The 1200 x 850 km Congo Impact Crater has formed the Congo Basin, probably around the Triassic-Jurassic boundary

Extract from Part 2 of my study : "**Global Impact Events are the cause for Plate Tectonics and the formation of Continents and Oceans**"

(→ Please find my other studies on vixra.org, archive.org or soon on this website : www.permiantriassic.de)

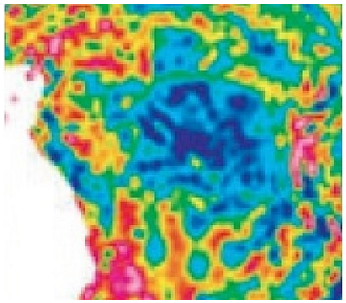
by **Harry K. Hahn** / Germany - **8. July 2017**

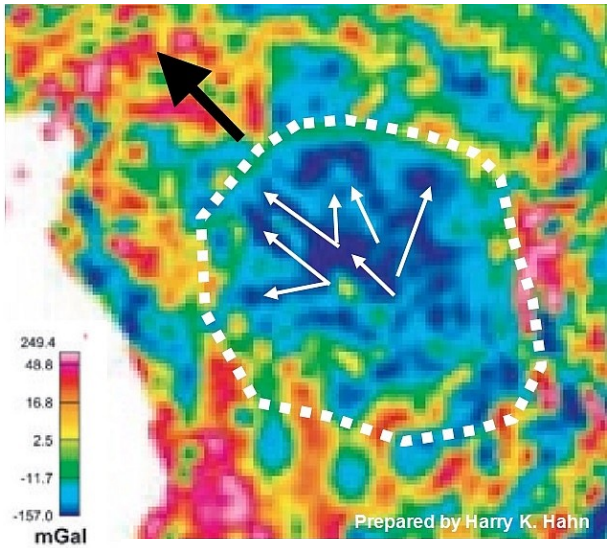
Abstract :

The gravity anomaly map of Africa shows a complex impact crater with the enormous dimensions of **1200 x 850 km**. This impact crater, which is responsible for the Congo Basin, probably was formed by ≥ 40 fragments of a large asteroid or comet that broke to pieces just before impact. The gravity anomaly signature shows where many of the fragments impacted. The impactor-fragments probably had ≥ Ø 3 - 10 km each, and the original asteroid or comet probably had a diameter of ≈ 30 – 50 km, and it impacted in a shallow angle. This is indicated by the "drop-shape" of the whole impact area. The trajectory of the asteroid or comet had a north-west direction.
The trajectory indicates that this impact probably wasn't related to the PT-Impact. The acceleration of the North- & South-American-Plates towards North-West, which must have happened >150 Ma ago, probably was initiated exactly at the Triassic/Jurassic boundary 200 Ma ago. In all probability the T/J-boundary was caused by the Congo Impact ! The Congo Impact transferred a very powerful impulse into the African Plate, which then passed this impulse to the North- & South-American-Plates. With a long delay of maybe 10 to 20 million years the North- & South-American-Plate probably began to slowly break-off and move away from the African Plate. The Congo Impact Impulse (CII) in this way may be responsible for the final break-up of Gondwana.

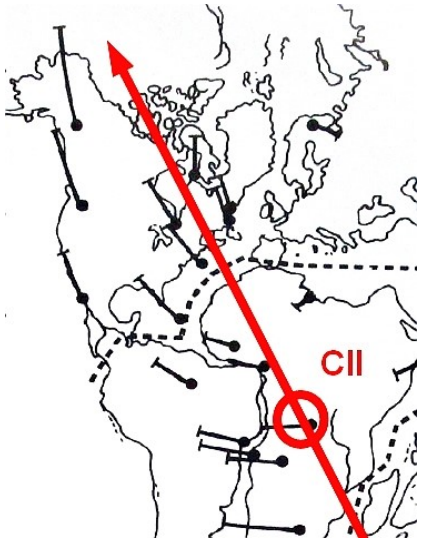
The gravity anomaly map of Africa also shows the three powerful linear Ejecta Rays R2 - R4 (secondary crater-chains) which were caused by the Permian-Triassic Impact in Siberia. These Ejecta Rays R1 – R4 meet at the original PT- Impact Point. (please see my studies Part 1 to 6 about the PT-Impact Event – see weblinks in References)

Congo Impact Crater 1200 x 850 km





Gravity Anomaly Map

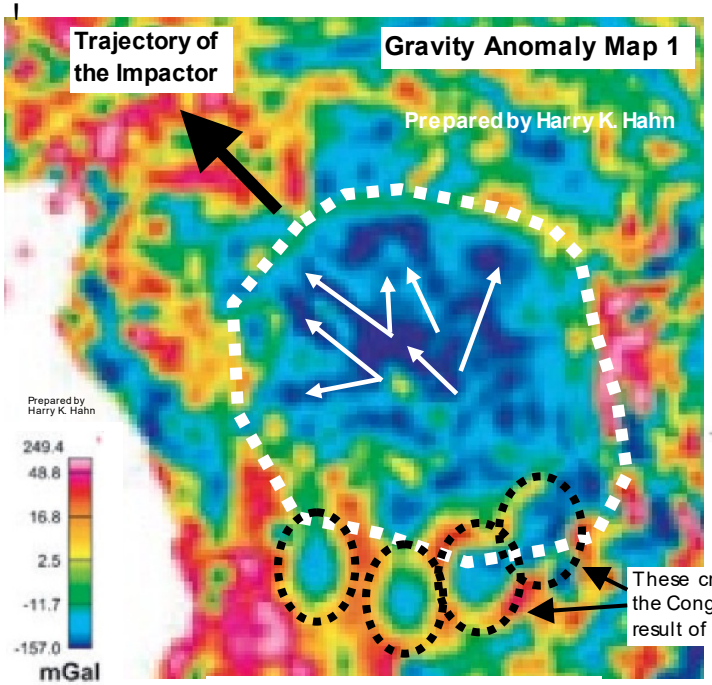


A fixed hot spot frame indicates that the **Congo Impact Impulse (CII)** may have caused the final break-up of Gondwana

The Congo Crater was formed by a multiple Impact Event probably caused by an asteroid or comet that collapsed before impact

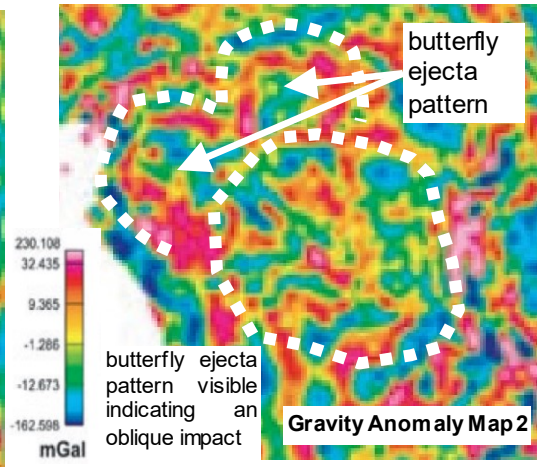
The gravity anomaly map of Africa shows a large **1200 x 850 km multiple impact crater structure** where the Congo Basin is located today.

The gravity anomaly map provides the evidence for a complex impact crater structure which probably was formed by ≥ 40 fragments of a large asteroid or comet which broke into pieces just before impact. The impact signature shows precisely where each fragment impacted. The impactor-fragments probably had ≥ Ø 3 - 10 km each, and the original asteroid or comet probably had a diameter of 30 – 50 km, and it impacted in a shallow angle. The assumed trajectory and age of the impactor indicate that it wasn't related to the PT-Impact !. It seems that this impact was responsible for the acceleration of North- & South-America towards North-West ≈ 180-200 Ma ago. Additional there are 3 strong Ejecta Rays (secondary crater-chains) of the PT-Impact visible on the map !

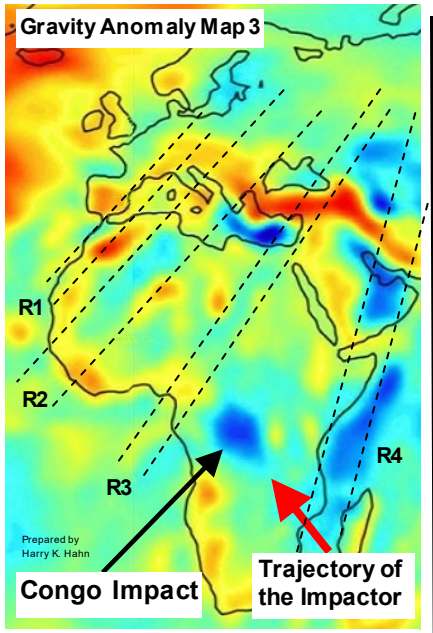


(A) EIGEN-GL04C free-air anomaly,

→ Eigen-GL04C free-air gravity anomaly map



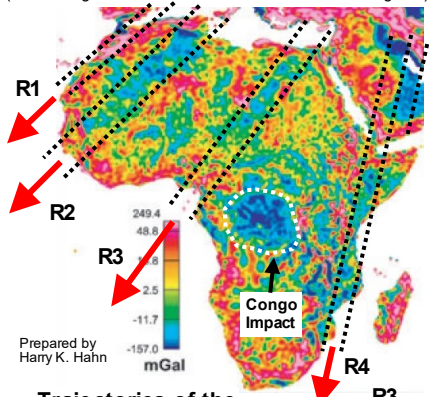
(B) High-pass filtered gravity anomaly map



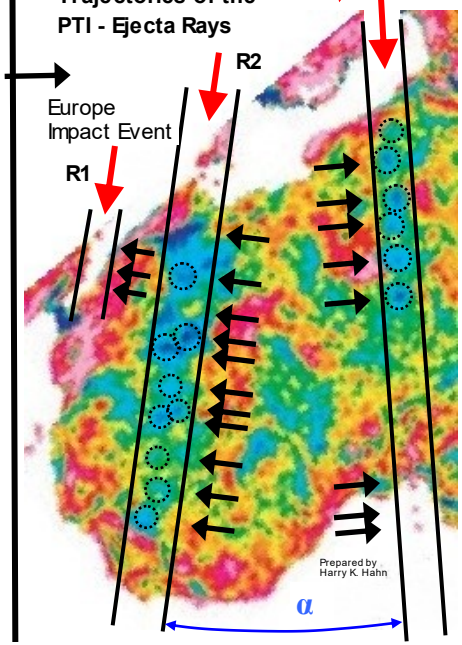
Other Impact Structures in Africa

There are four impact crater chains R1 to R4 visible on the gravity anomaly map of Africa, which must be caused by ejecta from the PT-Impact. The rays all meet in the center of the PTI-Crater !

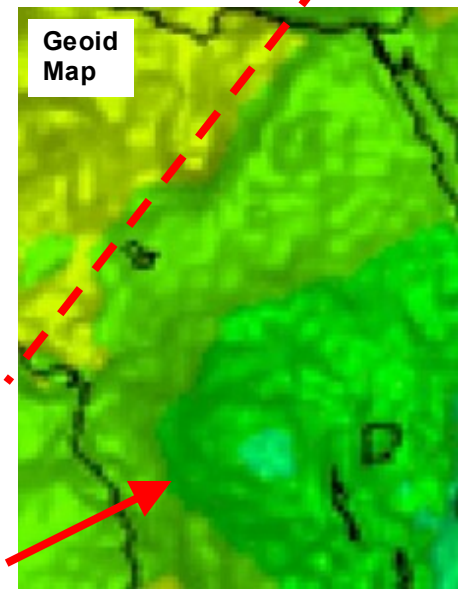
(considering that Africa has rotated clockwise 5-10 degrees)



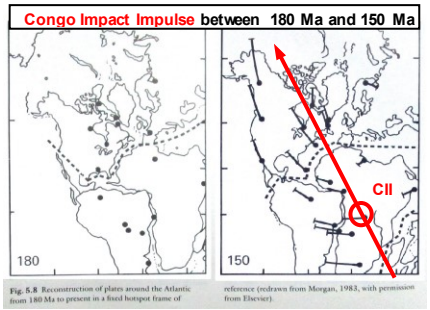
Trajectories of the PTI - Ejecta Rays



Linear structure from the Ejecta Ray R3 of the PT-Impact Event



The two images on the righthand side show the other impact structures on the gravity anomaly map, which are independent from the Congo Impact. The bottom Map was rotated a bit to make the impact structures clearer. The impact crater chains R1 to R4 in all probability are caused by the Permian-Triassic Impact. Therefore the indicated craters with Ø150-250 km, must be secondary craters which are caused by ejecta from the **PTI.** In the crater areas many oil/gas-fields may exist.



This largescale impact structure, which seems to be independent from the PT-Impact, may have caused the final break-up of Gondwana. The impulse of the impact was powerful and surely was transferred from the African Plate in the South-American- & North-American-Plate, which then moved away from the African Plate with considerable speed Under this consideration the impact maybe 180-200 Ma old.

Congo Impact & Butterfly Ejecta pattern visible on Geoid Map

3 METHODOLOGY

As our main interest is the depth of the crust–mantle boundary, the gravity data are first subjected to a high-pass filter using a 1000-km cut-off wavelength to remove deep mantle sources (Obenson 1974; Block *et al.* 2009, Fig. 1B). Undesired tapering effects are minimized by expanding the gird up to 20 per cent of the total grid area. We then calculate the *X*, *Y*, *Z* derivatives of the filtered gravity anomaly on a 0.25° grid (Figs 1C, D and E) and use them as input to the 3-D Euler equation.

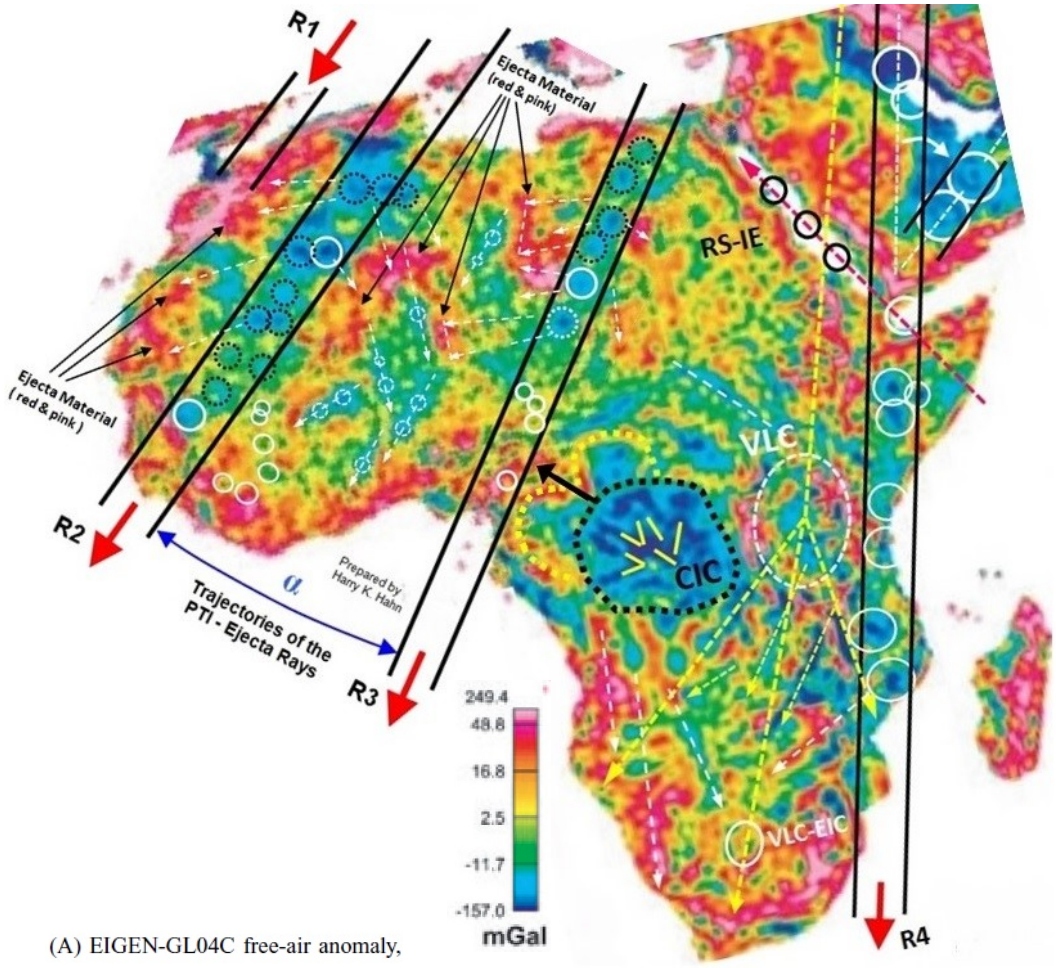
A crustal thickness map of Africa derived from a global gravity field model using Euler deconvolution

Getachew E. Tedla,[1,2] M. van der Meijde,[1] A. A. Nyblade[2,3] and F. D. van der Meer[1]

[1]*University of Twente, Faculty of Geo-Information Sciences and Earth Observation (ITC), Enschede, The Netherlands. E-mail: tedla@itc.nl, get11@psu.edu*
[2]*Department of Geosciences, Pennsylvania State University, University Park, PA 16802, USA*
[3]*School of Geosciences, The University of the Witwatersrand, Johannesburg, South Africa*

Gravity Anomaly Map showing PT-Ejecta Rays R1-R4 & Congo Crater :

- ➔ Ejecta Rays (crater chains) R1 to R4 of the Permian Triassic impact (PTI) are marked on the map. (→ smaller crater chains are also indicated)
- ➔ Impact Craters appear as negative anomalies (blue or green areas)
- ➔ Congo Impact Crater (**CIC**) shown on the map



(A) EIGEN-GL04C free-air anomaly,

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[1]*University of Twente, Faculty of Geo-Information Sciences and Earth Observation (ITC), Enschede, The Netherlands. E-mail: tedla@itc.nl, get11@psu.edu*
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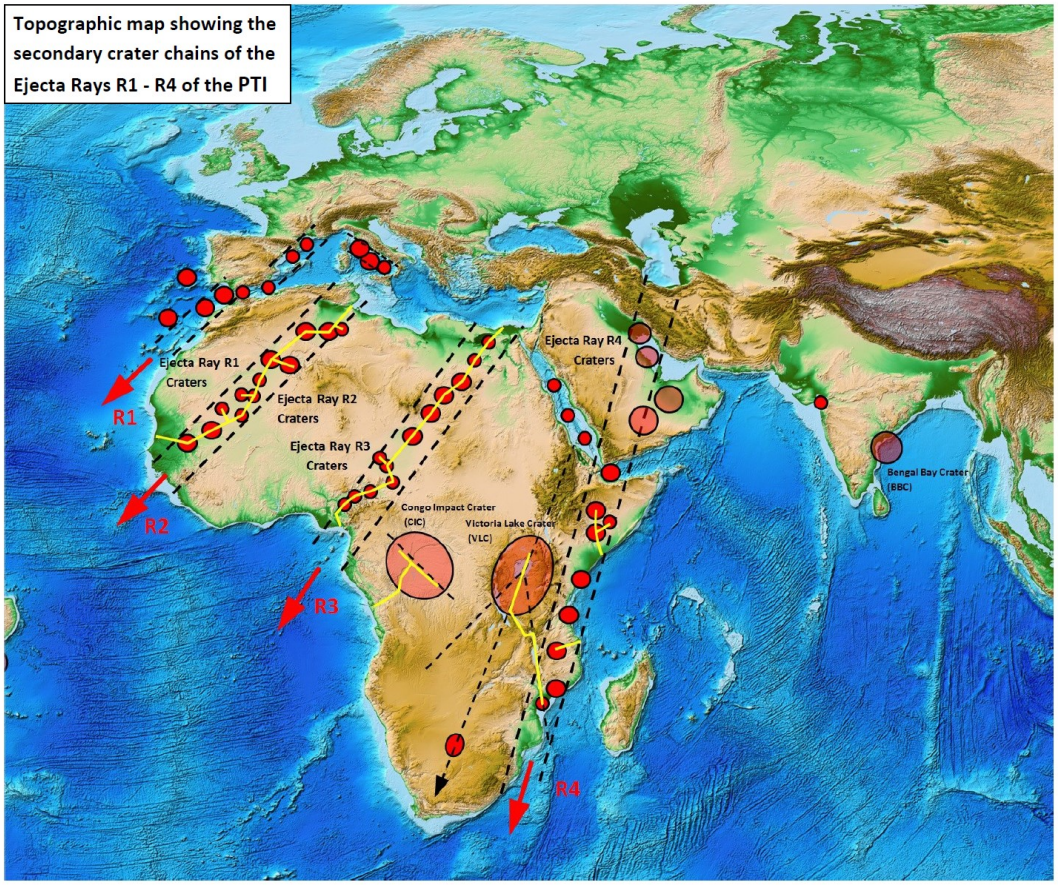
Topographic Map of Africa indicating the crater chains R1 to R4 :

- ➔ The Chains of impact craters (R1 to R4) shown on the topographic map (→ marked in red) in all probability represent oil- & gas-rich areas.
- ➔ The Impact Crater areas can easily be connected by an oil-pipline (Piplines marked in yellow)
- ➔ The Congo Impact Crater (**CIC**) and the Victoria Lake Impact Crater (**VLC**) probably also represent oil- & gas-rich areas. (➔ see also my other studies !)



In the oil-exploration industry it is common knowledge that large oil-fields can be expected in an area effected by a big impact crater. Because a large impact not only produces the required structural traps (by impact induced fracturing and brecciation of the rock under the crater, which results in very effective porosity & permeability of the fractured rock), but also the palaeo-environment for the deposition of post-impact shales that provides the oil & gas.

There are geological examples available, like the Ames Crater (Ø 14 km) in Oklahoma / USA, or the worldclass Cantarell Oil-field, which is located near the Ø 180 km Chicxulub Crater in Mexico, which clearly indicate the close connection of impact craters & oil- & gas-fields

References :

Part 5 of my Study : Global Impact Events are the cause for Plate Tectonics and the formation of Continents and Oceans_Part 5

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 and Australia

Part 3 : The Permian-Triassic Impact Event Caused Secondary-Craters and Impact Structures in India, South-America and Australia

Part 4 : The Permian-Triassic Impact Event and its Importance for the World Economy and for the Exploration- and Mining-Industry

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2. W. Frisch, M. Meschede, Ronald Blakey : **Plate Tectonics** ; Germany 2011, Springer Verlag ; ISBN : 978-3-540-76503-5 , (e-ISBN: ...-76504-2)
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Impact Cratering :

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Interesting Online Documents & Websites :

1.) Introduction : **Impact Metamorphism** , by Dr. Ludovic Ferriere
   → http://www.meteorimpactonearth.com/impactmeta.html

2.) **Numerical modelling of basin-scale impact crater formation**; R.W.K. Potter
   → http://www.lpi.usra.edu/lpi/potter/publications/RossThesis.pdf, **see also**: Orientale impact

3.) **Cycles in fossil diversity** : R.A. Rohde, R.A. Muller, 2005, www.nature.com
   → http://muller.lbl.gov/papers/Rohde-Muller-Nature.pdf → see Introduction in my study

4.) **Asteroid/Comet Impact Craters and Mass Extinctions** , Michael Paine
   → http://users.tpg.com.au/users/tps-seti/crater.html

5.) **A Breakup of Pangaea and plate kinematics of the central Atlantic and Atlas regions**, A.Schettino, E.Turco → http://gji.oxfordjournals.org/content/178/2/1078.full

6.) **A crustal thickness map of Africa derived from a global gravity field model** ; G.E. Tedla & others, Geophysical Journal International 2011
   → http://www.africaarray.psu.edu/publications/pdfs/Tedla_et_al_GJI_2011.pdf → see Chapter.4