

.1. ()
 E F2
 ()
 F2.
 21
 F2
 ()
 IRI-2009.
 ()
 .1).
 5.

.1. ()
 ()
 IRI,
 ()
 F1 F2).
 .1,
 « - », F2,
 3.
 IRI
 4. .1 .2, «
 », ()
 .1).
 5.

(),

[2, 3].

$$F(t, \mathbf{r}, \mathbf{k}, \omega) = \kappa^2 - \kappa_0^2 \cdot n^2(t, \omega, \mathbf{r}, \mathbf{k}, \mathbf{H}), \quad (1)$$

4 :
 (2 .); (6 .);
 (1 .);

$$\begin{cases} \frac{d\mathbf{r}}{d\tau} = \frac{\partial F}{\partial \mathbf{p}} = \mathbf{p} - \frac{1}{2} \frac{\partial n^2}{\partial \mathbf{p}}, \\ \frac{d\mathbf{p}}{d\tau} = -\frac{\partial F}{\partial \mathbf{r}} = \frac{1}{2} \frac{\partial n^2}{\partial \mathbf{r}}, \end{cases} \quad (2),$$

10.00UT 15.05.2010 () .

$$n(t, \omega, \mathbf{r}, \mathbf{k}, \mathbf{H}) = \mu + i\chi, \quad \mathbf{H} = \dots, \quad \mathbf{r} = \{r, \theta, \varphi\}$$

$$\mathbf{p} = \frac{\mathbf{k}}{|\mathbf{k}_0|} = \{p_i\}$$

, τ

μ .

n

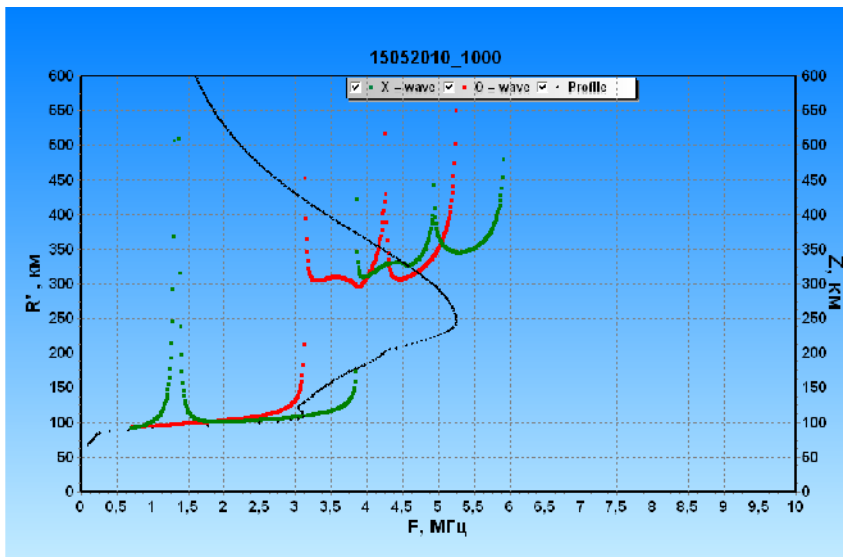
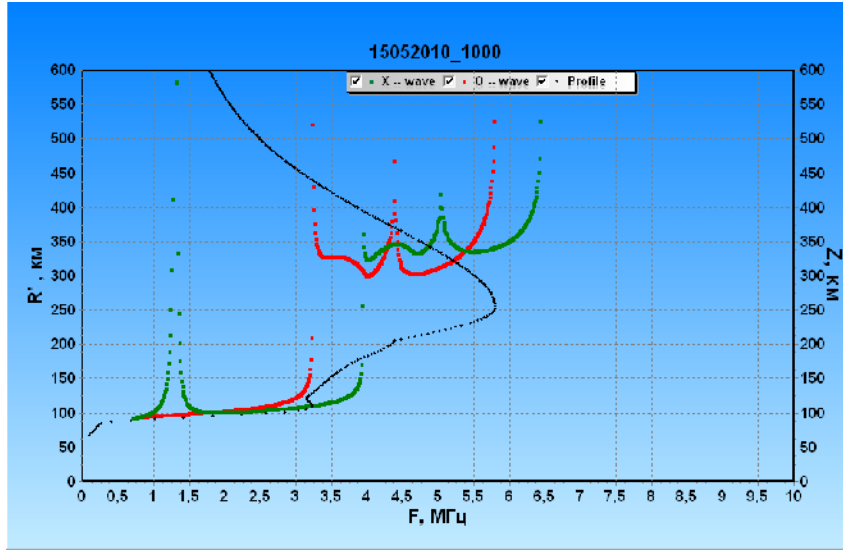
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.2

. 3. . 4

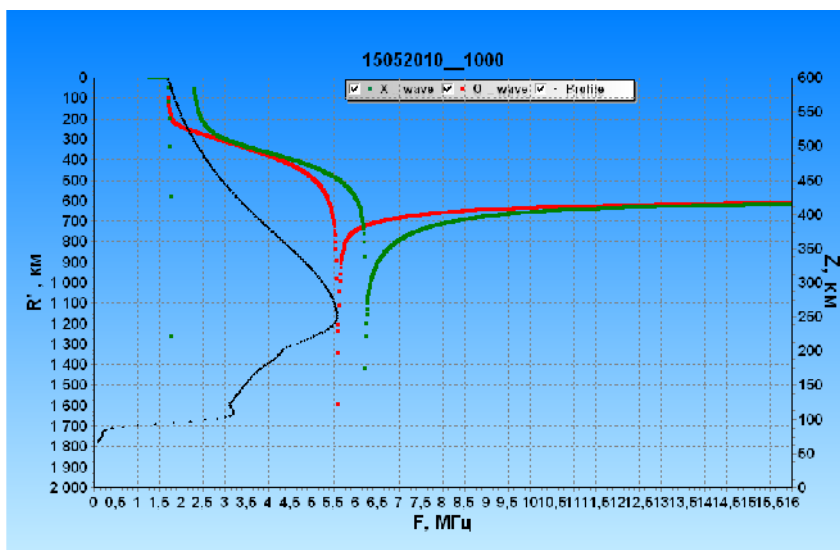
.5.

2 ()



.2.

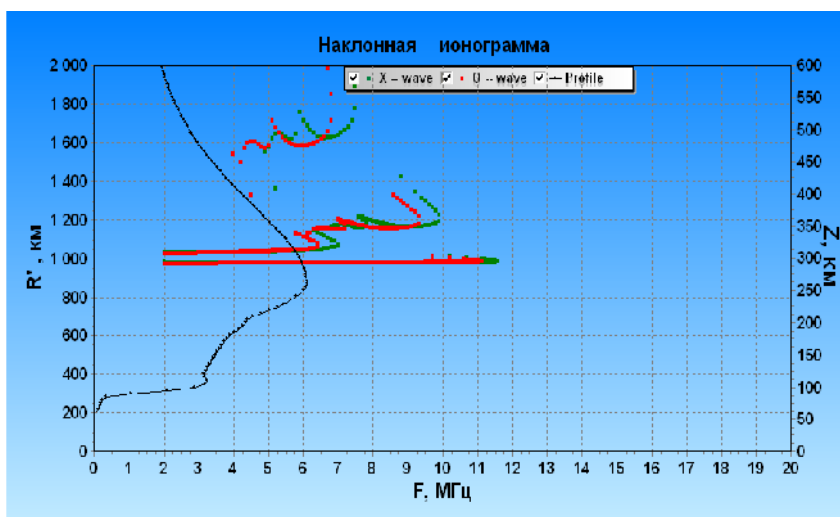
() (),



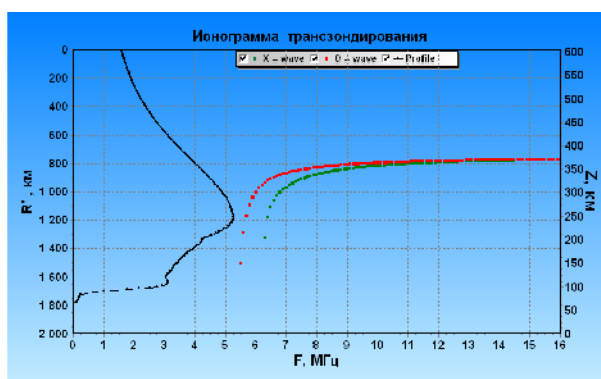
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2 (

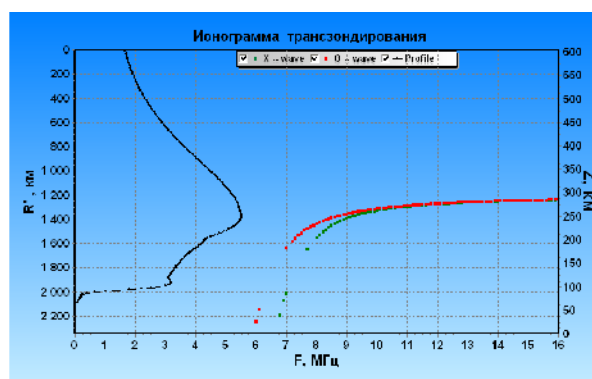
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.4.



.5.



5:) « - ») « - ».

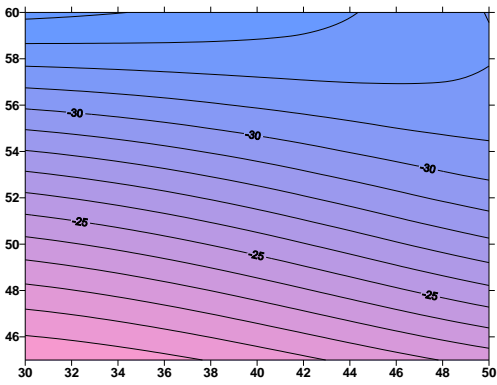
1.

Tip	latprd	lonprd	Zprd	latprm	lonprm	Zprm	Fmin, MHz	R min, km	FoE, MHz	FoF1, MHz	FoF2, MHz	Fpr, MHz	Rpr, km	FoE _{max}	FoF2 _{max}	File
1	1	55,73	38,2	0	55,73	38,2	0,7	92	3,125	4,25	5,25	4,5	305			mosc_v.io2
2	1	47,24	39,64	0	47,24	39,64	0,7	92	3,25	4,4	5,8	4,7	300			rost_v.io2
3	2	48,84	31,68	600	48,84	31,68	600	1,72			5,7	4	373			sat_1.io2
4	2	50,56	35,05	600	50,56	35,05	600	1,69			5,58	4	381			sat_2.io2
5	2	52,21	38,42	600	52,21	38,42	600	1,65			5,46	4	389			sat_3.io2
6	2	53,89	41,78	600	53,89	41,78	600	1,62			5,35	4	398			sat_4.io2
7	2	55,58	45,15	600	55,58	45,15	600	1,59			5,25	4	407			sat_5.io2
8	2	57,23	48,52	600	57,23	48,52	600	1,57			5,16	4	415			sat_6.io2
9	3	55,73	38,2	0	47,24	39,64	0							11,1	9,3	naklon_iono.io2
10	4	55,73	38,2	0	48,84	31,68	600	6,9	1440							m_sat1.io2
11	4	55,73	38,2	0	50,56	35,05	600	6	1318							m_sat2.io2
12	4	55,73	38,2	0	52,21	38,42	600	5,6	1144							m_sat3.io2
13	4	55,73	38,2	0	53,89	41,78	600	5,5	1090							m_sat4.io2
14	4	55,73	38,2	0	55,58	45,15	600	5,5	1503							m_sat5.io2
15	4	55,73	38,2	0	57,23	48,52	600	5,7	1630							m_sat6.io2
16	4	47,24	39,64	0	48,84	31,68	600	6,4	1454							r_sat1.io2
17	4	47,24	39,64	0	50,56	35,05	600	6	1531							r_sat2.io2
18	4	47,24	39,64	0	52,21	38,42	600	6	1496							r_sat3.io2
19	4	47,24	39,64	0	53,89	41,78	600	6,3	1563							r_sat4.io2
20	4	47,24	39,64	0	55,58	45,15	600	7	1640							r_sat5.io2
21	4	47,24	39,64	0	57,23	48,52	600	7,9	1793							r_sat6.io2

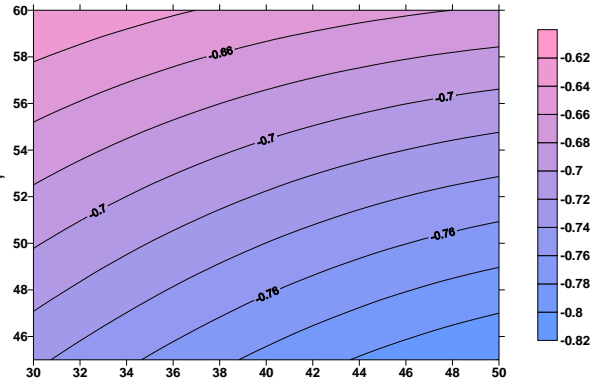
Tip – (1 – , 2 – , 3 – , 4 –);
 Latprd, lonprd, Zprd – ;
 Latprm, lonprm, Zprm – ();
 Fmin, R min – ();
 FoE, FoF1, FoF2 – ;
 Fpr, Rpr – ;
 FoE_{max}, FoF2_{max} – ;
 File – ;

1. « IRI »

6 « IRI »



6. F2)



« F2. » -)

1.

IRI-

2.

6

F1;
F2;
F2.

.7.

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F_n (

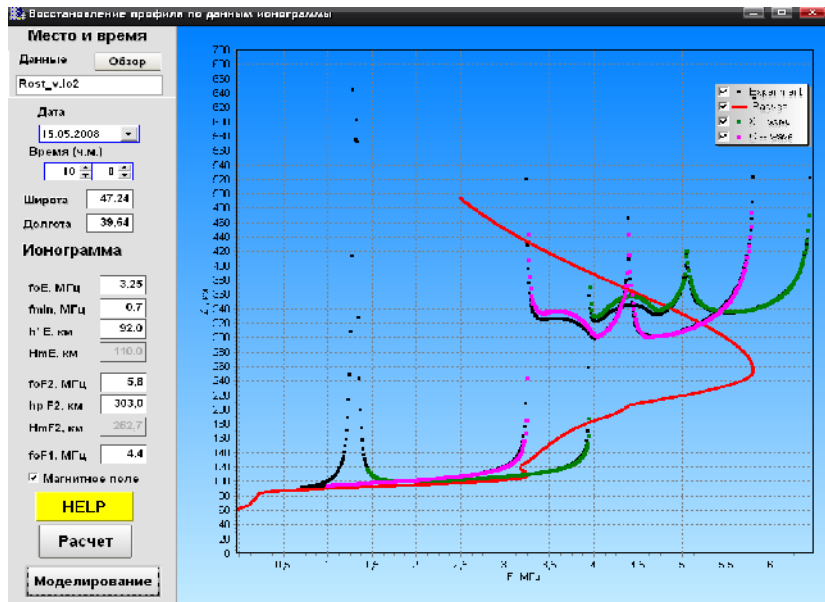
400).

3. « - ».

4. « - ».

E- F2- F2.

12



7.

(.1-4)

2. N_Pnt	Latpnt, degr	Lonpnt, degr	FoE, MHz	HmE, km	FoF1, MHz	FoF2, MHz	HmF2, Km	Fo400, MHz	Fosat, MHz
1	55,73	38,2	3,125	109,5	4,25	5,25	252,8		
2	47,24	39,64	3,25	110	4,4	5,8	252,7		
3	48,84	31,68				5,71	251	3,736	1,715
4	50,56	35,05				5,61	250,3	3,652	1,68
5	52,21	38,42				5,47	249,9	3,566	1,645
6	53,89	41,78				5,38	248,9	3,488	1,614
7	55,58	45,15				5,27	247,7	3,417	1,583
8	57,23	48,52				5,18	247,9	3,367	1,561
9	51,487	38,987	3,177	109,75	4,329	5,638	253,928		
10	52,33	34,686				5,495	250,027		
11	53,155	36,53				5,431	250,264		
12	53,97	38,315				5,357	250,723		
13	54,823	40,031				5,403	250,587		
14	55,704	41,682				5,253	249,423		
15	56,587	43,258				5,15	248,165		
16	48,109	35,722				5,759	251,954		
17	48,923	37,421				5,73	252,379		
18	49,727	39,061				5,635	253,168		
19	50,57	40,634				5,424	253,426		
20	51,442	42,143				5,403	252,381		
21	52,317	43,578				5,502	251,168		

:
N_Pnt, Latpnt, Lonpnt –
FoE, FoF1, FoF2 –
HmE, HmF2 –
Fo400 –
Fosat –

- 1 2
- 3-8
- 9 –
- 10-21

IRI

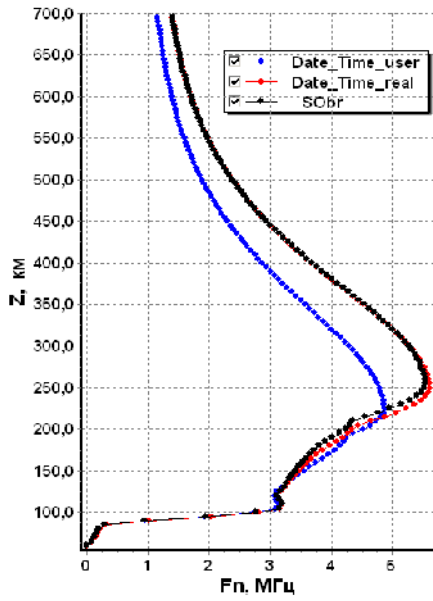
IRI-

(.2).

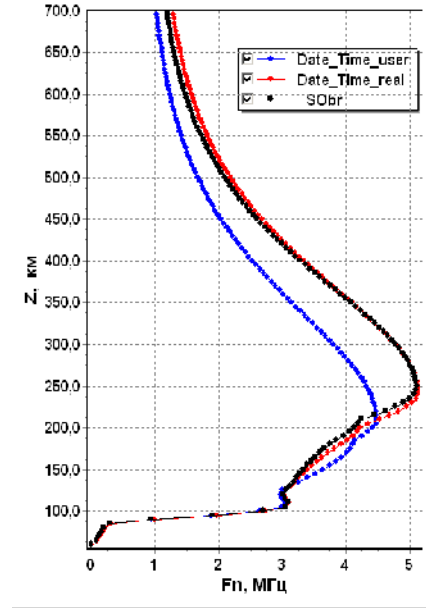
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IRI-

.8
« »

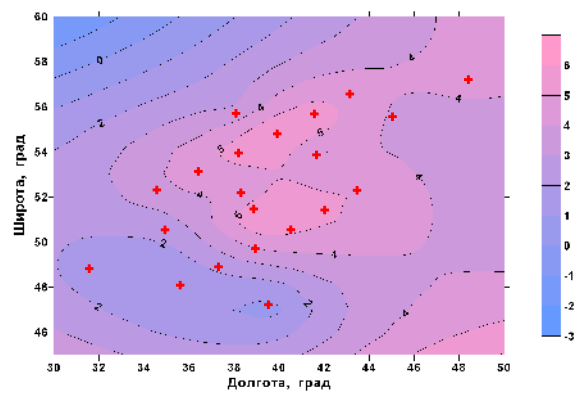
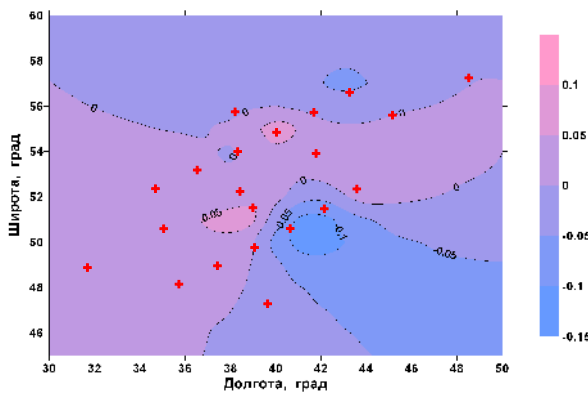


F2. .10
200 400



.8.
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« -



.9. ()

() F2,

