Newsletter

June 22nd 2021
Castricum, The Netherlands
Newsletter 2021-Q2

Dear readers,

With this newsletter we like to inform you about our day to day business, current projects, performance characteristics of our products and new product development. Enjoy reading!

SWAP instruments: applications of the soil Redox probes

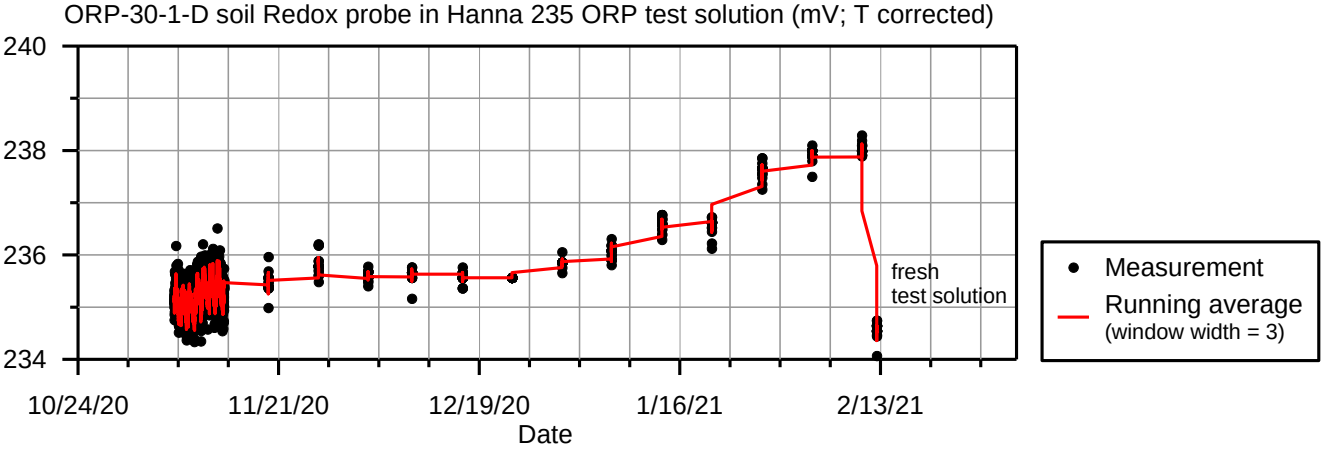
Since we have launched our website in November 2021, researchers, scientists, agronomists and archeologists from all over the world have embraced our products. We are very proud that our products are being used worldwide for many applications, including:

1) soil quality monitoring to optimise crop production.
2) wetland research to study redox processes under varying tidal conditions.
3) field and pot experiments under field and laboratory conditions to study the decay of organic matter.
4) the immobilisation of metals in industrial waste.

Visit **www.swapinstruments.com** to get an impression of our affordable high-quality products.

SDI-12 soil Redox probe: long-term stability test

We performed a long-term stability test with our ORP-30-1-D soil Redox probe in an ORP buffer under laboratory conditions. The stability is tested for a period of **3 months** in Hanna ORP test solution 235 ± 10 mV (vs 3.0 M KCl gel at 25 °C). The figure below shows that the **variation** is within **± 0.5 mV (1 STD)**. The signal increase (after 01/06/21) is most likely caused by ageing of the ORP test solution (due to evaporation and the influence of light). Refreshing of the test solution, at the end of the experiment, confirms this. This test shows that the signal of our ORP-30-1-D soil Redox probe was very stable for a period of 3 months.



Redox potential measurements to study the factors that control greenhouse gas (GHG) emissions.

The SWAP soil Redox pobes are used by various research groups to study GHG emissions. GHG, like carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), are important contributors to global warming. Several studies showed a strong relation between soil redox potential and GHG emission in paddy rice fields and wetlands. Our robust probes are ideal for long-term monitoring of field-scale soil redox potential changes. This knowledge can be used to establish mitigation measures (like alternative fertilisation and watering strategies) to reduce GHG emissions from agricultural land.

(Photo by Erlian Zakia Ayu Anggarani from Pixabay)

Testing of a system to prevent biofouling of the water hardness sensor (SodiSens)

We developed a sensor- called **SodiSens** – that can monitor the functioning of water softeners (based on exchange resins). With SodiSens, the water hardness can be checked in-line and continuously. This sensor has been tested extensively at Medisch Centrum Leeuwarden (MCL) and Schiphol. Water hardness can be controlled very well, but the sensor-head suffers from biofilm formation. SWAP instruments developed a biofilm-protection system (based on UV-C) to prevent and/or remove biofilm from the sensor-head. Centre of Expertise Watertechnlogy (CEW) is currently testing the performance characteristics of this biofilm-protection system.

The tests are performed by Yannick ten Caat (4th year student Biological and Medical Laboratory at NHL Stenden) and Terry Hoekstra (3rd year student Biological Medical Analyst at Nordwin College).

This research is funded by Interreg North-West Europe Water Test Network (WTN). The WTN project establishes a transnational network of testing facilities that can be used by SMEs in North West Europe to develop, test and verify new products in the water sector.

If you are interested in our products or like some additional information, please contact us at info@swapinstruments.com or visit our website www.swapinstruments.com.

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