WEATHER STATION

ST-WMO

ST-BASE

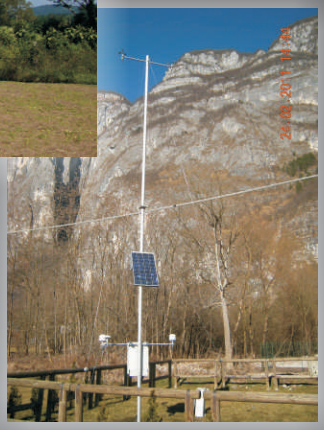
ST-M36

STP

NESA Environmental monitoring system & remote controls

WEATHER STATIONS

What are?



Stations are **realized according to WMO Directive (World Meteorological Organization)**, **Annex 8**, and are used for meteorological forecasts.
Instrumentation and its implementation are done in compliance to WMO directives.
Support structures (poles and lattices) in anodized aluminium or galvanized iron at different heights, allow an easy transport and facilitate the installation also in impervious areas, where there are difficulties to access.
The **low consumption** of the station, allows a long autonomy also with a **little solar panel of 20W power.**
All typologies of stations **are realized according to definite directives,** which responding to different norms depending on the application:

- **ST-WMO:** Weather station according to **WMO standard.**
- **ST-M36:** Landfills monitoring station **according to D.Lgs 36/2003**
- **ST-BASE:** Weather station with **standard parameters** for application of **basic meteorology**.
- **STP:** **Thermal-pluviometric** station for application in hydrology and meteorology used in agriculture.

Each **station is configured** (in factory or from the user) to acquire weather data agree **with specific procedures and intervals of time for elaboration.**
The acquisition of the primary sample is made with programmable time scan **from 1 to 3600 seconds** (typically 2 seconds).
Elaborations normally applied to data are those required by WMO: **instantaneous value, average, minimum, maximum, totalization, standard deviation and mean square deviation;** other elaborations are available also by inserting of corrective customized formula.
The **recording of elaborated data** is programmable **from 1 to 1440 minutes (typ. 10 min.)**.
The **data recording** is made on **2 memory supports**:
- internal memory of 32MB capacity;
- external memory (USB memory) from 2GB to 4GB;

Data are recorded as is (in a text file) or **encrypted** (algorithm AES 256bit).
The **connection** via GPRS, radio, satellite, etc, permits the **management of the control unit a**nd data in a very simple way from remote too, **by simple web interfaces without any specific software.**

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ST-WMO How is it composed?

Principal components (but not binding) of a **WMO station**, in addition to pole or support lattice, are:
Datalogger TMF100 o TMF500 for elaboration and registration of all acquired data from the connected instrumentation (sensors), and their transfer to a collection center, via GPRS, UMTS, cable, radio or satellite, by different protocols (serial, Modbus, FTP, TCP-IP, etc.). The acquisition can be programmed continuously, or at specific intervals of acquisition.
It's equipped with **Linux operative system**, that has a really easy management and interfacing trough special web pages. Principal components are:

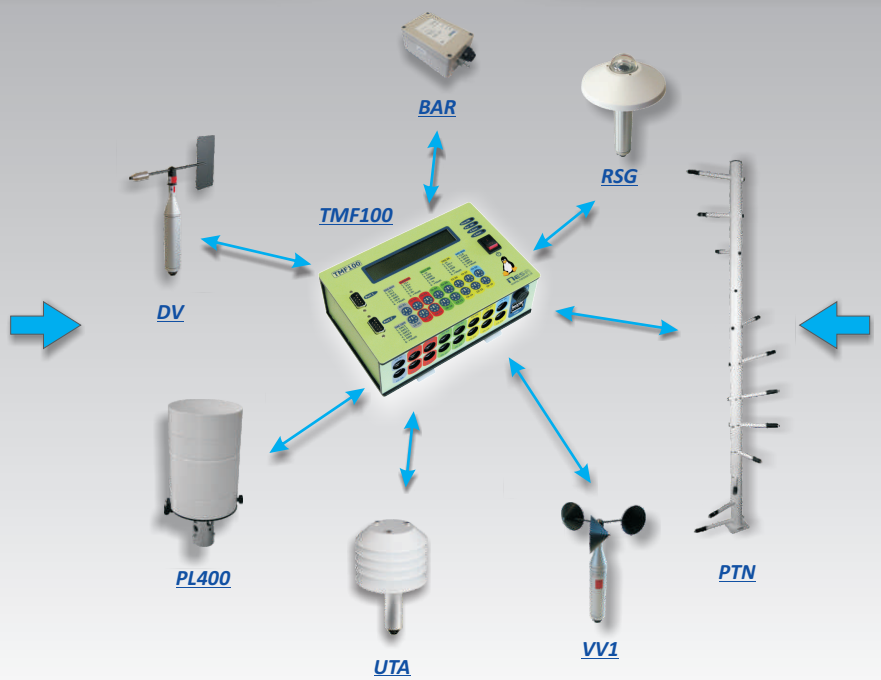
- **VV1** Sensor according to WMO norms to measure the Wind Speed
- **DV** Sensor according to WMO norms to measure the Wind Direction
- **UTA** Combined sensor according to WMO norms for temperature (T) and Air Humidity (Rh), or single sensors
- **RSG** Thermopile sensor for global solar radiation according to WMO (I, II Class and Secondary Standard)
- **BAR** Electronic barometer according to WMO
- **Pl400** Rain gauge Class A (UNI 11552:2012) according to WMO (mouth of 400cm2)
- **PTN** Snow Temperature Profiler with 12 Pt100 1/5DIN as sensors

The **data downloading** from every station happens mainly **in 4 ways**:

- **On site**: **via LAN**, connecting a portable PC or similar with internet browser (es. Internet Explorer, Chrome, Firefox).
- **On site**: taking/replacing the **USB** memory.
- **Remotely**: by data transmission module **GPRS-UMTS, radio or satellite**, connected to a serial port of the control unit, trough **FTP protocol** (File Transfer Protocol) with user authentication.
- **Cable**: downloading data continuously or at intervals via serial, Modbus, TCP-IP, FTP, etc.

Instantaneous data visualization: Instantaneous data of the station can be visualized both trough the **datalogger's display** and by link (local or remote) to the control unit with Internet browser (**dedicated web pages**) where it's possible to have data in table or graphic format with a tracking in real time of acquired measures.

Programming: Station's datalogger is totally **configurable** and it's possible to program **specific calculation algorithms** (Penman Monteith, Pasquill, QNH, Dew Point, Sun Shine duration Algorithm, etc.). Thanks to an open system (Linux) it's possible **the development of customized application software** directly by the user.



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ST-WMO Performace

- Weather Sensors **according to WMO** (World Meteorological Organization) standard – Annex 8
- **Data elaboration**: instantaneous datum, medium, totalization gust, standard deviation, etc.
- **Data transmission**: GPRS/UMTS, satellite, modem, radio, cable.
- **Different transfer protocols**: serial, Modbus, TCP, FTP. on request NMEA, SDI12, etc.
- Possibility of **specific calculations** about the atmospheric stability and meteorological in general (Pasquill, Penman Monteith, etc.), or with **algorithms implementable by the user**.
- **Real time visualization** of instantaneous data for each measured parameter and **programming**, both in **local and from remote**.
- **Automatic and pre-configurable management** of **alarms on threshold or on event**, with activation of **relay commands** or **SMS messages sending** to indicator panels.
- **Large data memory** both internal and from **removable support (USB)** able to record a storage of **over 4 years of data**.
- **Possibility to connect** to the datalogger **other sensors** or instruments with **analogical interface 0÷2Vdc or 4÷20mA** or digital (contact or frequency) or serial (RS232, RS485, etc.).
- **Low energy consumption** (<1W), with alimentation from primary network (110/220Vac) or from photovoltaic panel.
- Service for **periodic recalibration** of all instrumentation with release of the new calibration report.

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NESA Srl - Via Sartori, 6/8 - 31020 - Vidor (TV) Italy, Web: www.nesasrl.it
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Environmental monitoring system & remote controls

ST-M36 How is it composed?

Mainly components (but not binding) of a **ST-M36 station**, in addition to pole or support lattice, are:
Datalogger TMF100 o TMF500 for data elaboration and registration according to Table 2 of D.Lgs 36/2003, and their transfer to a collection center, via GPRS, UMTS, cable, radio or satellite, by different protocols (serial, Modbus, FTP, TCP-IP, etc.). It's equipped with **Linux operative system**, that has a really easy management and interfacing trough special web pages. Principal components are:

VV1	Sensor according to WMO norms to measure the Wind Speed
DV	Sensor according to WMO norms to measure the Wind Direction
UTA	Combined sensor according to WMO norms for temperature (T) and Air Humidity (Rh), or single sensors
RSG	Thermopile sensor for global solar radiation according to WMO (I, II Class and Secondary Standard)
RSN	Net solar radiation sensor for the calculation of evapotranspiration according to Penman Monteith
BAR	Electronic barometer according to WMO
Pl400	Rain gauge Class A (UNI 11552:2012) according to WMO (mouth of 400cm2)
WMP6	Multiparametric probe with 4 or 6 parameters **for checking pollutants in water layers**
LP10	Piezometric water level sensor

Other sensors can be easily add in every moment (for example **air gas analysis sensor**).

The **data downloading** from every station happens mainly **in 4 ways**:

- **On site**: **via LAN**, connecting a portable PC or similar with internet browser (es. Internet Explorer, Chrome, Firefox).
- **On site**: taking/replacing the **USB** memory.
- **Remotely**: by data transmission module **GPRS-UMTS, radio or satellite**, connected to a serial port of the control unit, trough **FTP protocol** (File Transfer Protocol) with user authentication.
- **Cable**: downloading data continuously or at intervals via serial, Modbus, TCP-IP, FTP, etc.

Instantaneous data visualization: Instantaneous data of the station can be visualized both trough the **datalogger's display** and by link (local or remote) to the control unit with Internet browser (**dedicated web pages**) where it's possible to have data in table or graphic format with a tracking in real time of acquired measures.

Programming: Station's datalogger is totally **configurable** and it's possible to program **specific calculation algorithms** (Penman Monteith, Pasquill, QNH, Dew Point, Sun Shine duration Algorithm, etc.).

The **station can manage individually dangerous situations** both by **relay command**, **analogical PID** and by remote **sending of files and SMS**. The overcoming of thresholds is calculated by the ST-M36 station on specific elaborations (programmable) in a chosen period of time. This management is applied also for the re-entry of alarms that can happen automatically or manually by user (attestation).

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ST-M36 Performace

- Weather Sensors **according to D.Lgs. 36/2003 and WMO** (World Meteorological Organization) standard – Annex 8
- **Data elaboration**: instantaneous datum, medium, totalization gust, standard deviation, etc.
- **Data transmission**: GPRS/UMTS, satellite, modem, radio, cable.
- **Specific elaborations** of the atmospheric stability and the **evapotranspiration** (Pasquill, Penman Monteith, etc.)..
- **Real time visualization** of instantaneous data for each measured parameter and **programming**, both in **local and from remote**.
- **Automatic and pre-configurable management** of **alarms on threshold or on event**, with activation of **relay commands** or **SMS messages sending** to indicator panels.
- **Large data memory** both internal and from **removable support (USB)** able to record a storage of **over 4 years of data**.
- **Possibility to connect** to the datalogger **other sensors** or instruments with **analogical interface 0÷2Vdc or 4÷20mA** or digital (contact or frequency) or serial (RS232, RS485, etc.).
- Service for **periodic recalibration** of all instrumentation with release of the new calibration report.
- **Remote data management** on **web pages** with representation of **wind rose and storage** of the measures trend for a quickly check (IRIS)

Iris

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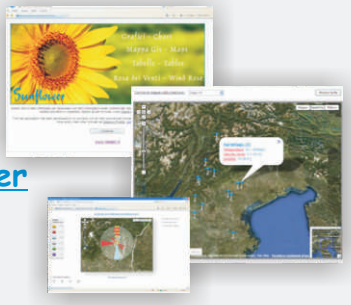
ST-BASE Performace

- Weather Sensors **according to WMO** (World Meteorological Organization) standard – Annex 8
- **Data elaboration**: instantaneous datum, medium, totalization gust, standard deviation, etc.
- **Data transmission**: GPRS/UMTS, satellite, modem, radio, cable.
- **Different transfer protocols**: serial, Modbus, TCP, FTP. on request NMEA, SDI12, etc.
- Possibility of **specific calculations** about the atmospheric stability and meteorological in general (Pasquill, Penman Monteith, etc.), or with **algorithms implementable by the user**.
- **Real time visualization** of instantaneous data for each measured parameter and **programming**, both in **local and from remote**.
- **Automatic and pre-configurable management** of **alarms on threshold or on event**, with activation of **relay commands** or **SMS messages sending** to indicator panels.
- **Large data memory** both internal and from **removable support (USB)** able to record a storage of **over 4 years of data**.
- **Low energy consumption** (<1W), with alimentation from primary network (110/220Vac) or from photovoltaic panel.
- **Remote data management** on **web pages** with representation of **wind rose and storage** of the measures trend for a quickly check (IRIS)



Sunflower

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Environmental monitoring system & remote controls

ST-BASE How is it composed?

Mainly components (but not binding) of a **ST-BASE station**, , are those necessary for the standard meteo monitoring (**6 parameters**) and include:
Datalogger TMF100 o TMF500 for data elaboration and registration according to WMO, and their transfer to a collection center, via GPRS, UMTS, cable, radio or satellite, by different protocols (serial, Modbus, FTP, TCP-IP, etc.). It's equipped with **Linux operative system**, that has a really easy management and interfacing trough special web pages. Principal components are:

PAL2A	Equipped pole in anticorroded aluminium to support instrumentation. Light and easy to assemble
VV1	Sensor according to WMO norms to measure the Wind Speed
DV	Sensor according to WMO norms to measure the Wind Direction
UTA	Combined sensor according to WMO norms for temperature (T) and Air Humidity (Rh), or single sensors
BAR	Electronic barometer according to WMO
Pl400	Rain gauge Class A (UNI 11552:2012) according to WMO (mouth of 400cm2)

Other sensors can be easily add in every moment (for example **air gas analysis sensor**).

The low consumption of the station, allow a long autonomy also with a little solar panel 20W power.

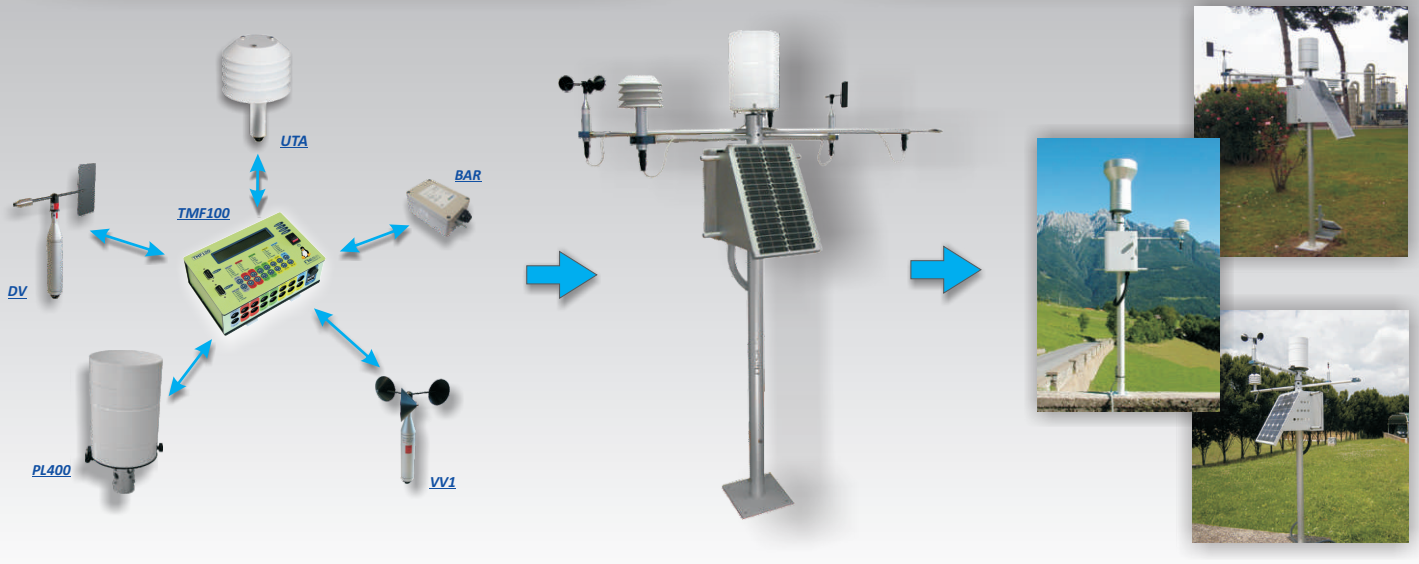
The **data downloading** from every station happens mainly **in 4 ways**:

- **On site**: **via LAN**, connecting a portable PC or similar with internet browser (es. Internet Explorer, Chrome, Firefox).
- **On site**: taking/replacing the **USB** memory.
- **Remotely**: by data transmission module **GPRS-UMTS, radio or satellite**, connected to a serial port of the control unit, trough **FTP protocol** (File Transfer Protocol) with user authentication.
- **Cable**: downloading data continuously or at intervals via serial, Modbus, TCP-IP, FTP, etc.

Instantaneous data visualization: Instantaneous data of the station can be visualized both trough the **datalogger's display** and by link (local or remote) to the control unit with Internet browser (**dedicated web pages**) where it's possible to have data in table or graphic format with a tracking in real time of acquired measures.

Programming: Station's datalogger is totally **configurable** and it's possible to program **specific calculation algorithms** (Penman Monteith, Pasquill, QNH, Dew Point, Sun Shine duration Algorithm, etc.).

It's easy create a **network of stations ST-BASE** sending data to a collection center where a management software, as **Iris or SunFlower,** can be installed (more information on www.nesasrl.it), and obtain so an automatic monitoring of extended areas (meteorological network)..



Environmental monitoring
system & remote controls

STP How is it composed?

STP Stations are among the simplest but not less important typologies of monitoring systems. They record essentially 2 parameters, T**emperature and Rain**, sometimes also **Humidity and Atmospheric Pressure**. Really useful in agriculture and in hydrological risk monitoring, are composed of:

Datalogger TMF100 o TMF500 for data elaboration and registration according to WMO, and their transfer to a collection center, via GPRS, UMTS, cable, radio or satellite, by different protocols (serial, Modbus, FTP, TCP-IP, etc.). It's equipped with **Linux operative system**, that has a really easy management and interfacing trough special web pages. Principal components are:

UTA Temperature sensor according to WMO norms

Pl400 Rain gauge Class A (UNI 11552:2012) according to WMO (mouth of 400cm2)

Other sensors can be easily add in every moment (for example **air gas analysis sensor**).

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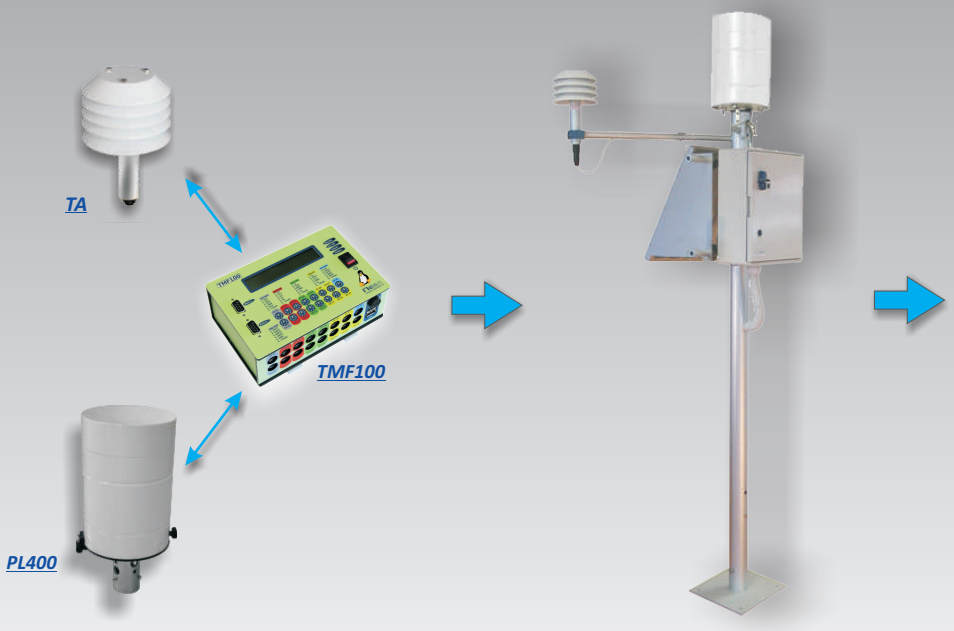

NESA Environmental monitoring system & remote controls

STP Performace

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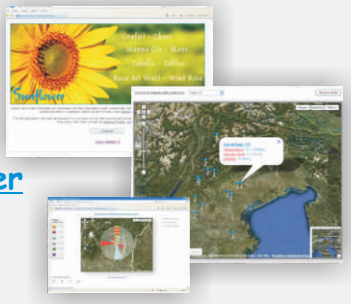
- **Real time visualization** of instantaneous data for each measured parameter and **programming**, both in **local and from remote**.
- **Automatic and pre-configurable management** of **alarms on threshold or on event**, with activation of **relay commands** or **SMS messages sending** to indicator panels.
- **Large data memory** both internal and from **removable support (USB)** able to record a storage of **over 4 years of data**.
- **Low energy consumption** (<1W), with alimentation from primary network (110/220Vac) or from photovoltaic panel.
- **Remote data management** on **web pages** with representation of the measures trend for a quickly check.



Sunflower

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