

The 840 x 630 km elliptical Pantanal Impact Crater in South-America - A secondary Crater of the P/T- Impact Event ?

see also Part 1 to 6 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

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Abstract :

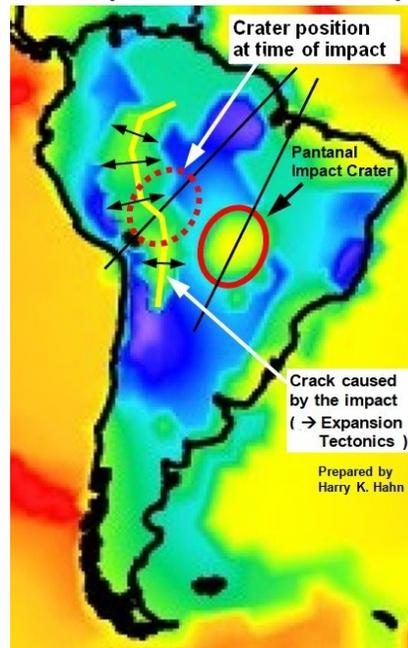
The large 840 x 630 km elliptical Pantanal Crater is easy visible on a Lithosphere-Thickness Map of South-America. A topographic map clearly shows a remaining crater-wall section of this gigantic impact crater. Further indication for the assumed impact crater can be found on a magnetic anomaly map of South America. The impact side is indicated by a red-colored flame-like feature on this map, which indicates the outflow of large amounts of magma from the original crater center.

The Central Atlantic Magmatic Province (CAMP) may be the result of the Pantanal Impact. Because this flame-like feature appears two times on the magnetic anomaly map, the crater area probably was tectonically shifted away from the original impact side in the east, which then produced another outflow at a later time. The Pantanal Impact caused a large crack, visible on the Lithosphere-Thickness Map. Three other large Craters are visible on the different maps. These three craters are in the \varnothing 200-400 km diameter range.

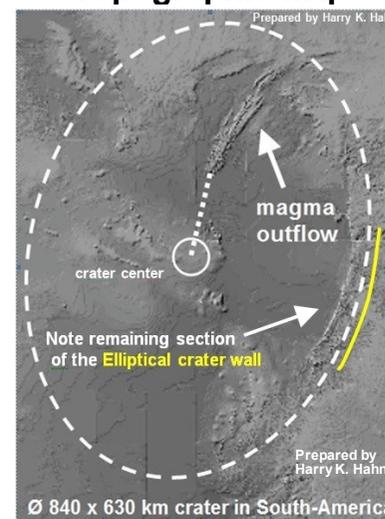
The large craters found on different maps of South-America in all probability are Secondary- Impact Craters which were caused by Ejecta Material from the Permian-Triassic (PT) Impact Event. During the Permian Triassic (PT)-Impact Event which formed the 1270x950 km elliptical PT-Impact Crater a large amount of rock-material was excavated from Earth's crust. The impactor which caused the PT-Impact, was an asteroid or comet in the diameter range of probably 60 to 200 km, which collided with our planet at a very shallow angle of probably less than 8° . Because of its enormous size, the Pantanal Crater may be the result of a large fragment of the PT-Impactor in the diameter range of 30-60 km which either was ejected from the PT-Crater, or which broke-off from the main impactor and travelled a bit further before it impacted in South-America.

Pantanal Impact Crater 840 x 630 km

Lithosphere-Thickness-Map



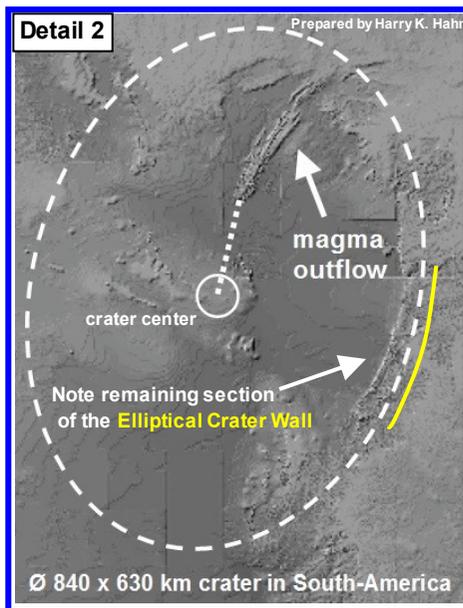
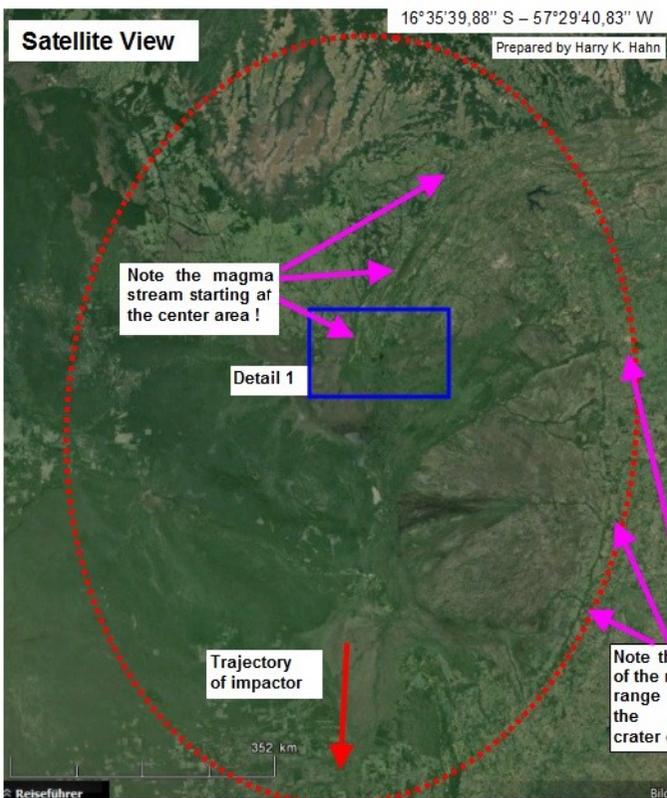
Topographic Map



In South-America a large \varnothing 840 x 630 km Crater exists, which may be connected to the PT - Impact Event 253 Ma ago

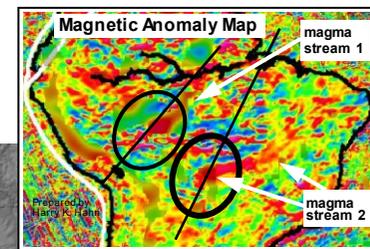
The orientation of this elliptical impact crater indicates that it may be a result of the PT-Impact too ! The special feature on this crater is a solidified magma stream which came straight out of its center ! This magma stream is 30 km wide and it surely had serious longterm effects on the climate ! But it is also possible that this massive Impact happened later, e.g. at the Triassic/Jurassic boundary, and it may have caused the CAMP- Event

The impact crater, which has formed the plane Pantanal area, has also caused an enormous crack in the lithosphere, which has triggered extensive Expansion Tectonics along the Andes in the East of South-America

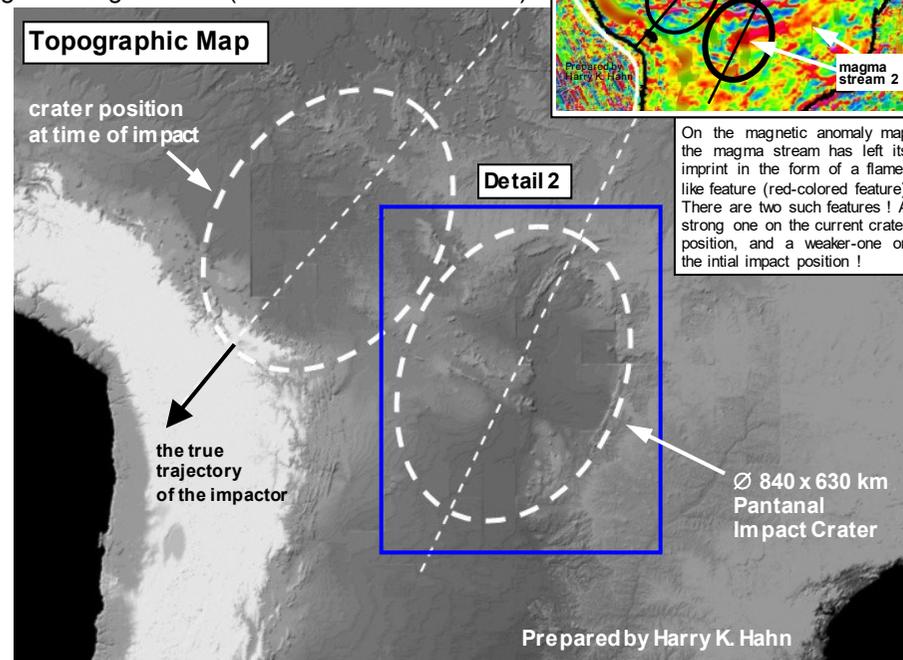
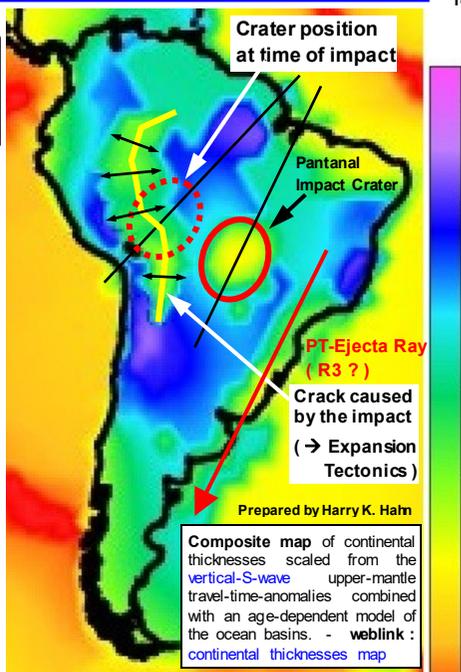
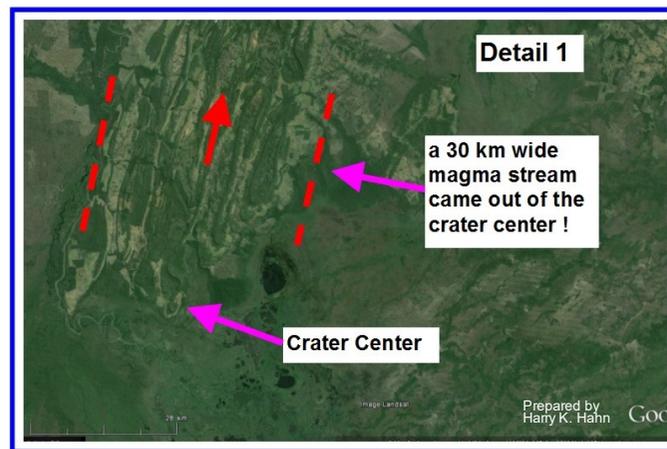


There are different maps which show clear evidence for this impact crater. The topographic map and the satellite map show the remains of the elliptical crater wall and of the magma stream, which flew out of the crater center. The topographic- and the magnetic anomaly map indicate that the crater position was located around 600 km towards the north-west at the time of impact. There are a number of features on the maps which clearly indicate this fact ! The continental (lithosphere)-thickness map shows a "crack", or a "stretching" of the lithosphere over a length of around 1500 km. This crack in the lithosphere runs along the eastern border of the Andes, from Bolivia through Brasilia and up to Colombia ! It is obvious that this enormous crater has caused a fracture through the north of the continent, and it led to Expansion Tectonics and maybe the CAMP- Event, which produced > 1,000,000 km² of new surface area !!

This \varnothing 840 x 630 km elliptical crater caused a > 600 km shift of the north-eastern part of the continent towards south-east. And it probably produced large areas with a great potential for large oil- & gas-fields (around the crater center)

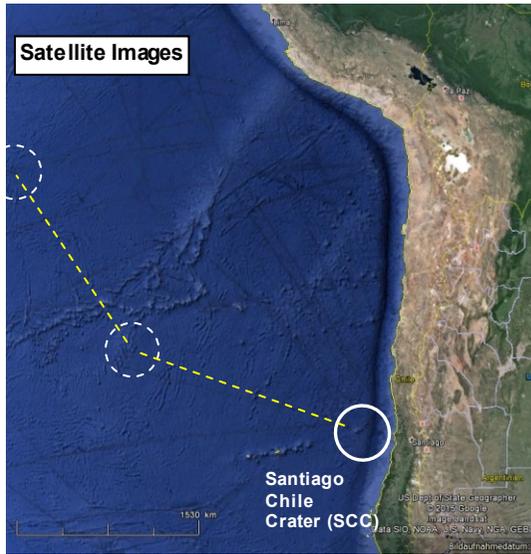


On the magnetic anomaly map the magma stream has left its imprint in the form of a flame-like feature (red-colored feature) ! There are two such features ! A strong one on the current crater position, and a weaker-one on the initial impact position !



Other possible large Impact Craters in South-America, which probably were caused by the PT – Impact Event :

There are other possible Impact Craters in South-America which are indicated by topographic-, gravity anomaly- and magnetic anomaly- features and visible on satellite images (e.g. on Google Earth). These assumed Impact Craters in South-America also seem to be connected to the [PT-impact](#). The image on the bottom left hand side shows the assumed trajectory of a powerful Ejecta Ray of the PT-Impact Event which probably has caused the initial fracture between South-America and Africa, which eventually led to the break-up of Gondwana. Indication for the linear Ejecta-Ray is clearly visible on the Lithosphere-Thickness Map (see previous page)



Other big Impact Craters in South-America :

There are two assumed large impact craters located in two bay-areas on the East-Coast of South-America, and one assumed crater on the West-Coast that may also be a secondary crater caused by the [PT-Impact Event](#) ~ 253 Ma ago.

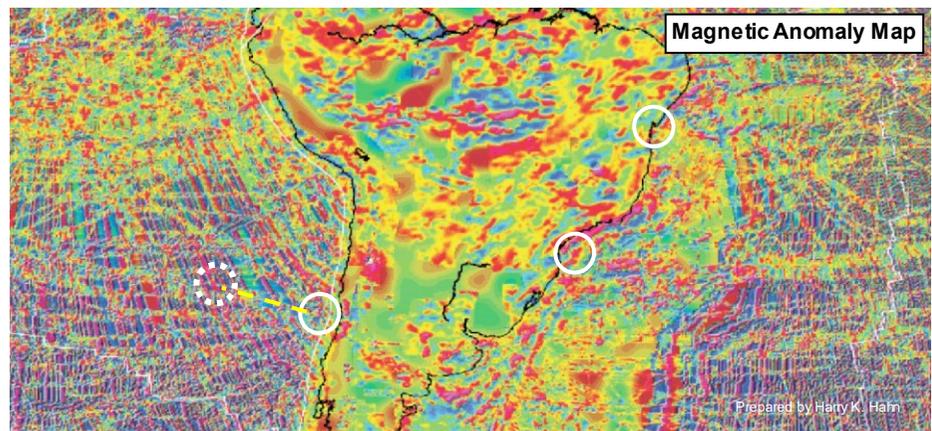
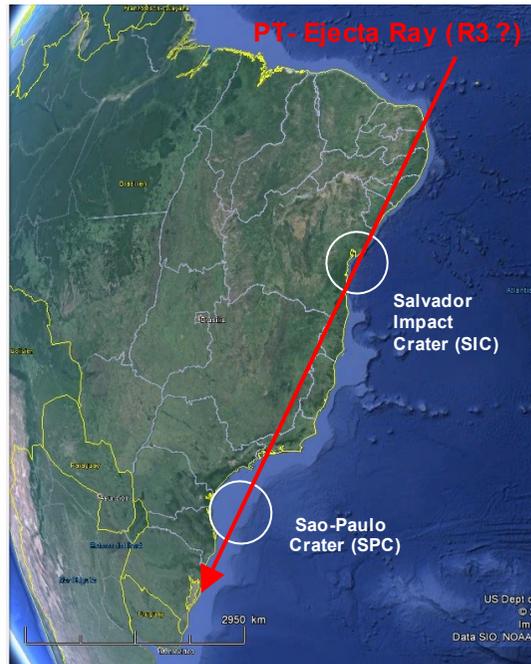
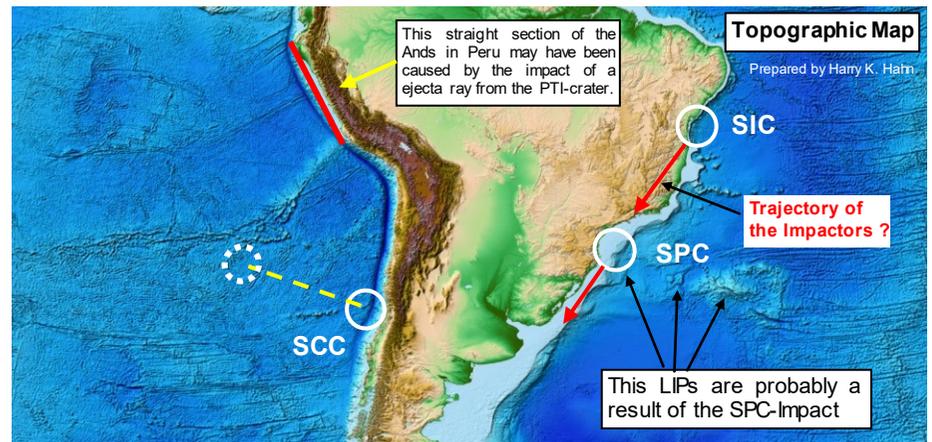
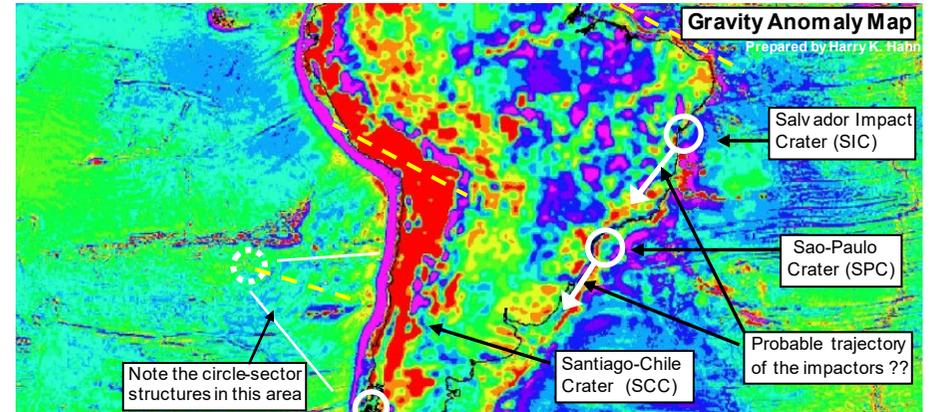
The Gravity Anomaly Map of South-America shows finer structures which indicate two Impact Craters in the **200-400km** diameter range on the East-Coast, and at least one impact-crater just west of the West-Coast of Chile, which seems to be connected to a structure on the ocean floor (→ this structure is indicated by a white dotted circle).

This structure seems to be a trace of a “stop” of this crater (?) in the past, during the ocean floor spreading . Possibly this structure shows a trace of a magma outbreak that was coming from this crater, within the last 100 Ma, similar to the traces of Cape York Crater.

The two assumed impact craters on the east coast of South-America, close to Salvador and Sao Paulo (Curitiba) seem to be (at least partly) responsible for the shape of the east-coast of South-America and the breakup of Gondwana

Both craters, the Salvador Impact Crater (SIC) and the Sao-Paulo Crater (SPC) may belong to the Ejecta-Ray R3 of the PTI, or at least the SIC

The Sao Paulo Crater could also be caused by ejecta from the VLC event. (see part 2 of my study series),



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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1. W. Frisch, M. Meschede, Ronald Blakey : **Plate Tectonics** ; Germany 2011, Springer Verlag ; ISBN : 978-3-540-76503-5 , (e-ISBN: ...-76504-2)
2. G.R. Foulger, D-M. Jurdy : **Plates, Plumes, and Planetary Processes** ; The Geological Society of America, Special Paper 430 ; Boulder Colorado 2007 ; ISBN: 978-0-8137-2430-0
3. P. Kearey, F.J. Vine : **Global Tectonics** , England 1996, Blackwell Science Ltd. , ISBN : 0-86542-924-3

Impact Cratering :

4. C. Koeberl, F. Martinez-Ruiz : **Impact Markers in the Stratigraphic Record** 2003 ; Springer Verlag ; ISBN : 3-540-00630-3
5. G. R. Osinski, E. Pierazzo : **Impact Cratering** ; USA 2013, Wiley-Blackwell Publication ; ISBN : 978-1-4051-9829-5
→ companion website of book : www.wiley.com/go/osinski/impactcratering
6. W.U. Reimold, R.L. Gibson : **Meteorite Impact** ; Council for Geoscience, Germany 2009, Springer Verlag
7. R.L. Gibson, W.U. Reimold : **Large Meteorite Impacts and Planetary Evolution IV** ; The Geological Society of America, Special Paper 465 Boulder Colorado 2010 ; ISBN: 978-0-8137-2465-2

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>