PYCNO BROCHURE

pycno
agriculture

EASY TO INSTALL

LoRa

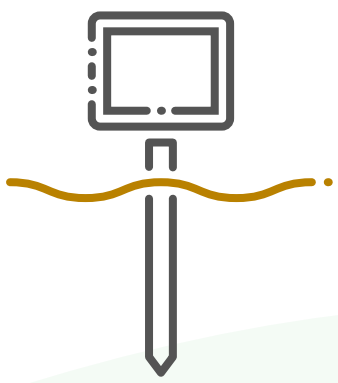
FREE MAINTENANCE

www.pycno.co

Measure, Analyze, Take action

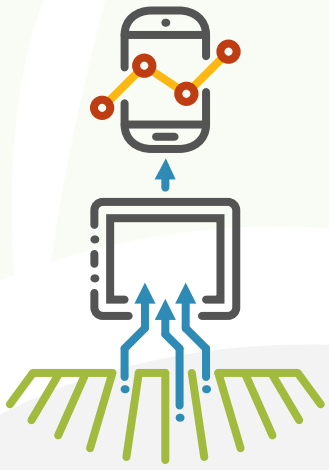
Pycno's mission is to bring efficient, easy to use, connected tools into the hands of growers around the world

Get started in 3 simple steps



DEPLOY A SENSOR KIT

Installing our sensors in your field gives great insights about water drainage, soil temperature and weather conditions



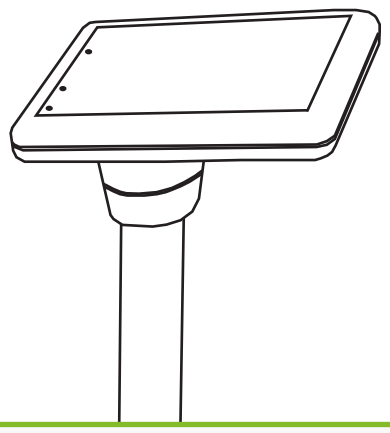
RECEIVE DATA FROM YOUR FIELD

Right after installation you can access the sensor data in real-time from anywhere in the world

TAKE DECISIONS BASED ON FACTS

Use recorded data to support farm operations. Save water, predict diseases, observe plant growth and more

Our products

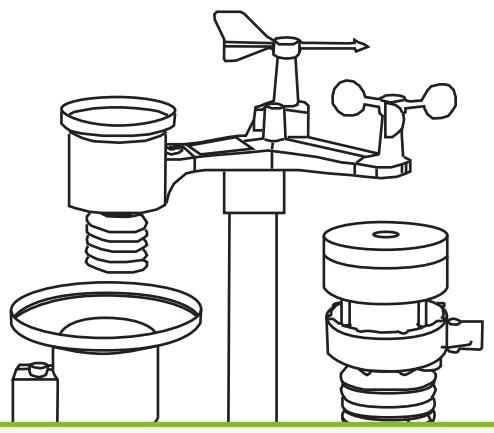


TERRA

All-in-one Soil & Gateway sensor

Our best selling sensor

Air Temperature / Humidity
Solar radiation
Rain detection (Microphone)
Soil moisture every 15cm
Soil temperature every 30cm
2W Solar panel
2G-4G / WiFi / LoRa / GPS



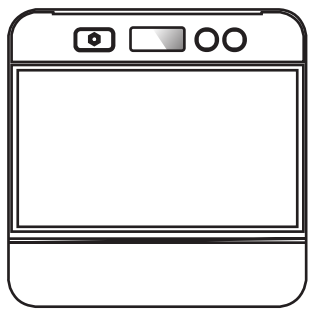
SKY

Weather Instruments

Come in 2 flavours

SKY - Wind (Sonic)
Wind Speed / Gust / Dir.
Air Temperature / Humidity
UV Index

SKY - Rain
Rainfall (tipping bucket)
Air Temperature / Humidity



PULSE

Smart Gateway Sense & Control

Coming Q3 2021

Connect 3rd Party devices such as chemical sensors, flow meters and valves

Join our happy customers

Pycno is currently in 30+ countries and looking for partners

pycno agriculture

TERRA FAMILY

All-in-one soil and ambient sensor with onboard connectivity

TERRA is an optimized sensor for quick field deployment. It is plug and play and wire-free.

It can measure local ambient conditions such as air temperature, humidity, solar radiation, soil moisture every 15cm/6” and soil temperature every 30cm/12”.

Terra also has cutting edge features such as rain event classification using microphones and accelerated sampling during irrigation, while completely autonomous with its built-in solar panel and high capacity battery.

Sensing

> Air Temperature / Humidity
> Solar radiation
> Rain detection (Microphone)
> Soil moisture every 15cm
> Soil temperature every 30cm

Hardware

> 2W Solar panel
> Built-in 3500mA/h battery
> 2 RGB LEDs / Buzzer / Vibration feedback

Communication

Master sensor (Red color)

> 2G / 3G / 4G / WiFi / LoRa / GPS
> Built-in global roaming SIM

Node sensor (Green color)

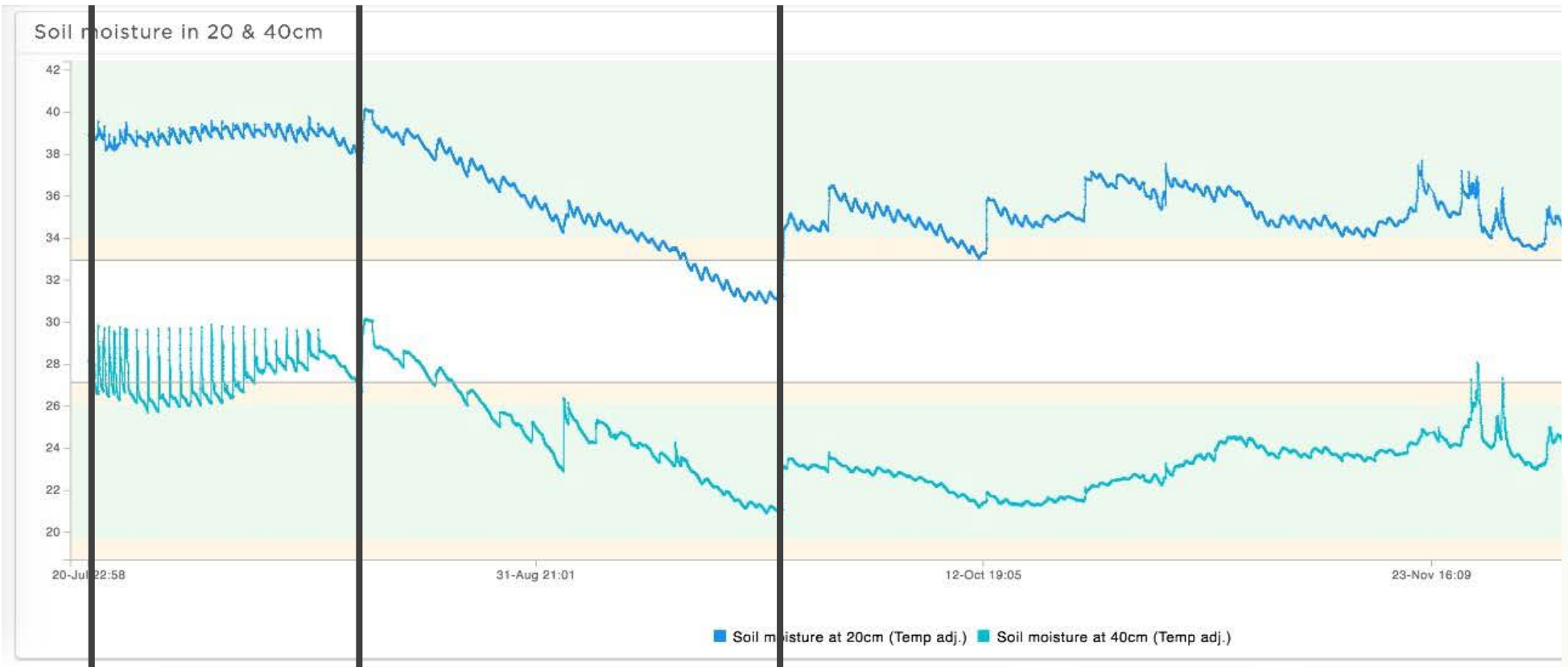
> LoRa / GPS

TERRA Use cases

Terra sensors are used to detect various weather and soil parameters during the growing season. One of the strongest use cases is to use Terra to tune irrigation patterns to save water and electricity while having a positive effect on yields.

By using less water other issues also get solved, such as nutrient depletion and diseases related to over-irrigation

Below is a real world example of one of our customers where right after deploying Terra sensors, they were able to observe soil saturation occurring and reduce their irrigation from two times a day to every two days.



TERRA Customer feedback

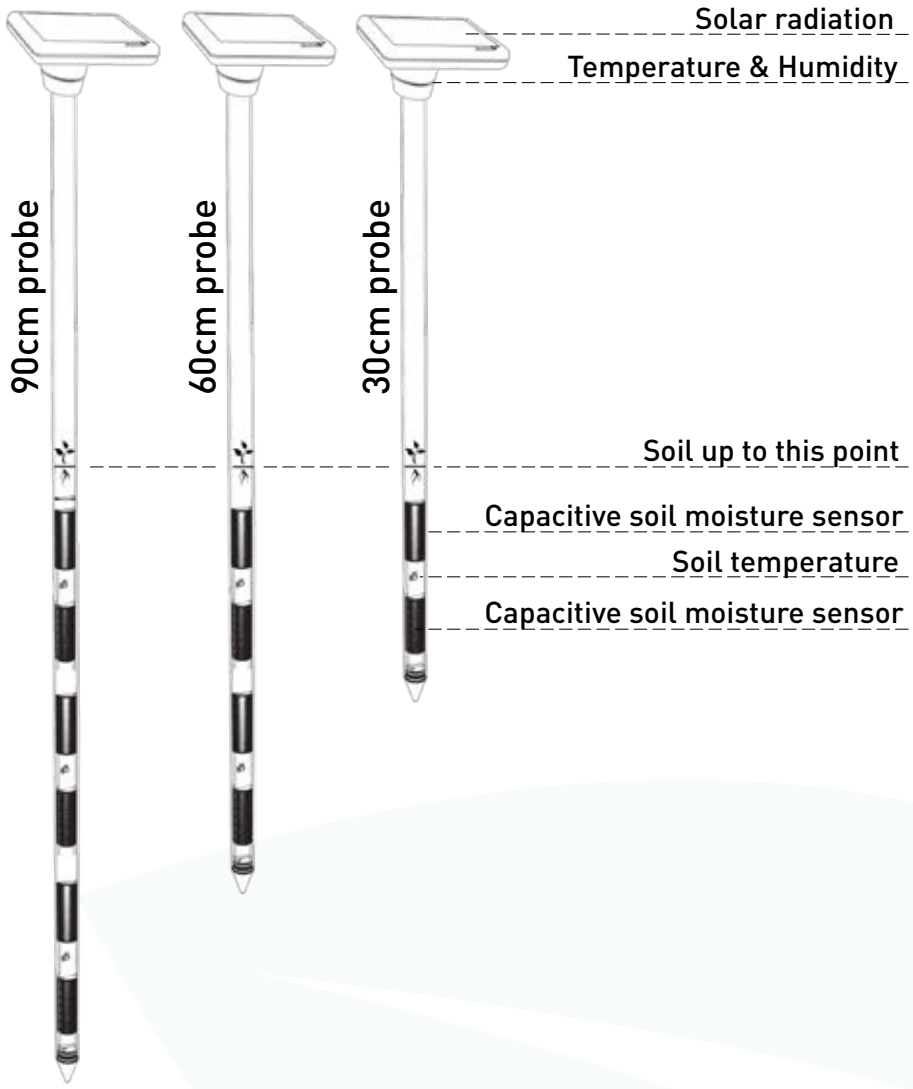
Over the last 6 years of deployments we have observed growers having around 10-20% reduction in water and electricity usage while yields have gone up by 5-15%.

In most cases, when used correctly, Pycno sensors pay for themselves in 1-3 months.

Soil sensing options

Terra comes in three lengths (30/60/90) with each length increment adding more and more sensing elements. The recommended way to choose a length is to choose a sensor that can reach lower than the plant root system.

This way, if water reaches a level below the plant root system, then the irrigation schedule or amount is not optimal and water is wasted. Terra sensors can be used to indicate this early on.



Available lengths

> 30cm / 12”
2 Moisture sensors / 1 Temperature sensor

> 60cm / 24”
4 Moisture sensors / 2 Temperature sensors

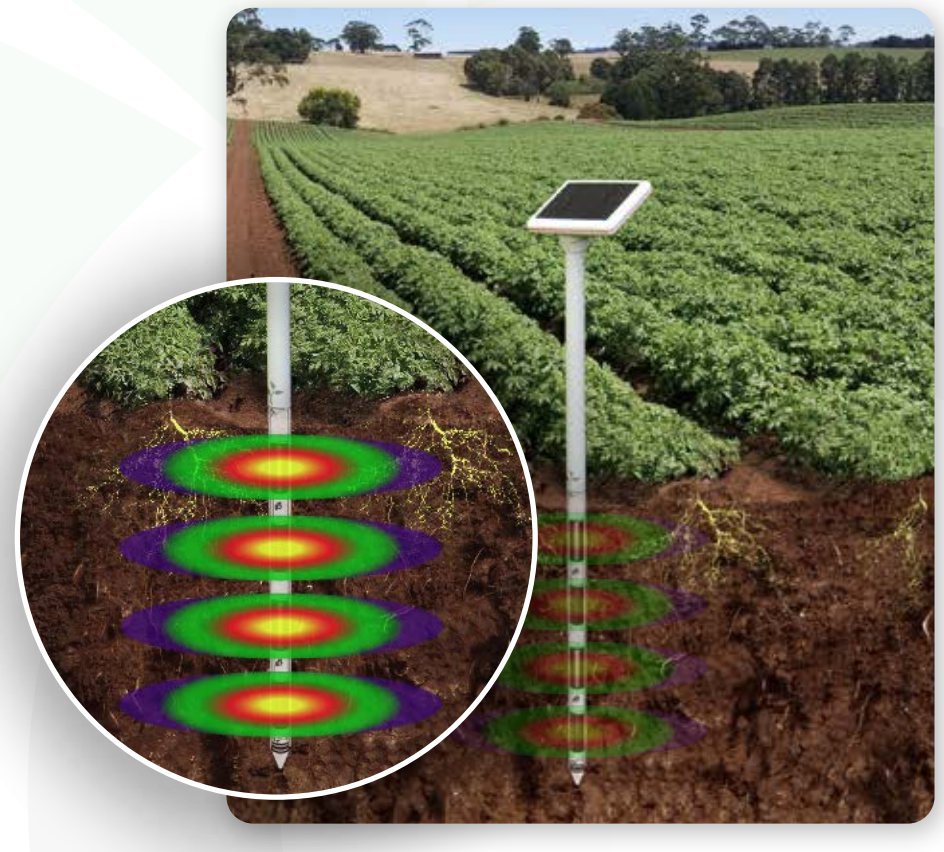
> 90cm / 36”
6 Moisture sensors / 3 Temperature sensors

Soil capacitive modules

Terra can measure subtle changes of water in the soil using its high sensitivity capacitance sensors. These are cylindrical sensing elements that repeat every 15cm/6”.

By using high quality, tight tolerance components, our calibrated sensing elements exhibit a resolution of 0.01% Volumetric Water content (VWC) and an accuracy of +/- 1mm. The soil modules are also designed with temperature immunity in mind so no compensation is needed.

The sensor’s usable sphere of influence is around 10cm, but in various tests, sensitivity of up to 100cm was observed.



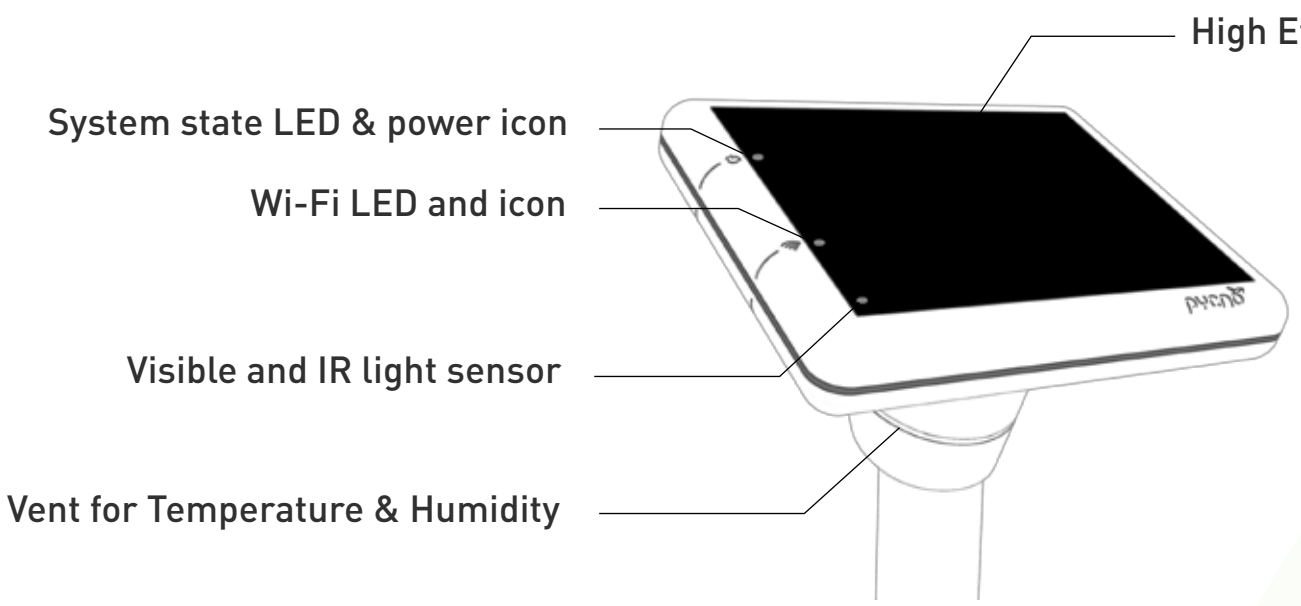
3rd Party soil sensor testing

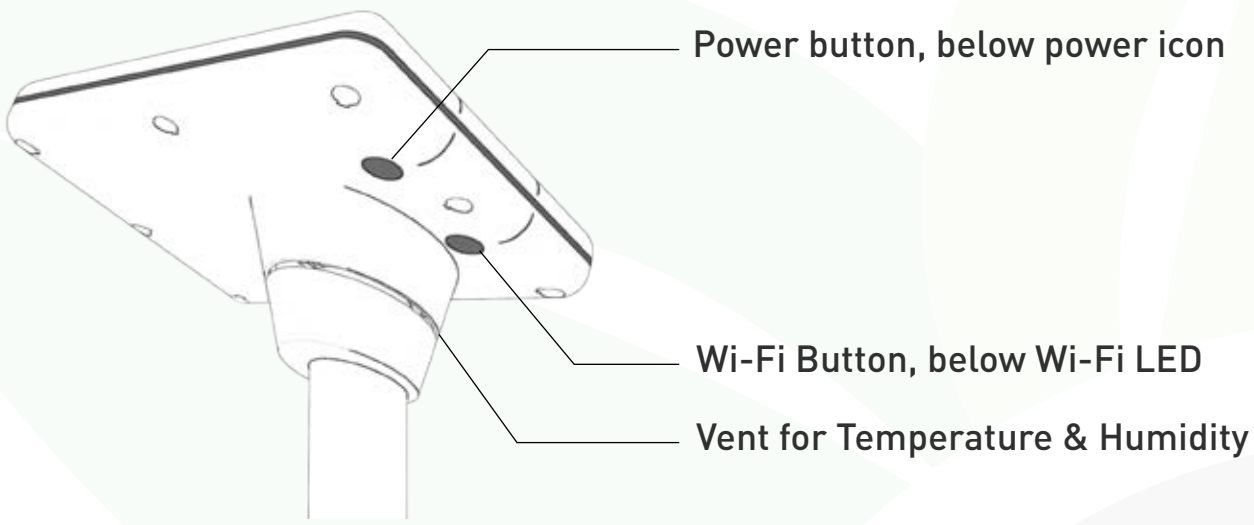
Terra soil probes have been tested against the top 5 leading brands of soil sensors to ensure data sensitivity and accuracy are up to the highest standard.

Sensors tested against

> Sentek EnviroSCAN
> EnviroPro EP100G
> Adcon SM1 (hardware similar to Dacom probes)
> Stevens Hydra II
> Decagon Devices 5TE
> Pycno sensor

To get access to our report, please write us at soil@pycno.co



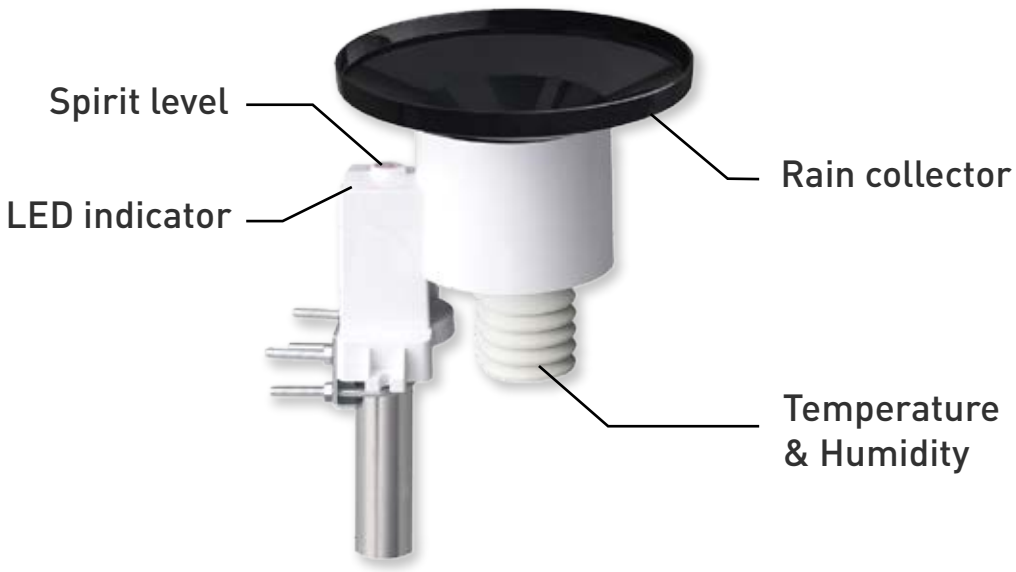


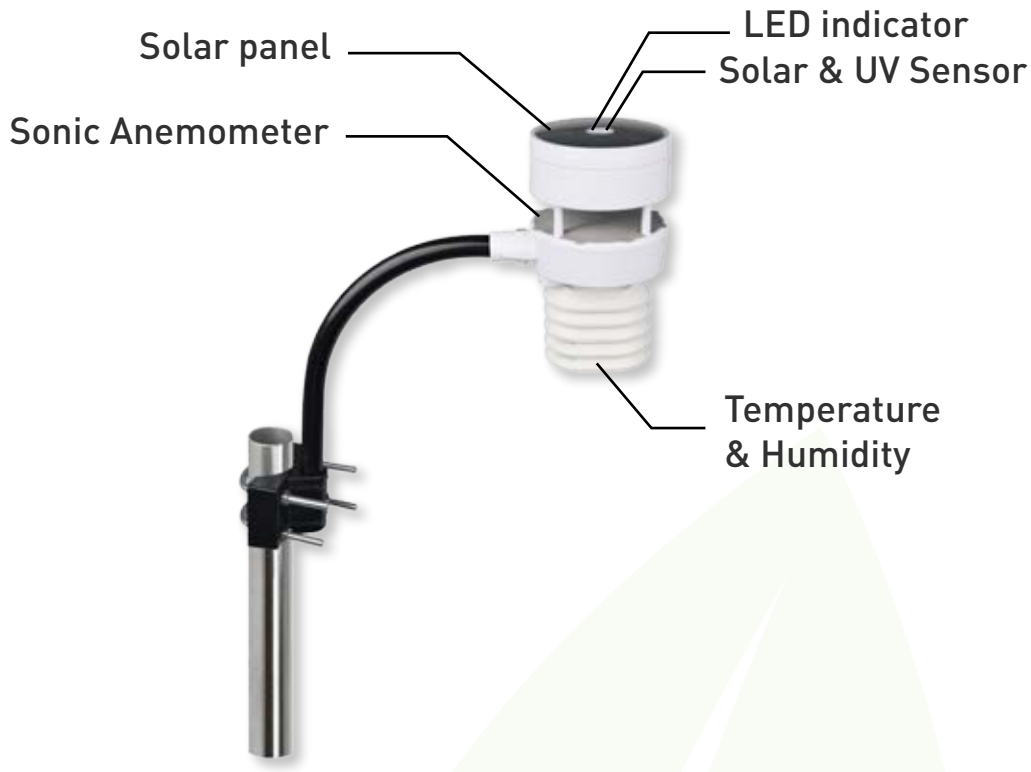
Key specifications

> High efficiency monocrystalline 2W Solar Panel.
> Solar irradiance (IR + visible light LUX) – Accuracy: +/-10Lux, Resolution: 0.1 Lux,
> Solar irradiance (Watts per m2) – Accuracy: 1 W/m2, Resolution: 1 W/m2,
> Air Temperature – Range: -40~85°C – Accuracy: +/-0.2°C, Resolution: +/-0.005°C
> Air Humidity – Range: 0~100%RH – Accuracy: +/- 2% , Resolution: 0.01%
> Soil Temperature – Range: -40~85°C – Accuracy: +/-0.2°C, Resolution: +/-0.005°C
> Capacitive Soil Moisture – Resolution: 0.01mm, Accuracy +/- 1mm
> 3500mA/h Internal battery providing months of power even without sunlight

SKY Weather Instruments

The SKY Wind and SKY Rain models are our low cost, wireless weather Nodes. Due to their size, they can be placed at any height near the plant making them the ultimate sensor for growth and disease models. SKY stations use LoRa direct connectivity (P2P) and upload their data to nearby Terra or Pulse gateways (Master).





SKY - Rain
(Tipping bucket type)

Rainfall
Air Temperature/Humidity

1x AA Battery
LoRa P2P Node

SKY - Wind
(Sonic anemometer type)

Wind Speed / Gust / Direction
Air Temperature/Humidity
Solar & UV Index

2x AA Batteries
LoRa P2P Node
Solar panel

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PULSE FAMILY

A highly customizable gateway for sensing and control

SENSORS

ACTUATORS

Pulse is the next step in industrial automation.

BETA units available now.

> Can talk to 3rd party wired/wireless devices such as valves, chemical sensors, flow meters and more!
> Comes in Master or Node versions
> LoRa, WiFi, 2G-4G, NBIoT, GPS, BT5, Satellite
> Hot swappable modules add SDI-12, RS-485, RS-232, I2C, CAN, Analog functionality

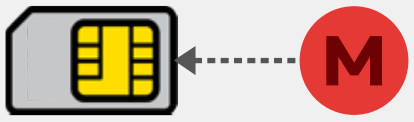
Sensor Communication

The sensors form a network with each other. Any local Master sensor, acts as the farm gateway, collecting all the sensor measurements and uploads them using cellular connectivity.

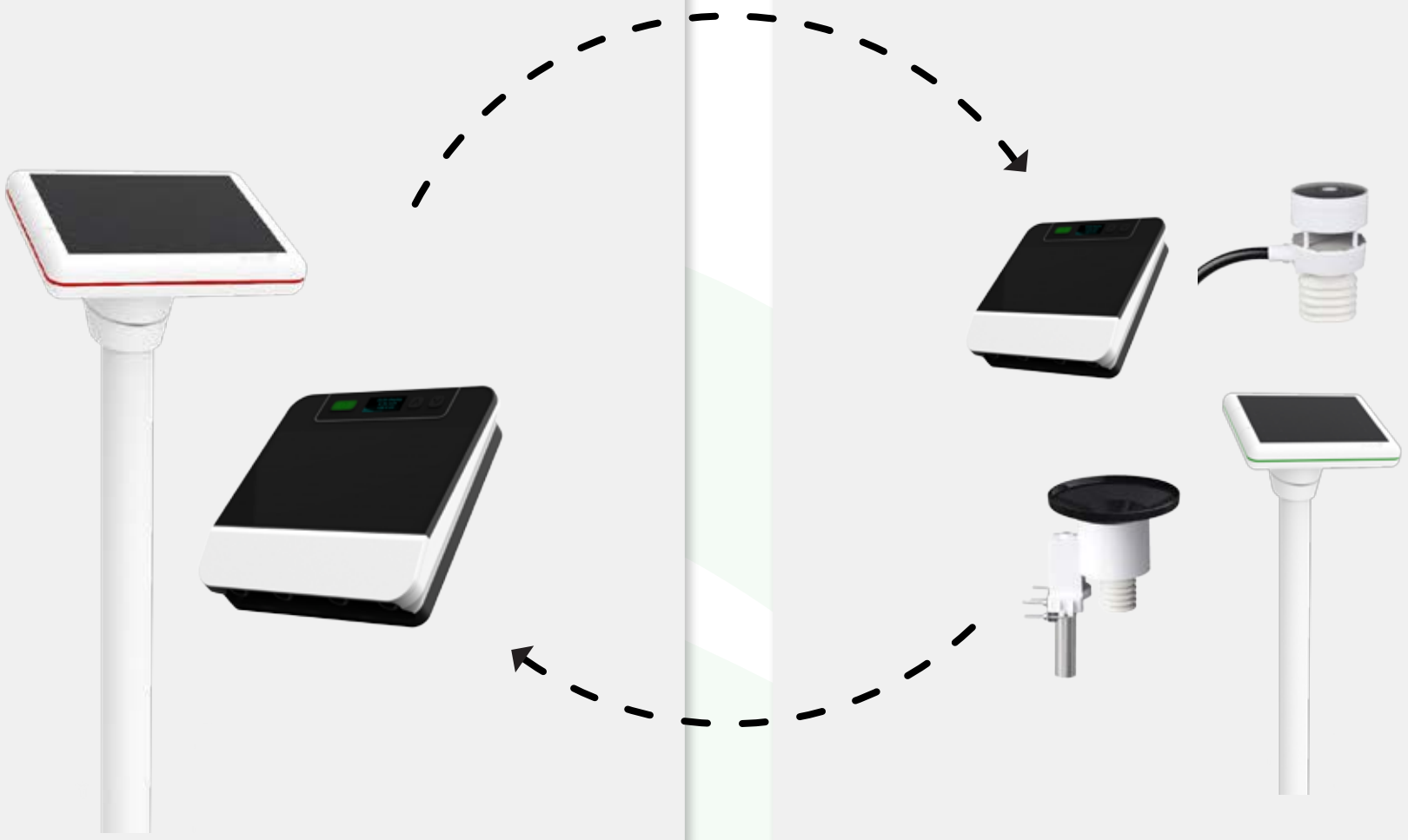
Below are 2 classes of sensors:

Gateway / Master Versions

2G / 3G/ 4G, LoRa P2P



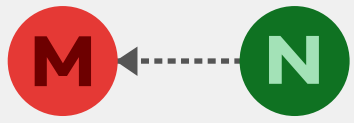
Direct cellular connection



Master sensors act as the gateway of your farm. They use a SIM card to connect to the Internet and upload their own data and local Node sensor data. Once the data is uploaded, it is available instantly on your dashboard.

Node Versions

LoRa P2P



Internet through Master Sensor

The Node sensor has similar functionality with the Master, but instead of uploading data directly to the Internet, it can only be used in conjunction with a Master, that is acting as its gateway.

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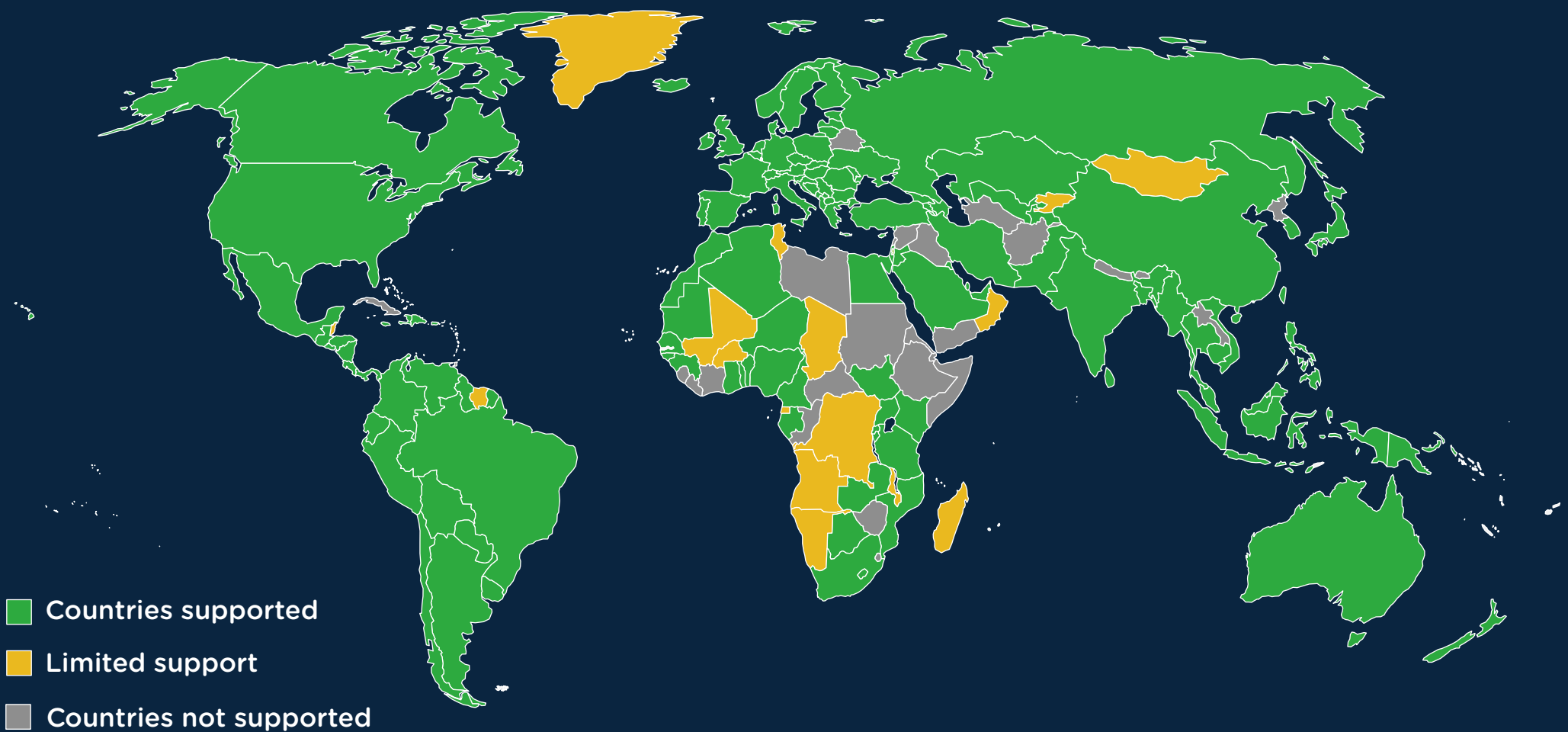
SENSOR NETWORK

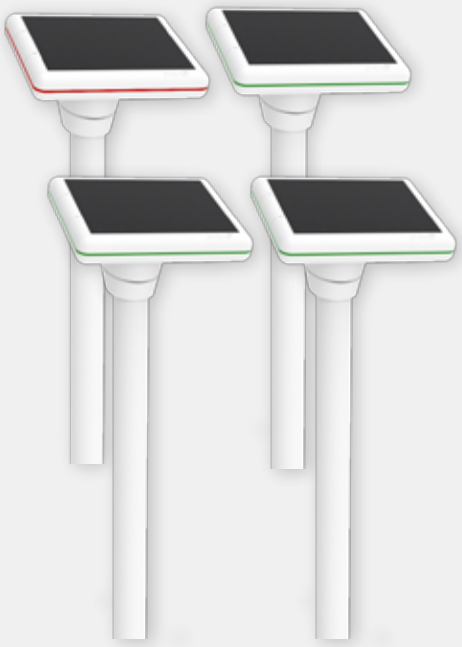
COUNTRY COMPATIBILITY

Deploy quickly and globally. Pycno Global SIM comes built-in our Master sensors. That way you can start receiving data instantly and reliably.



Starter Kits

We offer many starter kits to get up and running in no time. Have a specific project in mind? Contact us today!



Soil starter kit

1x Master sensor
3x Node sensors

Soil + Weather kit

1x Master sensor
1x Node sensor
1x SKY Wind
1x SKY Rain

Soil + Weather kit

1x Pulse (Coming soon)
1x Node sensor
1x SKY Wind
1x SKY Rain

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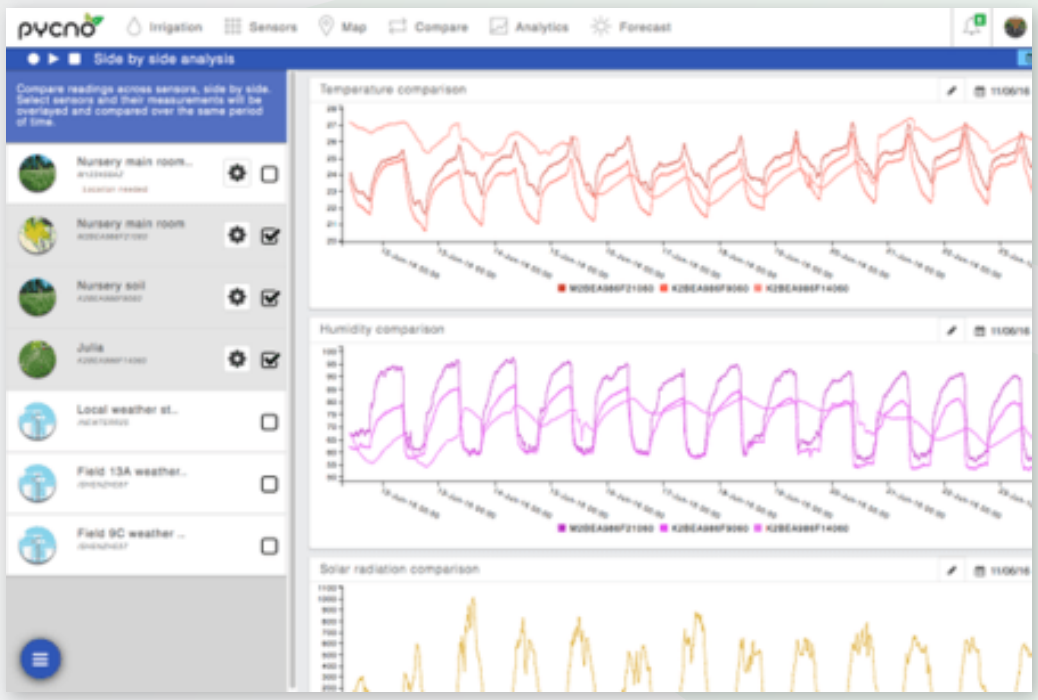
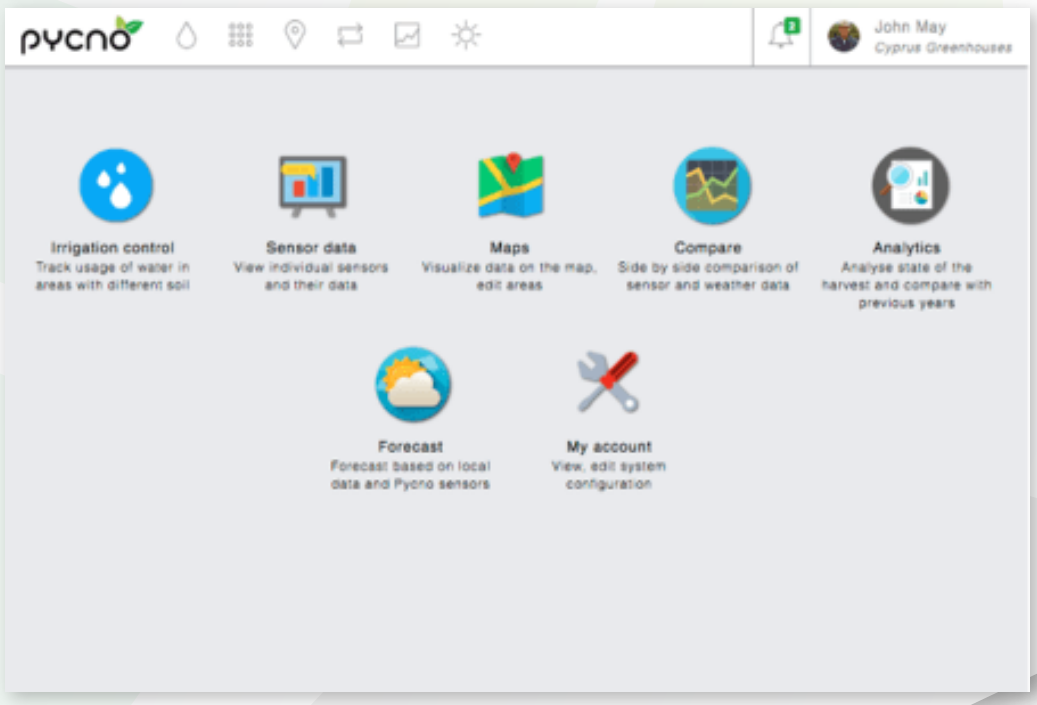
SOFTWARE

All-in-one, simple dashboard

> View and analyze sensor data from anywhere in the world
> Analyze Irrigation events and water drainage
> Mapping and heat maps
> Weather forecast, Growing degree days, Chilling hours
> Alerts based on rules
> Sub-users, SIM management, API





Access all the sensor data through our API

```
"UID":  "K05123B72119A6",
"site": "MB258724B01154",
"name": "Chile Plot #1",
"HUM": 54.38,
"TEMP": 5.99,
"LW1": 67.95,
"LX1": 25883,
"NET": "56001",
"loc": {
    "type": "Point",
    "updatedAt": "2021-03-05T11:30:57.504Z",
    "satellites": 9,
    "coordinates": [
        "19.589713333",
        "46.519890000"
```

Access sensor data programmatically

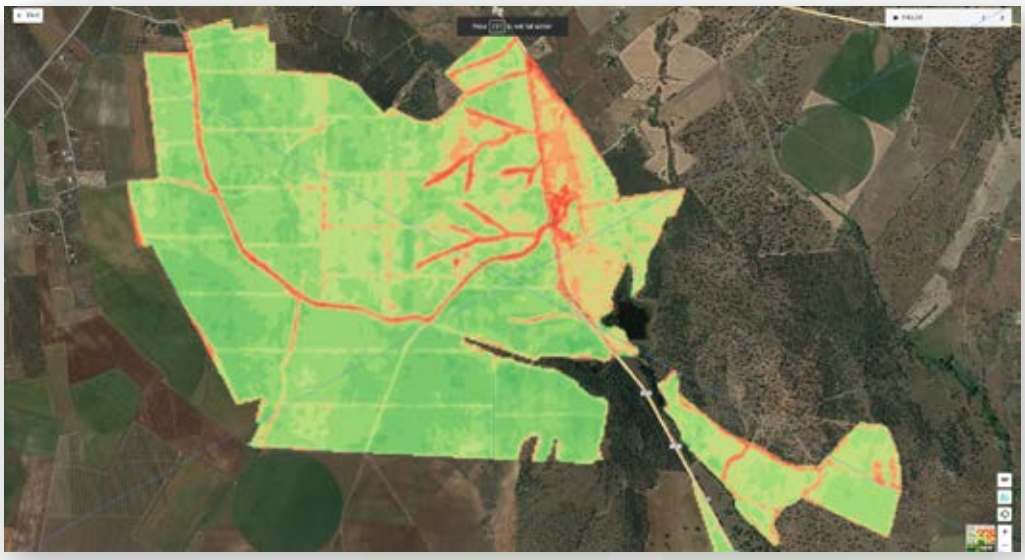
> Build your own custom platform
> Fetch data for further analysis
> Commission devices automatically
> Control SIMs through API

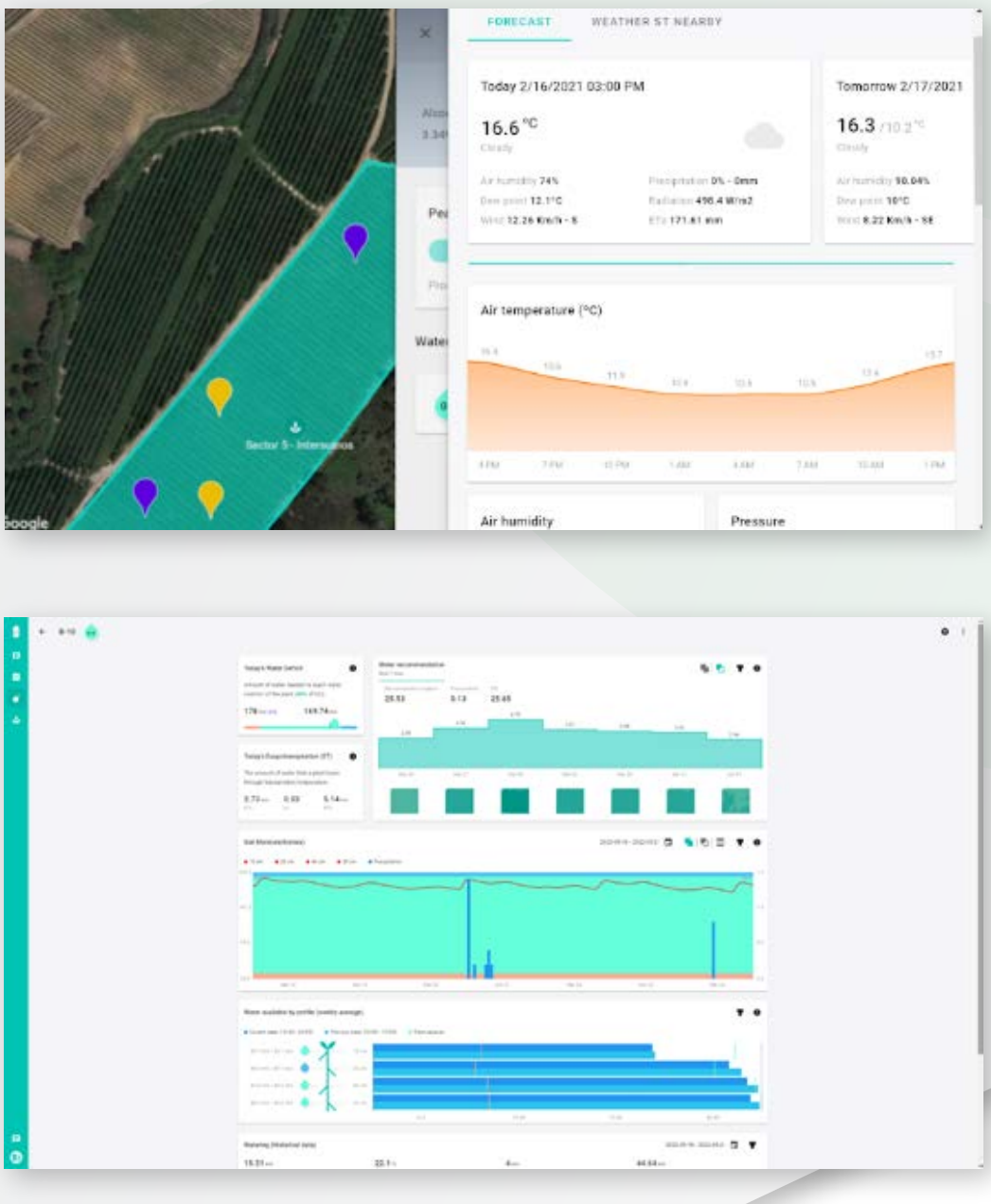
pycno agriculture

SOFTWARE

Agronomic Package

> Apply agronomic analytics on your existing sensor data
> Analyze Irrigation events and water drainage
> NVDI, ETc, NDMI, NDWI layers from satellite data
> Weather forecast, Growing degree days, Chilling hours
> Alerts based on rules and critical events
> Leaf wetness and insect growth tracking
> Optimal spraying hours based on weather
> Farm event logging such as spraying, irrigation





Agronomic package pricing starts at 5 EUR per hectare per year (includes mobile app)

GET IT ON Google Play

Download on the App Store

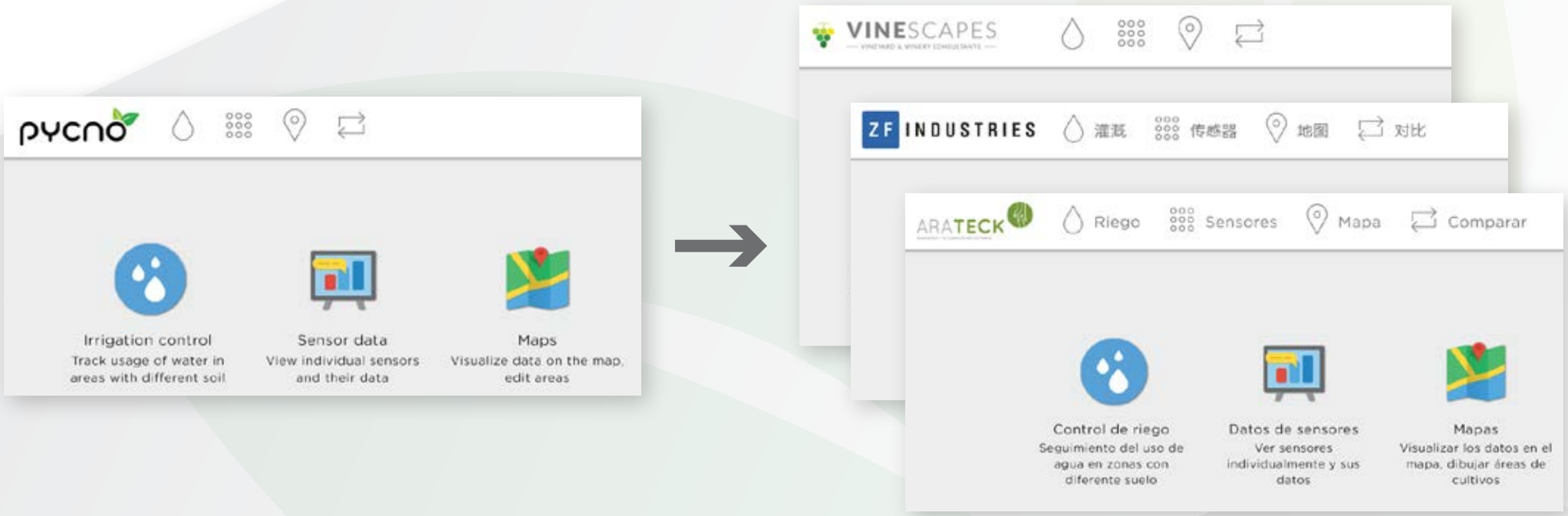
DISTRIBUTION

For distributors - Grow your brand

Pycno offers tools to grow and protect your brand. Perks include customization, white-labeling, direct support, consultation and volume discounts.

Software white-labeling

> Logo change on the dashboard
> Custom domain connected to our dashboard
> All dashboard URLs lead to your website or shop
> Sub-users, SIM management and billing, API data access

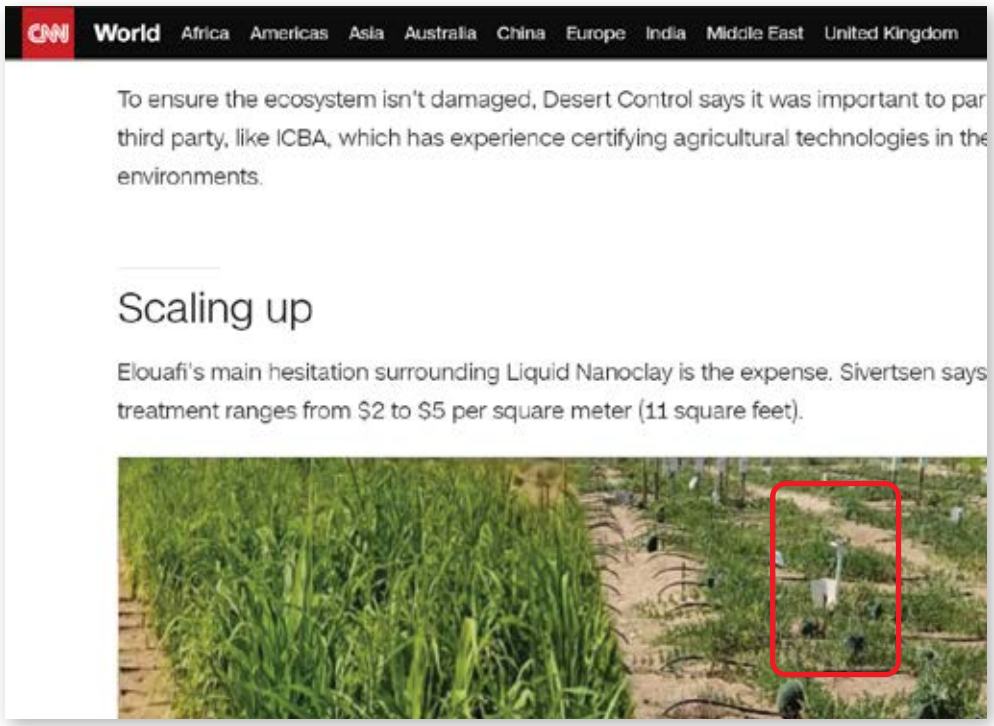


Hardware branding

> Laser engrave sensors
> Product labels with your logo

Contact us for more information
distribution@pycno.co

PRESS & EVENTS



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DEPLOYMENTS

pycno agriculture

Industrial and Agricultural sensing with automation

Contact us today

If you have any sensing or automation requirements we'd love to chat

hello@pycno.co

www.pycno.co