



10 ALLEGATO II - FILE METEO



Report fornitura dati meteorologici in formato MMS CALPUFF

Località Gatteo (FC)
Periodo Anno 2022 fuso orario dei dati GMT

Caratteristiche del dominio richiesto

Origine SW x = 285046.00 m E - y = 4883596.00 m N UTM fuso 33 – WGS84
Dimensioni orizzontali totali 10.5 km x 10.5 km
Risoluzione orizzontale (dimensioni griglia) dx = dy = 300 m
Risoluzione verticale (quota livelli verticali) 0-20-50-100-200-500-1000-2000-4000 m sul livello del suolo

Caratteristiche del punto richiesto

Coordinate (44.122741°N, 12.379013°E)
Cella (18,18)

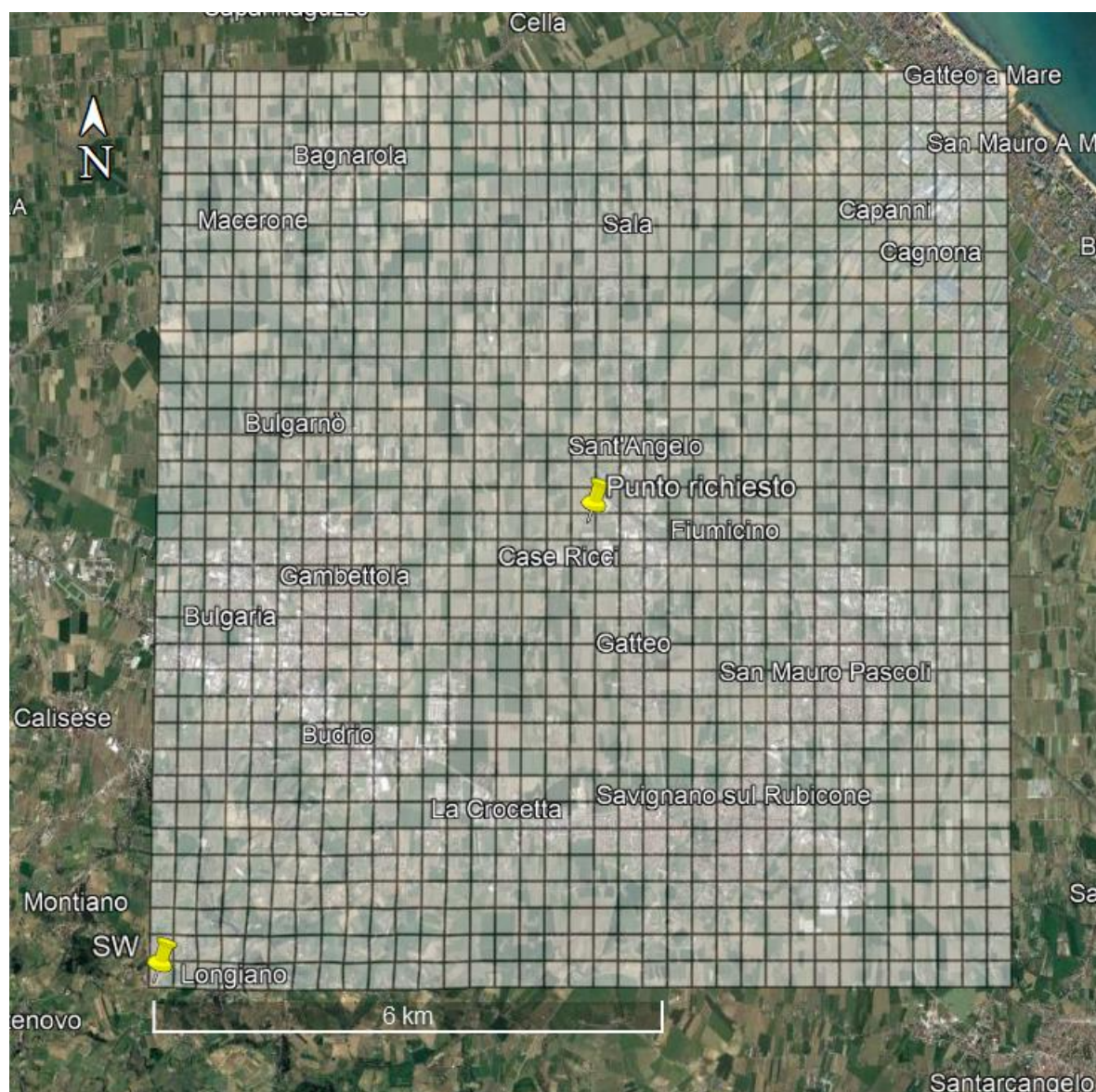


Figura
1 –

Dominio, località richiesta

I dati forniti sono stati ricostruiti per l'area descritta attraverso un'elaborazione "mass consistent" sul dominio tridimensionale effettuata con il modello meteorologico CALMET con le risoluzioni (orizzontali e verticali) indicate nella pagina precedente, dei dati rilevati nelle stazioni SYNOP ICAO (International Civil Aviation Organization) di superficie e profilometriche, presenti sul territorio nazionale, dati meteorologici sinottici di superficie e di profilo verticale ricavati dal modello di calcolo climatologico del centro meteorologico europeo ECMWF (dati forniti dal Progetto ERA5), e dei dati rilevati nelle stazioni locali sito-specifiche se disponibili.

Il modello CALMET ricostruisce per interpolazione 3D "mass consistent", pesata sull'inverso del quadrato della distanza, un campo iniziale tridimensionale (FIRST GUESS) che viene modificato per incorporare gli effetti geomorfologici ed orografici del sito in esame alla risoluzione spaziale richiesta (campo meteo STEP 1); il processo di interpolazione avviene per strati orizzontali, l'interazione tra i vari strati orizzontali viene definita attraverso opportuni fattori di BIAS che permettono di pesare strato per strato l'influenza dei dati di superficie rispetto ai dati profilometrici (es: nel primo strato verticale adiacente al terreno che va da 0 a 20 metri sul suolo in genere viene azzerato il peso del profilo verticale rispetto a quello delle stazioni di superficie mentre negli strati verticali superiori al primo viene gradatamente aumentato il peso dei dati profilometrici rispetto a quelli di superficie fino ad azzerare il peso di questi ultimi dopo alcune centinaia di metri dal suolo).

Sul campo meteo (STEP 1) così definito vengono infine reinserite le osservabili misurate per ottenere il campo finale (STEP 2) all'interno del quale in questo modo vengono recuperate le informazioni sito-specifiche delle misure meteo.

Per informazioni più dettagliate sul funzionamento del preprocessore CALMET si deve fare riferimento alla documentazione originale del modello al seguente link
(http://www.src.com/calpuff/download/MMS_Files/MMS2006_Volume2_CALMET_Preprocessors.pdf)

Stazioni meteorologiche utilizzate

Stazioni sinottiche

- stazioni di superficie SYNOP ICAO
CERVIA LIPC 161480 [44.223995°N - 12.306990°E]
- stazioni di radiosondaggio SYNOP ICAO
16144 - San Pietro Capofiume profilo [44.65°N - 11.62°E]

Dati ricavati dal modello meteorologica europeo ECMWF – Progetto ERA5

- stazioni virtuali di superficie
non utilizzate
- stazioni virtuali di profilo verticale
non utilizzate

Stazioni sito specifiche da reti regionali/provinciali

Cesenatico Porto	[44.206447°N - 12.401309°E]	Rete ARPA EMR (Dexter)
Martorano (*)	[44.166134°N - 12.267976°E]	Rete ARPA EMR (Dexter)

(*) (stazione priva di anemometro)

Stazioni private fornite da richiedente

Non disponibili

Nelle immagini seguenti viene riportata la posizione delle stazioni meteorologiche utilizzate per la ricostruzione del campo meteorologico sull'area richiesta



Figura 2 – Stazioni di superficie utilizzate per la ricostruzione meteo



Figura 3 – Stazioni di superficie e di profilo verticale utilizzate per la ricostruzione meteo

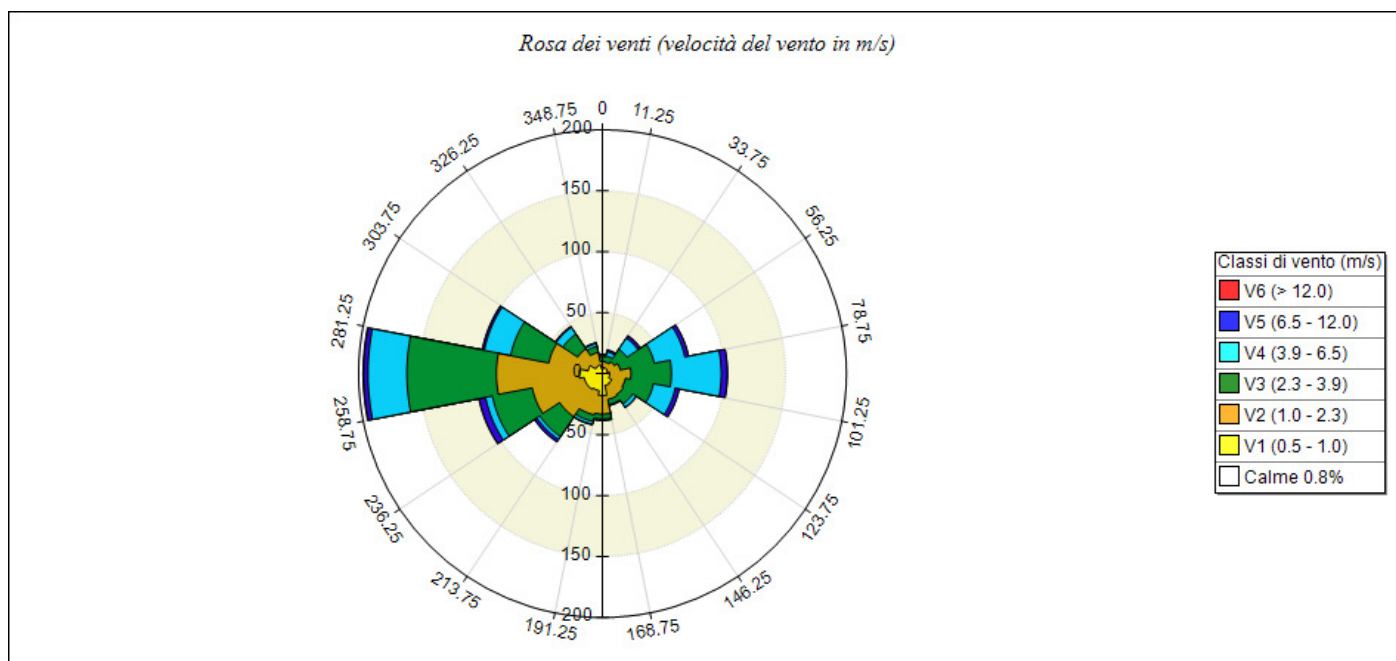


Rapporto generato dal software [MMS Calpuff](#) prodotto da Maind S.r.l. (23/03/2023)

Informazioni di base

Elemento	Valore
Tipologia dati meteorologici	CALMET file di input stazione al suolo
Periodo dei dati	01/01/2022 00:00:00 <-> 01/01/2023 00:00:00
Ore totali	8761
Valore limite per determinare le calme di vento	0.5 (m/s)
Rosa dei venti fattore di normalizzazione	1000
Stazione	CERVIA LIPC 161480
Posizione della stazione di misura	44.224000°N - 12.307000°E
File con i dati utilizzati	C:\ProgramData\Maind\Maind.MeteoReport\meteo\data.txt

Rosa dei venti



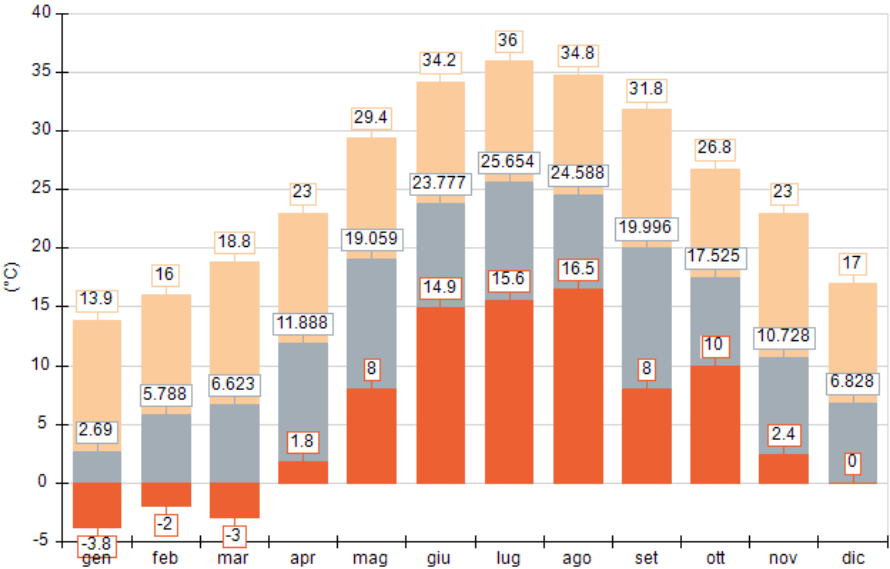
SECTORS	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	4.11	5.94	3.77	1.37	0.46	0.11	15.75	2.37
11.3 - 33.8	5.02	4.57	5.14	3.54	1.48	0.00	19.75	2.92
33.8 - 56.3	4.91	6.85	12.33	10.96	2.17	0.34	37.55	3.44
56.3 - 78.8	4.11	10.73	28.42	25.57	3.08	0.00	71.91	3.56
78.8 - 101.3	5.82	17.58	33.10	40.86	5.02	0.00	102.39	3.69
101.3 - 123.8	6.05	13.13	23.40	18.15	3.31	0.00	64.03	3.41
123.8 - 146.3	9.13	11.41	9.36	3.20	0.34	0.00	33.44	2.17
146.3 - 168.8	9.93	11.64	4.22	0.68	0.11	0.00	26.60	1.70
168.8 - 191.3	17.92	15.18	3.99	0.91	0.23	0.00	38.24	1.54
191.3 - 213.8	14.15	20.20	5.48	2.40	0.46	0.00	42.69	1.85
213.8 - 236.3	15.41	26.94	19.63	2.85	2.40	0.00	67.23	2.29
236.3 - 258.8	15.41	43.37	33.33	5.71	5.36	0.23	103.41	2.59
258.8 - 281.3	19.06	67.91	73.39	31.85	3.54	0.57	196.32	2.81
281.3 - 303.8	11.98	32.87	31.85	22.03	1.60	0.23	100.56	2.88
303.8 - 326.3	6.96	17.46	14.61	6.62	0.91	0.00	46.57	2.57
326.3 - 348.8	7.31	10.39	5.02	2.40	0.68	0.00	25.80	2.19
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	7.76	0.00	0.00	0.00	0.00	0.00	7.76	0.00
Totale	165.05	316.17	307.04	179.09	31.16	1.48	1000.00	0.00

Temperatura (°C)

Periodo	Minima	Media	Massima
Anno	-3.80	14.64	36.00
Primavera	-3.00	12.53	29.40
Estate	14.90	24.68	36.00

Periodo	Minima	Media	Massima
Autunno	2.40	16.10	31.80
Inverno	-3.80	5.08	17.00
gen	-3.80	2.69	13.90
feb	-2.00	5.79	16.00
mar	-3.00	6.62	18.80
apr	1.80	11.89	23.00
mag	8.00	19.06	29.40
giu	14.90	23.78	34.20
lug	15.60	25.65	36.00
ago	16.50	24.59	34.80
set	8.00	20.00	31.80
ott	10.00	17.53	26.80
nov	2.40	10.73	23.00
dic	0.00	6.83	17.00

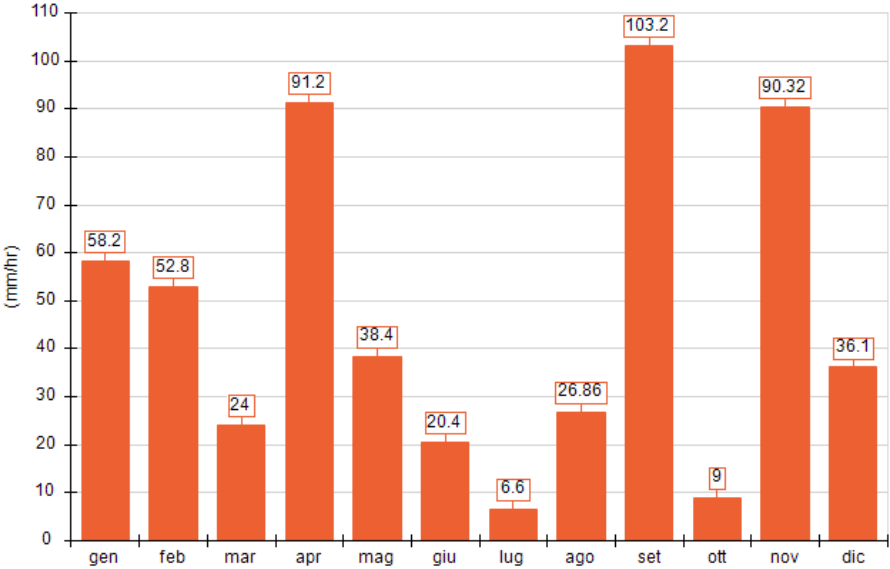
Temperatura minima, media massima (°C)



Precipitazione (mm/hr)

Periodo	Media	Massima	Cumulata
Anno	0.06	4.70	557.08
Primavera	0.07	4.70	153.60
Estate	0.02	2.80	53.86
Autunno	0.09	3.70	202.52
Inverno	0.07	3.70	147.10
gen	0.08	2.60	58.20
feb	0.08	3.70	52.80
mar	0.03	1.50	24.00
apr	0.13	4.70	91.20
mag	0.05	2.50	38.40
giu	0.03	2.80	20.40
lug	0.01	0.50	6.60
ago	0.04	1.90	26.86
set	0.14	3.70	103.20
ott	0.01	1.50	9.00
nov	0.13	3.09	90.32
dic	0.05	2.12	36.10

Precipitazione cumulata (mm/hr)

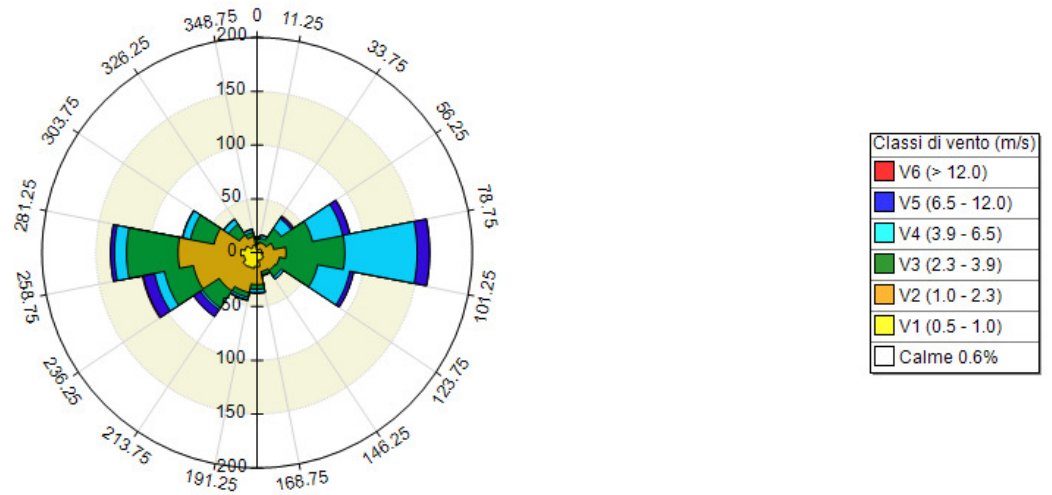


Percentuale dati validi

Periodo	Dir. vento	Vel. vento	Temp. aria	Precip.	Pres.	UR
Periodo Completo	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Primavera	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Estate	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Autunno	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Inverno	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
gen	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
feb	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
mar	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
apr	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
mag	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
giu	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
lug	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
ago	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
set	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
ott	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
nov	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
dic	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

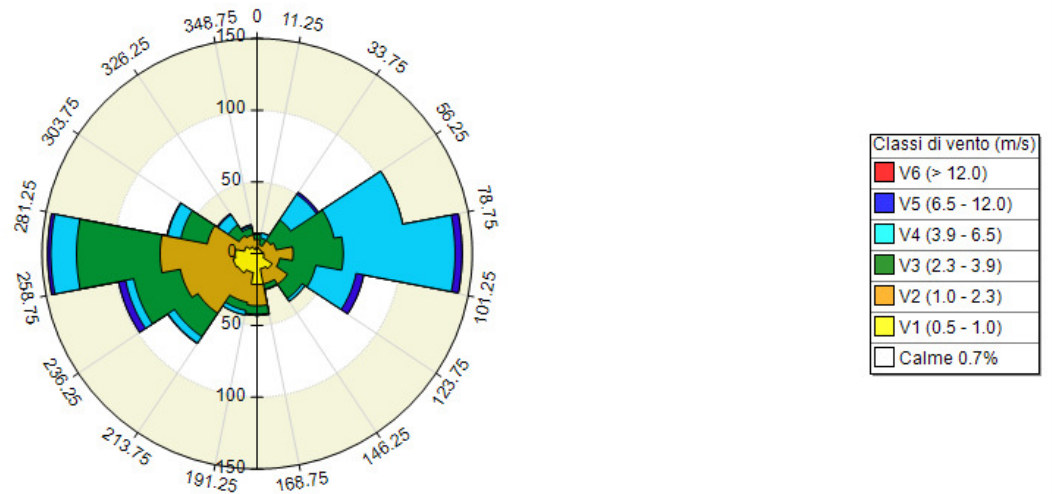
Rose dei venti stagionali

Rosa dei venti (velocità del vento in m/s): Primavera



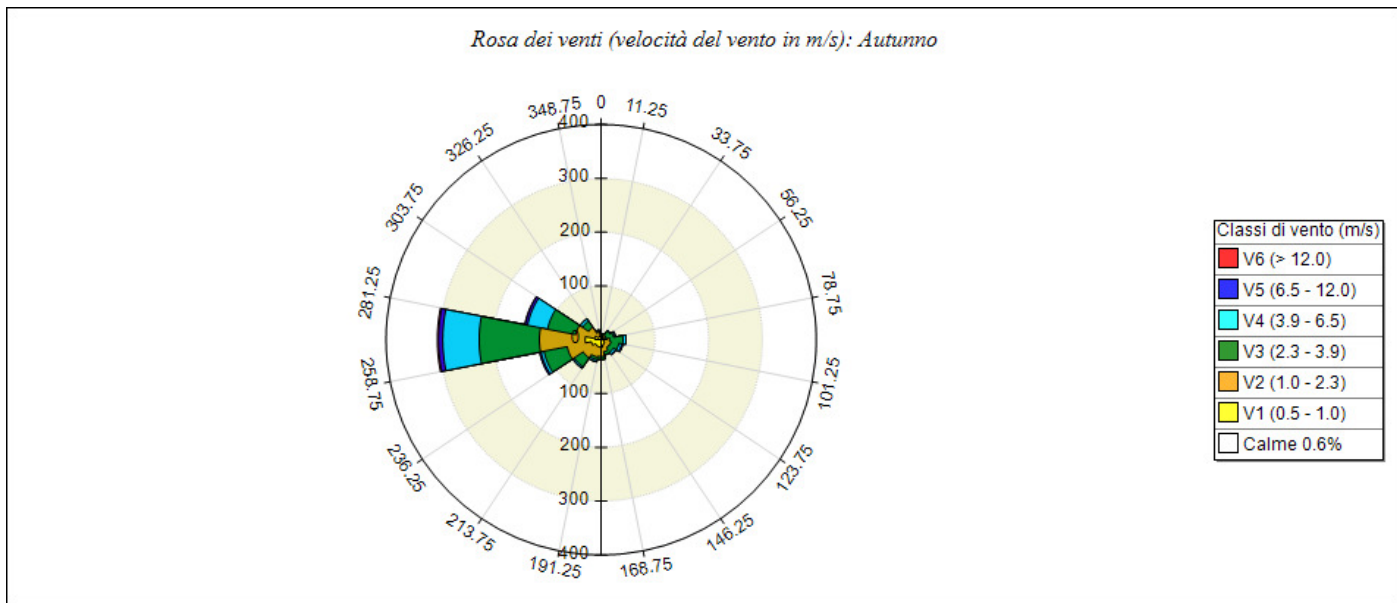
Primavera	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	2.69	5.38	4.48	1.34	0.90	0.00	14.78	2.74
11.3 - 33.8	2.69	7.17	4.03	2.69	0.45	0.00	17.03	2.50
33.8 - 56.3	4.48	5.38	17.03	11.20	2.24	0.90	41.22	3.54
56.3 - 78.8	4.48	11.20	36.74	28.67	6.72	0.00	87.81	3.70
78.8 - 101.3	4.03	22.85	54.66	67.20	11.65	0.00	160.39	3.90
101.3 - 123.8	5.38	15.68	36.29	30.47	3.58	0.00	91.40	3.58
123.8 - 146.3	7.17	12.54	7.17	2.69	0.00	0.00	29.57	2.02
146.3 - 168.8	7.17	10.75	3.14	0.45	0.45	0.00	21.95	1.85
168.8 - 191.3	12.99	16.58	4.48	3.14	0.45	0.00	37.63	1.88
191.3 - 213.8	14.78	22.85	4.48	2.24	0.90	0.00	45.25	1.83
213.8 - 236.3	15.68	26.88	18.82	2.24	7.62	0.00	71.24	2.72
236.3 - 258.8	12.54	47.94	27.33	9.41	10.75	0.90	108.87	3.08
258.8 - 281.3	15.23	58.24	47.94	11.20	3.58	0.00	136.20	2.55
281.3 - 303.8	11.20	29.57	22.40	7.17	0.45	0.00	70.79	2.40
303.8 - 326.3	6.27	13.44	12.10	5.38	0.45	0.00	37.63	2.51
326.3 - 348.8	7.62	7.62	4.03	2.69	0.45	0.00	22.40	2.14
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	5.82	0.00	0.00	0.00	0.00	0.00	5.82	0.00
Totale	140.23	314.07	305.11	188.17	50.63	1.79	1000.00	0.00

Rosa dei venti (velocità del vento in m/s): Estate

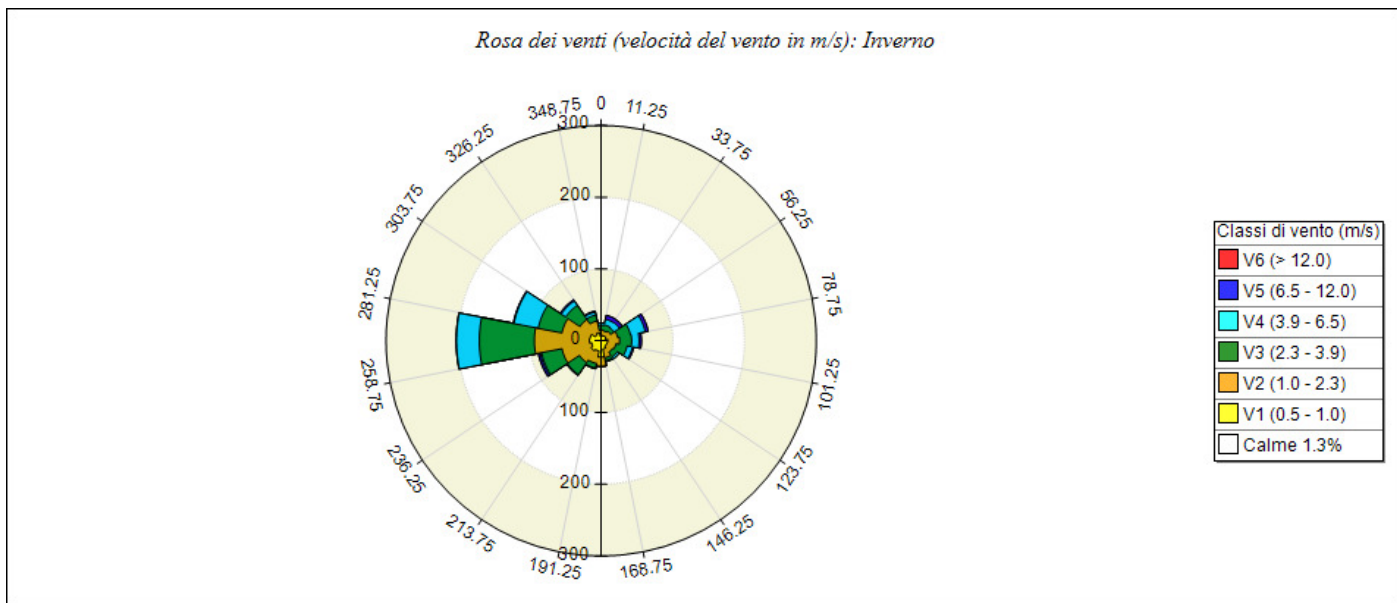


Estate	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	4.48	5.38	3.58	0.45	0.00	0.45	14.34	2.19
11.3 - 33.8	3.58	2.69	4.93	3.58	0.00	0.00	14.78	2.79
33.8 - 56.3	3.14	8.06	17.03	21.51	1.79	0.00	51.52	3.60
56.3 - 78.8	3.58	9.86	41.22	48.84	0.00	0.00	103.49	3.64
78.8 - 101.3	4.48	20.61	34.95	77.96	4.93	0.00	142.92	4.03
101.3 - 123.8	4.93	11.20	25.54	28.67	5.38	0.00	75.72	3.81
123.8 - 146.3	12.54	12.99	12.10	2.24	0.00	0.00	39.87	2.01
146.3 - 168.8	10.75	10.75	3.58	0.45	0.00	0.00	25.54	1.59
168.8 - 191.3	21.51	14.78	5.82	0.45	0.45	0.00	43.01	1.52
191.3 - 213.8	13.44	21.06	5.82	3.14	0.00	0.00	43.46	1.92
213.8 - 236.3	16.13	33.60	19.71	5.38	0.45	0.00	75.27	2.14

Estate	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
236.3 - 258.8	17.03	37.63	33.15	5.82	4.93	0.00	98.57	2.56
258.8 - 281.3	15.23	52.42	58.24	17.92	2.24	0.00	146.06	2.64
281.3 - 303.8	8.96	26.43	18.82	9.41	0.45	0.00	64.07	2.54
303.8 - 326.3	5.82	9.41	8.96	8.51	0.90	0.00	33.60	2.84
326.3 - 348.8	3.14	10.30	4.93	1.34	0.90	0.00	20.61	2.43
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	7.17	0.00	0.00	0.00	0.00	0.00	7.17	0.00
Totale	155.91	287.19	298.39	235.66	22.40	0.45	1000.00	0.00



Autunno	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	3.24	4.17	0.46	0.93	0.46	0.00	9.26	2.02
11.3 - 33.8	6.48	1.85	3.24	0.00	0.00	0.00	11.57	1.58
33.8 - 56.3	4.17	6.02	9.26	1.39	0.00	0.00	20.83	2.30
56.3 - 78.8	1.85	5.09	16.67	2.78	1.39	0.00	27.78	3.00
78.8 - 101.3	5.56	10.19	25.00	5.56	0.00	0.00	46.30	2.70
101.3 - 123.8	5.09	13.43	15.28	5.09	2.31	0.00	41.20	2.91
123.8 - 146.3	7.87	9.72	10.19	4.63	1.39	0.00	33.80	2.61
146.3 - 168.8	10.19	12.50	6.02	0.46	0.00	0.00	29.17	1.67
168.8 - 191.3	14.35	16.67	5.56	0.00	0.00	0.00	36.57	1.63
191.3 - 213.8	13.89	18.98	5.09	3.24	0.93	0.00	42.13	1.98
213.8 - 236.3	12.96	27.31	19.91	2.78	0.93	0.00	63.89	2.19
236.3 - 258.8	18.52	45.83	43.98	5.56	2.78	0.00	116.67	2.37
258.8 - 281.3	29.63	85.19	112.04	67.59	7.87	2.31	304.63	3.09
281.3 - 303.8	12.04	36.11	53.24	37.96	4.63	0.93	144.91	3.22
303.8 - 326.3	6.02	21.76	13.89	5.09	0.46	0.00	47.22	2.40
326.3 - 348.8	6.94	7.41	2.78	1.39	0.00	0.00	18.52	1.81
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	5.56	0.00	0.00	0.00	0.00	0.00	5.56	0.00
Totale	164.35	322.22	342.59	144.44	23.15	3.24	1000.00	0.00



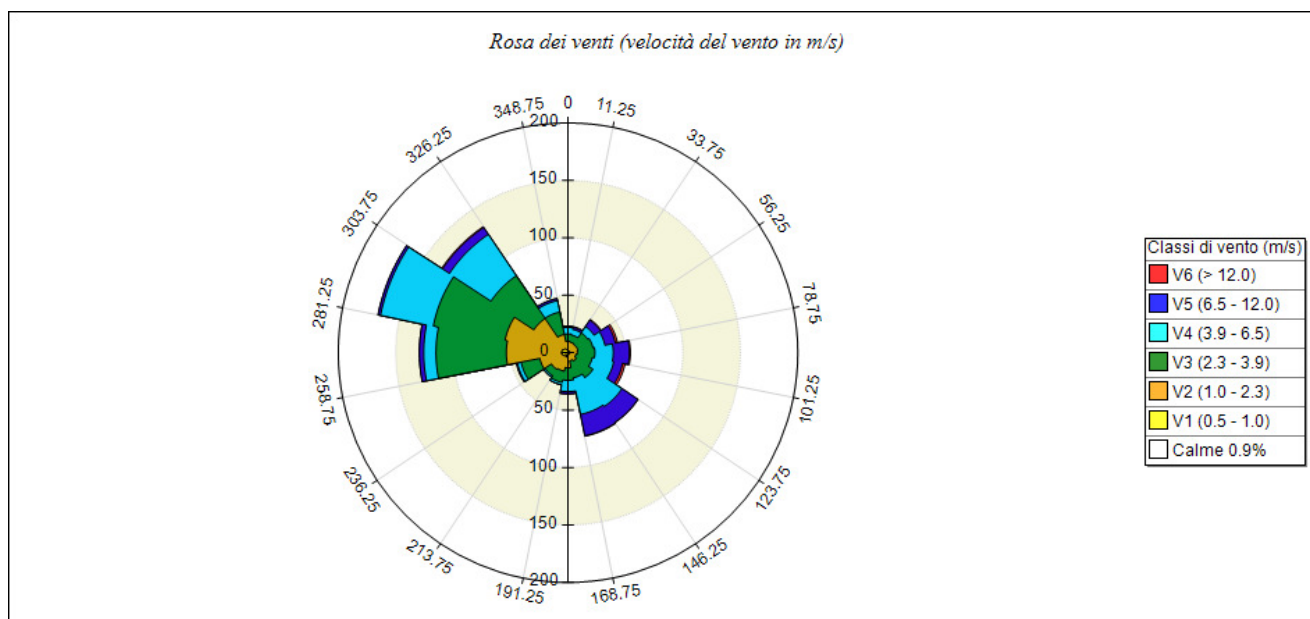
Inverno	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	6.08	8.89	6.55	2.81	0.47	0.00	24.80	2.38
11.3 - 33.8	7.49	6.55	8.42	7.96	5.62	0.00	36.03	3.63
33.8 - 56.3	7.96	7.96	5.62	9.36	4.68	0.47	36.03	3.76
56.3 - 78.8	6.55	16.85	18.25	21.06	4.21	0.00	66.92	3.46
78.8 - 101.3	9.36	16.38	16.85	10.29	3.28	0.00	56.15	2.96
101.3 - 123.8	8.89	12.17	15.91	7.49	1.87	0.00	46.33	2.83
123.8 - 146.3	8.89	10.29	7.96	3.28	0.00	0.00	30.42	2.08
146.3 - 168.8	11.70	12.63	4.21	1.40	0.00	0.00	29.95	1.71
168.8 - 191.3	22.93	12.63	0.00	0.00	0.00	0.00	35.56	1.10
191.3 - 213.8	14.51	17.78	6.55	0.94	0.00	0.00	39.78	1.64
213.8 - 236.3	16.85	19.65	20.12	0.94	0.47	0.00	58.03	2.03
236.3 - 258.8	13.57	42.12	29.01	1.87	2.81	0.00	89.38	2.32
258.8 - 281.3	16.38	76.74	76.74	31.82	0.47	0.00	202.15	2.68
281.3 - 303.8	15.91	39.78	33.69	34.63	0.94	0.00	124.94	2.95
303.8 - 326.3	9.83	25.74	23.87	7.49	1.87	0.00	68.79	2.59
326.3 - 348.8	11.70	16.38	8.42	4.21	1.40	0.00	42.12	2.25
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	12.63	0.00	0.00	0.00	0.00	0.00	12.63	0.00
Totale	201.22	342.54	282.17	145.53	28.08	0.47	1000.00	0.00

Rapporto generato dal software **MMS Calpuff** prodotto da Maind S.r.l. (23/03/2023)

Informazioni di base

Elemento	Valore
Tipologia dati meteorologici	CALMET file di input stazione al suolo
Periodo dei dati	01/01/2022 00:00:00 <-> 01/01/2023 00:00:00
Ore totali	8761
Valore limite per determinare le calme di vento	0.5 (m/s)
Rosa dei venti fattore di normalizzazione	1000
Stazione	Cesenatico Porto - ARPAE Emilia Romagna
Posizione della stazione di misura	(44.206°N, 12.401°E)
File con i dati utilizzati	C:\ProgramData\Maind\Maind.MeteoReport\meteoata.txt

Rosa dei venti



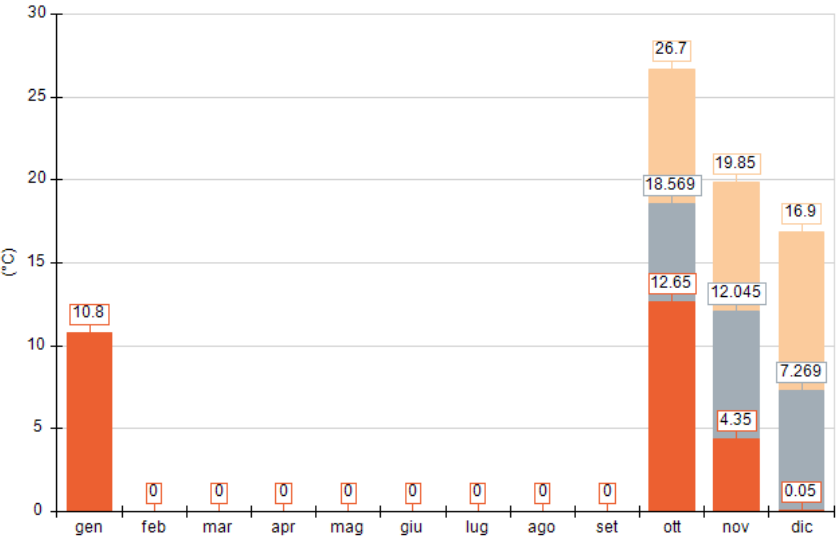
SECTORS	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	1.73	8.08	6.50	5.77	0.87	0.14	23.09	3.20
11.3 - 33.8	1.59	7.65	6.35	5.05	1.88	0.58	23.09	3.66
33.8 - 56.3	1.73	6.93	12.12	6.50	6.78	0.72	34.79	4.55
56.3 - 78.8	1.44	7.36	13.28	10.68	9.24	1.88	43.88	4.97
78.8 - 101.3	1.30	6.78	15.30	16.02	14.00	0.87	54.27	5.13
101.3 - 123.8	1.59	5.34	14.58	19.05	7.79	2.17	50.52	4.89
123.8 - 146.3	1.73	6.93	17.47	30.31	16.60	0.29	73.33	4.93
146.3 - 168.8	1.59	5.63	15.16	32.48	18.91	0.43	74.19	5.18
168.8 - 191.3	1.88	11.26	10.97	9.82	1.88	0.29	36.09	3.42
191.3 - 213.8	3.90	12.56	9.96	2.02	0.14	0.00	28.58	2.32
213.8 - 236.3	2.17	15.30	6.64	1.44	0.14	0.00	25.69	2.17
236.3 - 258.8	4.91	20.06	16.60	3.32	0.87	0.00	45.76	2.43
258.8 - 281.3	5.77	47.92	61.20	10.68	3.75	0.00	129.33	2.74
281.3 - 303.8	5.34	50.52	63.65	46.91	2.17	0.00	168.59	3.16
303.8 - 326.3	4.19	31.61	44.89	43.45	7.22	0.87	132.22	3.64
326.3 - 348.8	3.03	13.14	19.92	10.10	1.88	0.00	48.07	3.18
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	8.52	0.00	0.00	0.00	0.00	0.00	8.52	0.00
Totale	52.40	257.07	334.58	253.61	94.11	8.23	1000.00	0.00

Temperatura (°C)

Periodo	Minima	Media	Massima
Anno	0.05	11.82	26.70
Primavera	0.00	0.00	0.00
Estate	0.00	0.00	0.00
Autunno	4.35	14.65	26.70
Inverno	0.05	7.27	16.90
gen	10.80	10.80	10.80
feb	0.00	0.00	0.00
mar	0.00	0.00	0.00
apr	0.00	0.00	0.00

Periodo	Minima	Media	Massima
mag	0.00	0.00	0.00
giu	0.00	0.00	0.00
lug	0.00	0.00	0.00
ago	0.00	0.00	0.00
set	0.00	0.00	0.00
ott	12.65	18.57	26.70
nov	4.35	12.04	19.85
dic	0.05	7.27	16.90

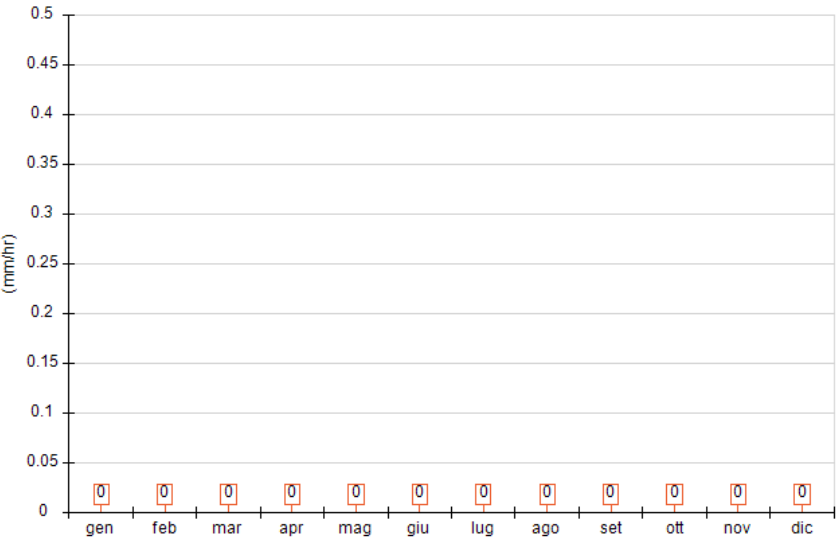
Temperatura minima, media massima (°C)



Precipitazione (mm/hr)

Periodo	Media	Massima	Cumulata
Anno	0.00	0.00	0.00
Primavera	0.00	0.00	0.00
Estate	0.00	0.00	0.00
Autunno	0.00	0.00	0.00
Inverno	0.00	0.00	0.00
gen	0.00	0.00	0.00
feb	0.00	0.00	0.00
mar	0.00	0.00	0.00
apr	0.00	0.00	0.00
mag	0.00	0.00	0.00
giu	0.00	0.00	0.00
lug	0.00	0.00	0.00
ago	0.00	0.00	0.00
set	0.00	0.00	0.00
ott	0.00	0.00	0.00
nov	0.00	0.00	0.00
dic	0.00	0.00	0.00

Precipitazione cumulata (mm/hr)

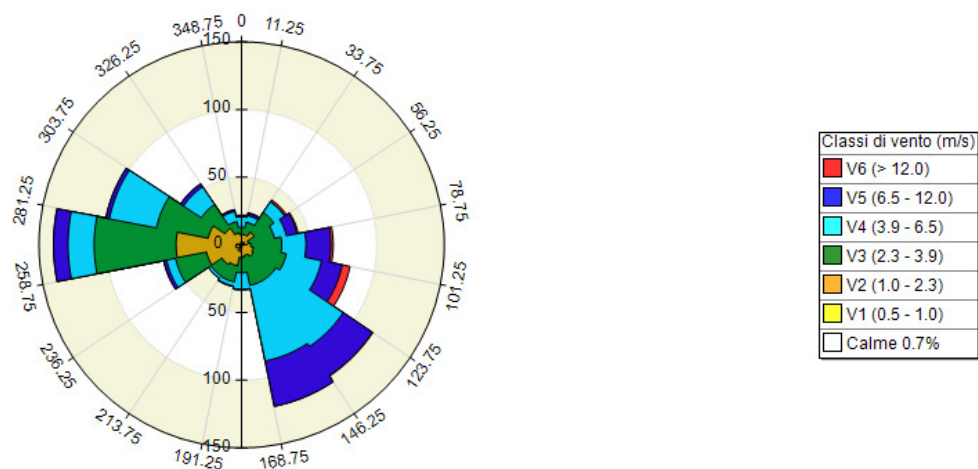


Percentuale dati validi

Periodo	Dir. vento	Vel. vento	Temp. aria	Precip.	Pres.	UR
Periodo Completo	79.08%	79.08%	22.19%	0.00%	0.00%	0.00%
Primavera	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%
Estate	61.59%	61.59%	0.00%	0.00%	0.00%	0.00%
Autunno	54.90%	54.90%	54.90%	0.00%	0.00%	0.00%
Inverno	100.00%	100.00%	34.47%	0.00%	0.00%	0.00%
gen	100.00%	100.00%	0.13%	0.00%	0.00%	0.00%
feb	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%
mar	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%
apr	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%
mag	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%
giu	99.17%	99.17%	0.00%	0.00%	0.00%	0.00%
lug	72.72%	72.72%	0.00%	0.00%	0.00%	0.00%
ago	14.11%	14.11%	0.00%	0.00%	0.00%	0.00%
set	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ott	64.38%	64.38%	64.38%	0.00%	0.00%	0.00%
nov	100.00%	100.00%	100.00%	0.00%	0.00%	0.00%
dic	100.00%	100.00%	100.00%	0.00%	0.00%	0.00%

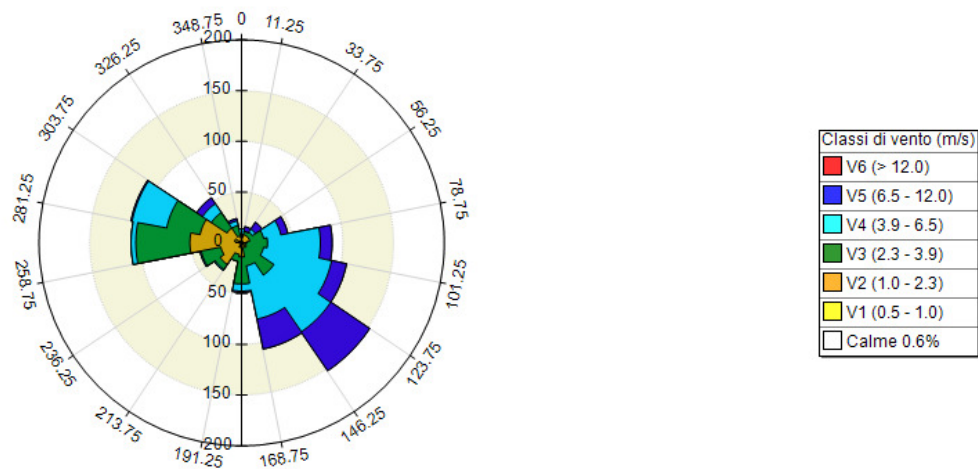
Rose dei venti stagionali

Rosa dei venti (velocità del vento in m/s): Primavera



Primavera	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	1.80	5.84	5.39	7.64	0.90	0.45	22.01	3.56
11.3 - 33.8	0.90	6.74	9.43	4.94	1.80	0.45	24.26	3.84
33.8 - 56.3	2.70	8.54	17.52	9.43	0.45	1.35	39.98	3.60
56.3 - 78.8	0.45	4.49	19.77	8.98	8.09	0.90	42.68	4.59
78.8 - 101.3	0.45	6.29	22.91	17.97	18.42	1.80	67.83	5.35
101.3 - 123.8	1.35	7.64	24.71	26.50	15.72	5.84	81.76	5.37
123.8 - 146.3	0.90	9.43	20.22	59.75	26.06	0.45	116.80	5.23
146.3 - 168.8	0.45	7.64	22.46	57.05	34.14	0.00	121.74	5.27
168.8 - 191.3	0.45	8.98	11.23	12.13	0.45	0.00	33.24	3.45
191.3 - 213.8	4.94	10.78	12.13	3.14	0.45	0.00	31.45	2.55
213.8 - 236.3	1.35	16.17	9.88	2.25	0.00	0.00	29.65	2.36
236.3 - 258.8	4.49	22.01	23.36	6.74	2.25	0.00	58.85	2.77
258.8 - 281.3	3.59	44.92	60.65	19.32	10.78	0.00	139.26	3.23
281.3 - 303.8	0.00	25.16	39.08	35.49	2.70	0.00	102.43	3.49
303.8 - 326.3	0.90	13.93	21.11	15.72	2.70	0.00	54.36	3.40
326.3 - 348.8	1.80	7.19	8.54	7.64	1.35	0.00	26.50	3.44
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	7.19	0.00	0.00	0.00	0.00	0.00	7.19	0.00
Totale	33.69	205.75	328.39	294.70	126.24	11.23	1000.00	0.00

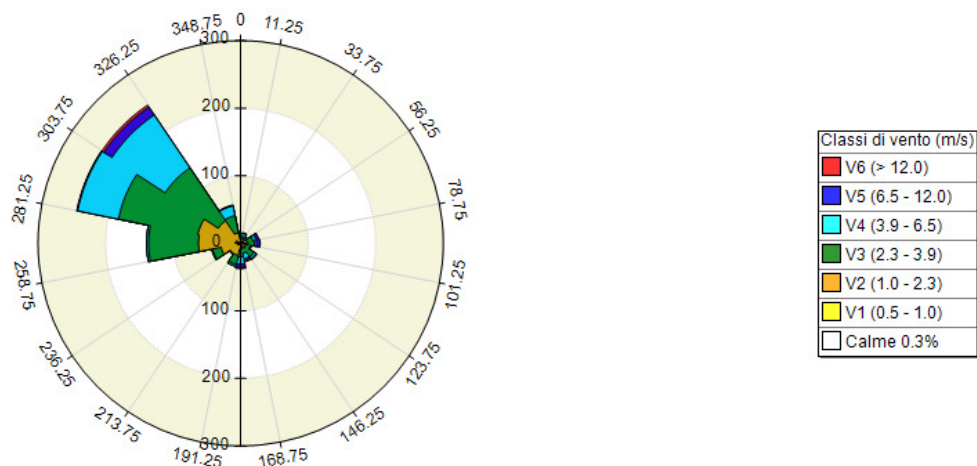
Rosa dei venti (velocità del vento in m/s): Estate



Estate	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	0.00	4.64	3.48	5.80	0.00	0.00	13.92	3.35
11.3 - 33.8	2.32	5.80	3.48	0.00	4.64	0.00	16.24	3.56
33.8 - 56.3	0.00	8.12	4.64	3.48	8.12	0.00	24.36	4.62
56.3 - 78.8	0.00	8.12	13.92	17.40	6.96	0.00	46.40	4.62
78.8 - 101.3	0.00	4.64	20.88	52.20	11.60	0.00	89.33	4.73
101.3 - 123.8	0.00	3.48	18.56	68.45	15.08	0.00	105.57	5.06
123.8 - 146.3	3.48	2.32	32.48	67.29	46.40	0.00	151.97	5.32
146.3 - 168.8	1.16	3.48	18.56	53.36	30.16	0.00	106.73	5.64
168.8 - 191.3	1.16	12.76	26.68	6.96	1.16	0.00	48.72	2.99
191.3 - 213.8	4.64	6.96	6.96	0.00	0.00	0.00	18.56	1.93
213.8 - 236.3	1.16	24.36	5.80	1.16	0.00	0.00	32.48	2.00
236.3 - 258.8	1.16	19.72	19.72	1.16	0.00	0.00	41.76	2.36
258.8 - 281.3	2.32	48.72	53.36	4.64	0.00	0.00	109.05	2.46
281.3 - 303.8	6.96	34.80	33.64	34.80	1.16	0.00	111.37	3.05
303.8 - 326.3	1.16	16.24	18.56	10.44	6.96	0.00	53.36	3.62
326.3 - 348.8	2.32	4.64	10.44	4.64	2.32	0.00	24.36	3.34

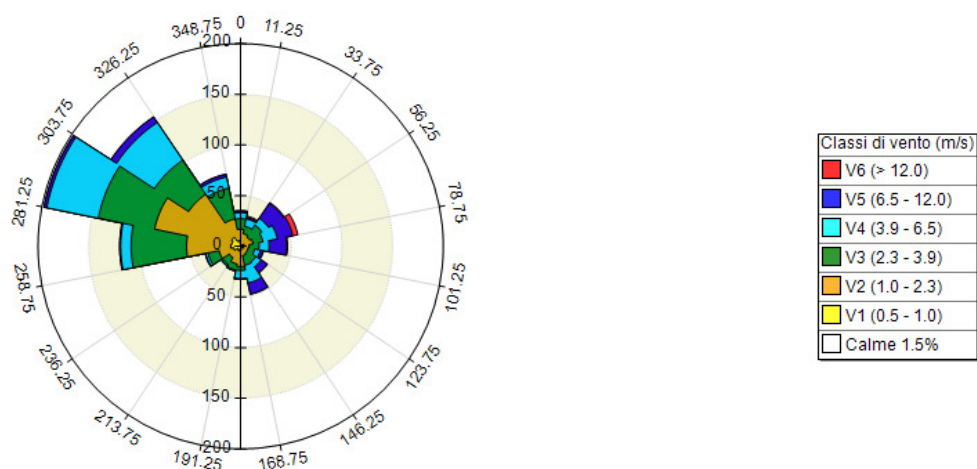
Estate	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	5.80	0.00	0.00	0.00	0.00	0.00	5.80	0.00
Totale	33.64	208.82	291.18	331.79	134.57	0.00	1000.00	0.00

Rosa dei venti (velocità del vento in m/s): Autunno



Autunno	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	2.35	4.11	4.70	2.94	0.00	0.00	14.09	2.71
11.3 - 33.8	2.35	5.28	2.35	4.70	1.17	0.00	15.85	3.19
33.8 - 56.3	1.17	1.76	5.87	2.35	0.59	0.00	11.74	3.14
56.3 - 78.8	0.59	8.81	8.81	4.70	4.11	0.00	27.01	3.63
78.8 - 101.3	2.35	8.81	9.40	2.94	5.28	0.00	28.77	3.83
101.3 - 123.8	0.59	4.70	9.40	1.17	0.00	0.59	16.44	3.05
123.8 - 146.3	1.76	7.05	15.27	3.52	1.17	0.00	28.77	3.01
146.3 - 168.8	2.94	1.76	10.57	8.22	2.94	1.76	28.19	4.75
168.8 - 191.3	1.76	7.05	11.74	10.57	5.28	1.17	37.58	4.37
191.3 - 213.8	1.17	17.03	13.51	2.94	0.00	0.00	34.64	2.49
213.8 - 236.3	2.35	15.85	1.17	0.59	0.00	0.00	19.96	1.89
236.3 - 258.8	4.70	24.66	12.92	1.17	0.00	0.00	43.45	2.09
258.8 - 281.3	5.28	56.96	73.99	2.94	0.00	0.00	139.17	2.43
281.3 - 303.8	7.05	57.55	119.79	61.66	1.17	0.00	247.21	3.17
303.8 - 326.3	1.76	38.17	94.54	94.54	14.09	3.52	246.62	4.06
326.3 - 348.8	1.76	14.09	25.84	14.68	1.17	0.00	57.55	3.26
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	2.94	0.00	0.00	0.00	0.00	0.00	2.94	0.00
Totale	42.87	273.63	419.85	219.61	36.99	7.05	1000.00	0.00

Rosa dei venti (velocità del vento in m/s): Inverno



Inverno	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
348.8 - 11.3	1.87	14.97	10.29	6.08	1.87	0.00	35.10	3.09
11.3 - 33.8	1.40	11.23	7.49	7.49	1.40	1.40	30.42	3.73
33.8 - 56.3	1.87	8.89	14.51	7.96	17.78	0.94	51.94	5.55
56.3 - 78.8	3.74	8.89	9.83	14.51	15.44	5.15	57.56	5.87
78.8 - 101.3	1.87	6.55	9.83	9.83	17.31	0.94	46.33	5.73
101.3 - 123.8	3.28	4.21	6.55	5.62	2.81	0.47	22.93	3.86
123.8 - 146.3	1.87	6.08	10.29	6.08	7.02	0.47	31.82	4.42
146.3 - 168.8	1.87	7.49	9.83	17.78	11.23	0.00	48.20	4.71
168.8 - 191.3	3.74	16.38	3.74	7.96	0.94	0.00	32.76	2.78
191.3 - 213.8	4.68	13.10	6.08	0.94	0.00	0.00	24.80	1.94

Inverno	V1 (0.5 - 1.0)	V2 (1.0 - 2.3)	V3 (2.3 - 3.9)	V4 (3.9 - 6.5)	V5 (6.5 - 12.0)	V6 (> 12.0)	Totale	Vmed (m/s)
213.8 - 236.3	3.28	10.29	7.96	1.40	0.47	0.00	23.40	2.20
236.3 - 258.8	7.02	14.51	11.23	2.34	0.47	0.00	35.56	2.20
258.8 - 281.3	9.83	43.52	54.75	10.29	0.94	0.00	119.33	2.55
281.3 - 303.8	8.89	77.68	56.62	51.94	2.81	0.00	197.94	3.00
303.8 - 326.3	10.76	51.01	40.71	44.92	6.55	0.00	153.95	3.19
326.3 - 348.8	5.62	21.99	30.88	11.23	2.81	0.00	72.53	3.01
Variabili	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calme < 0.5	15.44	0.00	0.00	0.00	0.00	0.00	15.44	0.00
Totale	87.04	316.80	290.59	206.36	89.85	9.36	1000.00	0.00

Maind S.r.l Milano | P.za L. Da Vinci, 7 20133 Milano | C.F. e P.IVA 09596850157 | Informazioni: info@maindsupport.it
Reg.Imprese Milano n. 09596850157 | REA 1305211 | Cap.Soc.12.480,00 EURO (interamente versato) |

Informazioni di base

Elemento	Valore
Tipologia dati meteorologici	CALMET file di input stazione al suolo
Periodo dei dati	01/01/2022 00:00:00 <-> 01/01/2023 00:00:00
Ore totali	8761
Valore limite per determinare le calme di vento	0.5 (m/s)
Rosa dei venti fattore di normalizzazione	1000
Stazione	Martorano - ARPAE Emilia Romagna
Posizione della stazione di misura	(44.166°N, 12.268°E)
File con i dati utilizzati	C:\ProgramData\Maind\Maind.MeteoReport\meteo\data.txt

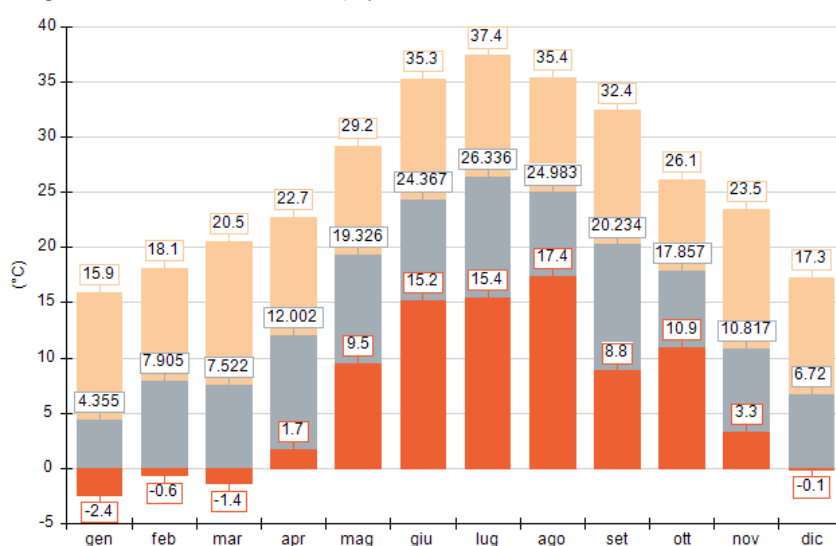
Rosa dei venti

Questa stazione non contiene dati di vento validi

Temperatura (°C)

Periodo	Minima	Media	Massima
Anno	-2.40	15.35	37.40
Primavera	-1.40	12.96	29.20
Estate	15.20	25.24	37.40
Autunno	3.30	16.32	32.40
Inverno	-2.40	6.25	18.10
gen	-2.40	4.36	15.90
feb	-0.60	7.90	18.10
mar	-1.40	7.52	20.50
apr	1.70	12.00	22.70
mag	9.50	19.33	29.20
giu	15.20	24.37	35.30
lug	15.40	26.34	37.40
ago	17.40	24.98	35.40
set	8.80	20.23	32.40
ott	10.90	17.86	26.10
nov	3.30	10.82	23.50
dic	-0.10	6.72	17.30

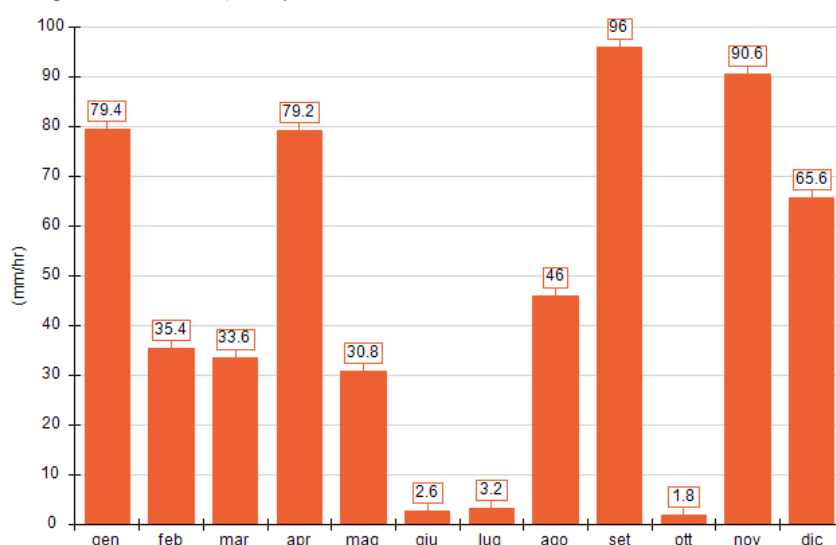
Temperatura minima, media massima (°C)



Precipitazione (mm/hr)

Periodo	Media	Massima	Cumulata
Anno	0.07	12.60	564.20
Primavera	0.07	6.60	143.60
Estate	0.02	11.20	51.80
Autunno	0.09	12.60	188.40
Inverno	0.09	9.80	180.40
gen	0.11	9.80	79.40
feb	0.05	6.40	35.40
mar	0.05	4.20	33.60
apr	0.11	6.60	79.20
mag	0.04	4.60	30.80
giu	0.00	2.00	2.60
lug	0.00	1.80	3.20
ago	0.06	11.20	46.00
set	0.13	12.60	96.00
ott	0.00	1.00	1.80
nov	0.13	10.00	90.60
dic	0.10	4.20	65.60

Precipitazione cumulata (mm/hr)



Percentuale dati validi						
Periodo	Dir. vento	Vel. vento	Temp. aria	Precip.	Pres.	UR
Periodo Completo	0.00%	0.00%	98.76%	98.79%	98.80%	83.71%
Primavera	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
Estate	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
Autunno	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
Inverno	0.00%	0.00%	94.96%	95.09%	95.14%	33.97%
gen	0.00%	0.00%	99.87%	99.87%	99.87%	0.00%
feb	0.00%	0.00%	99.70%	100.00%	100.00%	14.29%
mar	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
apr	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
mag	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
giu	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
lug	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
ago	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
set	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
ott	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
nov	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
dic	0.00%	0.00%	85.75%	85.89%	86.02%	85.75%

Rose dei venti stagionali

Questa stazione non contiene dati di vento validi

11 ALLEGATO III – PARAMETRI BUILDING DOWNWASH

'Maind Model Suite BPIP Utilities'

'p'

'METERS' 1.00

'UTMY' 0.0

2

'Edificio' 1 12

8 10

290324 4888907

290326 4888824

290285 4888825

290280 4888865

290306 4888867

290306 4888899

290294 4888898

290294 4888905

'Edificio' 1 12

7 15

290273 4888904

290287 4888904

290287 4888877

290283 4888874

290268 4888874

290270 4888896

290273 4888897

2

'STACK1' 12 6 290255 4888790

'STACK2' 12 6 290259 4888843

Maind Model Suite BPIP Utilities

BPIP (Dated: 04274)

DATE : 10/17/2023

TIME : 15:45: 8

Maind Model Suite BPIP Utilities

=====

BPIP PROCESSING INFORMATION:



=====

The P flag has been set for preparing downwash related data for a model run utilizing the PRIME algorithm.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

The UTM variable is set to UTM. The input is assumed to be in UTM coordinates. BPIP will move the UTM origin to the first pair of UTM coordinates read. The UTM coordinates of the new origin will be subtracted from all the other UTM coordinates entered to form this new local coordinate system.

Plant north is set to 0.00 degrees with respect to True North.

Maind Model Suite BPIP Utilities

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE (Output Units: meters)

Stack-Building			Preliminary*	
Stack Name	Stack Height	Base Elevation Differences	GEP** EQN1	GEP Stack Height Value
STACK1	6.00	0.00	25.00	65.00
STACK2	6.00	0.00	37.50	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.



Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 04274)

DATE : 10/17/2023

TIME : 15:45: 8

Maind Model Suite BPIP Utilities

BPIP output is in meters

SO BUILDHGT STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT STACK1	10.00	10.00	10.00	10.00	10.00	10.00
SO BUILDHGT STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID STACK1	67.65	57.77	68.21	76.58	82.62	86.15
SO BUILDWID STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN STACK1	87.53	90.39	90.51	87.88	82.58	74.77
SO BUILDLEN STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ STACK1	0.00	0.00	0.00	0.00	0.00	0.00



SO XBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	STACK1	-127.20	-133.54	-135.82	-133.98	-128.06	-118.26
SO XBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	STACK1	30.19	26.20	10.38	-5.76	-21.72	-37.02
SO YBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	STACK1	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT	STACK2	10.00	10.00	10.00	15.00	10.00	10.00
SO BUILDHGT	STACK2	10.00	10.00	10.00	10.00	10.00	10.00
SO BUILDHGT	STACK2	10.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	STACK2	15.00	15.00	15.00	15.00	10.00	10.00
SO BUILDHGT	STACK2	10.00	10.00	10.00	10.00	10.00	10.00
SO BUILDHGT	STACK2	10.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	STACK2	67.65	77.25	68.21	28.08	82.62	86.15
SO BUILDWID	STACK2	87.06	87.99	83.00	87.53	90.39	90.51
SO BUILDWID	STACK2	87.88	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	STACK2	20.04	22.47	25.62	28.08	82.62	86.15
SO BUILDWID	STACK2	87.06	85.33	83.00	87.53	90.39	90.51
SO BUILDWID	STACK2	87.88	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	STACK2	87.53	90.39	90.51	35.19	82.58	74.77
SO BUILDLEN	STACK2	64.69	60.88	58.00	52.42	57.77	68.21
SO BUILDLEN	STACK2	76.58	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	STACK2	32.84	34.69	35.48	35.19	82.58	74.77
SO BUILDLEN	STACK2	64.69	52.65	46.00	52.42	57.77	68.21
SO BUILDLEN	STACK2	76.58	0.00	0.00	0.00	0.00	0.00
SO XBADJ	STACK2	-13.21	-8.02	-2.59	29.53	8.35	13.52
SO XBADJ	STACK2	18.28	14.25	9.00	16.86	11.68	-0.69
SO XBADJ	STACK2	-13.04	0.00	0.00	0.00	0.00	0.00
SO XBADJ	STACK2	-64.94	-66.90	-66.83	-64.73	-90.93	-88.29
SO XBADJ	STACK2	-82.97	-75.13	-67.00	-69.28	-69.46	-67.52
SO XBADJ	STACK2	-63.54	0.00	0.00	0.00	0.00	0.00
SO YBADJ	STACK2	-35.46	-30.83	-33.42	14.45	-16.31	-6.88
SO YBADJ	STACK2	2.76	13.65	22.50	30.55	37.17	42.67
SO YBADJ	STACK2	46.87	0.00	0.00	0.00	0.00	0.00



SO YBADJ	STACK2	11.65	3.45	-5.56	-14.45	16.31	6.88
SO YBADJ	STACK2	-2.76	-12.32	-22.50	-30.55	-37.17	-42.67
SO YBADJ	STACK2	-46.87	0.00	0.00	0.00	0.00	0.00

