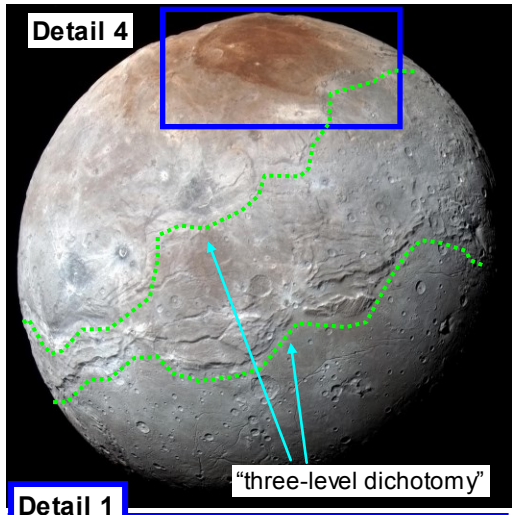
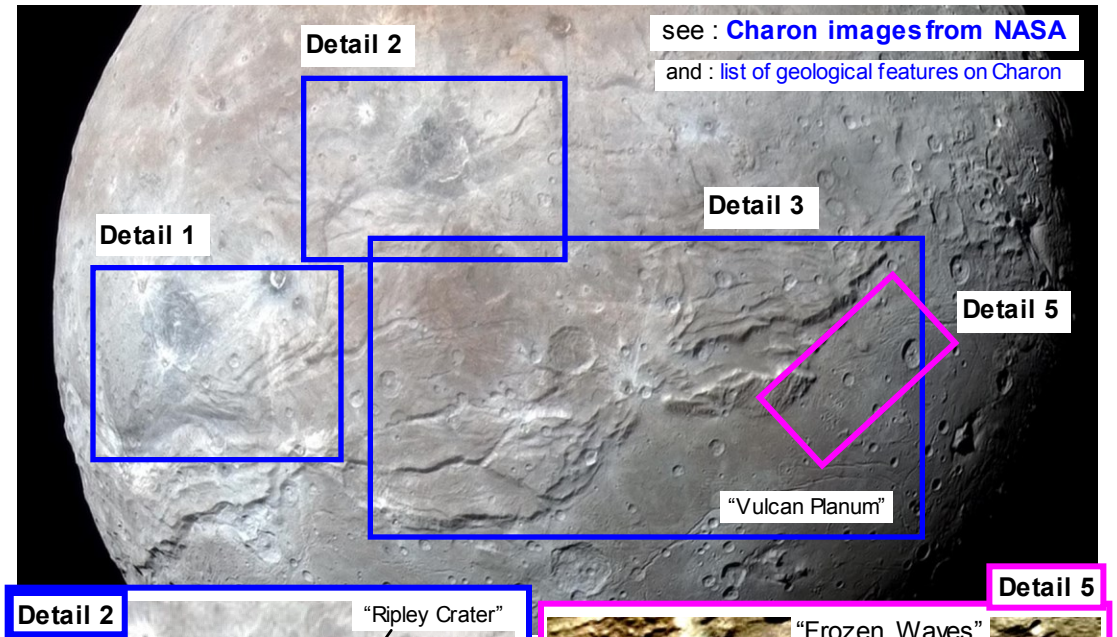
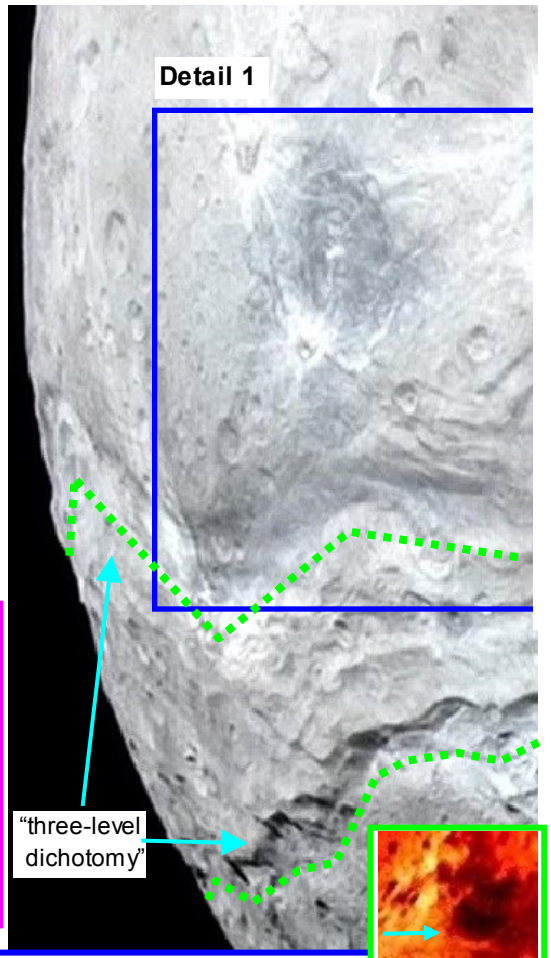
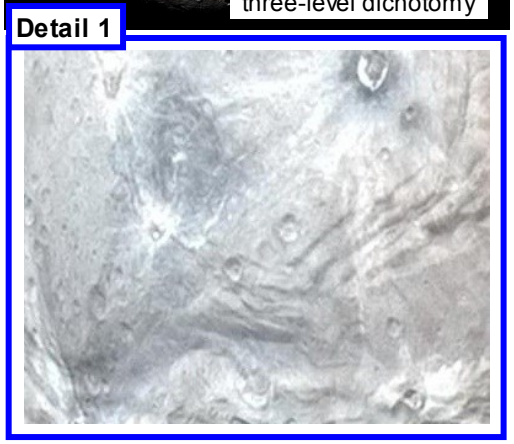
9a The fracture belts on Charon are caused by Comet Impacts, which formed craters in the diameter range ∅ 60-110 km

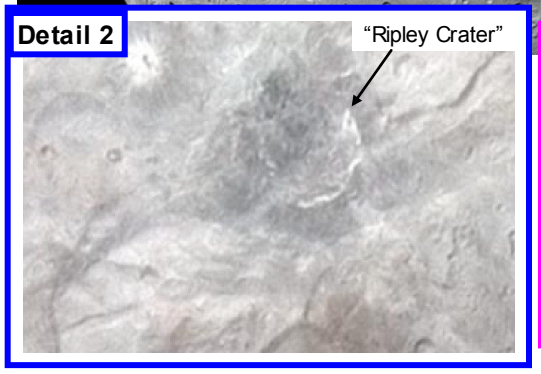
A number of large impact craters, probably caused by high velocity comets, are responsible for the fracturing of Charon's crust. The fractures which resulted from these impacts not only caused the extensive canyon systems on Charon, they also triggered global expansion tectonics on Charon. There is a "three-level dichotomy" visible on Charon which was caused by two global impact events, which happened at different times.

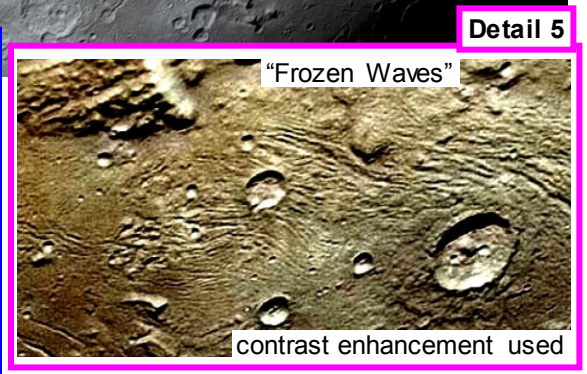


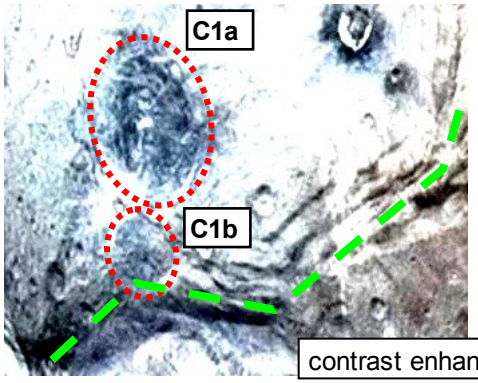


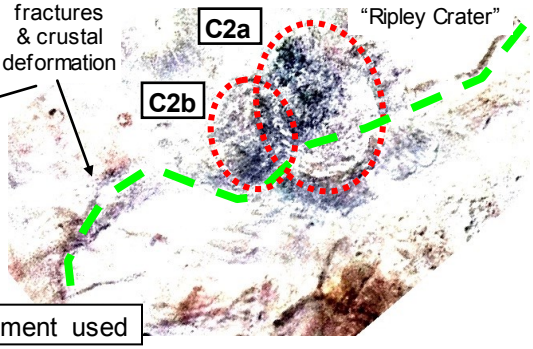




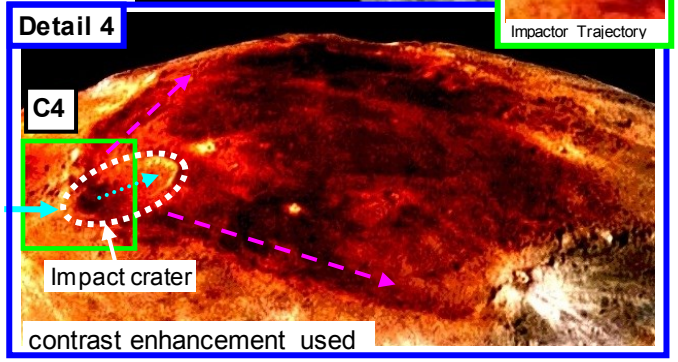






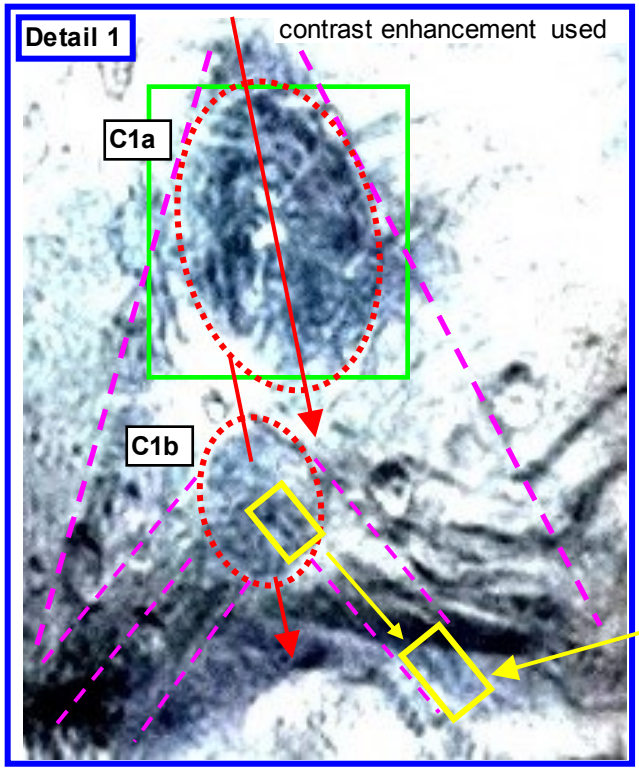


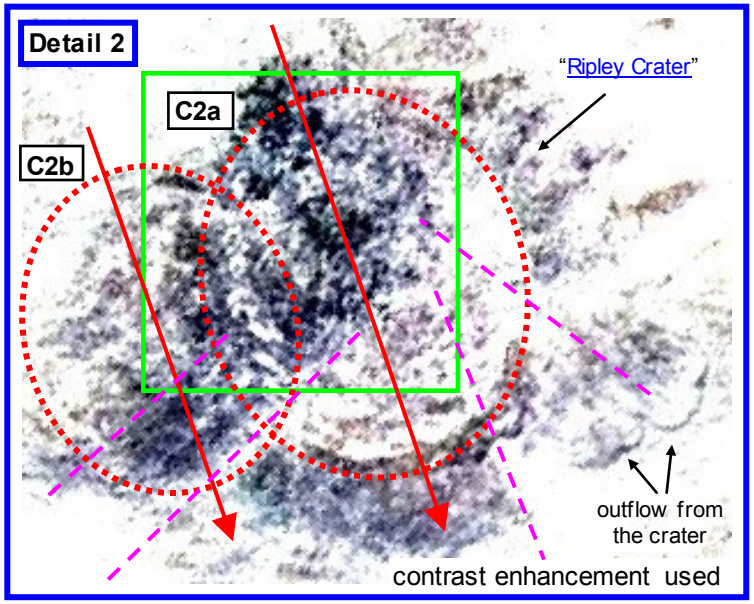
The Impact Craters visible in Details 1 & 2 were probably caused by comet fragments. These impacts are responsible for the fractures and the crustal deformation shown in the Details 1 & 2, which triggered global expansion tectonics and led to the "first dichotomy level". The dark surface markings in the north polar region are probably also the result of a big (carbon-rich) comet impact. See marks & description in Detail 4

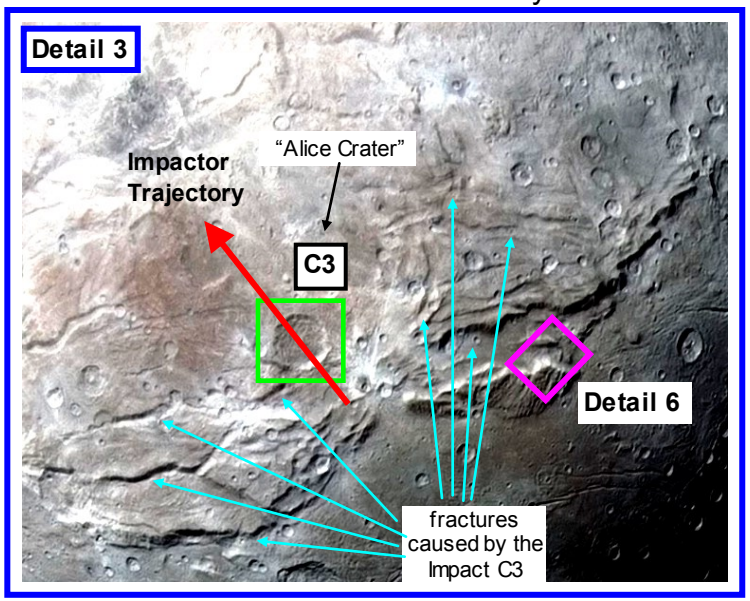


The “three-level-dichotomy” on Charon is a result of expansion tectonics, triggered by impact-induced fractures

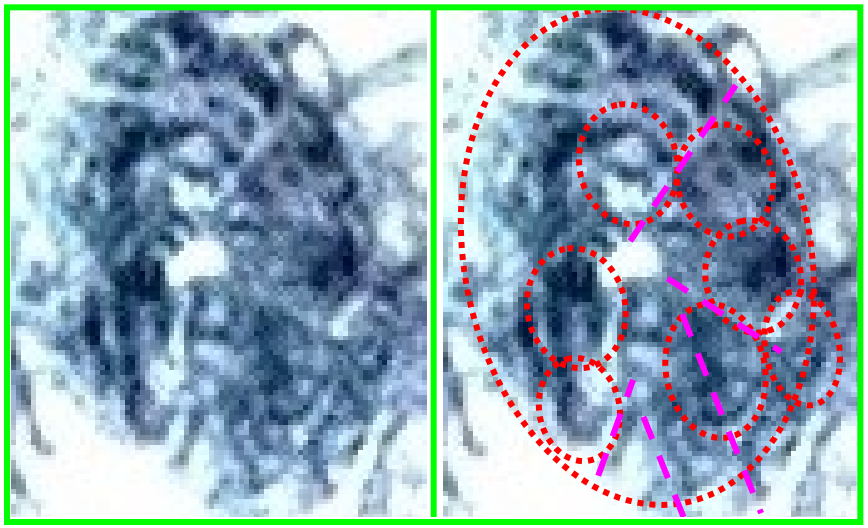
The “first dichotomy level” noticeable on Charon was caused by at least two simultaneous impact events which occured 350 km apart from each other Each of these two impact events not only produced two distinctive crater areas, which again were formed by several (> 10) (comet) fragments. It also caused extensive fractures and deformations in Charon’s crust, which triggered global expansion tectonics and led to this “first dichotomy event”.

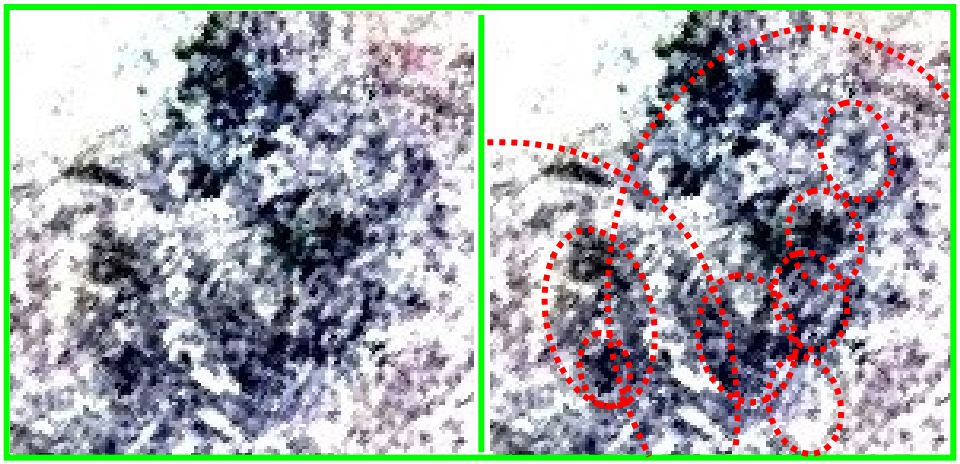




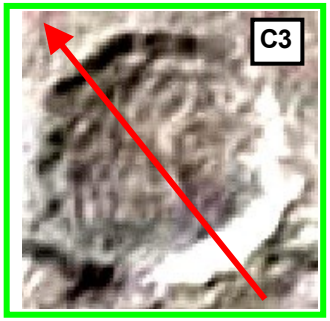


The two sections of the twin ejecta ray (→ yellow boxes) , belonging together, were separated by crustal deformation





The “second dichotomy level” noticeable on Charon was also caused by at least one (or more) large Impact event(s) which led to another intensive episod of global expansion tectonics, which formed the young “Vulcan Planum” area on Charon.
Crater C3, which is probably also the result of a (burst) comet impact, is responsible for the majority of the fractures shown in Detail 3 ! This can be read from the fracture pattern and the trajectory of the comet which produced the impact crater (Alice Crater). The smooth Vulcan Planum is the result of expansion tectonics triggered by the fractrures, which brought large amounts of H_2O- & NH_3-rich material to the surface.



Detail 6 shows landslides probably caused by water-rich material, which probably was deposited by cryovolcanism.
A result of expansion textonics !