

МИРВАΞ – MIRVAX

Monitoring for Improving the River ВАРдар/ΑΞιός (VARDar/AXios)

A Project of the NATO Science for Peace Program

**of George BALAFOUTAS, Aristotle University of
Thessaloniki**

**of Atanasko TUNESKI, Cyril & Methodius University of
Skopje**

Borders



River

Вардар/Αξιός

(Vardar/Axios

)



Tribureries



The
Transboundary
Watershed



Forget
Borders



Simpler



t

МИРВАΞ - MIRVAX

MONITORING FOR IMPROVING THE RIVER
ВАРДАР / ΑΞΙΟΣ

<http://reald.civil.auth.gr/mirvax/mirvax.htm>

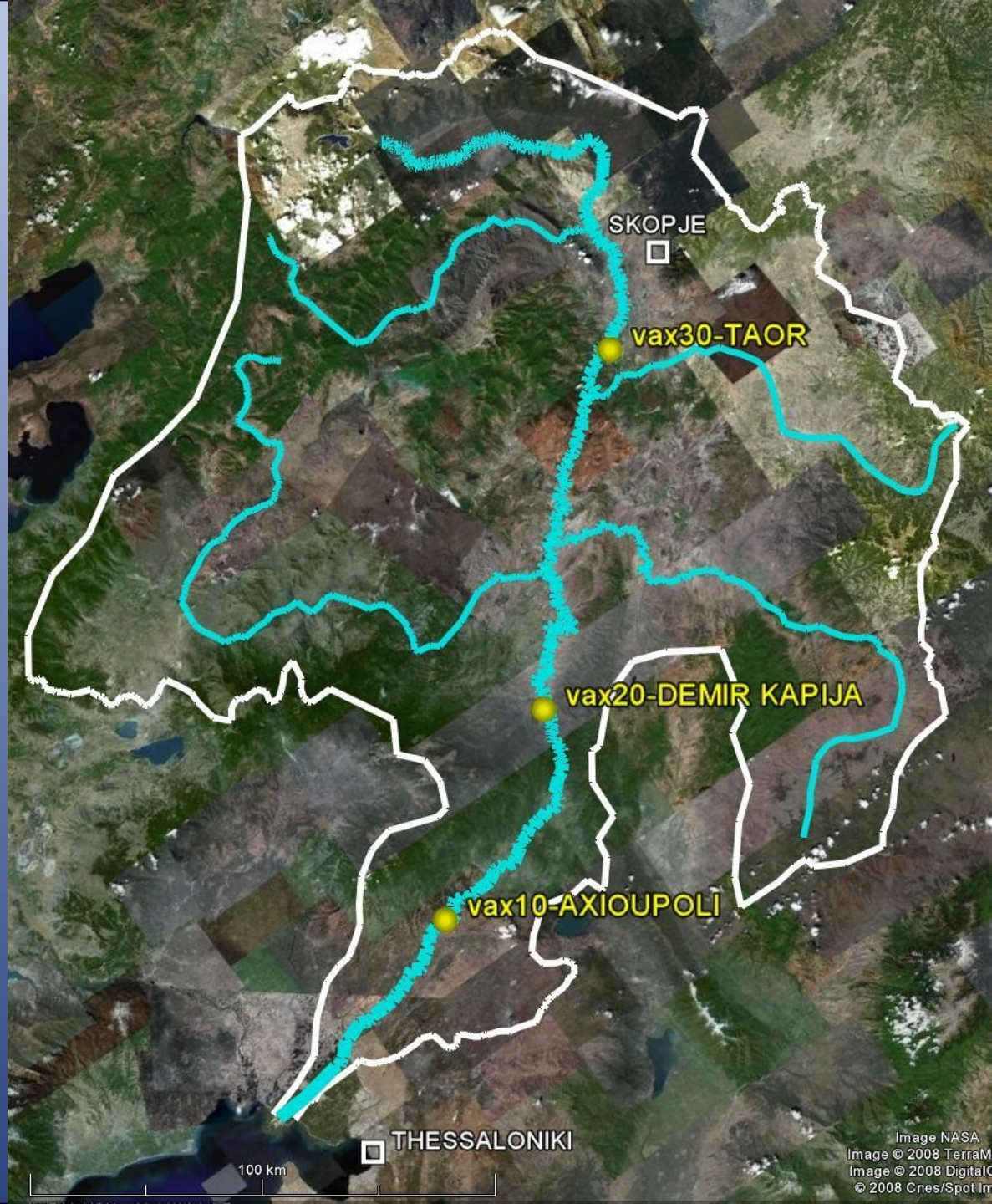
Mir for Мир
(Science for Peace)

Table 2. Hydrographic characteristics of Vardar and its main tributaries

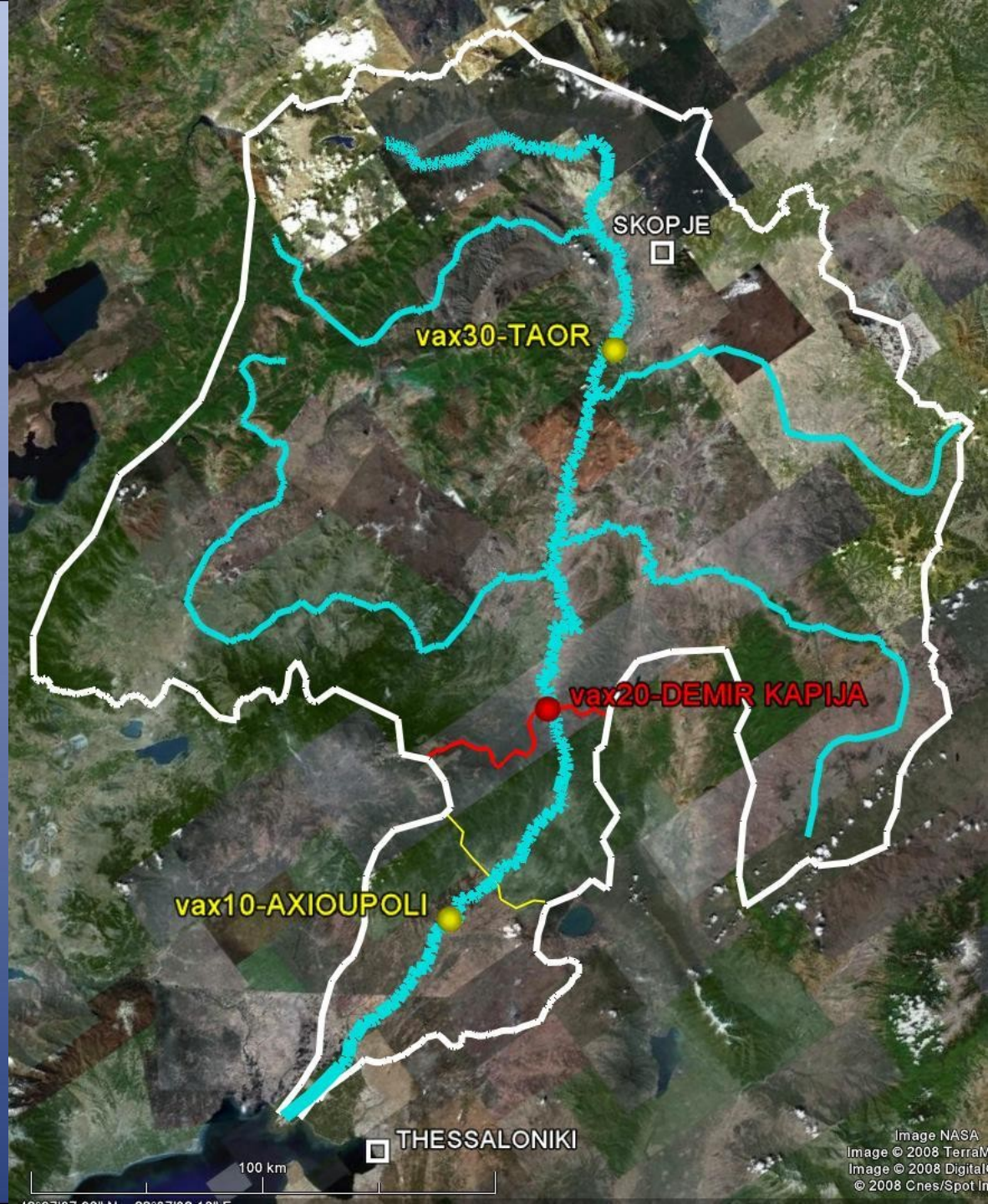
River	Watershed [km ²]	Average elevation [m]	Length [km]	Average discharge [m ³ /s]	Annual discharge [m ³] $\times 10^6$
VARDAR	20,400	793	302	45.0	4,565
Crna	4,850	863	228	7.5	1,178
Treska	1,920	1,010	139	2.4	762
Bregalnica	4,300	722	225	4.0	444
Pcinja	2,500	758	136	2.5	397

Three
Permanent
Monitoring
Stations

Existed but
out of
operation



The
Demir
Kapija
Permanent
Monitoring
Station











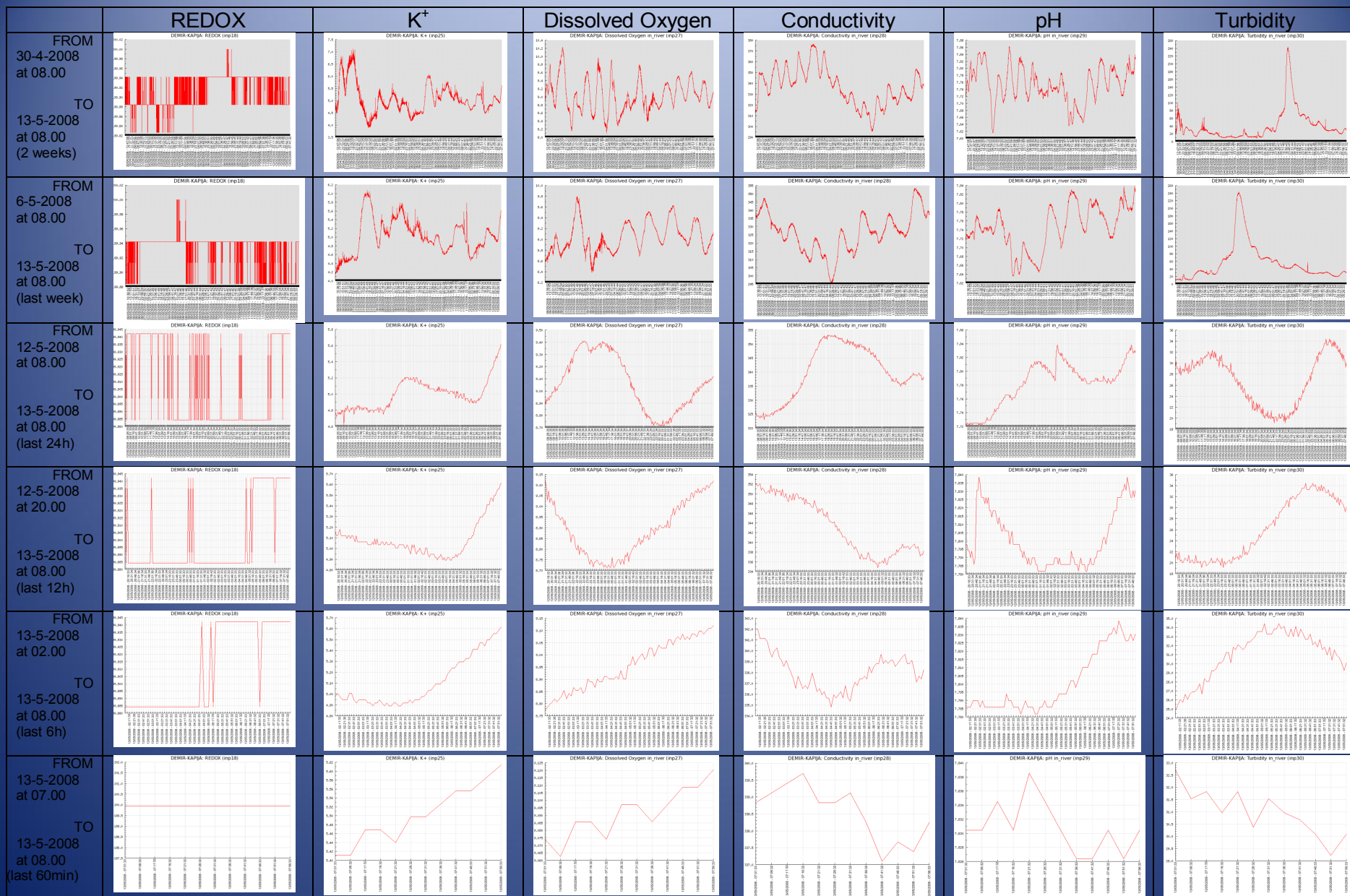


Fig. 12. Measurements of 6 (from 21 actually active and 42 totally configured) Vardar/Axios water quality parameters, emitted every 5 minutes from our online fully automated NATO-MIRVAX in-river Monitoring Station in Demir Kapija (Taken through internet, the 13th May 2008, at 12.00 to 13.00)
{To see details in the electronic version of this report of any of the above diagrams, click on it and zoom in 500%}

35

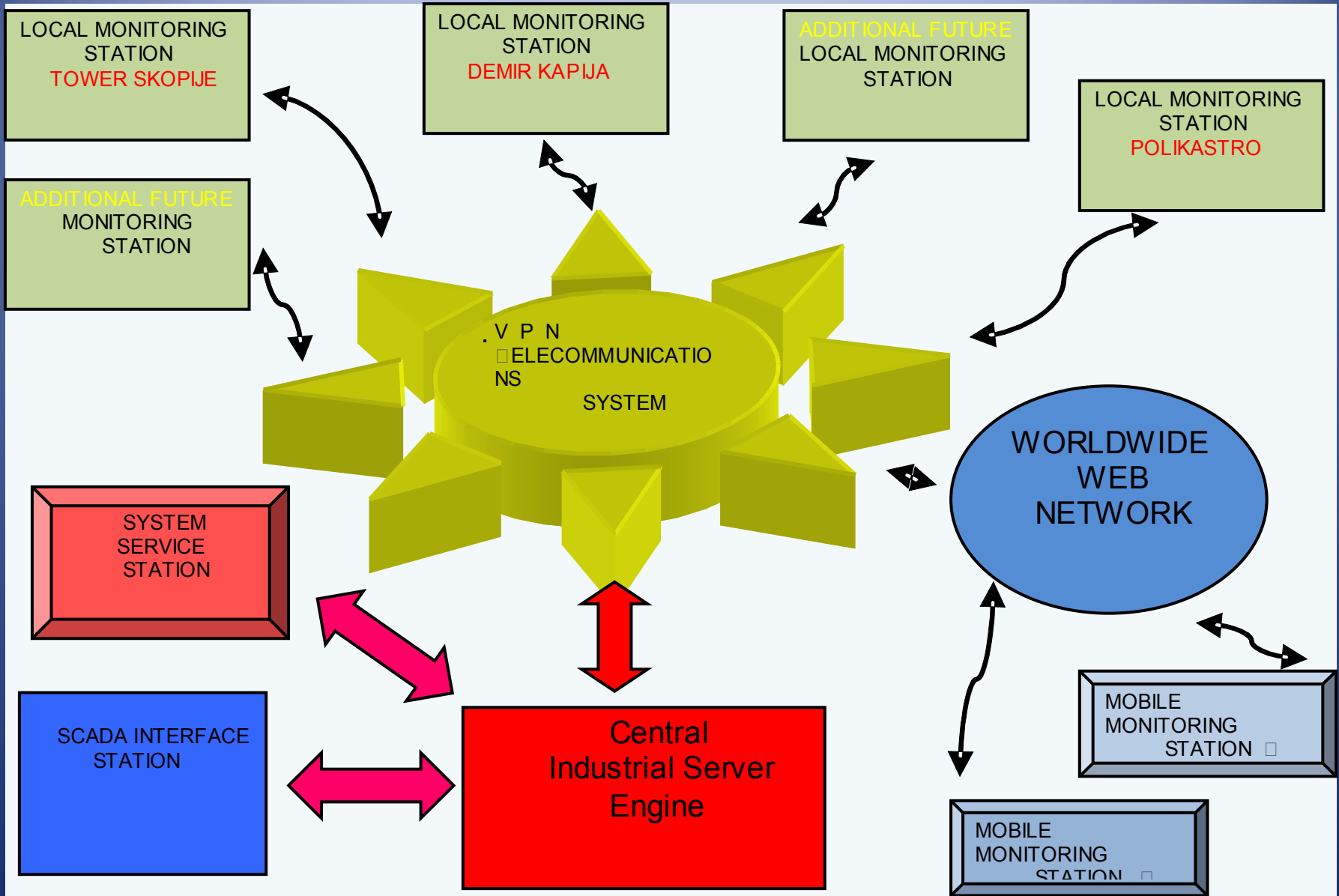
Activated

Mobile

Monitoring

Stations



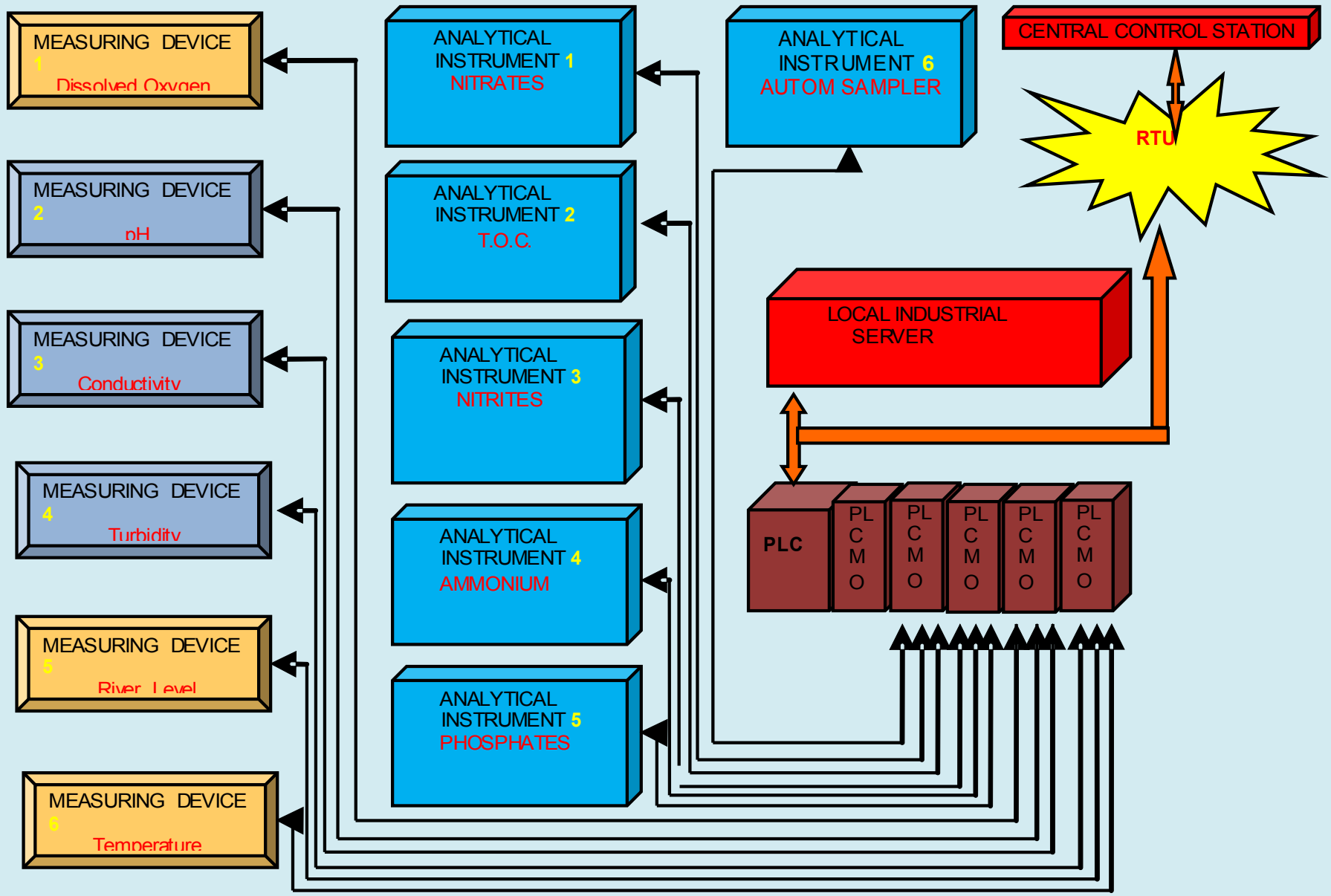


Structure of the real-time telemetry network and SCADA of the MIRVAX System

The automated industrial telemetry system

MIRVAX

- Local tele-monitoring in-container stations,
- Local tele-monitoring in-river stations,
- Mobile tele-monitoring stations,
- PLC-based totally integrated automation system,
- Tele-communication modular system (RTU),
- Main coordination center.

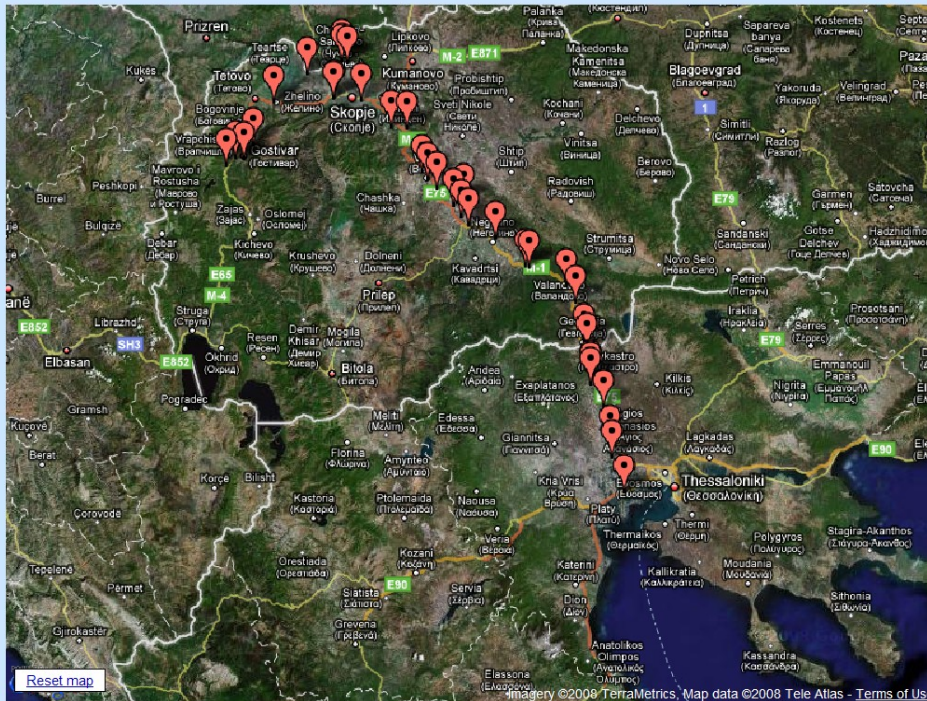


Structure of a local permanent in-container station



Artemis monitoring system
Engineered by SYMPAN A.G.

- ARTEMIS_Minax001
- Stations
- Measurements
- Alarms
- System



ARTEMIS.Mirvax001

- Stations
 - List all
 - View / Edit
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HOME > Stations > List all

Registered Stations:

Station ID	Name	Location	WGS-84 Lon	WGS-84 Lat	Initiated	Options
41000	AXIOS_RIVER	HEADER	HEADER	HEADER	HEADER	
41010	VAX01-ANAHOMA	AXIOS	0	0	N/A	
41020	VAX02-KYMINA	AXIOS	22.71185	40.60411	29/08/2008	
41030	VAX03-ANATOLIKO	AXIOS	0	0	N/A	
41040	VAX04-ADENDRO	AXIOS	0	0	N/A	
41050	VAX05-GEFYRA	AXIOS	22.65435	40.72863	29/08/2008	
41060	VAX06-PROHOMA	AXIOS	22.64612	40.78673	28/08/2008	
41070	VAX07-AXIOHORI	AXIOS	22.6148	40.9103	28/08/2008	
41080	VAX08-KAMPOHORI	AXIOS	0	0	N/A	
41081	VAX09-GEFYRA_AXIOUPOLIS	AXIOS	22.55728	40.98727	28/08/2008	
41100	VAX10-POLYKASTRO	AXIOS	22.55689	41.0099	28/08/2008	
41110	VAX11-AXIOUPOLI	AXIOS	22.552778	41.018056	N/A	
41120	VAX12-PEFKODASOS	AXIOS	0	0	N/A	
41130	VAX13-EVZONI	AXIOS	0	0	N/A	
41140	VAX14-EIDOMENI	AXIOS	22.53841	41.112	28/08/2008	
41149	VARDAR_RIVER	HEADER	HEADER	HEADER	HEADER	
41150	VAX15-BOGORODICA	VARDAR	0	0	N/A	
41160	VAX16-GEVGELIJA	VARDAR	22.52411	41.146	02/09/2008	
41170	VAX17-MARVINCI	VARDAR	22.48263	41.28082	02/09/2008	
41180	VAX18-UDOVO	VARDAR	22.43752	41.34075	02/09/2008	
41190	VAX19-KLISURA	VARDAR	0	0	N/A	
41200	VAX20-DEMIR KAPIJA	VARDAR	22.26169	41.4049	21/03/2008	
41210	VAX21-DAMIR_TUNEL	VARDAR	22.2474	41.41019	02/09/2008	
41220	VAX22-DUBROVO	VARDAR	0	0	N/A	
41230	VAX23-KRIVOLAK	VARDAR	22.10373	41.50876	02/09/2008	
41240	VAX24-GRADSKO	VARDAR	21.94352	41.58456	02/09/2008	



40.72863,22.65435

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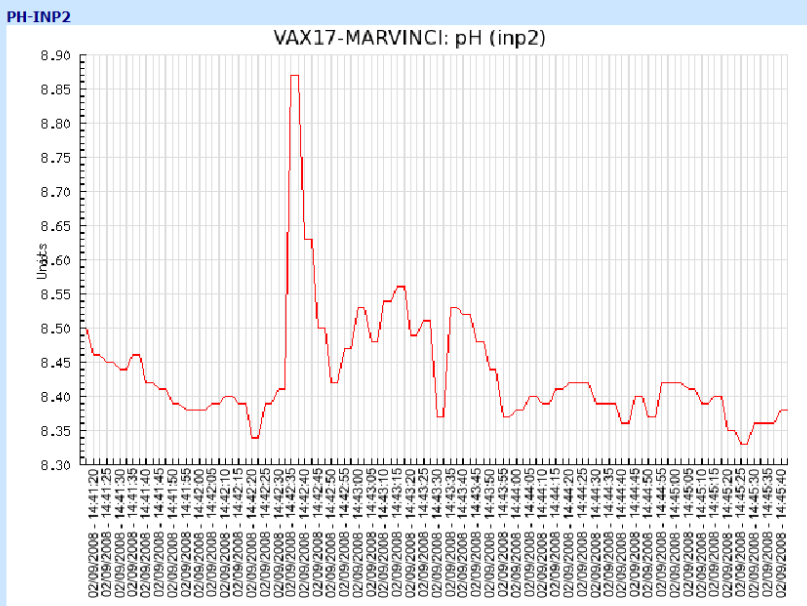
Print Send Link

Results 1 - 1 of about 1 for 40.72863,22.65435

+40° 43' 43.07", +22° 39' 15.66"



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- Stations
 - List all
 - View / Edit
 - Add new
- Measurements
 - Per station report
 - All stations (text)
 - Combined reports
- Alarms
- System



- Temperature
- pH
- ORP
- SpConductivity
- SpConductivity
- Resistance
- Sal
- TDS
- Depth
- NH4+
- NH4+
- NH4Total
- NO3-
- NO3-
- Cl-
- Cl-
- DepthX
- DepthY
- Turbidity
- Turbidity
- Turbidity
- LDO%
- LDO
- LDO_BP
- Int. Battery
- Ext. Battery
- Circulator
- C.O.D.



- Temperature
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- ORP
- SpConductivity
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- Sal
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HOME > [Measurements](#) > Combined reports

Combined reports (GMT+03:00)

Choose elements to report:

Station: 41200-VAX20-DEMIR KAPI...	Selected counters: ext_pH from VAX20-DEMIR KAPIJA (Red) ext_DissOxygen from VAX20-DEMIR KAPIJA (Blue) ext_Turbidity from VAX20-DEMIR KAPIJA (Purple)	From: 2008-10-13 02:55:00
Counter: WaterLevel		To: 2008-10-16 02:55:00

Format: YYYY-MM-DD hh:mm:ss
Example: 2007-7-20 16:55:30

Remove selected
Display

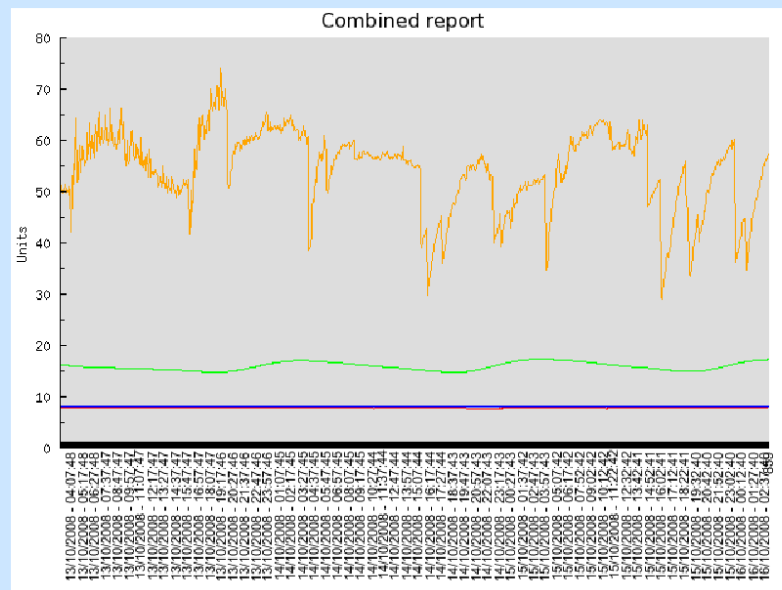
- WaterLevel
- int_DissOxygen
- Temperature
- int_Conductivity
- int_pH
- int_Turbidity
- Toxicity
- NO3
- NO2
- int_NH4
- ext_NH4
- T.O.C.
- PO4
- C.O.D.
- Gr
- Cd
- Ni
- REDOX
- Chlorine
- Mn
- Green_Algae
- Chlorophyl
- Velocity
- Microbe
- K+
- Water Level SNR
- ext_DissOxygen
- ext_Conductivity
- ext_pH
- ext_Turbidity



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HOME > Measurements > Combined reports

Combined report from 2008-10-13 02:55:50 to 2008-10-16 02:55:50 (GMT+03:00)



Red = ext_pH (port 29) from station ID 41200
Blue = ext_DissOxygen (port 27) from station ID 41200
Orange = ext_Turbidity (port 30) from station ID 41200
Green = Temperature (port 3) from station ID 41200

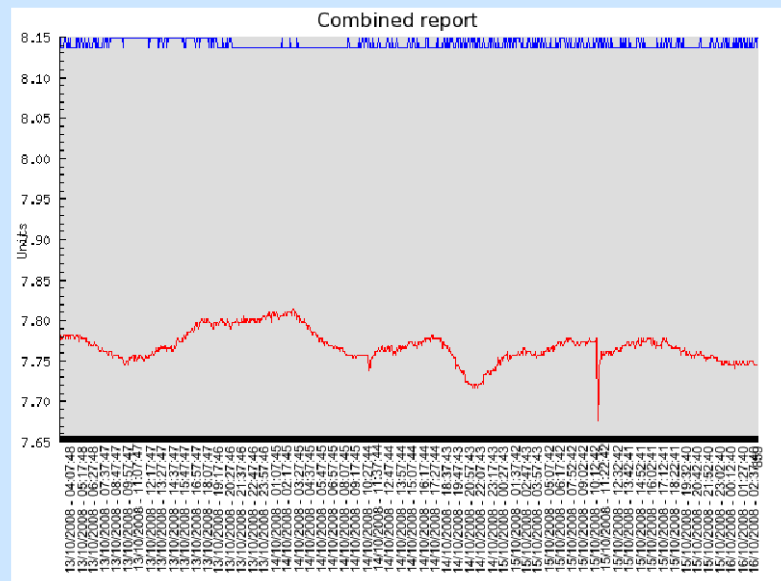


Artemis monitoring system
 Engineered by SYMPAN A.G.

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HOME > Measurements > Combined reports

Combined report from 2008-10-13 02:55:50 to 2008-10-16 02:55:50 (GMT+03:00)



Red = ext_pH (port 29) from station ID 41200
 Blue = ext_DissOxygen (port 27) from station ID 41200

Programmed
to be
Activated
Mobile
Monitoring
Stations



Thank you for your attention



<http://reald.civil.auth.gr/mirvax/mirvax.htm>