The Ø 30 km Mt Warning Impact Crater & 1.5 km Impact Crater (East-Australia)

- **RAMAN Spectra of selected Rock Samples** - by Harry K. Hahn , 30.6.2021 -

Summary :

Raman spectra of quartz from the sample sites **8-B2, 8-B3** and **15-B** and **15-C** provide evidence for an impact scenario in the Mt Warning area in East-Australia. The Ø 30 km crater-shaped Mt Warning area and a smaller ≈ Ø 1.5 km circular crater structure, which is located directly near the crater-rim of the Mt Warning Crater, seem to belong to a large-scale impact event caused by the Ø 320 km Cape York Crater in NE-Australia → see : **The 320 km Cape York Crater** (link2) **& Evidence for the Cape York Crater** (link4)

The possible Ø320 km Cape York Crater belongs to a Secondary Impact Crater Chain along the NE-coast of Australia which was caused by ejecta from the Ø 1270 x 950 km Permian Triassic Crater in the Arctic Sea

According to the current geological theory Mount Warning is a strongly erroded shield volcano.

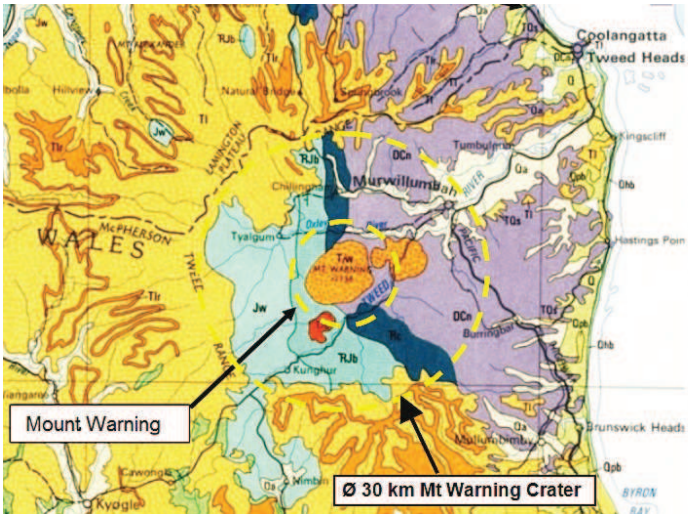
Refering to my Permian-Triassic Impact Hypothesis Mt Warning is the result of an impact of a big ejecta fragment from the Cape York Crater or from the PT-Impact Crater, which caused this Ø30 km secondary crater that fractured Earth's crust and resulted in the growth of a large shield volcano above the crater

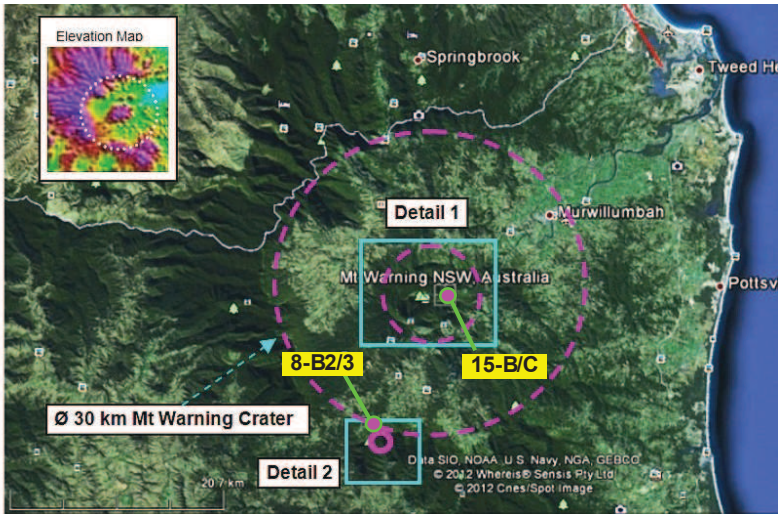
→ see my Permian Triassic Impact Hypothesis : **Part 1** (P1), **Part 2** (P2) & **Part 5** (P5) → **Mars Impacts !**

The Raman spectra of quartz from sample site **8-B2,** on the foot of the crater-wall on the outside of the smaller Ø 1.5 km circular crater structure, provides **first evidence for an impact event !** (see Appendix)

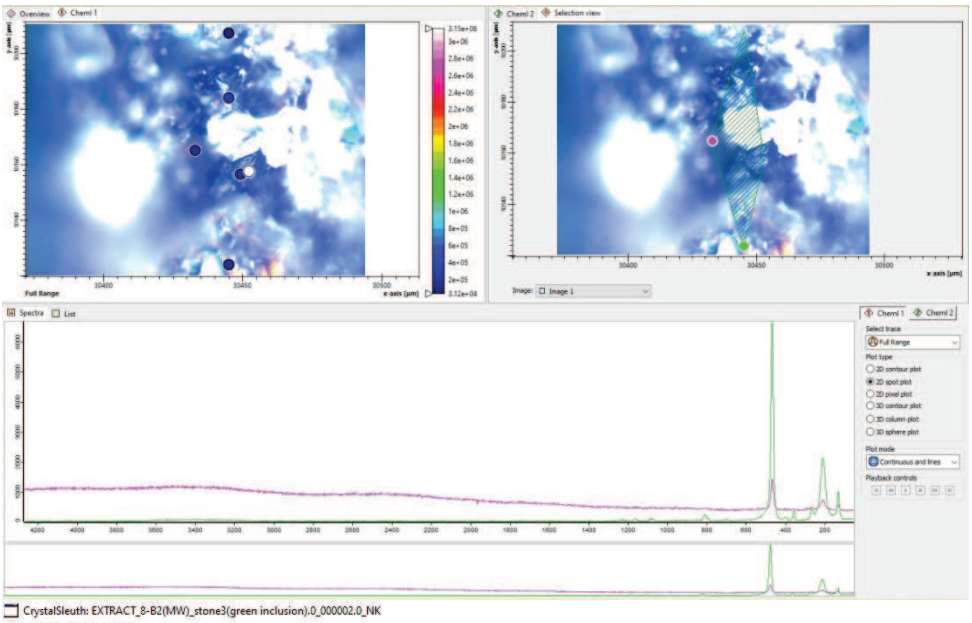
The shifts of the main Raman bands (peaks) to the lower frequencies **463, 260, 205** and **127 cm^{-1}** which are visible in the Raman Spectra of the quartz-sample, clearly indicate that the quartz from this site was exposed to a **shock pressure of around 20 - 22 GPa**. (→ see explanation in the Appendix at **page 17**).
The spectra were made with a **BRUKER Senterra-II Raman Microscope** (wavenumber precision <0.1cm^{-1})

→ Images of the analysed rock samples and photos of the sample sites are in the Appendix at **page 12**.
→ A general summary to all analysed sample sites is provided by **Part 6** (P6) of my **PTI-hypothesis** (P1)
→ More images of all sample sites are available on www.permiantriassic.de or www.permiantriassic.at

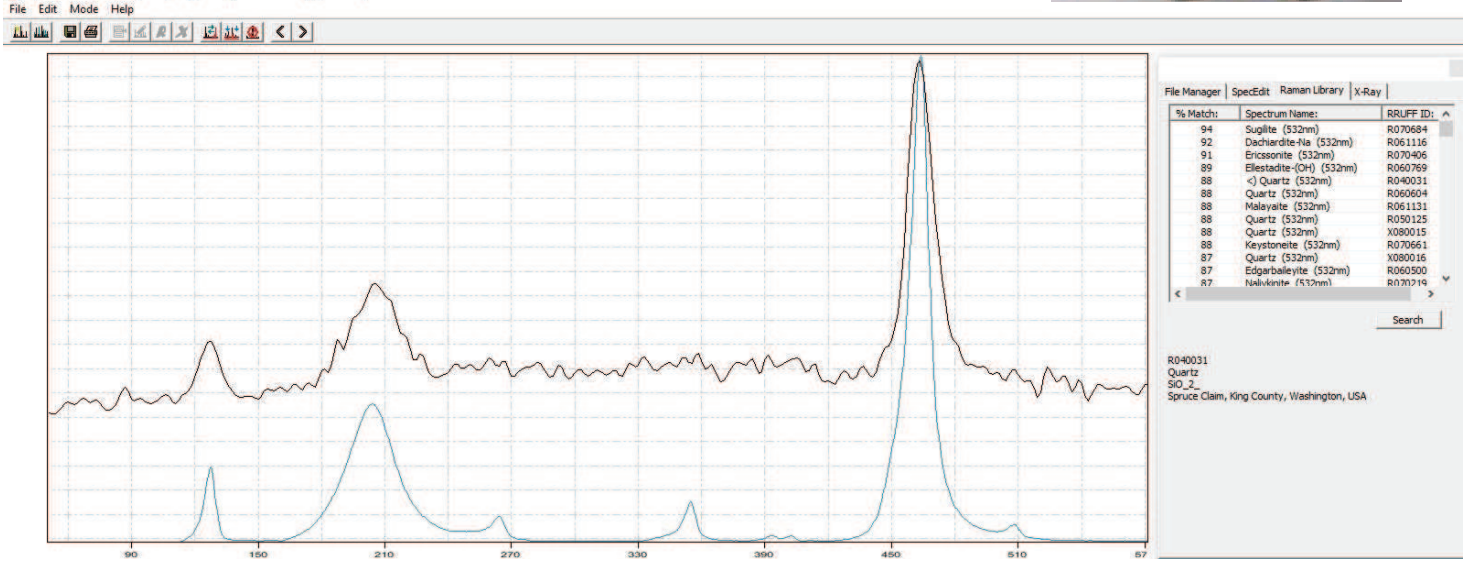




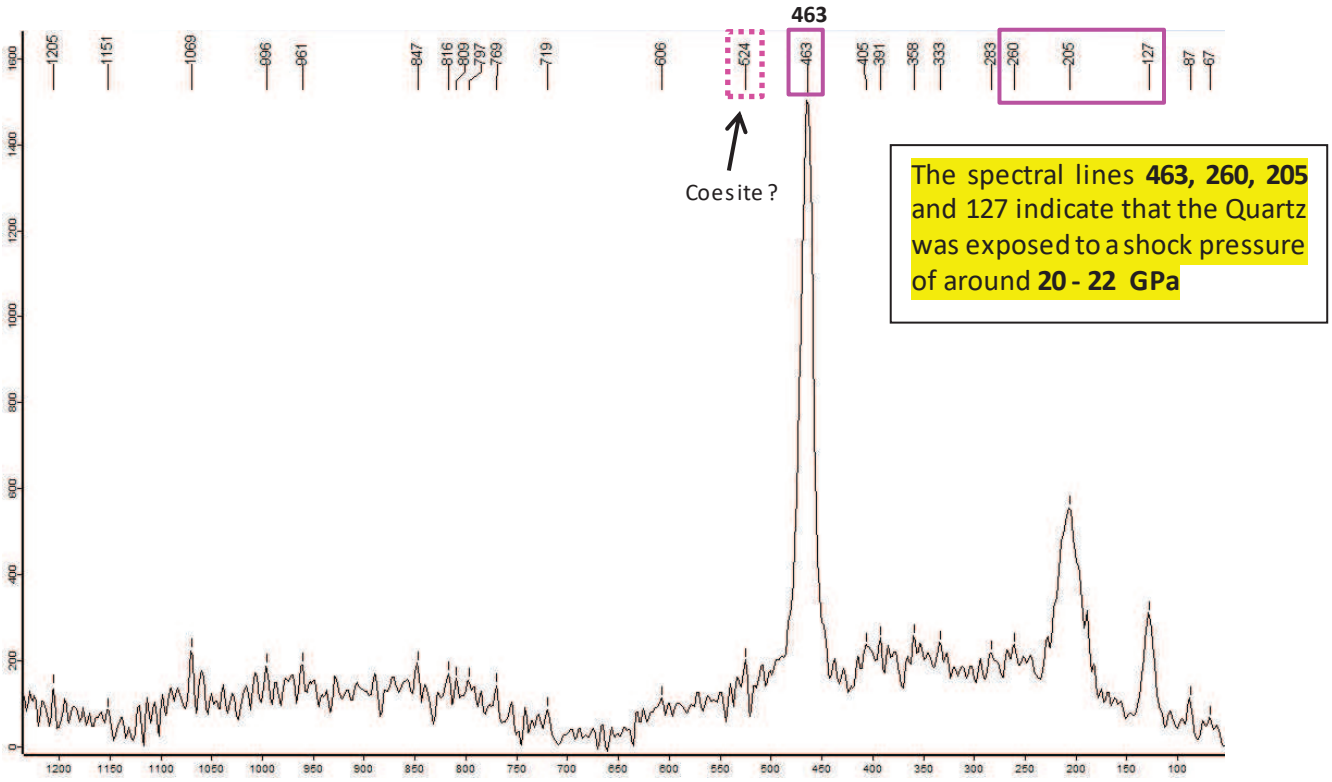
Sample Site 8-B2 : Stone 3_spectra 2 (Green mineral inclusions) indicates : Quartz (→ RRUFF_CS results)



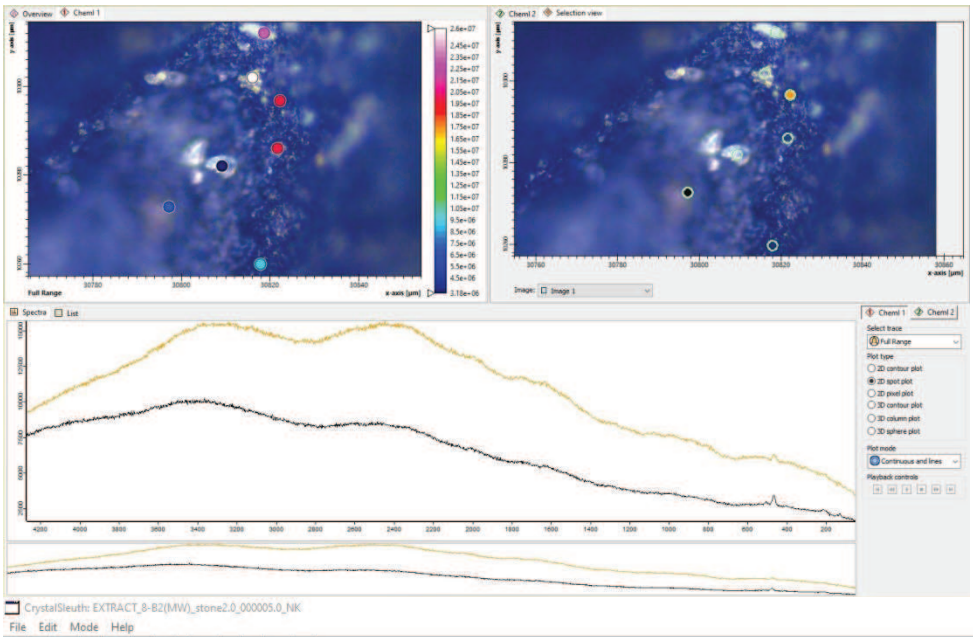
Sample :



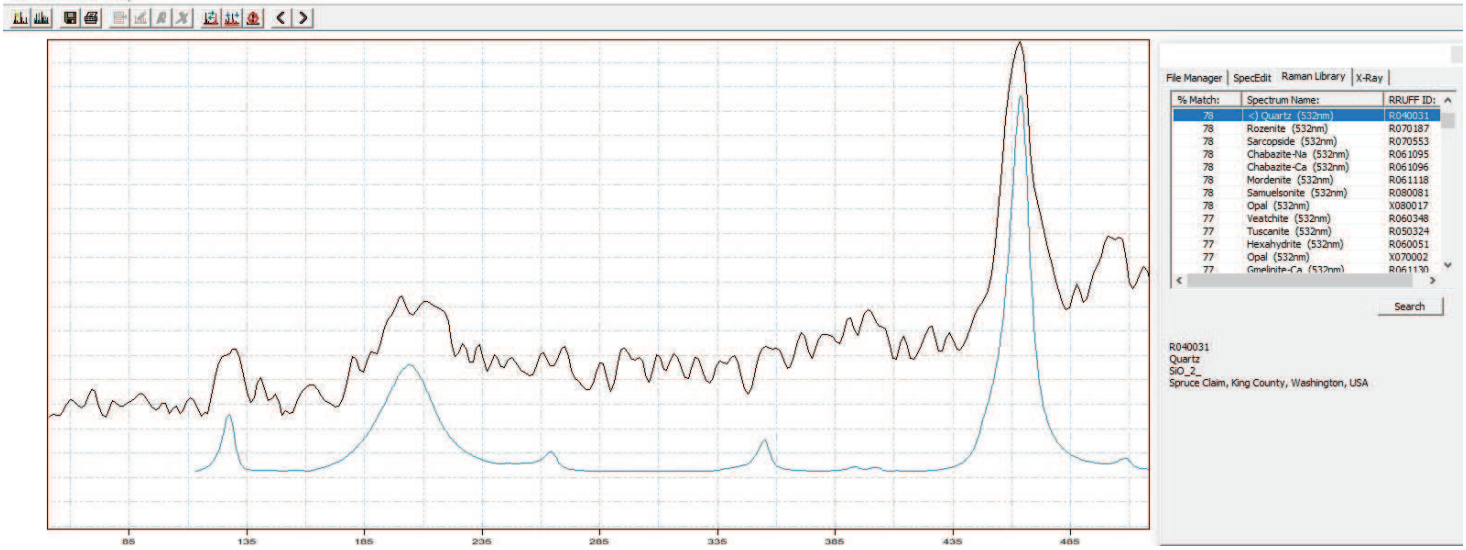
Indication for a shock event are the shifts of the marked Quartz spectral lines towards 463, 260, 205 and 127



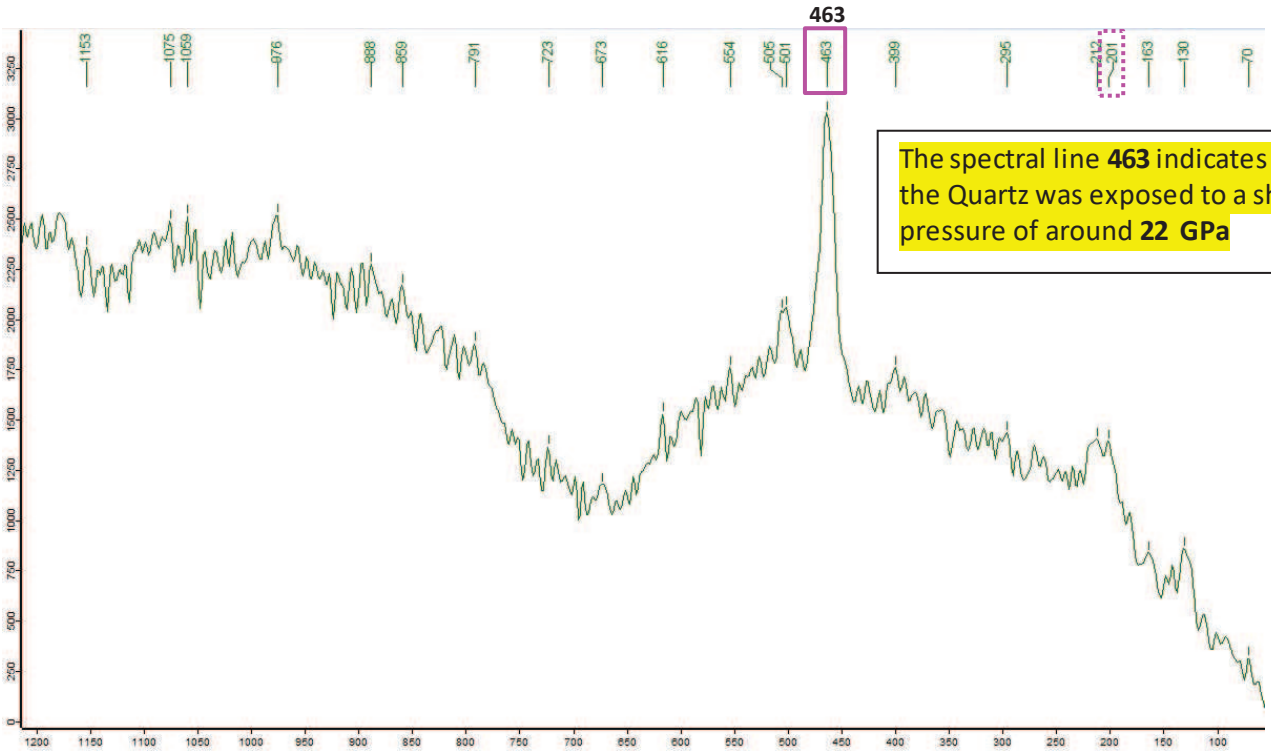
Sample Site 8-B2 : Stone 2_spectra 1 indicates : Quartz. (→ see RRUFF_CS results)



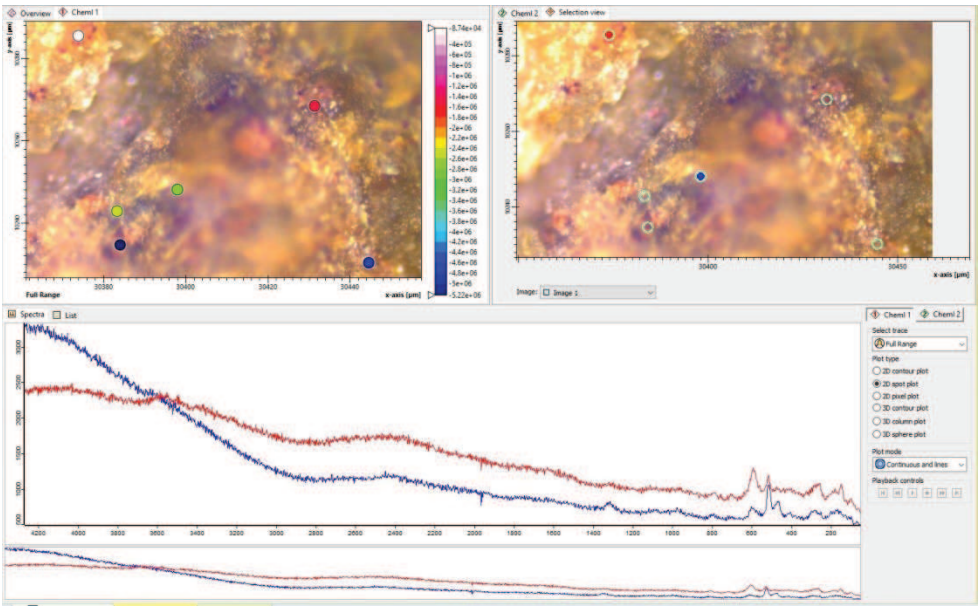
Sample :



Indication for a shock event is the shift of the marked main Quartz spectral line towards 463



Sample Site 8-B2 : Stone 3_spectra 1 (brown mineral) indicates : Anorthoclase , Orthoclase (→ RRUFF_CS)



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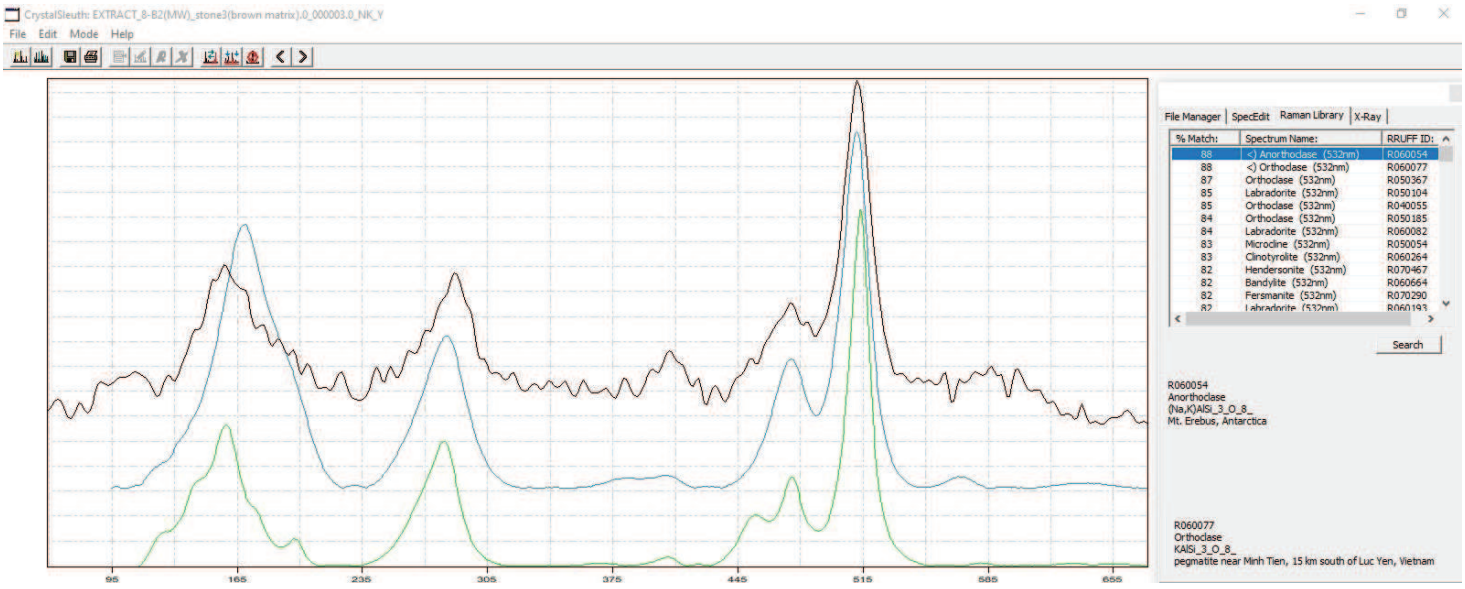
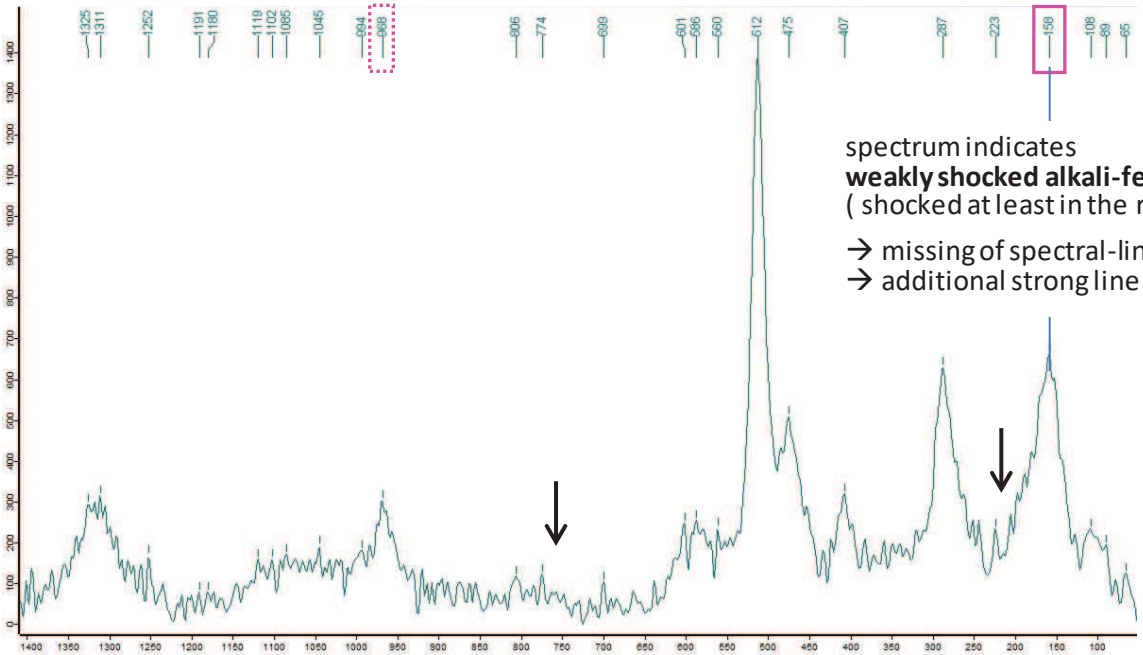
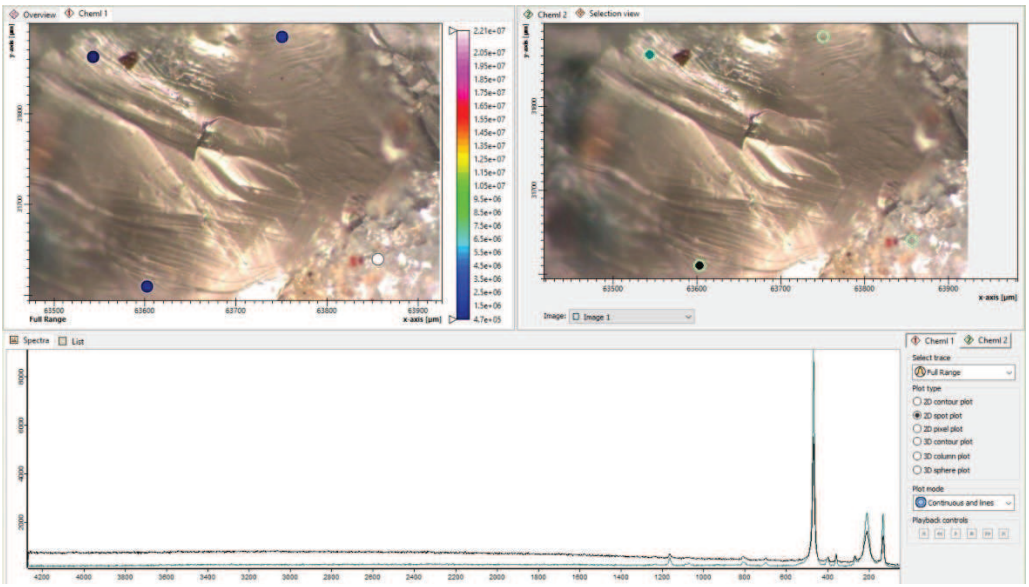




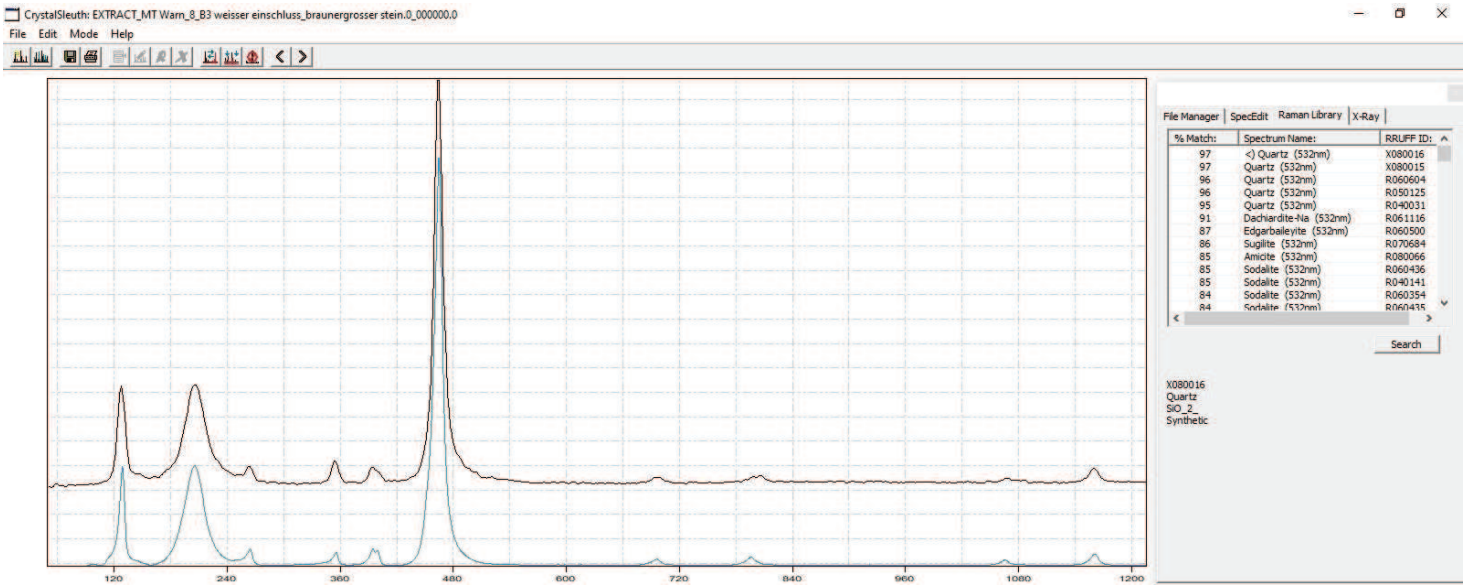
spectrum indicates
weakly shocked alkali-feldspar
(shocked at least in the range ≥ 5 - 14 GPa)

→ missing of spectral-lines 210 & 765
→ additional strong line at ≈ 150

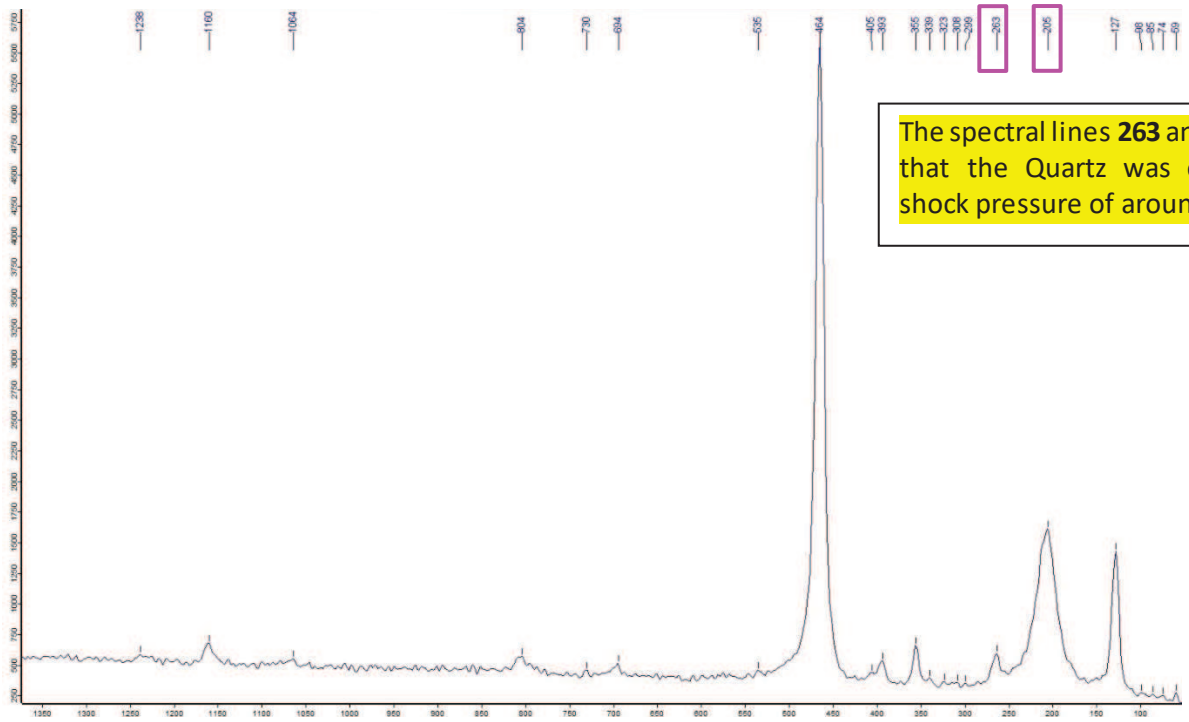
Sample Site 8-B3 : Stone 1_spectra 1 (white mineral inclusions) indicates : Quartz (→ see RRUFF_CS results)



Sample :

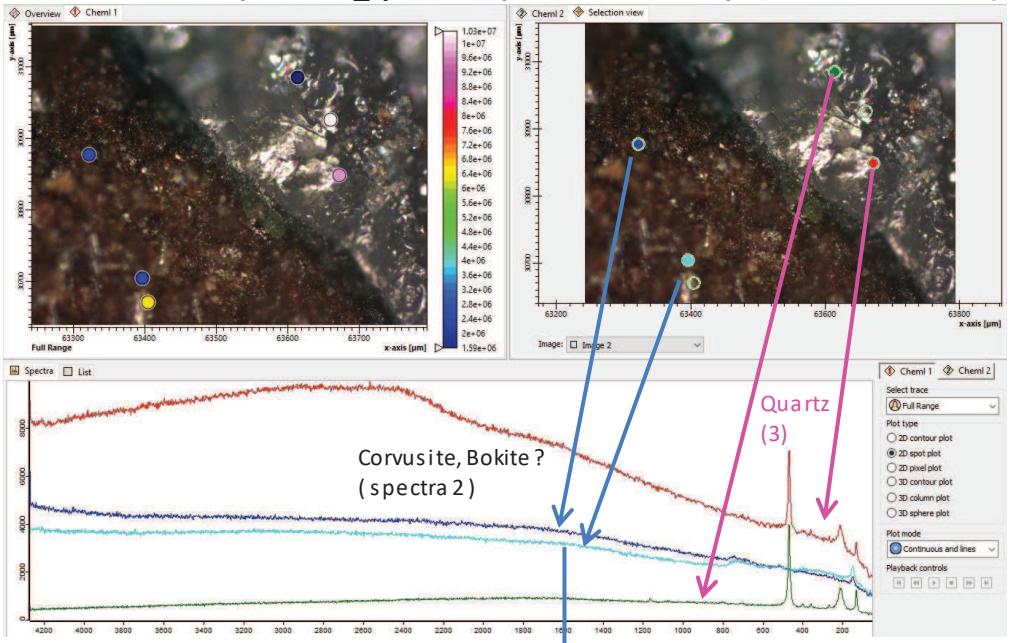


Indication for a shock event are the shifts of the marked Quartz spectral lines towards 263 and 205



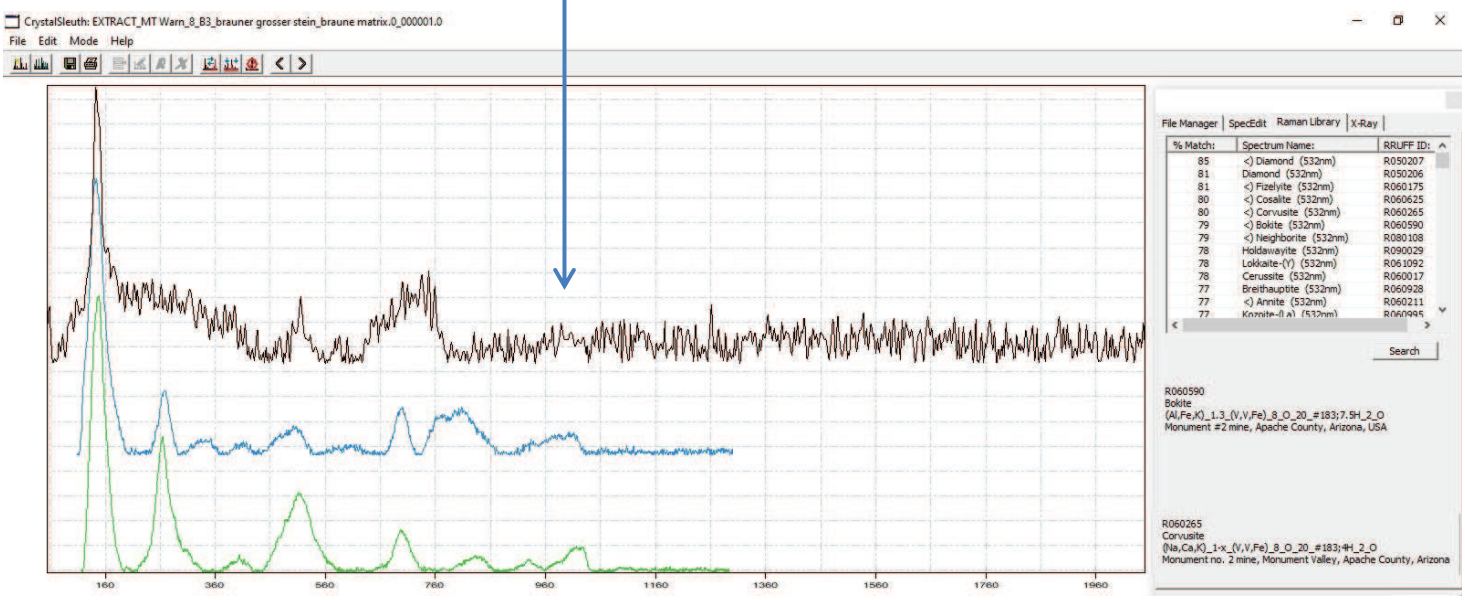
The spectral lines **263** and **205** indicate that the Quartz was exposed to a shock pressure of around **22 GPa**

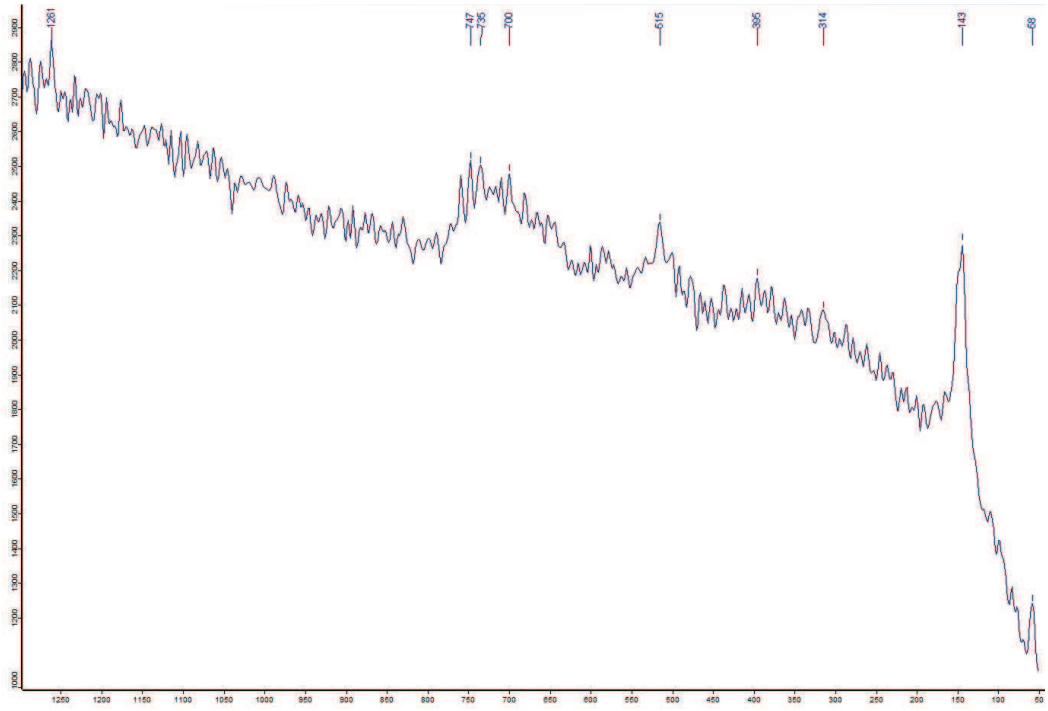
Sample Site 8-B3 : Stone 1_spectra 2 (brown matrix) indicates : Corvusite, Bokite (→ see RRUFF_CS results)
(Stone 1_spectra 3 (white inclusion) indicates : Quartz)



The image on the left shows the border-area between the brown matrix and one Quartz-inclusion

Sample :

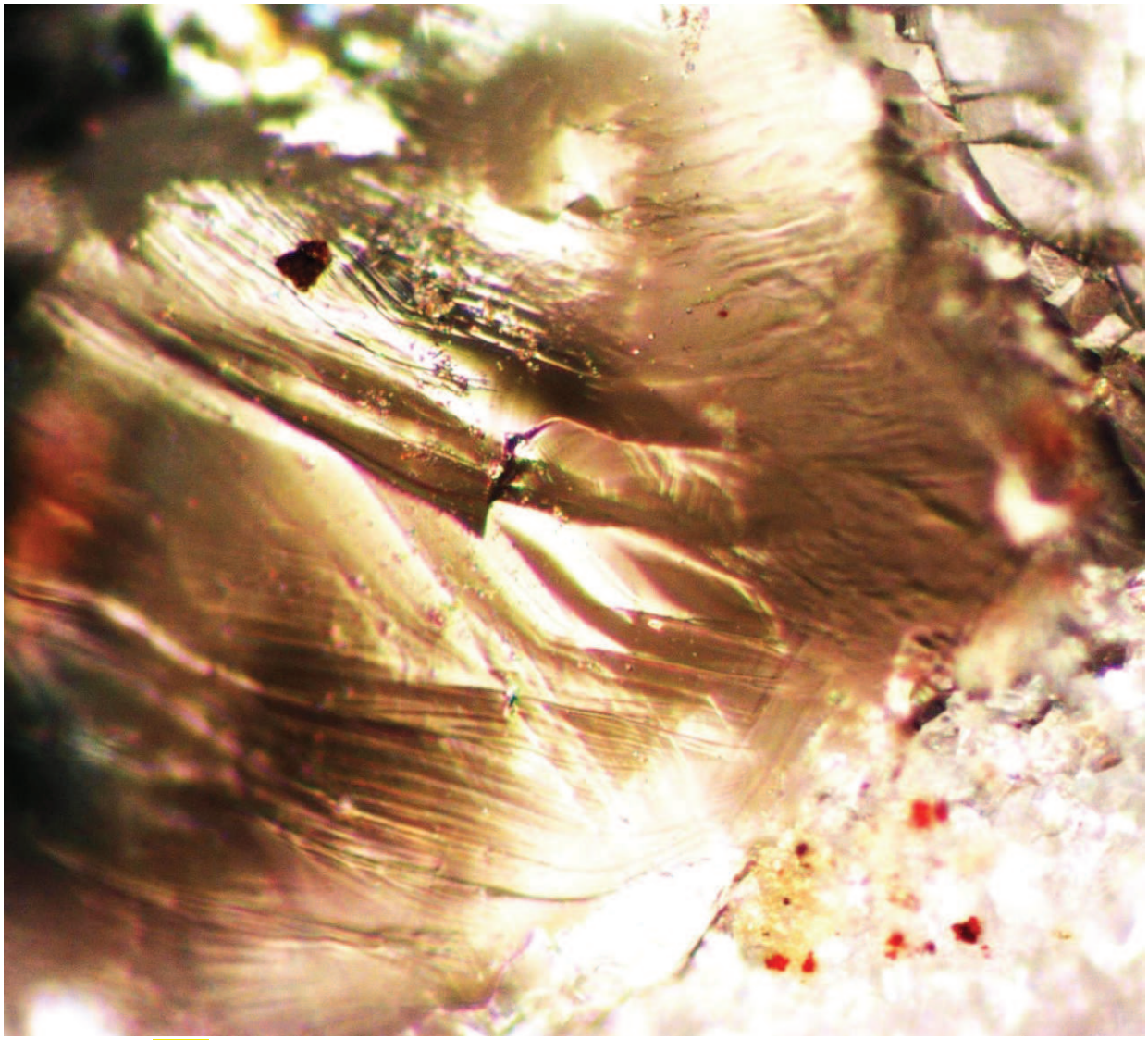




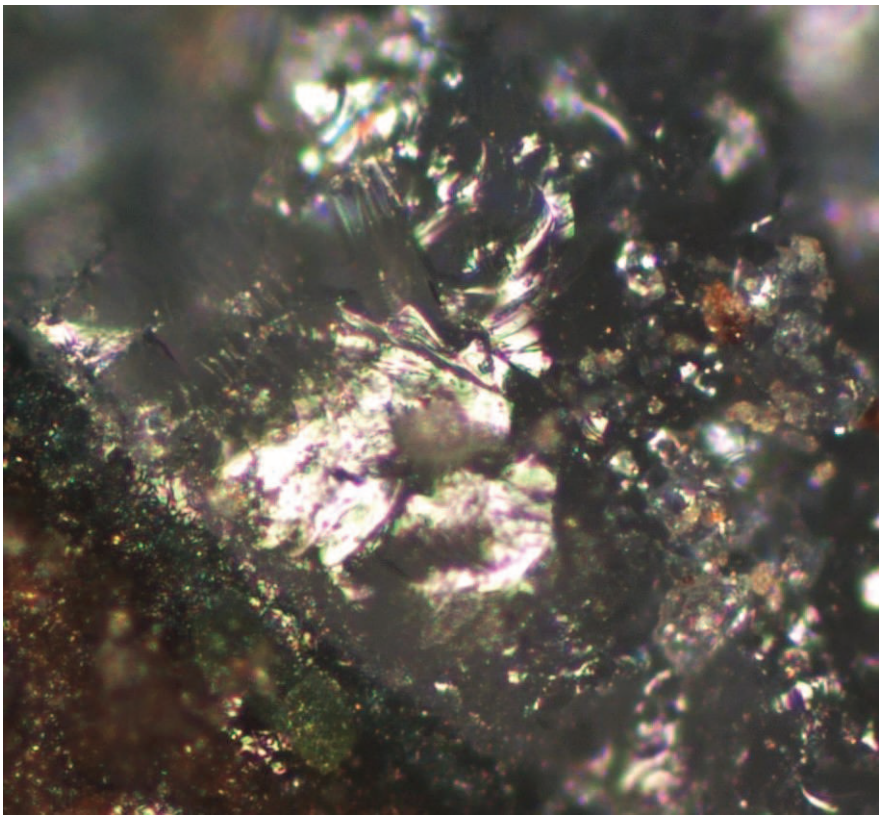
Microscopic Images : Sample from Site 8-B3 → original state (no preparation for analysis)

Sample Site 8-B3 : Stone 1_spectra 1 (white mineral) indicates : Quartz - Image size : ~ 250 x 250 µm

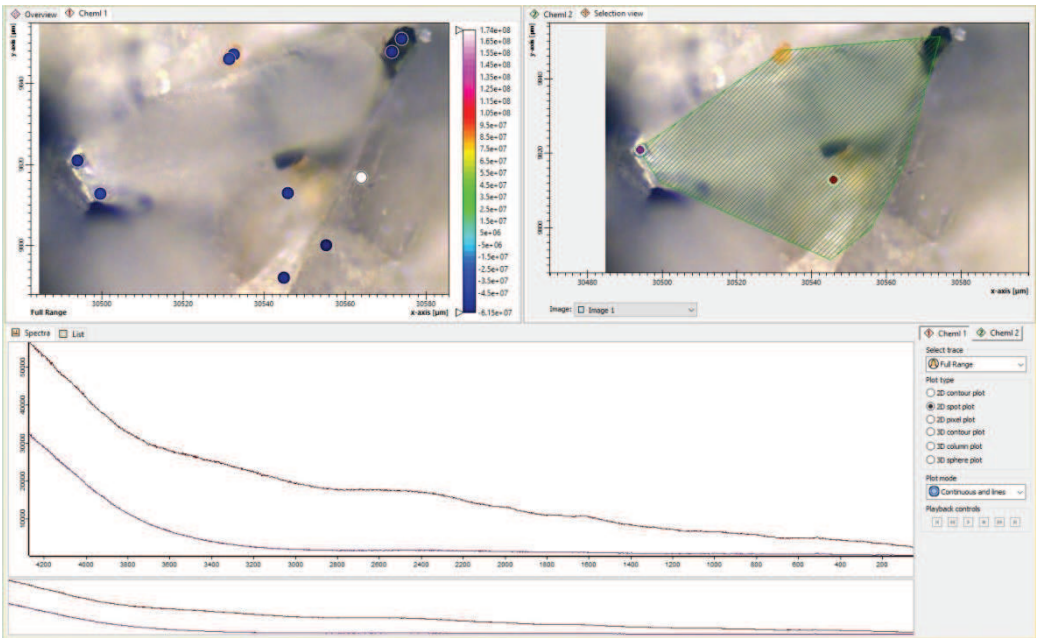
Note the fracture pattern visible in the quartz sample !



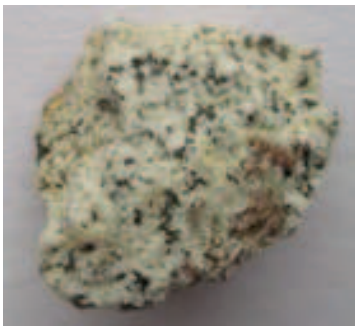
Sample Site 8-B3 : Stone 1_spectra 1 (white mineral) indicates : Quartz - Image size : ~ 200 x 200 µm

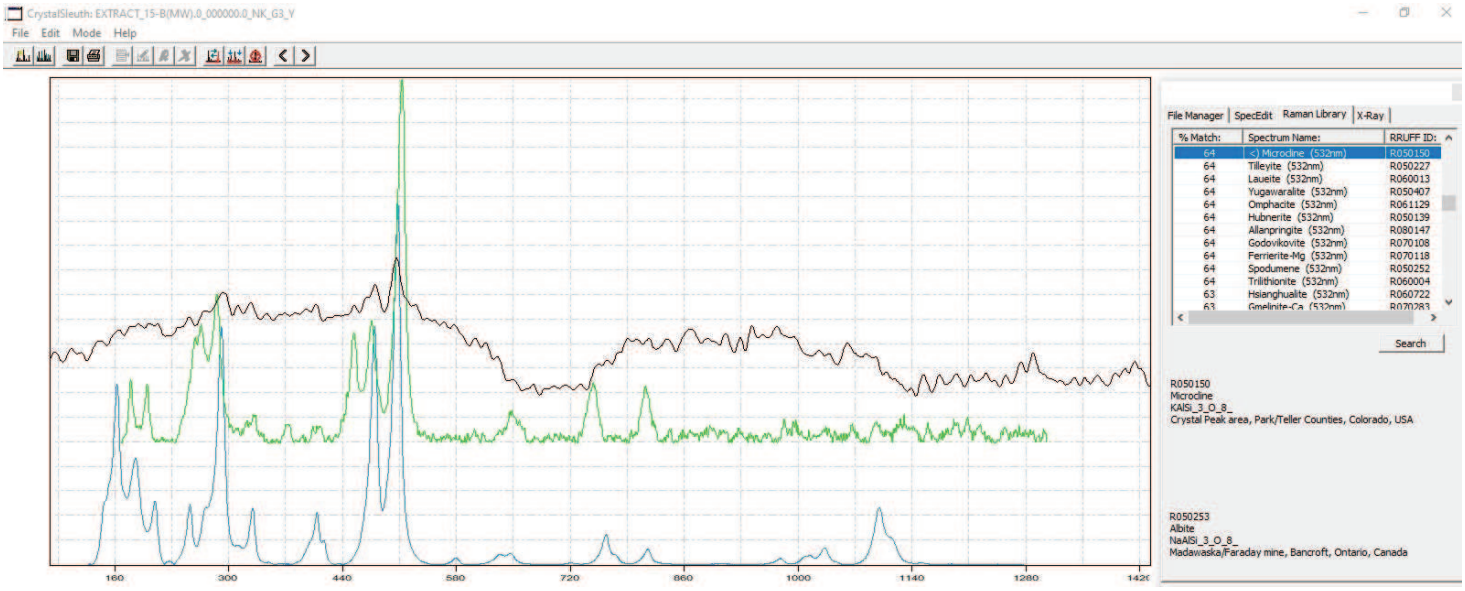


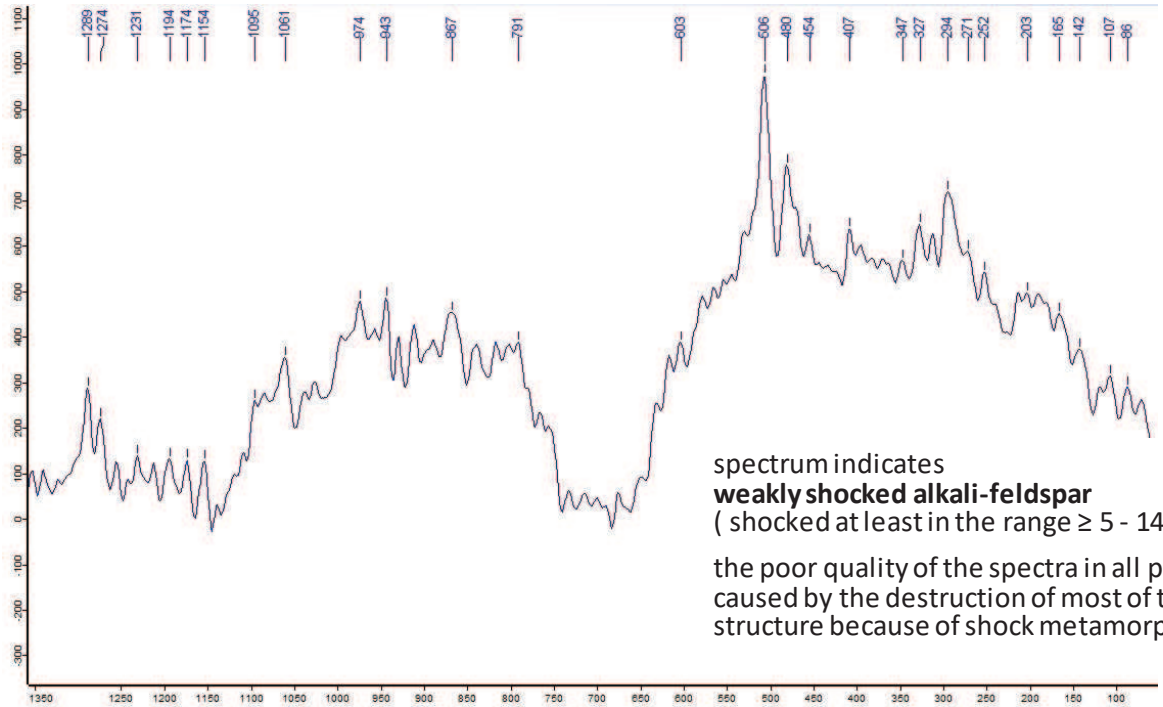
Sample Site 15-B : Stone 1_spectra 1 indicates : Microcline , Albite (→ RRUFF_CS results)



Sample :



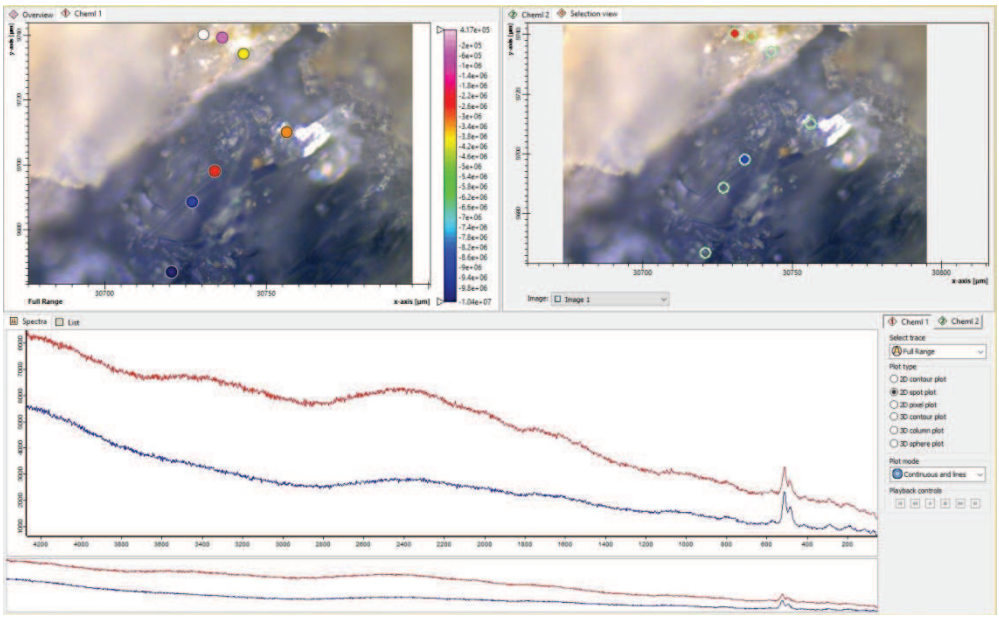




spectrum indicates
weakly shocked alkali-feldspar
(shocked at least in the range ≥ 5 - 14 GPa)

the poor quality of the spectra in all probability is caused by the destruction of most of the crystalline structure because of shock metamorphism

Sample Site 15-C : Stone 1_spectra 1 indicates : Labradorite , Tengerite-Y (→ RRUFF_CS results)



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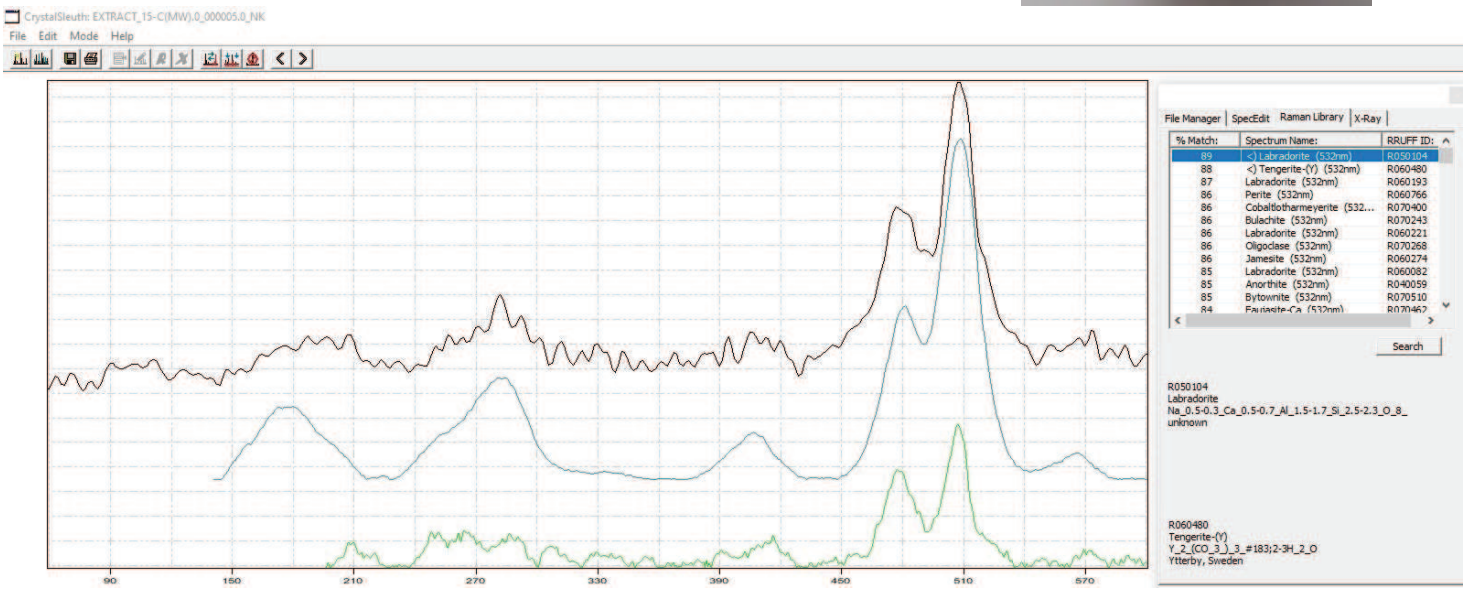
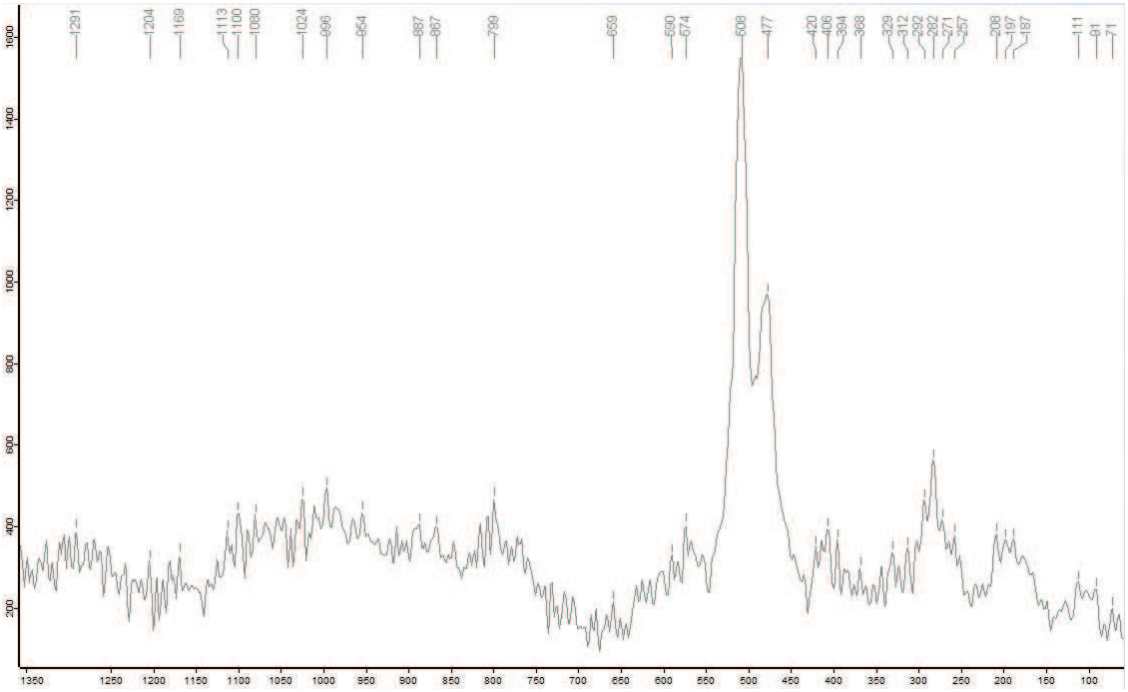
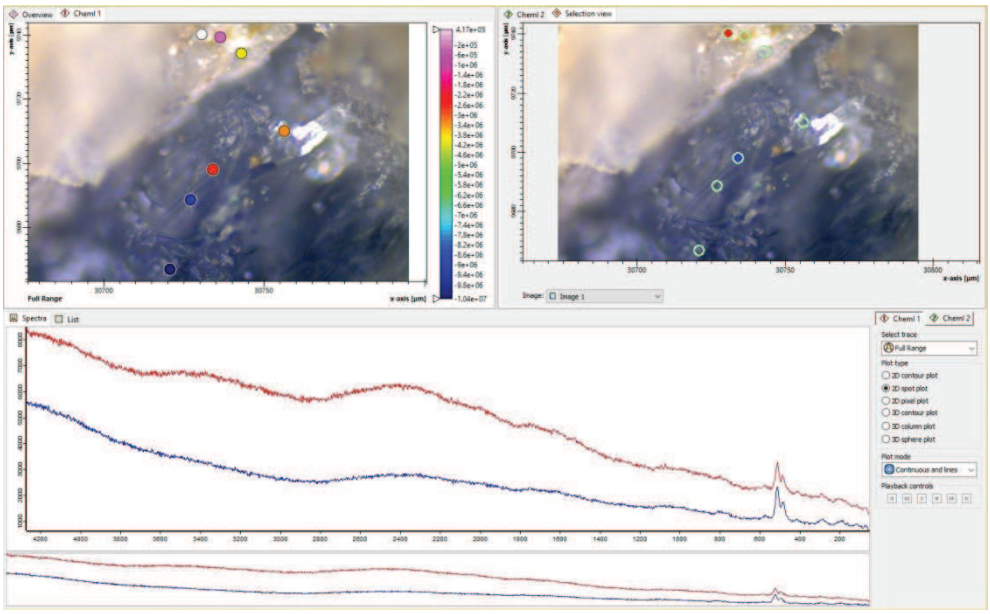
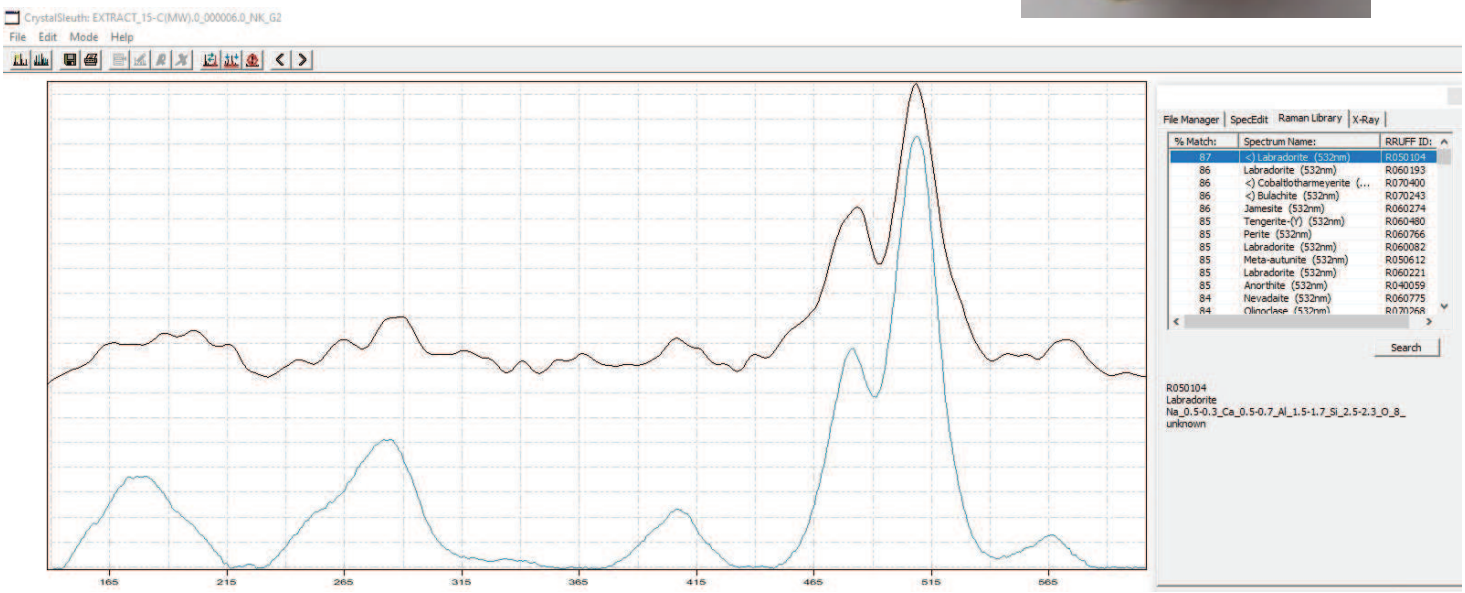


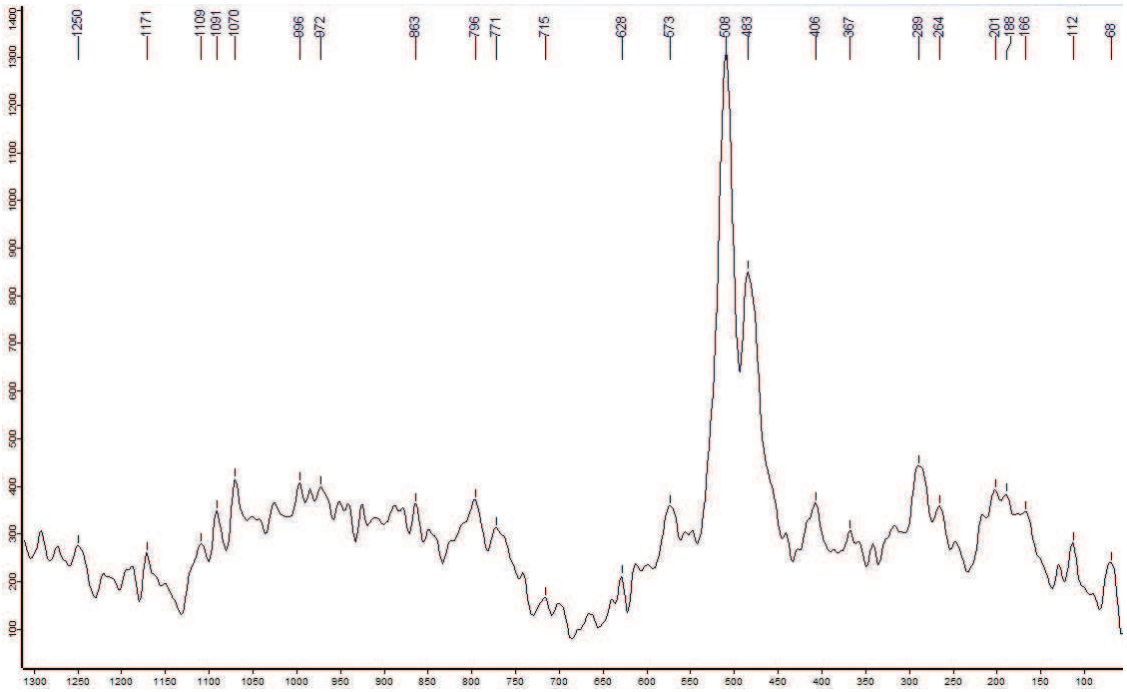


Sample Site 15-C : Stone 1_spectra 2 indicates : Labradorite (→ RRUFF_CS results)



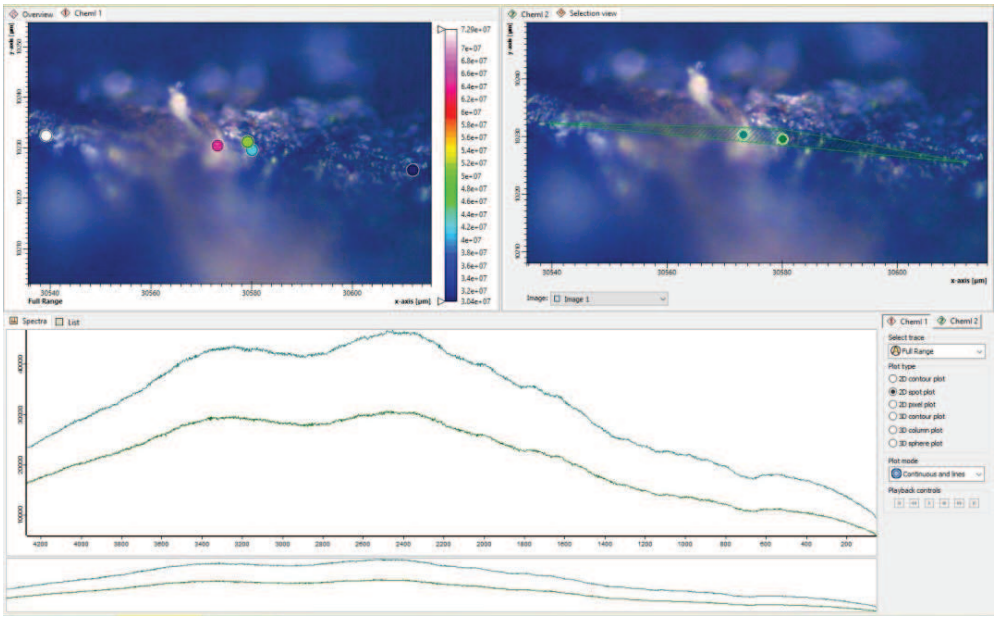
Sample :





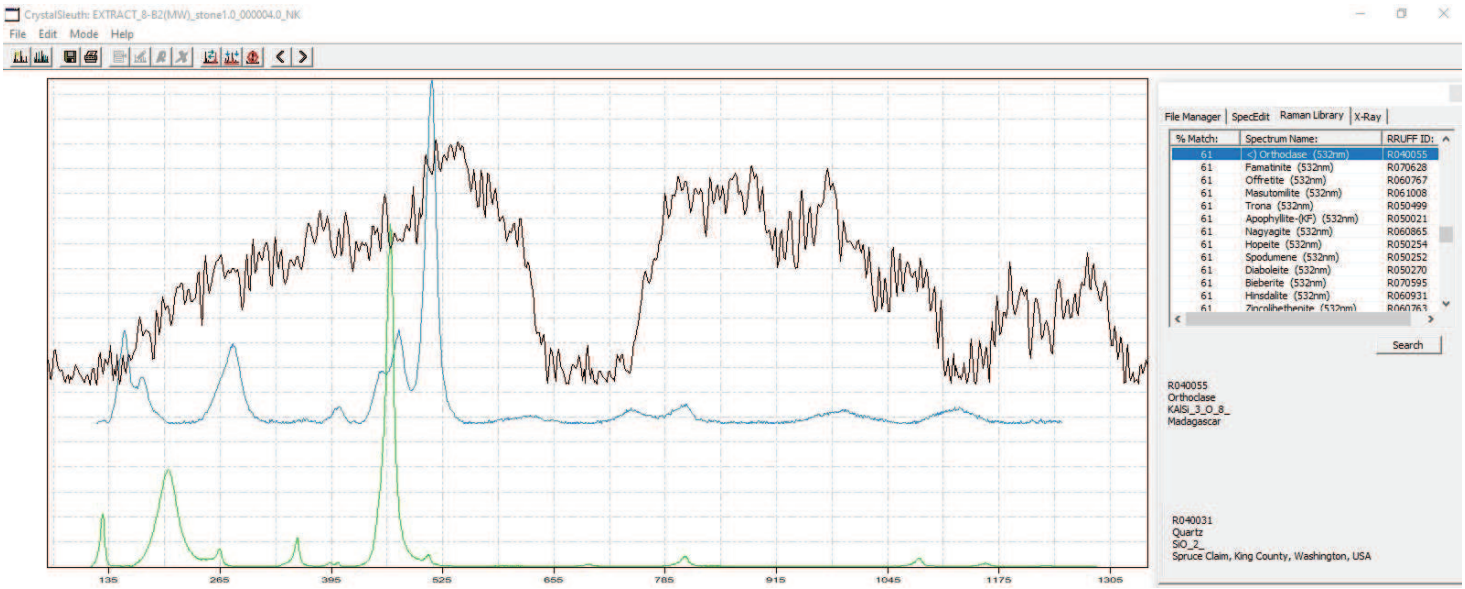
Sample Site 8-B2 : Stone 1_spectra 1 (green Mineral) indicates : (Orthoclase ? Quarz ?)

Spectra of poor quality contains to less information ! Therefore the result is only guesswork in this case.



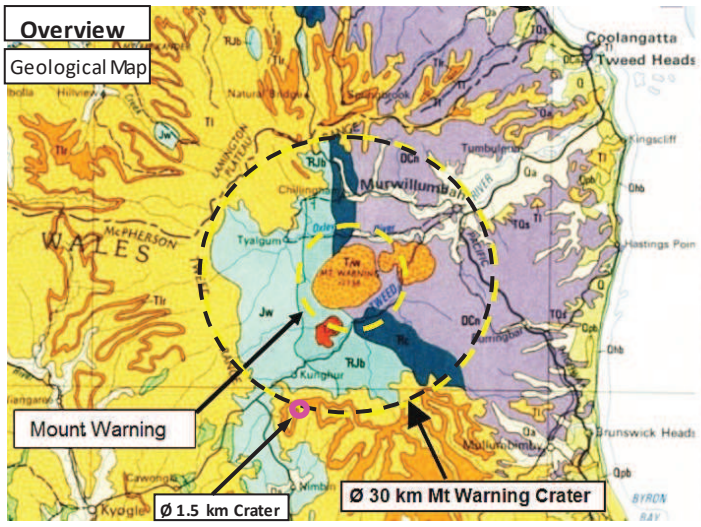
Sample :

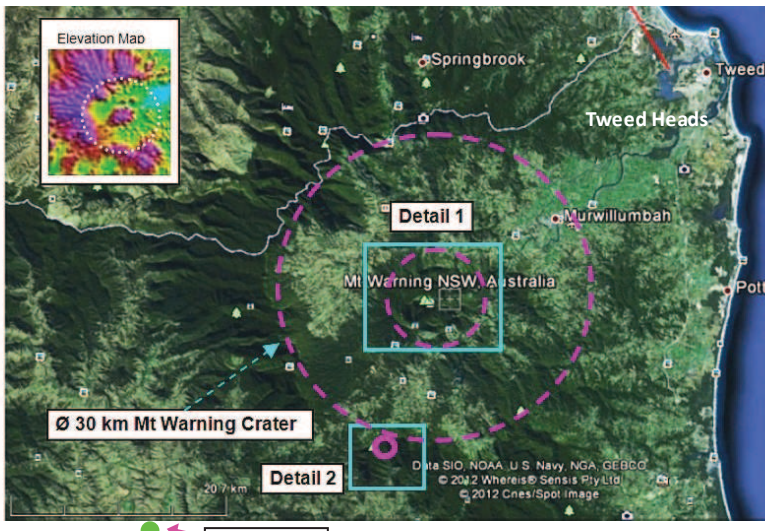
Note the green color



Appendix 1 : **Photos of the rock samples from sample sites : 8-B2/-B3 and 15-A to 15-C**
➔ See next page !

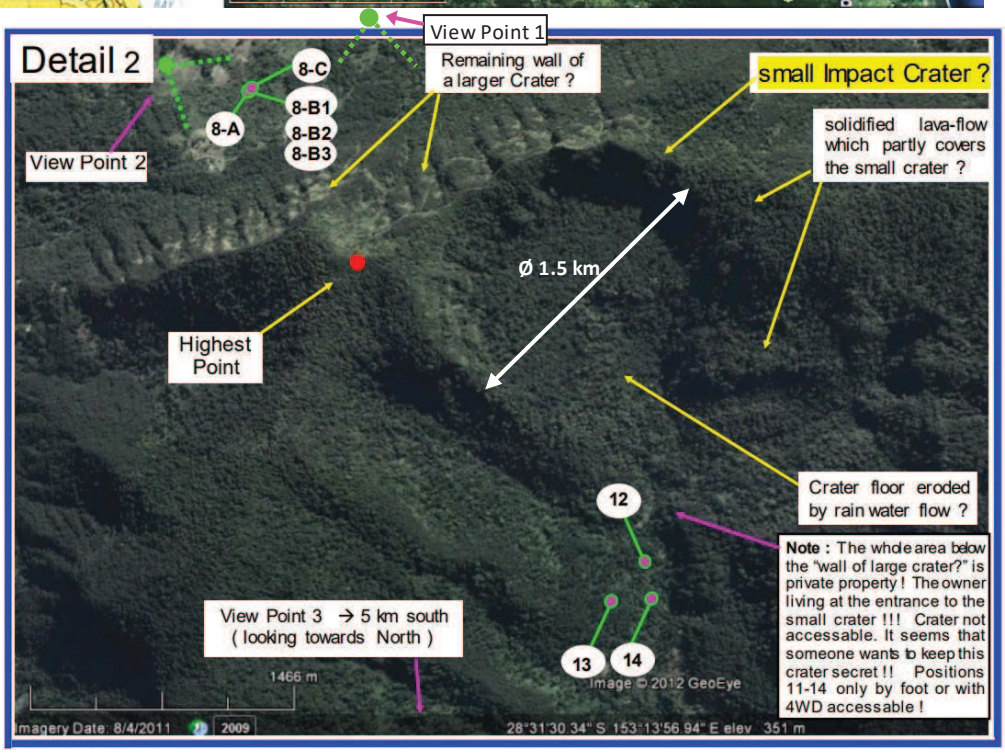
Please note : **Photos of Sample Sites 8-B2 /-B3 and 15-B & 15-C and other sample sites are also available here ➔ weblink : Sample Sites "Mt Warning Crater"**

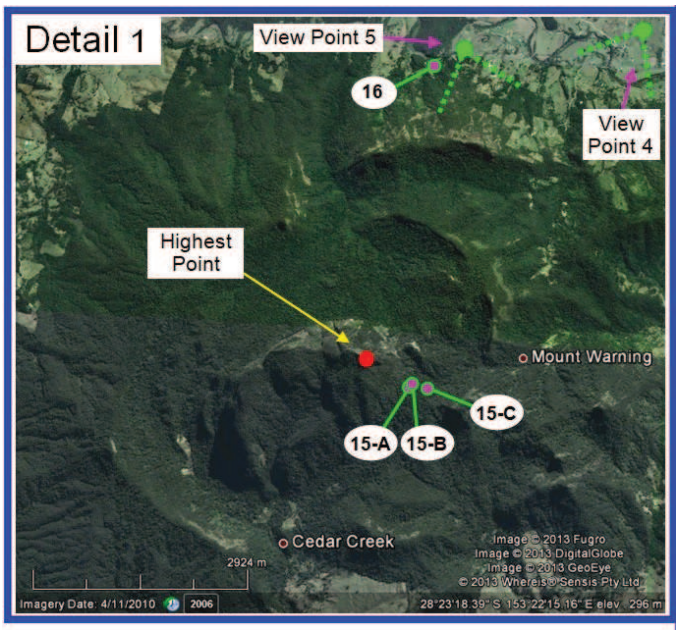




Mount Warning is probably the result of a large **secondary impact** caused by the Cape York Impact Event, and is not the rest of an erroded shield-volcano as currently believed ! Therefore the age of the Mt Warning crater may be ~253 Ma

The chaotic looking central area of the Mt Warning crater (Detail 1) is probably the result of a shield volcano which grew on top of the Mt Warning impact crater after the Impact Event.
When the volcanic activity ended, this shield volcano heavily eroded and collapsed into the visible chaotic structure. (Detail 1) consisting of magmatic material. Only the original Crater-wall of the Mt Warning crater is left from the original earlier impact event.





To the samples 8-B2/3 and 15-B/C :

The samples 8-B2 and 8-B3 were collected on the foot of a remaining section of the Ø 30 km Mt Warning crater.

This location lies close to the smaller Ø 1,5 km Crater, a bit below the level where the small crater is located. (➔ see image above)

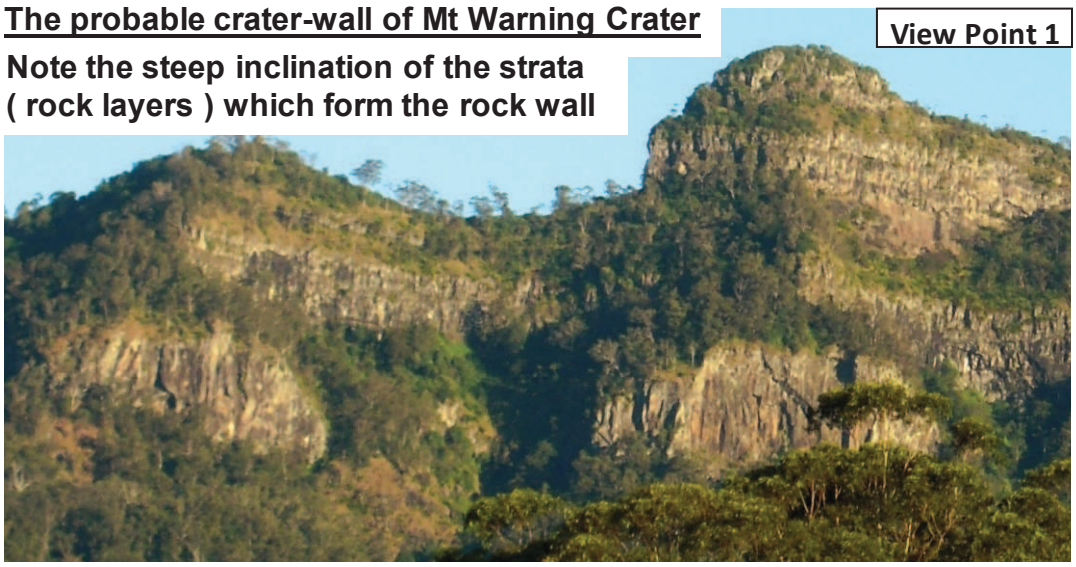
The samples 15-B & 15-C were collected on Mount Warning itself, which is the former top of the shield volcano (or top of the central uplift ?). It lies much deeper today because the shield volcano (which grew on top of the impact crater) eroded heavily and only left behind the former top of the volcano (or central uplift).

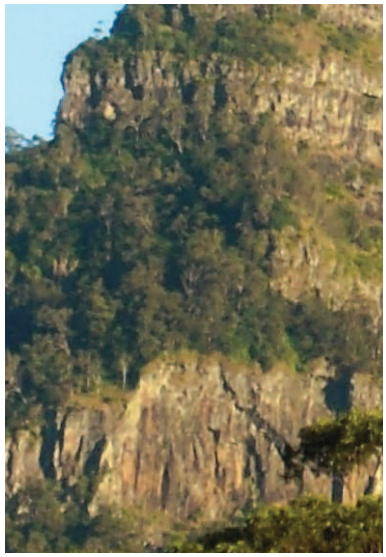
➔ **Please find all images of all sample sites on my**

Note: permission may be required to do a geological expedition to the sites 8-B2/B3, located on private property

The probable crater-wall of Mt Warning Crater

Note the steep inclination of the strata (rock layers) which form the rock wall

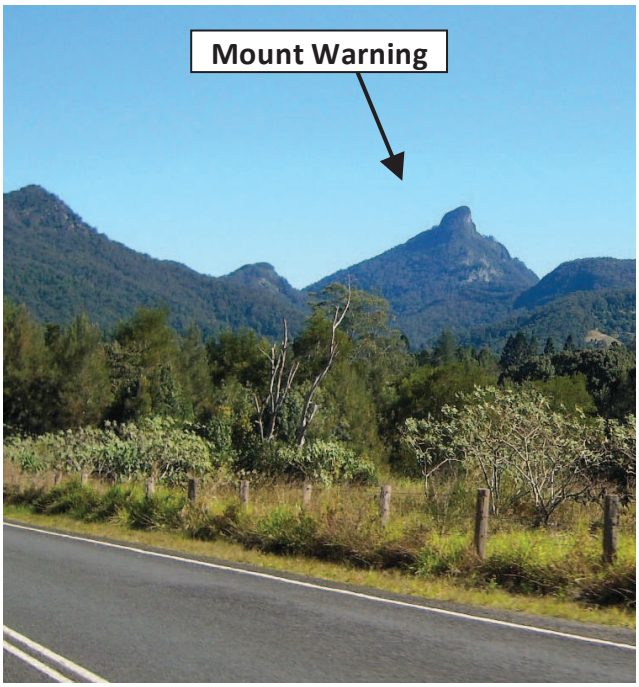


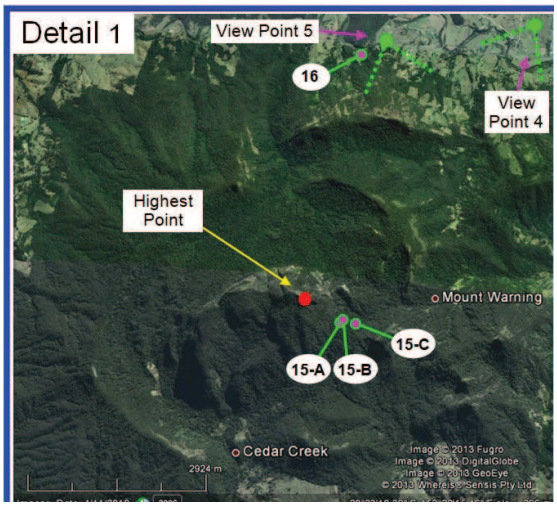


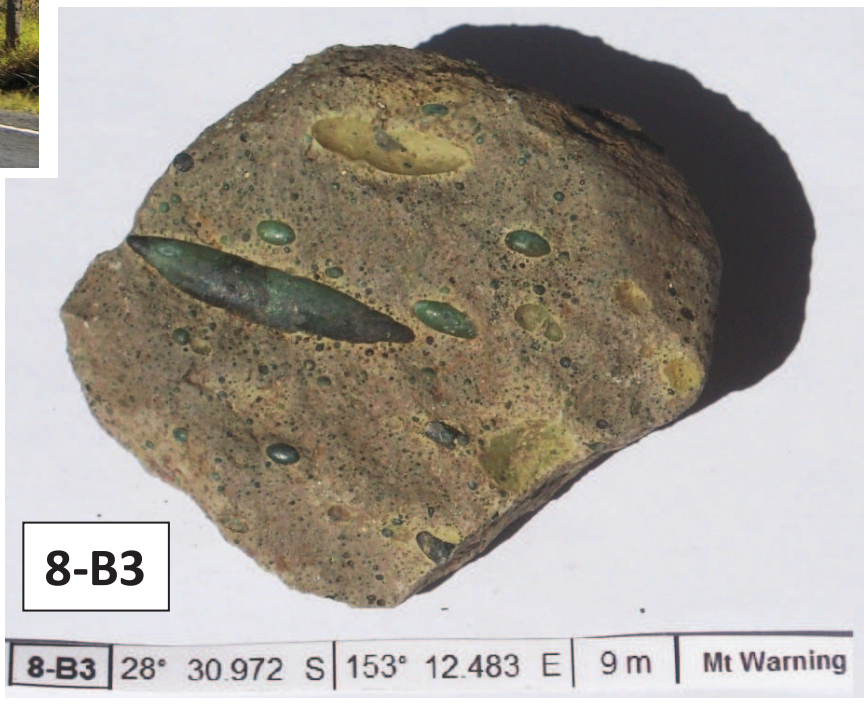
Note: permission may be required to do a geological expedition to the sites 8-B2/B3, located on private property

Note: **The sample sites 15-A to 15-C are accesible over a walking track (hiking trail). It's around a 1 hour walk.**


15-A
15-A 28° 24.072 S 153° 16.639 E 30 m Mt Warning


Mount Warning


Detail 1
View Point 5
16
View Point 4
Highest Point
Mount Warning
15-C
15-A
15-B
Cedar Creek
2924 m


8-B3
8-B3 28° 30.972 S 153° 12.483 E 9 m Mt Warning

Appendix 2 : A short overview : The Raman bands (peaks) of Quartz shocked with 22-26 GPa

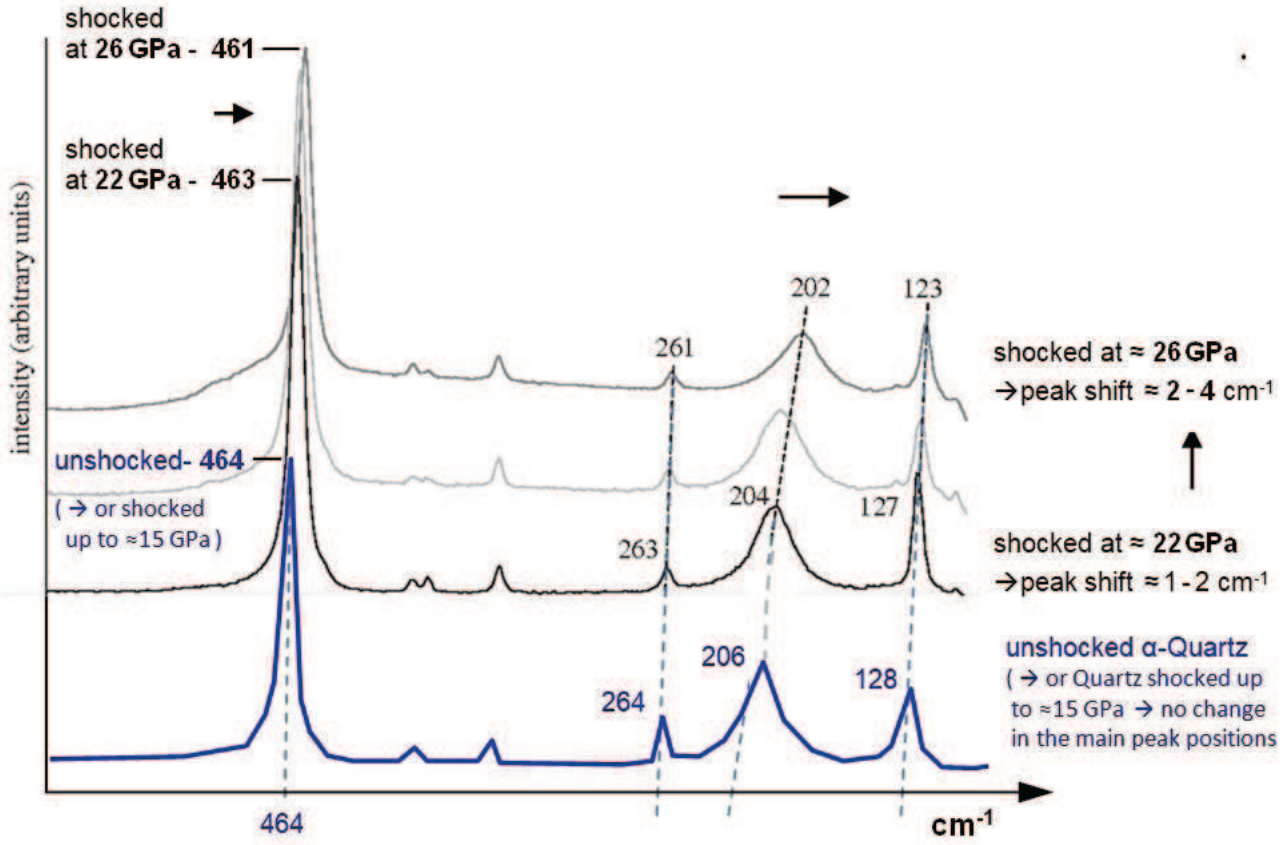
In order to verify a sample site as an impact site or impact structure, shock-metamorphic effects must be discovered in the rocks of the sample site. This can be done by different methods.

For example with the help of PDFs (planar deformation features) which are visible in the quartz with the help of a microscope. However this requires careful preparation of the samples and expertise.

Another, easier method, is the use of a RAMAN microscope. Micro-RAMAN Spectroscopy on quartz grains in the samples can provide the first evidence for a shock event, that was caused by an impact.

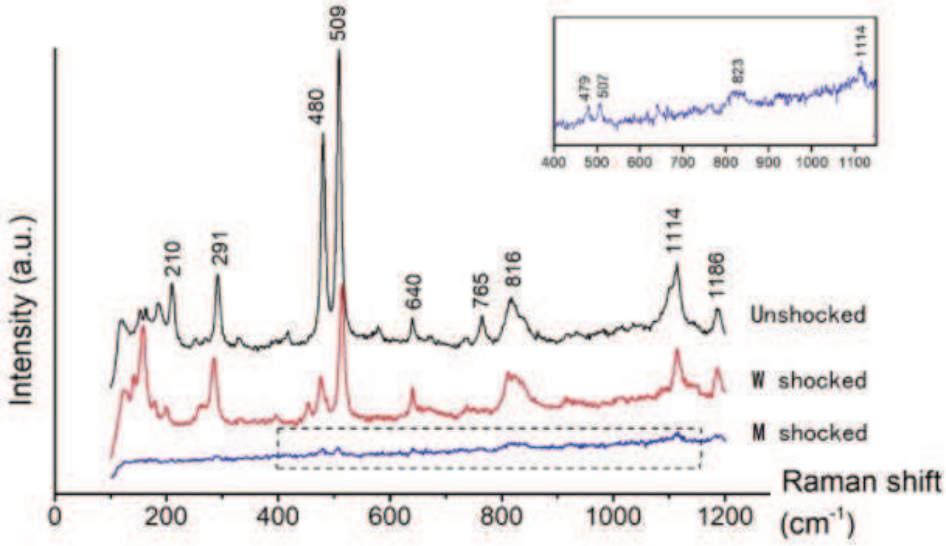
Mc Millan et al. (1992) and others have shown that the main RAMAN-peaks of Quartz shift towards lower frequencies if the Quartz was exposed the a shock-pressure > 15 GPa. → see diagram below

The shift of the main quartz RAMAN-peaks can be used to identify quartz that was shocked by an impact



Quartz shocked with **22 GPa** and **26 GPA** shows shifts of the main RAMAN-peaks of 1 - 4 cm^{-1} to lower frequencies

Appendix 3 : Raman spectra of (W) weakly-shocked & (M) moderately-shocked Alkali-Feldspar



Weakly shocked alkali feldspar mainly developed irregular fractures and undulatory extinction. Note that the Raman-lines 210 and 765 are missing in the w-shocked feldspar, and an additional line at ≈ 150 appears.

The shock pressure for the w-shocked feldspar was estimated to be between 5 and 14 GPa

References :

Photos of all Sample Sites & Rock Samples are available on : Samples "Mt Warning Crater" (or : "Mt Warning Crater")

The 320 km Cape York Impact Crater and the Cape York Crater Chain in North-East Australia - by Harry K. Hahn
https://vixra.org/abs/2101.0136 alternative : https://archive.org/details/the-320-km-cape-york-impact-crater-in-ne-australia

RAMAN spectra of quartz samples from the Cape York impact area : Evidence for the Cape York Crater (or here : link4)

The Permian-Triassic (PT) Impact hypothesis - by Harry K. Hahn - 8. July 2017 :
Part 1 : The 1270 X 950 km Permian-Triassic Impact Crater caused Earth's Plate Tectonics of the Last 250 Ma
Part 2 : The Permian-Triassic Impact Event caused Secondary-Craters and Impact Structures in Europe, Africa & Australia
Part 3 : The PT-Impact Event caused Secondary-Craters and Impact Structures in India, South-America & Australia
Part 4 : The PT-Impact Event and its Importance for the World Economy and for the Exploration - and Mining-Industry
Part 5 : Global Impact Events are the cause for Plate Tectonics and the formation of Continents and Oceans (Part 5)
Part 6 : Mineralogical - and Geological Evidence for the Permian-Triassic Impact Event
Alternative weblinks for my Study **Parts 1 - 6 with slightly higher resolution** : Part 1, Part 2, Part 3, Part 4, Part 5, Part 6
Parts 1 – 6 of my PTI-hypothesis are also available on my website : www.permiantriassic.de or www.permiantriassic.at

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