Cruise Report: TN211
AFSC Cruise Number 1TT07
R/V Thomas G. Thompson
September2 24-October 11, 2007
Eastern Bering Sea

Cruise Objectives:

The primary purpose of Cruise TN211 was to monitor the ecosystem of the eastern Bering Sea. It primarily consisted of a hydrographic survey with zooplankton sampling along transects which had also been occupied in May 2005 and April 2006. Because of time constraints caused by high winds, we had to omit some stations, most noticeably at the east end of line SL and near the north end of the 70m isobath transect (Figure 1). The cruise supported research for the North Pacific Climate Regimes and Ecosystem Productivity (NPCREP) study at Eco-FOCI (the Ecosystems and Fisheries-Oceanography Coordinated Investigations). The work was sponsored by NOAA's North Pacific Climate Regimes & Ecosystem Productivity Program, the North Pacific Research Board (NPRB), the Alaskan Ocean Observing System (AOOS), and PMEL/AFSC base funding.

Personnel:

Chuck Bartlett (USCG)
Robert Freyer (NOAA/AFSC)
Colleen Harpold (NOAA/AFSC)
Thomas Kruger (USCG)
Kathryn Mier (NOAA/AFSC)
Calvin Mordy (NOAA)
William Parker (ITS Corp)
Peter Proctor (JISAO)

Dylan Righi (JISAO)
Sigrid Salo (NOAA/PMEL)
David Strausz (NOAA)

The cruise track for cruise TN211 is shown in Figure 1, and a list of the stations occupied during the cruise is included as Table 1. CTD casts were made at every station, and zooplankton were collected with bongo tows at every other station.

The maximum depth of CTD casts was 5 m from the bottom. Water samples were collected when the CTD was at depth, and at 100m, 75m, 50m, 40m, 30m, 20m, 10m and at the surface. We collected nutrient samples from every bottle. The samples were filtered and analyzed aboard the ship. We also collected chlorophyll samples at every CTD cast from the Niskins at depths of 50m or less. These samples were filtered and the filters were frozen to be processed in Seattle.

Zooplankton sampling to 5m above the bottom was accomplished with MARMAP bongo tows, using 60 cm and 20cm bongo nets. The depth of the nets was determined with a SeaCat attached to the cable just above the nets. The mesh size of the 60 cm nets was 0.333 mm and the 20 cm bongo frame was fitted with nets whose mesh size was 0.153 mm. Samples from the nets were preserved for later analysis.

Figures 2-6 depict the temperature, salinity, density and fluorescence from the transects, in the order they were occupied. Beyond the inner front, the transects all show a strong thermocline. There was a cold or cool pool in the bottom layer at stations where water depth was 50 to about 100m. Bottom temperatures were lowest at northern transects. The progression in temperature and the gradual deepening (and cooling) of the surface mixed layers are obvious in the 70m contour. The warmest surface temperatures (7-8+) were seen near the shore where the water was well-mixed or farther offshore, beyond the cold/cool pool.

We were hoping to finish the transects before autumn winds mixed the water column, in order to see regional differences in the summer hydrographic conditions. However, we encountered high winds at several times during the cruise, so that mixing was occurring as the cruise proceeded. Because of time constraints caused by these winds, we had to omit stations just southwest of St. George Island where we had hoped to

study possible interleaving. We also abandoned the east end of line SL and left a gap near the north end of the 70m transect.

Figure 7 displays wind fields from the Quikscat scatterometer for the time of the cruise. The highest winds, greater than 40 knots for ~ 30 hours, arrived when we had just started down the 70m isobath. Figures 8 and 9 present the sea-chest temperature and salinity from the cruise. If you look at the areas in Figure 8 where the 70m transect passes over transects we had also sampled earlier, you can see that surface temperatures after these winds were noticeable colder. However, this pattern is somewhat patchy, possibly because of variable wind speed over the area, or because of earlier hydrographic structure. There were no exact repeats of stations before and after high winds, but we present (Figure 10) two temperature comparisons from stations close to each other (respectively, transects MN and PN compared to 70m stations) that were occupied near the start of the cruise, and near its end.

Aknowledgements: We would like to thank the officers and crewmembers of the R/V Thompson for their help in carrying out the goals of this cruise. We would especially like to acknowledge the help of two Coast Guard Marine Technicians, Chuck Bartlett and Thomas Kruger, for their hours of hard work and companionship.

Table 1:

Event Log TN 211 Sept-Oct 2007						
GMT Month,day,hour	Latitude	Longitude	Depth m	FOCI #	Stn	Event
25-Sep						High winds, departure delayed 24 hr
Sep 26 1636	55 15.07	169 45.23	2290	1-1		ARGO float 3399
Sep 26 2026	55 30.08	170 30.06	3155	2-1		ARGO float 2896
Sep 27 0214	56 01.99	171 20.50	2854	3-1	WOCE	CTD 1
Sep 27 0613	56 17.10	171 02.94	138	4-1	PN1	CTD 2
Sep 27 0645	56 17.00	171 02.13	138	4-2	PN1	Bon001
Sep 27 0907	56 30.60	170 45.58	124	5-1	PN2	CTD 3
Sep 27 1142	56 43.81	170 32.38	112	6-1	PN3	CTD 4
Sep 27 1215	56 43.52	170 31.49	113	6-2	PN3	Bon002
Sep 27 1457	56 58.23	170 16.86	76	7-1	PN4	CTD 5
Sep 27 1819	57 19.33	169 55.10	59	8-1	PN5	CTD 6
Sep 27 1839	57 19.06	169 54.32	59	8-2	PN5	Bon003
Sep 27 2039	57 28.67	169 44.37	71	9-1	PN6	CTD 7
Sep 28 0312	57 37.91	169 33.58	74	10-1	PN7	CTD 8
Sep 28 0331	57 37.76	169 33.57	73	10-2	PN7	Bon004
Sep 28 0514	57 47.19	169 22.62	68	11-1	PN8	CTD 9
Sep 28 0705	57 56.49	169 11.71	69	12-1	PN9	CTD 10
Sep 28 0722	57 56.39	169 11.57	68	12-2	PN9	Bon005
Sep 28 0910	58 05.77	169 00.92	72	13-1	PN10	CTD 11
Sep 28 1104	58 15.05	168 50.05	69	14-1	PN11	CTD 12
Sep 28 1125	58 14.99	168 50.52	69	14-2	PN11	Bon006
Sep 28 1312	58 24.36	168 39.17	65	15-1	PN12	CTD 13
Sep 28 1445	58 33.66	168 28.18	59	16-1	PN13	CTD 14
Sep 28 1509	58 33.86	168 28.75	59	16-2	PN13	Bon007
Sep 28 1648	58 42.83	168 17.16	50	17-1	PN14	CTD 15
Sep 28 1835	58 52.23	168 06.41	45	18-1	PN15	CTD 16
Sep 28 1852	58 52.39	168 06.67	45	18-2	PN15	Bon008
Sep 28 2045	59 01.39	167 55.68	43	19-1	PN16	CTD 17
Sep 28 2200						Winds, 6-hour loss,skip PN17-20
Sep 29 1359	59 53.97	168 00.07	30	20-1	MN22	CTD 18
Sep 29 1413	59 53.97	168 00.43	30	20-2	MN22	Bon009
Sep 29 1628	59 54.03	168 32.18	40	21-1	MN21	CTD 19
Sep 29 1643	59 53.94	168 32.36	40	21-2	MN21	Bon010
Sep 29 1910	59 54.00	169 04.32	45	22-1	MN20	CTD 20
Sep 29 2133	59 53.98	169 36.63	51	23-1	MN19	CTD 21
Sep 29 2147	59 53.75	169 36.43	50	23-2	MN19	Bon011

Sep 30 0015	59 54.02	170 08.84	60	24-1	MN18	CTD 22
Sep 30 0223	59 54.01	170 41.05	68	25-1	MN17	CTD 23
Sep 30 0237	59 53.97	170 40.92	67	25-2	MN17	Bon012
Sep 30 0503	59 53.99	171 14.98	74	26-1	MN16	CTD 24
Sep 30 0519	59 53.88	171 15.10	73	26-2	MN16	Bon013
Sep 30 0750	59 42.05	171 24.96	72	27-1	M5-S	CTD 25
Sep 30 0814	59 41.91	171 30.27	75	27-2	M5-S	Bon014
Sep 30 1018	59 54.39	171 42.36	71	28-1	M5	CTD 26
Sep 30 1035	59 54.39	171 42.36	71	28-2	M5	Cal001
Sep 30 1053	59 54.39	171 42.36	71	28-3	M5	Cal002
Sep 30 1109	59 54.39	171 42.36	71	28-4	M5	Cal003
Sep 30 1130	59 54.01	171 43.02	71	28-5	M5	Bon015
Sep 30 1344	60 04.44	172 00.11	64	29-1	M5-N	CTD 27
Sep 30 1442	60 05.07	172 00.68	64	29-3	M5-N	Bon017
Sep 30 1649	59 54.04	172 10.92	75	30-1	M5-W	CTD 28
Sep 30 1706	59 53.88	172 10.85	75	30-2	M5-W	Bon018
Sep 30 1954	59 54.00	172 49.91	76	31-1	MN13	CTD 29
Sep 30 2010	59 53.84	172 49.89	76	31-2	MN13	Bon019
Sep 30 2235	59 53.97	173 22.17	86	32-1	MN12	CTD 30
Oct 01 0049	59 53.99	173 54.39	102	33-1	MN11	CTD 31
Oct 01 0110	59 53.77	173 54.82	101	33-2	MN11	BOn020
Oct 01 0310	59 53.99	174 26.68	111	34-1	MN10	CTD 32
Oct 01 0527	59 54.02	174 59.90	120	35-1	MN09	CTD 33
Oct 01 0547	59 54.12	174 59.18	118	35-2	MN09	Bon021
Oct 01 0823	59 54.00	175 31.09	126	36-1	MN08	CTD 34
Oct 01 1056	59 53.92	176 03.29	137	37-1	MN07	CTD 35
Oct 01 1127	59 53.96	176 04.53	137	37-2	MN07	Bon022
Oct 01 1358	59 54.00	176 35.53	142	38-1	MN06	CTD 36
Oct 01 1629	59 54.00	177 07.74	138	39-1	MN05	CTD 37
Oct 01 1657	59 53.79	177 08.17	137	39-2	MN05	Bon023
Oct 01 1935	59 54.00	177 39.97	140	40-1	MN04	CTD 38
Oct 01 2204	59 54.00	178 12.15	146	41-1	MN03	CTD 39
Oct 01 2223	59 53.96	178 12.50	145	41-2	MN03	Bon024
Oct 02 0049	59 53.98	178 44.34	148	42-1	MN02	CTD 40
Oct 02 0331	59 54.02	17916.55	2057	43-1	MN01	CTD 41 (to 250m)
Oct 02 0409	59 53.79	179 16.88	1949	43-2	MN01	Bon025 (to 300)
Oct 02 1906	62 12.05	175 58.46	93	44-1	SL01	CTD 42
Oct 02 1925	62 12.00	175 58.94	92	44-2	SL01	Bon026
Oct 02 2115	62 12.05	175 33.88	87	45-1	SL02	CTD 43
Oct 02 2241	62 12.00	175 12.04	81	46-1	SL03M8W	CTD 44
Oct 02 2256	62 12.01	175 12.24	81	46-2	SL03M8W	Bon027

Oct 03 0215	62 25.30	174 42.00	74	47-1	M8N	CTD 45
Oct 03 0229	62 25.28	174 42.30	73	47-2	M8N	Bon028
Oct 03 0528	62 11.99	174 44.88	76	48-1	M8SL4	CTD 46
Oct 03 0545	62 11.97	174 45.02	75	48-2	M8SL4	CalVet004
Oct 03 0609	62 11.94	174 45.02	75	48-3	M8SL4	CalVet005
Oct 03 0630	62 11.99	174 45.02	75	48-4	M8SL4	CalVet006
Oct 03 0652	62 11.94	174 45.35	75	48-5	M8SL4	Bon029
Oct 03 0903	61 58.51	174 37.01	77	49-1	M8S	CTD 47
Oct 03 0922	61 58.56	174 37.45	77	49-2	M8S	Bon030
Oct 03 1133	62 12.00	174 18.03	70	50-1	SL05M8E	CTD 48
Oct 03 1149	62 11.93	174 18.48	70	50-2	SL05M8E	Bon031
Oct 03 1326	62 11.99	173 55.87	65	51-1	SL6	CTD 49
Oct 03 1502	62 11.98	173 31.48	62	52-1	SL7	CTD 50
Oct 03 1516	62 12.06	173 31.82	62	52-2	SL7	Bon032
Oct 03 1702	62 11.96	173 07.09	60	53-1	SL8	CTD 51
Oct 03 1840	62 12.02	172 42.51	57	54-1	SL9	CTD 52
Oct 03 1855	62 12.05	172 42.99	56	54-2	SL9	Bon033 (bad)
Oct 03 1919	62 12.13	172 43.00	57	54-3	SL9	Bon034 (redo)
Oct 03 2057	62 12.01	172 18.03	56	55-1	SL10	CTD 53
Oct 03 2136	62 11.9	172 20.18	55	55-2	SL10	Bon035
Oct 04 0307	61 56.53	174 21.80	75	56-1	70m03	CTD 54
Oct 04 0320	61 56.57	174 21.54	75	56-2	70m03	Bon036
Oct 04 0436	61 51.74	174 06.85	74	57-1	70m04	CTD 55
Oct 04 0611	61 43.63	173 51.35	74	58-1	70m05	CTD 56
Oct 04 0627	61 43.65	173 51.27	73	58-2	70m05	Bon037
Oct 04 0648	61 43.85	173 51.40	73	58-3	70m05	Bon038 (redo)
Oct 04 0840	61 33.65	173 42.74	75	59-1	70m06	CTD 57
Oct04-Oct 05						Winds, 30 hour loss
Oct 05 2253	60 44.34	173 38.83	73	60-1	70m11	CTD 58
Oct 05 2307	60 44.40	173 39.12	72	60-2	70m11	Bon039
Oct 06 0110	60 34.33	173 38.23	69	61-1	70m12	CTD 59
Oct 06 0236	60 25.49	173 35.59	66	62-1	70m13	CTD 60
Oct 06 0253	60 25.45	173 35.84	66	62-2	70m13	Bon040
Oct 06 0433	60 15.11	173 31.28	71	63-1	70m14	CTD 61
Oct 06 0606	60 06.03	173 19.00	73	64-1	70M15	CTD 62
Oct 06 0621	60 05.92	173 19.26	72	64-2	70m14	Bon041
Oct 06 0757	60 02.22	173 00.38	69	65-1	70m16	CTD 63
Oct 06 0913	59 58.68	172 44.79	70	66-1	70m17	CTD 64
Oct 06 0929	59 58.55	172 44.38	70	66-2	70m17	Bon042
Oct 06 1057	59 54.66	172 20.10	75	67-1	70m18	CTD 65
Oct 06 1231	59 50.74	172 05.63	77	68-1	70m19	CTD 66

Oct 06 1246	59 50.71	172 05.90	76	68-2	70m19	Bon043
Oct 06 1406	59 50.40	171 50.18	75	69-1	70m20	CTD 67
Oct 06 1545	59 46.63	171 26.89	74	70-1	70m21	CTD 68
Oct 06 1602	59 46.56	171 27.40	74	70-2	70m21	Bon044
Oct 06 1748	59 42.91	171 08.39	73	71-1	70m22	CTD 69
Oct 06 1914	59 35.71	170 55.69	72	72-1	70m23	CTD 70
Oct 06 1933	59 35.47	170 55.87	72	72-2	70m23	Bon045
Oct 06 2105	59 26.13	170 54.34	72	73-1	70m24	CTD 71
Oct 06 2233	59 20.12	170 39.35	71	74-1	70m25	CTD 72
Oct 06 2249	59 20.24	170 39.02	70	74-2	70m25	Bon046
Oct 07 0020	59 14.90	170 24.78	69	75-1	70m26	CTD 73
Oct 07 0150	59 06.45	170 14.85	69	76-1	70m27	CTD 74
Oct 07 0204	59 06.53	170 14.45	68	76-2	70m27	Bon047
Oct 07 0342	58 56.87	170 19.60	72	77-1	70m28	CTD 75
Oct 07 0512	58 46.43	170 17.58	72	78-1	70m29	CTD 76
Oct 07 0527	58 46.53	170 17.71	72	78-2	70m29	Bon048
Oct 07 0702	58 37.0	170 16.52	73	79-1	70m30	CTD 77
Oct 07 0839	58 26.74	170 11.20	73	80-1	70m31	CTD 78
Oct 07 0855	58 26.97	170 11.69	73	80-2	70m31	Bon049
Oct 07 1037	58 17.00	170 05.72	73	81-1	70m32	CTD 79
Oct 07 1207	58 08.83	169 55.08	72	82-1	70m33	CTD 80
Oct 07 1223	58 08.98	169 55.31	72	82-2	70m33	Bon050
Oct 07 1407	58 02.53	169 40.30	71	83-1	70m34	CTD 81
Oct 07 1555	57 55.61	169 19.33	67	84-1	70m35M4W	CTD 82
Oct 07 1612	57 55.64	169 19.62	67	84-2	70m35M4W	Bon051
Oct 07 1818	57 51.47	168 52.68	72	85-1	M4	CTD 83
Oct 07 1843	57 51.45	168 52.73	72	85-2	M4	CalVet007 (fail)
Oct 07 1857	57 51.41	168 52.81	72	85-3	M4	CalVet008
Oct 07 1913	57 51.37	168 52.94	72	85-4	M4	CalVet009
Oct 07 1924	57 51.44	168 52.81	72	85-5	M4	CalVet010
Oct 07 1938	57 51.32	168 54.25	72	85-6	M4	Bon053(fail)
Oct 07 2000	57 51.32	168 54.25	72	85-7	M4	Bon054
Oct 07 2200	58 04.01	168 43.87	71	86-1	M4N	CTD 84
Oct 07 2214	58 04.14	168 44.23	70	86-2	M4N	Bon054
Oct 08 0030	57 46.03	168 27.90	72	87-1	M4E	CTD 85
Oct 08 0042	57 46.14	168 28.15	71	87-2	M4E	Bon055
Oct 08 0253	57 39.19	169 01.16	70	88-1	M4S	CTD 86
Oct 08 0306	57 39.19	169 01.36	70	88-2	M4S	Bon056
Oct 08 0445	57 54.28	169 03.75	70	89-1	70m36	CTD 87
Oct 08 0540	57 50.94	168 56.00	72	90-1	70m37	CTD 88
Oct 08 0557	57 50.76	168 56.14	71	90-2	70m37	Bon057

Oct 08 0652	57 47.34	168 51.05	72	91-1	70m38	CTD 89
Oct 08 0818	57 37.72	168 49.56	71	92-1	70m39	CTD 90
Oct 08 0834	57 37.61	168 50.01	71	92-2	70m39	Bon058
Oct 08 1010	57 31.44	168 36.84	72	93-1	70m40	CTD 91
Oct 08 1139	57 30.16	168 18.25	72	94-1	70m41	CTD 92
Oct 08 1154	57 30.10	168 18.57	72	94-2	70m41	Bon059
Oct 08 1409	57 30.07	167 39.88	72	95-1	70m43	CTD 93
Oct 08 1422	57 30.02	167 40.15	72	95-2	70m43	Bon060
Oct 08 1627	57 31.28	167 02.20	71	96-1	70m45	CTD 94
Oct 08 1641	57 33.11	167 02.37	71	96-2	70m45	Bon061
Oct 08 1838	57 20.19	166 30.65	70	97-1	70m47	CTD 95
Oct 08 1854	57 25.98	166 30.62	69	97-2	70m47	Bon062
Oct 08 2050	57 19.25	166 00.70	69	98-1	70m49	CTD 96
Oct 08 2107	57 19.07	166 01.08	69	98-2	70m49	Bon063
Oct 08 2310	57 06.44	165 36.81	71	99-1	70m51	CTD 97
Oct 08 2323	57 06.27	165 37.03	71	99-2	70m51	Bon064
Oct 09 0141	56 51.55	165 07.28	75	100-1	70m53	CTD 98
Oct 09 0154	56 51.43	165 07.23	74	100-2	70m53	Bon065
Oct 09 0321	56 54.54	164 49.54	73	101-1	70m54	CTD 99
Oct 09 0435	56 51.20	164 34.36	74	102-1	70m55	CTD 100
Oct 09 0451	56 51.27	164 34.01	73	102-2	70m55	Bon066
Oct 09 0615	56 46.01	164 19.98	75	103-1	70m56M2W	CTD 101
Oct 09 0631	56 46.10	164 19.81	75	103-2	70m56M2W	Bon067
Oct 09 0842	57 00.75	164 12.78	70	104-1	M2N	CTD 102
Oct 09 0855	57 00.79	164 12.54	69	104-2	M2N	Bon068
Oct 09 1033	56 51.5	164 2.10	73	105-1	M2	CTD 103
Oct 09 1046	56 51.51	164 2.10	73	105-2	M2	CalVet011
Oct 09 1059	56 51.50	164 2.10	73	105-3	M2	CalVet012
Oct 09 1113	56 51.50	164 2.10	73	105-4	M2	CalVet013
Oct 09 1127	56 51.54	164 1.74	73	105-5	M2	Bon069
Oct 09 1228	56 47.27	163 57.60	74	106-1	70m58	CTD 104
Oct 09 1242	56 47.42	163 57.43	74	106-2	70m58	Bon070
Oct 09 1407	56 40.02	163 52.06	77	107-1	M2-S	CTD 105
Oct 09 1424	56 40.16	163 51.73	76	107-2	M2-S	Bon071
Oct 09 1621	56 56.54	163 49.96	76	108-1	M2-E	CTD 106
Oct 09 1636	56 56.63	163 49.71	71	108-2	M2-E	Bon072
Oct 09 2117	57 38.23	163 16.54	47	109-1	SEB15	CTD 107
Oct 09 2129	57 38,26	163 16.36	47	109-2	SEB15	Bon073
Oct 09 2312	57 22.99	163 31.68	53	110-1	SEB14	CTD 108
Oct 10 0104	57 7.84	163 47.87	67	111-1	SEB13	CTD 109
Oct 10 0122	57 7.89	163 47.62	66	111-2	SEB13	Bon074

Oct 10 0559	56 33.82	164 54.26	79	112-1	SEB10	CTD 110
Oct 10 0801	56 25.30	165 18.17	85	113-1	SEB09	CTD 111
Oct 10 0817	56 25.39	165 17.87	85	113-2	SEB09	Bon075
Oct 10 1007	56 16.69	165 42.03	93	114-1	SEB08	CTD 112
Oct 10 1146	56 08.22	166 06.20	110	115-1	SEB07	CTD 113
Oct 10 1205	56 08.25	166 05.72	110	115-2	SEB07	Bon076
Oct 10 1407	55 59.23	166 30.62	128	116-1	SEB06	CTD 114
Oct 10 1605	55 51.02	166 54.43	135	117-1	SEB05	CTD 115
Oct 10 1625	55 51.00	166 53.91	135	117-2	SEB05	Bon077
Oct 10 1828	55 41.99	167 18.26	137	118-1	SEB04	CTD 116
Oct 10 2025	55 33.36	167 42.06	138	119-1	SEB03	CTD 117
Oct 10 2047	55 38.19	167 41.75	137	119-2	SEB03	Bon078
Oct 10 2243	55 25.96	168 03.65	203	120-1	SEB02	CTD 118
Oct 10 2335	55 22.33	168 10.63	514	121-1	SEB01	CTD 119
Oct 11 0024	55 22.04	168 10.27	529	121-2	SEB01	Bon079

Figure 1 Cruise Map:

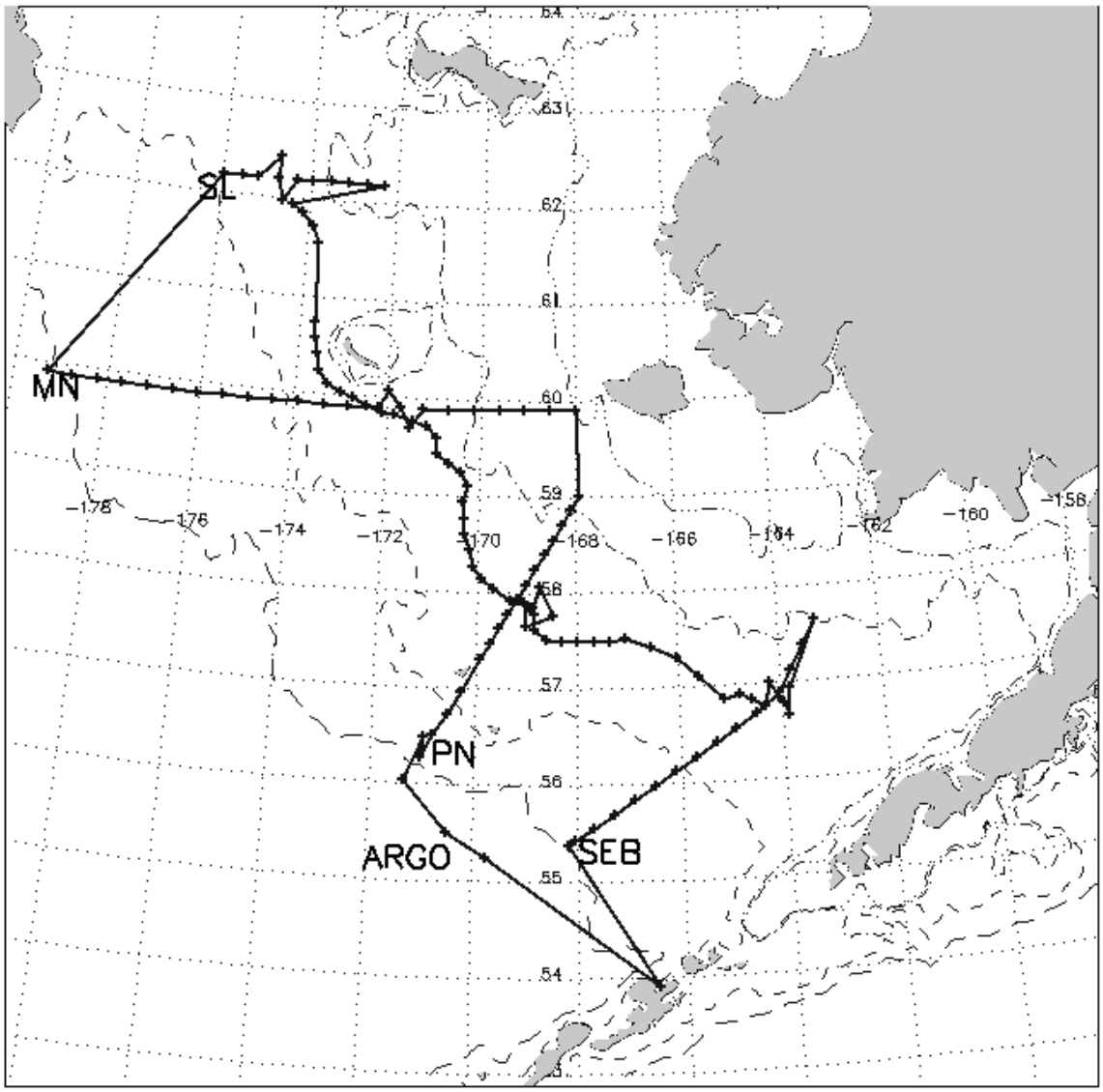
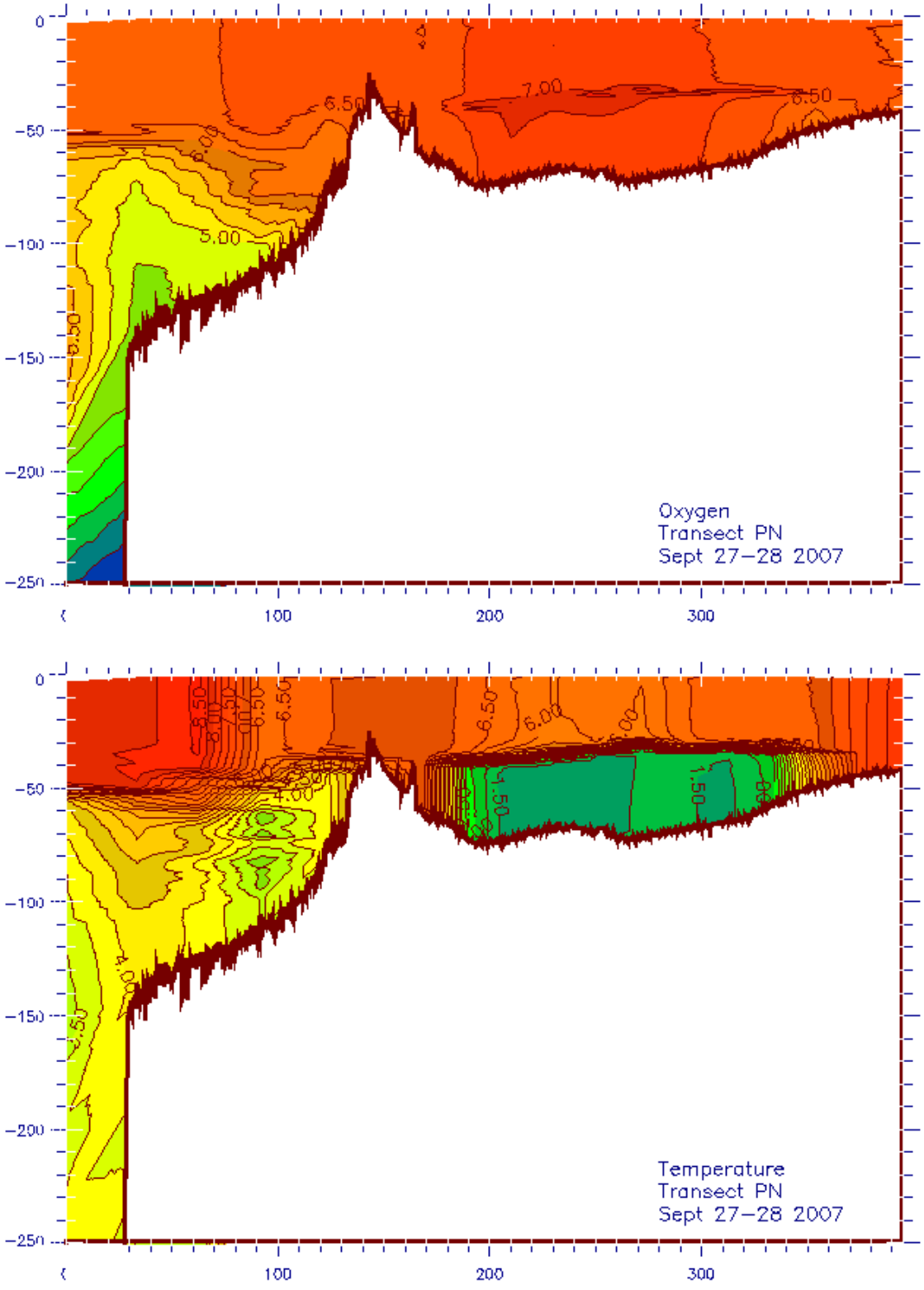


Figure 2: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200
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7.00
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Oxygen
Transect PN
Sept 27–28 2007
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-100
-150
-200
-250
100
200
300
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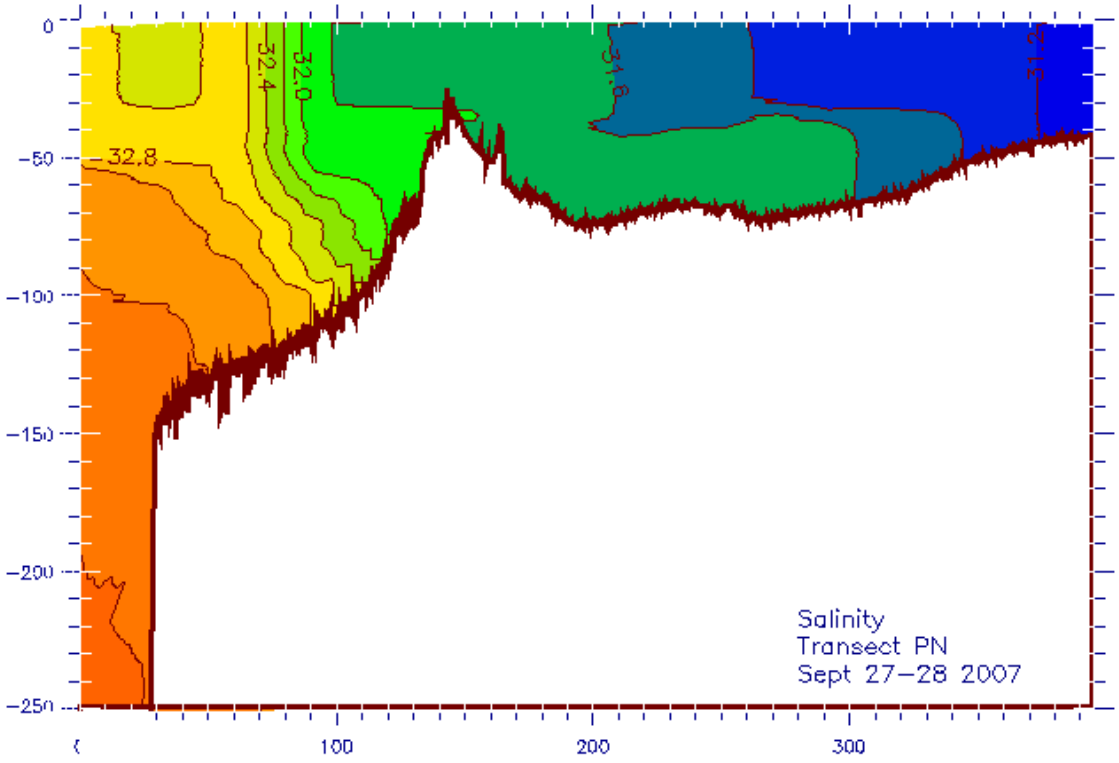
Temperature
Transect PN
Sept 27–28 2007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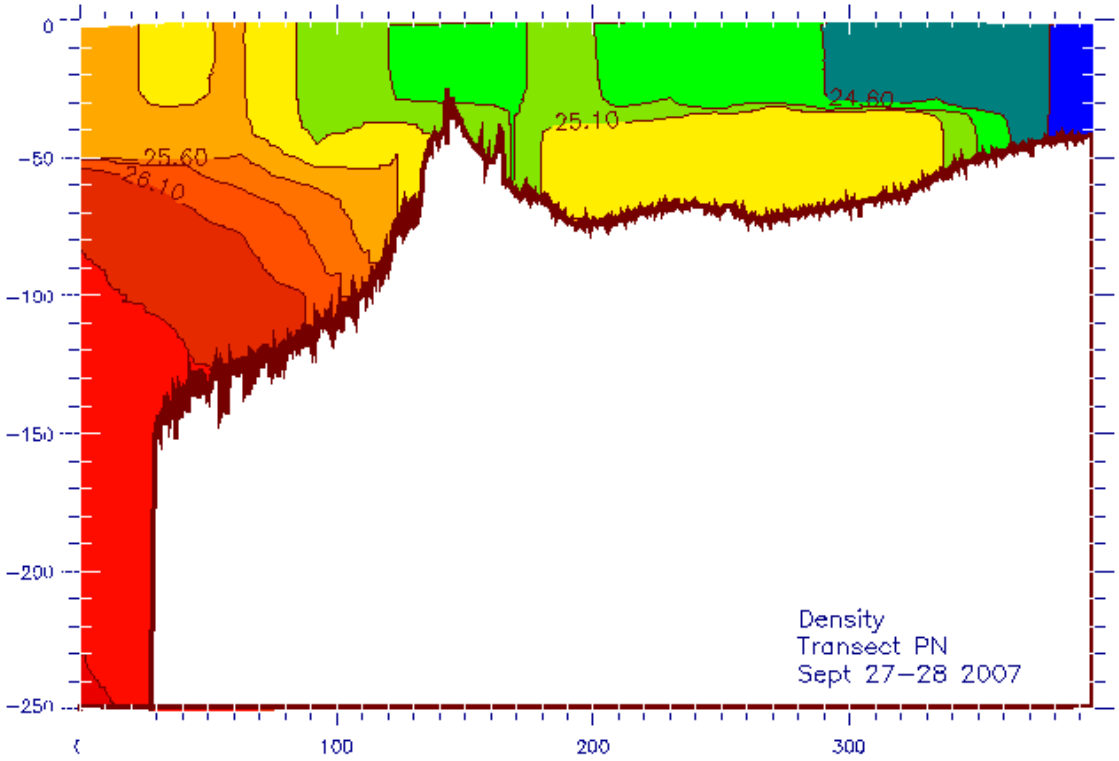
-250
100
200
300
32.8
32.4
32.0
31.6
31.2
Salinity
Transect PN
Sept 27–28 2007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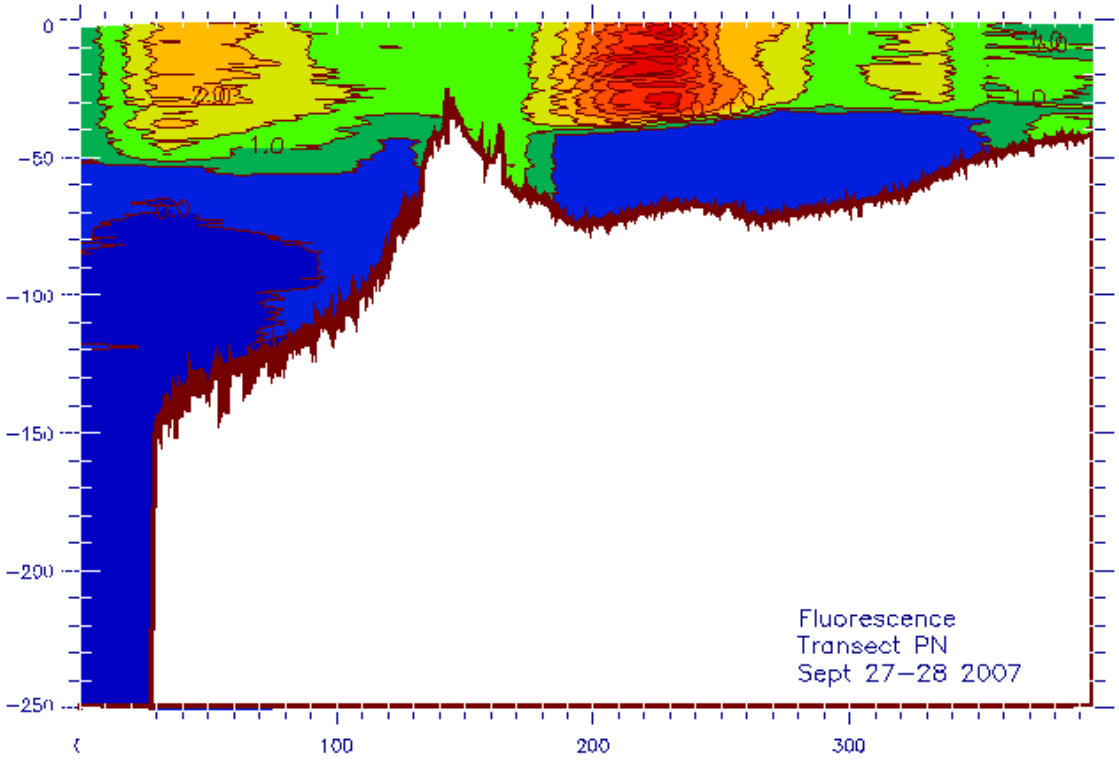
300
24.60
25.10
25.60
26.10
Density
Transect PN
Sept 27-28 2007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300
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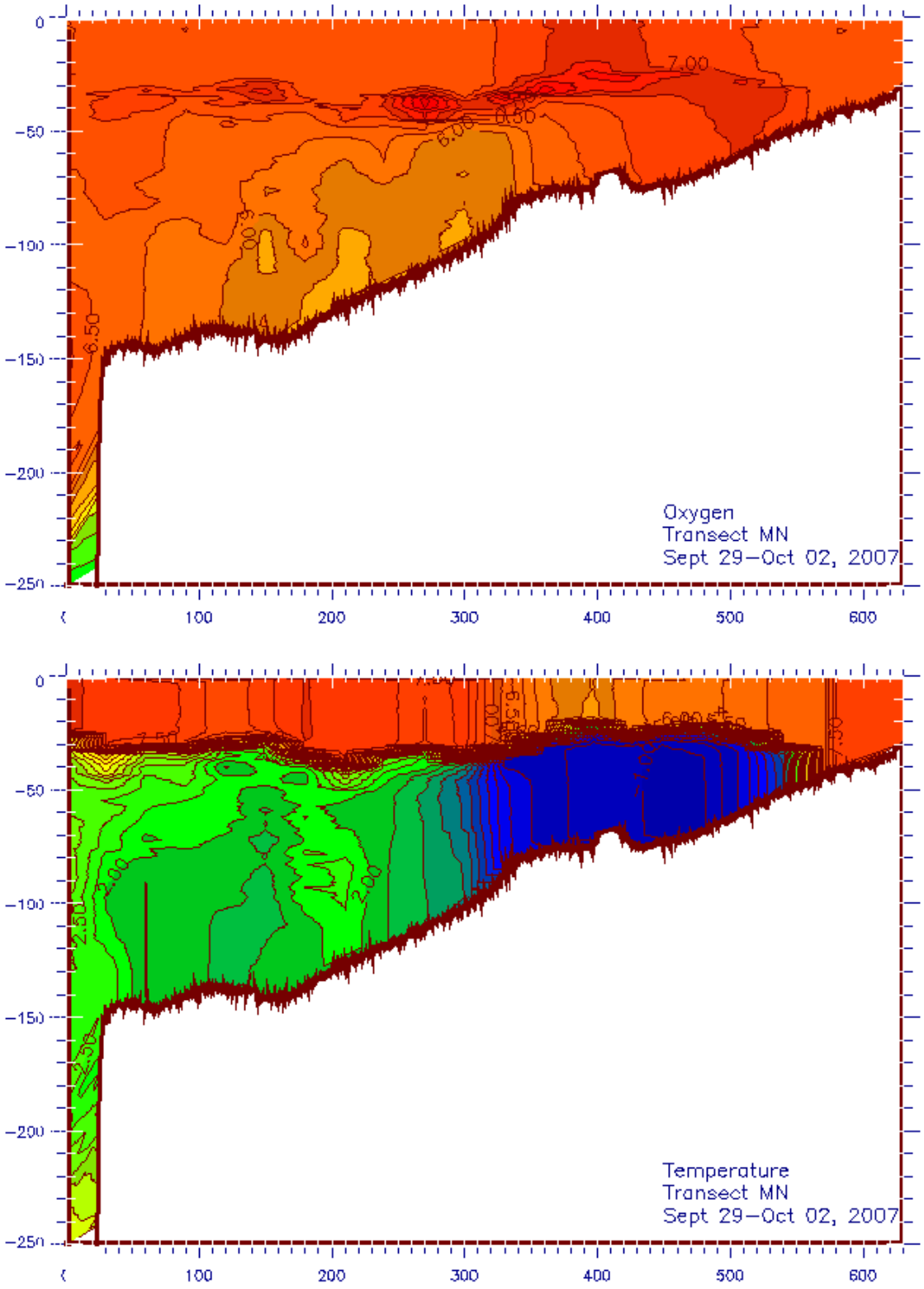
1.0
Fluorescence
Transect PN
Sept 27-28 2007

Figure 3: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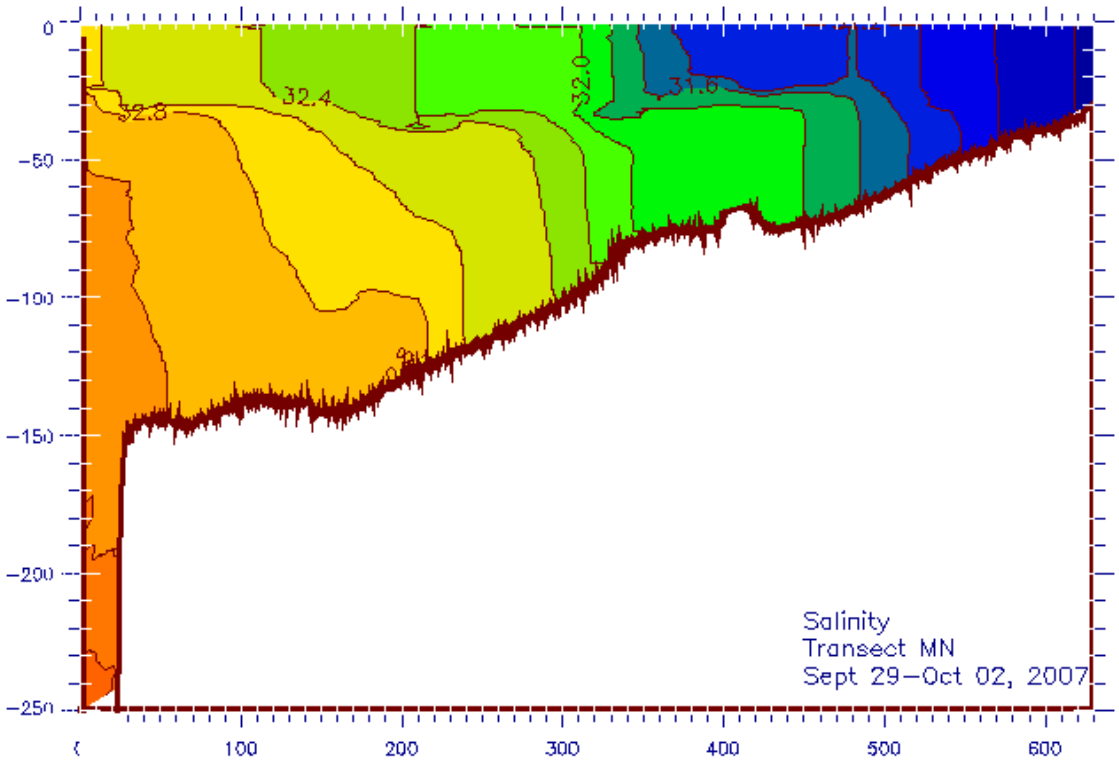
-200
-250
100
200
300
400
500
600
7.00
6.50
6.00
6.50
Oxygen
Transect MN
Sept 29–Oct 02, 2007
0
-50
-100
-150
-200
-250
100
200
300
400
500
600
6.50
7.00
7.50
2.00
2.50
2.00
2.50
Temperature
Transect MN
Sept 29–Oct 02, 2007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0
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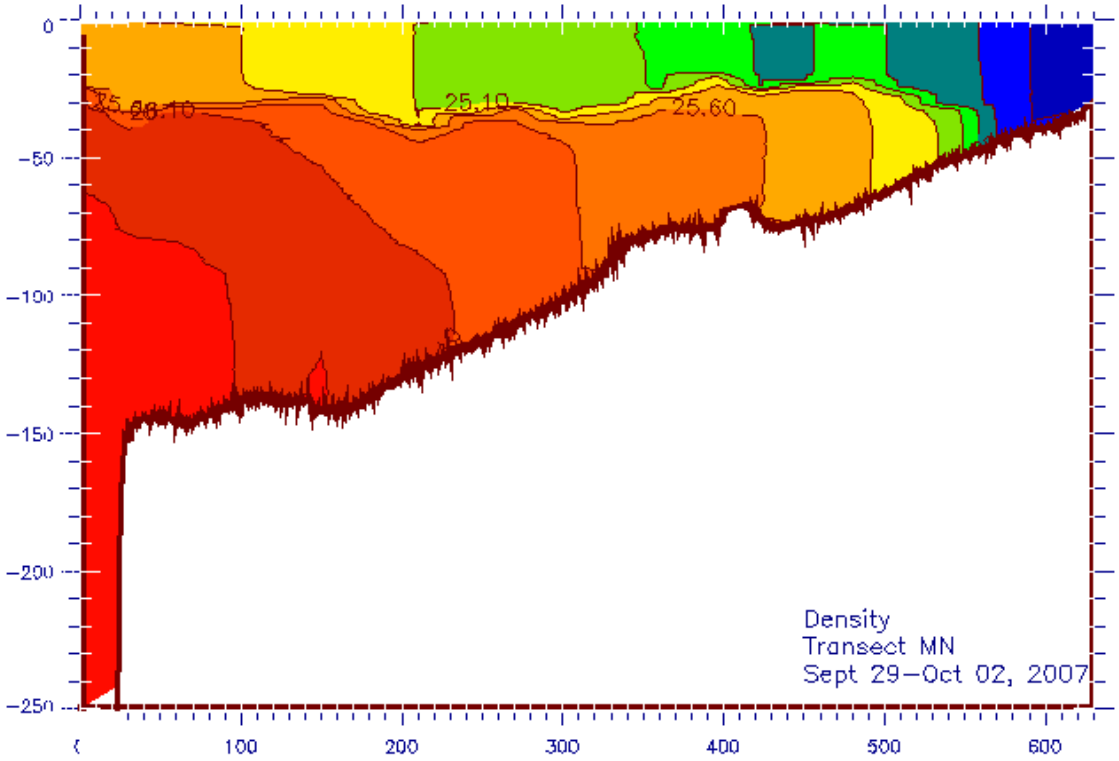
200
300
400
500
600
32.8
32.4
32.0
31.6
Salinity
Transect MN
Sept 29−Oct 02, 2007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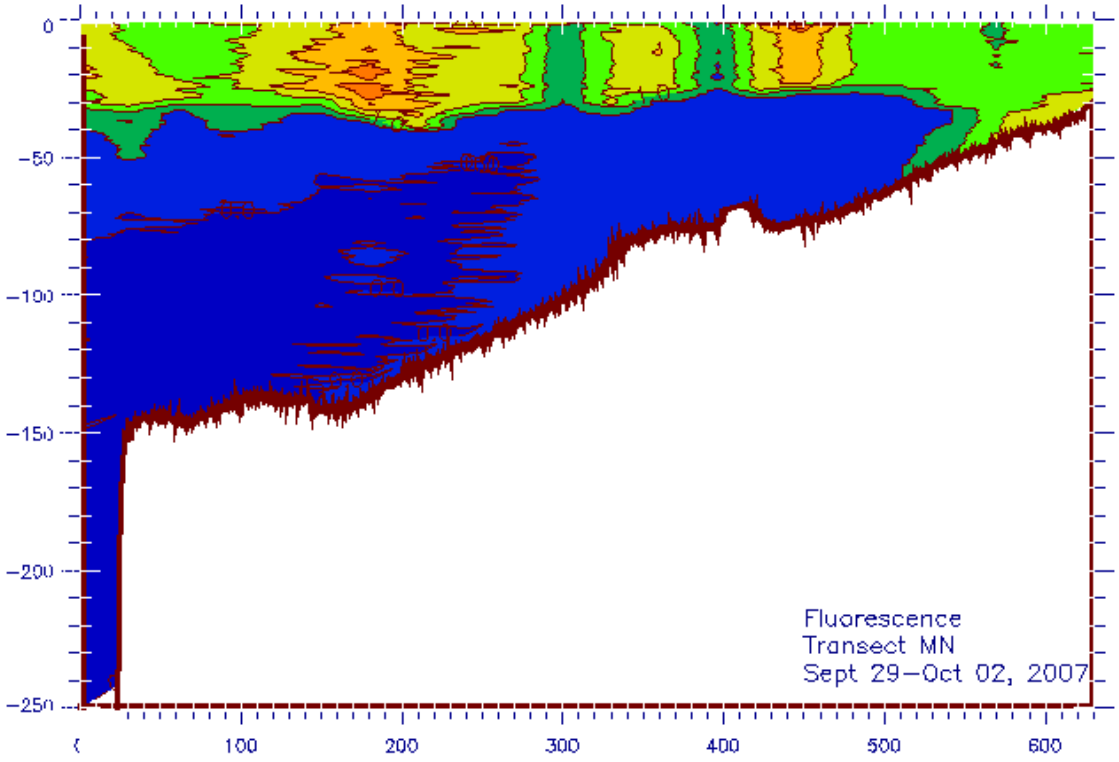
Density
Transect MN
Sept 29–Oct 02, 2007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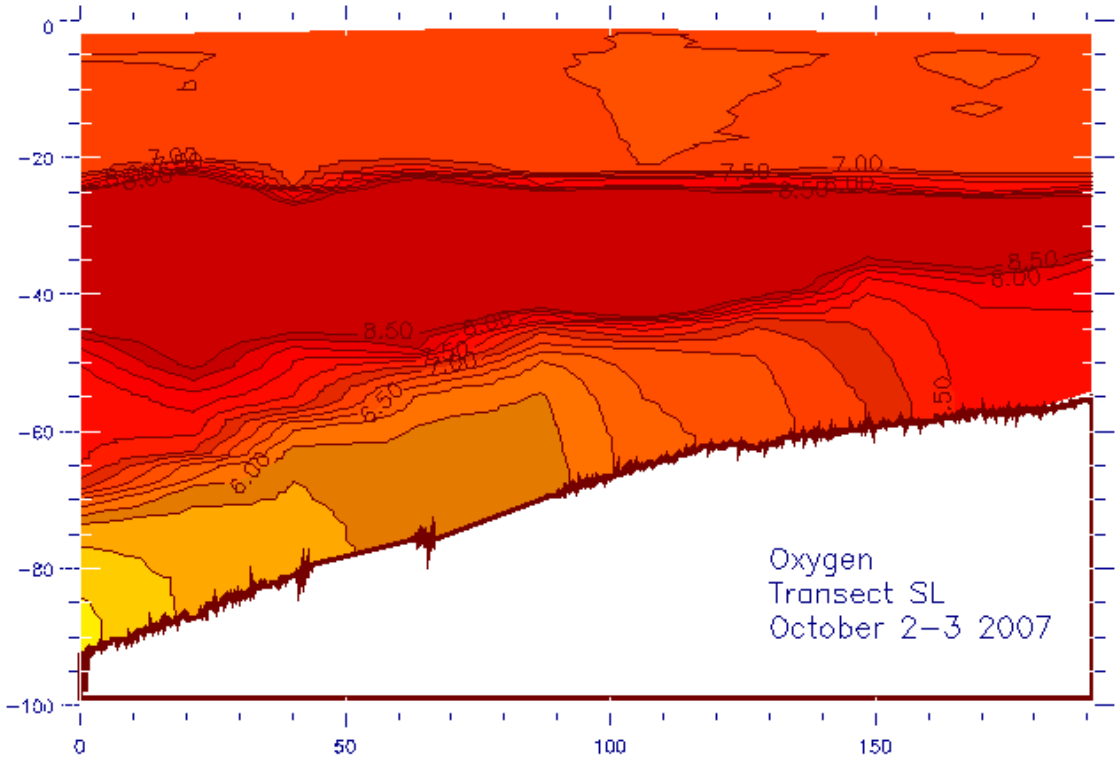
Fluorescence
Transect MN
Sept 29–Oct 02, 2007

Figure 4: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0
50
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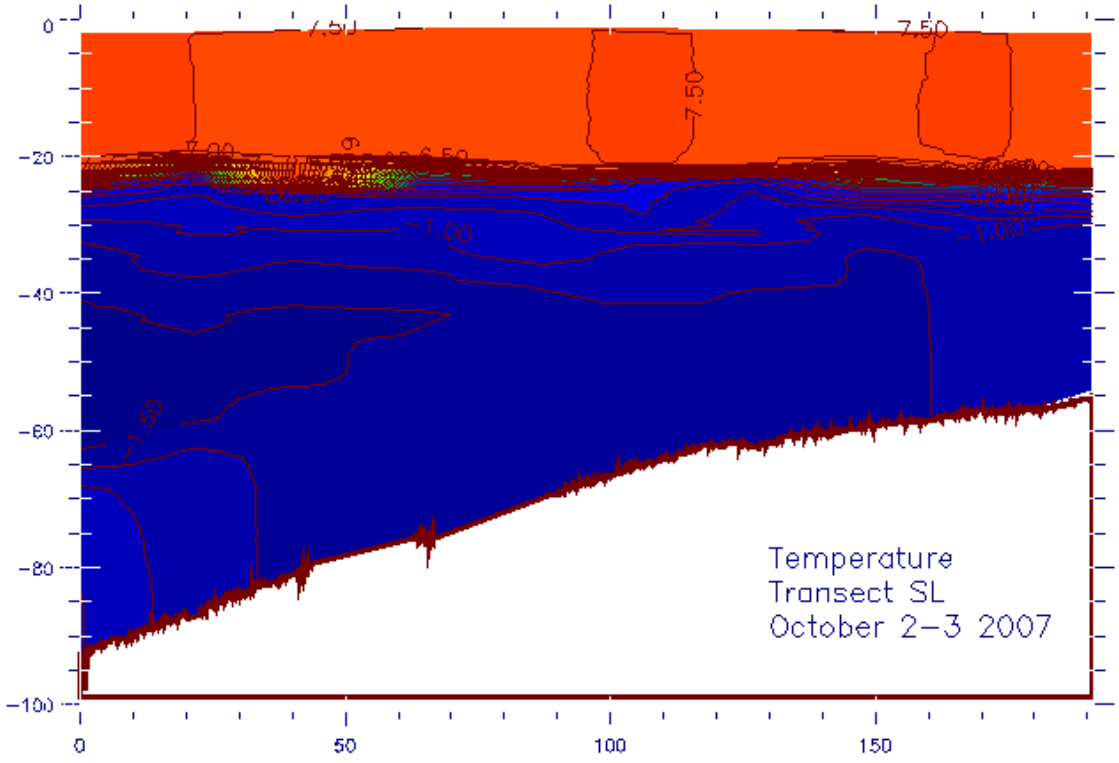
150
7.00
7.50
8.00
8.50
6.50
6.00
Oxygen
Transect SL
October 2-3 2007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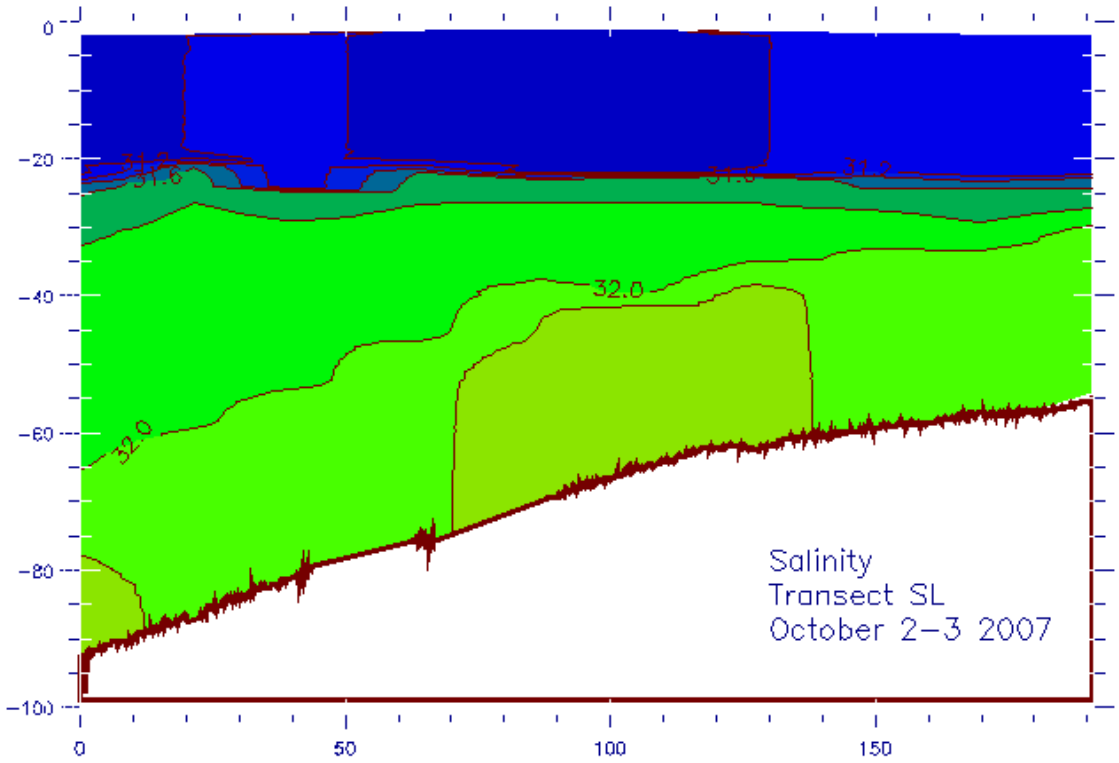
-100
0
50
100
150
7.50
7.00
1.00
Temperature
Transect SL
October 2-3 2007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100
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31.6
31.8
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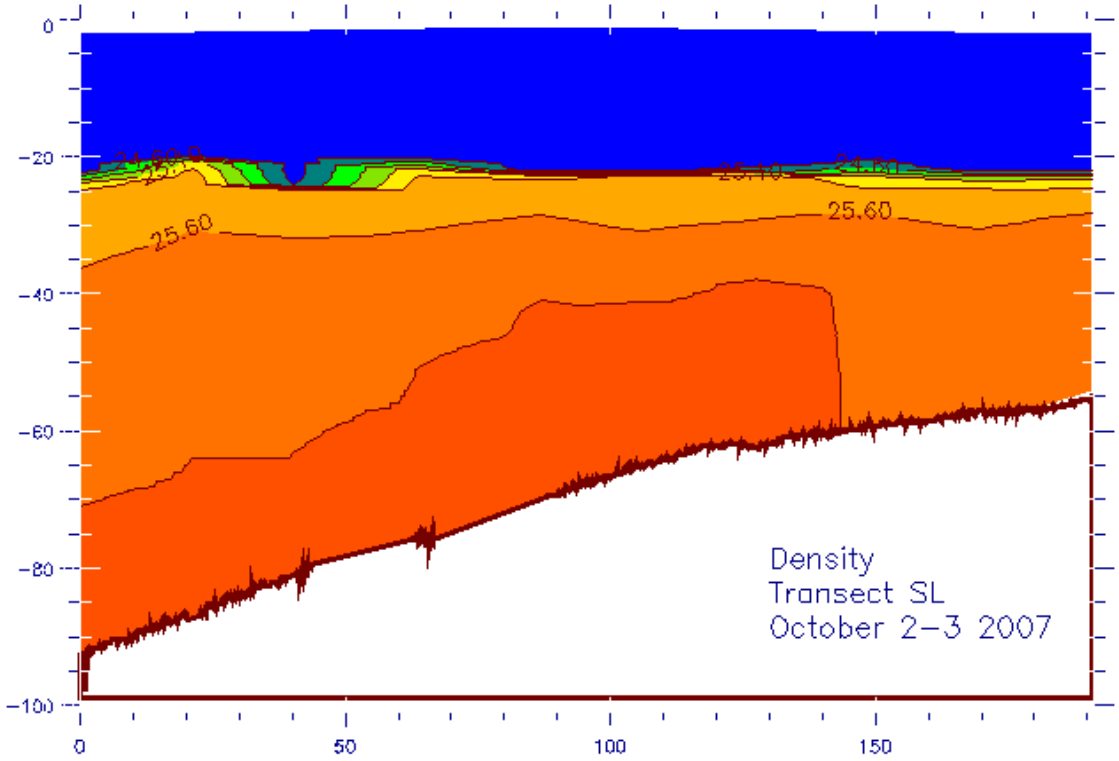
32.0
Salinity
Transect SL
October 2-3 2007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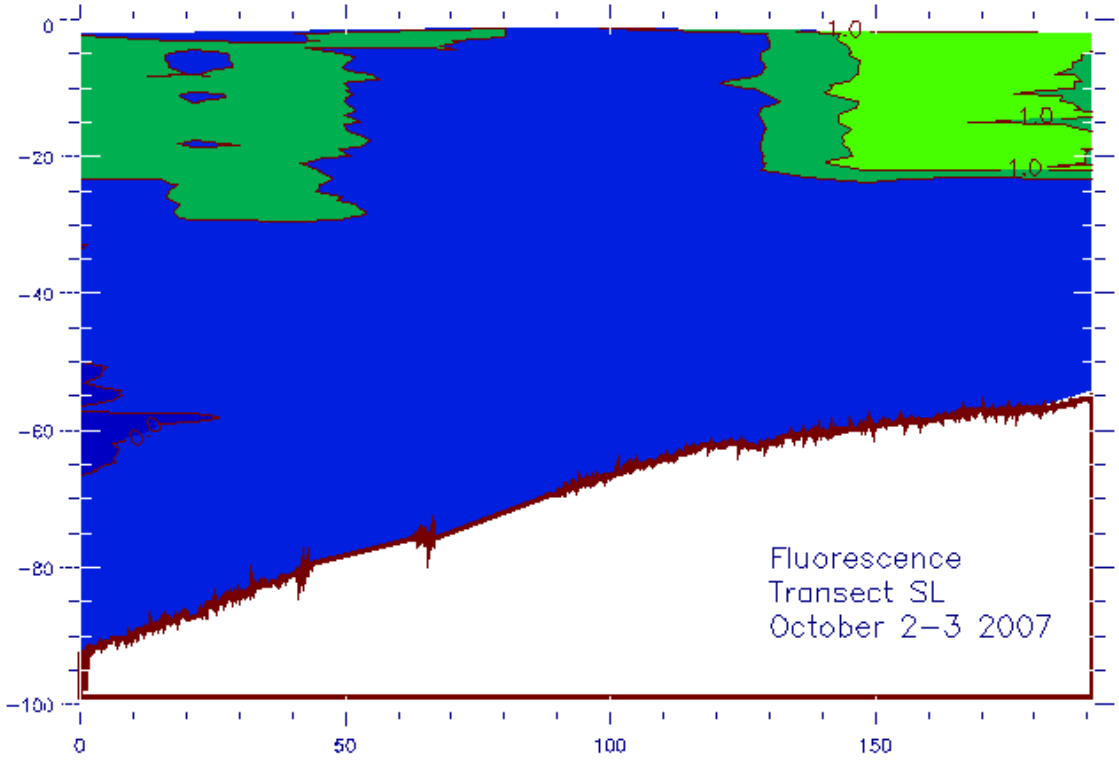
0
50
100
150
25.60
25.60
Density
Transect SL
October 2-3 2007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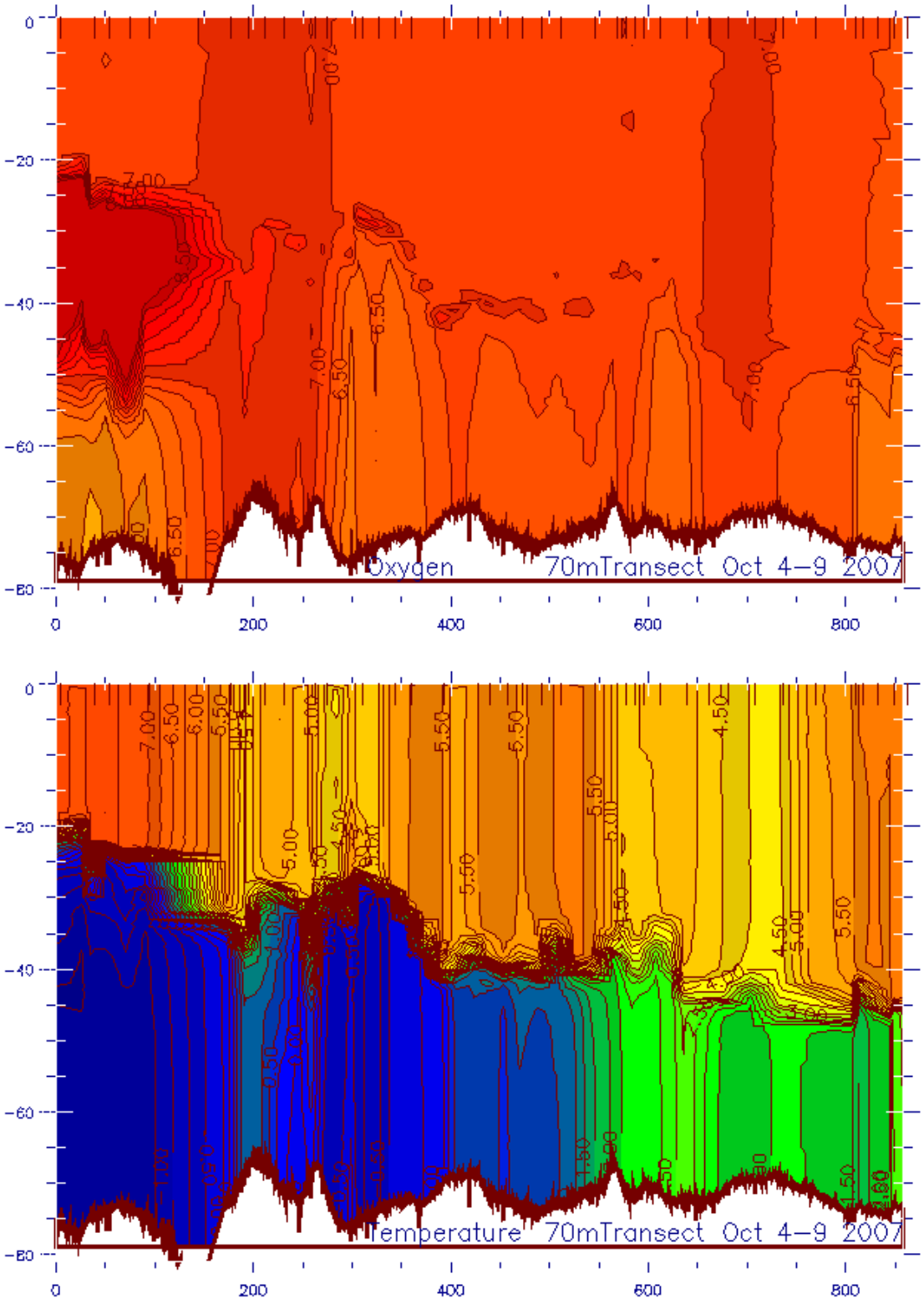
50
100
150
1.0
1.0
1.0
0.0
Fluorescence
Transect SL
October 2-3 2007

Figure 5:


Oxygen 70mTransect Oct 4–9 2007
Temperature 70mTransect Oct 4–9 2007
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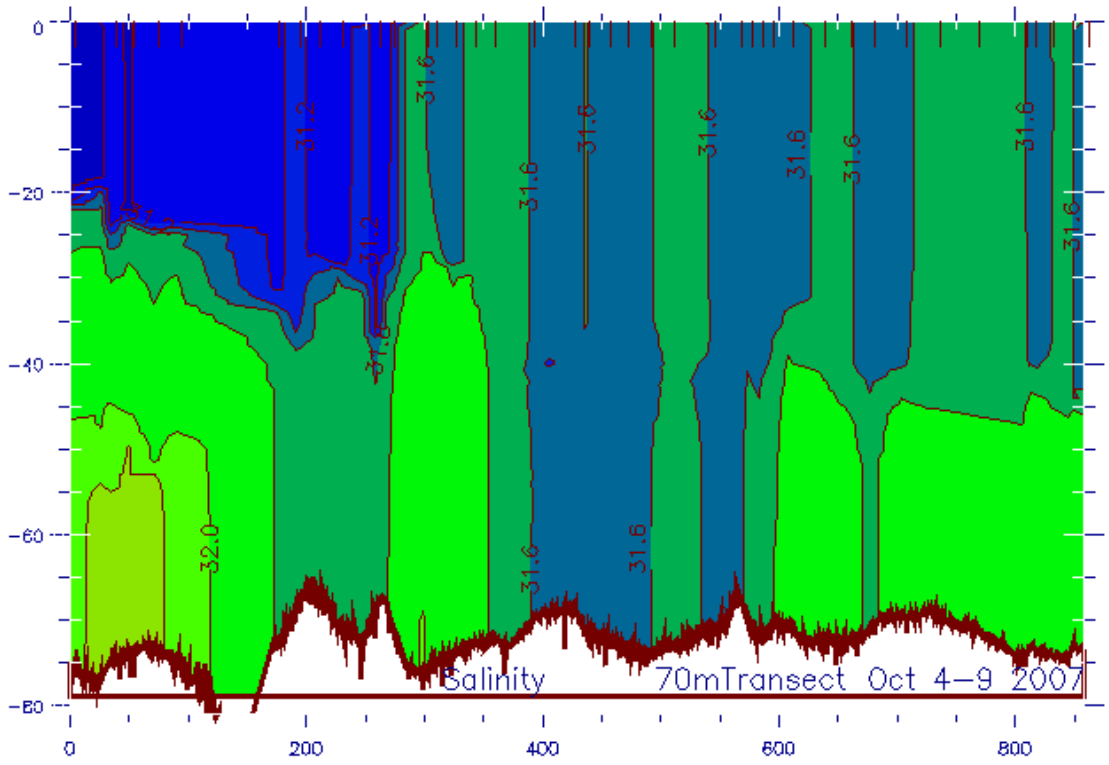
-40
-60
-80
0
200
400
600
800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-40
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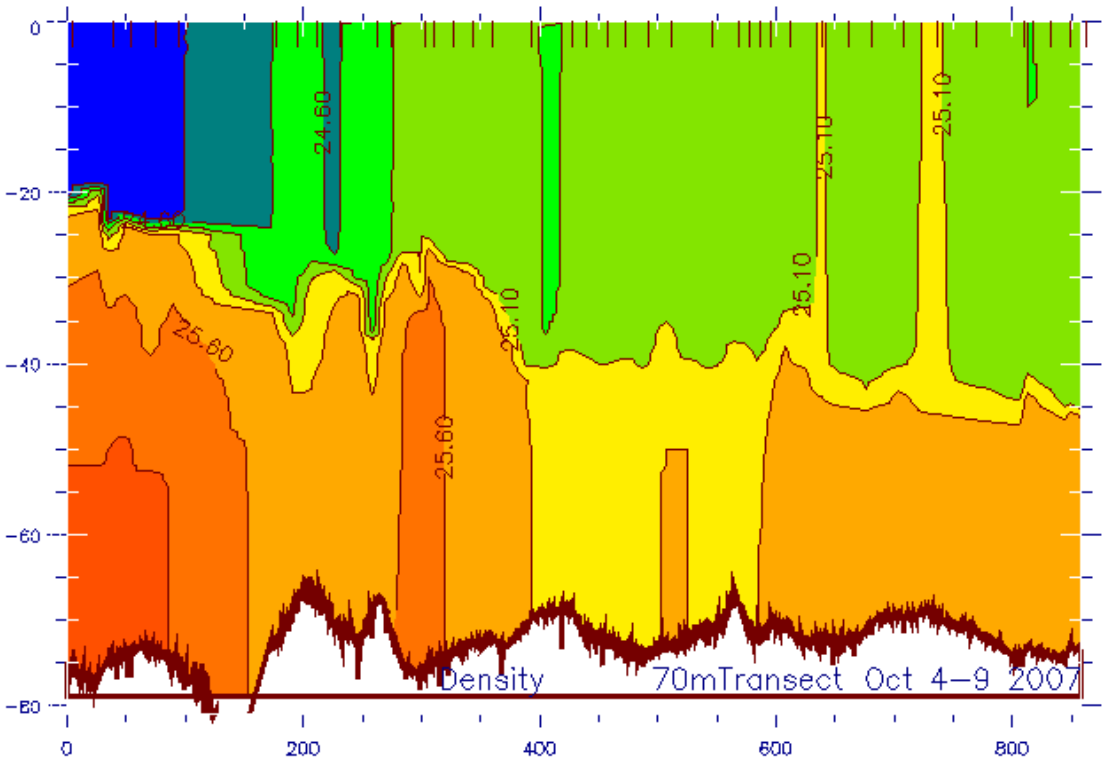
-80
0
200
400
600
800
31.2
31.6
32.0
Salinity
70mTransect Oct 4-9 2007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-60
-80
24.60
25.10
25.10
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25.10
25.60
Density 70mTransect Oct 4-9 2007
0
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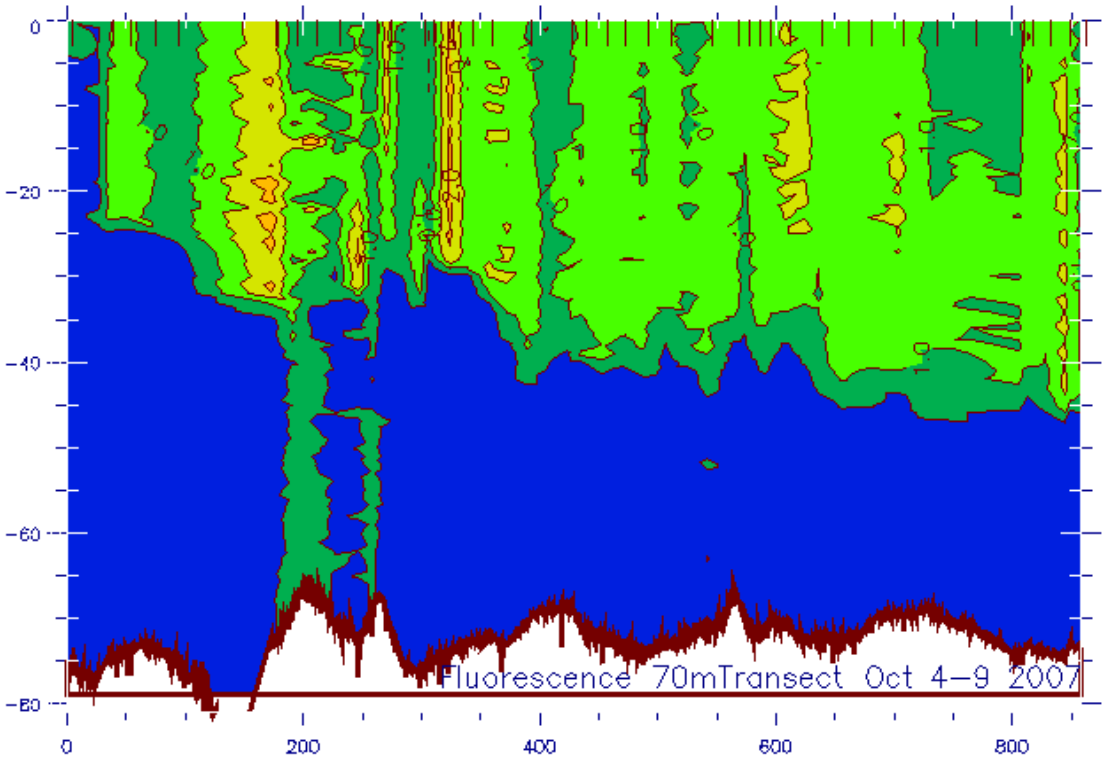
400
600
800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-80
Fluorescence 70mTransect Oct 4-9 2007
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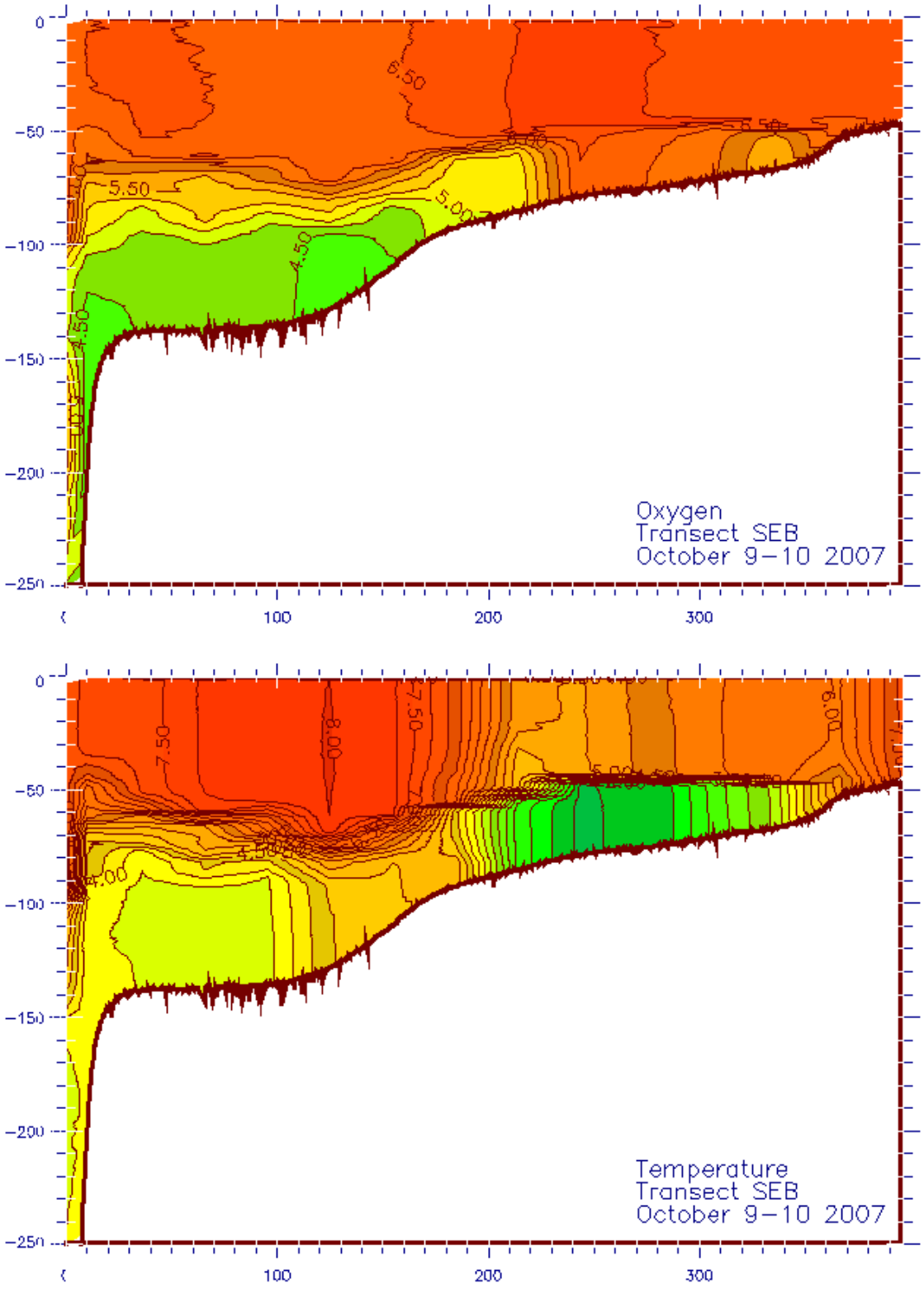
200
400
600
800

Figure 6: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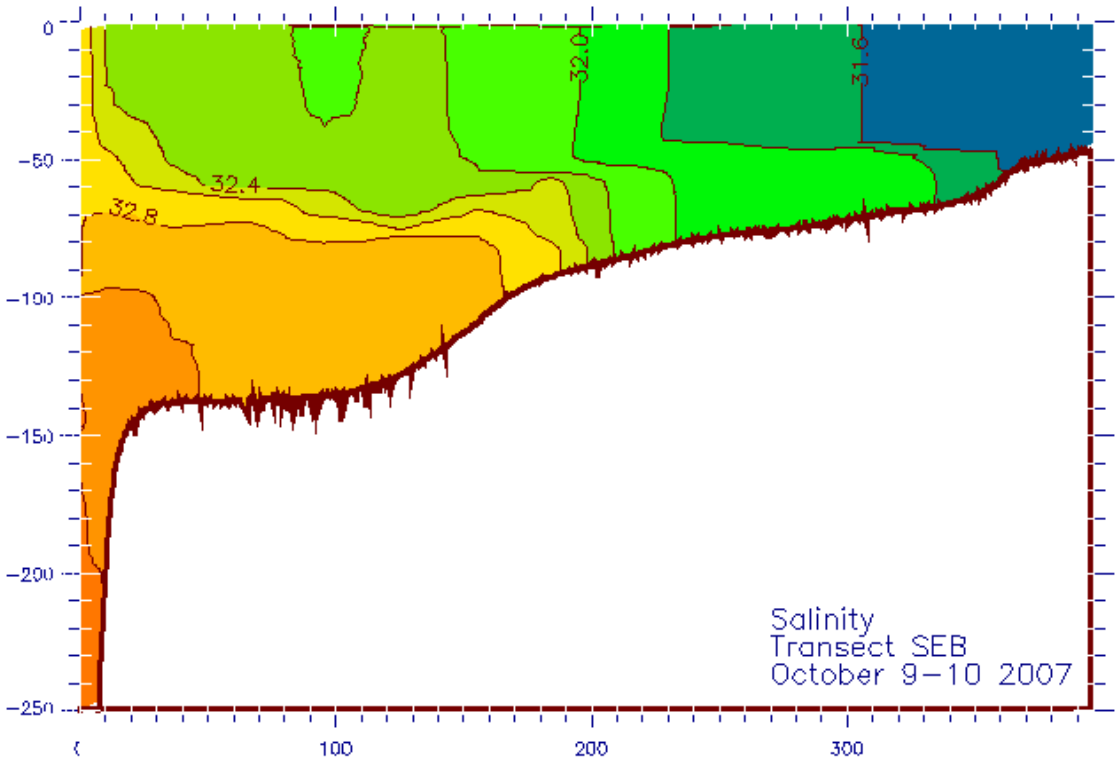
-100
-150
-200
-250
100
200
300
6.50
5.50
5.00
4.50
4.50
Oxygen
Transect SEB
October 9-10 2007
0
-50
-100
-150
-200
-250
100
200
300
7.50
8.00
7.50
8.00
4.00
Temperature
Transect SEB
October 9-10 2007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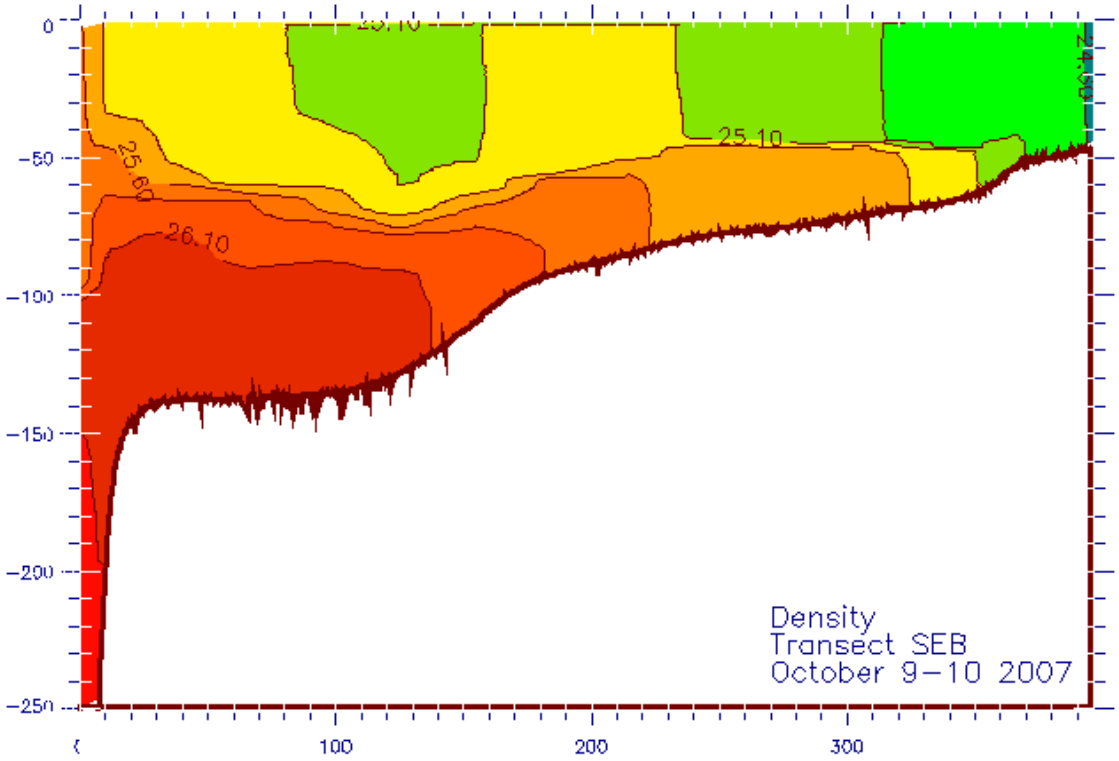
200
300
32.0
31.6
32.4
32.8
Salinity
Transect SEB
October 9-10 2007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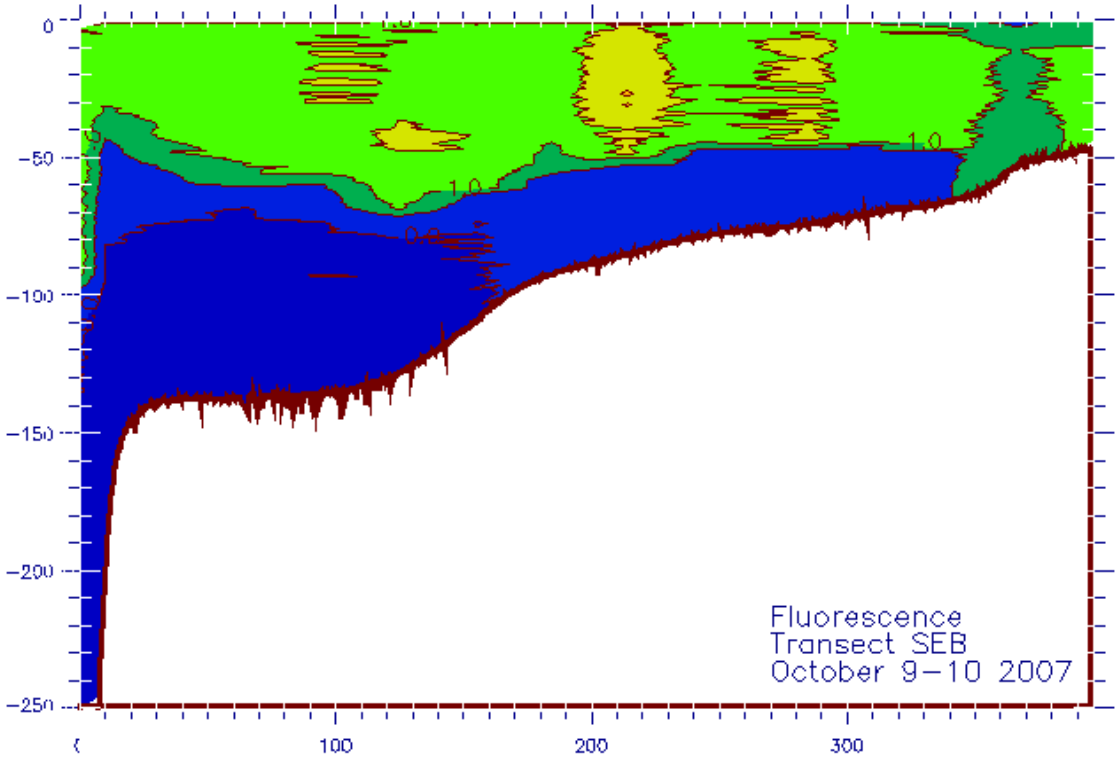
25.60
25.10
26.10
Density
Transect SEB
October 9-10 2007


0
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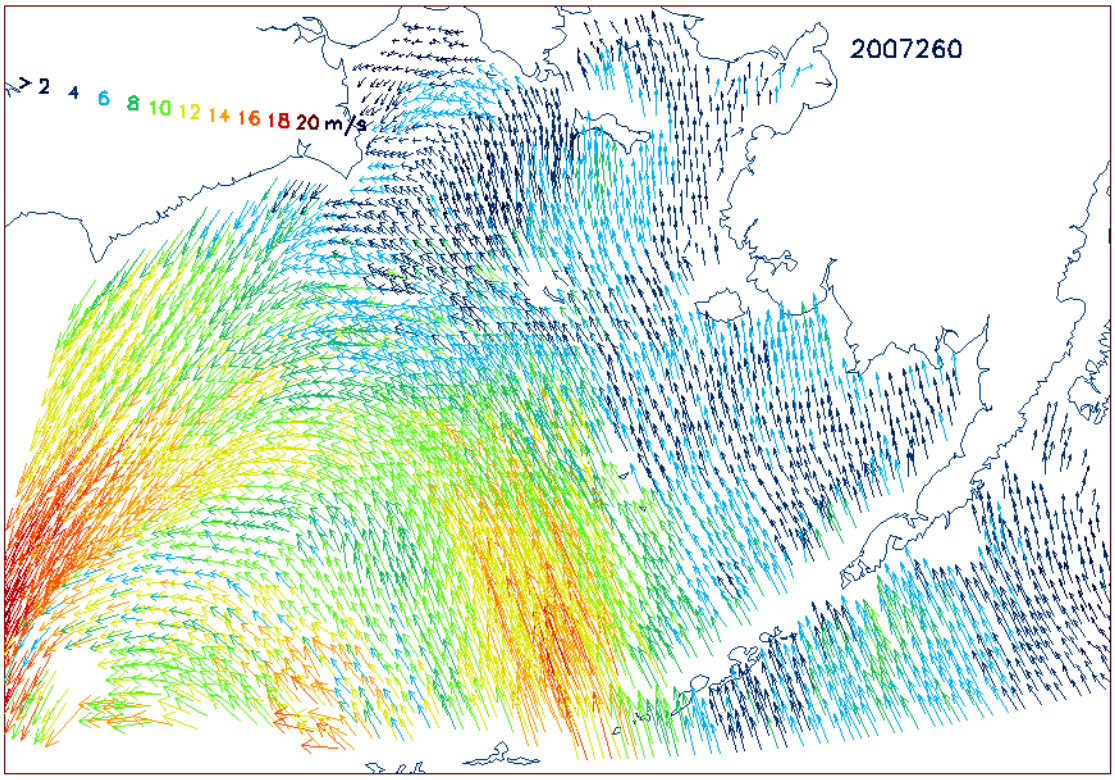
100
200
300
1.0
1.0
Fluorescence
Transect SEB
October 9-10 2007

Figure 7: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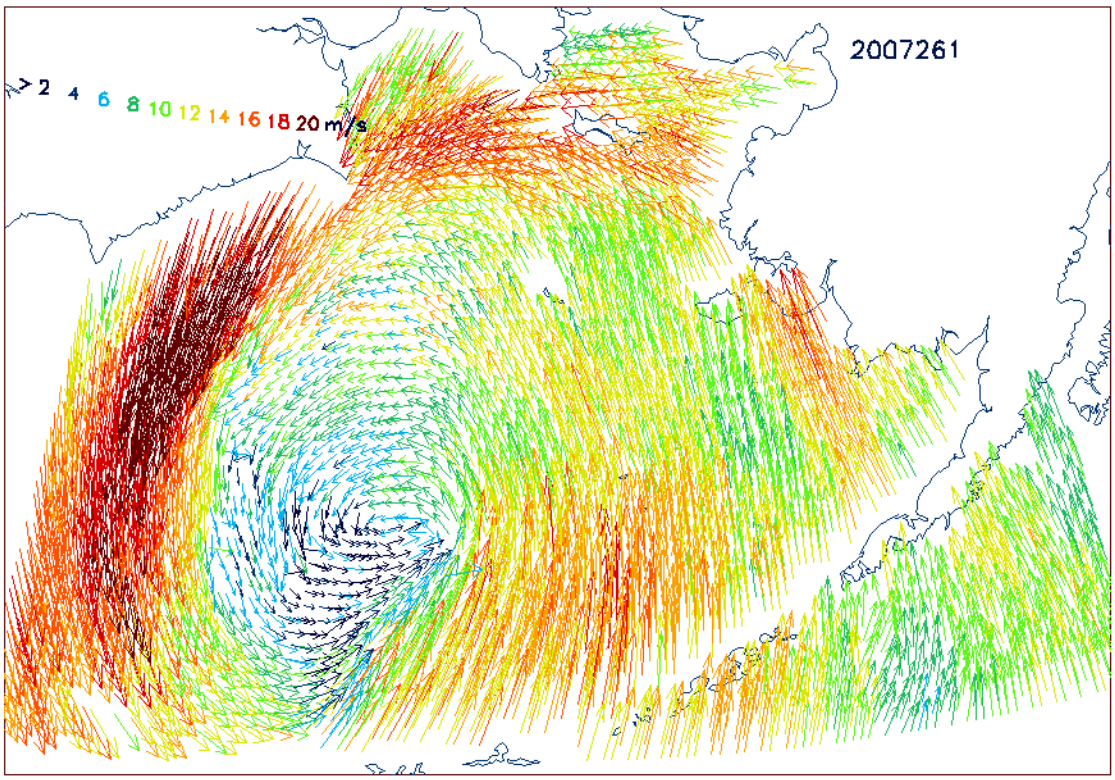
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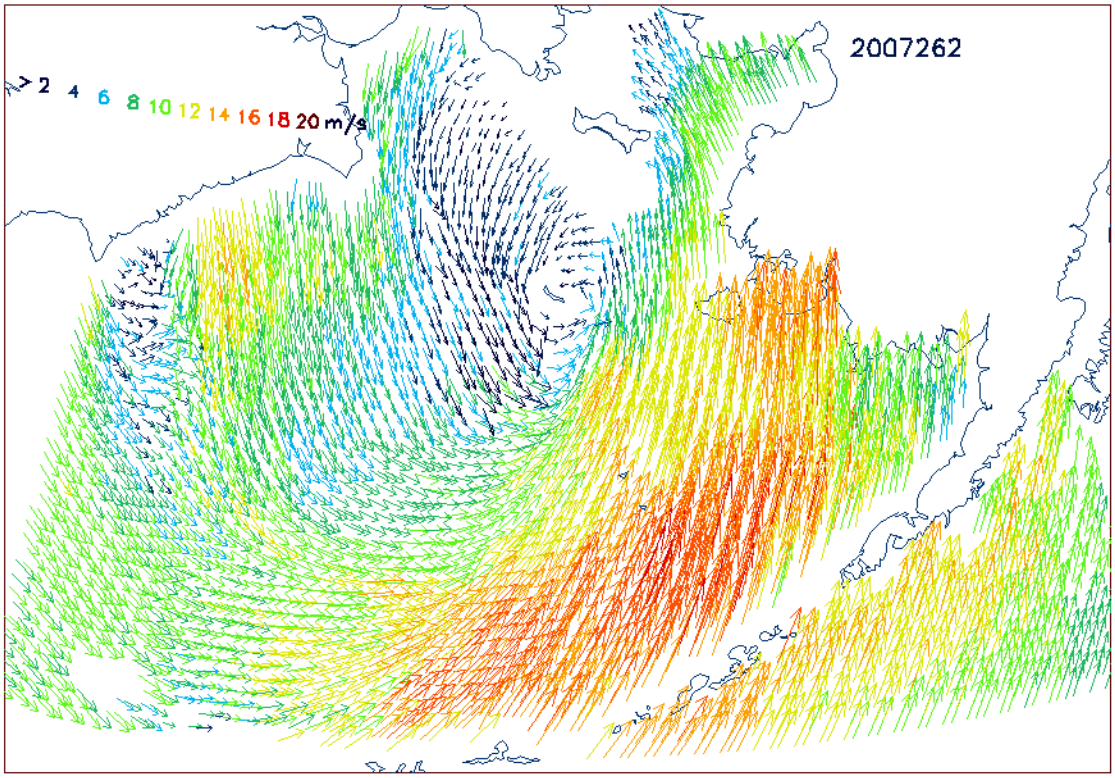
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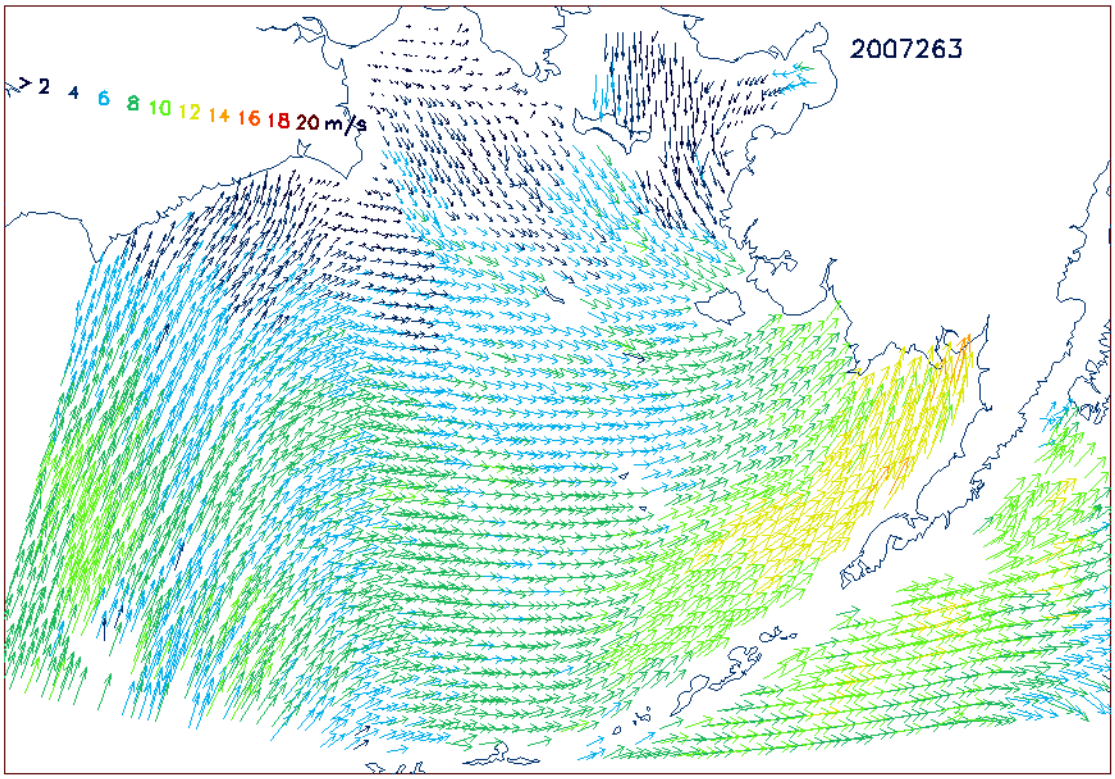
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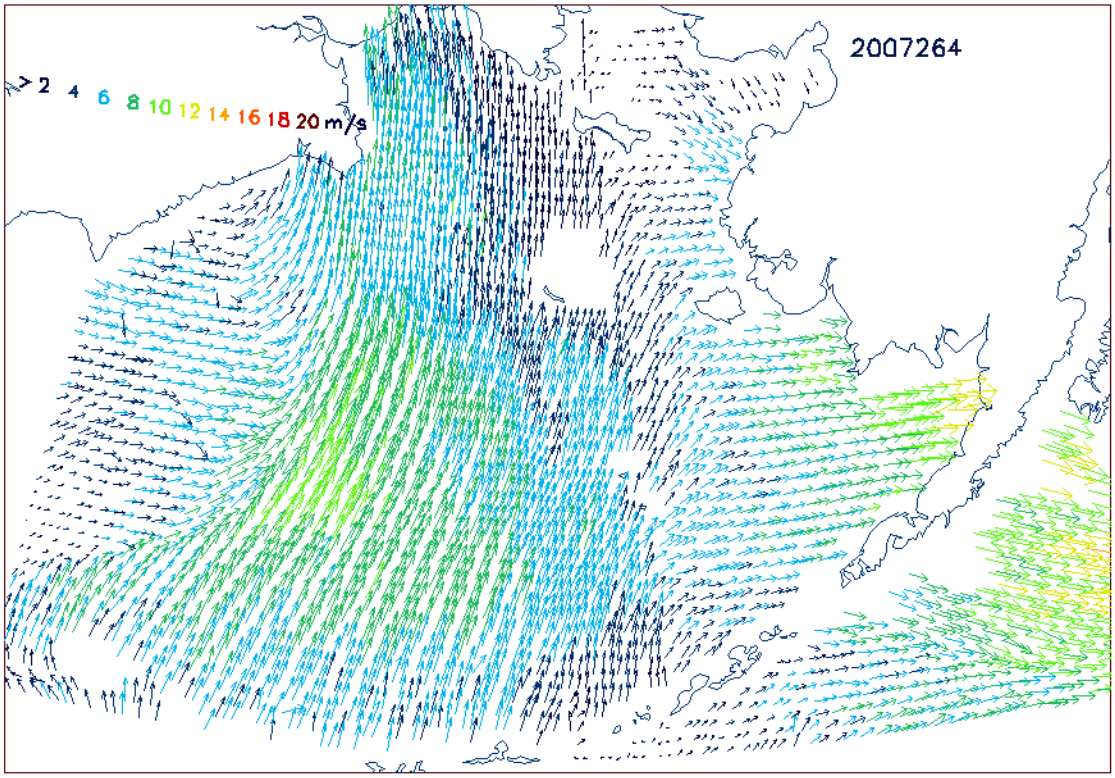
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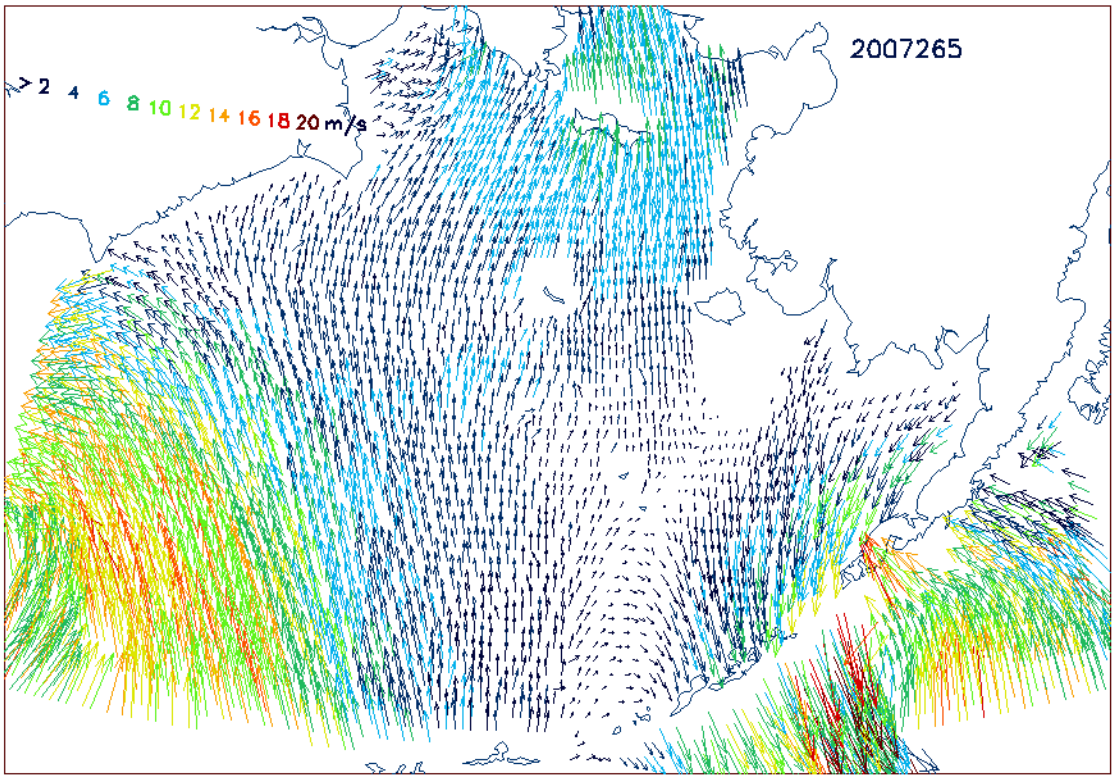
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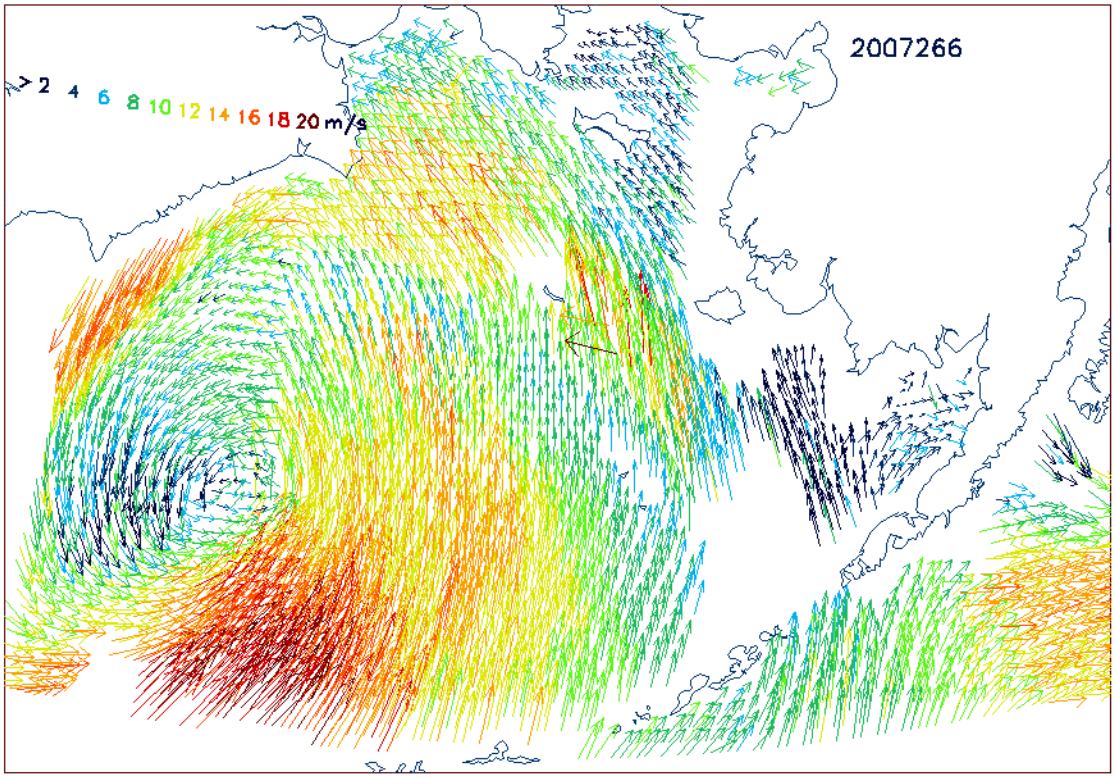
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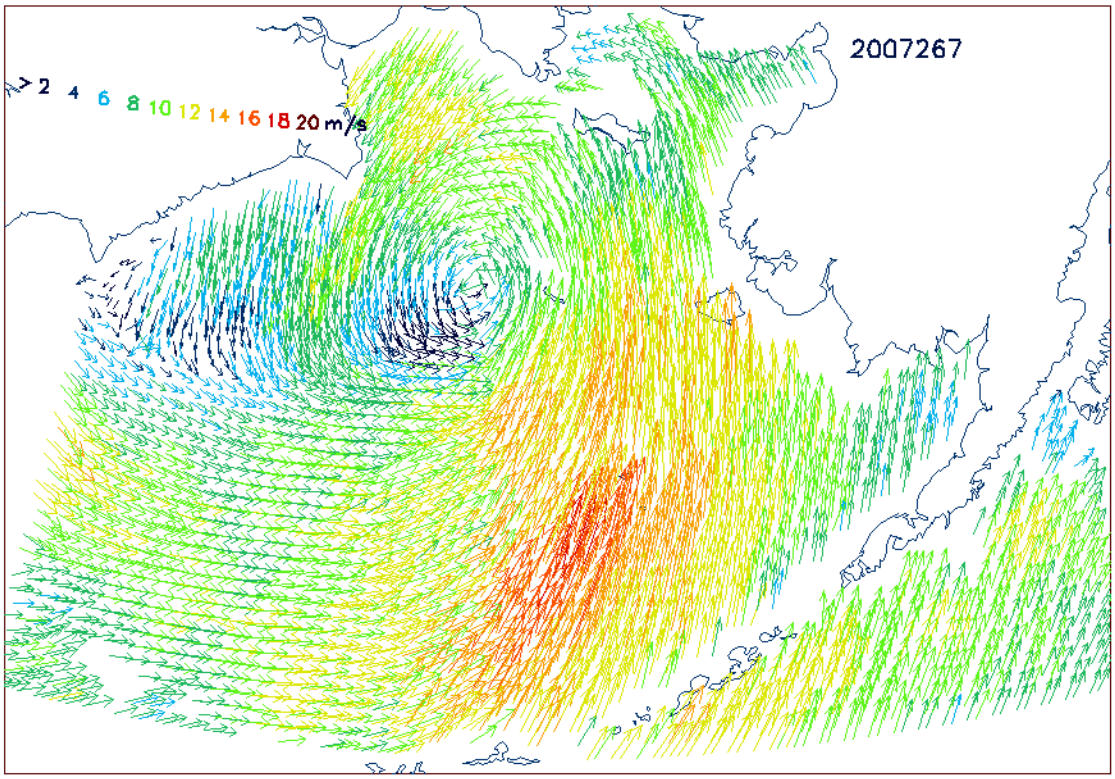
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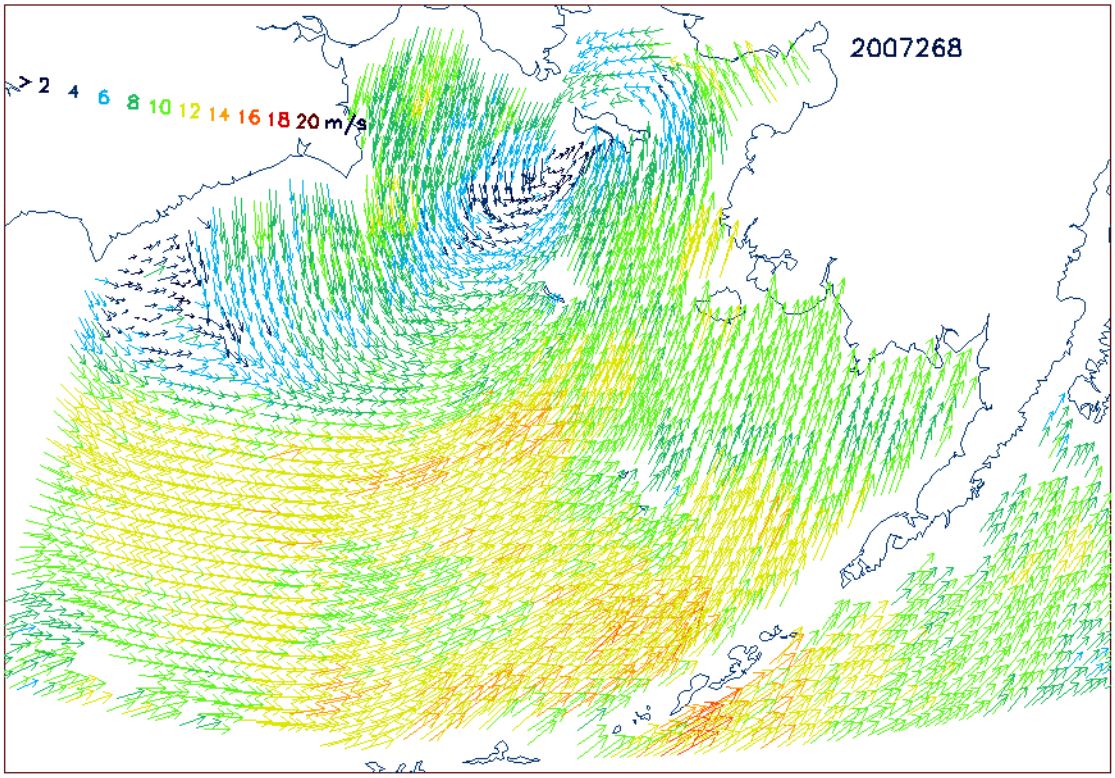
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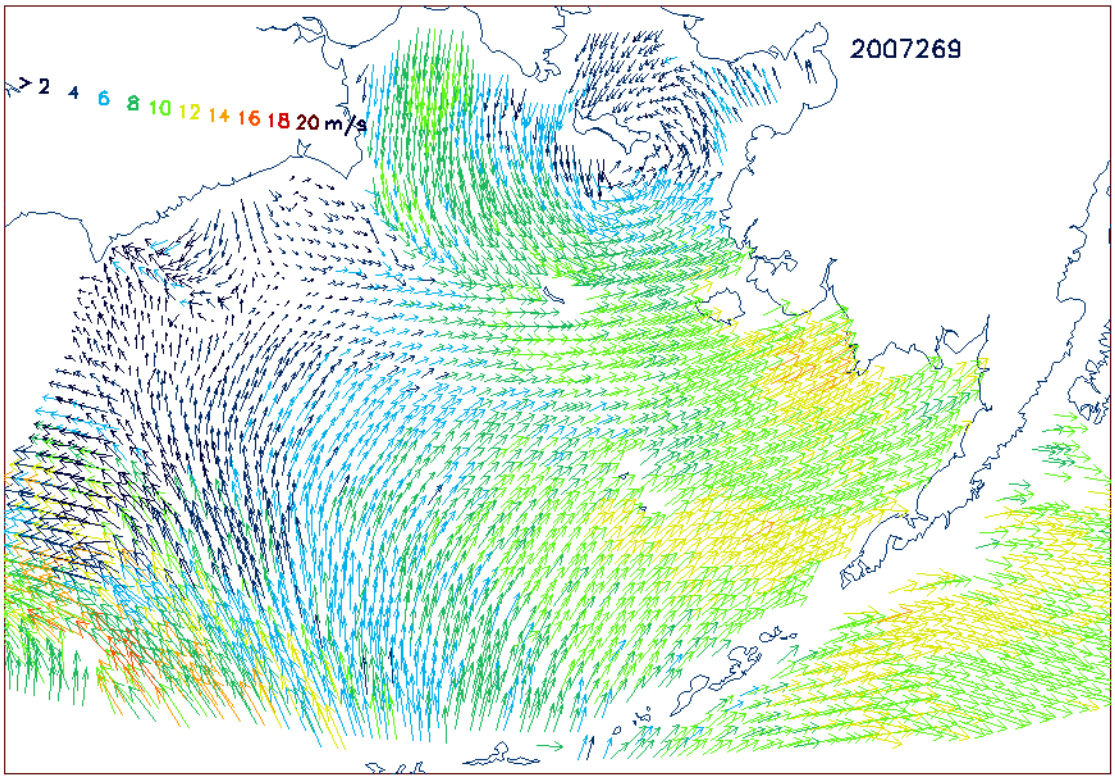
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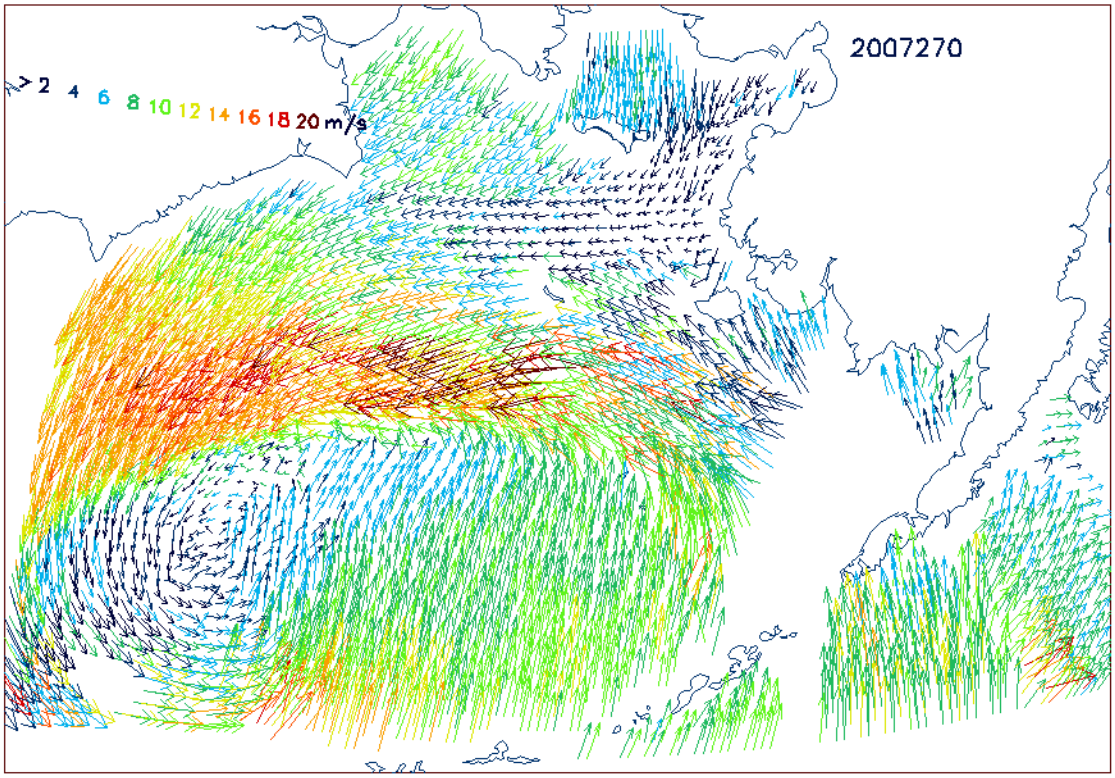
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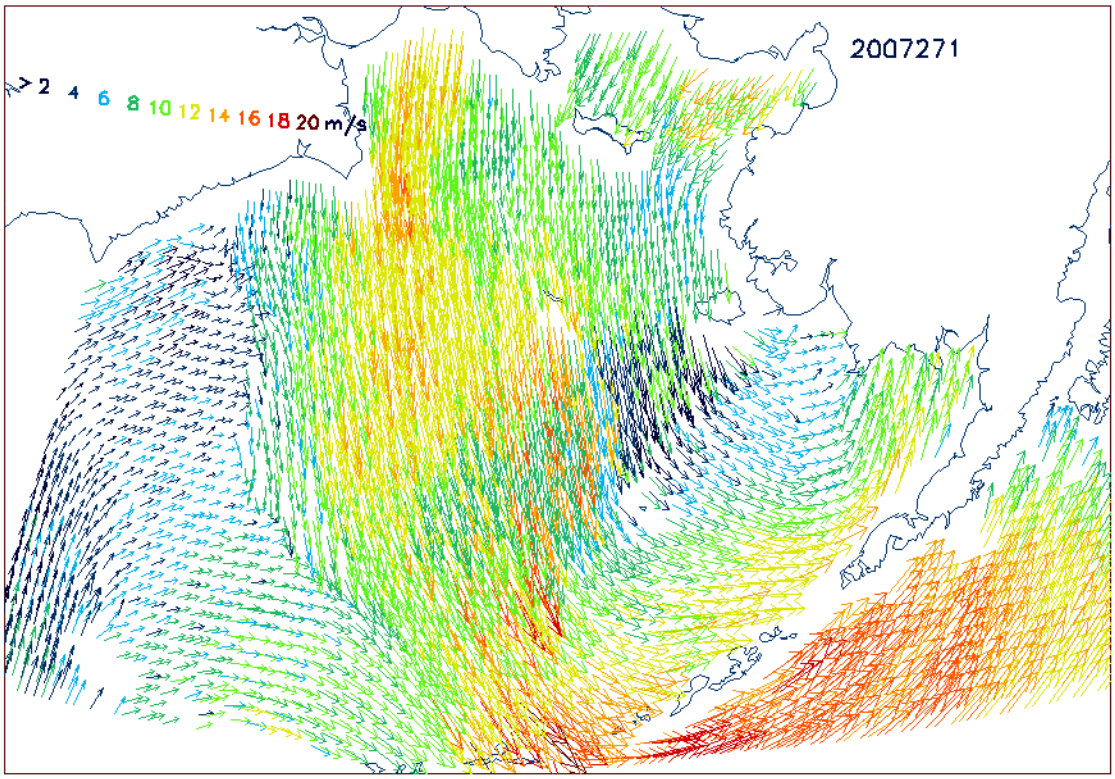
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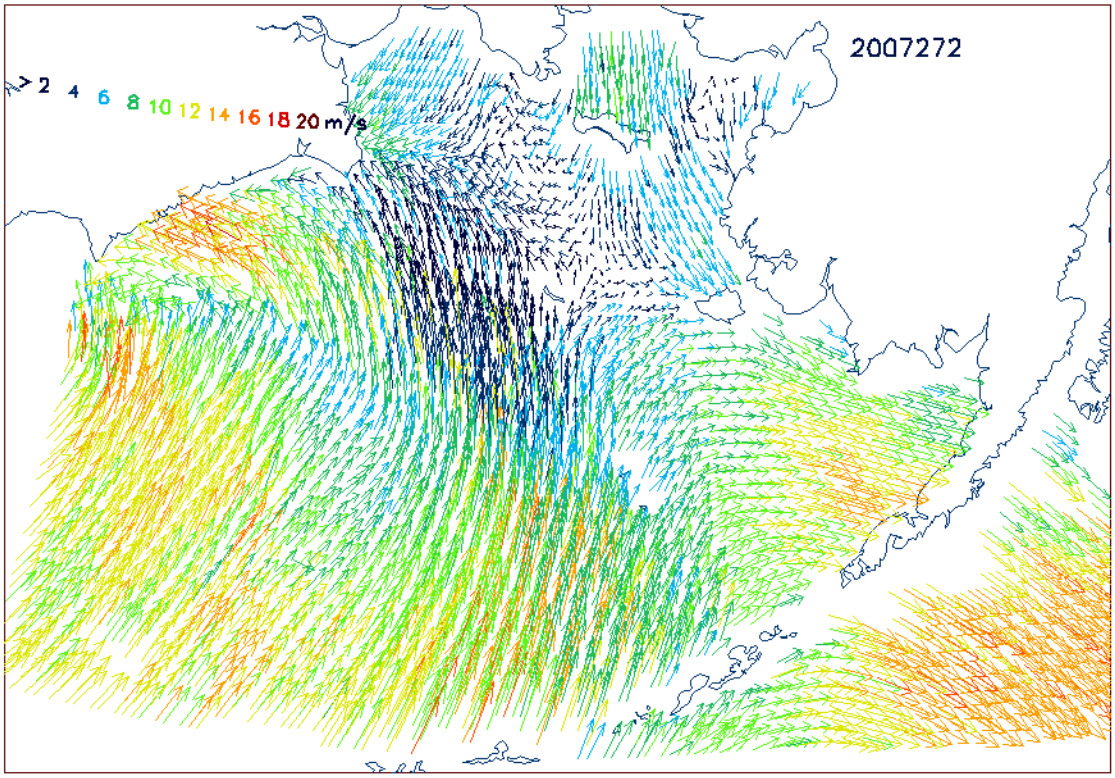
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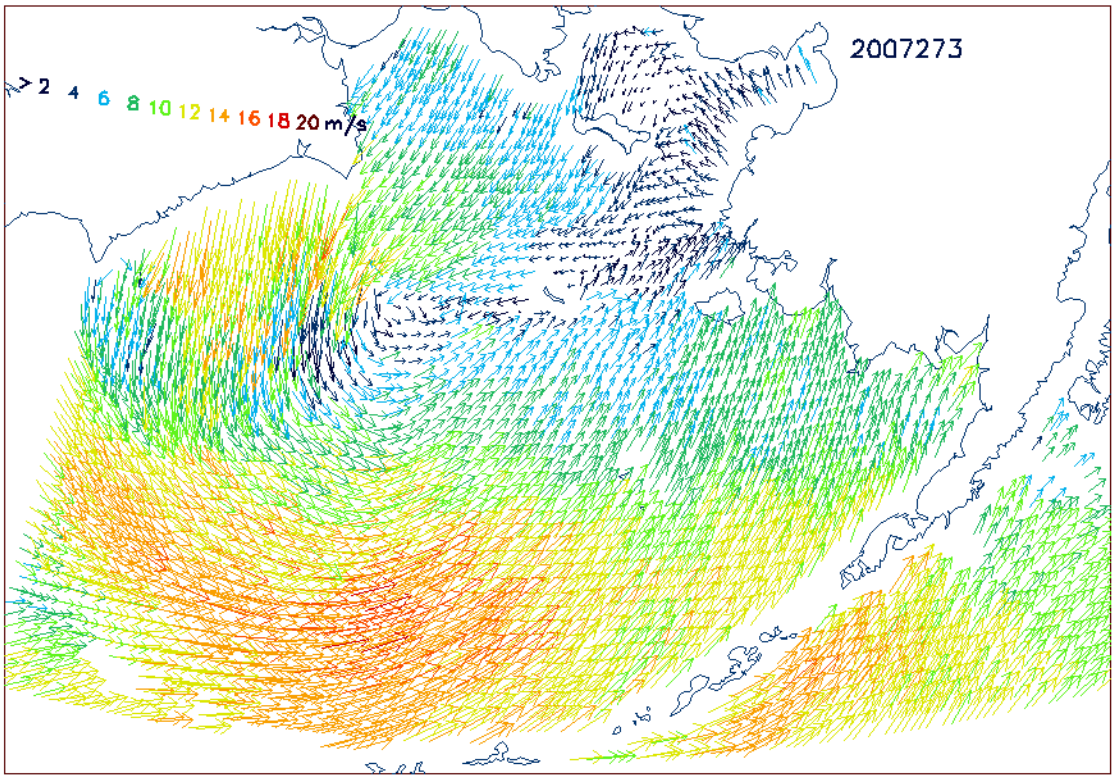
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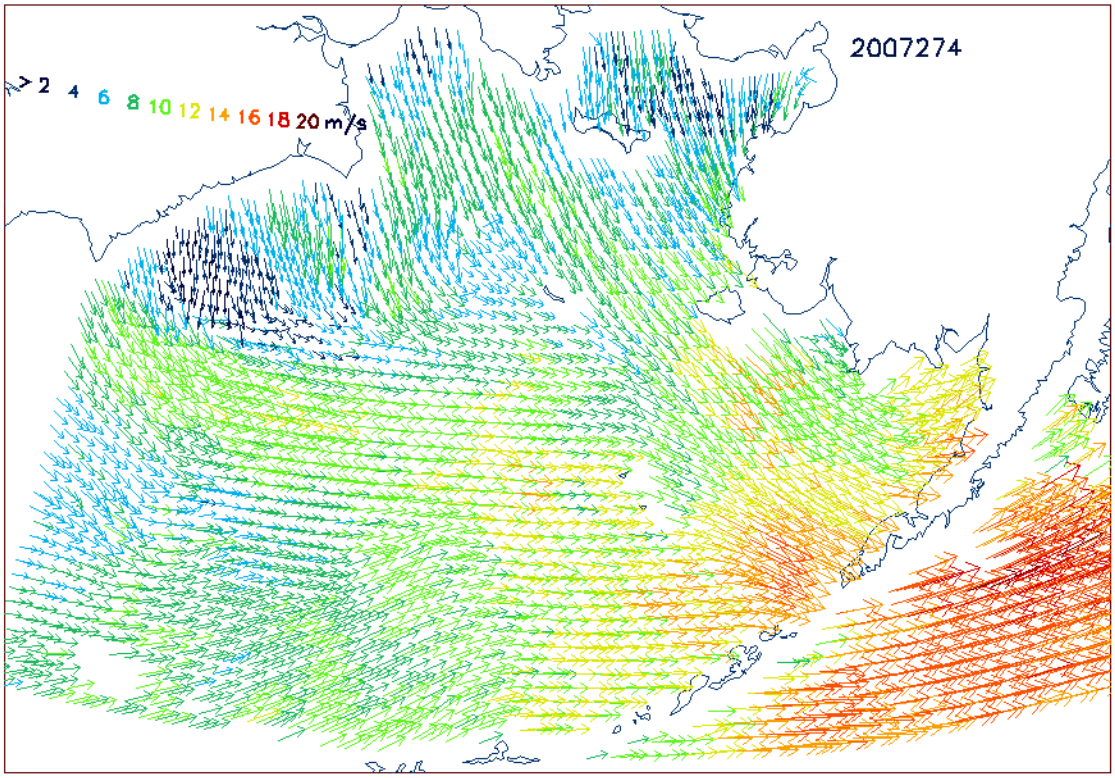
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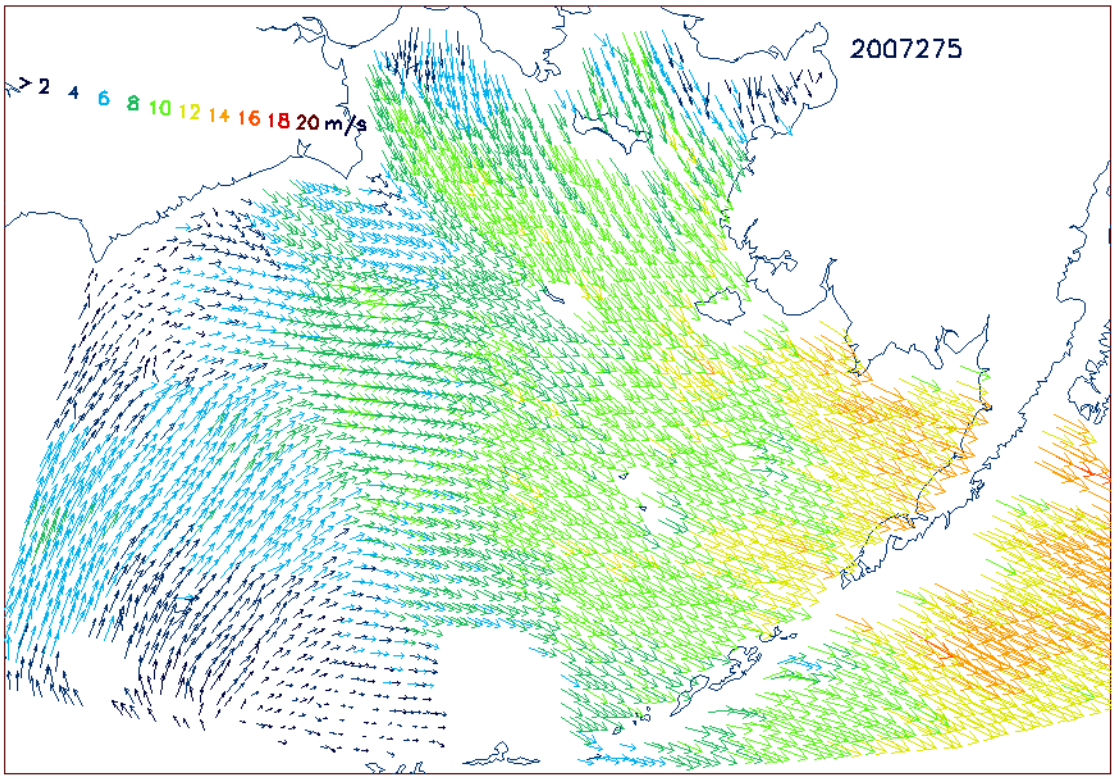
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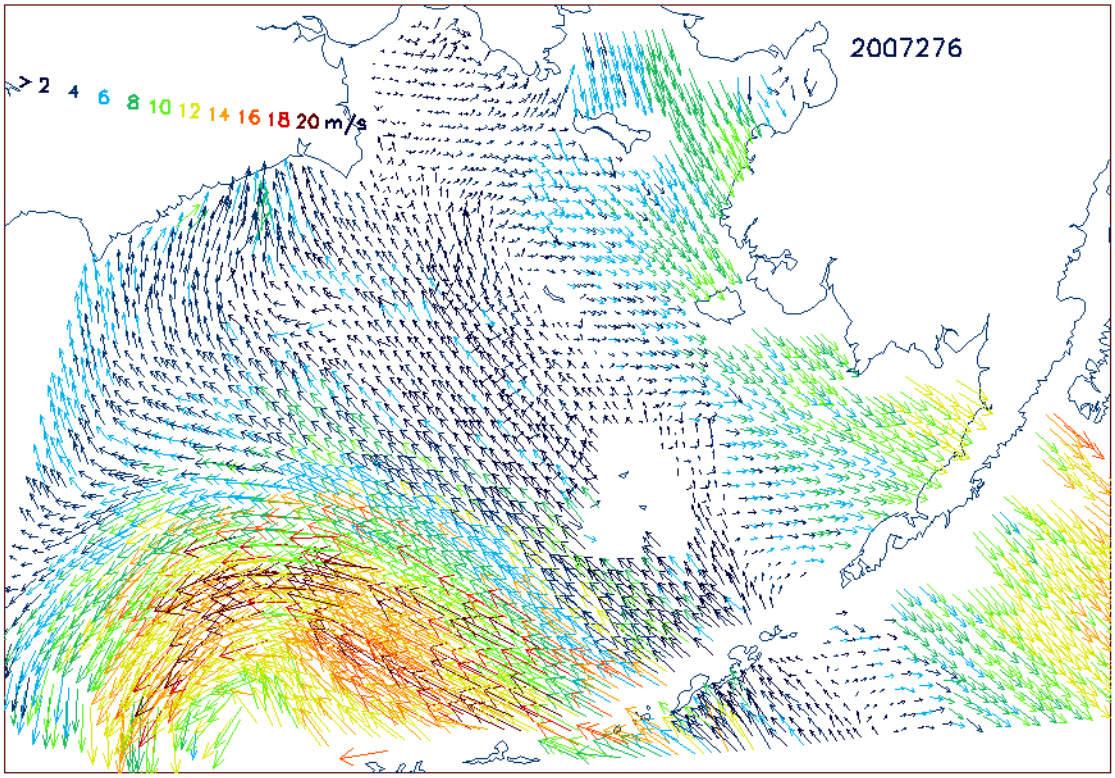
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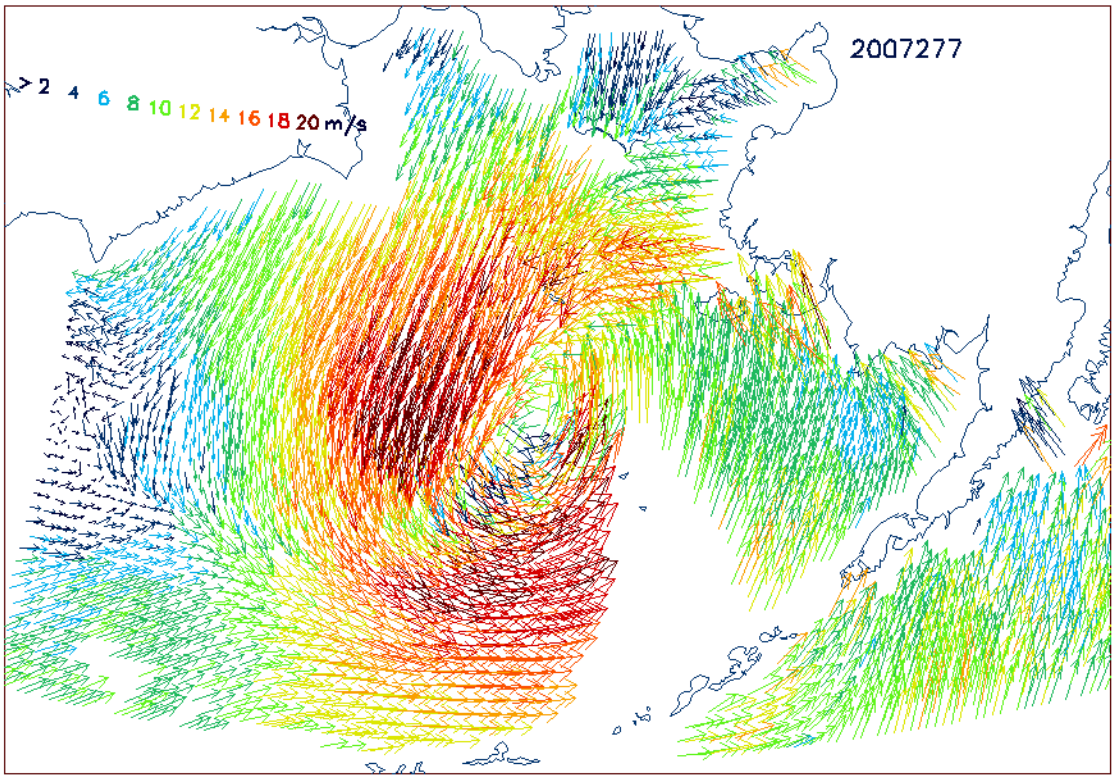
2007277
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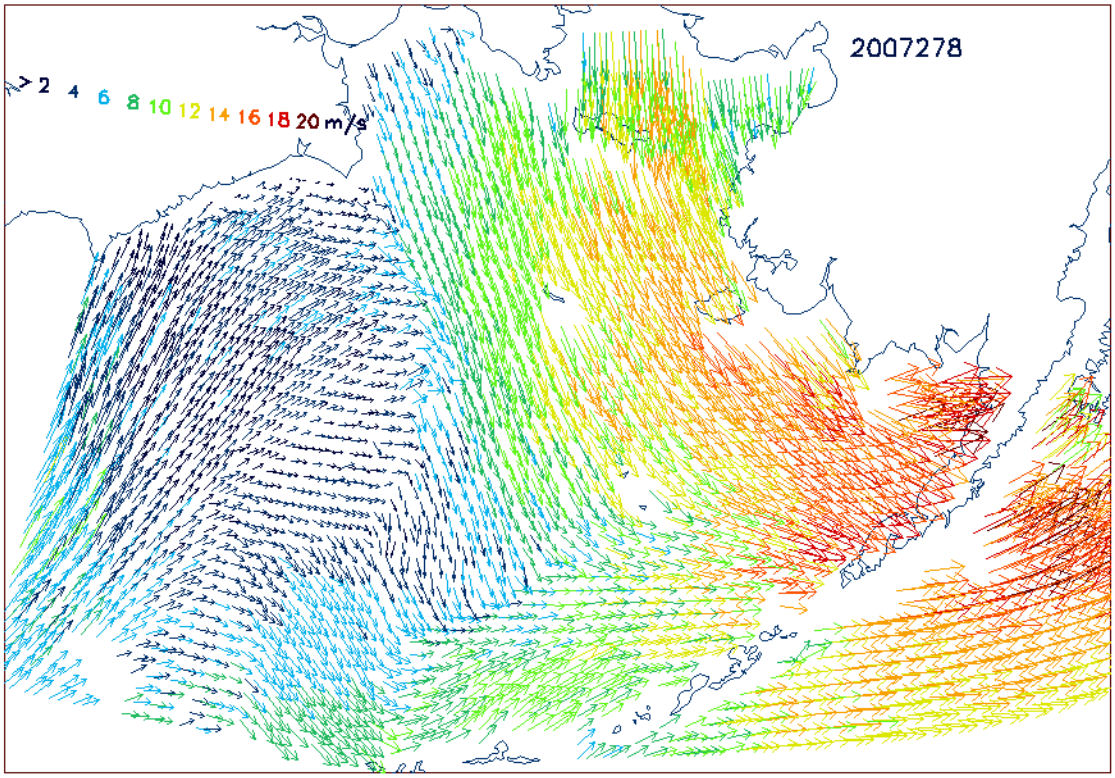
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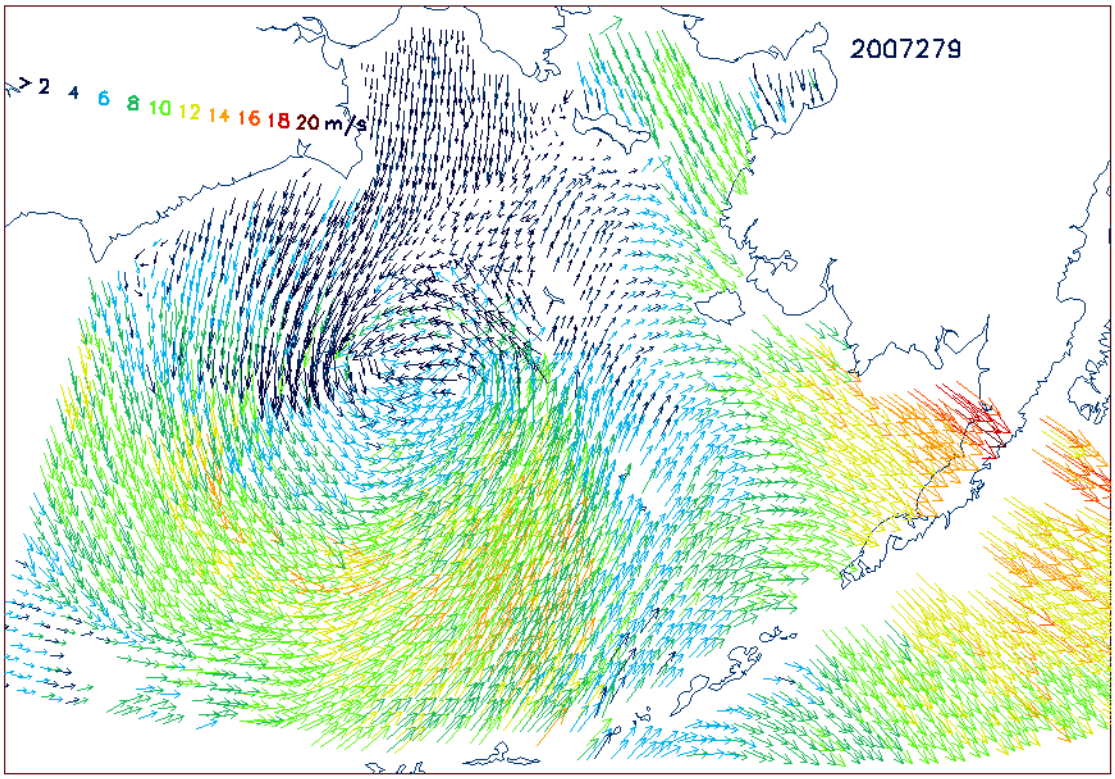
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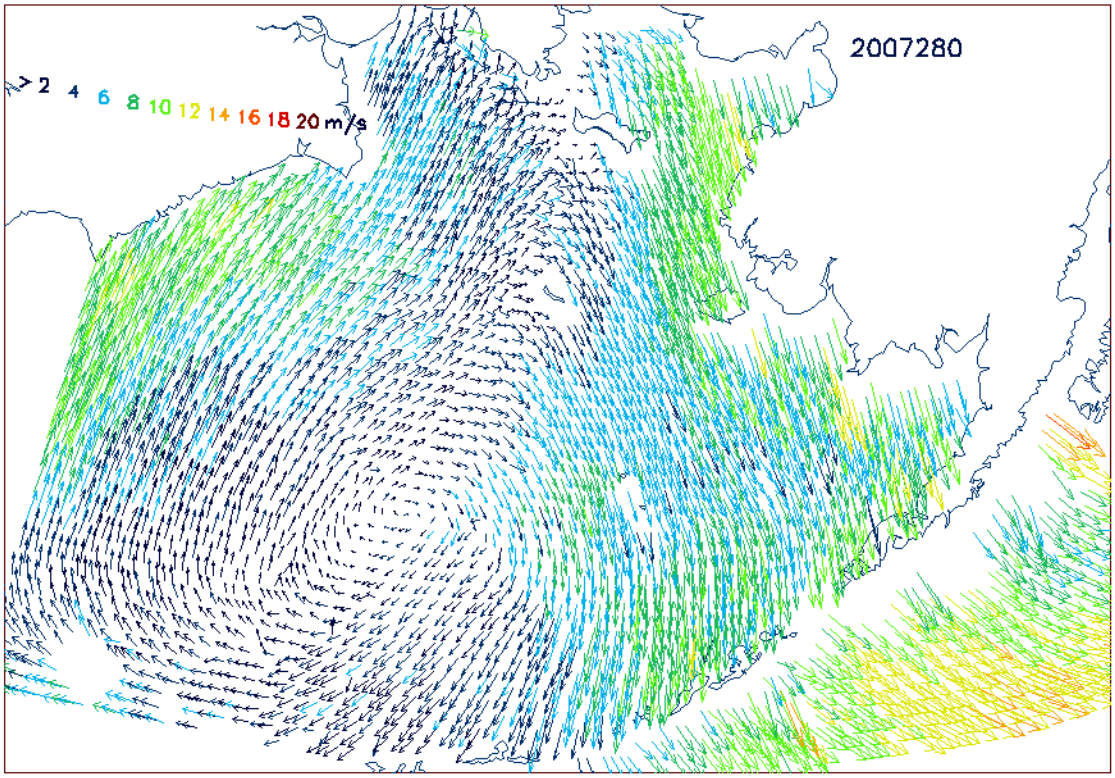
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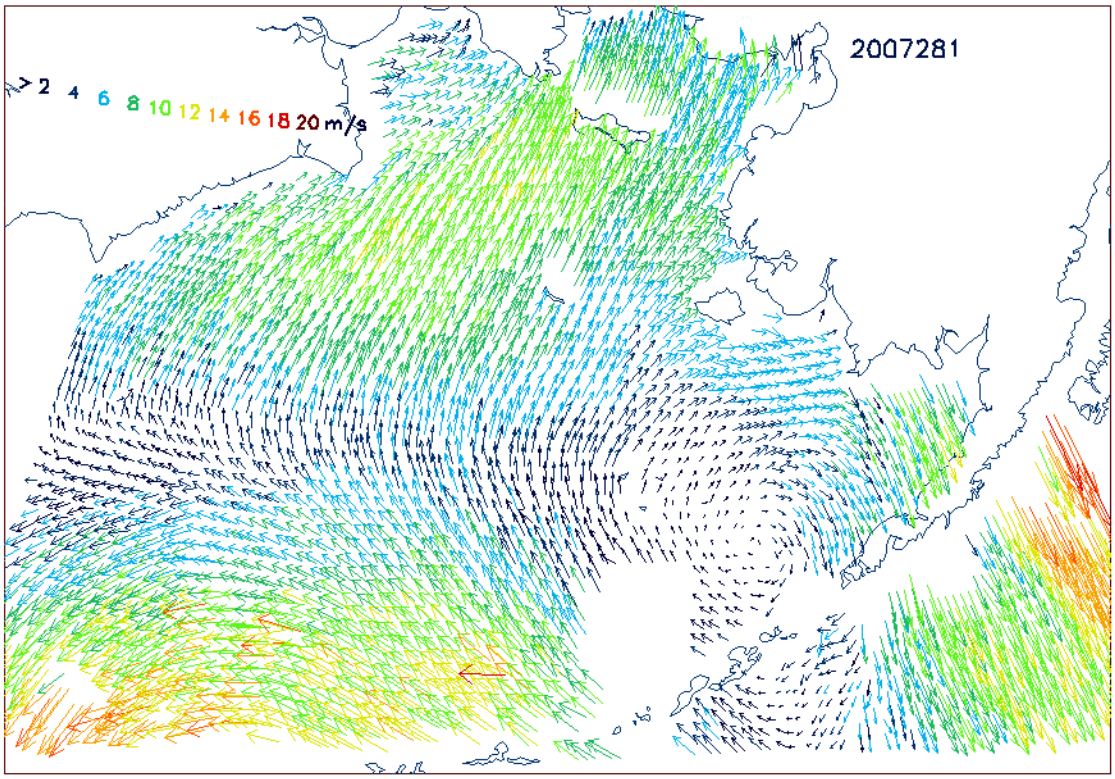
2007281
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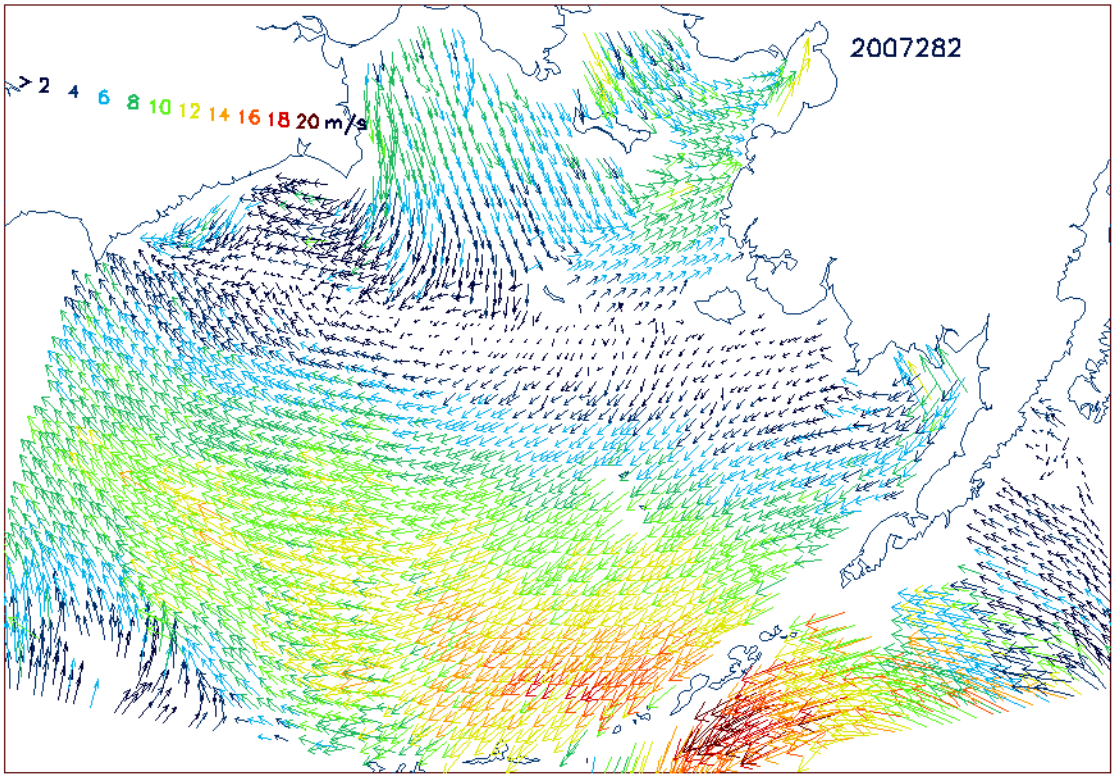
2007282
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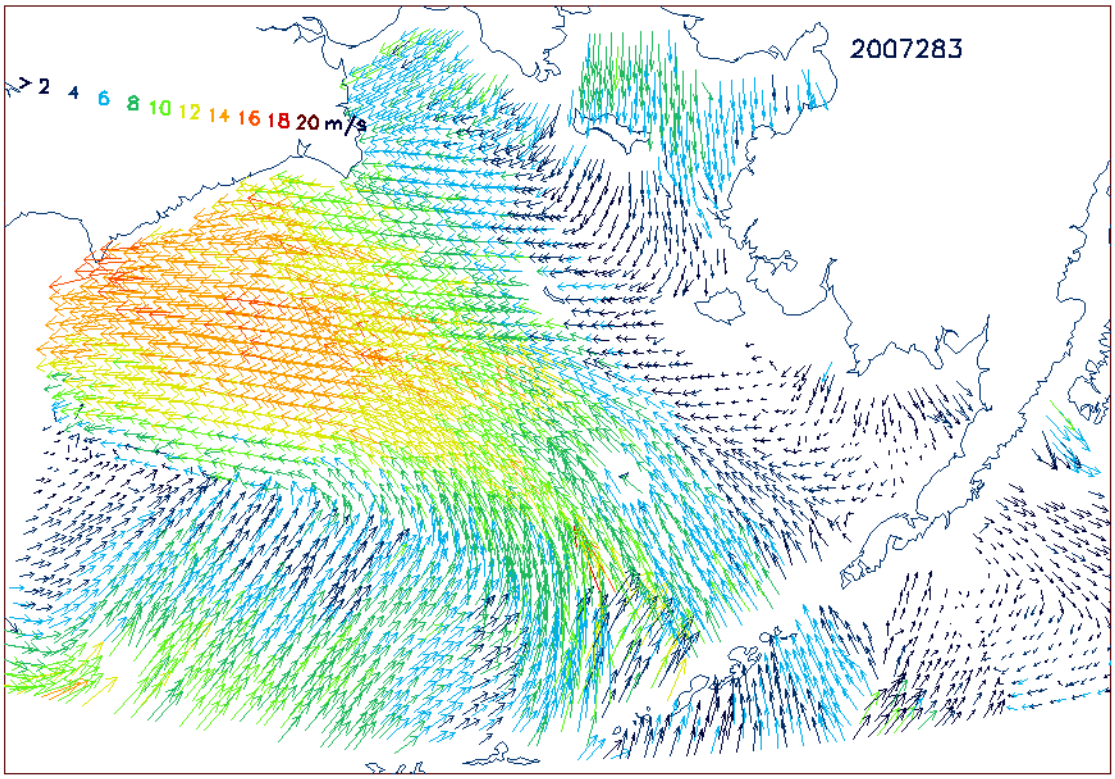
2007283
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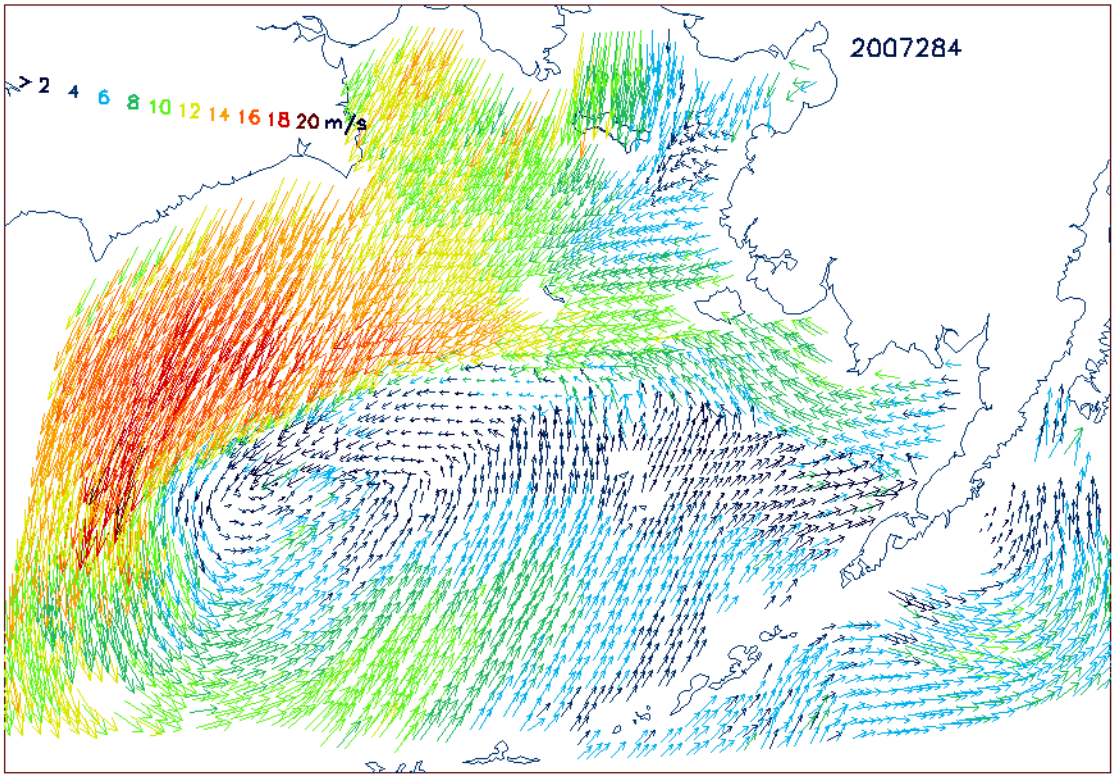
2007284
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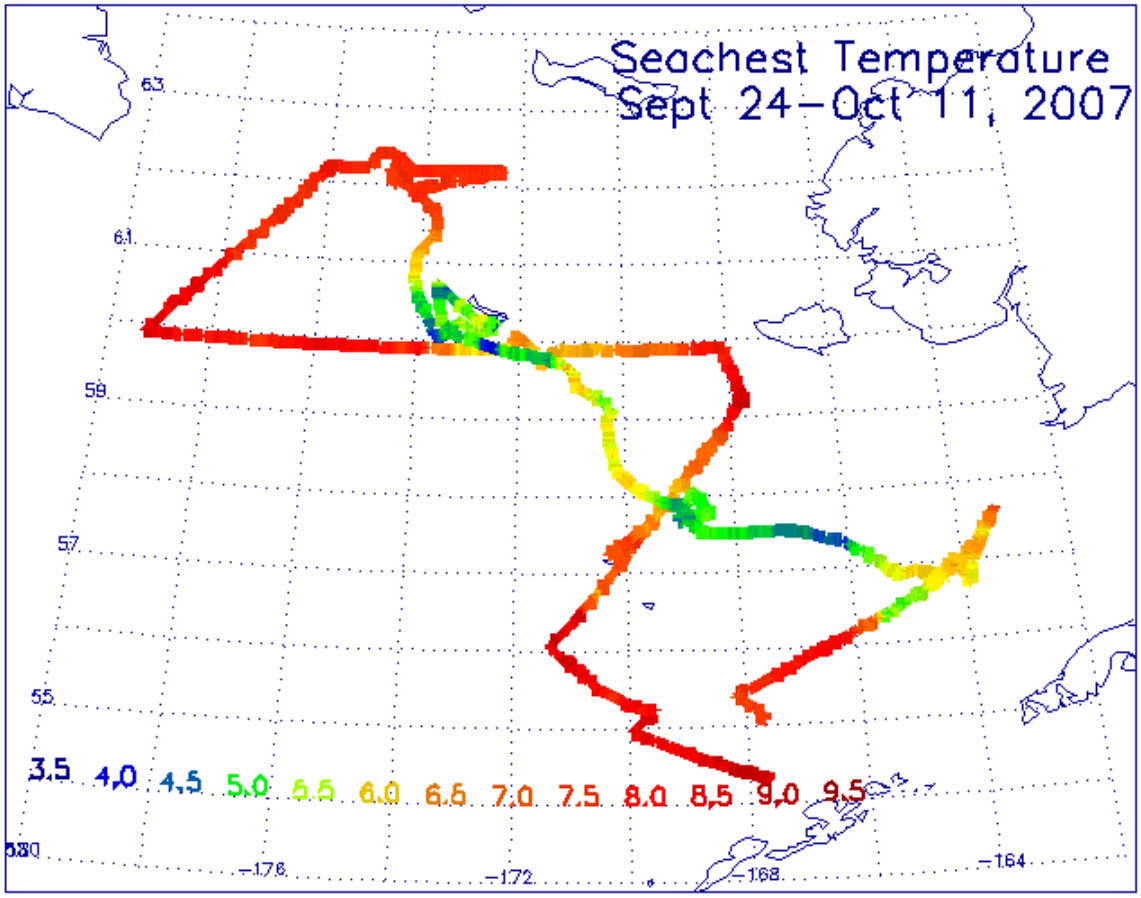
Figure 8:


Seachest Temperature
Sept 24–Oct 11, 2007
63
61
59
57
55
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
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9.0
9.5
-176
-172
-168
-164

Figure 9:

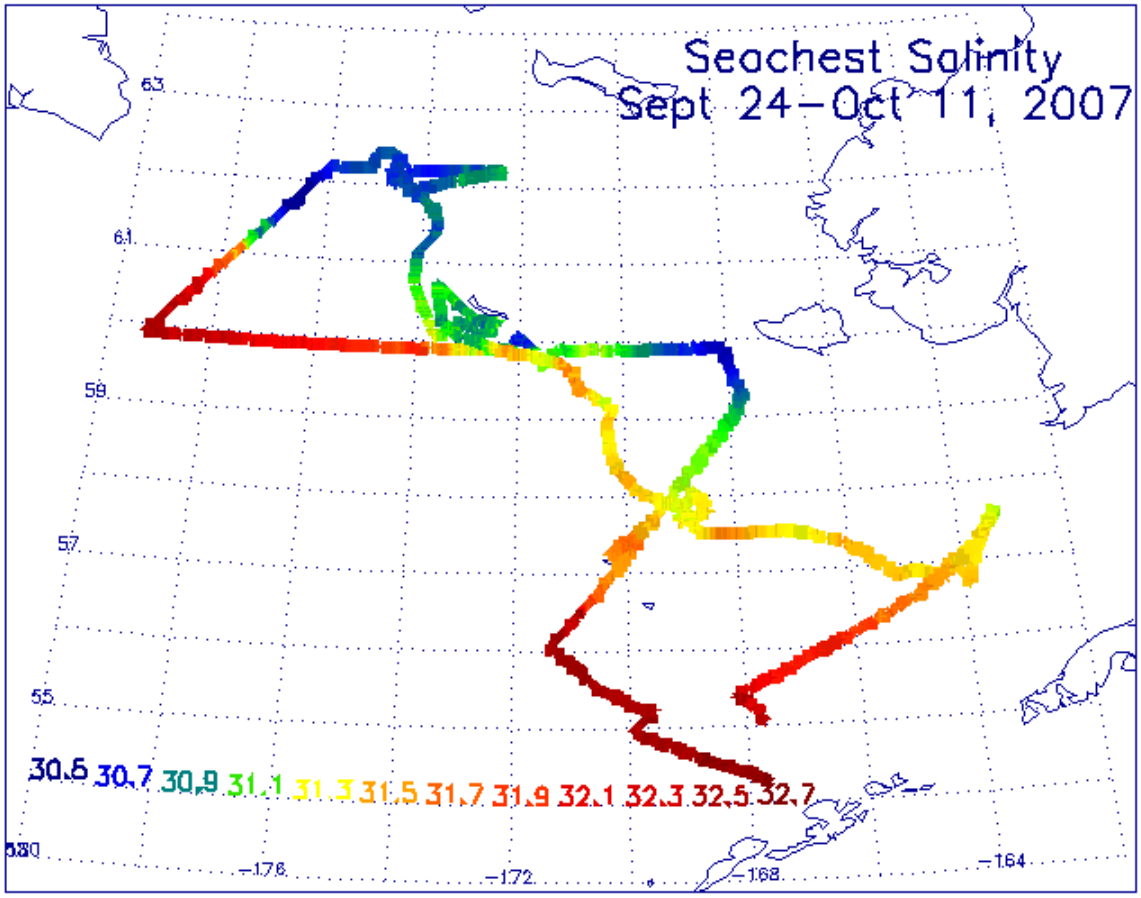
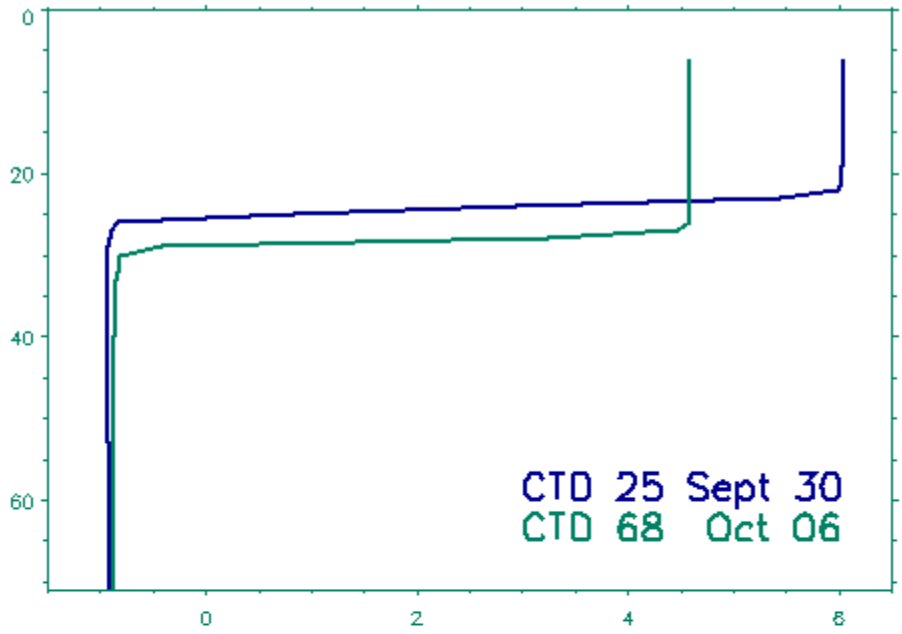

Seachest Salinity
Sept 24–Oct 11, 2007
63
61
59
57
55
30.5 30.7 30.9 31.1 31.3 31.5 31.7 31.9 32.1 32.3 32.5 32.7
-176
-172
-168
-164

Figure 10: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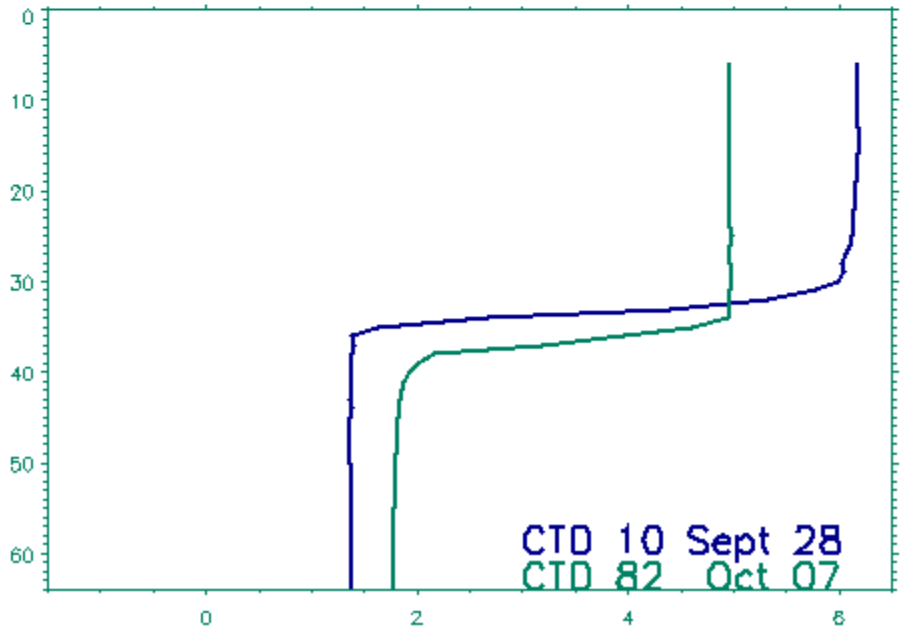
20
40
60
0
2
4
6
CTD 25 Sept 30
CTD 68 Oct 06


0
10
20
30
40
50
60
0
2
4
6
CTD 10 Sept 28
CTD 82 Oct 07