A New Step Towards A Road Stretch Forecasting System

PRESENTED BY CLAUS PETERSEN Danish Meteorological Institute

Research and Development Department Danmarks meteorologiske institut (DMI) (Contakt: <u>cp@dmi.dk</u> Tlf:39157442)

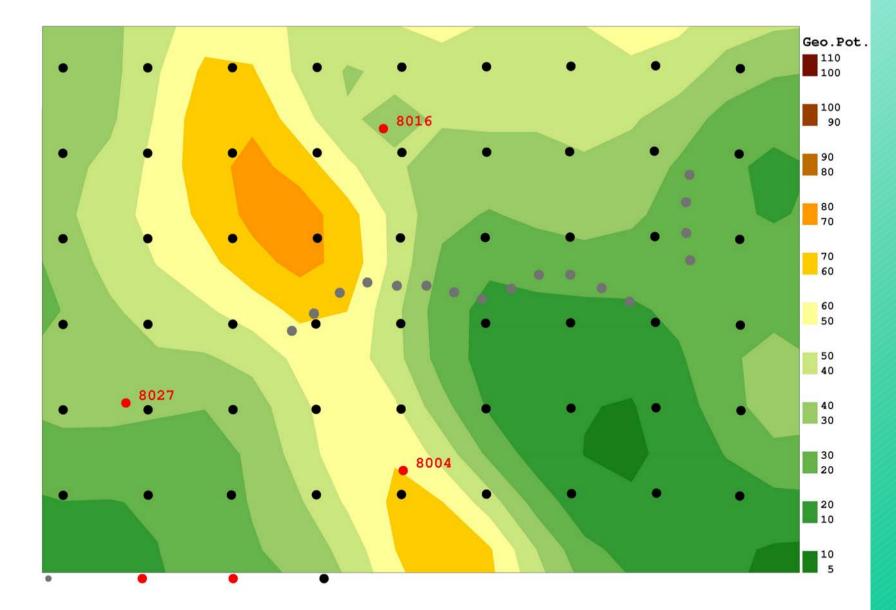


VISION

- ACCURATE AND DETAILED ROAD
 FORECASTS
- CONTROLLED SALTING BASED ON
 - GPS
 - LOCATION
 - HISTORY
 - ROAD WEATHER FORECAST

HOW TO MAKE ROAD STRETCH FORECASTS

- HIGH RESOLUTION NWP MODEL
- DENSE NETWORK OF ROAD STATIONS
- USE OF LOCAL INFORMATION
 - ASPHALT TYPE, ROAD CHARACTERISTIC ETC.
 - HIGH RESOLUTION PHYSIOGRAPHIC DATA
 - SHADOWS
 - 'THERMAL MAPPING DATA'

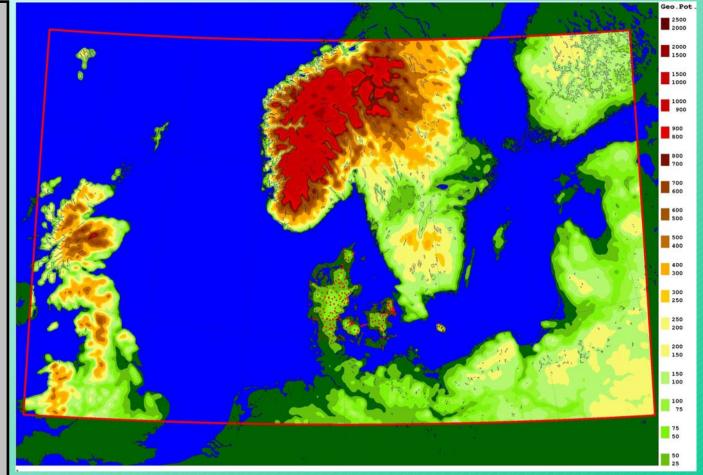


SIRWEC 2008 PRAGUE

NWP

FACT BOX

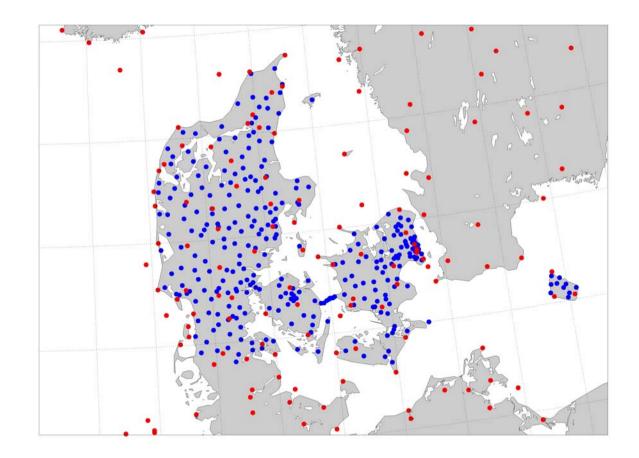
- HIRLAM 7.1
- 0.05x0.05
- 40 LEVELS
- EVERY HOUR
- 24 HOURS FORECAST
- SL
- CLOUD
 INITIALIZATION
- INLINE ROAD MODEL
- ROAD
 OBSERVATIONS
- CRAY
 SUPERCOMPUTER



OBSERVATION NETWORK

SYNOP STATIONS: CLOUD T2M T2D WEATHER PRECIPITATION OTHER

ROAD STATIONS: T2M T2D (WEATHER) (PRECIPITATION) TS TSD OTHER

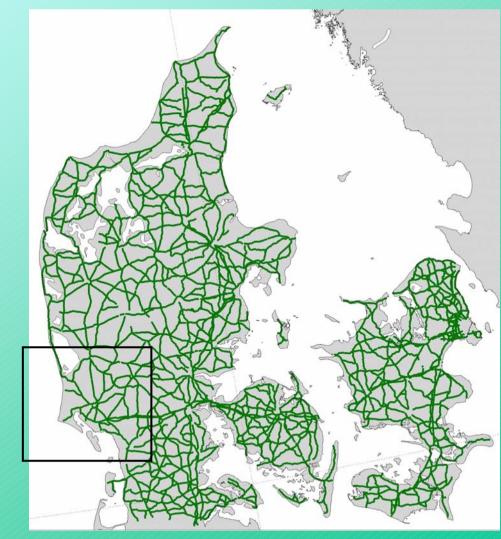


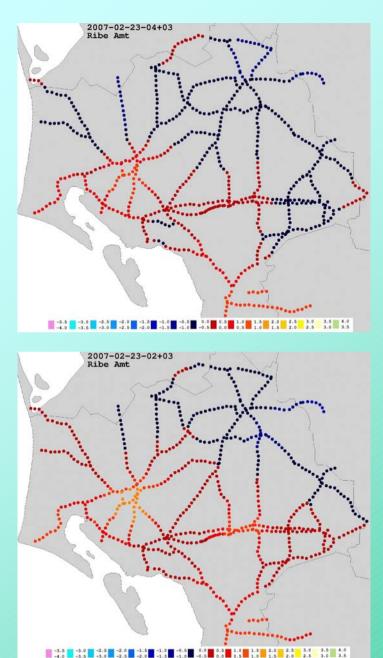
THERMAL MAPPING AND ROAD STRETCH FORECAST

🔆 Vims Ist	oil 98 Rapport	tering						_ 8 ×	
Bestyrernr	Vejnr	Vejdel	Sidevej Forløb						1
0	20			(OV(VESTMOTORVE)	JEN)			Hele strækningen • Aktuel side	J. M.
Þo	40		KNUDSHOVE						
Fra km	Til km	Løbenr	Måledato start	Måledato stop	Bemærkning		2 0 0 0		
210/0000	130/0425		4 09-02-99 21:46:24	09-02-99 22:33:50	IKKE HELT KLART OVER FYN		I1 TBC	Graf indstillinger	
130/0425	210/0000	1	3 09-02-99 19:58:20	09-02-99 20:50:47	VIND SVAG FRA SYD VEST- EN DE	L TIGE IS'R VED O		Ymin -5	
Y max 5									
	emperatur (Infra	arød)		Lufttemperatur		Luftfugtighed	Database vi98		10
	Dugpunk	d	Stræk, mid, justeret	Du	ugpunkt Stræk, mid, justeret				V V
Temp		Temp IR1)	Temp IR1		Dug(Temp 1) 🔽 Temp 1	Fugt 1	Antal målinger pr. side: 4000 🚖	<u>U</u> dfør	
Temp	ALL COMPANY AND A DESCRIPTION OF A DESCR	Temp IR2) Temp IR3)	Temp IR2 Temp IR3		Dug(Temp 2) 🔽 Temp 2 Dug(Temp 3) 🔽 Temp 3	Fugt 2	1/1	1	
I remp		remp in sj					KE PE NE SN	Hent <u>d</u> ata	RS 1963
53						3 16 16 4 3			
ja 4									
h and a start and a start start a star									
d6n 2-							Leve de la		
Q 1							A STATE OF A	LINE AND AND ANY THE	
ghe.			al a la der beriden	er dela helse kan in an der Merinde	William Martines			Anad Analysis (199	
temperatur/Fugtighed/Dugpunkter * c. 7. 1. 0. 1. 7. 2. 4.	dian and				The second state of the se	and the state	AN A REAL PROPERTY AND A REAL		
년 -1 t		a substitute			a a a a a a a a a a a a a a a a a a a	C. Martin			
nte -2		TL	NUT WANT						
ළ -3		W							
ла4									
-5-									C C C C C C C C C C C C C C C C C C C
-5-200000	30/0922 31/0922 33/0460 34/0981- 36/0521-	38/0039 38/0039 39/0581- 41/0101-	42/0641- 44/0200 45/0721- 45/0721- 47/0260 48/0780 50/0320	54/0901- 54/0901- 56/0439 57/0979 59/0511-	61/0041- 62/0560 64/0101- 65/0539 67/0143 67/0143 70/0220 71/0747- 71/07220 71/0788 74/0588 74/0588	77/0740 79/0280 80/0801- 82/0340 82/0381- 83/0881-	185/0399 186/0923 186/0923 190/0000 191/0501 191/0508 193/0060 193/0058 192/0118 196/0118	200/0699	
ŝ	31/0922 31/0922 33/0460 34/0981 34/0981	38/0039 39/0581 41/0101	42/0641 44/0200 45/0721 45/0721 47/0260 48/0780 50/0320	53/0359 54/0901 56/0439 55/0979 57/0979 59/0511	61/0041 62/0560 64/0101 65/0533 65/0143 65/0143 68/0702 68/0702 71/0747 71/0747 73/0180 73/0180 73/0180 73/0180 73/0180 73/0220	77/0740 79/0280 80/0801 82/0340 82/0381 83/0881	85/0399 86/0923 90/0000 91/0501 93/0060 94/0588 95/0158 95/0153 95/0153		
2 7	- $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$	- -	4444404	10101010	16 16 16 16 17 17 17 17 17 17 17	17 18 18 18 18 18		8888	
— TempA1 — TempA2 — TempIRA1									
5				+ + + + + + + + + + + + + + + + + + + +					
else									DANIEL DOAD
Haendelser									DANISH ROAD
Hae									AUTHORITIES
	000								AUTHORITIES
	30/0425 31/0942 33/0480 35/0019	36/0561- 38/0119 39/0661- 44/0204-	42/0741- 42/0741- 44/0300- 45/0860- 45/0860- 47/0401- 48/0941- 50/0480-	52/0040- 53/0560- 55/0100- 56/0659- 58/0220- 59/0777-	61/0299 62/0840 64/0380 65/0939 65/0939 65/0939 65/0471 70/0559 72/0102 75/0060 75/0060	78/0160 79/0701- 81/0241- 82/0778 82/0778	88/0881- 88/0881- 88/0939 92/00490- 92/0041- 92/0601- 95/0103 95/0103 98/0238	000000000000000000000000000000000000000	www.vd.dk
	30/ 31/ 35/	36/ 39/ 39/	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	52/ 53/ 56/ 58/ 58/	161/0299 162/0840 162/0840 165/0939 165/0939 165/0939 160/020 170/0569 172/0102 172/0102 175/0060 175/0060	79/ 79/ 81/ 84/	195/089-0 185/088-0 190/0490 192/0041-1 195/0103 195/0103 195/0103 198/0238	201/0299 202/0834 204/0398 205/0949 207/0484 209/0020	www.vu.uk
			The and OICOY		CONTENT OVER			<u> </u>	

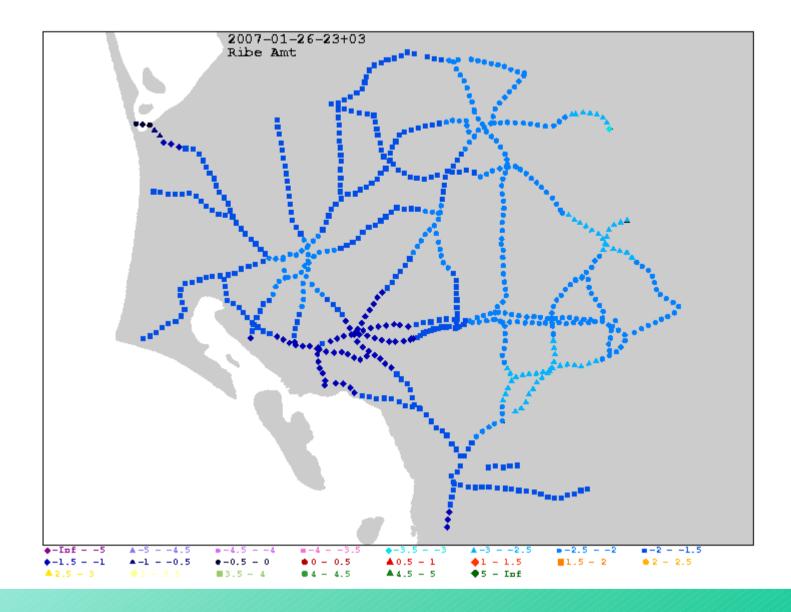
ROAD STRETCH FORECASTS SHOWING FORECAST OF ROAD SURFACE TEMPERATURE

PRESENT ROAD NETWORK

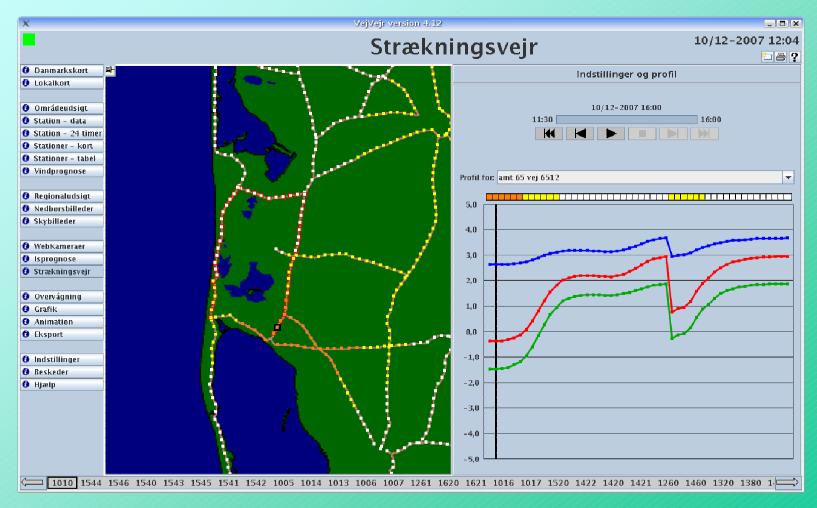




3H FORECAST OF ROAD SURFACE TEMPERATURE

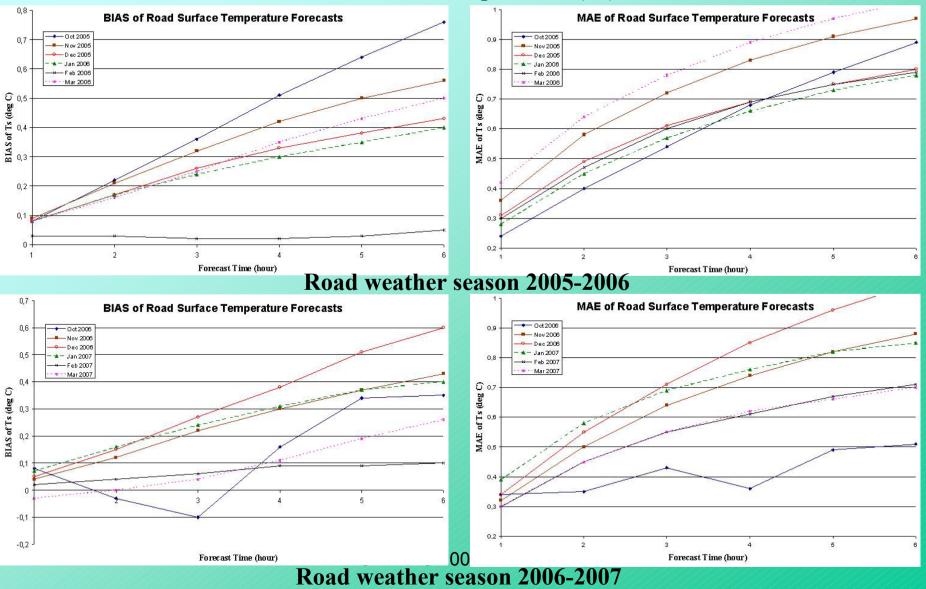


HOW WOULD THIS LOOK LIKE FOR THE CUSTOMERS?



QUALITY OF PRESENT ROAD STRETCH FORECASTS

Road surface temperature (Ts)





Contakt: cp@dmi.dk +0045 39157442

SIRWEC 2008 PRAGUE