eas. We have produced an Airy isostatic residual map, enhancing crustal anomalies better than traditional free air and Bouguer anomaly maps. Density measurements on core samples, hand specimens and in situ on bedrock exposures are essential for the interpretation of these anomalies.

Some of the most prominent gravity and magnetic anomalies in the region are attributed to lower crustal rocks occurring at a shallow level in the crust e.g. along the Lapland Granulite belt in northern Fennoscandia, along the Bamble-Kongsberg Complex in southern Norway and in the Lofoten area. The emplacement of high grade and high-density lower crustal on top of upper crustal rocks produces a distinct gravity anomaly with a steep gradient along the suture zone and a much gentler gradient on the hinterland side. The asymmetry of the gravity anomalies along the Lapland Granulite Belt and Kongsberg-Bamble Complex, combined with the steep gradient, points to the over-thrusted high-grade and high-density granulites as the main source of the observed positive gravity anomaly. The Bouguer gravity anomaly associated with the Kongsberg-Bamble complex can be traced southwards through the Kattegat to the Scania region in southern Sweden. This asymmetric anomaly has previously been related to deep-seated mafic intrusions of Permian age. Our new suture zone interpretation is in accordance with reflection seismic data from northern Skagerrak and Bornholm areas. The regional suture zones were later reactivated as continental rifts. This concept of gravity field modeling can also be applied to the mid-Norwegian continental shelf and partially explain the observed high-density rocks occurring below the Møre and Vøring basins and in the Lofoten area.

Visualization of geoscientific data in the Oslo Region using the GeoSim simulator

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The Geological Survey of Norway (NGU) carried out a comprehensive geoscientific mapping project – GEOS (Geology in the Oslo Region) in 2003-3008. The grater Oslo region has a population of approximately 2 million, representing almost 50% of the Norwegian inhabitants. The area experiences the largest population growth in Norway, imposing needs for new infrastructure such as highways, double-track railroads and construction of new housing. The geological mapping programme included i.a. the identification of areas with radon hazard, landslide hazard, anomalous subsidence (both natural or man-made), polluted soil and groundwater, 3D mapping of construction material deposits, thermal energy, bedrock weakness zones and palaeotropical weathering. Oslo and surrounding areas are also hosting numerous schools and universities needing high-quality tools for teaching geosciences at introduction to advanced levels.

NGU has in collaboration with and University of Oslo utilized the Statoils GeoSim simulator to visualize the large amounts of data in 3D. Bedrock and overburden geology and gravity, aeromagnetic and radiometric maps have in addition to satellite images, orthophotos and radon and tunnel awareness maps been imported into the system. These gridded datasets are draped on a compiled high-resolution bathymetry-topography grid. Also included in GeoSim is electronic teaching material focusing on rocks and geologic structures found in the Oslo Region. Data such as oblique aerial photographs, geological and geophysical interpretation profiles, 3D geological bodies and animations have been added to the system.

The GeoSim simulator has a highly intuitive and visual interface to make virtual excursions and move around in the landscape obtaining a regional overview and geological understanding as well as visiting geological key localities. In the GeoSim simulator, the topography is consequently covered by different attributes such as geologic and geophysical maps, satellite images and aerial photographs in order to allow a comprehensive geological understanding that would be more difficult to obtain by other means. This simulator represents also a way of making available information which would otherwise be little used. The simulator has been utilized in both popular and scientific presentations to visualize the importance of geoscientific data in urban planning as well as geology teaching and training at different levels. The integrated system gives geological knowledge greater interest and accessibility, as well as promoting multidisciplinary collaboration and creativity.

Impact melting: A synthesis

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The melting of large volumes of target rock is one of the most characteristic features of the impact cratering process. Our understanding of impact melting is, however, incomplete. This is due to several factors, including the erosional degradation of many terrestrial impact structures and complications introduced due to inconsistent nomenclature use of terms, such as "suevite", for several types of impactites, which may have different origins [1]. There also remains considerable discussion as to the effect of target lithology on the generation of impact melts, which