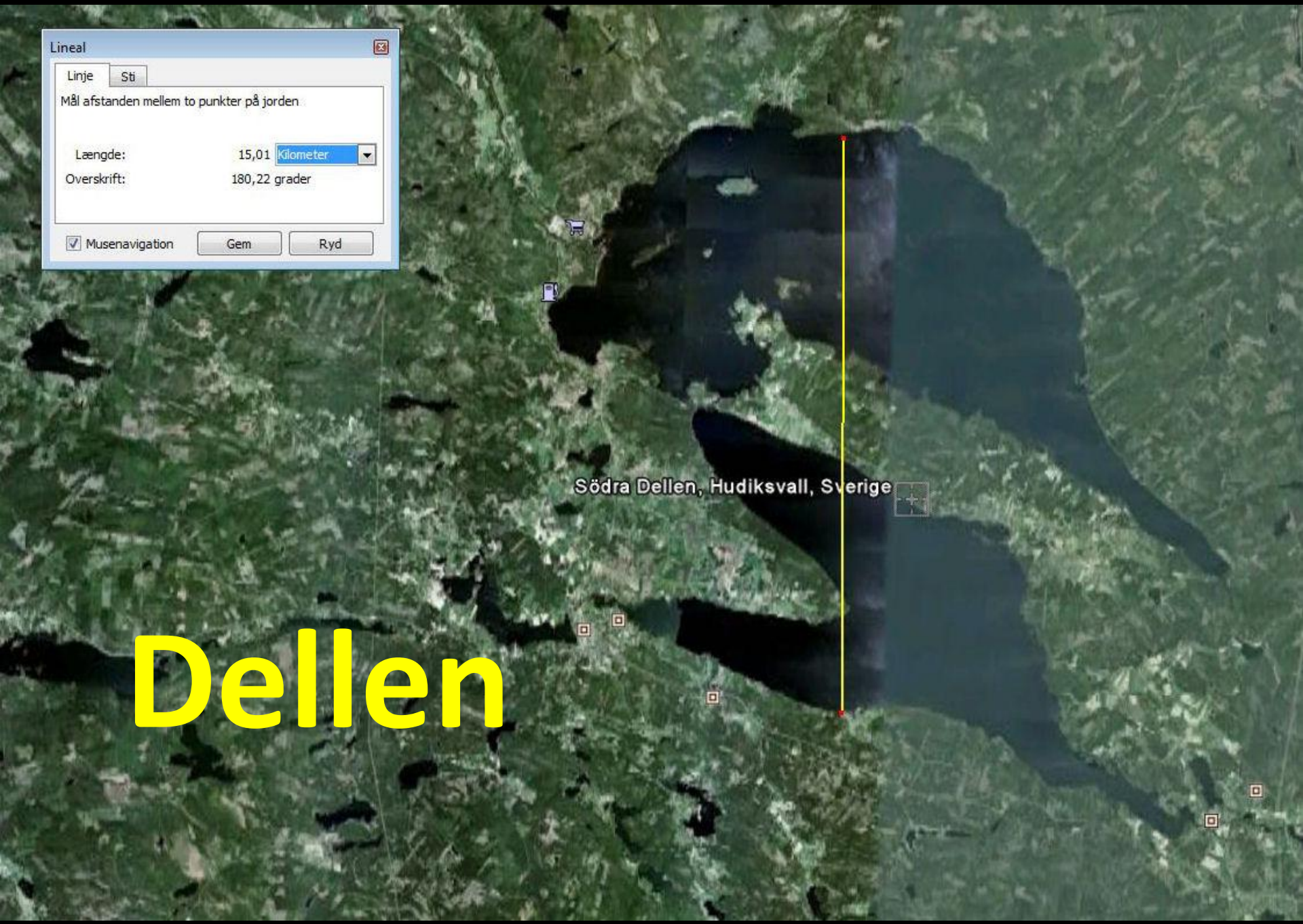


Figure E4: Details in the suevite composition are often most easily seen on weathered surfaces.


Lineal
Linje
Sti
Mål afstanden mellem to punkter på jorden
Længde:
15,01
Kilometer
Overskrift:
180,22 grader
Musenavigation
Gem
Ryd
Södra Dellen, Hudiksvall, Sverige
Dellen

Dellenit är Hälsinglands landskapssten. Det är en bergart som hittats vid Dellensjöarna och brukar i övrigt oftast benämnas som andesit**???**. Det finns två olika sorters dellenit, den svarta som kommer från Norrdellen och den bruna från Sördellen.

The vaguely circular lake system was formed by an impact crater 89.0 ± 2.7 million years ago, placing the impact in the Upper Cretaceous. The resulting impact crater measures about 19 kilometres in diameter. It has resulted in the area containing the rock Dellenite

9 RARE IMPACTITE DELLEN PIECES FROM CRATER SWEDEN 96 g

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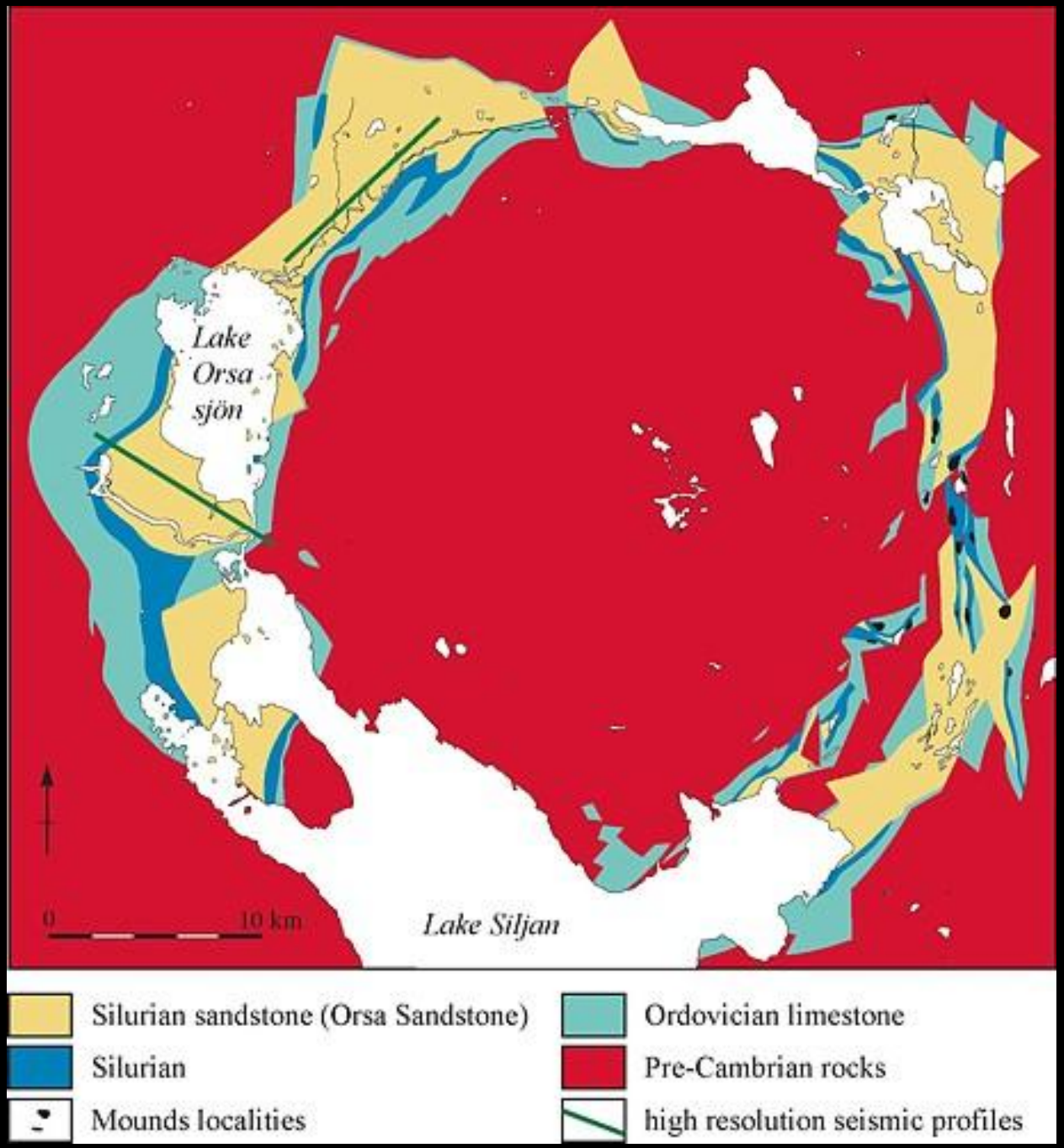
Granby

- **Granby** is an impact crater in Sweden. It is estimated to have formed about 470 million years ago (Middle Ordovician). The crater is 3 km in diameter and is not exposed at the surface.
- The Granby structure represents an almost completely preserved impact crater within a Paleozoic sedimentary rock sequence — only the uppermost part of the raised crater rim might be eroded and was subsequently covered by Quaternary sediments.

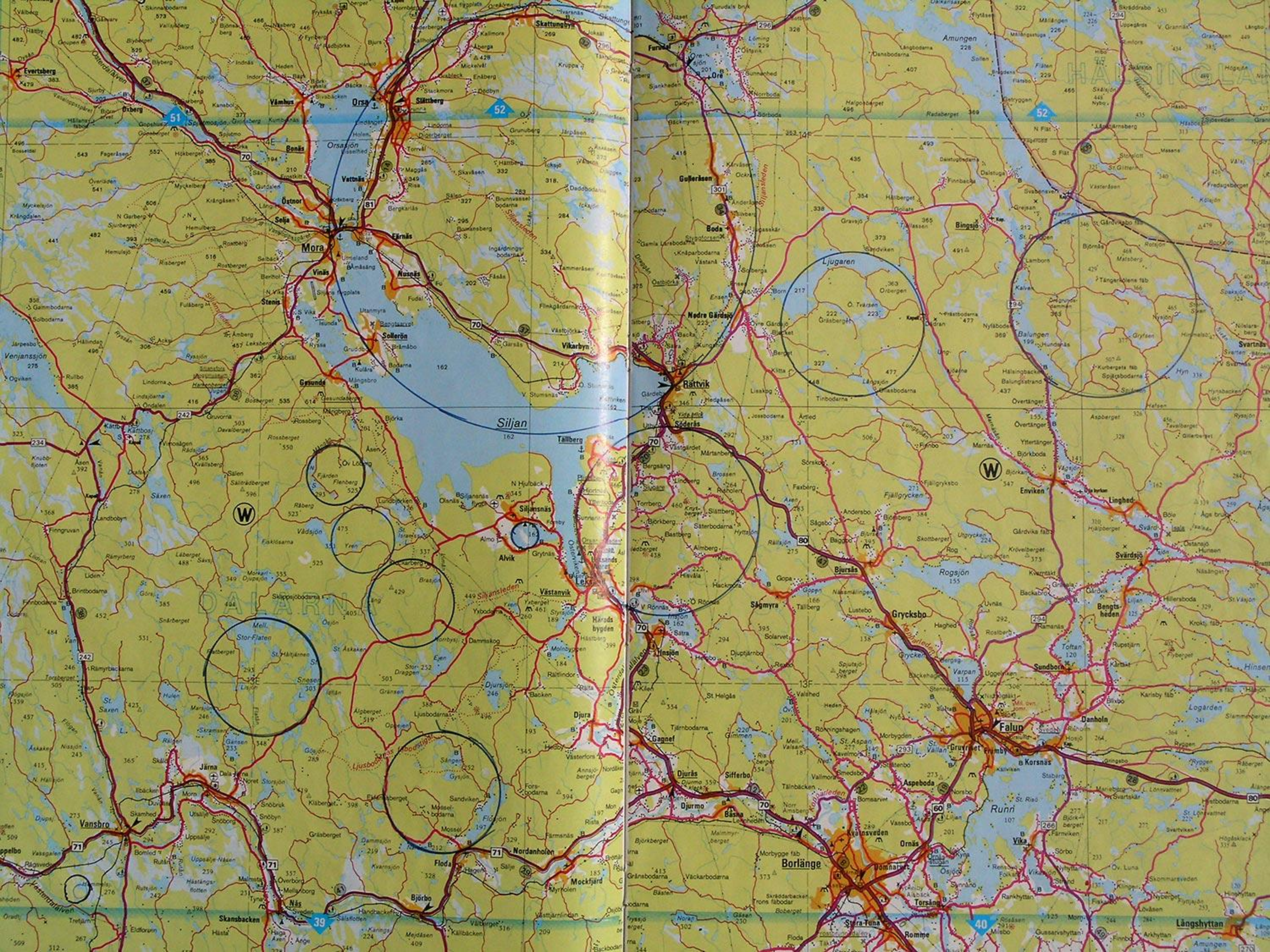
Siljan

The lake is located around the southwestern perimeter of the Siljansringen (Siljan Ring), a circular geological formation which was formed 377 million years ago in the Devonian by a major meteorite impact. The original crater, now mostly eroded, is estimated to have been about 52 km (32 mi) in diameter and is the largest known impact crater in Europe (excluding Russia).
The Cambrian, Ordovician and Silurian sedimentary rocks deformed by the impact are rich in fossils.


Lake Orsa sjön
Lake Siljan
0
10 km
Silurian sandstone (Orsa Sandstone)
Silurian
Mounds localities
Ordovician limestone
Pre-Cambrian rocks
high resolution seismic profiles

Suevite(?) breccia, Siljan (Sweden) impact structure.

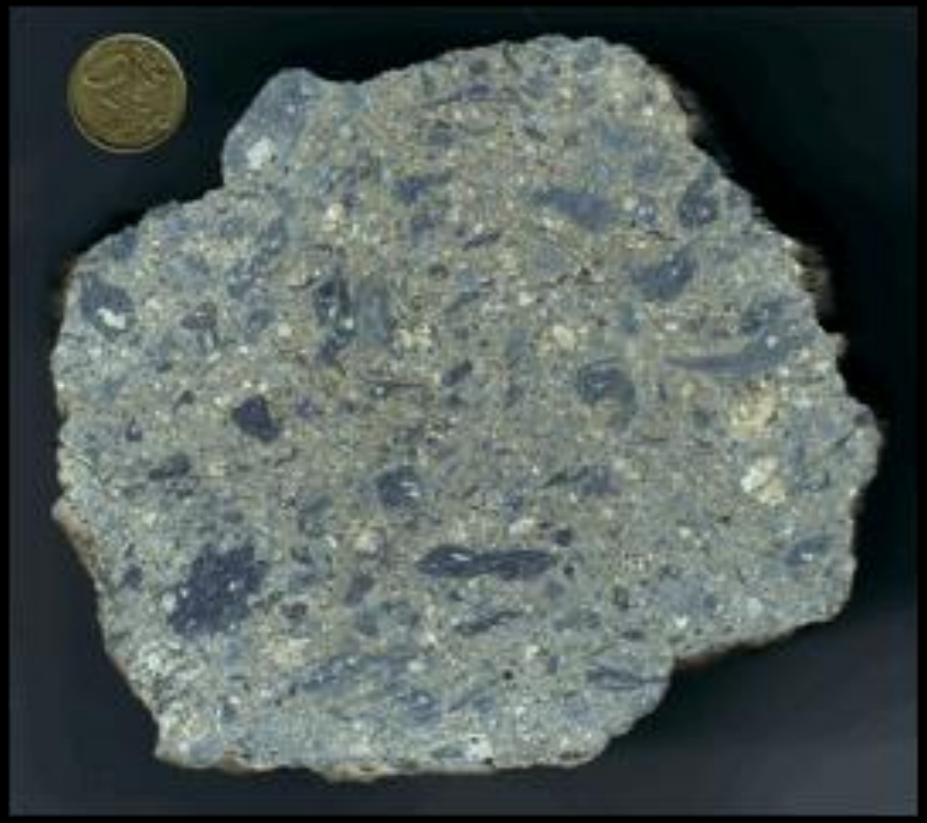
Granit med slagkegler

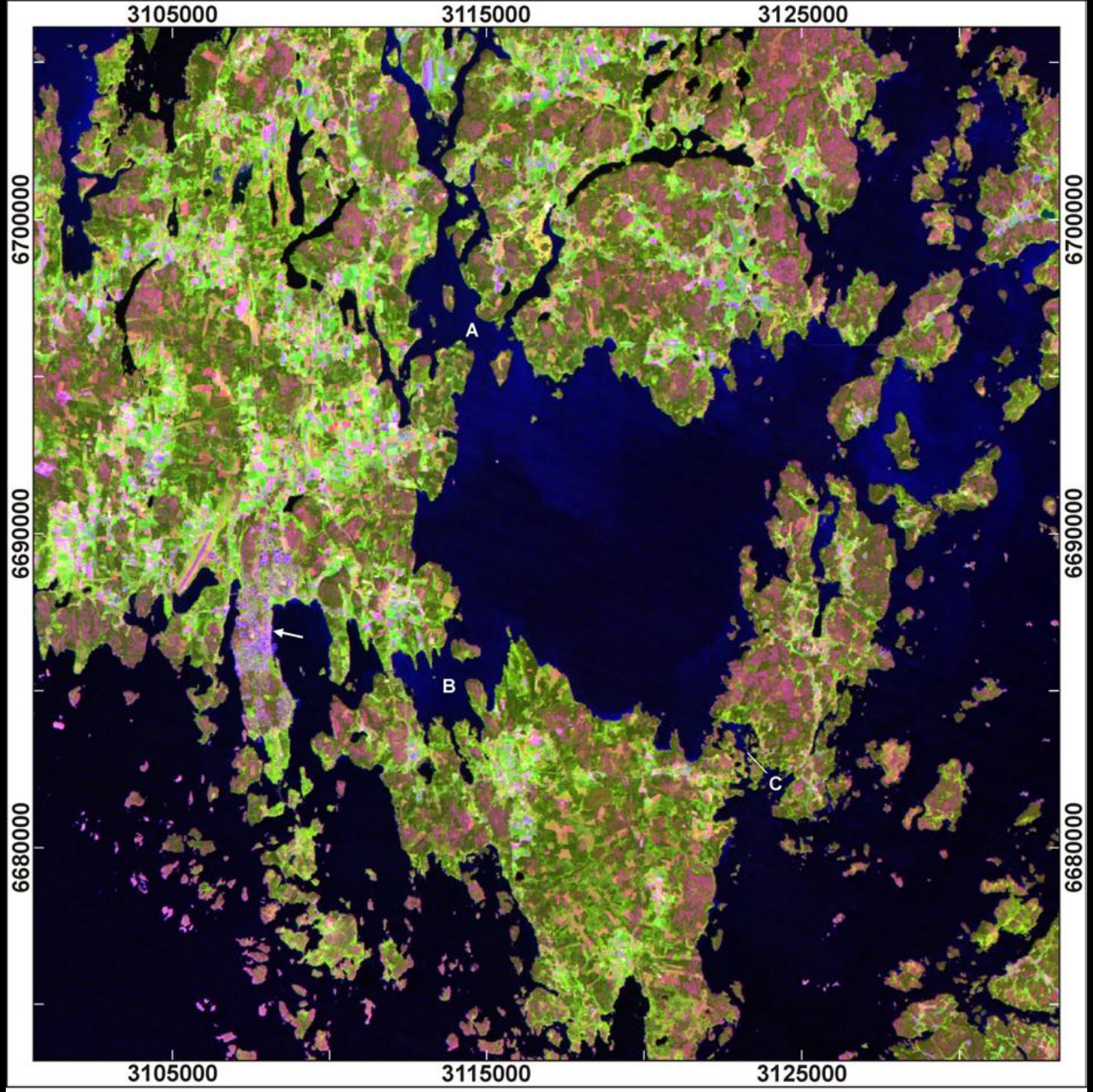


Evertsberg
Oxberg
Orsa
Skattungbyn
Furudal
Amungen
Orsasjön
Vattnäs
Bonäs
Östnor
Mora
Färnäs
Nusnäs
Vinäs
Venjanssjön
Sollerön
Vikarbyn
Rättvik
Nedre Gärdsjö
Gulleråsen
Boda
Bingsjö
Ljugaren
Gesunda
Siljan
Tällberg
Söderås
Siljansnäs
Alvik
Leksand
Västanvik
Vansbro
Järna
Nås
Skansbacken
Björbo
Floda
Nordanholen
Mockfjärd
Djura
Gagnef
Djurås
Djurmo
Sifferbo
Borlänge
Stora Tuna
Romme
Ornäs
Falun
Korsnäs
Runn
Vika
Grycksbo
Bjursås
Sågmyra
Rogsjön
Svärdsjö
Linghed
Enviken
Bengtsheden
Sundborn
Danholn
Hinsen
Logården
Långshyttan
Balungen
Hälsingland
Dalarna
Siljansleden
Österdalälven
Västerdalälven

Mien

Lake Mien suevites, like the Wanapitei suevites, are occurring in the form of glacial erratic blocks only.



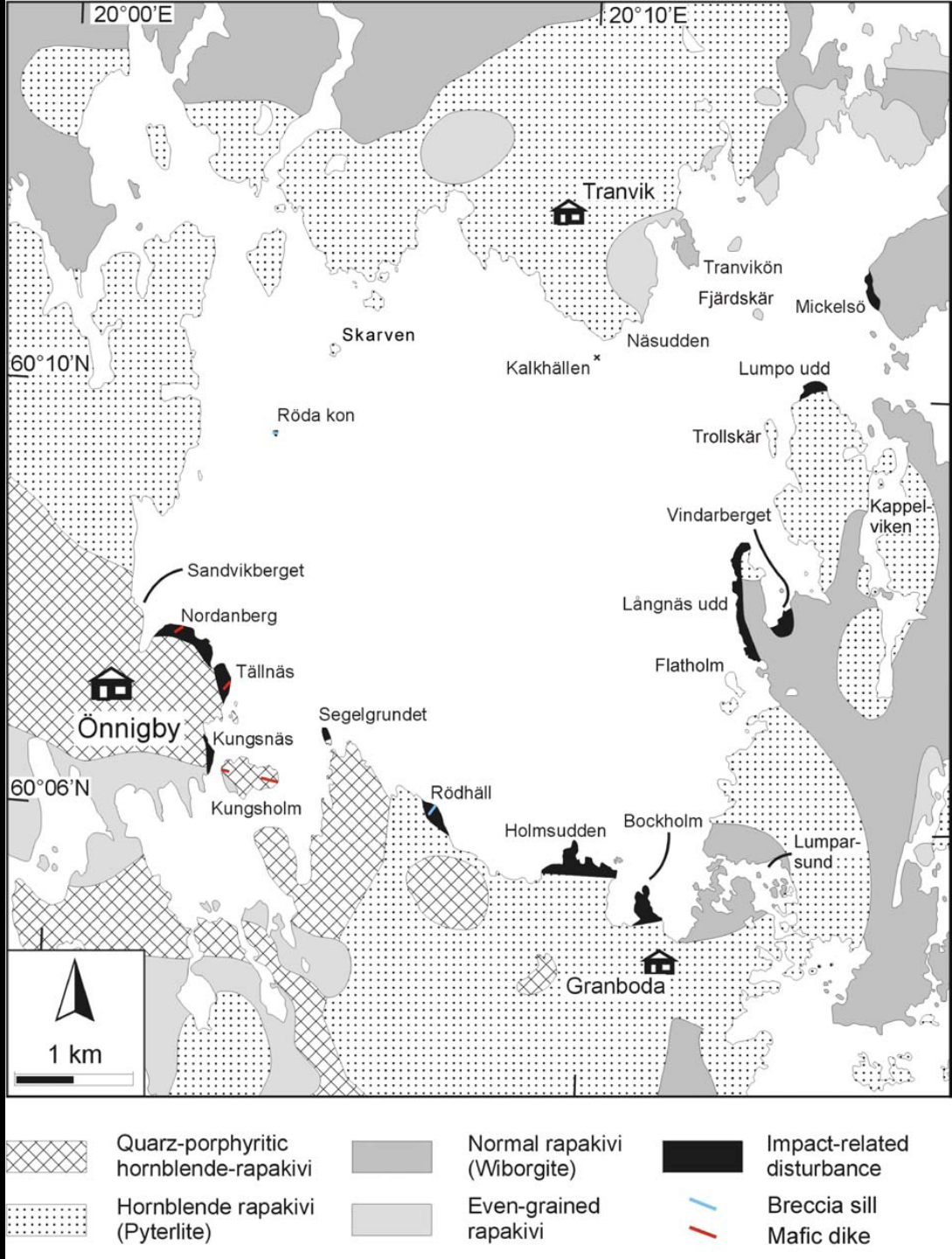


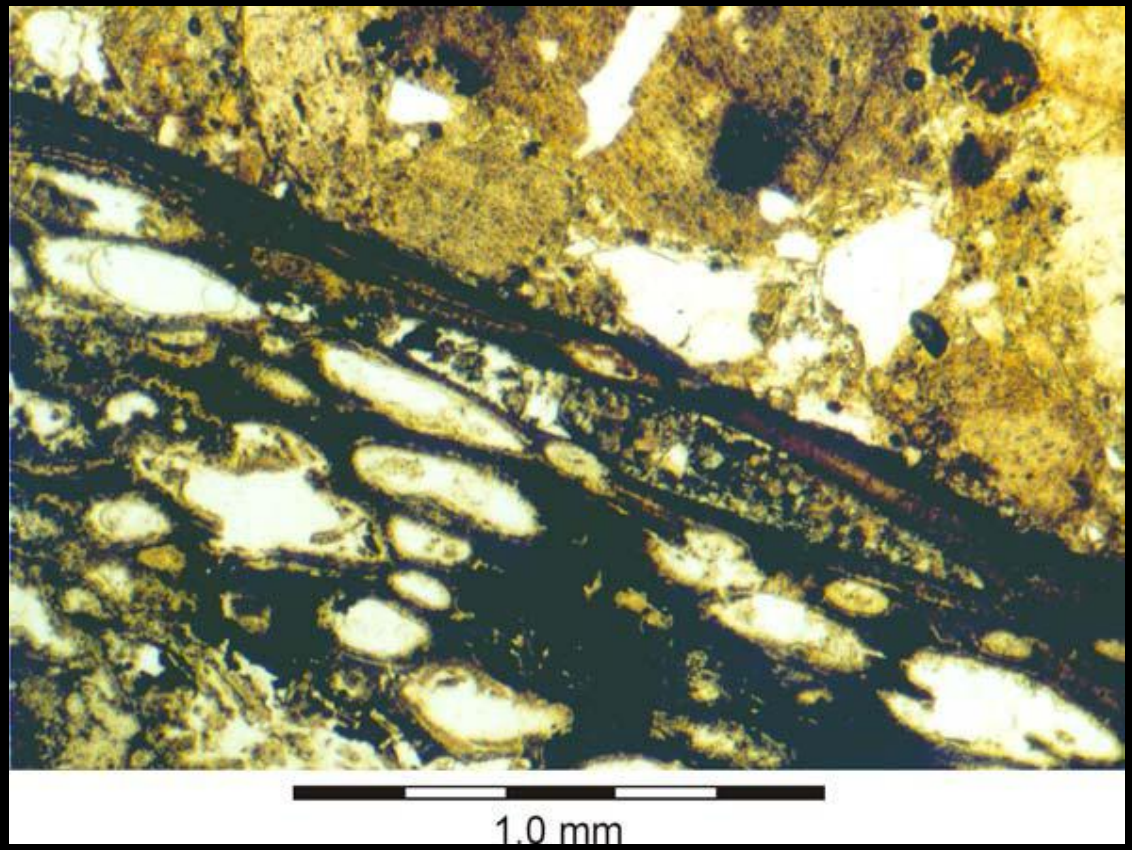
N

Lumparn

0 metres 5000

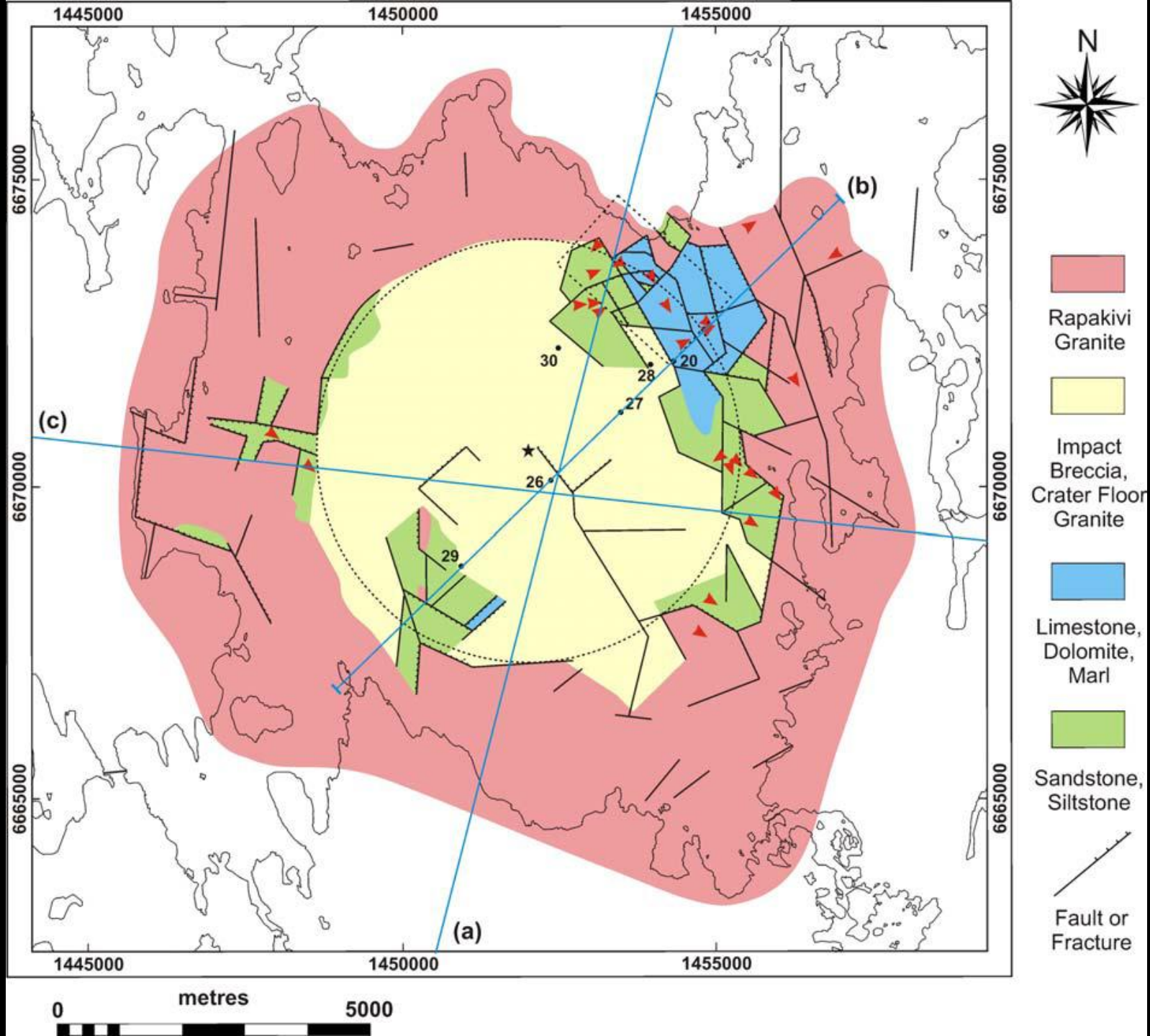
Geology around Lumparn Bay





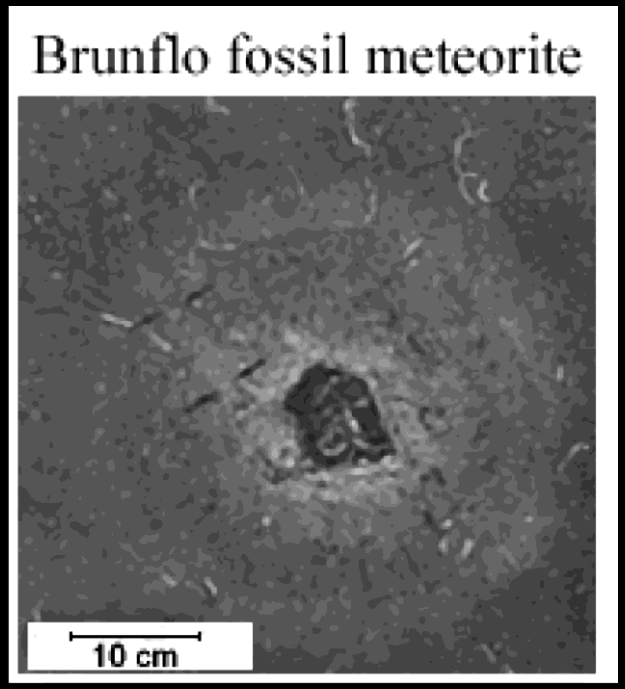
Photomicrograph of suevite. Recrystallized glassy fragment with fluidal texture and elongated gasbubbles, and breccia consisting offragments of rapakivi granite. Planepolarized light.

Steeply dipping, dark veins (pseudotachylite) in coherent rapakivi granite.


1445000
1450000
1455000
6675000
6670000
6665000
(a)
(b)
(c)
30
28
20
27
26
29
N
Rapakivi Granite
Impact Breccia, Crater Floor Granite
Limestone, Dolomite, Marl
Sandstone, Siltstone
Fault or Fracture
0
metres
5000

Og nu – til ære for fossilfolket:

FOSSILE METEORITTER!

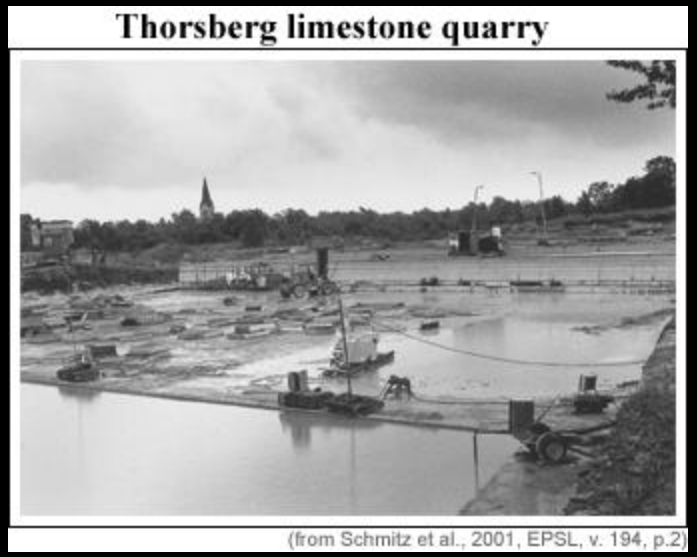


Prof. Per Thorslund

1952: Kraftigt metamorfoseret ultramafisk bjergart. Formentlig transporteret 14 km til havs i det ordoviciske Japetusocean på en klump tang.

1979: Chondritiske strukturer. Verdens første fossile meteorit.

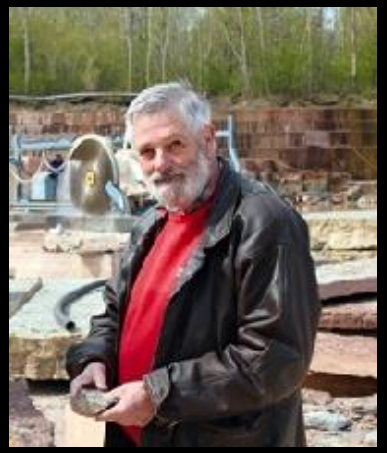
Birger Schmitz
>90 fossile meteoritter



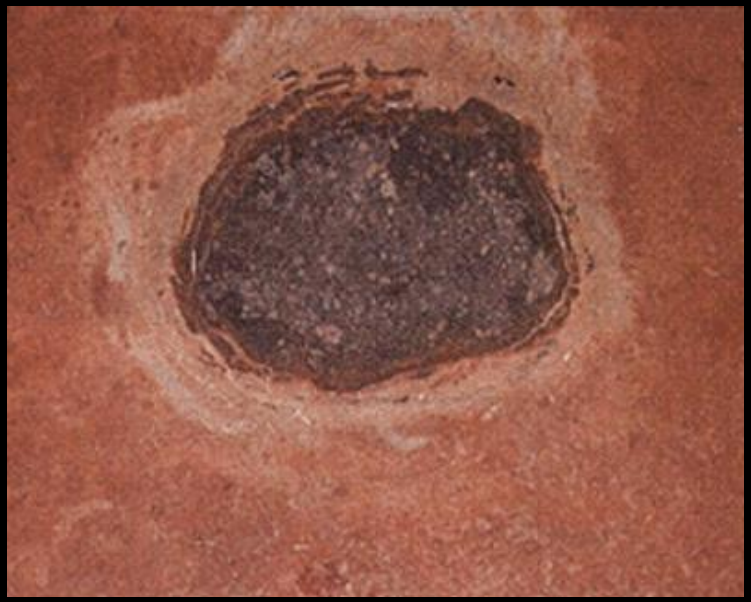
Mario Tassinari

Amatørgeolog

Æresdoktor ved Lunds naturvidenskabelige fakultet



Hvor er vi?



Verdens ældste meteorit

480 mill år

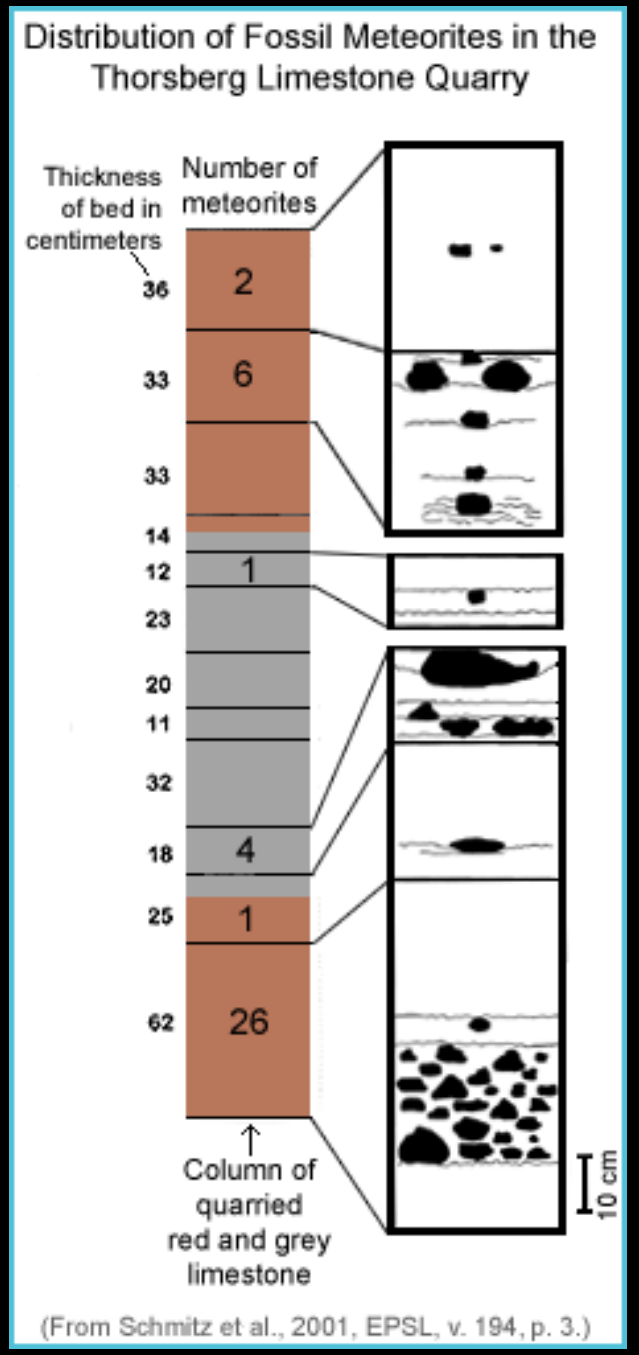
1,5 mill år

468 Ma

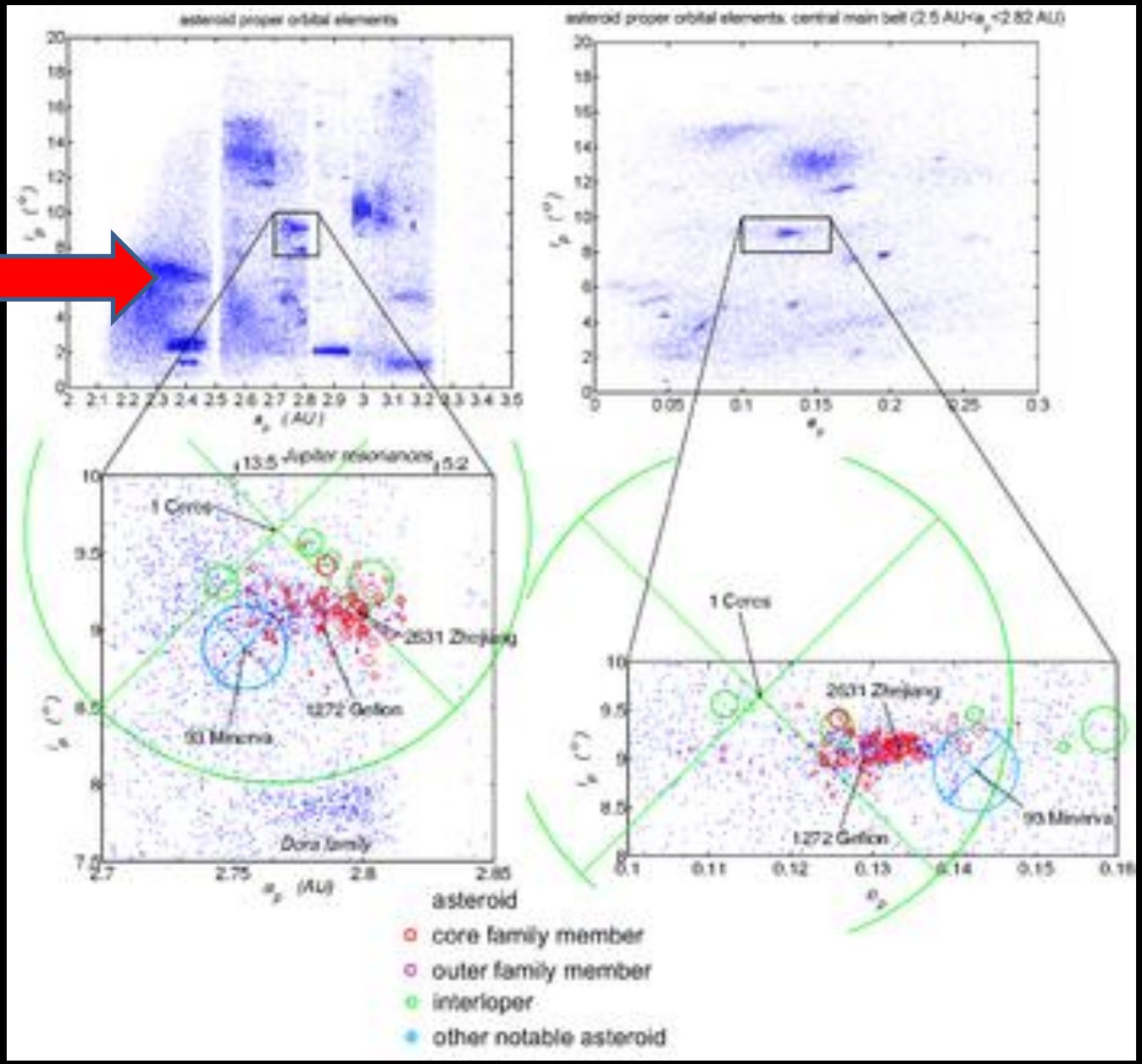
100-150 gange
normalt influks

Lockne
Kärdla
Tvären
Granby

Skåne (Killerröd)
Kina



Flora familien



Gefion Familien

In the film
The Green Slime fra
1968 the asteroid Flora
falls out of orbit and is
on a collision course
with Earth.