

Upgrading the Metsähovi Geodetic Research Station

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Abstract. Metsähovi Geodetic Research Station (MGRS) of the National Land Survey of Finland, has been undergoing a major upgrade. First SLR observations were started in 1978, and later GPS, DORIS, superconducting and absolute gravimeters. During decades the equipment and facilities became outdated. A decade-long reform began in 2012, during which all major equipment was renewed. This included a new SLR system and geodetic radio telescope, and the area's infrastructure has been completely refurbished. When completed, MGRS will be one of the northernmost stations in the global geodetic core network of the International Association of Geodesy (IAG) with a full suite of co-located space geodetic instrumentation, including Global Navigation Satellite Systems (GNSS) receivers, Satellite Laser Ranging (SLR), Very Long Baseline Interferometer (VLBI) radio telescope, The Doppler Orbitography and Radio-positioning Integrated by Satellite instrument (DORIS), absolute and superconducting gravimeters, and local geodetic networks and facilities to connect various observing techniques. Together, the core stations form the solid backbone for maintaining the International Terrestrial Reference Frame (ITRF), monitoring the orientation of the Earth in space, global tectonic movements, and producing information for computing precise orbits of satellites, including GNSS. The stability of the stations and their long and stable series of observations is paramount both for global and regional networks. Since 1992 MGRS has been a part of the IGS network, currently a member of GGOS Space Geodetic Network, and it has produced data for EUREF Permanent GNSS Network (EPN) since the very beginning of EPN. We present recent developments at MGRS and introduce the instrumentation that already contributes and will contribute in the future to various IAG services.