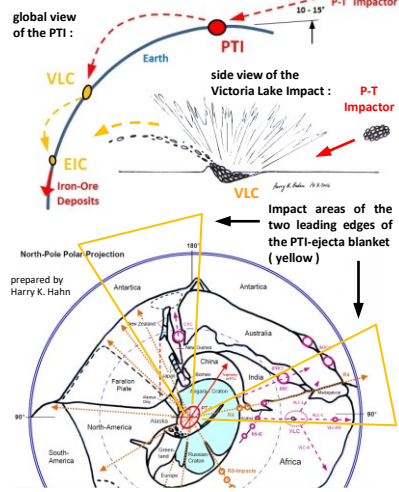


# The Pacific - LLSVP, which is responsible for the magma eruptions, and the African - LLSVP were caused by the PT-I :

There is strong indication that the **Permian-Triassic Impact (PT-I)** and the ejecta rays which were caused by this enormous impact are responsible for the formation of the two main **LLSVPs** ( **Large low-shear-velocity provinces** ) inside Earth's mantle. These two large structures, which are characterized by slow (seismic) shear wave velocities and which consist of much hotter material (~4000°K) than the surrounding mantle material (~2000°K), extend laterally and vertically for thousands of kilometers from the core-mantle boundary. In all probability the remains of large secondary impactors and the ejecta of the leading edges of the two ejecta-wings of the PT-I descended deep into Earth's Mantle and caused the **LLSVP's** ( by Harry K. Hahn )

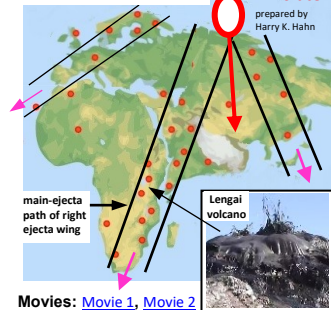
## Impact Scenario of Victoria Lake Crater (VLC) & Ejecta Impact Crater (EIC) :



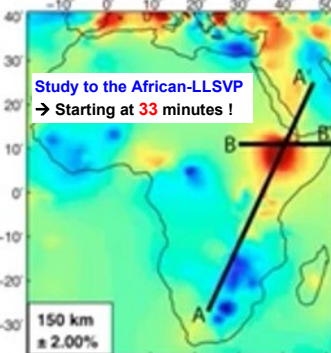
The diagram on the left shows the shallow (oblique) impact of the PT-Impactor which probably had a diameter of around **~60 to 200 km**. It also shows a side view of the **Victoria Lake Impact (crater)** (→VLC) which was caused by a large secondary impactor from the VLC was ejected forward in impact direction where it formed another secondary crater, the EIC. The rest (the majority) of the VLC-ejecta was again ejected in a butterfly-ejecta-pattern. Traces of "forward-ejecta", which always seems to be dense & ductile metal-bearing material, are also visible near the CYC- and PHC (BBC)-craters.

The majority of the ejecta from the PT-I-crater was ejected in the form of a gigantic butterfly-shaped ejecta blanket. Where the leading edges of the two ejecta wings of this butterfly-ejecta blanket impacted on Earth's crust ( in the yellow marked areas ) extensive fractures (new continent borders) were formed. The north-polar-projection of Earth, shown on the left shows Earth at P/T boundary time

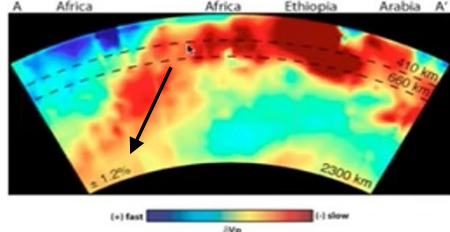
## Carbonatite distribution along main-ejecta paths of the PT-I :



Movies: [Movie 1](#), [Movie 2](#)  
see : [Study about Carbonatite Lava](#)



A large part of the ejected material and a number of big secondary impactors impacted in these two yellow marked areas. → see also larger map in the chapter : "Earth at the time of the PT-Impact Event"  
The world map on the left shows the distribution of **Carbonatites** in Africa & Eurasia. I have rearranged the position & orientation of Africa, Europe and India so as they were just after the PT-Impact 253 Ma ago ( → original map, Le Bas 1987 ). **It is clearly visible that the carbonatites are mainly located along the paths where the leading edges of the ejecta wings of the PT-I impacted !!** This is especially clear for the impact path of the leading edge of the right ejecta wing along the east-coast of Africa ( → ejecta ray R4 & VLC-ray ). Because the **Carbonatites** are probably derived from Earth's lower mantle, we can conclude that the shock-wave of the PT-I-impact, or PT-I-ejecta descending into the mantle, brought carbonatites from the lower mantle to the surface, or the carbonatites were brought-in by the impactor itself ! Lengai Volcano in Tanzania still erupts Carbonatite-Lava today ! ( → from the African LLSVP ! )



The two images on the bottom left side show a section view of the **African-LLSVP**. The section view A – A' runs from the Arabian Peninsula through the **African Rift Valley** and the **Victoria Lake (VLC)** area towards South-Africa. The section view runs essentially along the same path where the leading edge of the right ejecta wing of the PT-I impacted. It is clearly visible that the main structure of the African **LLSVP** is orientated along the same path as the impacting right leading edge of the PT-I-ejecta. ( → LLSVP = red, orange & yellow area in the section view A – A' ). The images are from a study of Andy Nyblade which used **African-Array Data**.

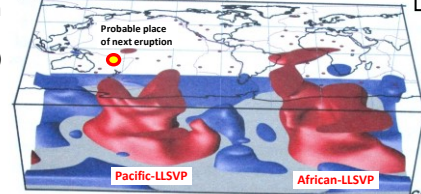
He claims that evidences indicate that the African LLSVP is a thermochemical **whole-mantle-structure** without a separation in the 410-660 km region. The same principles applies for the **Pacific LLSVP**. The two maps on the top right side show that especially the **ULVZ** at the **core mantle boundary (CMB)** within the Pacific LLSVP is mainly orientated along the path where the leading edge of the left ejecta wing of the PT-I impacted. Because this ULVZ has a distinct chemical signature there is a high probability that the **ULVZ** is a direct result of ejecta of the PT-I which descended to the CMB in this area.

**Note** : it seems that the Cape York Impact produced a permanent channel in the mantle which connects the Pacific-LLSVP / ULVZ with the surface. Through this channel in the mantle ≥8 violent magma eruptions occurred over the last ~200 Ma causing a number of big **LIP's** on the Pacific Plate ( e.g. the **Ontong LIP** )

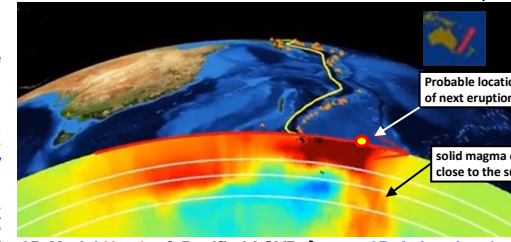
**Warning** : There is a high probability that another such violent magma eruption will occur !! My study indicates that the next magma eruption will take place near the **Fiji-islands** → see image on the right which shows the path of the source (outflow channel positions = yellow dots) of the magma eruptions. It seems the Pacific LLSVP is due for an eruption soon ! The solid upward pointing column at the top-end of the LLSVP, near the **Fiji's** may indicate the coming eruption ( & **mass extinction** ! ). The vertical expansion rate of this column must be measured !!!

**Note** : All volcanos of the **Pacific Fire Ring** and all other volcanos on Earth can be explained by the Permian-Triassic Impact ! They are all located in the (fractured) crust areas which were directly caused by the ejecta of the PT-I !! The magma (molten mantle material) which causes these volcanos, in all probability is **exclusively** a result of the impact of ejecta & secondary impactors from the PT-I !!! Therefore a revised model for **Earth's mantle** is required, which must consider a much higher share of **volatiles**, e.g. H<sub>2</sub>O & CO<sub>2</sub> within the mantle material

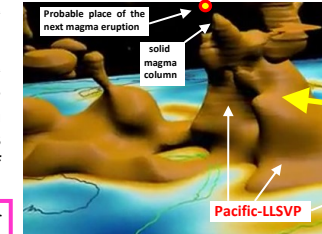
## (D) Shear velocity heterogeneity



A 3-D view of the Pacific- & African LLSVP and the probable location of the next eruption



3D-Model No. 1 of Pacific LLSVP → see : [3D-Animation 1](#)  
3D-Model No. 2 of Pacific LLSVP → see : [3D-Animation 2](#)



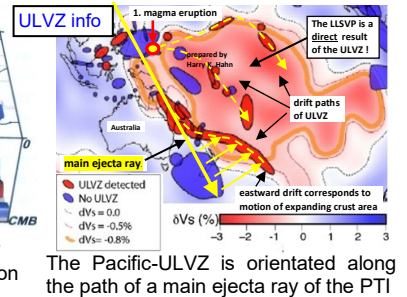
3D-view of Pacific-LLSVP with the possible location of next eruption



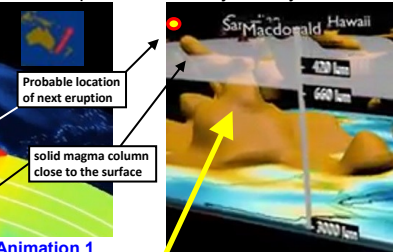
Path of the magma eruption source ( → yellow dots ). A2, B1&B2, C1-C3 represent drift-off-copies & remains of the first magma-eruption-zone A1

An alternative model for Earth's mantle is required !! **Earth's mantle** in all probability contains much more **volatiles**, especially H<sub>2</sub>O, than currently believed ! Similar to **Ganymede**, Earth's mantle may contain a high share of **high-pressure ice**, e.g. **Ice X & Ice XI**, probably mixed with silicate material like in **Callisto's** mantle and other materials. H<sub>2</sub>O may also be stored in materials like **Ringwoodite** etc.

## Ringwoodite in Diamond



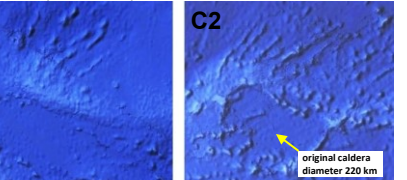
The Pacific-ULVZ is orientated along the path of a main ejecta ray of the PT-I



3D-Model No. 1 of Pacific LLSVP → see : [3D-Animation 1](#)  
3D-Model No. 2 of Pacific LLSVP → see : [3D-Animation 2](#)



3D-view of Pacific-LLSVP with the possible location of next eruption



These two different ocean floor areas A2 & C2 which are thousands of km apart represent the same structure !! These "drift-off-copies" are an image of the **first** magma eruption which took place on position A1 ! These nearly identical structures, from two different crust layers (?), probably show the remains of a burst shield-volcano with a base Ø-450 km and a caldera Ø-220 km.

