placement as well as global grids was started. These products (denoted as Operational Products) are made available for air pressure provided by the *European Center for Medium Range Weather Forecast* (ECMWF), only (see <http://www.sbl.statkart.no/products> for more information on these products).

Atmospheric loading

In 2006, the main focus was on the error budget of the atmospheric loading computation. The goal of the SBL is to achieve predictions with an accuracy of the daily displacements of better than 1 mm in all three coordinate components. Main contributions to the error budget come from differences in the meteorological data sets themselves, miss-modeling of the topographic effect, and miss-modeling of the ocean response to atmospheric pressure and wind forcing. The reference pressure field used to compute the pressure anomaly also needs considerable attention in order to avoid a significant deformation of the ITRF reference polyhedron.

During 2006, progress was made in accurately modeling the effect of Earth's topography on the air pressure anomaly. The long-period variations in air pressure were studied in order to inform a decision on what reference pressure field to use in an ITRF context.

For the prediction of the atmospheric loading signal, the air pressure anomaly is required at a model of the Earth's surface topography with sufficient spatial resolution. The question what spatial resolution would be sufficient is not trivial. In the meteorological models, the Earth's surface is represented by a model orography, typically given with a resolution of one or more degrees. The pressure field at this model orography does not have sufficient spatial resolution to achieve the target accuracy. After some iterations with meteorological institutions (see Plag, 2007, for a summary), an appropriate process of computing pressure at topographic height was found to be based on geopotential heights of isobars. The geopotential heights of isobars are model parameters, which are provided by the meteorological centers for a number of pressure levels on a routine basis. With spatial interpolation (both horizontally and vertically), pressure at topographic height can be computed in a straightforward procedure (see Plag et al., 2007, for details).

In order to quantify the long-term variations in air pressure, decadal averages of the surface pressure fields at topographic height were computed. The topographic heights were taken from the ETOPO5 model (<http://www.ngdc.noaa.gov/mgg/global/etopo5.HTML>) and all computations were done with 5 minutes spatial resolution. The geopotential heights were taken from the ECMWF reanalysis data set (ERA 40, <http://data.ecmwf.int/data/d/era40_daily/>), and these data allowed for the computation of four decadal averages. These decadal averages are available through the SBL web page. Variations from decade to decade are of the order of up to ±3 HPa, which