

POST Data Initial Analyses

- Get to know what we've got
- Identify cases with shear effects

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Results from Sawtooth Soundings

- Cloud macrostructure
- temperature and water vapor variation
- variation of horizontal wind speed and direction
- variation of Ri near the cloud top

Categorization based on:

Wind speed ($>$ or $<$ 10 m/s) at cloud top

LLJ (max wind speed) and shear location (at top, below or above top)

Distribution of Ri number

Horizontal distribution of wind speed at cloud top

Strong wind

LLJ (max) above cloud top

(080718,080727,080730,
080801,080802, 080808,080812

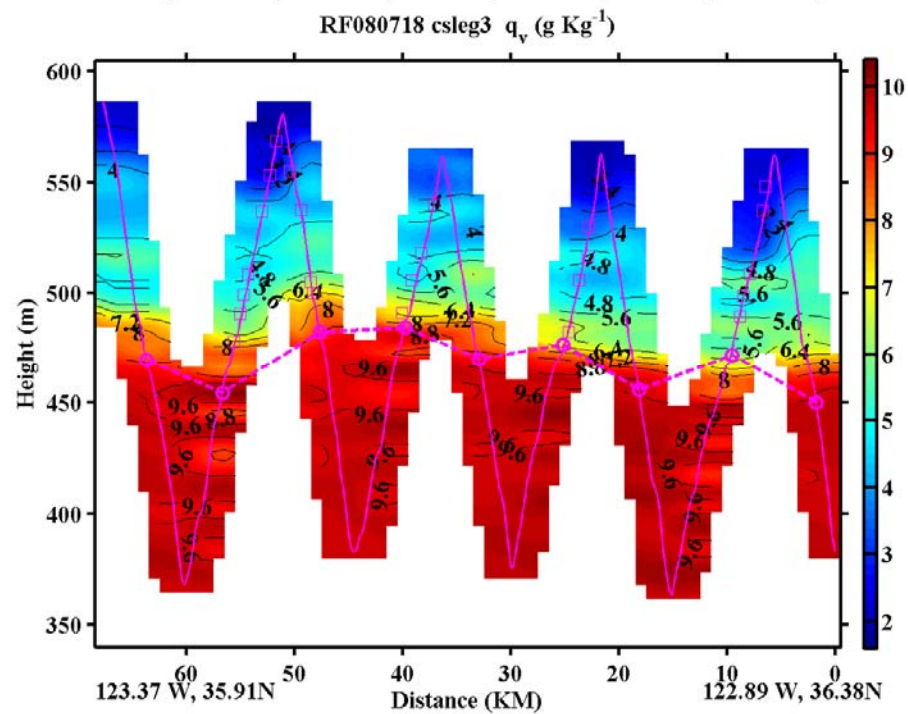
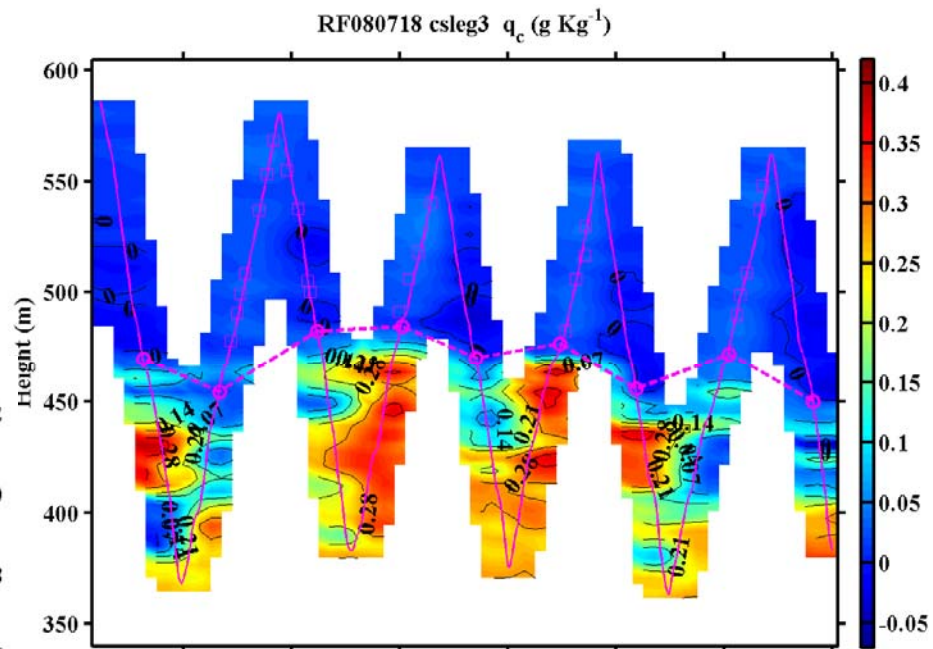
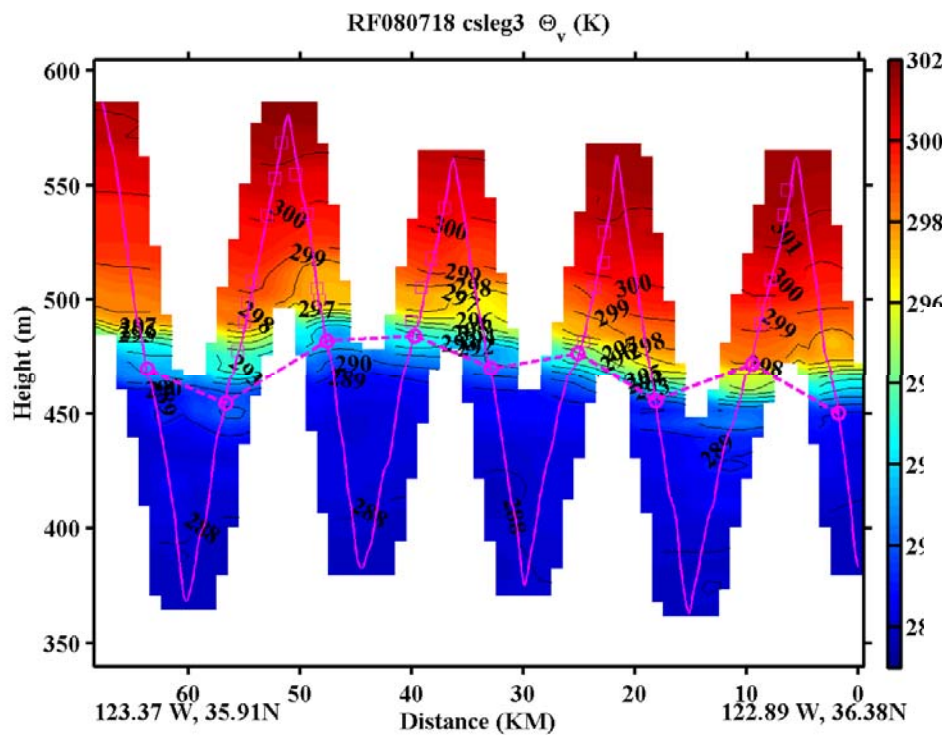
Strong wind

LLJ (max) above top of cloud

Strong shear at cloud top

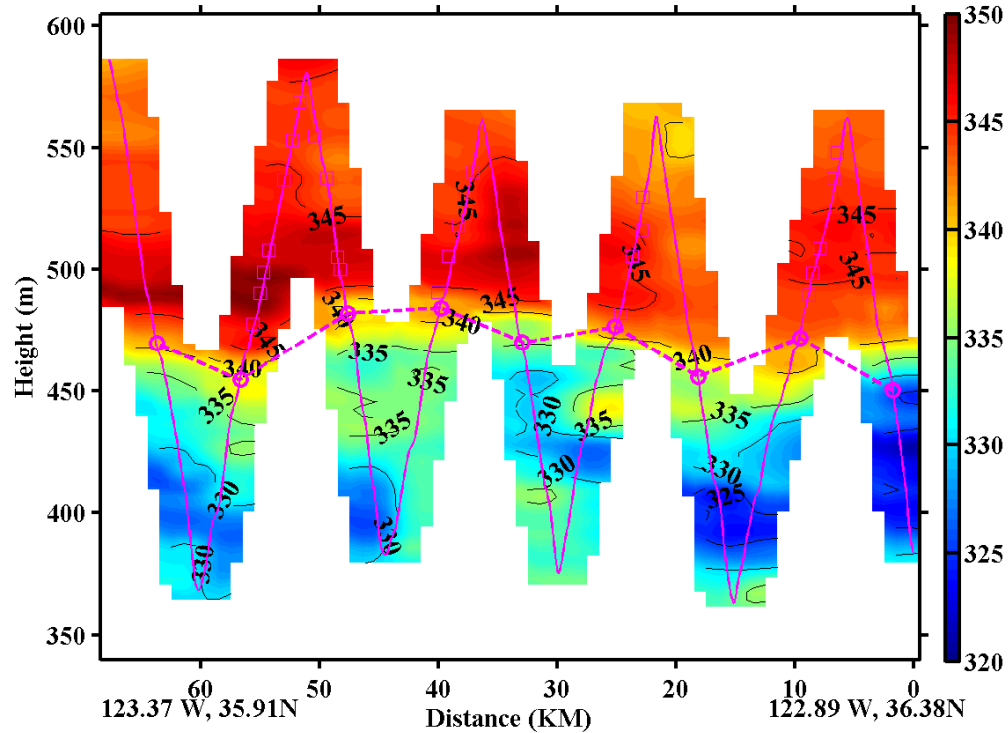
Example 1: 080718

RF3, 080718

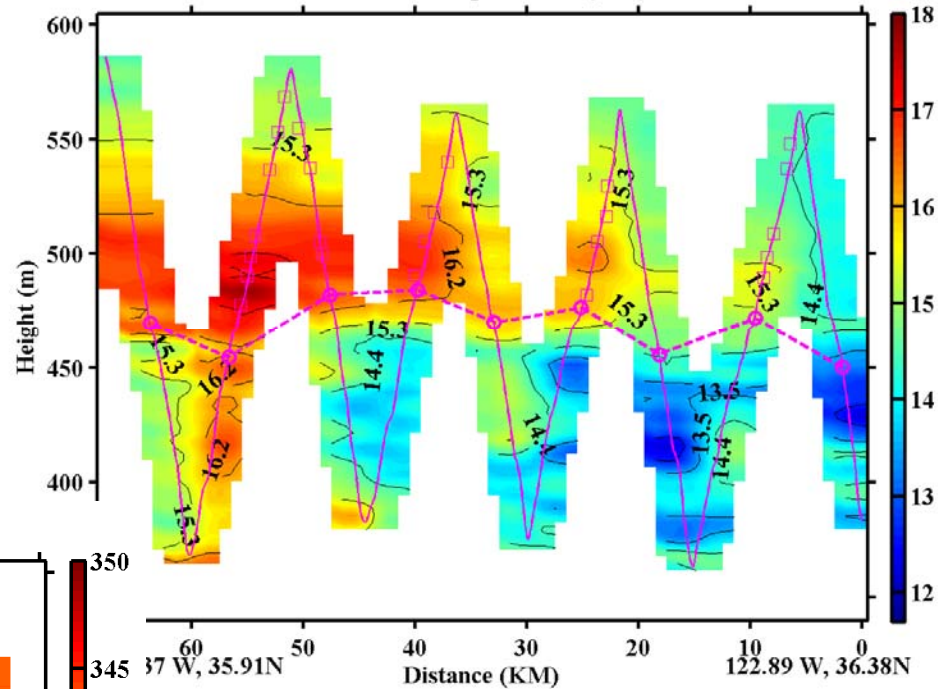


RF3, 080718

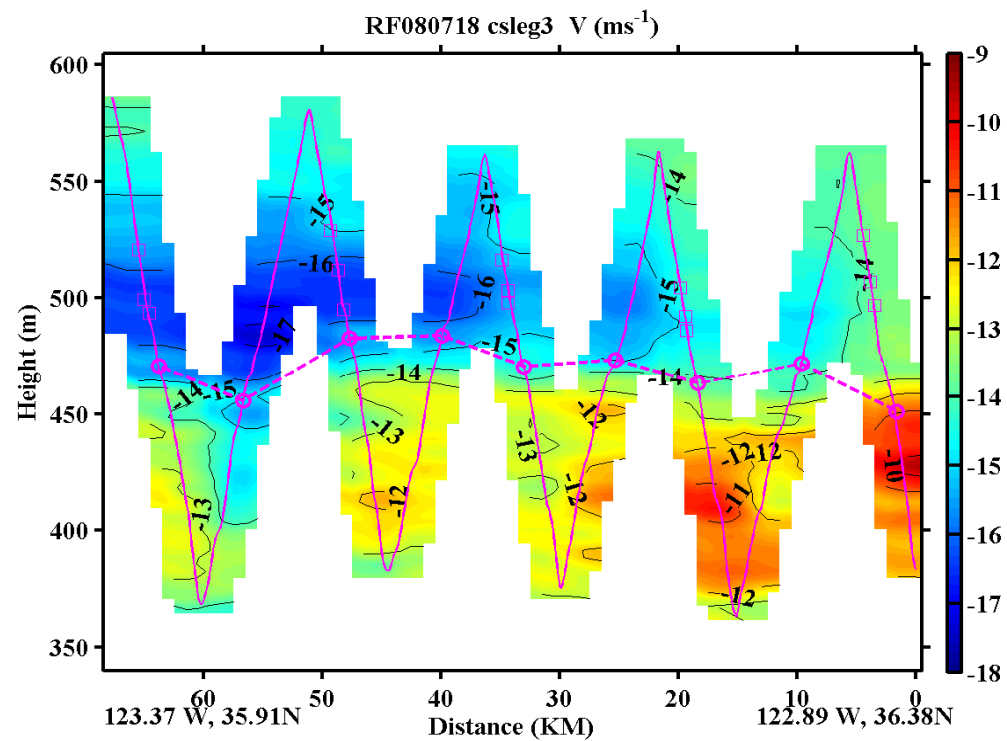
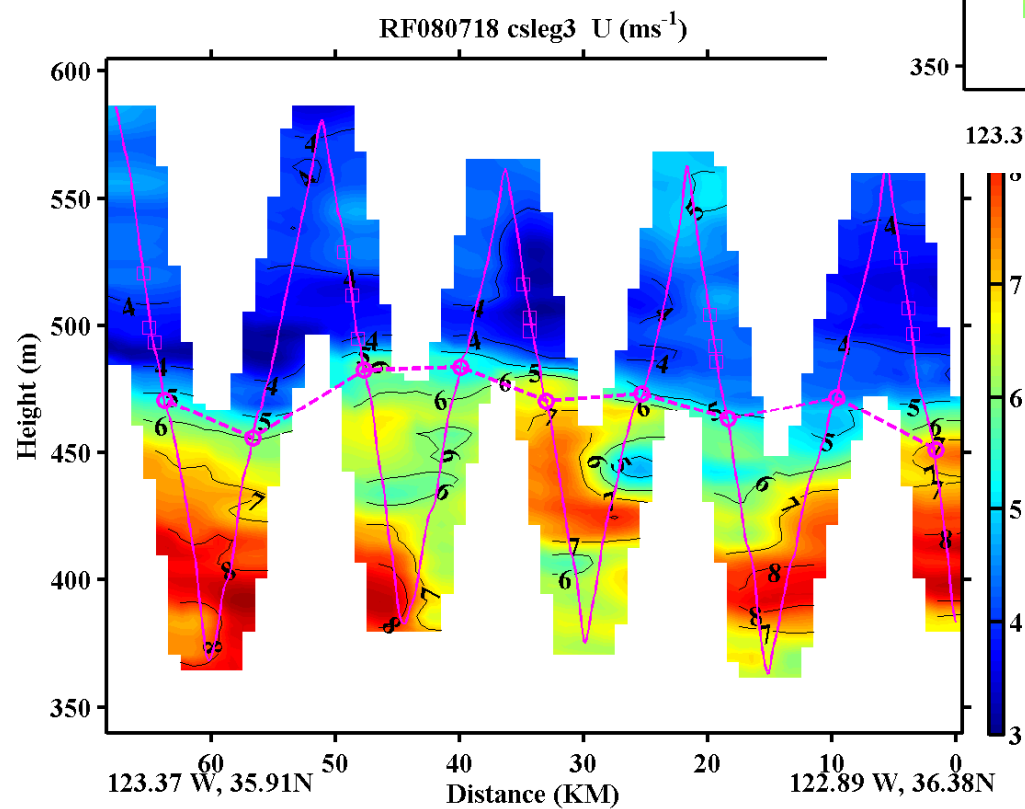
RF080718 csleg3 WinDir ($^{\circ}\text{C}$)

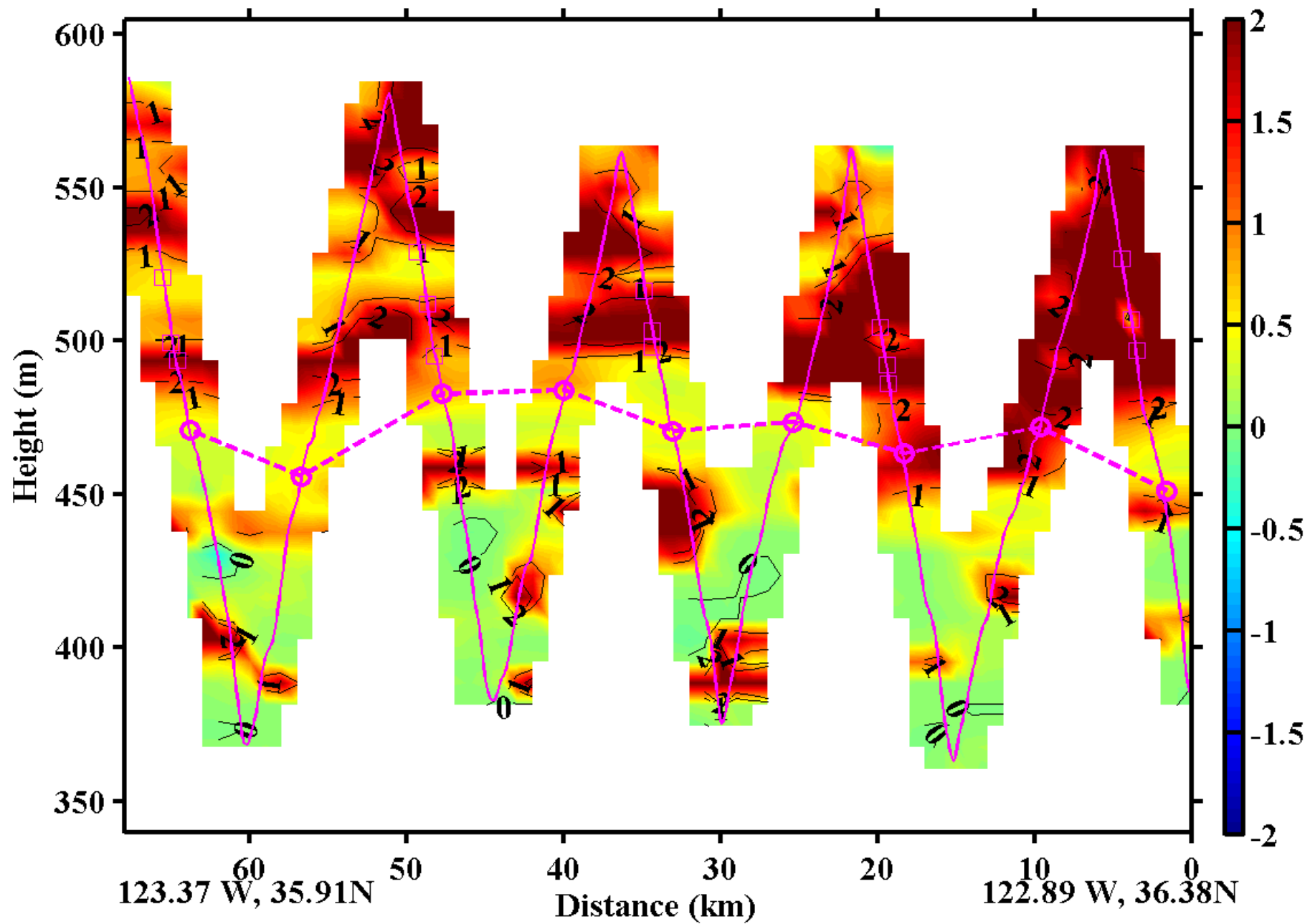


RF080718 csleg3 WinSP (ms^{-1})

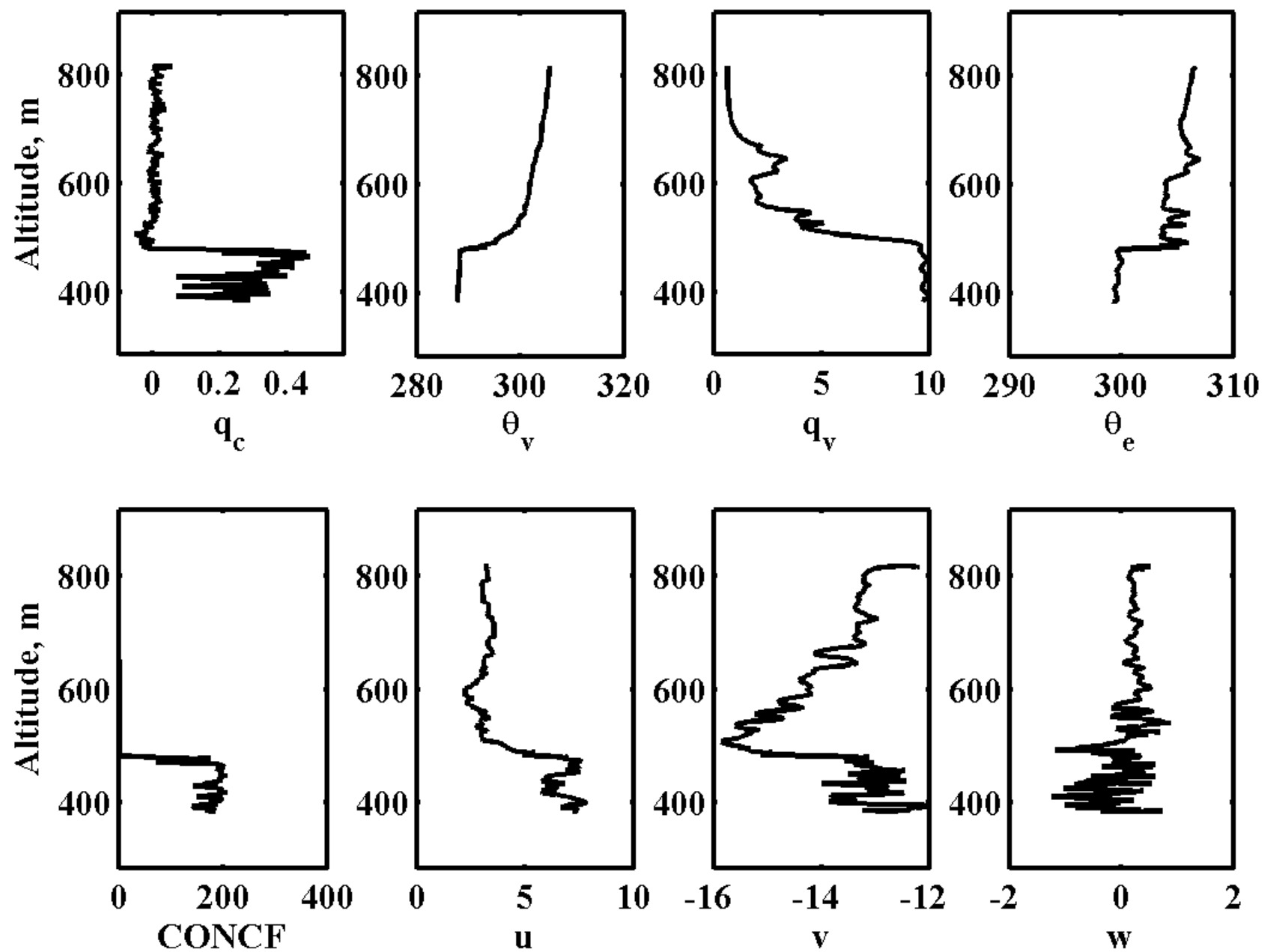


RF3, 080718

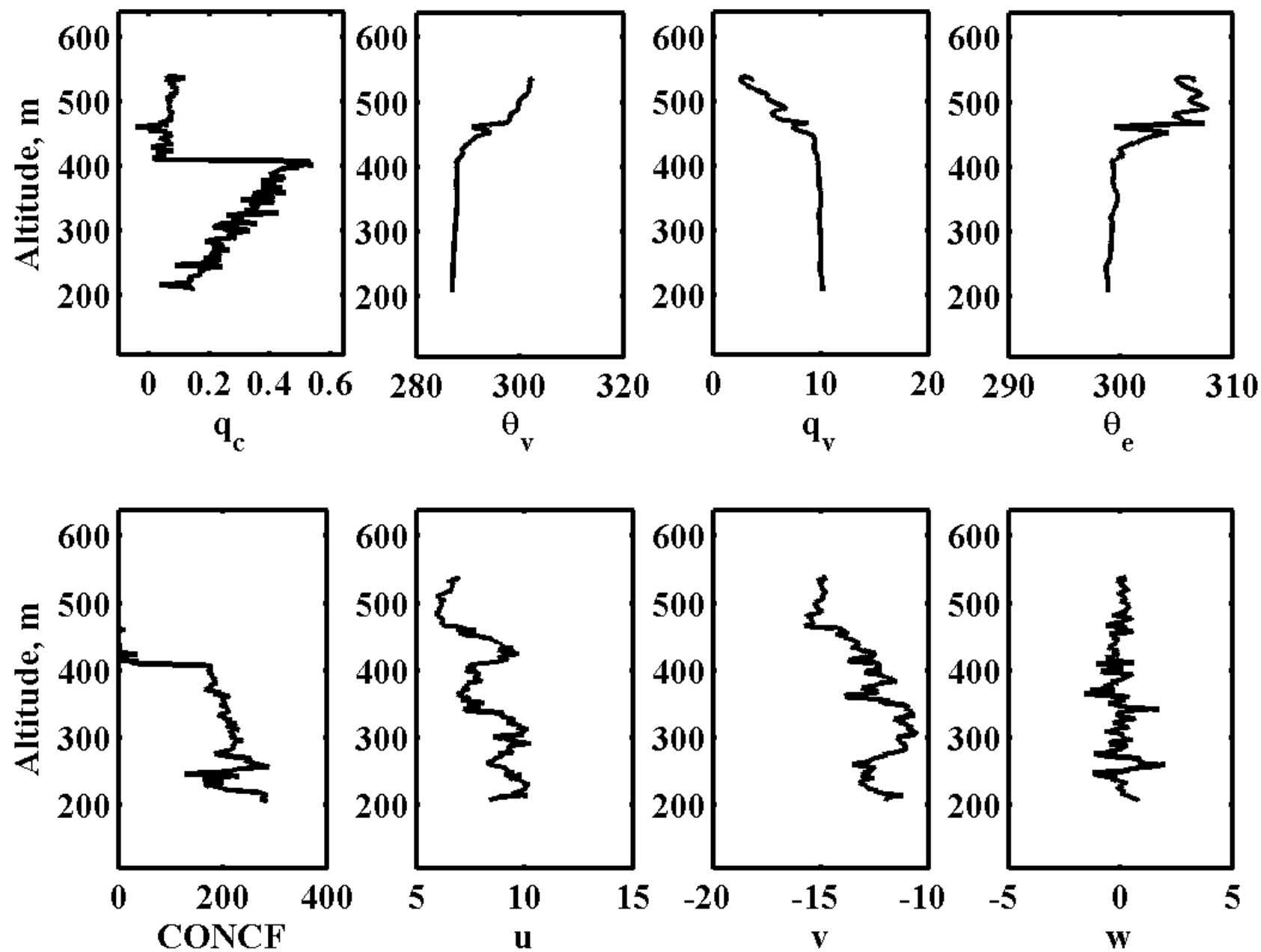




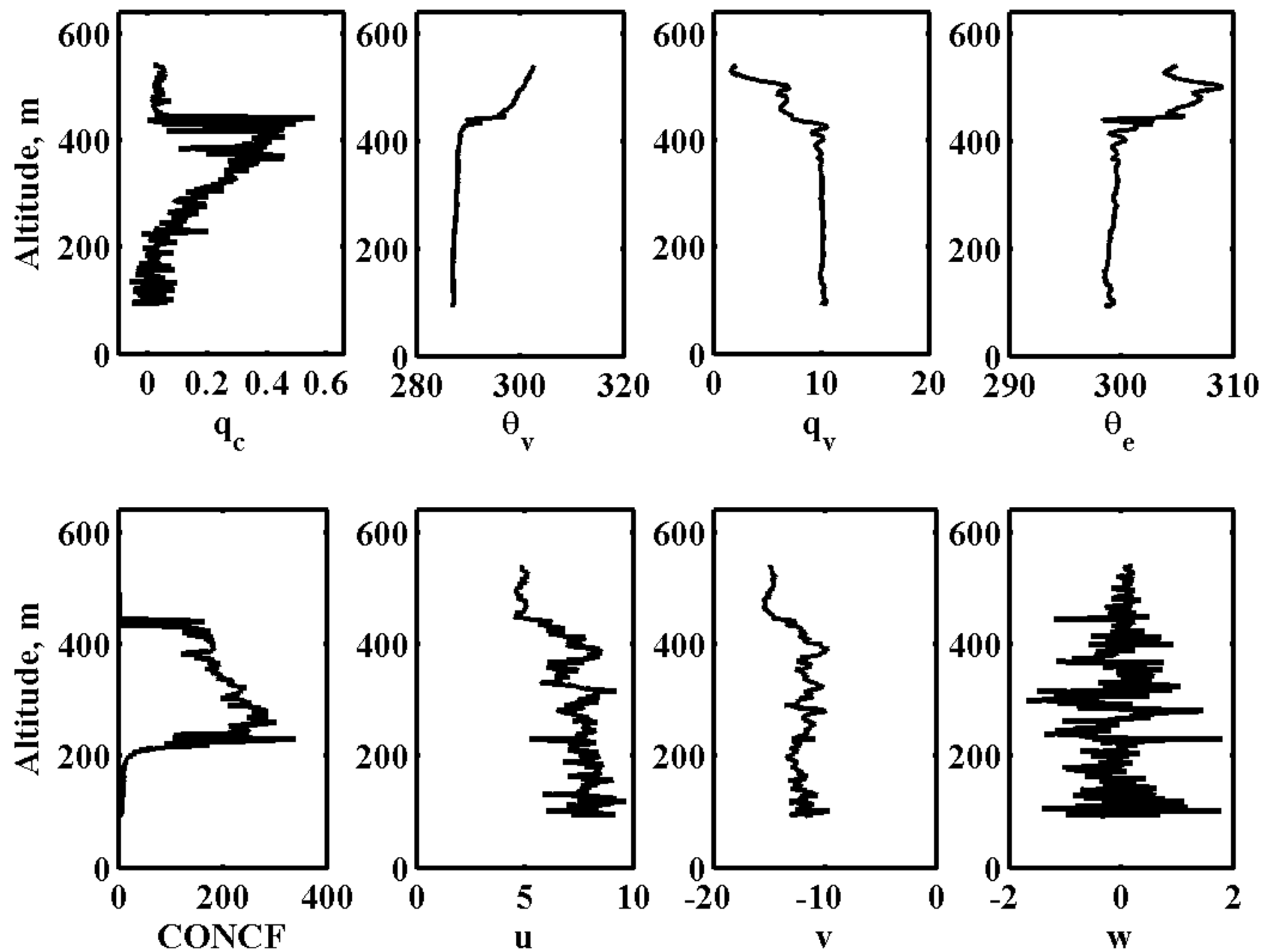
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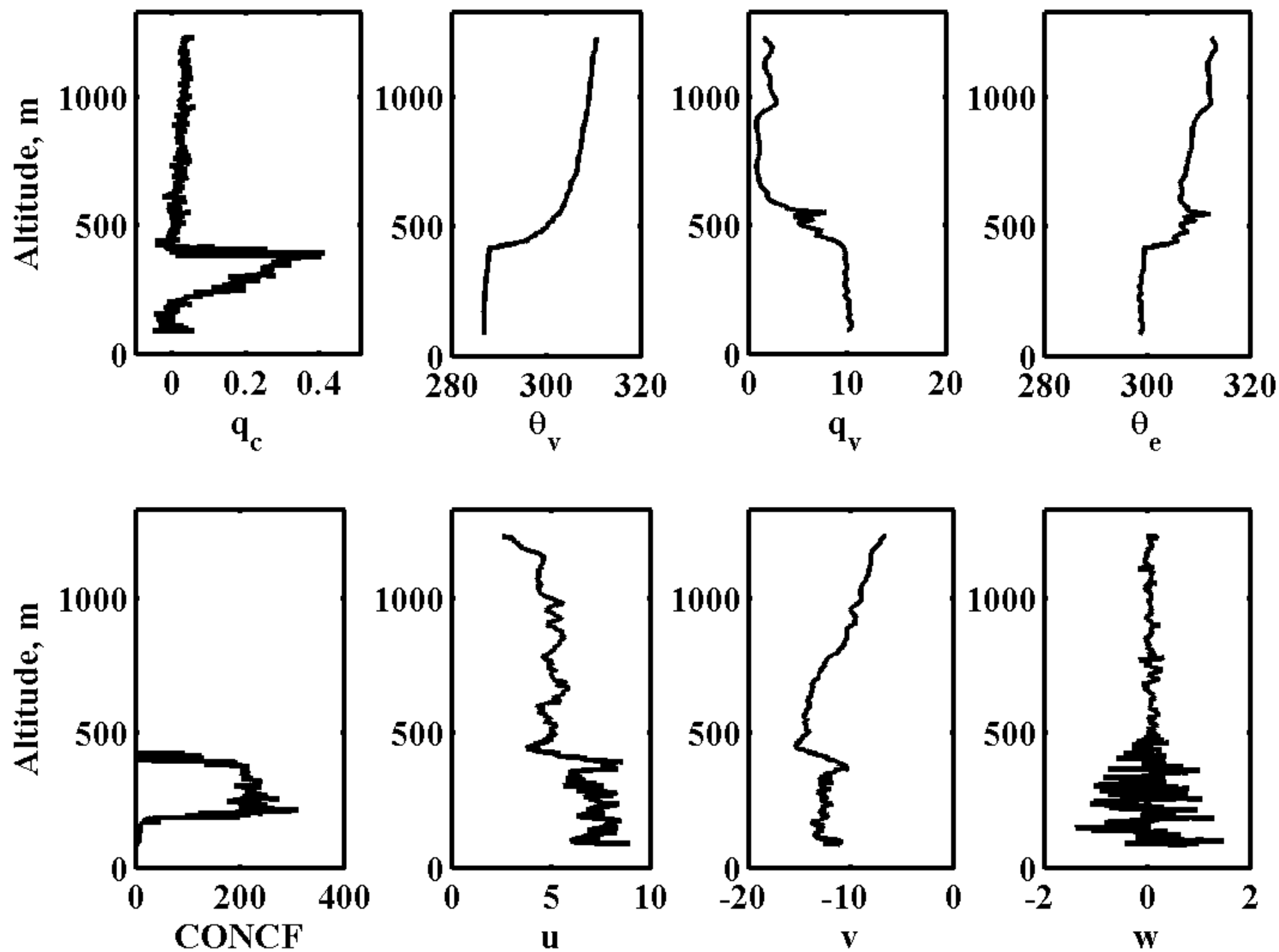
sleg10-profile;



sleg11-profile;



sleg12-profile;

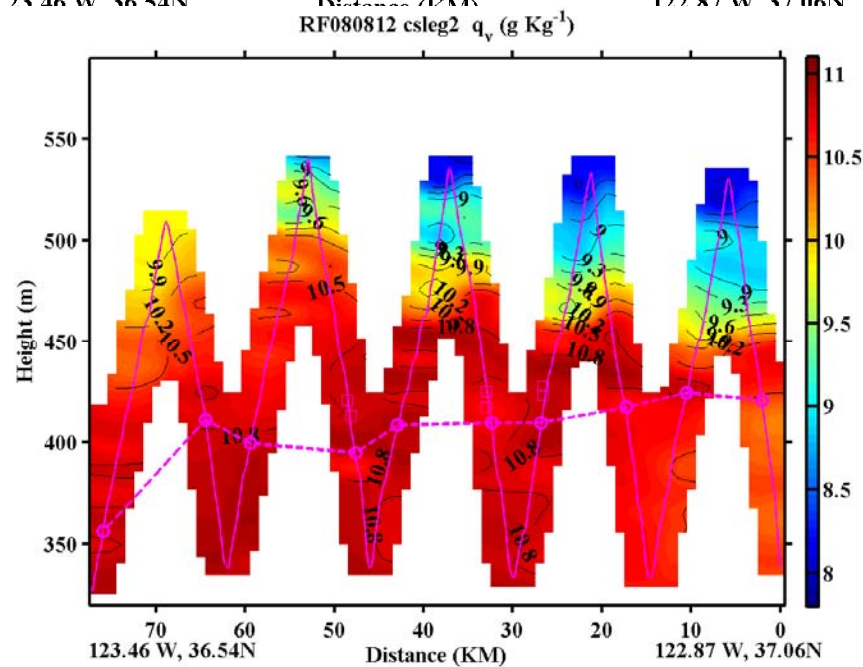
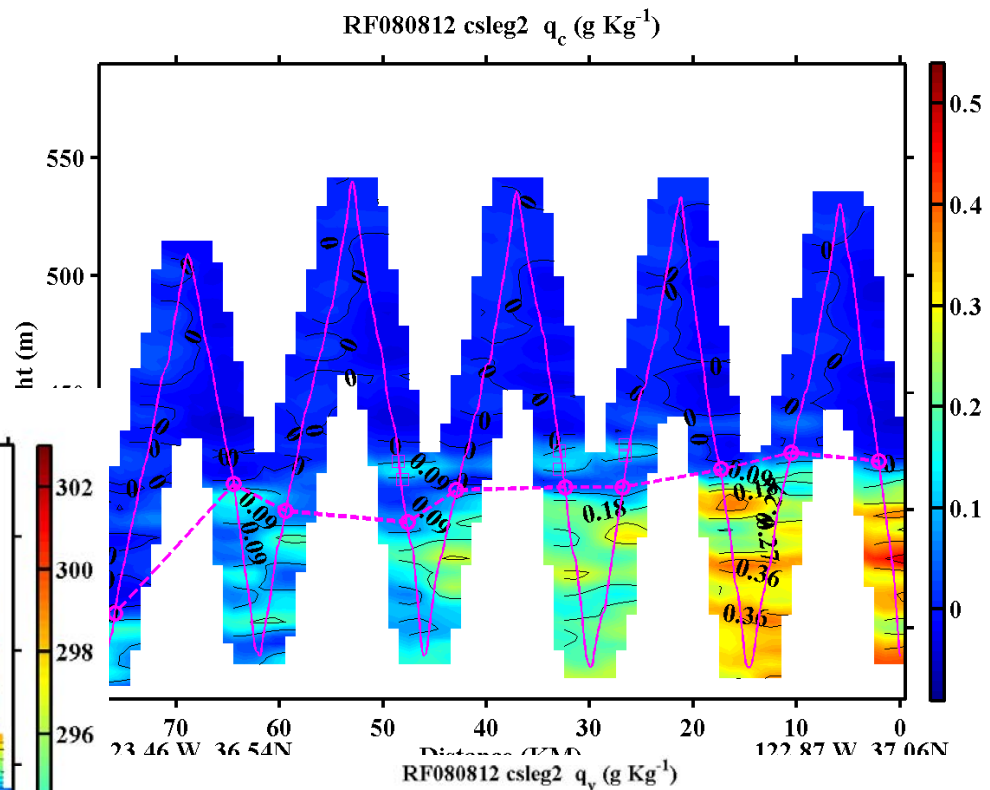
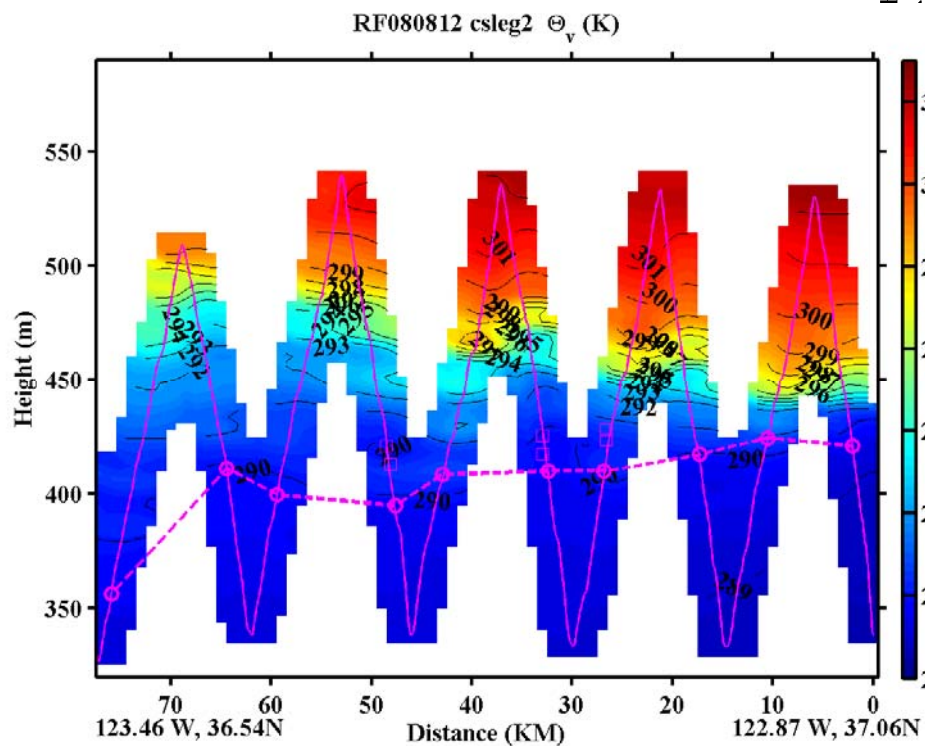


Strong wind

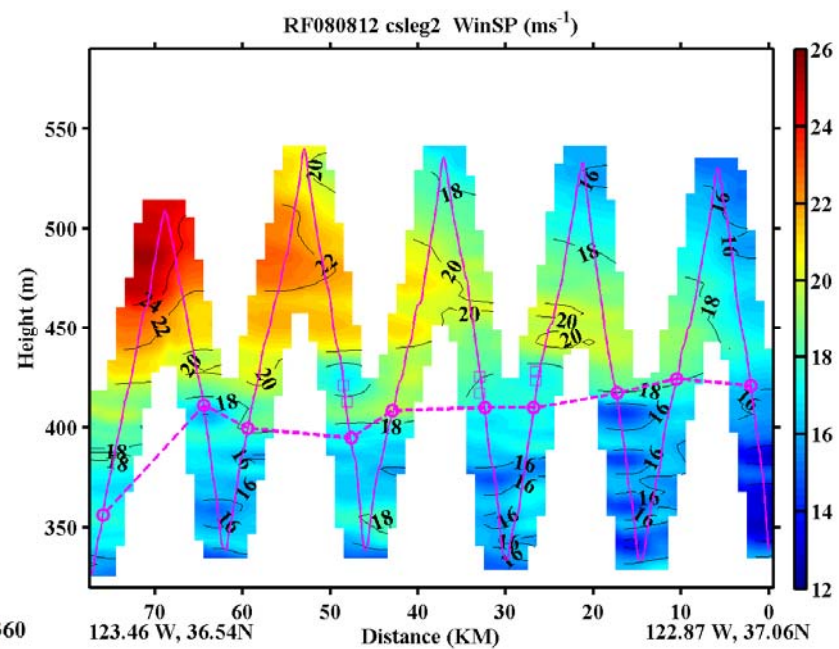
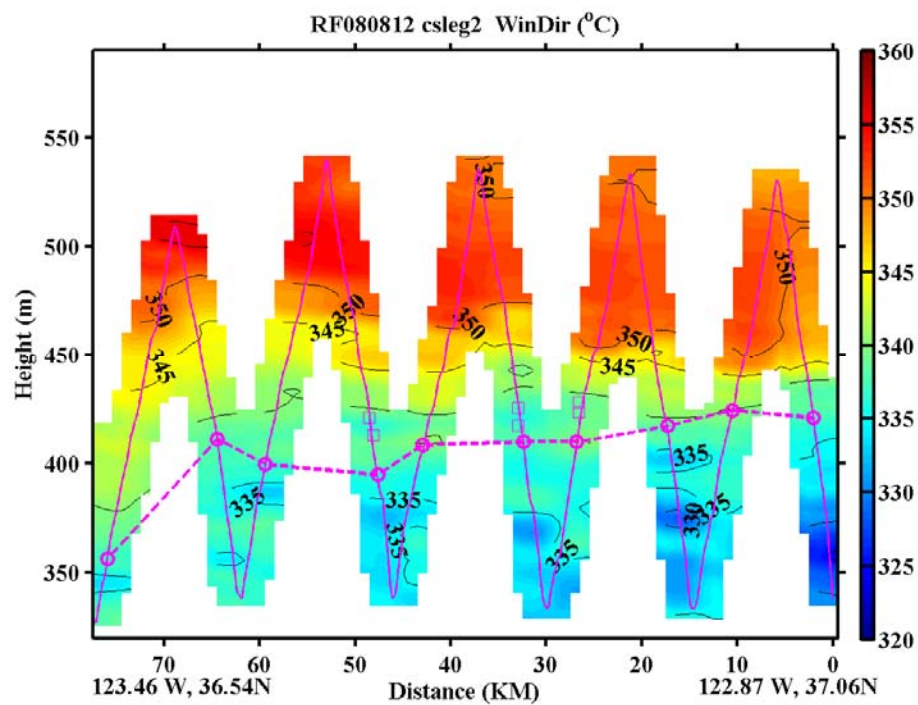
LLJ above top of cloud

Strong shear at top of cloud

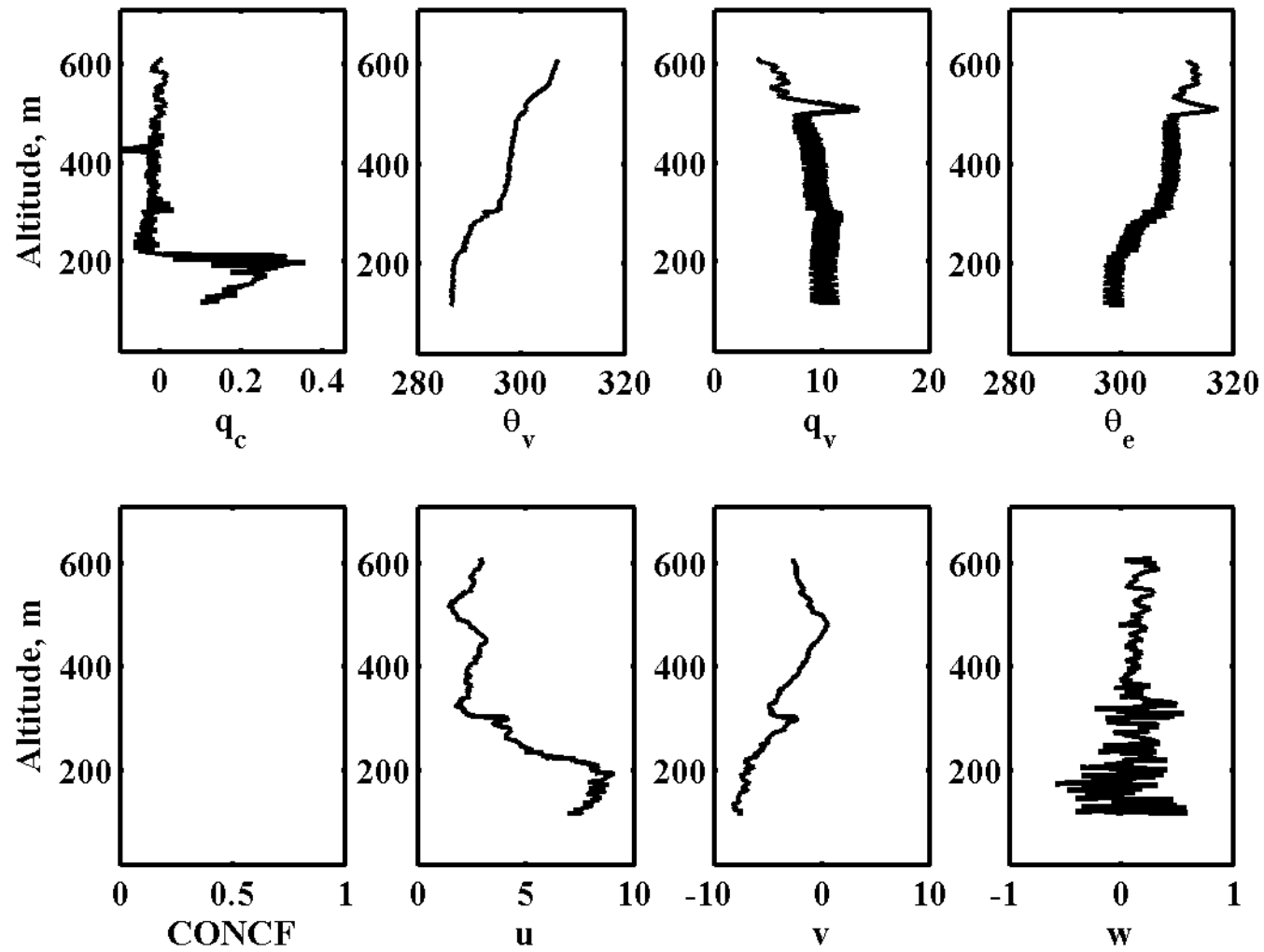
Example 2: 080812



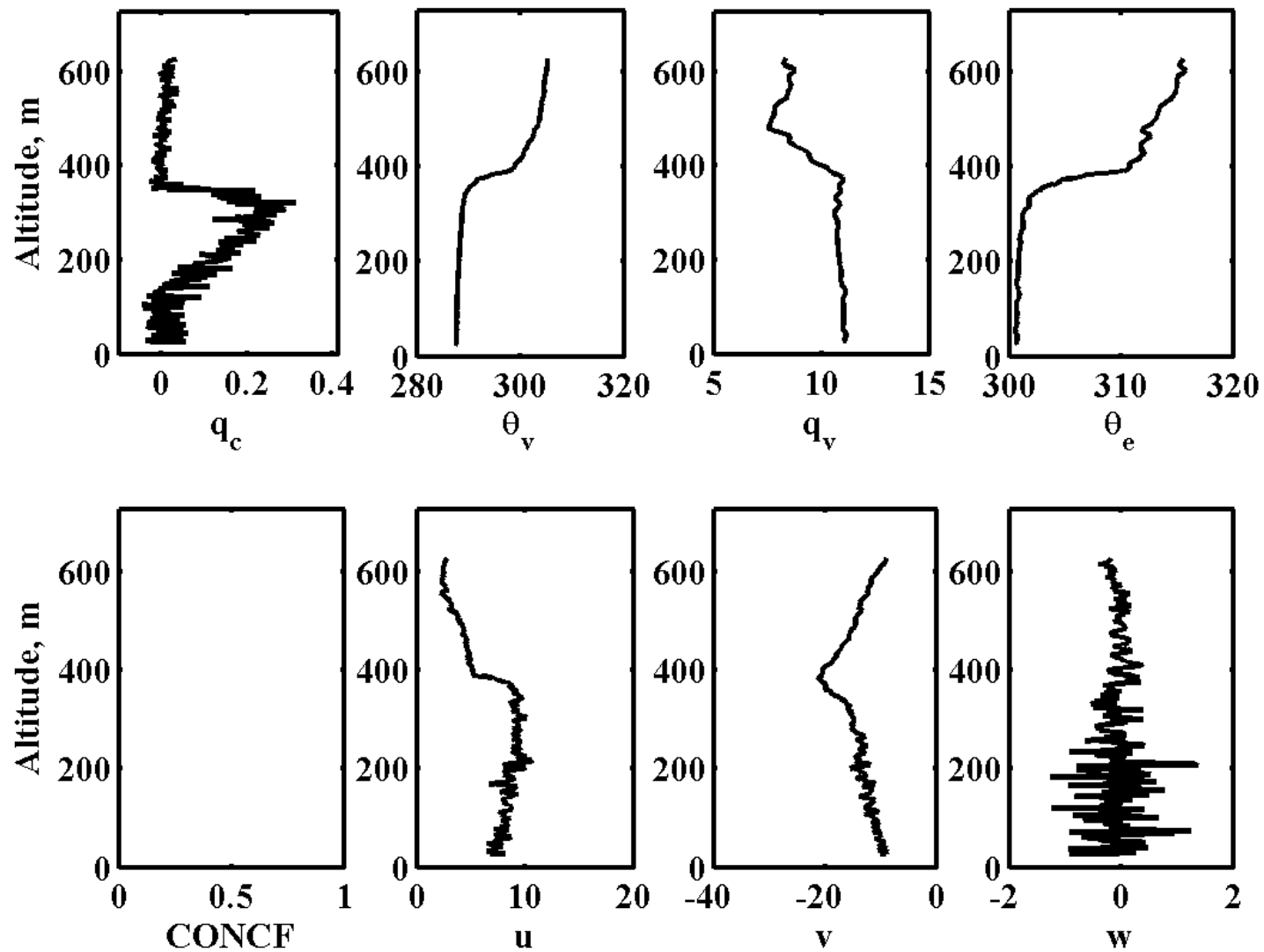
Flight 080812, RF15



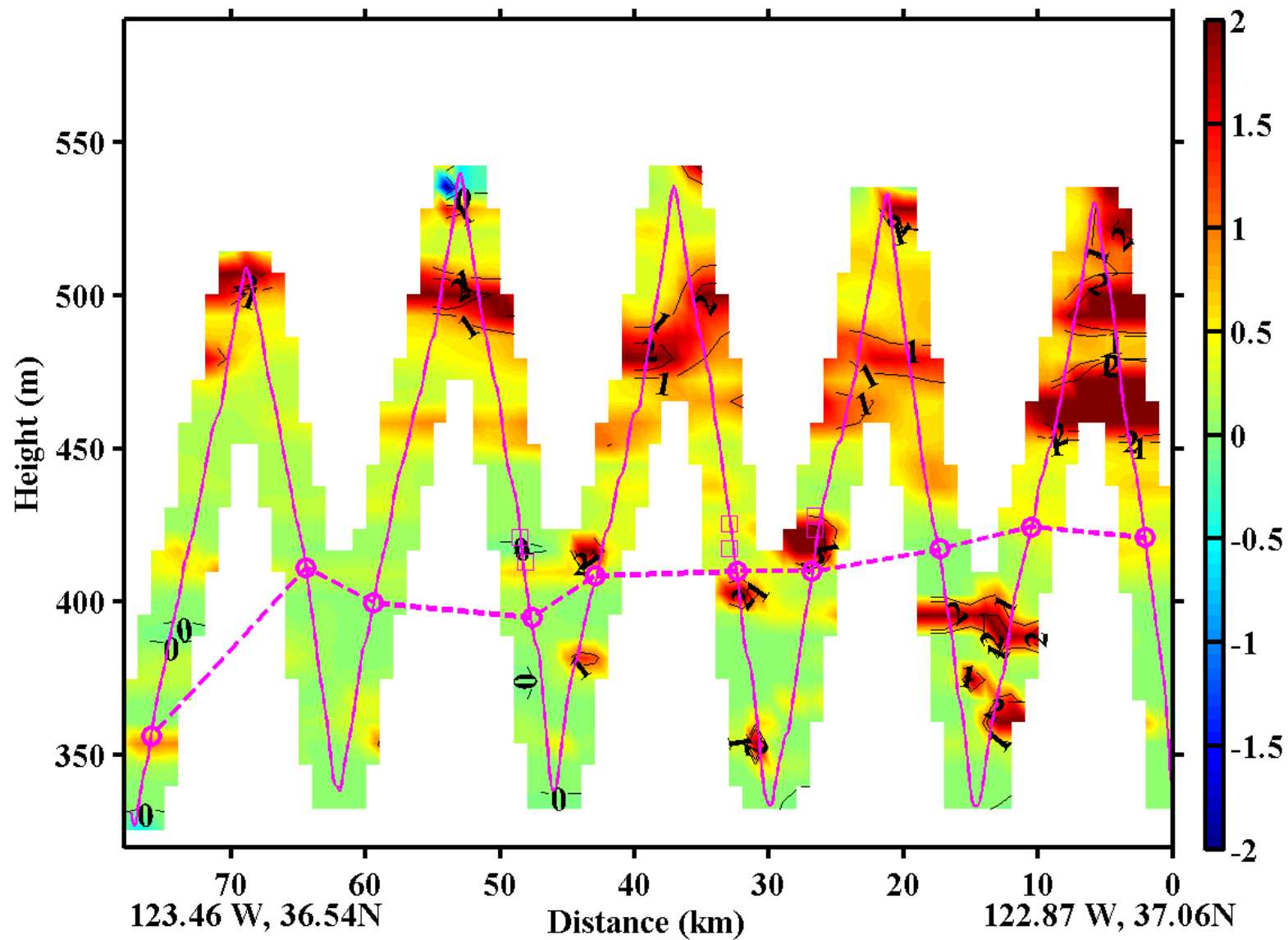
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sleg7-profile;

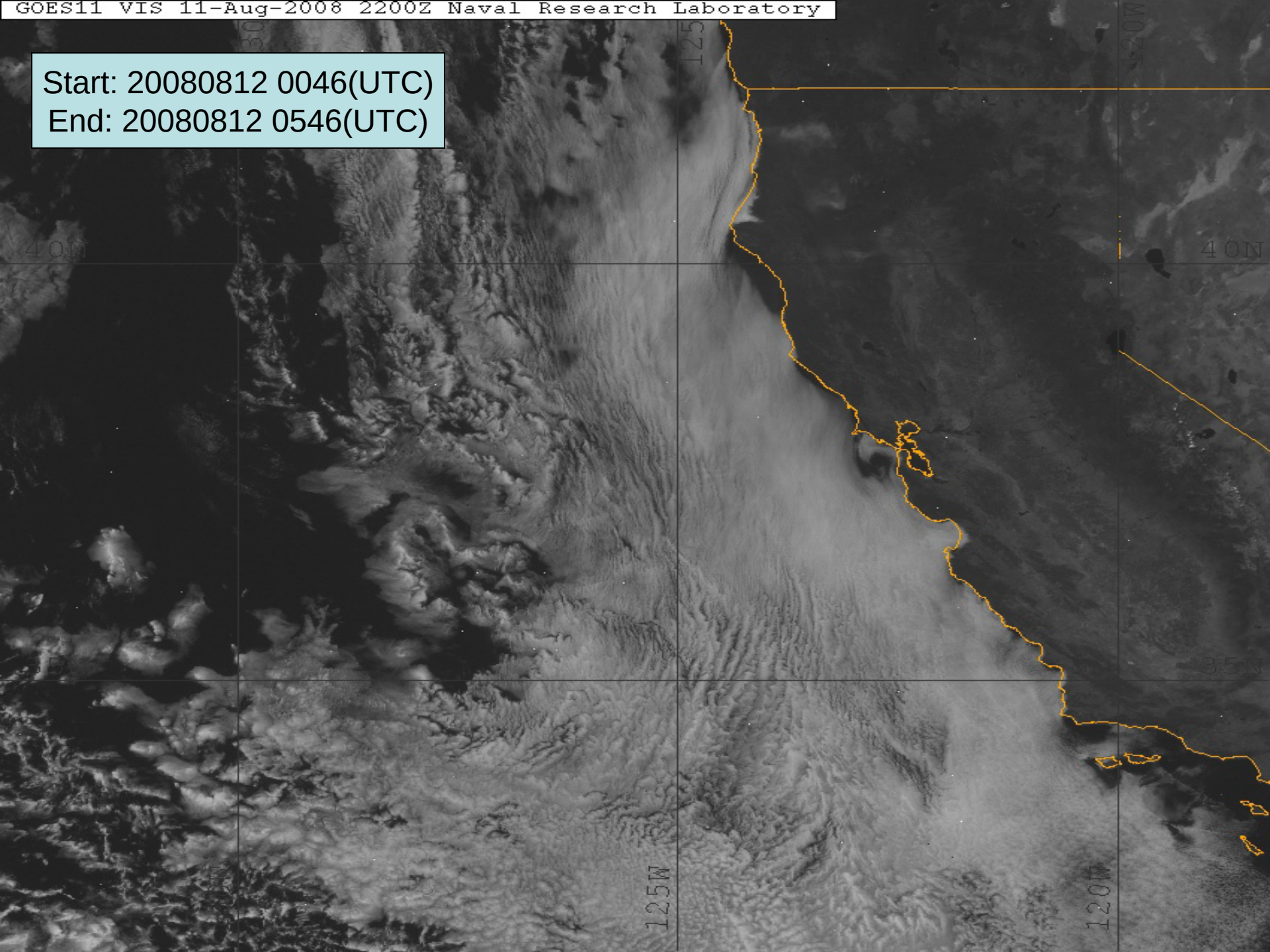


RF080812 csleg2 R_i



Start: 20080812 0046(UTC)

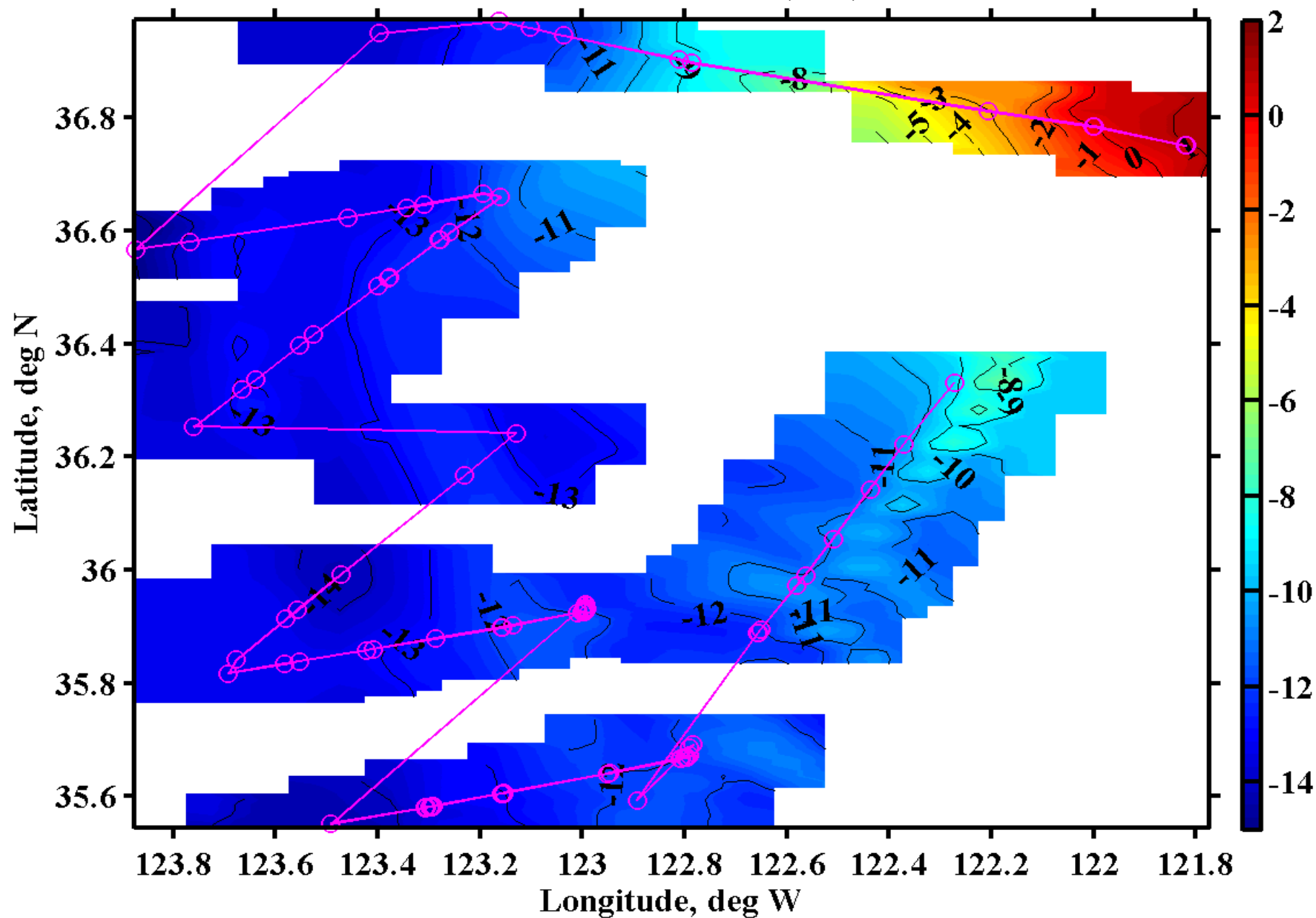
End: 20080812 0546(UTC)

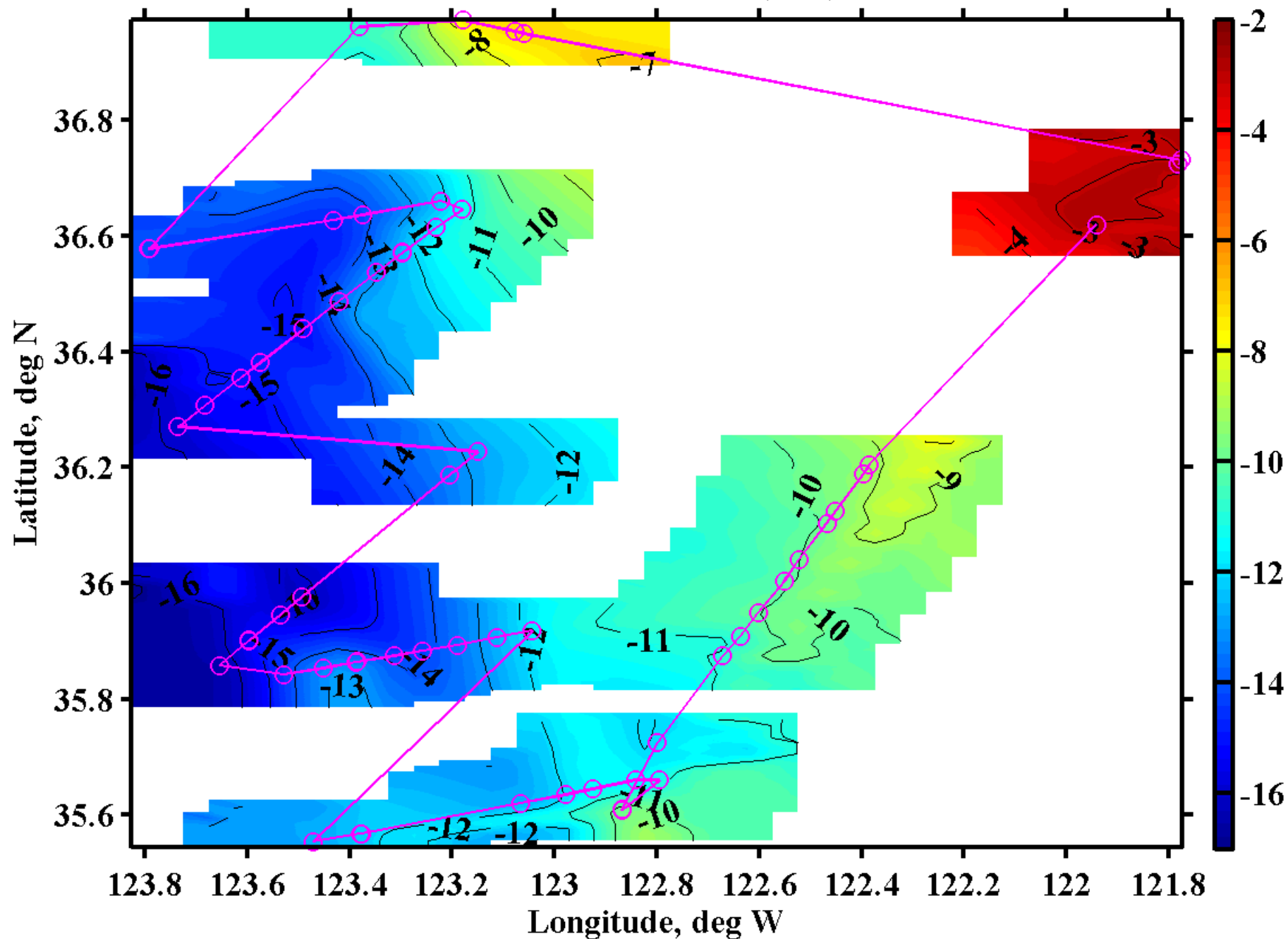


Strong wind with shear (no LLJ)
Horizontal Variability

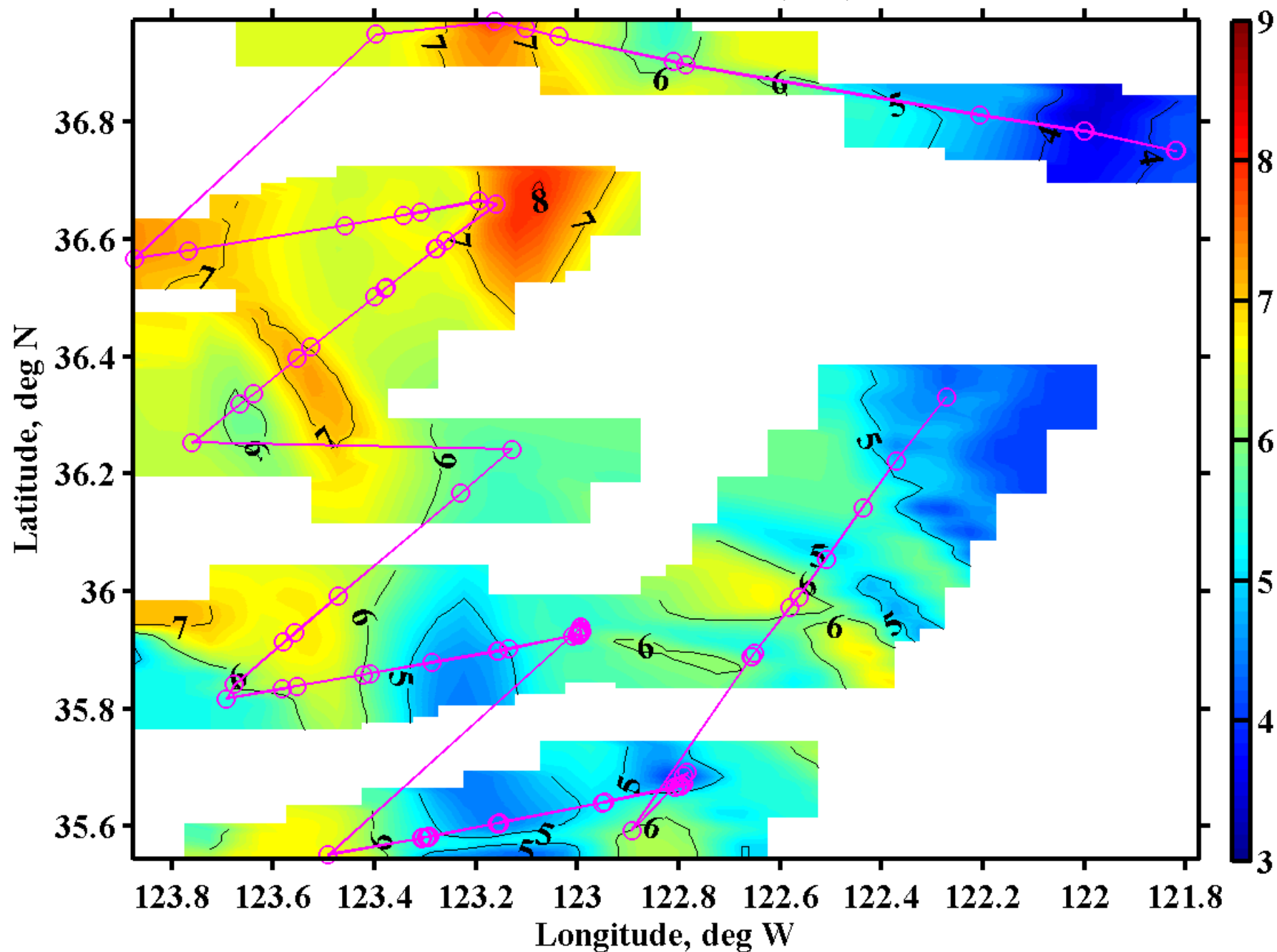
080811

RF080811 450m V (ms^{-1})

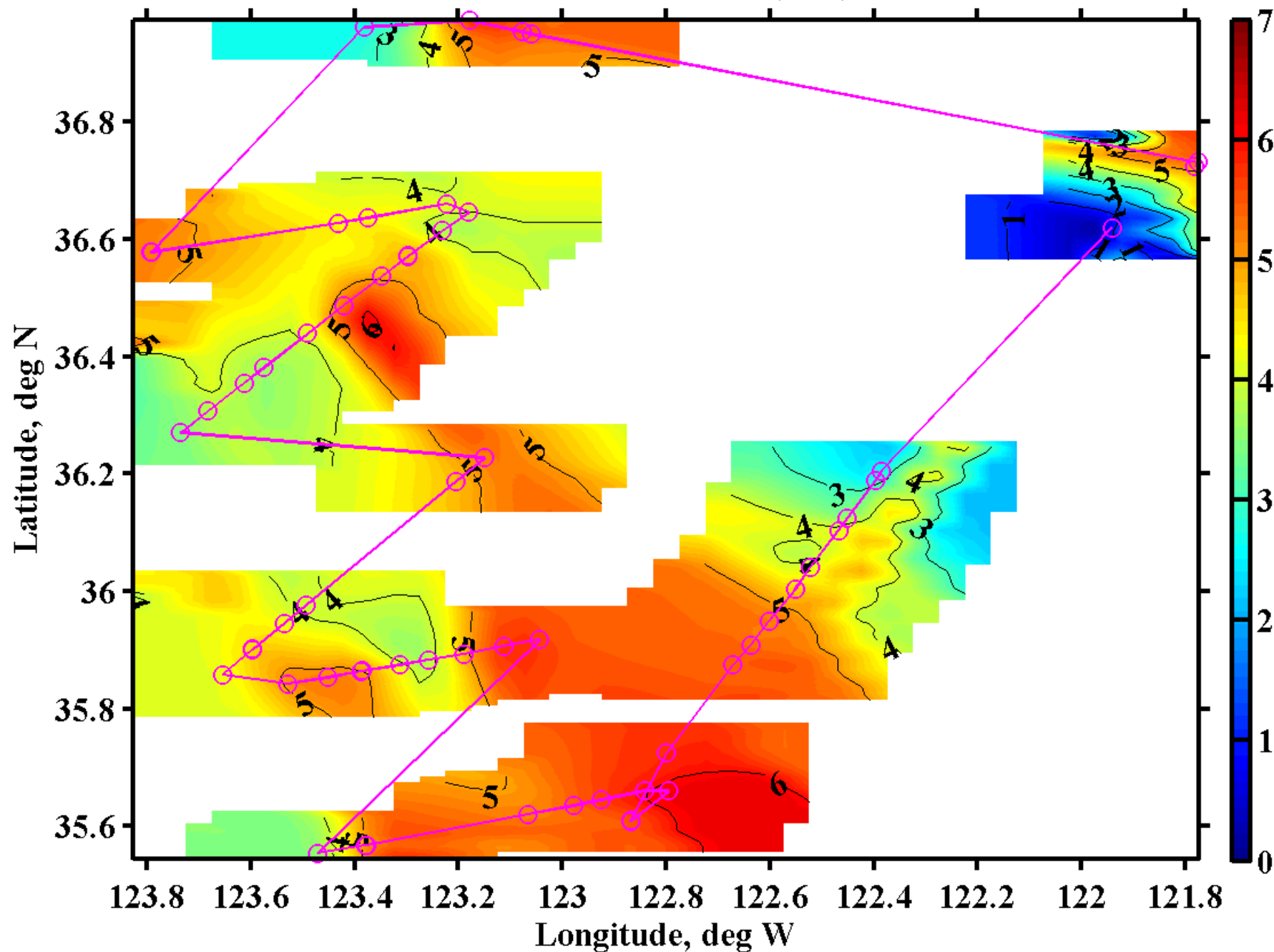


RF080811 520m V (ms⁻¹)

RF080811 450m U (ms⁻¹)

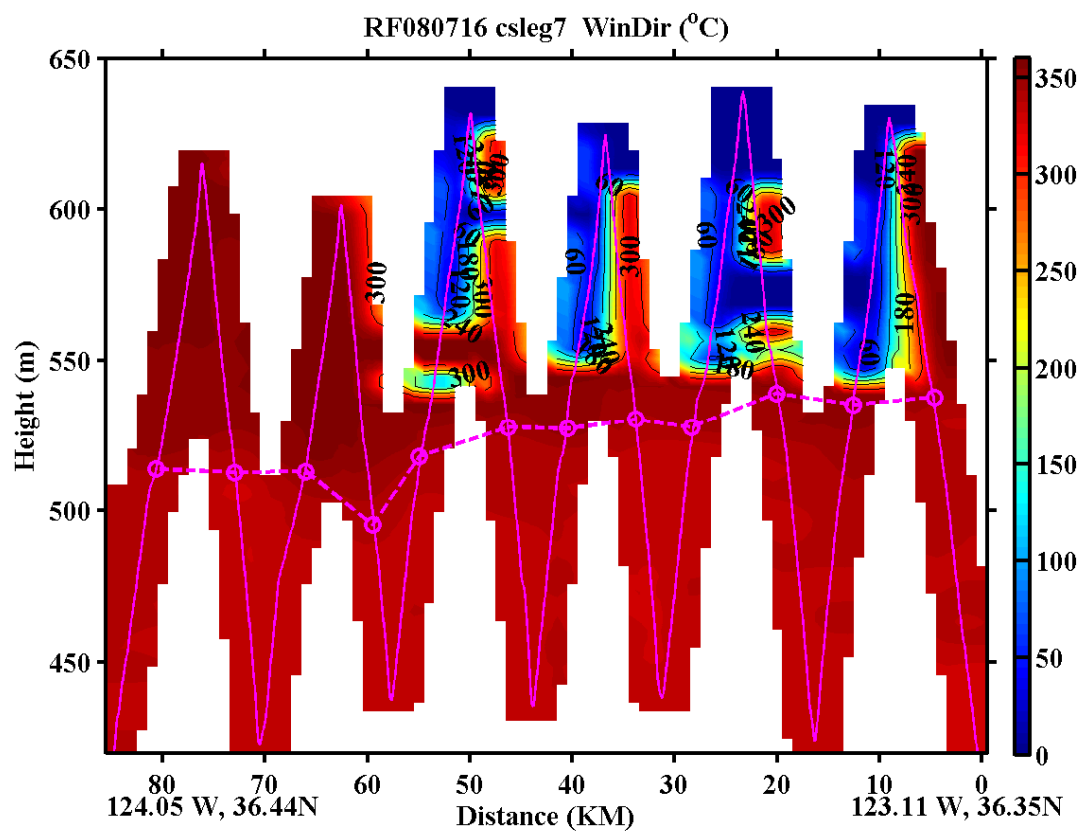
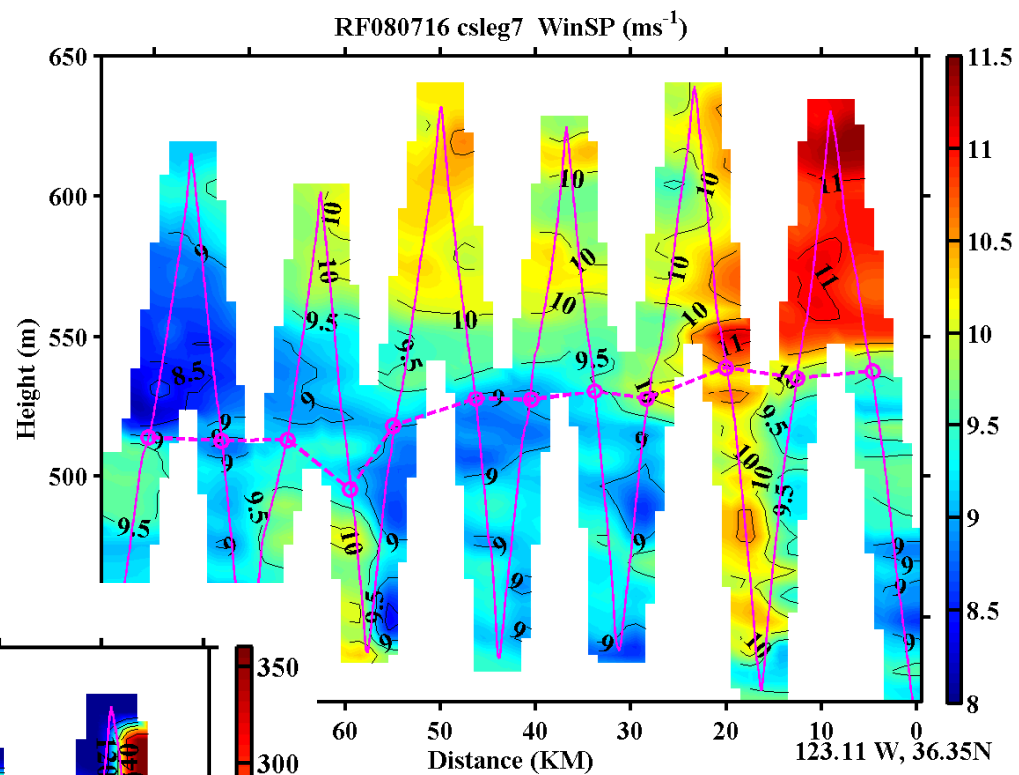


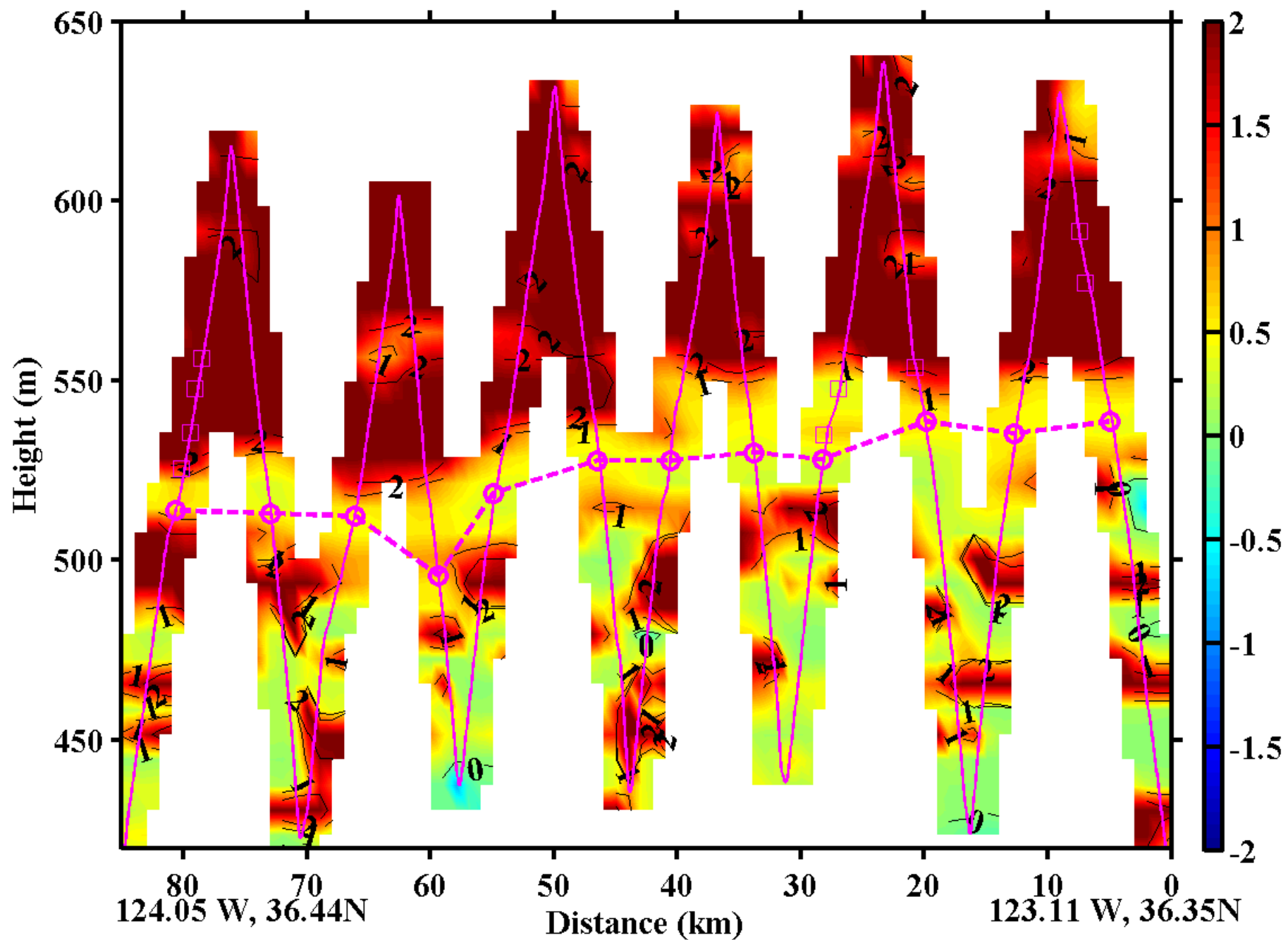
RF080811 520m U (ms^{-1})



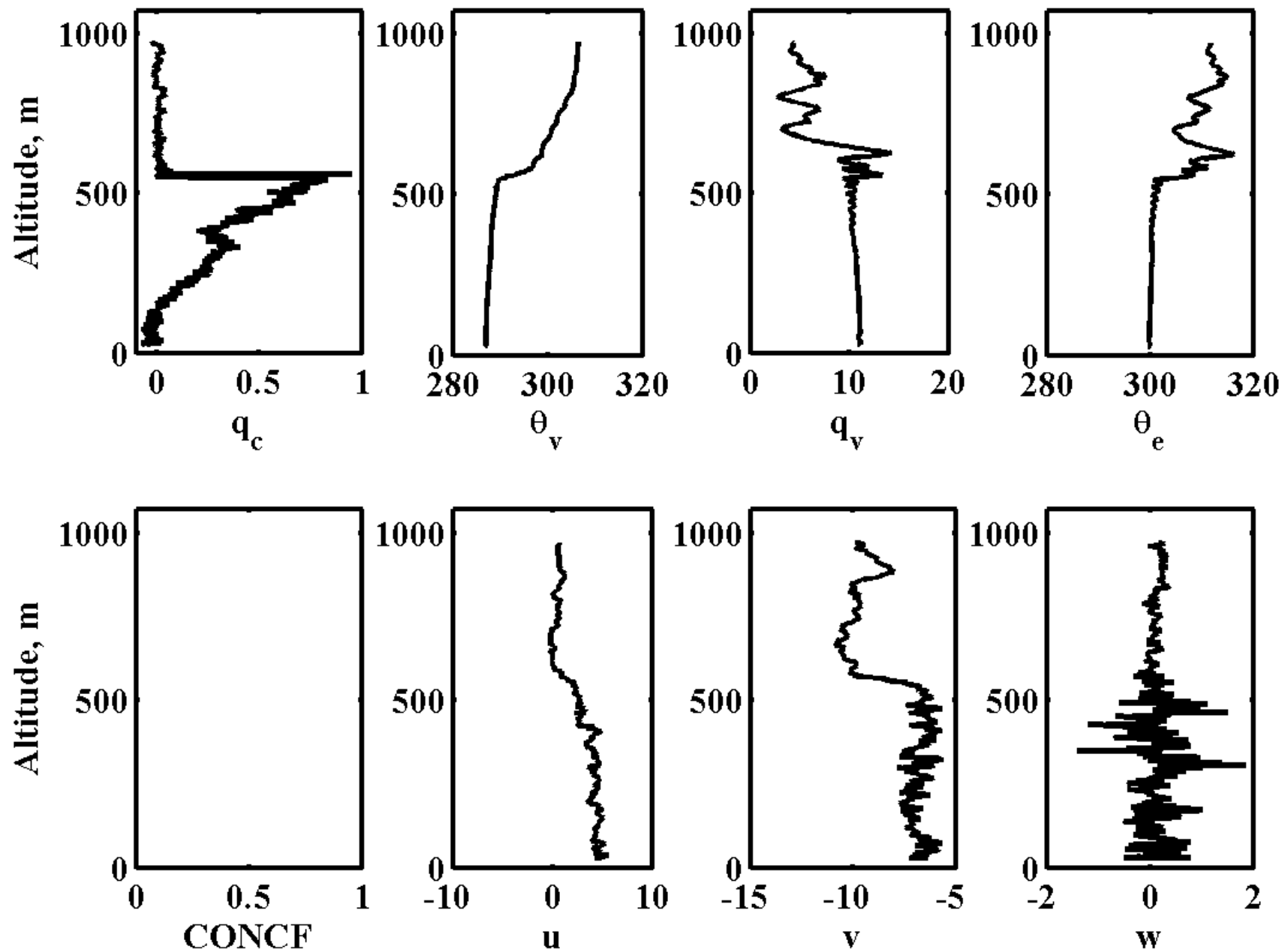
Weak wind speed with shear
at cloud top

080716

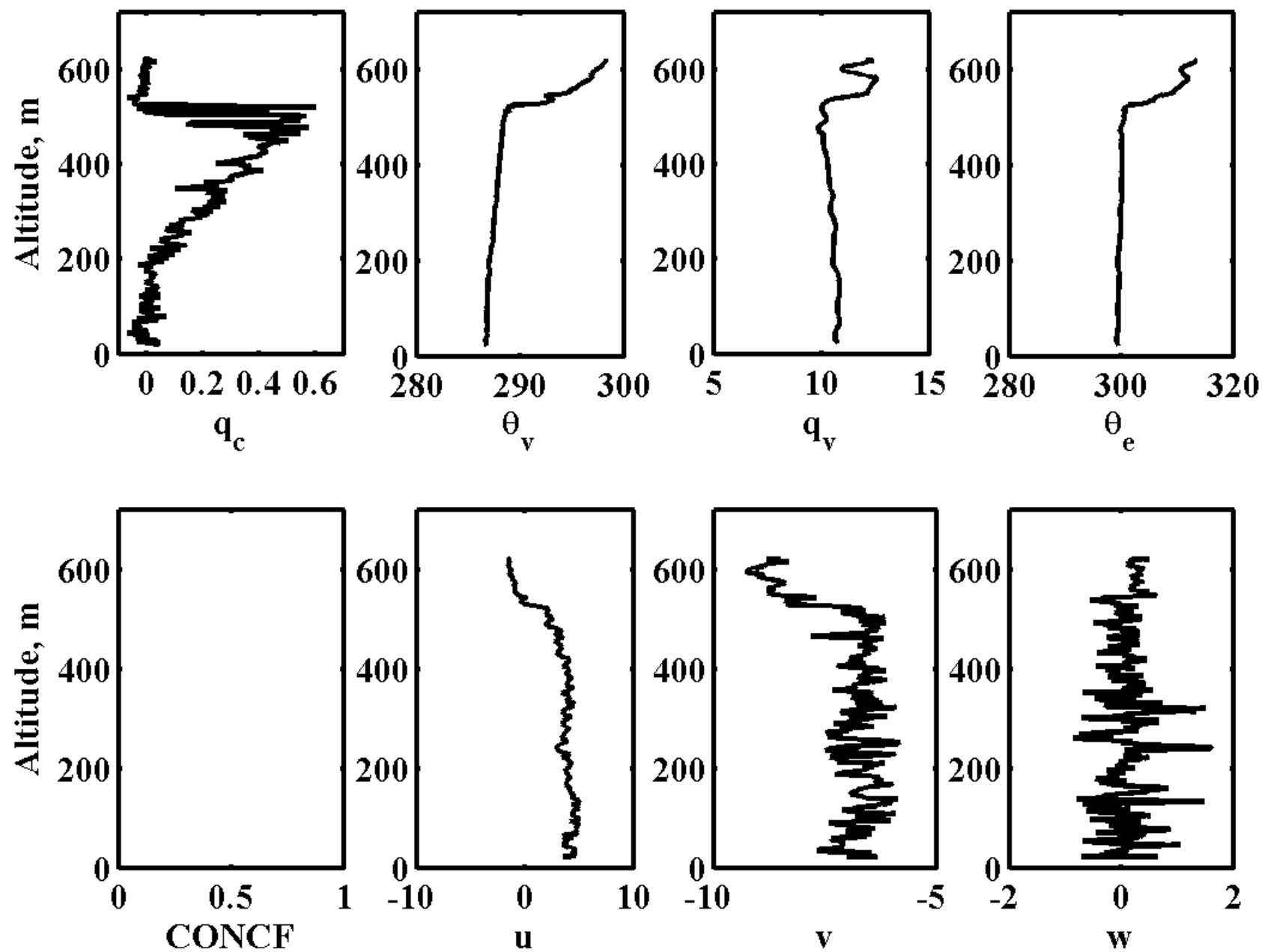




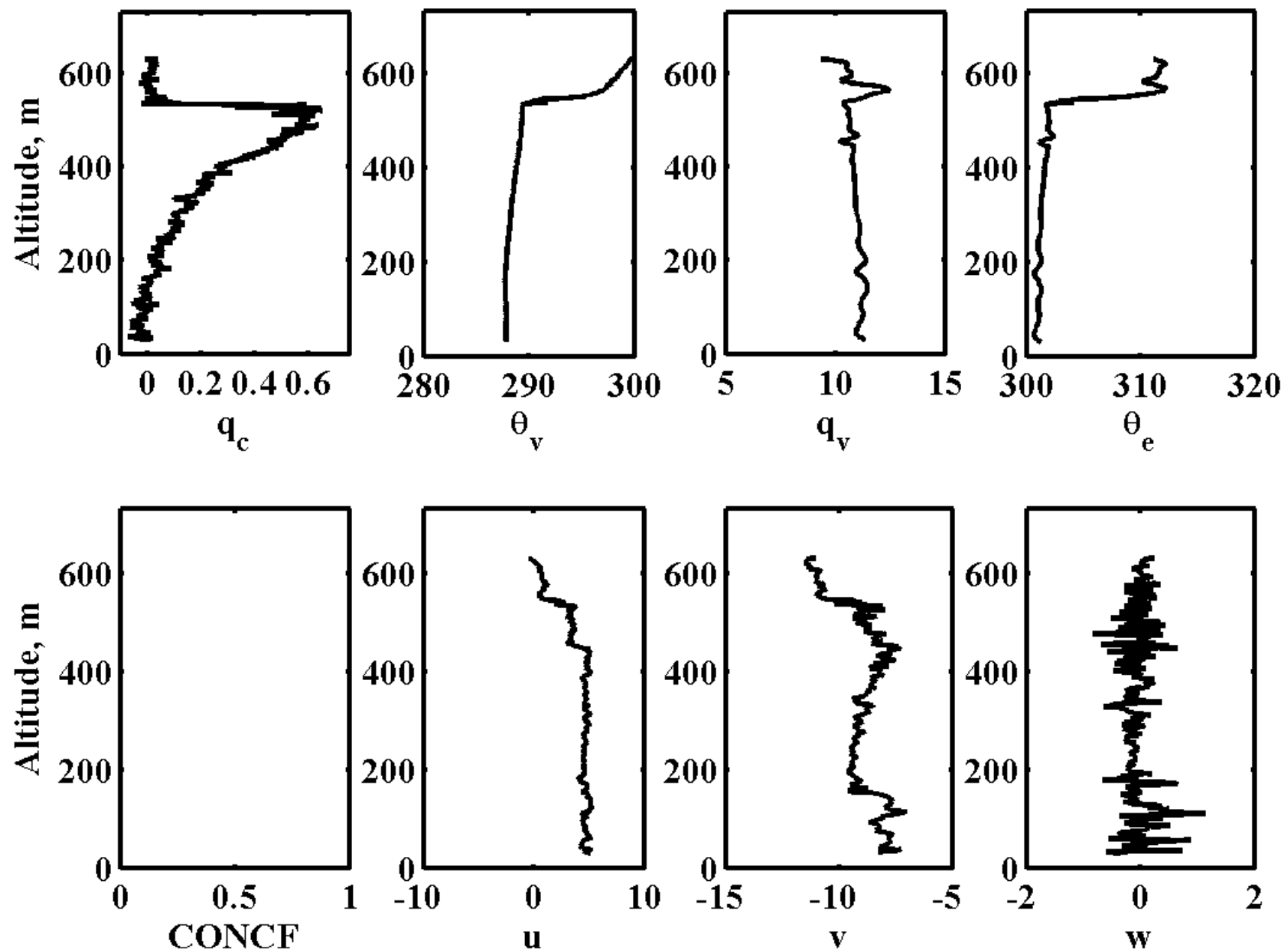
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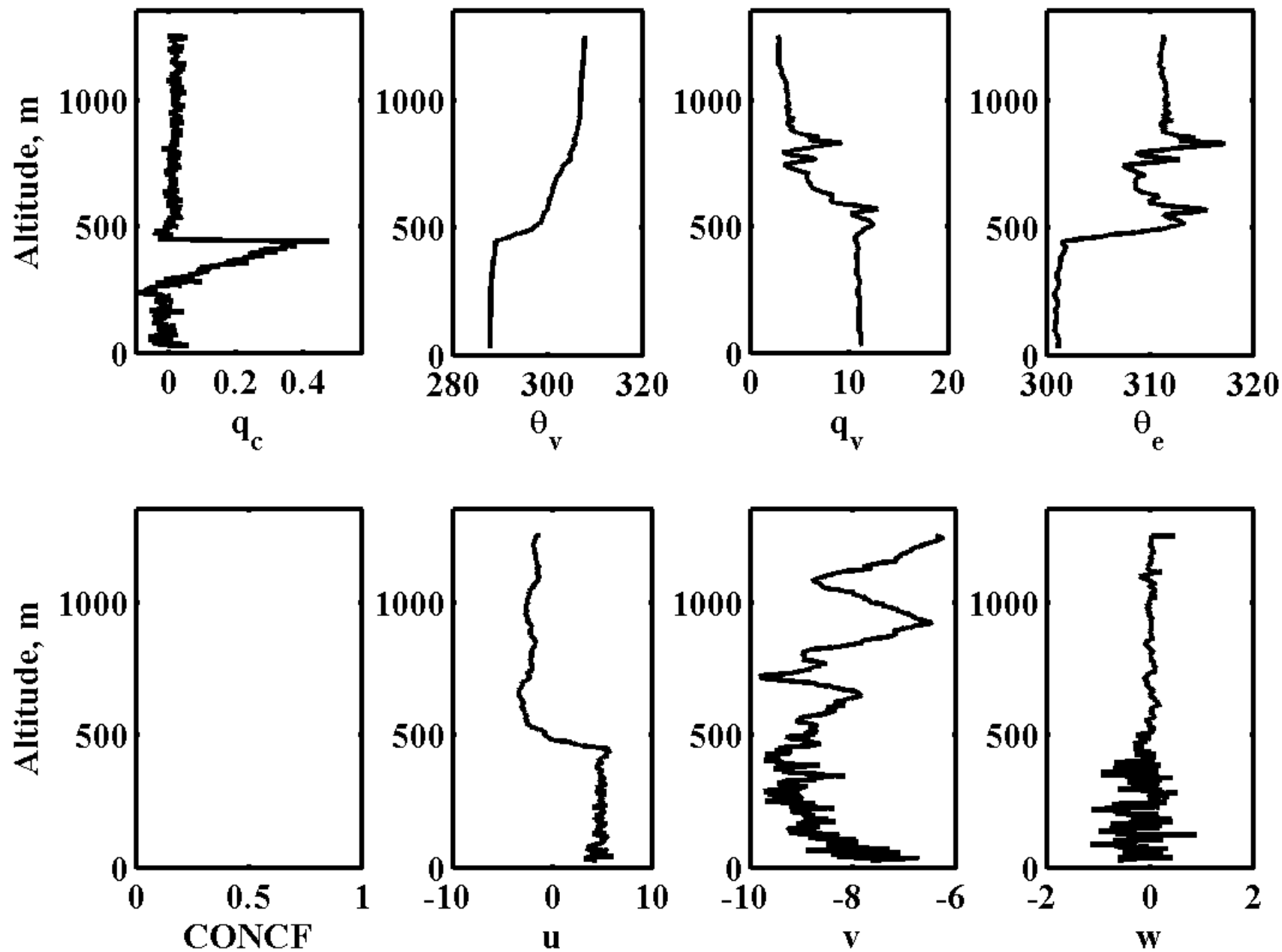
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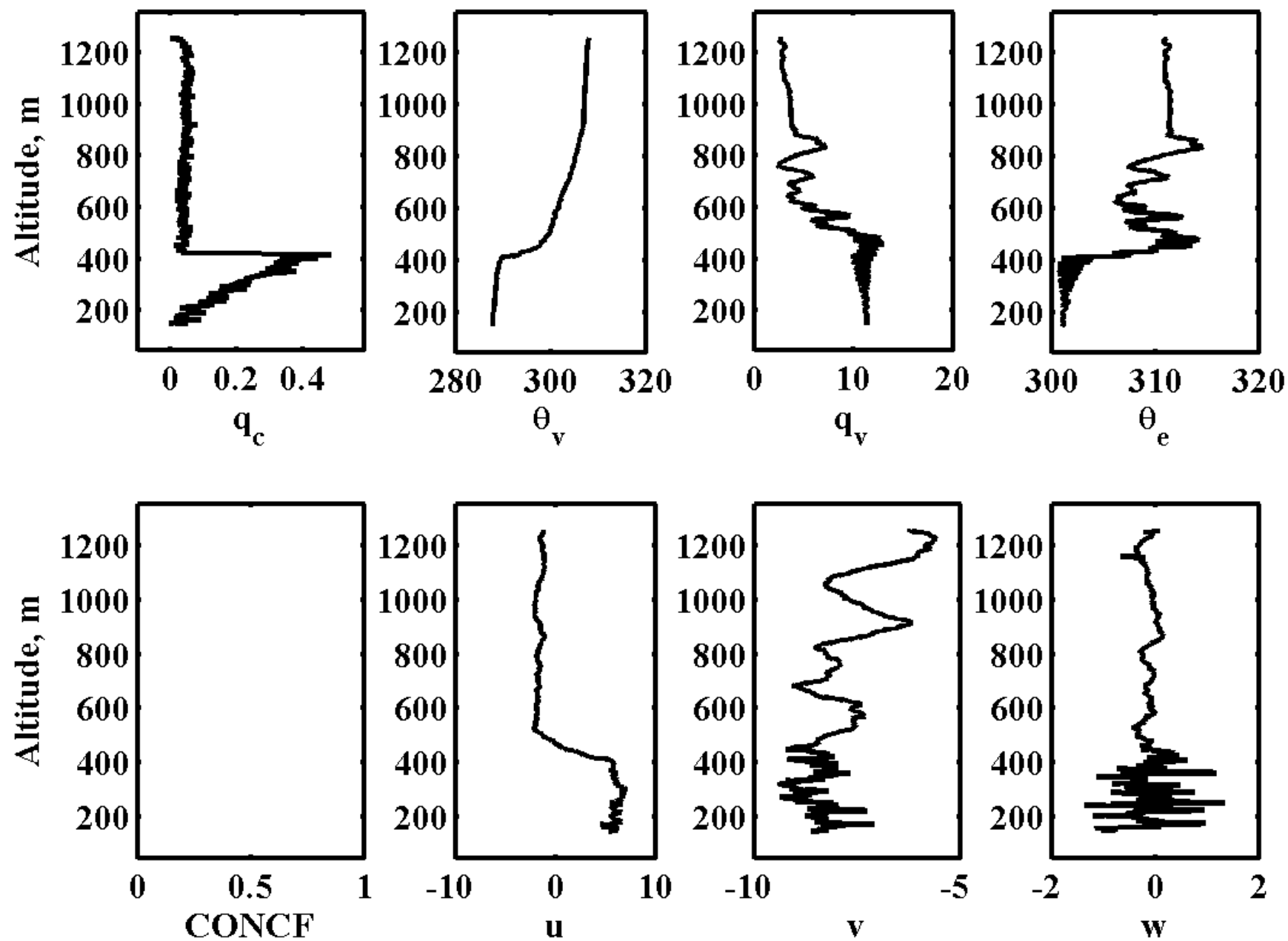
sleg10-profile;



sleg12-profile;



sleg13-profile;

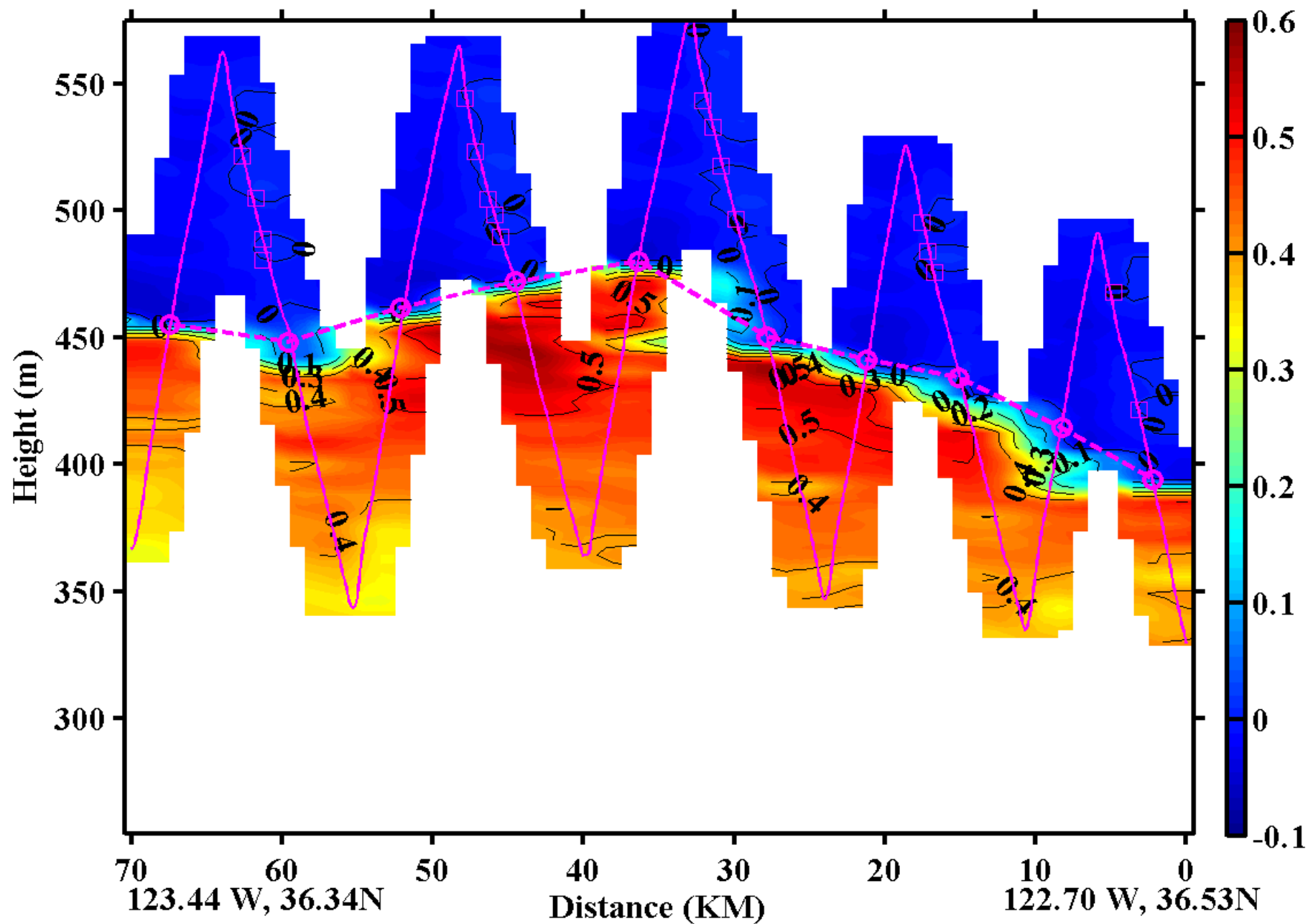


Weak wind speed and weak
shear (or no shear)

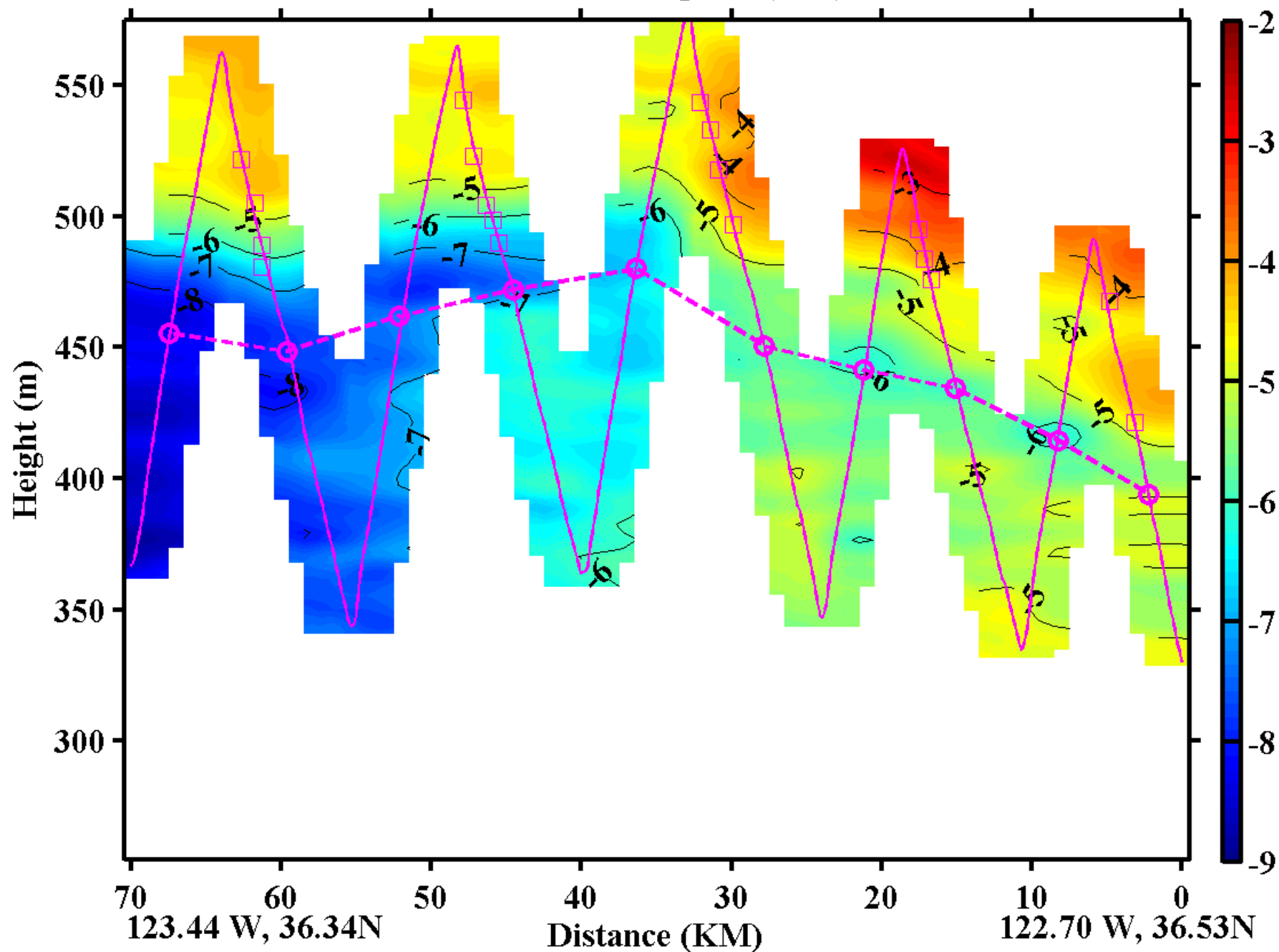
Large Ri number (above, below
and at cloud top)

Example 1: 080814

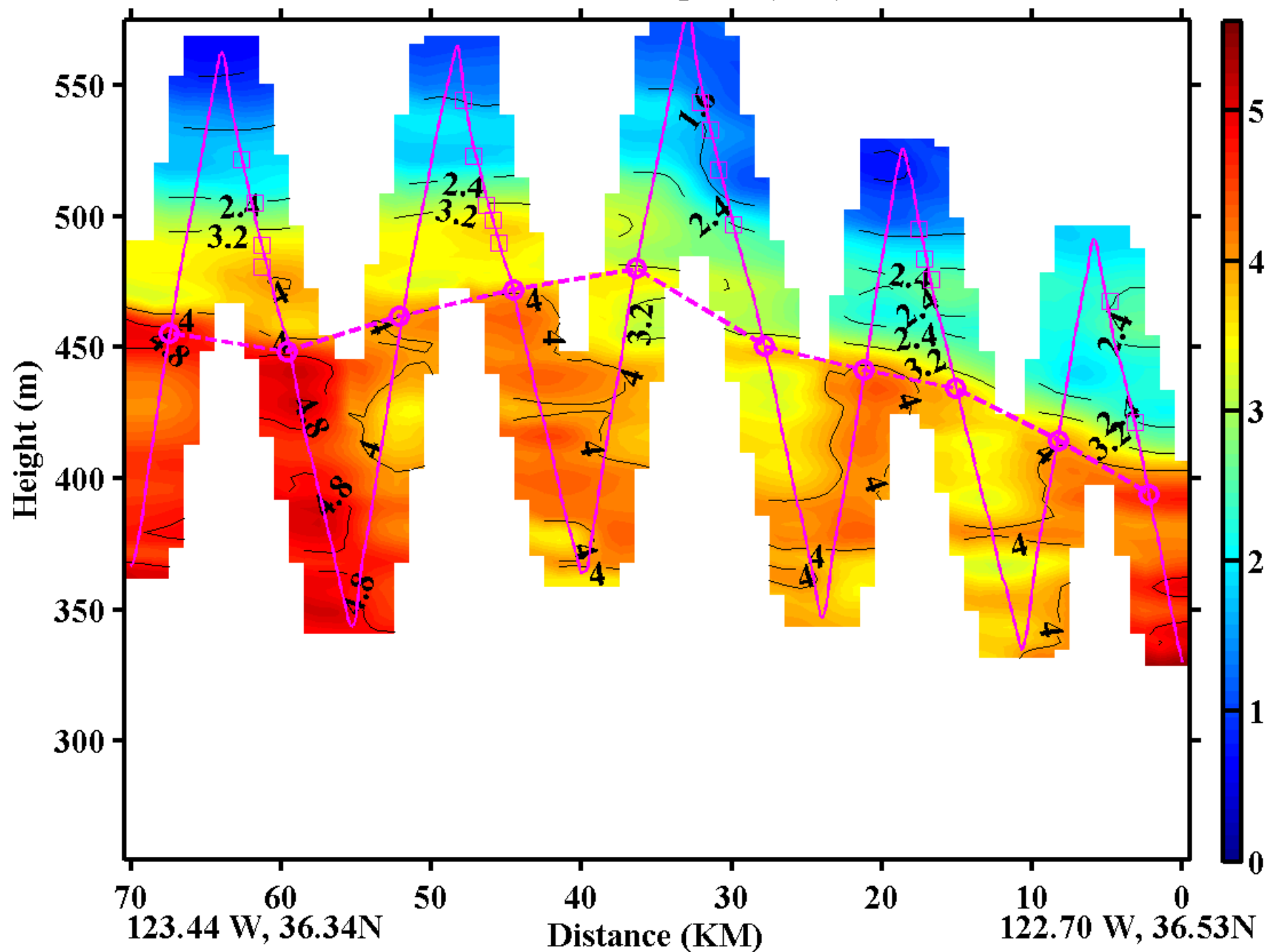
RF080814 csleg4 q_c (g Kg^{-1})



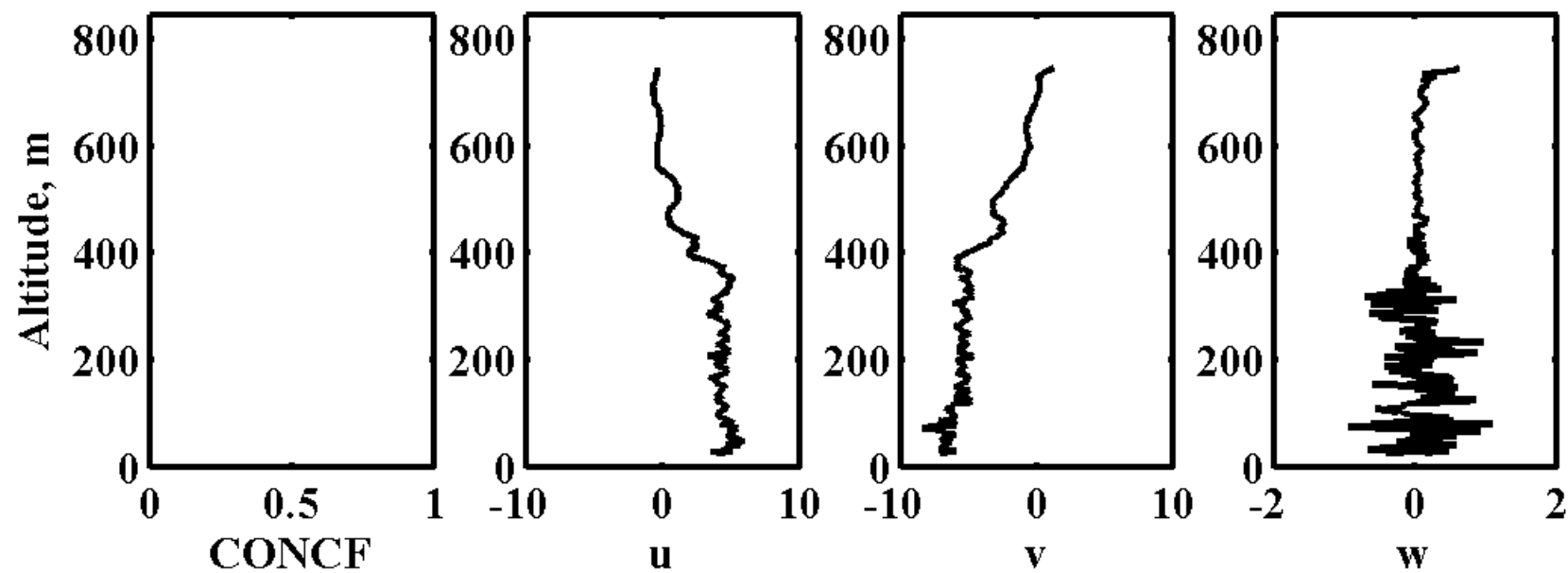
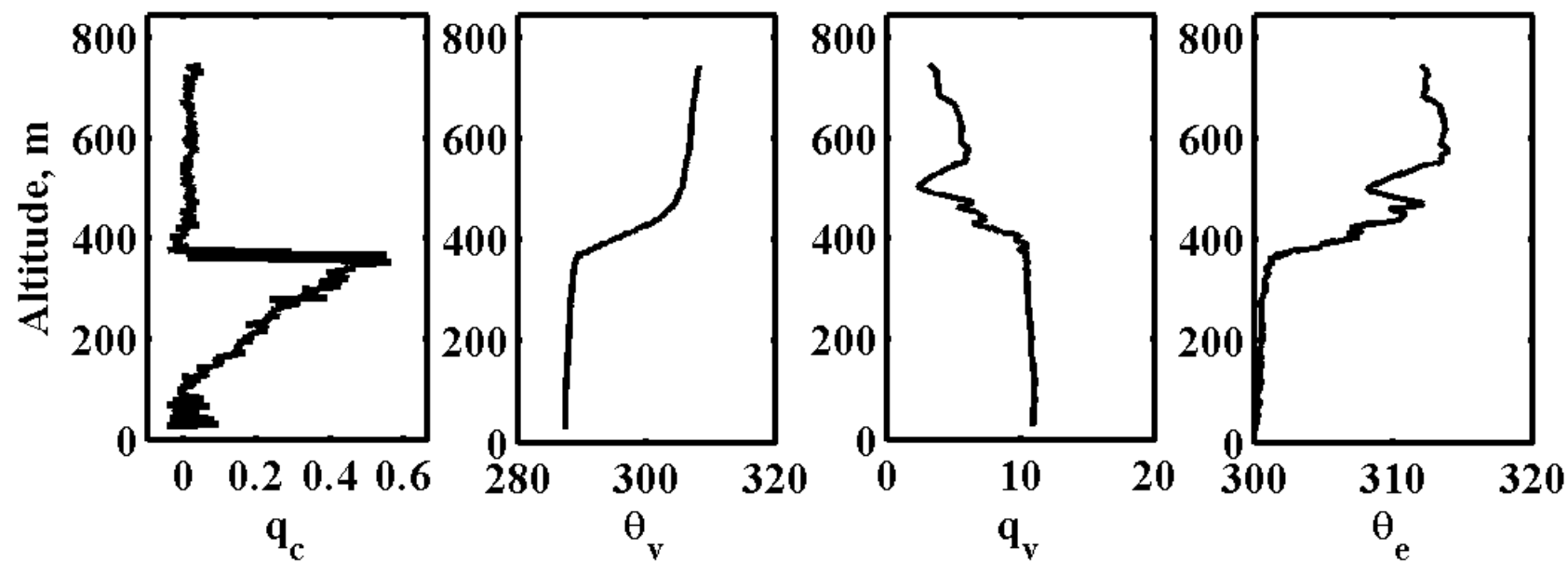
RF080814 csleg4 V (ms⁻¹)



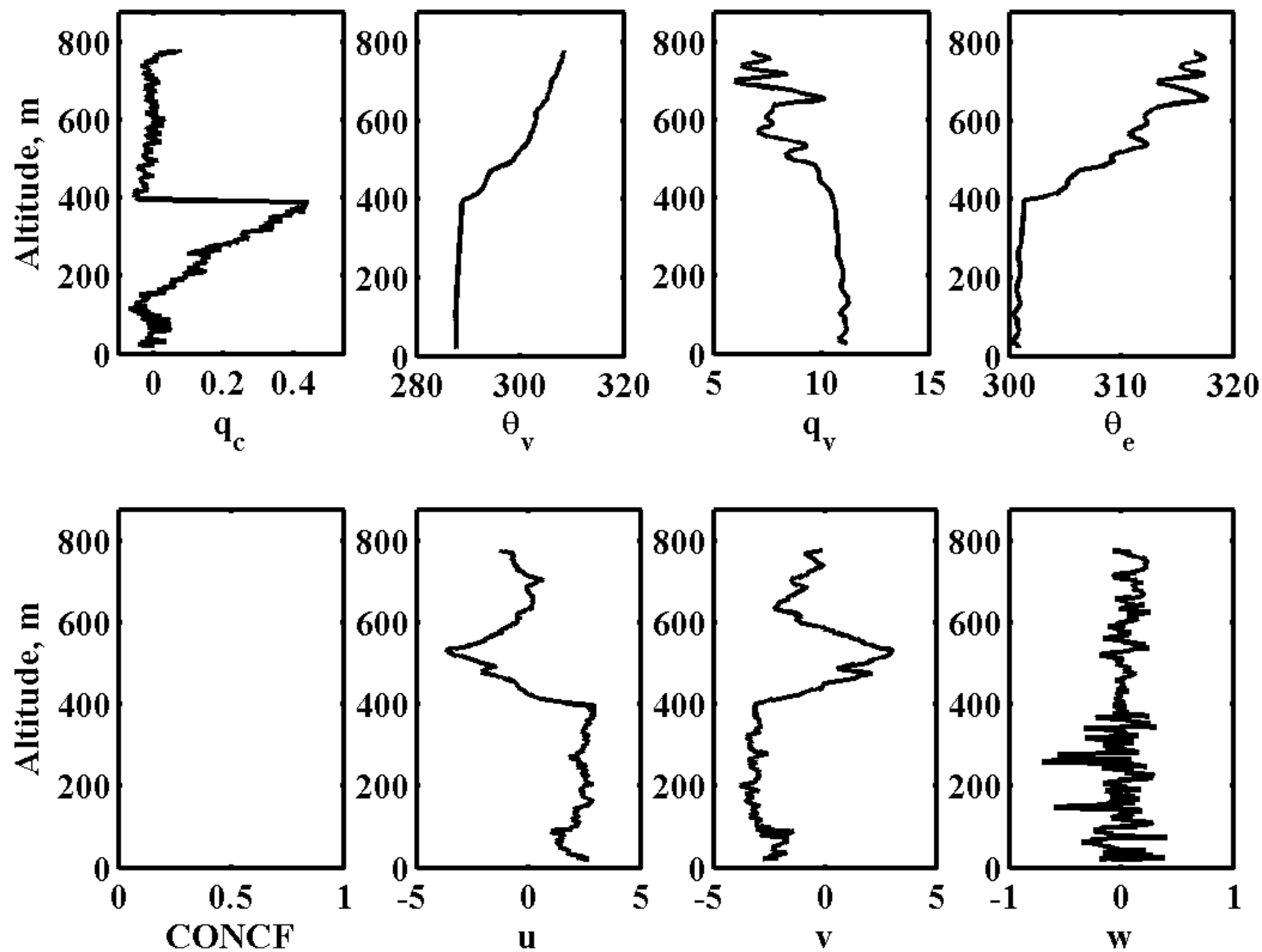
RF080814 csleg4 U (ms⁻¹)



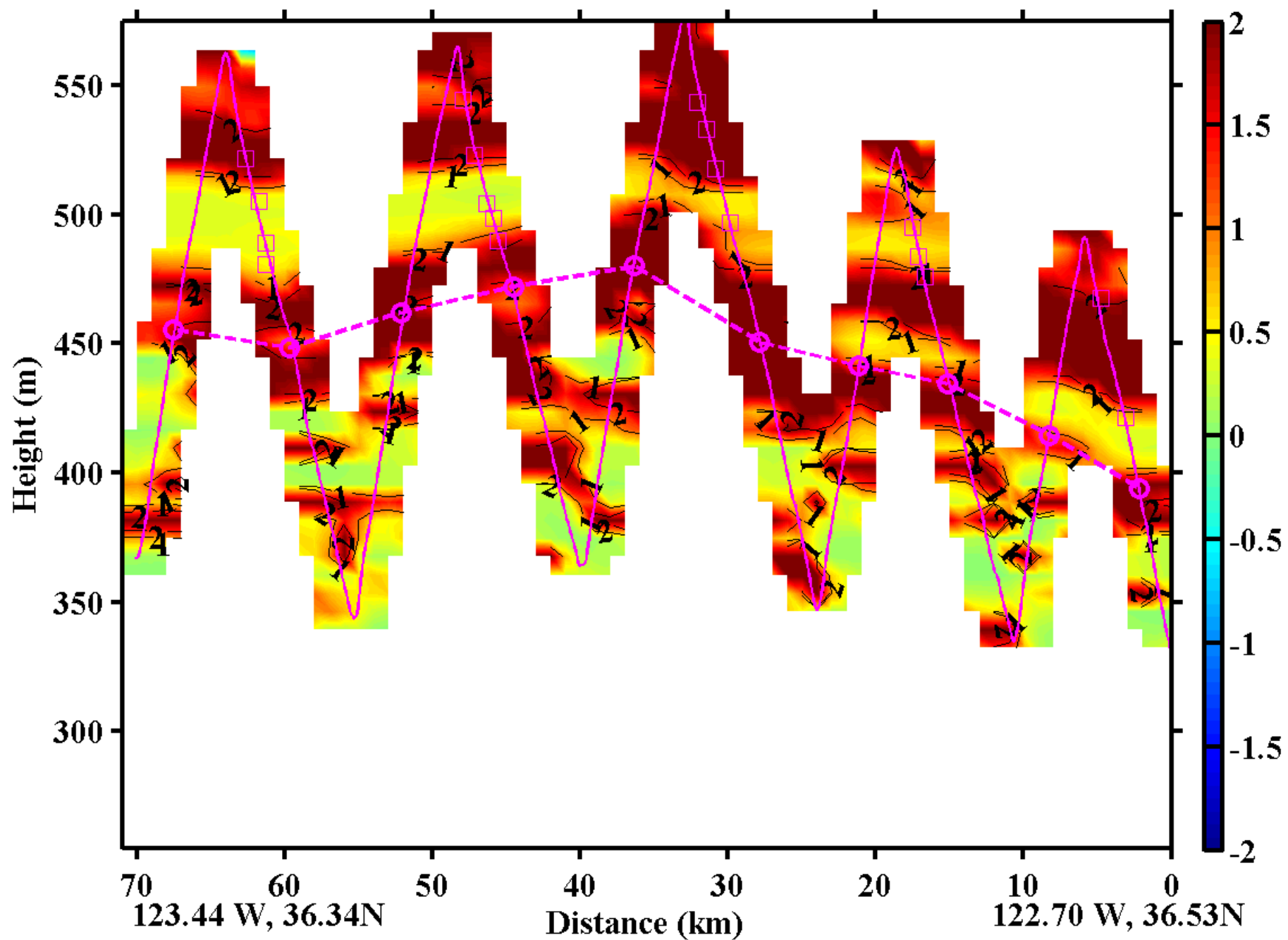
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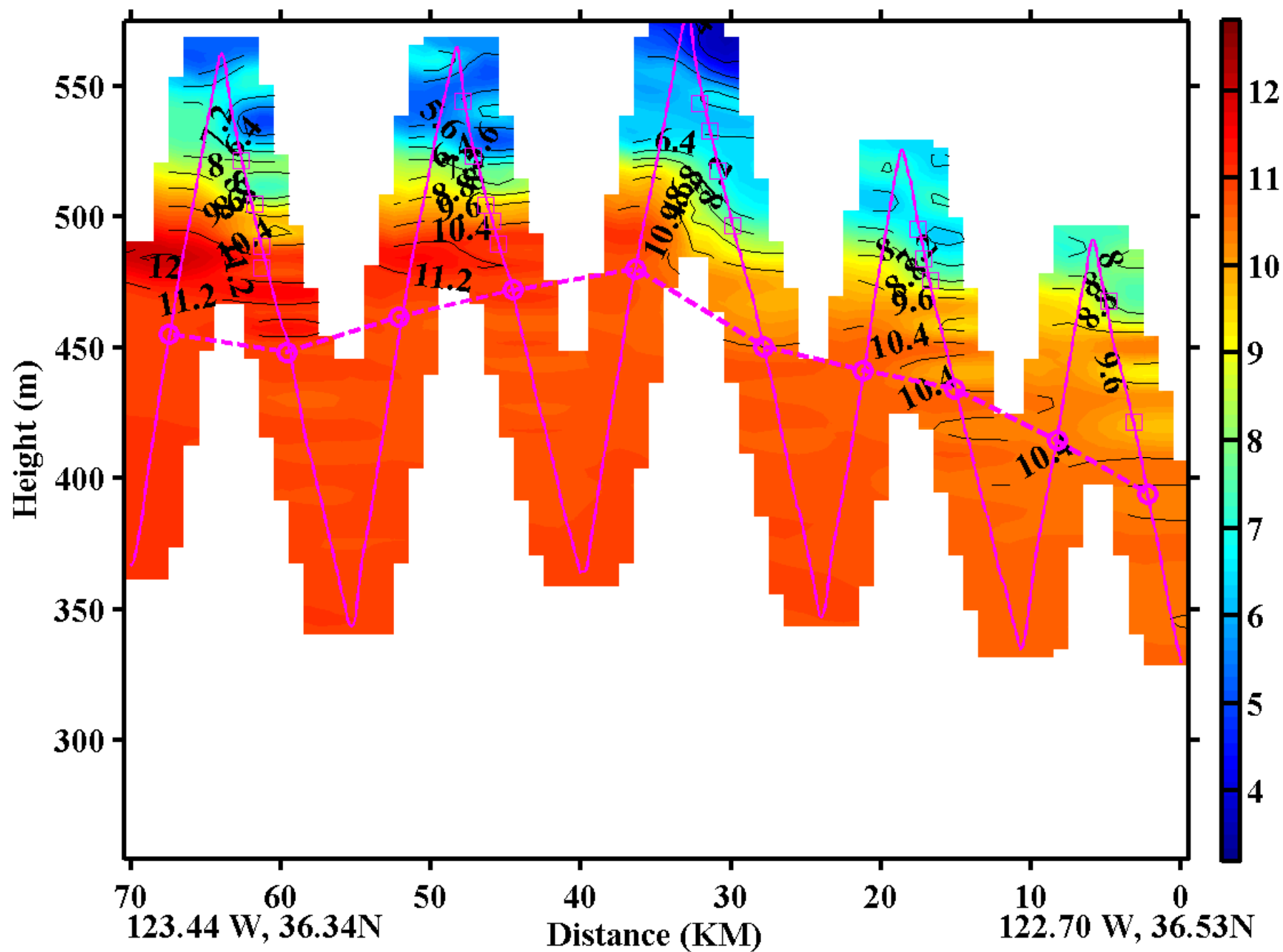
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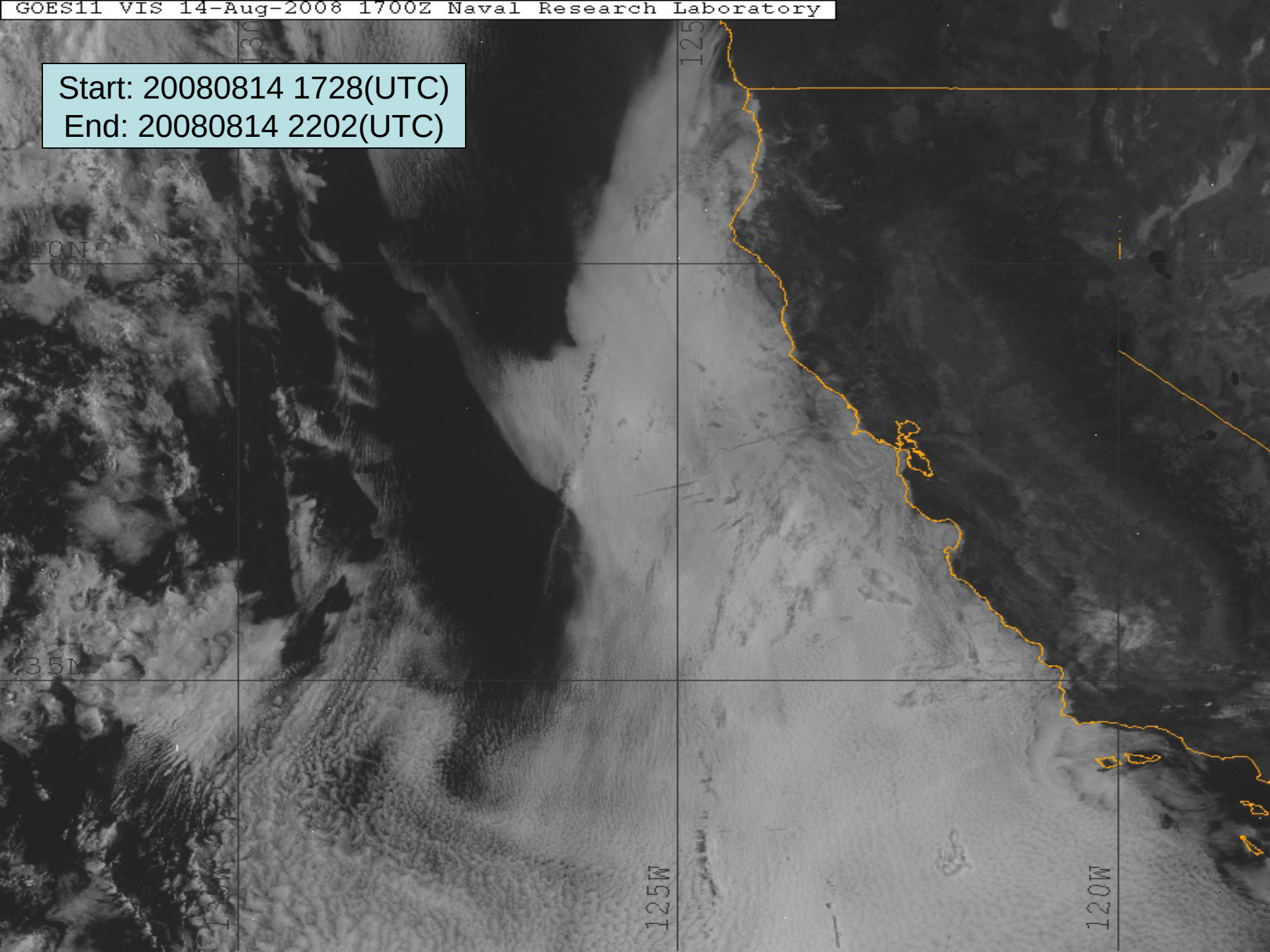
RF080814 csleg4 R_i



RF080814 csleg4 q_v (g Kg^{-1})



Start: 20080814 1728(UTC)
End: 20080814 2202(UTC)

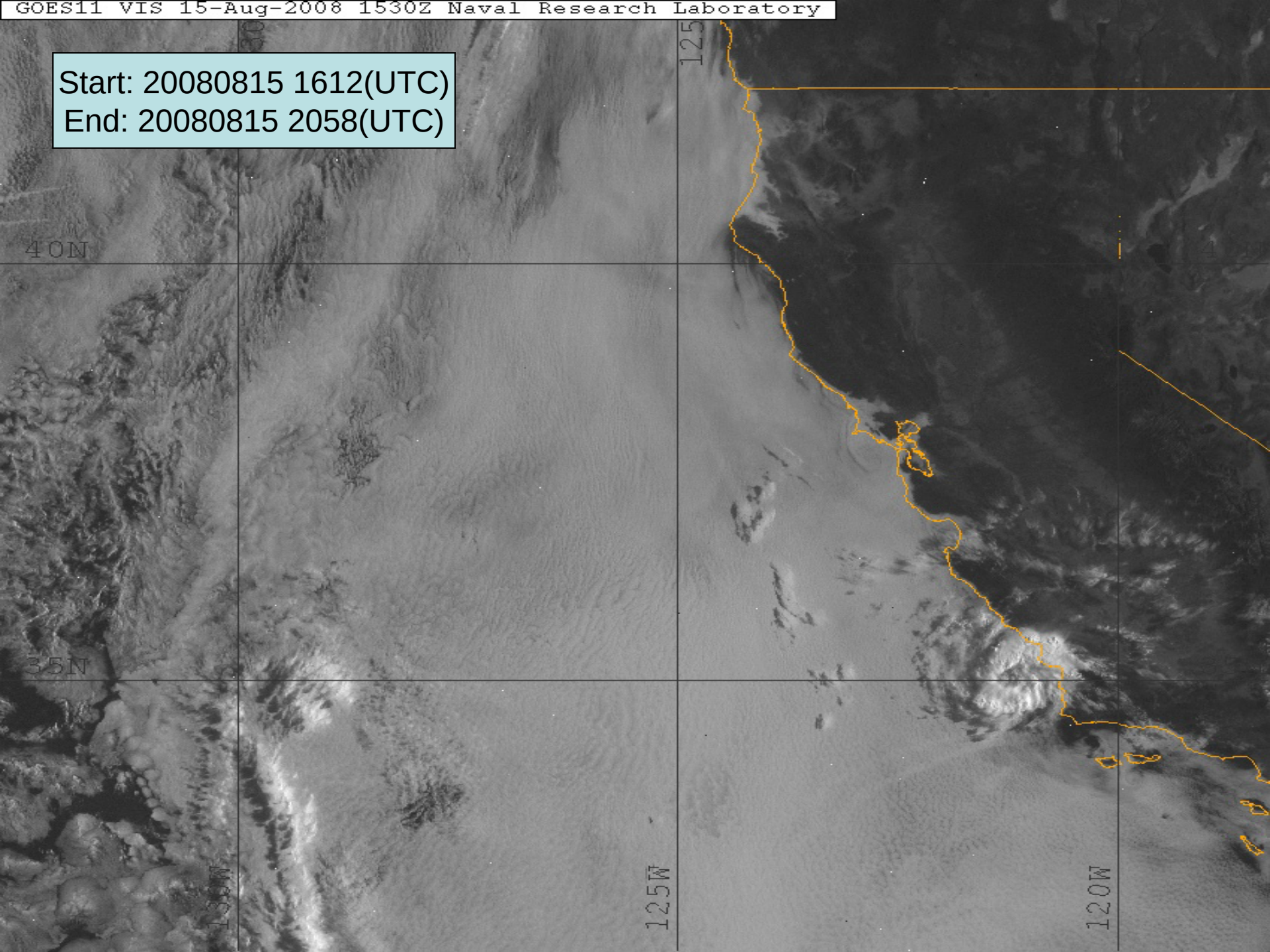


Weak wind speed
LLJ (max) at cloud top

Large Ri number at cloud top

080721, 080815, 080804

Start: 20080815 1612(UTC)
End: 20080815 2058(UTC)



POST Flight Summary, Preliminary

Flight #	Flight Date	Time period (UTC)	Cloud top height (m)	Cloud base height (m)	Cloud Depth (m)	EZ depth (m)	Max qc (g/kg)
RF01	80716	2008/07/16 17:12~2008/07/16 22:10	480~560	250~300	200	80	0.7
RF02	80717	2008/07/17 17:26~2008/07/17 22:26	440~540	300~400	150	100	0.3
RF03	80718	2008/07/19 00:49~2008/07/19 05:37	420~500	240~350	150	80	0.5
RF04	80721	2008/07/21 17:26~2008/07/21 22:06	930~1050	400~550	500	120	0.7
RF05	80727	2008/07/28 01:00~2008/07/28 05:45	350~500	250~350	150	150	0.5
RF06	80728	2008/07/29 00:47~2008/07/29 06:02	550~690	350~450	200	140	0.6
RF07	80730	2008/07/30 17:24~2008/07/30 23:30	300~400	150~250	150	100	0.5
RF08	80801	2008/08/01 17:10~2008/08/01 22:23	330~470	150~300	200	140	0.4
RF09	80802	2008/08/02 16:55~2008/08/02 22:13	110~220	80~120	80	110	0.25
RF10	80804	2008/08/04 17:15~2008/08/04 22:15	560~700	380~450	250	140	0.5
RF11	80805	2008/08/06 0:46~2008/08/06 05:48	480~610	300~450	200	130	0.25
RF12	80807	2008/08/08 0:55~2008/08/21 05:53	580~800	300~550	300	220	0.5
RF13	80808	2008/08/09 00:58~2008/08/09 06:00	530~670	250~400	280	140	0.7
RF14	80811	2008/08/12 00:46~2008/08/12 05:46	350~560	200~300	200	210	0.7
RF15	80812	2008/08/13 01:00~2008/08/13 06:15	350~500	180~300	200	150	0.5
RF16	80814	2008-8-14 17:28:00~2008/08/14 22:02	360~470	150~220	200	110	0.5
RF17	80815	2008/08/15 16:27~2008/08/15 20:59	360~470	150~200	200	110	0.5

EIL Properties, Preliminary

						WS > 10 m/s			
Flight #	Flight Date	theta_EZB (K)	theta EZT (K)	q EZB (g/kg)	q EZT (g/kg)	WS EZB (m/s)	WS EZT (m/s)	WD EZB (o)	WD EZT (o)
RF01	80716	289	296	10.2	12	8.5	9.5	300	100
RF02	80717	288	296	9.6	6.6-9.9	12	12	340	339
RF03	80718	288	296	9.8	6.5-9	14	17	330	346
RF04	80721	289	298	8	6.6-8.0	10	10	312	300
RF05	80727	288	291	10	9.3	11	14	330	345
RF06	80728	290	297	6.3-9.8	1.2-5.4	10	8	340	330
RF07	80730	295	298	xx	xx	12	14	330	340
RF08	80801	290	294	11.5	12	17	19	340	350
RF09	80802	286	296	10	9	14	15	320	320
RF10	80804	290	299	9.6	3.2	10	5	335	336
RF11	80805	289	297	9.8	2.4-8.0	12	8	320	320
RF12	80807	290	298	9.5	6	7	4	320	310
RF13	80808	289	292	10.2	10.7	10	12	330	330
RF14	80811	289	298	11.5	9	12	16	330	345
RF15	80812	289	298	11.7	10	16	20	335	350
RF16	80814	289	296	10.8	7.8-11	8	6	330	330
RF17	80815	289	296	11	10	8	5	330	330

EIL Properties, Preliminary

		Weak Inversion	dry inversion (d_qv<-5)	WS > 10 m/s	strong WS shear	Strong WD shear
Flight #	Flight Date	d_theta (K)	d_qv (g/kg)	WS EZB (m/s)	d_WS (m/s)	d_WD
RF01	80716	7	1.8	8.5	1	-200
RF02	80717	8	varies	12	0	-1
RF03	80718	8	varies	14	3	16
RF04	80721	9	varies	10	0	-12
RF05	80727	3	-0.7	11	3	15
RF06	80728	7	varies	10	-2	-10
RF07	80730	3	xx	12	2	10
RF08	80801	4	0.5	17	2	10
RF09	80802	10	-1	14	1	0
RF10	80804	9	-6.4	10	-5	1
RF11	80805	8	varies	12	-4	0
RF12	80807	8	-3.5	7	-3	-10
RF13	80808	3	0.5	10	2	0
RF14	80811	9	-2.5	12	4	15
RF15	80812	9	-1.7	16	4	15
RF16	80814	7	varies	8	-2	0
RF17	80815	7	-1	8	-3	0