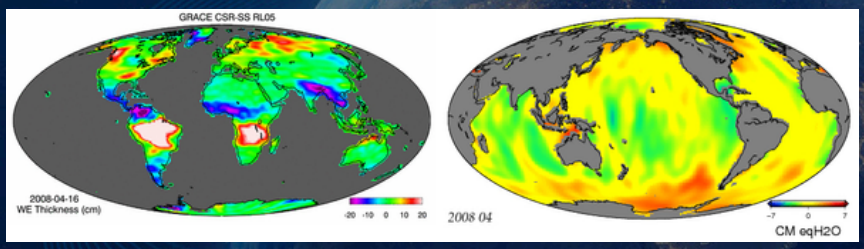
CARIOQA-PMP

Previous gravity field measurement missions leading to CARIOQA

Factsheet 5 : December 2024

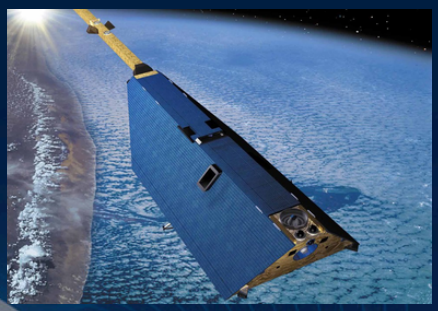
Earth gravity observation from space provides a global view that is not possible to reach with terrestrial gravimeters. The ability to analyse terrestrial gravity from space does not stem from the CARIOQA project. In fact, the CARIOQA mission builds on previous space missions. Several key satellite missions have laid the groundwork for advancements in gravity field measurement, leading up to the CARIOQA groundbreaking mission.



Mapping of Earth gravity from GRACE Mission ©NASA

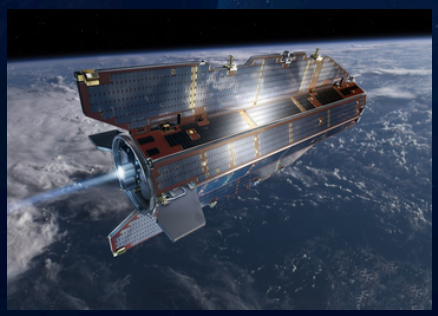
The CHAMP mission, launched in 2000, produced detailed gravity field models, enhancing knowledge of Earth's structure and ocean circulation. Following this, GRACE, launched in 2002, provided monthly gravity maps critical for tracking climate-related changes. The GOCE mission, introduced in 2009, achieved unprecedented precision in gravity measurement, while GRACE-FO, launched in 2018, continued this legacy, offering vital data on the Earth's water cycle and ice sheet changes, and introducing the Laser Ranging Interferometer (LRI) to enhance accuracy.

These missions have paved the way for CARIOQA, which aims to push satellite-based gravity measurement even further, leveraging advanced quantum technologies to provide deeper insights into Earth's gravity and dynamic processes.



CHAMP mission Satellite, concept art. ©NASA PO.DAAC.

GRACE mission Twin Satellites, concept art. ©NASA PO.DAAC.



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