Ukrainian Geospace research in Antarctica

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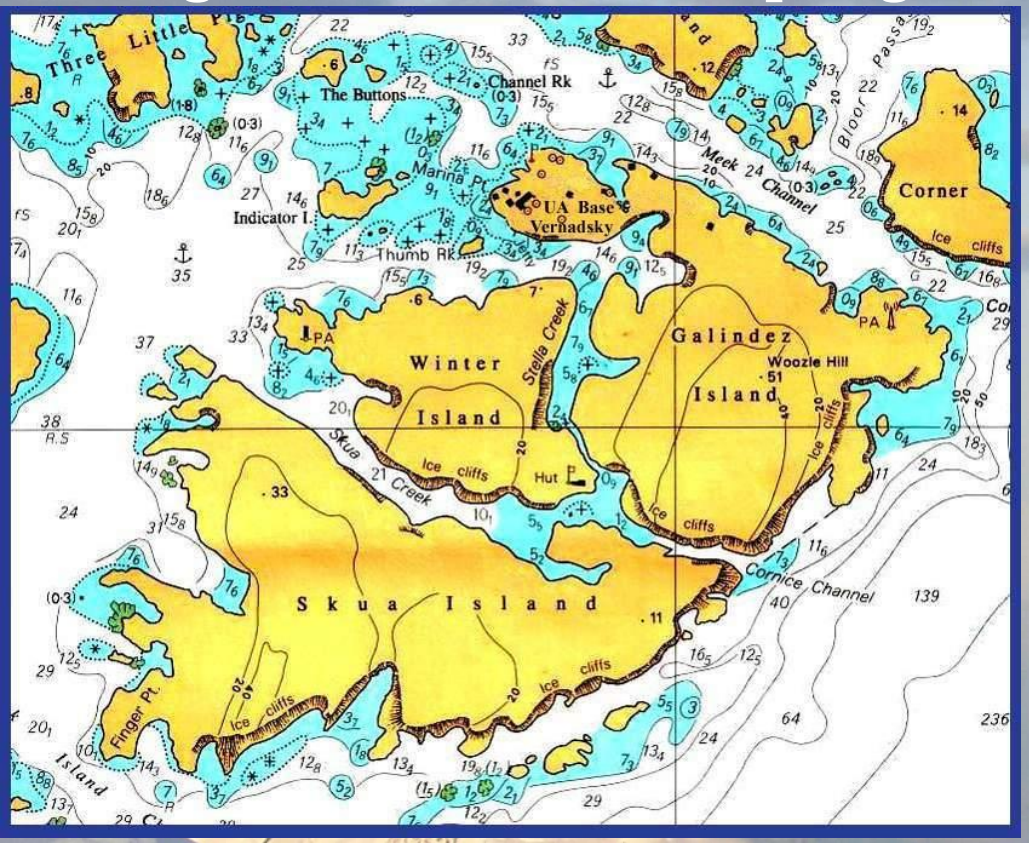
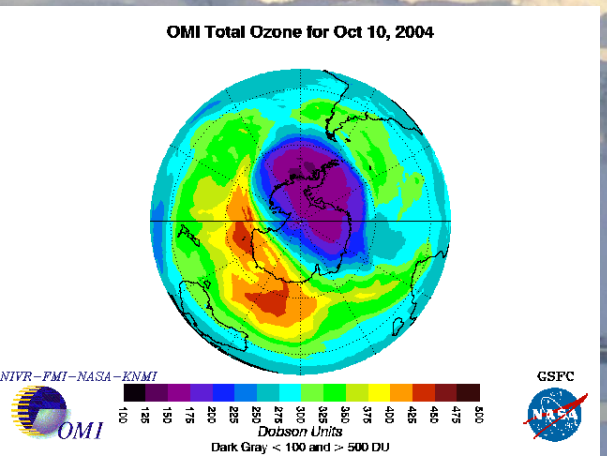
Argentine Islands Archipelago



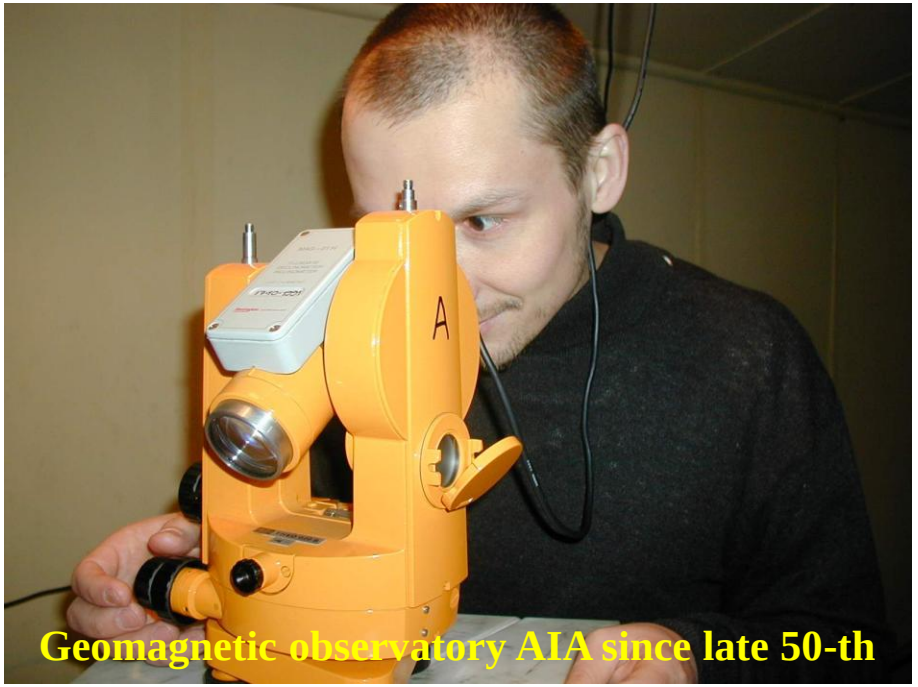
Geographic coordinates:
65.25° S, 64.27° W

Geomagnetic coordinates (CGM) :
50.1° S, 9.3° E

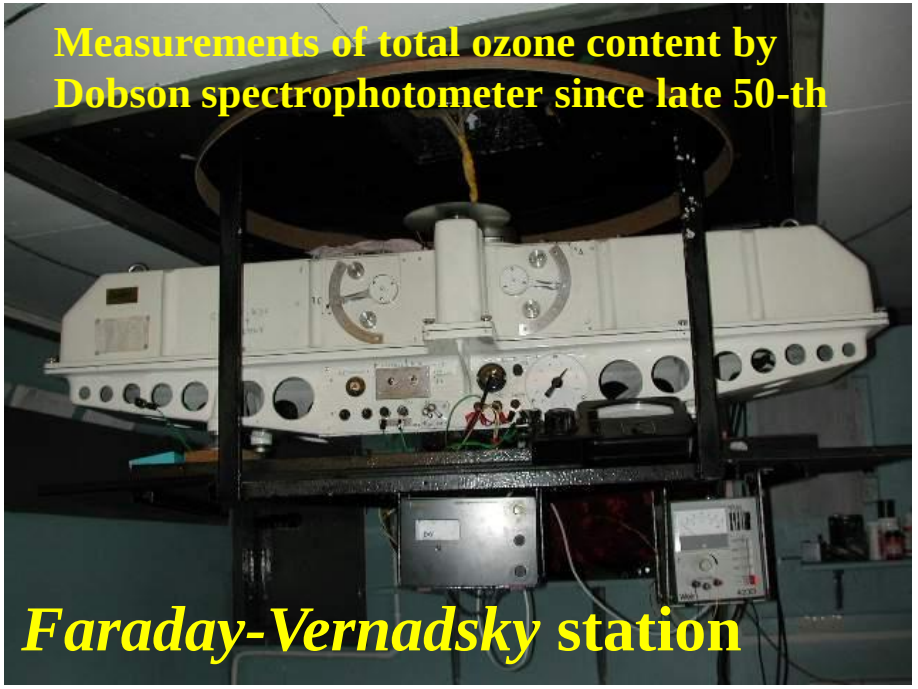



Great Britain:
Base F – 1947
Faraday – 1977
Ukraine:
Akademik Vernadsky – 1996


Meteorological observations since 1947

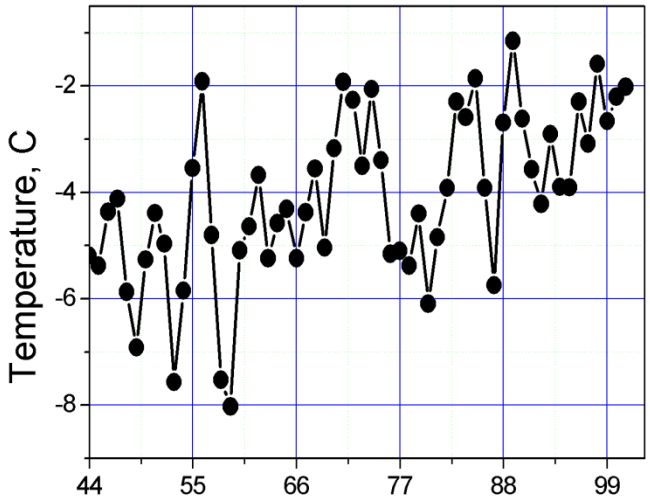

Geomagnetic observatory AIA since late 50-th


Vertical sounding of ionosphere since late 50-th
Traditional observations for

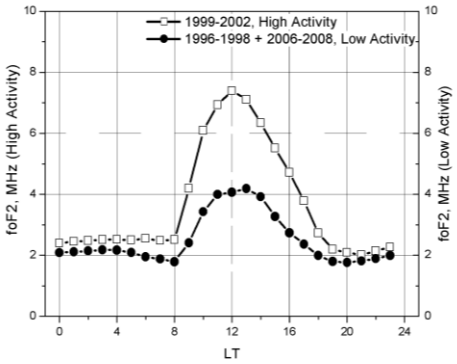

Measurements of total ozone content by
Dobson spectrophotometer since late 50-th
Faraday-Vernadsky station

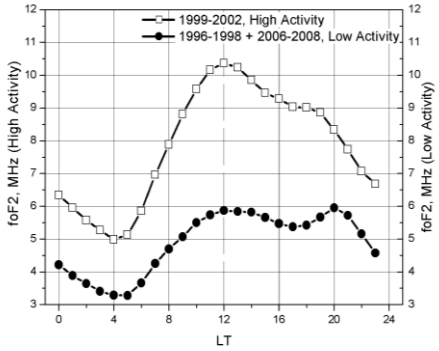
Background variations of the environment parameters at the *Vernadsky* station

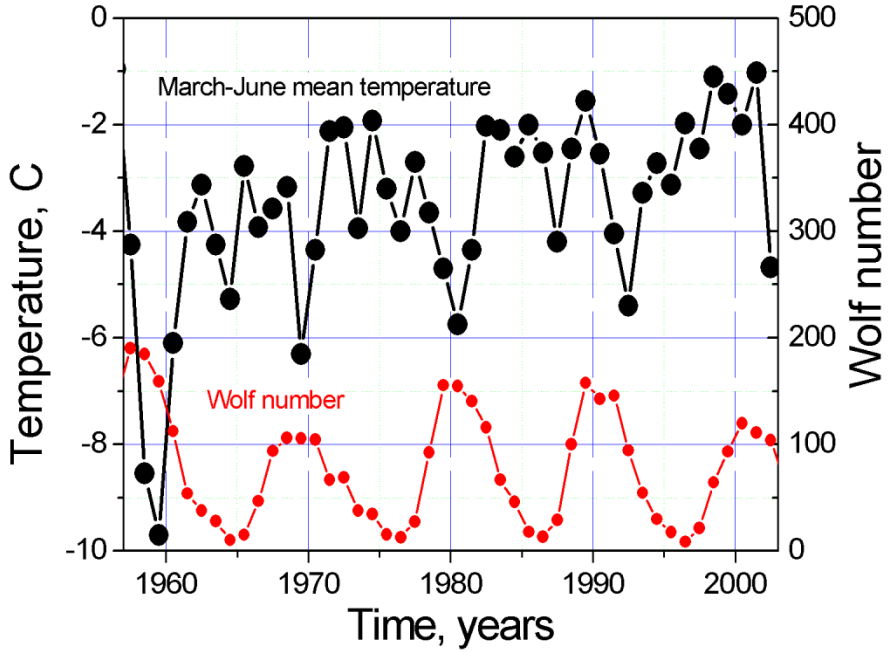
Surface temperature



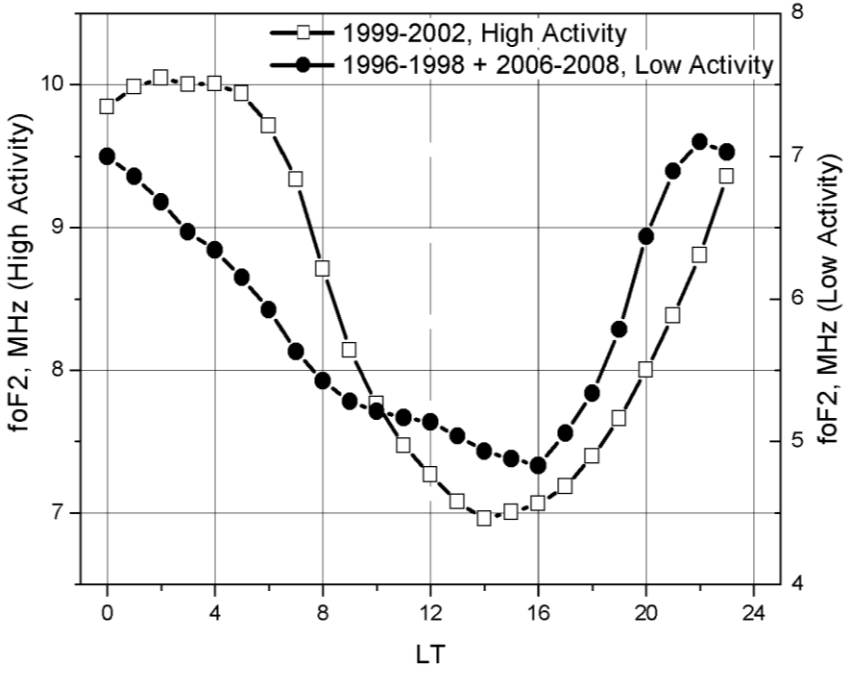
Critical frequency of the ionosphere





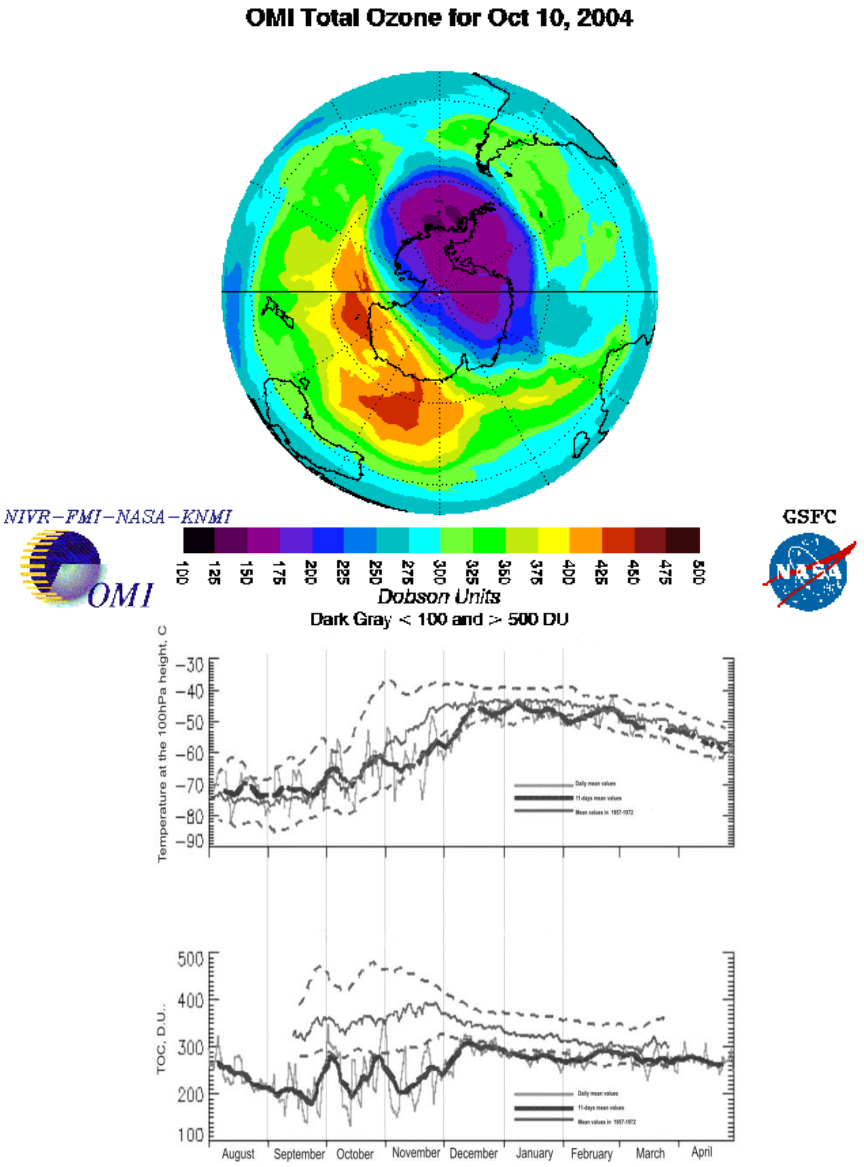


Weddell sea anomaly



Ozone observations

Farman J.C. Large losses of total ozone in Antarctica reveal seasonal ClOx/NOx Interaction /J.C. Farman, B.D. Gardner, J.D. Shanklin // Nature – 1985. – vol. 315. – P. 207-210.



It is possible to estimate the role of ozone layer in the energy transfer between the atmospheric layers

Geomagnetic observatory AIA

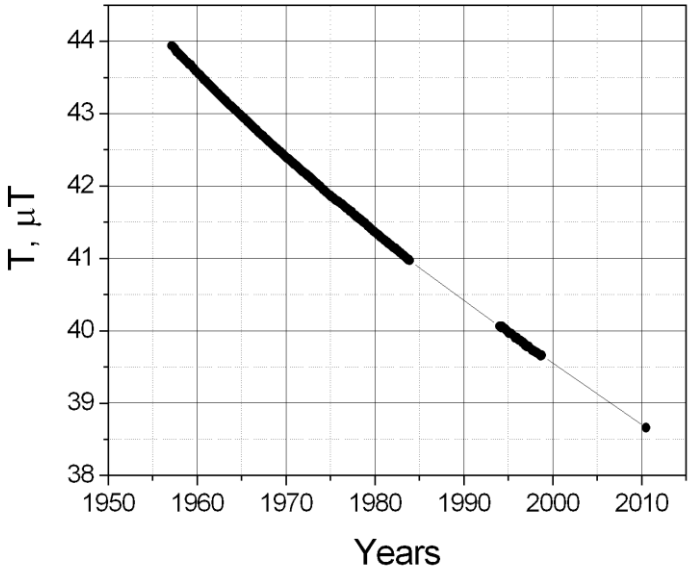
PROVISIONAL K INDICIES FOR ARGENTINE ISLANDS NOVEMBER 1998

DAY	E1	E2	E3	E4	E5	E6	E7	E8	SUM
1	1	1	1	2	1	1	2	2	11
2	2	1	0	1	1	1	3	2	11
3	2	1	0	2	1	2	2	3	13
4	2	0	1	2	2	1	1	2	11
5	2	1	1	2	2	3	3	2	16
6	3	3	4	3	3	2	3	3	24
7	3	2	3	3	4	3	4	3	25
8	5	7	6	4	3	3	4	5	37
9	5	6	6	6	4	3	5	5	40
10	3	2	2	2	1	2	1	1	14
11	1	0	0	2	1	1	2	2	9
12	0	1	2	1	1	1	2	2	10
13	6	4	5	5	4	4	5	5	38
14	5	5	4	5	4	3	4	3	33

FREQUENCIES OF K MAX

0	1	2	3	4	5	6	7	8	9	Missing
6	42	100	57	15	14	5	1	0	0	0

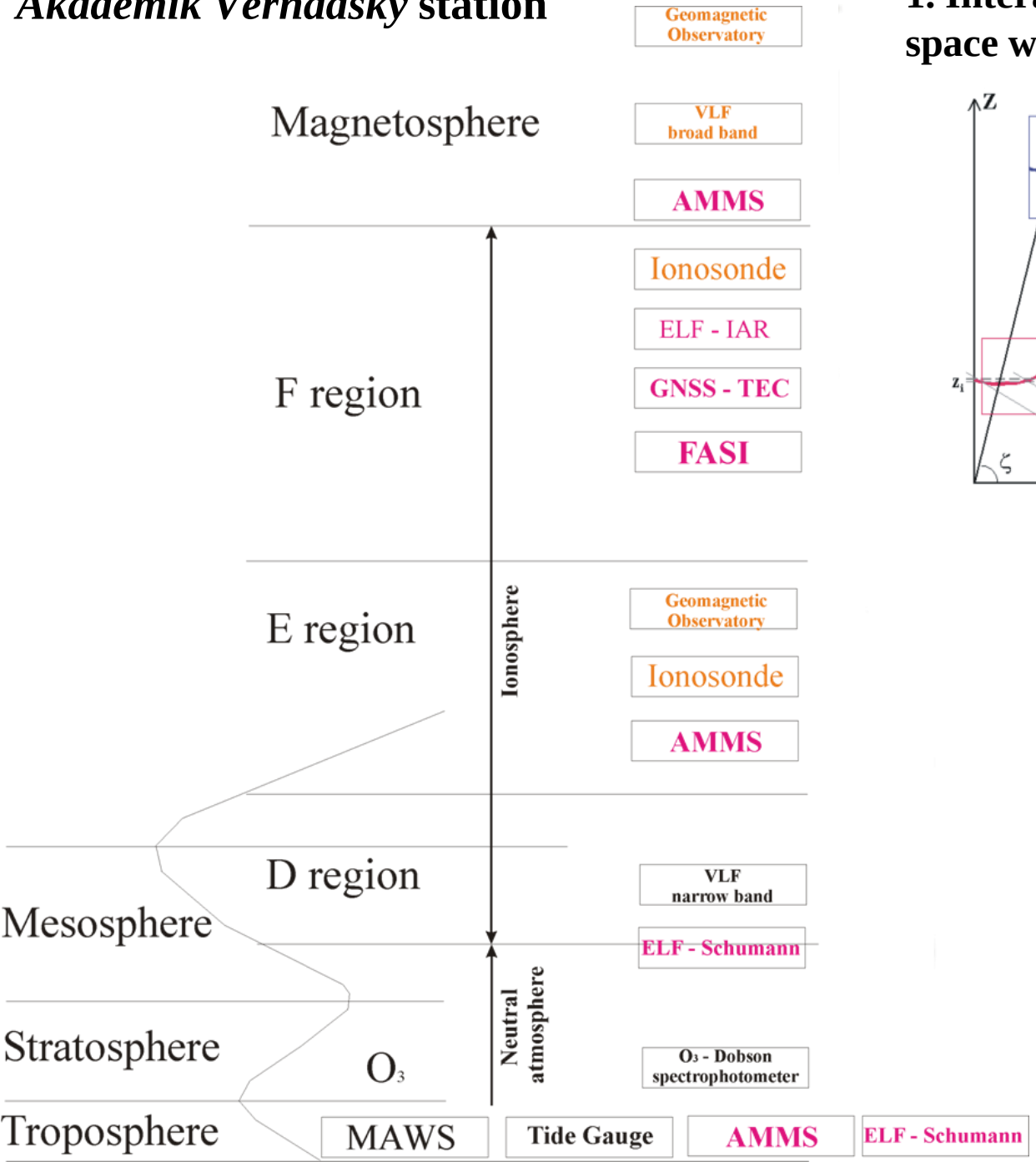
Magnetic anomaly.
Century variations of magnetic field



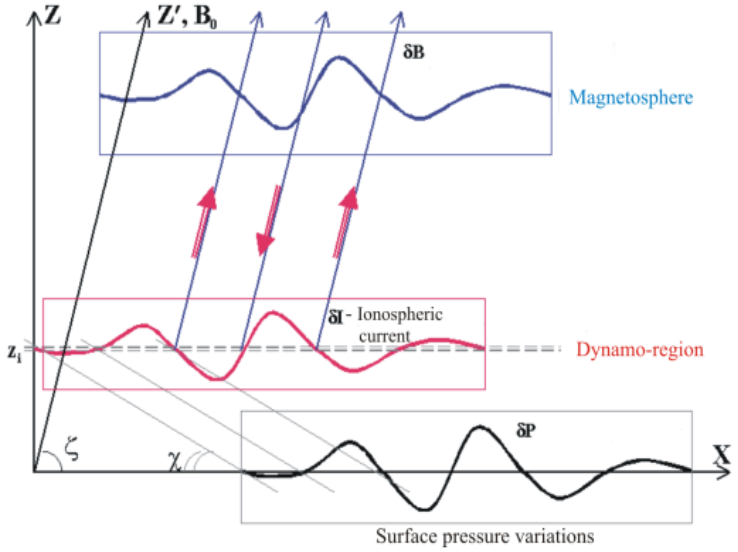
Advantages of the Antarctic Peninsula for geophysical research

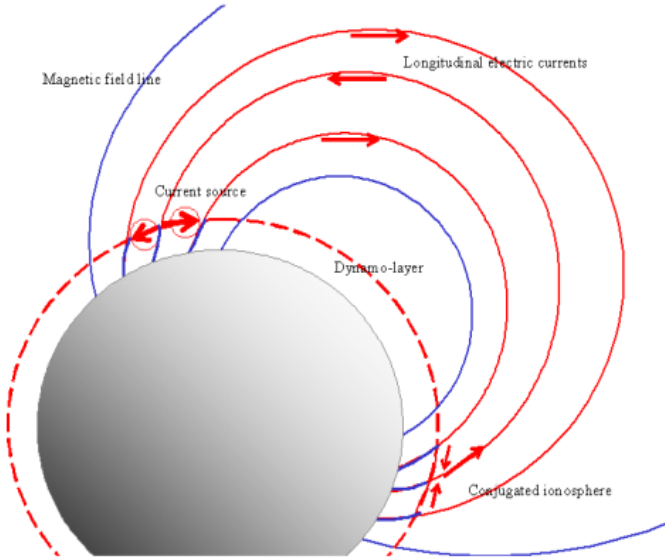
- Unique interference conditions
- Big difference between geographic and geomagnetic poles and latitudes
- High cyclonic activity
- Quiet background of ionospheric and geomagnetic variations at this region
- Variations of total ozone content at the spring time
- Geomagnetic anomaly
- Weddell sea anomaly

Akademik Vernadsky station

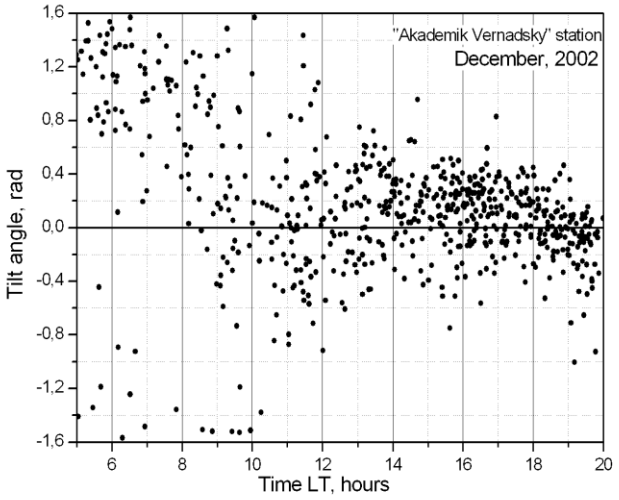


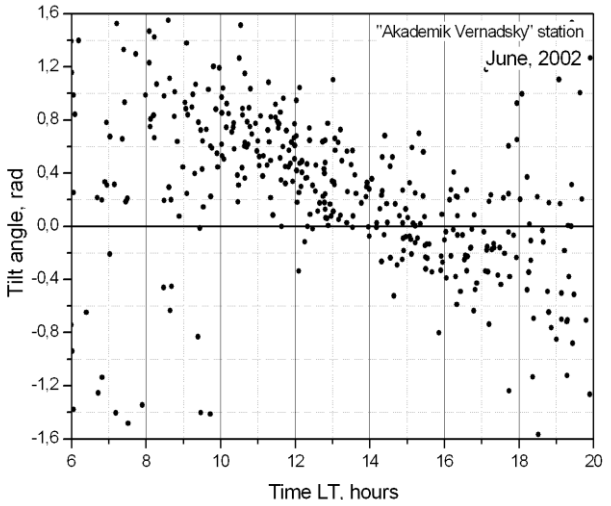
1. Interaction between atmospheric and space weather systems

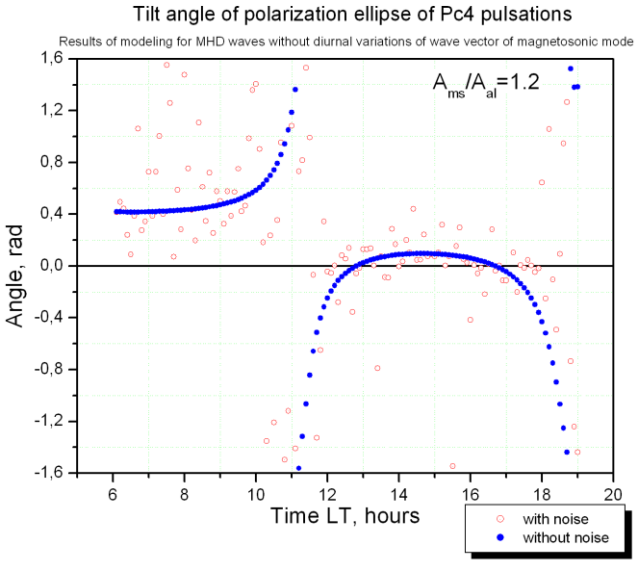


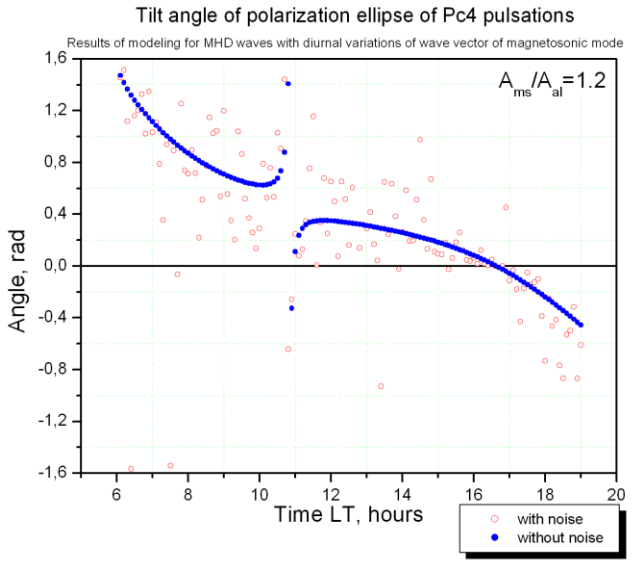


Using the natural global resonators for monitoring the geospace weather. Alfven magnetospheric resonators



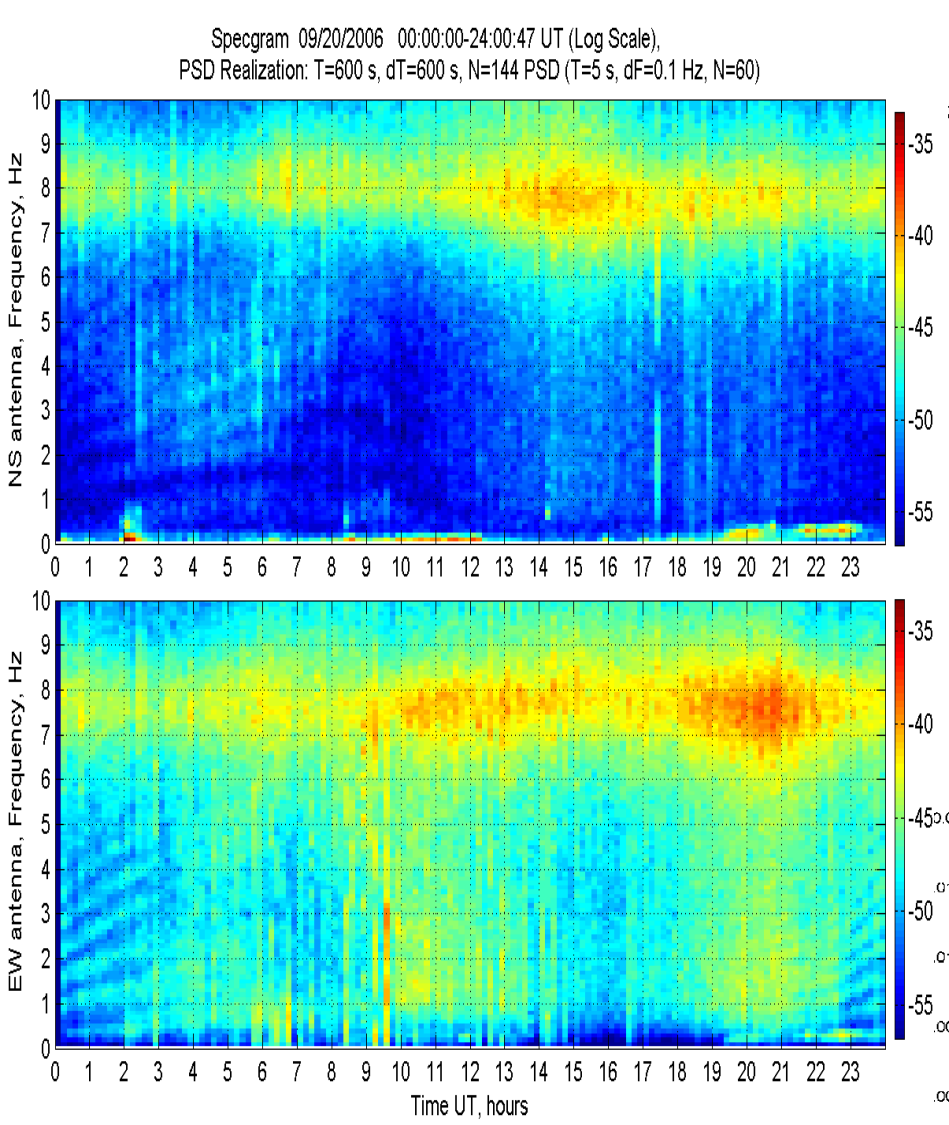


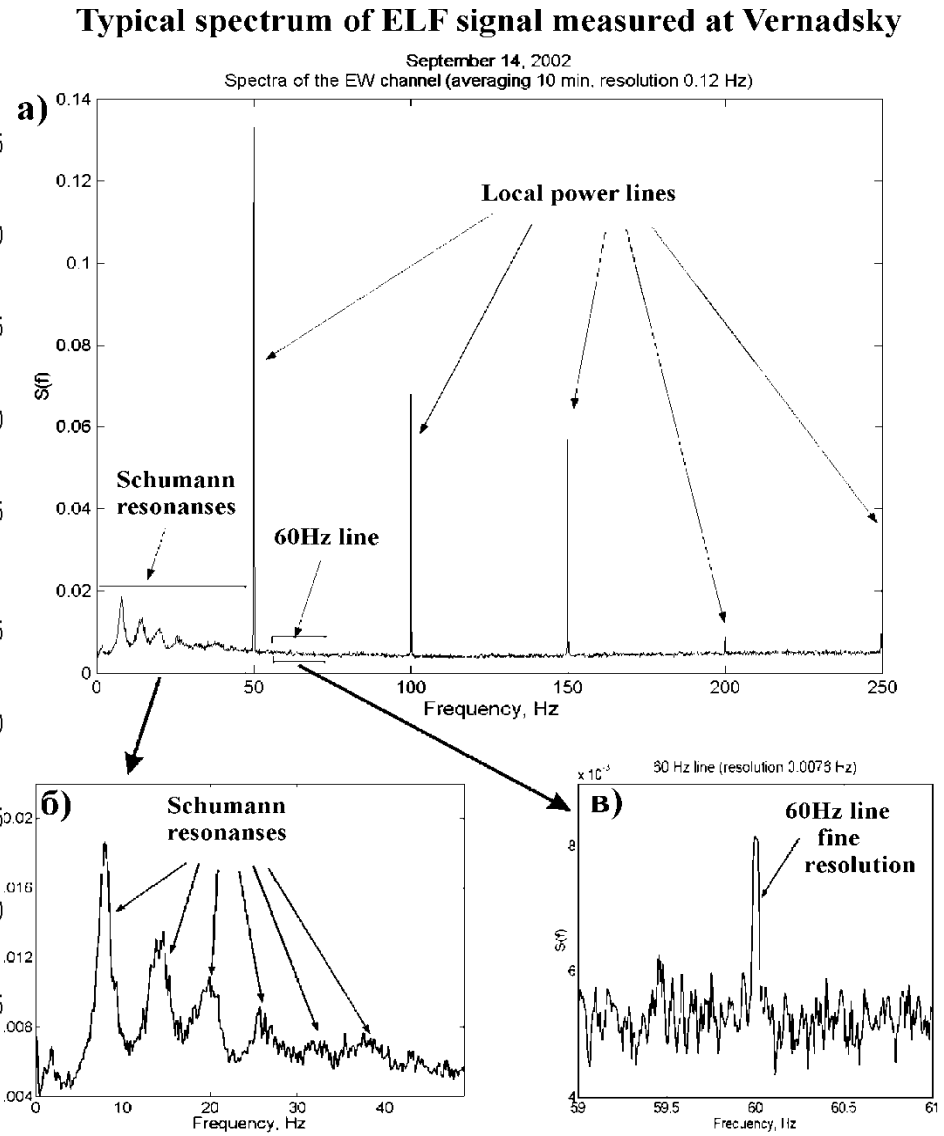




V.G. Sinitsin, Yu.M. Yampolski, A.V. Zalizovski, K. Grovs, M. Moldwin. Spatial field structure and polarization of geomagnetic pulsations in conjugate areas // Journal of Atmospheric and Solar-Terrestrial Physics. Vol.65, #10, July 2003, Pages 1161-1167.

Ionospheric Alfven resonator. Schumann resonator. Global lightning activity. Emission of power-supply networks





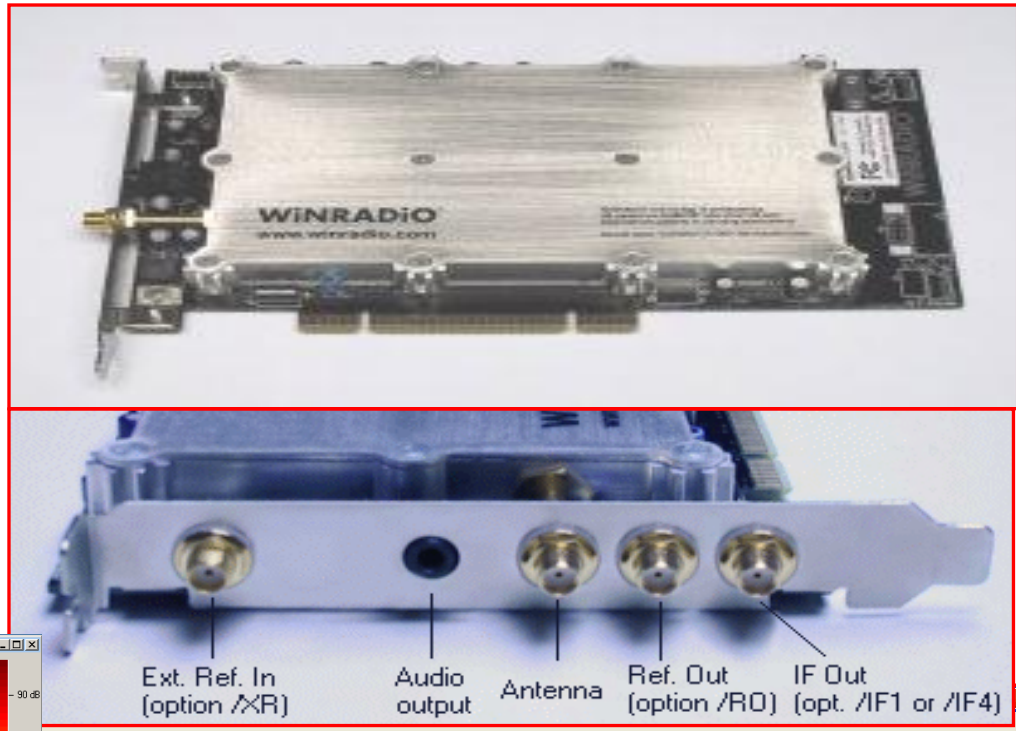
А.В.Колосков, В.Г. Синицын, Н.Н. Герасимова, Ю.М. Ямпольский, Околоземные резонаторы СНЧ-волн как индикаторы космической погоды// Космічна наука та технологія. 2008. т. 14, №5, стр. 49-64.

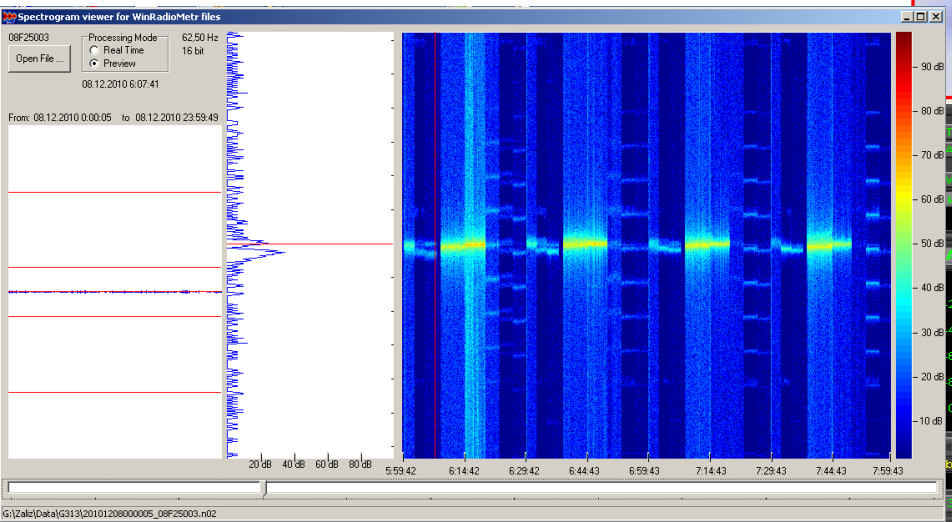
Global monitoring of ionospheric irregularities using the HF signals of time service stations located in Northern hemisphere

HF radio diagnostics of the polar and midlatitude ionosphere

HF receivers with remote control (IRA NASU):

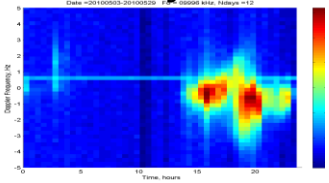
- External frequency stabilization (atomic or GPS standards)
- New software for remote control and data acquisition

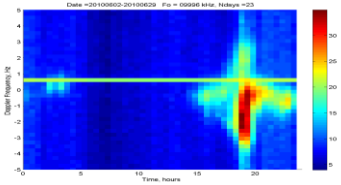


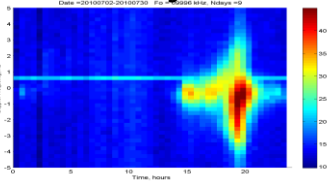


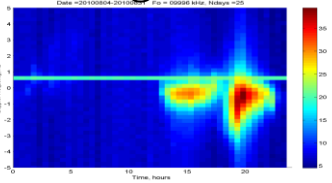
Interannual variability
RWM - UAS 9996 kHz,
2010

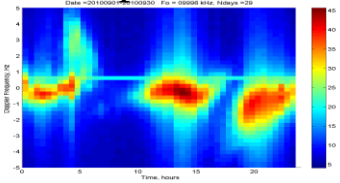
May | June | July | August | September


73.9, 13.61

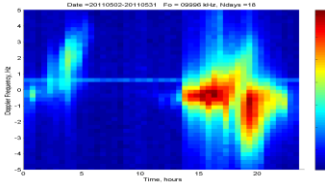

72.6, 12.27

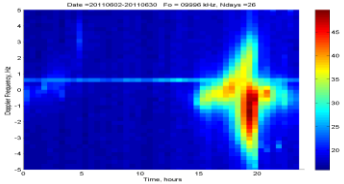

79.9, 8.74

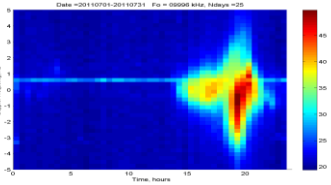

79.7, 12.23

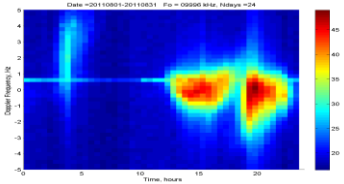

81.1, 8.77

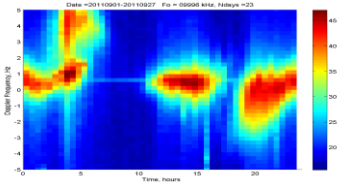
2011


95.7, 14.48


95.8, 14.07

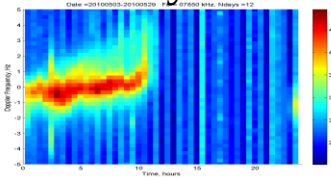

94.3, 14.16

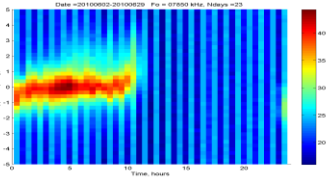

101.8, 11.45

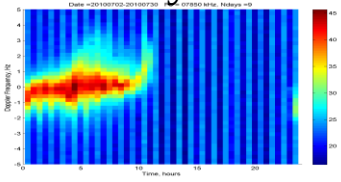

134.5, 19.30

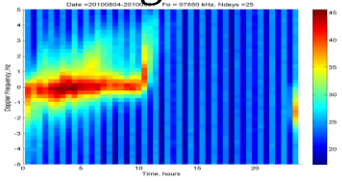
CHU - UAS, 07850 kHz
2010

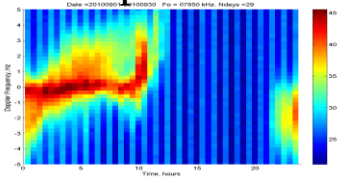
May | June | July | August | September


73.9, 13.61

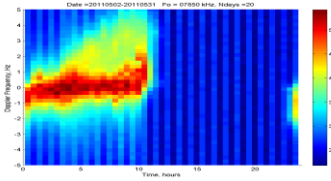

72.6, 12.27

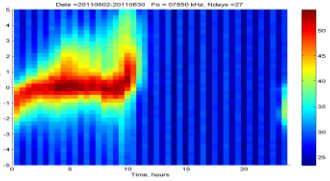

79.9, 8.74

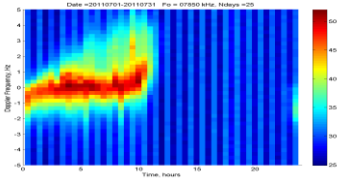

79.7, 12.23

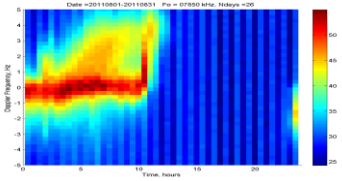

81.1, 8.77

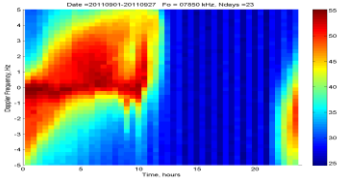
2011

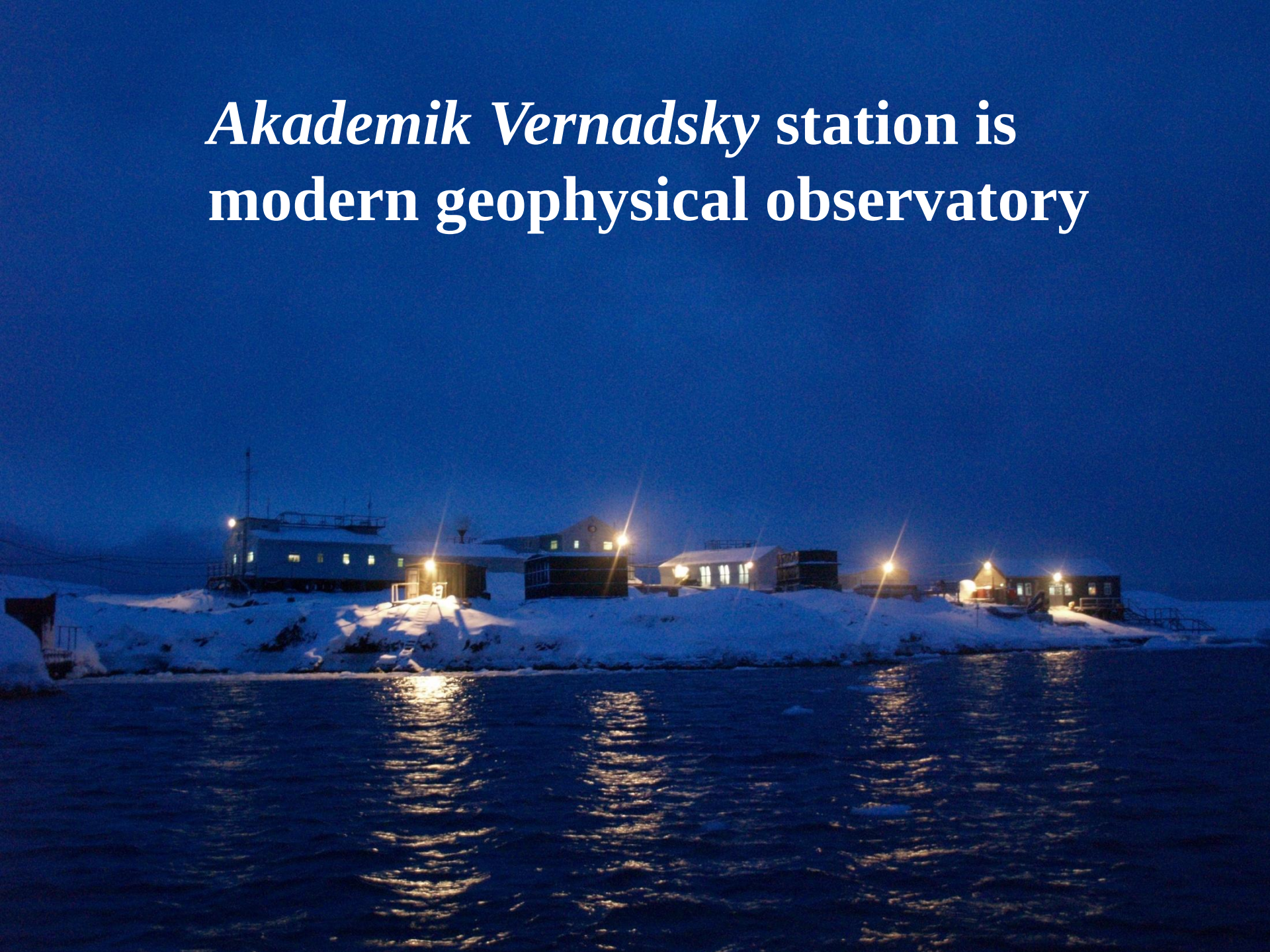

95.7, 14.48


95.8, 14.07


94.3, 14.16


101.8, 11.45


134.5, 19.30


Akademik Vernadsky station is
modern geophysical observatory


We should keep, develop, and use it