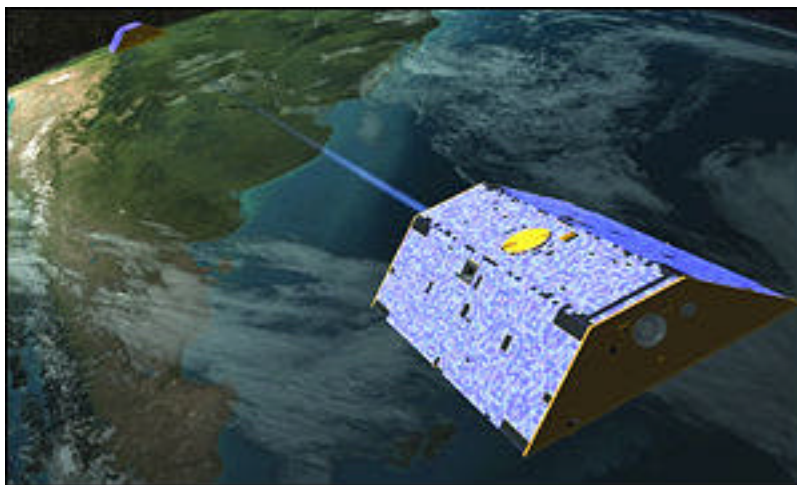


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Monday, 18 March, 2002, 10:43 GMT

Tom and Jerry on weighty mission



Tom and Jerry will fly at a separation of 200 km

Two satellites called Tom and Jerry have launched on a mission to investigate the Earth's shifting water masses and map their effects on the planet's gravity field.

A Rokot vehicle carrying the US-German satellites blasted off from the northern Russian city of Plesetsk on Sunday. The satellites were successfully inserted into a 500-kilometre- (300-mile-) high polar orbit

Tom and Jerry, which each weigh 500 kilograms (1,100 pounds), will circle the planet 16 times a day and fly 200 kilometres (120 miles) apart.

Their monthly gravity maps will be up to 1,000 times more accurate than those currently in use.

Best yet

The Rokot lifted clear of the launch pad at 1221 hours (0921 GMT). It should have gone up on Saturday but the take-off was postponed due to unfavourable weather.

The twin satellites are

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The BBC's Jane Ben Powell

The mission will last years

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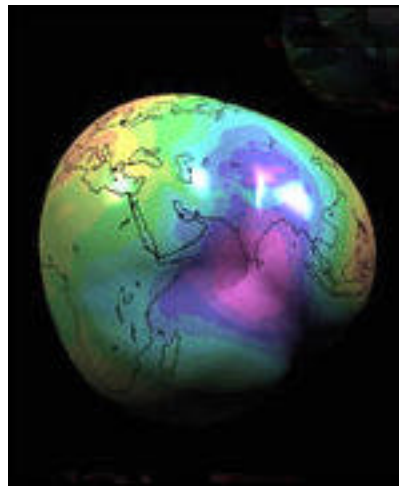
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the products of a German-American project known as Grace (Gravity Recovery And Climate Experiment).

The \$127m spacecraft will fly in tandem to create what scientists expect will be the most accurate map ever of the Earth's gravitational field.



Current gravity maps show the Earth to be very lumpy

The strength of the field varies from place to place due to differences in the density and types of materials that make up the Earth.

Water flow

The five-year mission - put together by the American space agency (Nasa) and the German Centre for Air and Space Flight - will chart large-scale movements of water around the planet.

These shifts in mass result in measurable - although tiny - differences in the planet's gravitational field.

The satellites have been built to sense these minute variations. Regions of slightly stronger gravity will affect the lead satellite first, pulling it slightly away from the trailing satellite.

Scientists will record the constantly changing distance between the two spacecraft, using an extremely sensitive microwave ranging system. This information will be combined with data from precise navigational instruments to construct a detailed Earth gravity map.

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