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Primjena modela širenja zračnog onečišćenja pri procjeni utjecaja na okoliš planiranih zahvata

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STUDIJE O UTJECAJU NA OKOLIŠ

– Procjena utjecaja na kvalitetu zraka

SIMULACIJE ONEČIŠĆENJA ZRAKA u svrhu procjene utjecaja zahvata na kvalitetu zraka u zoni utjecaja zahvata za scenarij najgoreg slučaja .

Vrsta zahvata	Parametri onečišćenja
Prometnica	Ispušni plinovi (CO, NO _x , PM ₁₀ ,...)
UPOV	Neugodni mirisi (H ₂ S, NH ₃ , merkaptani,...)
Odlagalište otpada	Neugodni mirisi (H ₂ S, NH ₃ , merkaptani,...) Odlagališni plin (CH ₄ , CO ₂)
KKE	Ispušni plinovi (CO, NO _x , SO ₂)
Betonara	Lebdeće čestice (PM ₁₀) Ispušni plinovi
Zračna luka	Ispušni plinovi (NO _x , PM ₁₀ , benzo(a)piren,...)

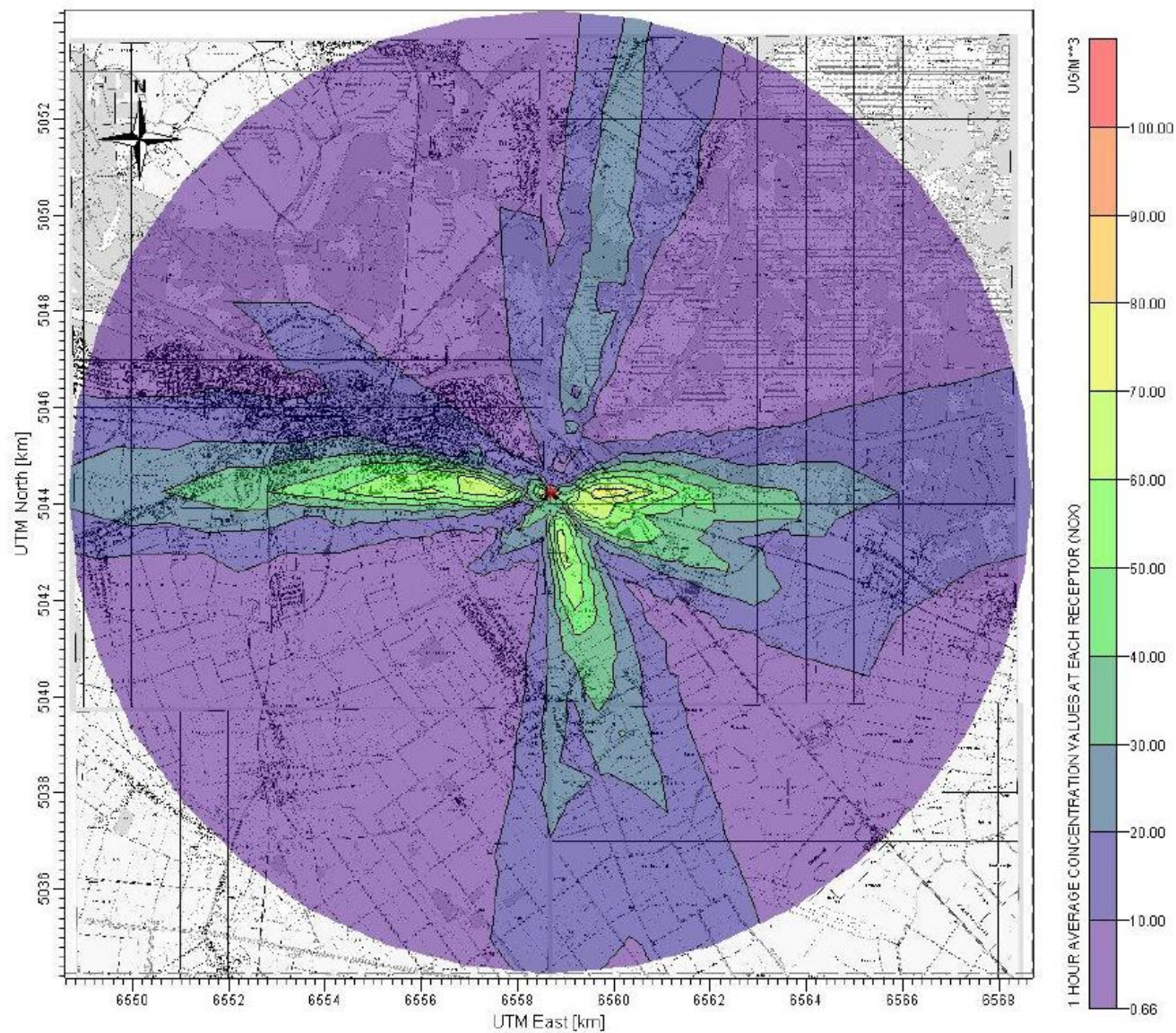
KORIŠTENI ALATI

- CALPUFF View software za 3-D modeliranje disperzije zraka (LES)
- ISC-AERMOD View software za 3-D modeliranje disperzije zraka (US-EPA)

Ulazni podaci na temelju kojih se izračunava transport parametara onečišćenja:

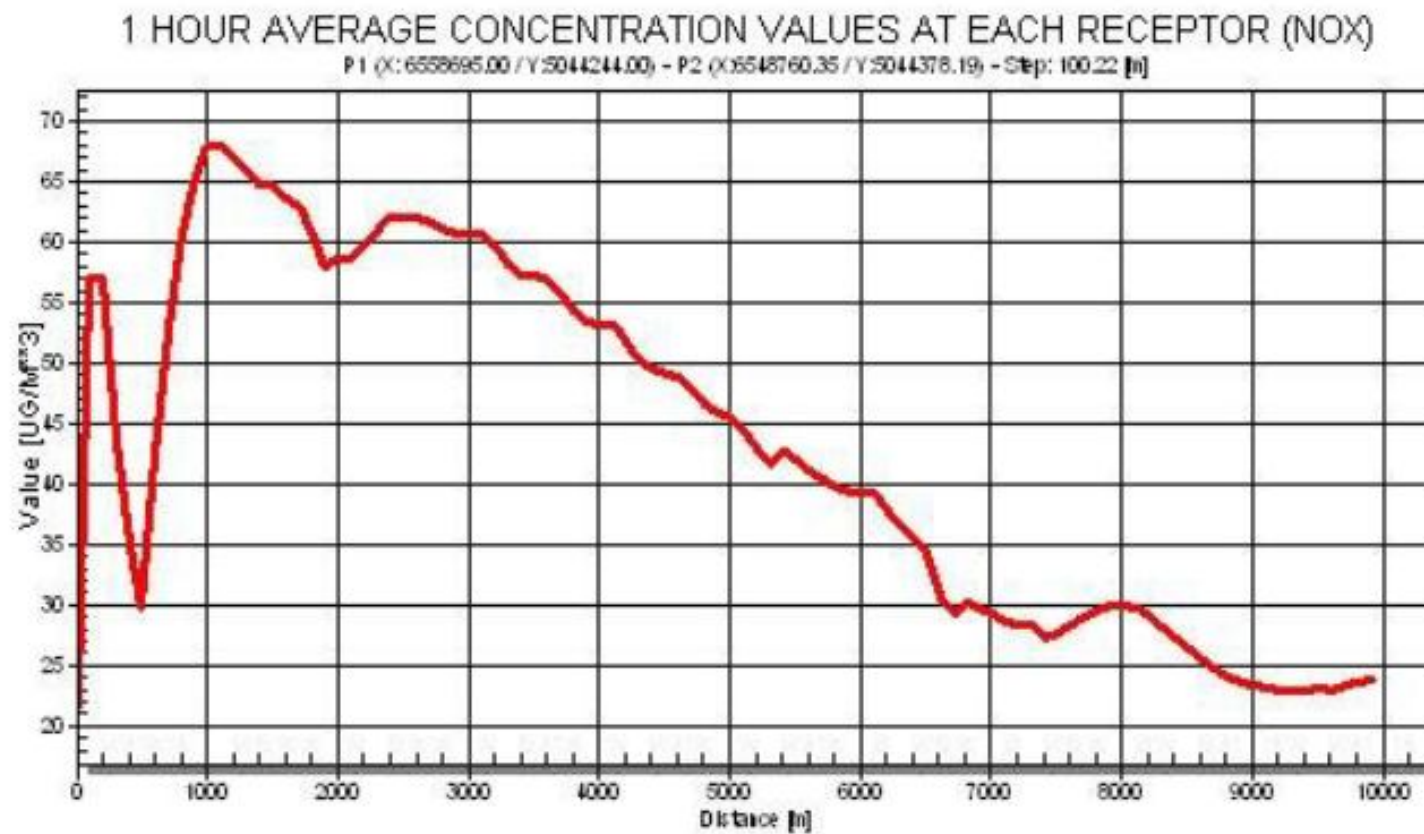
- meteorološki podaci
 - mreža proračuna meteorološkog modela CALMET (engl. „meteorologicalgrid”)
 - podaci o konfiguraciji terena
 - izgrađeni objekti u zoni *near-fielda*
 - podaci o vrsti zemljišnog pokrova
 - podaci o izvoru zagađenja i emisijama parametara onečišćenja
 - kontrolni parametri proračuna
-
- mreža proračuna disperzijskog modela CALPUFF

PRIMJER – KKE OSIJEK 500



Imisijske koncentracije NOx za scenarij najgoreg slučaja (vrijeme usrednjavanja: 1 sat)

PRIMJER – KKE OSIJEK 500



Imisijske koncentracije NO_x od izvora u smjeru W (vrijeme usrednjavanja: 1 sat)

Tumačenje dobivenih rezultati:

- Procjena utjecaja na temelju usporedbe dobivenih imisijskih koncentracija s graničnim vrijednostima iz Uredbe o razinama onečišćujućih tvari u zraku (NN 117/12)
- U prilogima Uredbe je definirano sljedeće:
 - granične i ciljne vrijednosti s obzirom na zaštitu zdravlja ljudi i kvalitetu življenja (dodijavanje mirisom)
 - donji i gornji pragovi procjene - određivanje uvjeta za procjenu koncentracija onečišćujućih tvari u zraku unutar zone ili aglomeracije s obzirom na zaštitu zdravlja ljudi, vegetacije i ekosustava
 - ciljne vrijednosti i dugoročni ciljevi za prizemni ozon te mjerenje prekursora prizemnog ozona
- Za onečišćujuću tvar je definirano sljedeće:
 - vrijeme usrednjavanja
 - granična vrijednost
 - učestalost dozvoljenih prekoračenja

Koriste se podaci DHMZ s najbliže meteorološke postaje

- mjerni + procijenjeni podaci

Značajni parametri:

- smjer i brzina vjetra
- temperatura
-
- kategorija stabilnosti
- visina miješanja
- Monin-Obukova dužina
- tlak zraka
- sunčevo zračenje

METEOROLOŠKI PODACI

Meteorological/Landuse

Met File Format: ISC ASCII file (ISCMET.DAT)

Met Data | Wind Speed | Advanced Variables

ISC Meteorological Data File

File Name: D:\zlatko\DATA(D~1\MODELI~2\PROJEKTIVZL\Zagreb.met)

Profile Data File

Profile File:

CTDPlus Tower File AERMET Tower File

Single-Station Met Data Inputs

Landuse Type: Other


Roughness Length [m]: 0.9 Dispersion Regime: Rural

Leaf Area Index: 5.0

Elevation above MSL [m]: 103.0 Latitude: 45.740833

Anemometer Height [m]: 10.0 Longitude: 16.065556

Tip

 The single-station data file may be used in some near-field application, when spatial variability of the met fields may not be significant (e.g. uniform terrain and land use).

Help Restore Defaults Cancel OK

METEOROLOŠKI PODACI

Zagreb.met - WordPad

File Edit View Insert Format Help

86	7	212	143.0000	6.1733	296.5	4	529.1	529.1	1.0344	-999.0	0.9000	0	0.00	379.	69
86	7	213	134.0000	7.7166	297.0	4	514.6	514.6	1.2876	-999.0	0.9000	0	0.00	388.	66
86	7	214	142.0000	6.1733	294.8	4	500.0	500.0	1.0336	-999.0	0.9000	0	0.00	428.	73
86	7	215	152.0000	5.1444	297.0	4	500.0	500.0	0.8646	-999.0	0.9000	0	0.00	356.	64
86	7	216	133.0000	4.1155	298.2	4	500.0	500.0	0.7126	-321.0	0.9000	0	0.00	495.	56
86	7	217	128.0000	5.6588	298.2	4	500.0	500.0	0.9524	-999.0	0.9000	0	0.00	446.	58
86	7	218	129.0000	5.1444	298.2	4	500.0	500.0	0.8622	-999.0	0.9000	0	0.00	226.	60
86	7	219	175.0000	5.1444	298.2	4	500.0	500.0	0.8552	-999.0	0.9000	0	0.00	162.	58
86	7	220	187.0000	3.6011	297.0	4	500.0	500.0	0.5621	303.8	0.9000	0	0.00	44.	64
86	7	221	193.0000	2.0578	295.9	5	548.0	527.6	0.2649	67.2	0.9000	0	0.00	1.	69
86	7	222	189.0000	2.5722	295.9	6	600.4	557.7	0.3693	124.2	0.9000	0	0.00	0.	71
86	7	223	196.0000	2.5722	294.8	6	652.9	587.9	0.3644	113.2	0.9000	0	0.00	0.	73
86	7	224	192.0000	2.5722	294.3	6	705.4	618.0	0.3631	110.5	0.9000	0	0.00	0.	79
86	7	3 1	179.0000	3.0866	293.7	6	757.9	618.0	0.4620	177.5	0.9000	0	0.00	0.	81
86	7	3 2	194.0000	2.0578	292.6	6	810.4	618.0	0.2462	50.2	0.9000	0	0.00	0.	81
86	7	3 3	196.0000	2.0578	292.0	6	862.8	618.0	0.2459	50.0	0.9000	0	0.00	0.	81
86	7	3 4	187.0000	2.0578	291.5	6	915.3	618.0	0.2460	50.0	0.9000	0	0.00	0.	81
86	7	3 5	181.0000	2.0578	290.4	6	967.8	618.0	0.2462	50.0	0.9000	0	0.00	0.	84
86	7	3 6	198.0000	1.5433	290.4	5	88.0	668.2	0.2132	50.0	0.9000	0	0.00	18.	81
86	7	3 7	196.0000	4.6300	291.5	4	257.0	764.7	0.7827	-815.6	0.9000	0	0.00	121.	76
86	7	3 8	177.0000	2.5722	292.0	3	426.0	861.2	0.4804	-90.8	0.9000	0	0.00	309.	76
86	7	3 9	190.0000	4.1155	293.7	3	595.0	957.6	0.7248	-217.0	0.9000	0	0.00	505.	71
86	7	310	191.0000	3.6011	295.4	2	764.0	1054.1	0.6541	-129.1	0.9000	0	0.00	696.	62
86	7	311	181.0000	4.1155	297.0	2	933.0	1150.6	0.7363	-163.8	0.9000	0	0.00	840.	50
86	7	312	174.0000	4.6300	297.6	2	1102.0	1247.1	0.8162	-213.0	0.9000	0	0.00	946.	40
86	7	313	189.0000	3.0866	298.7	2	1271.0	1343.5	0.5843	-78.8	0.9000	0	0.00	990.	47
86	7	314	186.0000	5.1444	299.3	3	1440.0	1440.0	0.8929	-301.7	0.9000	0	0.00	982.	38
86	7	315	167.0000	2.0578	299.3	2	1440.0	1440.0	0.4251	-36.9	0.9000	0	0.00	880.	41
86	7	316	178.0000	2.5722	299.3	2	1440.0	1440.0	0.4911	-72.1	0.9000	0	0.00	691.	38
86	7	317	152.0000	3.6011	299.3	3	1440.0	1440.0	0.6321	-232.1	0.9000	0	0.00	617.	33
86	7	318	237.0000	2.5722	298.7	3	1440.0	1440.0	0.4557	-194.0	0.9000	0	0.00	414.	35
86	7	319	237.0000	2.5722	298.2	4	1440.0	1440.0	0.3637	111.7	0.9000	0	0.00	225.	33
86	7	320	189.0000	2.0578	296.5	4	1440.0	1440.0	0.2482	51.7	0.9000	0	0.00	56.	37
86	7	321	206.0000	1.5433	294.8	5	1432.3	1113.3	0.2124	50.0	0.9000	0	0.00	2.	43
86	7	322	215.0000	0.0000	292.0	6	1423.9	756.6	0.0000	0.0	0.9000	0	0.00	0.	59

For Help, press F1

NUM

METEOROLOŠKI PODACI

Rammet View - [D:\zlatko\DATA (D)\MODELIRANJE - ZRAK\Tutorial\TUTORIAL.RAM]

File View Run Utilities Help

New Open Save Print Run WRPlot Bintoasc Editor MetView Help

Input Data Dry & Wet Deposition Data

Calculation Type : No Deposition Dry Deposition Wet Deposition

File Format : ASCII Unformatted (Binary)

Output File : TUTORIAL.met

Hourly Surface Data Mixing Height Data

Hourly Surface Data File

SCRAM (MET144) CD-144 SAMSON HUSWO (English) Year: 1988 WebMET

File Name : Met14826_88.sam

Surface Station

Latitude : 42.967 [deg]
Longitude : 83.75 [deg]
Time Zone : 5 (Eastern)

Surface Station (Optional)

Search NWS Stations...

Name : FLINT/BISHOP ARPT
State : Michigan Station No. : 14826

9:31:57

METEOROŠKI PODACI

Met View [Pre-Processed ISC Met Data File]

File Header Data

File Name: TUTORIAL.met

Surface Station ID: 14826 Mixing Height Station ID: 14826

Surface Data Year: 1988 Mixing Height Data Year: 1988

Filter

Year: All Month: All Day: All Show All

	Year	Month	Day	Hour	Random Flow Vector	Wind Speed (m/s)	Ambient Temperature (K)	Stability Category	Rural Mixing Height (m)	Urban Mixing Height (m)
1	1988	sij	1	1	81,0000	6,6877	268,1	4	755,0	755,0
2	1988	sij	1	2	78,0000	7,2022	267,6	4	786,3	786,3
3	1988	sij	1	3	74,0000	8,2310	267,0	4	817,6	817,6
4	1988	sij	1	4	73,0000	7,7166	266,5	4	848,9	848,9
5	1988	sij	1	5	63,0000	7,7166	266,5	4	880,2	880,2
6	1988	sij	1	6	62,0000	7,2022	265,9	4	911,5	911,5
7	1988	sij	1	7	85,0000	8,2310	265,4	4	942,8	942,8
8	1988	sij	1	8	83,0000	9,2599	264,8	4	974,1	974,1
9	1988	sij	1	9	67,0000	8,2310	264,3	4	1005,5	1005,5
10	1988	sij	1	10	81,0000	8,2310	264,3	4	1036,8	1036,8
11	1988	sij	1	11	94,0000	8,7455	264,8	4	1068,1	1068,1
12	1988	sij	1	12	86,0000	9,2599	264,3	4	1099,4	1099,4
13	1988	sij	1	13	93,0000	10,2888	264,8	4	1130,7	1130,7
14	1988	sij	1	14	79,0000	8,7455	264,8	4	1162,0	1162,0
15	1988	sij	1	15	72,0000	10,2888	265,9	4	1162,0	1162,0
16	1988	sij	1	16	74,0000	9,7744	264,8	4	1162,0	1162,0
17	1988	sij	1	17	74,0000	8,2310	264,3	4	1162,0	1162,0

METEOROŠKI PODACI

Met View [Hourly Surface Data File - SAMSON Format]

File Header Data

File Name: 14826_88.sam

Station ID: 14826

Station Year: 1988

Filter

Year: All Month: All Day: All Show All

	Year	Month	Day	Hour	Opaque Cloud Cover (Tenths)	Dry Bulb Temperature (deg C)	Relative Humidity (%)	Station Pressure (mb)	Wind Direction (deg)	Wind Speed (m/s)	Ceiling Height (m)	Present Weather	Hourly Precipitation Amount (Hundredths of Inches)	Global Horizontal Radiation (wh/m2)
1	1988	sij	1	1	10	-5,00	78	991,0	260	6,70	820	9999 9999	0,0	0
2	1988	sij	1	2	10	-5,60	71	991,0	260	7,20	880	9999 9999	N/A	0
3	1988	sij	1	3	10	-6,10	71	992,0	250	8,20	880	9999 9999	N/A	0
4	1988	sij	1	4	10	-6,70	71	993,0	250	7,70	880	9999 9999	N/A	0
5	1988	sij	1	5	10	-6,70	74	993,0	240	7,70	820	9999 9999	N/A	0
6	1988	sij	1	6	10	-7,20	74	993,0	240	7,20	790	9999 9999	N/A	0
7	1988	sij	1	7	10	-7,80	74	994,0	260	8,20	880	9999 9999	N/A	0
8	1988	sij	1	8	10	-8,30	74	995,0	260	9,30	880	9999 9999	N/A	0
9	1988	sij	1	9	10	-8,90	65	996,0	250	8,20	1130	9999 9999	N/A	19
10	1988	sij	1	10	9	-8,90	68	997,0	260	8,20	1980	9999 9999	N/A	70
11	1988	sij	1	11	9	-8,30	65	998,0	270	8,80	760	9999 9999	N/A	144
12	1988	sij	1	12	9	-8,90	68	998,0	270	9,30	760	9999 9999	N/A	235
13	1988	sij	1	13	8	-8,30	62	998,0	270	10,30	910	9999 9999	N/A	199
14	1988	sij	1	14	10	-8,30	68	997,0	260	8,80	910	9999 9999	N/A	106
15	1988	sij	1	15	9	-7,20	62	998,0	250	10,30	910	9999999999	N/A	230
16	1988	sij	1	16	10	-8,30	62	998,0	250	9,80	820	9999 9999	N/A	51
17	1988	sij	1	17	10	-8,90	65	999,0	250	9,30	980	9999 9999	N/A	22
18	1988	sij	1	18	9	-9,40	70	999,0	250	8,20	850	9999 9999	N/A	1

METEOROLOŠKI PODACI

Met View [Mixing Height Data File - SCRAM Format]

File Header Data

File Name: 14826-88.txt

Station ID: 14826

Station Year: 1988

Filter

Year: 1988 Month: All Day: All Show All

	Year	Month	Day	AM Mixing Height (m)	PM Mixing Height (m)
1	1988	sij	1	1330	1162
2	1988	sij	2	689	996
3	1988	sij	3	300	411
4	1988	sij	4	2314	1722
5	1988	sij	5	1548	1469
6	1988	sij	6	290	1339
7	1988	sij	7	108	765
8	1988	sij	8	54	833
9	1988	sij	9	523	723
10	1988	sij	10	80	669
11	1988	sij	11	390	643
12	1988	sij	12	469	545
13	1988	sij	13	1219	729
14	1988	sij	14	761	1115
15	1988	sij	15	652	912
16	1988	sij	16	408	515
17	1988	sij	17	814	734
18	1988	sij	18	954	954
19	1988	sij	19	139	150
20	1988	sij	20	69	418

Dostupnost satnih podataka za meteorološke parametre:

- smjer i brzina vjetra
- temperatura
- kategorija stabilnosti
- visina miješanja
- Monin-Obukova dužina
- tlak zraka
- sunčevo zračenje

Odgovarajući format podataka



HVALA NA PAŽNJI

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