

Timeline:

# The evolution of upper air measurement

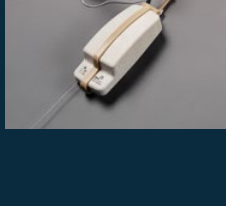
Nearly 90 years ago, Professor Vilho Väisälä put the finishing touches on his first commercial radiosonde. Today, most atmospheric soundings around the world are performed with Vaisala sounding equipment.

Here is how our first groundbreaking technology has led to the organization we are today.



**2024**

Vaisala introduces new security features in Radiosonde RS41 models and Vaisala Cirrus® Sounding System MW51: multi-GNSS support and message authentication. These features help meteorological agencies defend against GPS interference and cyberattacks.



**2023**

Vaisala launches Radiosonde RS41 E-models with Vaisala BioCover™ and BioTwine™ that combine high-quality atmospheric sounding data with innovative, biodegradable materials to help reduce plastic waste originating from sounding operations.

NCAR Dropsonde NRD41\* debuts as a meteorological measurement device for use in atmospheric profiling from aircraft flight level to surface.



**2022**

Vaisala Cirrus® Sounding System MW51 provides a generational leap in upper-air observations. The MW51 is equipped with all new built-to-purpose Vaisala Cirrus Sounding Processing Subsystem SPS511, and DigiCORA® Software which offer never before seen features in sounding capability.



**2018**

Vaisala raises the bar for automatic soundings with the release of the Vaisala AUTOSONDE® AS41, a completely new upper-air observation system for synoptic and adaptive use.

Vaisala Dropsonde RD41\* debuts as a meteorological measurement device that takes atmospheric profilings from aircraft flight level to surface.



**2013**

The Vaisala Radiosonde RS41 is released and combined with the Vaisala DigiCORA® Sounding System MW41. It introduces new standards in both technology and usability.



**2012**

Vaisala launches Vaisala DigiCORA® Sounding System MW41, the first part of the next-generation radiosonde system. MW41 takes the sounding operational experience to a new level.



**2009**

Vaisala introduces the second generation Vaisala MARWIN® Sounding System for demanding environmental conditions. It meets a number of focal MIL-STD and other applicable requirements including operating environment and electromagnetic compatibility.



**2003**

The Vaisala Radiosonde RS92 features new high-performing sensors designed for radiosonde use, featuring Vaisala's method of applying GPS to wind measurement. The next sounding system version, Vaisala DigiCORA® Sounding System MW31, gives meteorologists comfortable control over the sounding process by integrating sounding controls, archiving the sounding data, and meteorological messaging.



**1999**

Vaisala DigiCORA® Sounding System MW21 is introduced. It features data and messages transmitted over the Internet, together with a user-friendly graphical interface. A BUFR message coding program is implemented in 2001.



**1997**

Vaisala delivers the first dropsondes. The National Center for Atmospheric Research (NCAR) and Vaisala enter into a licensing agreement on dropsonde design. NCAR designs the "GPS Dropwindsonde" using Vaisala core technology for pressure, temperature, humidity and wind finding. This dropsonde is renamed the Vaisala Dropsonde RD93\*.

*\*The dropsonde, aircraft data system hardware and software are designed by the Earth Observing Laboratory of the National Center of Atmospheric Research in Boulder, Colorado, USA and built by Vaisala under license from UCAR.*



**1996**

Vaisala introduces GPS for upper-air wind measurements. GPS technology offers substantially more detailed profiling of upper-air wind patterns.



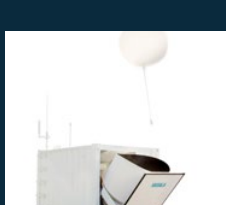
**1994**

The first Vaisala Automatic Sounding Station AUTOSONDE® is delivered—a robot that prepares and releases a radiosonde without human intervention.



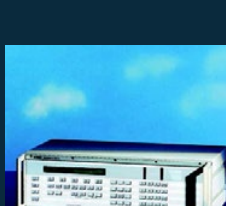
**1987**

Vaisala introduces the first version of the 1680 MHz radiotheodolite for defense applications.



**1986**

Vaisala introduces the compact ASAP Sounding Station, a semi-automatic upper-air observation station for use on board ships. ASAP receives the radiosonde signals and converts them into meteorological messages.



**1985**

The Vaisala DigiCORA® Sounding System MW11 is introduced. It features a self-guiding menu for operation through front panel keys, comprehensive self-testing, and built-in battery backup. An automatic telemetry system control is introduced. The next version—DigiCORA® Sounding System MW15 (pictured)—is compact and portable.



**1981**

The Vaisala Radiosonde RS80 sets a new standard in synoptic upper-air observation. New methods for measuring small capacitances and an electronic switch are patented worldwide. It becomes the WMO's "transfer standard" in radiosonde comparison tests.



**1977**

WMO chooses Vaisala Radiosonde RS21 as the radiosonde for the FGGE (First GARP Global Experiment). This was the beginning of the great success of Omega based wind finding. Picture shows RS21 launch on board of a research ship, late 1970s.



**1975**

Vaisala introduces the CORA® Automatic Sounding System. It features wind measurement based on the Omega NAVOID network, and automatic coding of TEMP messages. The world-famous MicroCORA (pictured) enters the market in 1981. It is in use until the termination of the Omega network in 1997.



**1973**

The Vaisala Radiosonde RS21 offers an improved temperature sensor and a thin film, the HUMICAP® humidity sensor. 400 MHz telemetry opens the door to mobile radiosonde systems.



**1969**

The Vaisala Radiosonde RS16 is equipped with a thin wire thermometer. The WMO grants it temperature reference radiosonde status.



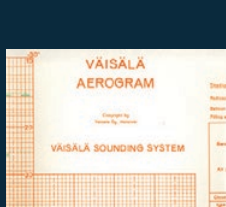
**1965**

The Vaisala Radiosonde RS13 is the world's first fully transistorized radiosonde—much lighter than previous models, with better performance and new measuring elements.



**1950**

Väisälä Radiotheodolite for upper-air wind measurement is introduced in the early 1950s. It works in the 25 MHz frequency band.



**1936**

Prof Väisälä develops the Väisälä Aerogram, in use for 50 years. The Aerogram is a graphical aid to determine hydrostatic altitude for pressure levels.



**1936**

The Vaisala Radiosonde RS11 wins Gold Medal at the 1937 World Fair in Paris. This was Professor Vilho Väisälä's first commercial radiosonde, delivered to MIT, USA on July 30th, 1936.

Through innovation, industry commitment, and an innate curiosity, Vaisala strives to produce high-quality and dependable instruments and intelligence for taking every measure for the planet.

Professor Väisälä, Ph.D. Mathematics, Prof. Meteorology, was a member of the WMO's Commissions for Aerology (CAe) and for Instruments and Methods of Observation (CI MO). He was founder and longtime Managing Director of Vaisala.



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