

RADON IN SOIL GAS VARIATION ON PECHERSK POLYGON IN KIEV

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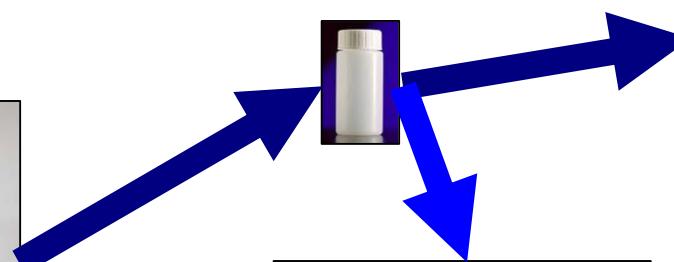
Карта-схема

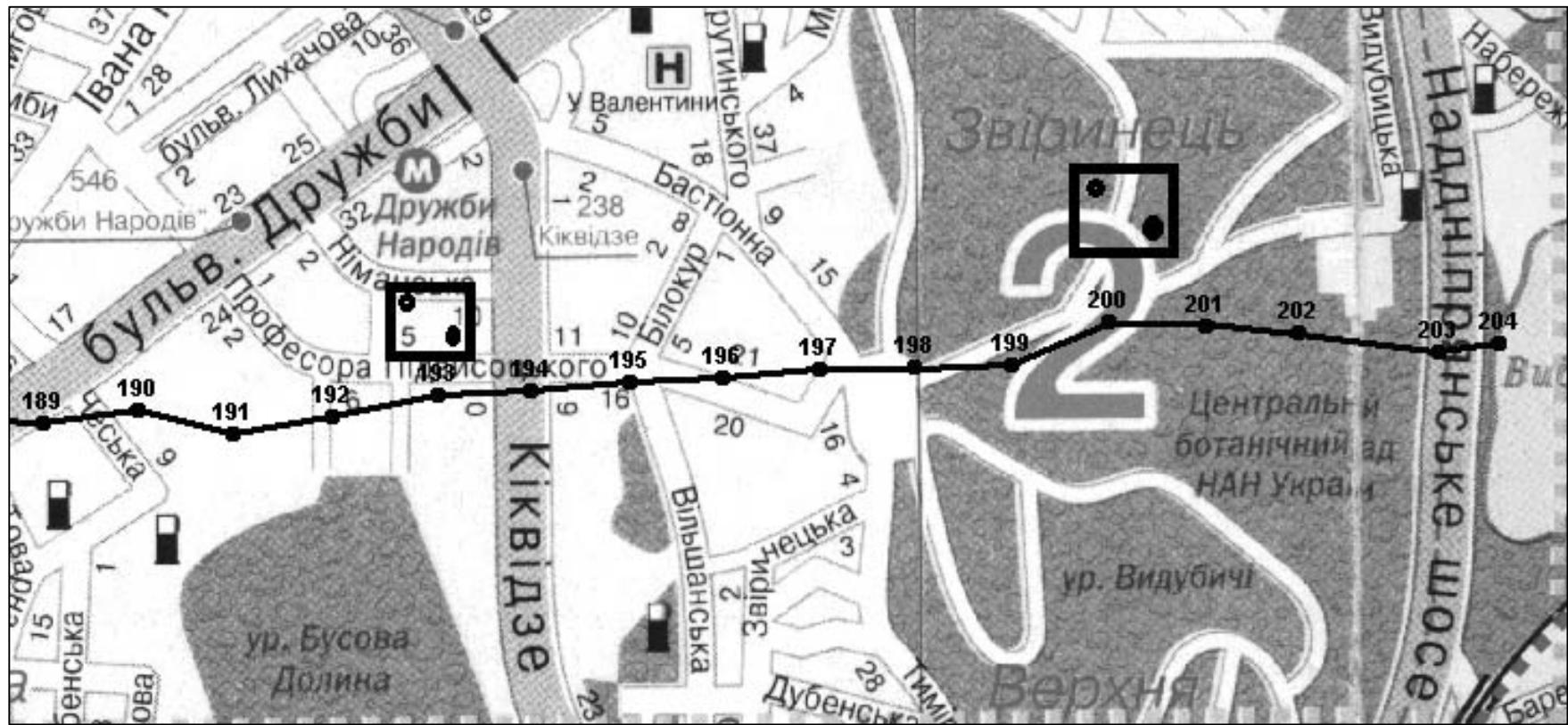
Національного ботанічного саду ім. М.М. Тришка НАН України



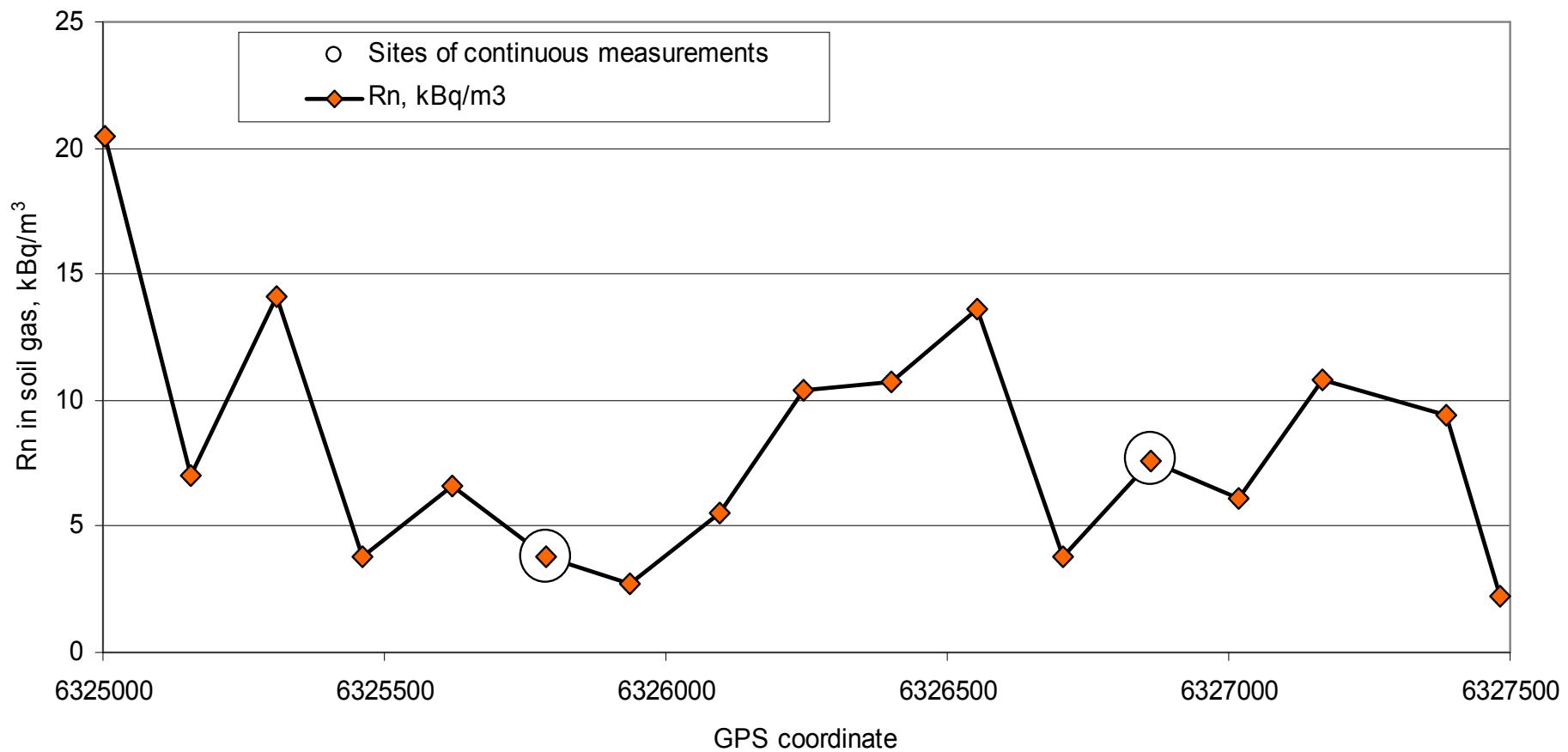


Methodical approach

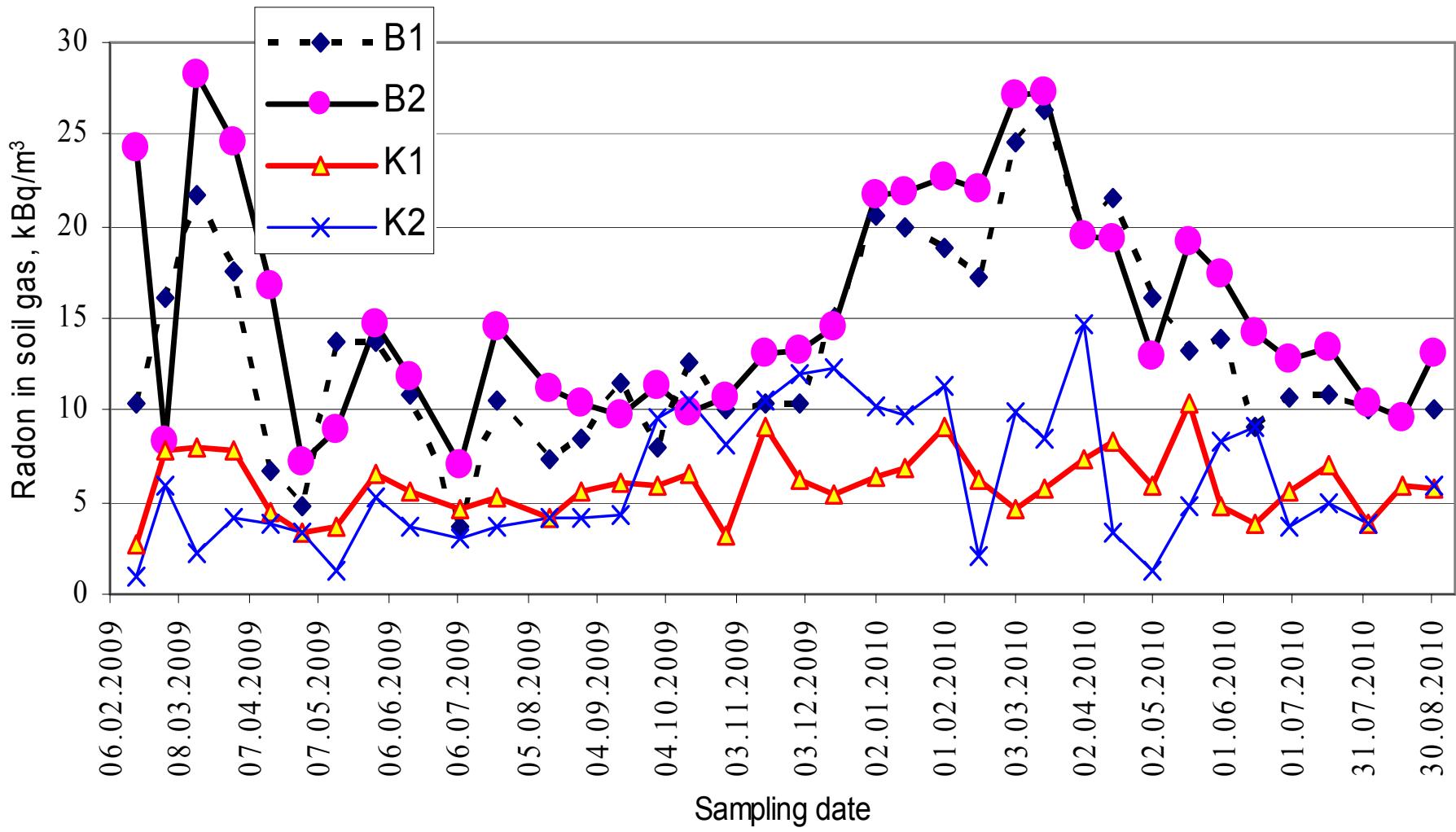




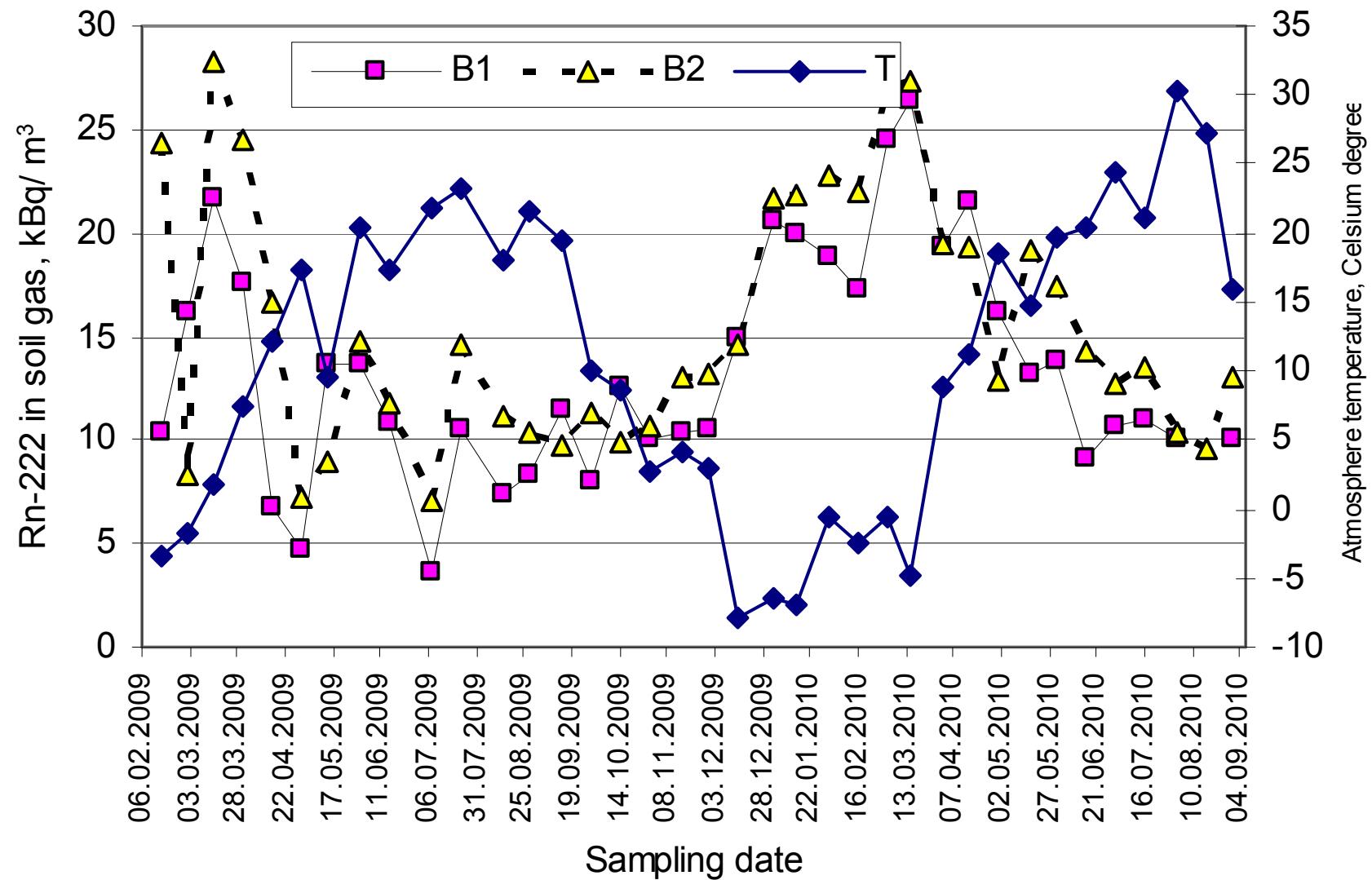
Fragment of Prydniprovs'kyi part of Pechersk district of Kiev city used for radon mapping (observation points 188-204 of Pechersk polygon) [Didenko et al., 2009]).



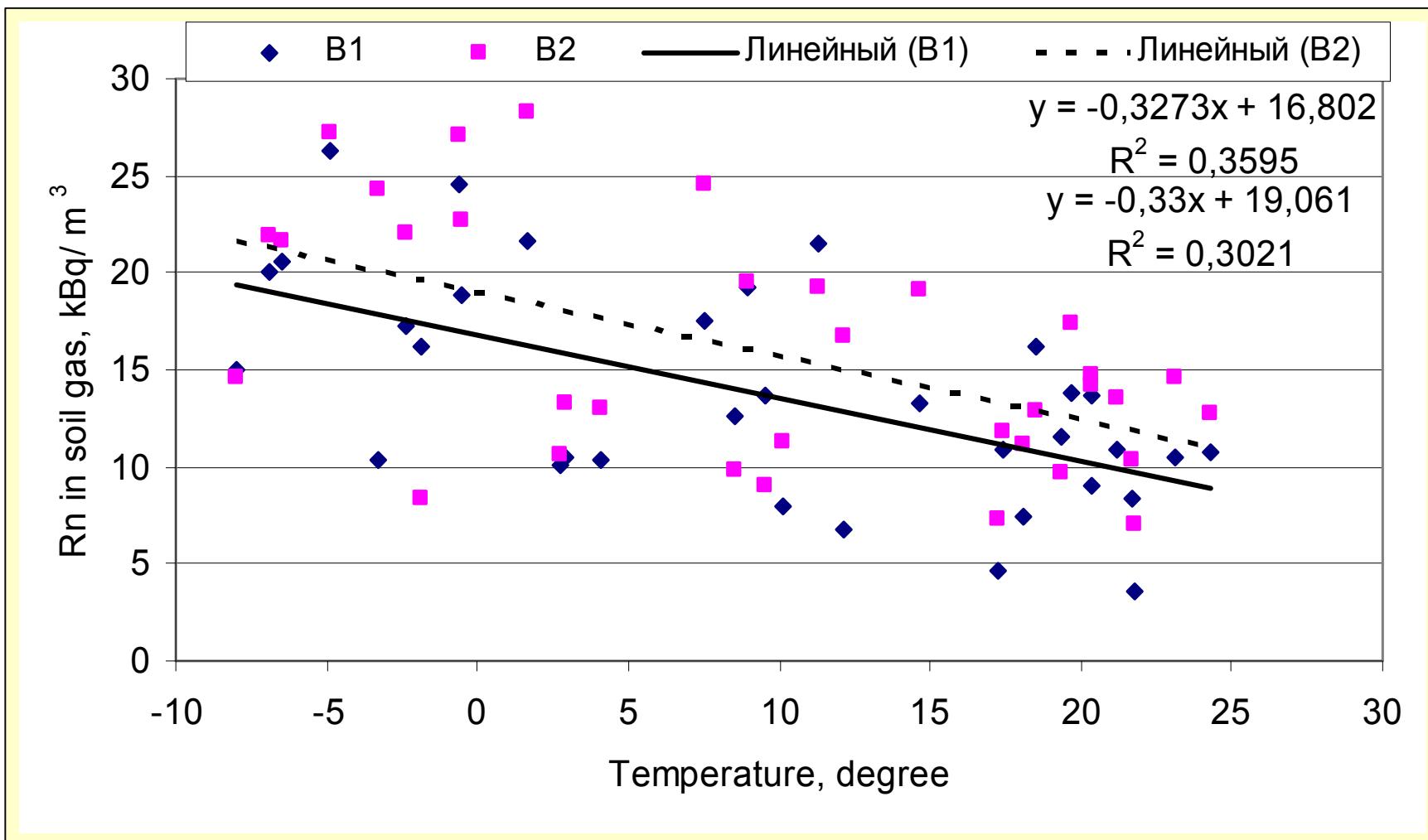
Radon in soil gas profile measured for sampling sites shown on fig. 1 [Didenko et al. 2009]. Two circled points corresponds to sites for 18 months experiment.



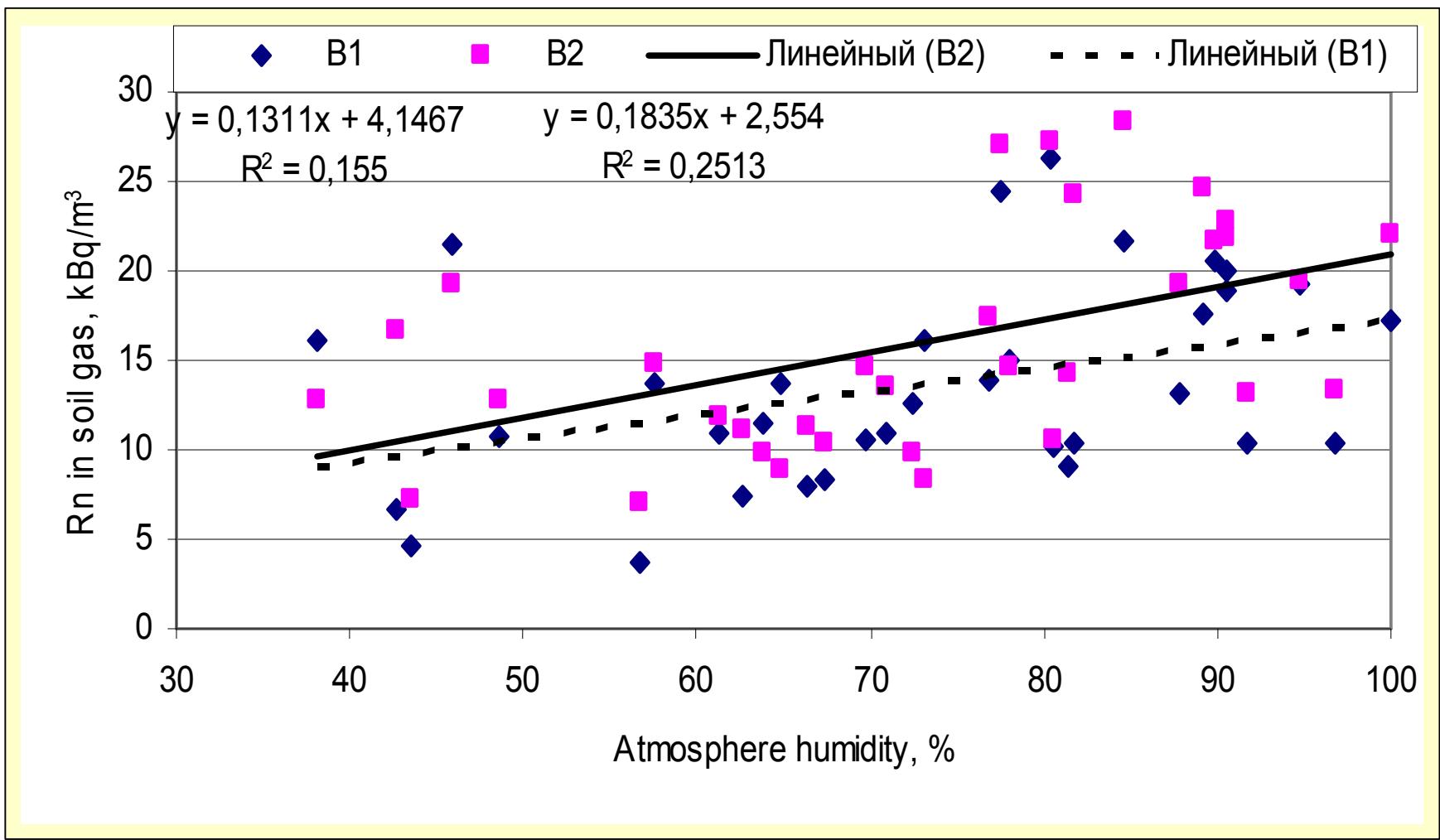
Radon in soil gas variation during observation period for Pechersk polygon
(Botanical garden (B1,B2), Kirovgeology (K1,K2)).



Seasonal variation of atmosphere temperature (T) and radon in soil gas ($B1, B2$) for Pechersk polygon “Botanical garden”, at Kiev.



Dependence of radon in soil gas versus atmosphere air temperature (Pechersk polygon, “Botanical garden” sites: (B1, B2) besides to correlation parameters (*linear fit*)).



Dependence of radon in soil gas versus atmosphere air humidity (Pechersk polygon, “Botanical garden” sites: (B1, B2) besides to correlation parameters (linear fit)).

Correlation parameters of radon in soil air to day averaged air temperature, atmosphere pressure and humidity (*linear fit*). Sampling sites: “Botanical garden” (B1, B2), “Kirovgeology” – (K1, K2)

Sampling site	A	B	R ²	A	B	R ²	A	B	R ²
	Temperature			Pressure			Humidity		
B1	-0.33	16.8	0.36	0.34	-242.9	0.06	0.13	4.15	0.16
B2	-0.33	19.1	0.30	0.37	-271.2	0.11	0.18	2.55	0.25
K1	-0.04	6.1	0.07	0.15	-107.7	0.16	0.13	2.43	0.29
K2	-0.24	8.9	0.36	0.18	-130.1	0.04	0.04	3.31	0.12

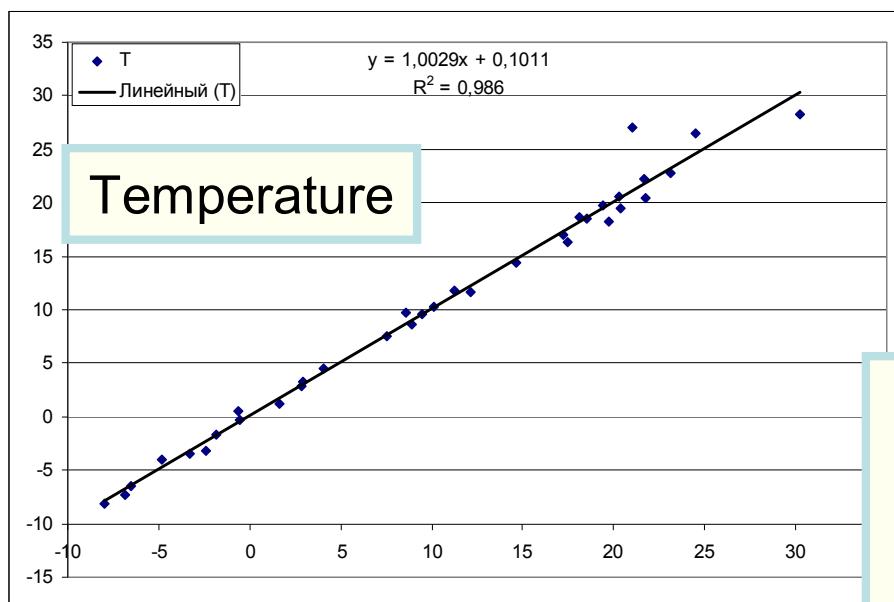
Conclusions

- Profile range of radon in soil gas is caused by geological conditions of upper soil.
- Variation of radon in soil gas on territory of Pechersk polygon is mostly caused by seasonal change of atmosphere air temperature.
- Influence of air pressure and humidity on activity of radon in soil gas is expressed as individual character to each site of research.
- Thus, prolonged researches of radon concentration in soil gas of Pechersk polygon show that radon in soil gas in its territory depends on the characteristics of its geological structure and meteorological conditions.

Literature

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9. URL: <http://www.meteoprog.ua/ru/fwarchive/Kyiv/> Archive of actual weather in Kiev (In Russian).
10. URL: http://rp5.ua/archive.php?wmo_id=33345&lang=ru Archive of weather in Kiev (In Russian).

Meteorological conditions



Two different sources:

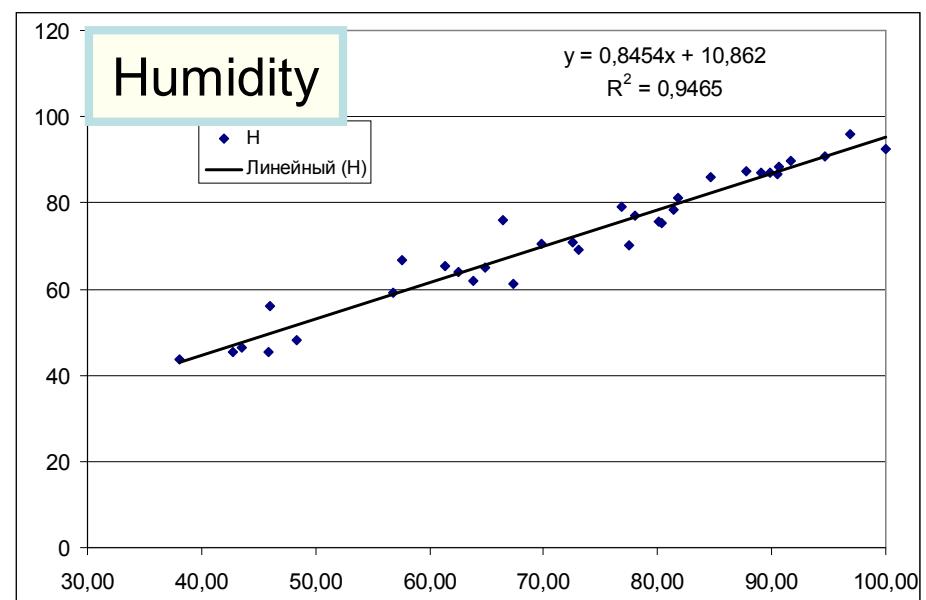
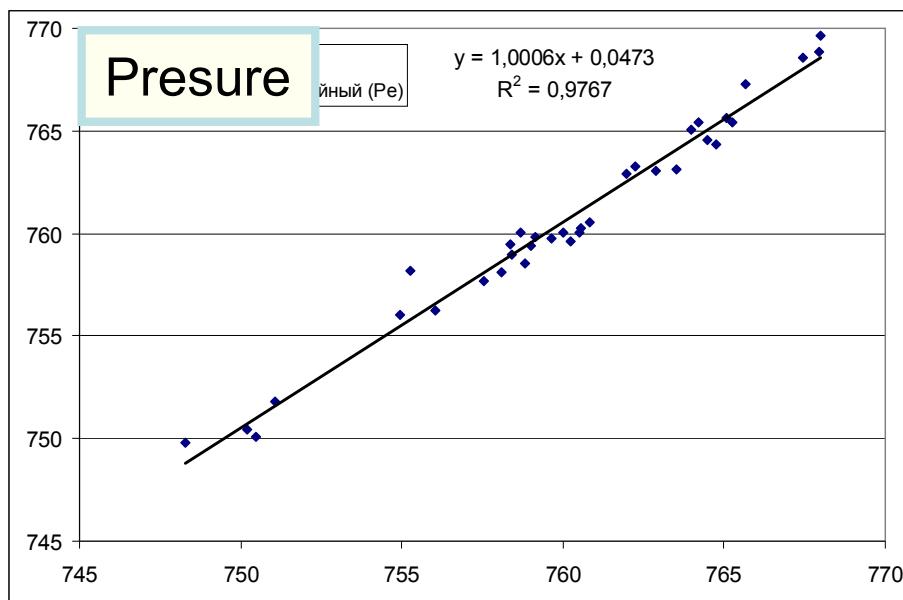
1. <http://www.meteoprog.ua/ru/fwarchive/Kyiv/>

Archive of actual weather in Kiev (In Russian).

2. http://rp5.ua/archive.php?wmo_id=33345&lang=ru

Archive of weather in Kiev (In Russian).

$$\begin{aligned} T & (1.0029 X + 0.1011) R^2= 0.986 \\ P & (1.0006 X + 0.0473) R^2= 0.9767 \\ H & (0.8454 X + 10.862) R^2= 0.9465 \end{aligned}$$



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