The UNAVCO Facility is actively investigating a number of details critical to the implementation and operation of next generation high-precision GNSS networks. The addition of new GPS signals and new GNSS constellations to IGS stations will require that new hardware, infrastructure, data formats and software be carefully evaluated and modified. UNAVCO’s Development and Testing group is testing the current offerings from seven leading GNSS hardware manufacturers; results will be discussed. Critical findings regarding the impacts of near-band RF interference on tracking characteristics of new hardware will be highlighted.

Many global GNSS stations which are co-located with other space geodetic techniques such as SLR, and VLBI are in need of equipment upgrades, especially antenna and/or antenna/radome replacement. The data from these stations are used in the determination of the Global Geodetic Reference Frame, thus requiring delicate modifications in order to preserve sub-millimeter accuracy in positions. Suitable techniques will be discussed.

The high reliance of data flow on UNAVCO’s teqc pre-processing software, especially for UNIX-based systems, and the IGS push to embrace RINEX 3.xx are at odds. UNAVCO is developing an interim 2.xx specification, which could be easily accommodated by the teqc design and would differentiate between coarse and precise phase L1 and L2 in GPS and GLONASS, add QZSS support, and any additional enhancements for Galileo data. Such a new 2.xx would also be more adaptable than RINEX 3.xx to any processing software, which can already read RINEX 2.11. BINEX format enhancements for new observables are also under active development.