



WIZ in-situ multiparametric nutrients probe

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In-situ probes evolution in 10 years

AMS SYSTEMA



NPA
(2002)



NPAPlus
(2005)



DPA-D
(2007)



NPA-Pro
(2008)



DPA
(2009)

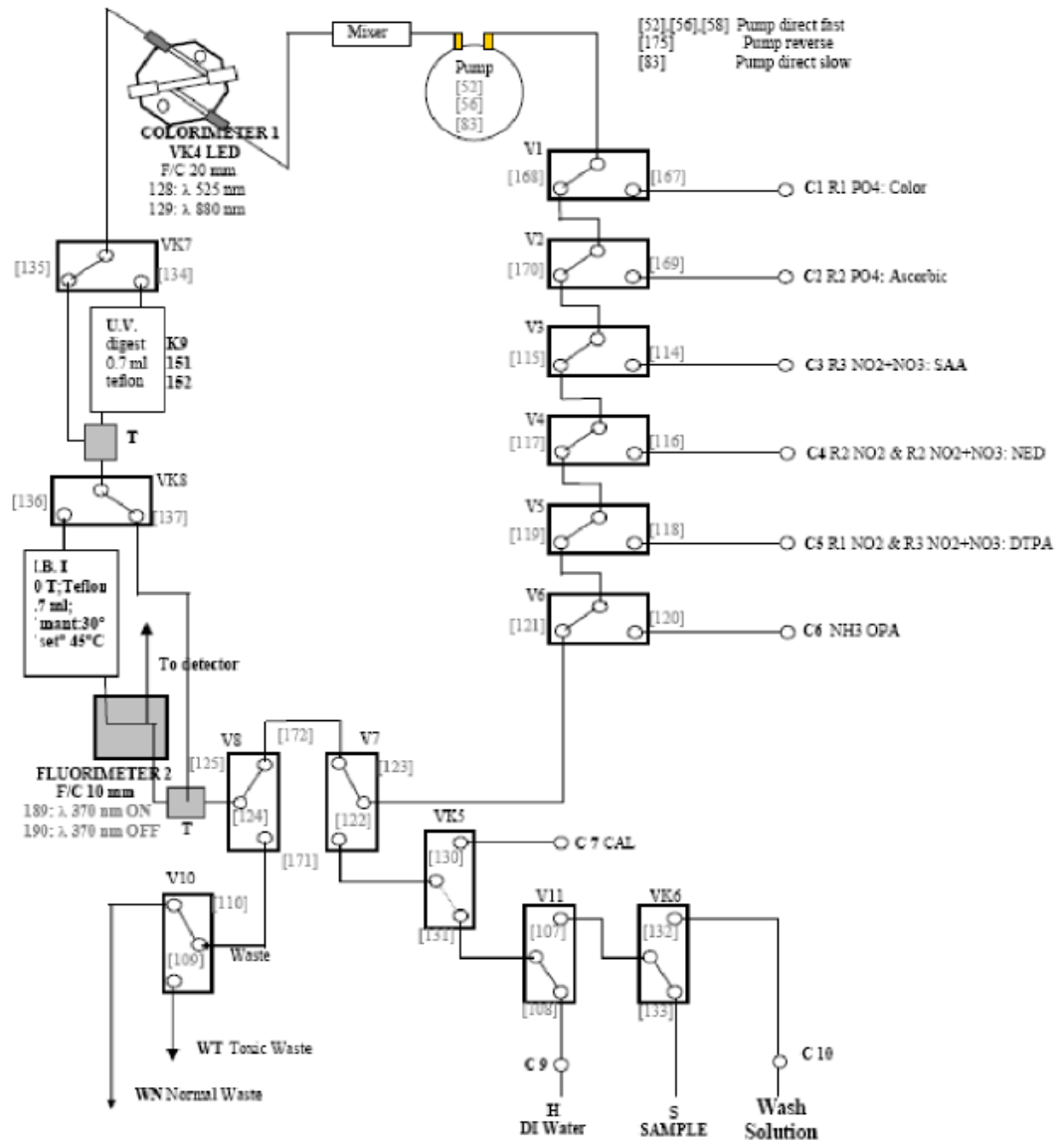
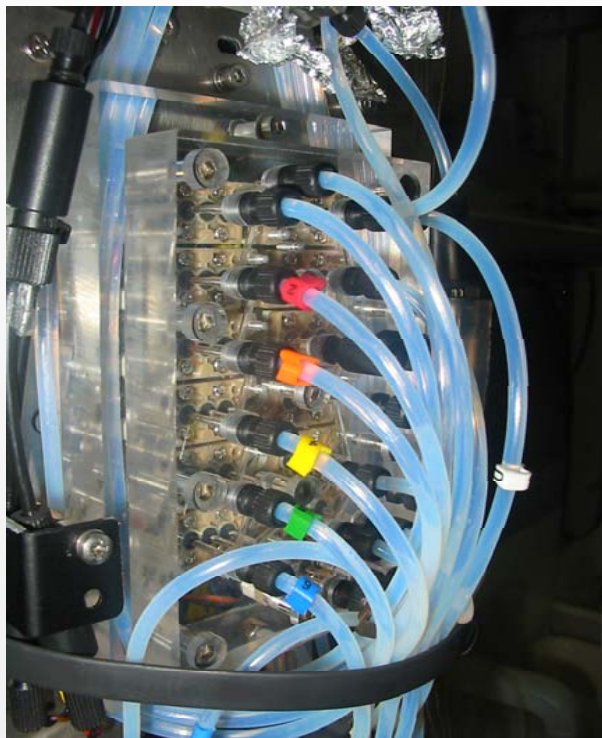


WIZ
(2009)

- **Multiparametric capability, up to four parameters in one unit**
- **Applications: surface, ground and sea water**
- **Low reagents consumption: 60 μ l for most of the reagents used**
- **Fast “plug-in” reagents canister allows fast deployment**
- **Power supply: 12 Vdc, 3 W stand-by, 6 W analysis, max. 1 A**
- **Low maintenance**
- **Suitable for medium and long term deployment.**



The micro Loop Flow Reactor



- **Nutrients: NH₃, NO₃+NO₂, NO₂ and PO₄**
- **SiO₂ (as alternative to NO₂ in nutrients configuration)**
- **Total Phosphorus (NH₃ can be added)**
- **Total Nitrogen (NH₃ can be added)**
- **Several metal ions like Cr⁶⁺, Al, Cu, Iron, Zn, Mn, even in biparametric combination.**

WIZ is the only in-situ probe actually available on the market to measure Total P or Total N



- ➔ **AMMONIA:**
OPA fluorimetric method, 6 ppb
- ➔ **NITRITE: NED-SAA, 1 ppb**
- ➔ **NITRATE + NITRITE:**
UV reduction method + NED-SAA, 5 ppb
- ➔ **ORTOPHOSPHATE:**
Molibdate-Antimony, 3 ppb

	NH ₄ -N	NO ₂ -N	NO ₃ -N	PO ₄ -P
Recovery (%)	96	126	94	109
RSD (%)	22.3	1.2	8.6	4.2
LOD (ppb)	6	1	5	3
LOQ (ppb)	20	3	15	10





NO₃+NO₂ UV reduction method

DTPA solution and TRIS buffer are added to the sample, the mixture flows in a Teflon coil wrapped around a UV lamp for NO₃ reduction; the nitrites formed by the photoderivation then react with sulfanilamide and naphthylethyldiamine in acid solution, to form a pink coloured compound measurable at 525 nm.



Total N can be optionally measured applying a preliminary UV acid digestion to the water sample

(ref. Y. Zhang, L. Wu, Analyst July 1986, Vol.111)

- automatic sample blank correction
- automatic washing
- automatic sample dilution allows double scale measurements
- compact canister allows easy reagents changeover
- true portability.

Autonomy:
12 measurements/day
for four weeks.



Project WARMER: coastal water pollution control and Early Warning (2009)

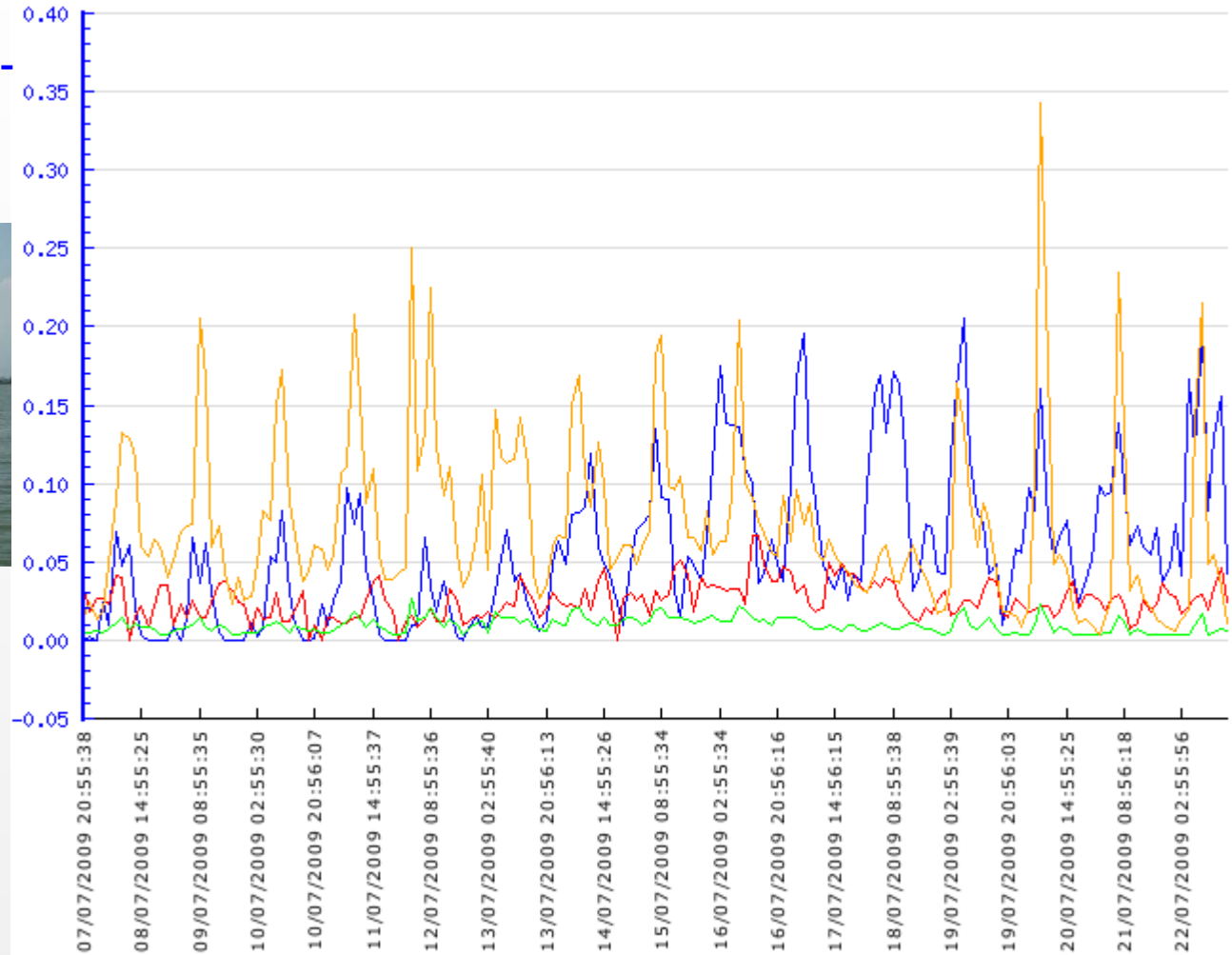


<http://www.projectwarmer.eu>

Project WARMER: field test in Venice lagoon (Palude di Cona - VE, July 2009)



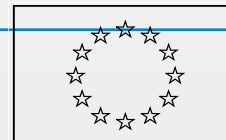
Data from 07-07 to 22-07-09
Nutrients



- Ve-7 - NH3-N (mg/l)
- Ve-7 - PO4-P (mg/l)
- Ve-7 - NO2-N (mg/l)
- Ve-7 - (NO3+NO2)-N (mg/l)



<http://www.projectwarmer.eu>



Project funded by:
EUROPEAN COMMISSION
Information Society and Media Directorate-General
ICT for Sustainable Growth



**25 microns in-situ
filtration unit with
copper coil and optional
air cleaning**

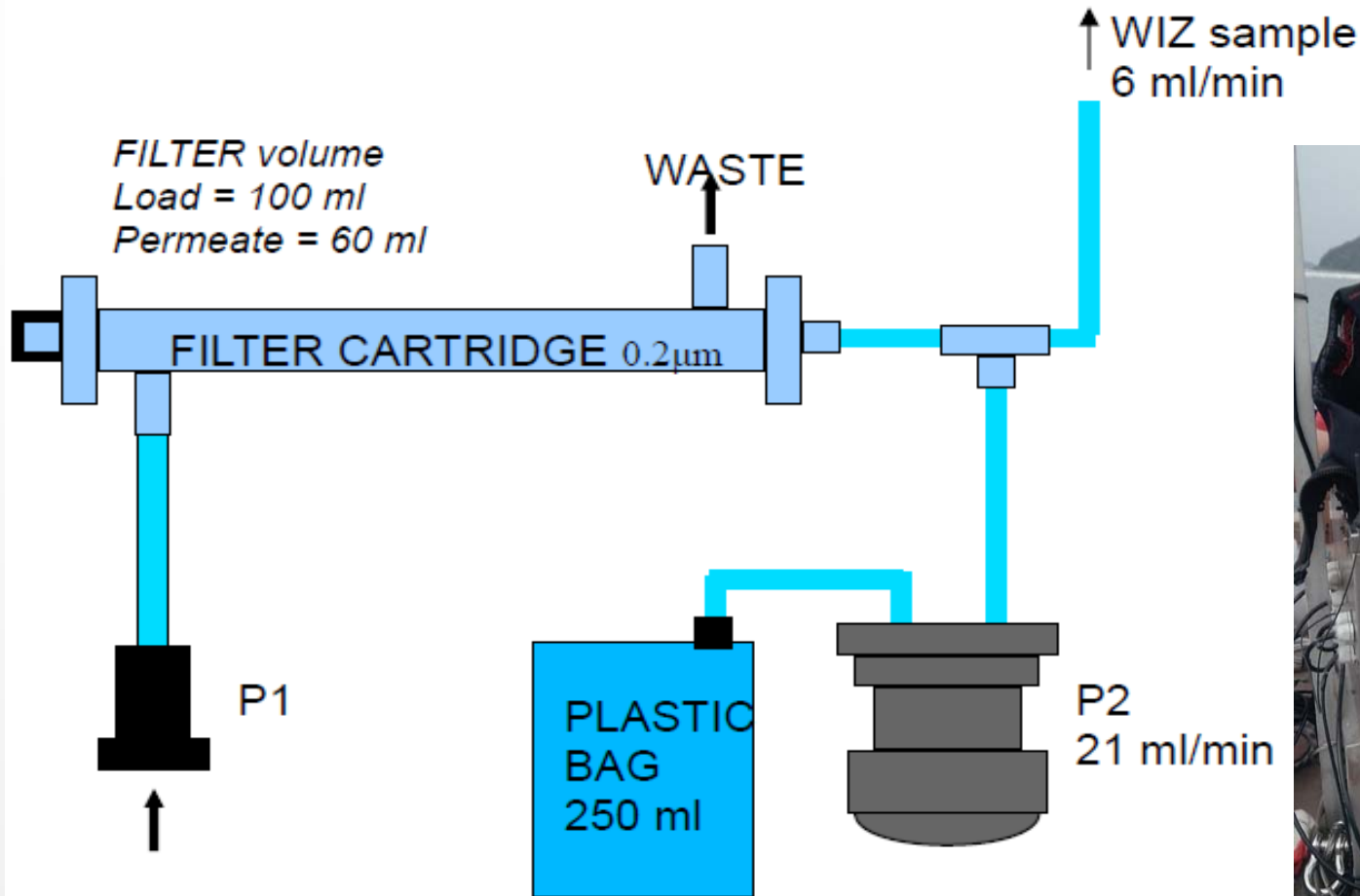
**DI water washing
cycle at the end of
each method**

**Special autocleaning cycle
using DIC to wash sampling
inlet at the end of the
measurements sequence**





0.2 microns filtration unit with auto back-wash



Nutrients in-situ probes integrated in coastal monitoring buoys in China



**TN, TP and NH₃ monitoring
(Lake Taihu, 2009)**

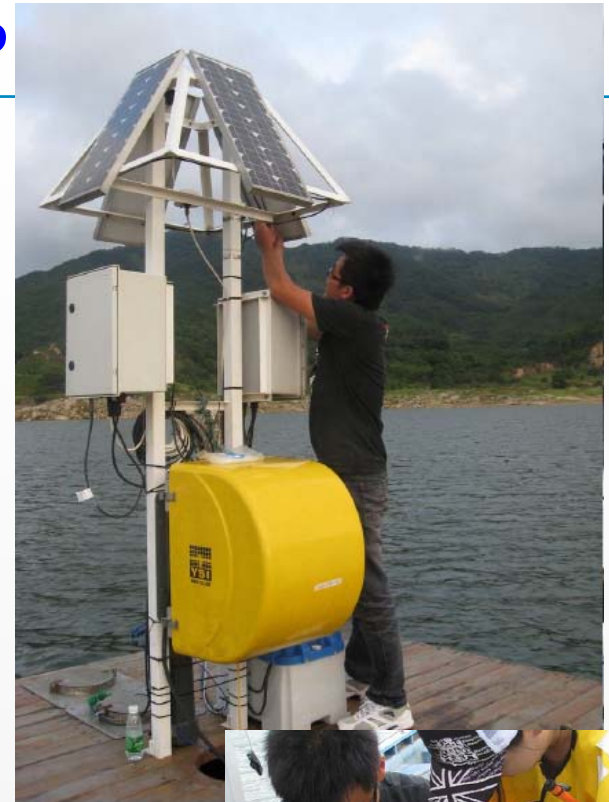
**Coastal monitoring networks in
Xiamen (2006), Guangxi (2009)
and Shenzhen (2011)**



**WIZ nutrients
(Ningbo harbour, 2011)**



WIZ TN and WIZ TP in Zhuhai lake







THANK YOU
FOR YOUR KIND ATTENTION