

Did the building blocks for Titan form in the same region of the Protosolar Nebula as 67P?

We have shown previously that the nitrogen isotope ratio in Titan's atmosphere could not have evolved significantly over the history of the solar system, and that the primordial ratio must have been similar to the value measured in ammonia in comets. This means that Titan's building blocks formed in conditions similar to comets, allowing them to obtain nitrogen with an isotope ratio that is strongly enriched in the heavy isotope. The noble gases ^{22}Ne and ^{36}Ar were also measured in Titan's atmosphere while upper limits were provided for Kr and Xe. We will compare these observations for Titan with measurement that have been published for noble gas abundances in 67P and evaluate whether they predict similar formation conditions for Titan's building blocks.