Cruise Report

R/V ENDEAVOR Cruise 303 to Georges Bank

26 June - 6 July 1997

Acknowledgments

We thank Captain Tyler and the crew of the R/V Endeavor for their help and good humor throughout the cruise. Mike Caruso, Dick Limeburner and Jim Bisagni provided satellite images which played a key role in guiding our sampling strategy.

This report was prepared by Craig Lee and Frank Bahr. The work described herein was sponsored by the National Science Foundation as part of the U.S. GLOBEC Georges Bank Study.

1. Purpose

Project Summary: Retention Processes- Highly Resolved Hydrography

Georges Bank is a broad, shallow section of continental shelf that supports a productive, though heavily stressed, fishery. Several important fish species have extensive hatching areas on the bank, where their larvae enjoy an increased chance of success. Processes which remove larvae from the bank to the deeper surrounding waters decrease their chances of survival, and thus play a strong role in determining the success of the fishery. Two cruises, the first undertaken in unstratified wintertime conditions and the second in a stratified, summertime regime will examine the physics and biology of several processes which may remove water, nutrients and larvae from the southern flank of Georges Bank. Of specific interest are the effects of Gulf Stream rings, strong wind events and instabilities in the flow along the edge of the bank. A towed, undulating instrument package, known as the SeaSoar, will make three-dimensional surveys of physical and biological variability along the southern flank of Georges Bank, while shipboard instrumentation provides simultaneous measurements of currents and meteorological variables. Typical along-track horizontal resolution will be finer than 2 km, with a depth range from the surface to 10 m off the bottom (or to a maximum depth of approximately 150 m, whichever is shallower). As the processes of interest are episodic, remote sensing will be used to devise sampling strategies suitable to the variability present at the time of each cruise.

The June/July SeaSoar Cruise

The primary goal of this cruise was to make observations of processes which may remove shelf water and associated biota from the southern flank of Georges Bank, with priority given to obtaining observations of interactions between Gulf Stream rings and the shelf break front. Prior to sailing, satellite imagery revealed two ring-like features near the southern flank of the bank. A warm-core ring was positioned just west of the Great South Channel, while a less distinctly formed feature occupied the region to the east, near the 100 m isobath (see 26 June 1997 image). As the western ring was outside the study area, we chose to sample the eastern feature, beginning near Ron Schlitz's moored array and working eastward with a series of three 'radiator' sampling grids. Grid locations were chosen to sample: 1) the leading edge of interaction between Gulf Stream and the shelf waters, perhaps including the zone of flow reversal on the bank, 2) the region of maximum shear between Gulf Stream water in the feature and the mean flow on the Bank and 3) the region where the flow associated with the

warm feature separates from the shelf, where imagery suggests streamers of cold water extend off-bank. Flow patterns and satellite imagery obtained during these initial surveys indicated that the feature was more plume-like (rather than ring-like) in character, with westward flows in the western region and eastward flows further east. Based on the results of the initial survey and motivated by our interest in shelf water removal, we chose to use the remainder of our time executing repeated radiator surveys spanning the maximum shear region and the separation zone to the east of the feature. Four repeats of the survey pattern allowed us to document both spatial variability and the temporal evolution of the warm-water intrusion onto the Bank. During this period, the primary warm plume produced a tendril which extended on-bank to the 60 m isobath. Fortunately, this feature was captured in our repeat sampling pattern. Lastly, while en route back to Woods Hole, we recovered a drifting guard buoy belonging to Peter Smith (Bedford Institute of Oceanography).

2. Cruise Narrative: Endeavor 303

Local time is used throughout this narrative- GMT is five hours ahead.

26 June 1997

Sailed from Narragansett at 08:30 in foggy weather, bound for the southern flank of Georges Bank. AVHRR imagery revealed what we believed to be a warm core ring impinging on the southern flank of the bank. After analyzing the imagery, we set the first survey site to examine the leading edge of the ring-Bank interaction, just west of the central part of the feature and near Ron Schlitz's moored array. Smooth sailing throughout the day as we proceeded to the initial waypoint.

27 June 1997

We arrived at the first waypoint, south of the moored array, and deployed SeaSoar at 02:03, 40° 02.5' N, 68° 03.5' W. Approximately three hours after the initial deployment SeaSoar collided with some fishing gear, resulting in transmissometer failure and a degradation in flight characteristics. Upon recovery at 05:27, 40° 26.1' N, 68° 12.3' W, we found the transmissometer hanging loosely in its mounting brackets and a length of loose faring tangled in the impeller. After making repairs, we redeployed at 05:43 and continued towing northward along the first survey line. Later that afternoon,

flight characteristics deteriorated. Attempts to correct the situation by varying tow speed and control parameters failed, and we brought the vehicle aboard at 16:38, 40° 27.7' N, 67° 52.4' W to add weight to the undercarriage. We redeployed SeaSoar at 17:01 and continued the survey.

28 June 1997

Completed the first survey at 02:23 and set sail for the start of the second pattern. ADCP velocities in the off-bank region of the first survey reveal significant westward flow, indicating that the feature is not a simple warm-core ring. Flow patterns observed during the second survey, in the region where the warm feature extended farthest on-bank, suggest a that it is a plume-like extension of Gulf Stream water.

29 June 1997

Completed the third survey in the region where flow associated with the plume separates from the Bank. Following this, we executed an east-west section across what the imagery suggested to be a streamer extending off to the south. Currents and hydrography from this section indicated that the streamer was actually oriented more eastward, and we thus planned and executed two cross-bank sections east of the plume.

30 June 1997

Based on twice-daily imagery, we set a repeat survey pattern to straddle the region where the plume extends farthest on-bank and the separation region to the east. After completing the 'streamer' sections, we joined the repeat survey at its southeastern corner and steamed anticlockwise through the first pattern. During the first repeat, satellite imagery revealed a tendril of warm water separating from the primary plume and penetrating far onto the southern flank of the Bank.

1 July 1997

Completed the first iteration of the intensive survey at 11:00 and immediately turned around to begin the next repeat, steaming clockwise through the pattern. Waters associated with the warm feature intrude much farther onto the bank than observed in the previous survey. There was a striking difference in cross-bank structure between the westernmost track and the line just to the east of it, with Gulf Stream waters sitting much farther south along the western transect.

The VPR strobe failed around 15:30, going from synchronized flashes to intermittent operation. We recovered SeaSoar at 16:05, 40° 53.6' N, 67° 27.8' W to check for leakage in the underwater connectors linking the strobe and the engineering unit. Cleaning, regreasing and reseating the connectors failed to revive the strobe. Lacking spares, we redeployed SeaSoar with the intermittent strobe, in hopes of collecting some VPR data despite the failure.

SeaSoar flight characteristics deteriorated around 18:00, with the fish refusing to dive below 30 m. Impeller turns were down, wings and pitch would not turn over into a dive configuration, and roll was more stable than usual. After trying to remedy the situation by varying ship speed and cable length, we began to suspect hydraulic unit failure. We recovered SeaSoar at 23:27, 40° 34.5' N, 67° 04.7' W and replaced the hydraulic unit with a tested spare.

2 July

Deck tests showed little variation between the two hydraulic units, and we found no significant changes in flight characteristics after redeploying SeaSoar. At this point, the VPR strobe had failed completely. To reduce the number of drag elements on the fish and minimize flow disturbance around the impeller, we recovered SeaSoar at 03:02, 40° 39.9' N, 67° 08.4' W and removed the VPR cameras and strobe. We redeployed SeaSoar without the VPR and found its flight characteristic to be even worse than before. For reasons that we do not yet fully understand, both excessive roll and not enough roll prevent the SeaSoar from diving. In the absence of the VPR, the set of stabilizing weights centered on the undercarriage prevented SeaSoar from rolling during its dive cycle. We recovered SeaSoar at 05:27, 40° 46.4' N, 67° 02.8' W and reverted to the configuration flown in the Arabian Sea Experiment, which included the entire instrument suite, less the non-functioning VPR, with a slightly different scheme of stabilizing weights. SeaSoar flew well after reconfiguration, and we continued with the second iteration of the repeat survey.

3 July 1997

Lost telemetry at 03:00, 40° 44.8' N, 67° 29.1' W in less than 100 m of water, part way through the third repeat. When SeaSoar was brought back on board, several signs suggested the fish had collided with fishing gear. The section of faring closest to SeaSoar had been torn away from the cable, though it was still hanging on when the instrument was brought aboard, and the PAR sensor had sustained minor damage. The ground line (which is a separate wire running from the armored

shield of the sea cable to the electronics) had been severed, presumably by the same event which caused the rest of the damage, and was responsible for the failure. SeaSoar was redeployed after repairs to the ground line and faring.

Imagery indicated that the repeat surveys were sampling a tendril of Gulf Steam water which extended northwestward away from the main plume, far onto the bank. Several of the sections were extended farther on-bank to capture the inshore extent of the feature. The off-bank ends of some sections passed back through shelf water and into the main body of the plume.

4 July 1997

Continued towing SeaSoar though a fourth repeat of the intensive survey pattern. The warm tendril seemed to be moving farther on-bank, and all of the survey lines were extended to follow the feature's progress.

5 July 1997

We recovered SeaSoar at 12:44, 41° 06.4' N, 67° 03.3' W, concluding SeaSoar operations for Phase II GLOBEC. Following recovery, we set course for the last known position of a drifting guard buoy which we'd sighted several times over the course of the cruise. Flat, calm conditions and a good reflector made the buoy an excellent radar target, and it proved The Endeavor's crew recovered the buoy at 17:00, 40° 46.1' N, 67° 43.1' W and we began steaming for Woods Hole.

6 July 1997

Arrived in Woods Hole at 12:10.

3. List of Participants

Name	Institution	Project
Craig Lee	WHOI	SeaSoar, Chief Scientist
Frank Bahr	WHOI	SeaSoar
Jerome Dean	WHOI	SeaSoar
Paul Fucile	WHOI	SeaSoar
Allan Gordon	WHOI	SeaSoar
Paul Hartmann	URI	SeaSoar
Ellen Levy	WHOI	SeaSoar
Craig Marquette	WHOI	SeaSoar

4. Data and Preliminary Results

SeaSoar is a towed, undulating instrument package which we use in conjunction with ship-board sensors to make highly resolved, quasi-synoptic, three-dimensional surveys of the upper ocean. Typical tow speeds of 8 knots with a vertical range of 130 m yield along-track horizontal resolutions finer than 2 km. Anticipating considerable small-scale variability, we kept cross-track separations at approximately 12 km. The initial, three-radiator survey was designed to sample different regimes of ring-shelf interaction, while the intensive survey was set to look at shelf water removal and to facilitate isolation of the semidiurnal tide. In waters shallower than 130 m, SeaSoar typically flew within 7 m of the bottom. Sensor payload included redundant temperature and conductivity sensors, PAR, chlorophyll fluorometer, transmissometer, Video Plankton Recorder (VPR), Tracor Acoustic Plankton Recorder (TAPS) and an experimental bioluminescence sensor. Shipboard instrumentation included narrowband and broadband Acoustic Doppler Current Profilers (ADCP), a suite of meteorological sensors, P-code GPS and a Trimble Tansvector phase carrier GPS heading system.

The results presented here are preliminary- no corrections or calibrations have been applied. A Seabird 911+ CTD acquired SeaSoar sensor data at 24 Hz, which are converted to physical units using a precruise calibration and averaged into 1 second bins. Narrowband ADCP processing incorporates preliminary hull alignment and GPS heading corrections.

A remotely sensed sea surface temperature image from 26 June, 1997 shows the major features present during the survey period and illustrates their initial positions relative to the bank. The thick, black line marks the SeaSoar sampling track. Three 4-leg radiator grids extending across the southern flank mark the initial survey, while the 6 tracks oriented slightly more to the northwest and extending farther on-bank mark the intensive survey. Note the warm core ring sitting southwest of the Great South Channel, well downslope from the 100 m isobath. The feature sampled during this cruise lies just to the east. A warm plume, which looks almost ring-like in character, extends northward to nearly the 100 m isobath, touching the bank to east of the Great South Channel. A later image, taken on 1 July, 1997, shows that the plume advanced on-bank over the intervening week. A small tendril of warm water has separated from the primary feature at approximately 67° W and extended northwestward to the 60 m isobath.

Preliminary sections of temperature, salinity and σ_θ show considerable small scale variability in both along- and cross-shelf directions. Accompanying plots show the SeaSoar flight path through each section and highlight the horizontal resolution provided by these observations. Heavy black lines on the small chart of Georges Bank (oriented perpendicularly to each section plot) indicate the portion of the survey track displayed. An exponential filter interpolated data to a regular grid for preliminary contouring. The gridding algorithm used scales chosen to reflect the horizontal and vertical resolution of the observations. Regions where the section depth shoals to less than 130 m indicate SeaSoar flight over shallow water, where profiles typically extended to within 7 m of the bottom. Note that tidal excursions have not been removed from the data, and thus the relative positions of various features should be considered with caution.

Sections are grouped by survey pattern. The first three radiators make up the broad survey of interactions between the warm plume and the bank, and are arranged going west to east, starting with the survey at the leading edge of the feature, followed by sections taken where the plume extends farthest on-bank and ending with a survey of the separation region. These are followed by sections from the repeated intensive survey pattern. Note that the intrusion of Gulf Stream water has a significant subsurface component. This tongue of warm, salty water extends on-bank significantly farther than

the plume's surface expression might suggest. Also note the strong frontal structures associated with interactions between Gulf Stream waters and the Bank. In contrast to conditions during the winter-time (March) SeaSoar cruise, waters atop the Bank, off-bank of the tidal mixing front, were strongly stratified.

Maps of ADCP currents, averaged over 15 minutes and between depths of 44 m and 55 m, show a clear semidiurnal tide, particularly in shallow water over the bank. M2 tidal currents reach speeds of above 1 m/s, and stand out as large velocity vectors turning clockwise as one progresses along the survey track. Strong tidal flows make it difficult to produce preliminary comments regarding the plume's influence on flow patterns over the southern flank of Georges Bank.

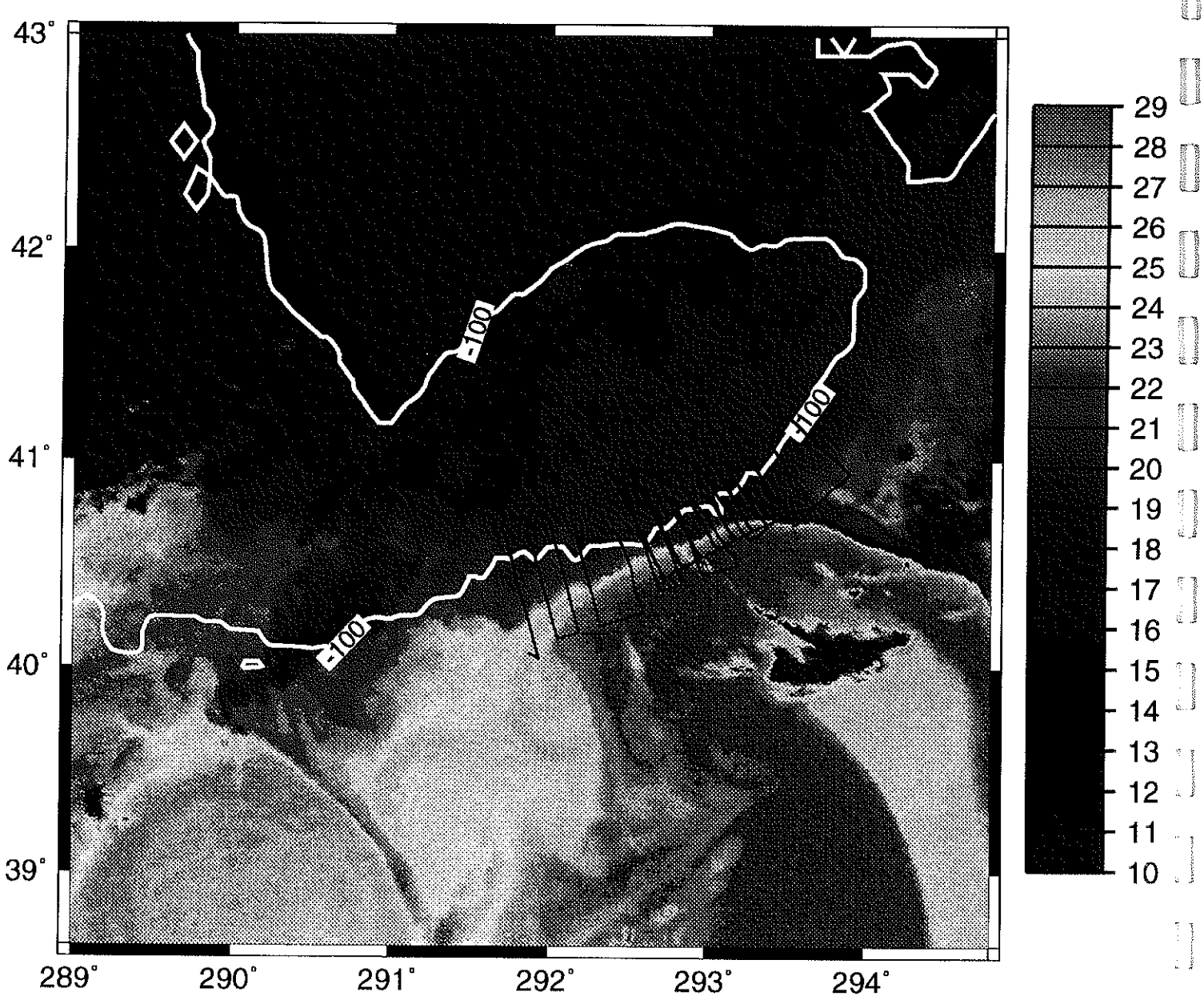
Appendix- Event Log

All event log times are local (EST). A single cast sequence logs SeaSoar deployments and recoveries. 's/e' refers to start and end times and 'reg.' refers to region, neither of which is used here.

Event #	Inst.	cast #	sta. #	std. sta. #	Mon	Date	Time	s/e	Lat (N)	Lon (W)	Water Dep. (m)	Cast Dep. (m)	P.I.	Reg.	Time Zn.	Comments
1	SeaSoar	1	-	-	6	27	02:03	-	40 02.54	68 03.53	-	-	Lee	-	EST	deploy
2	SeaSoar	1	-	-	6	27	05:27	-	40 26.10	68 12.30	-	-	Lee	-	EST	recover
3	SeaSoar	2	-	-	6	27	05:43	-	40 25.70	68 12.20	-	-	Lee	-	EST	deploy
4	SeaSoar	2	-	-	6	27	16:38	-	40 20.70	67 52.40	-	-	Lee	-	EST	recover
5	SeaSoar	3	-	-	6	27	17:01	-	40 20.20	67 52.20	-	-	Lee	-	EST	deploy
6	SeaSoar	3	-	-	7	1	16:05	-	40 53.60	67 27.80	-	-	Lee	-	EST	recover
7	SeaSoar	4	-	-	7	1	17:25	-	40 54.50	67 28.70	-	-	Lee	-	EST	deploy
8	SeaSoar	4	-	-	7	1	23:27	-	40 34.50	67 04.76	-	-	Lee	-	EST	recover
9	SeaSoar	5	-	-	7	2	01:28	-	40 31.75	67 02.75	-	-	Lee	-	EST	deploy

Event #	Inst.	cast #	sta. #	std. sta. #	Mon	Date	Time	s/e	Lat (N)	Lon (W)	Water Dep. (m)	Cast Dep. (m)	P.I.	Reg.	Time Zn.	Comments
10	SeaSoar	5	-	-	7	2	03:02		40 39.93	67 08.40	-	-	Lee	-	EST	recover
11	SeaSoar	6	-	-	7	2	03:48	-	40 35.68	67 05.90	-	-	Lee	-	EST	deploy
12	SeaSoar	6	-	-	7	2	05:27	-	40 46.40	67 13.60	-	-	Lee	-	EST	recover
13	SeaSoar	7	-	-	7	2	06:29	-	40 39.00	67 08.00	-	-	Lee	-	EST	deploy
14	SeaSoar	7	-	-	7	3	03:00	-	40 44.79	67 29.10	-	-	Lee	-	EST	recover
15	SeaSoar	8	-	-	7	3	04:09	-	40 39.70	67 25.80	-	-	Lee	-	EST	deploy
16	SeaSoar	8	-	-	7	5	12:44	-	41 06.42	67 03.30	-	-	Lee	-	EST	recover
17	mooring	1	-	-	7	5	17:11	-	40 45.90	67 43.20	-	-	Lee	-	EST	recover

26 June 1997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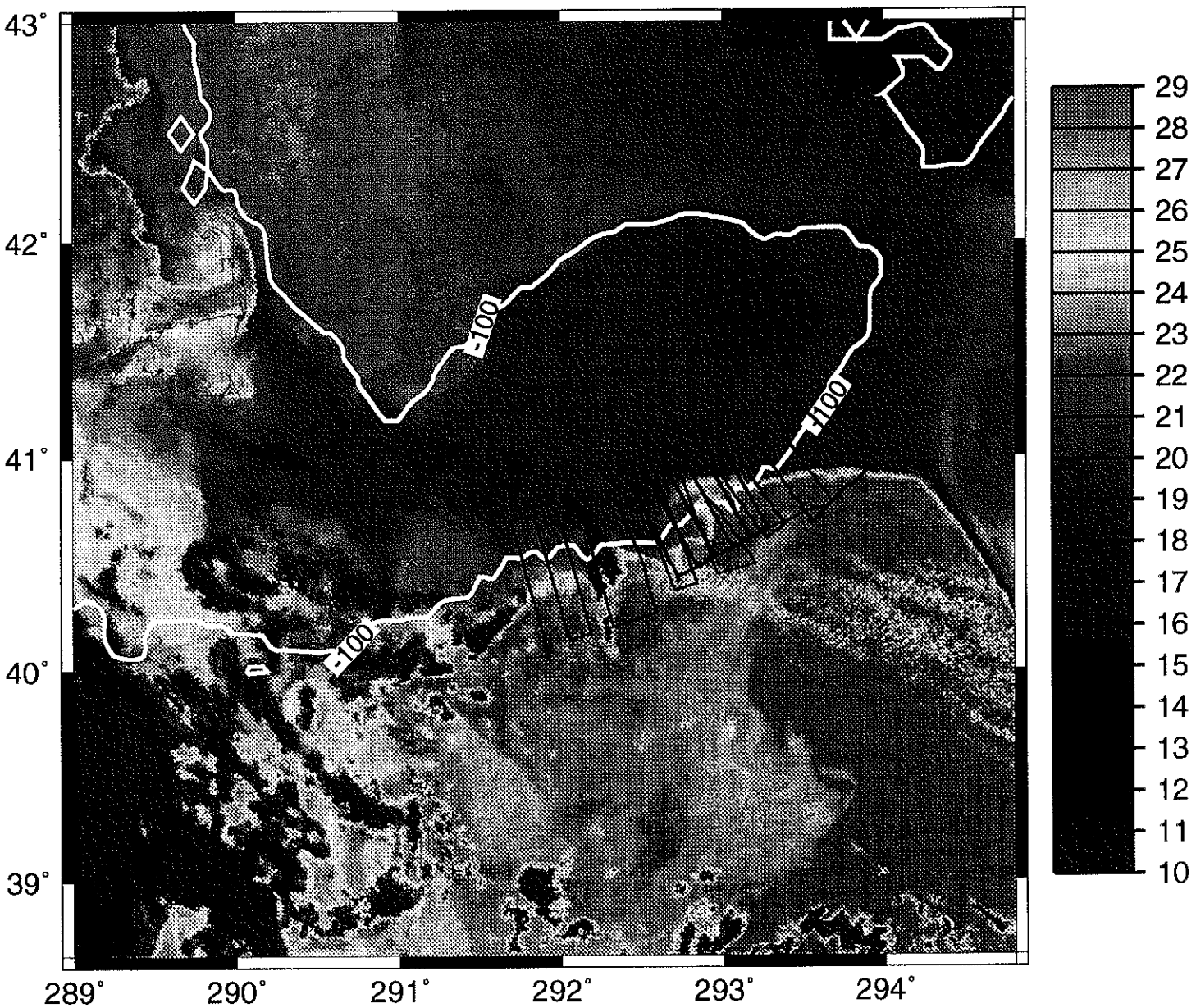
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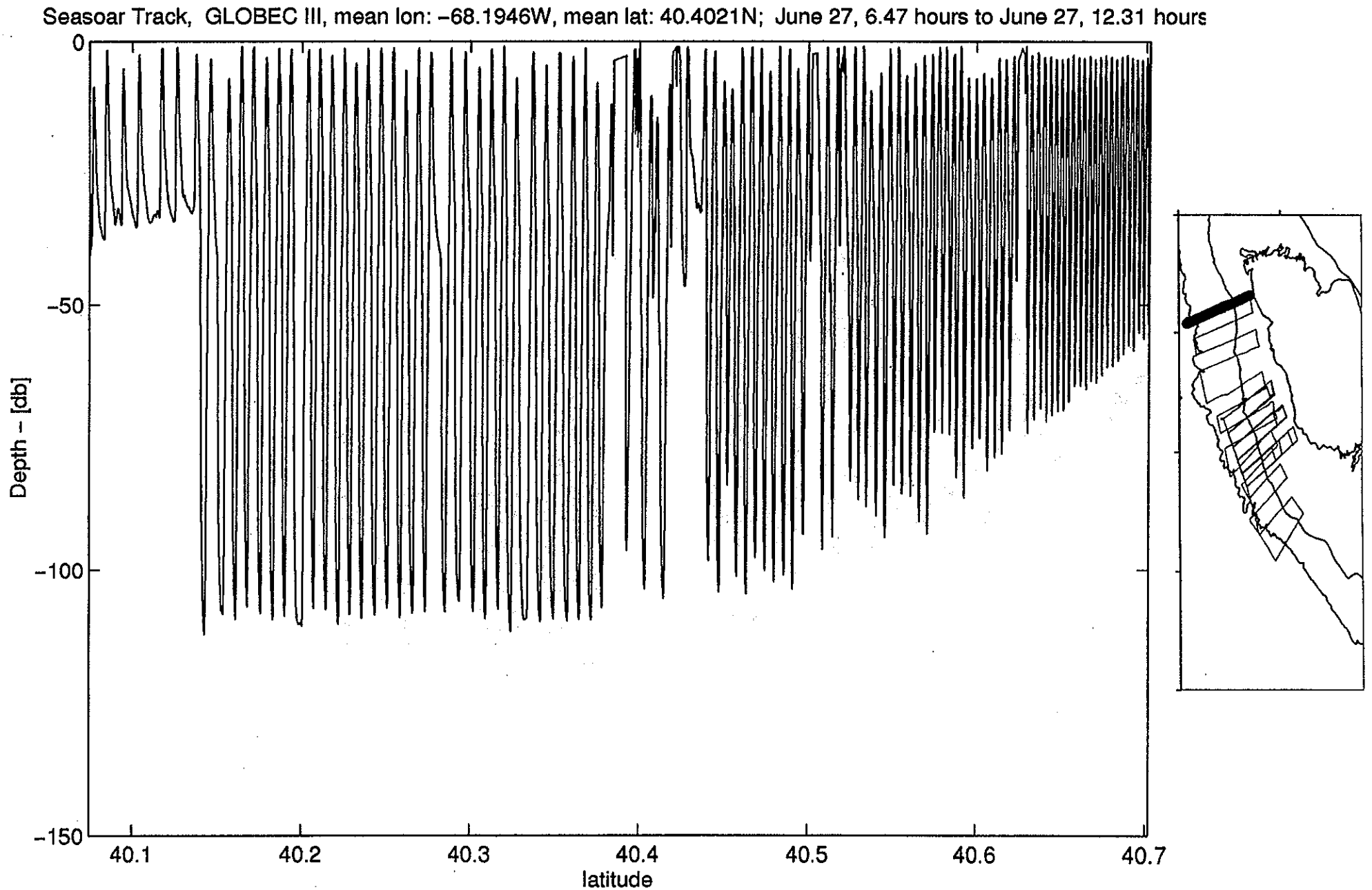
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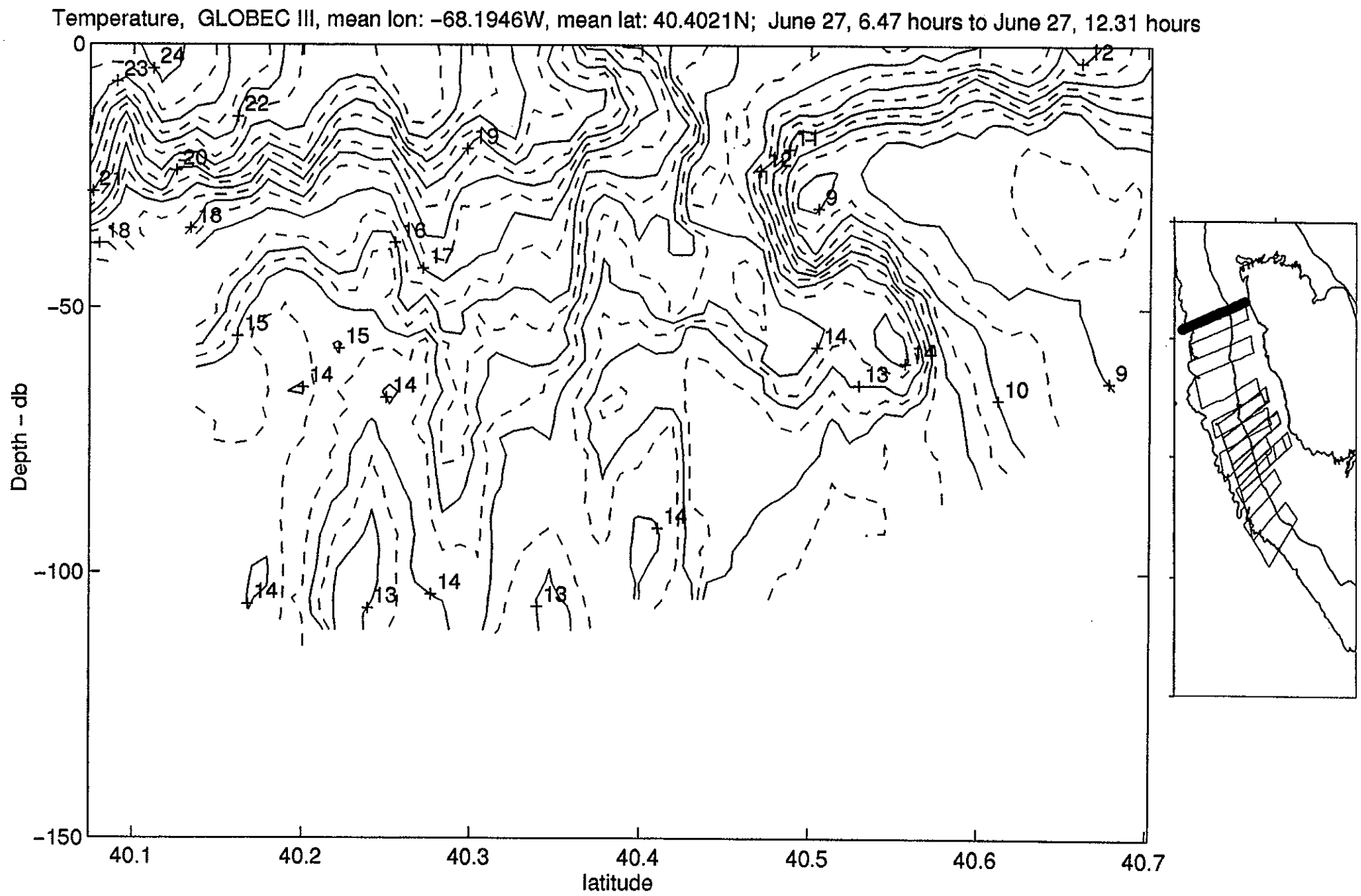
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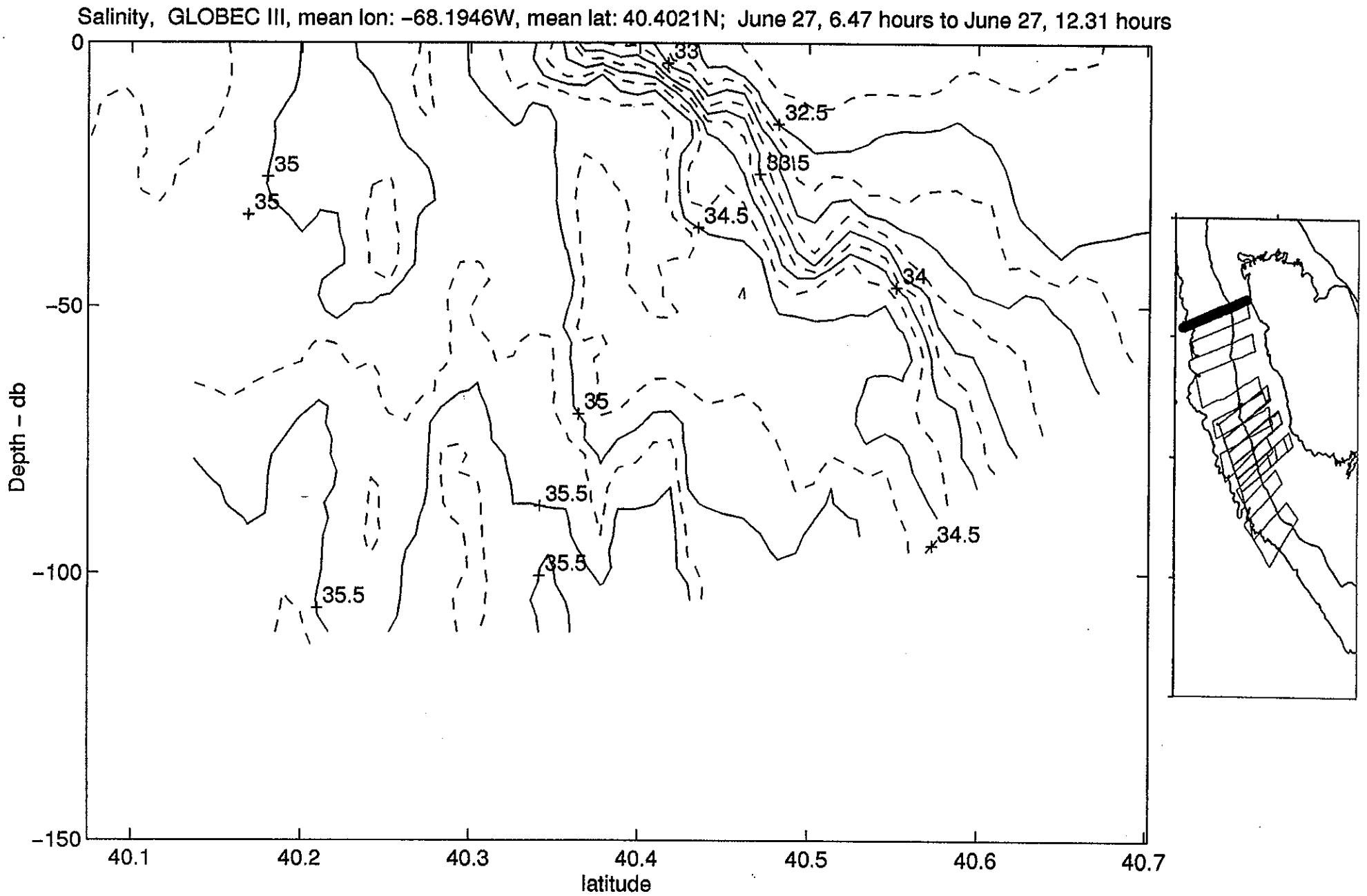
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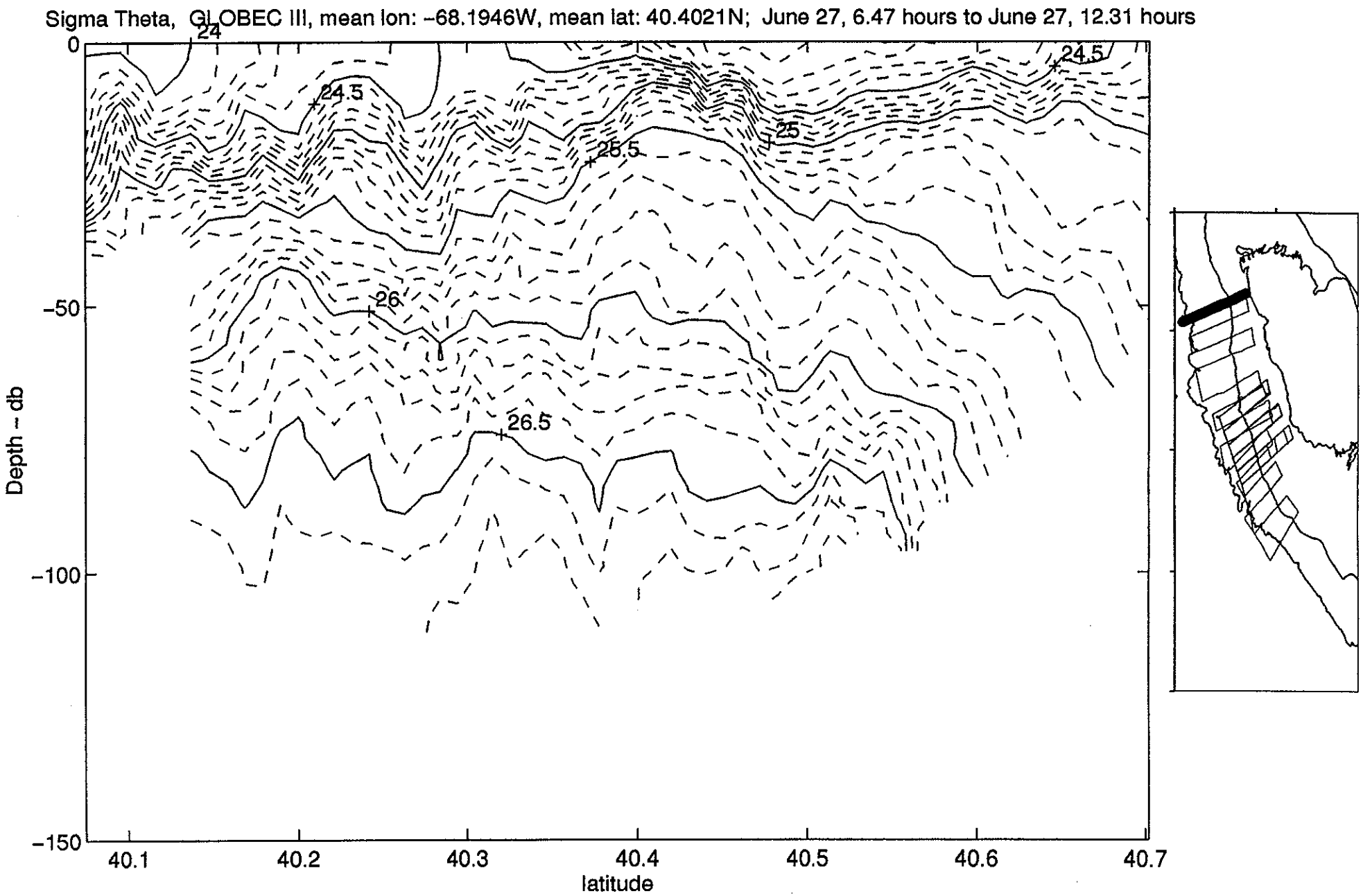
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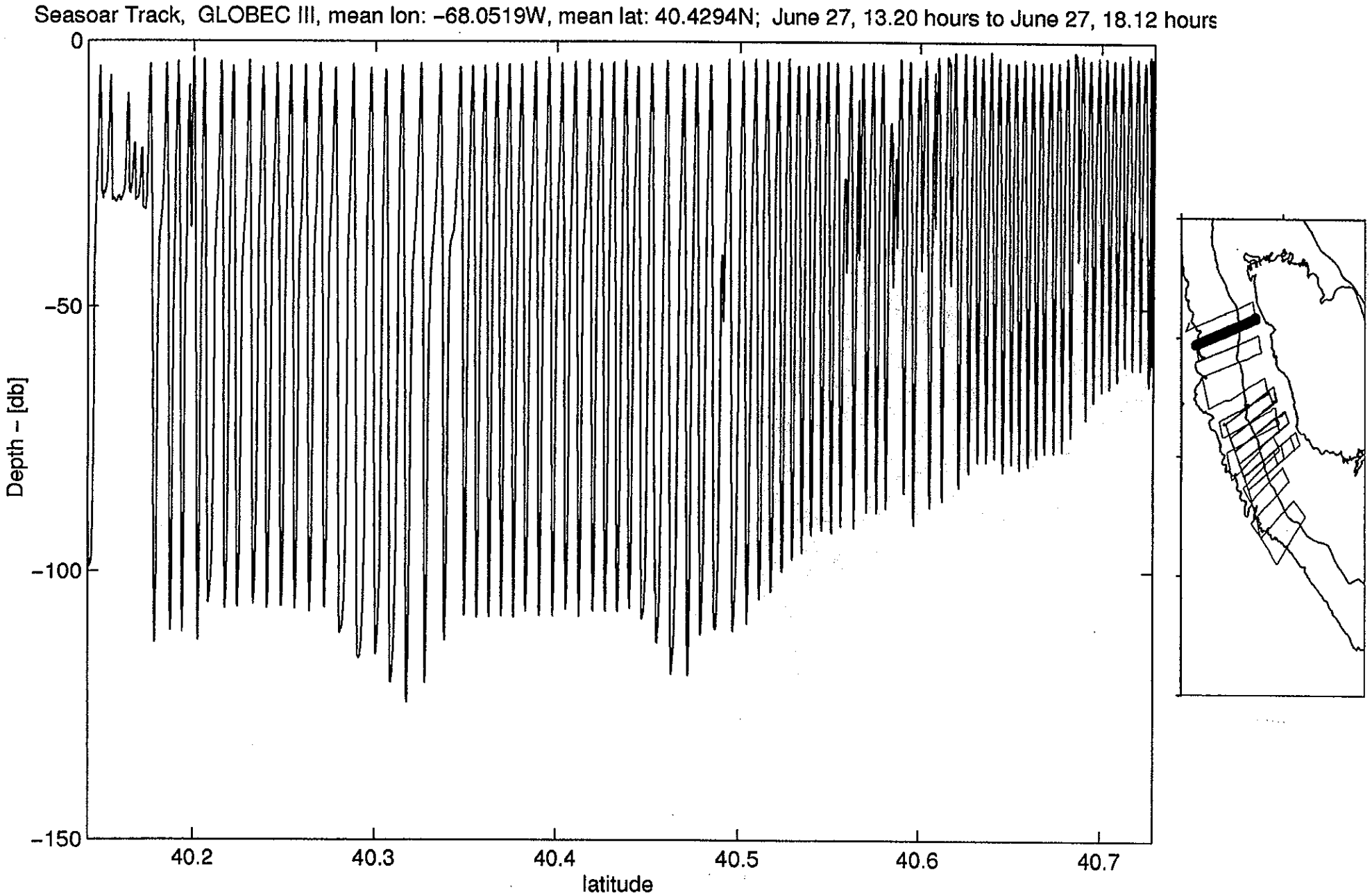
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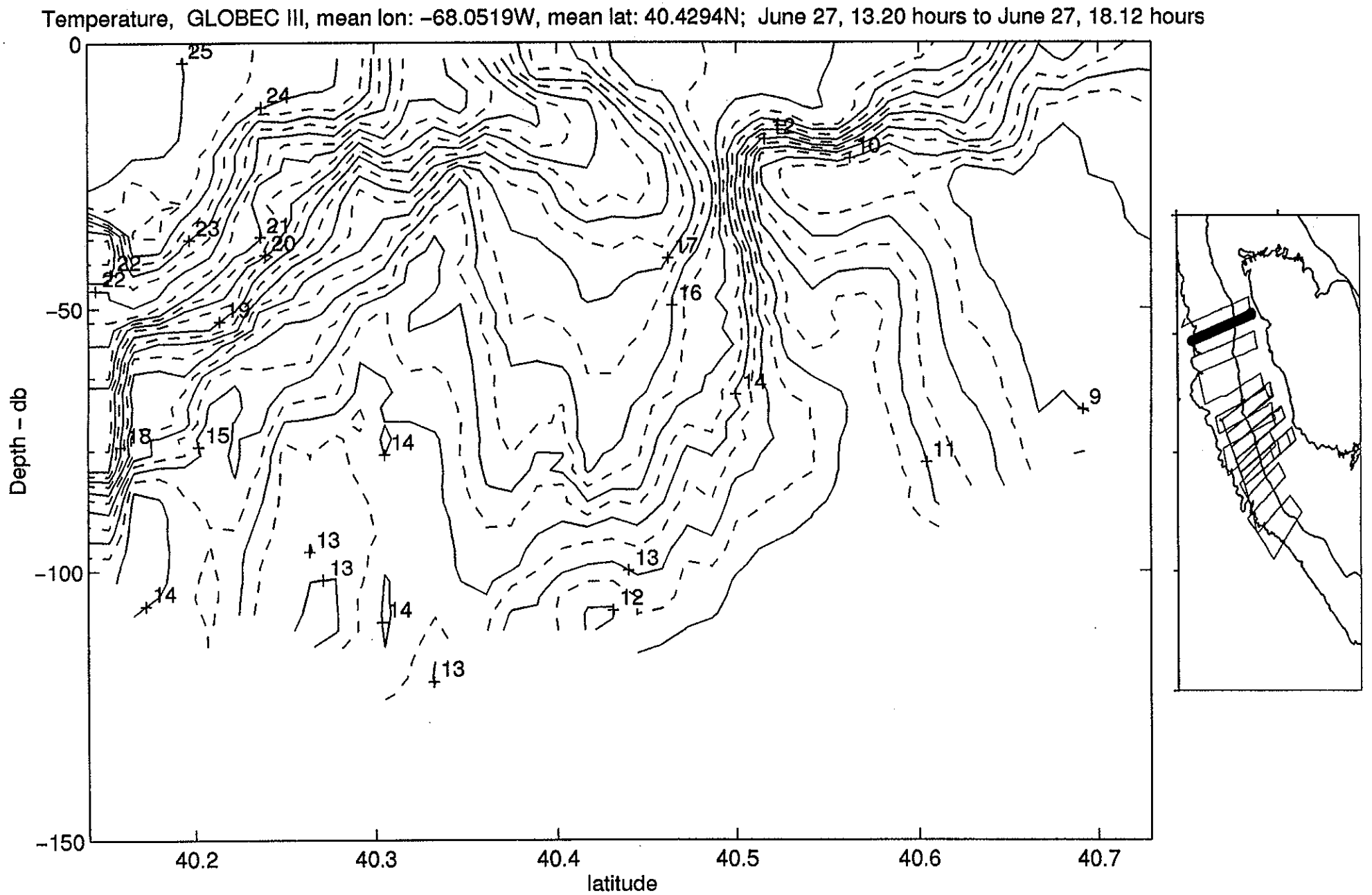
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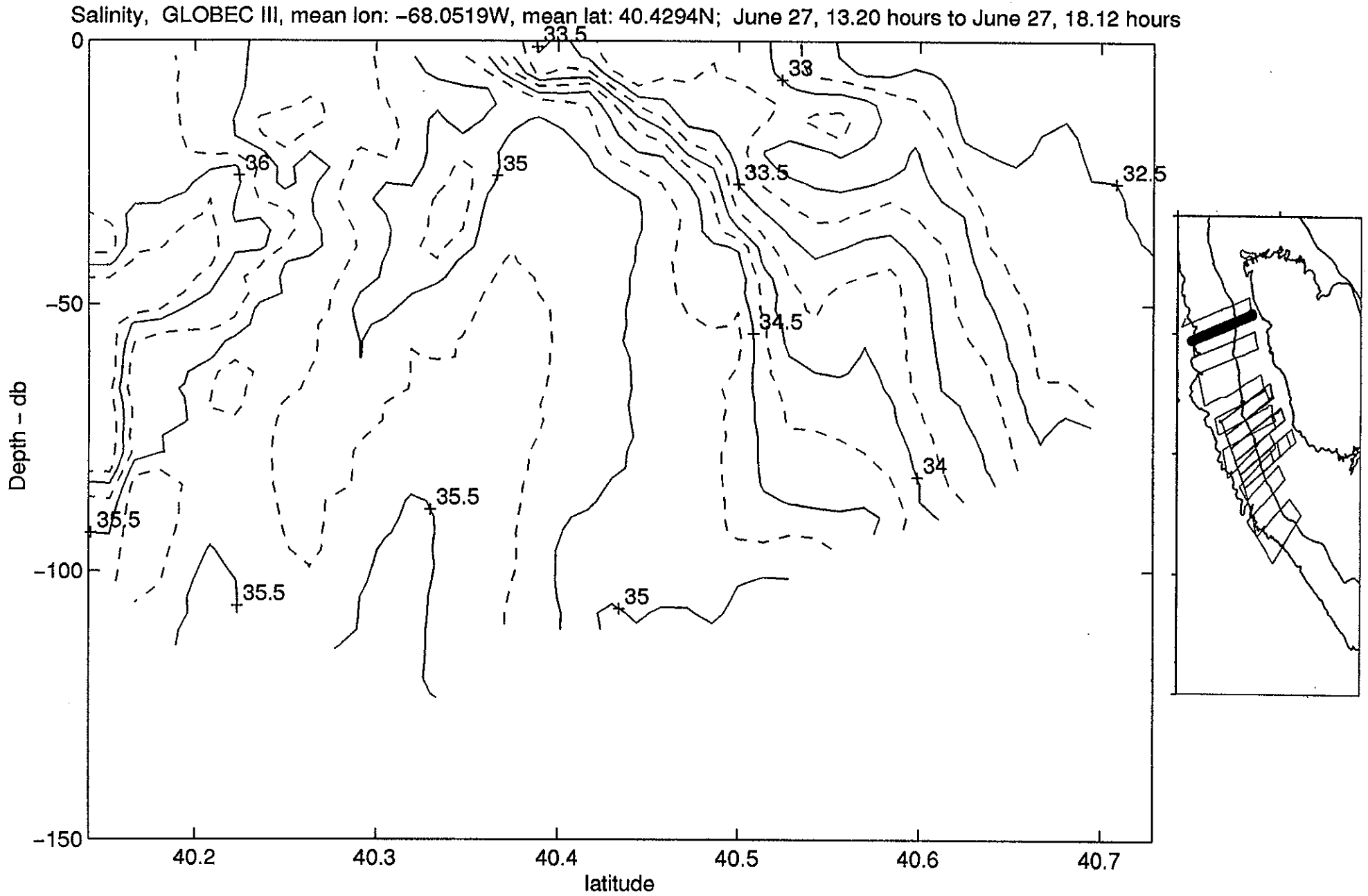
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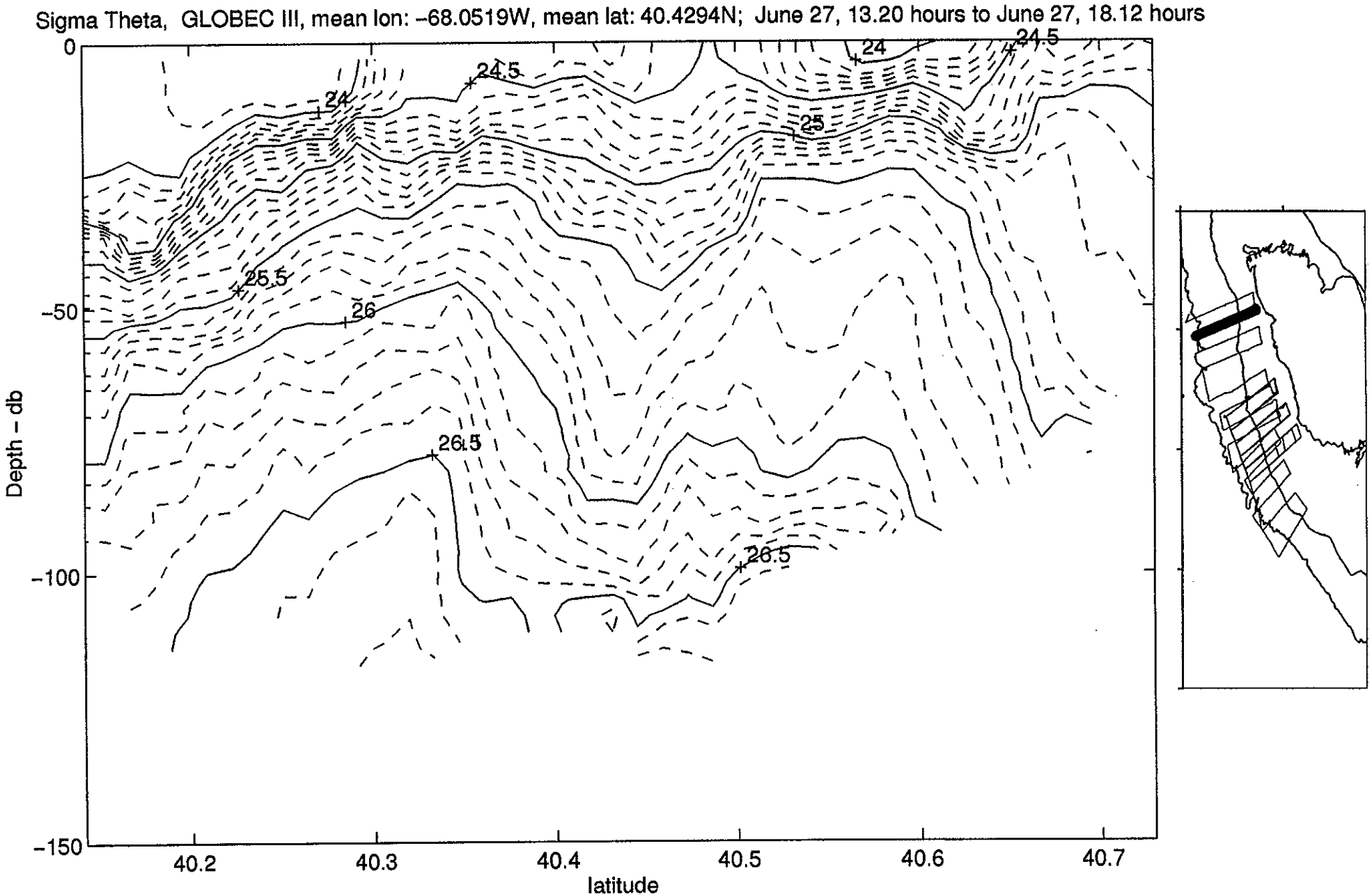
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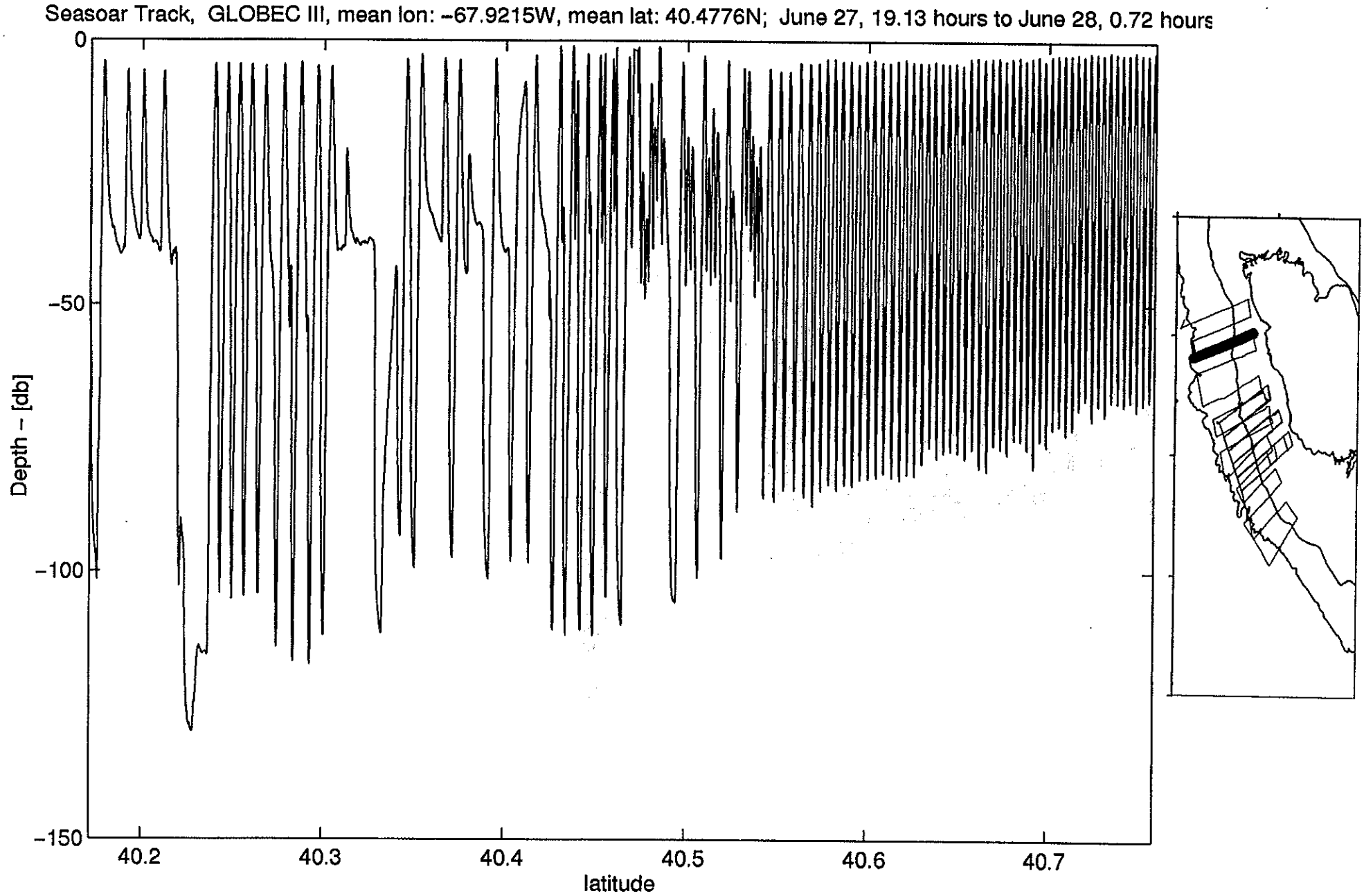
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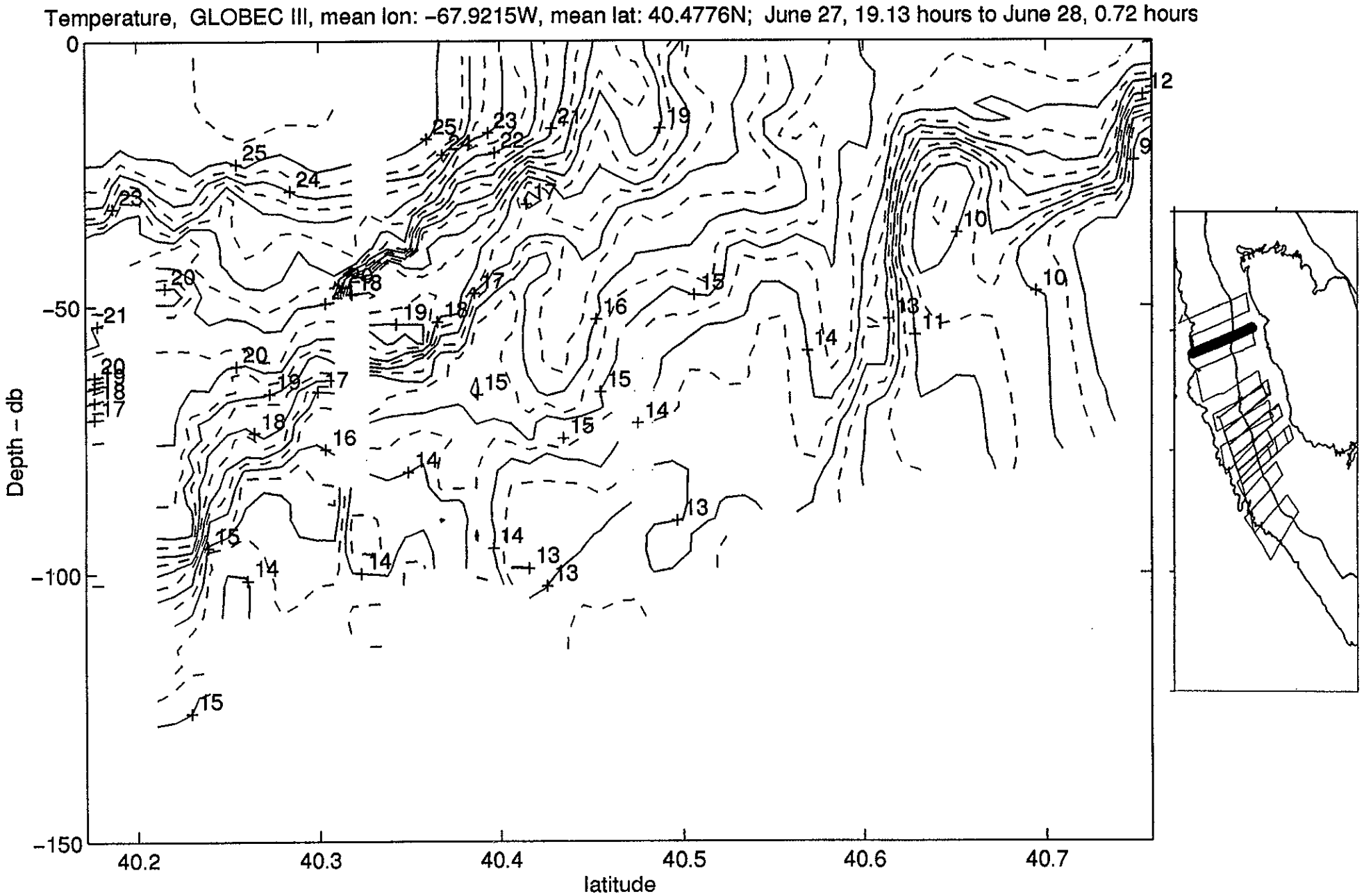
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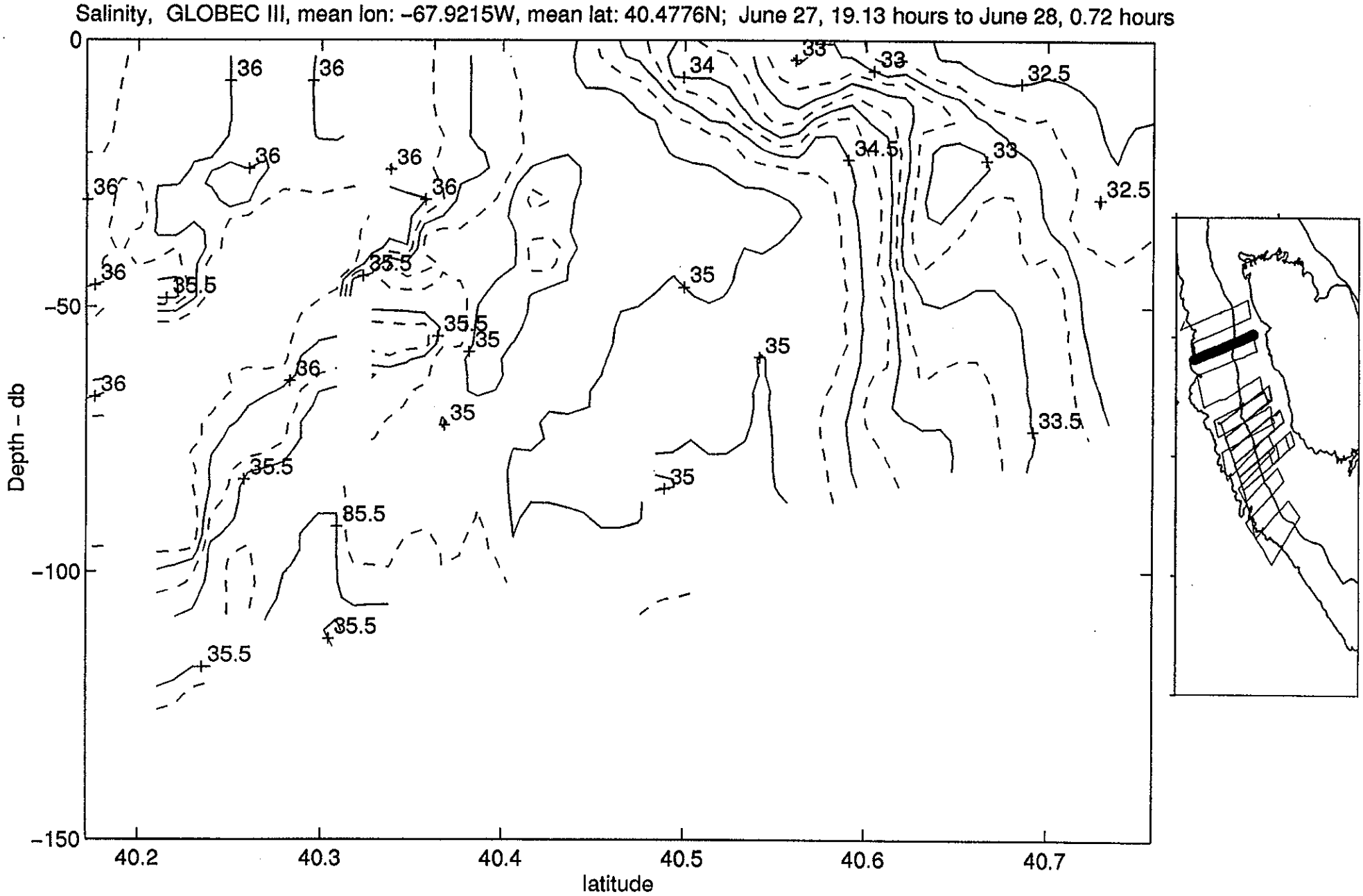
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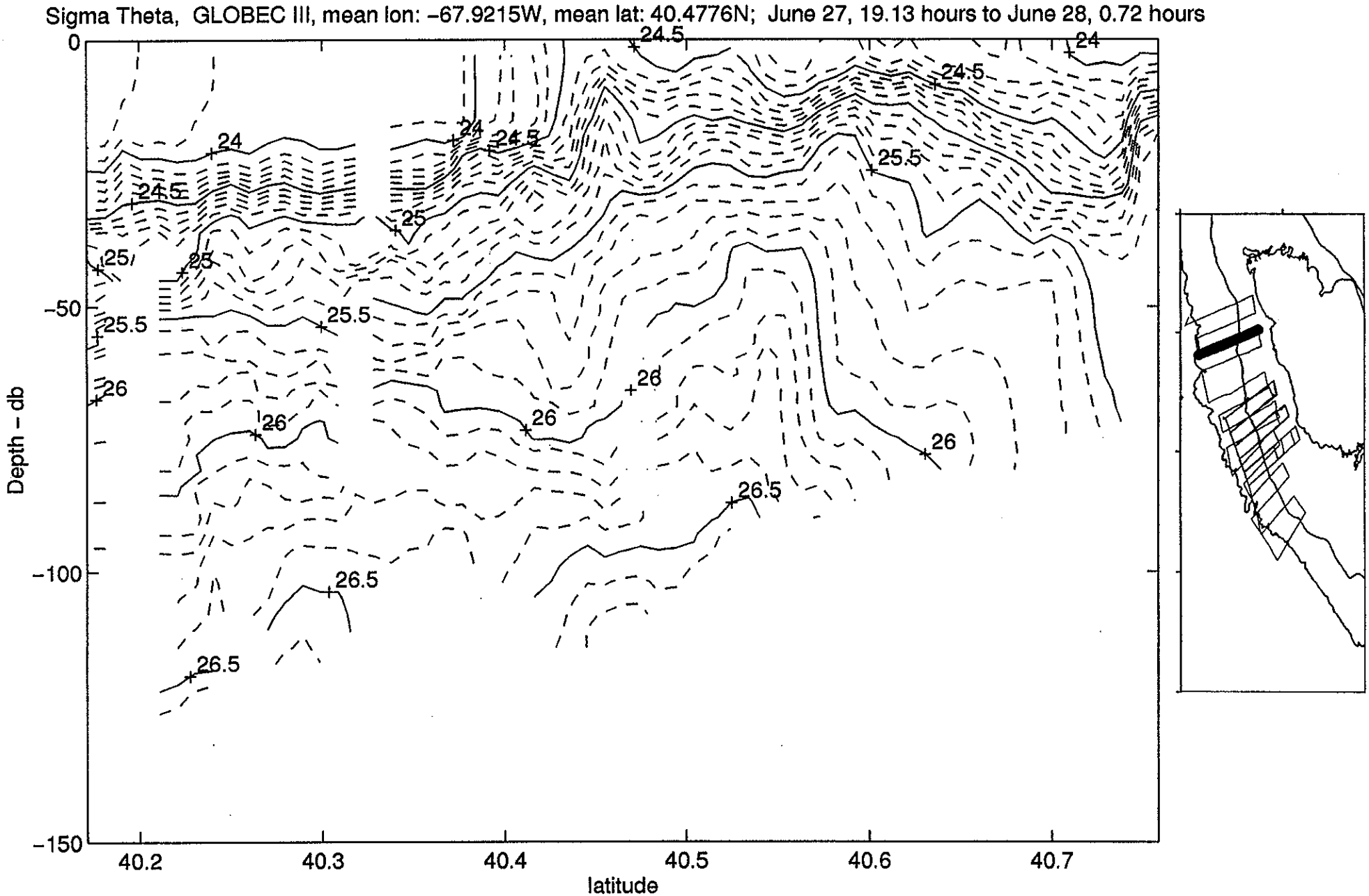
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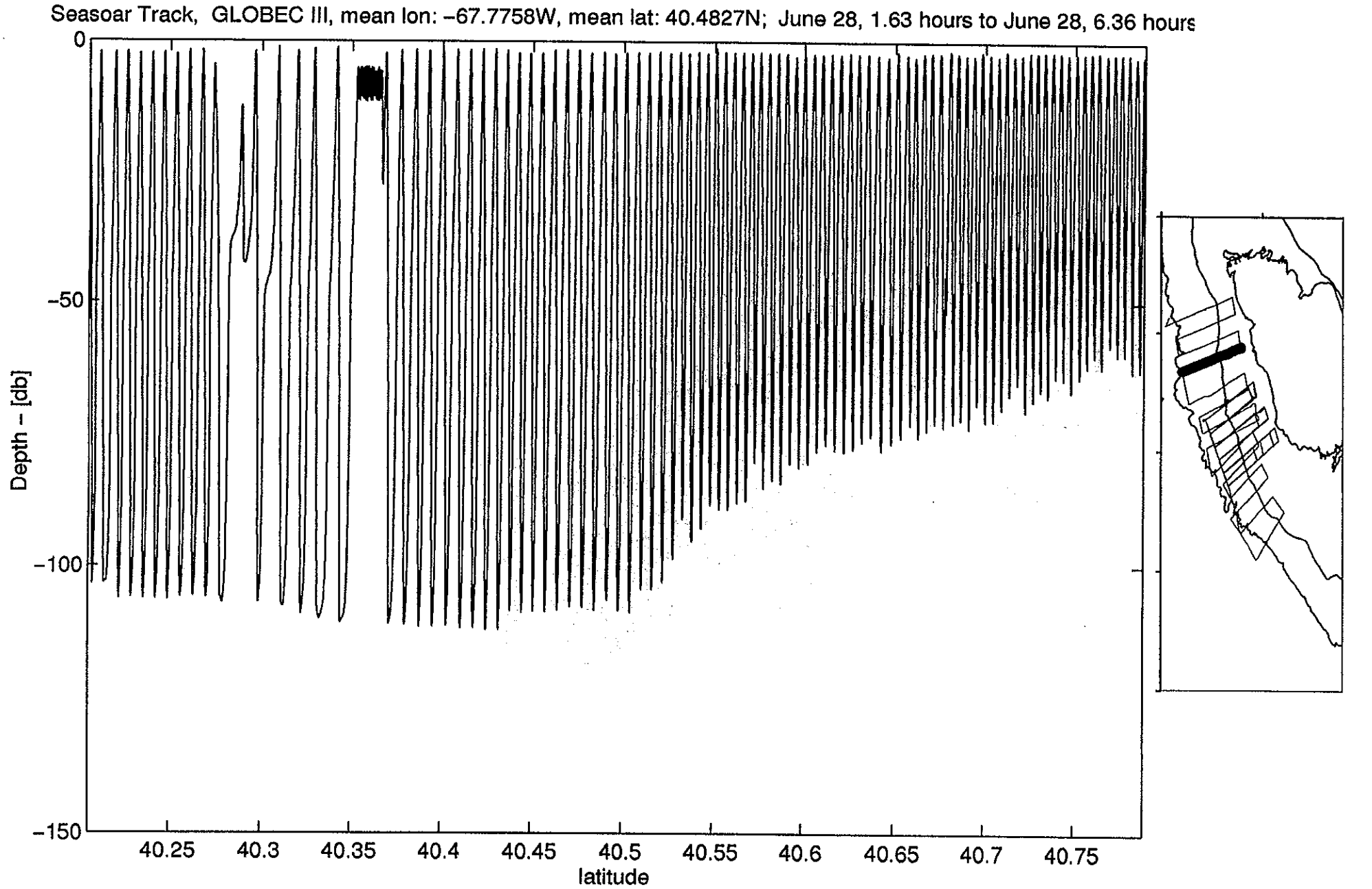
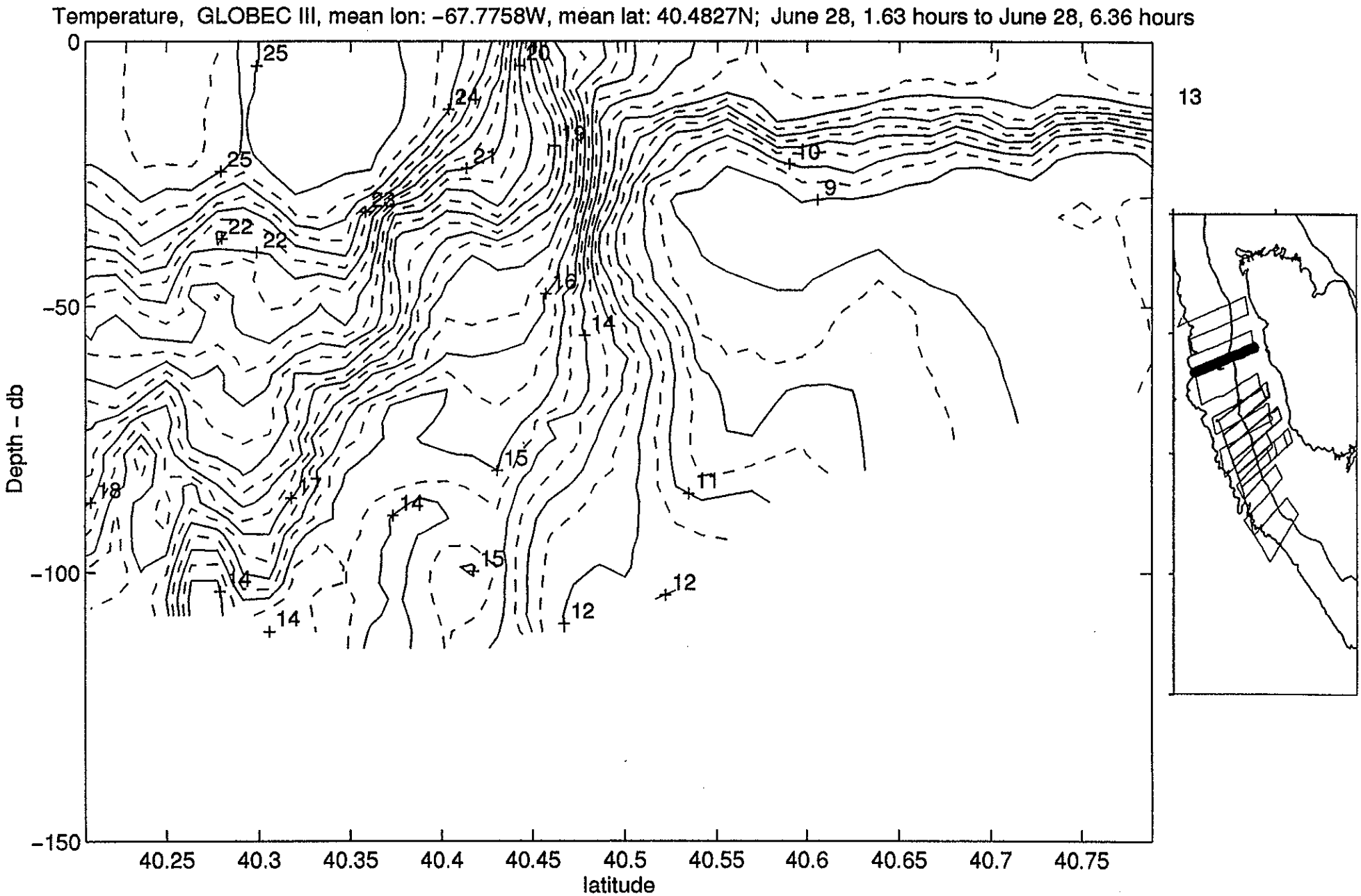
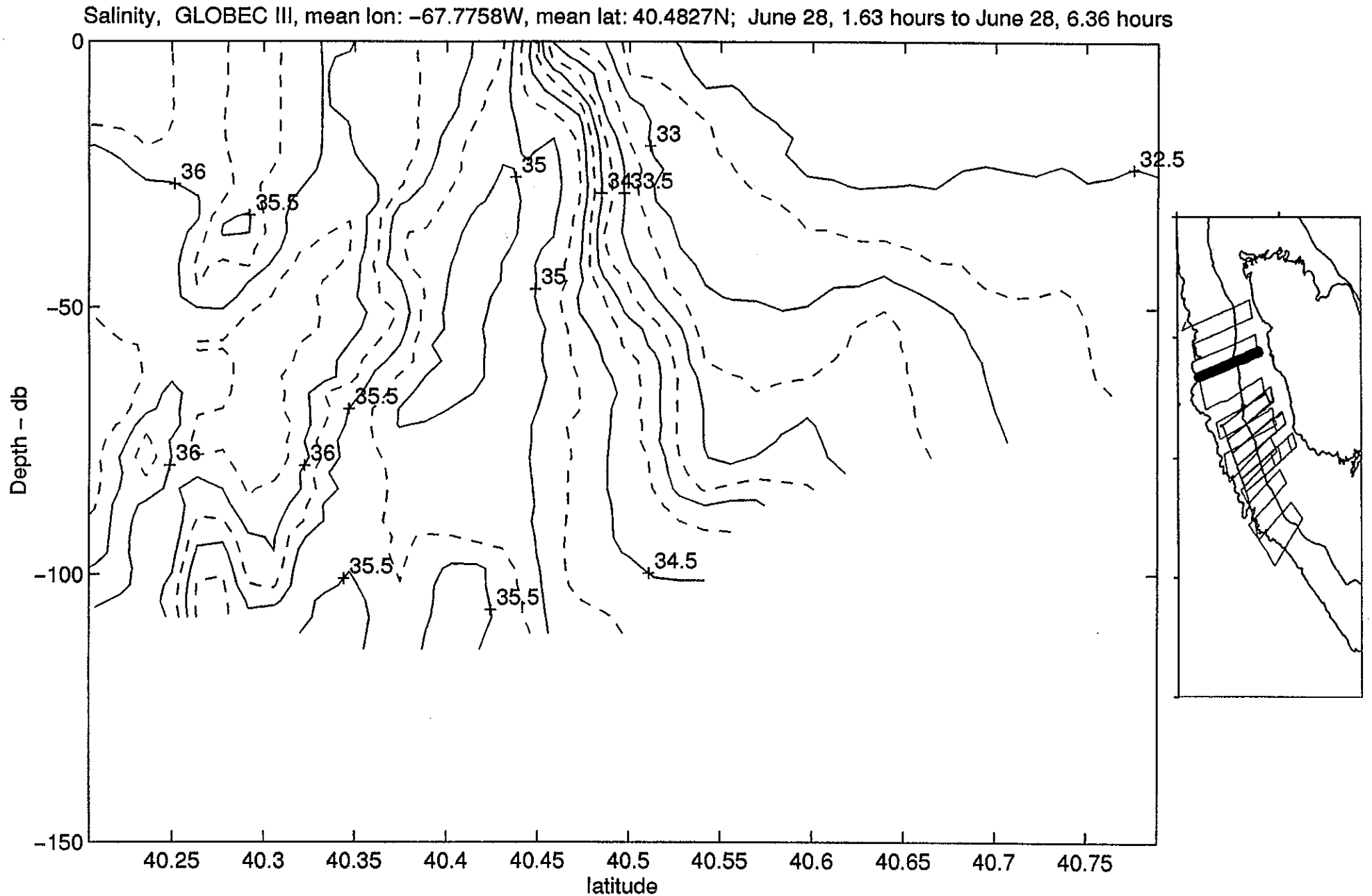
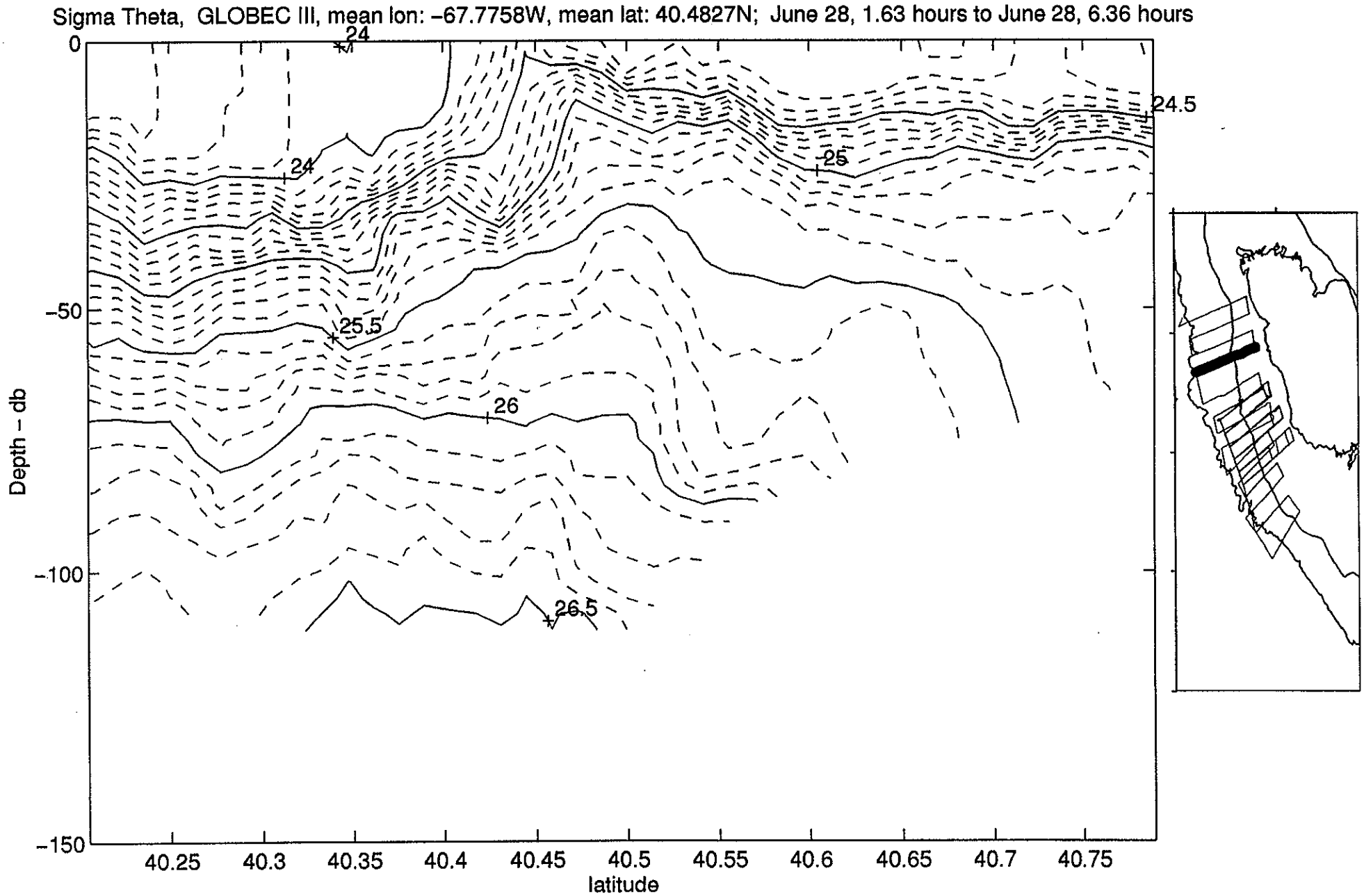
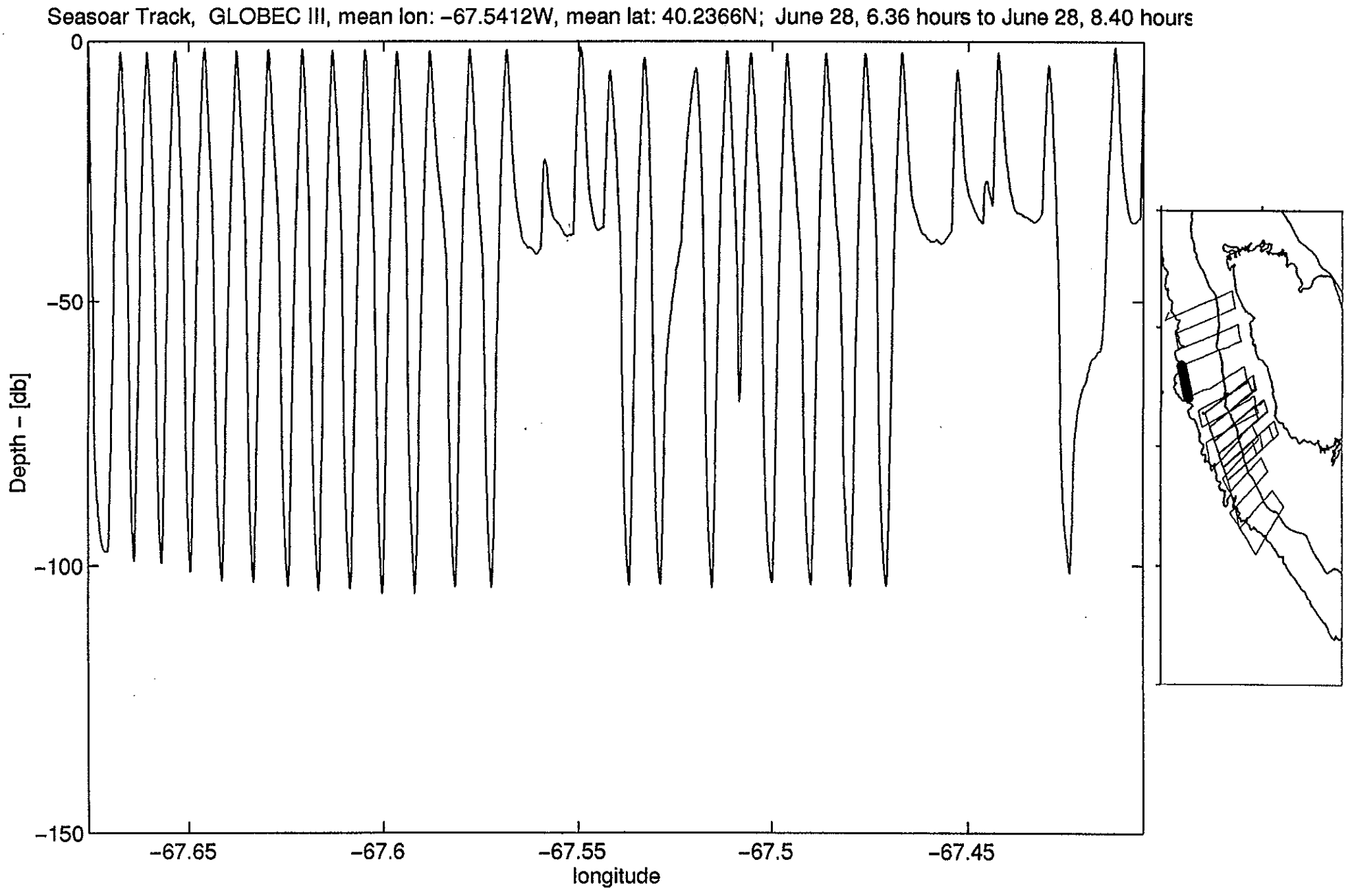
26.5

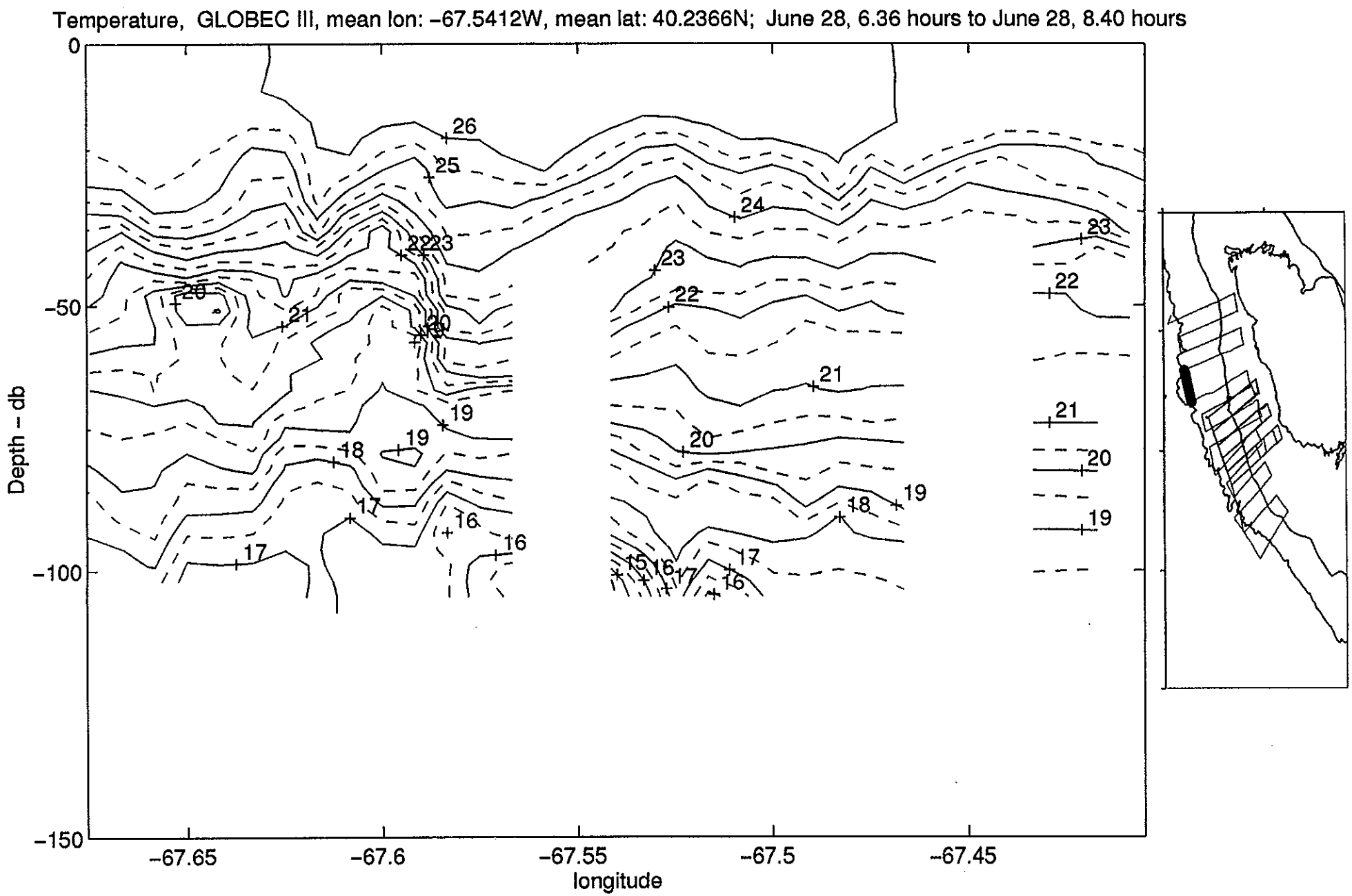

Seasoar Track, GLOBEC III, mean lon: −67.7758W, mean lat: 40.4827N; June 28, 1.63 hours to June 28, 6.36 hours
0
−50
−100
−150
Depth − [db]
40.25
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
latitude

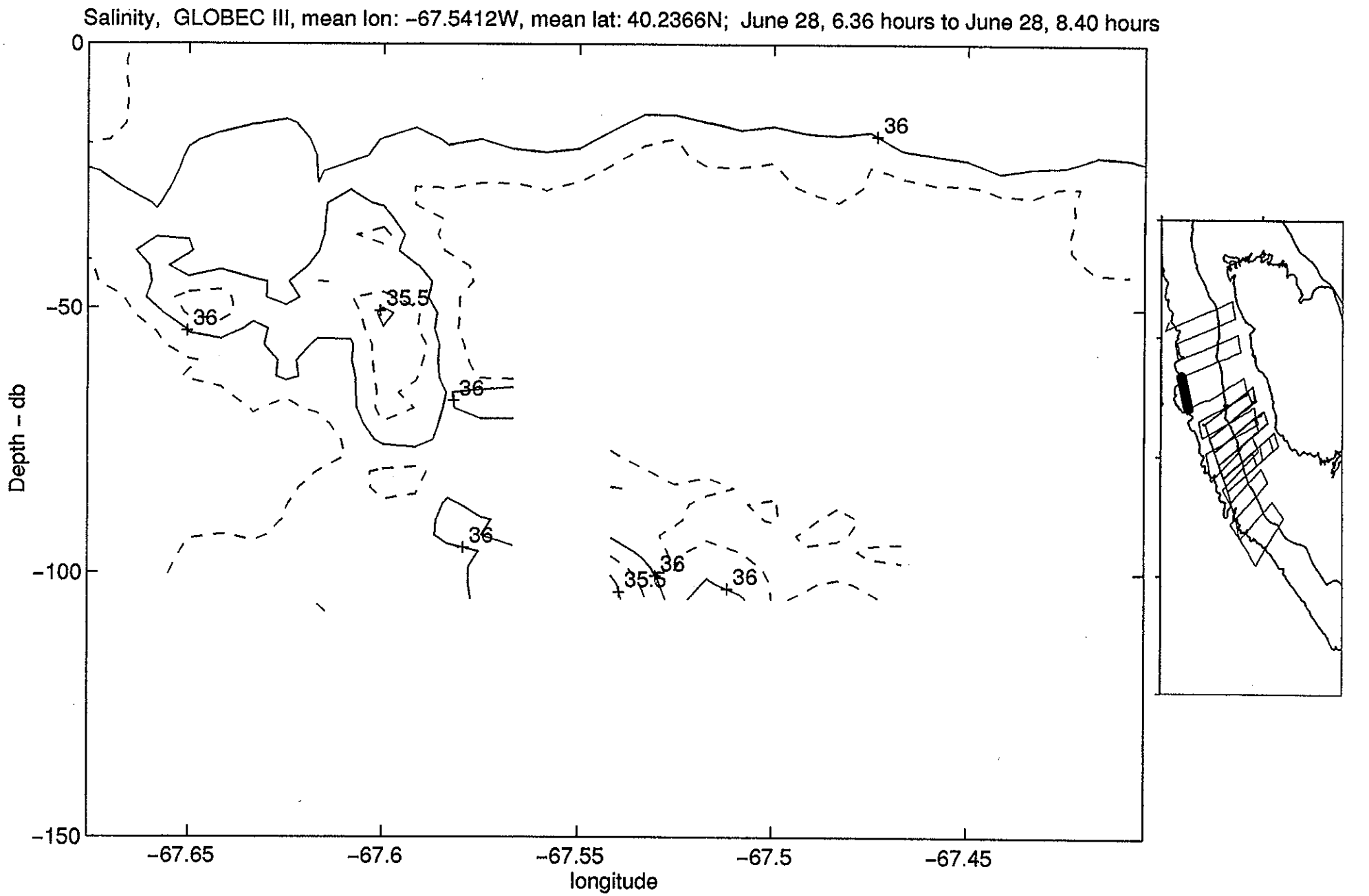

Temperature, GLOBEC III, mean lon: -67.7758W, mean lat: 40.4827N; June 28, 1.63 hours to June 28, 6.36 hours
0
-50
-100
-150
Depth - db
40.25
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
latitude
13

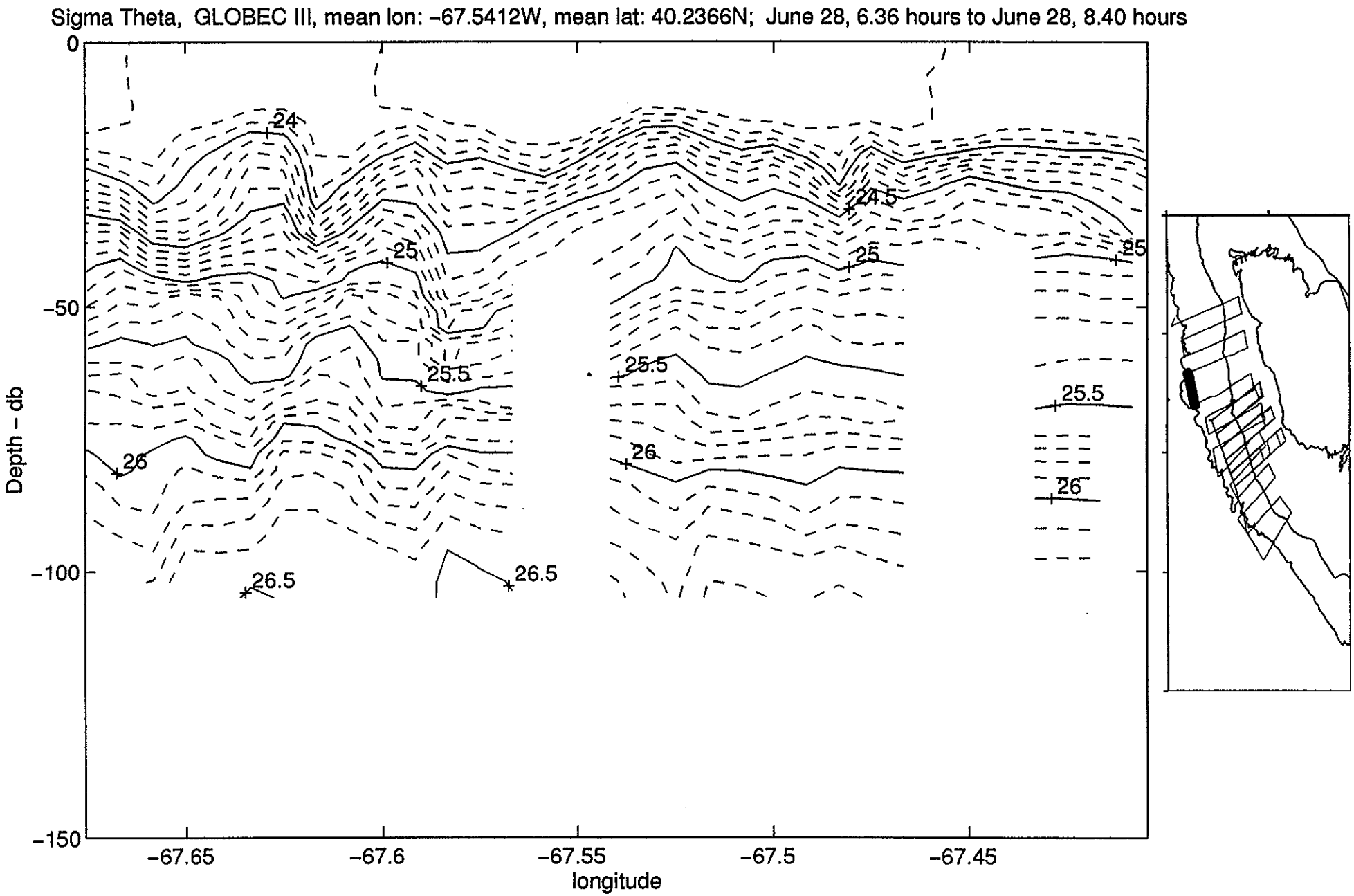

Salinity, GLOBEC III, mean lon: -67.7758W, mean lat: 40.4827N; June 28, 1.63 hours to June 28, 6.36 hours
0
-50
-100
-150
Depth - db
40.25
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
latitude
36
35.5
35
33
33.5
32.5
34.5

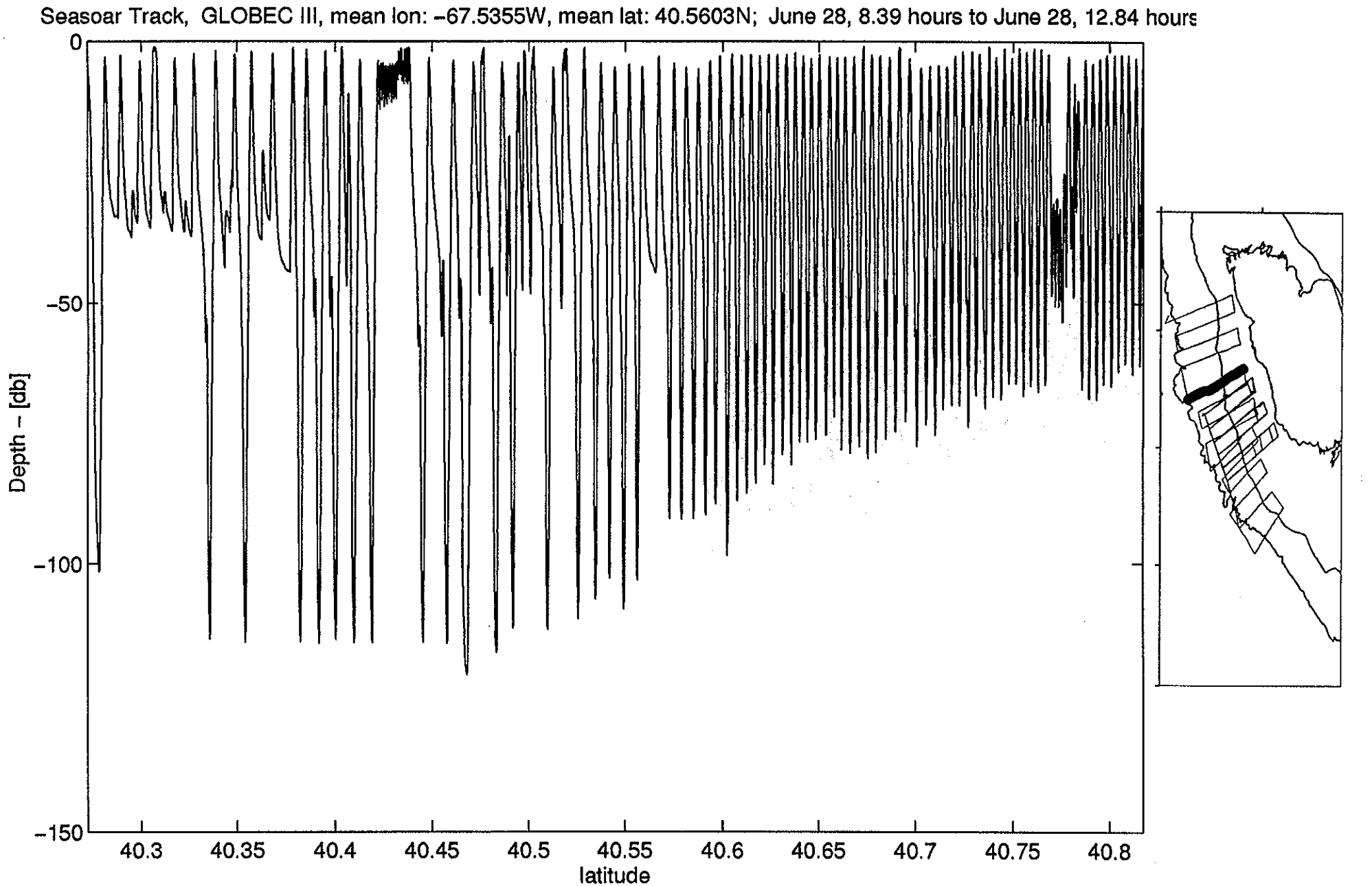

Sigma Theta, GLOBEC III, mean lon: −67.7758W, mean lat: 40.4827N; June 28, 1.63 hours to June 28, 6.36 hours
0
−50
−100
−150
Depth − db
24
24
24.5
25
25.5
26
26.5
40.25
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
latitude

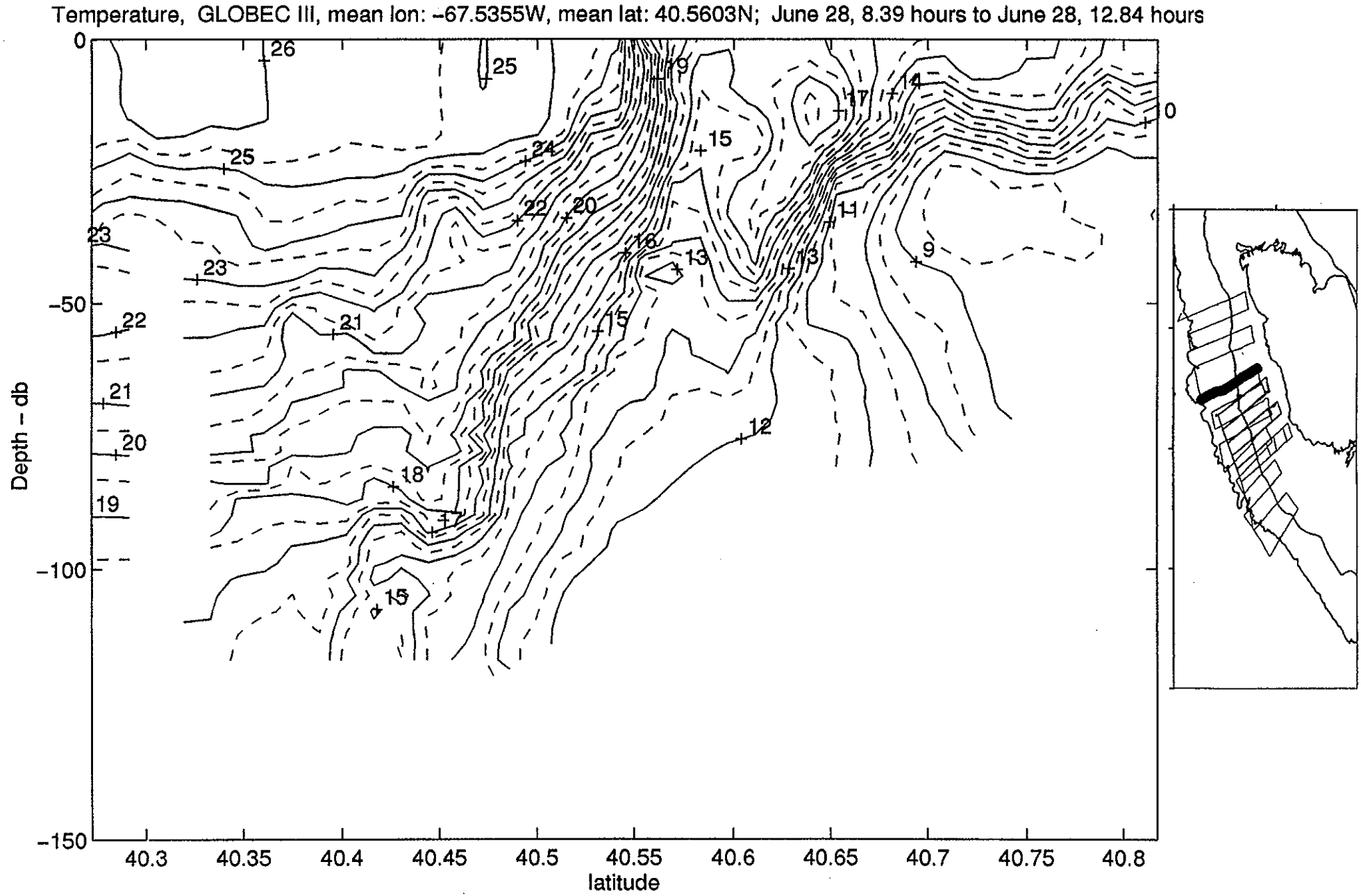

Seasoar Track, GLOBEC III, mean lon: −67.5412W, mean lat: 40.2366N; June 28, 6.36 hours to June 28, 8.40 hours
0
−50
−100
−150
Depth − [db]
−67.65
−67.6
−67.55
−67.5
−67.45
longitude

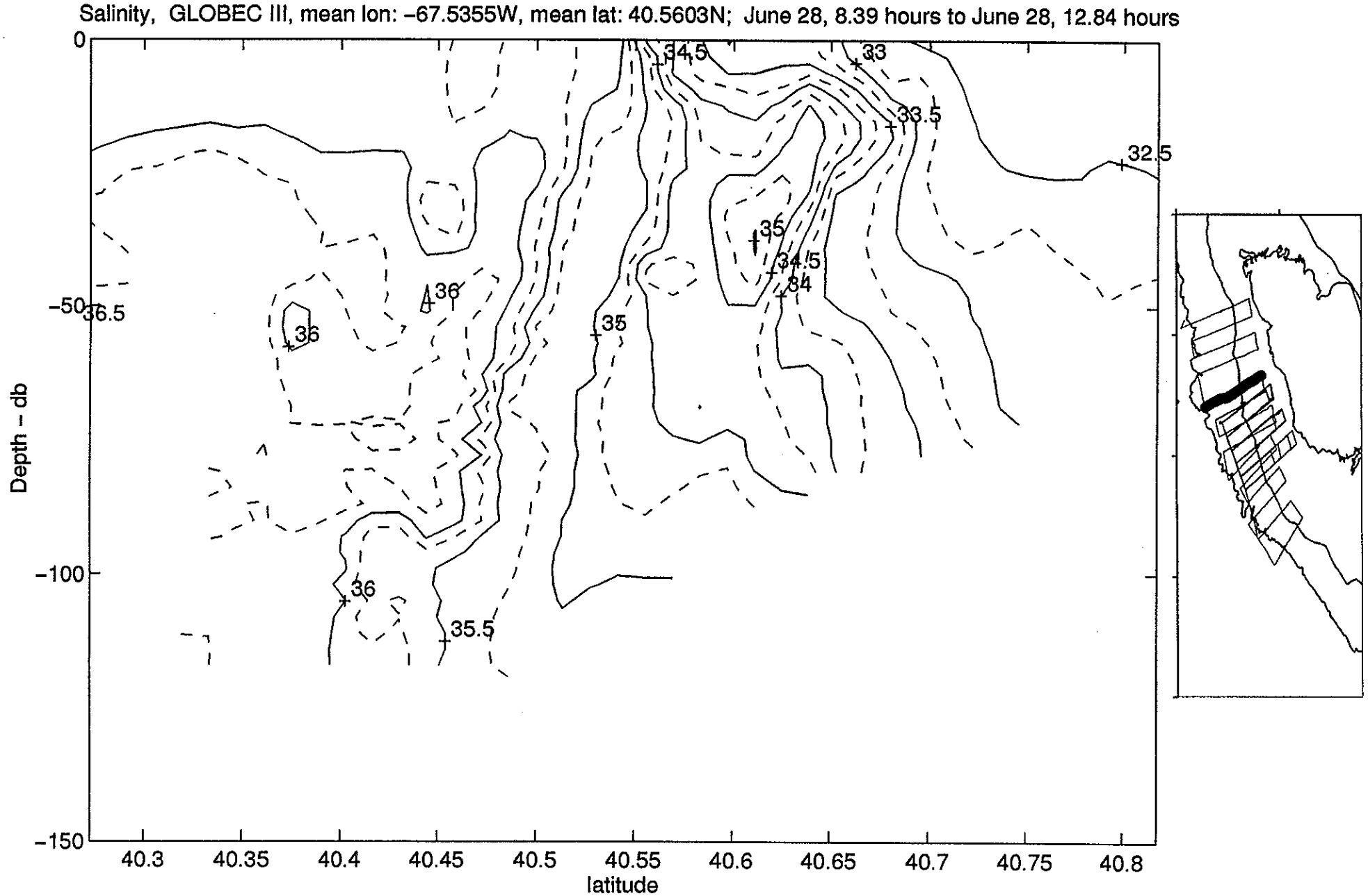

Temperature, GLOBEC III, mean lon: -67.5412W, mean lat: 40.2366N; June 28, 6.36 hours to June 28, 8.40 hours
0
-50
-100
-150
Depth - db
-67.65
-67.6
-67.55
-67.5
-67.45
longitude


Salinity, GLOBEC III, mean lon: -67.5412W, mean lat: 40.2366N; June 28, 6.36 hours to June 28, 8.40 hours
0
-50
-100
-150
Depth - db
-67.65
-67.6
-67.55
-67.5
-67.45
longitude
36
35.5


Sigma Theta, GLOBEC III, mean lon: -67.5412W, mean lat: 40.2366N; June 28, 6.36 hours to June 28, 8.40 hours
0
-50
-100
-150
Depth - db
-67.65
-67.6
-67.55
-67.5
-67.45
longitude
24
24.5
25
25.5
26
26.5


Seasoar Track, GLOBEC III, mean lon: -67.5355W, mean lat: 40.5603N; June 28, 8.39 hours to June 28, 12.84 hours
0
-50
-100
-150
Depth - [db]
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
latitude


Temperature, GLOBEC III, mean lon: -67.5355W, mean lat: 40.5603N; June 28, 8.39 hours to June 28, 12.84 hours
Depth - db
latitude
0
-50
-100
-150
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8


Salinity, GLOBEC III, mean lon: −67.5355W, mean lat: 40.5603N; June 28, 8.39 hours to June 28, 12.84 hours
0
−50
−100
−150
Depth – db
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
latitude
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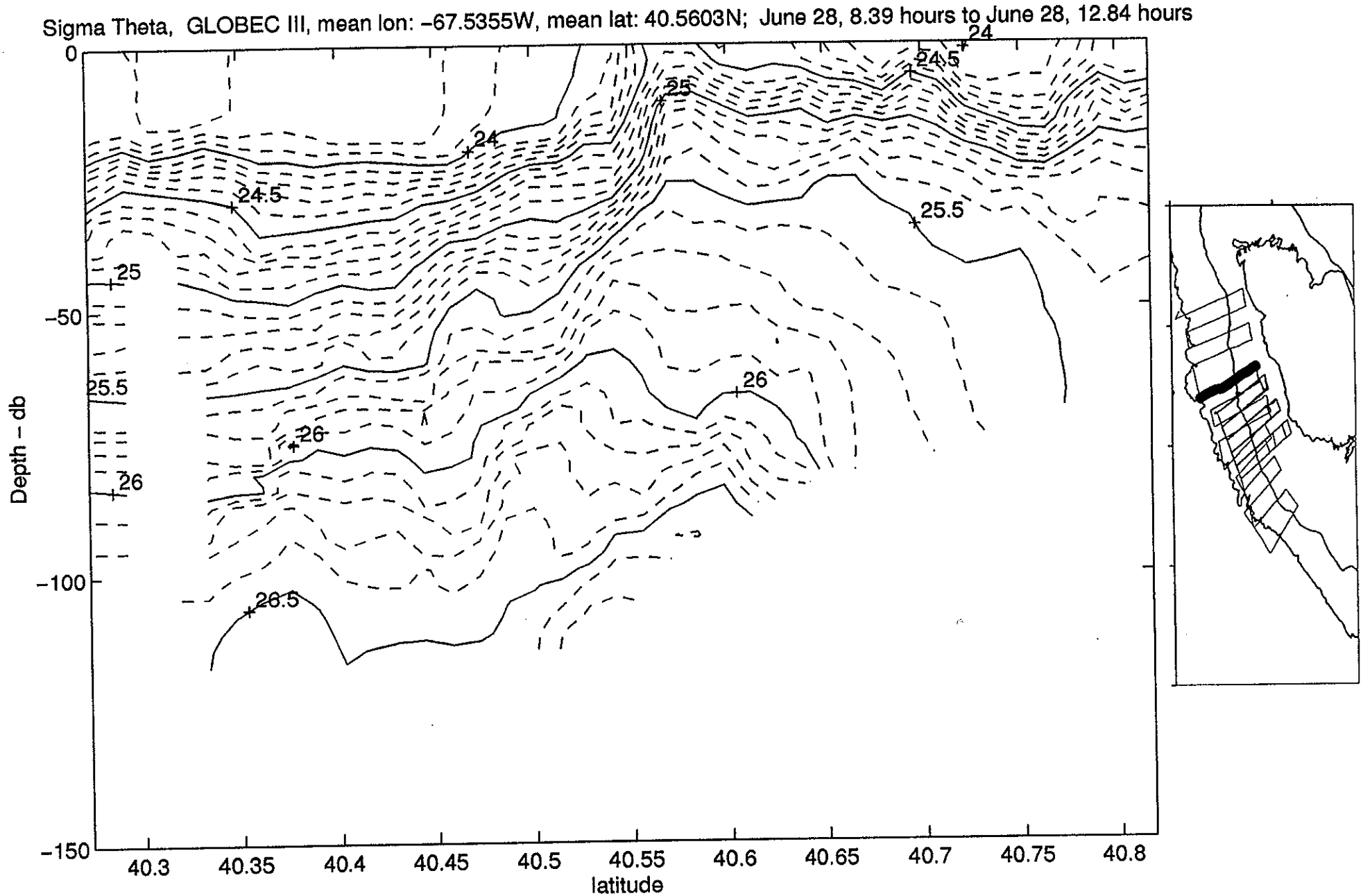
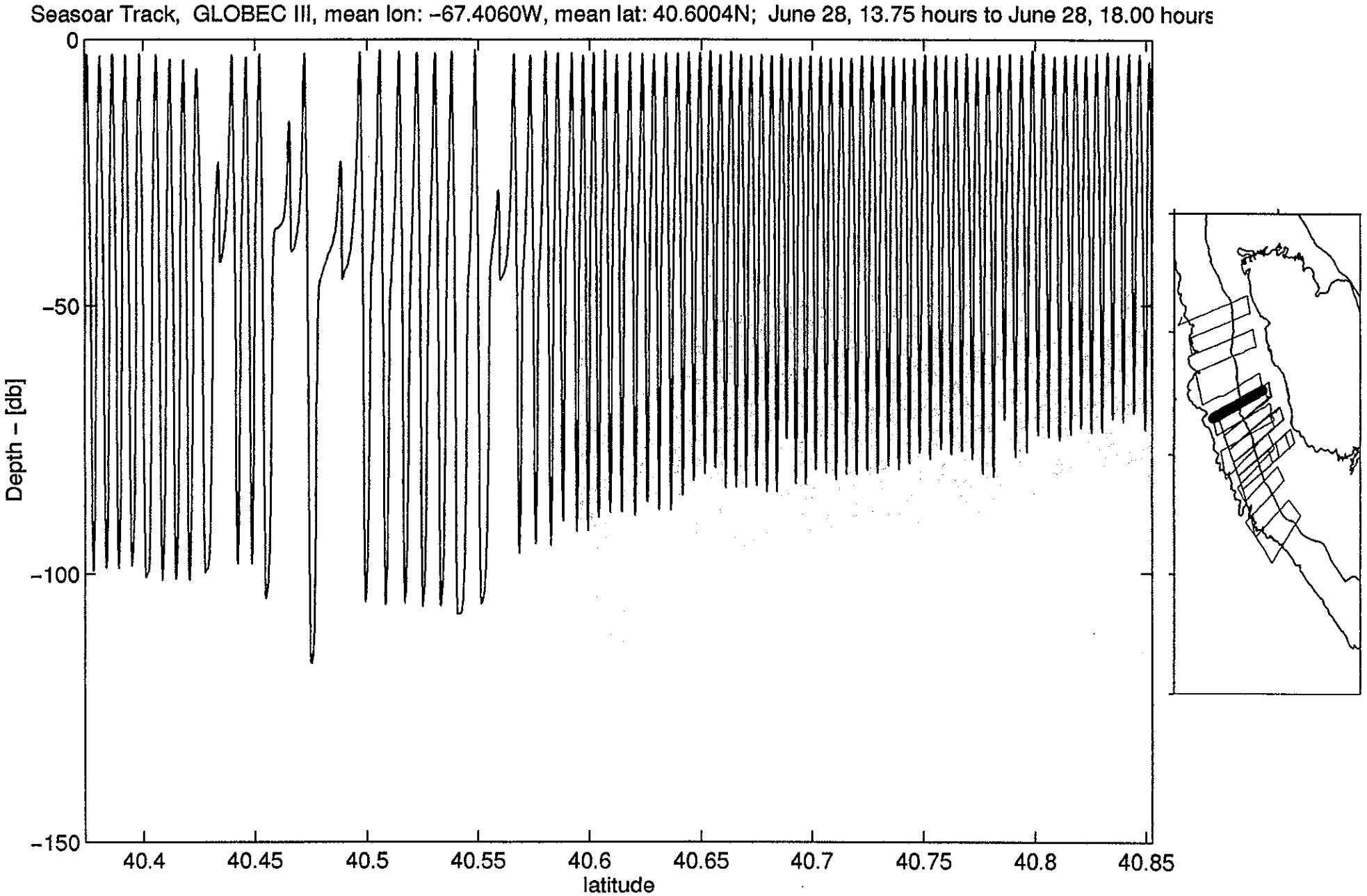
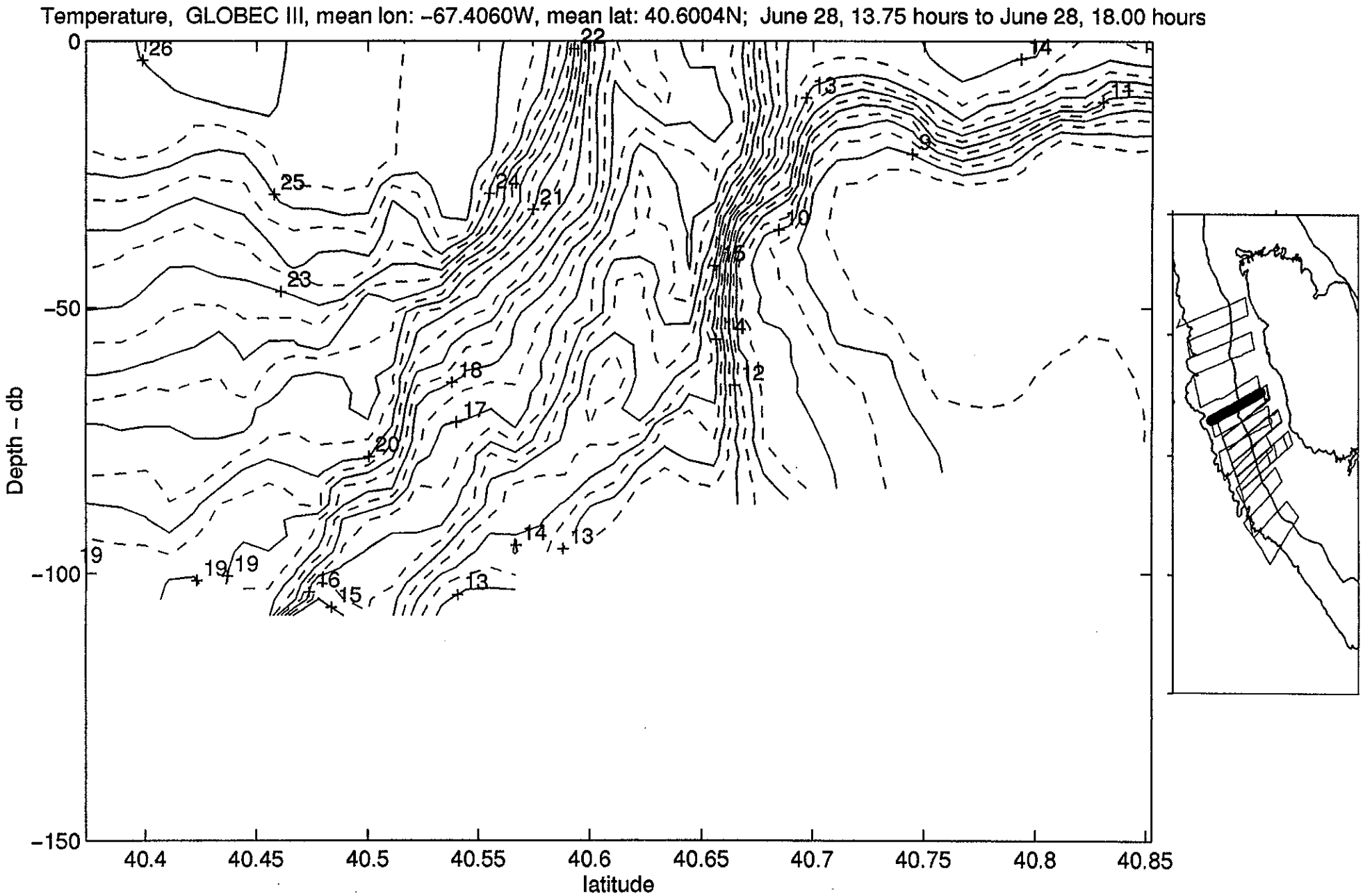
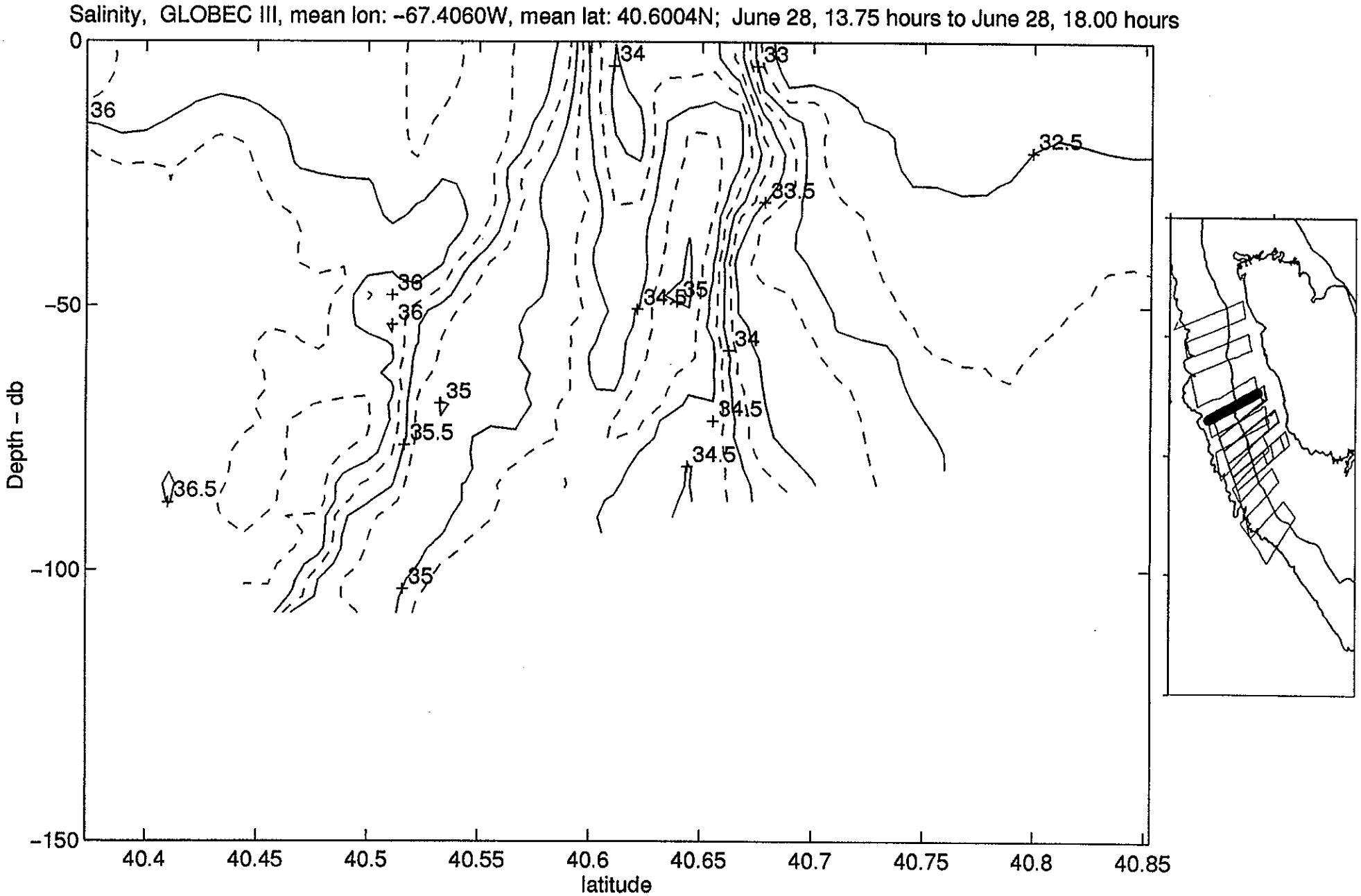
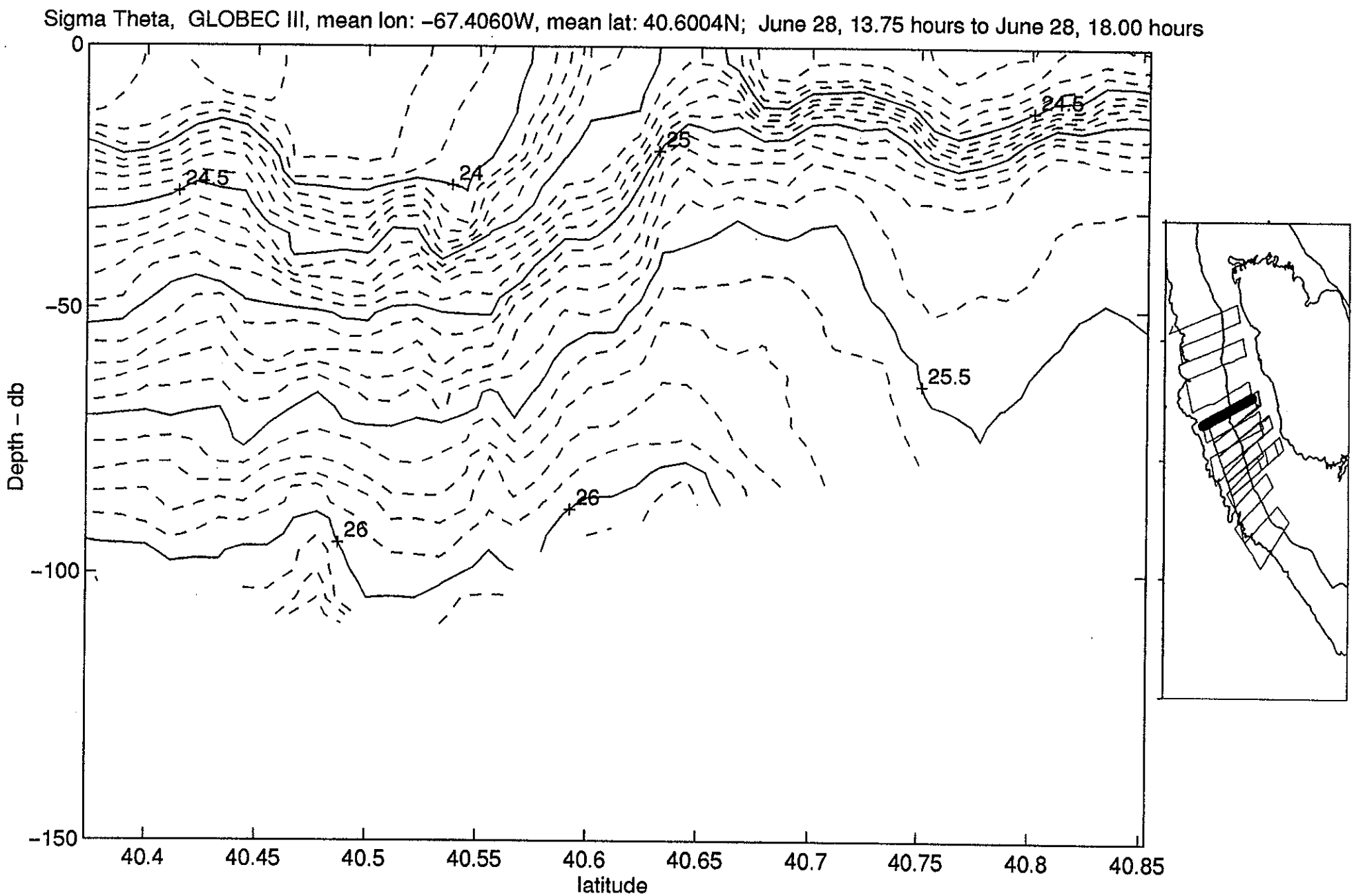
34.5
34
36.5
36
36
35
36
35.5

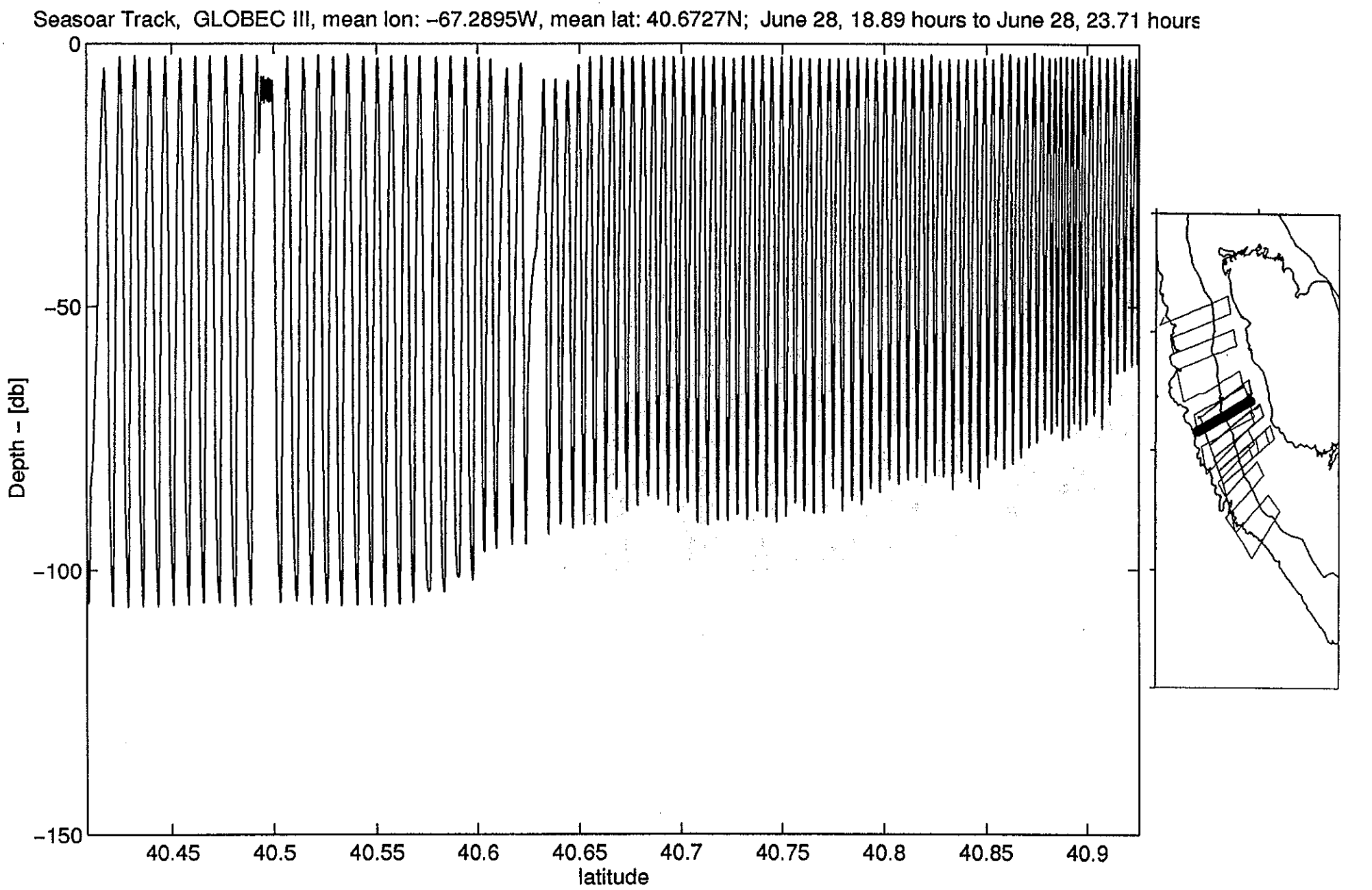

Sigma Theta, GLOBEC III, mean lon: -67.5355W, mean lat: 40.5603N; June 28, 8.39 hours to June 28, 12.84 hours
Depth - db
latitude
0
-50
-100
-150
40.3
40.35
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
24
24.5
25
25.5
26
26.5

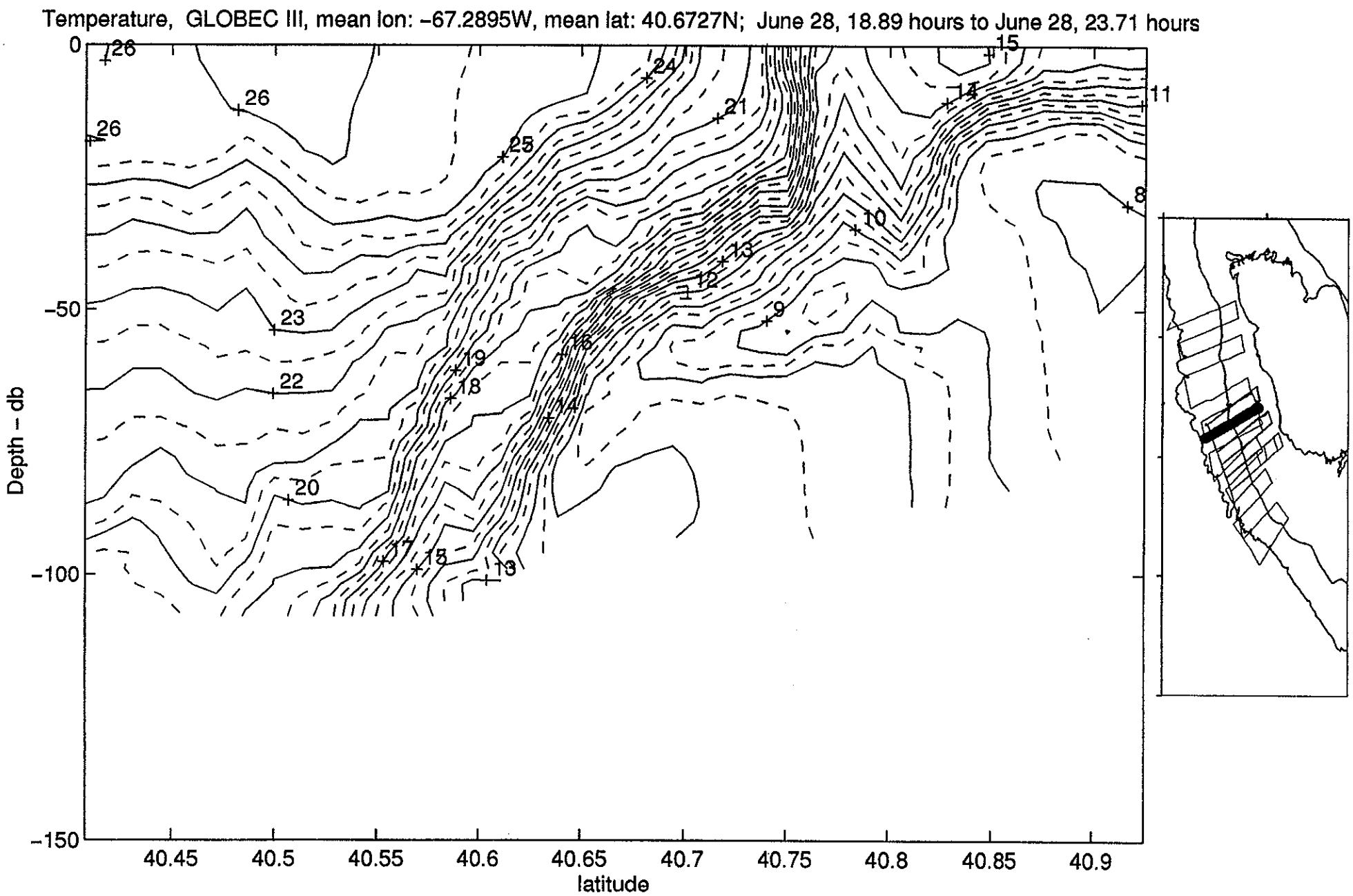

Seasoar Track, GLOBEC III, mean lon: -67.4060W, mean lat: 40.6004N; June 28, 13.75 hours to June 28, 18.00 hours
0
-50
-100
-150
Depth - [db]
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude


Temperature, GLOBEC III, mean lon: -67.4060W, mean lat: 40.6004N; June 28, 13.75 hours to June 28, 18.00 hours
Depth - db
latitude
0
-50
-100
-150
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85


Salinity, GLOBEC III, mean lon: -67.4060W, mean lat: 40.6004N; June 28, 13.75 hours to June 28, 18.00 hours
0
-50
-100
-150
Depth - db
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude
36
34
33
32.5
33.5
36
36
35
34.5
35
34
34.5
35
35.5
36.5
35


Sigma Theta, GLOBEC III, mean lon: -67.4060W, mean lat: 40.6004N; June 28, 13.75 hours to June 28, 18.00 hours
0
-50
-100
-150
Depth - db
24.5
24
25
24.5
25.5
26
26
40.4
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude


Seasoar Track, GLOBEC III, mean lon: −67.2895W, mean lat: 40.6727N; June 28, 18.89 hours to June 28, 23.71 hours
0
−50
−100
−150
Depth − [db]
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude


Temperature, GLOBEC III, mean lon: -67.2895W, mean lat: 40.6727N; June 28, 18.89 hours to June 28, 23.71 hours
Depth - db
latitude
0
-50
-100
-150
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
26
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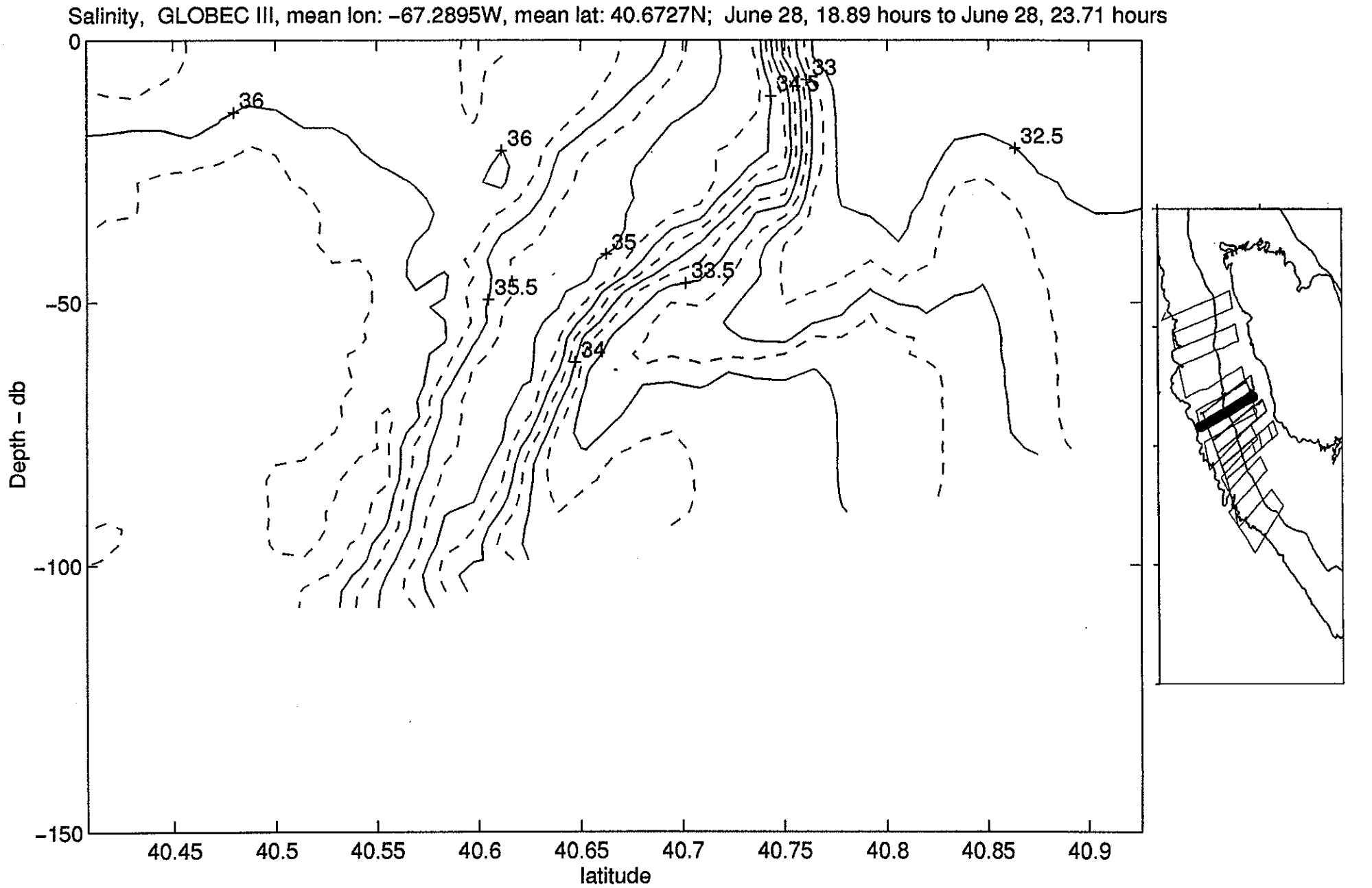
Salinity, GLOBEC III, mean lon: −67.2895W, mean lat: 40.6727N; June 28, 18.89 hours to June 28, 23.71 hours
0
−50
−100
−150
Depth − db
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude
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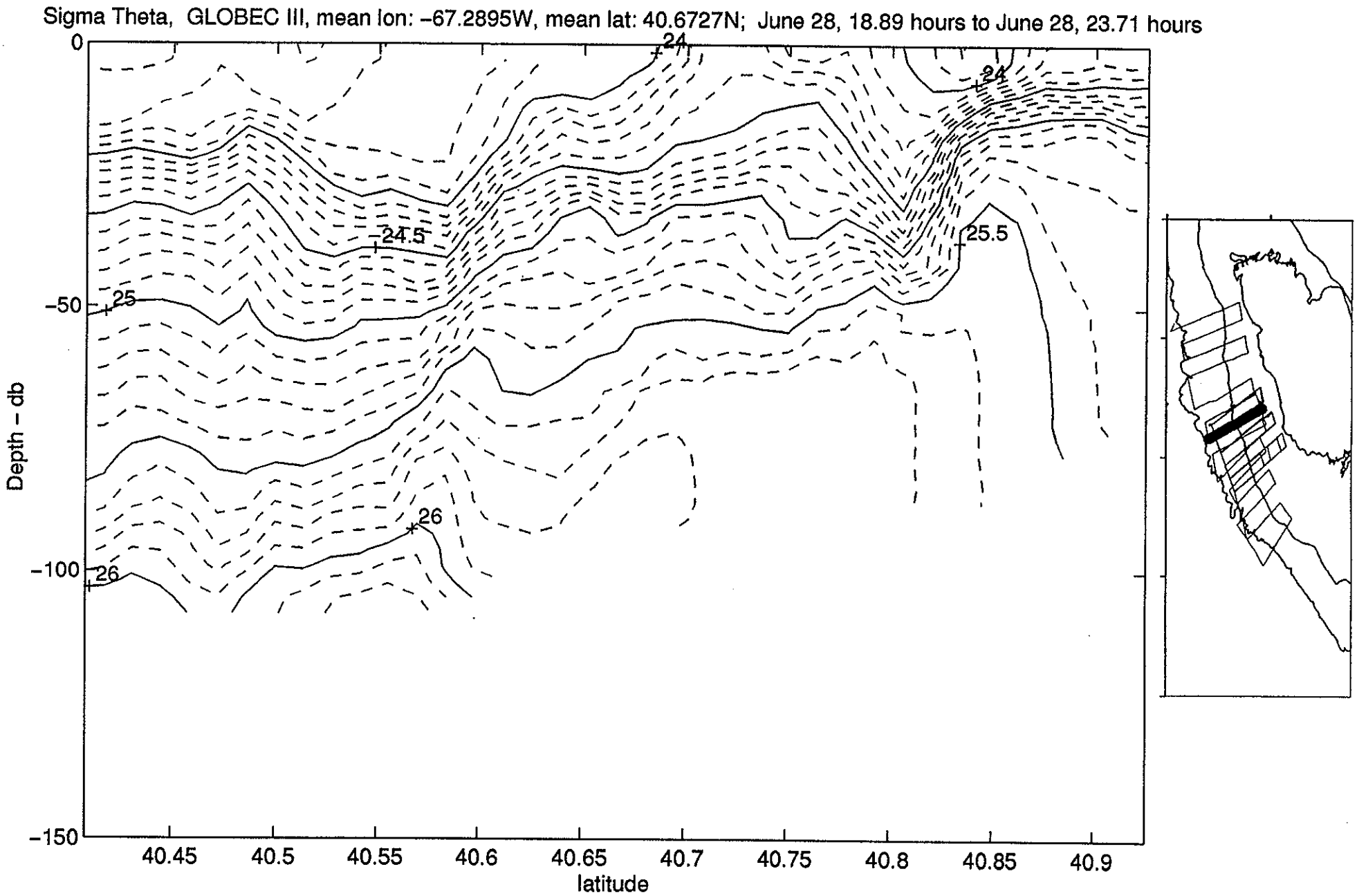
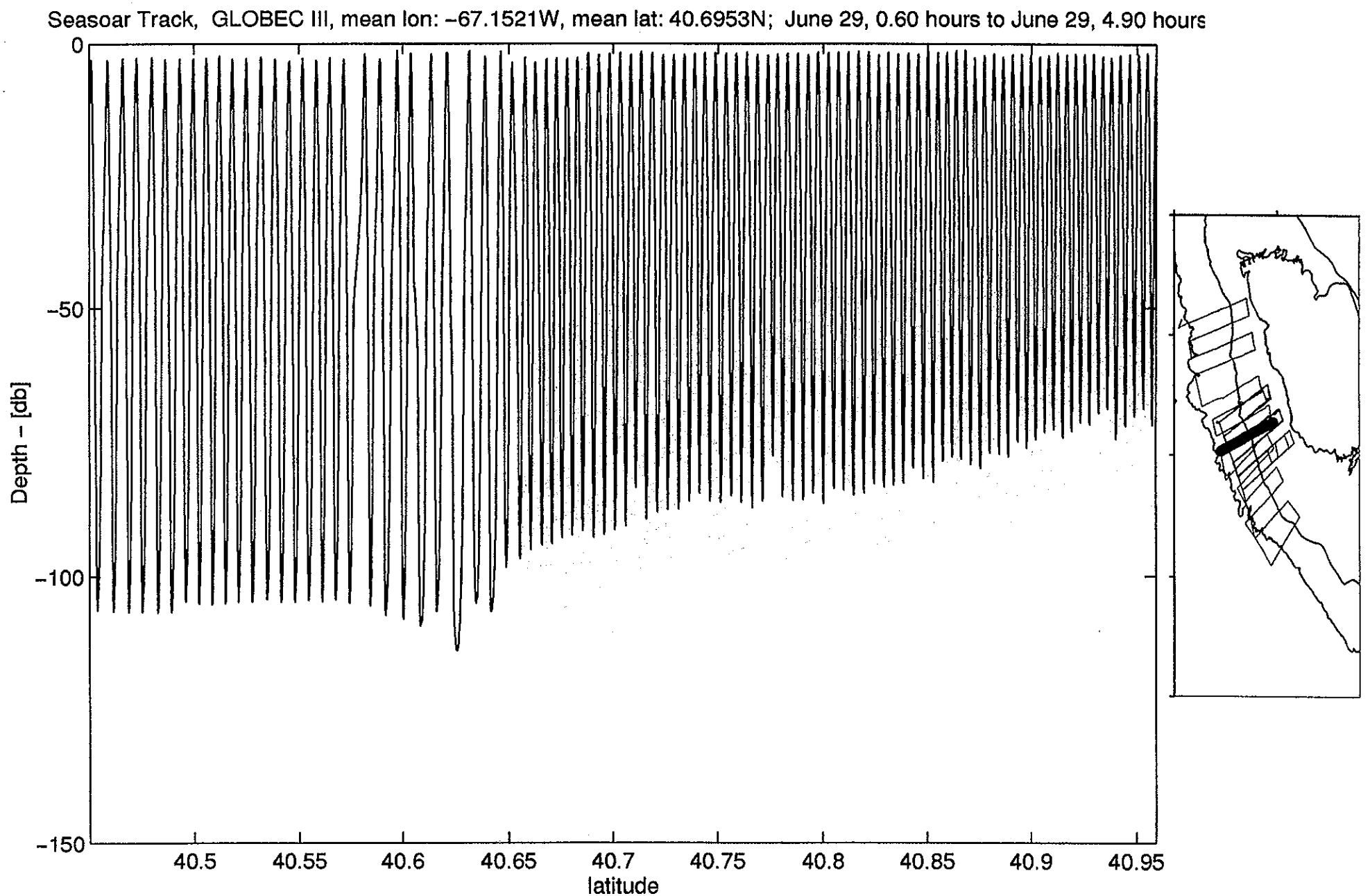
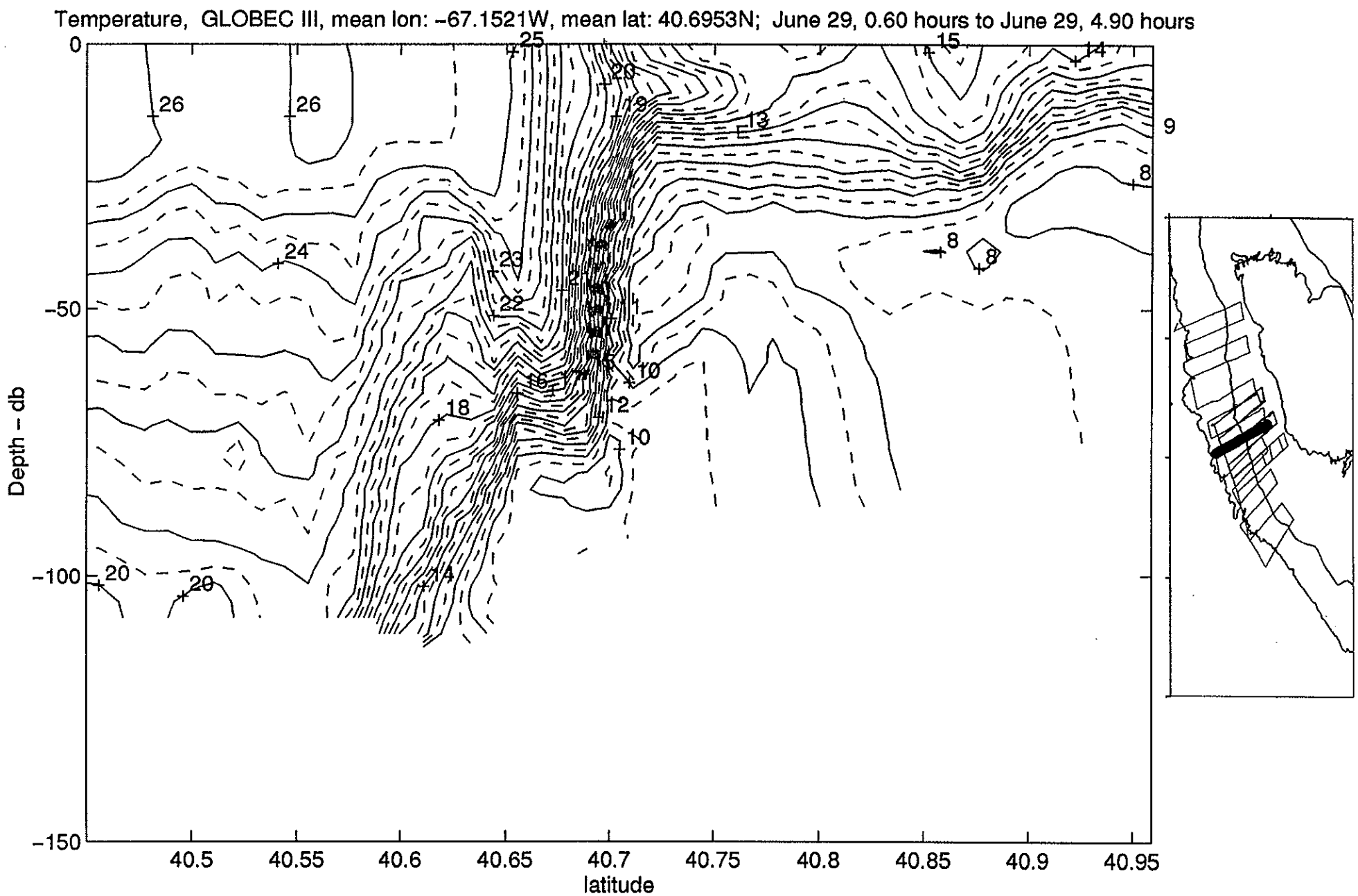
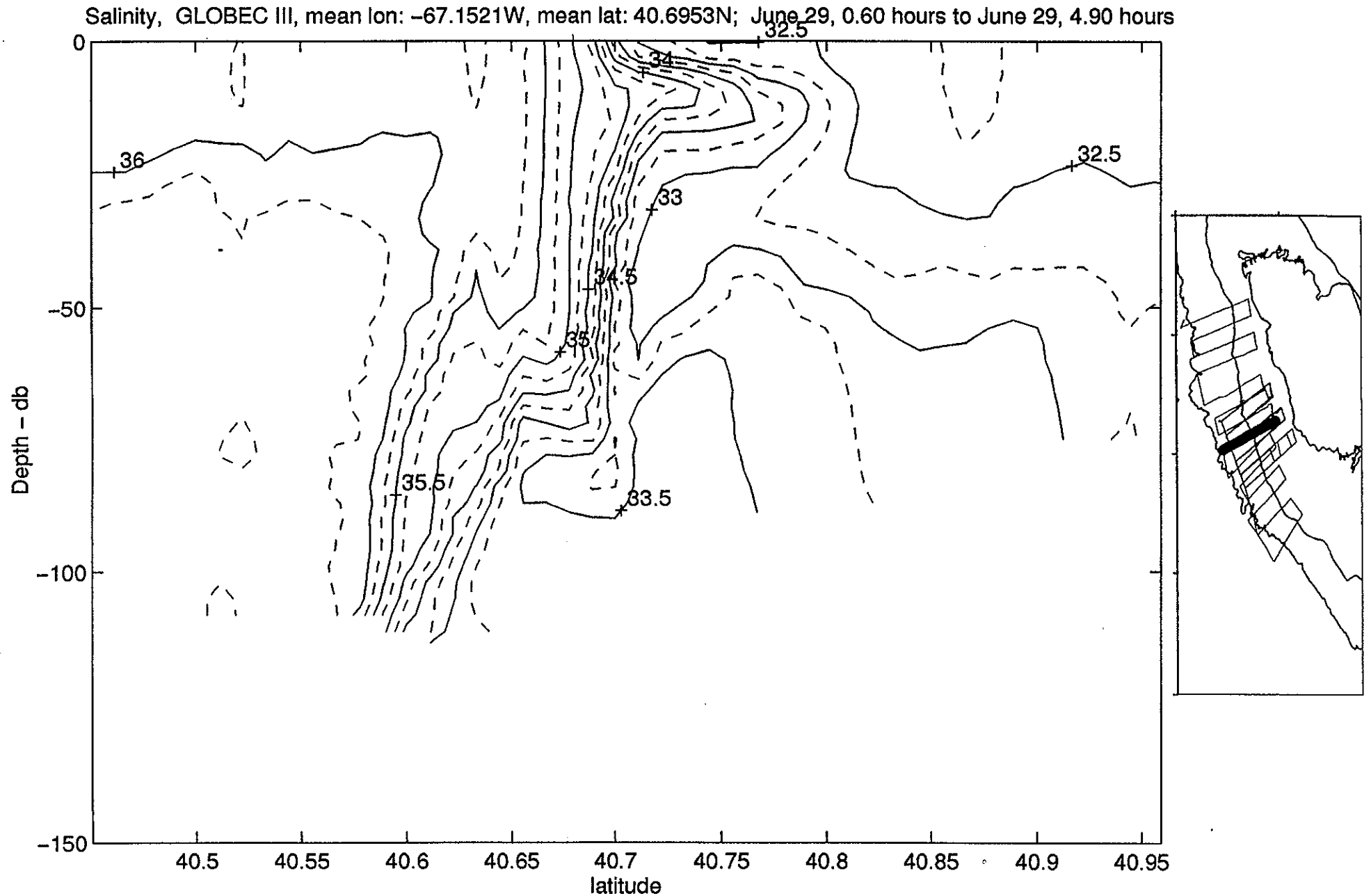
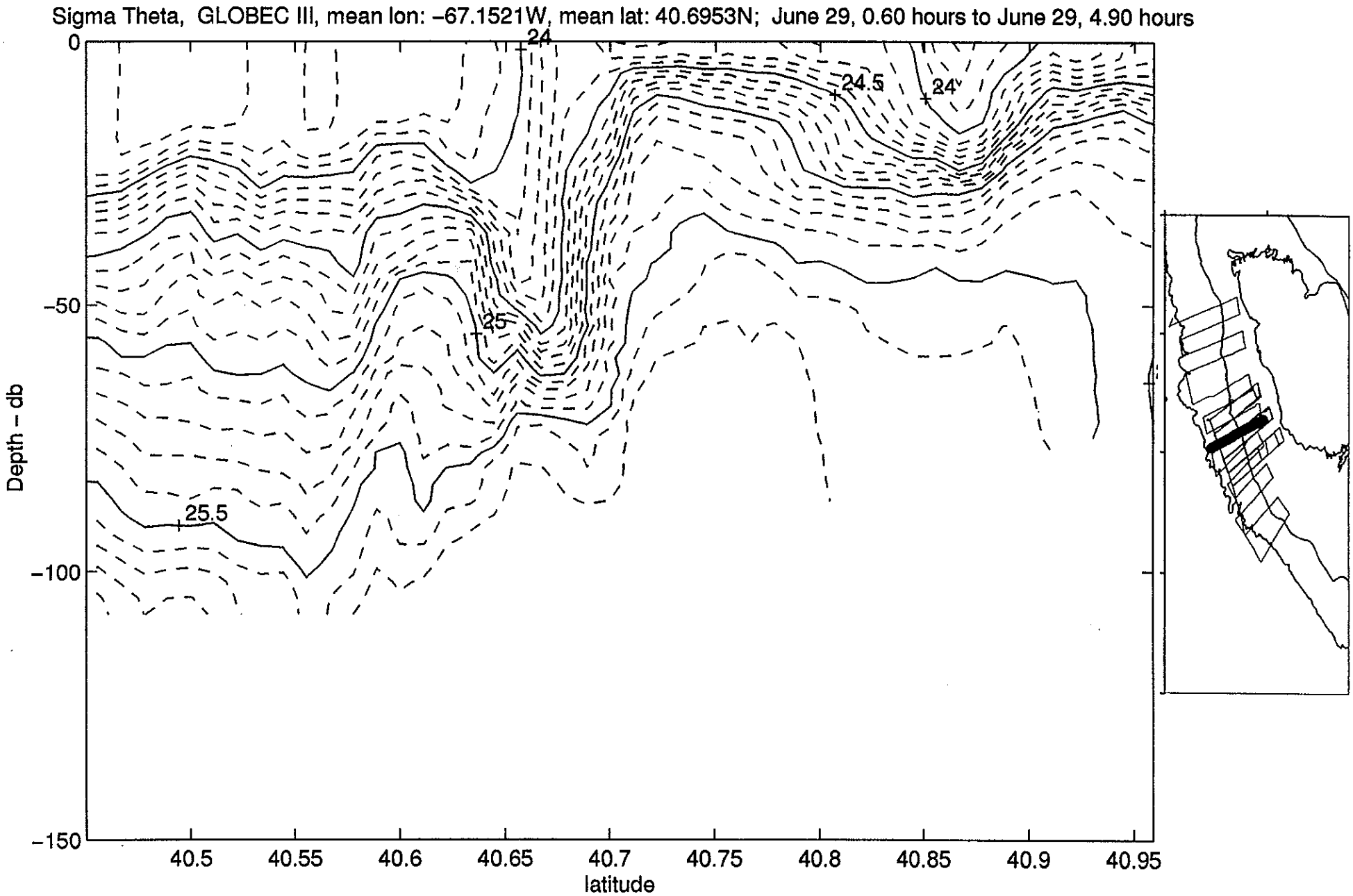
36
35.5
35
34
33.5
34.5
33
32.5

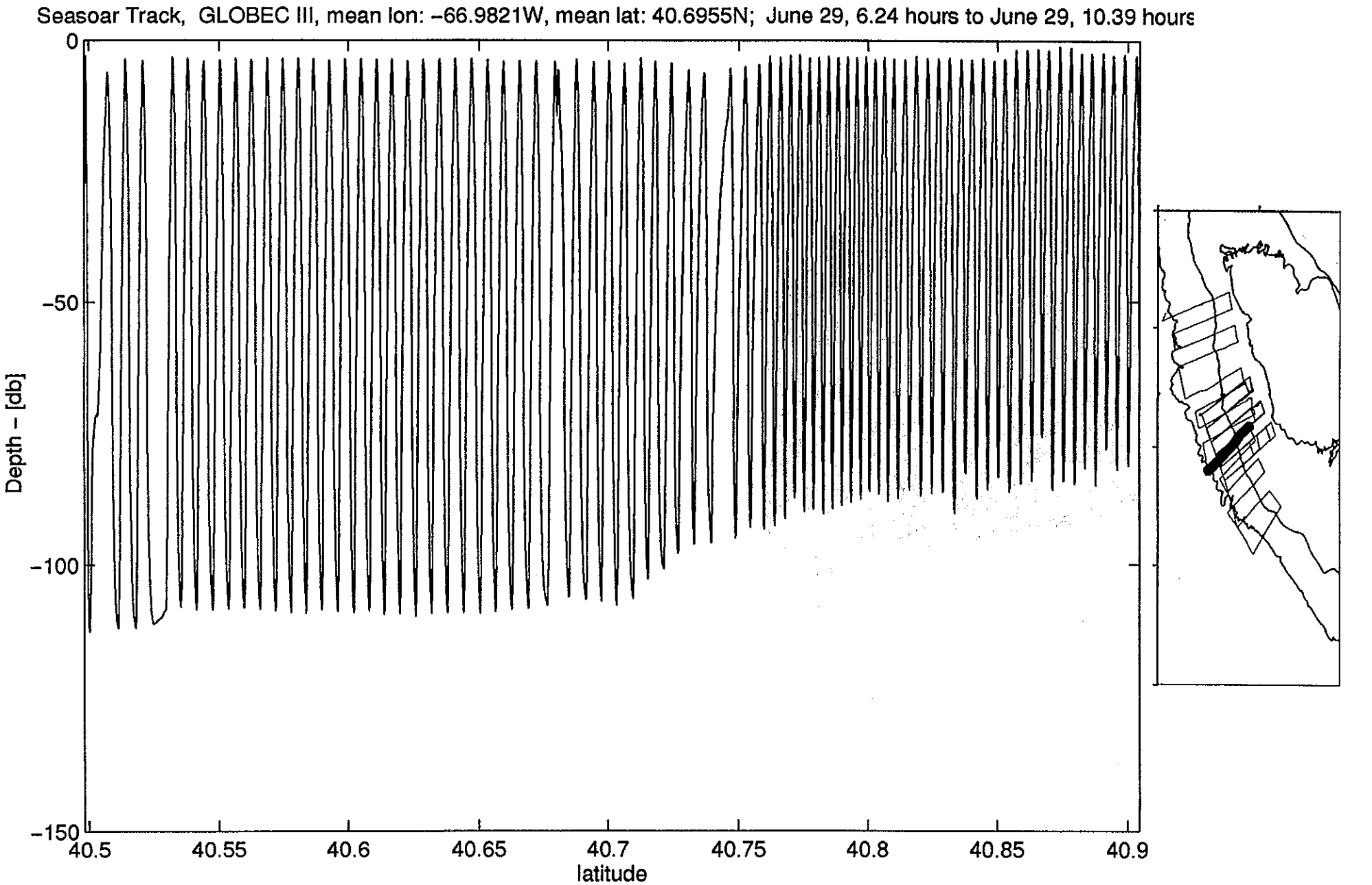

Sigma Theta, GLOBEC III, mean lon: -67.2895W, mean lat: 40.6727N; June 28, 18.89 hours to June 28, 23.71 hours
0
-50
-100
-150
Depth - db
24
24
24.5
25.5
25
26
26
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

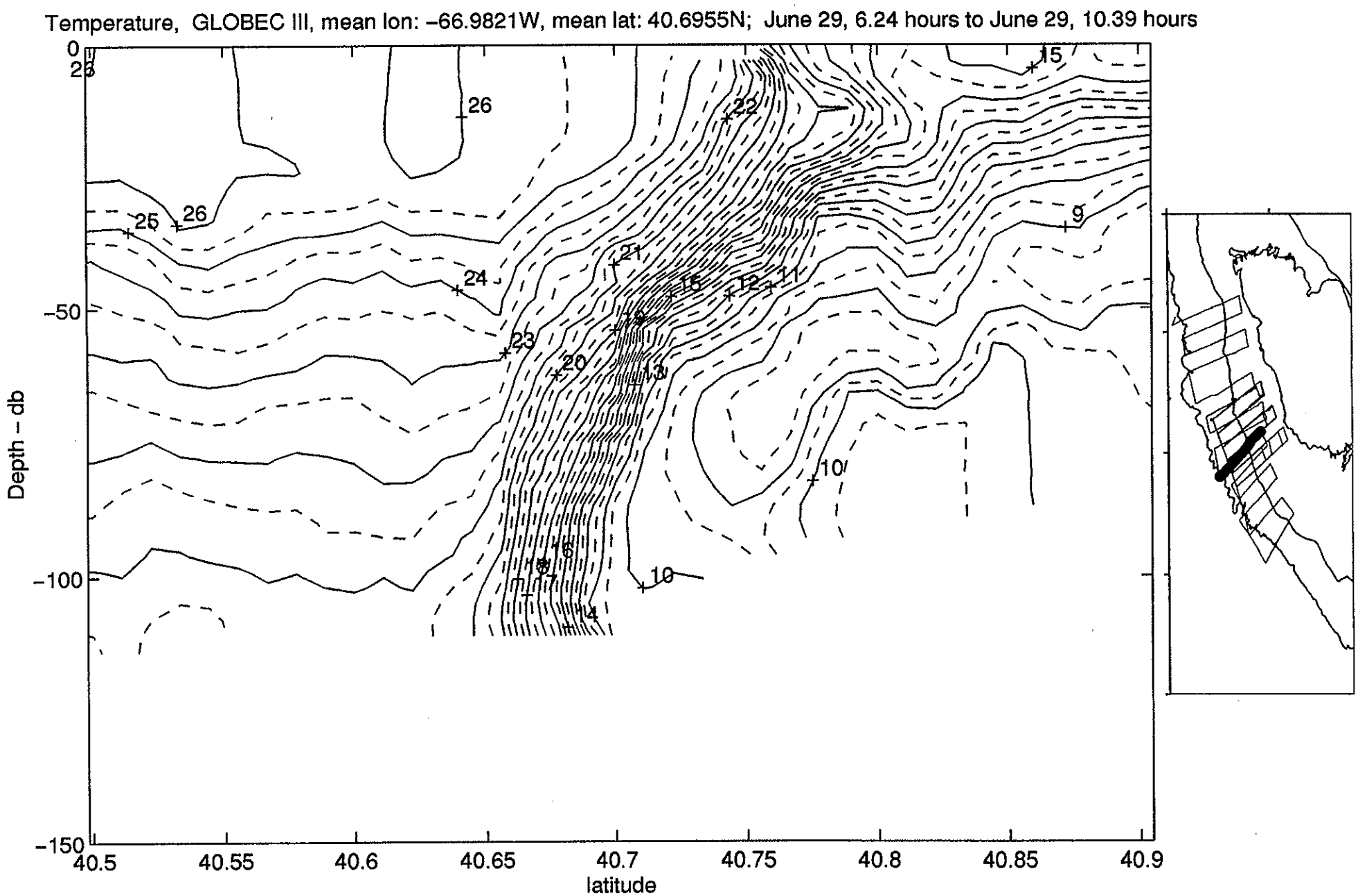

Seasoar Track, GLOBEC III, mean lon: −67.1521W, mean lat: 40.6953N; June 29, 0.60 hours to June 29, 4.90 hours
0
−50
−100
−150
Depth − [db]
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude


Temperature, GLOBEC III, mean lon: -67.1521W, mean lat: 40.6953N; June 29, 0.60 hours to June 29, 4.90 hours
Depth - db
latitude
0
-50
-100
-150
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95


Salinity, GLOBEC III, mean lon: -67.1521W, mean lat: 40.6953N; June 29, 0.60 hours to June 29, 4.90 hours
0
-50
-100
-150
Depth - db
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude
32.5
34
36
32.5
33
34.5
35
35.5
33.5


Sigma Theta, GLOBEC III, mean lon: -67.1521W, mean lat: 40.6953N; June 29, 0.60 hours to June 29, 4.90 hours
0
-50
-100
-150
Depth - db
24
24.5
24
25
25.5
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude


Seasoar Track, GLOBEC III, mean lon: -66.9821W, mean lat: 40.6955N; June 29, 6.24 hours to June 29, 10.39 hours
0
-50
-100
-150
Depth - [db]
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude


Temperature, GLOBEC III, mean lon: −66.9821W, mean lat: 40.6955N; June 29, 6.24 hours to June 29, 10.39 hours
Depth – db
latitude
0
−50
−100
−150
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
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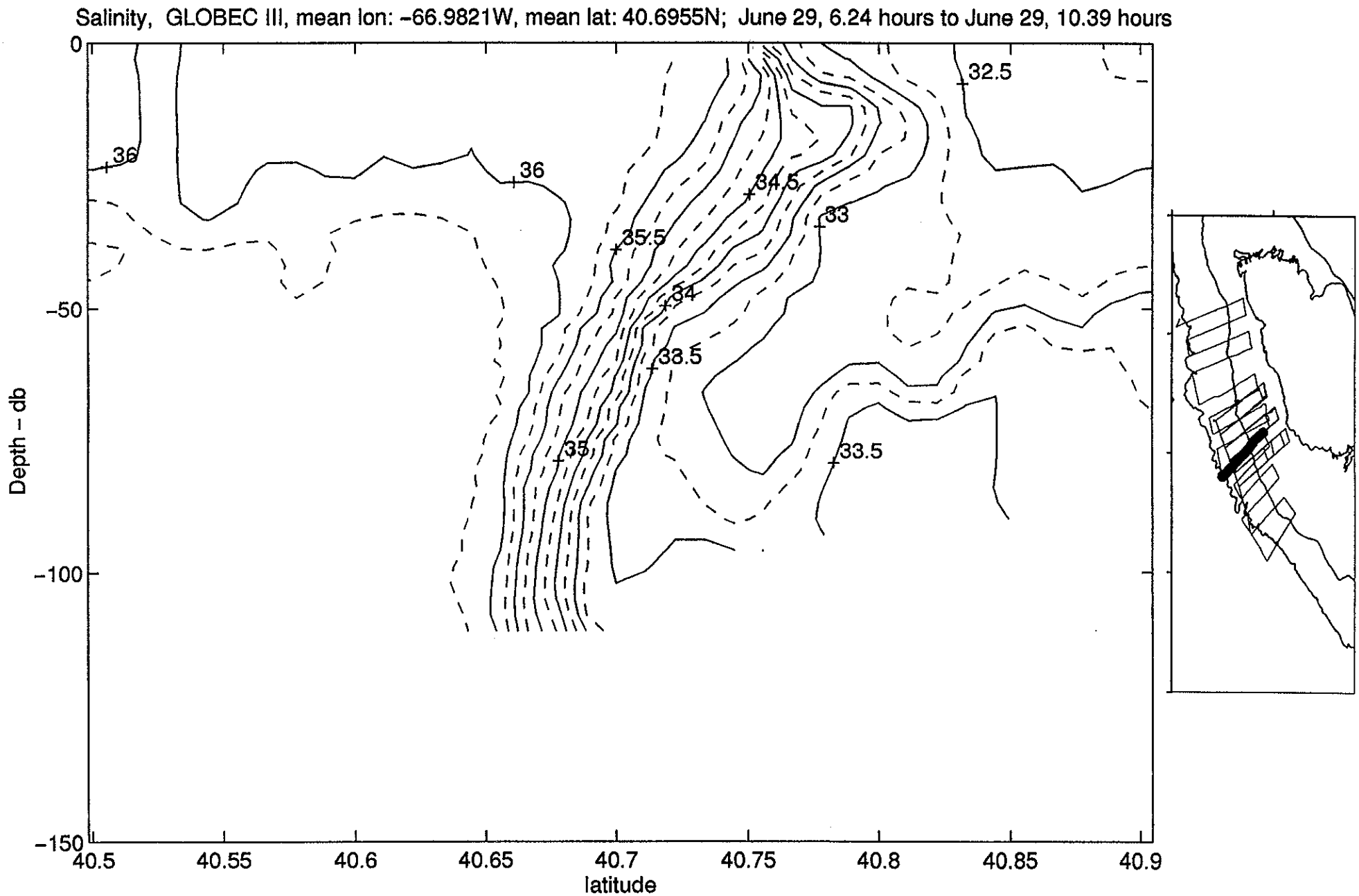
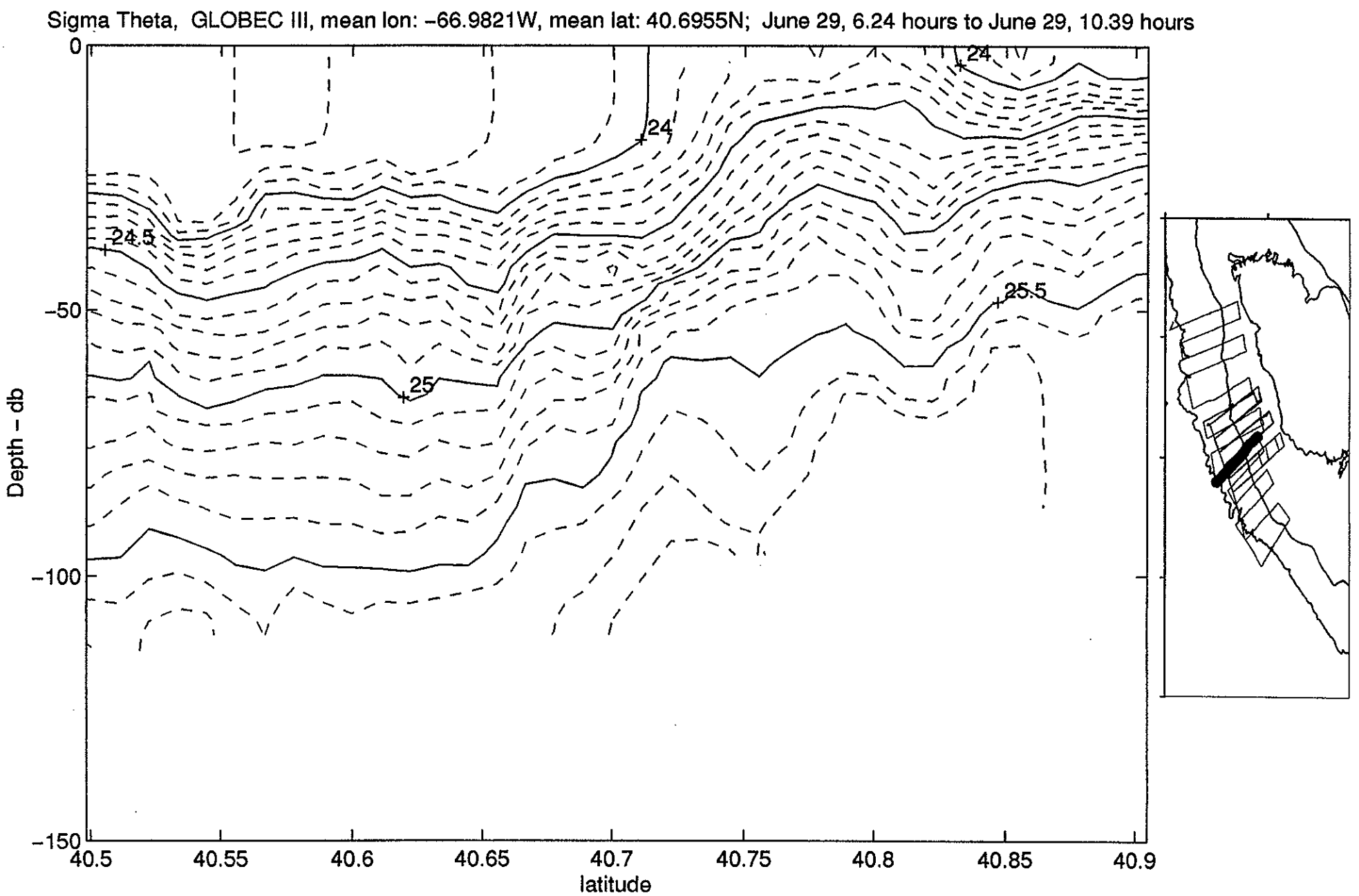
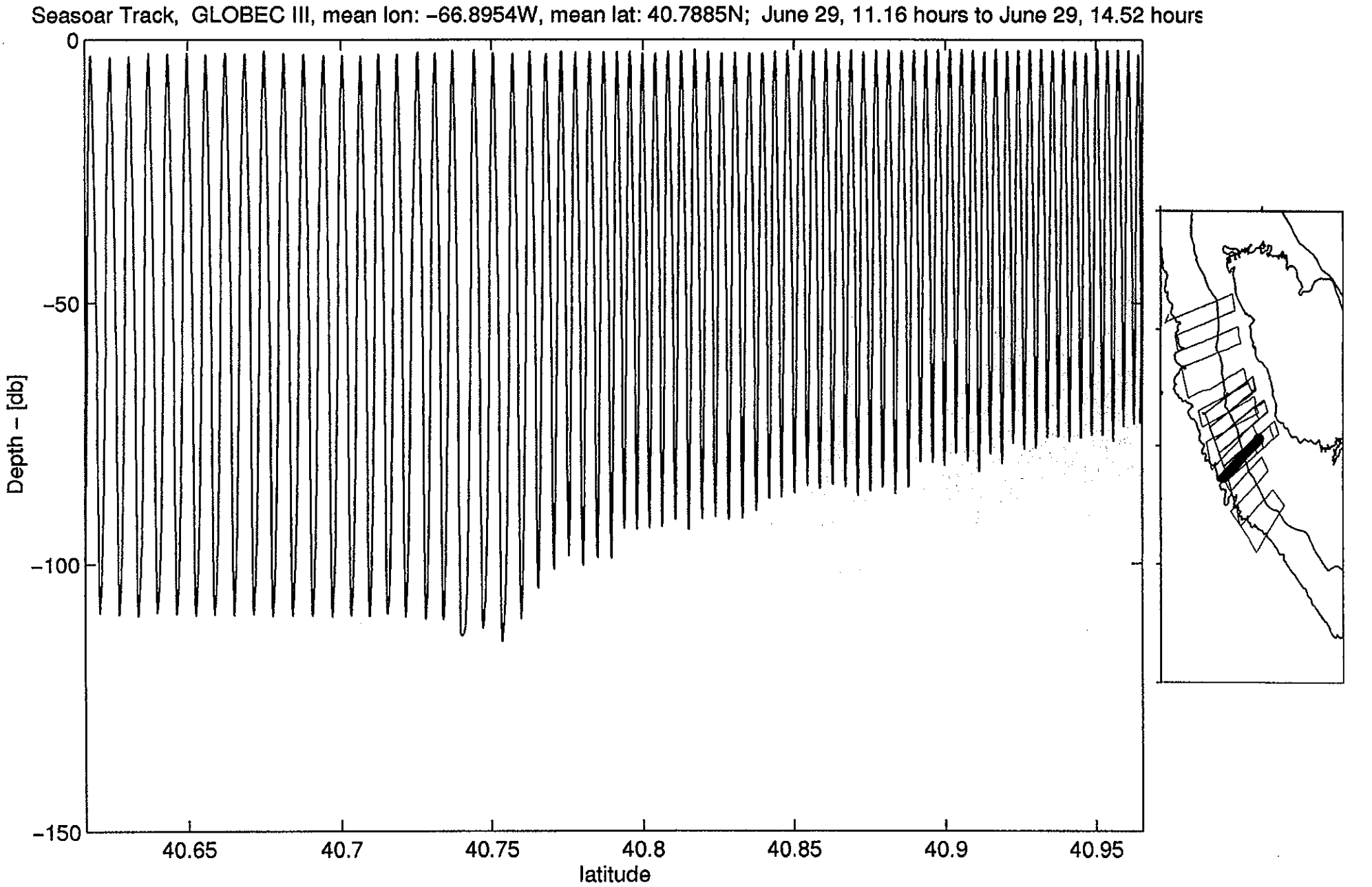
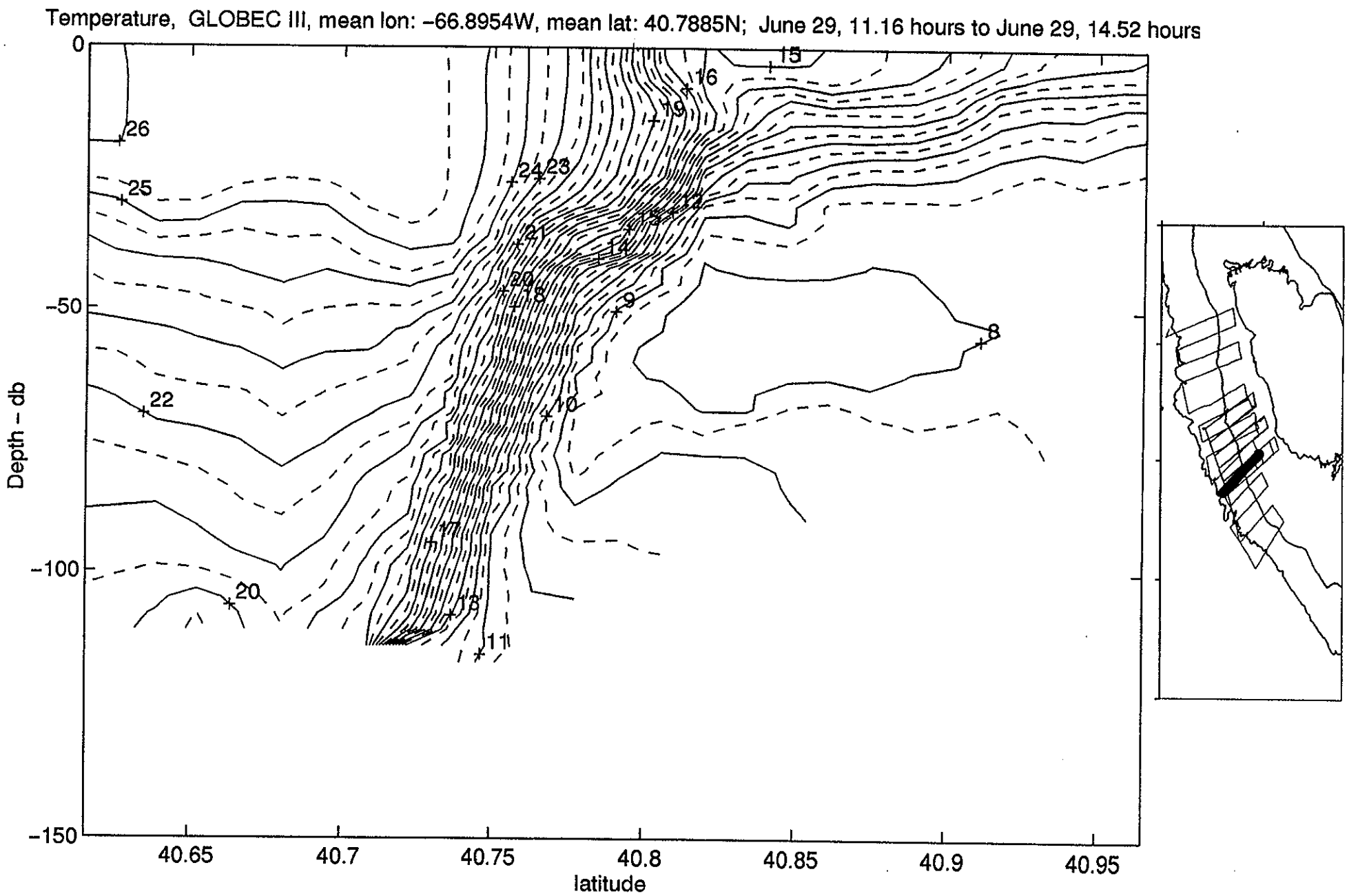

Salinity, GLOBEC III, mean lon: -66.9821W, mean lat: 40.6955N; June 29, 6.24 hours to June 29, 10.39 hours
0
-50
-100
-150
Depth - db
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude
36
36
32.5
34.5
33
35.5
34
33.5
35
33.5


Sigma Theta, GLOBEC III, mean lon: -66.9821W, mean lat: 40.6955N; June 29, 6.24 hours to June 29, 10.39 hours
0
-50
-100
-150
Depth - db
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude
24
24
24.5
25
25.5


Seasoar Track, GLOBEC III, mean lon: −66.8954W, mean lat: 40.7885N; June 29, 11.16 hours to June 29, 14.52 hours
0
−50
−100
−150
Depth − [db]
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude


Temperature, GLOBEC III, mean lon: -66.8954W, mean lat: 40.7885N; June 29, 11.16 hours to June 29, 14.52 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude
26
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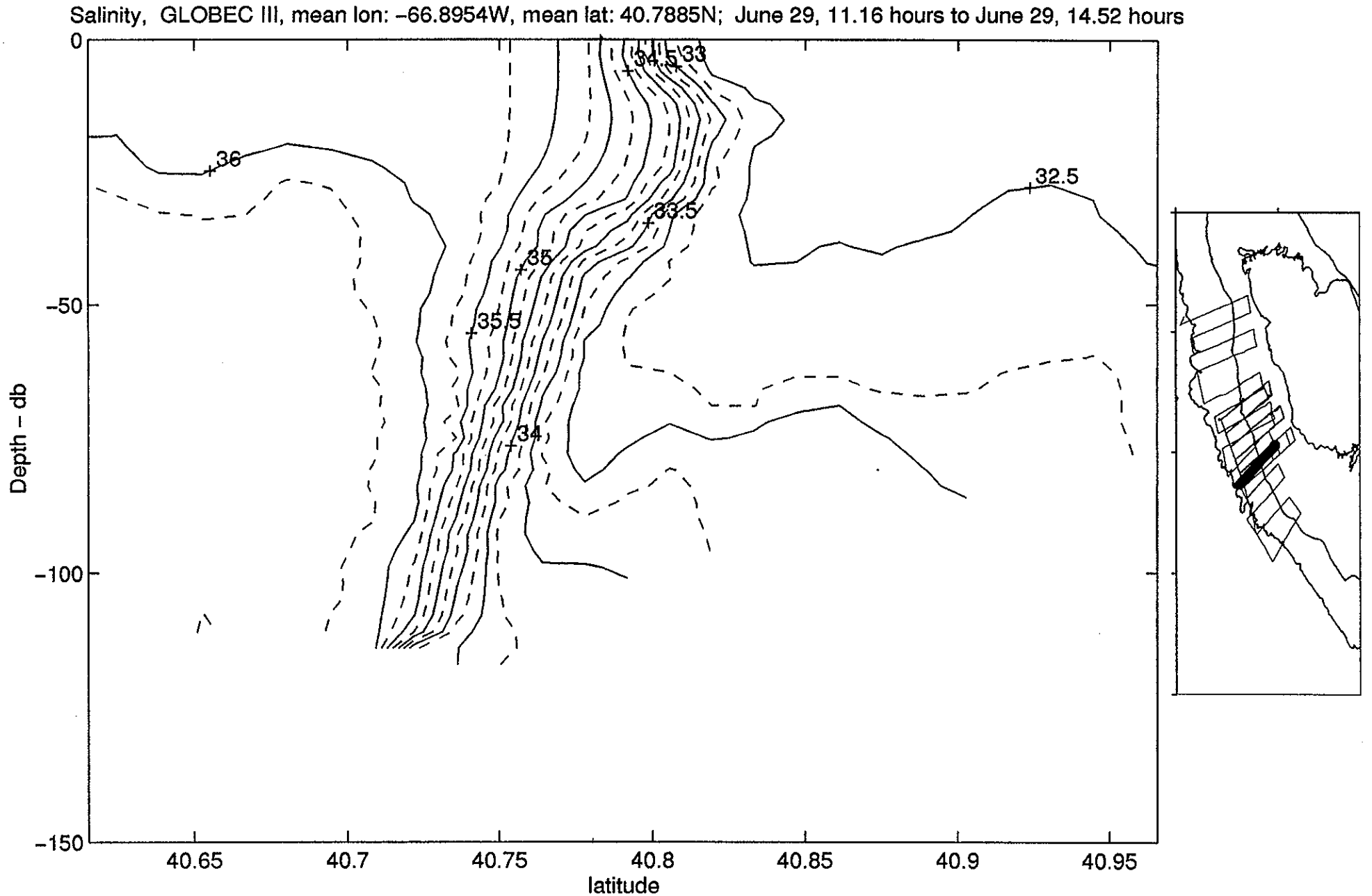
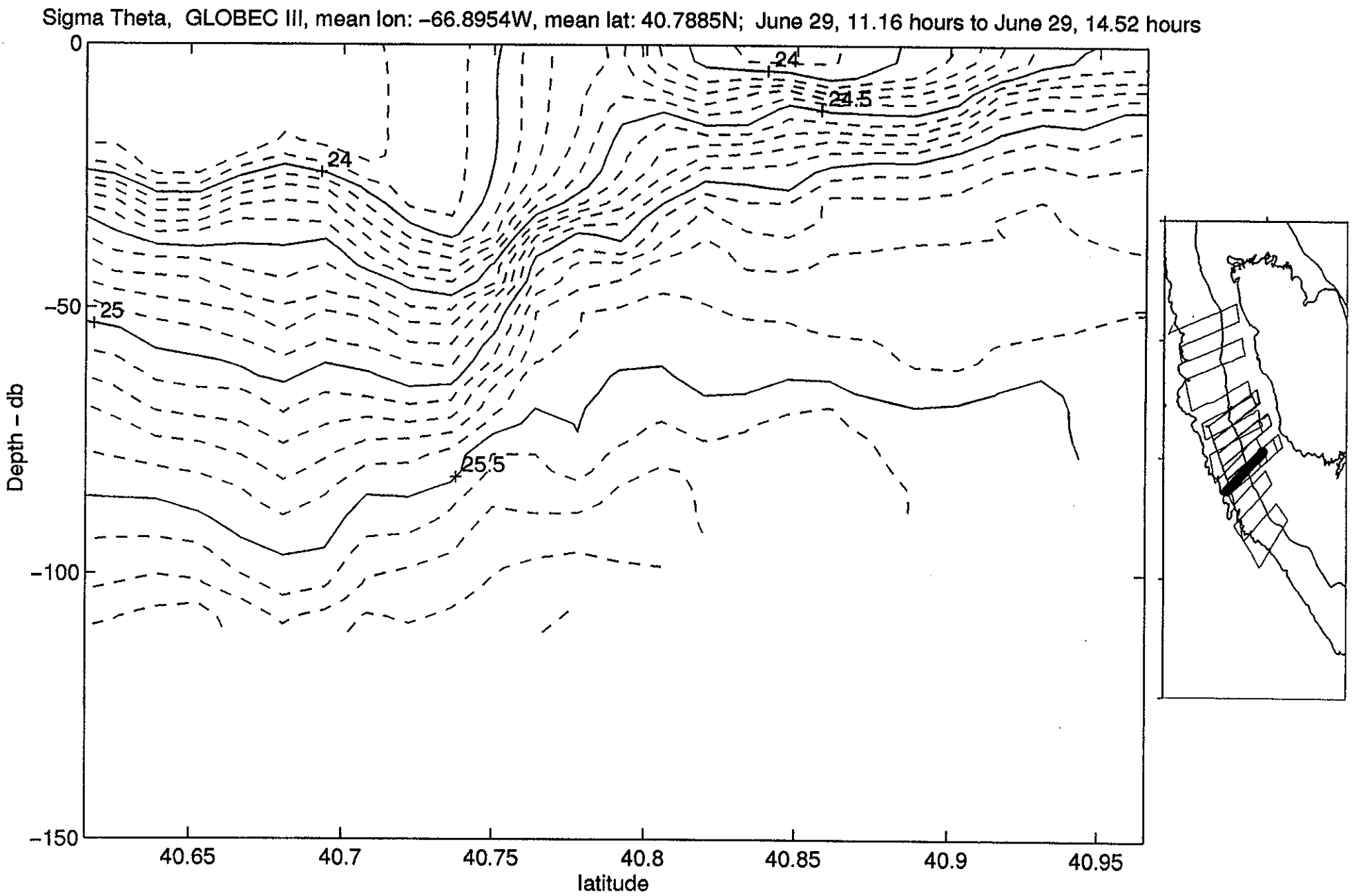
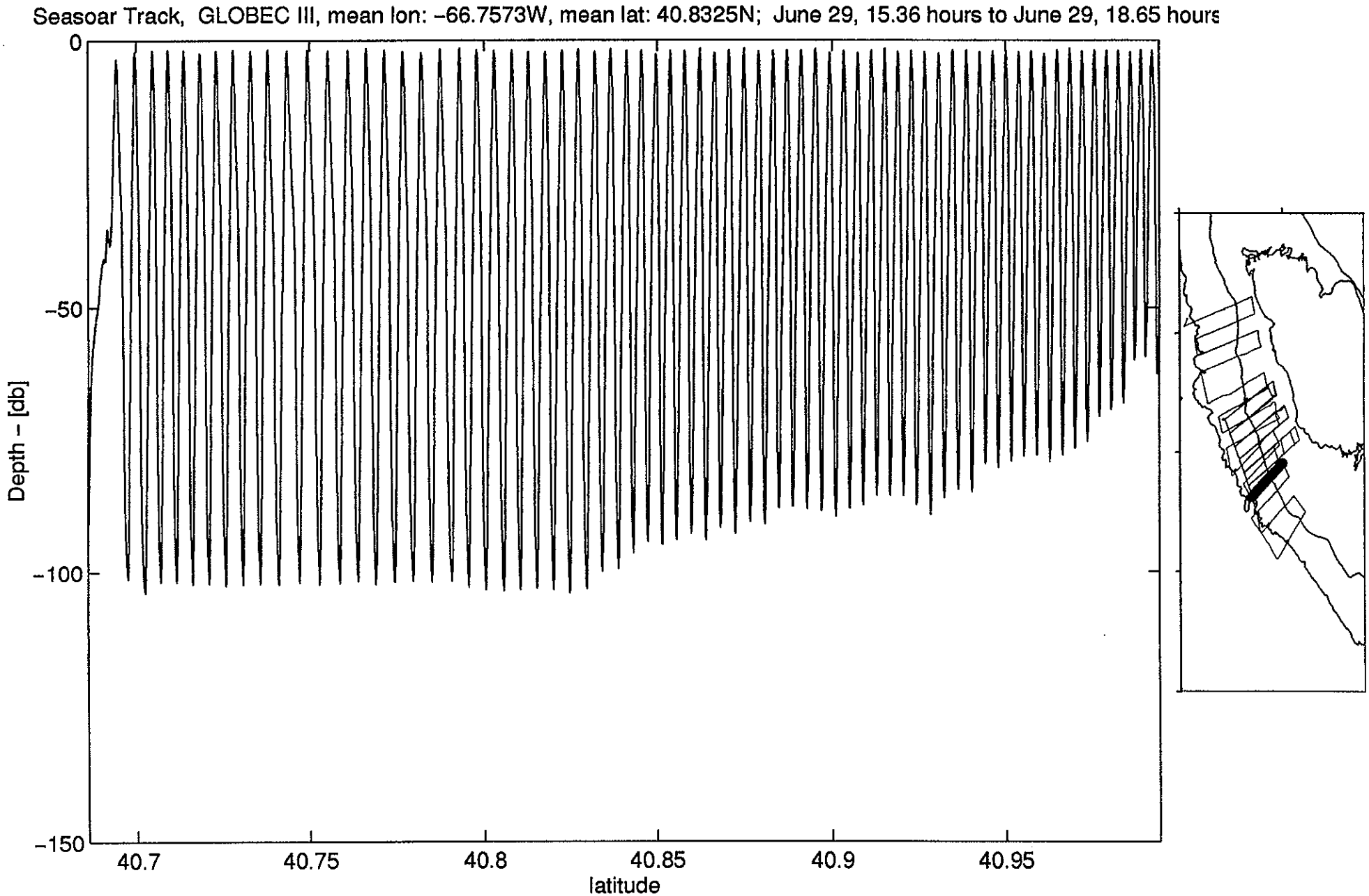
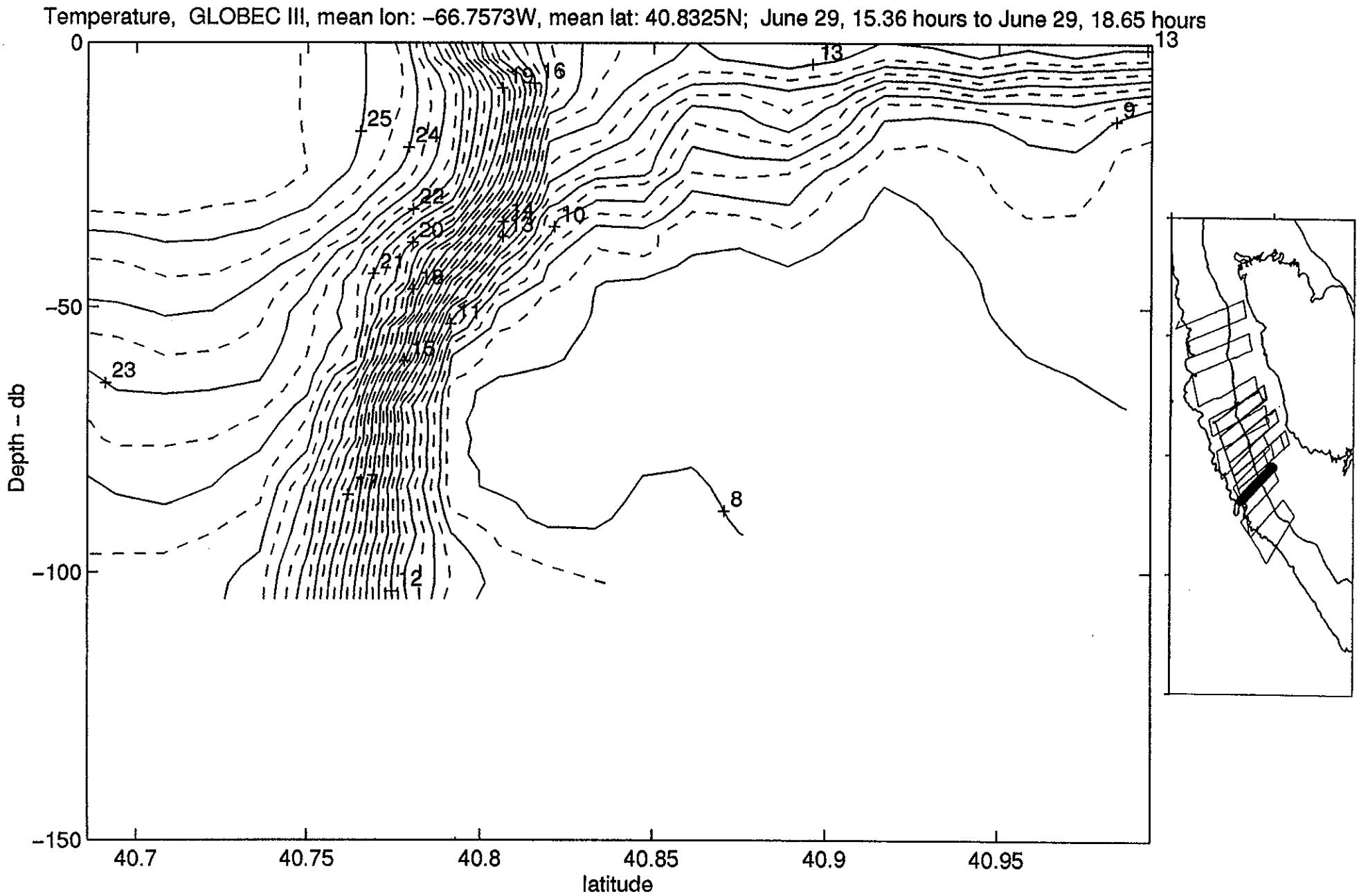
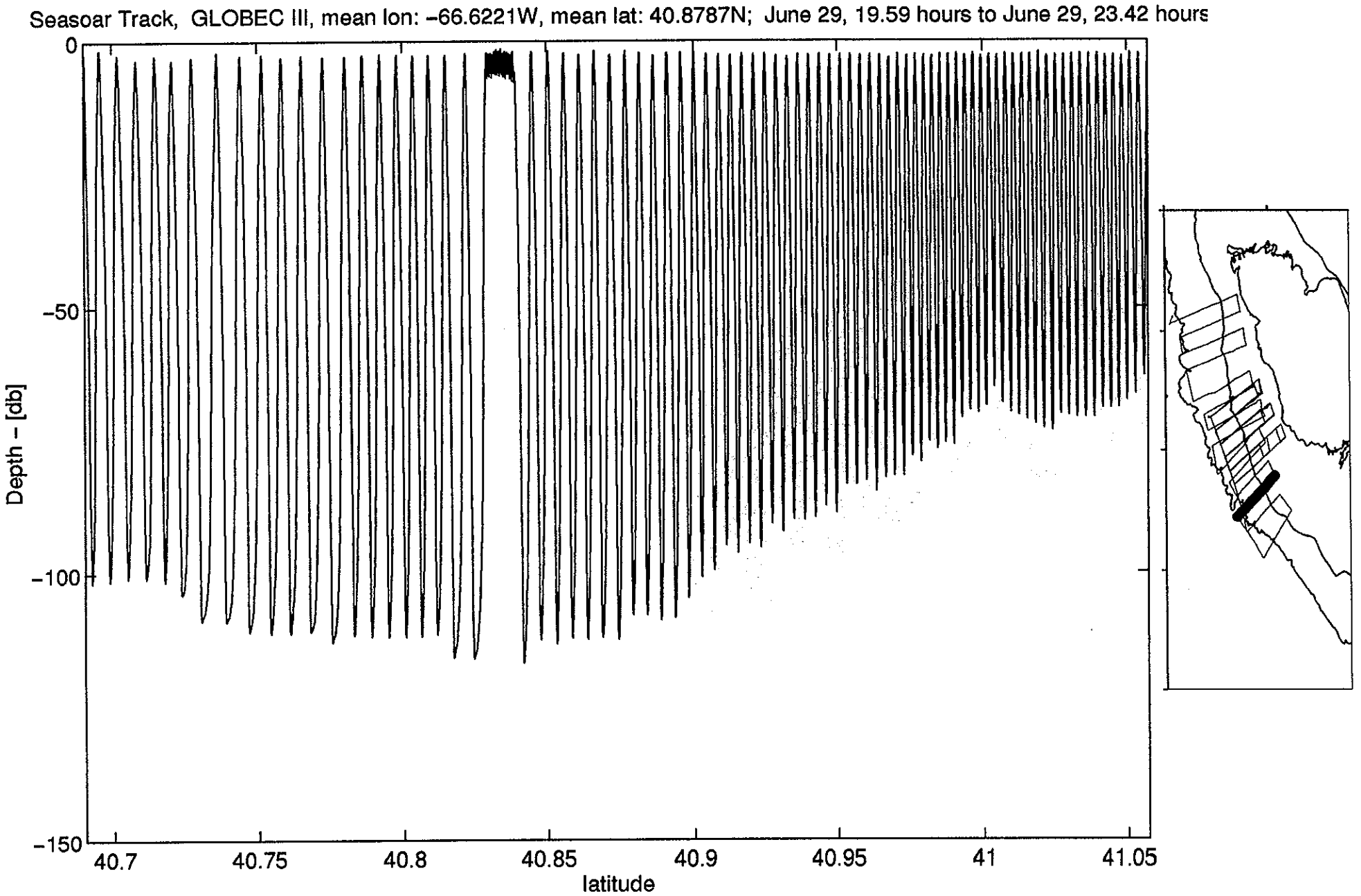
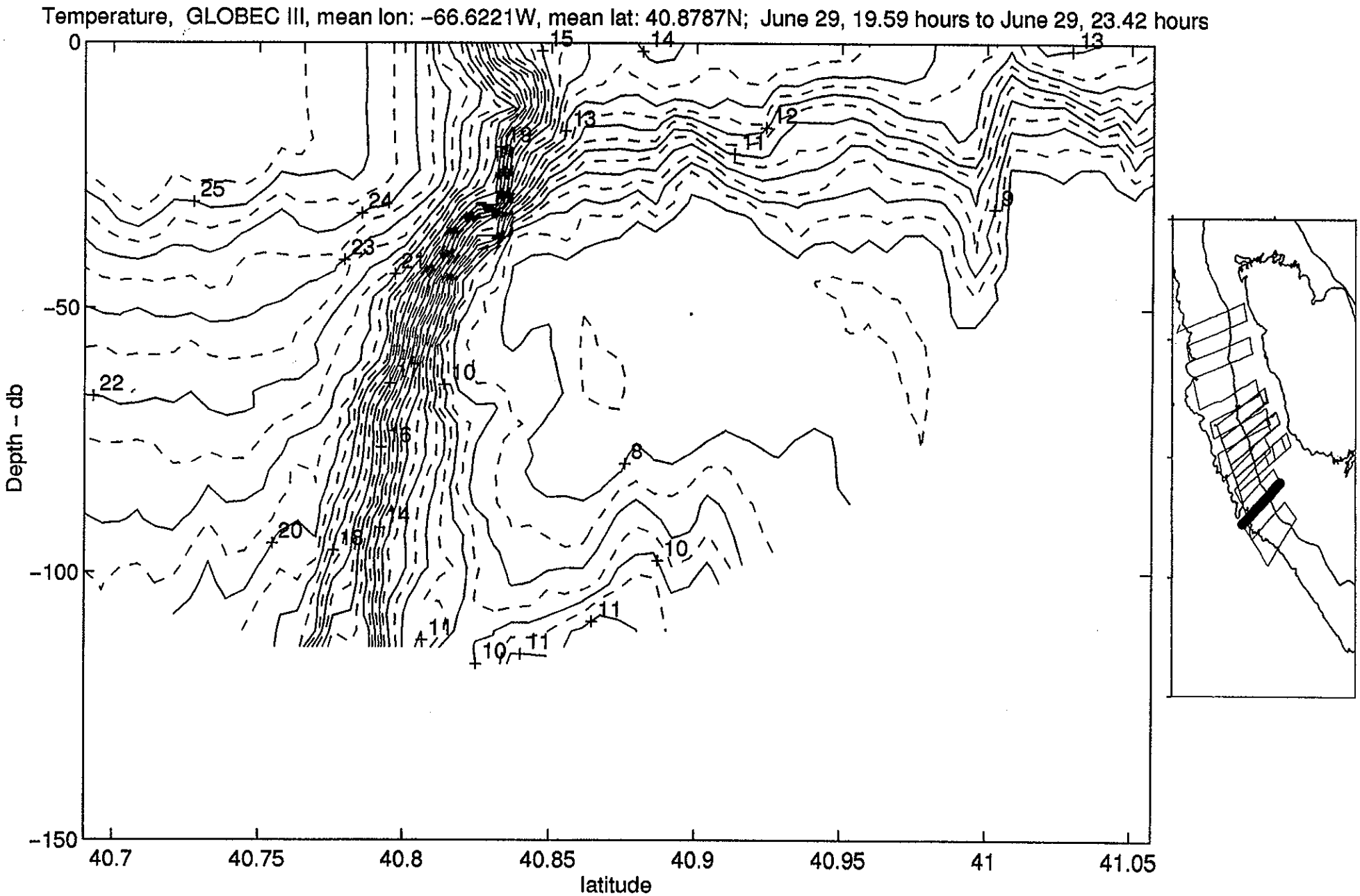

Salinity, GLOBEC III, mean lon: -66.8954W, mean lat: 40.7885N; June 29, 11.16 hours to June 29, 14.52 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude
36
34.5
33
32.5
33.5
35
35.5
34

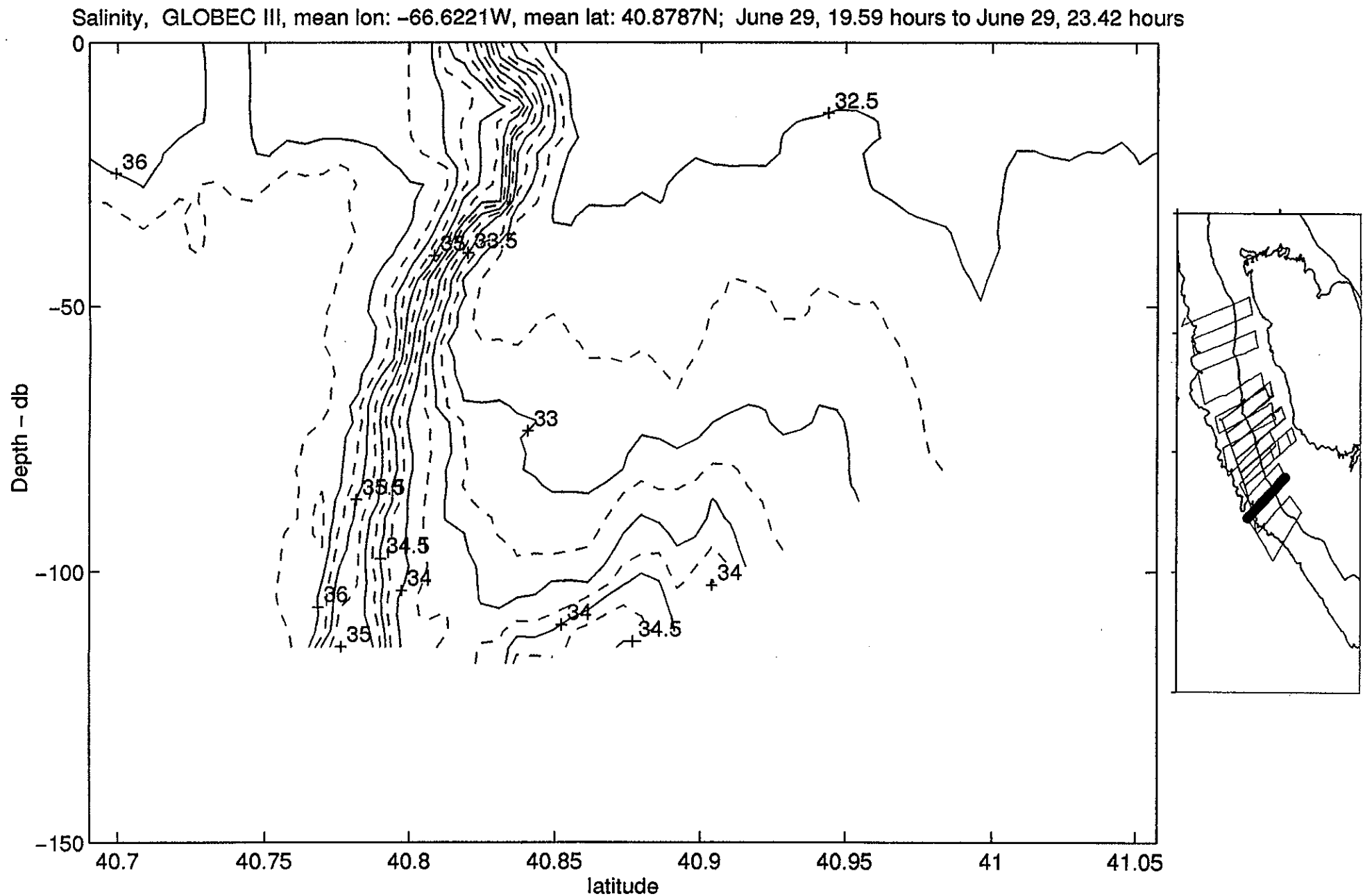

Sigma Theta, GLOBEC III, mean lon: -66.8954W, mean lat: 40.7885N; June 29, 11.16 hours to June 29, 14.52 hours
0
-50
-100
-150
Depth - db
24
24.5
24
25
25.5
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

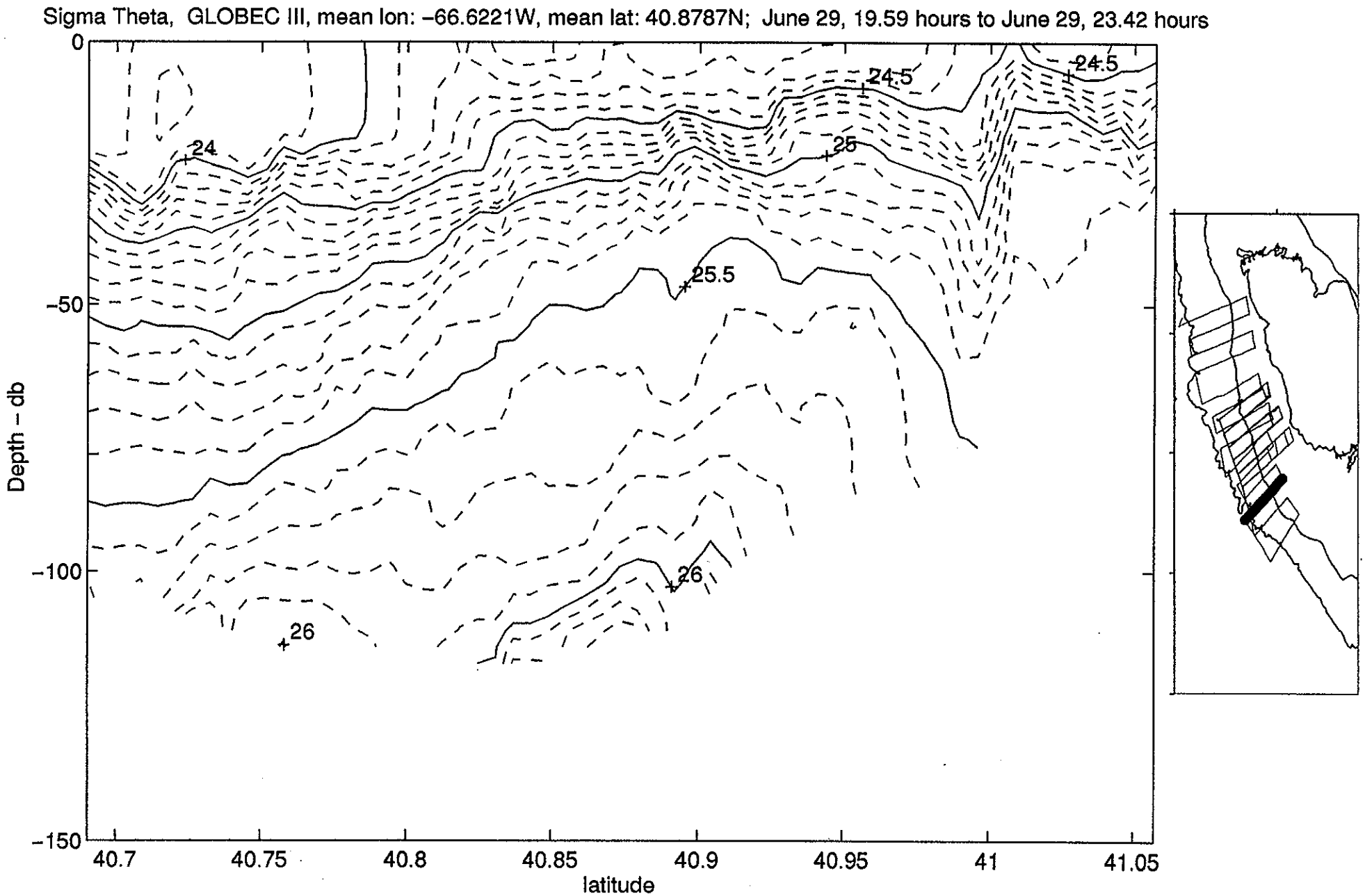

Seasoar Track, GLOBEC III, mean lon: -66.7573W, mean lat: 40.8325N; June 29, 15.36 hours to June 29, 18.65 hours
0
-50
-100
-150
Depth - [db]
40.7
40.75
40.8
40.85
40.9
40.95
latitude

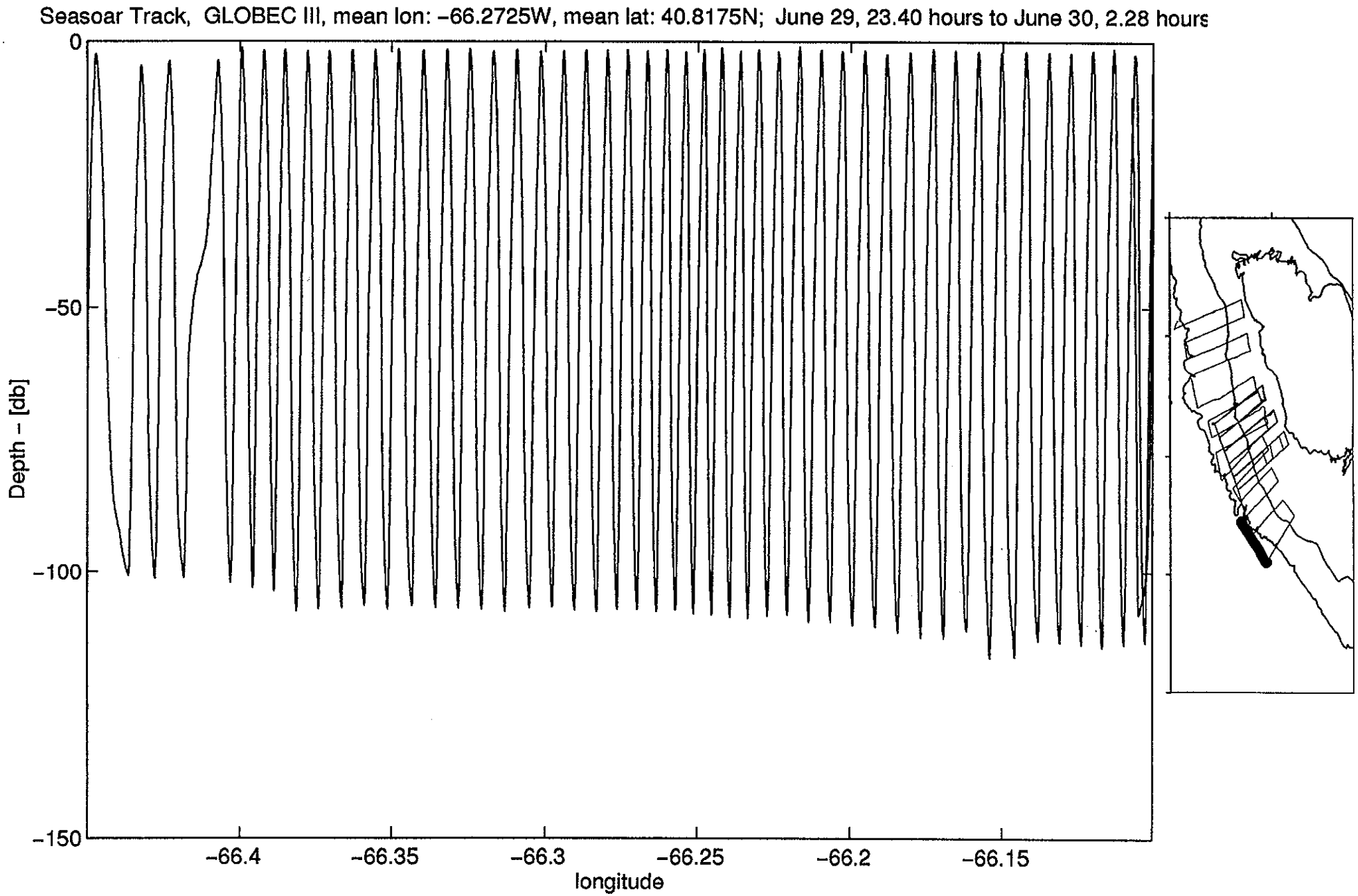

Temperature, GLOBEC III, mean lon: -66.7573W, mean lat: 40.8325N; June 29, 15.36 hours to June 29, 18.65 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
40.95
latitude
13
13
9
19
16
25
24
22
14
18
10
20
21
12
11
15
23
17
8
2

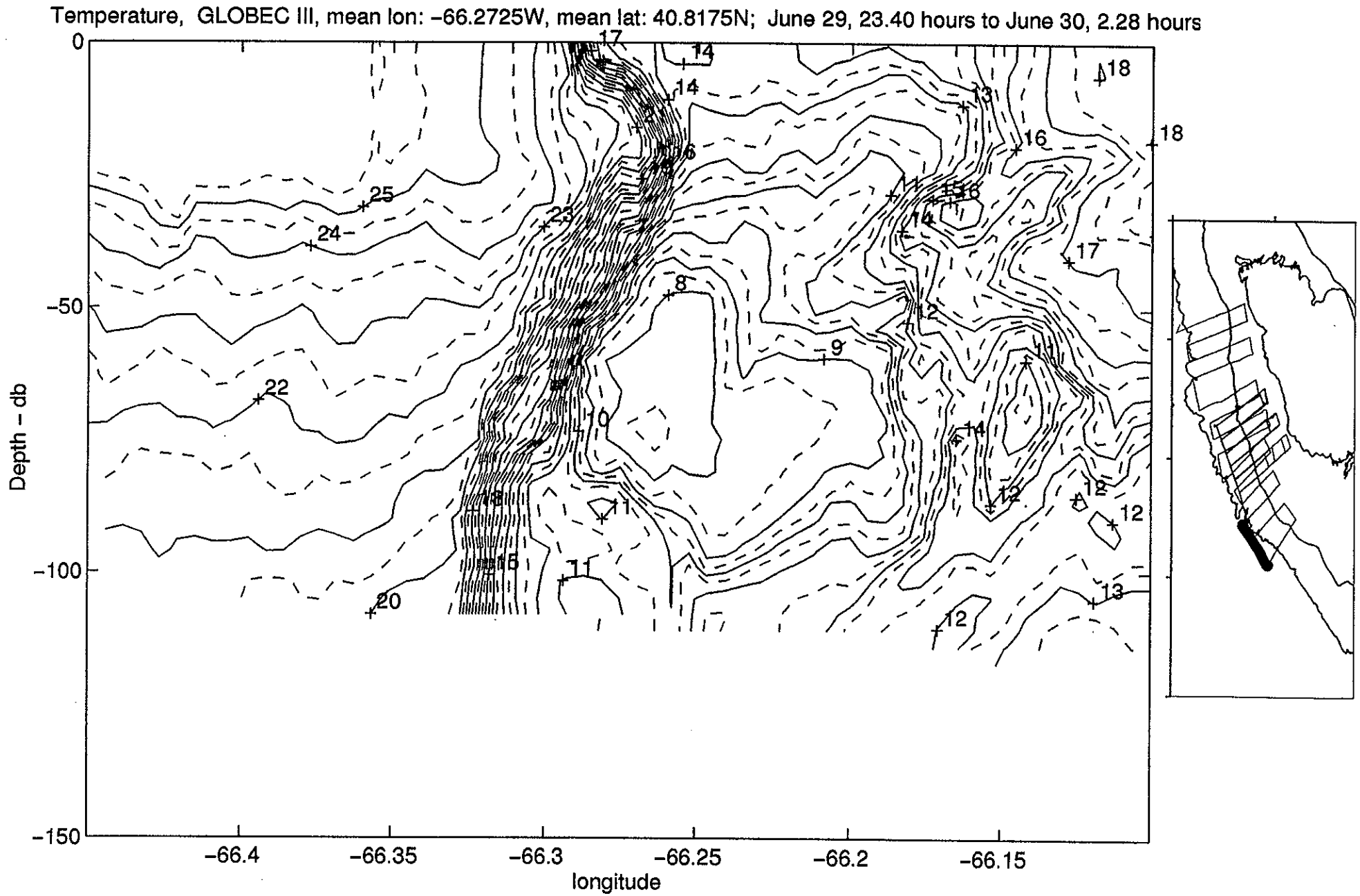

Seasoar Track, GLOBEC III, mean lon: -66.6221W, mean lat: 40.8787N; June 29, 19.59 hours to June 29, 23.42 hours
0
-50
-100
-150
Depth - [db]
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

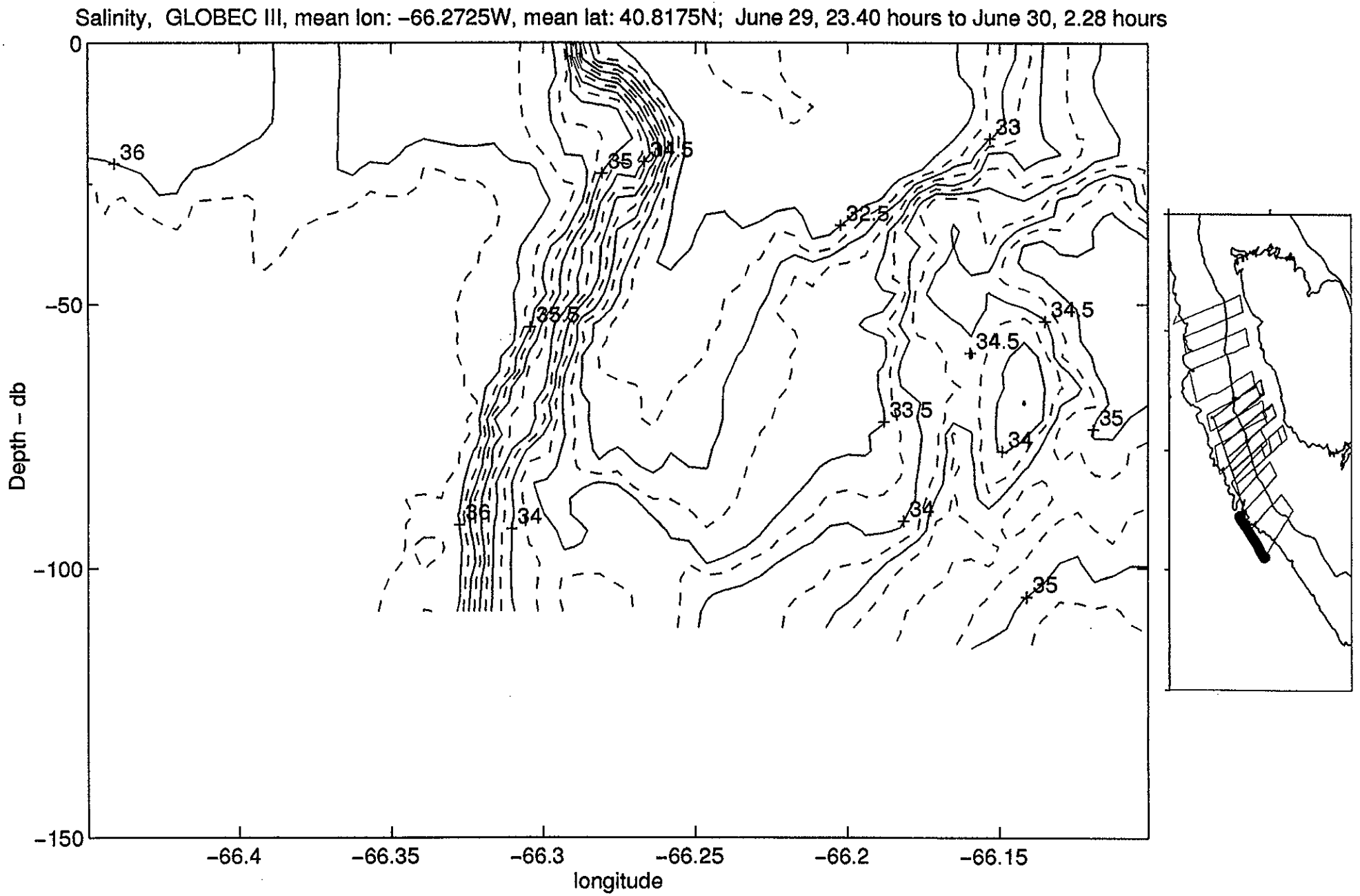

Temperature, GLOBEC III, mean lon: -66.6221W, mean lat: 40.8787N; June 29, 19.59 hours to June 29, 23.42 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

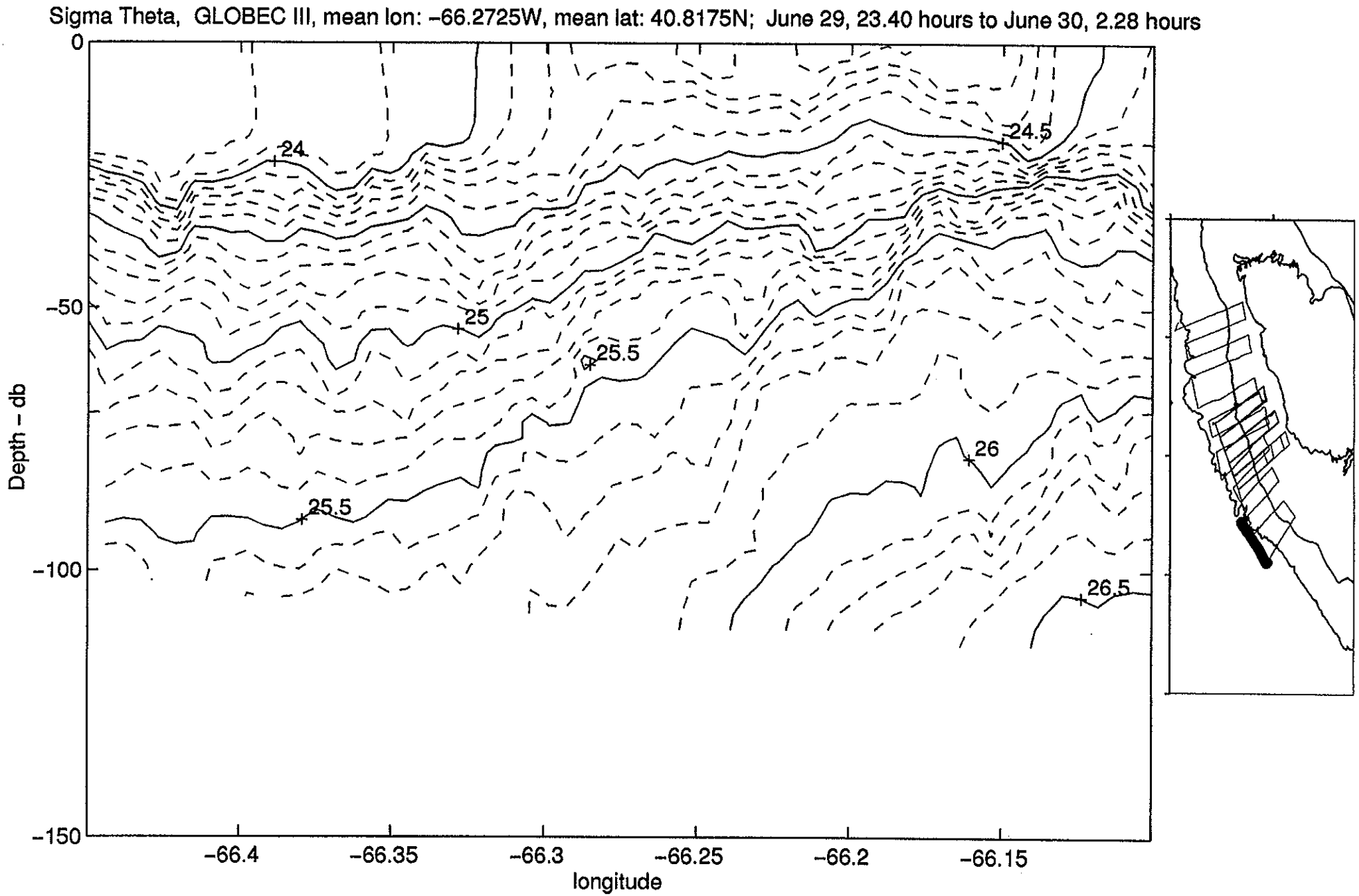

Salinity, GLOBEC III, mean lon: -66.6221W, mean lat: 40.8787N; June 29, 19.59 hours to June 29, 23.42 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude
36
32.5
33.5
33
35.5
34.5
34
36
35
34
34
34.5

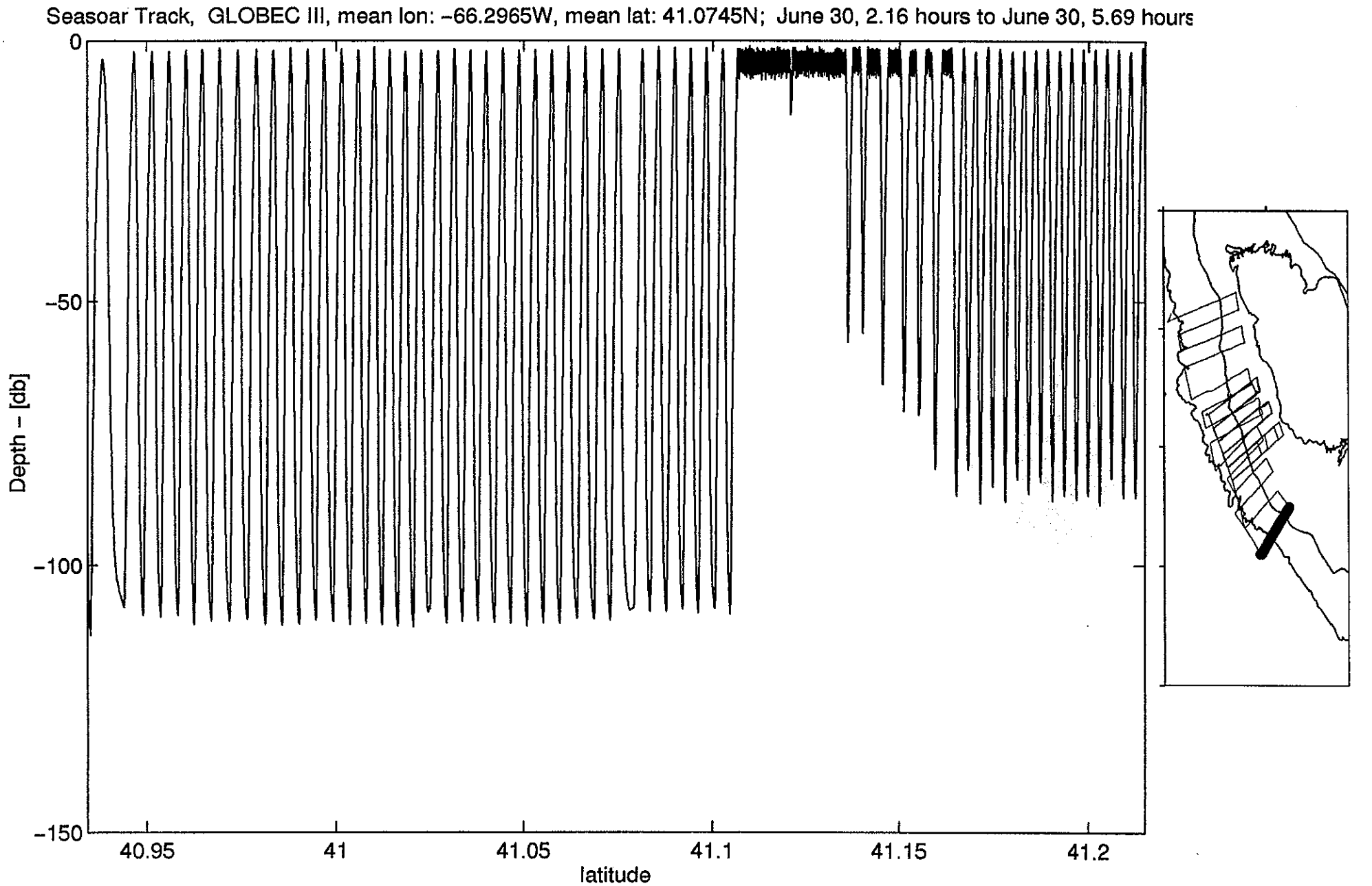

Sigma Theta, GLOBEC III, mean lon: -66.6221W, mean lat: 40.8787N; June 29, 19.59 hours to June 29, 23.42 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude
24
24.5
24.5
25
25.5
26
26

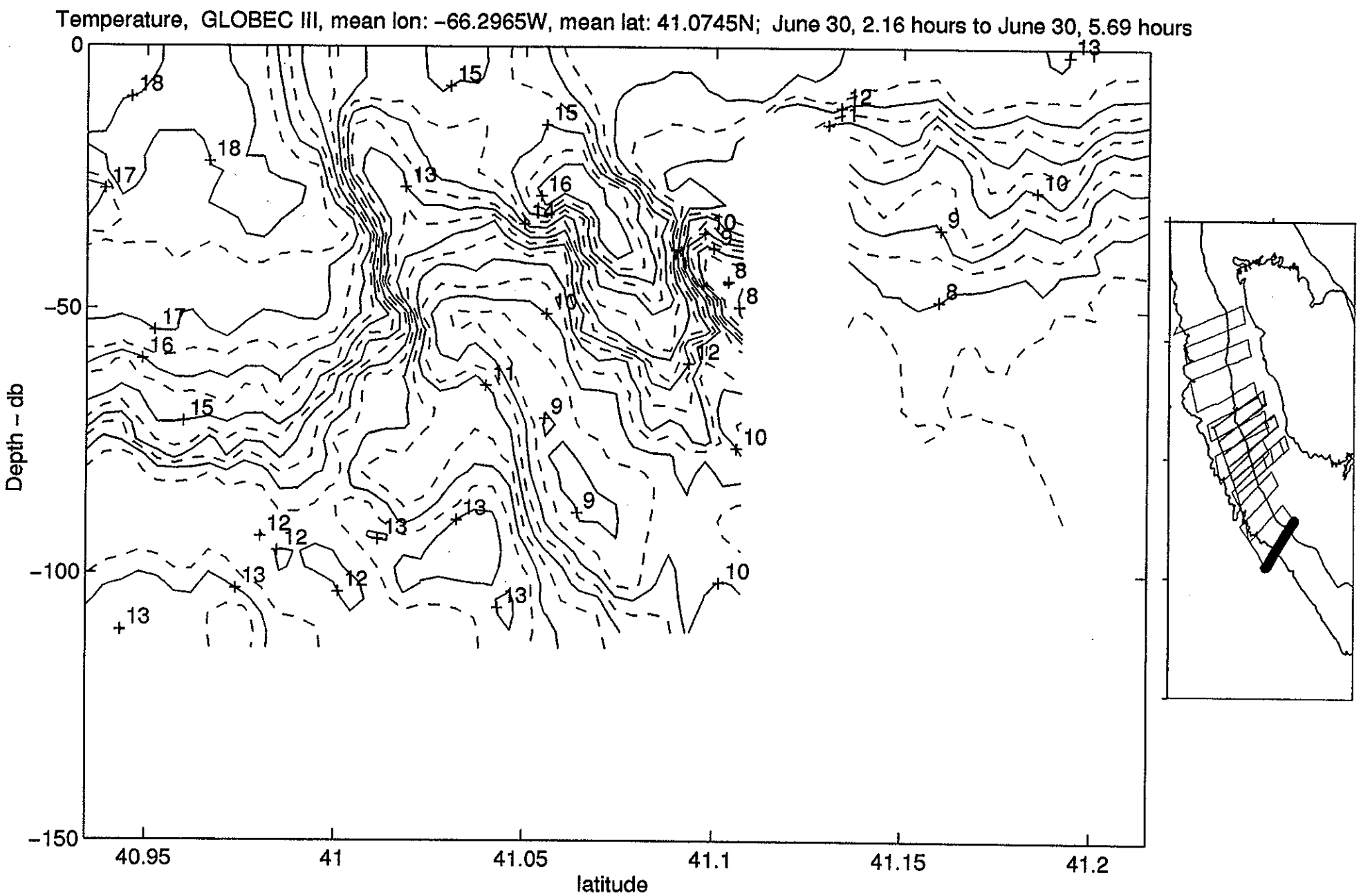

Seasoar Track, GLOBEC III, mean lon: -66.2725W, mean lat: 40.8175N; June 29, 23.40 hours to June 30, 2.28 hours
0
-50
-100
-150
Depth - [db]
-66.4
-66.35
-66.3
-66.25
-66.2
-66.15
longitude

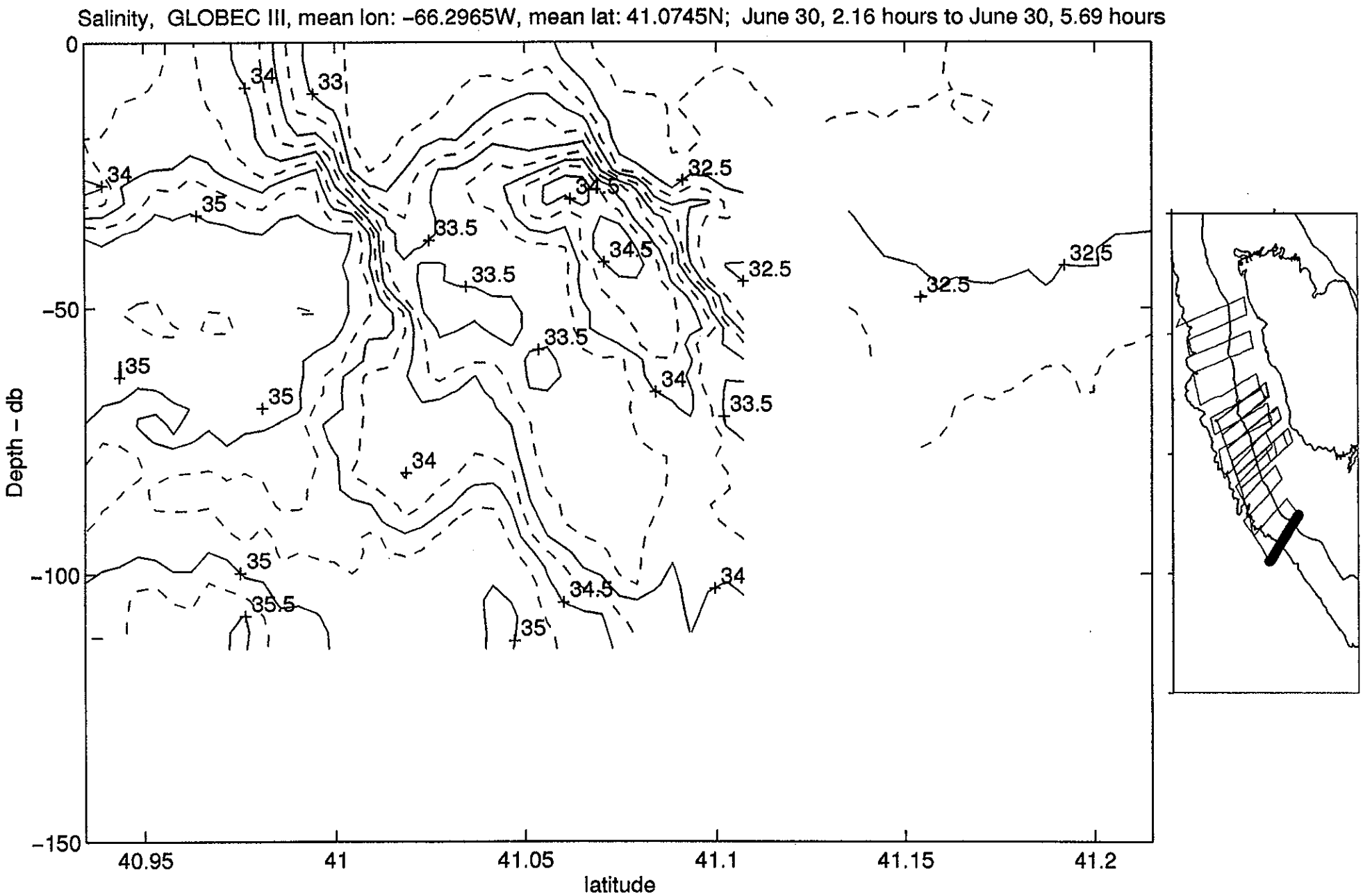

Temperature, GLOBEC III, mean lon: -66.2725W, mean lat: 40.8175N; June 29, 23.40 hours to June 30, 2.28 hours
0
-50
-100
-150
Depth - db
-66.4
-66.35
-66.3
-66.25
-66.2
-66.15
longitude

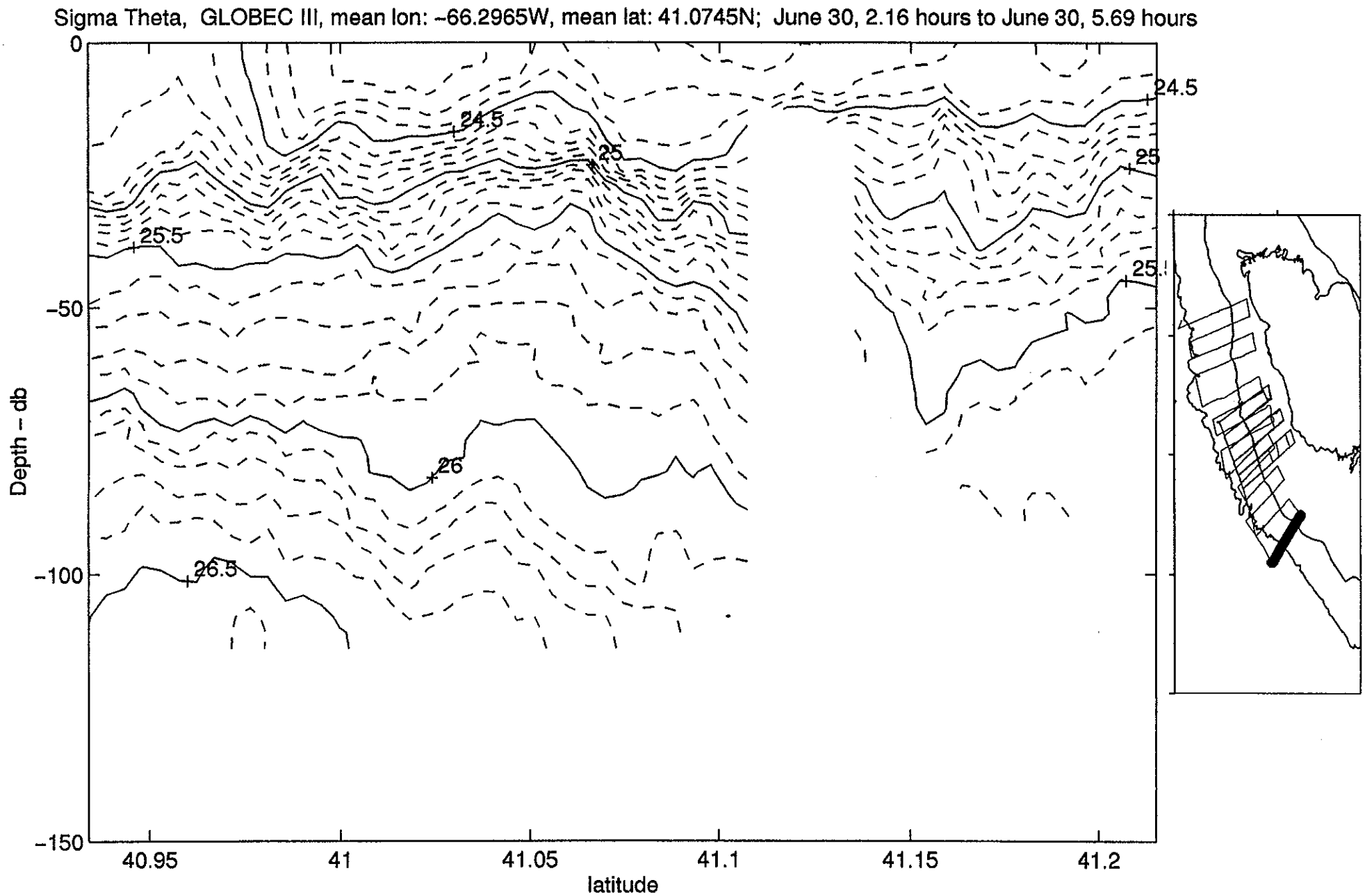

Salinity, GLOBEC III, mean lon: -66.2725W, mean lat: 40.8175N; June 29, 23.40 hours to June 30, 2.28 hours
0
-50
-100
-150
Depth - db
-66.4
-66.35
-66.3
-66.25
-66.2
-66.15
longitude
36
35
34.5
33
32.5
35.5
34.5
34.5
33.5
35
34
36
34
34
35

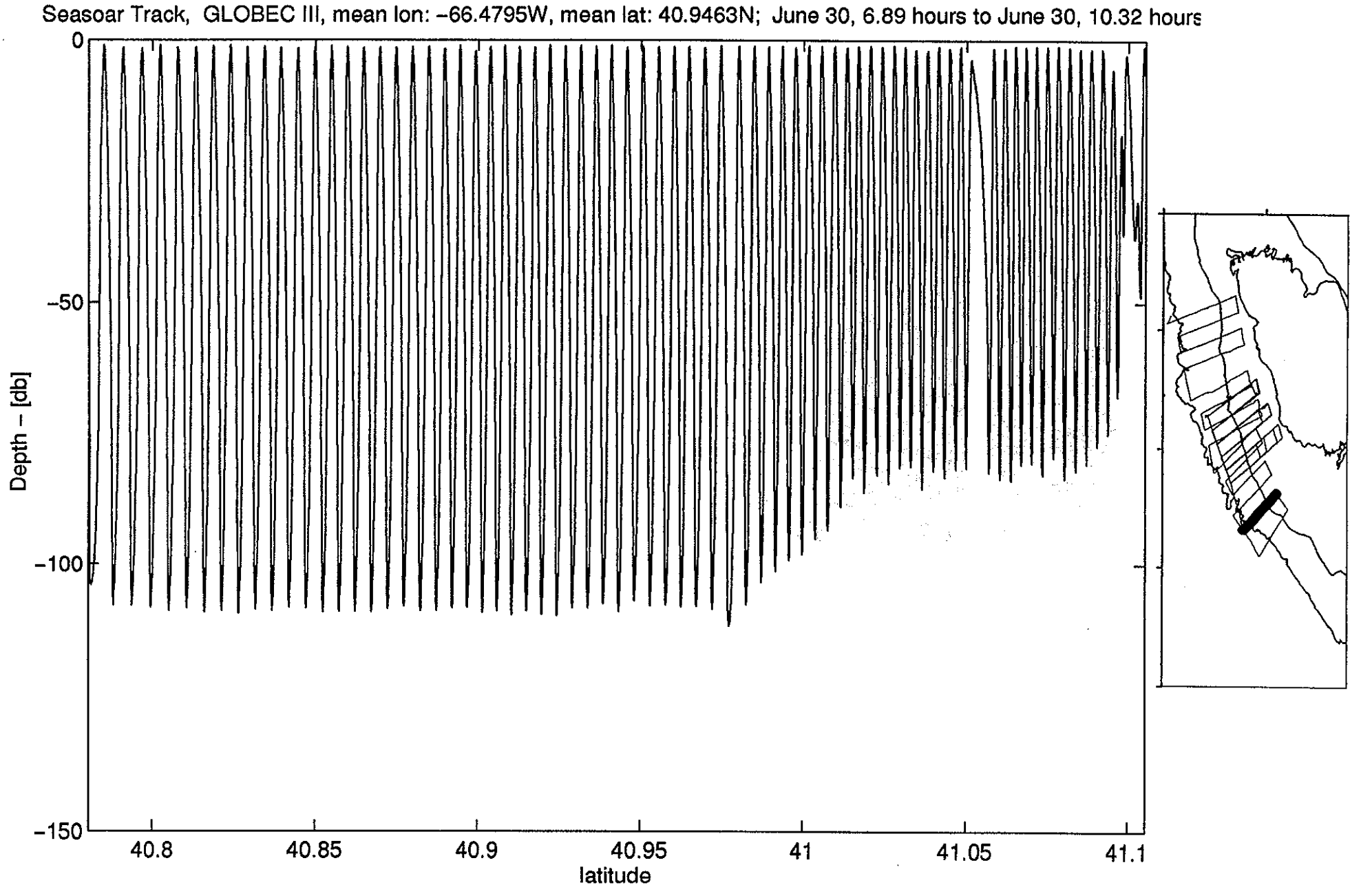

Sigma Theta, GLOBEC III, mean lon: -66.2725W, mean lat: 40.8175N; June 29, 23.40 hours to June 30, 2.28 hours
0
-50
-100
-150
Depth - db
-66.4
-66.35
-66.3
-66.25
-66.2
-66.15
longitude
24
24.5
25
25.5
25.5
26
26.5

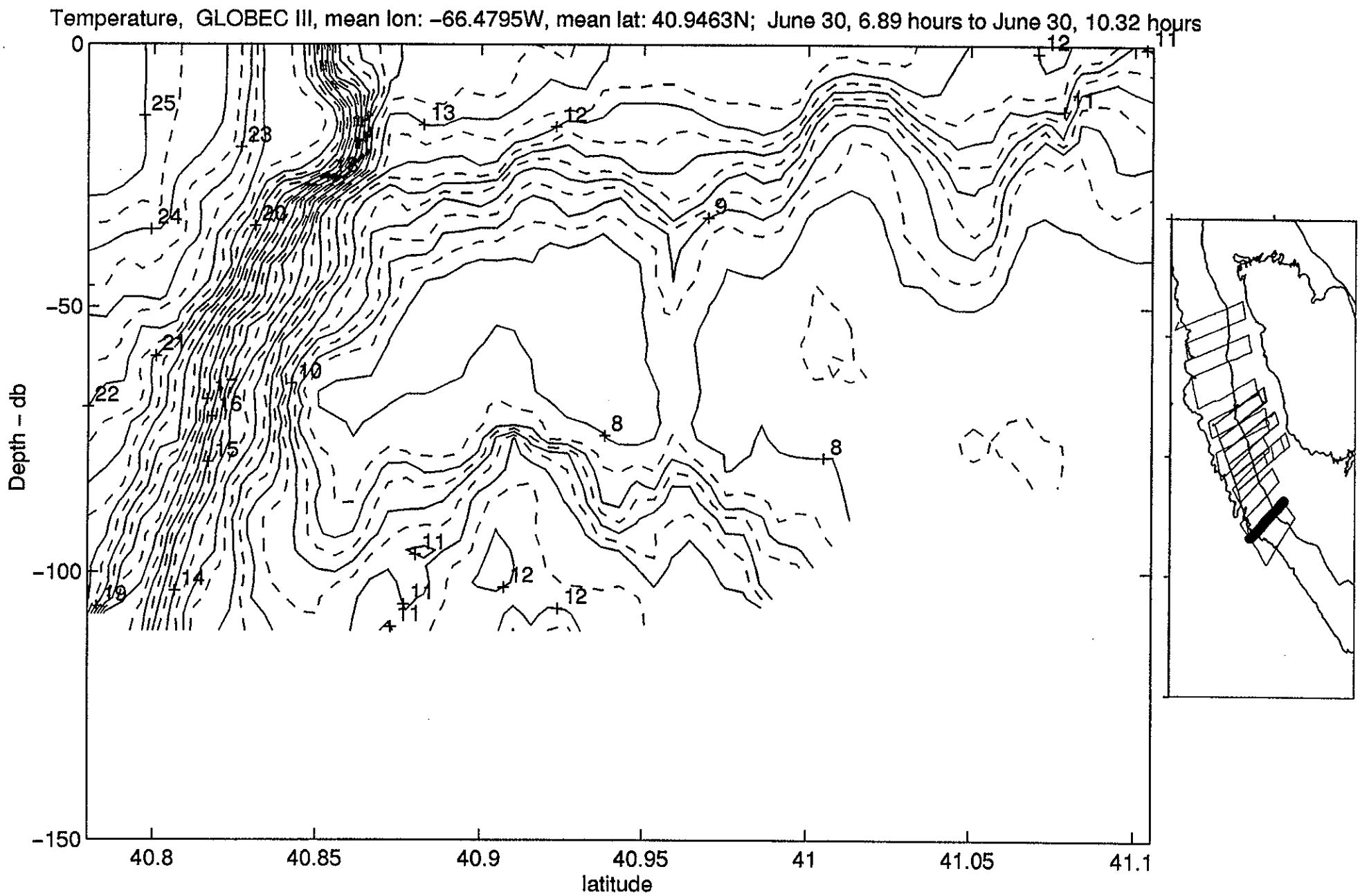

Seasoar Track, GLOBEC III, mean lon: -66.2965W, mean lat: 41.0745N; June 30, 2.16 hours to June 30, 5.69 hours
0
-50
-100
-150
Depth - [db]
40.95
41
41.05
41.1
41.15
41.2
latitude

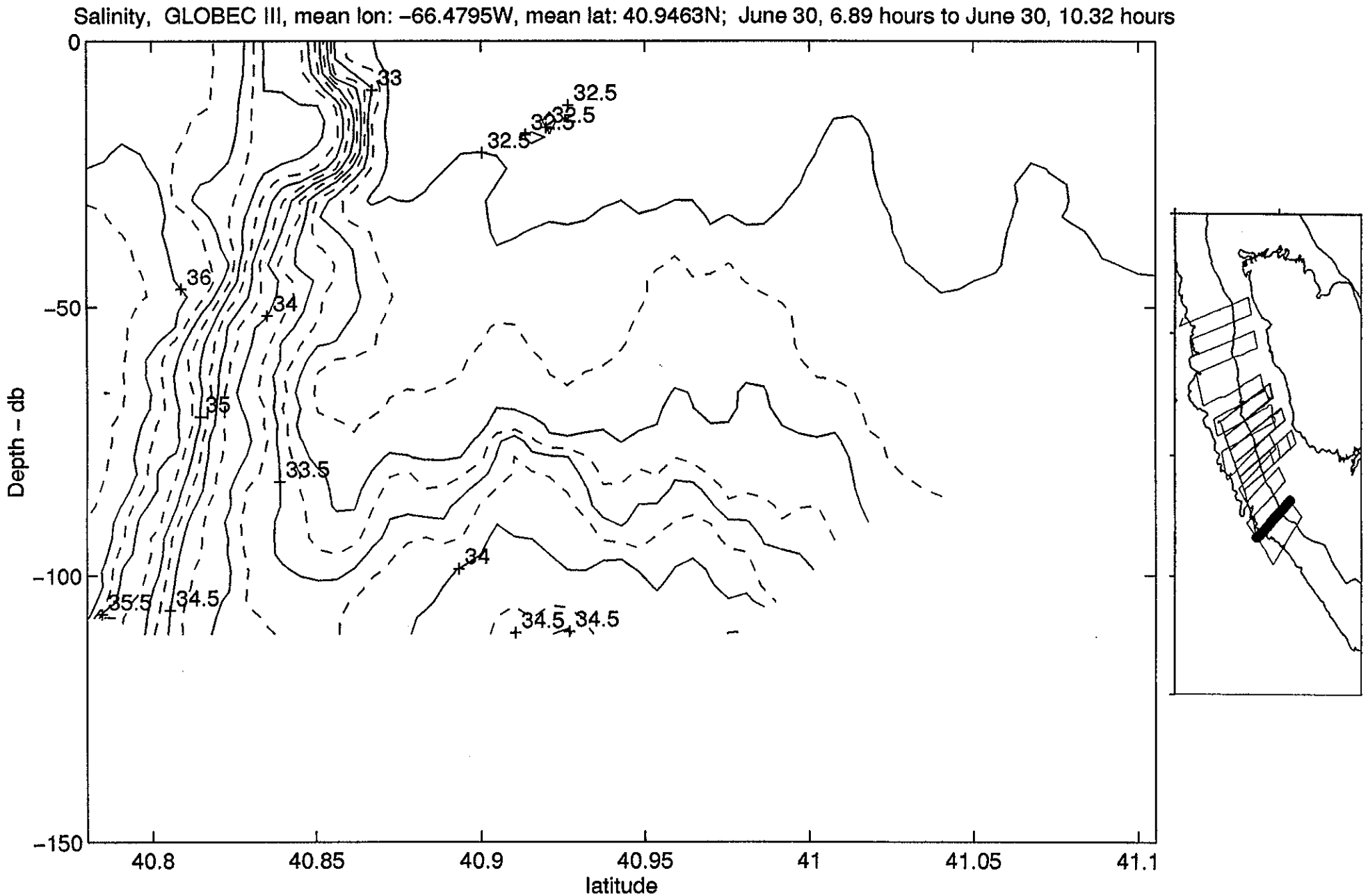

Temperature, GLOBEC III, mean lon: -66.2965W, mean lat: 41.0745N; June 30, 2.16 hours to June 30, 5.69 hours
0
-50
-100
-150
Depth - db
40.95
41
41.05
41.1
41.15
41.2
latitude

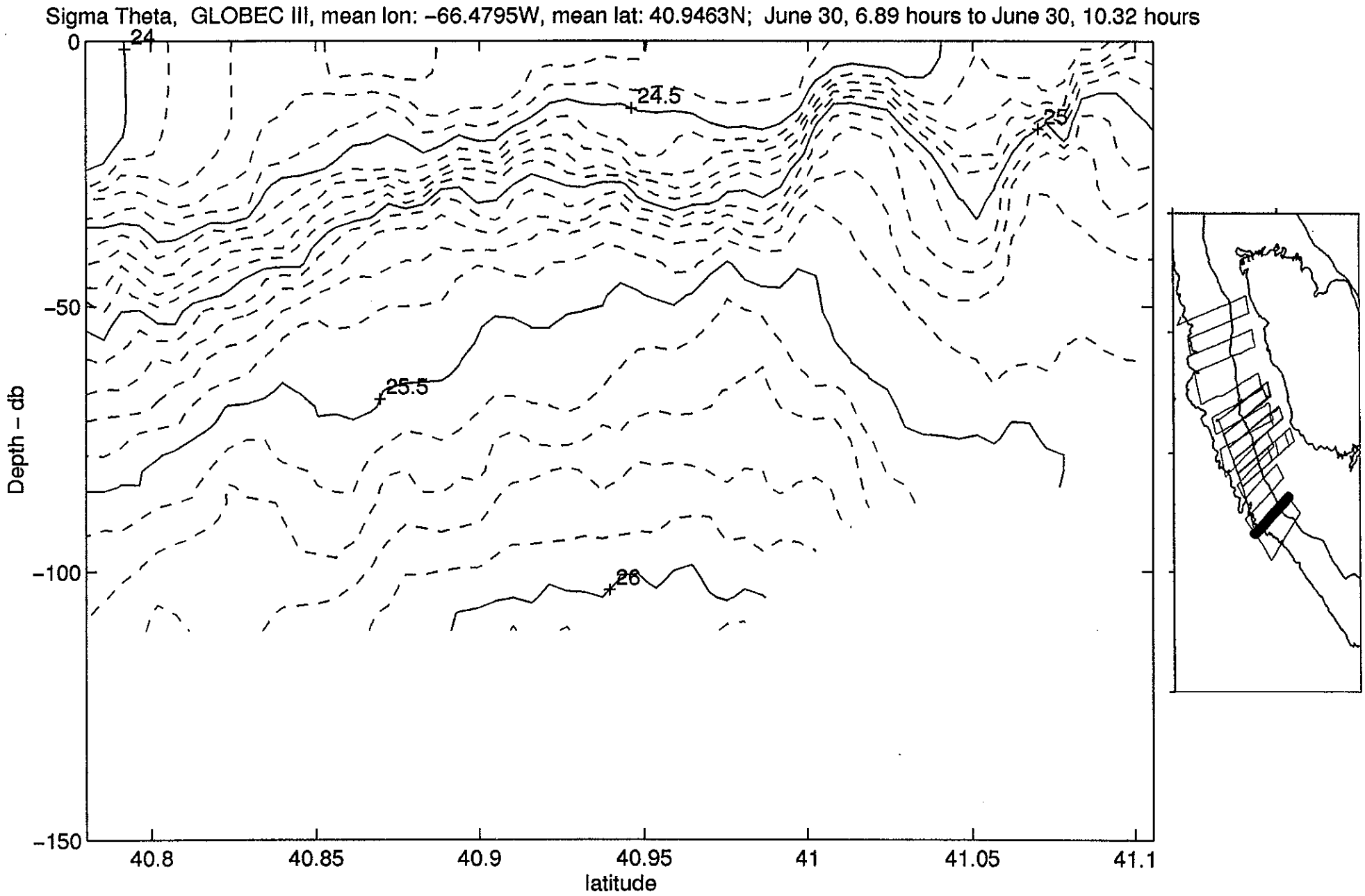

Salinity, GLOBEC III, mean lon: -66.2965W, mean lat: 41.0745N; June 30, 2.16 hours to June 30, 5.69 hours
Depth - db
latitude
0
-50
-100
-150
40.95
41
41.05
41.1
41.15
41.2
34
33
35
33.5
34.5
32.5
35.5

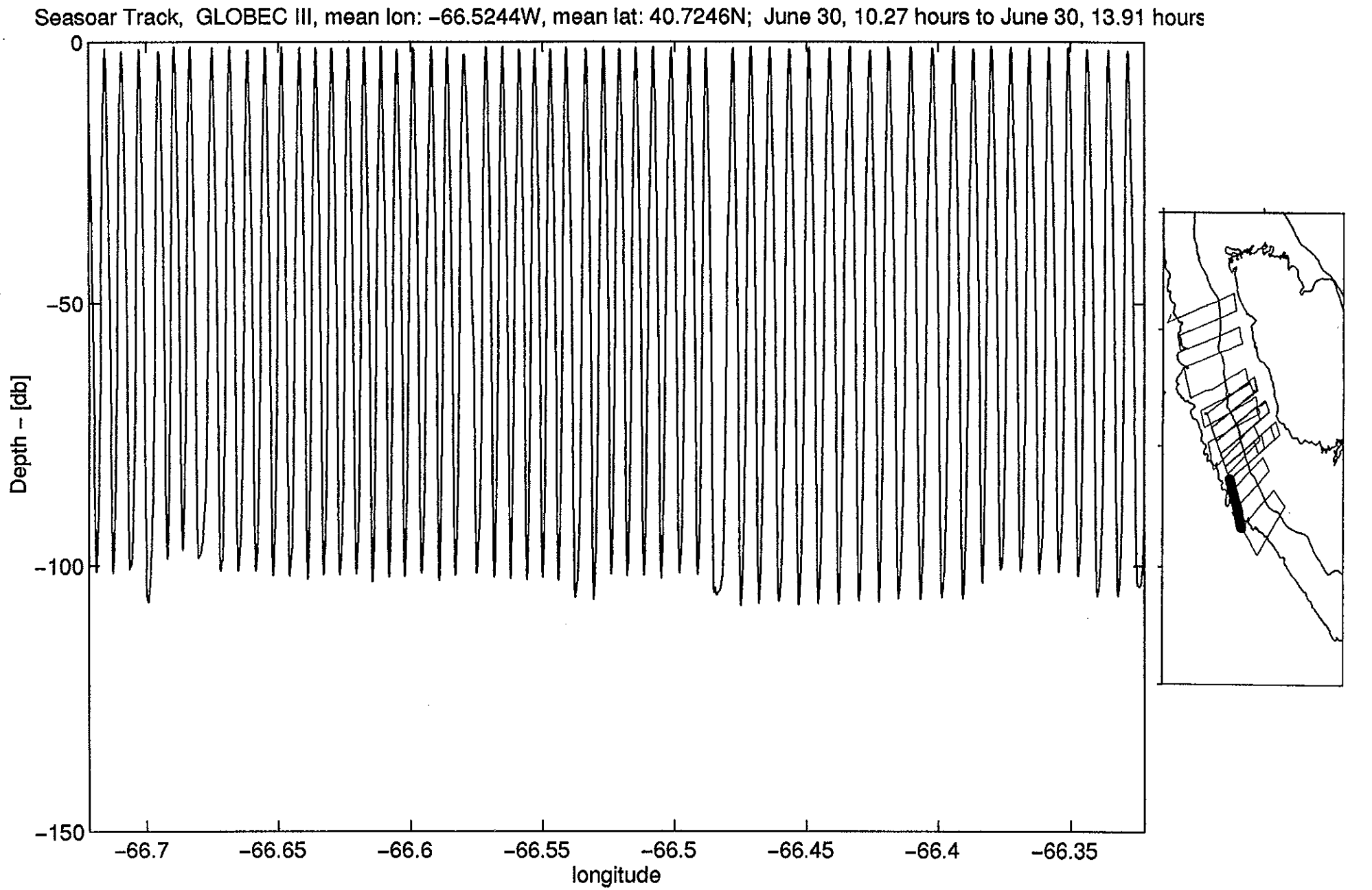

Sigma Theta, GLOBEC III, mean lon: -66.2965W, mean lat: 41.0745N; June 30, 2.16 hours to June 30, 5.69 hours
0
-50
-100
-150
Depth - db
40.95
41
41.05
41.1
41.15
41.2
latitude
24.5
25
25.5
26
26.5

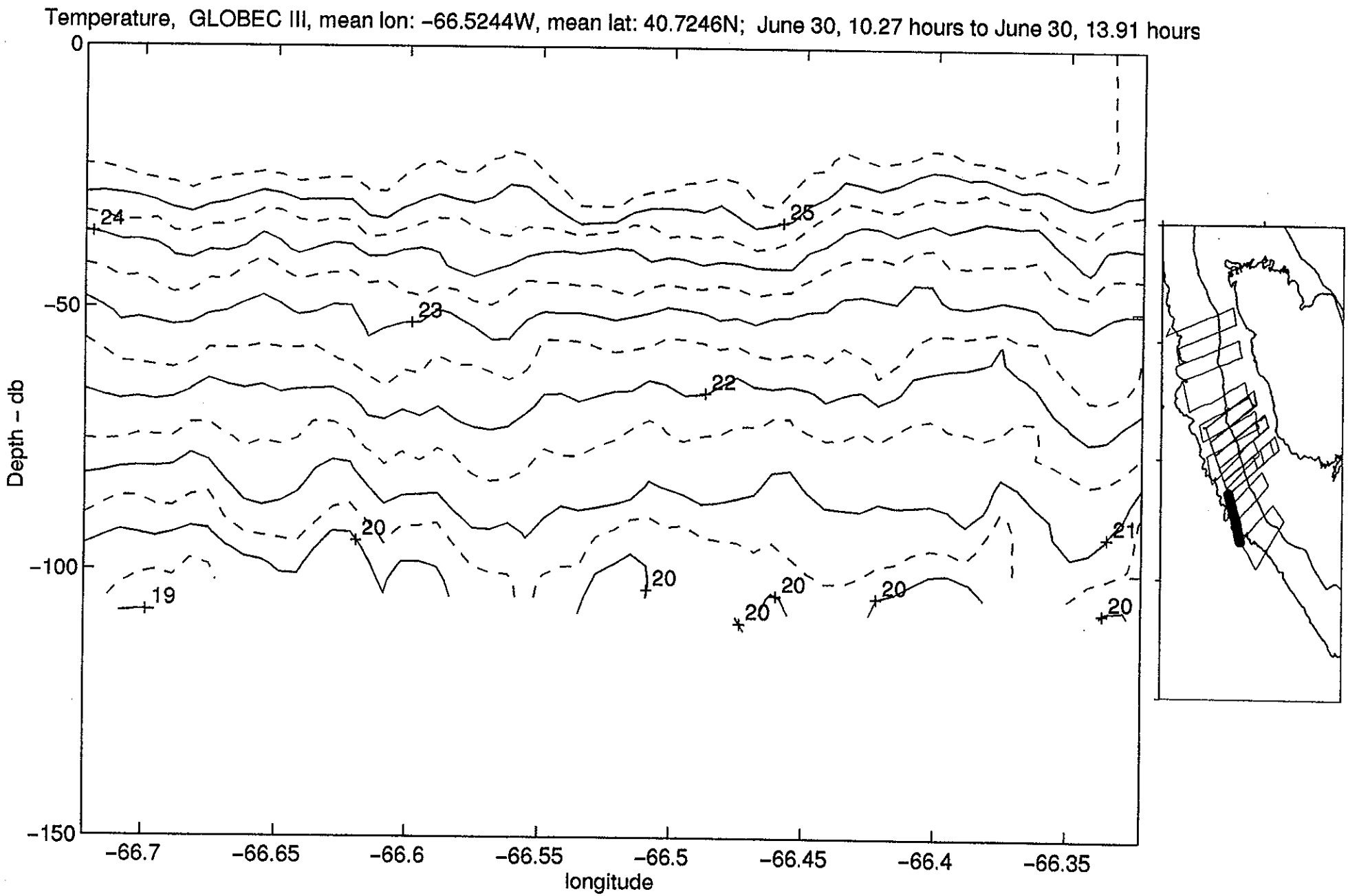

Seasoar Track, GLOBEC III, mean lon: -66.4795W, mean lat: 40.9463N; June 30, 6.89 hours to June 30, 10.32 hours
0
-50
-100
-150
Depth - [db]
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude

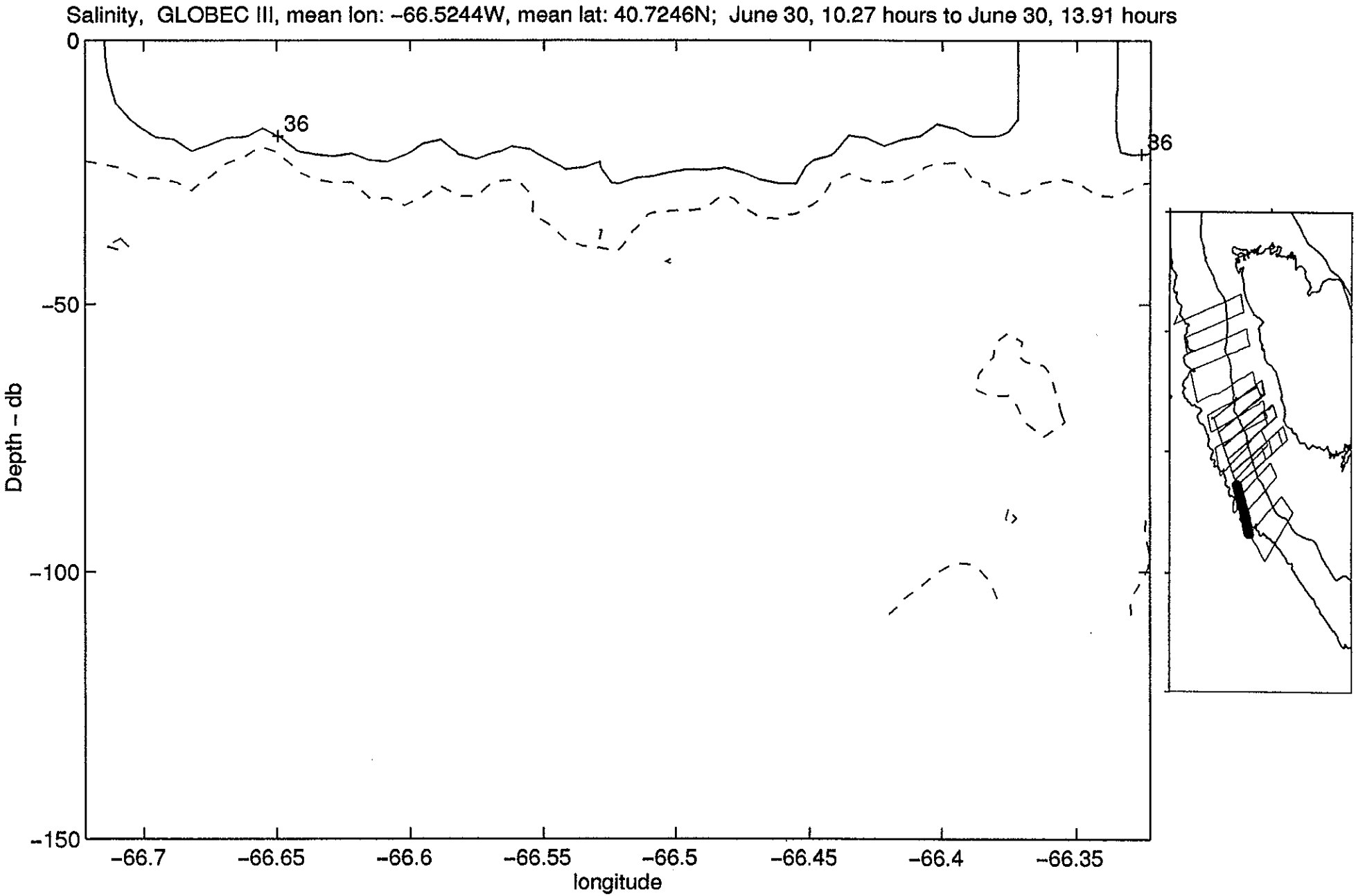

Temperature, GLOBEC III, mean lon: −66.4795W, mean lat: 40.9463N; June 30, 6.89 hours to June 30, 10.32 hours
Depth – db
0
−50
−100
−150
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude

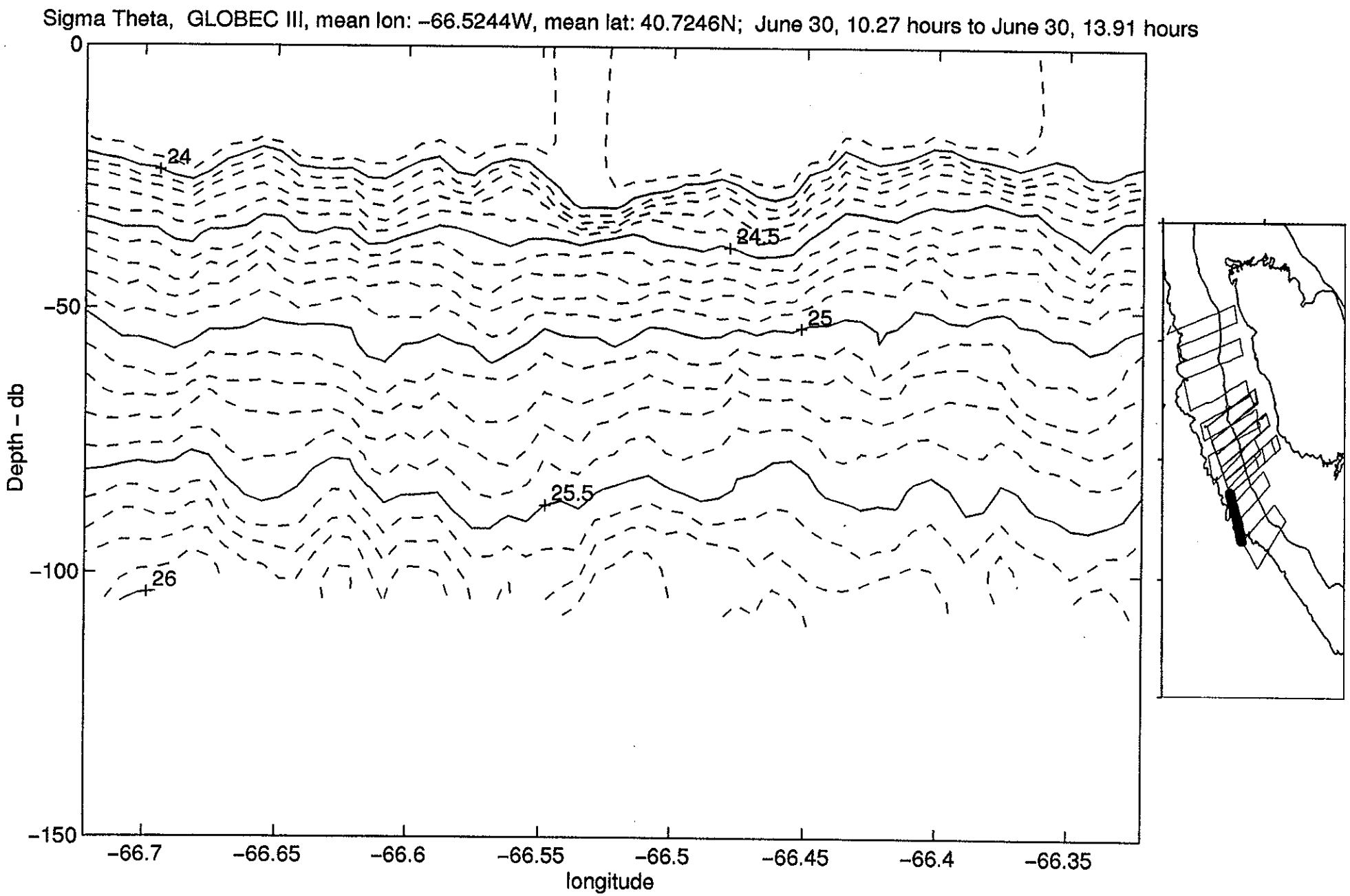

Salinity, GLOBEC III, mean lon: -66.4795W, mean lat: 40.9463N; June 30, 6.89 hours to June 30, 10.32 hours
0
-50
-100
-150
Depth - db
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude
33
32.5
32.5
32.5
36
34
35
33.5
34
35.5
34.5
34.5
34.5


Sigma Theta, GLOBEC III, mean lon: -66.4795W, mean lat: 40.9463N; June 30, 6.89 hours to June 30, 10.32 hours
0
-50
-100
-150
Depth – db
24
24.5
25
25.5
26
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude

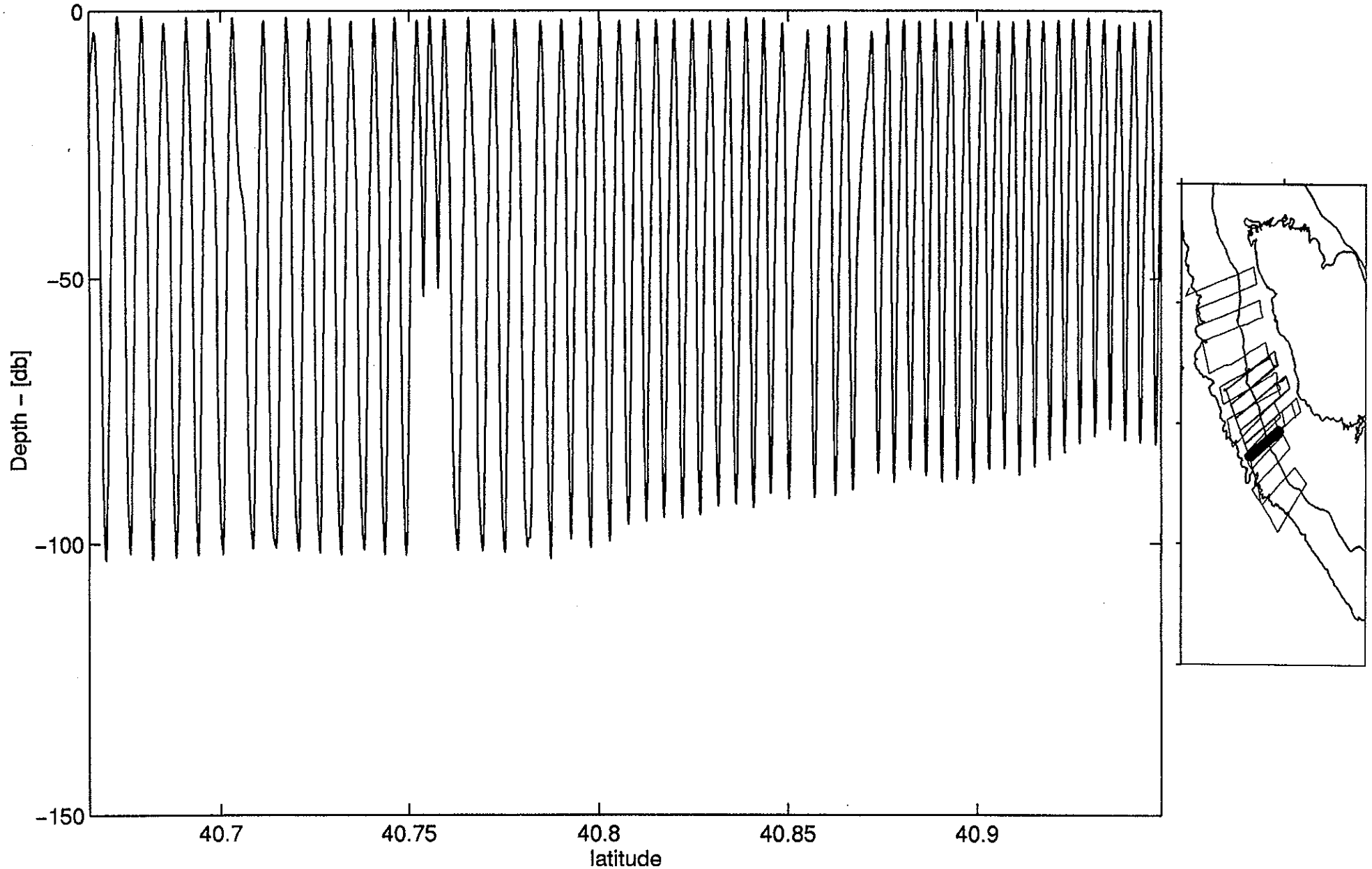

Seasoar Track, GLOBEC III, mean lon: -66.5244W, mean lat: 40.7246N; June 30, 10.27 hours to June 30, 13.91 hours
0
-50
-100
-150
Depth -- [db]
-66.7
-66.65
-66.6
-66.55
-66.5
-66.45
-66.4
-66.35
longitude

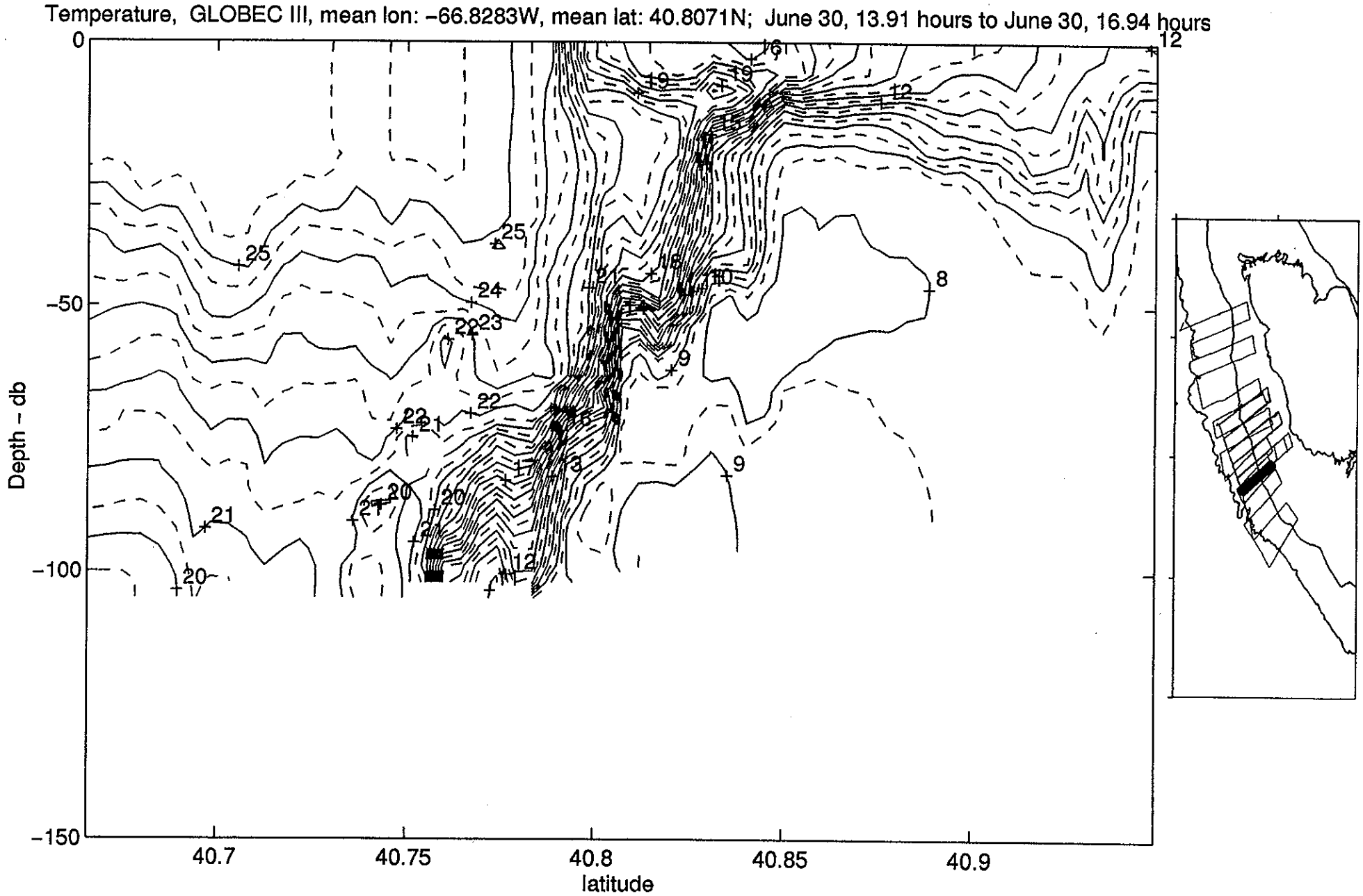

Temperature, GLOBEC III, mean lon: -66.5244W, mean lat: 40.7246N; June 30, 10.27 hours to June 30, 13.91 hours
0
-50
-100
-150
Depth - db
-66.7
-66.65
-66.6
-66.55
-66.5
-66.45
-66.4
-66.35
longitude
24
25
23
22
20
19
21

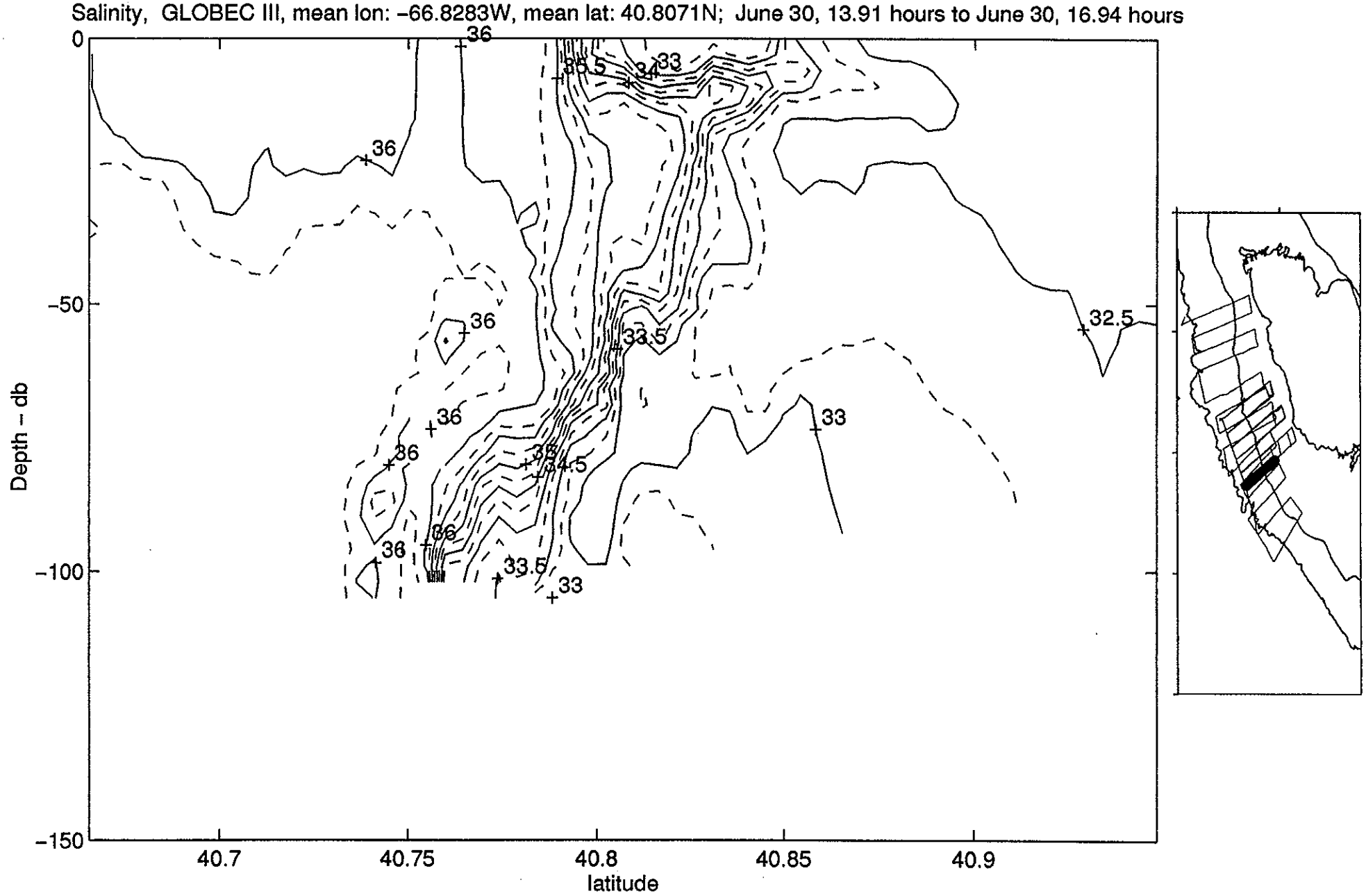

Salinity, GLOBEC III, mean lon: -66.5244W, mean lat: 40.7246N; June 30, 10.27 hours to June 30, 13.91 hours
0
-50
-100
-150
Depth - db
36
36
-66.7
-66.65
-66.6
-66.55
-66.5
-66.45
-66.4
-66.35
longitude

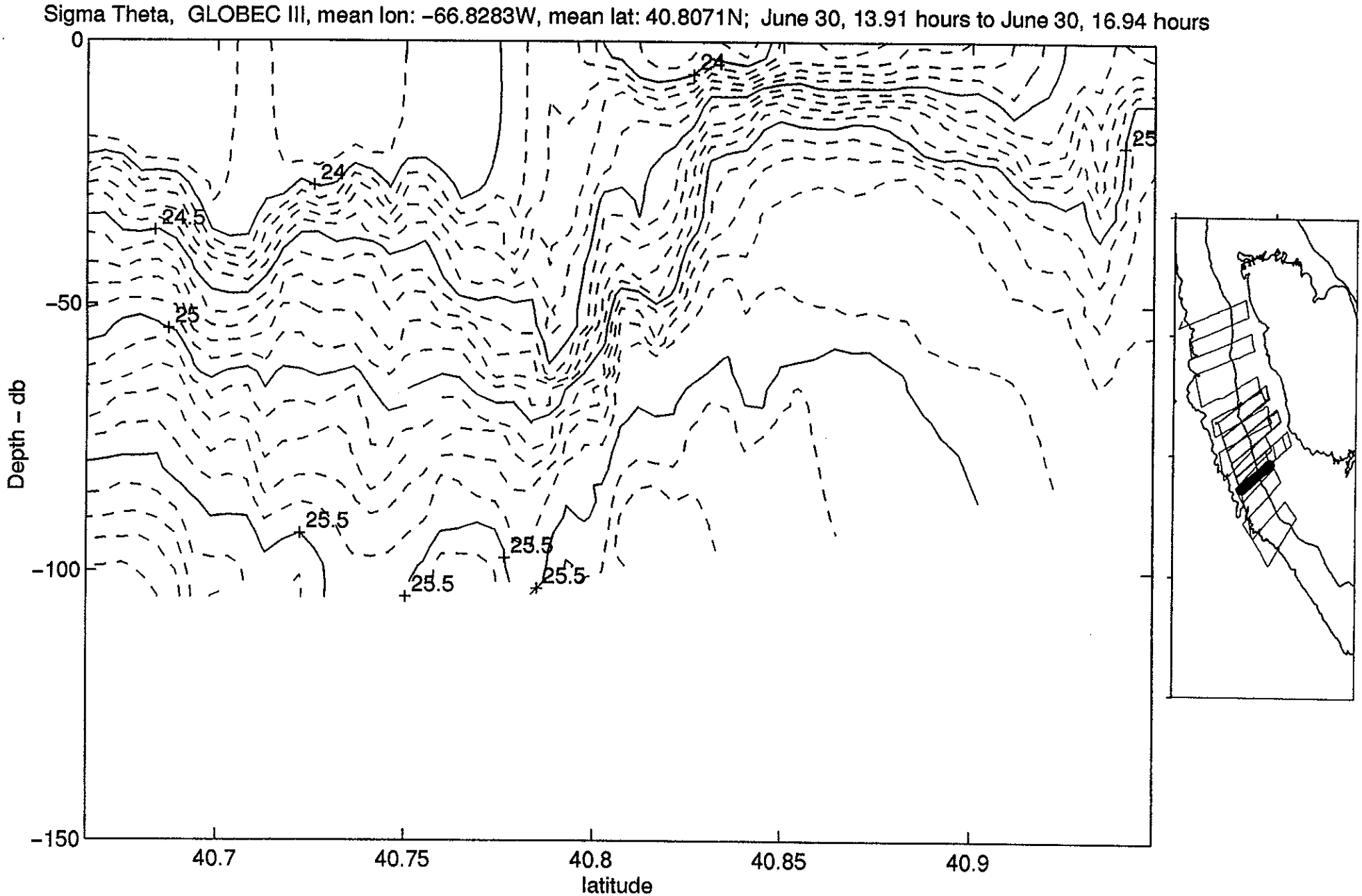

Sigma Theta, GLOBEC III, mean lon: -66.5244W, mean lat: 40.7246N; June 30, 10.27 hours to June 30, 13.91 hours
0
-50
-100
-150
Depth - db
24
24.5
25
25.5
26
-66.7
-66.65
-66.6
-66.55
-66.5
-66.45
-66.4
-66.35
longitude

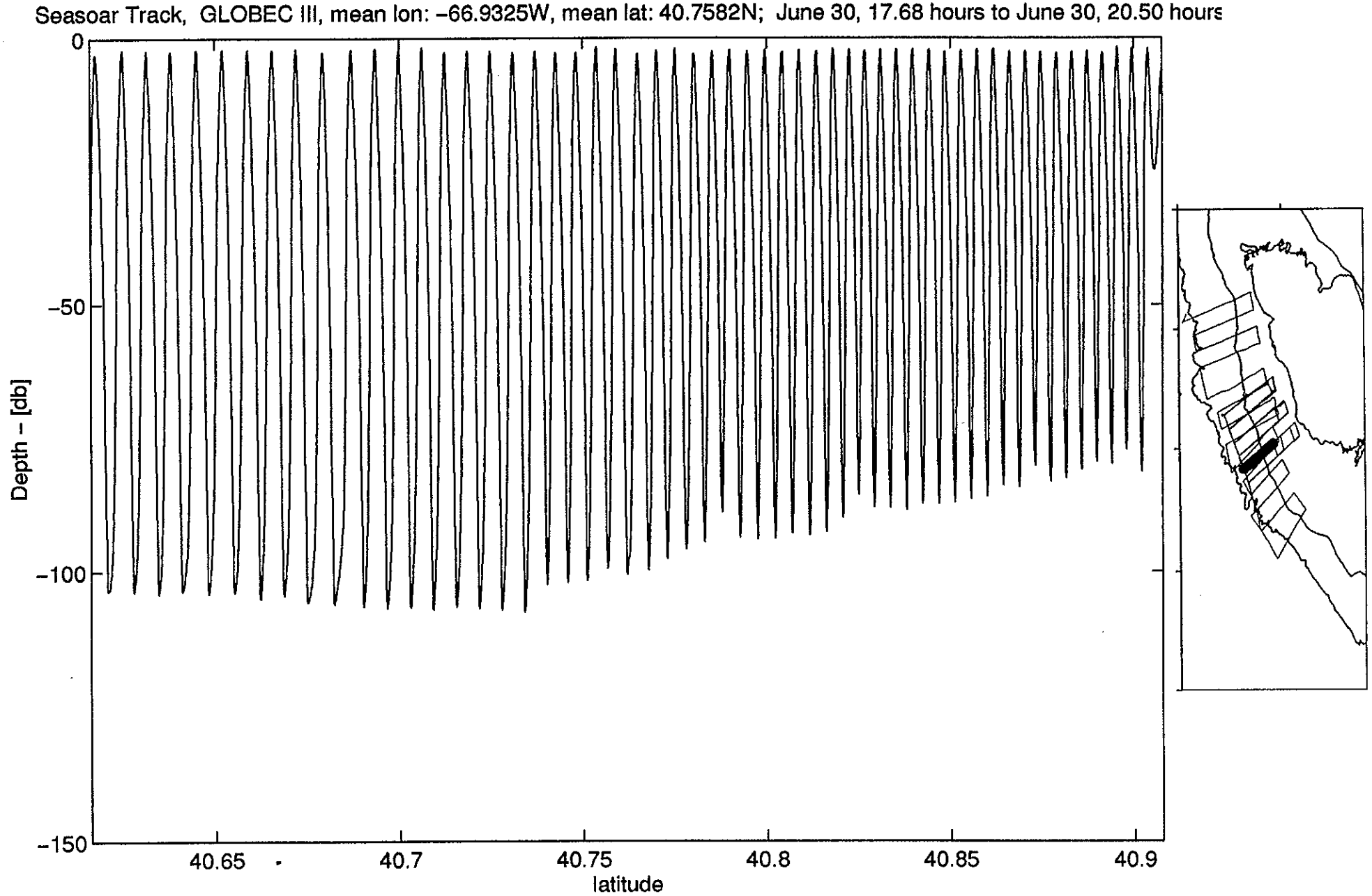
Seasoar Track, GLOBEC III, mean lon: -66.8283W, mean lat: 40.8071N; June 30, 13.91 hours to June 30, 16.94 hours

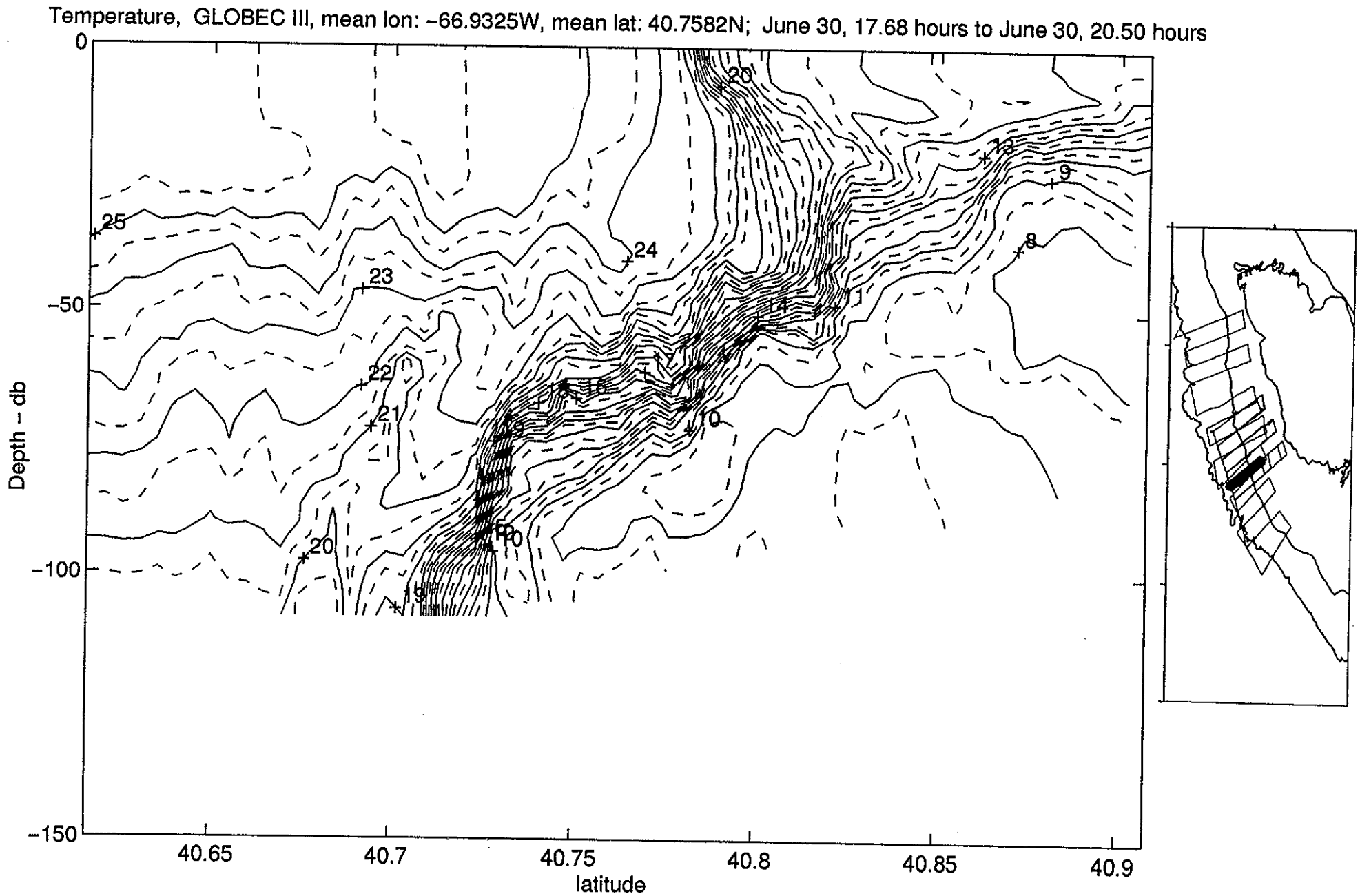


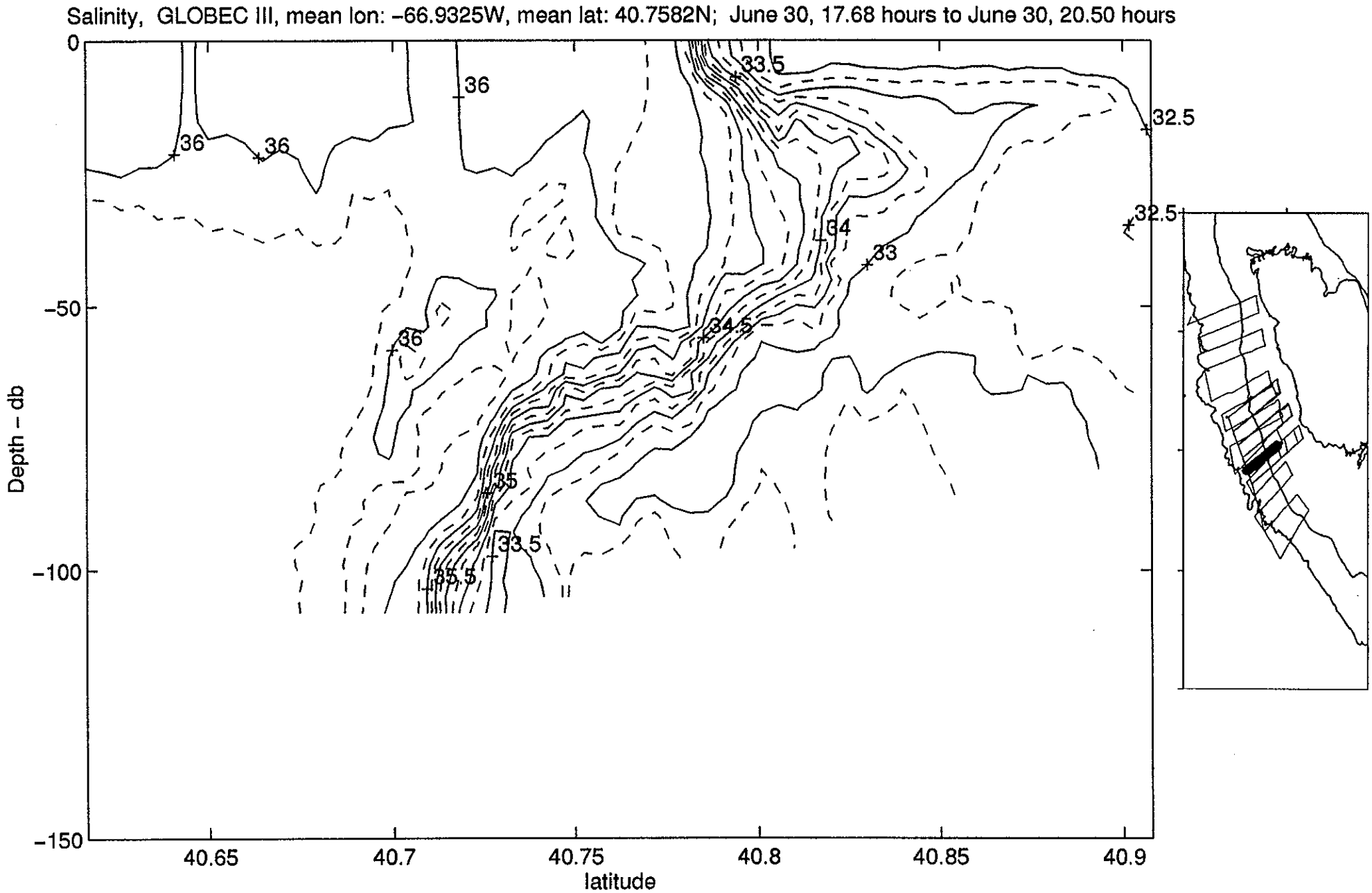

Temperature, GLOBEC III, mean lon: -66.8283W, mean lat: 40.8071N; June 30, 13.91 hours to June 30, 16.94 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
latitude

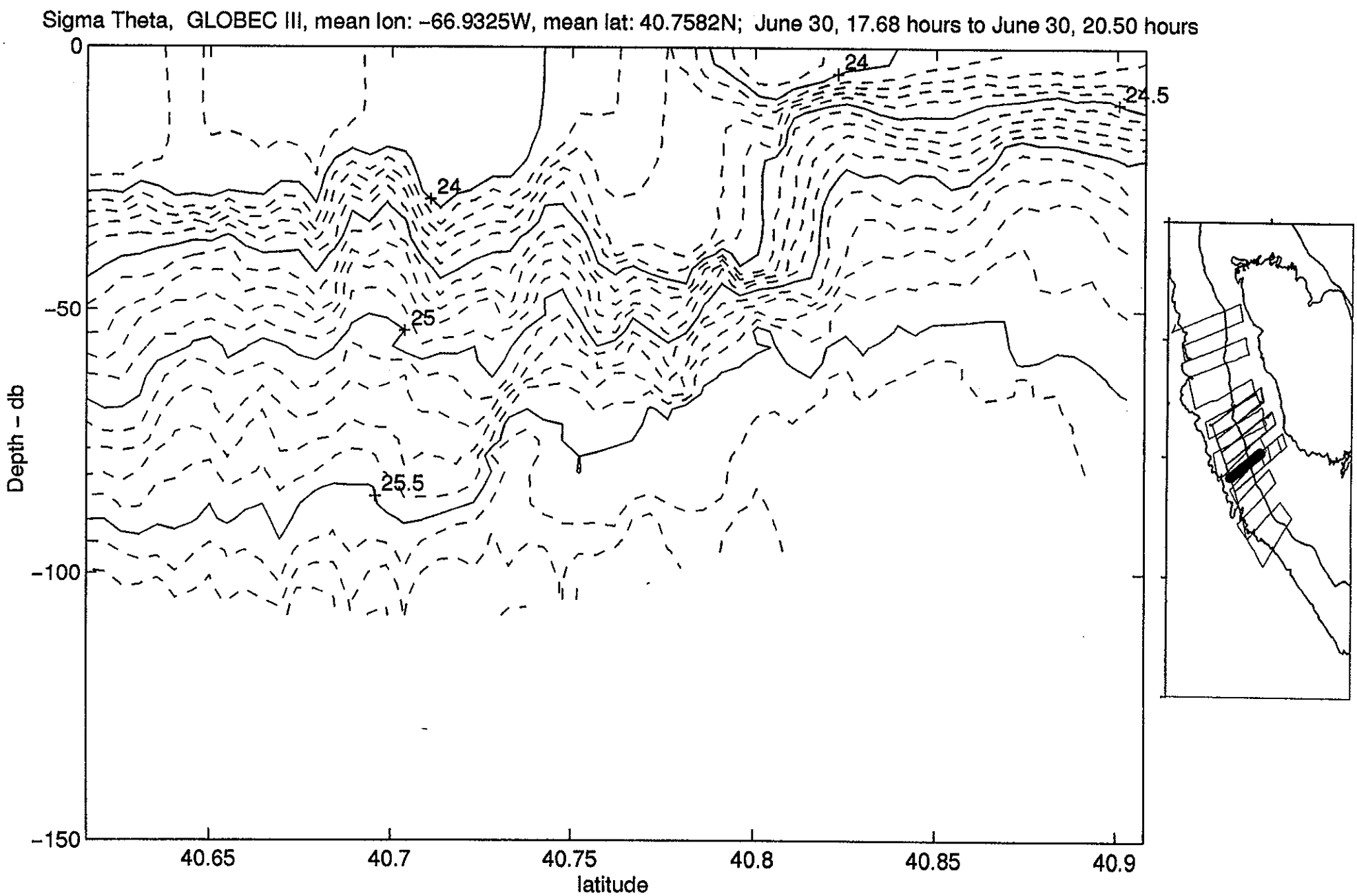

Salinity, GLOBEC III, mean lon: -66.8283W, mean lat: 40.8071N; June 30, 13.91 hours to June 30, 16.94 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
latitude
36
35.5
34
33
36
36
33.5
32.5
33
36
36
34.5
36
36
33.5
33

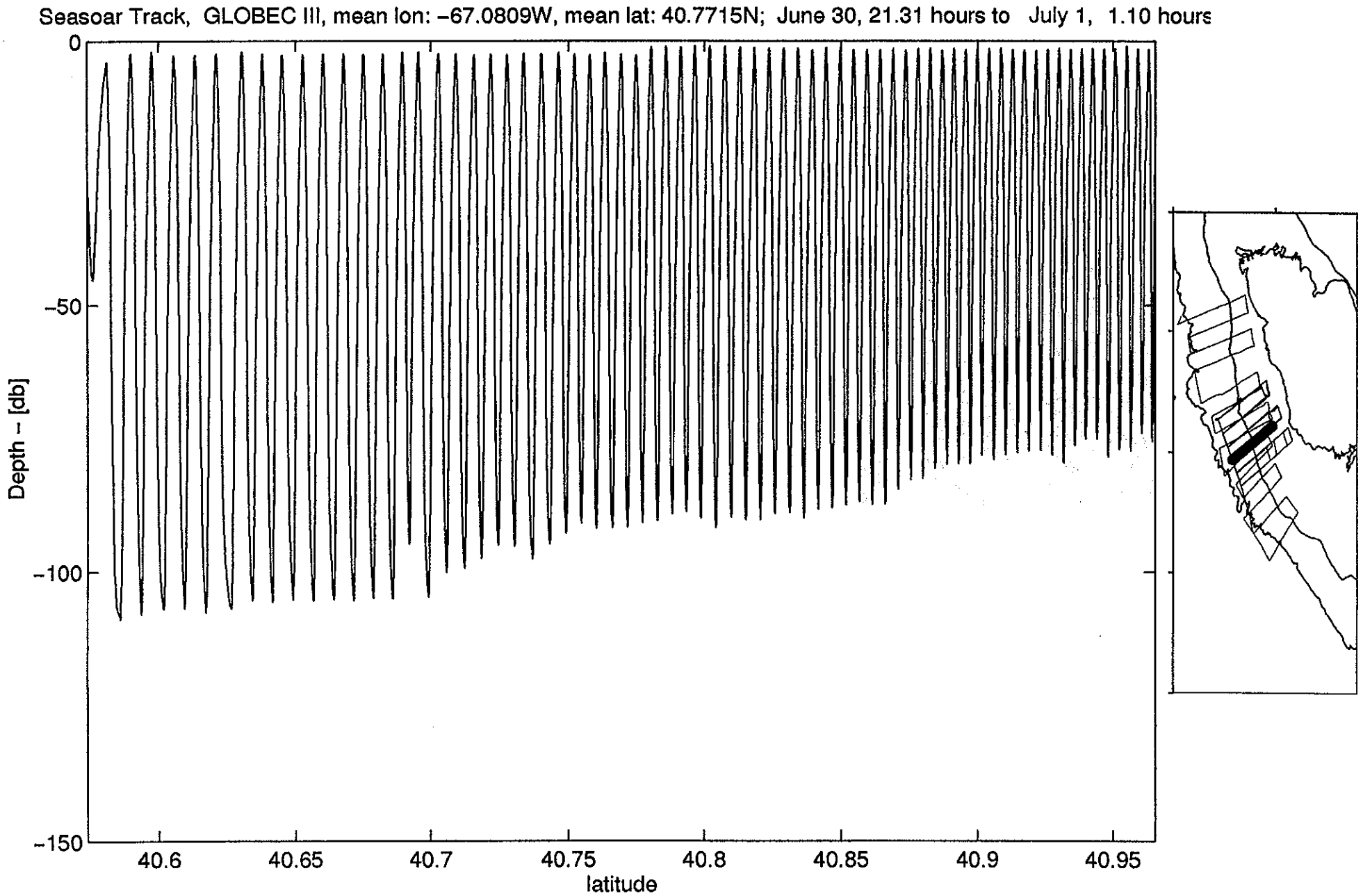

Sigma Theta, GLOBEC III, mean lon: -66.8283W, mean lat: 40.8071N; June 30, 13.91 hours to June 30, 16.94 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
latitude
24
24
24.5
25
25
25.5
25.5
25.5
25.5

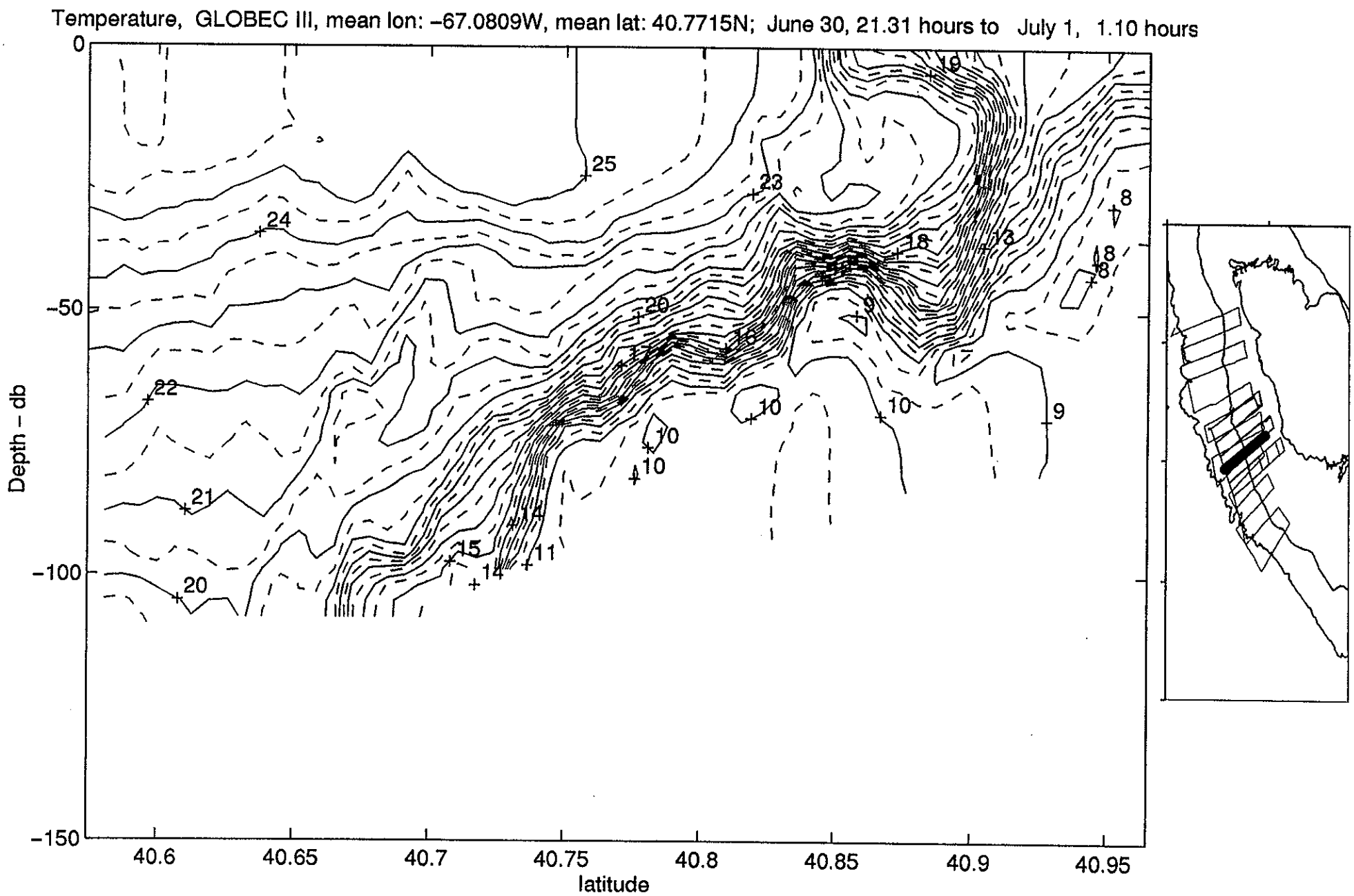

Seasoar Track, GLOBEC III, mean lon: -66.9325W, mean lat: 40.7582N; June 30, 17.68 hours to June 30, 20.50 hours
0
-50
-100
-150
Depth - [db]
40.65
40.7
40.75
40.8
40.85
40.9
latitude

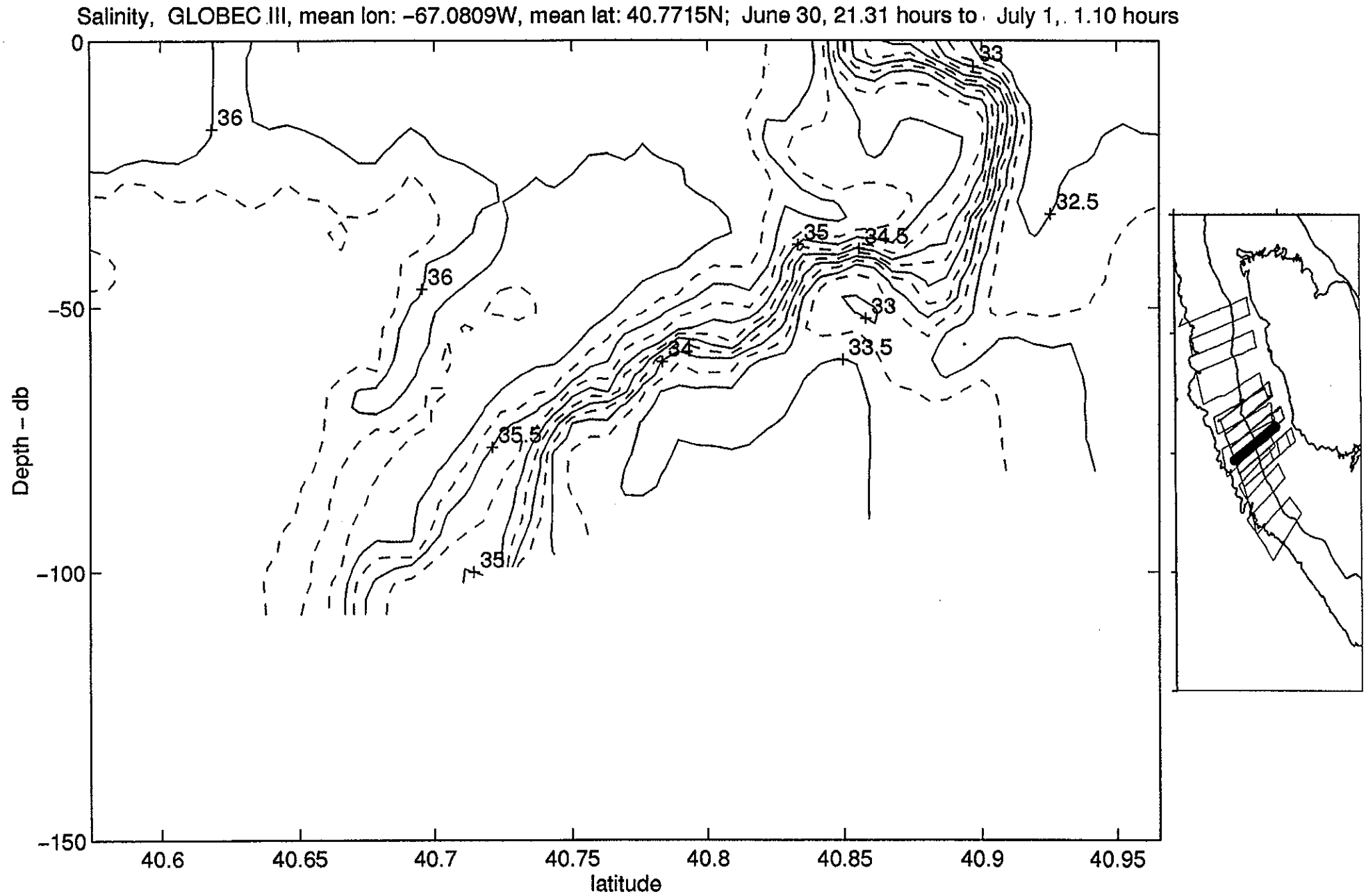

Temperature, GLOBEC III, mean lon: -66.9325W, mean lat: 40.7582N; June 30, 17.68 hours to June 30, 20.50 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
latitude

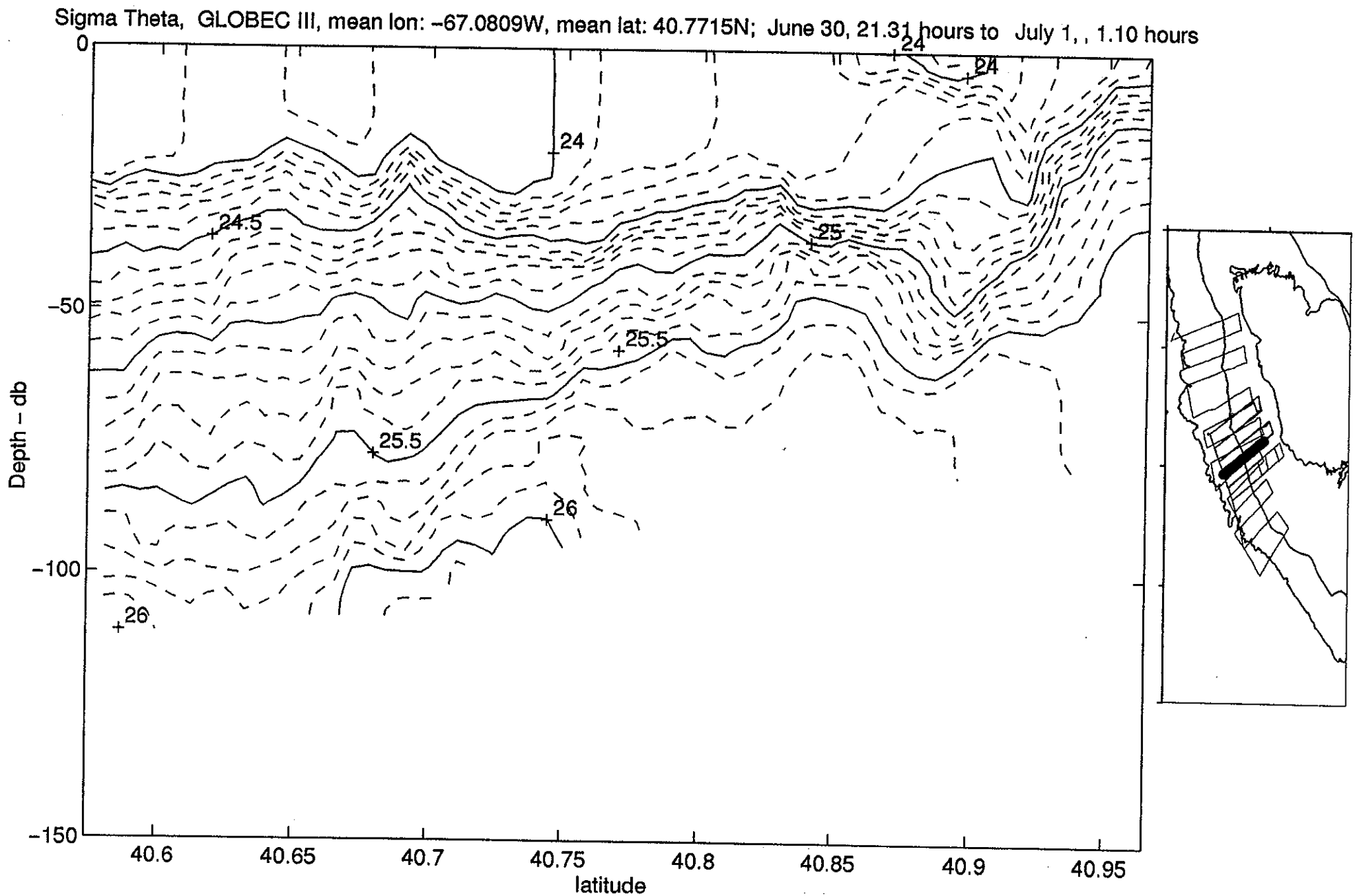

Salinity, GLOBEC III, mean lon: -66.9325W, mean lat: 40.7582N; June 30, 17.68 hours to June 30, 20.50 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
latitude
36
36
36
36
33.5
32.5
32.5
34
33
34.5
35
33.5
35.5

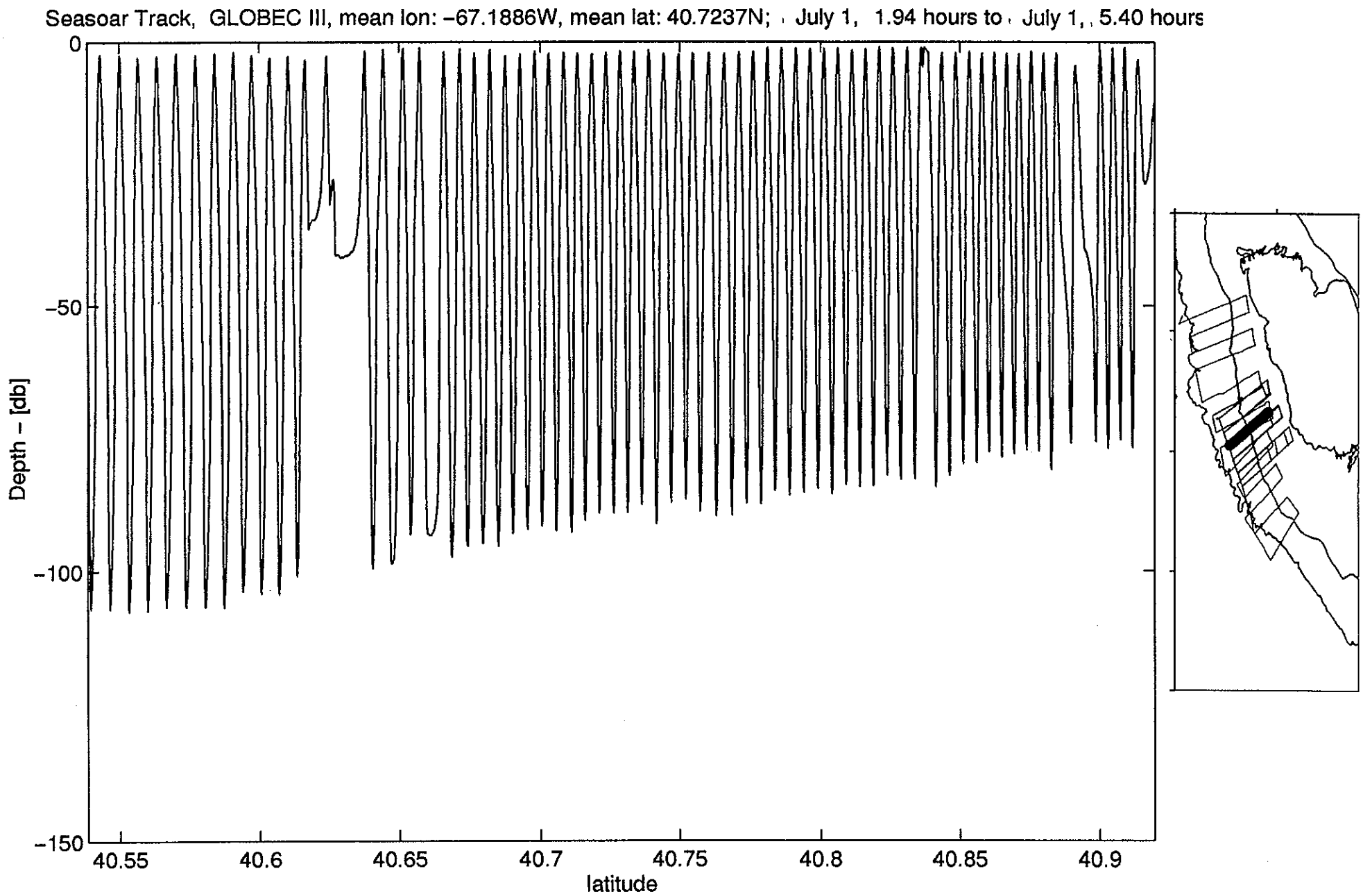

Sigma Theta, GLOBEC III, mean lon: -66.9325W, mean lat: 40.7582N; June 30, 17.68 hours to June 30, 20.50 hours
0
-50
-100
-150
Depth - db
24
24.5
24
25
25.5
40.65
40.7
40.75
40.8
40.85
40.9
latitude

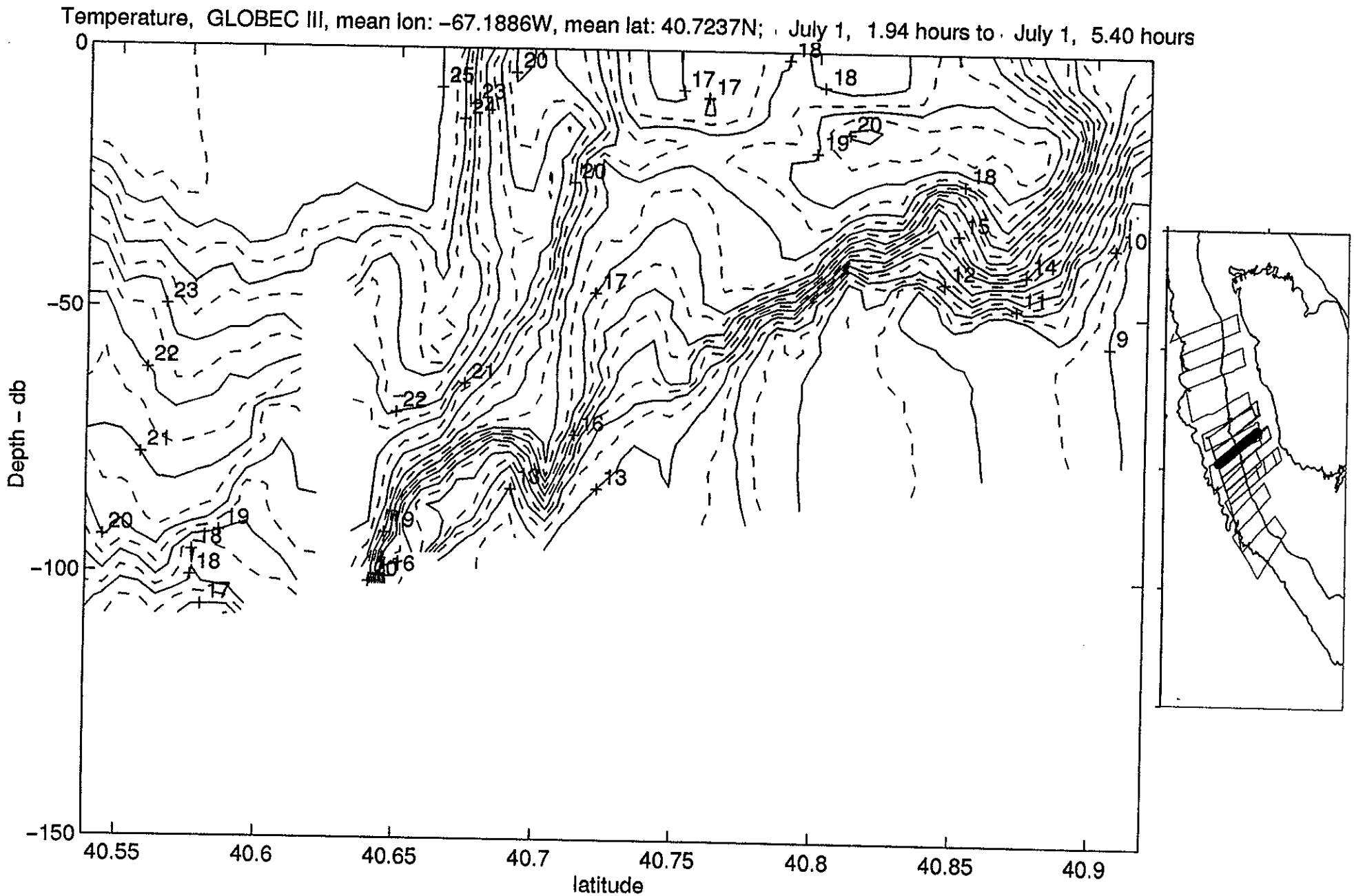

Seasoar Track, GLOBEC III, mean lon: −67.0809W, mean lat: 40.7715N; June 30, 21.31 hours to July 1, 1.10 hours
0
−50
−100
−150
Depth − [db]
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

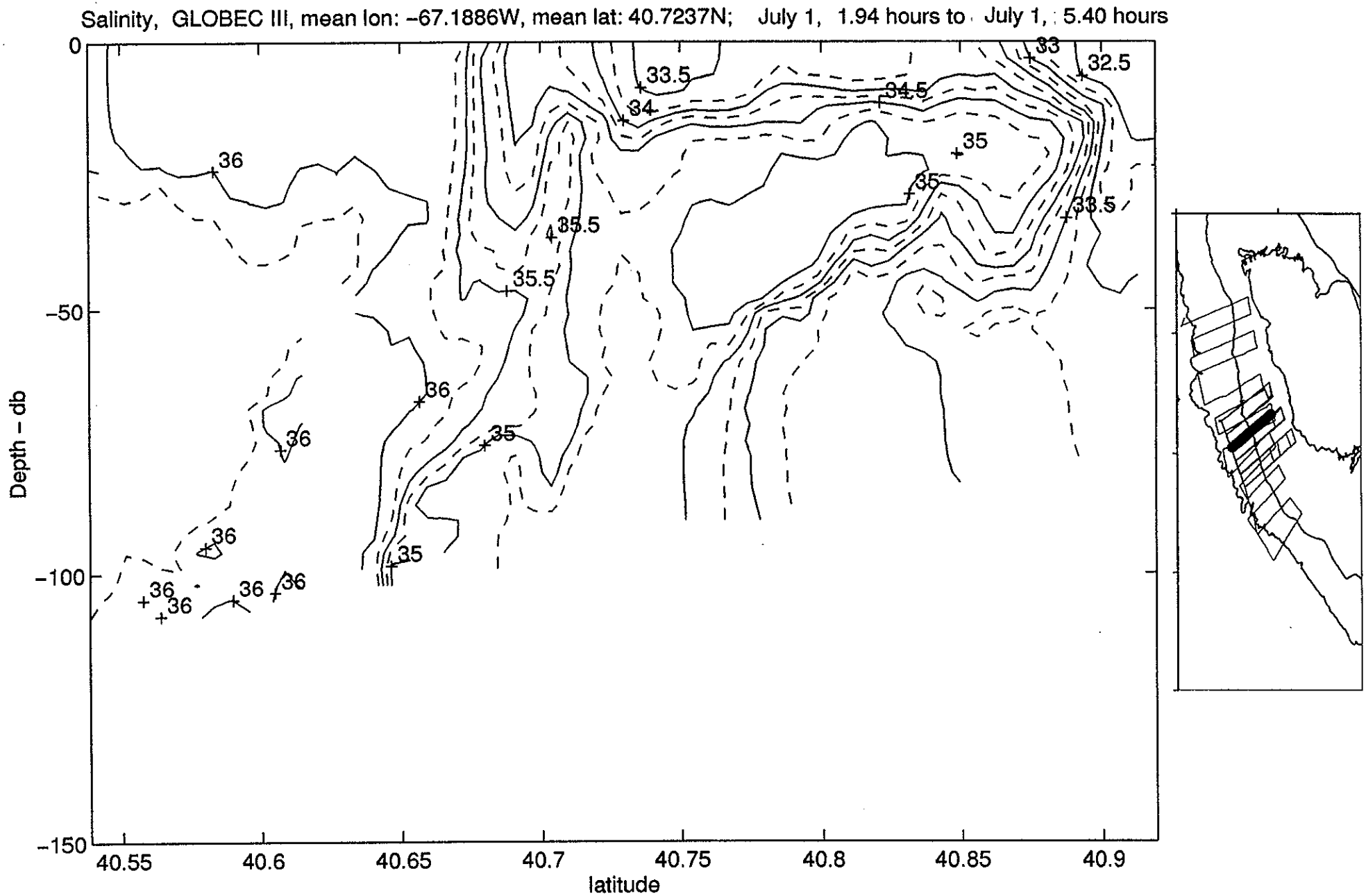

Temperature, GLOBEC III, mean lon: −67.0809W, mean lat: 40.7715N; June 30, 21.31 hours to July 1, 1.10 hours
Depth – db
0
−50
−100
−150
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude


Salinity, GLOBEC III, mean lon: -67.0809W, mean lat: 40.7715N; June 30, 21.31 hours to July 1, 1.10 hours
0
-50
-100
-150
Depth - db
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude
36
36
35
34.5
33
32.5
33
34
33.5
35.5
35


Sigma Theta, GLOBEC III, mean lon: -67.0809W, mean lat: 40.7715N; June 30, 21.31 hours to July 1, , 1.10 hours
0
-50
-100
-150
Depth - db
24
24
24
24.5
25
25.5
25.5
26
26
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude


Seasoar Track, GLOBEC III, mean lon: -67.1886W, mean lat: 40.7237N; , July 1, 1.94 hours to , July 1, , 5.40 hours
0
-50
-100
-150
Depth - [db]
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude


Temperature, GLOBEC III, mean lon: -67.1886W, mean lat: 40.7237N; July 1, 1.94 hours to July 1, 5.40 hours
Depth - db
latitude
0
-50
-100
-150
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9


Salinity, GLOBEC III, mean lon: -67.1886W, mean lat: 40.7237N; July 1, 1.94 hours to July 1, 5.40 hours
0
-50
-100
-150
Depth - db
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude
33
32.5
33.5
34
34.5
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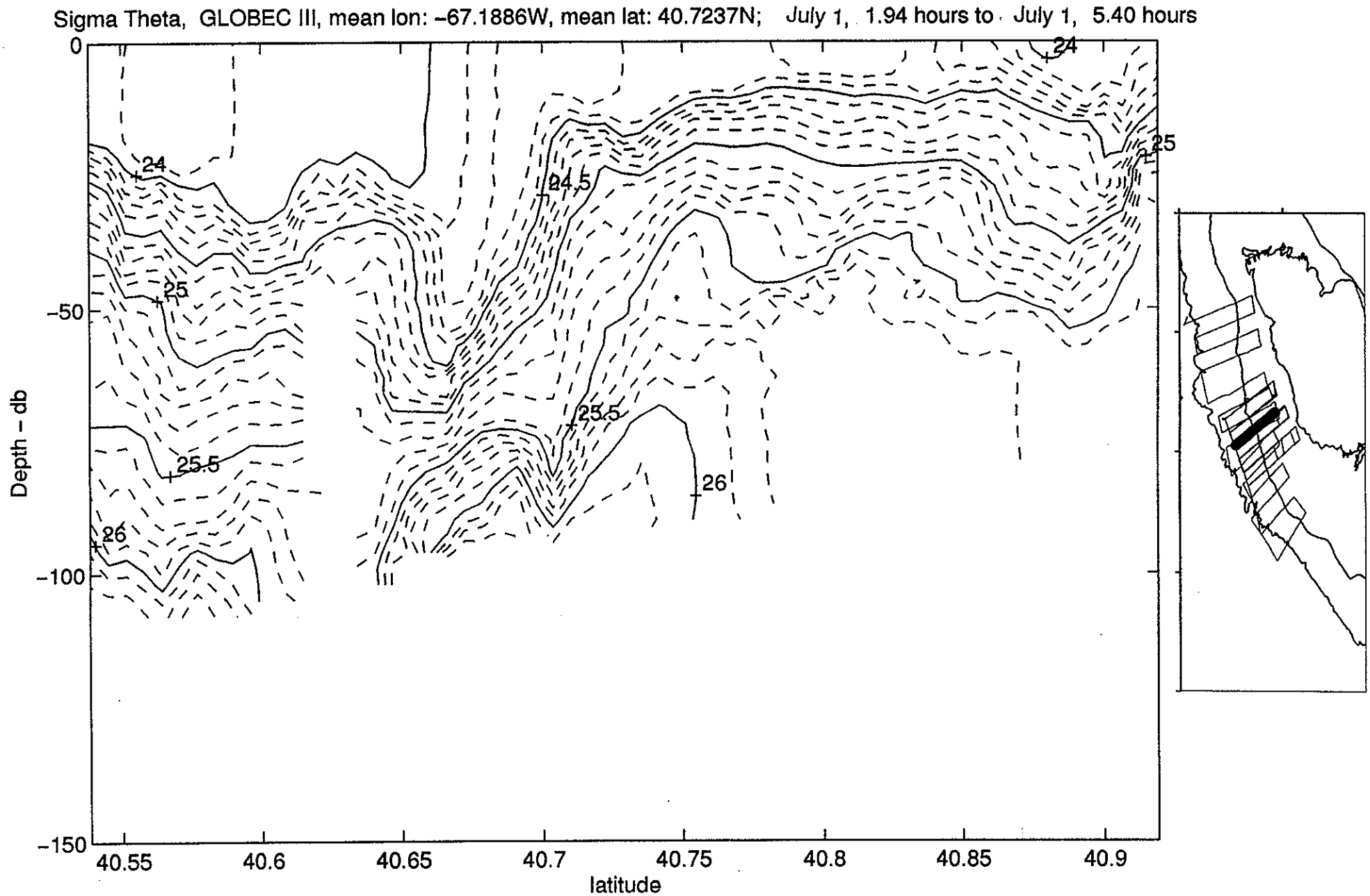
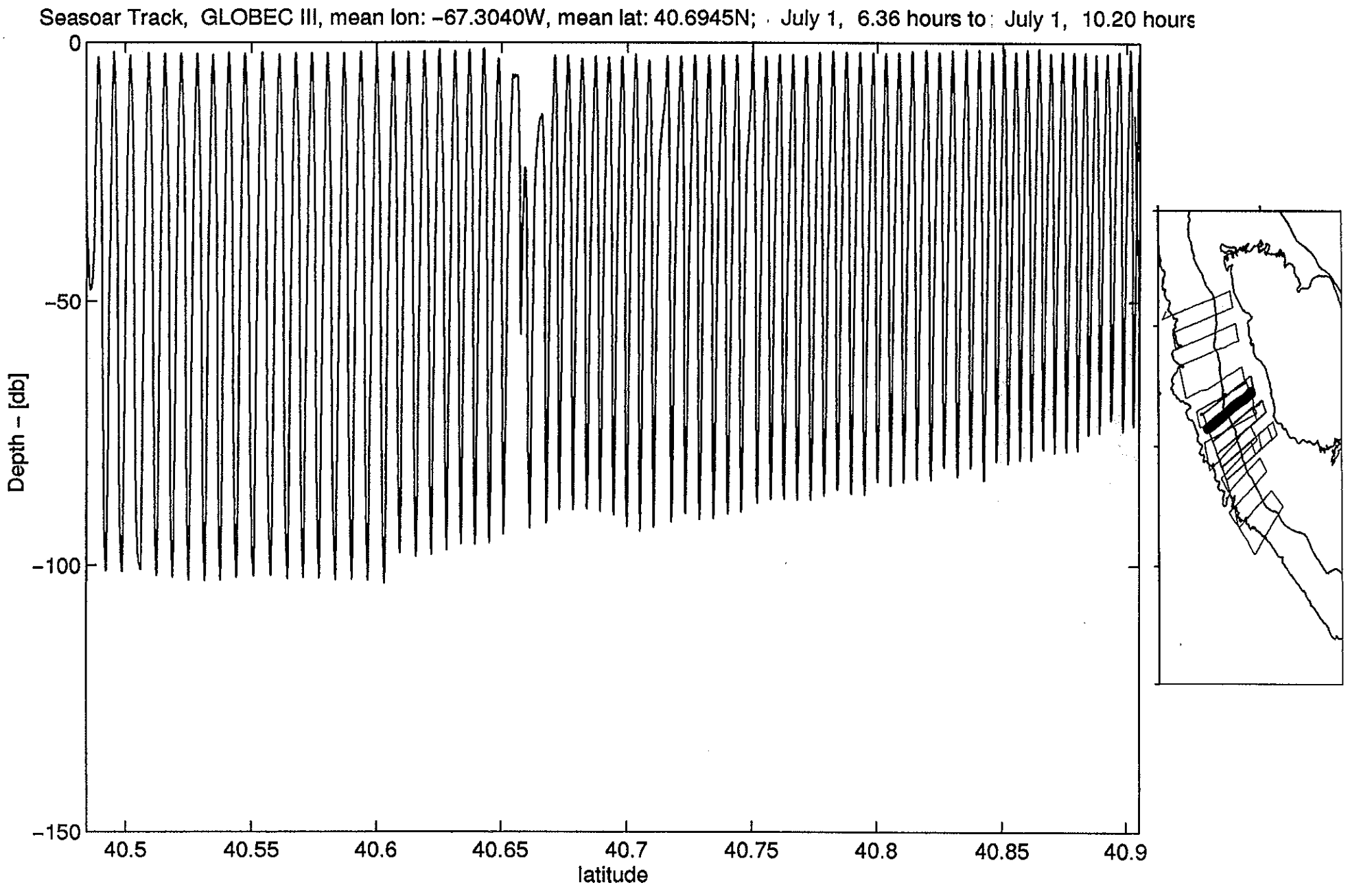
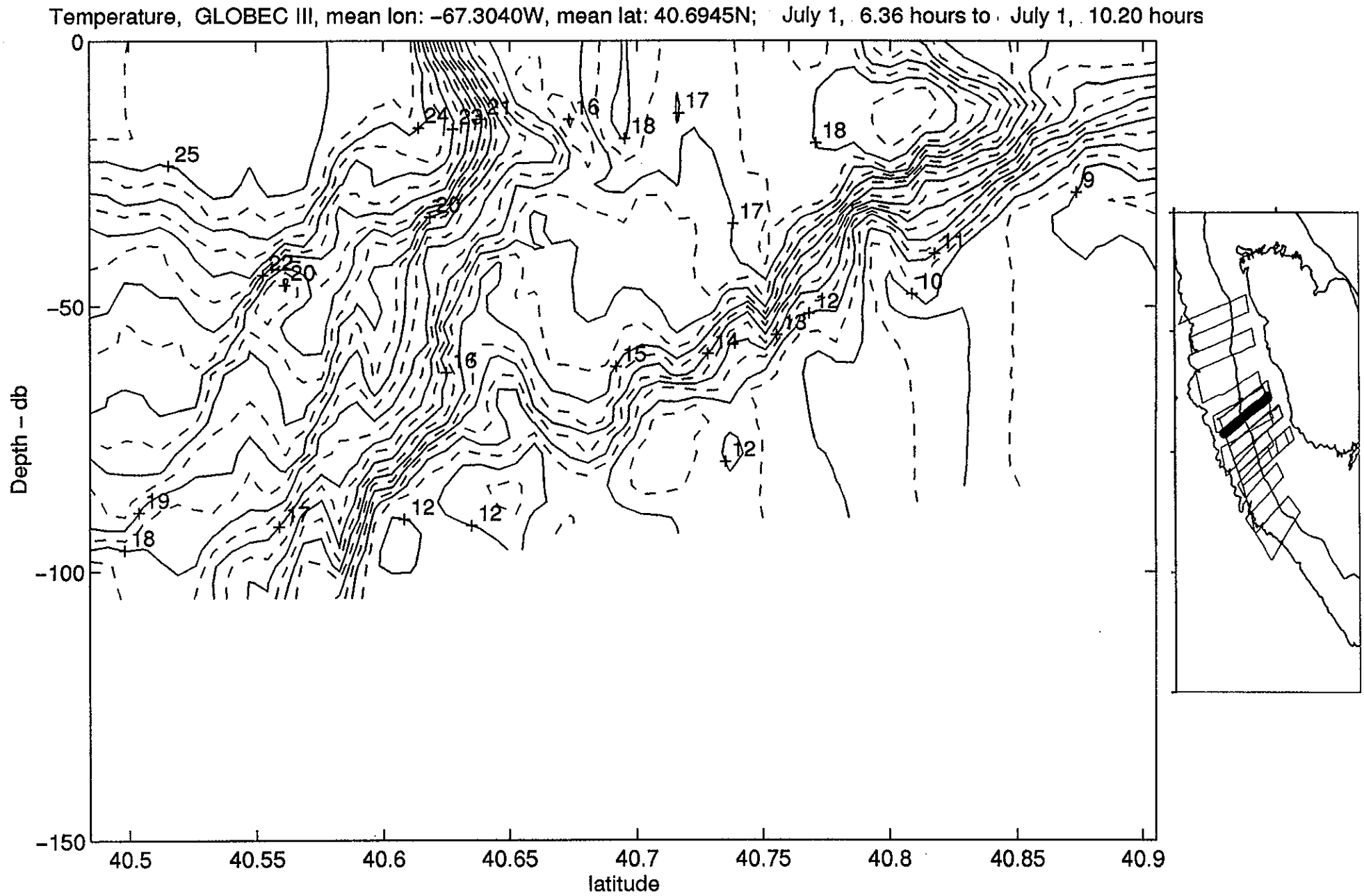
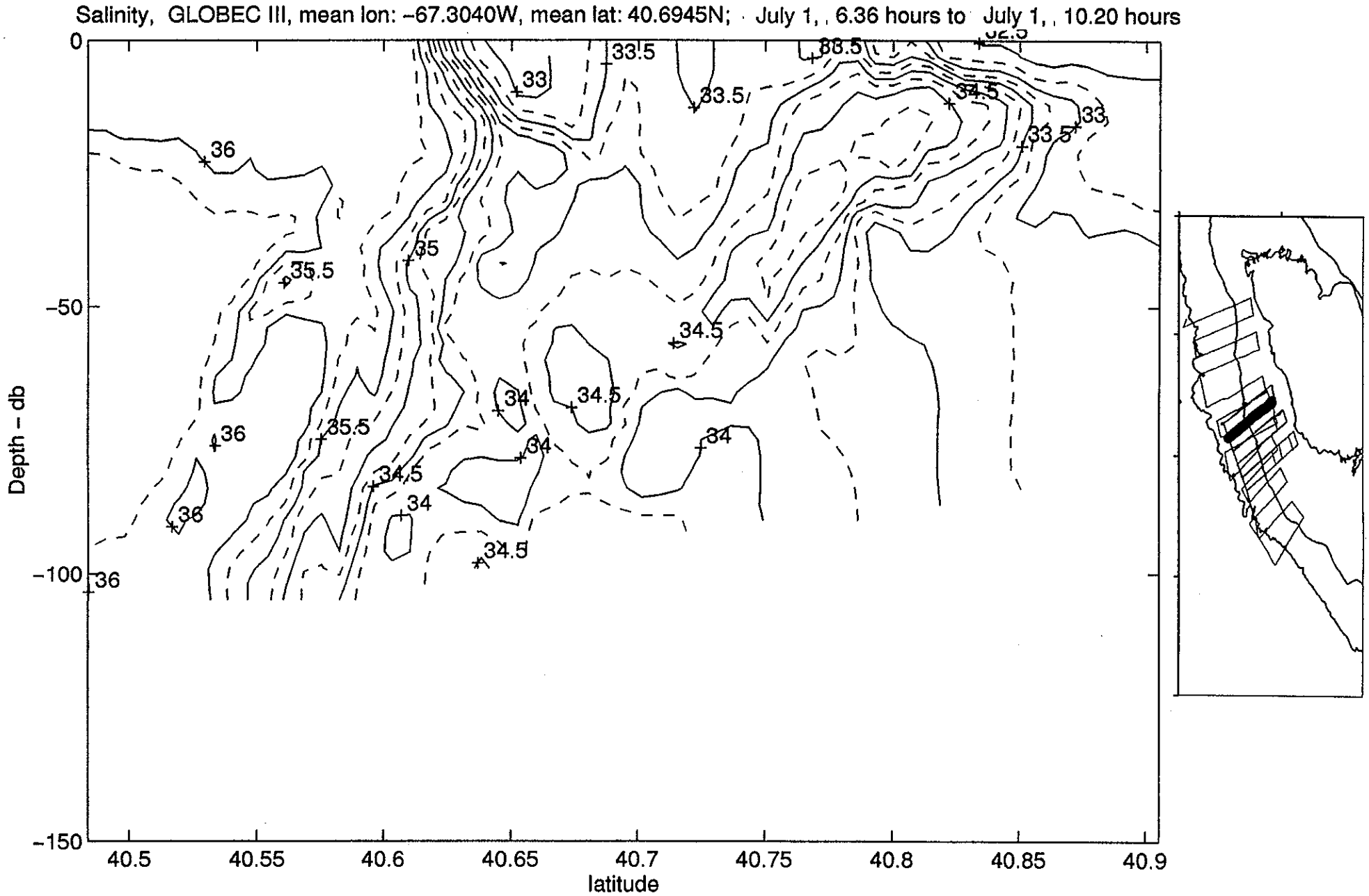
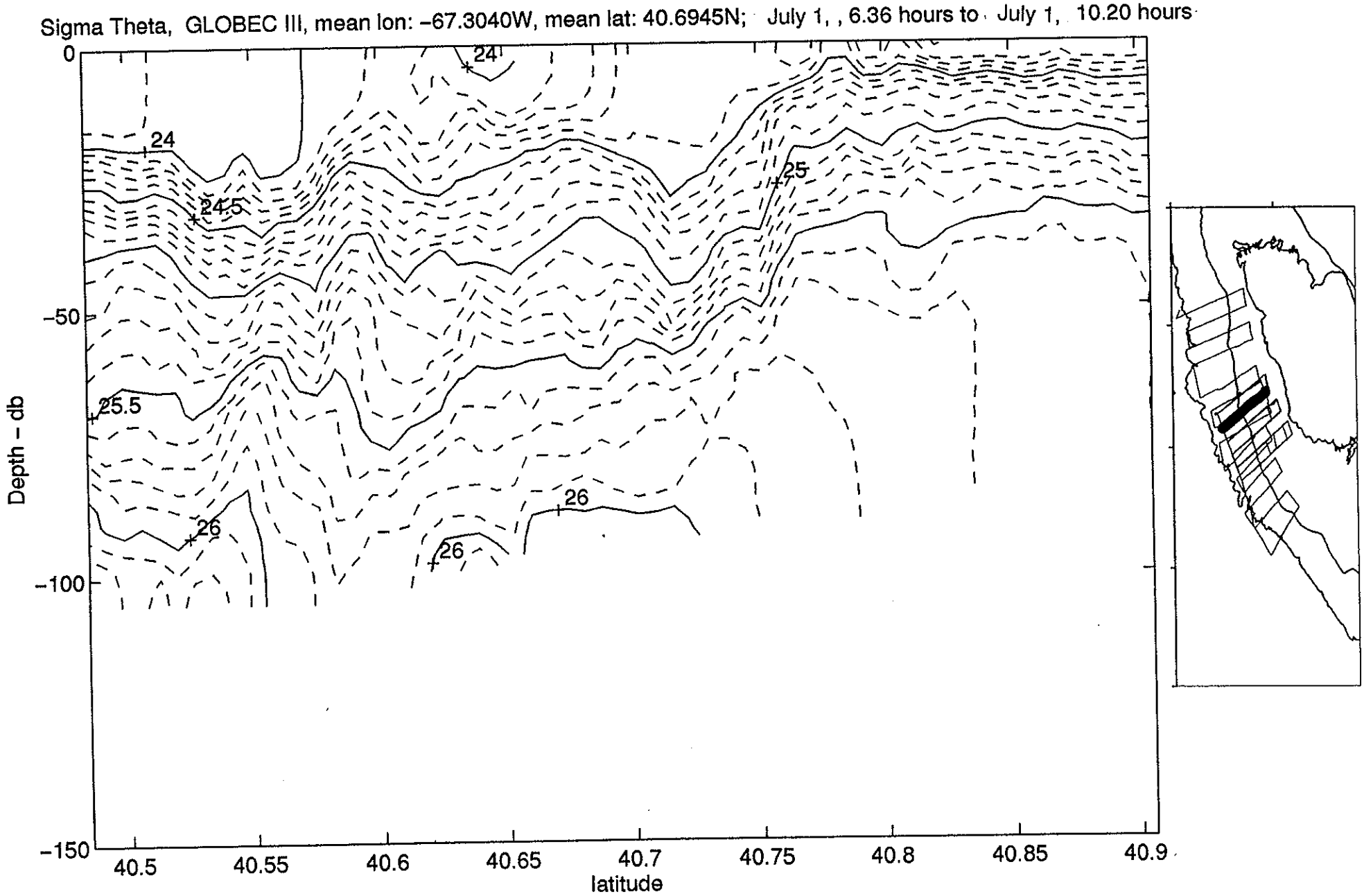
35
33.5
35.5
35.5
36
36
36
35
36
35
36
36
36
36

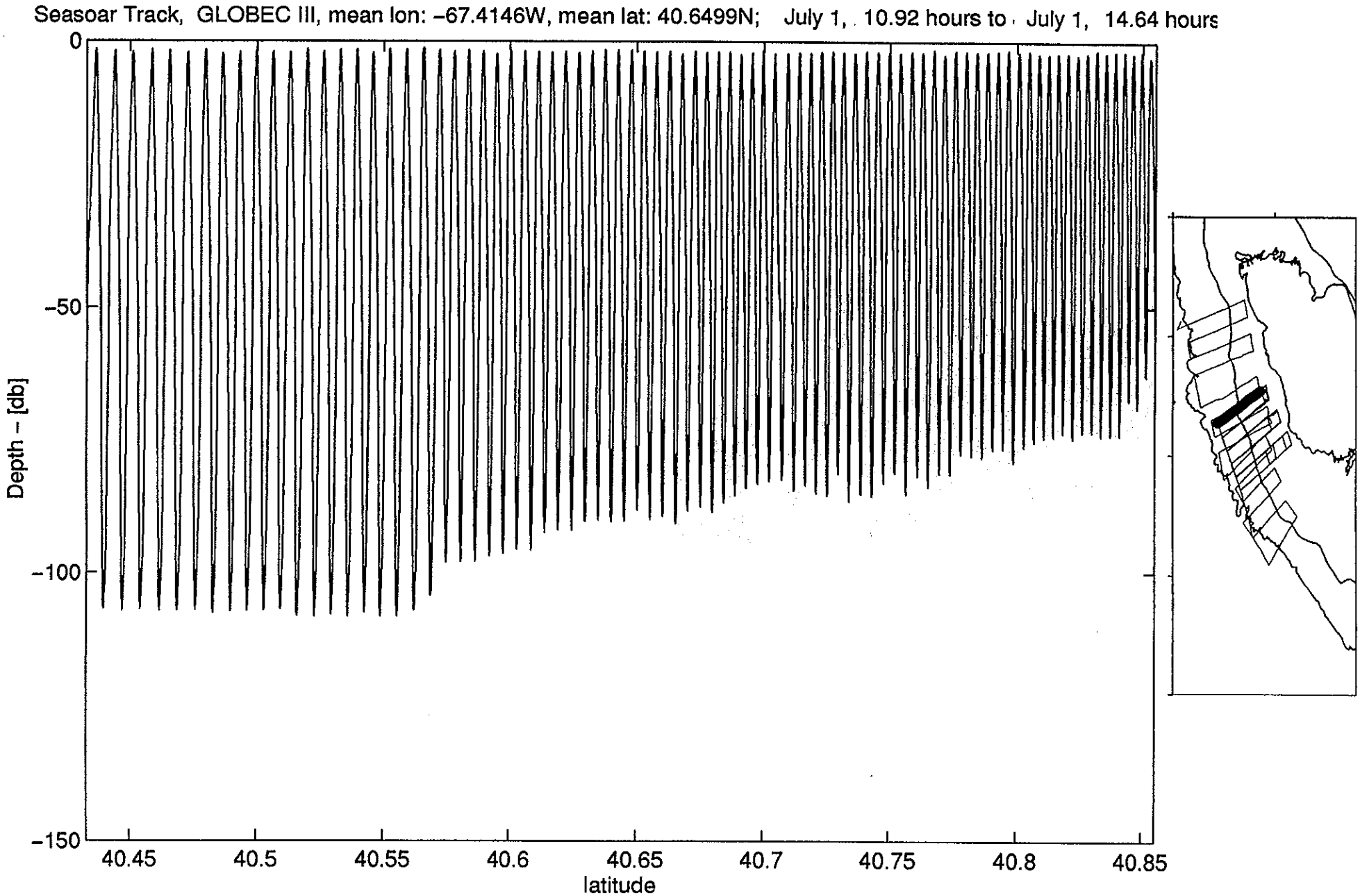

Sigma Theta, GLOBEC III, mean lon: -67.1886W, mean lat: 40.7237N; July 1, 1.94 hours to July 1, 5.40 hours
0
-50
-100
-150
Depth - db
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude
24
24.5
25
25.5
26

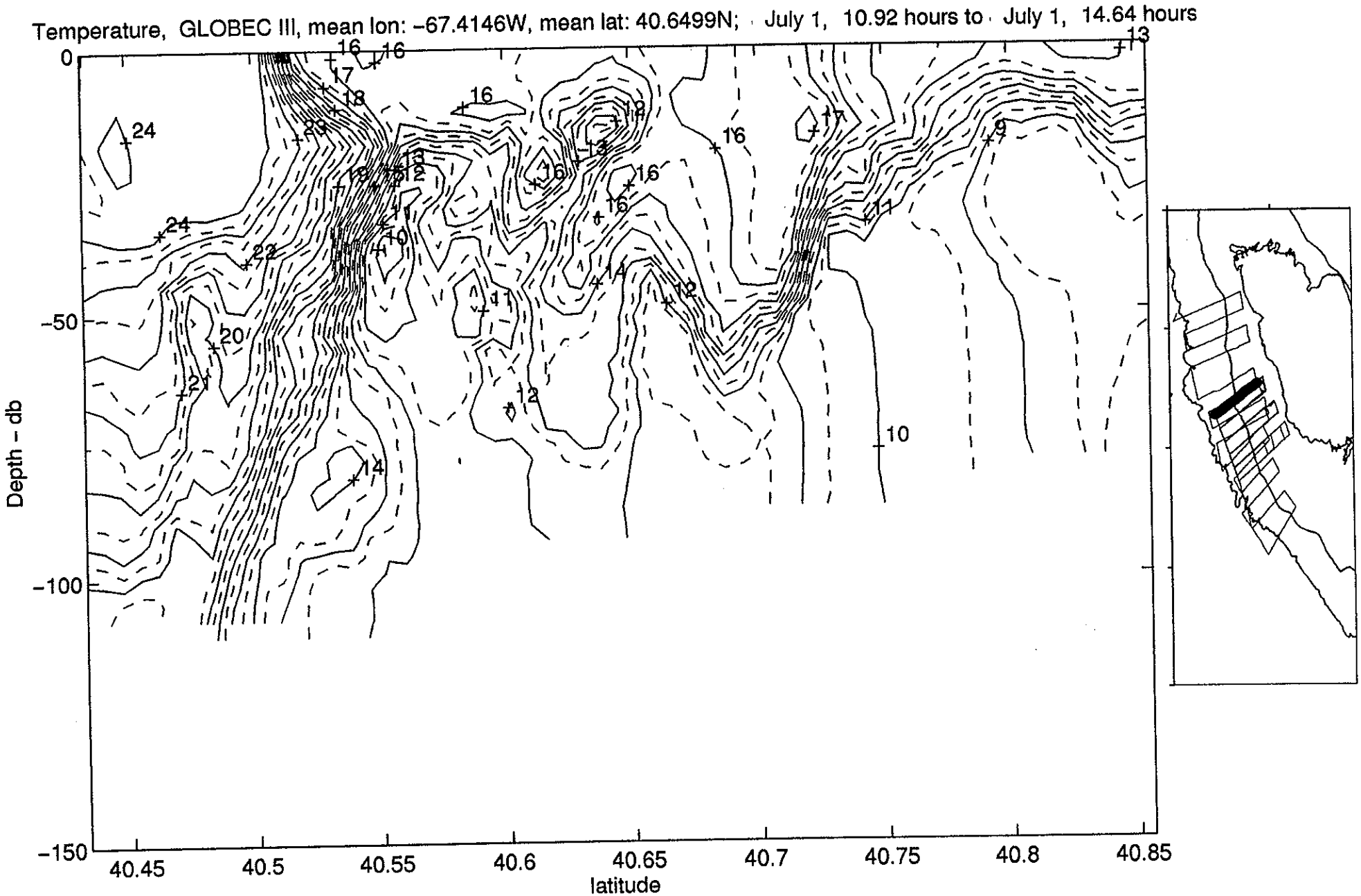

Seasoar Track, GLOBEC III, mean lon: -67.3040W, mean lat: 40.6945N; July 1, 6.36 hours to July 1, 10.20 hours
0
-50
-100
-150
Depth -- [db]
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

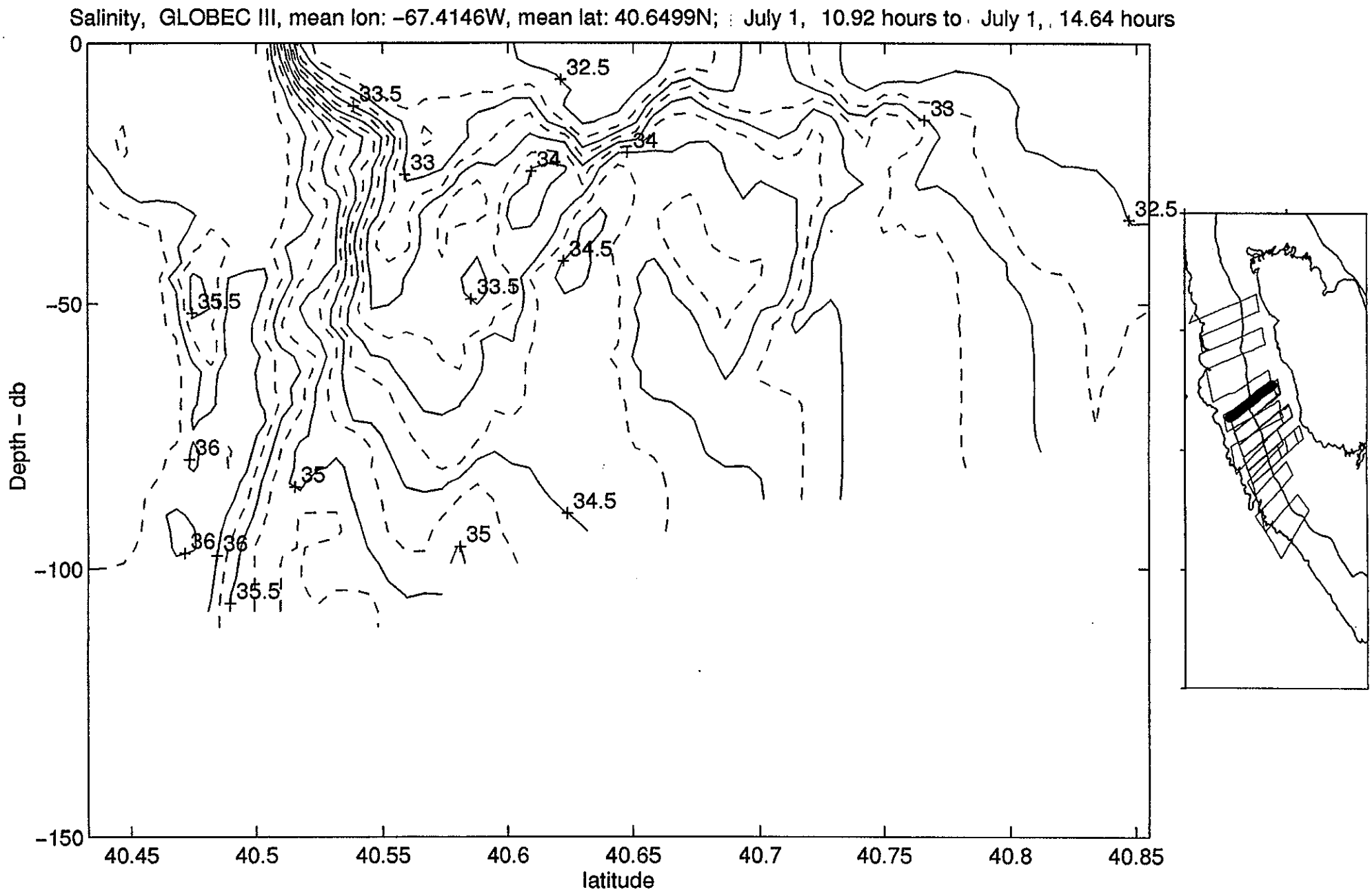

Temperature, GLOBEC III, mean lon: -67.3040W, mean lat: 40.6945N; July 1, 6.36 hours to July 1, 10.20 hours
Depth - db
latitude
0
-50
-100
-150
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9

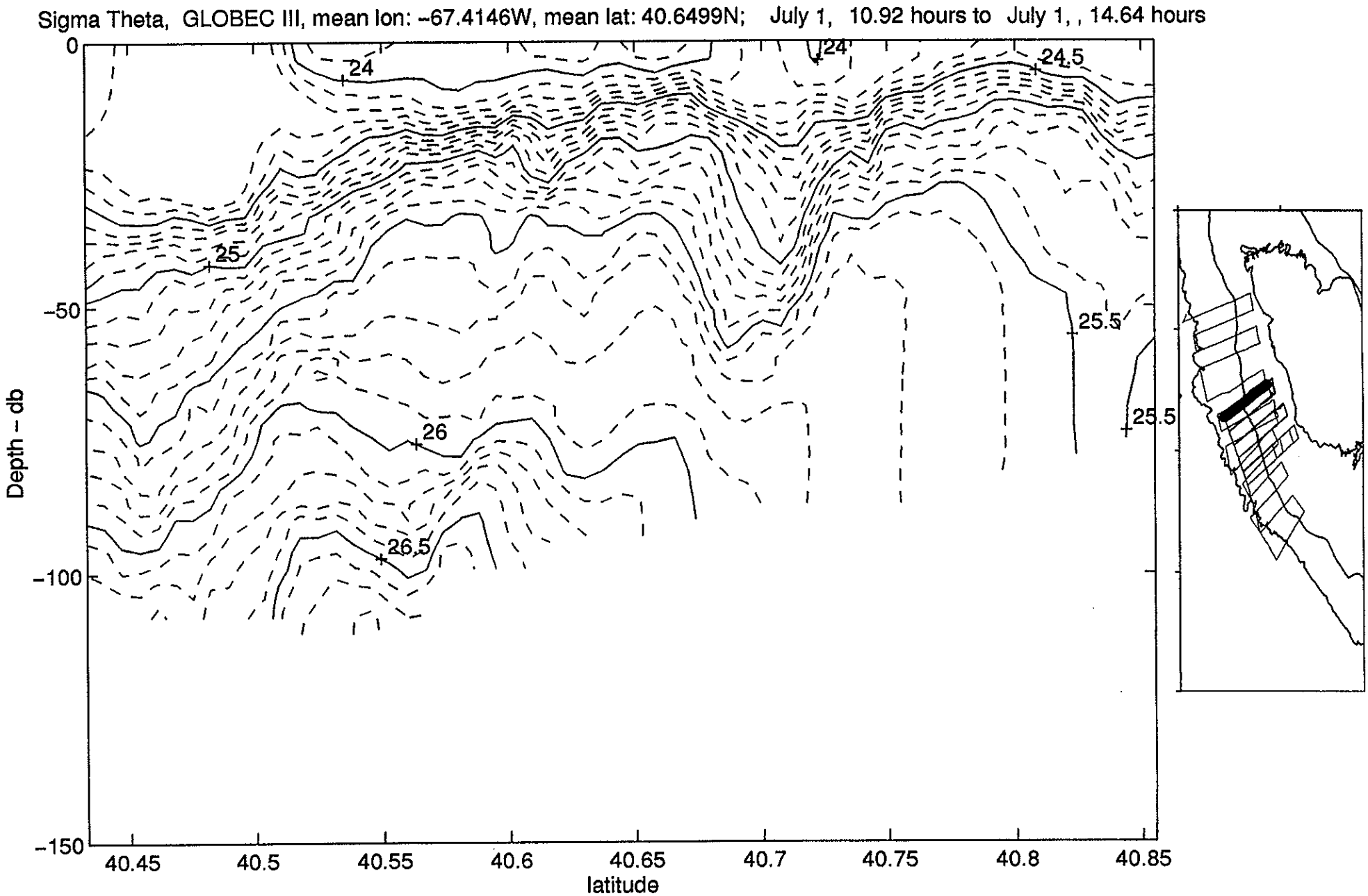

Salinity, GLOBEC III, mean lon: -67.3040W, mean lat: 40.6945N; July 1, , 6.36 hours to July 1, , 10.20 hours
0
-50
-100
-150
Depth - db
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude
33
33.5
34
34.5
35
35.5
36

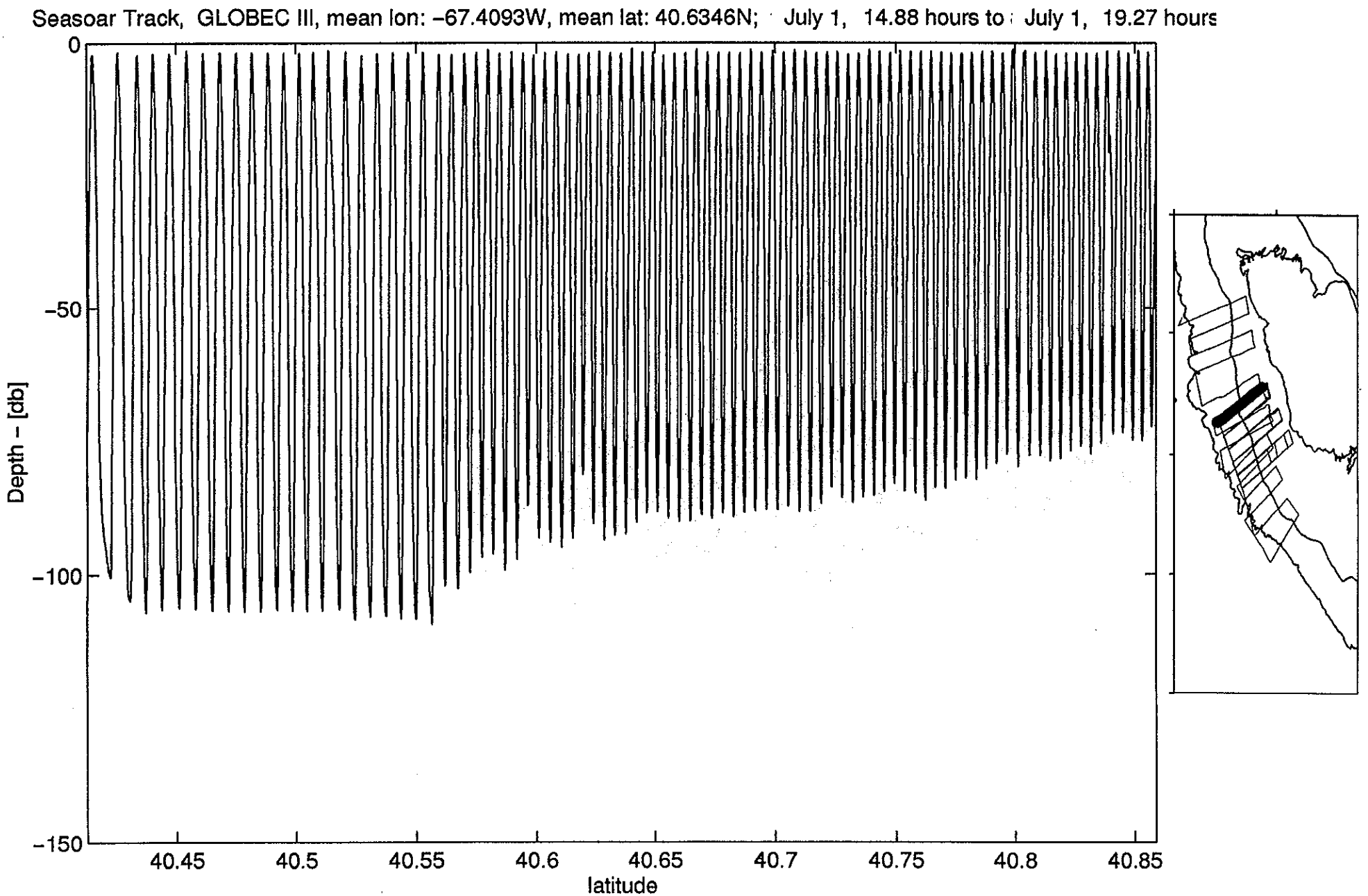

Sigma Theta, GLOBEC III, mean lon: -67.3040W, mean lat: 40.6945N; July 1, , 6.36 hours to July 1, 10.20 hours
0
-50
-100
-150
Depth - db
24
24
24.5
25
25.5
26
26
26
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

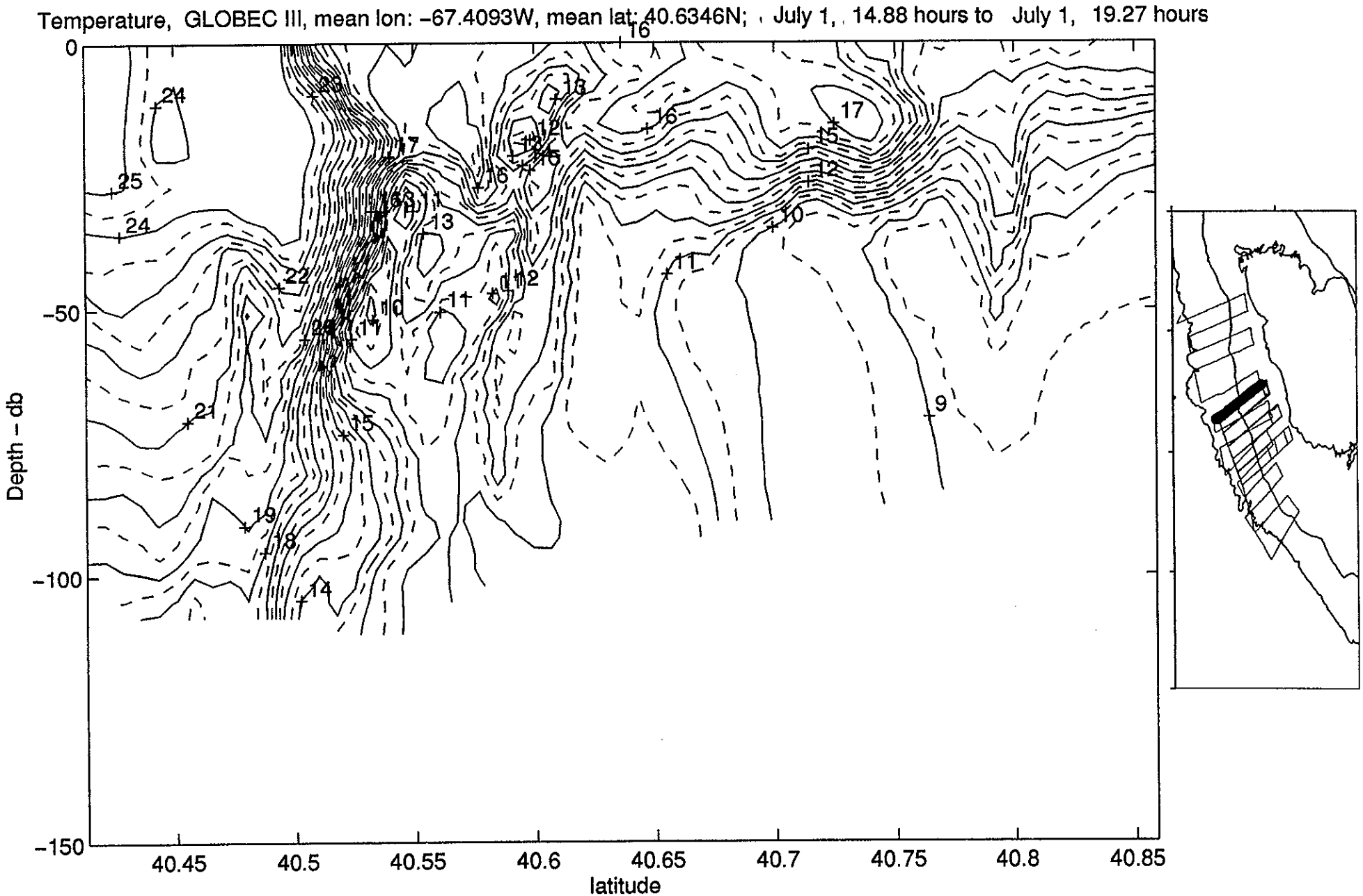

Seasoar Track, GLOBEC III, mean lon: -67.4146W, mean lat: 40.6499N; July 1, 10.92 hours to July 1, 14.64 hours
0
-50
-100
-150
Depth - [db]
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

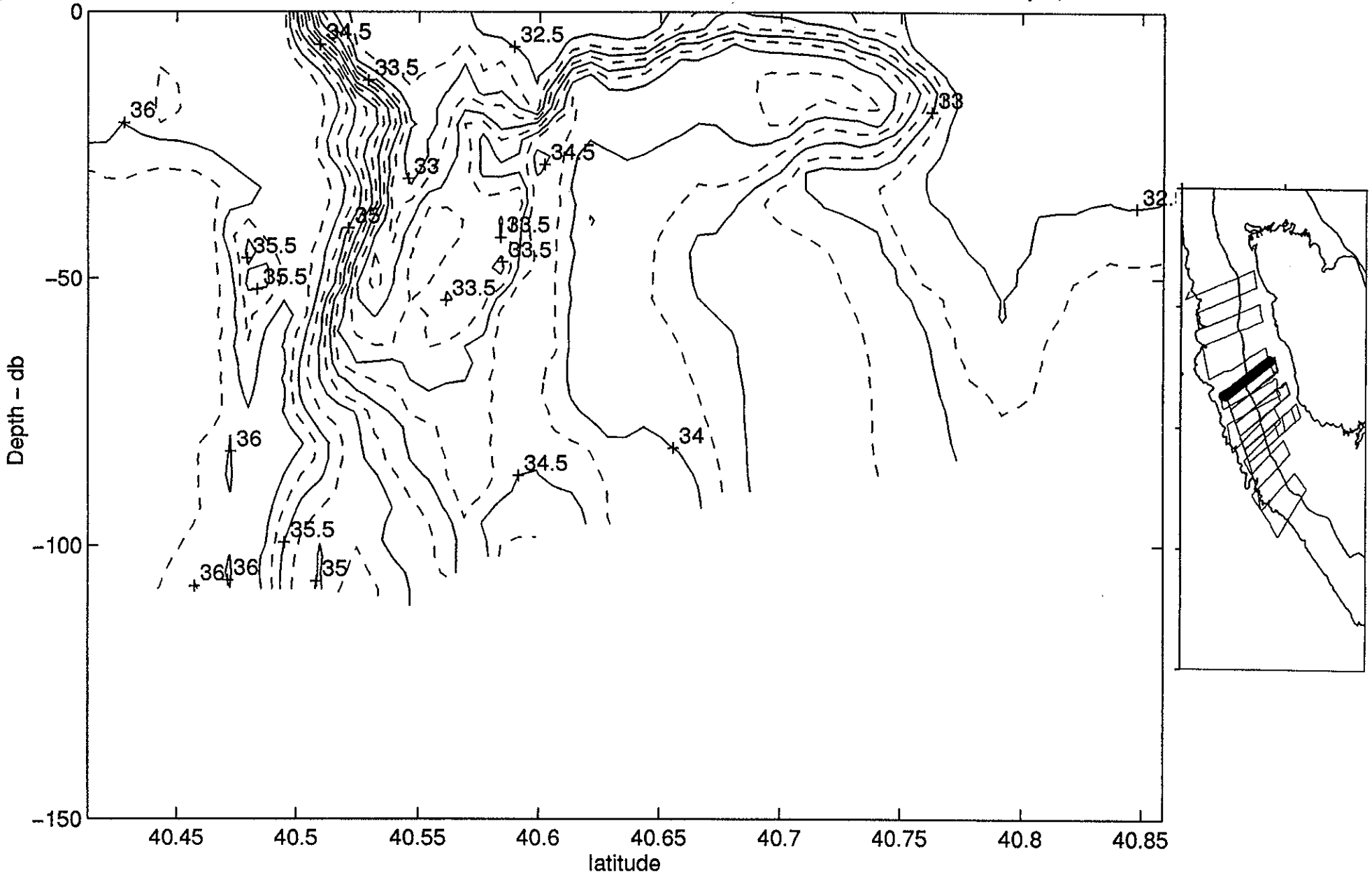

Temperature, GLOBEC III, mean lon: -67.4146W, mean lat: 40.6499N; July 1, 10.92 hours to July 1, 14.64 hours
0
-50
-100
-150
Depth - db
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

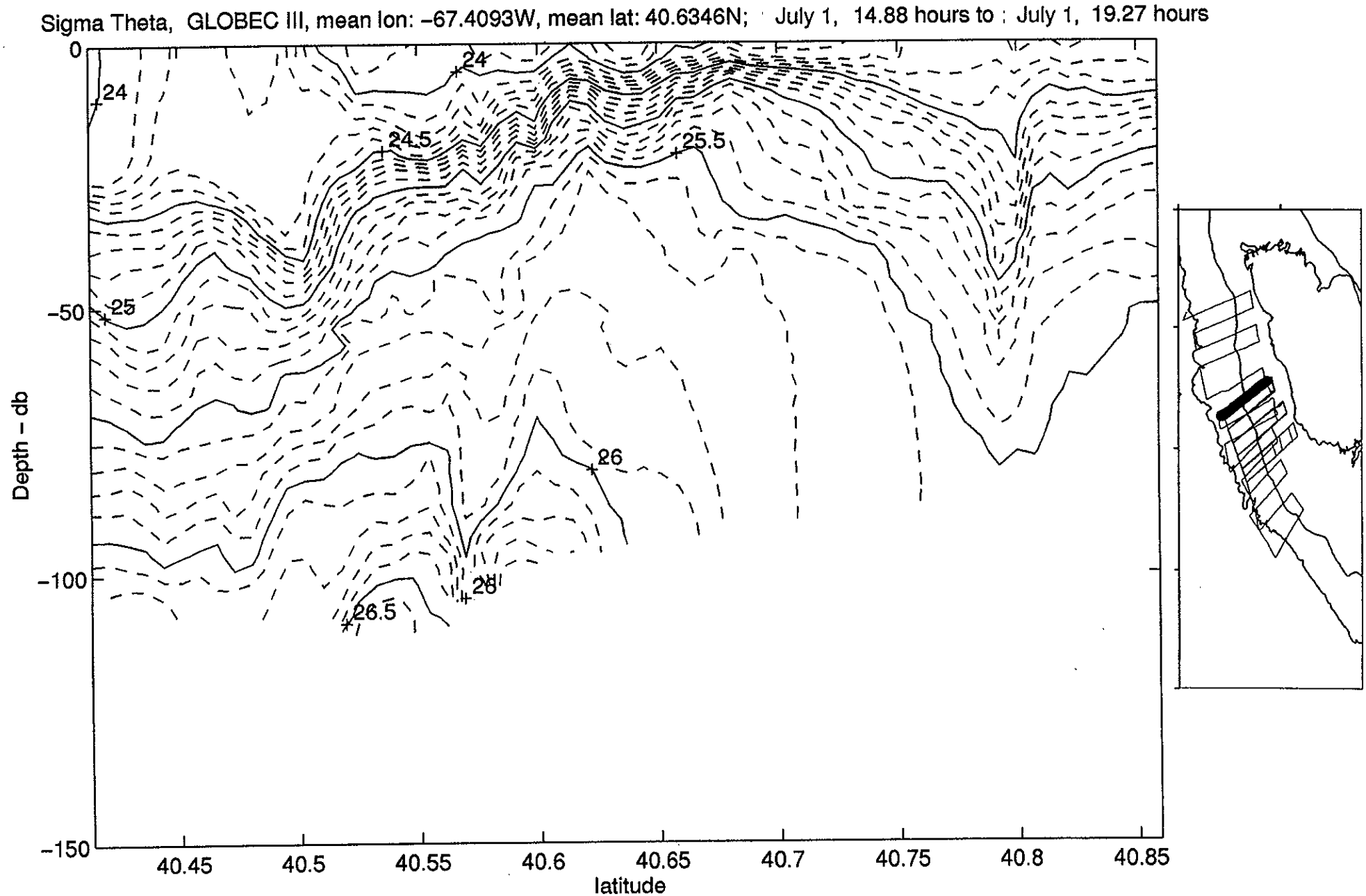

Salinity, GLOBEC III, mean lon: -67.4146W, mean lat: 40.6499N; July 1, 10.92 hours to July 1, 14.64 hours
0
-50
-100
-150
Depth - db
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude
32.5
33.5
33
34
34.5
35.5
36
35

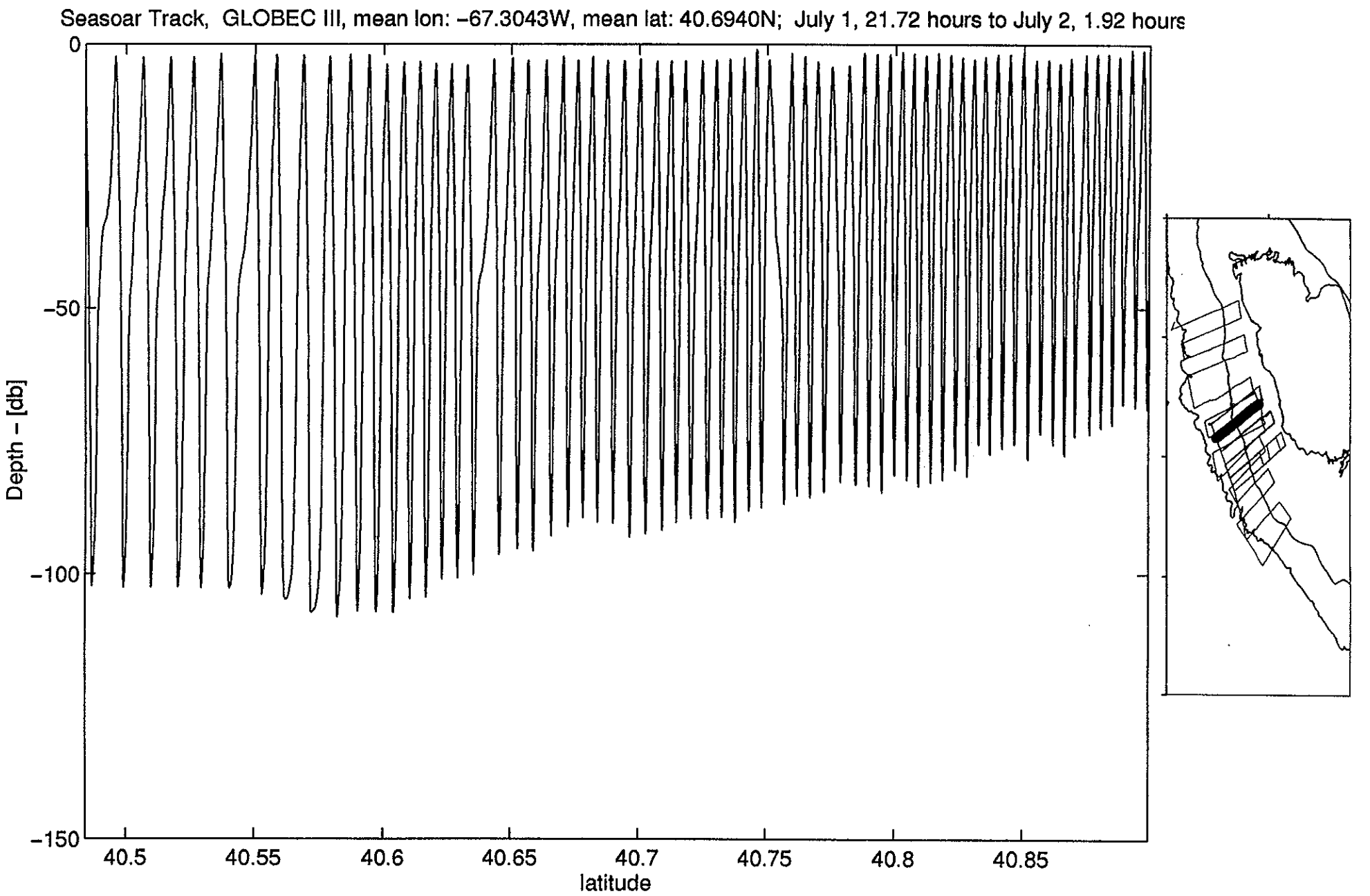

Sigma Theta, GLOBEC III, mean lon: -67.4146W, mean lat: 40.6499N; July 1, 10.92 hours to July 1, , 14.64 hours
0
-50
-100
-150
Depth - db
24
24
24.5
25
25.5
25.5
26
26.5
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

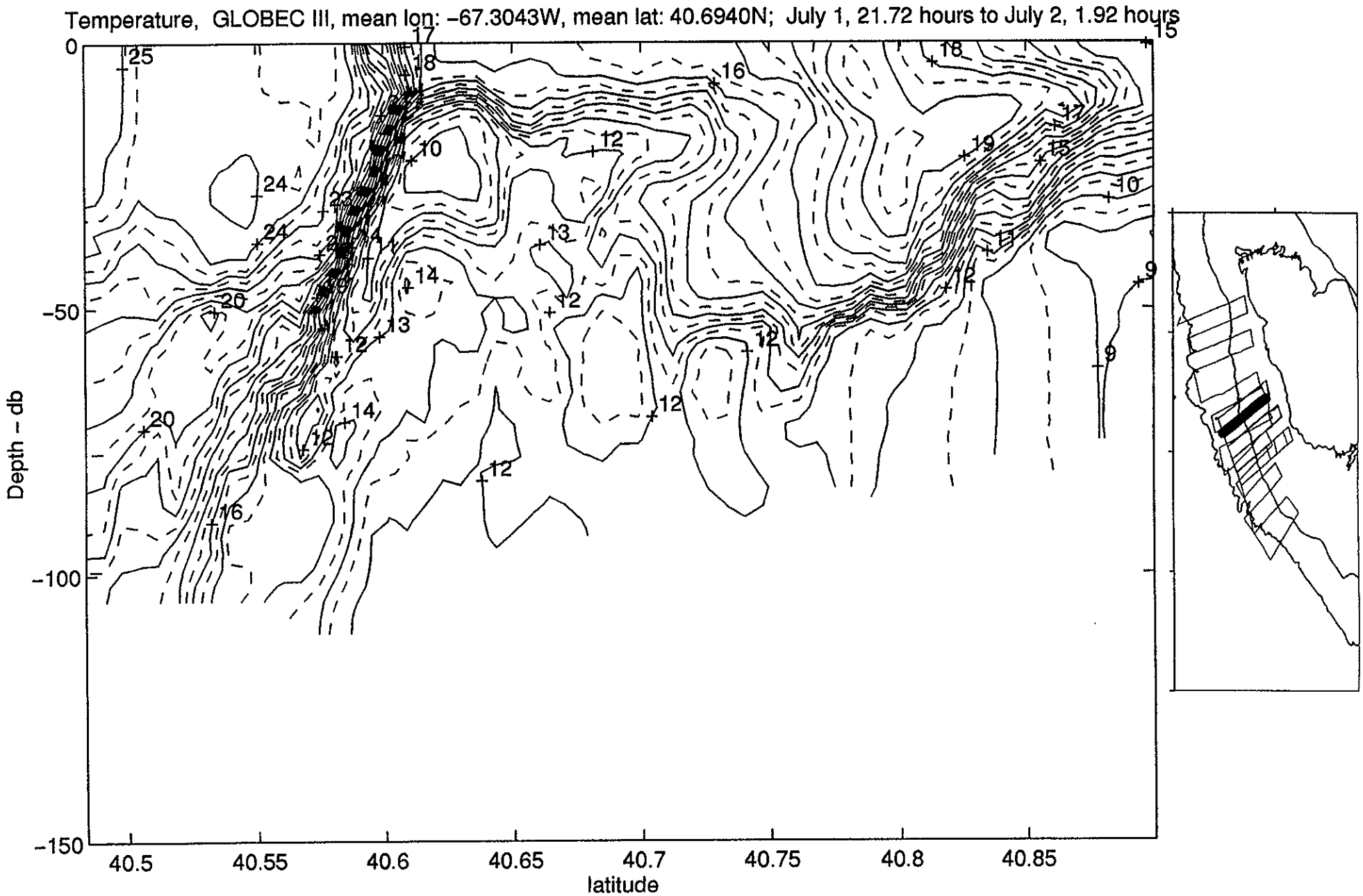

Seasoar Track, GLOBEC III, mean lon: −67.4093W, mean lat: 40.6346N; July 1, 14.88 hours to July 1, 19.27 hours
0
−50
−100
−150
Depth − [db]
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

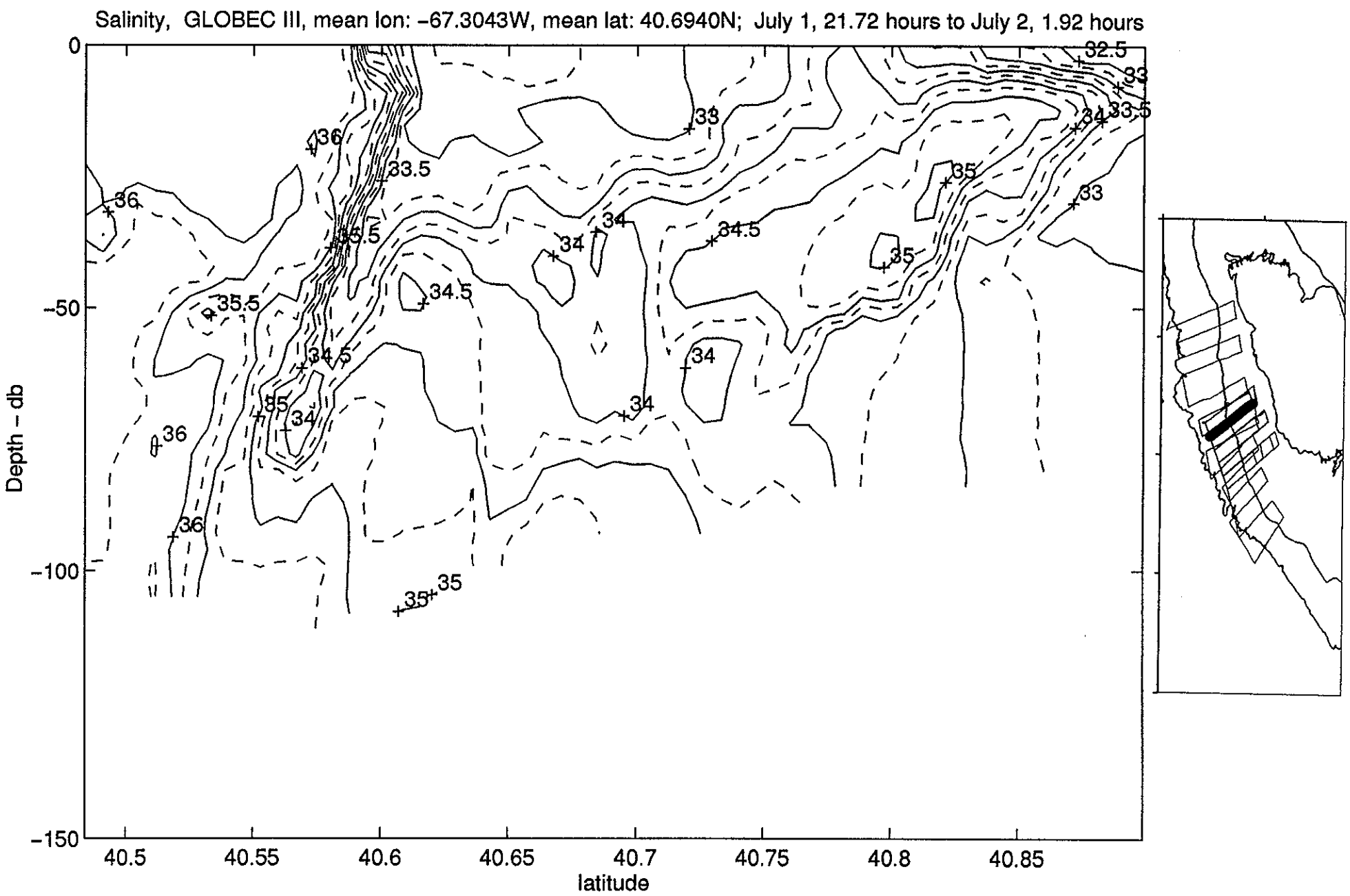

Temperature, GLOBEC III, mean lon: -67.4093W, mean lat: 40.6346N; July 1, 14.88 hours to July 1, 19.27 hours
0
-50
-100
-150
Depth - db
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

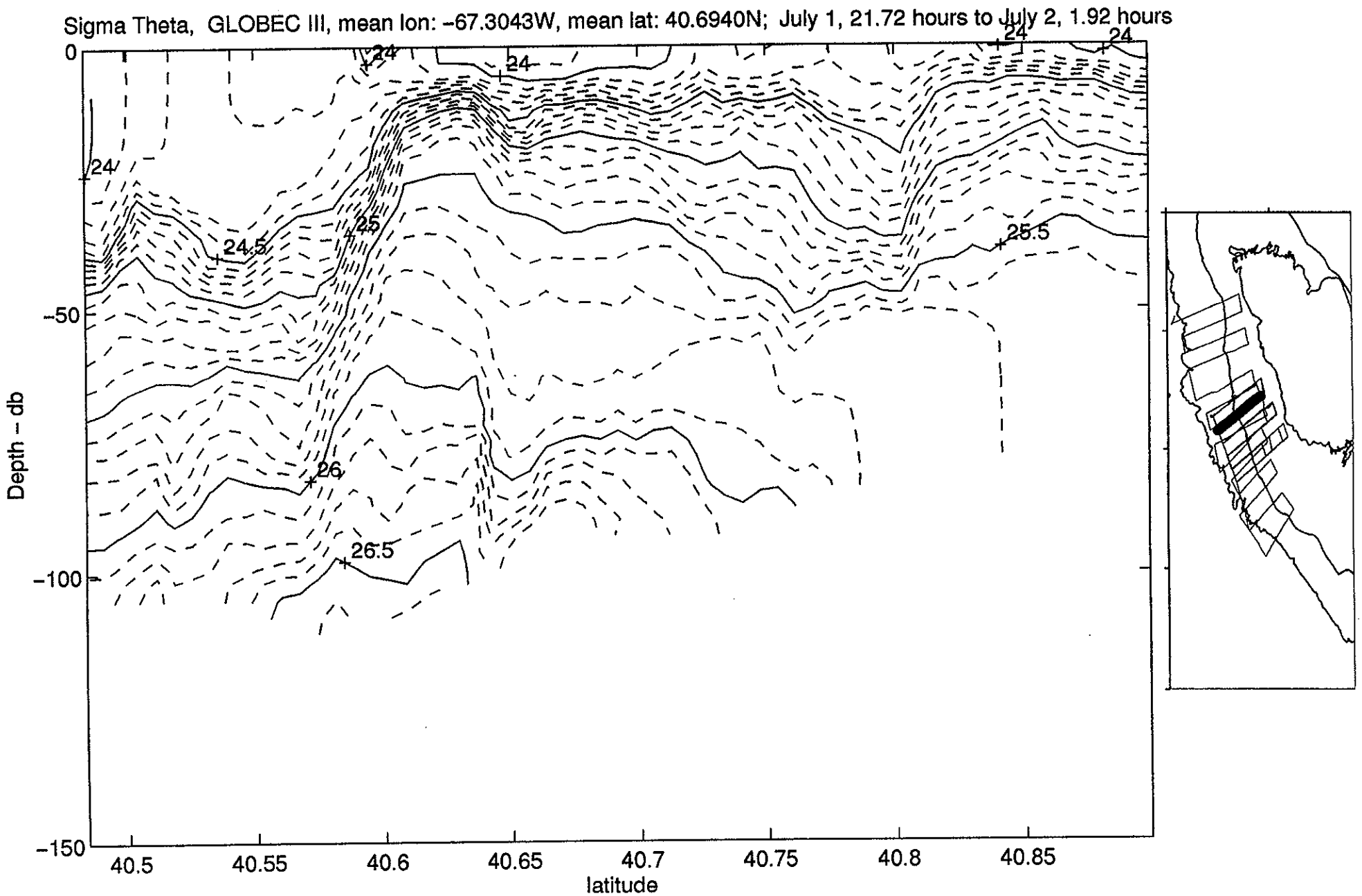

Salinity, GLOBEC III, mean lon: -67.4093W, mean lat: 40.6346N; July 1, 14.88 hours to July 1, 19.27 hours
0
-50
-100
-150
Depth - db
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude
34.5
32.5
33.5
36
33
34.5
35
35.5
35.5
33.5
33.5
33.5
36
34
34.5
35.5
36
36
35

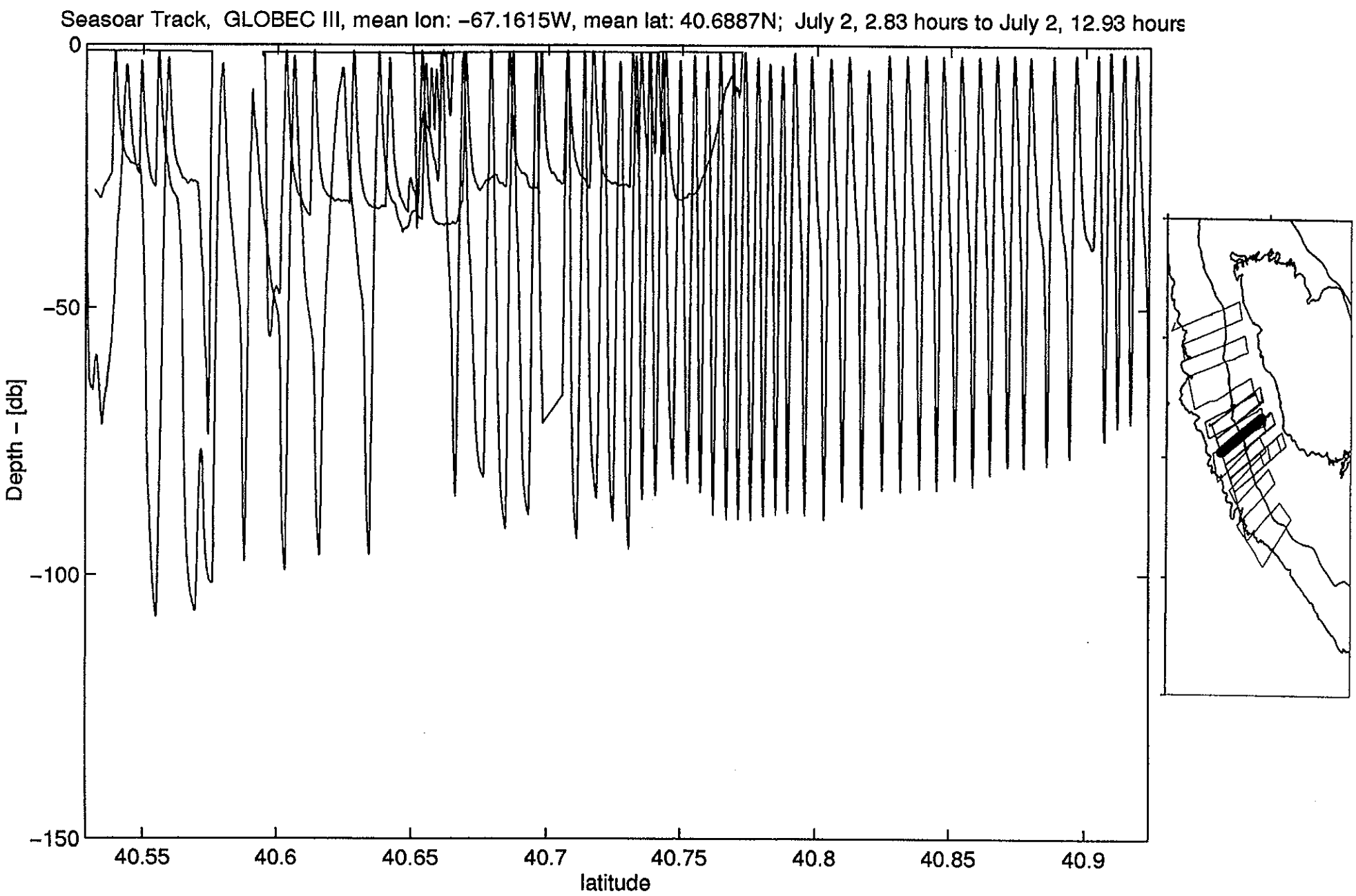

Sigma Theta, GLOBEC III, mean lon: -67.4093W, mean lat: 40.6346N; July 1, 14.88 hours to : July 1, 19.27 hours
0
-50
-100
-150
Depth - db
24
24
24.5
25.5
25
26
26.5
28
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

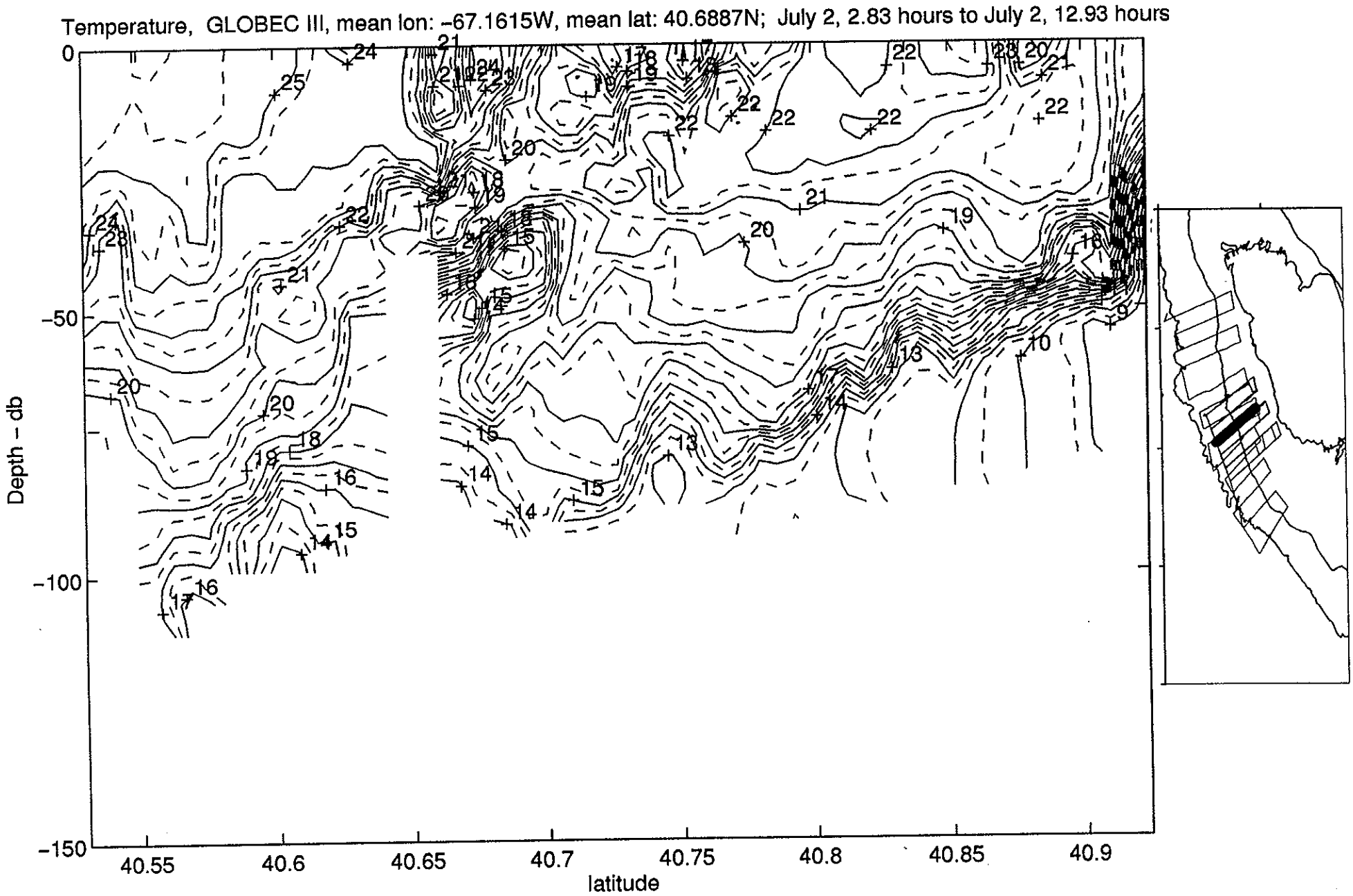

Seasoar Track, GLOBEC III, mean lon: -67.3043W, mean lat: 40.6940N; July 1, 21.72 hours to July 2, 1.92 hours
0
-50
-100
-150
Depth - [db]
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

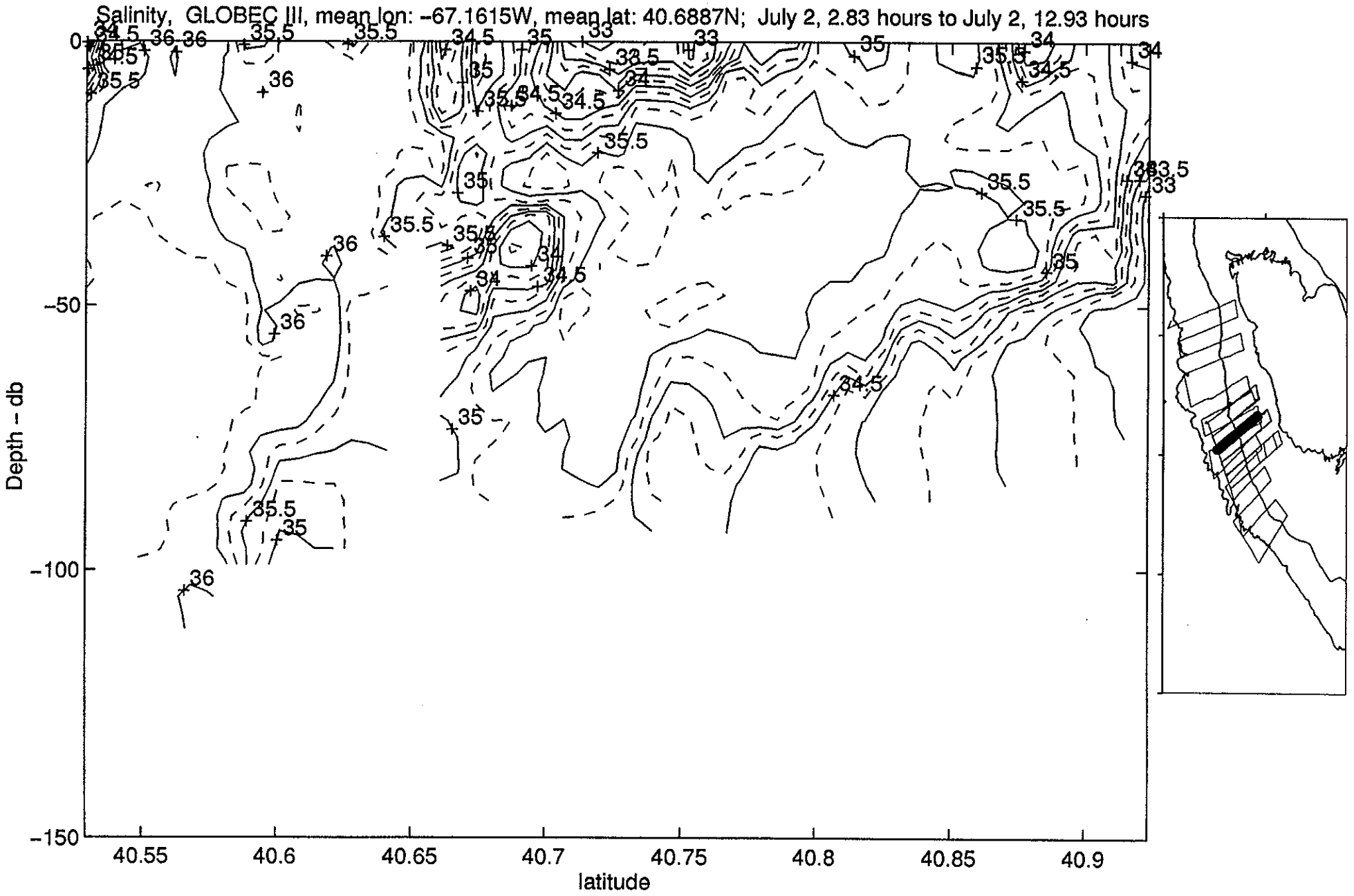

Temperature, GLOBEC III, mean lon: -67.3043W, mean lat: 40.6940N; July 1, 21.72 hours to July 2, 1.92 hours
Depth - db
0
-50
-100
-150
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

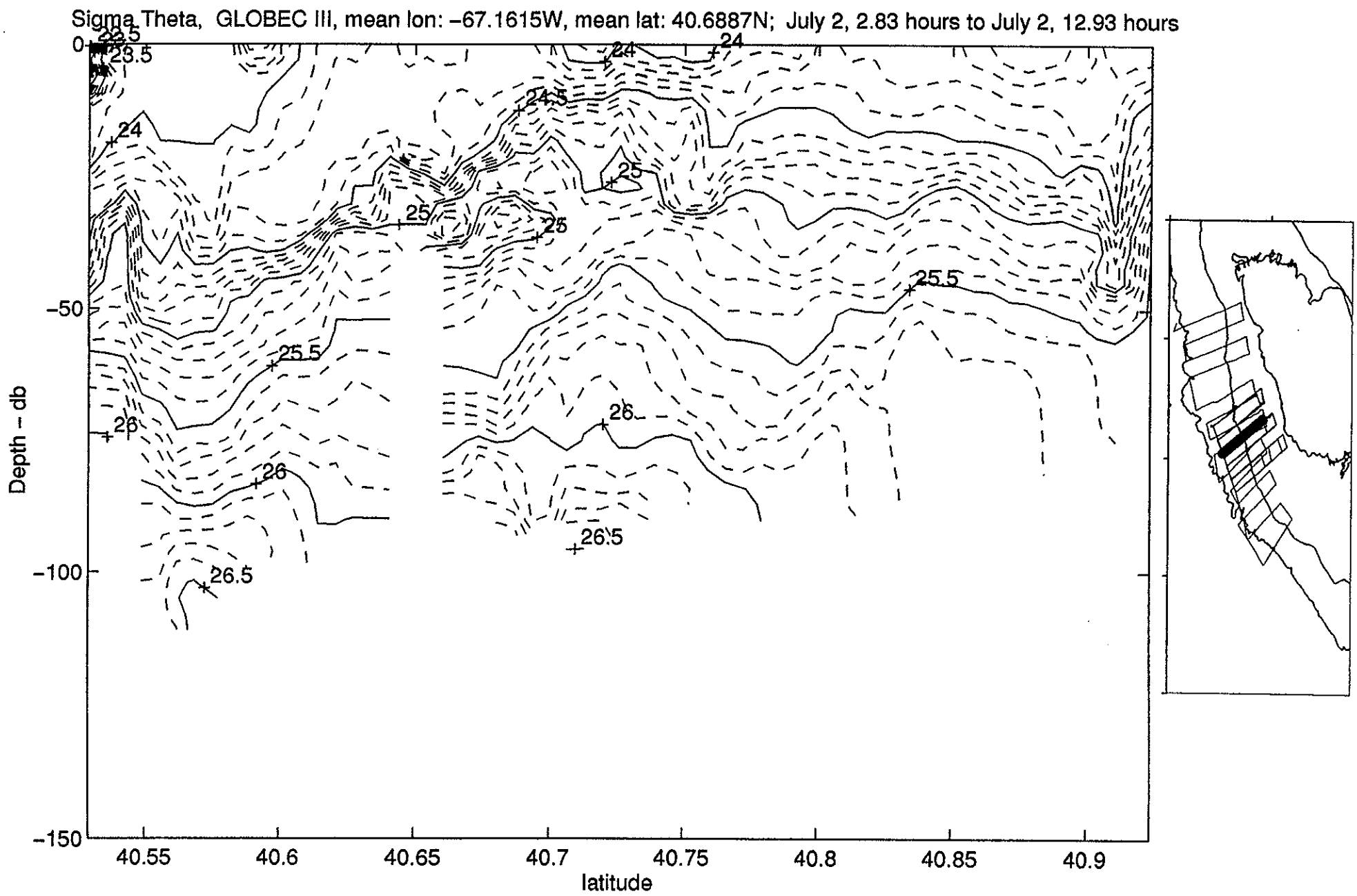

Salinity, GLOBEC III, mean lon: -67.3043W, mean lat: 40.6940N; July 1, 21.72 hours to July 2, 1.92 hours
Depth - db
latitude
0
-50
-100
-150
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
32.5
33
33.5
34
34.5
35
36

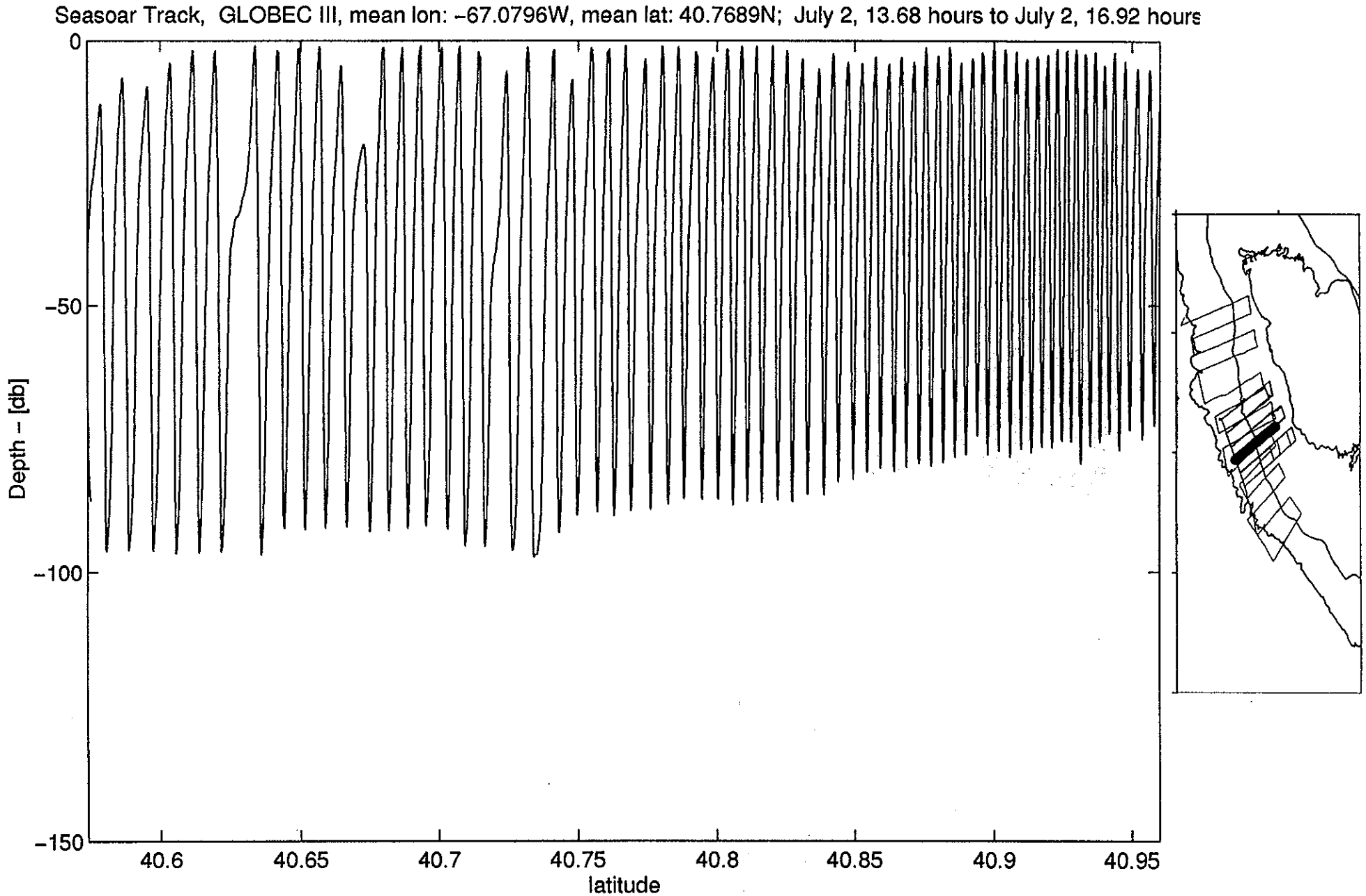

Sigma Theta, GLOBEC III, mean lon: -67.3043W, mean lat: 40.6940N; July 1, 21.72 hours to July 2, 1.92 hours
0
-50
-100
-150
Depth - db
24
24.5
25
25.5
26
26.5
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude

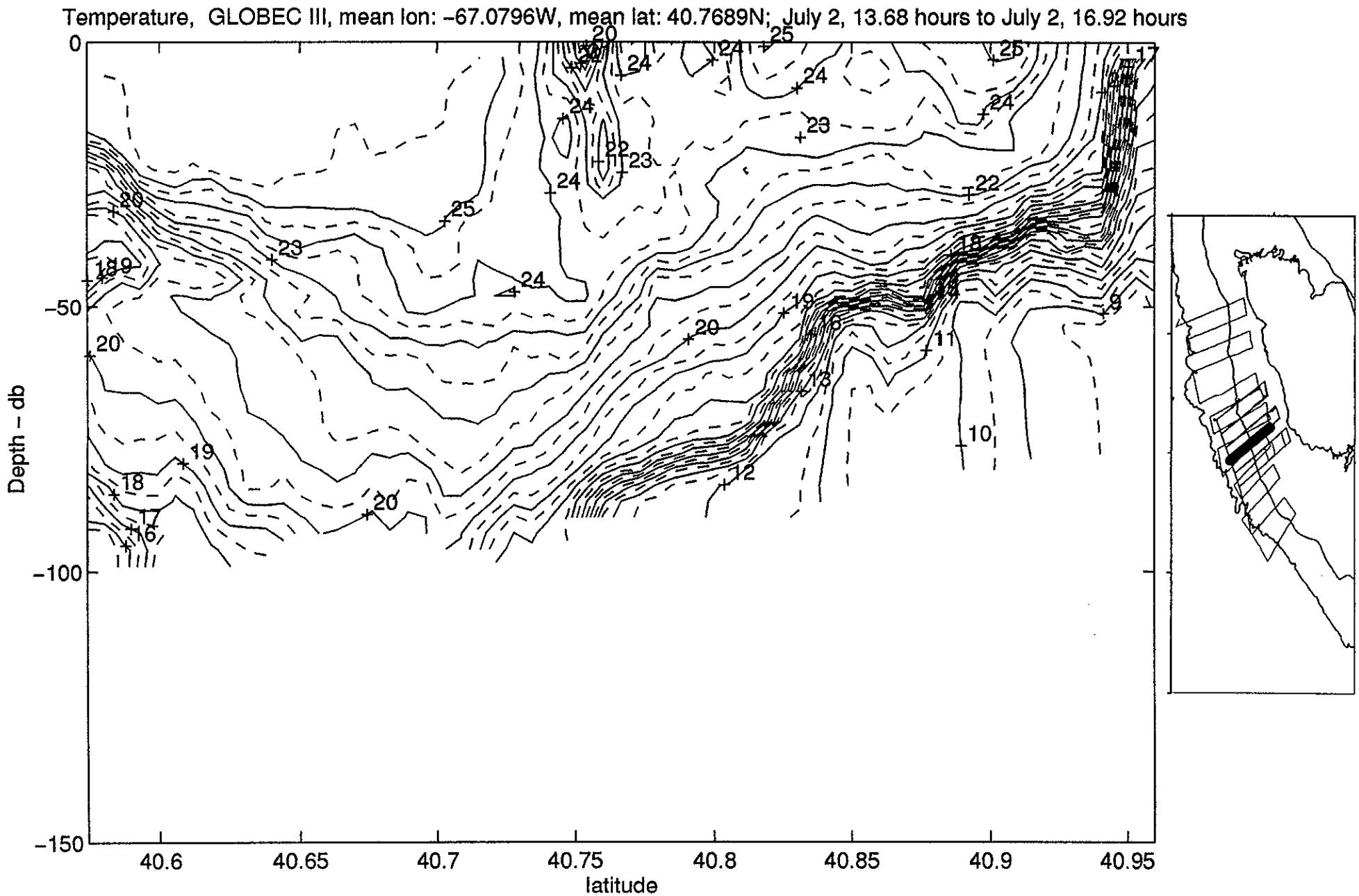

Seasoar Track, GLOBEC III, mean lon: −67.1615W, mean lat: 40.6887N; July 2, 2.83 hours to July 2, 12.93 hours
0
−50
−100
−150
Depth − [db]
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

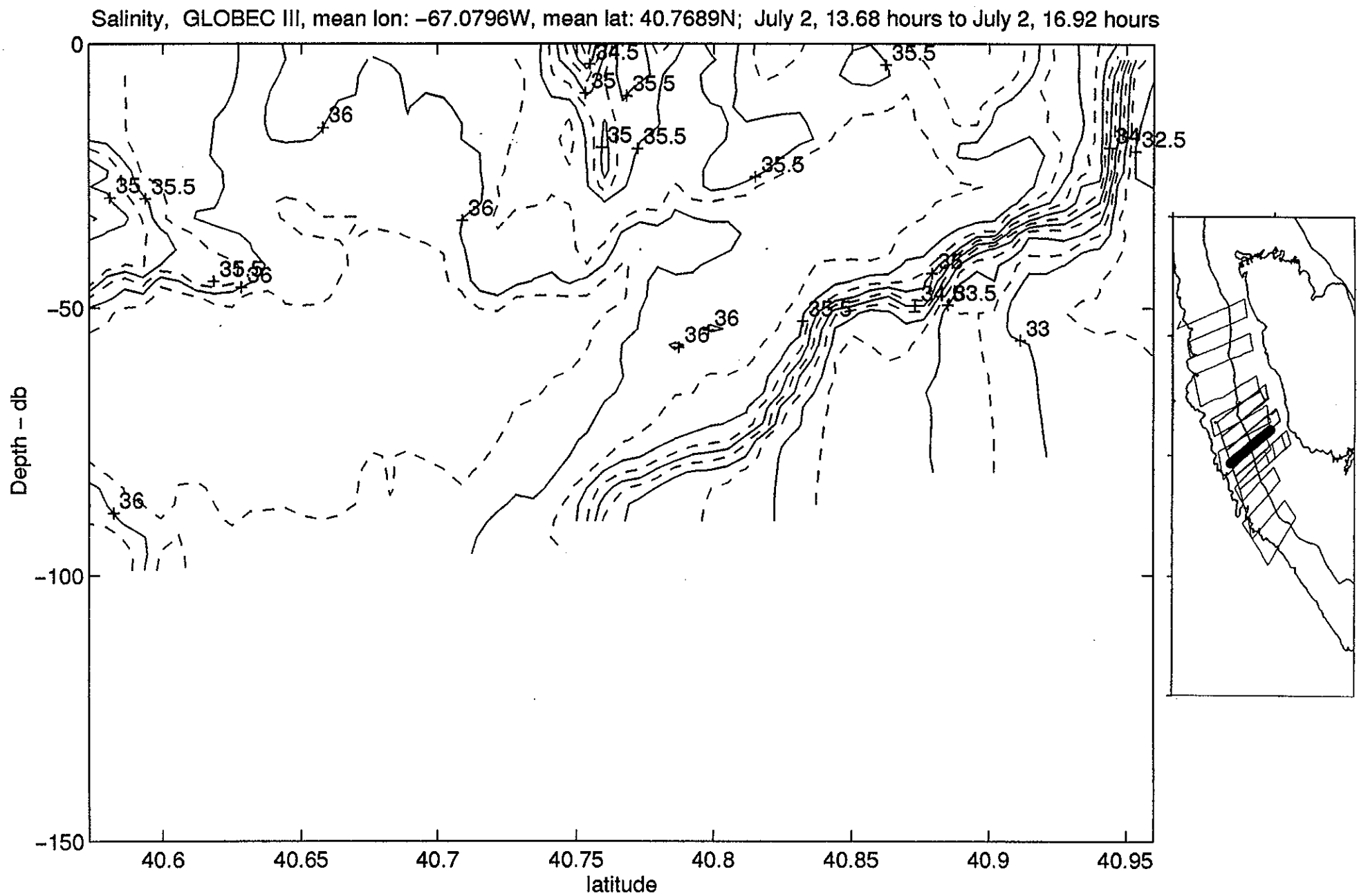

Temperature, GLOBEC III, mean lon: -67.1615W, mean lat: 40.6887N; July 2, 2.83 hours to July 2, 12.93 hours
Depth - db
0
-50
-100
-150
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

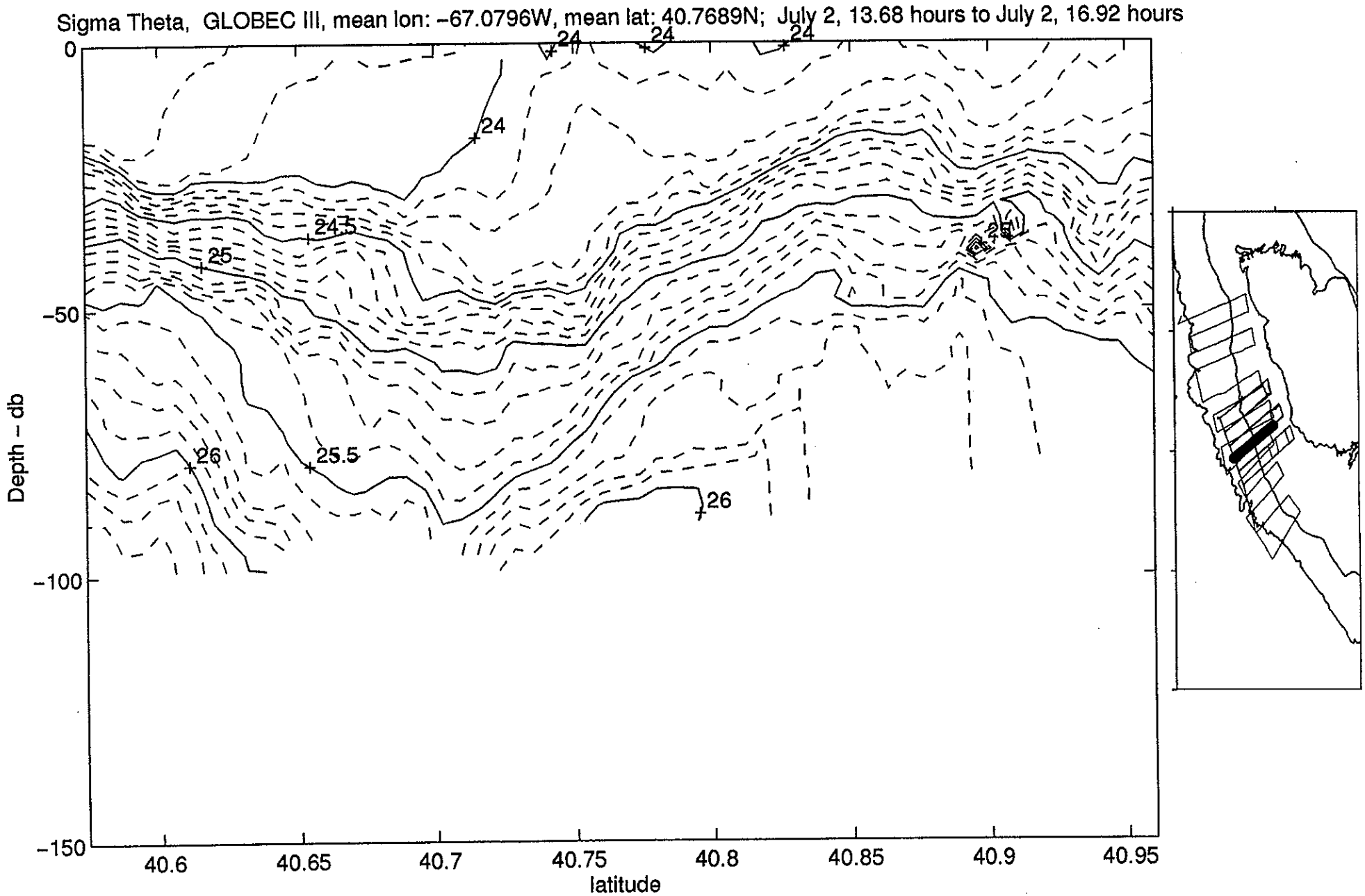

Salinity, GLOBEC III, mean lon: -67.1615W, mean lat: 40.6887N; July 2, 2.83 hours to July 2, 12.93 hours
Depth - db
0
-50
-100
-150
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

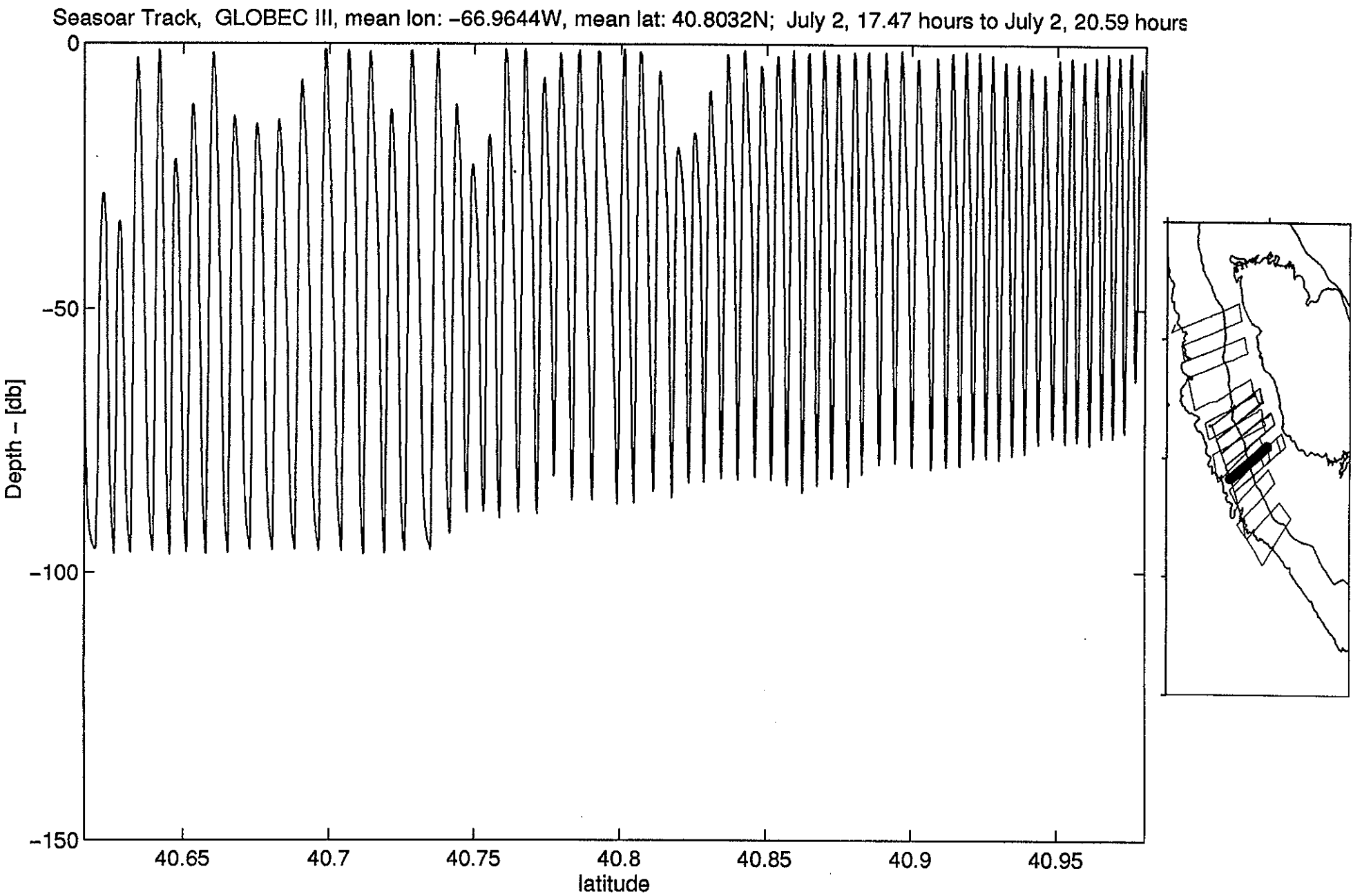

Sigma Theta, GLOBEC III, mean lon: −67.1615W, mean lat: 40.6887N; July 2, 2.83 hours to July 2, 12.93 hours
0
−50
−100
−150
Depth − db
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude
23.5
24
24.5
25
25.5
26
26.5

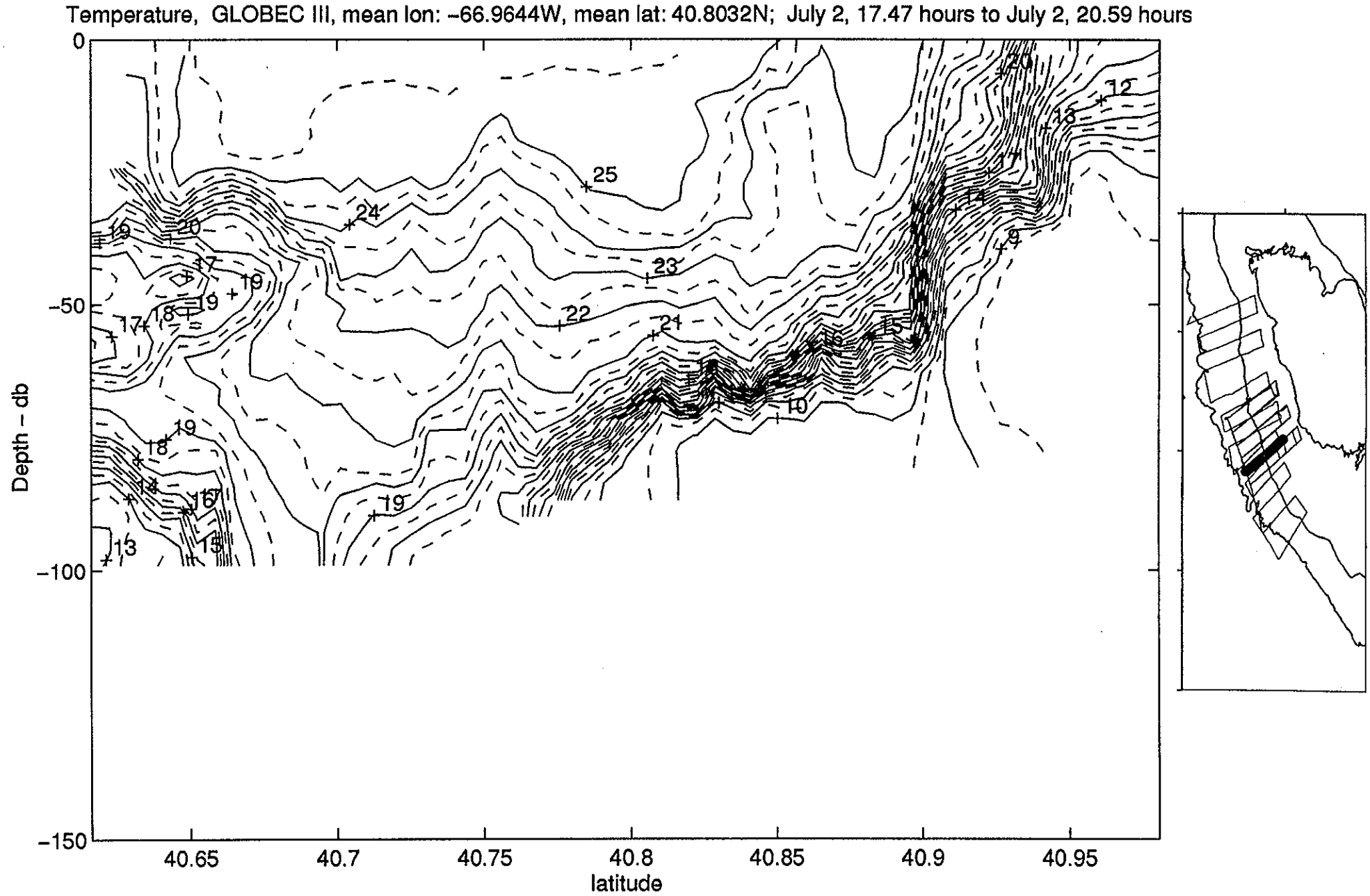

Seasoar Track, GLOBEC III, mean lon: -67.0796W, mean lat: 40.7689N; July 2, 13.68 hours to July 2, 16.92 hours
0
-50
-100
-150
Depth - [db]
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

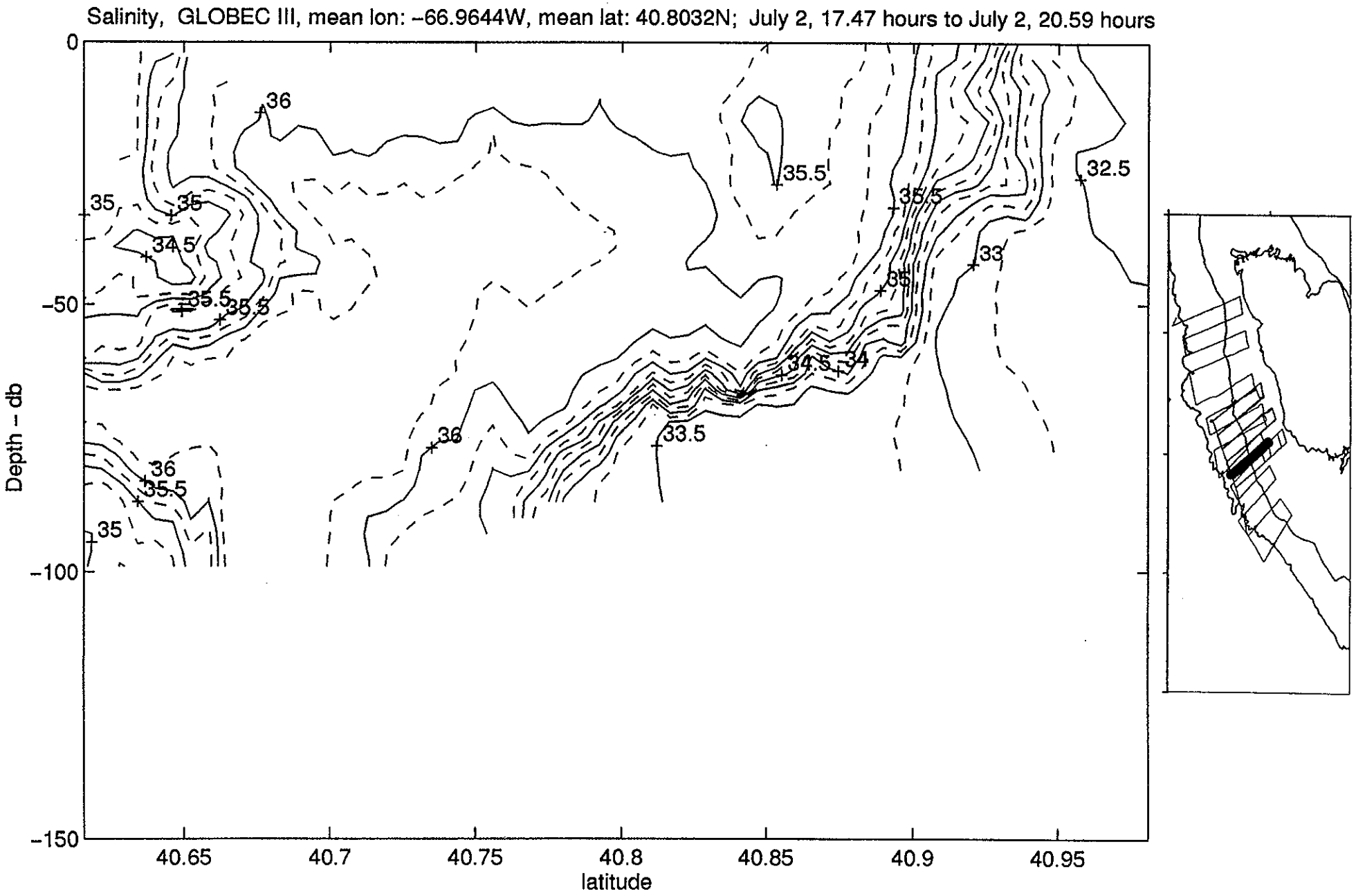

Temperature, GLOBEC III, mean lon: -67.0796W, mean lat: 40.7689N; July 2, 13.68 hours to July 2, 16.92 hours
Depth - db
0
-50
-100
-150
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

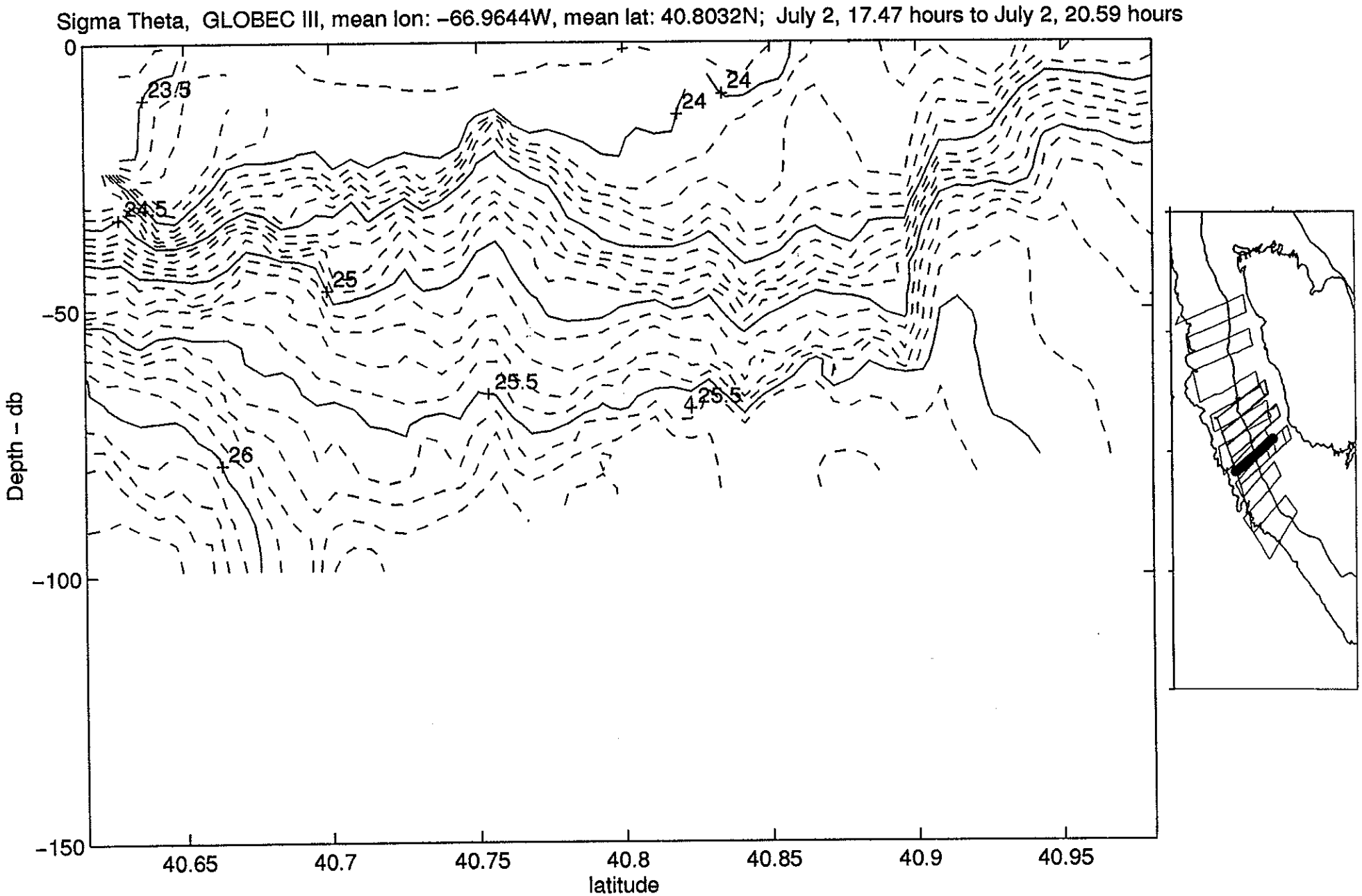

Salinity, GLOBEC III, mean lon: −67.0796W, mean lat: 40.7689N; July 2, 13.68 hours to July 2, 16.92 hours
0
−50
−100
−150
Depth − db
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude
34.5
35
35.5
36
32.5
33
33.5

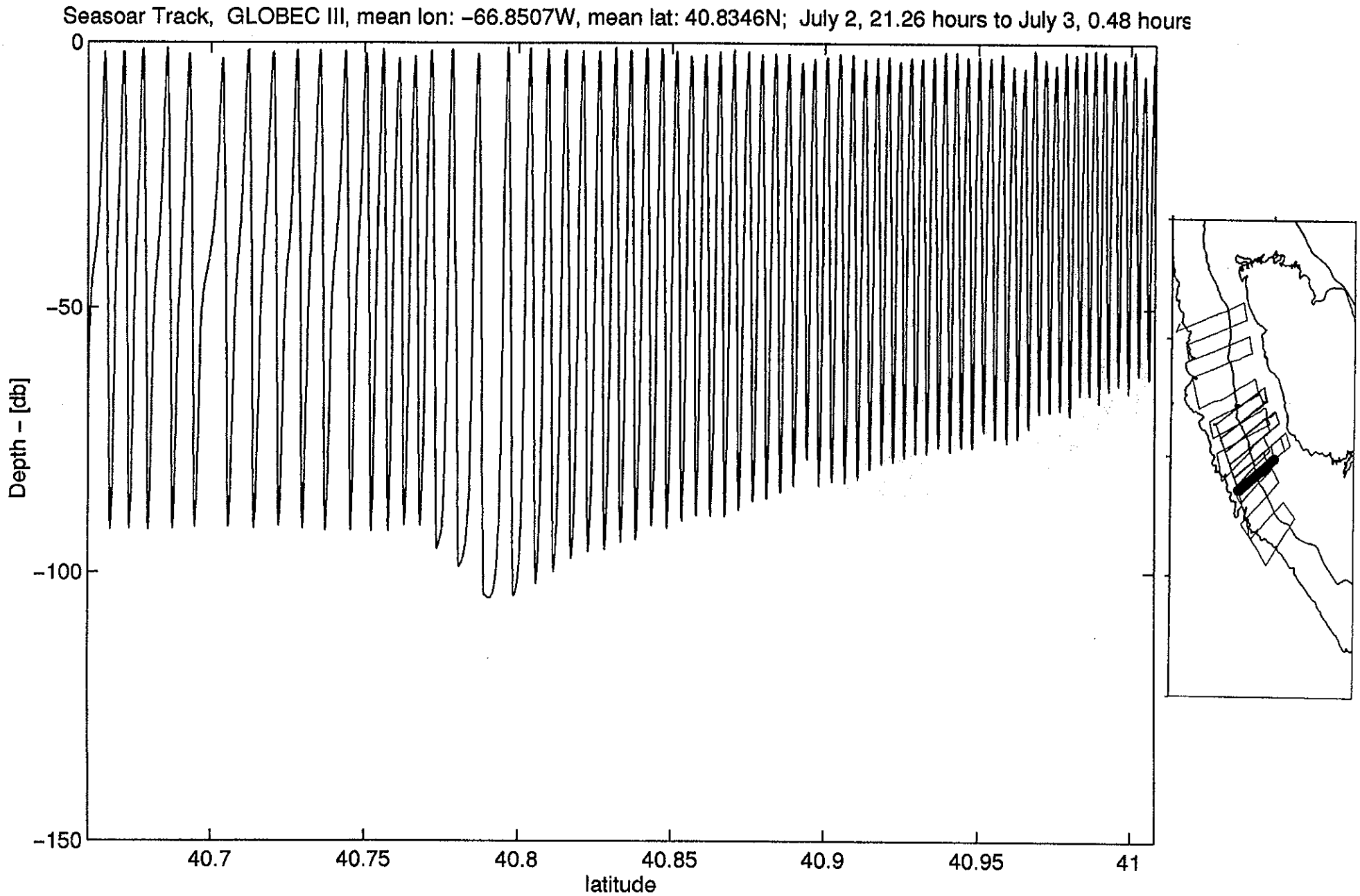

Sigma Theta, GLOBEC III, mean lon: -67.0796W, mean lat: 40.7689N; July 2, 13.68 hours to July 2, 16.92 hours
0
-50
-100
-150
Depth - db
24
24.5
25
25.5
26
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

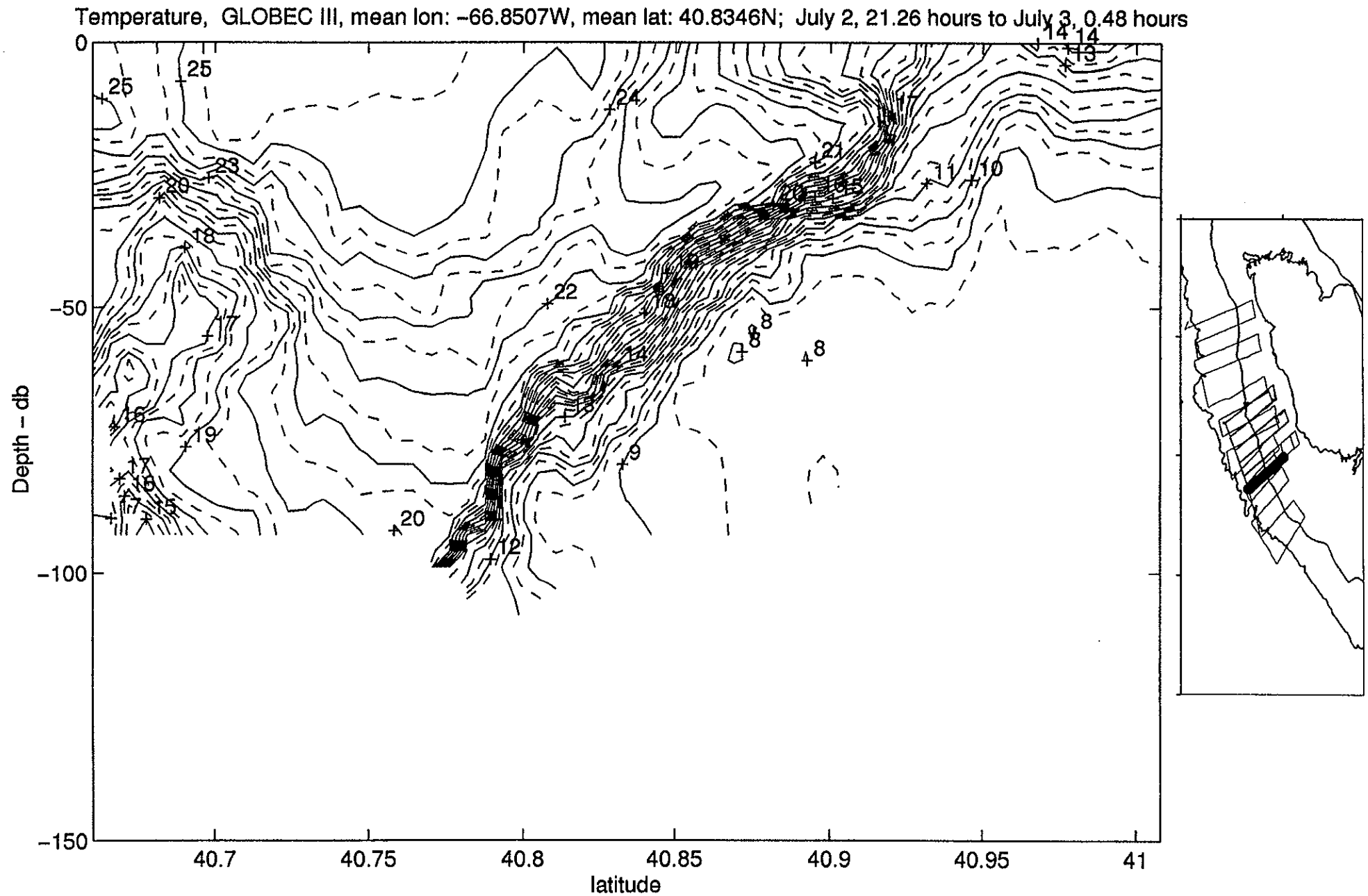

Seasoar Track, GLOBEC III, mean lon: -66.9644W, mean lat: 40.8032N; July 2, 17.47 hours to July 2, 20.59 hours
0
-50
-100
-150
Depth - [db]
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

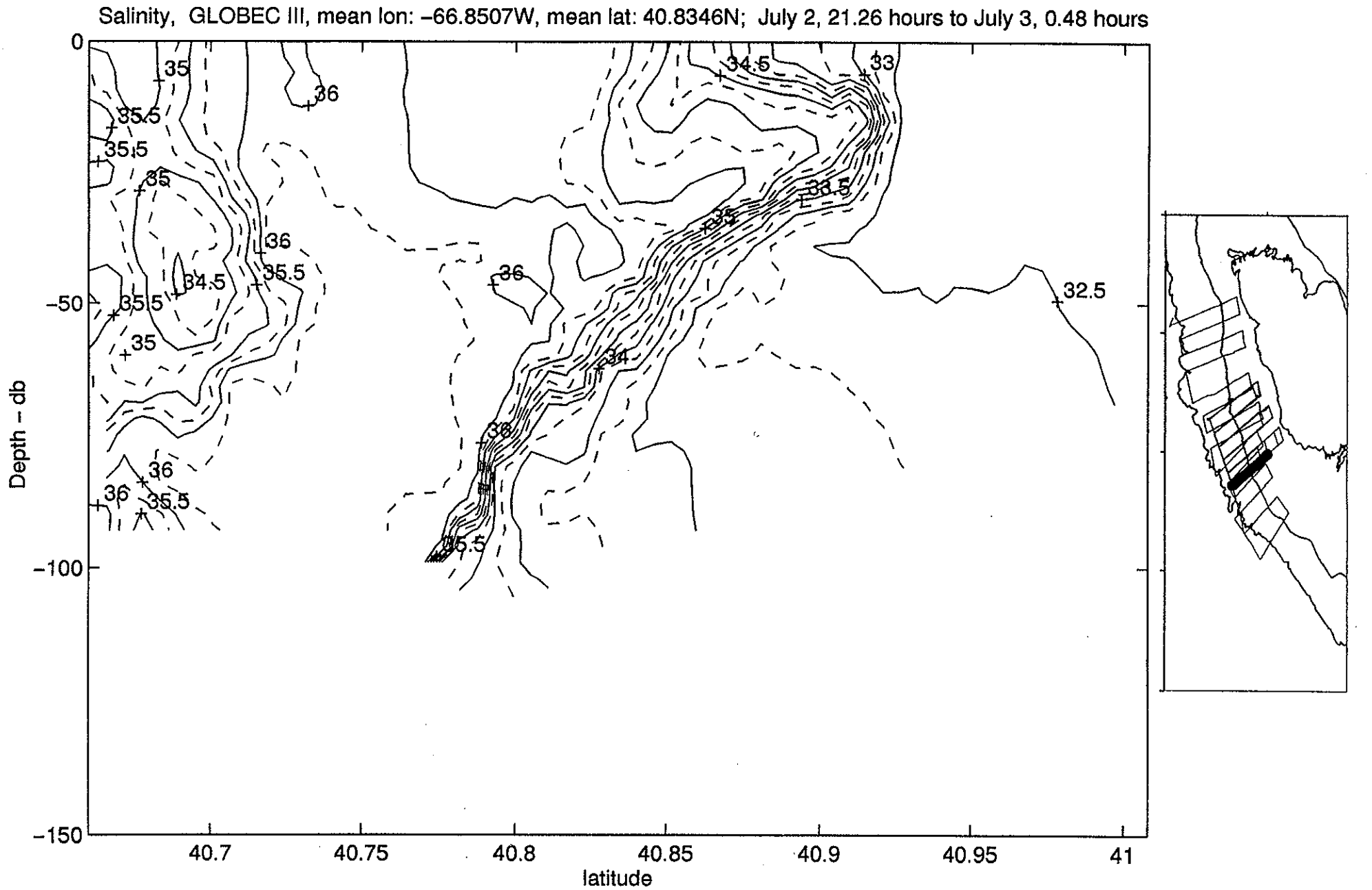

Temperature, GLOBEC III, mean lon: -66.9644W, mean lat: 40.8032N; July 2, 17.47 hours to July 2, 20.59 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

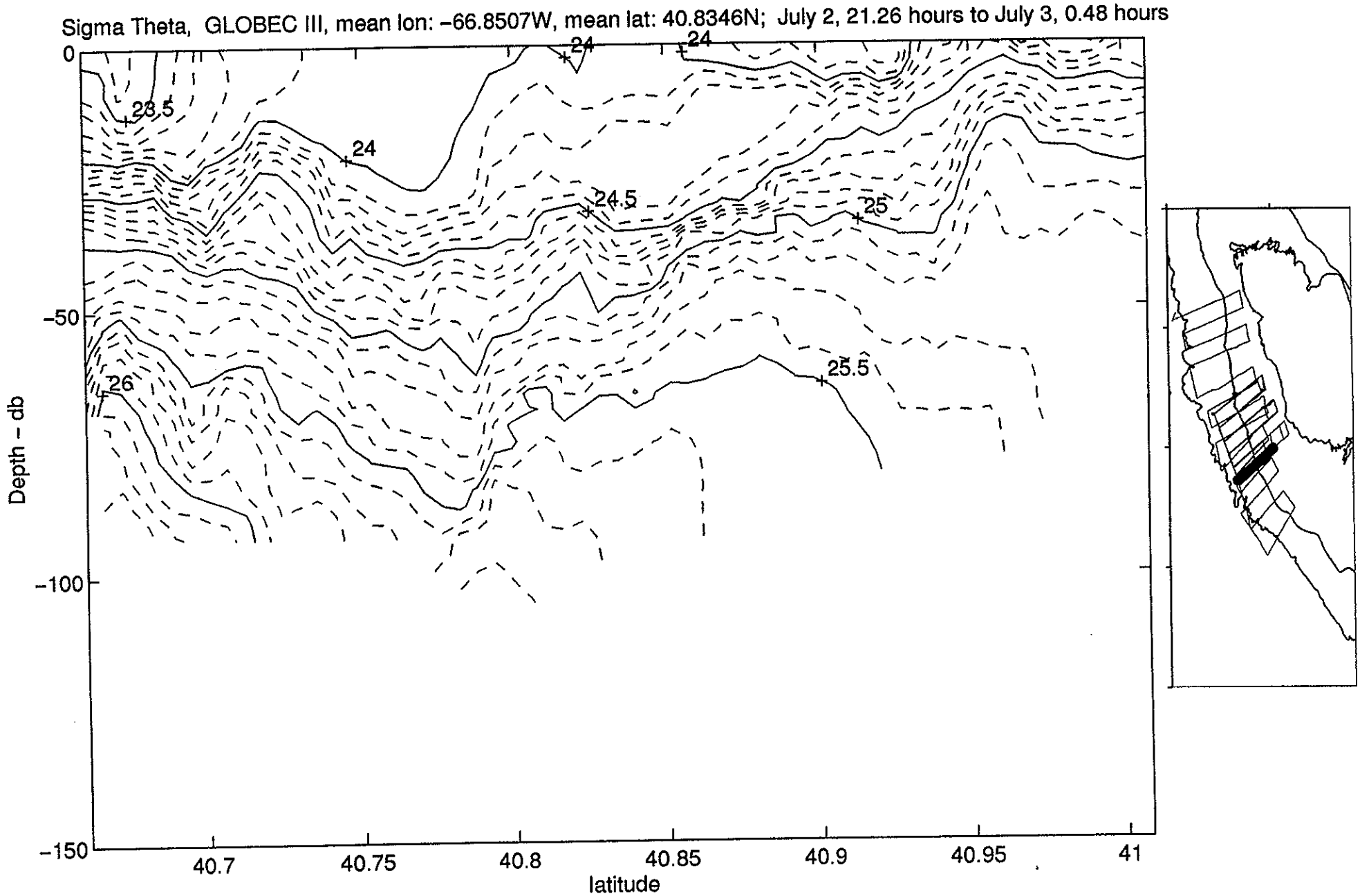

Salinity, GLOBEC III, mean lon: -66.9644W, mean lat: 40.8032N; July 2, 17.47 hours to July 2, 20.59 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude
36
35
34.5
35.5
33.5
32.5
33
34

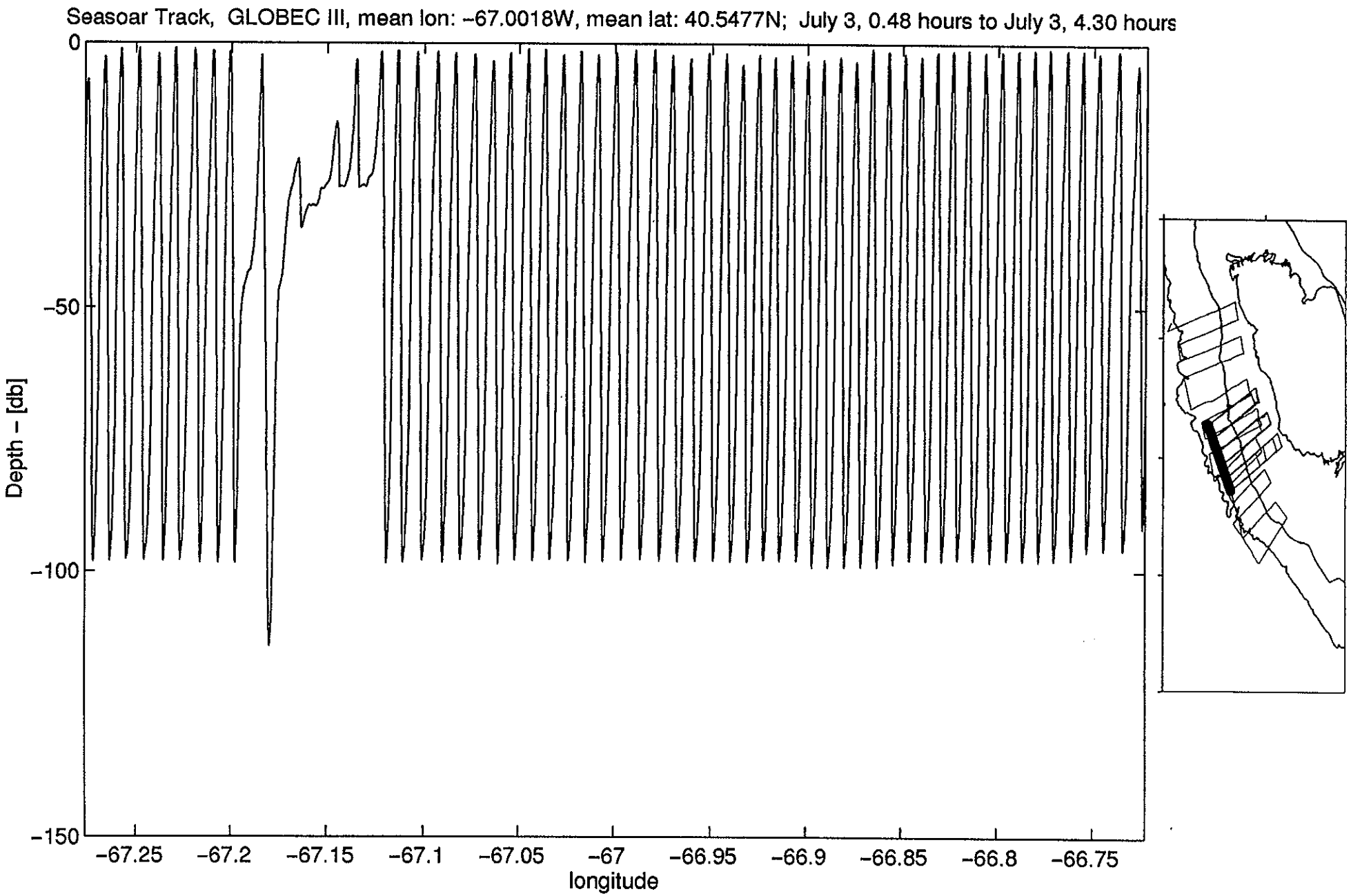

Sigma Theta, GLOBEC III, mean lon: -66.9644W, mean lat: 40.8032N; July 2, 17.47 hours to July 2, 20.59 hours
0
-50
-100
-150
Depth - db
23.5
24
24
24.5
25
25.5
25.5
26
40.65
40.7
40.75
40.8
40.85
40.9
40.95
latitude

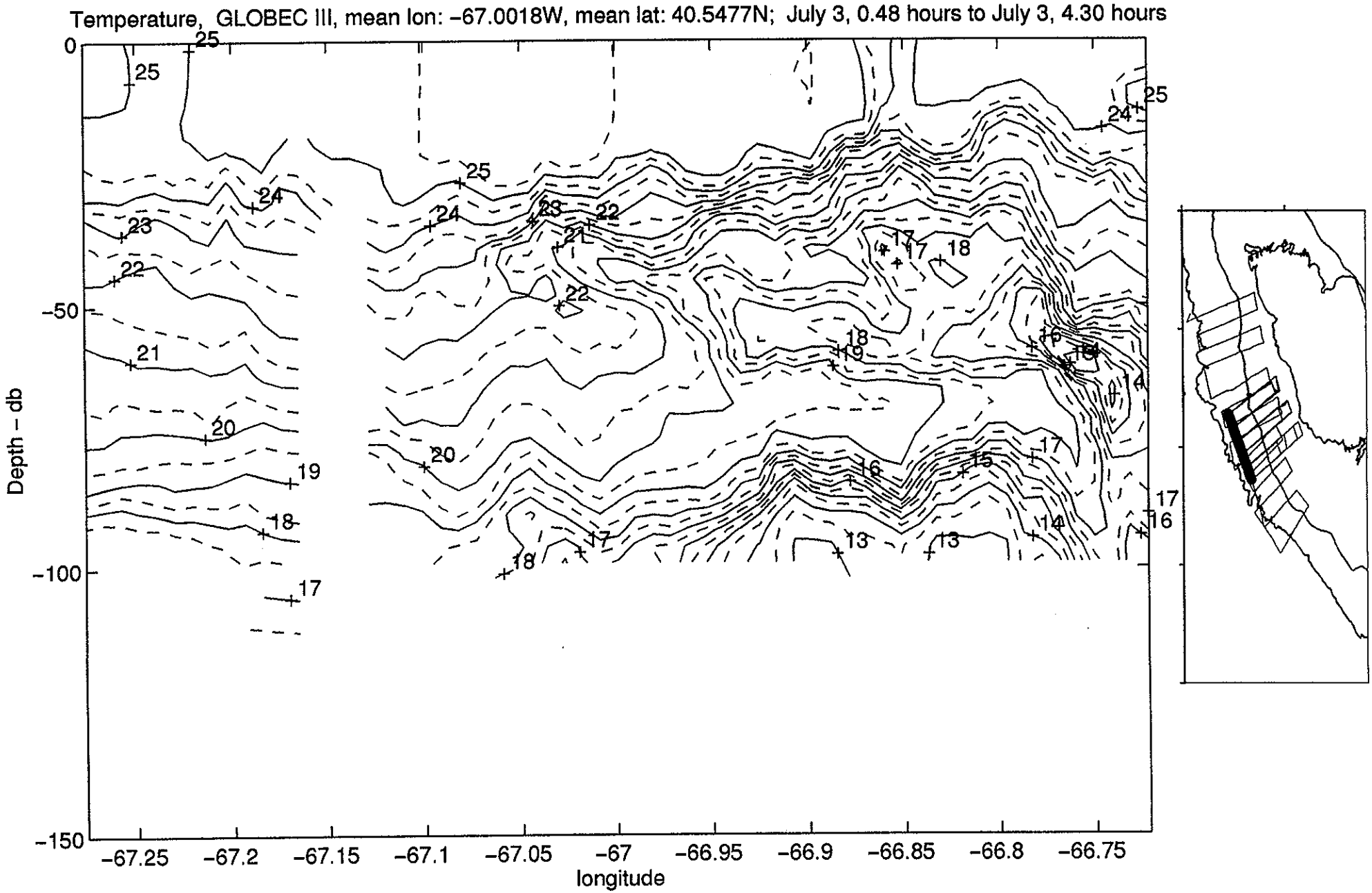

Seasoar Track, GLOBEC III, mean lon: -66.8507W, mean lat: 40.8346N; July 2, 21.26 hours to July 3, 0.48 hours
0
-50
-100
-150
Depth - [db]
40.7
40.75
40.8
40.85
40.9
40.95
41
latitude

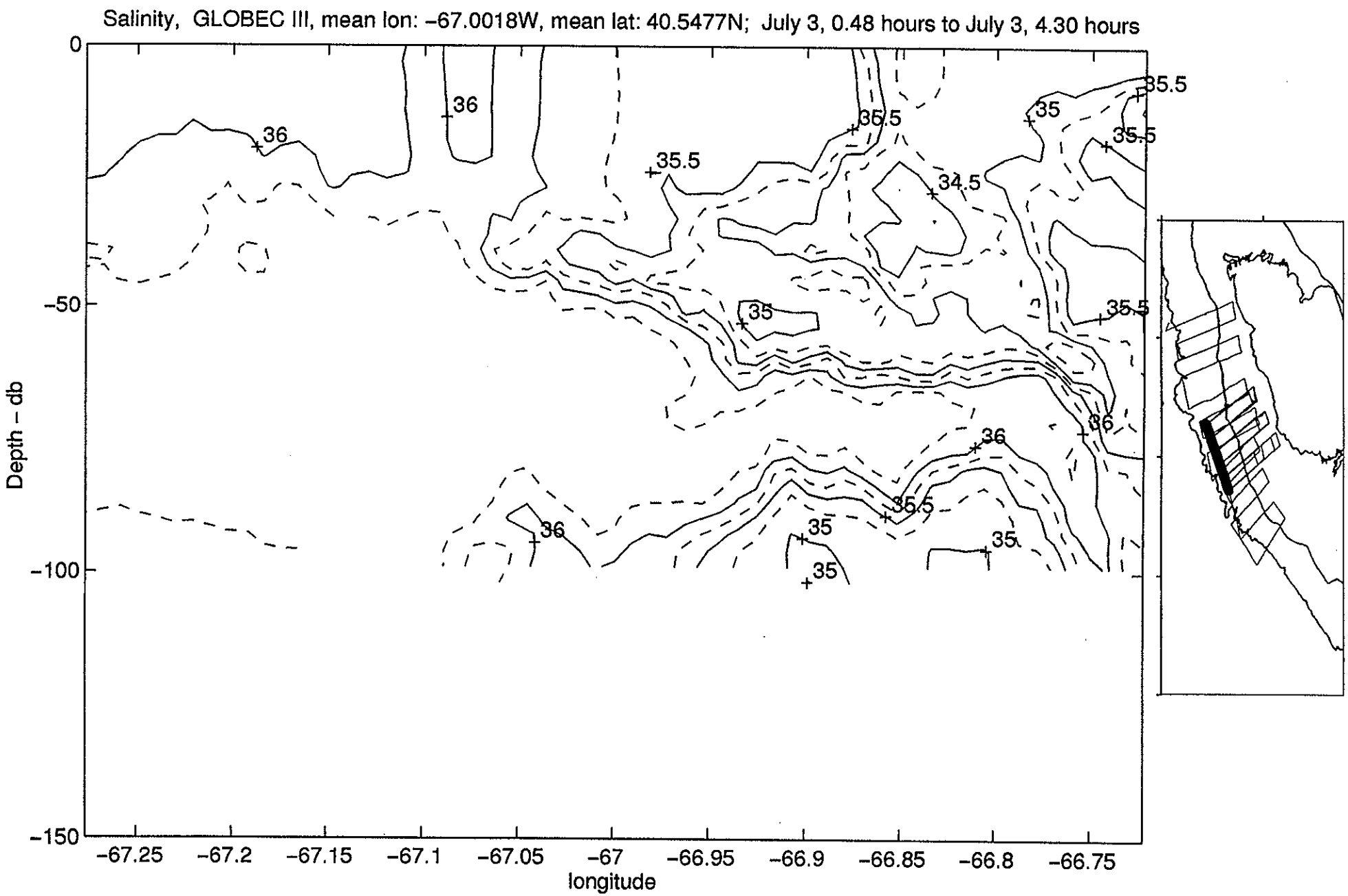

Temperature, GLOBEC III, mean lon: -66.8507W, mean lat: 40.8346N; July 2, 21.26 hours to July 3, 0.48 hours
Depth - db
0
-50
-100
-150
40.7
40.75
40.8
40.85
40.9
40.95
41
latitude

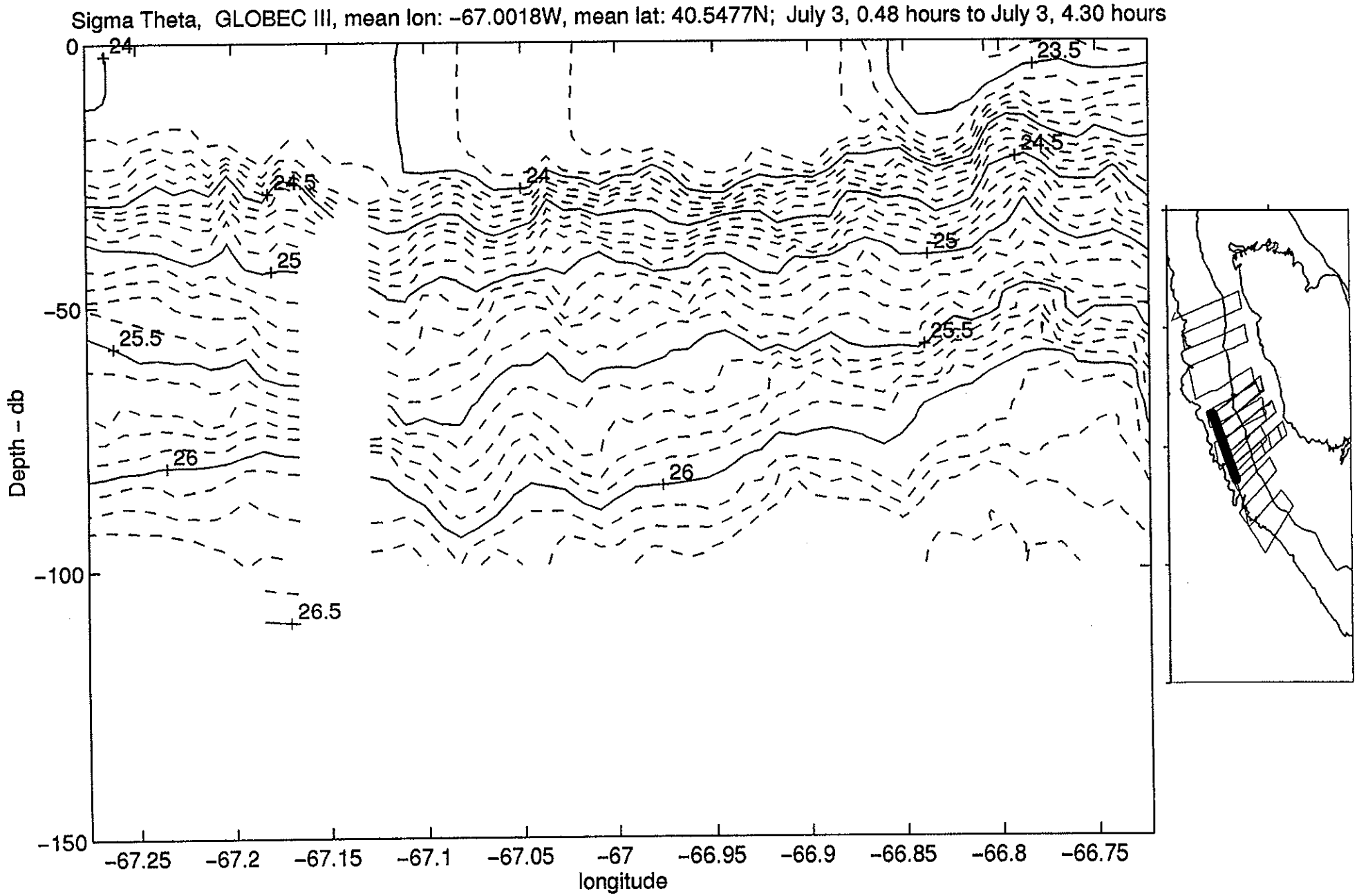

Salinity, GLOBEC III, mean lon: −66.8507W, mean lat: 40.8346N; July 2, 21.26 hours to July 3, 0.48 hours
Depth – db
latitude
0
−50
−100
−150
40.7
40.75
40.8
40.85
40.9
40.95
41
35
35.5
34.5
33
33.5
36
32.5
34

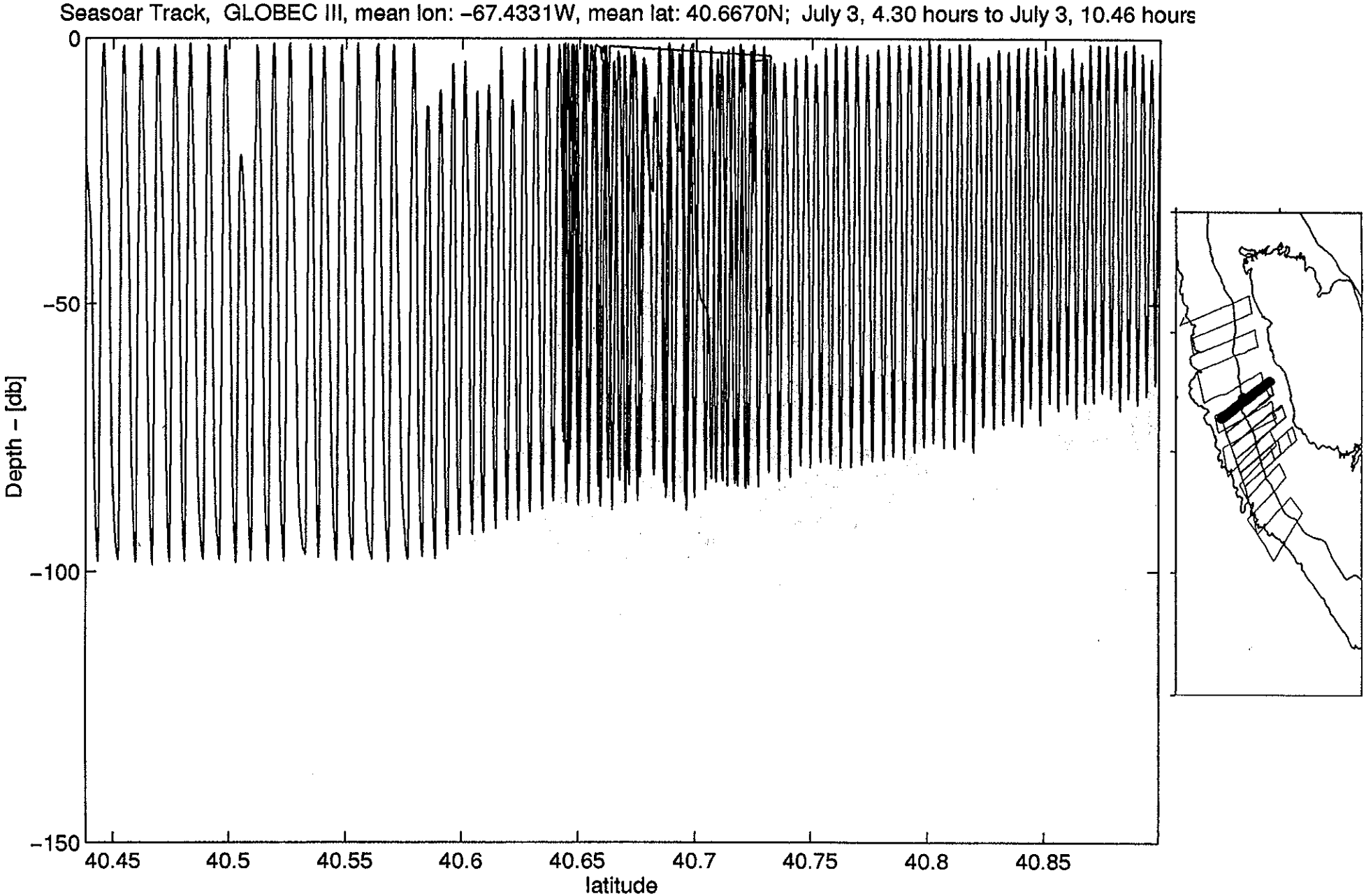

Sigma Theta, GLOBEC III, mean lon: −66.8507W, mean lat: 40.8346N; July 2, 21.26 hours to July 3, 0.48 hours
0
−50
−100
−150
Depth – db
24
24
23.5
24
24.5
25
25.5
26
40.7
40.75
40.8
40.85
40.9
40.95
41
latitude

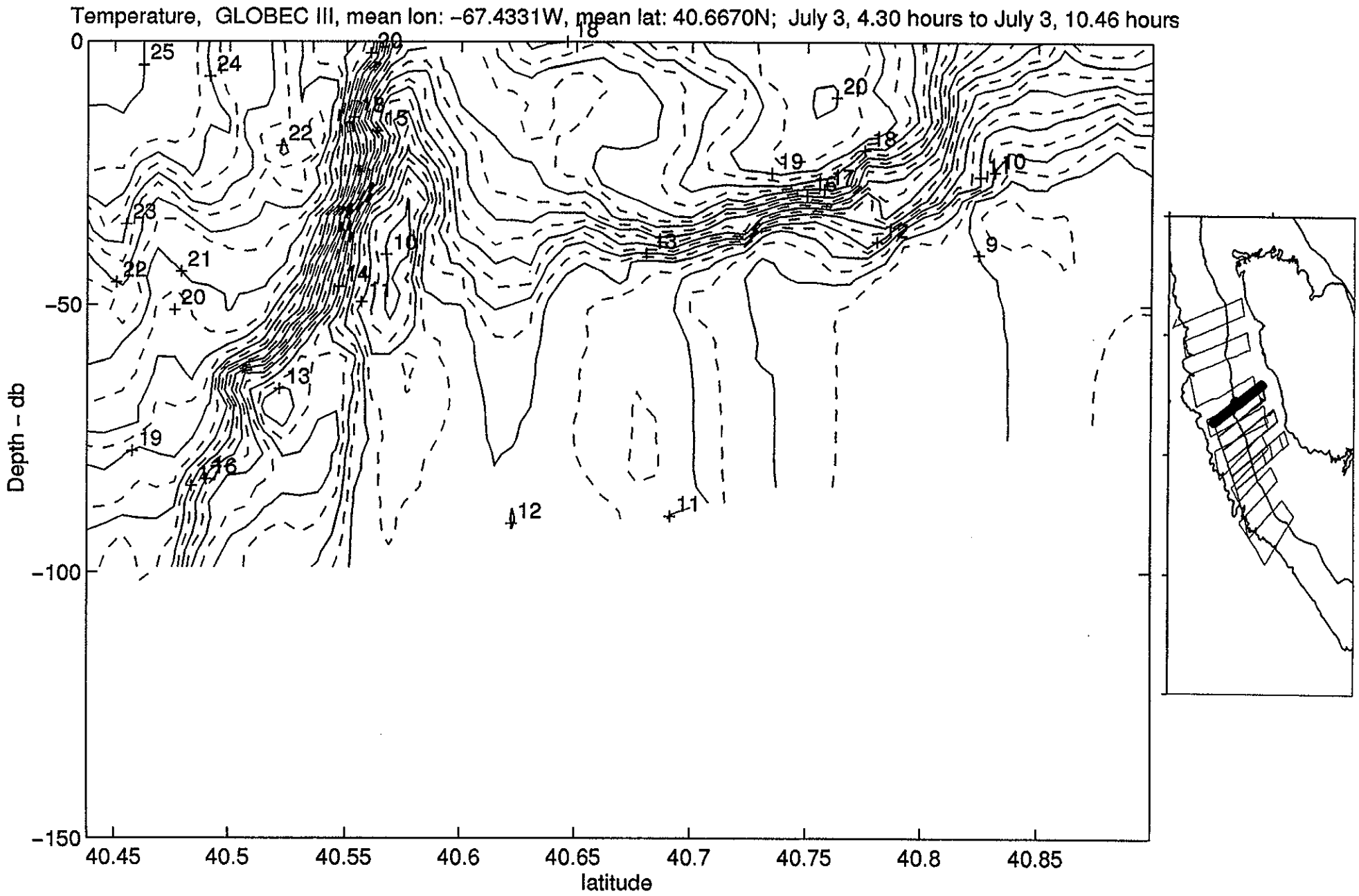

Seasoar Track, GLOBEC III, mean lon: -67.0018W, mean lat: 40.5477N; July 3, 0.48 hours to July 3, 4.30 hours
0
-50
-100
-150
Depth - [db]
-67.25
-67.2
-67.15
-67.1
-67.05
-67
-66.95
-66.9
-66.85
-66.8
-66.75
longitude

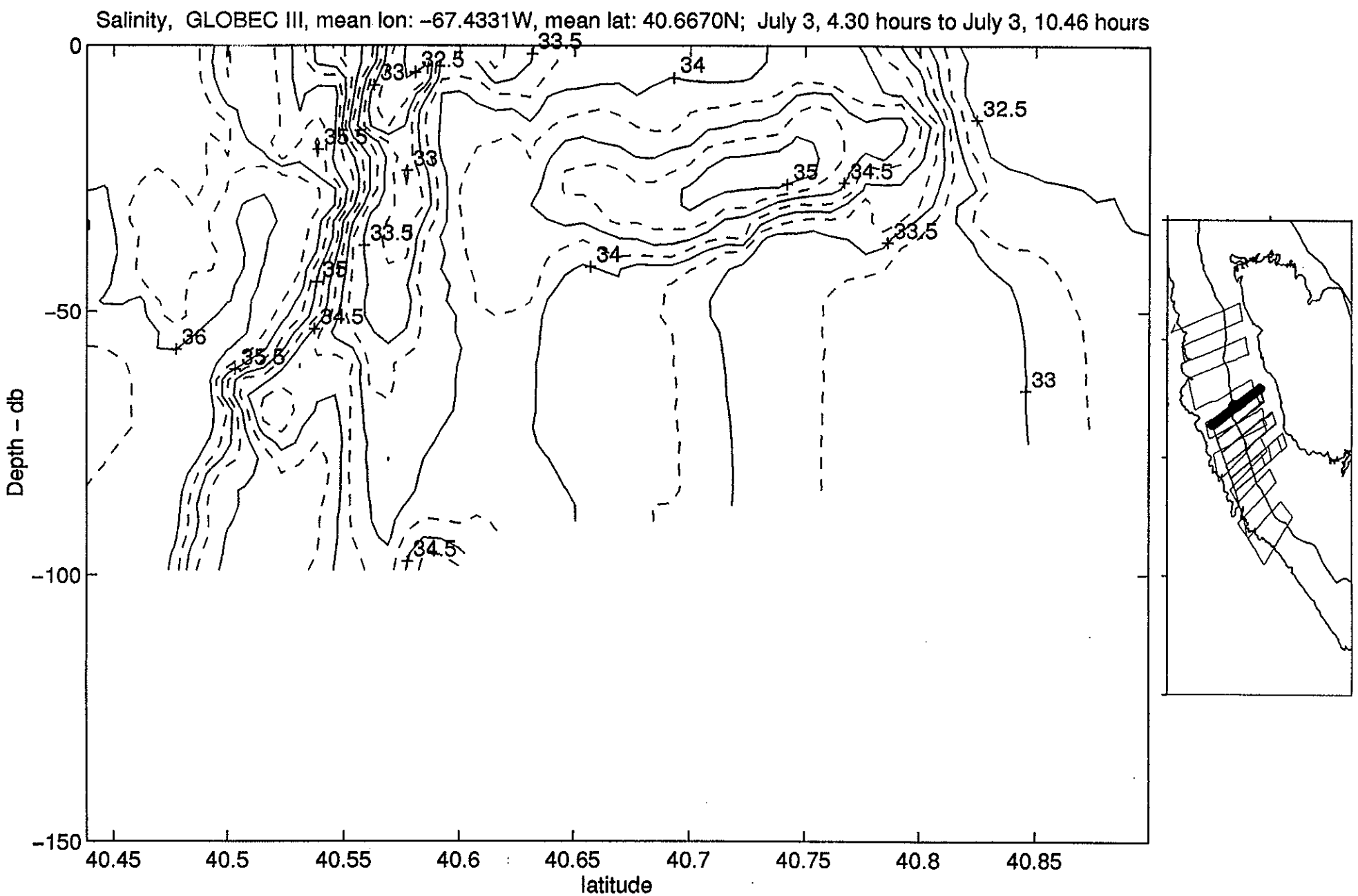

Temperature, GLOBEC III, mean lon: -67.0018W, mean lat: 40.5477N; July 3, 0.48 hours to July 3, 4.30 hours
Depth - db
0
-50
-100
-150
-67.25
-67.2
-67.15
-67.1
-67.05
-67
-66.95
-66.9
-66.85
-66.8
-66.75
longitude

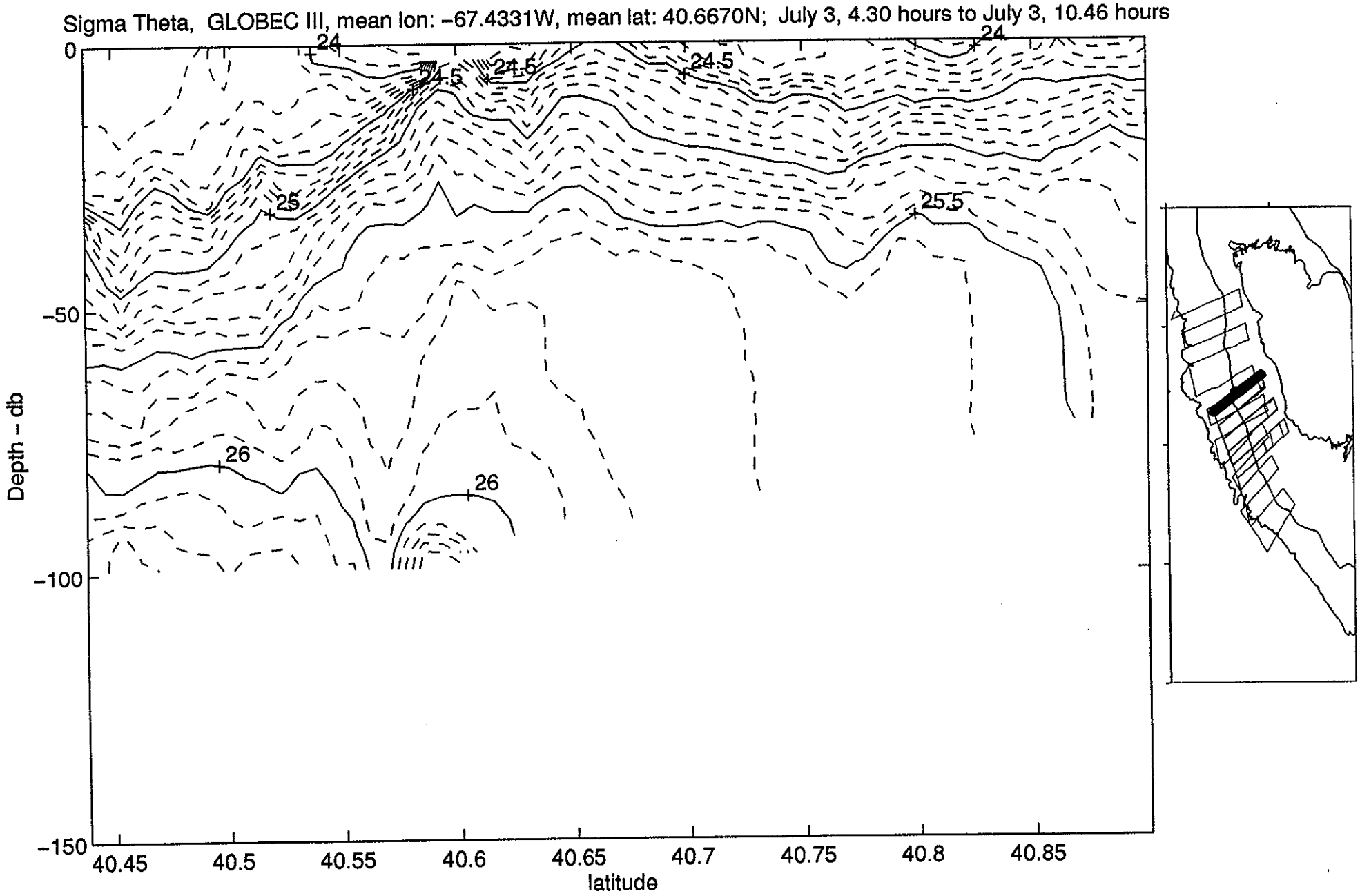

Salinity, GLOBEC III, mean lon: -67.0018W, mean lat: 40.5477N; July 3, 0.48 hours to July 3, 4.30 hours
0
-50
-100
-150
Depth - db
-67.25
-67.2
-67.15
-67.1
-67.05
-67
-66.95
-66.9
-66.85
-66.8
-66.75
longitude
36
35.5
35
34.5

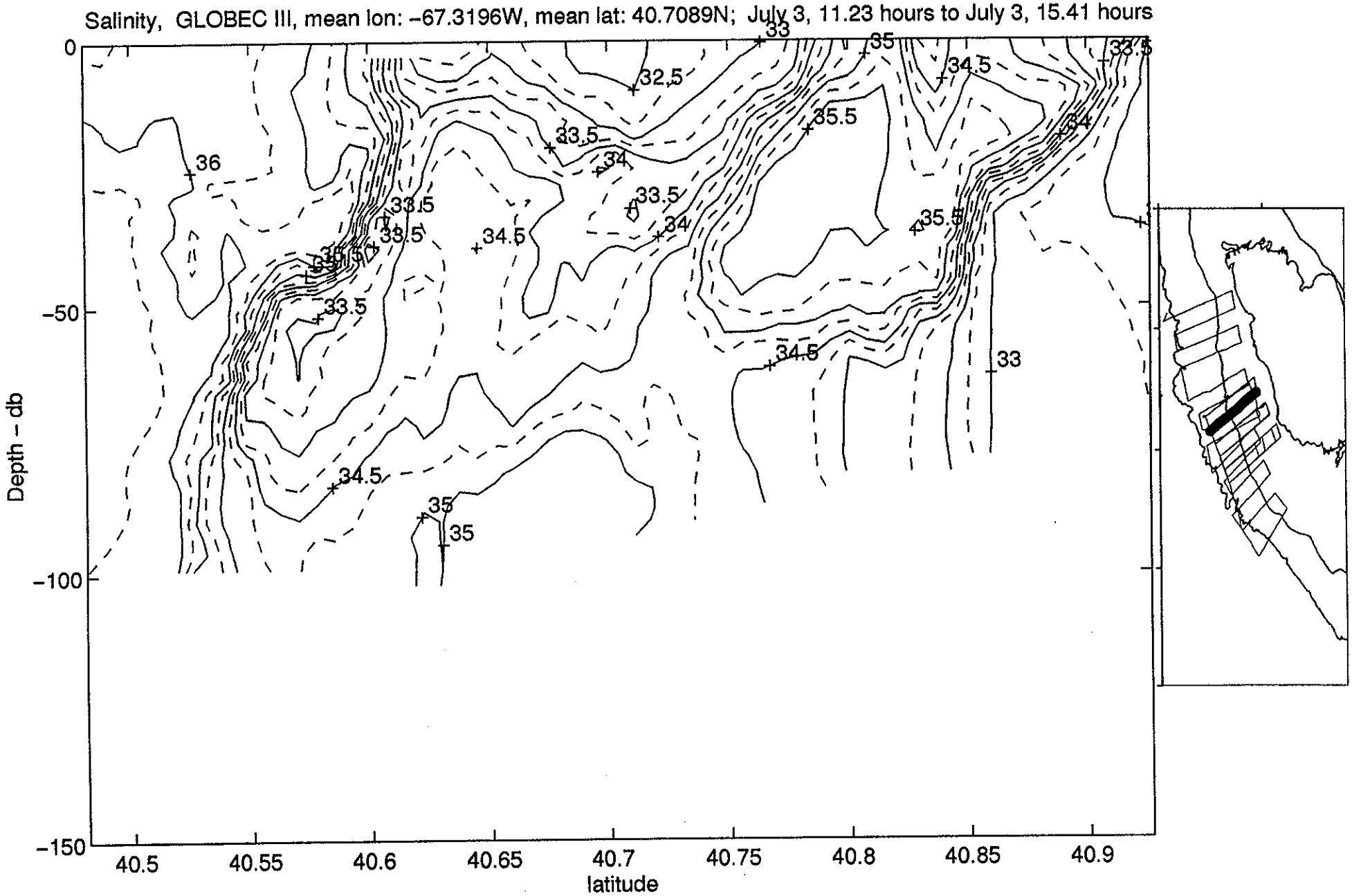

Sigma Theta, GLOBEC III, mean lon: -67.0018W, mean lat: 40.5477N; July 3, 0.48 hours to July 3, 4.30 hours
0
-50
-100
-150
Depth - db
-67.25
-67.2
-67.15
-67.1
-67.05
-67
-66.95
-66.9
-66.85
-66.8
-66.75
longitude
24
24.5
25
25.5
26
26.5
23.5


Seasoar Track, GLOBEC III, mean lon: −67.4331W, mean lat: 40.6670N; July 3, 4.30 hours to July 3, 10.46 hours
0
−50
−100
−150
Depth − [db]
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude


Temperature, GLOBEC III, mean lon: -67.4331W, mean lat: 40.6670N; July 3, 4.30 hours to July 3, 10.46 hours
Depth - db
0
-50
-100
-150
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude


Salinity, GLOBEC III, mean lon: −67.4331W, mean lat: 40.6670N; July 3, 4.30 hours to July 3, 10.46 hours
Depth – db
0
−50
−100
−150
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude
33.5
34
32.5
33
35.5
35
34.5
36


Sigma Theta, GLOBEC III, mean lon: -67.4331W, mean lat: 40.6670N; July 3, 4.30 hours to July 3, 10.46 hours
0
-50
-100
-150
Depth - db
24
24.5
25
25.5
26
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
latitude


Salinity, GLOBEC III, mean lon: -67.3196W, mean lat: 40.7089N; July 3, 11.23 hours to July 3, 15.41 hours
Depth - db
latitude
0
-50
-100
-150
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
33
35
34.5
33.5
32.5
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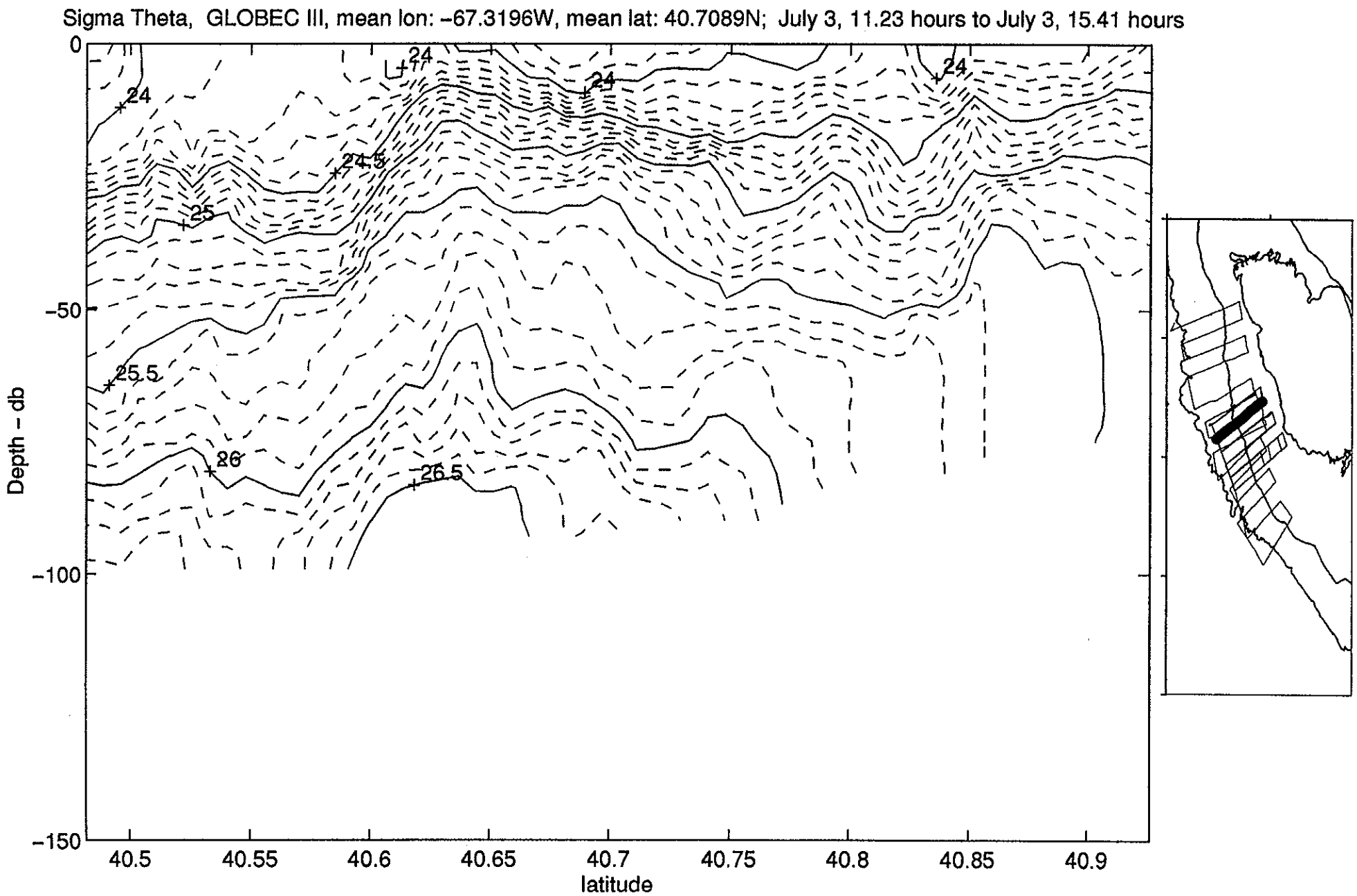
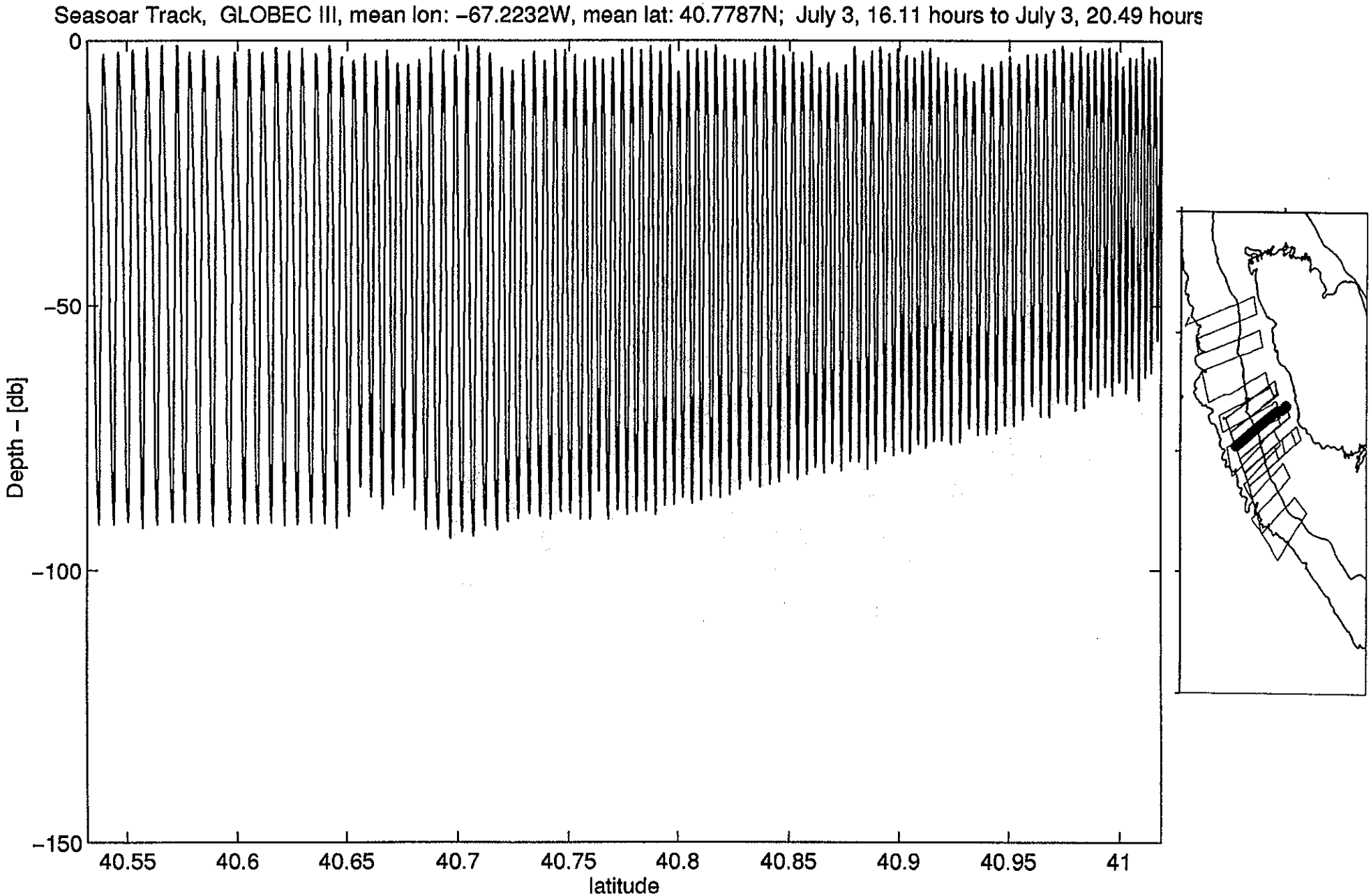
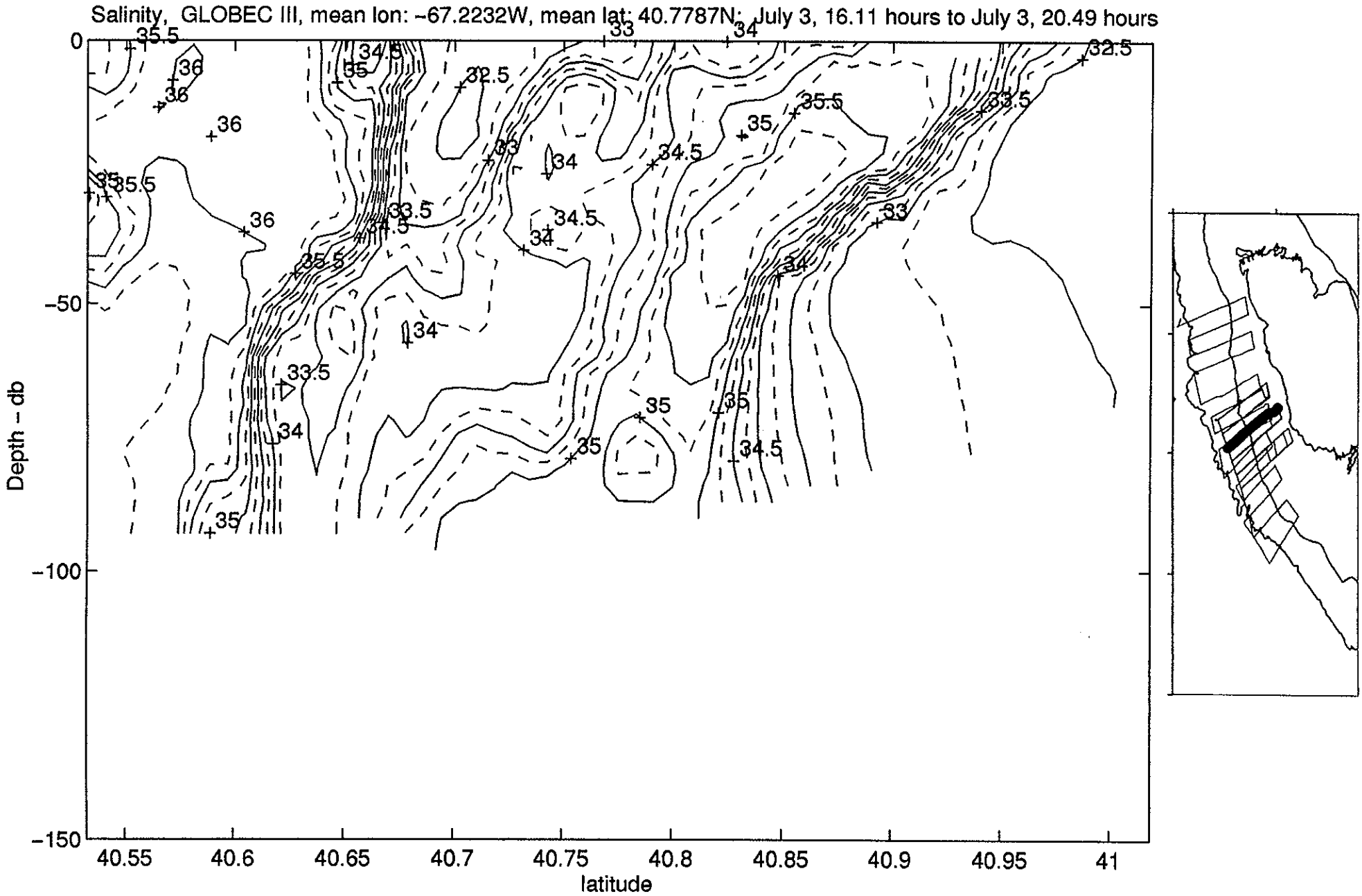
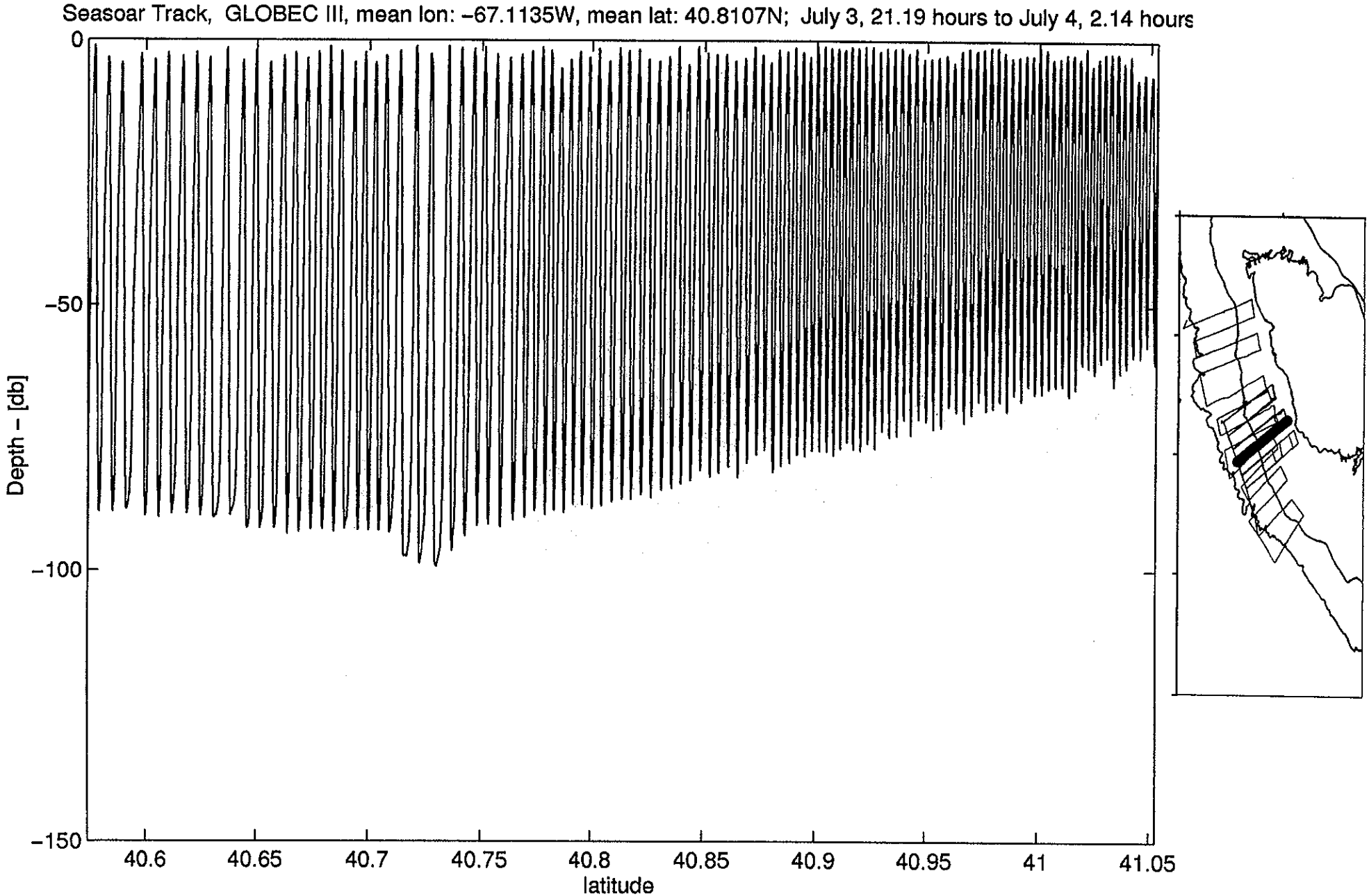
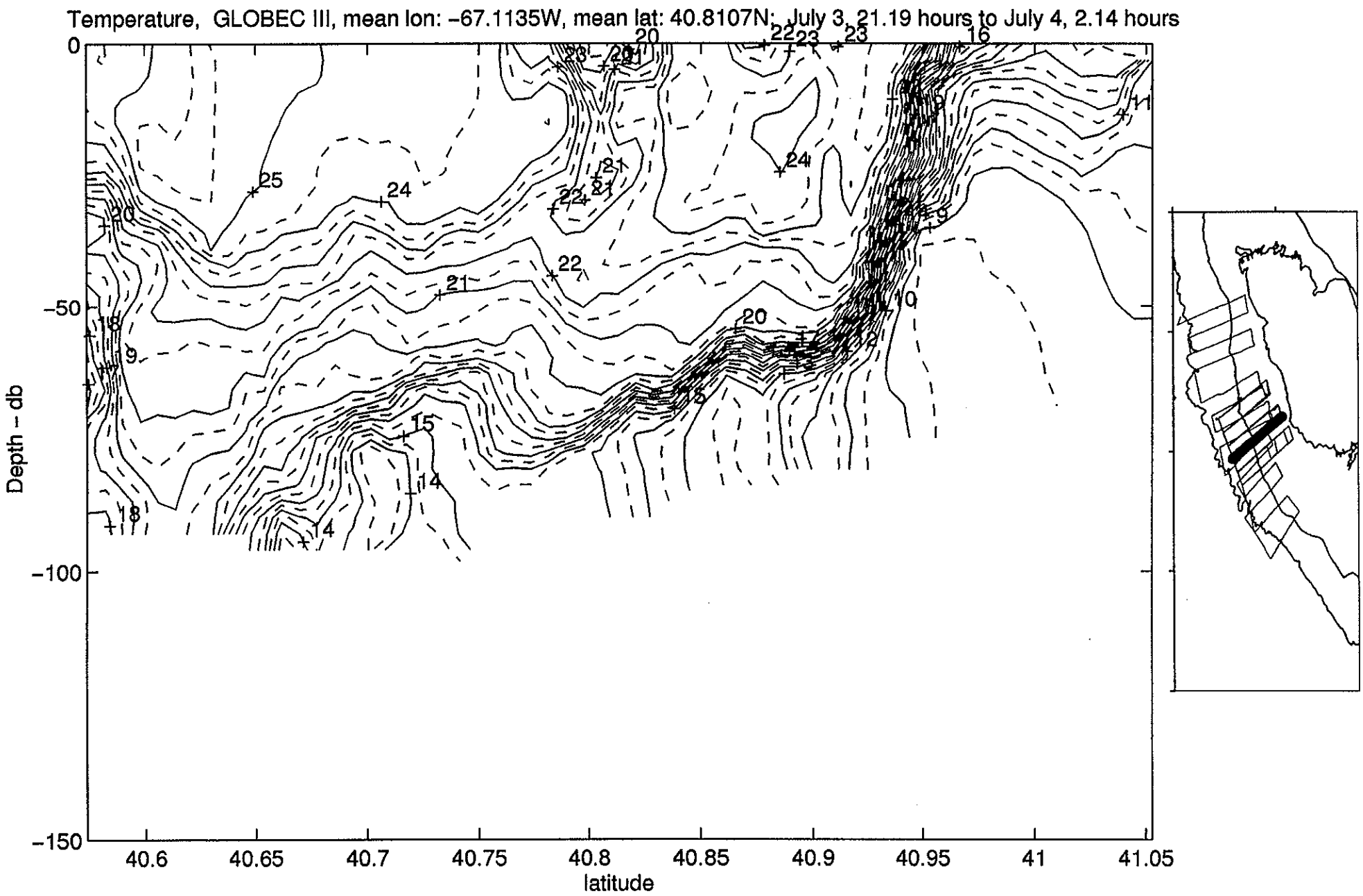
33.5
33.5
34.5
33
34.5
35
35

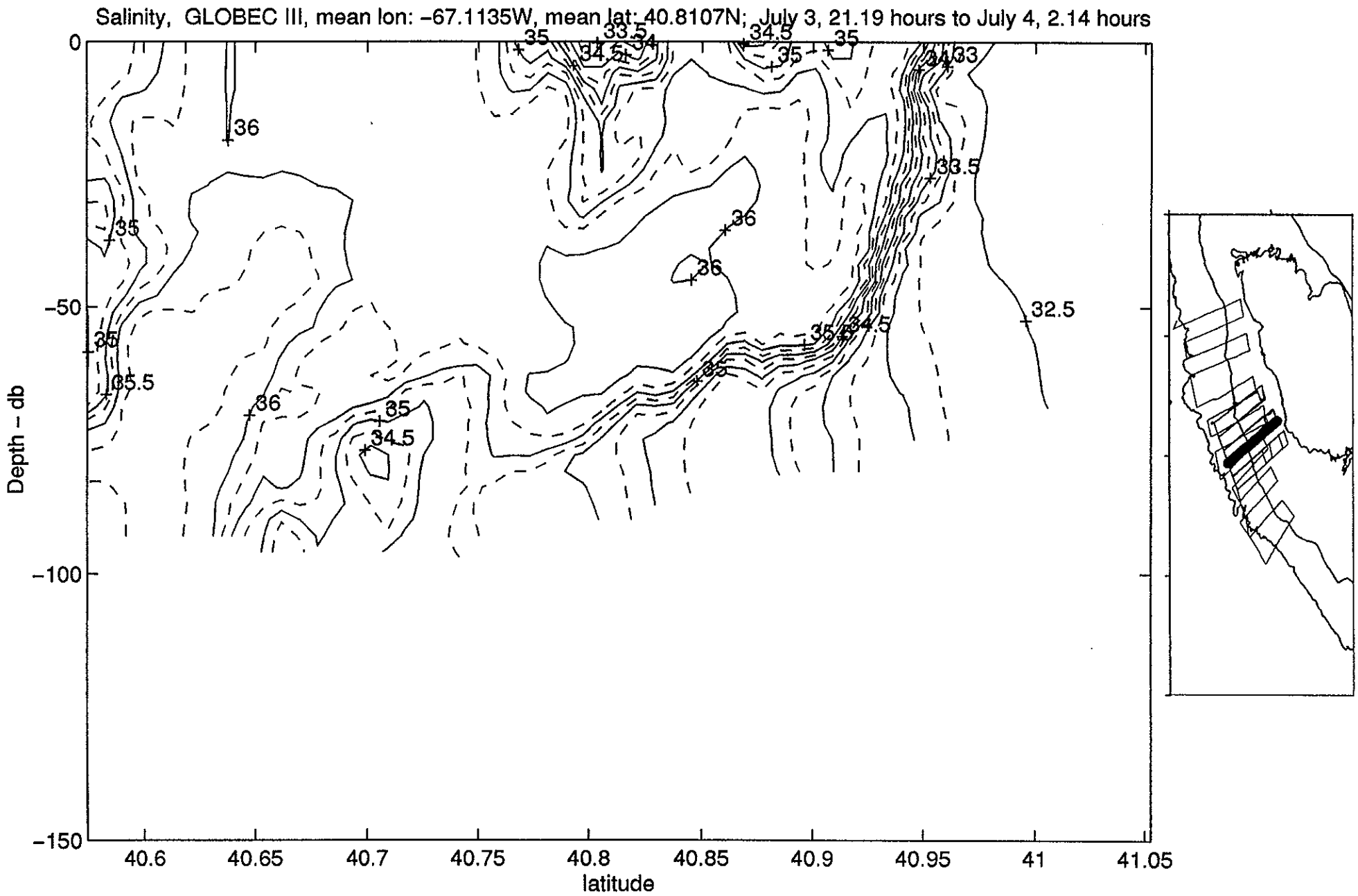

Sigma Theta, GLOBEC III, mean lon: -67.3196W, mean lat: 40.7089N; July 3, 11.23 hours to July 3, 15.41 hours
0
-50
-100
-150
Depth - db
24
24.5
25
25.5
26
26.5
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

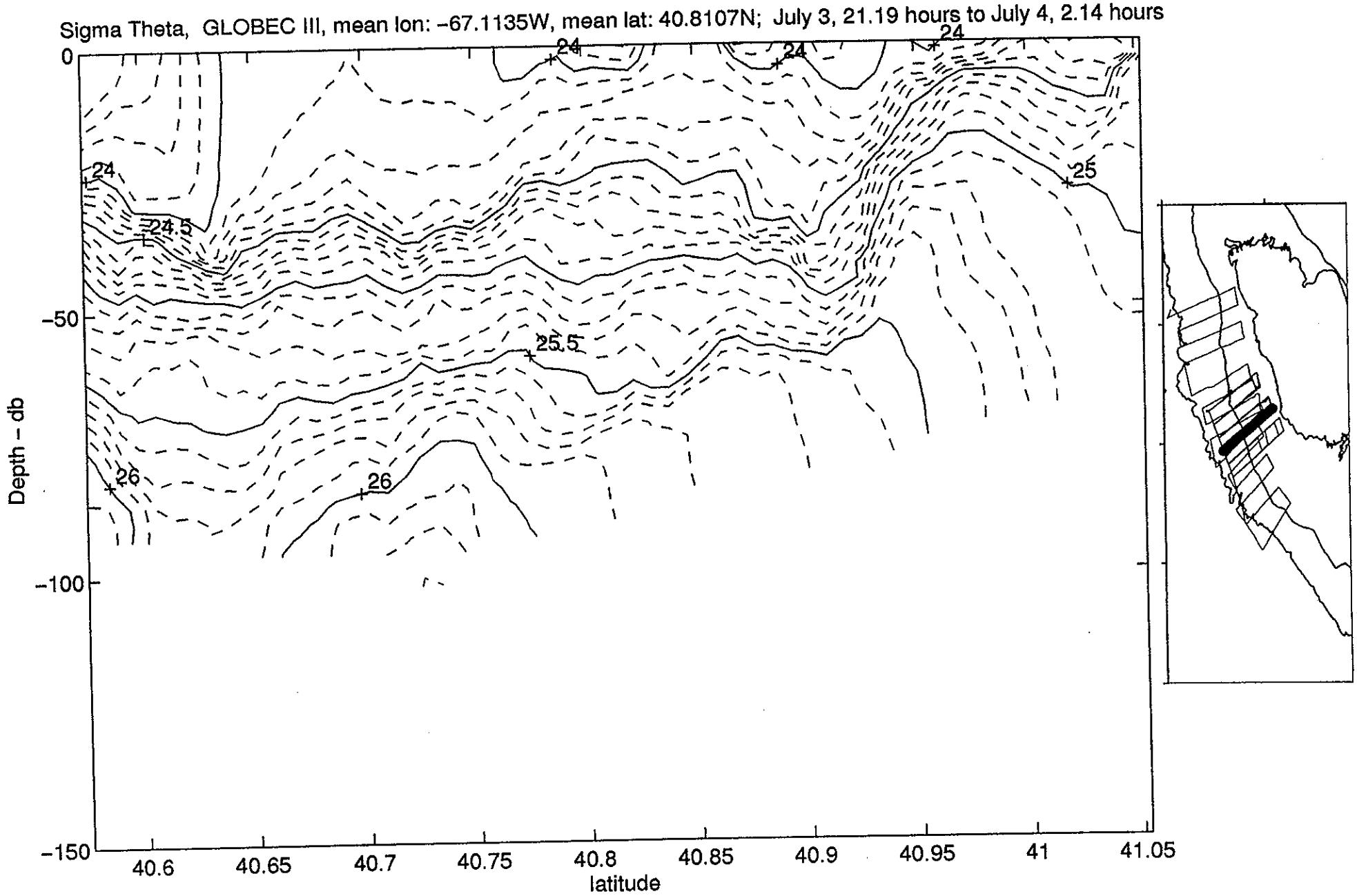

Seasoar Track, GLOBEC III, mean lon: −67.2232W, mean lat: 40.7787N; July 3, 16.11 hours to July 3, 20.49 hours
0
−50
−100
−150
Depth − [db]
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
latitude

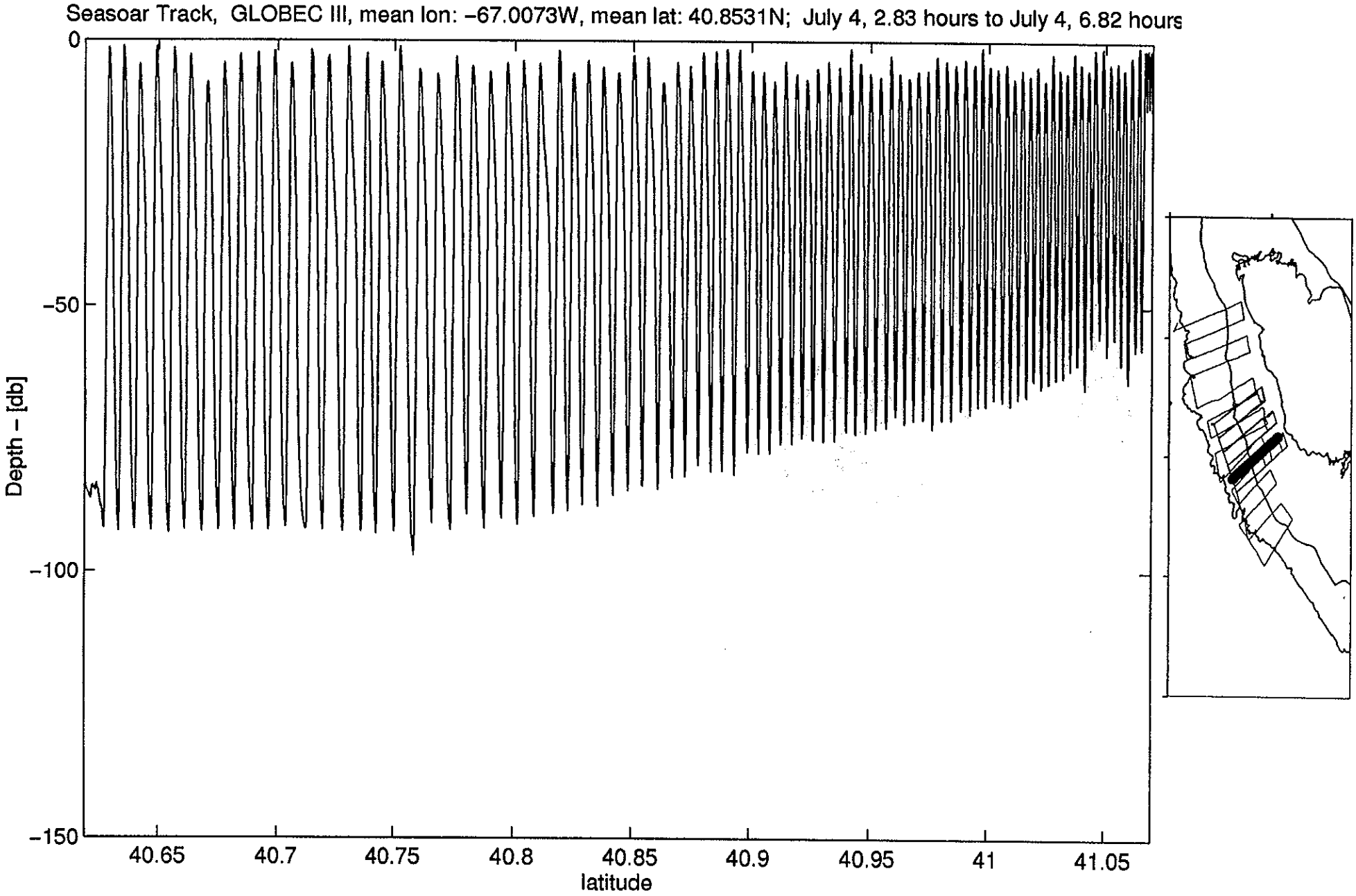

Salinity, GLOBEC III, mean lon: -67.2232W, mean lat: 40.7787N; July 3, 16.11 hours to July 3, 20.49 hours
Depth - db
latitude
0
-50
-100
-150
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41

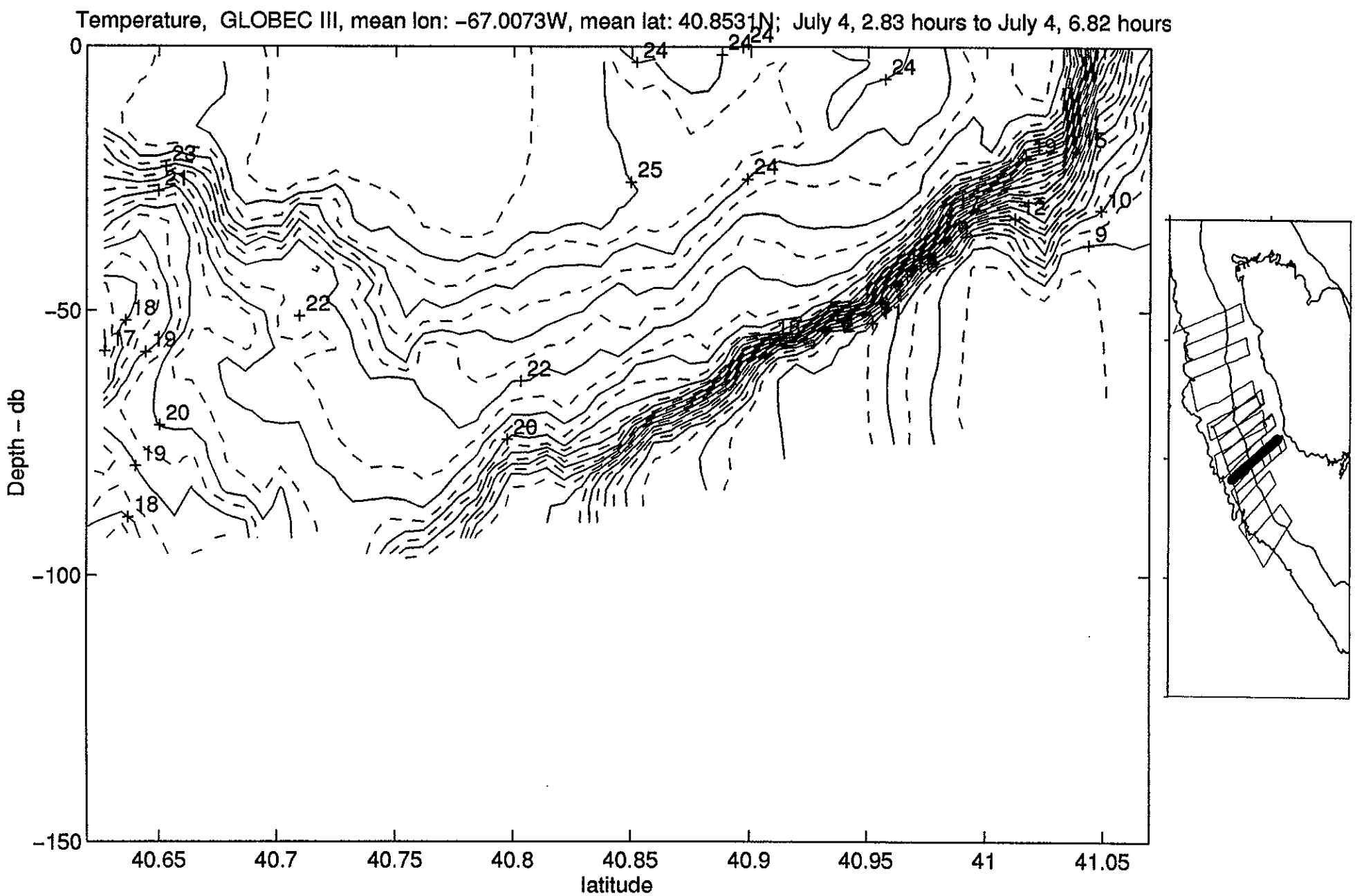

Seasoar Track, GLOBEC III, mean lon: −67.1135W, mean lat: 40.8107N; July 3, 21.19 hours to July 4, 2.14 hours
0
−50
−100
−150
Depth − [db]
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

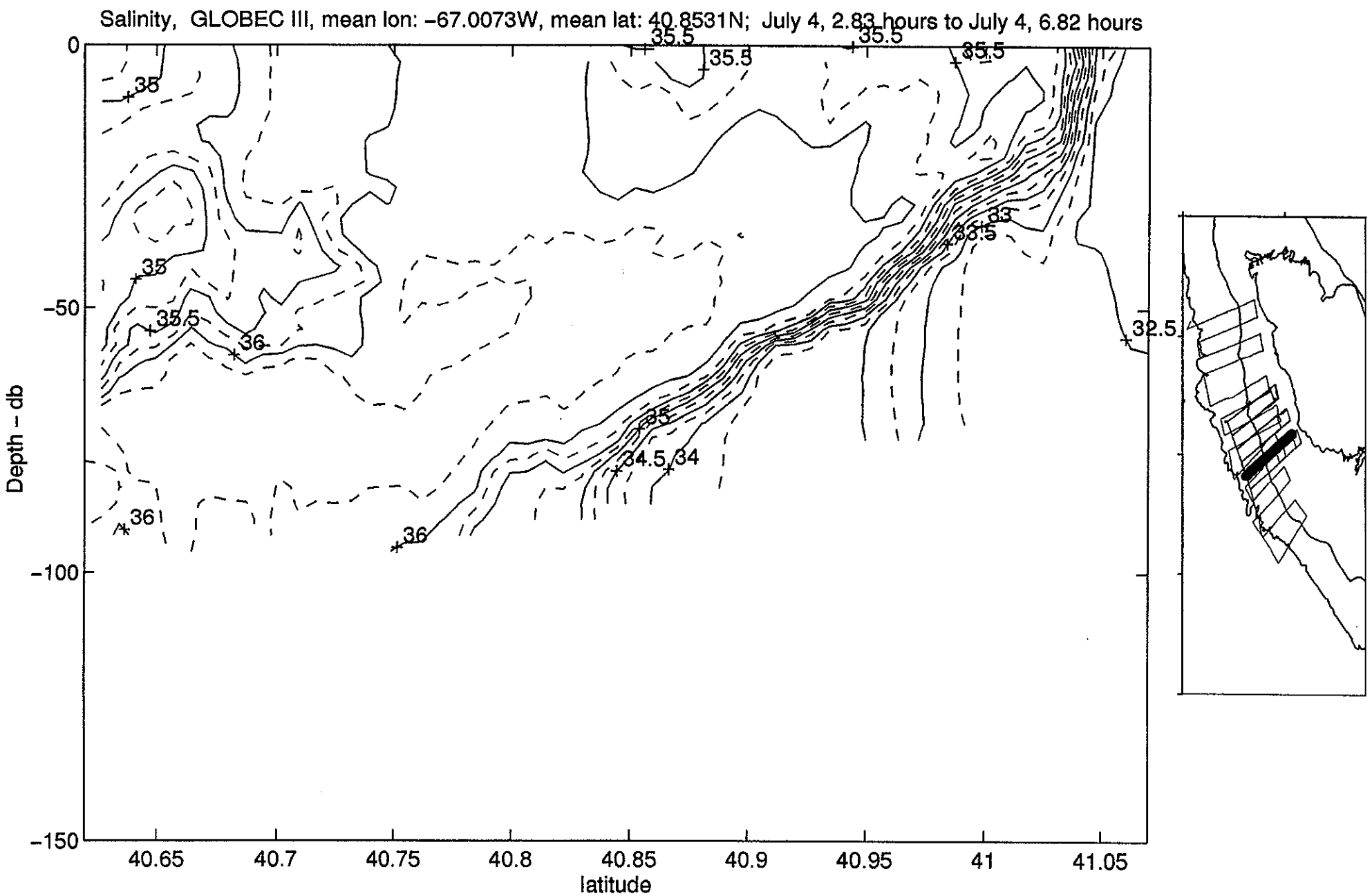

Temperature, GLOBEC III, mean lon: -67.1135W, mean lat: 40.8107N; July 3, 21.19 hours to July 4, 2.14 hours
0
-50
-100
-150
Depth - db
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

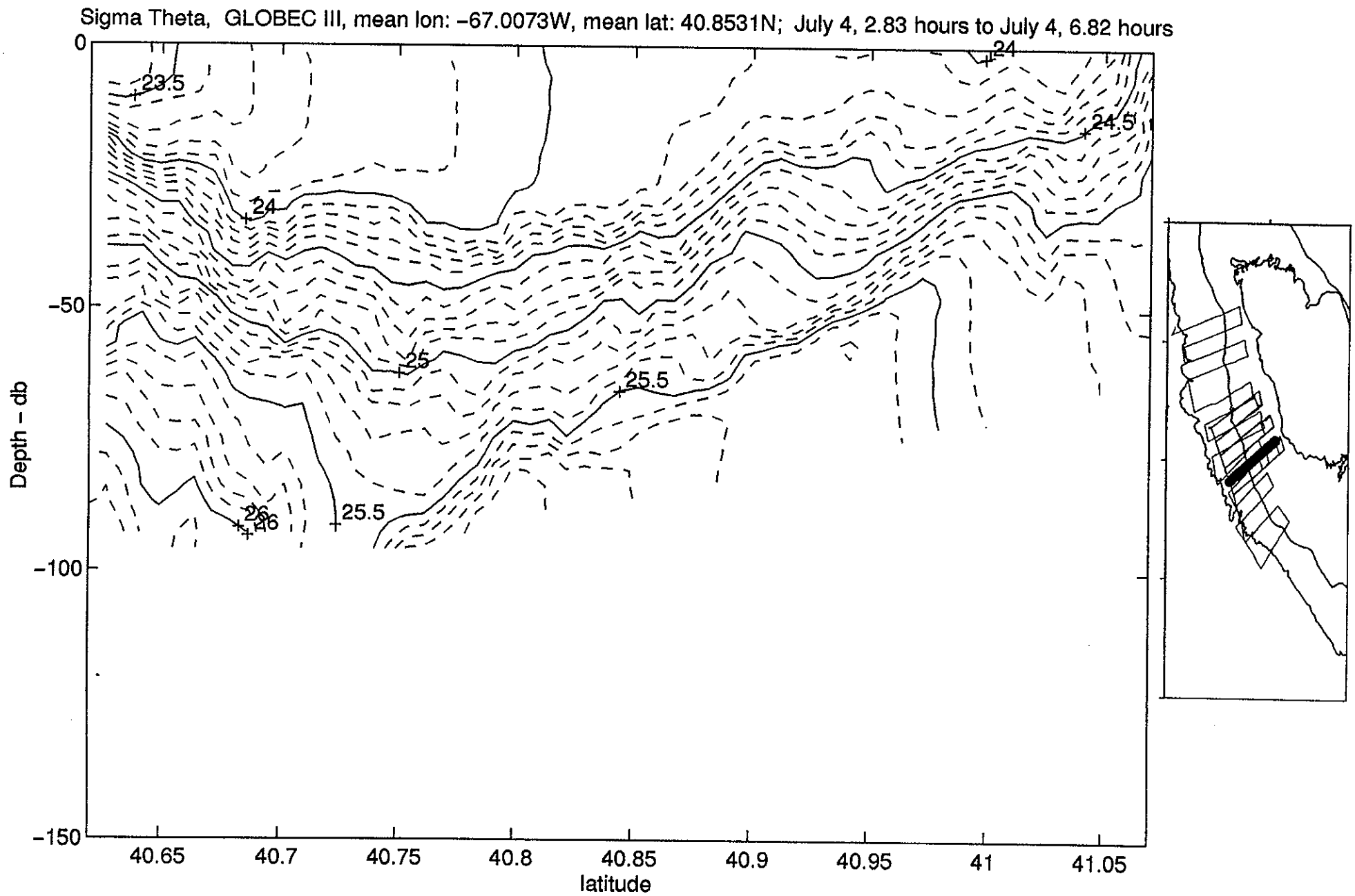

Salinity, GLOBEC III, mean lon: −67.1135W, mean lat: 40.8107N; July 3, 21.19 hours to July 4, 2.14 hours
Depth – db
latitude
0
−50
−100
−150
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
35
33.5
34
34.5
33
36
32.5
35.5

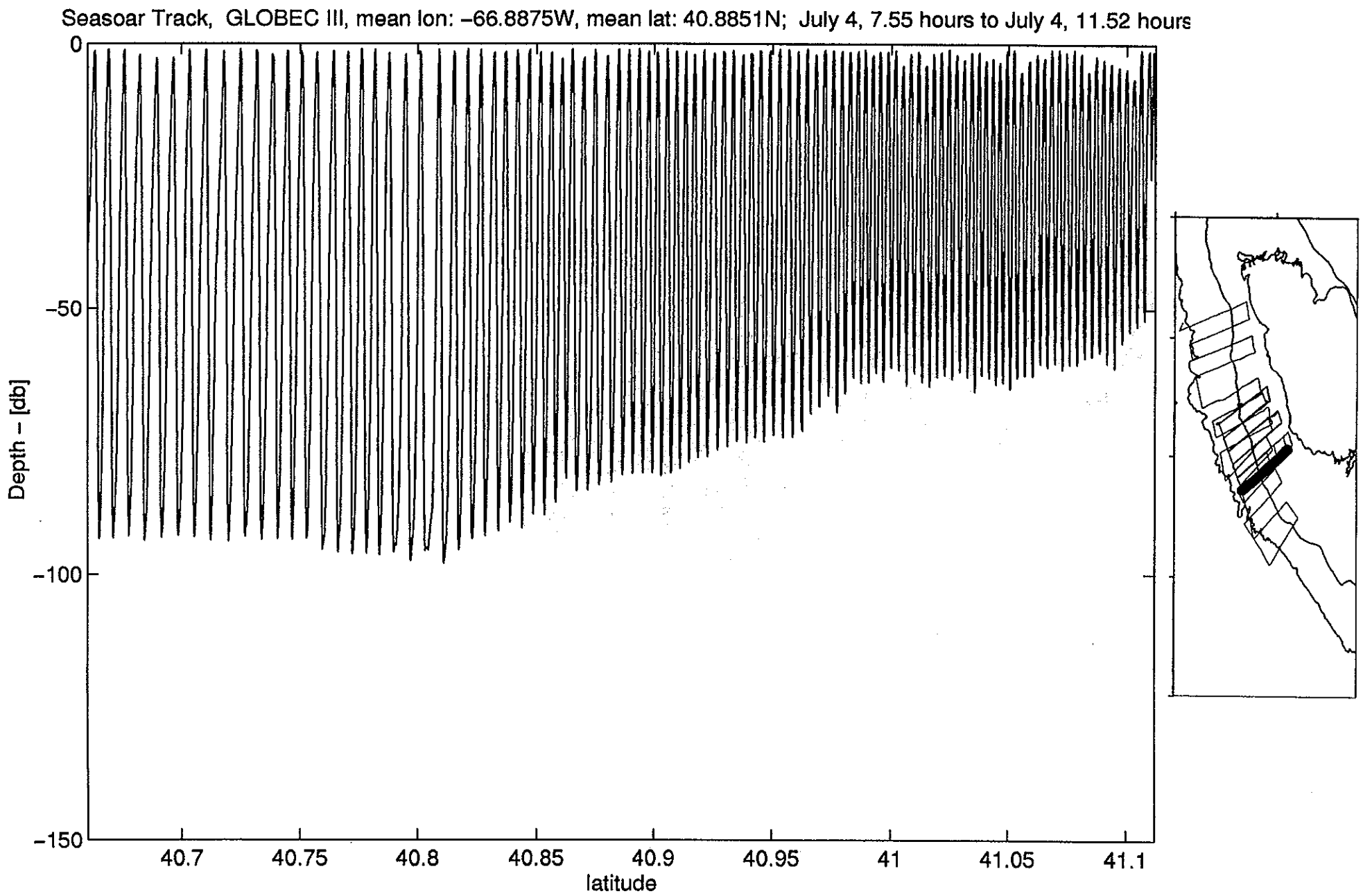

Sigma Theta, GLOBEC III, mean lon: -67.1135W, mean lat: 40.8107N; July 3, 21.19 hours to July 4, 2.14 hours
0
-50
-100
-150
Depth - db
24
24
24
24
25
24.5
25.5
26
26
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

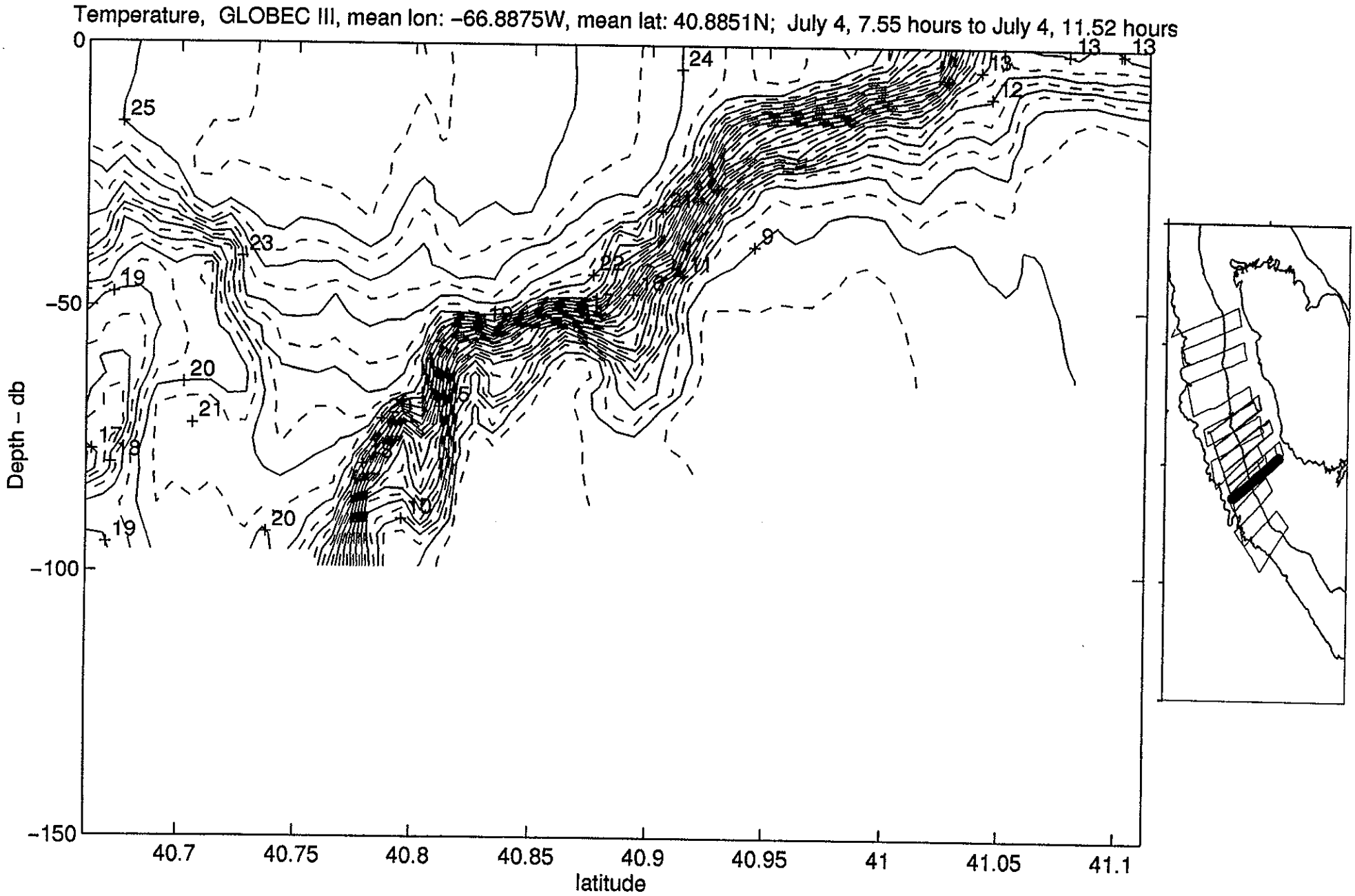

Seasoar Track, GLOBEC III, mean lon: −67.0073W, mean lat: 40.8531N; July 4, 2.83 hours to July 4, 6.82 hours
0
−50
−100
−150
Depth − [db]
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

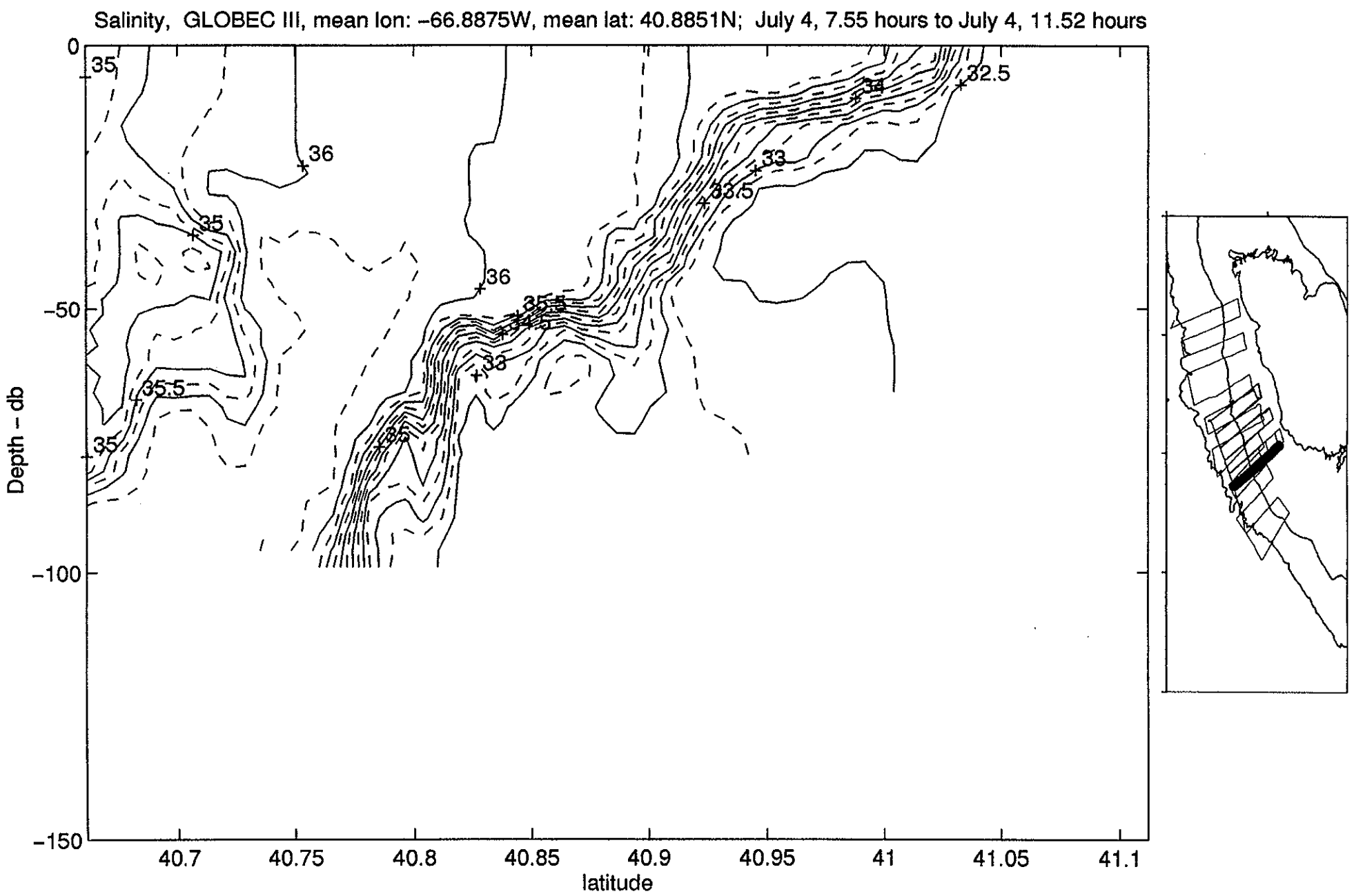

Temperature, GLOBEC III, mean lon: -67.0073W, mean lat: 40.8531N; July 4, 2.83 hours to July 4, 6.82 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

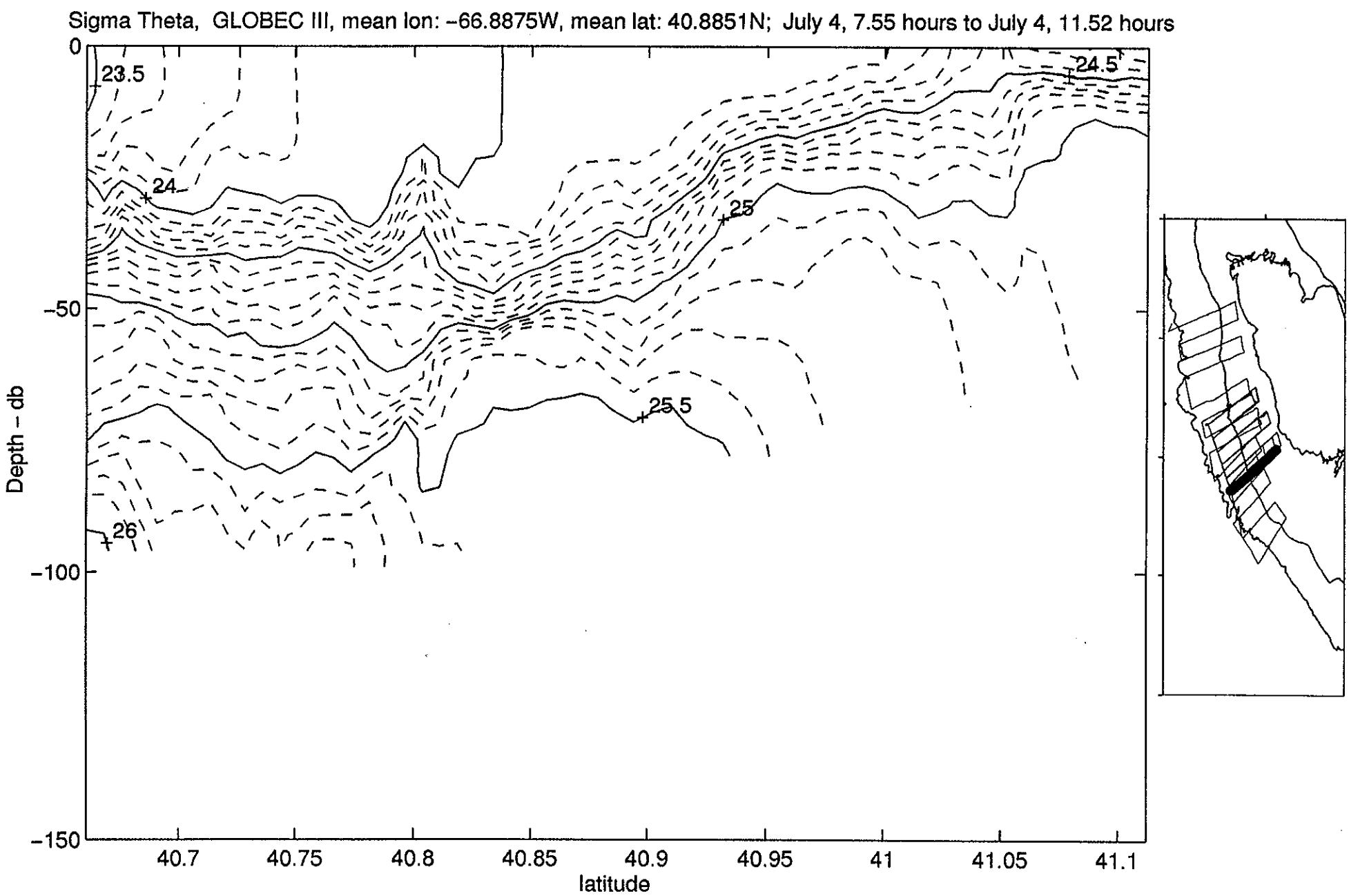

Salinity, GLOBEC III, mean lon: -67.0073W, mean lat: 40.8531N; July 4, 2.83 hours to July 4, 6.82 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude
35.5
35
36
34.5
34
33
33.5
32.5
36

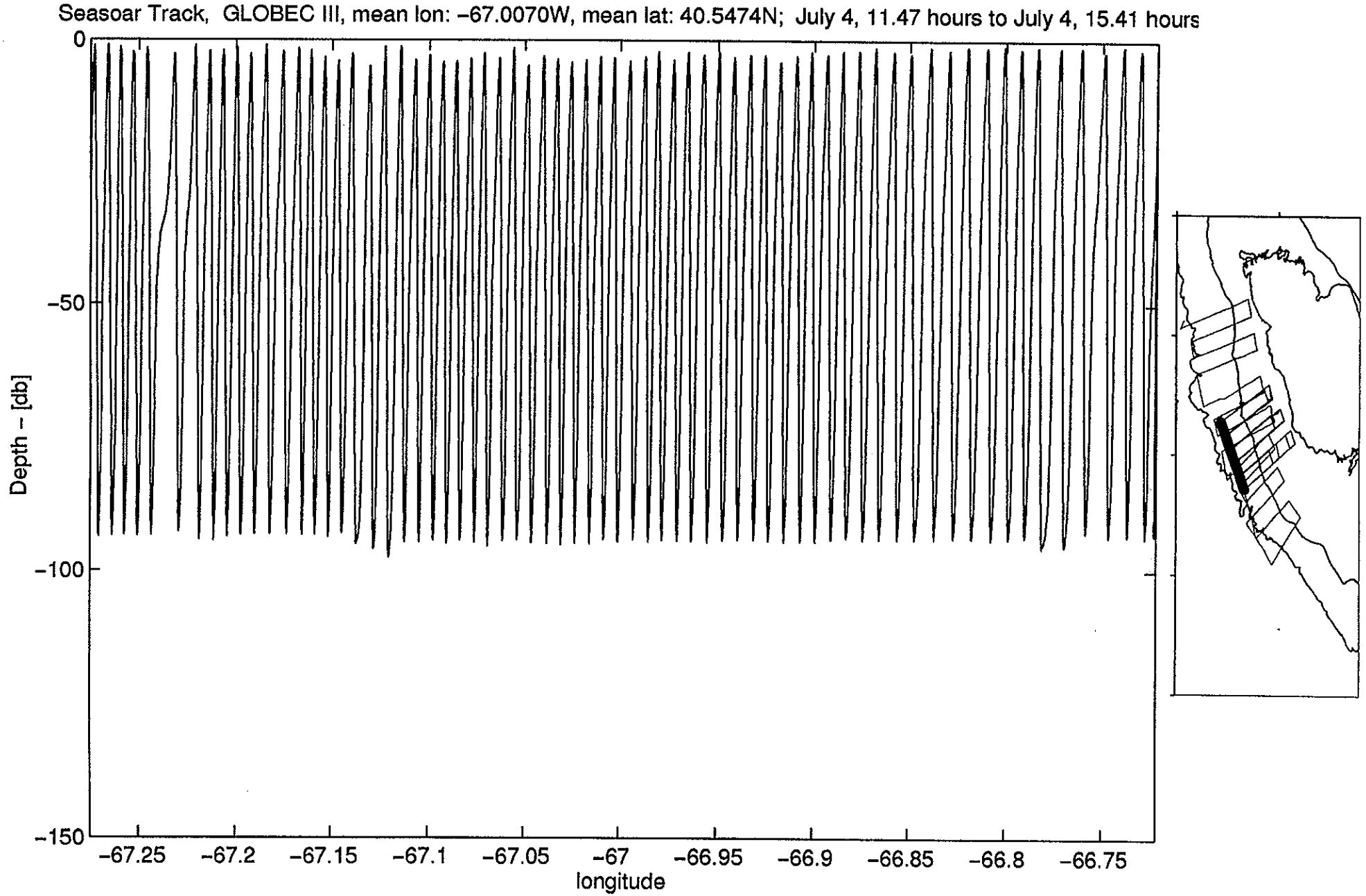

Sigma Theta, GLOBEC III, mean lon: -67.0073W, mean lat: 40.8531N; July 4, 2.83 hours to July 4, 6.82 hours
0
-50
-100
-150
Depth - db
23.5
24
24
24.5
25
25.5
25.5
26
26
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

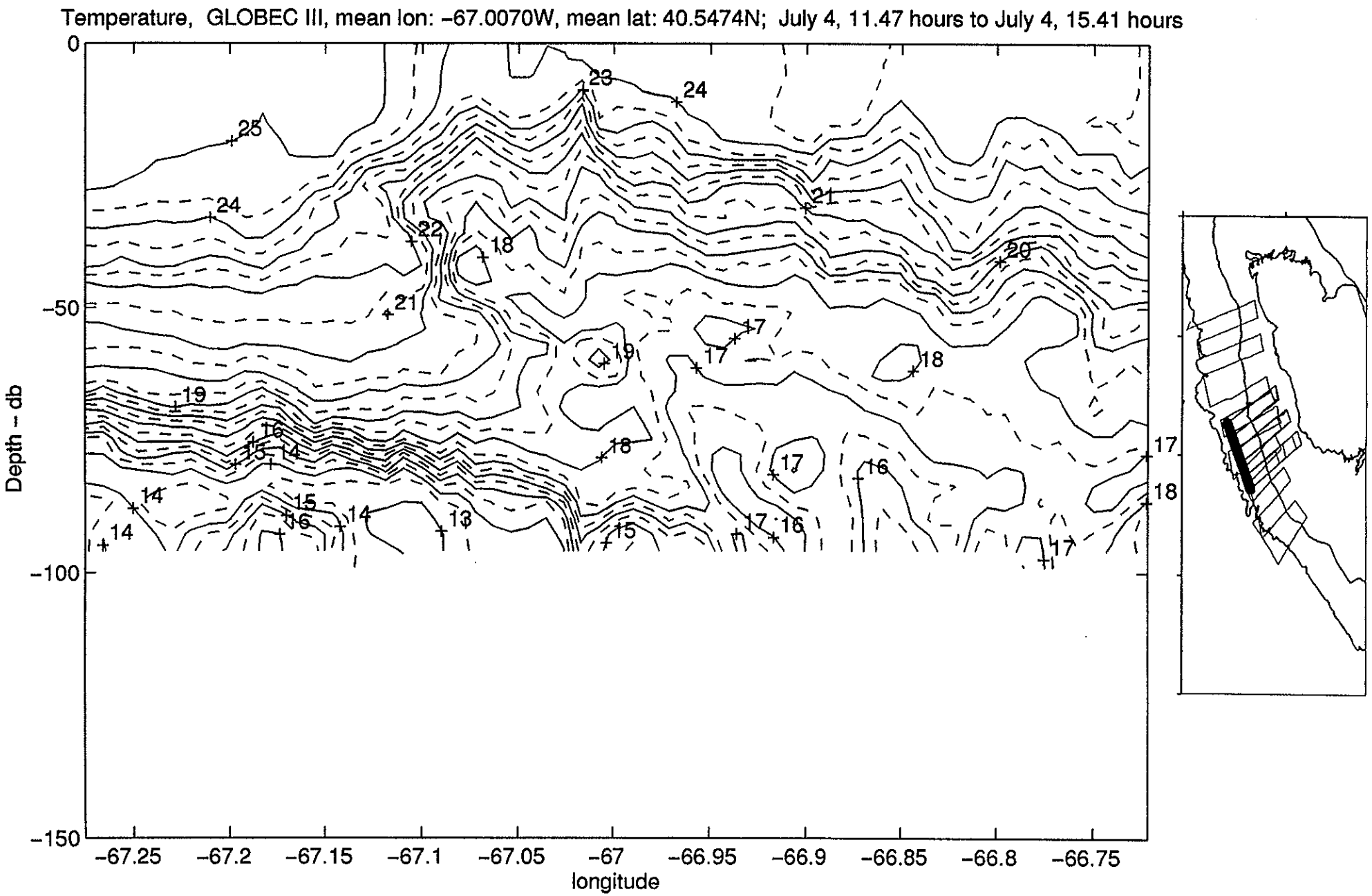

Seasoar Track, GLOBEC III, mean lon: −66.8875W, mean lat: 40.8851N; July 4, 7.55 hours to July 4, 11.52 hours
0
−50
−100
−150
Depth − [db]
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude

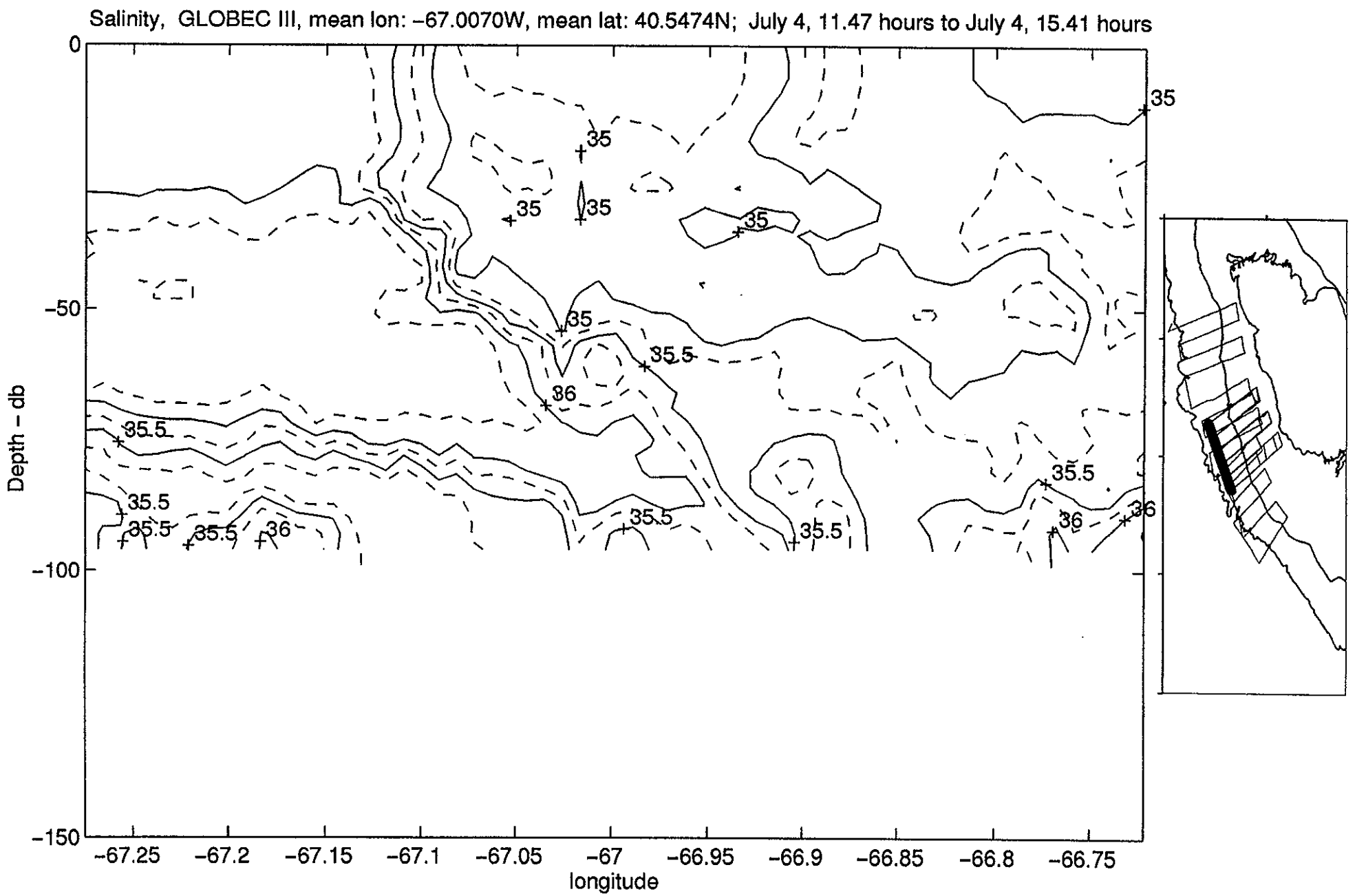

Temperature, GLOBEC III, mean lon: −66.8875W, mean lat: 40.8851N; July 4, 7.55 hours to July 4, 11.52 hours
0
−50
−100
−150
Depth – db
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude

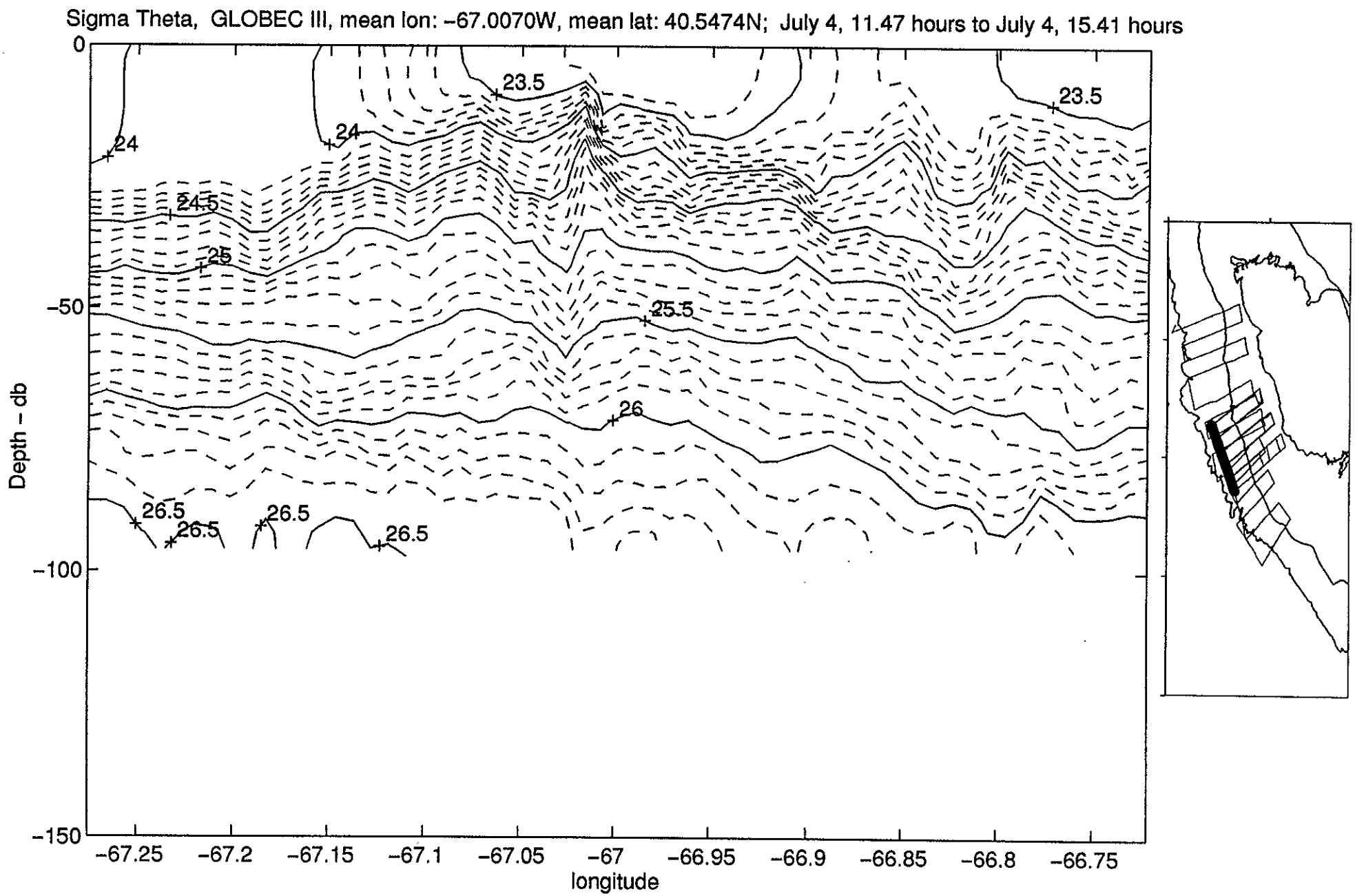

Salinity, GLOBEC III, mean lon: -66.8875W, mean lat: 40.8851N; July 4, 7.55 hours to July 4, 11.52 hours
0
-50
-100
-150
Depth - db
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude
35
36
35.5
34
33
33.5
32.5

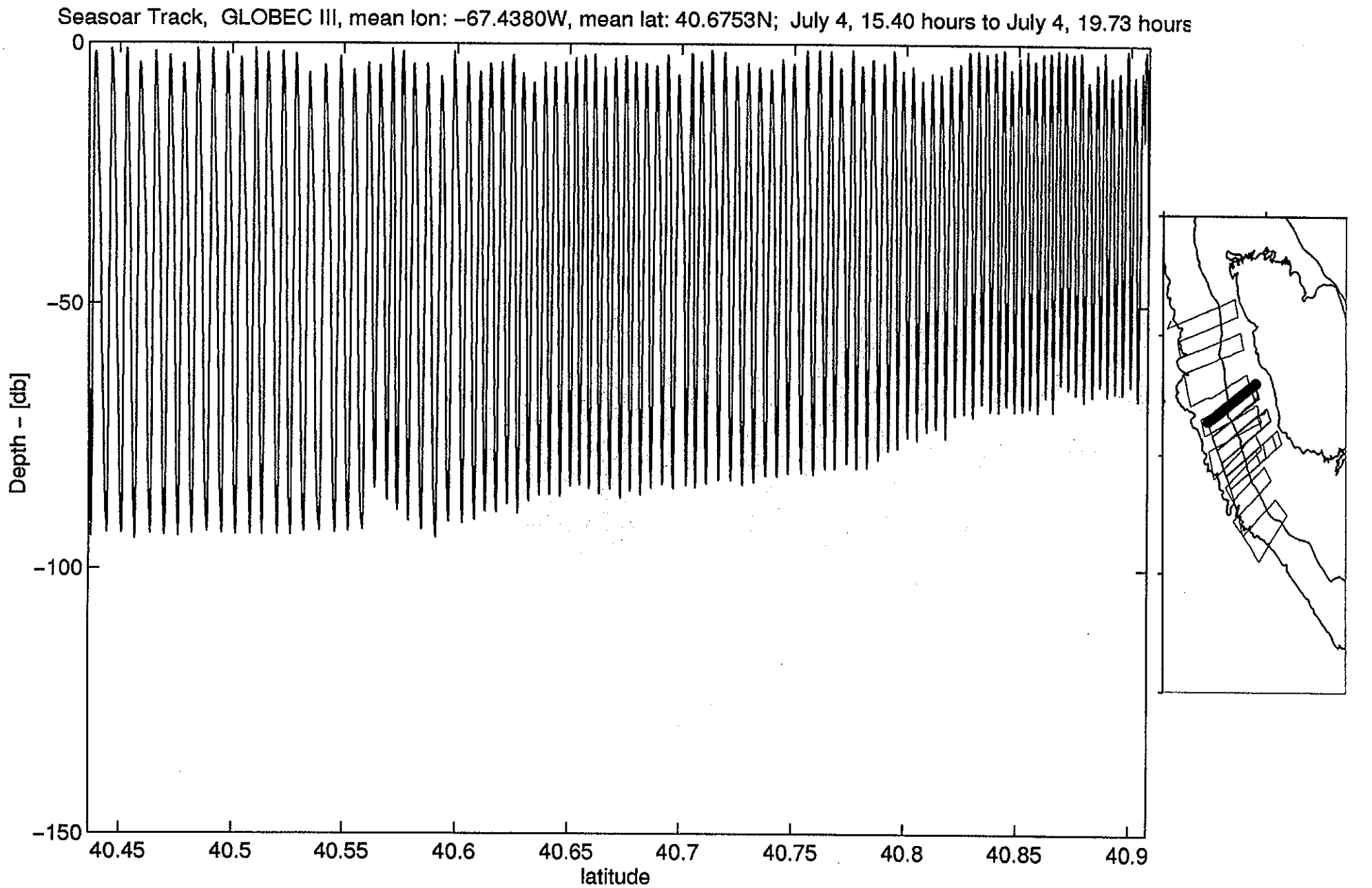

Sigma Theta, GLOBEC III, mean lon: -66.8875W, mean lat: 40.8851N; July 4, 7.55 hours to July 4, 11.52 hours
0
-50
-100
-150
Depth - db
23.5
24
25
24.5
25.5
26
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude

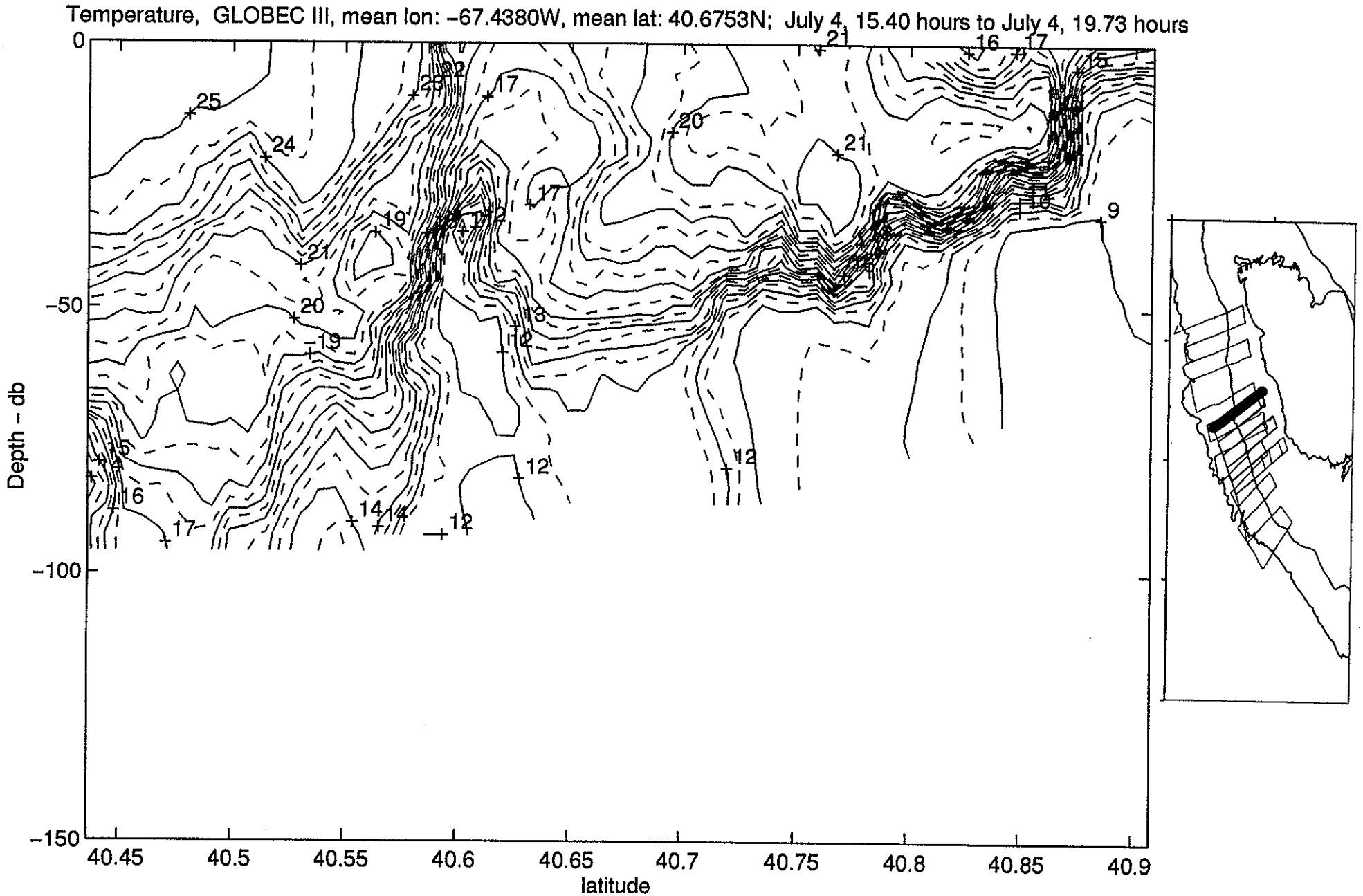

Seasoar Track, GLOBEC III, mean lon: −67.0070W, mean lat: 40.5474N; July 4, 11.47 hours to July 4, 15.41 hours
0
−50
−100
−150
Depth − [db]
−67.25
−67.2
−67.15
−67.1
−67.05
−67
−66.95
−66.9
−66.85
−66.8
−66.75
longitude

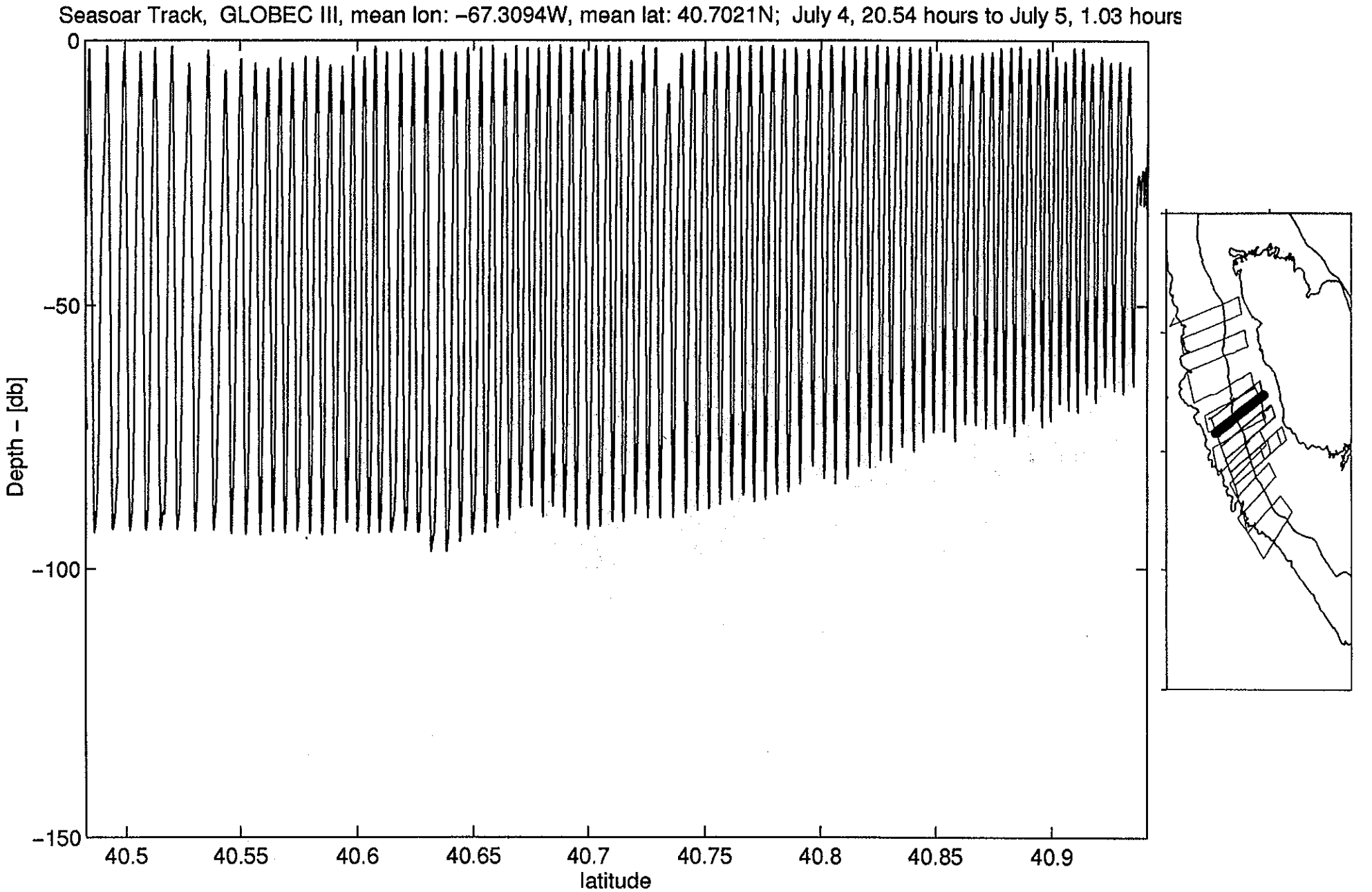

Temperature, GLOBEC III, mean lon: -67.0070W, mean lat: 40.5474N; July 4, 11.47 hours to July 4, 15.41 hours
Depth - db
0
-50
-100
-150
-67.25
-67.2
-67.15
-67.1
-67.05
-67
-66.95
-66.9
-66.85
-66.8
-66.75
longitude

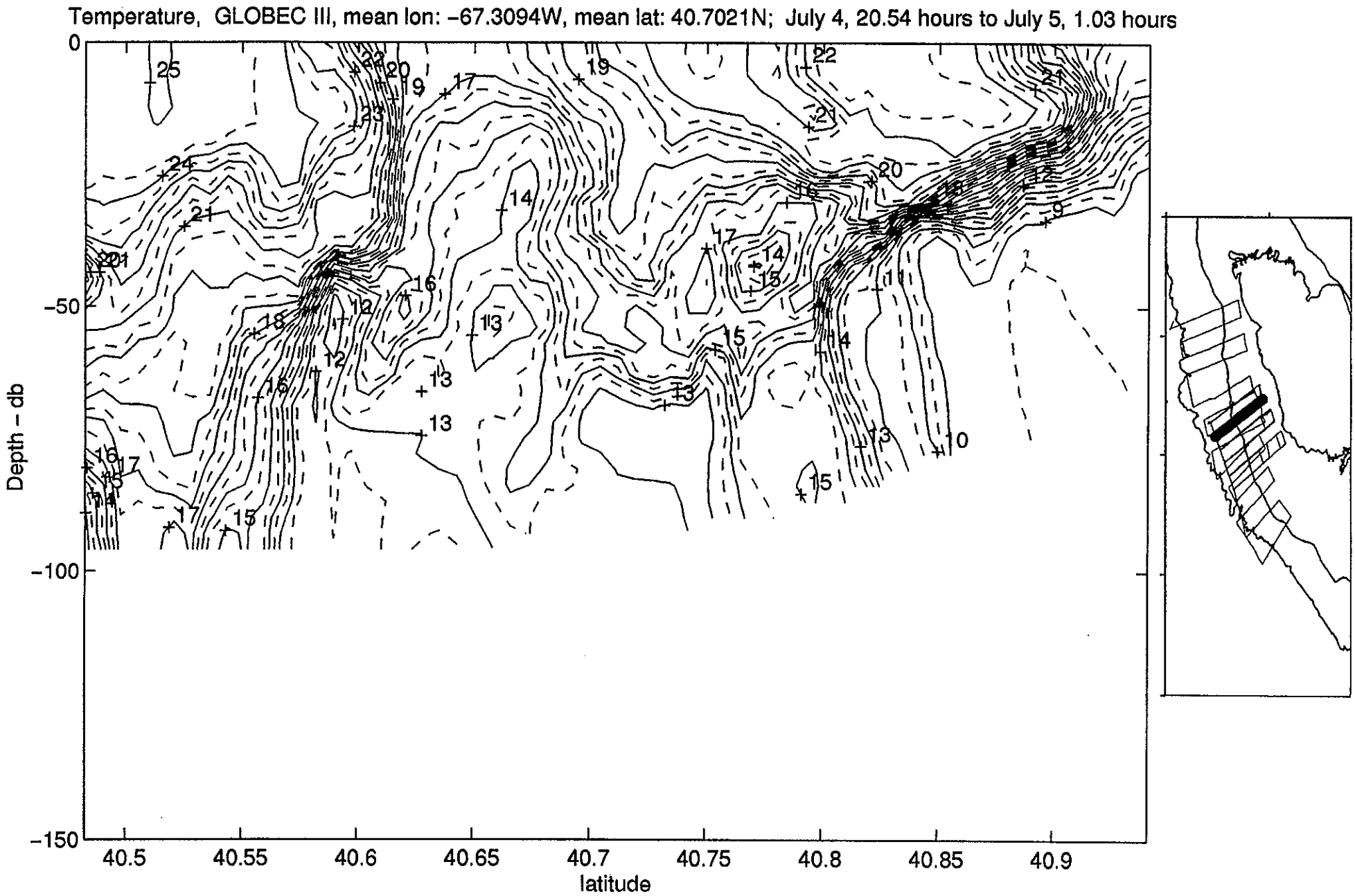

Salinity, GLOBEC III, mean lon: −67.0070W, mean lat: 40.5474N; July 4, 11.47 hours to July 4, 15.41 hours
0
−50
−100
−150
Depth − db
−67.25
−67.2
−67.15
−67.1
−67.05
−67
−66.95
−66.9
−66.85
−66.8
−66.75
longitude
35
35.5
36

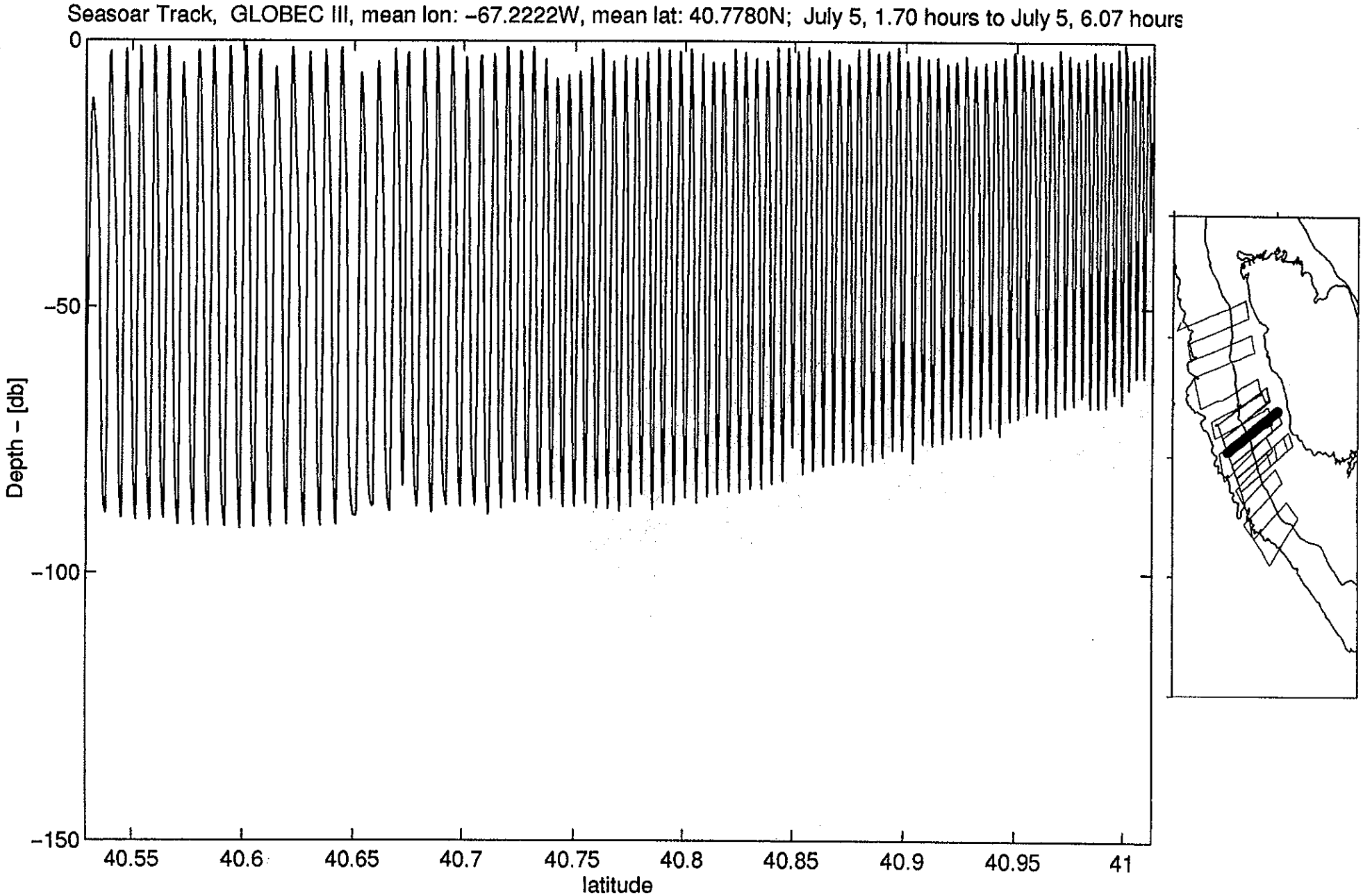

Sigma Theta, GLOBEC III, mean lon: -67.0070W, mean lat: 40.5474N; July 4, 11.47 hours to July 4, 15.41 hours
0
-50
-100
-150
Depth - db
23.5
24
24.5
25
25.5
26
26.5
-67.25
-67.2
-67.15
-67.1
-67.05
-67
-66.95
-66.9
-66.85
-66.8
-66.75
longitude

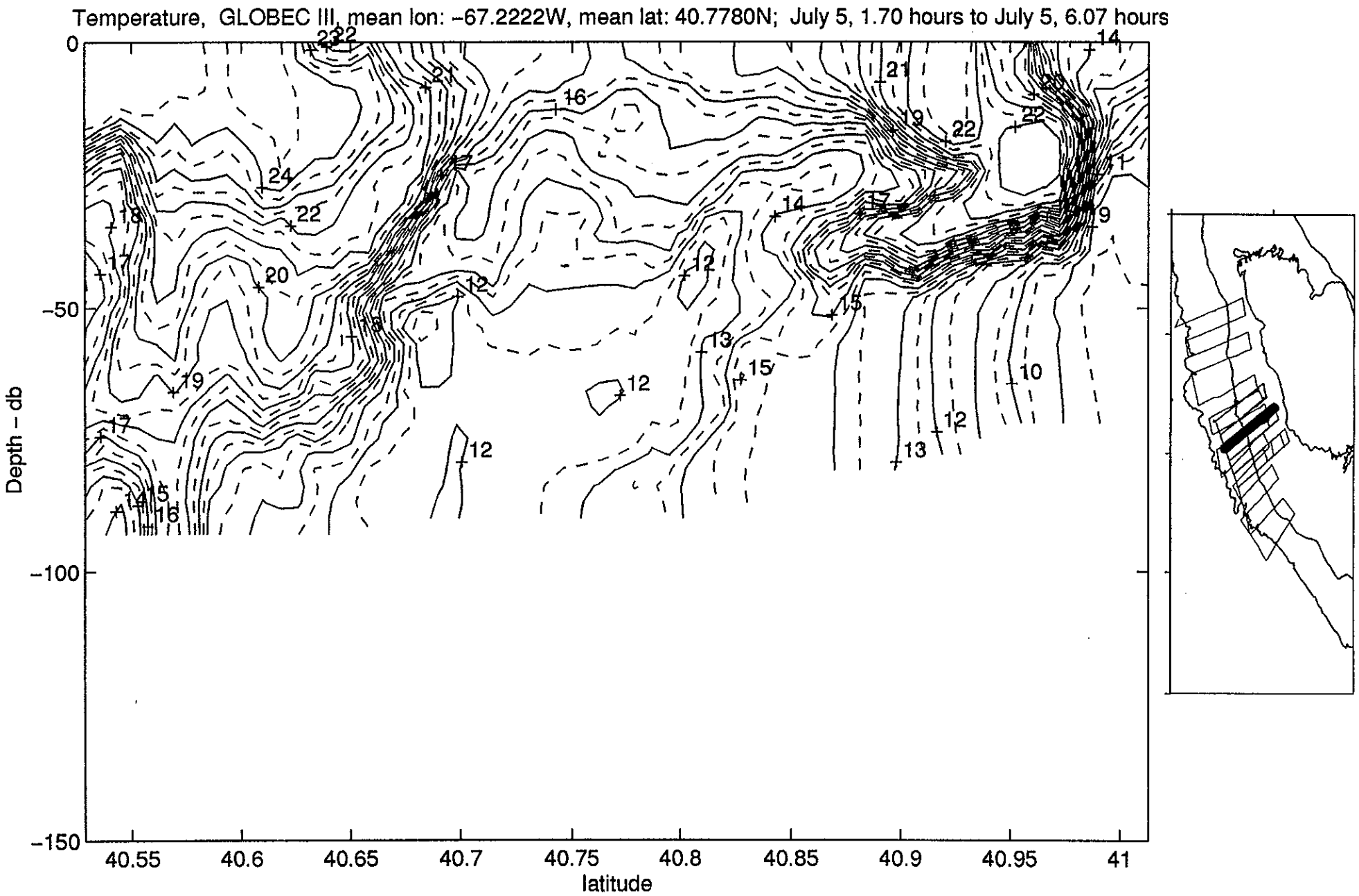

Seasoar Track, GLOBEC III, mean lon: -67.4380W, mean lat: 40.6753N; July 4, 15.40 hours to July 4, 19.73 hours
0
-50
-100
-150
Depth - [db]
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

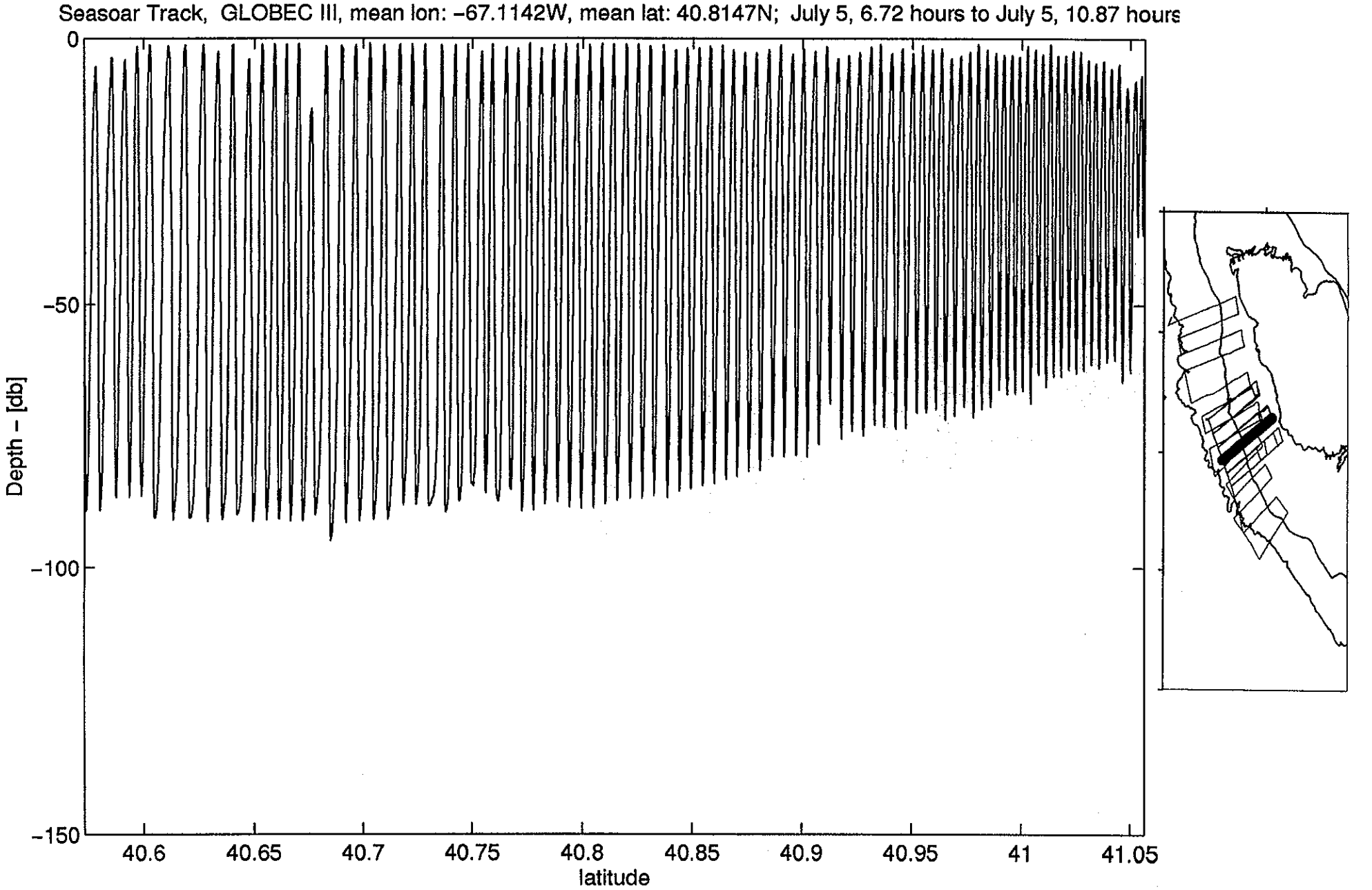

Temperature, GLOBEC III, mean lon: -67.4380W, mean lat: 40.6753N; July 4, 15.40 hours to July 4, 19.73 hours
Depth - db
0
-50
-100
-150
40.45
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

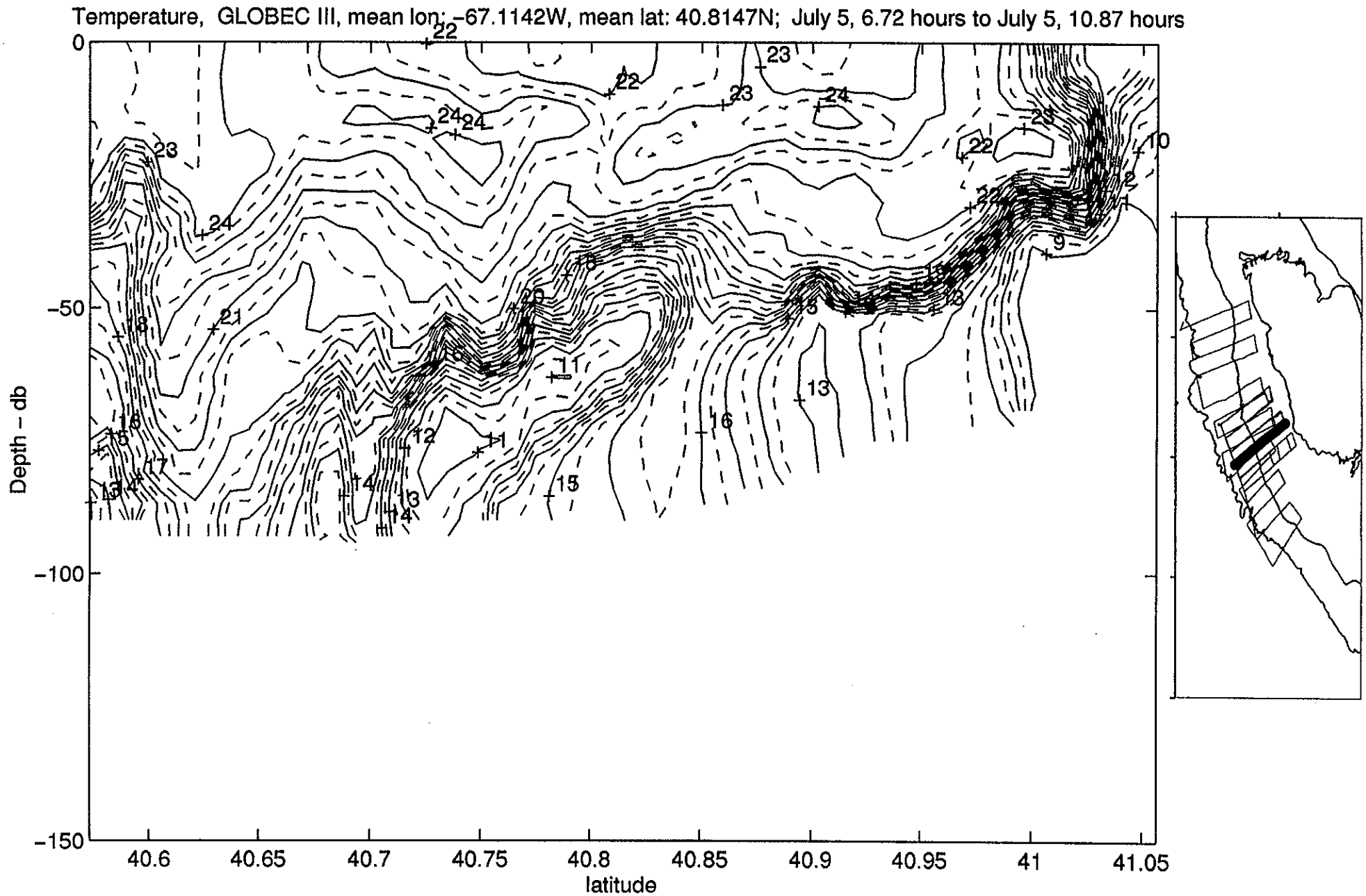

Seasoar Track, GLOBEC III, mean lon: −67.3094W, mean lat: 40.7021N; July 4, 20.54 hours to July 5, 1.03 hours
0
−50
−100
−150
Depth − [db]
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

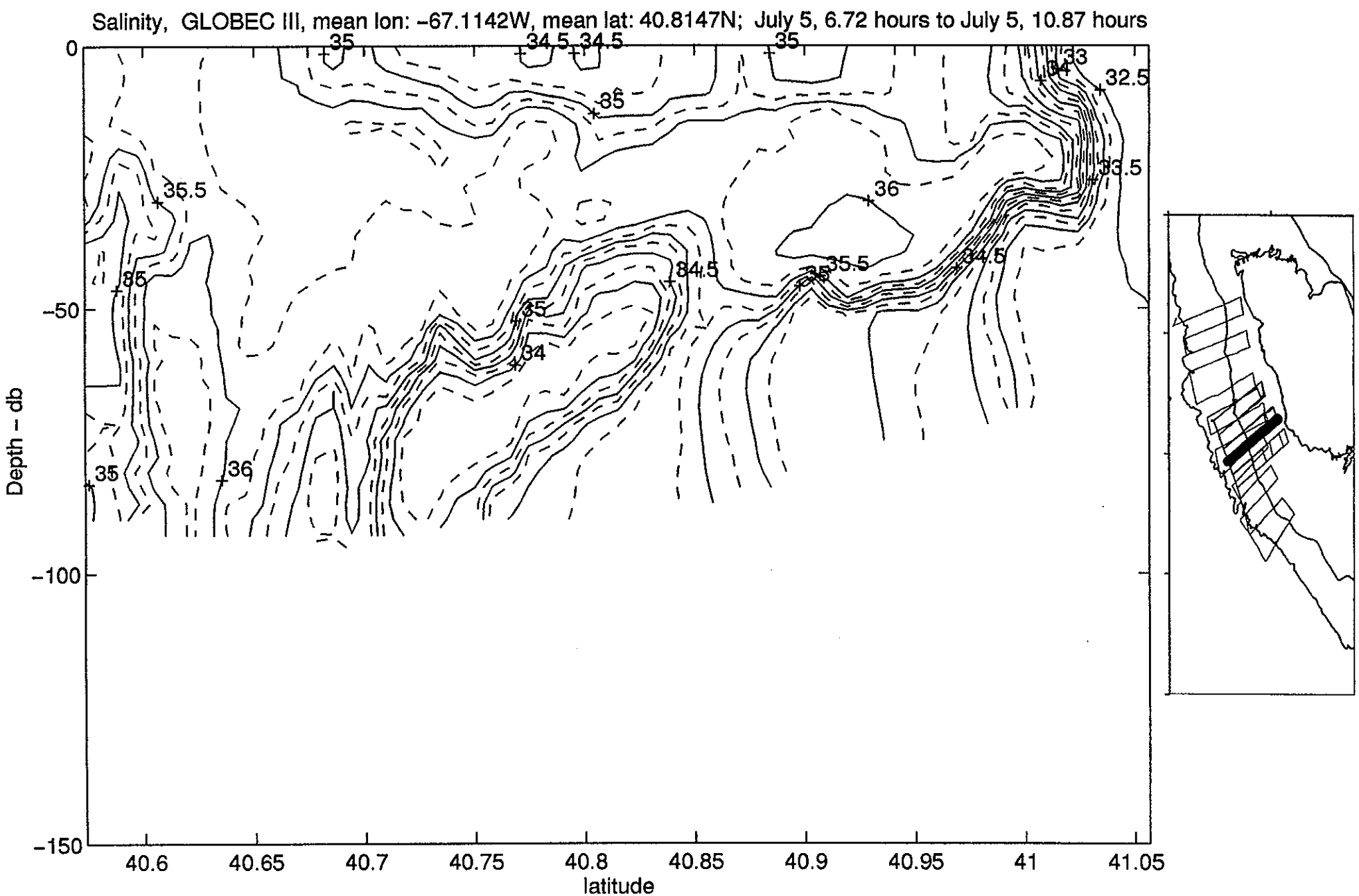

Temperature, GLOBEC III, mean lon: -67.3094W, mean lat: 40.7021N; July 4, 20.54 hours to July 5, 1.03 hours
0
-50
-100
-150
Depth - db
40.5
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
latitude

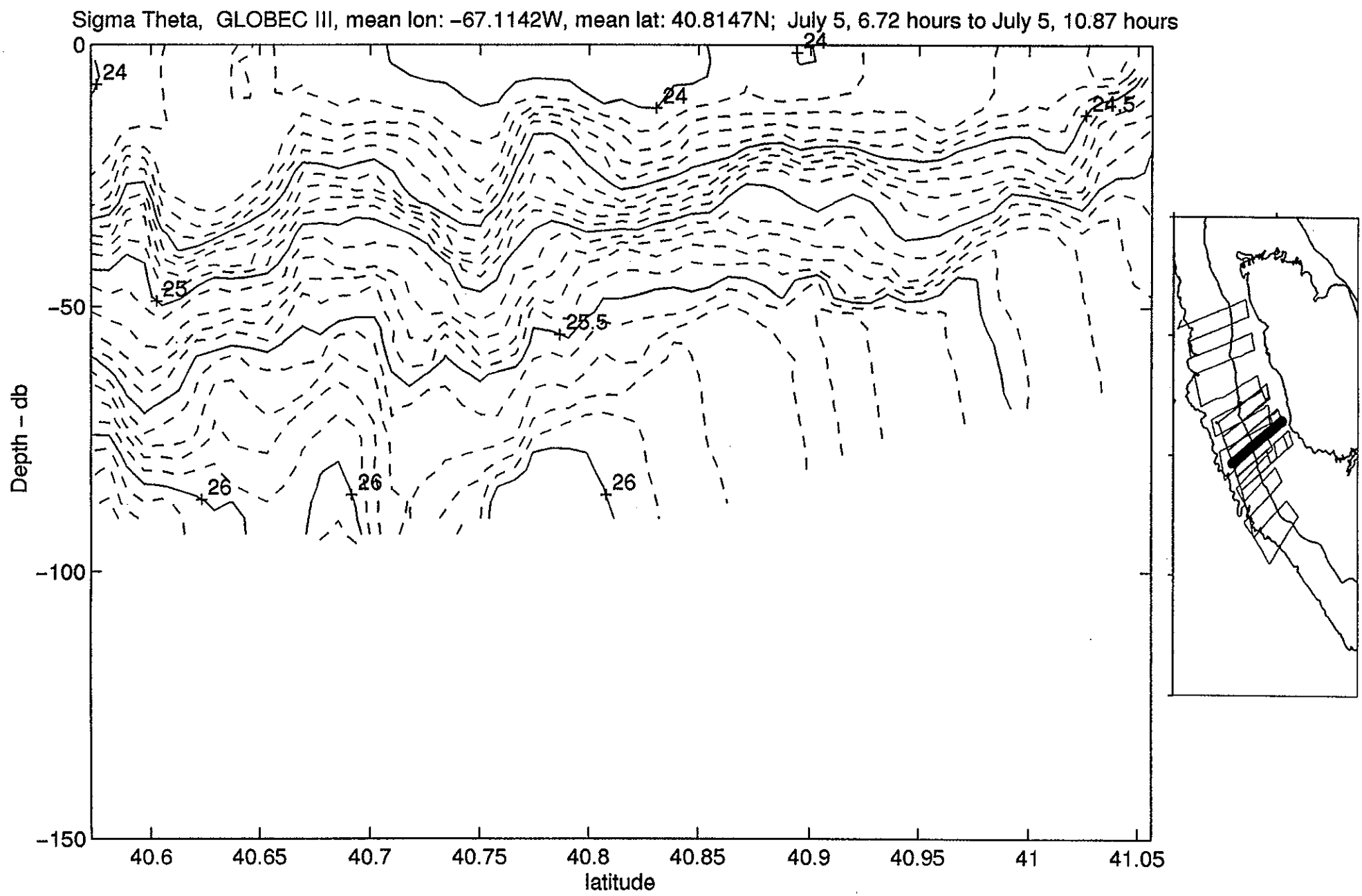

Seasoar Track, GLOBEC III, mean lon: -67.2222W, mean lat: 40.7780N; July 5, 1.70 hours to July 5, 6.07 hours
0
-50
-100
-150
Depth - [db]
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
latitude

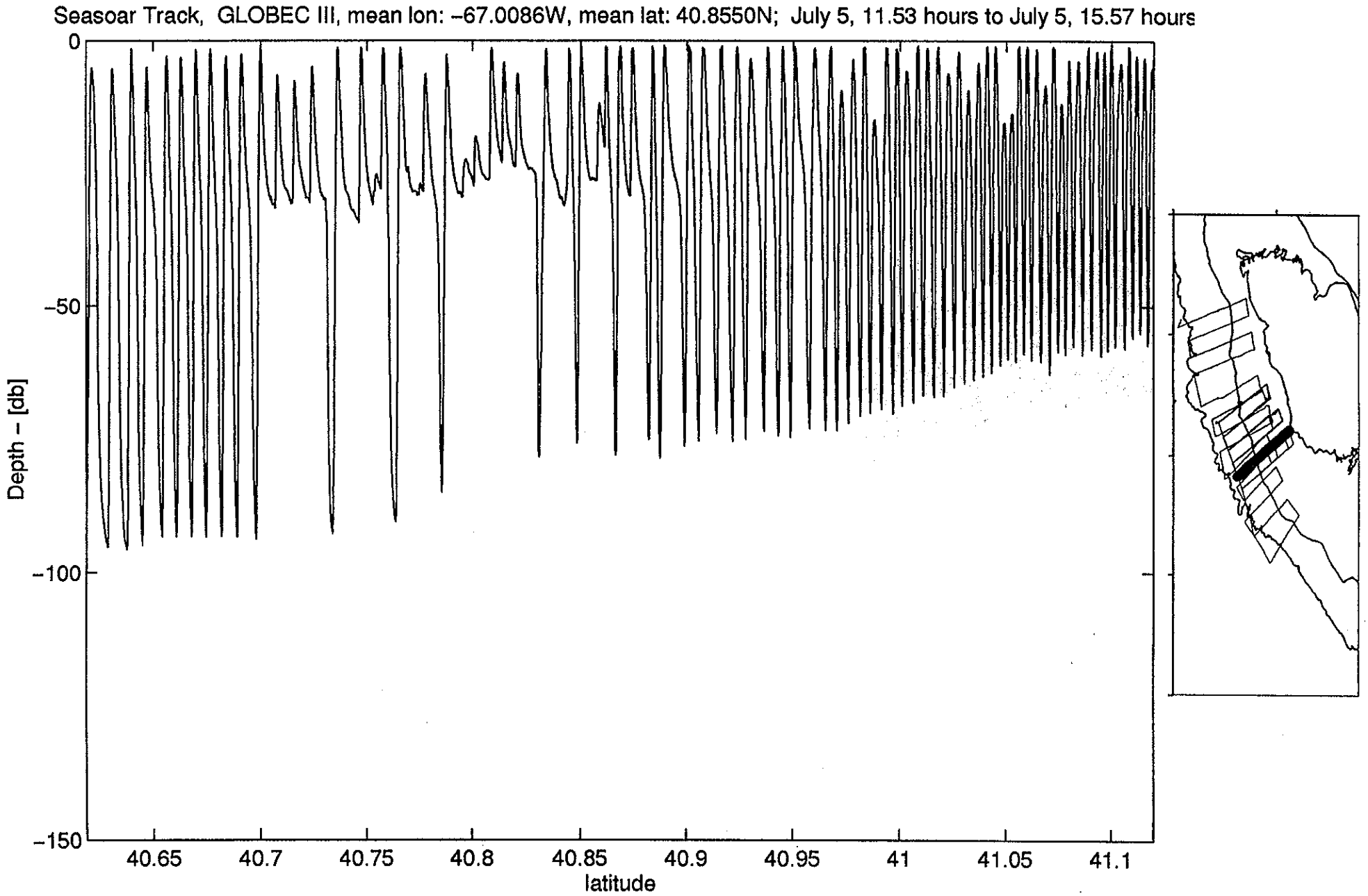

Temperature, GLOBEC III, mean lon: −67.2222W, mean lat: 40.7780N; July 5, 1.70 hours to July 5, 6.07 hours
0
−50
−100
−150
Depth − db
40.55
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
latitude

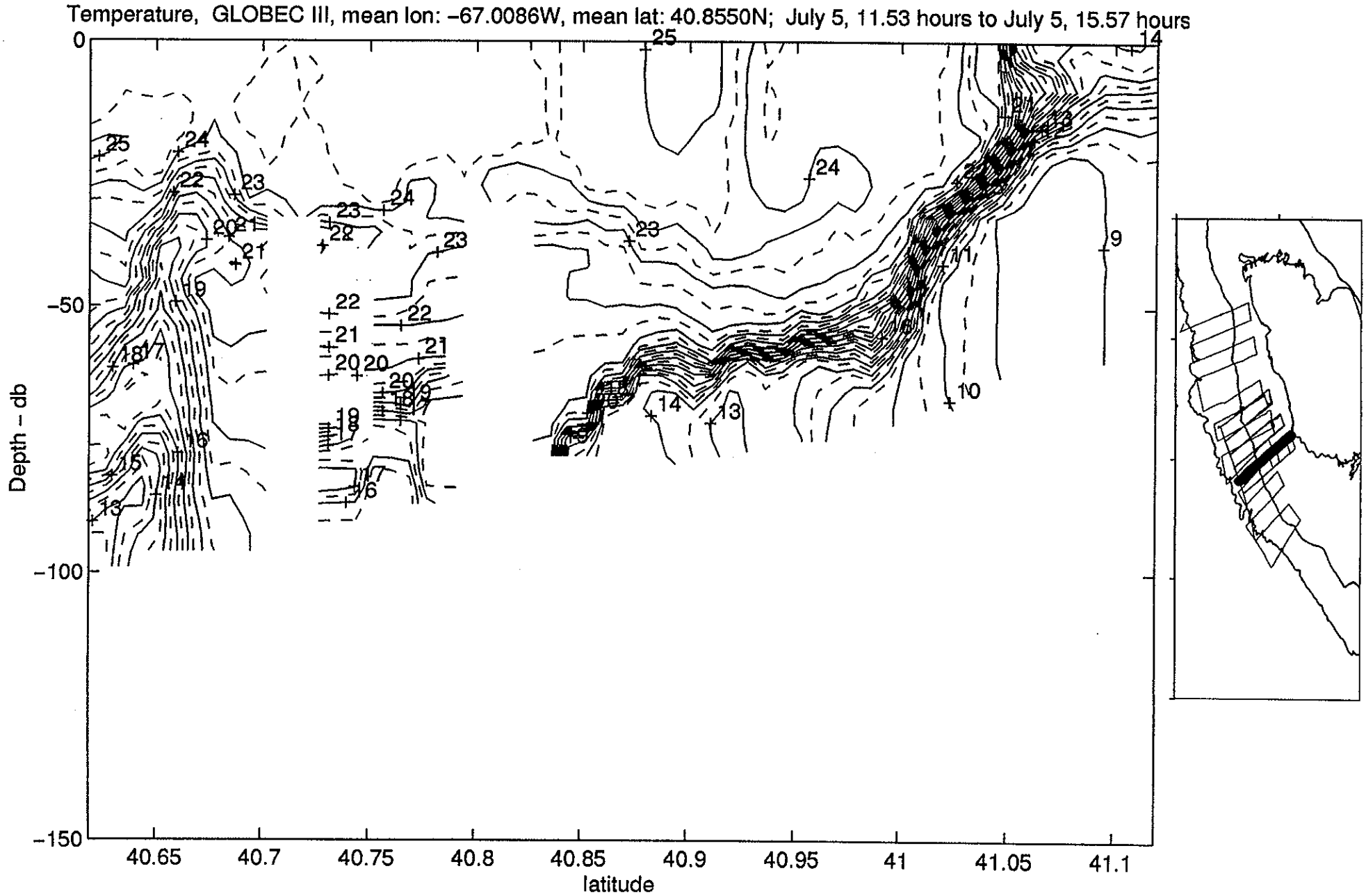

Seasoar Track, GLOBEC III, mean lon: -67.1142W, mean lat: 40.8147N; July 5, 6.72 hours to July 5, 10.87 hours
0
-50
-100
-150
Depth - [db]
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

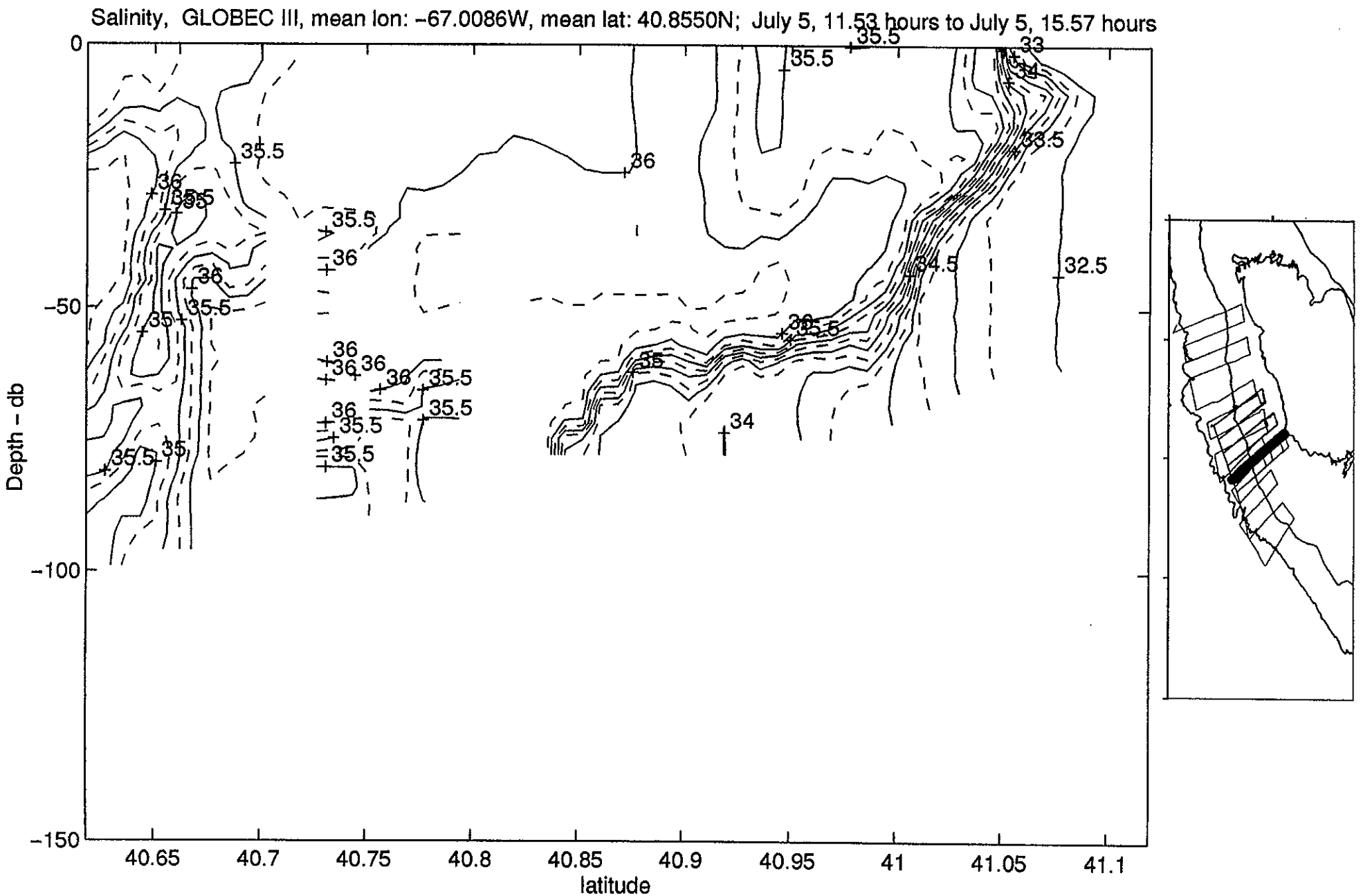

Temperature, GLOBEC III, mean lon: -67.1142W, mean lat: 40.8147N; July 5, 6.72 hours to July 5, 10.87 hours
0
-50
-100
-150
Depth - db
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude

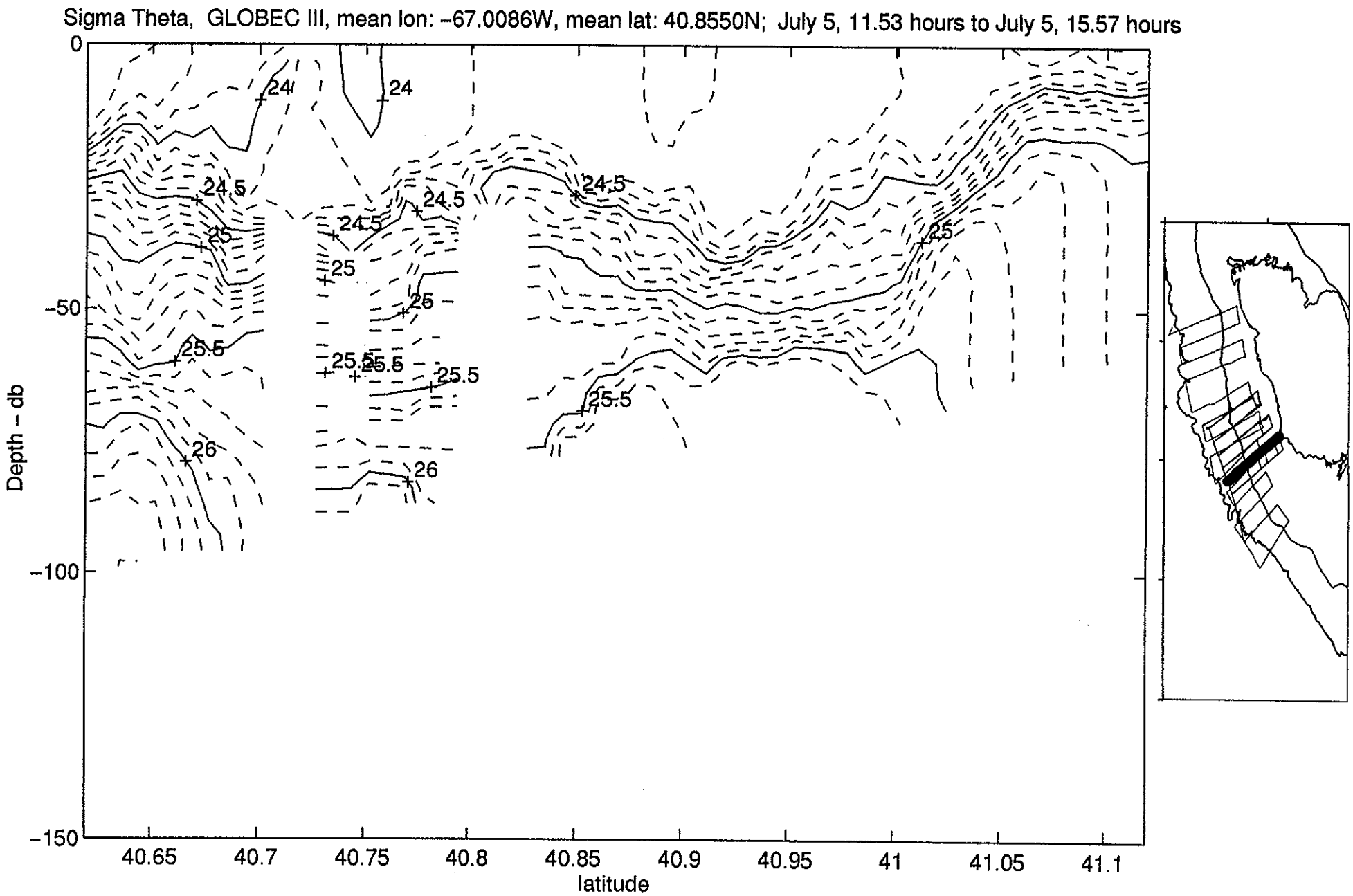

Salinity, GLOBEC III, mean lon: -67.1142W, mean lat: 40.8147N; July 5, 6.72 hours to July 5, 10.87 hours
Depth – db
latitude
0
-50
-100
-150
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
35
34.5
34.5
35
33
34
32.5
35
33.5
35.5
36
34.5
35.5
34.5
35
35
34
35
36


Sigma Theta, GLOBEC III, mean lon: -67.1142W, mean lat: 40.8147N; July 5, 6.72 hours to July 5, 10.87 hours
0
-50
-100
-150
Depth - db
24
24
24
24.5
25
25.5
26
26
26
40.6
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
latitude


Seasoar Track, GLOBEC III, mean lon: −67.0086W, mean lat: 40.8550N; July 5, 11.53 hours to July 5, 15.57 hours
0
−50
−100
−150
Depth − [db]
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude


Temperature, GLOBEC III, mean lon: −67.0086W, mean lat: 40.8550N; July 5, 11.53 hours to July 5, 15.57 hours
Depth - db
0
−50
−100
−150
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude


Salinity, GLOBEC III, mean lon: -67.0086W, mean lat: 40.8550N; July 5, 11.53 hours to July 5, 15.57 hours
Depth - db
latitude
0
-50
-100
-150
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
35.5
36
34
33
33.5
34.5
32.5
35


Sigma Theta, GLOBEC III, mean lon: -67.0086W, mean lat: 40.8550N; July 5, 11.53 hours to July 5, 15.57 hours
0
-50
-100
-150
Depth - db
40.65
40.7
40.75
40.8
40.85
40.9
40.95
41
41.05
41.1
latitude
24
24.5
25
25.5
26

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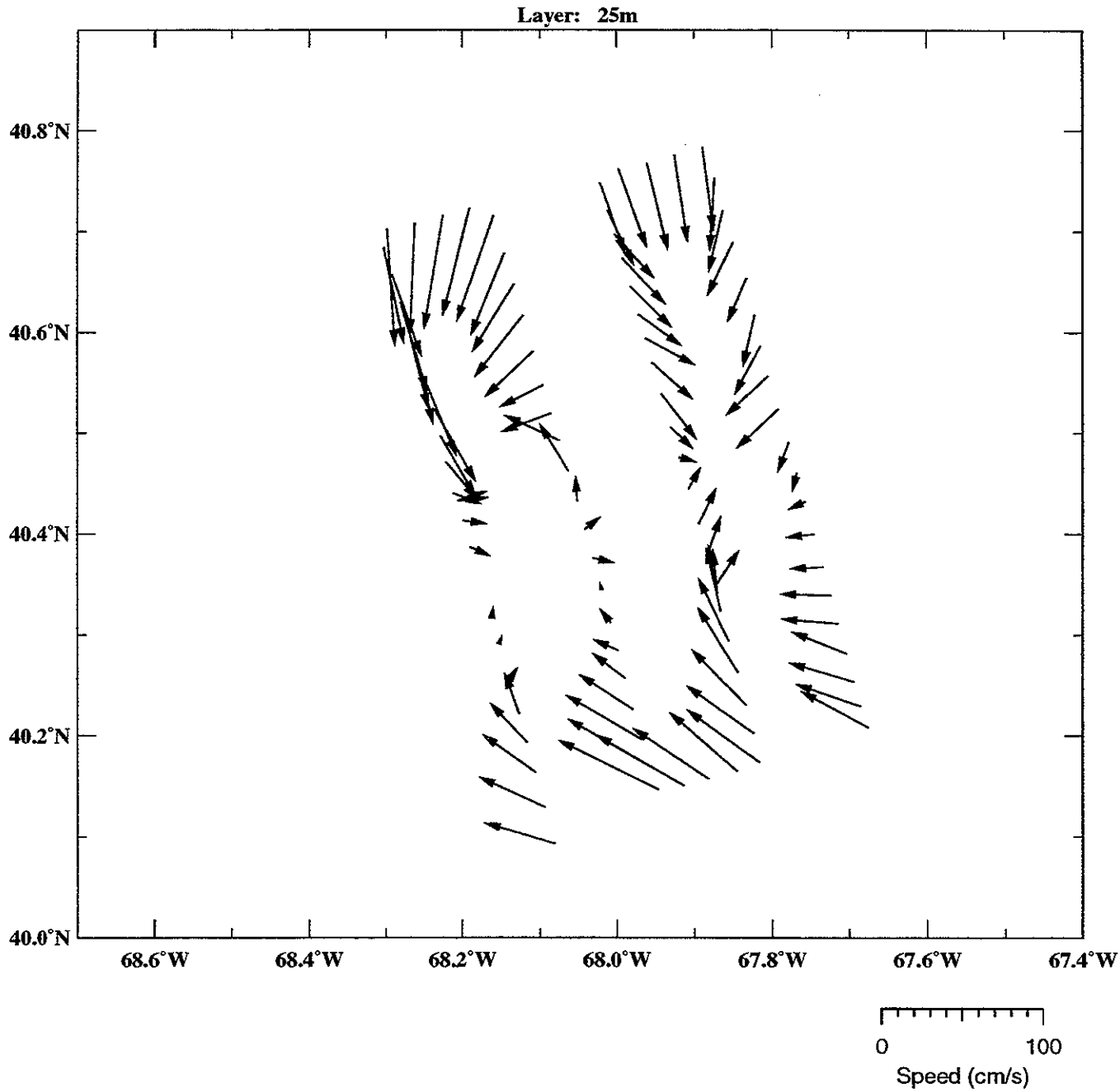
Radiator 1, 6/27 06:06 to 6/28 06:19



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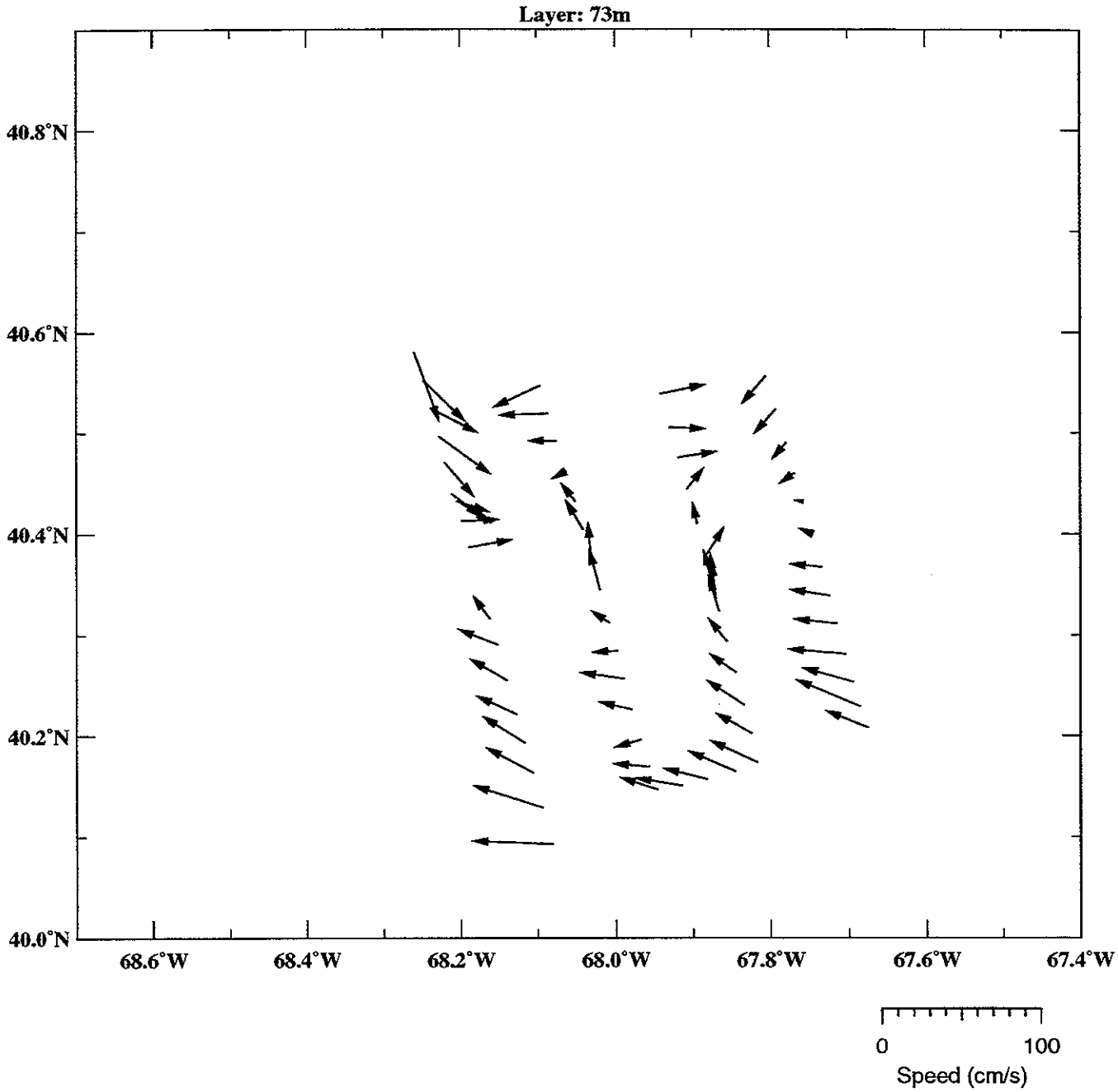
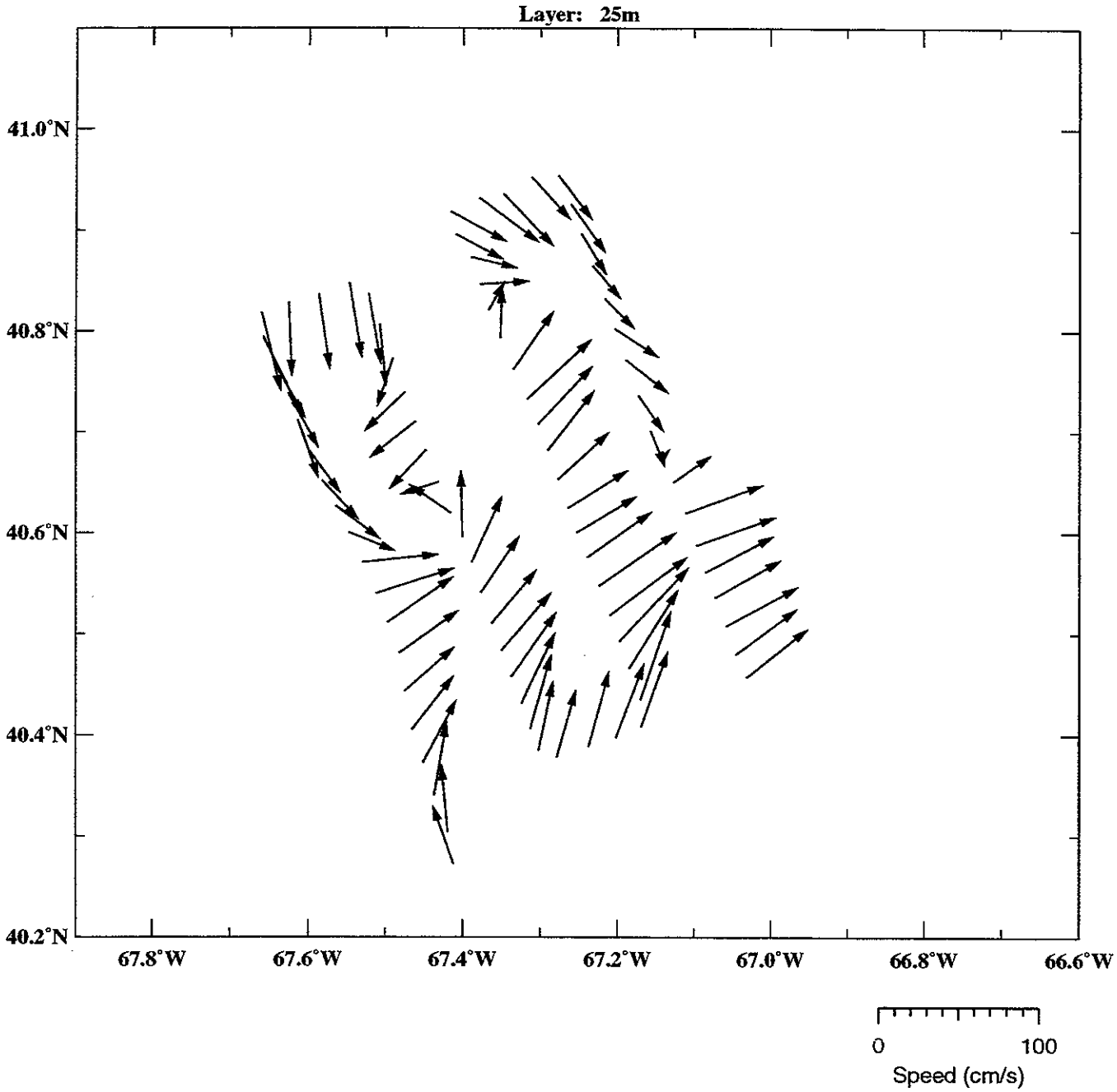
Radiator 1, 6/27 06:06 to 6/28 06:19



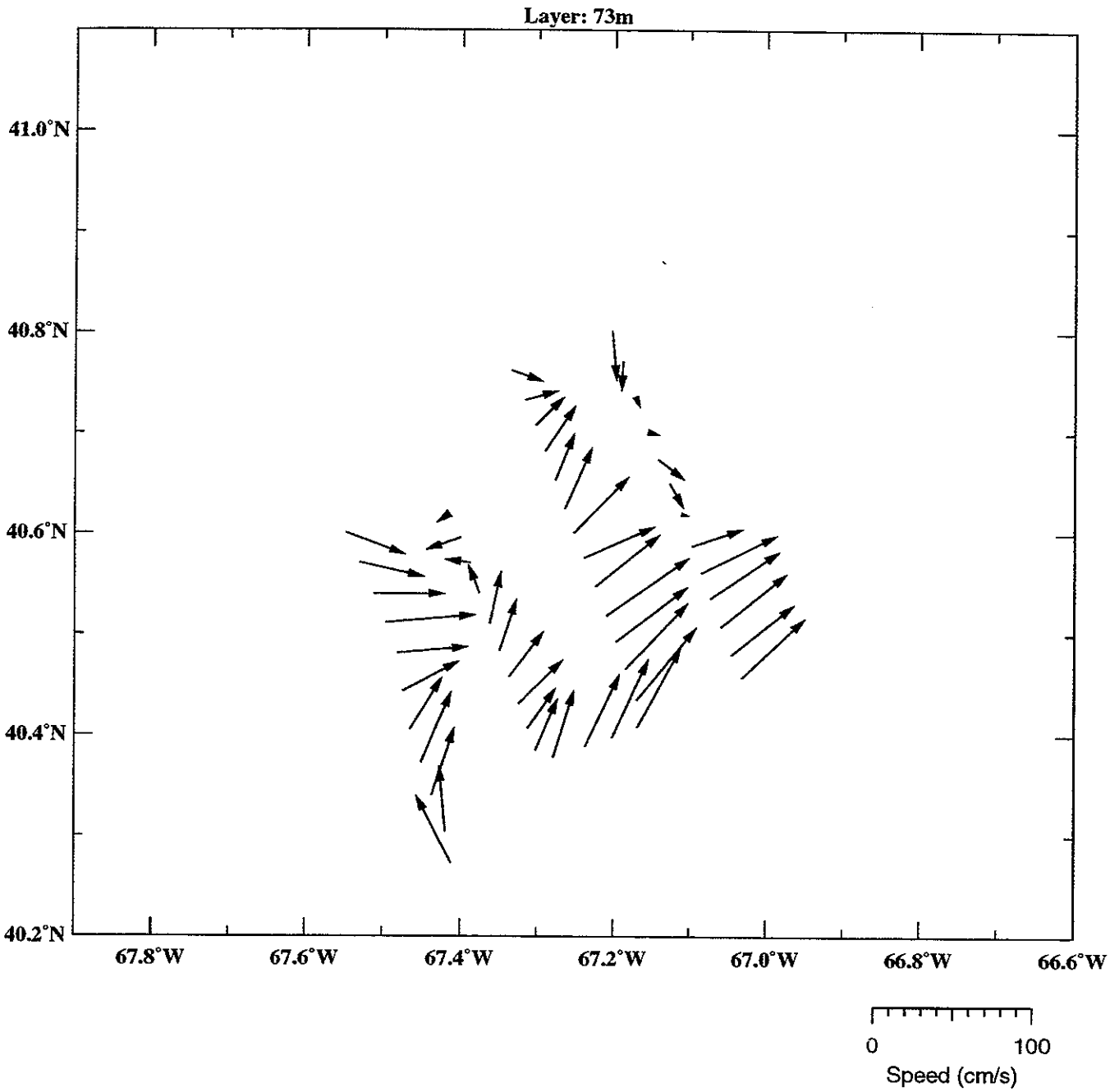
ADCP EN303

Radiator 2, 6/28 08:23 to 6/29 04:52



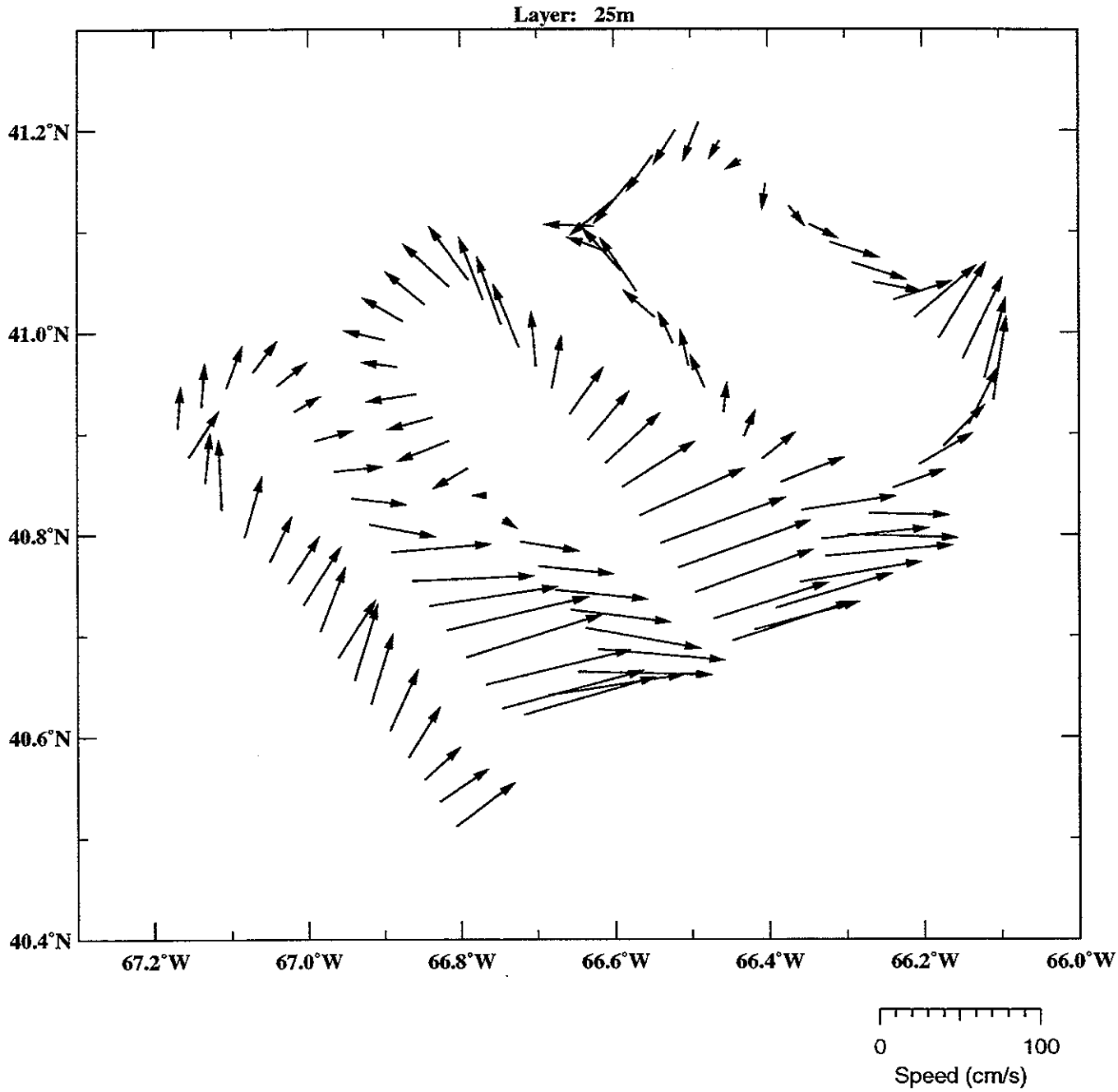
ADCP EN303

Radiator 2, 6/28 08:23 to 6/29 04:52



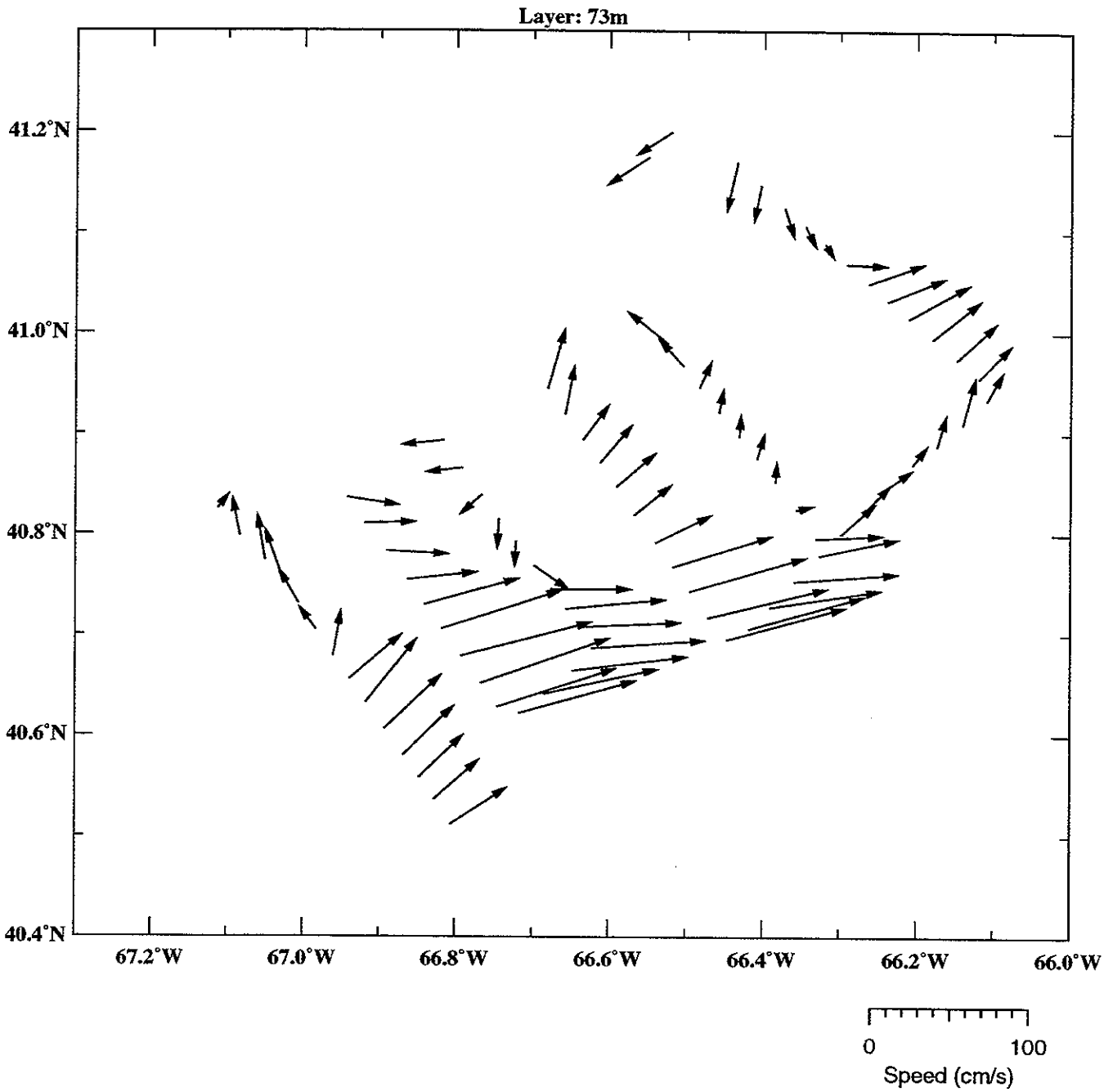
ADCP EN303

Radiator 3, 6/29 06:20 to 6/30 10:15



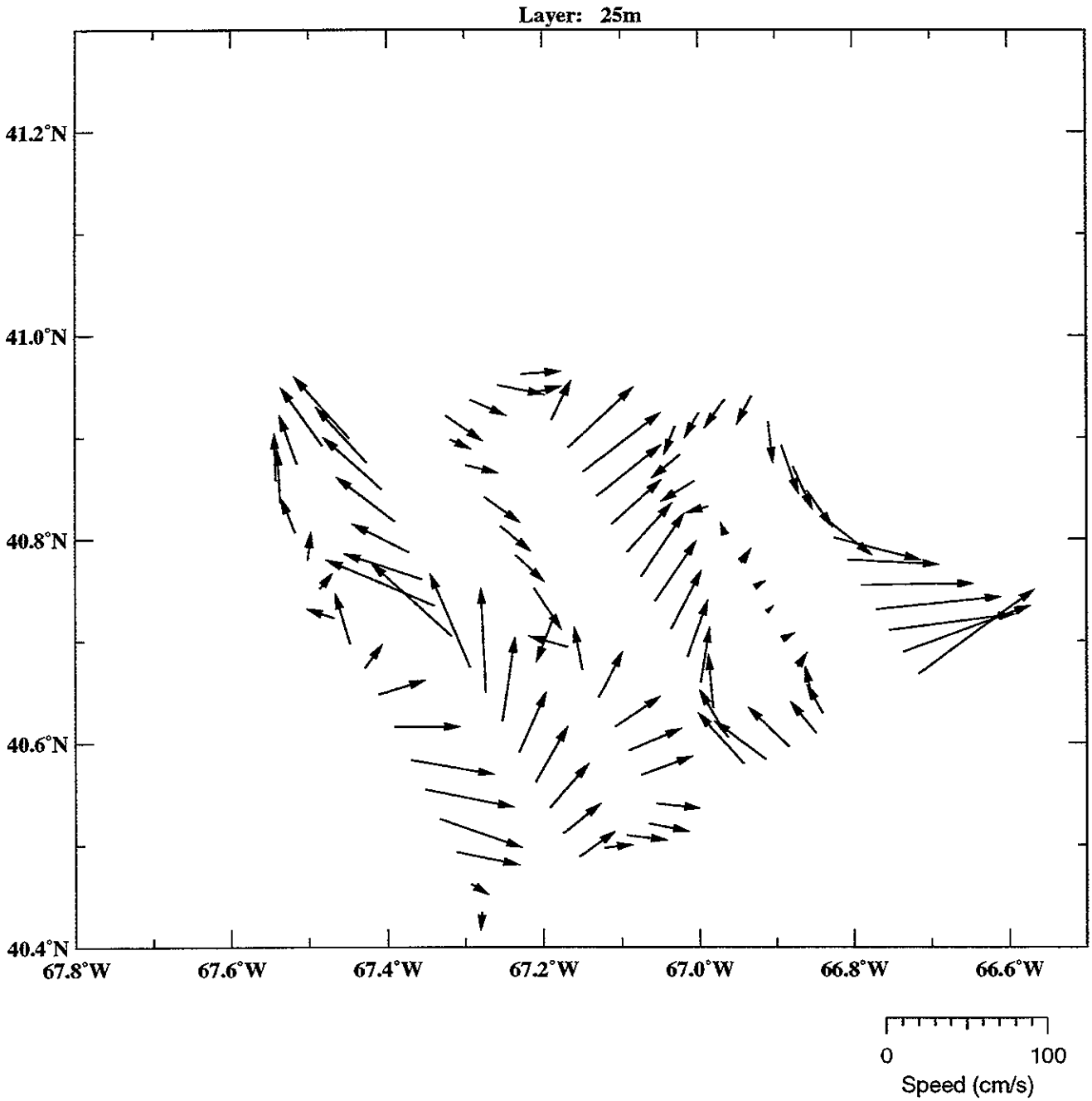
ADCP EN303

Radiator 3, 6/29 06:20 to 6/30 10:15



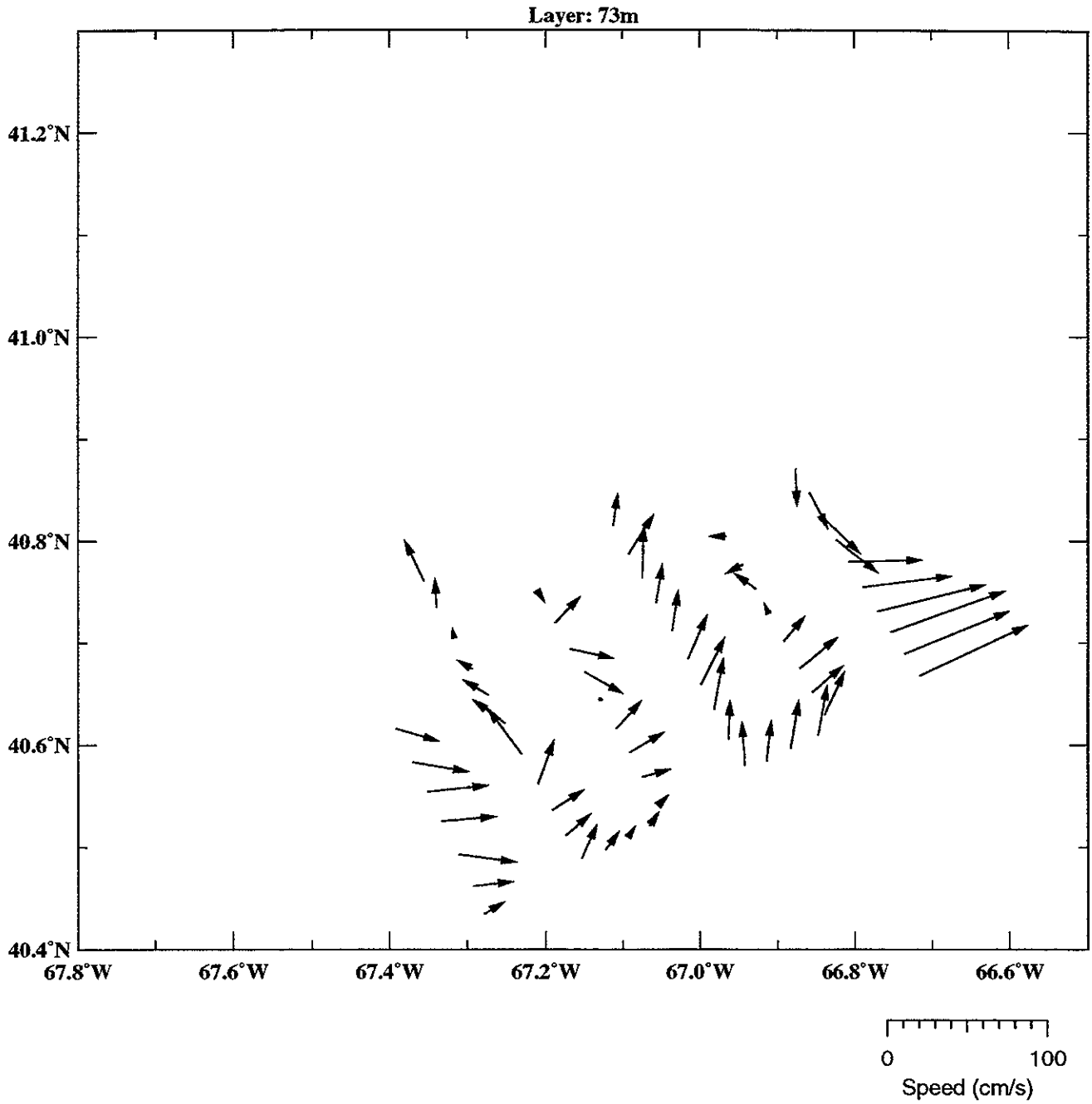
ADCP EN303

Radiator 4, pass 1, 6/30 13:50 to 7/01 14:39



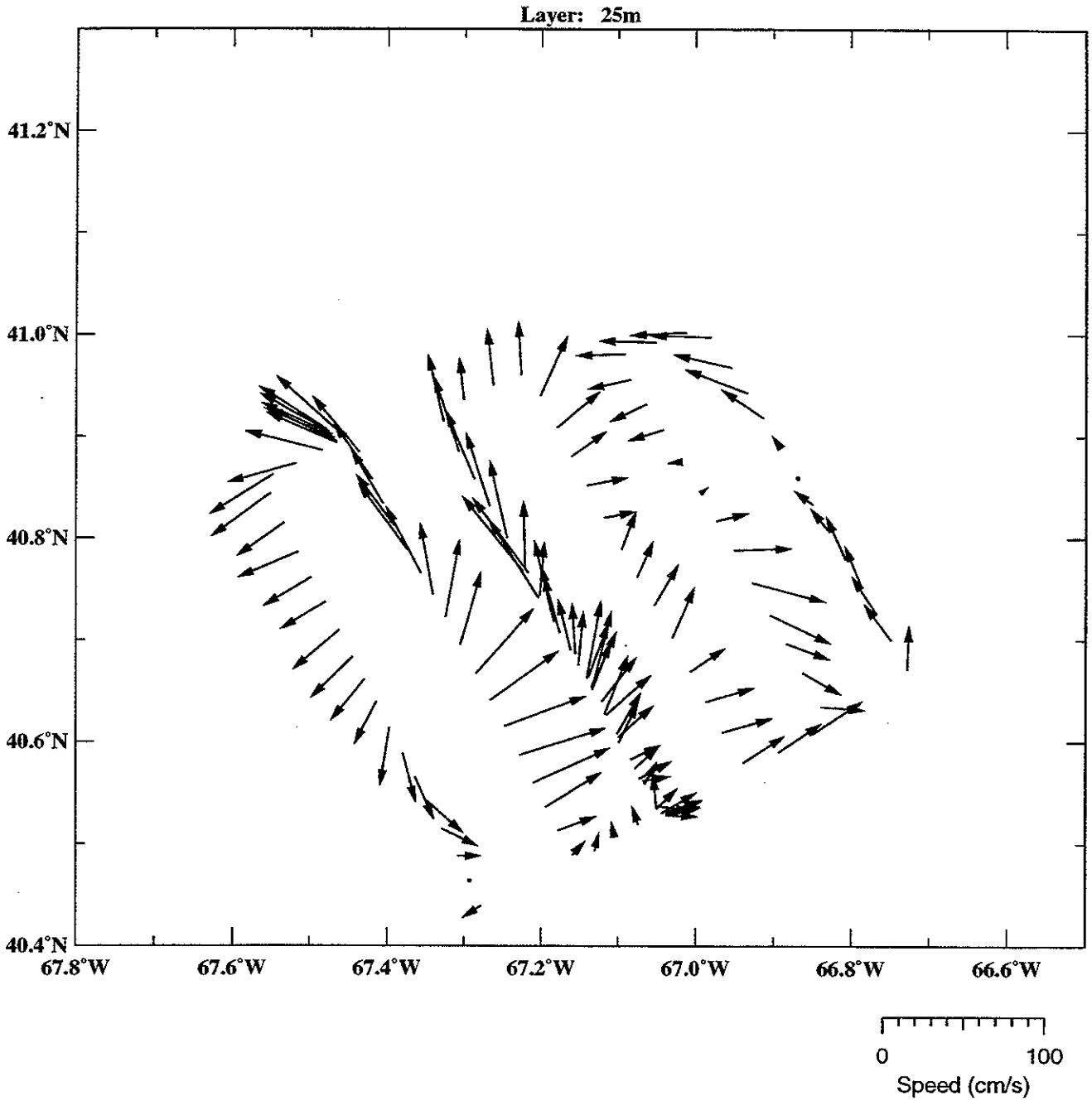
ADCP EN303

Radiator 4, pass 1, 6/30 13:50 to 7/01 14:39



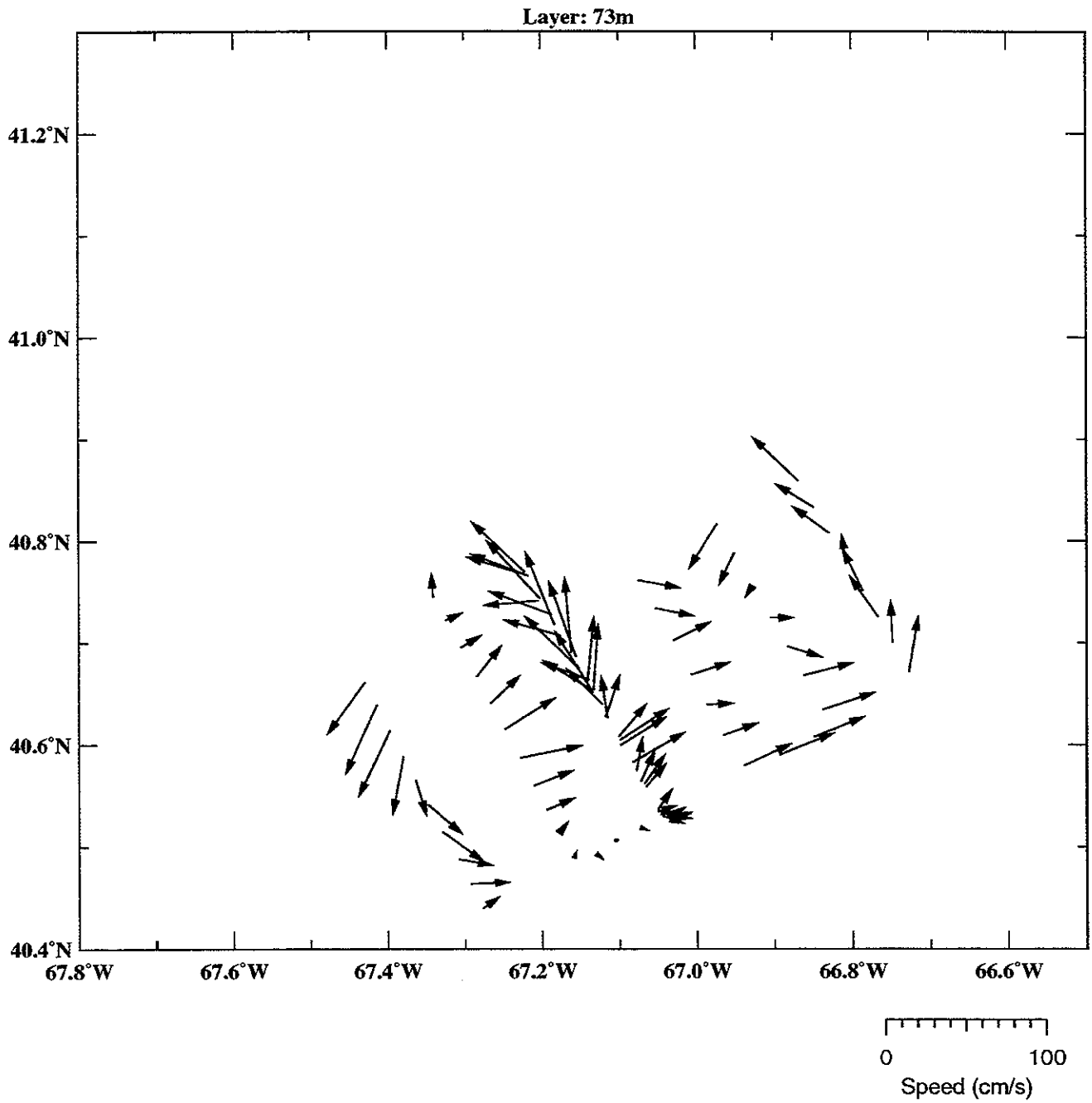
ADCP EN303

Radiator 4, pass 2, 6/28 08:23 to 6/29 04:52



ADCP EN303

Radiator 4, pass 2, 6/28 08:23 to 6/29 04:52



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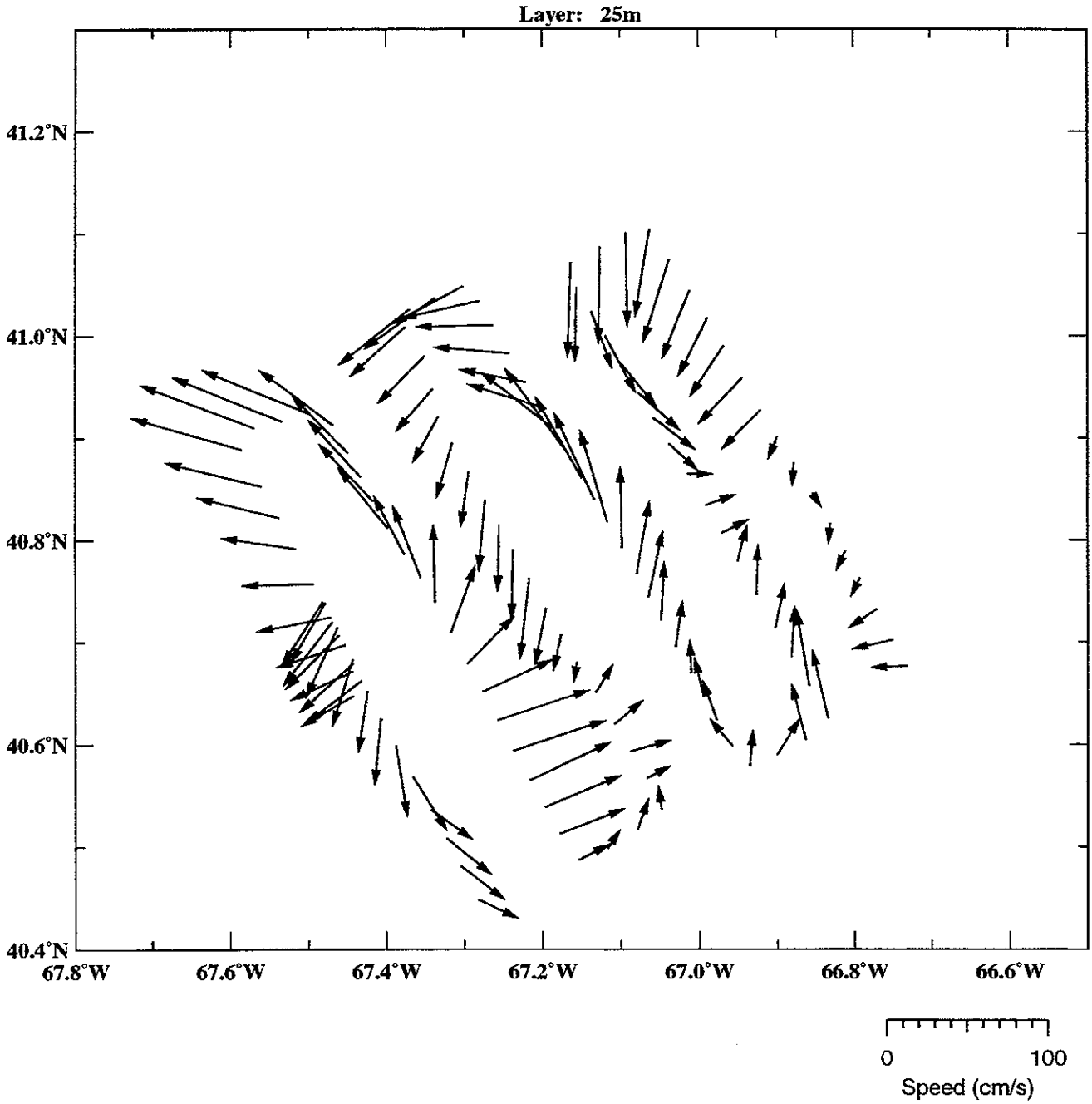
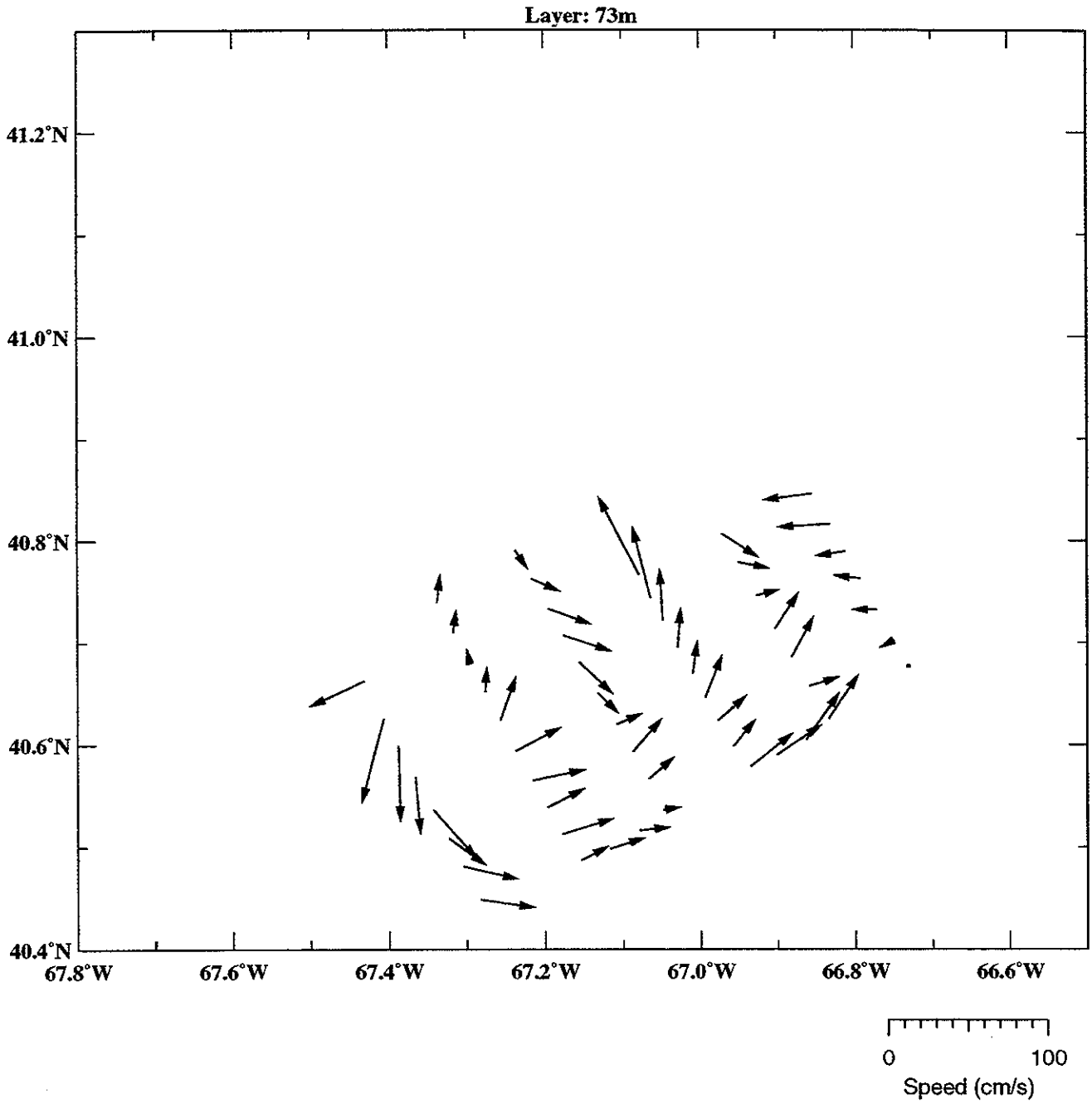
Radiator 4, pass 3, 7/03 04:20 to 7/04 11:30



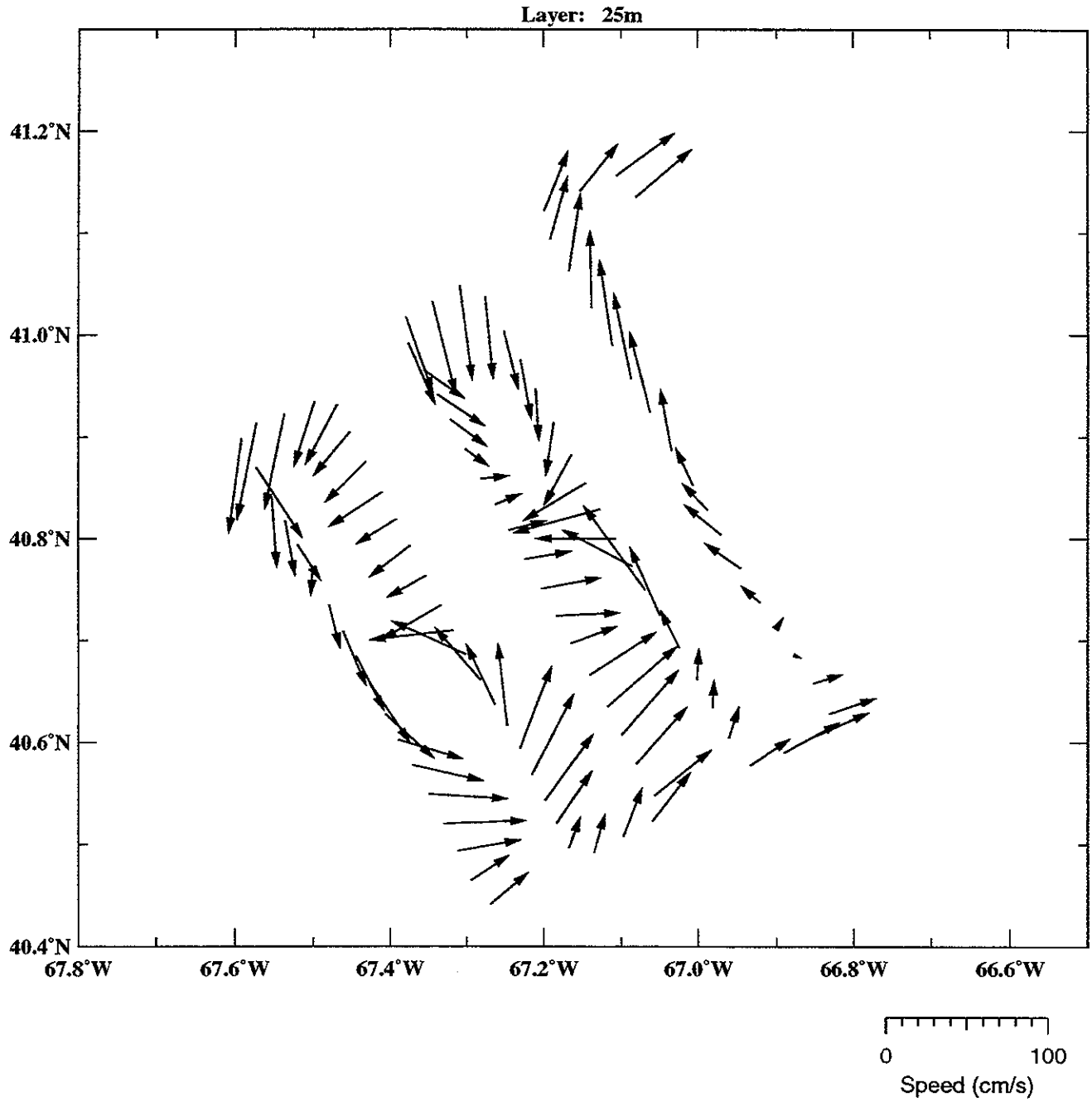
ADCP EN303

Radiator 4, pass 3, 7/03 04:20 to 7/04 11:30



ADCP EN303

Radiator 4, pass 4, 7/04 15:24 to 7/05 16:30



ADCP EN303

Radiator 4, pass 4, 7/04 15:24 to 7/05 16:30