COSMOS and BIOSPHERE

VIII International Crimean Conference

# Relation between the flow of UV photons and solar activity and processes in geosphere

[1]Soroka S. A., [2]Parkhomov A.G., [3]Perevozchikov N.F.

*[1]Lviv centre of Institute of space Research NAS and NSA of Ukraine, Lviv, Ukraine, E-mail:soroka@isr.lviv.ua*

*[2] The Institute of Research of Time Nature, Moscow State University, Moscow, Russia, E-mail: alexparh@mail.ru*

*[3] Moscow Institute Physic and Technology, Moscow, Russia, E-mail: n125252p@rambler.ru*

Sudak - 2009

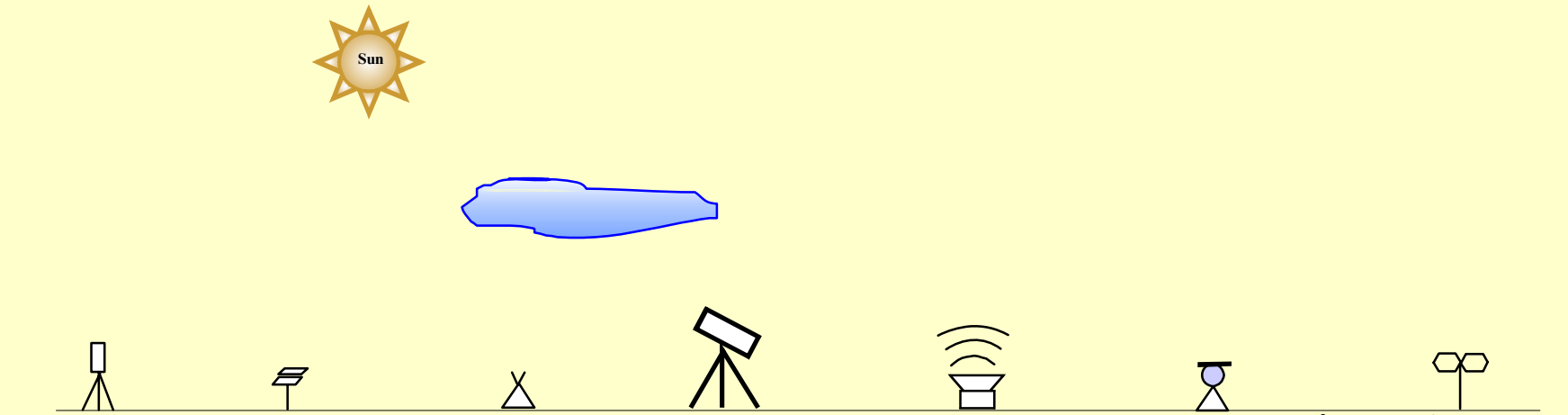
# Introduction

**Space influence on the biosphere occurs via geospheres. Solar activity , galaxy cosmic rays are the main factors of space influence on the atmosphere. Their influence causes both electromagnetic and mechanical wave processes. Atmosphere can be considered as a mechanical electromagnetic oscillating system . Under effect of cosmic electromagnetic rays on it the acoustic waves are formed and vice versa acoustic waves generate electromagnetic waves. Biological objects can also be attributed to acoustic-electromagnetic oscillating systems.**

**Space factors check the ground processes and biological objects through atmosphere acoustic-electromagnetic waves.**

***The aim of the researches is the investigation of the relation between the UV photons in the range 200-400 nanometers and solar activity and processes in atmosphere.***

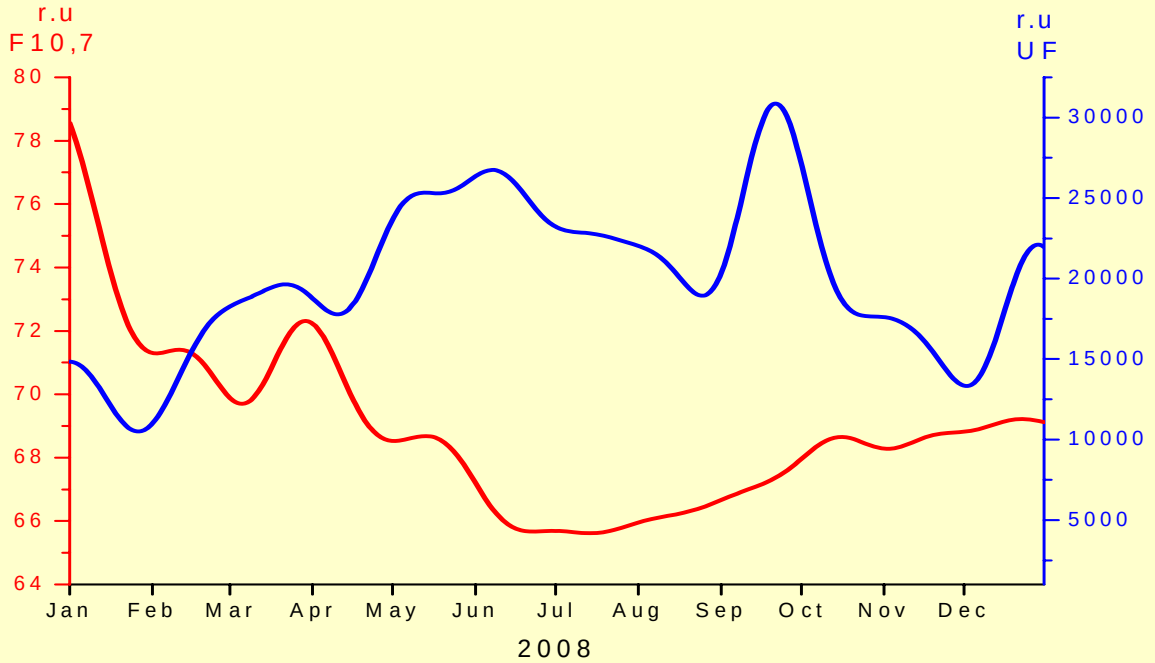
# The measuring equipment at realization of experiments



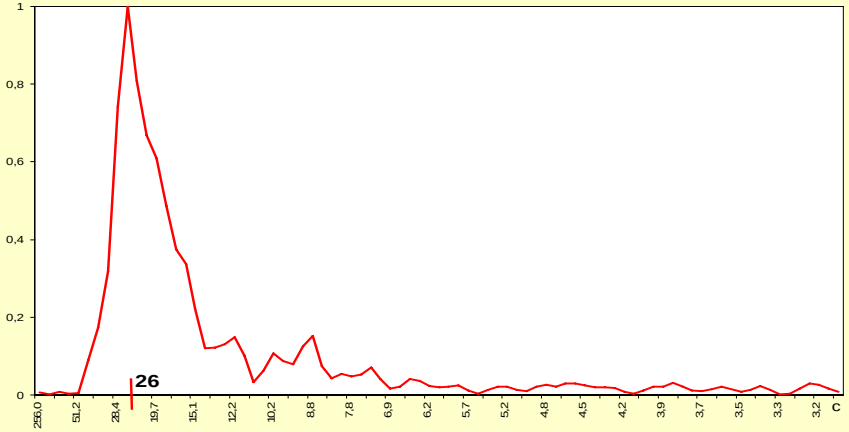

**Such experiments have been performed:**

1. Long-term experiments for detection of the influence of solar activity on the flux of UV photons.
2. Short-term ( active and passive) investigations for revealing the relation between UV photons with dynamics of atmosphere and low-frequency electric and magnetic fields .

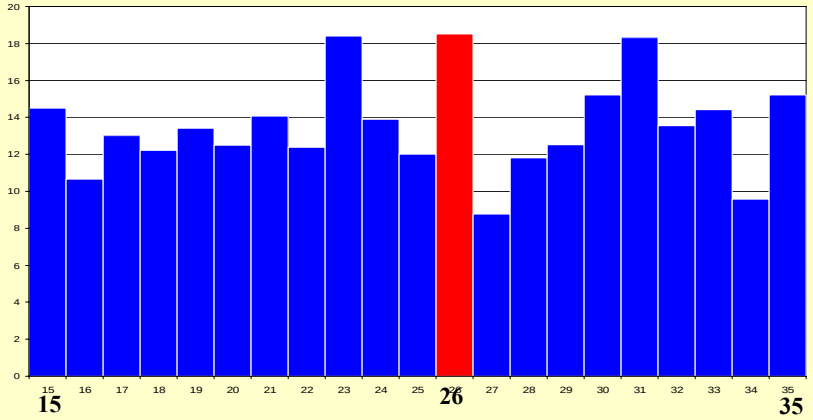
# Variations of UV photon flux and solar activity




**Changes solar activity and daily UV photons quantity for 2008**

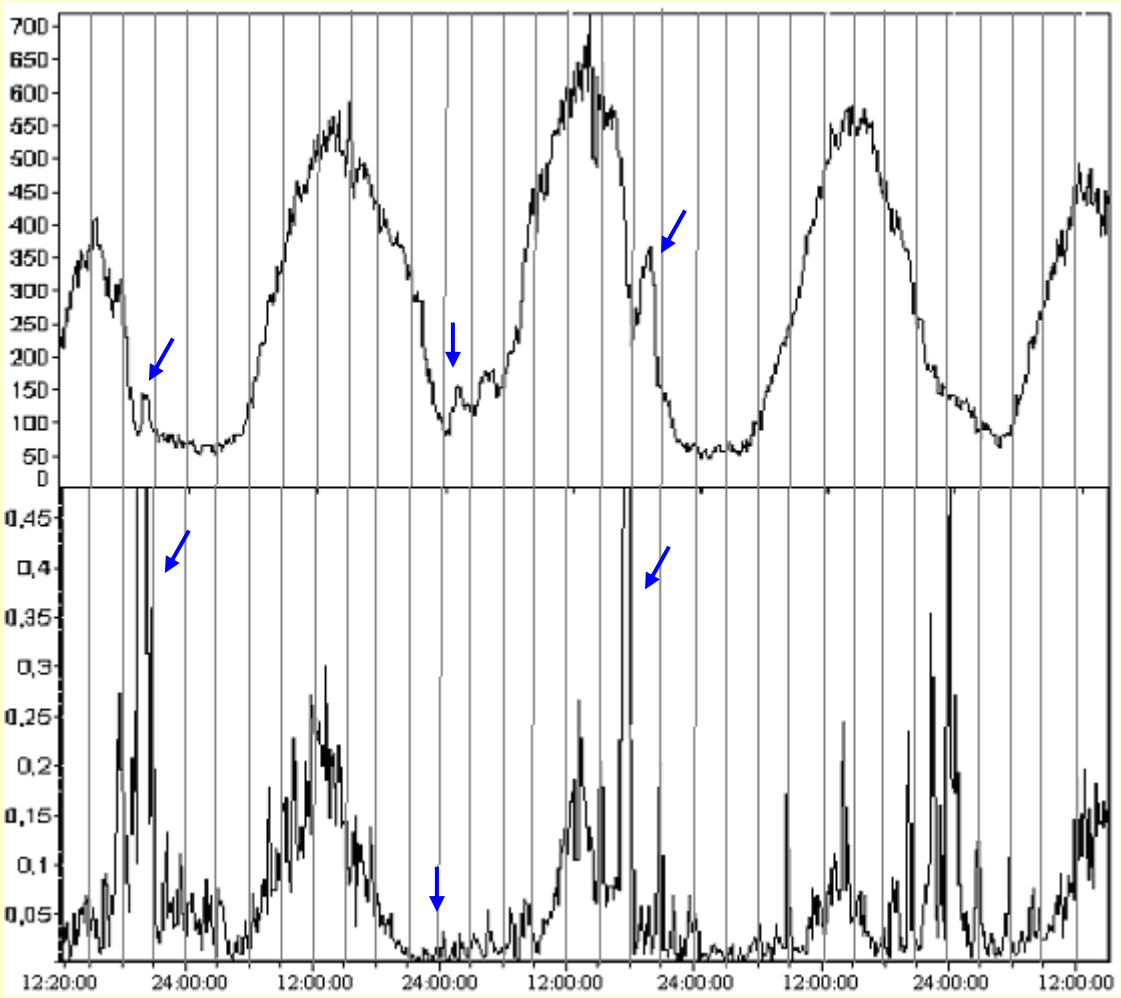



**Spectral density of SA variations for 2008**




**Period of variations UV photon flux for 2008**

# Variations of UV photon flux and acoustic disturbances in atmosphere (0,001 – 10 Hz)




**Impulse quantity**
**UV Photometer-1**

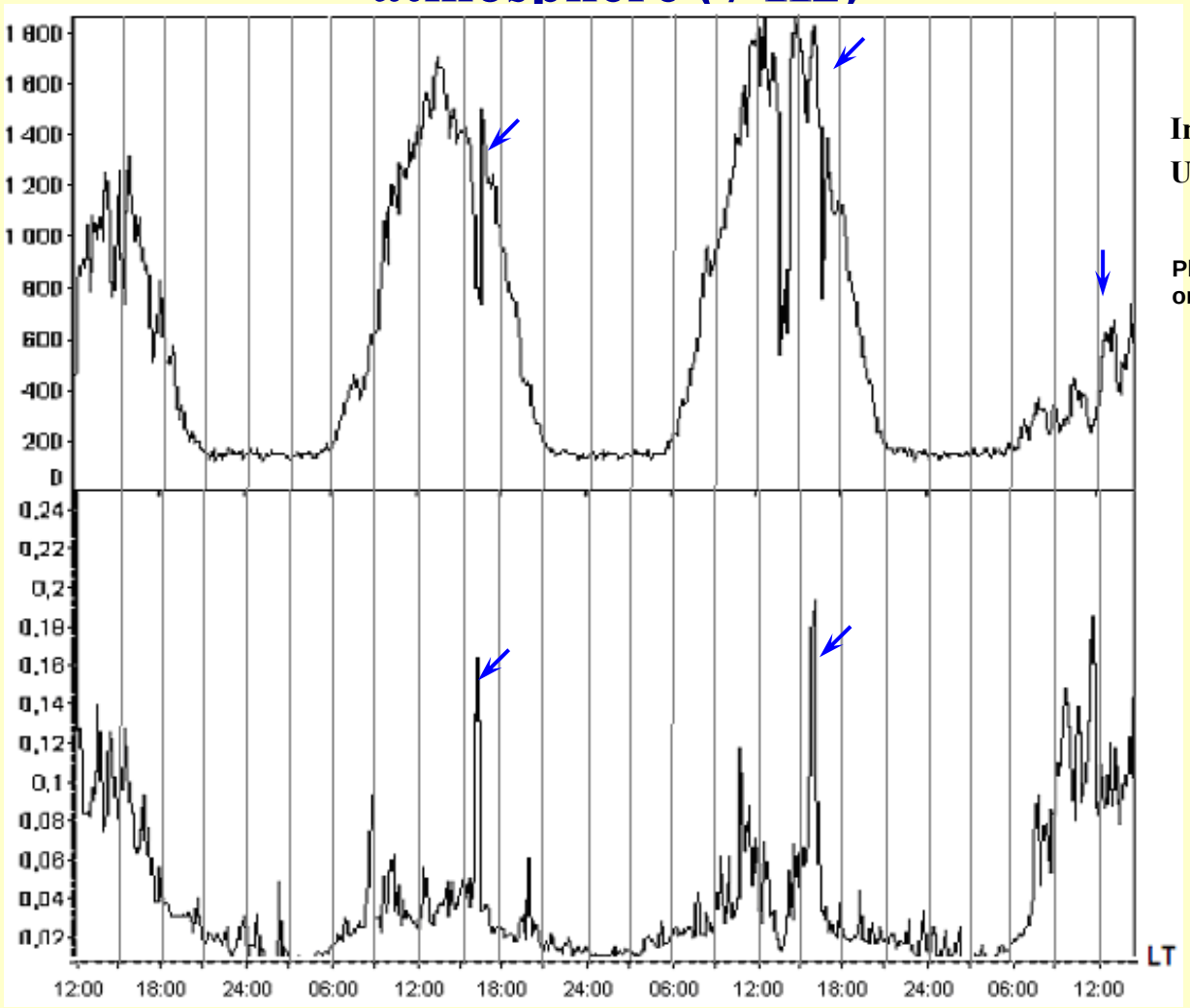
**Photometer is directed on north ~20° from a vertical**

**Infrasound**
**0,001-10 Hz**

**Registration from 27.06.2008 12:20:00 LT to 01.07.2008 15:20:00 LT.**
**Lviv 2008. ΔT=720 c.**

*Weather report: variable cloudy*

# Variations of UV photon flux and acoustic disturbances in atmosphere (7 Hz)




**Impulse quantity**
**UV Photometer-1**

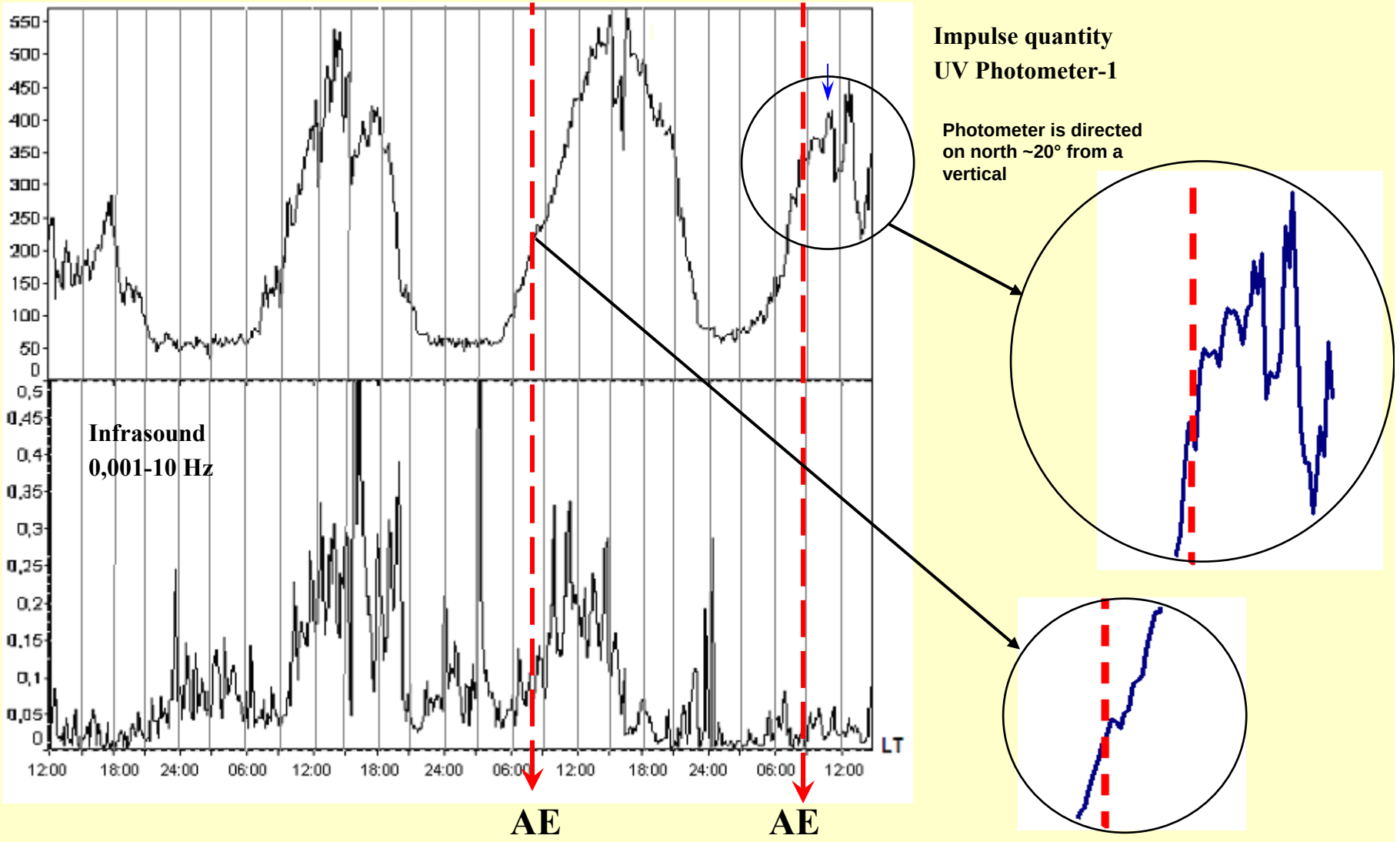
**Photometer is directed on north-west**

**Infrasound**
**7 Hz**

**Registration from 18.07.2008 12:00:00 LT to 21.07.2008 15:00:00 LT.**
**Lviv 2008. ΔT=720 c.**

*Weather report: cloudless*

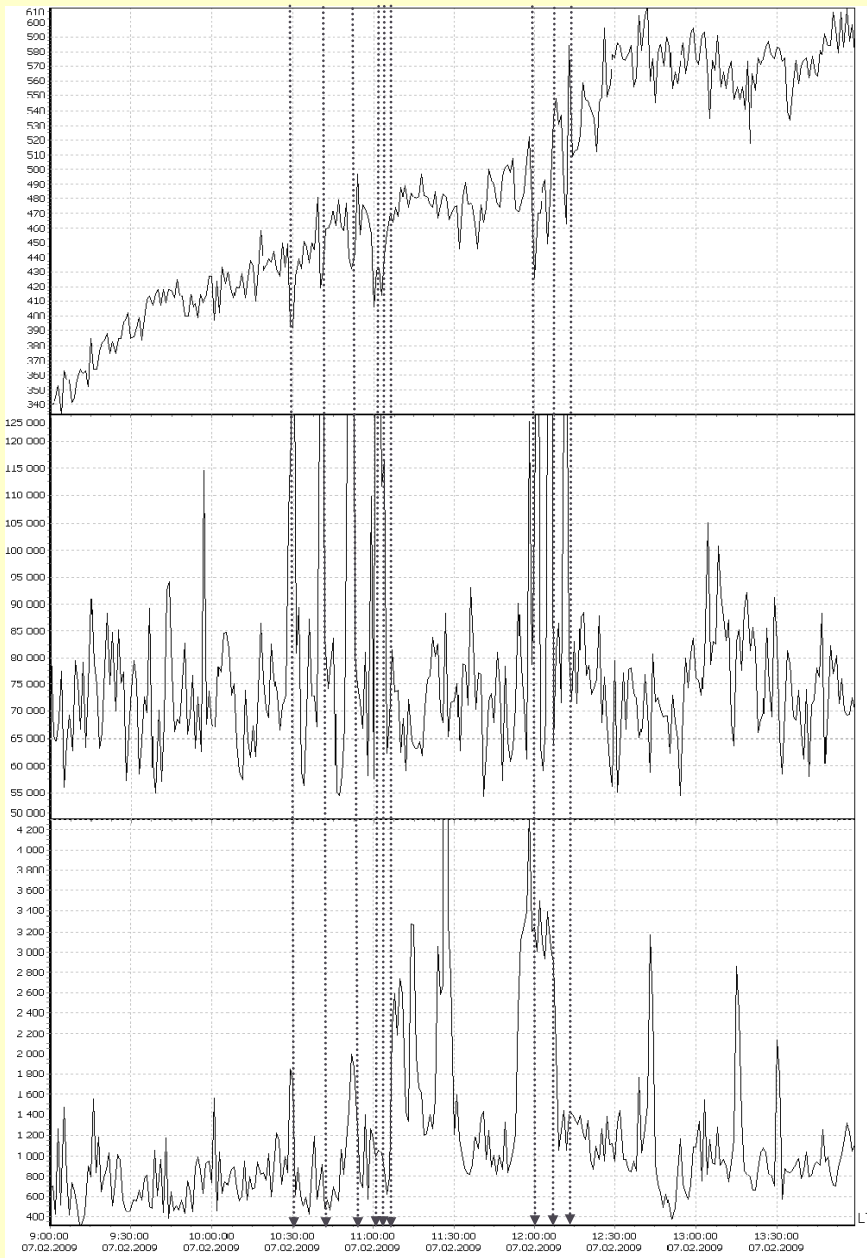
# Variations of UV photon flux and acoustic disturbances after acoustic excitation




**Registration from 04.07.2008 12:00:00 LT to 07.07.2008 15:00:00 LT.**
**Lviv 2008 ΔT=720 c**

*Weather report : 04.07.2008 – raining, 05-07.07.2008 - variable cloudy*

# Supervision through the acoustically indignant zone

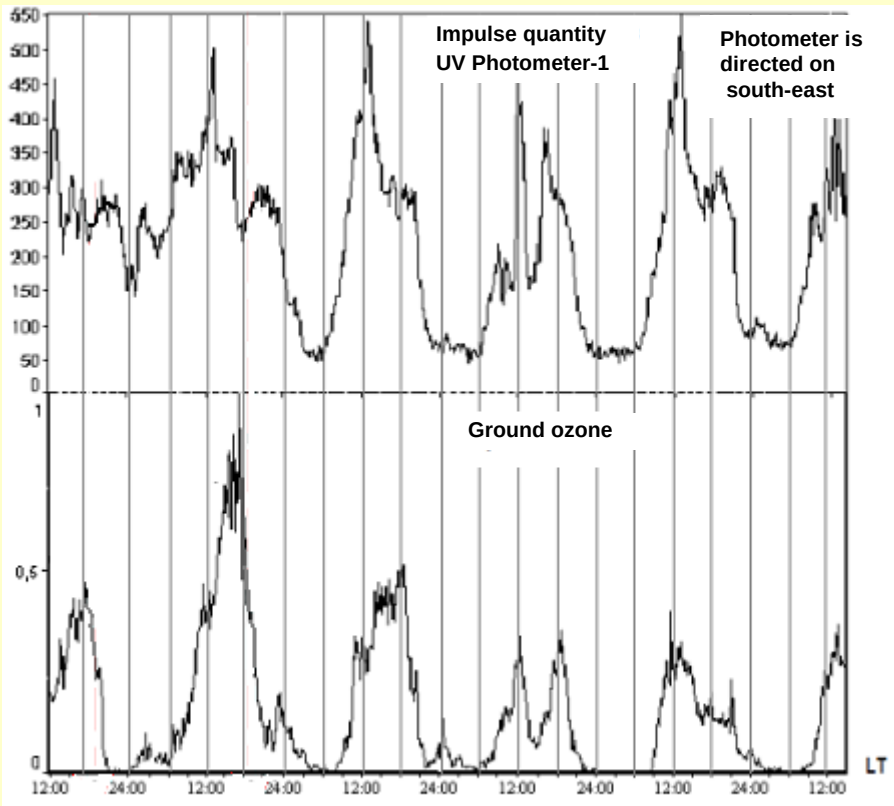



**Photometer**

**Vertical electrical field**

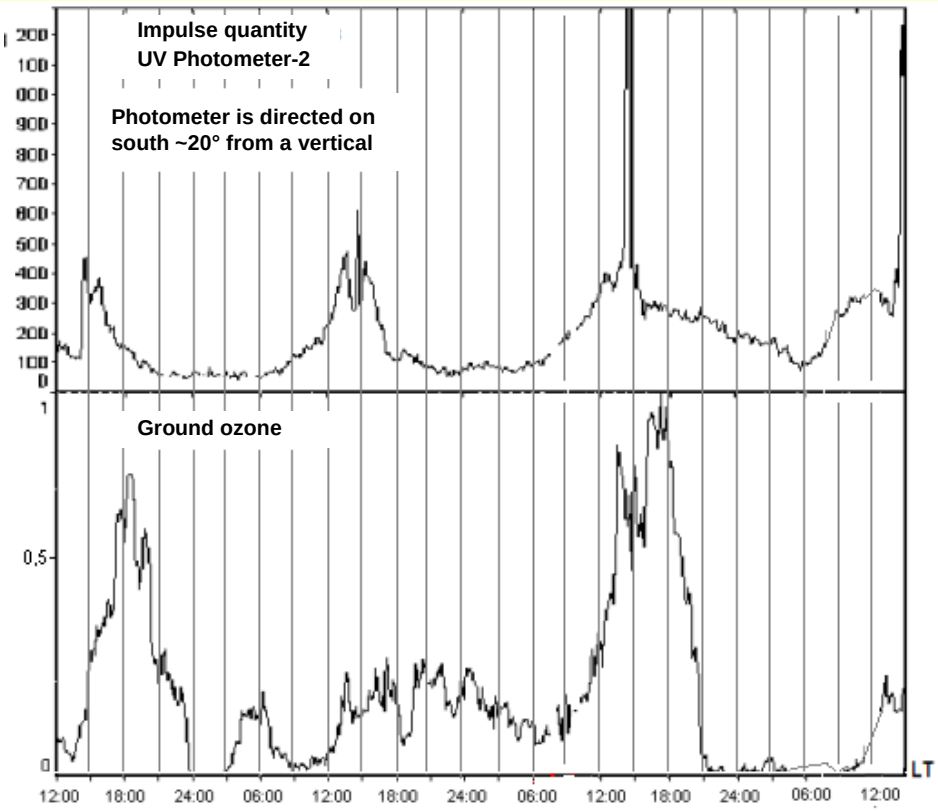
**Magnetic field the north - south**

# The ground ozone and variations UV photon flux




**Registration from 31.07.2008 12:00:00 LT to 05.08.2008 15:00:00 LT. Lviv 2008. ΔT=720 c.** (01.08.2008 solar eclipse at 13:07-13:15 LT)

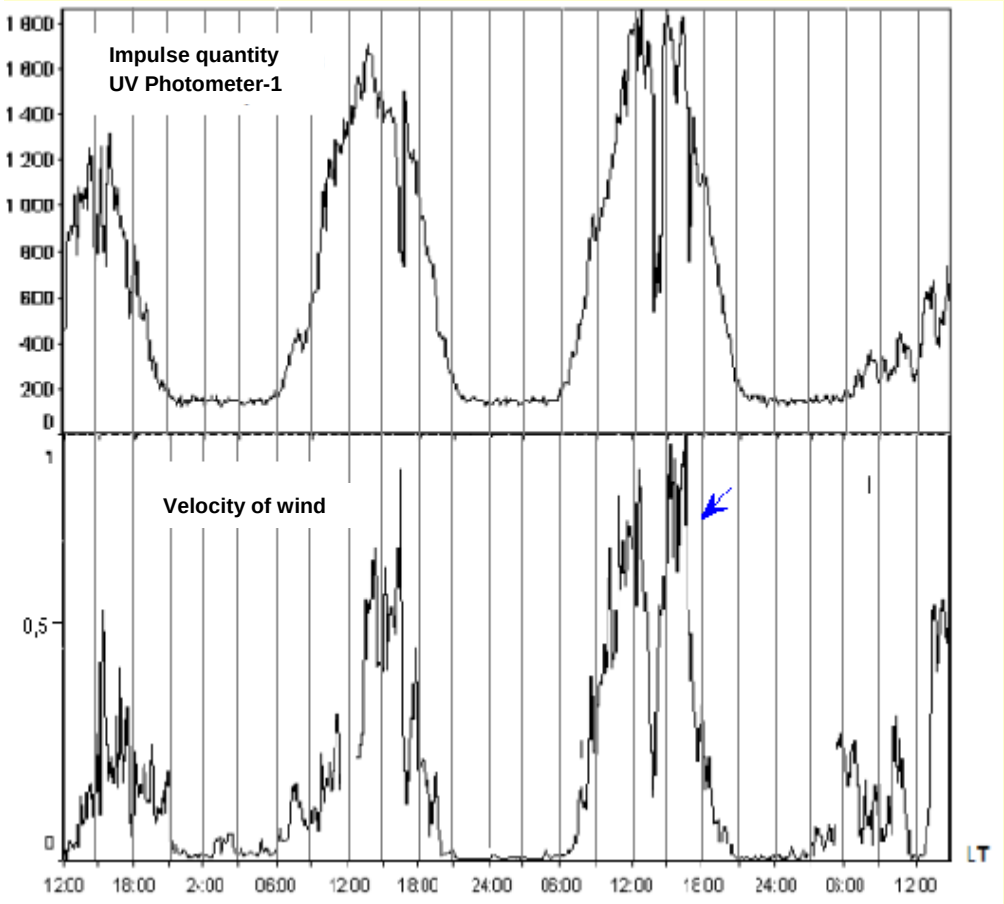
*Weather report : 31.07-02.08.2008 – cloudless,03.08.2008, from 14:00 to 15:00 – thunderstorm, 04.08.2008, from 21:00 to22:00 – thunderstorm, 05.08.2008г – variable cloudy.*

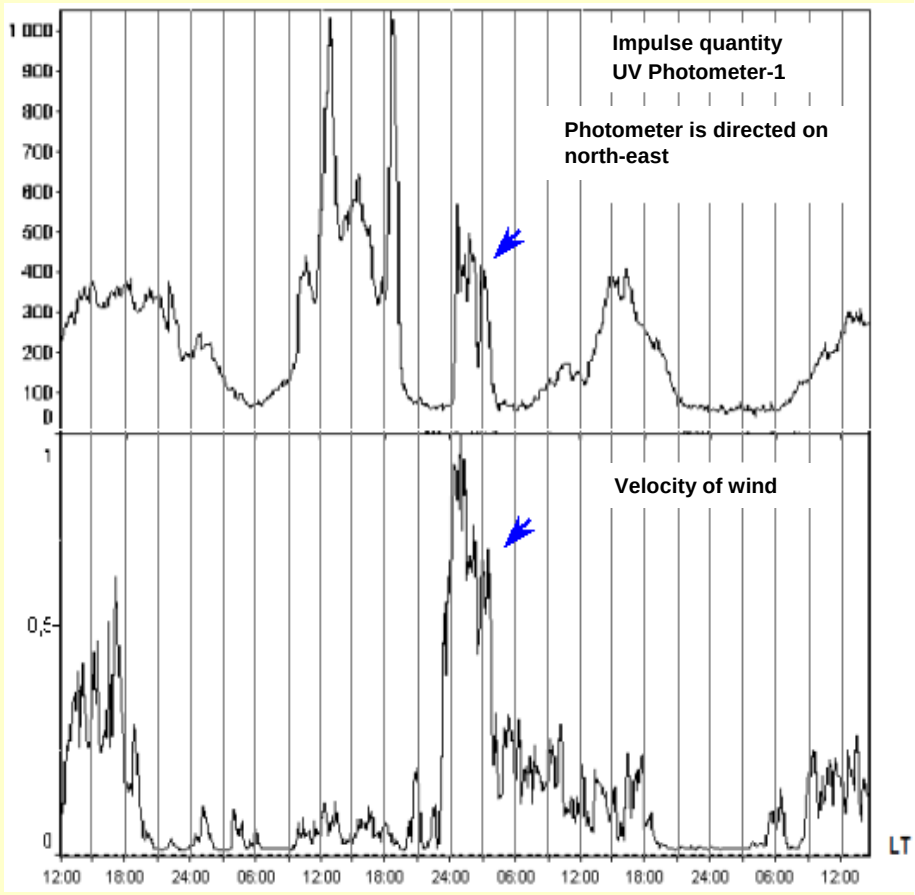



**Registration from 25.07.2008 12:00:00 LT to 28.07.2008 15:00:00 LT. Lviv 2008. ΔT=720 c.**

*Weather report : 25.07.2008 – cloudy, 26.07.2008 from14:00 to 15:00 – thunderstorm, rain to 18:00, 27-28.07.2008 – variable cloudy.*

# Influence of a wind on UV photon flux




**Registration from 18.07.2008 12:00:00 LT to 21.07.2008 15:00:00 LT. Lviv 2008. ΔT=720 c.**

*Weather report : cloudless*

**Registration from 08.08.2008 12:00:00 LT to 11.08.2008 15:00:00 LT. Lviv 2008. ΔT=720 c.**

*Weather report : 08.08.2008 – variable cloudy, 09.08.2008 – from 05:30 to 06:00 – thunderstorm, cloudy, 10.08.2008 – variable cloudy, 11.08.2008 – cloudless*

# CONCLUSIONS

- **Experiments show that variations of maximum daily values of UV photon flux on the ground surface in the range 200-400nm are in the reversed phase to the variation of solar activity. It is possible to suppose that a part of UV photons resulted from the interaction of galaxy cosmic rays with atmosphere.**
- **The UV photon fluxes are sensitive to dynamics of waves motion in the atmosphere, wind and storms. The UV photons manifest changes in the ground ozone.**
- **Taking into account that the ground UV photon flux in the range 200-400 nm is sensitive both to cosmic factors and the dynamics of atmosphere, it can be used as an indicator of space influence on ground processes, including biosphere.**

**THANK**

**FOR ATTENTION!**