

## Airborne gravimetry survey for the marine area of the United Arab Emirates

### Abstract

The Military Survey Department (MSD) of the United Arab Emirates (UAE) undertook an airborne gravity survey project for the marine area of the country in 2009, especially to strengthen the marine and coastal geoid in the near-shore regions. For the airborne gravity survey, 5 km spacing coast-parallel flight lines were planned and surveyed. These lines were supplemented by cross-lines in order to assess the quality of the airborne gravity surveys. The flight lines were extended 10 km, spacing lines further offshore. A Beech King Air 350 aircraft was used for the surveys, collecting data at a typical flight speed of 170 knots and a typical flight elevation of 900–1500 m, depending on weather conditions and topography. Gravity was measured with a ZLS-modified LaCoste and Romberg gravimeter (S-99), augmented with a Honeywell strap-down inertial navigation system unit. The estimated accuracy for the airborne gravity data is better than 2.0 mGal r.m.s., as judged from the airborne track crossovers. The new airborne gravimetry data changed the UAE coastal geoid by up to 30 cm in some regions, highlighting the importance of airborne gravity coastal surveys.