Radiosonde Replacement System (RRS) at WFO Glasgow

The National Weather Service at Glasgow, MT has a new Upper Air system. The old legacy system, Automatic Radio-Theodolite, or ART has been replaced with the new Radiosonde Replacement System, or RRS. The same protective dome for the tracking dish, as well as the same balloons for sending up the radiosonde are still being used, otherwise this is a whole new and improved system.

The National Weather Service upper air legacy systems that are still in use today at over half of the locations in the USA have complex mechanical ground system components, which are difficult to maintain and costly to replace. The NWS is replacing its current, aging network of upper air observing systems with modern, more reliable systems that will provide soundings with increased resolution and accuracy. The RRS is a leap forward from previous sounding systems. It uses a state-of-the-art ground tracking system and a Global Positioning System (GPS)-based radiosonde.

The term radiosonde is a contraction for radio-sounding device. The device measures the ambient pressure, temperature, and moisture. Winds are measured from changes in the radiosonde position during the flight. When attached to a weather balloon filled with a lighter-than-air gas, radiosondes can attain heights in excess of 30 km, or 100,000 feet.

The radiosonde is one of the most critical observational tools for obtaining atmospheric measurements required for numerical prediction, research models, climatology, and regional forecasts. It also serves as the benchmark from which estimates of satellite and thermodynamic profiler temperature and moisture retrievals are derived. Rawinsonde observations (short for radio-wind sounding) form the backbone of weather forecasts and upper air analyses as part of the World Meteorological Organization's, World Weather Watch. Of the 800 or more upper air stations around the world, the United States operates a network of over 90 upper air observing stations reaching from the conterminous United States to pacific islands near Japan, and from Alaska to below the equator.

So once again the Glasgow weather office has moved toward the future with more updated equipment to compliment the WSRD 88 Doppler Radar, AWIPS computer communications system, Console Replacement System (NOAA Weather Radio) and the myriad of new and changing computer systems and models used throughout daily operations.