



Tromsø Geophysical Observatory (TGO) was created in 2000 as a unit under the Faculty of Science and Technology at the University of Tromsø. Although being a young institution, TGO continues the heritage of the Auroral Observatory in Tromsø that goes 100 years back in time.

TGO's main purpose is to maintain long-term observations of geophysical processes in the ionosphere/upper atmosphere above Tromsø and in general in Norway.



Pic. 1: The Auroral Observatory in Tromsø in 1955. The left building was the observatory building, while the right building was the living quarters for the staff.

Permanent geophysical observations were started in Northern Norway in 1912 by the establishment of a permanent auroral observatory on the Haldde Mountain close to



Pic. 2: Leiv M. Harang performing absolute measurements of the geomagnetic field in Tromsø. His name is immortalized in the "Harang discontinuity" which is observed when a magnetic observatory transits from the evening to the morning ionospheric convection cell in the high latitude nightside ionosphere.

Alta some 150 km East of Tromsø. In 1928 the Norwegian Institute of Cosmic Physics (NIKF) was established in order to take responsibility of observations and research in subjects related to the Aurora Borealis in Norway. To improve the observational conditions the activity on Haldde was closed down and a new and modern observatory, the Auroral Observatory, was finished the same year. With the establishment of the University of Tromsø in 1972 NIKF was discontinued and the University took over the observatory commitments which are now being performed by TGO. Through history the main focus at the Auroral Observatory has been related to auroral



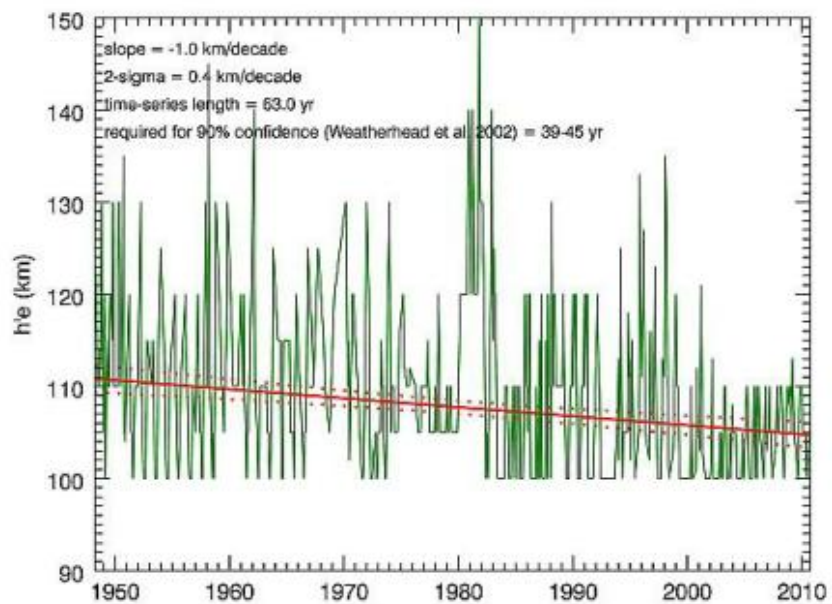
processes. From the beginning measurements of the geomagnetic field has been performed as well as photographic and spectrographic work related to the altitude and emissions of the aurora. In these fields, famous names like Leiv Harang, Lars Vegard, Carl Størmer and Willy Stoffregen are closely connected to the Auroral Observatory in Tromsø. In 1932 Sir E. V. Appelton started vertical electron density soundings in Tromsø, and since then an ionosonde has been in operation. These electron density measurements represent one of the longest time series of their kind in the world.

Today the main focus areas of TGO are monitoring of the geomagnetic field and vertical electron density soundings. TGO currently has 14 magnetometers, of which 3 are magnetic observatories, distributed across mainland Norway and the Arctic Ocean.

The ionosonde currently being operated in Tromsø is a collaboration between TGO and

QinetiQ. TGO is involved in collaborations running several meteor radars, a MF radar and the SOUSY MST radar in Svalbard. TGO is also responsible for the Ramfjordmoen Research Station outside Tromsø, where a wide range of guest instruments such as all-sky cameras, spectrographs and a lidar system are hosted.

Today TGO has 6 employees and is involved in the supervision of two PhD students. In addition of being an AFFECTS partner, TGO is also involved with other space weather related projects such as the SP-7 project ESPAS and the ESA space weather initiative. TGO's web-pages may be found at <http://www.tgo.uit.no/>.



Pic. 3: Monthly medians of the E-region virtual altitude maximum as measured by the Tromsø ionosonde. The red line indicates the declining latitude owing to mesospheric cooling (Hall, C. M., K. Rypdal, and M. Rypdal (2011), The E region at 69°N, 19°E: Trends, significances, and detectability, *J. Geophys. Res.*, 116, A05309, doi:10.1029/2011JA016431).