City of New York
Department of Environmental Protection
New York, New York

DRAFT APPENDIX C

NEWTOWN CREEK WATER POLLUTION CONTROL PROJECT EAST RIVER WATER QUALITY PLAN

TASK 10.0 SYSTEM-WIDE EUTROPHICATION MODEL (SWEM)

SUB-TASK 10.4 CALIBRATE SWEM WATER QUALITY

SUB-TASK 10.6 VALIDATE SWEM WATER QUALITY

Prepared under subcontract to:
Greeley and Hansen
115 Broadway, Suite 13B
New York, NY 10006-1604

April 1999

Project No: GRHN0020/209

City of New York
Department of Environmental Protection
New York, New York

DRAFT APPENDIX C

NEWTOWN CREEK WATER POLLUTION CONTROL PROJECT EAST RIVER WATER QUALITY PLAN

TASK 10.0 SYSTEM-WIDE EUTROPHICATION MODEL (SWEM)

SUB-TASK 10.4 CALIBRATE SWEM WATER QUALITY

SUB-TASK 10.6 VALIDATE SWEM WATER QUALITY

Prepared under subcontract to:
Greeley and Hansen
115 Broadway, Suite 13B
New York, NY 10006-1604

April 1999

Project No: GRHN0020/209

City of New York
Department of Environmental Protection
New York, New York

DRAFT APPENDIX C

NEWTOWN CREEK WATER POLLUTION CONTROL PROJECT EAST RIVER WATER QUALITY PLAN

TASK 10.0 SYSTEM-WIDE EUTROPHICATION MODEL (SWEM)

SUB-TASK 10.4 CALIBRATE SWEM WATER QUALITY

SUB-TASK 10.6 VALIDATE SWEM WATER QUALITY

Prepared under subcontract to:
Greeley and Hansen
115 Broadway, Suite 13B
New York, NY 10006-1604

April 1999

Project No: GRHN0020/209

HydroQual, Inc.
Environmental Engineers and Scientists

City of New York
Department of Environmental Protection
New York, New York

APPENDIX C

NEWTOWN CREEK WATER POLLUTION CONTROL PROJECT EAST RIVER WATER QUALITY PLAN

TASK 10.0 SYSTEM-WIDE EUTROPHICATION MODEL (SWEM)

SUBTASK 10.4 CALIBRATE SWEM WATER QUALITY

SUBTASK 10.6 VALIDATE SWEM WATER QUALITY

Prepraed under subcontract to:
Greeley and Hansen
115 Broadway, Suite 13B
New York, NY 10006-1604

April 2001
Project No: GRHN0020/209

HydroQual, Inc.
Environmental Engineers and Scientists

APPENDIX C

VALIDATION DIAGRAMS
1988-89 CONDITIONS

APPENDIX C

TABLE OF CONTENTS

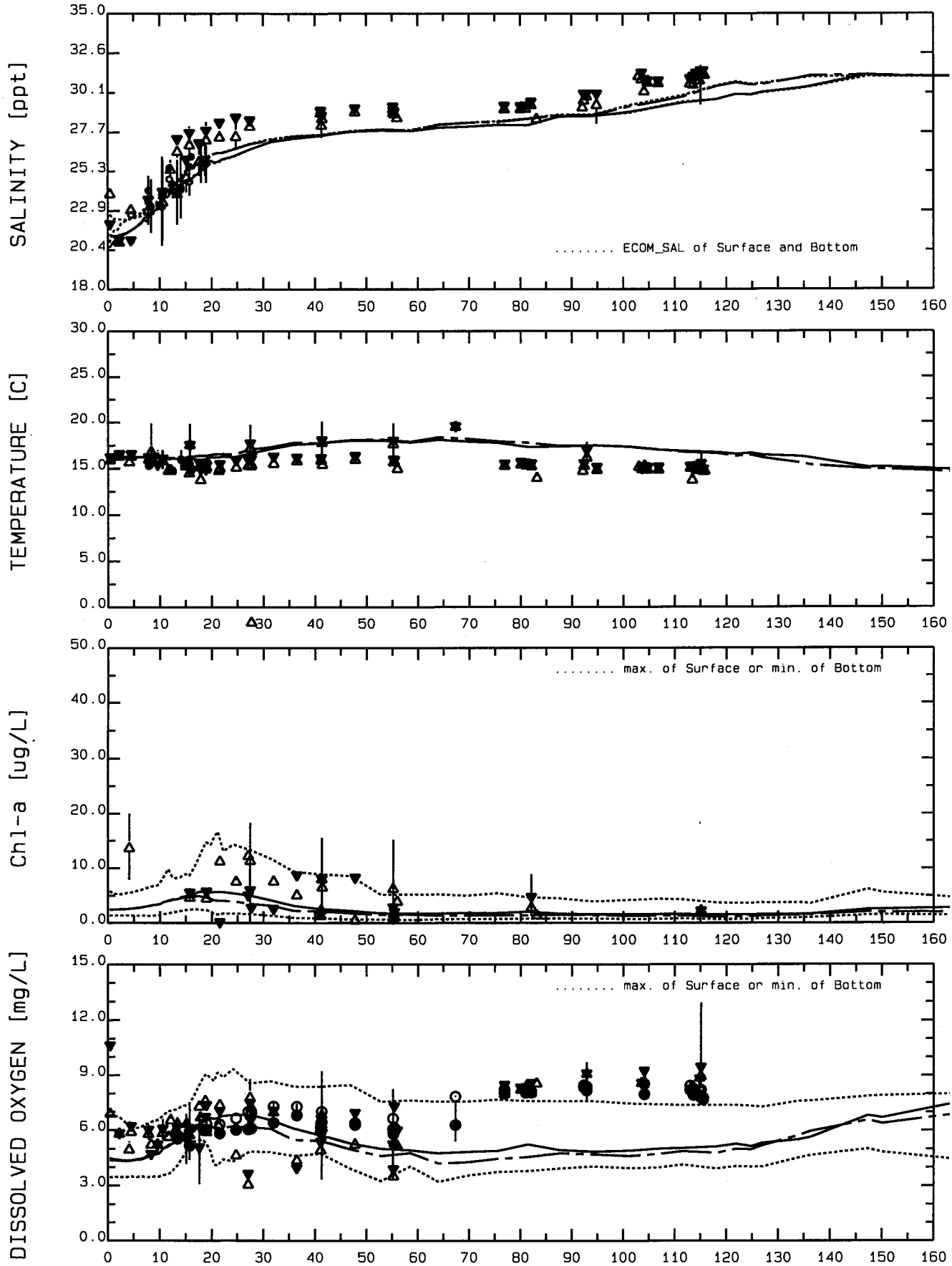
SPATIAL DISTRIBUTIONS

EAST RIVER, LONG ISLAND SOUND
HUDSON RIVER, UPPER BAY, LOWER BAY

TEMPORAL DISTRIBUTIONS

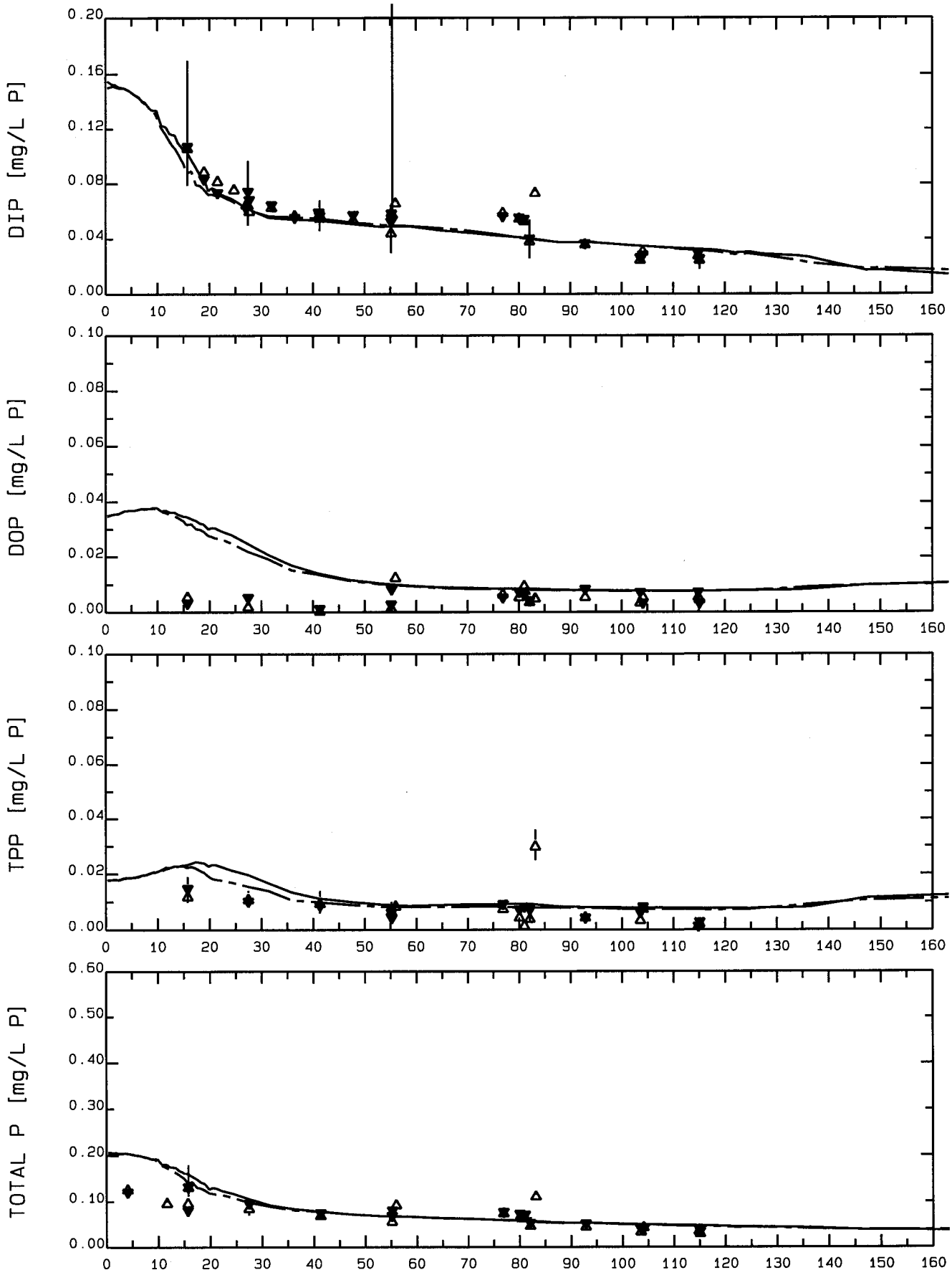
LOWER EAST RIVER
UPPER EAST RIVER
HUDSON RIVER, UPPER BAY, LOWER BAY
HARLEM RIVER
RARITAN BAY
KILL VAN KULL, ARTHUR KILL
JAMAICA BAY

SPATIAL DISTRIBUTIONS OF EAST RIVER, LONG ISLAND SOUND



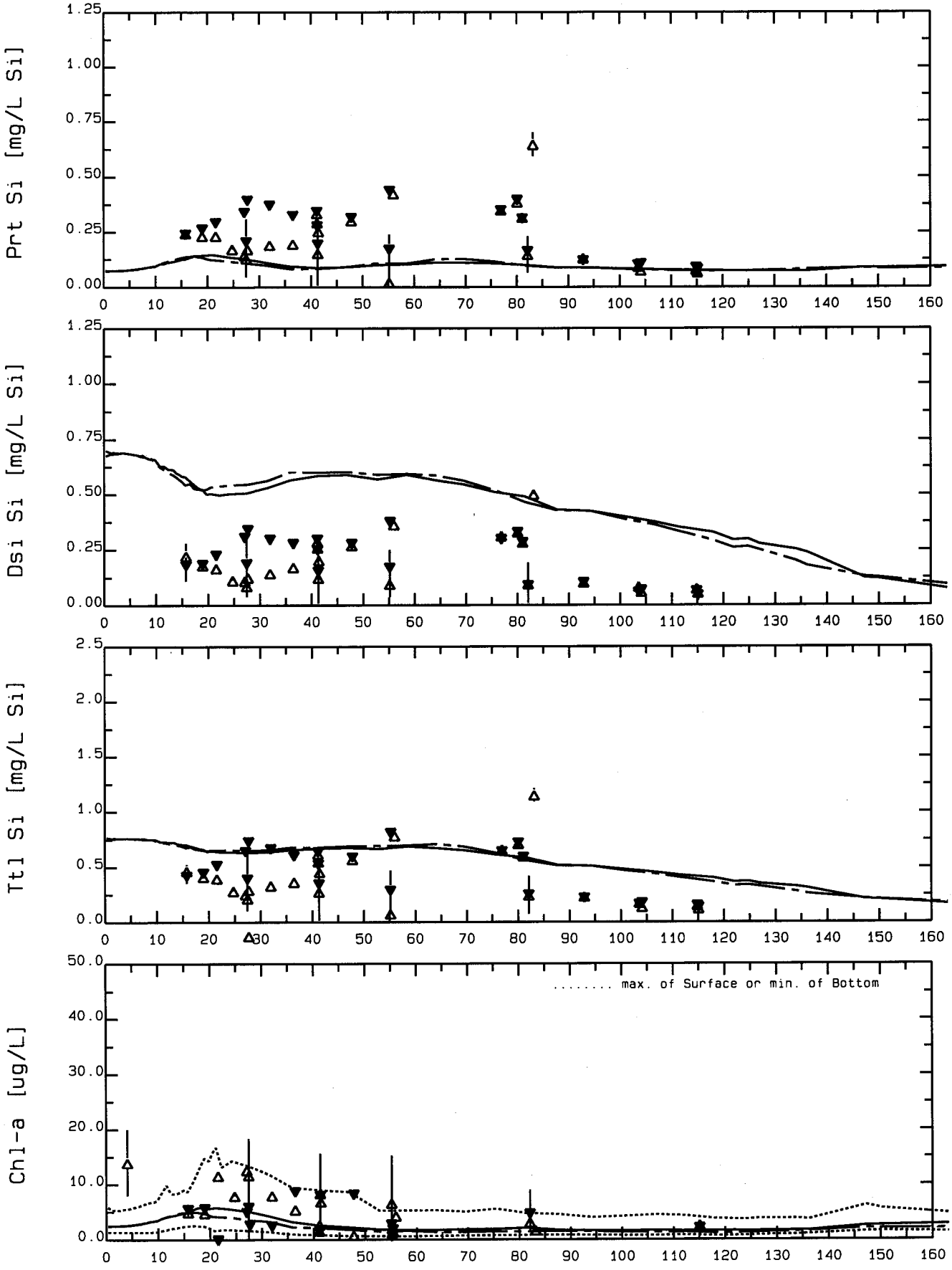
SWEM SPATIAL PROFILE - 8810

HydroQual SWEM Run 37



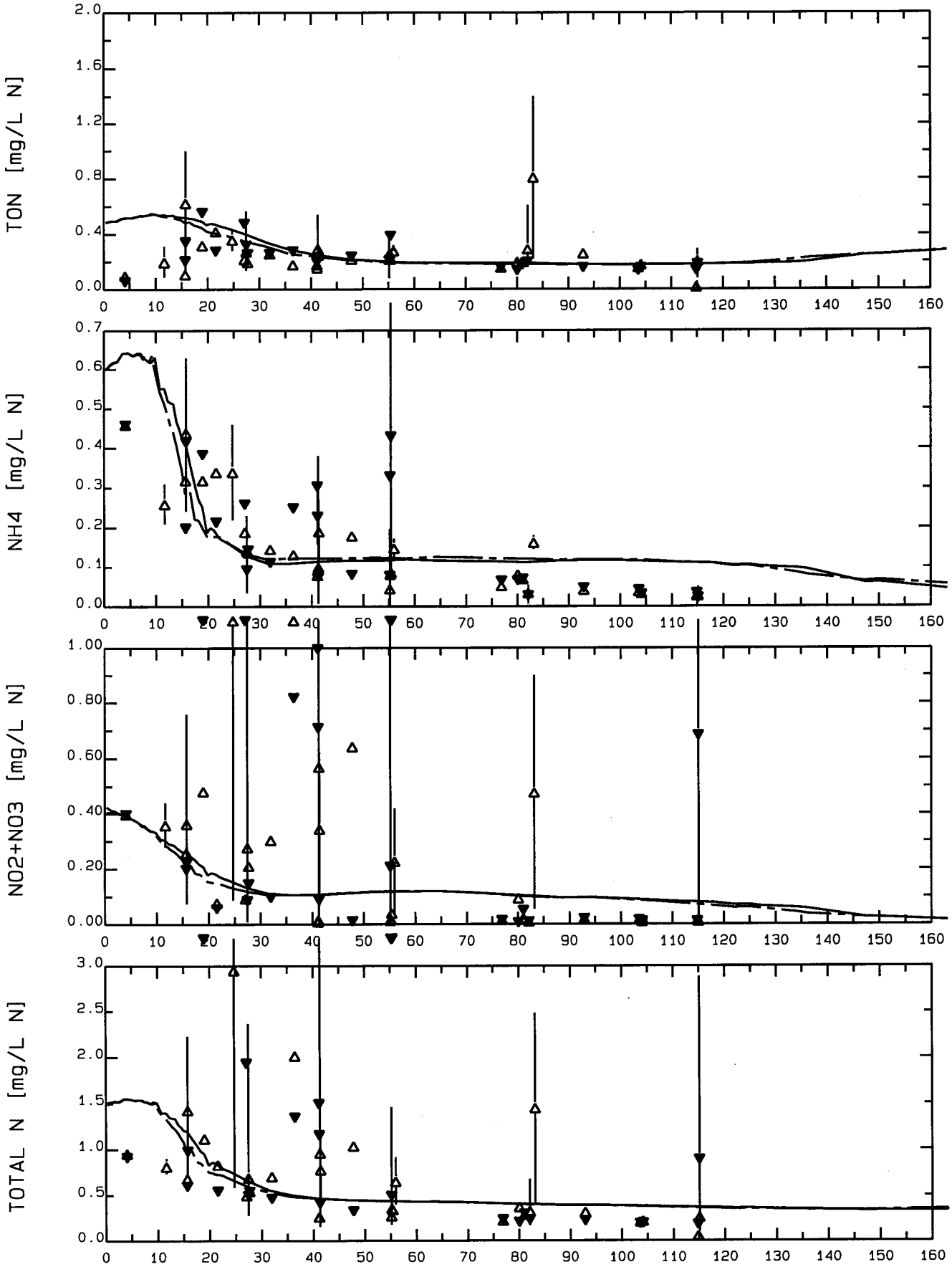
SWEM SPATIAL PROFILE - 8810

HydroQual SWEM Run 37



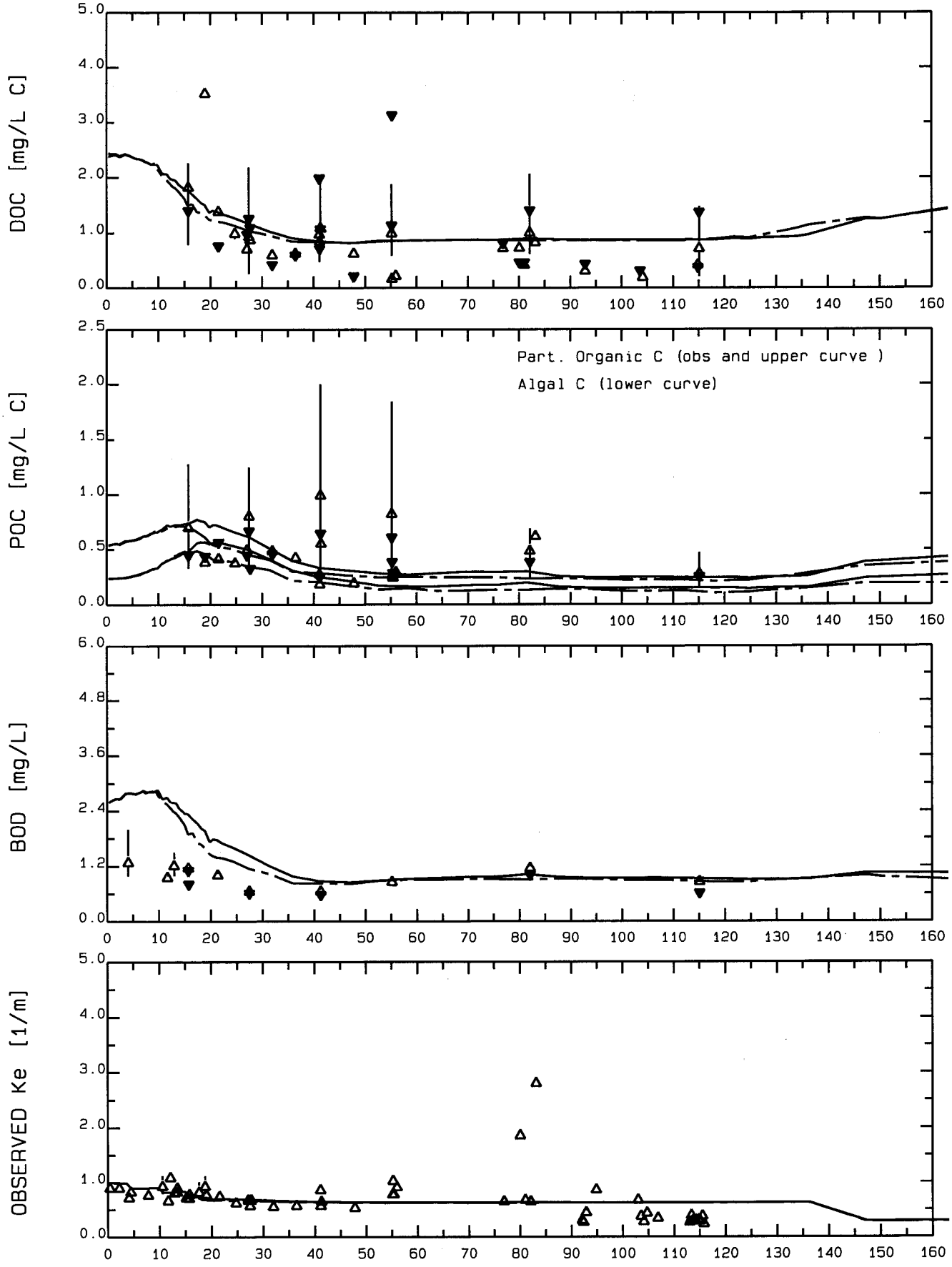
SWEM SPATIAL PROFILE - 8810

HydroQual SWEM Run 37



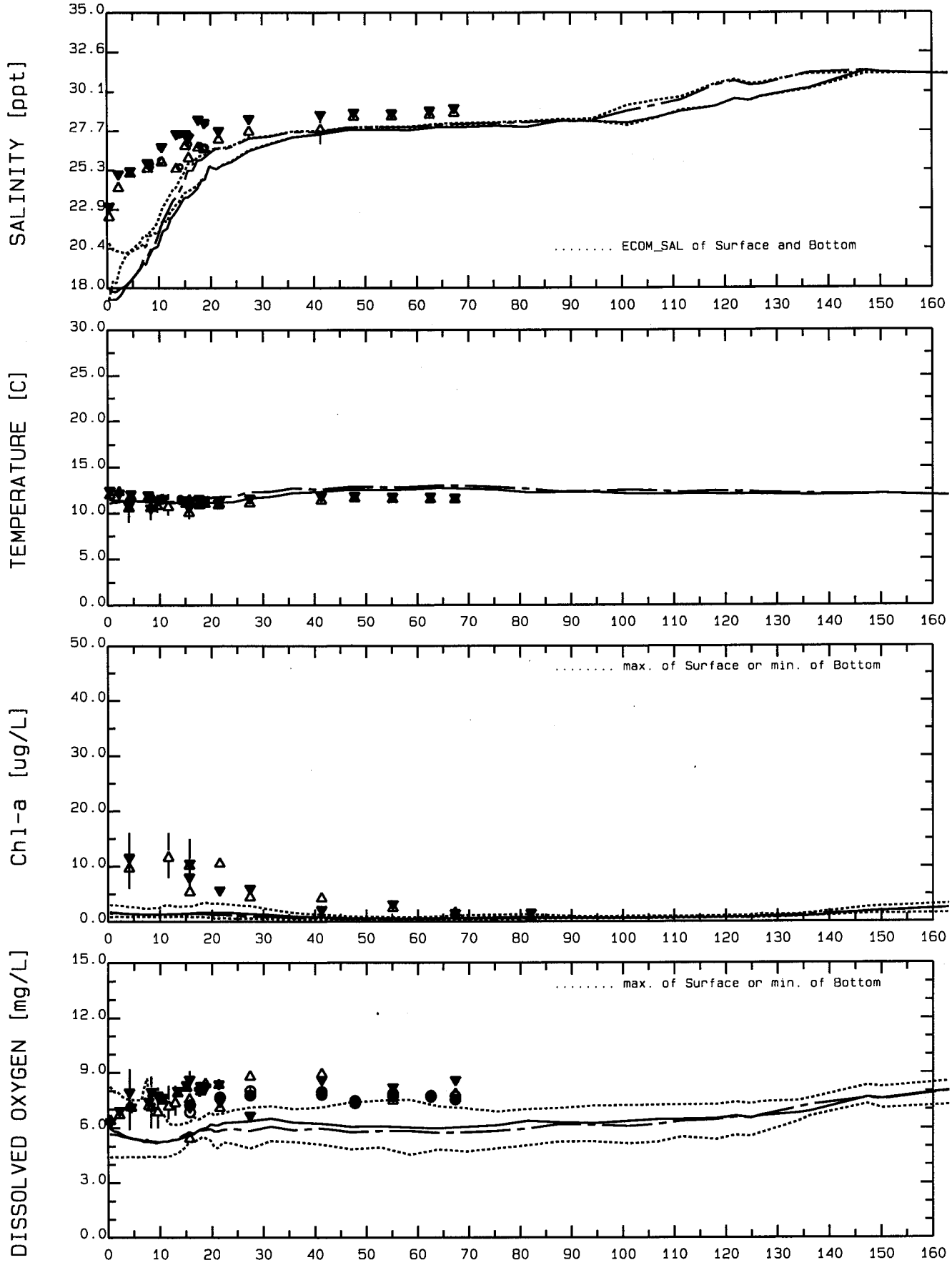
SWEM SPATIAL PROFILE - 8810

HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8810

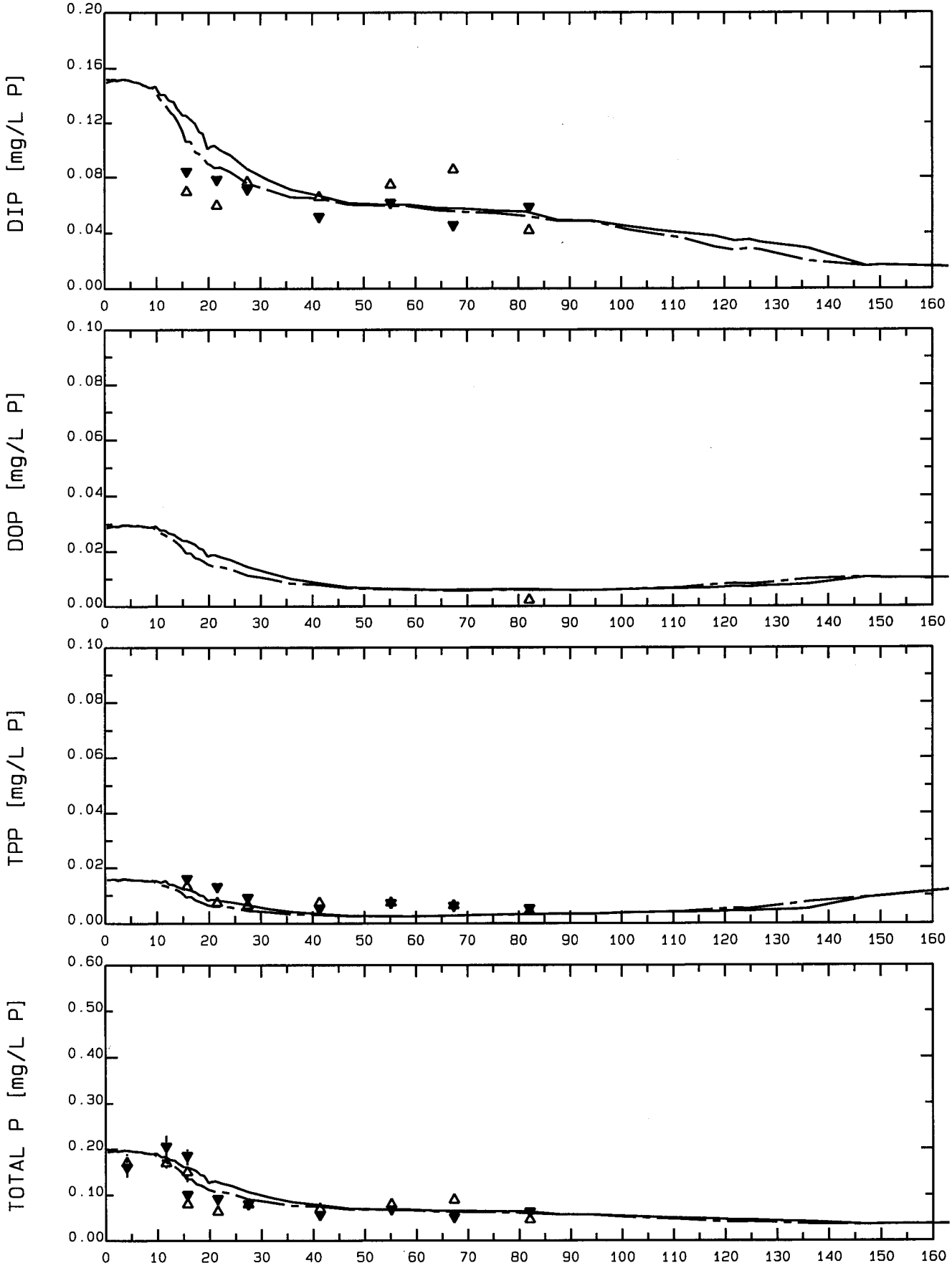
HydroQual SWEM Run 37



SURFACE MODEL
BOTTOM MODEL

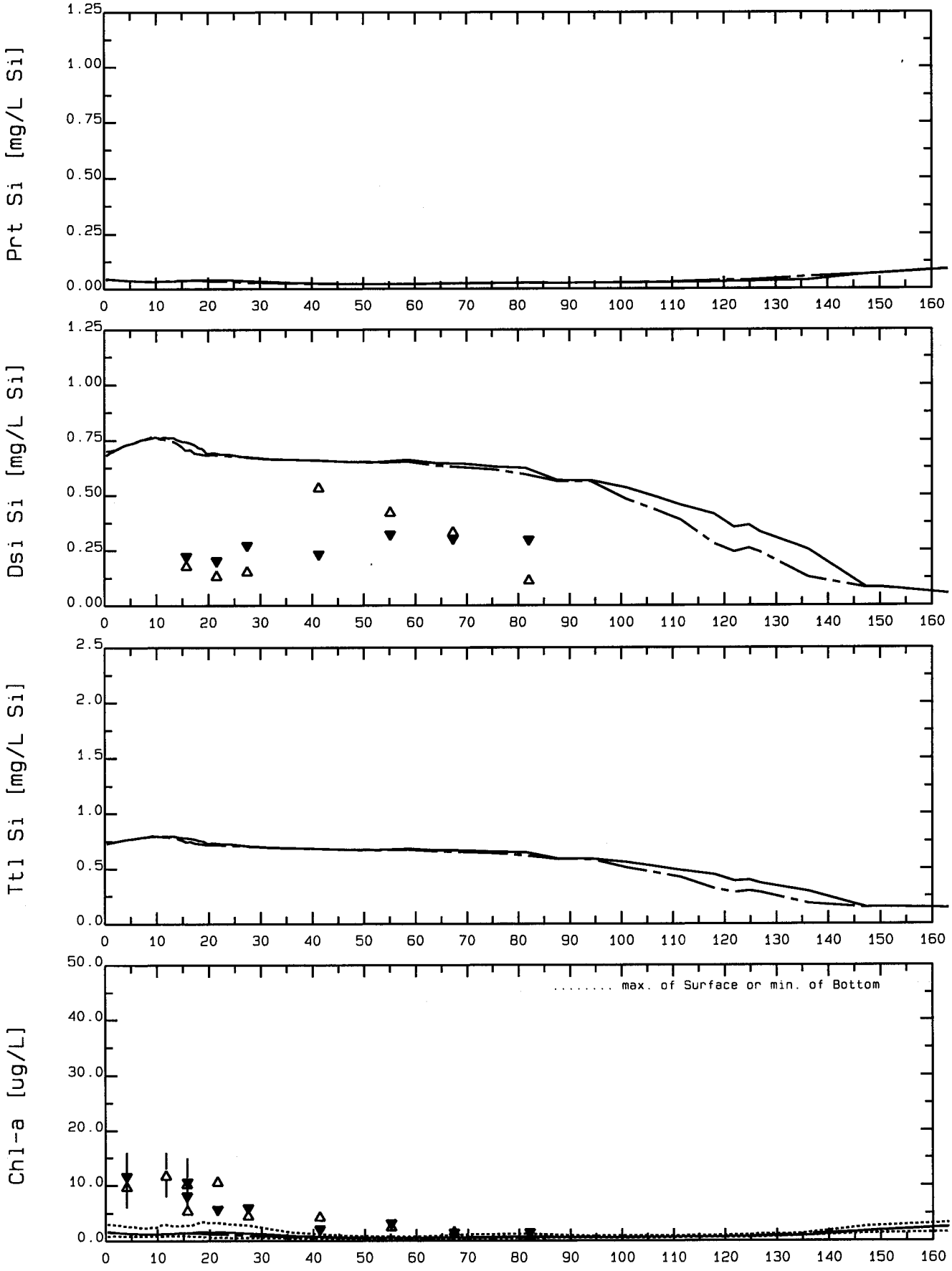
SWEM SPATIAL PROFILE - 8811

HydroQual SWEM Run 37



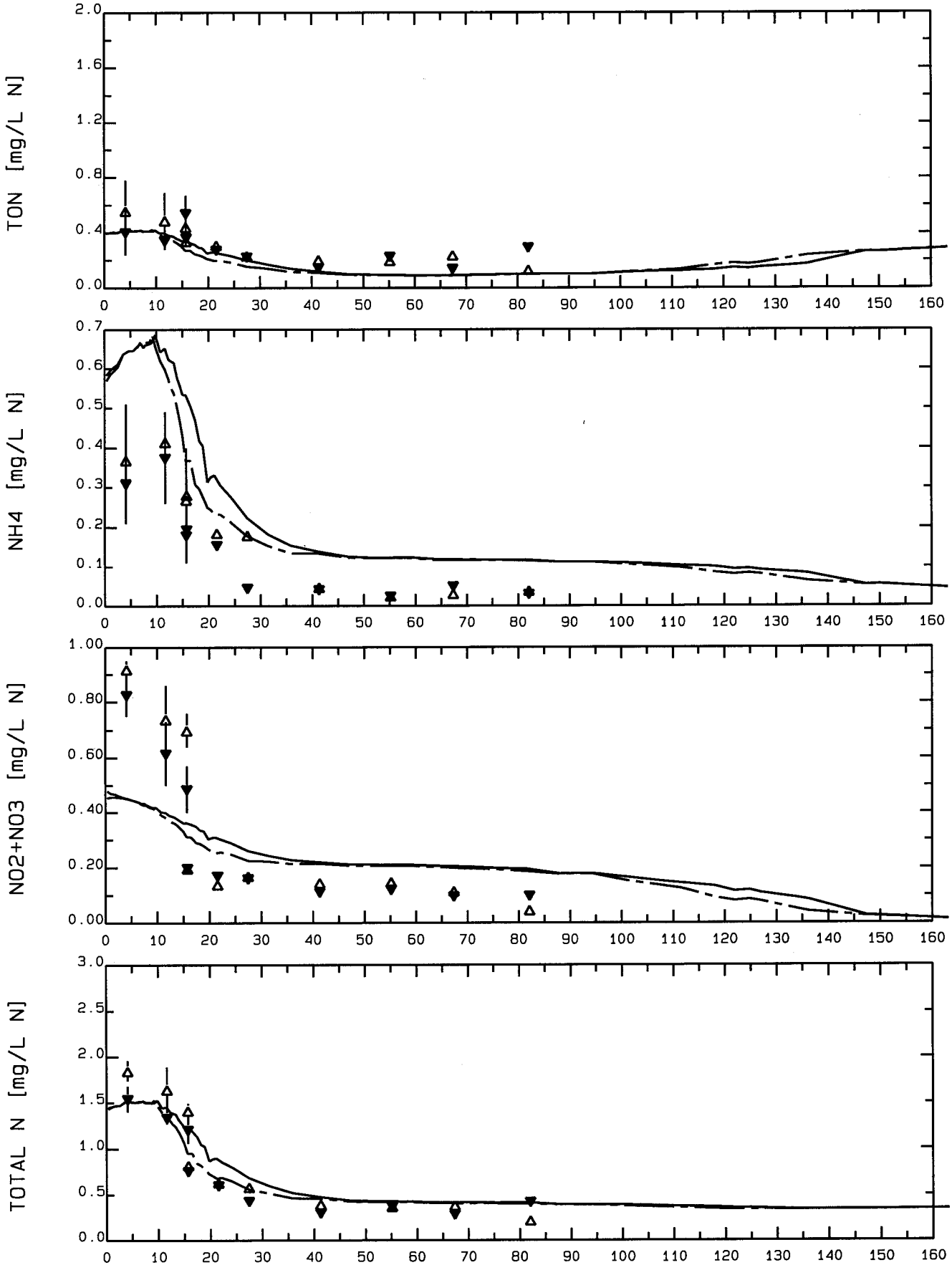
SWEM SPATIAL PROFILE - 8811

HydroQual SWEM Run 37



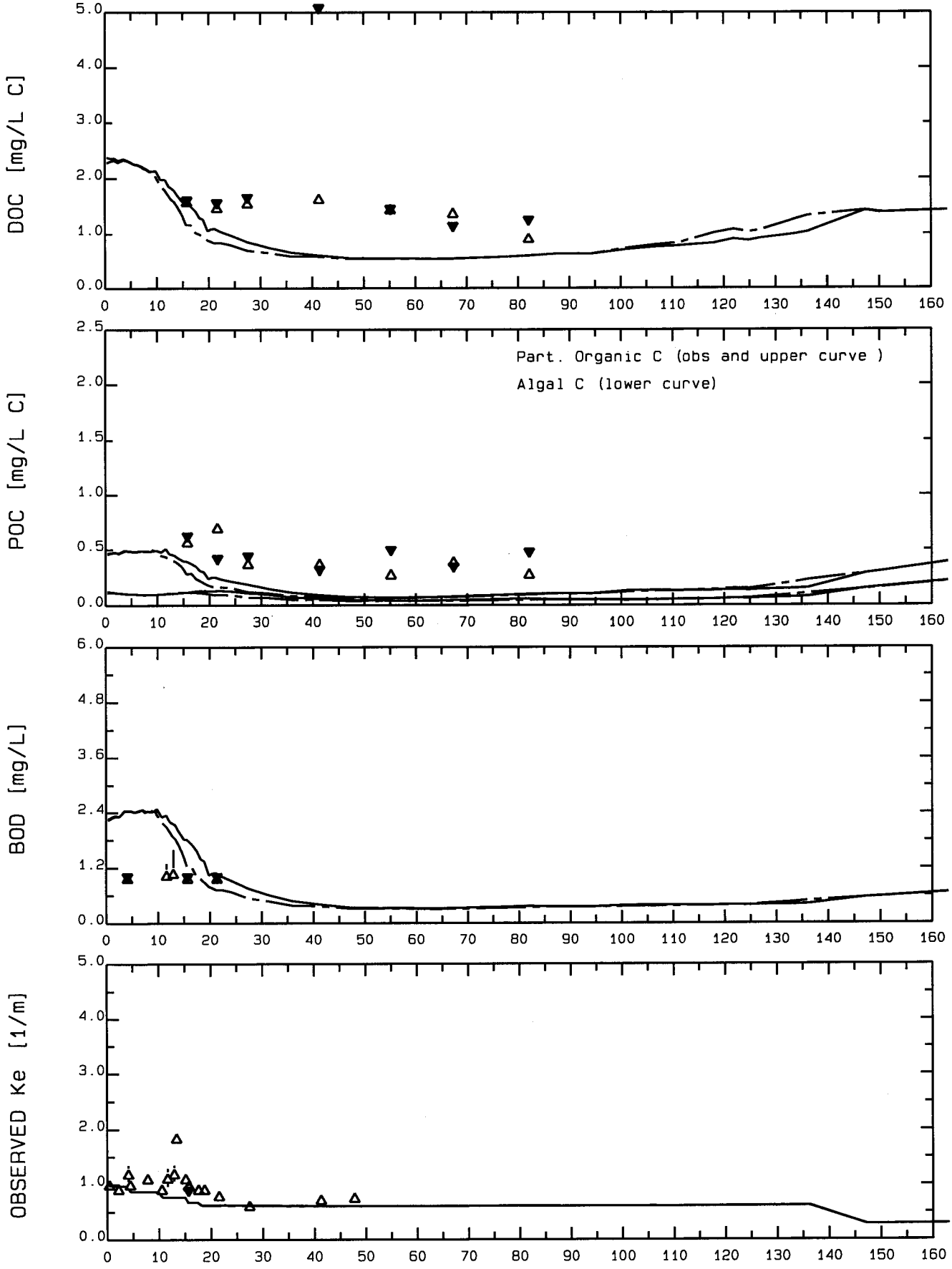
SWEM SPATIAL PROFILE - 8811

HydroQual SWEM Run 37



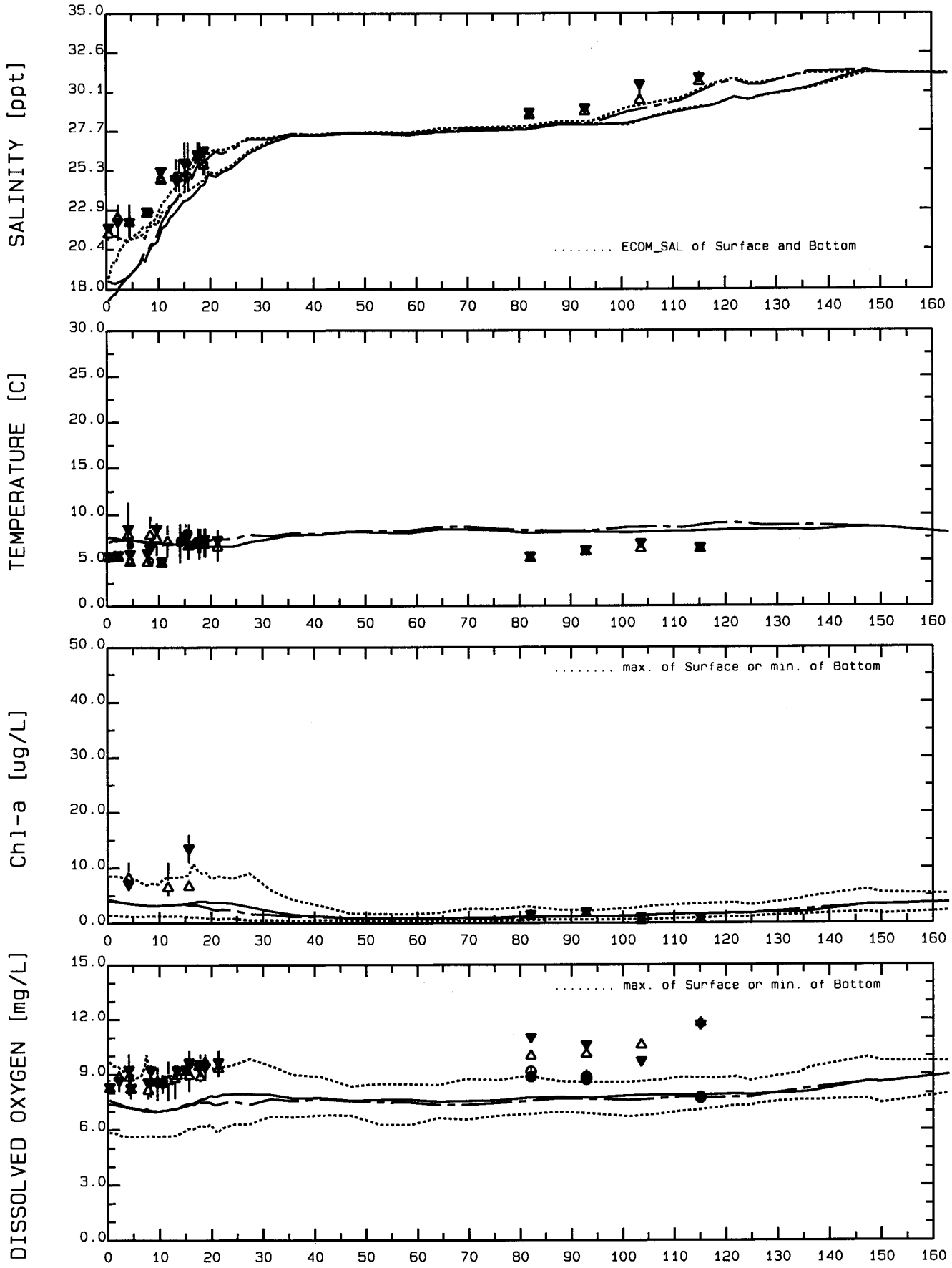
SWEM SPATIAL PROFILE - 8811

HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8811

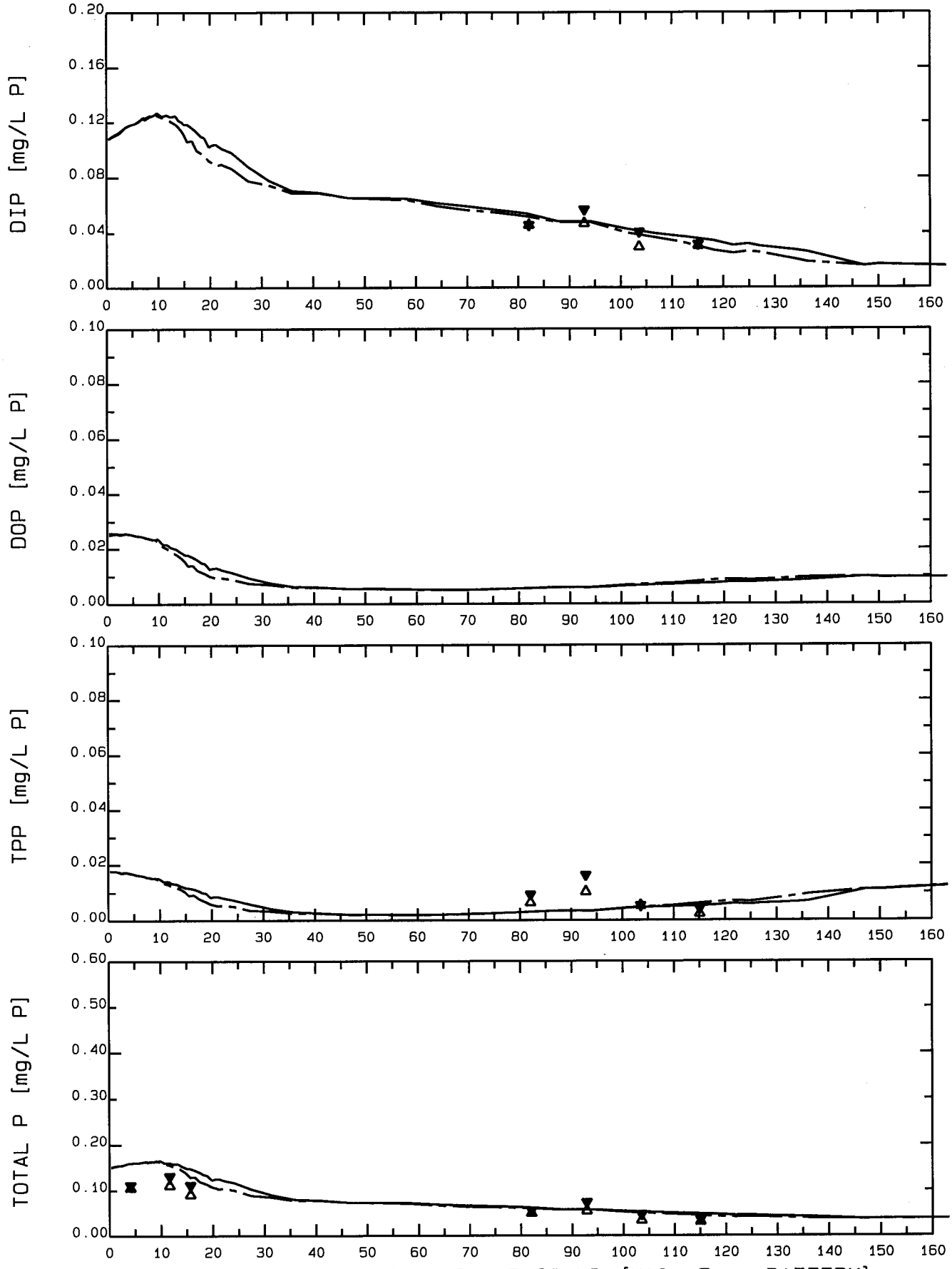
HydroQual SWEM Run 37



SURFACE MODEL
BOTTOM MODEL

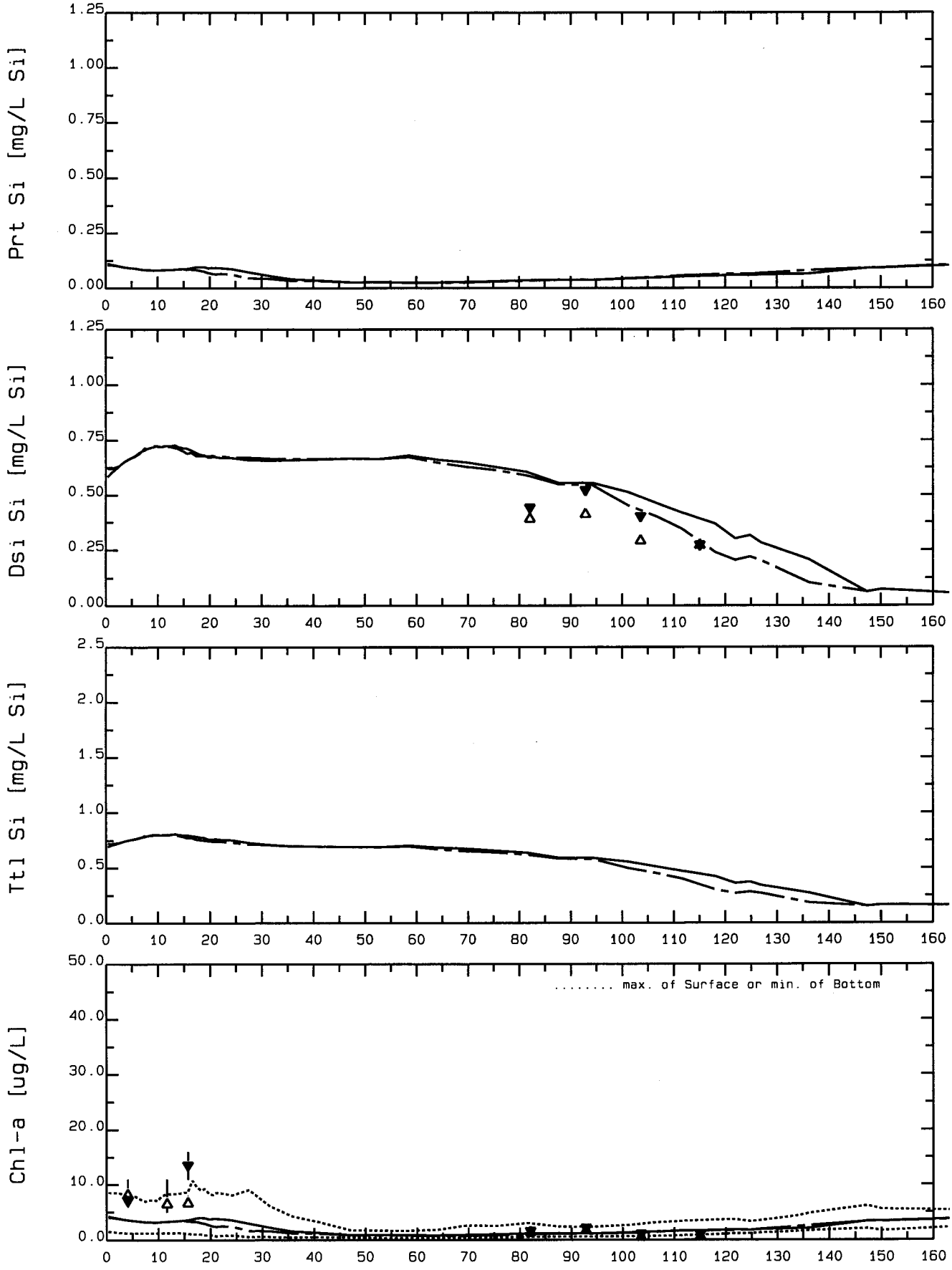
SWEM SPATIAL PROFILE - 8812

HydroQual SWEM Run 37



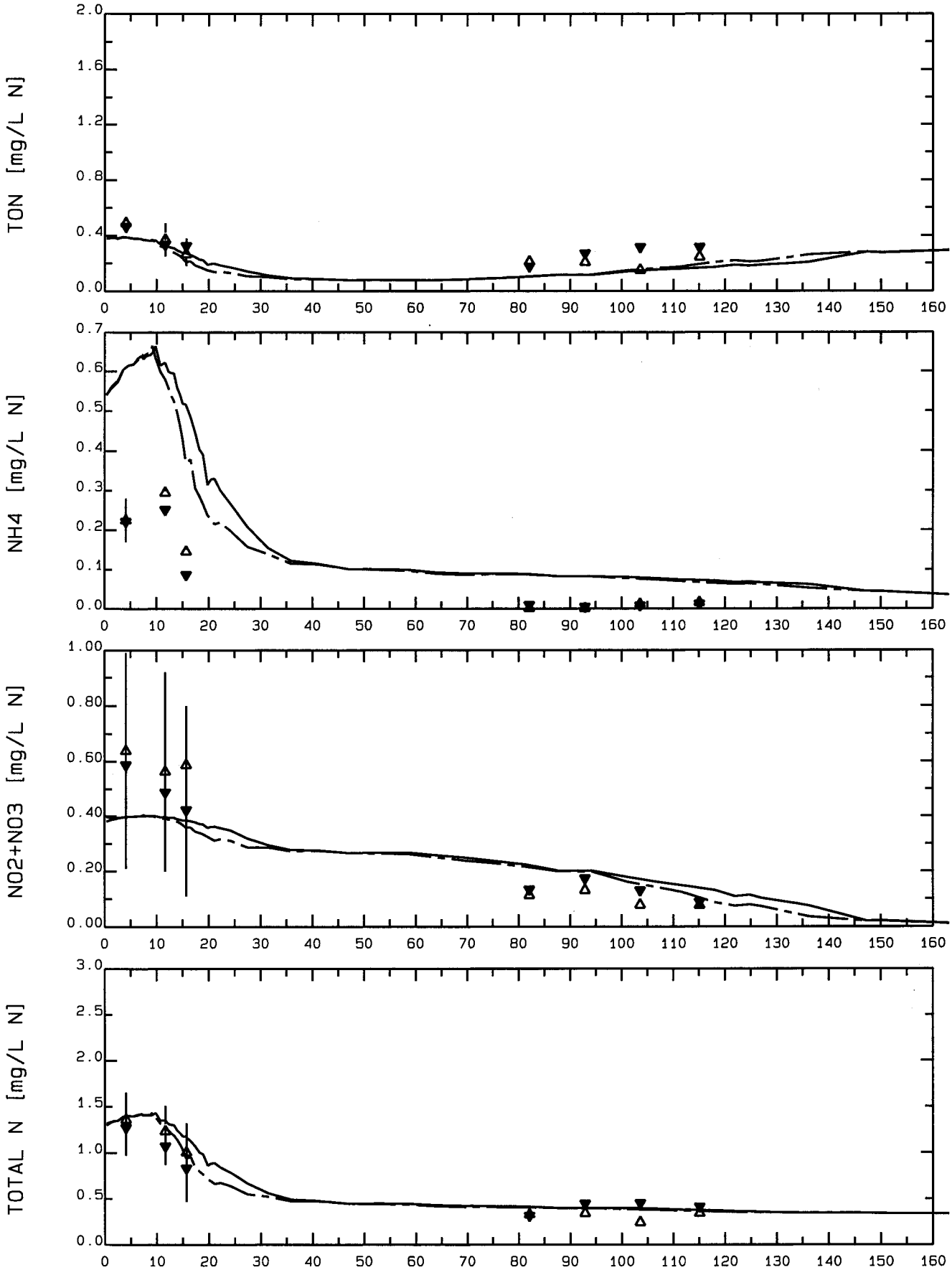
SWEM SPATIAL PROFILE - 8812

HydroQual SWEM Run 37



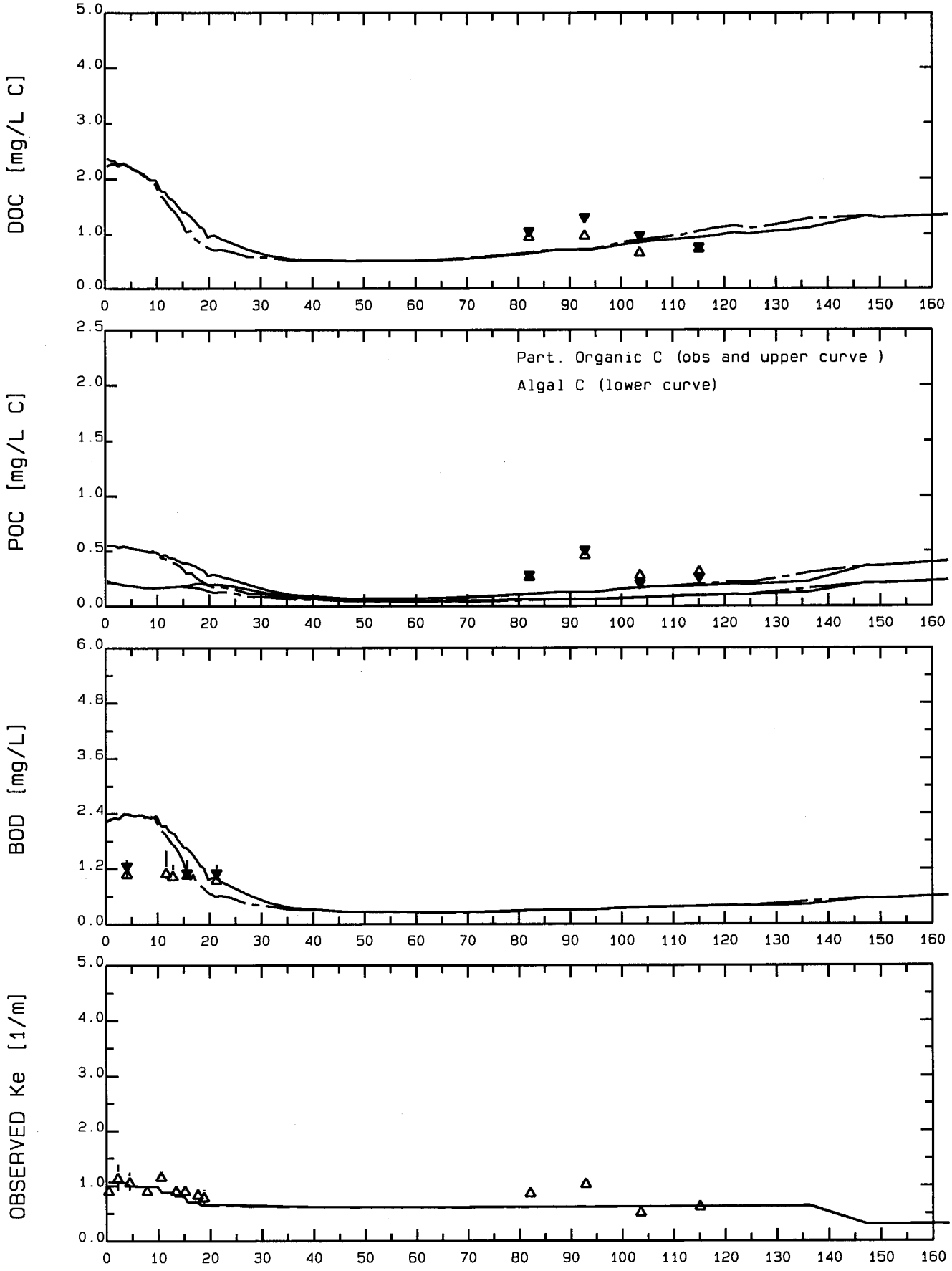
SWEM SPATIAL PROFILE - 8812

HydroQual SWEM Run 37



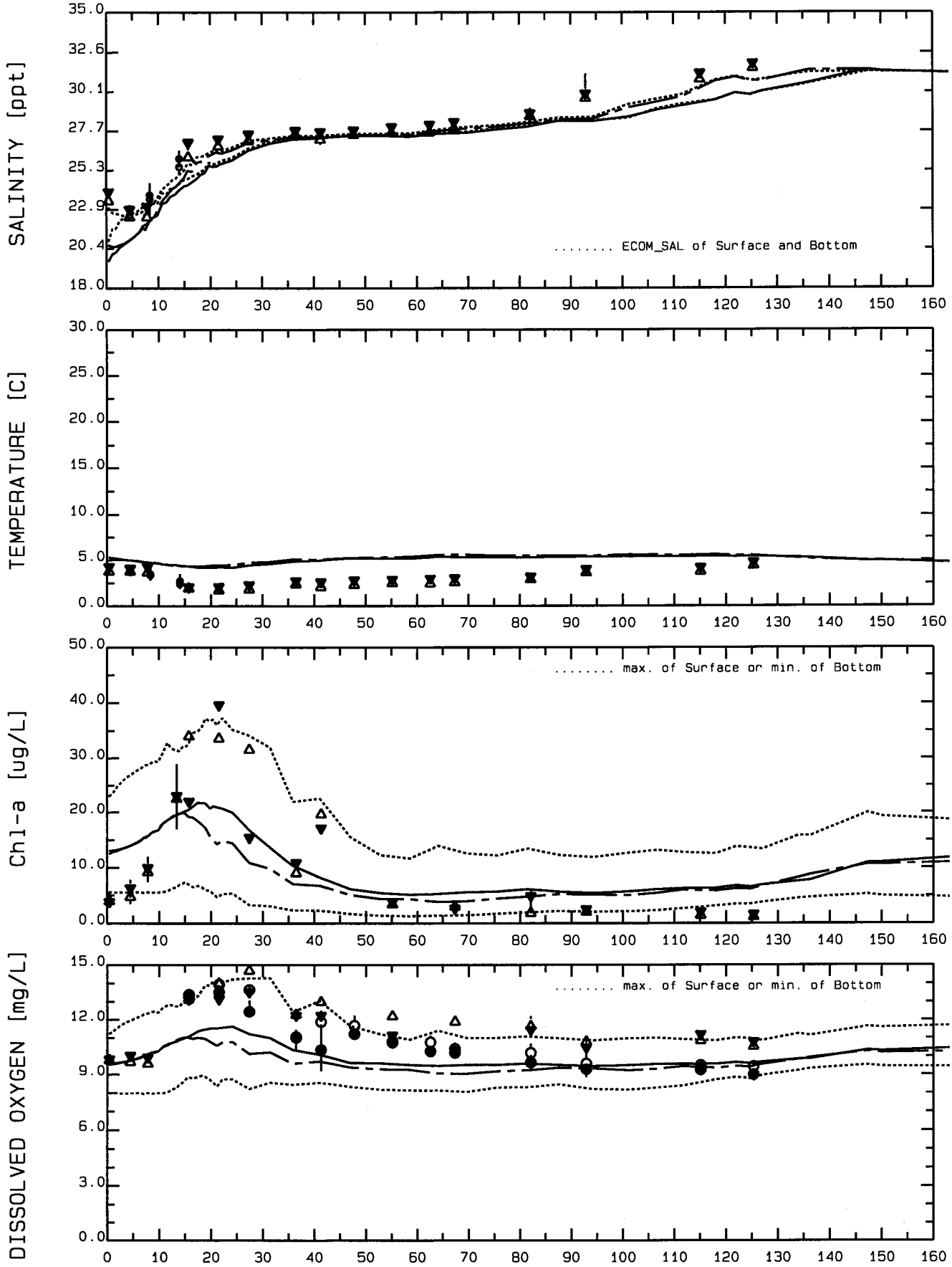
SWEM SPATIAL PROFILE - 8812

HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8812

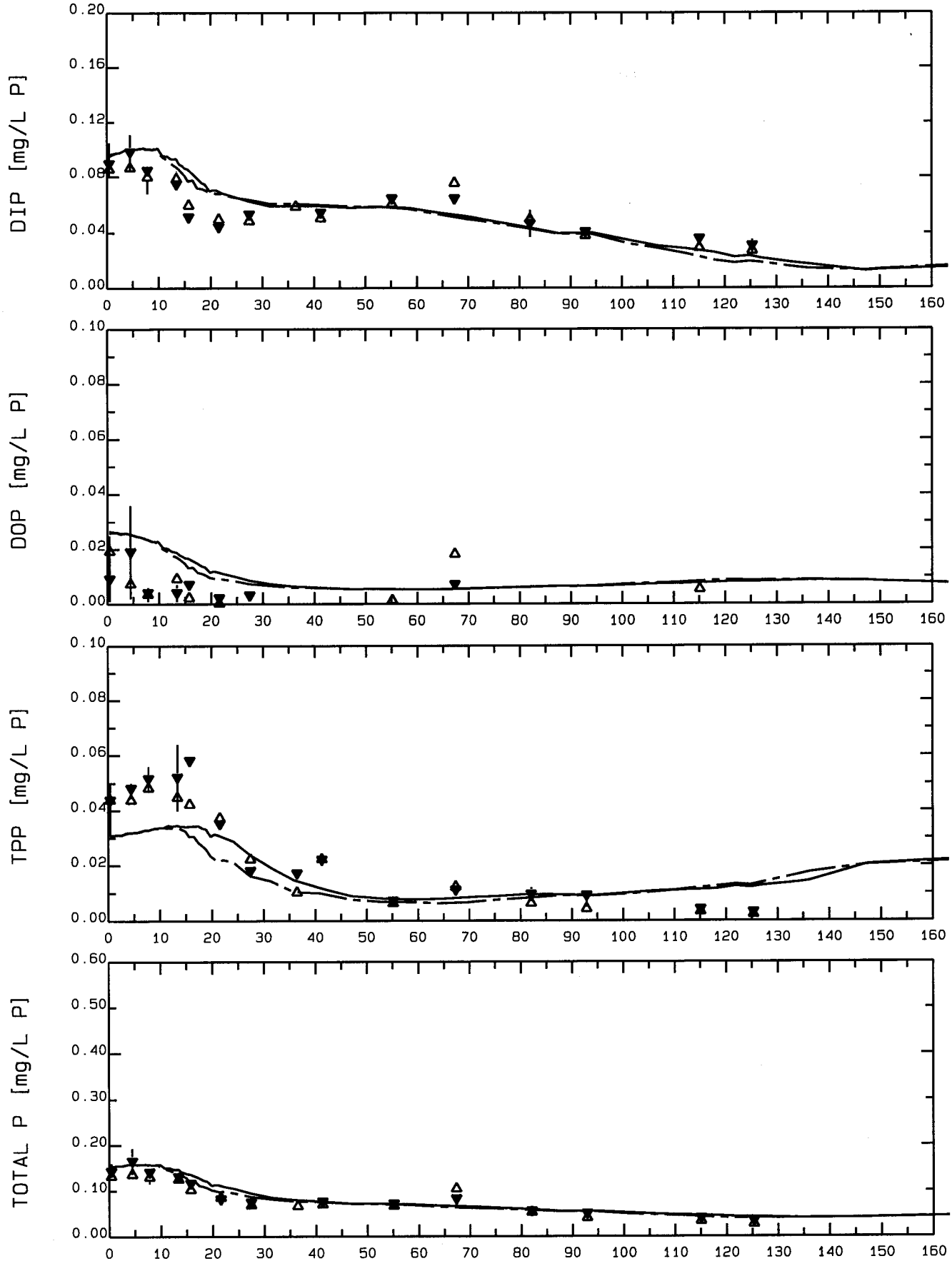
HydroQual SWEM Run 37



SURFACE MODEL
BOTTOM MODEL

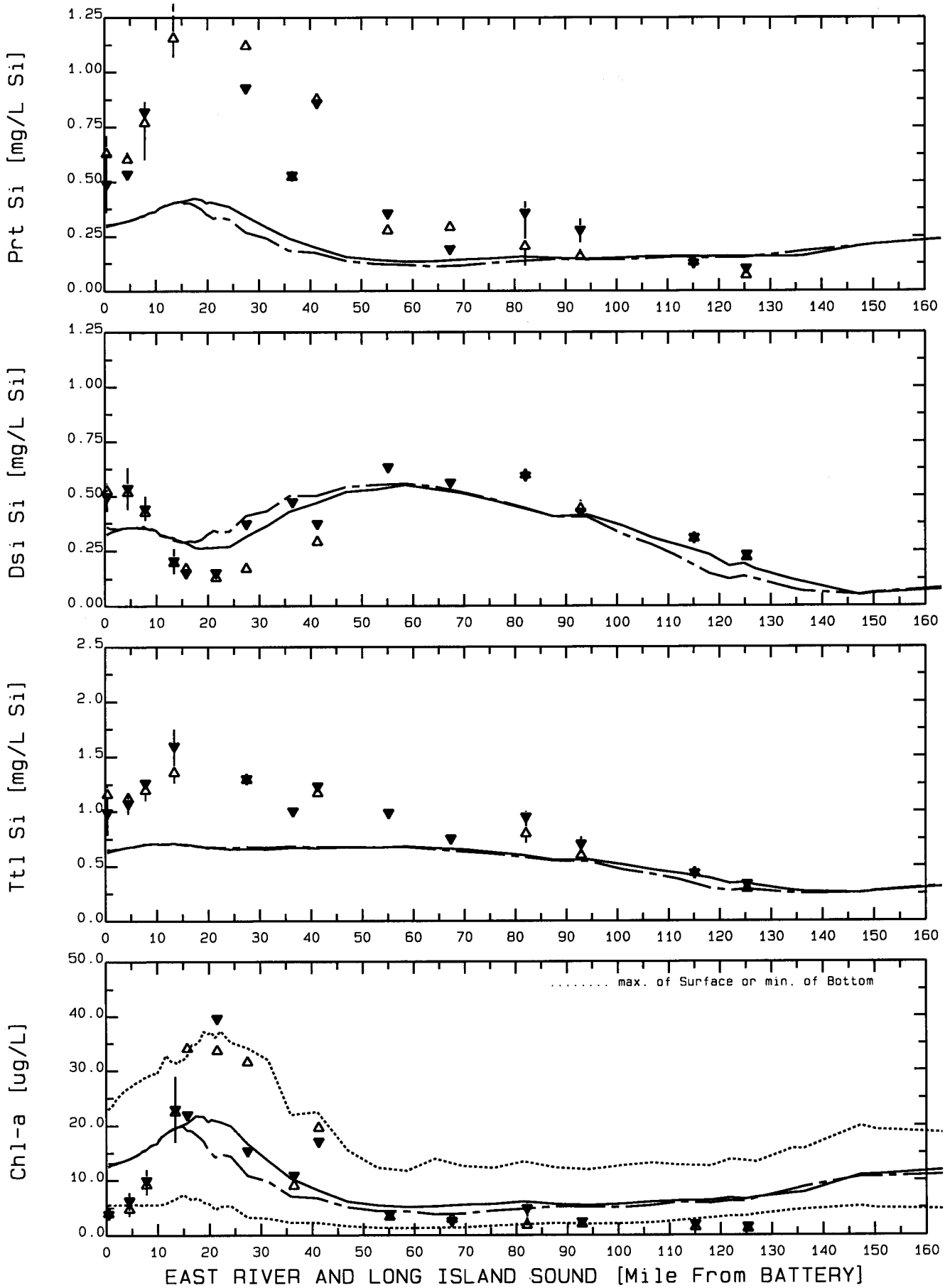
SWEM SPATIAL PROFILE - 8901

HydroQual SWEM Run 37



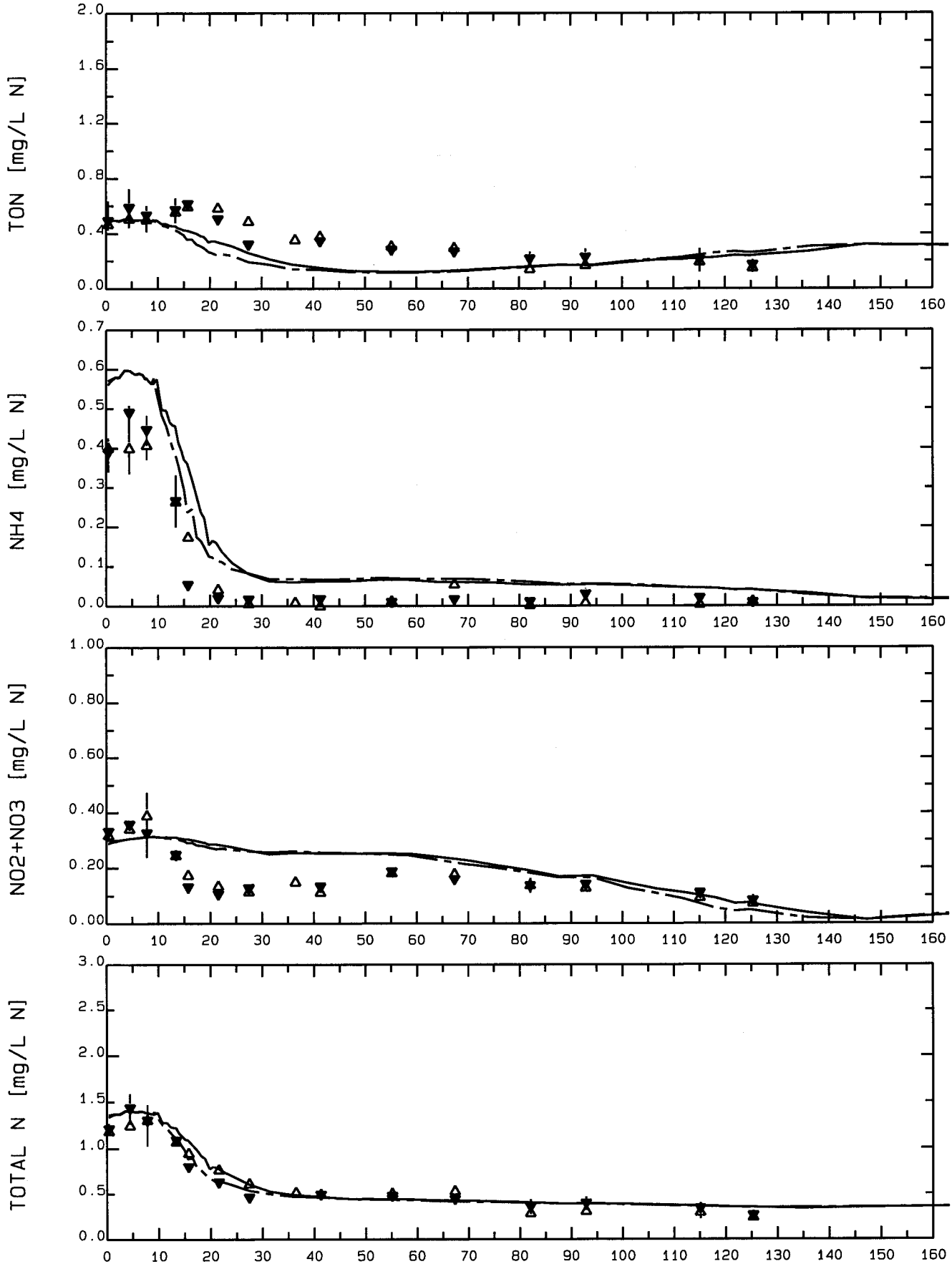
SWEM SPATIAL PROFILE - 8901

HydroQual SWEM Run 37



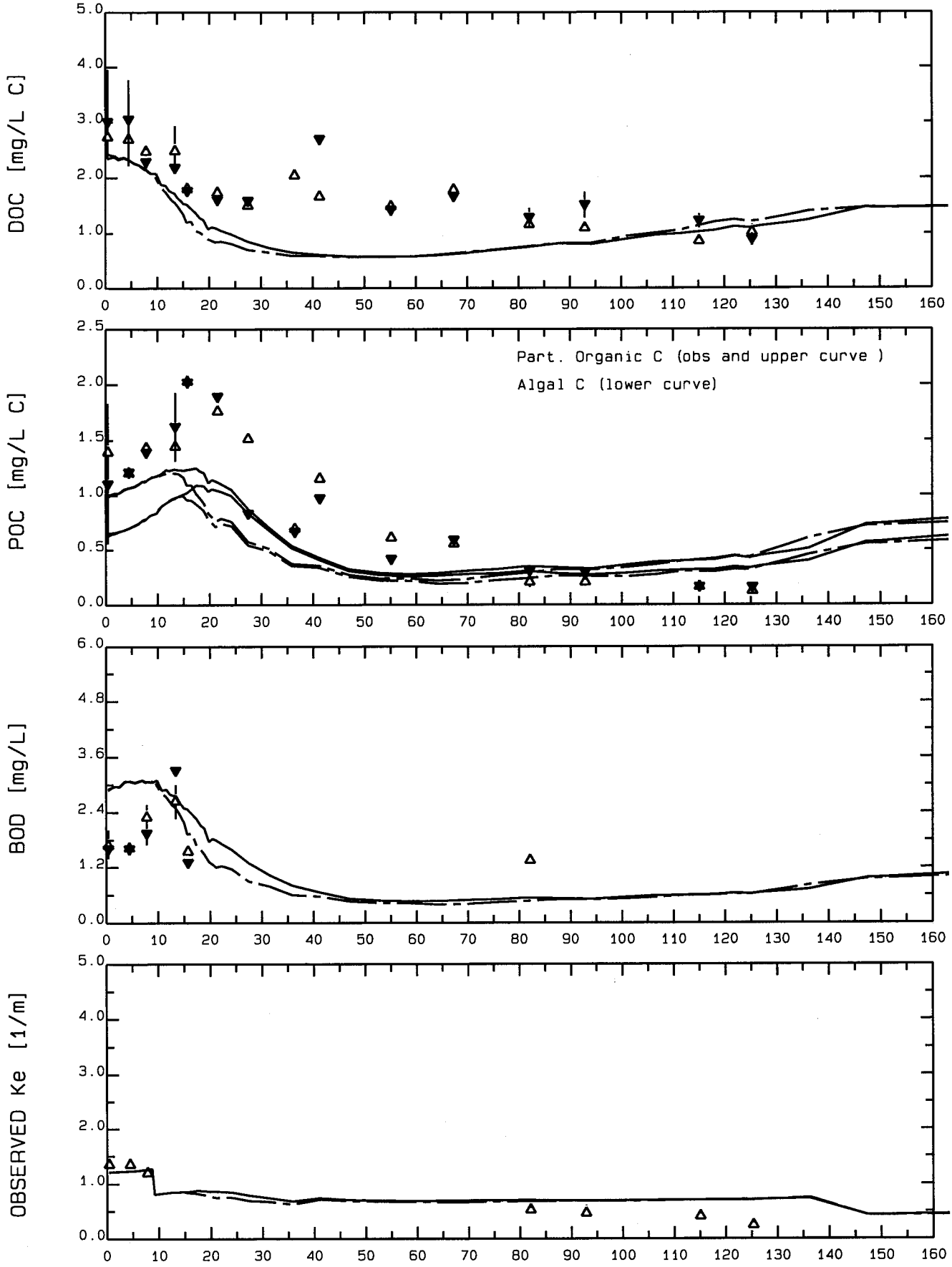
SWEM SPATIAL PROFILE - 8901

HydroQual SWEM Run 37



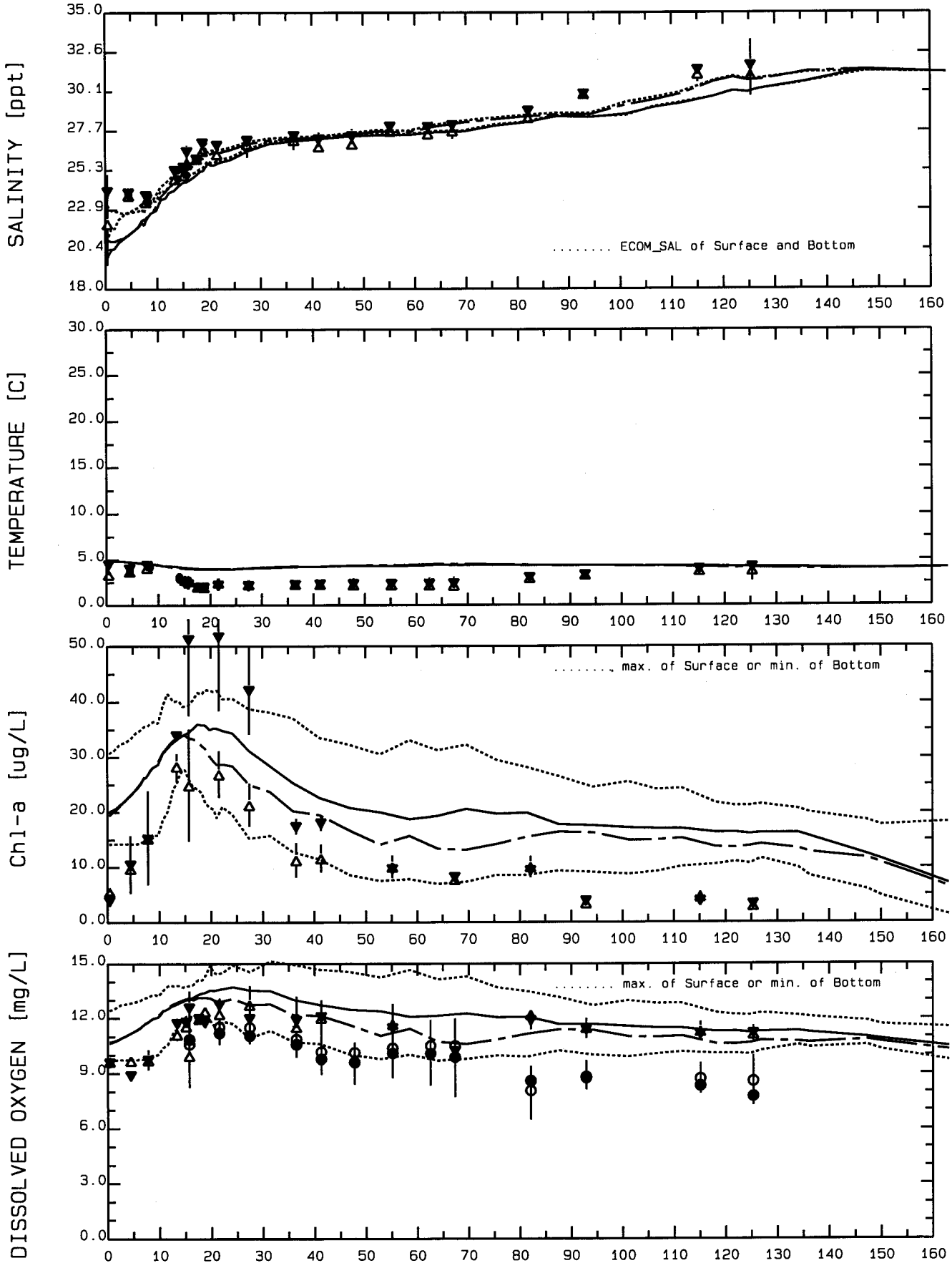
SWEM SPATIAL PROFILE - 8901

HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8901

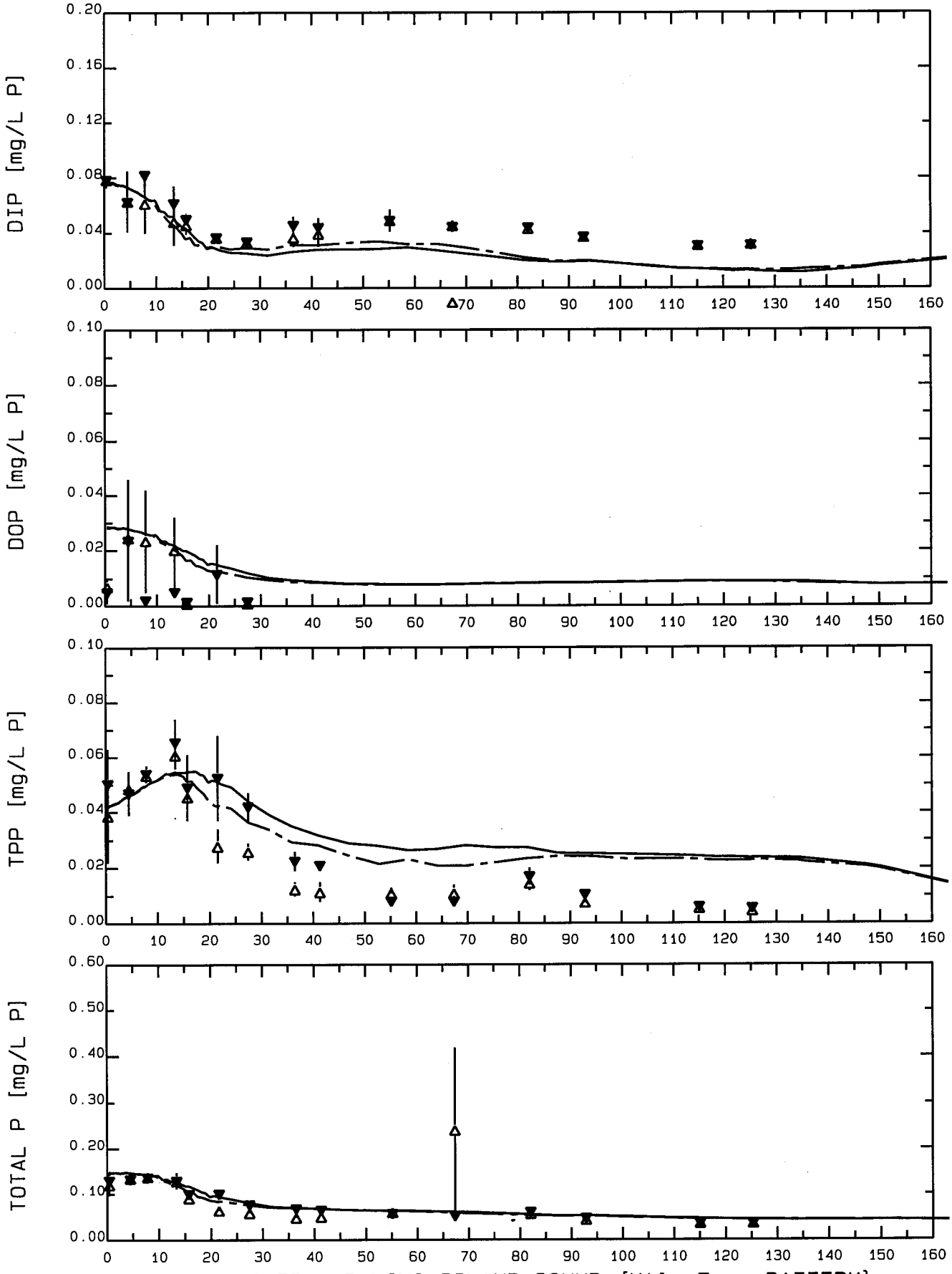
HydroQual SWEM Run 37



SURFACE MODEL
BOTTOM MODEL

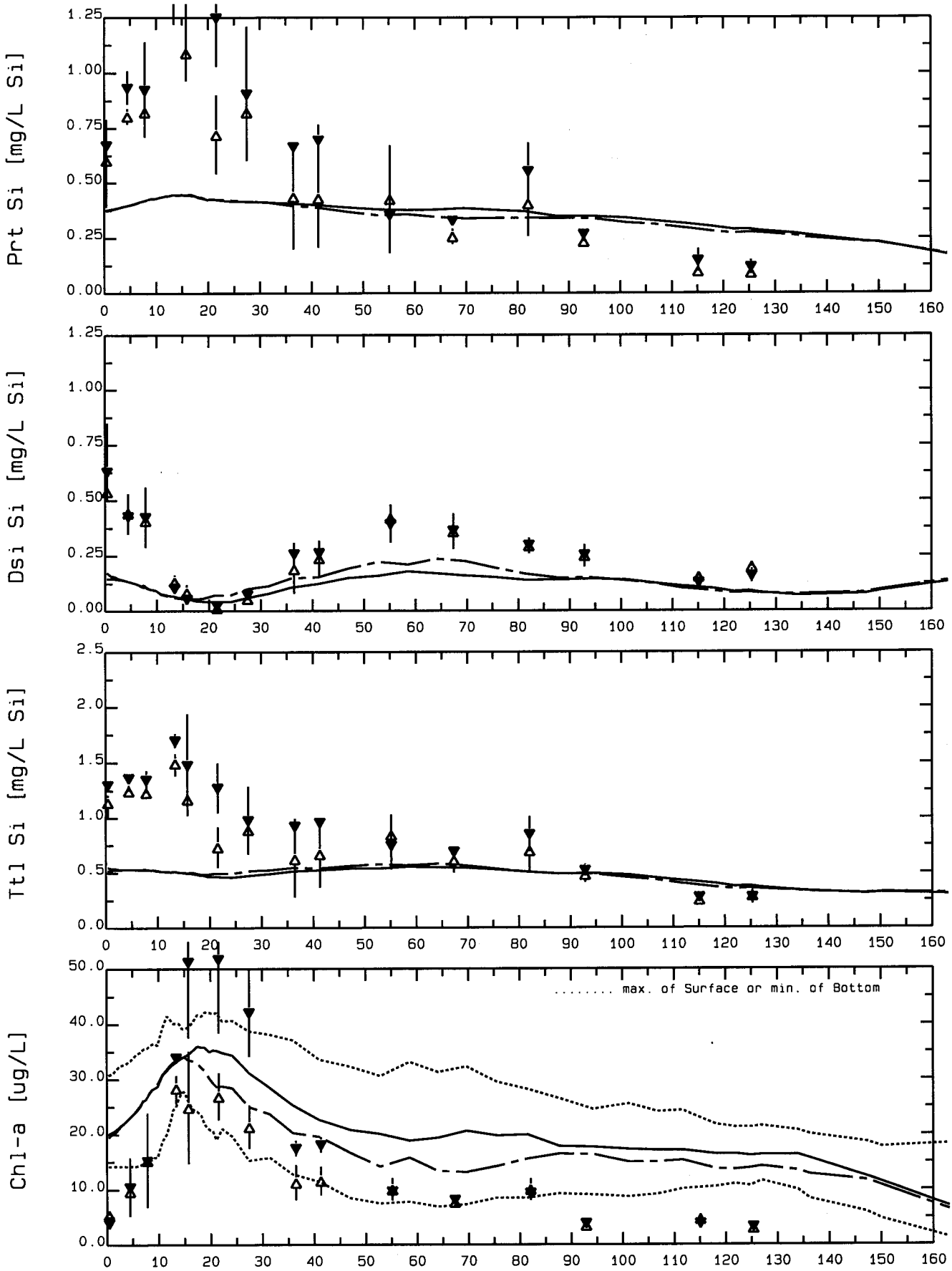
SWEM SPATIAL PROFILE - 8902

HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8902

HydroQual SWEM Run 37

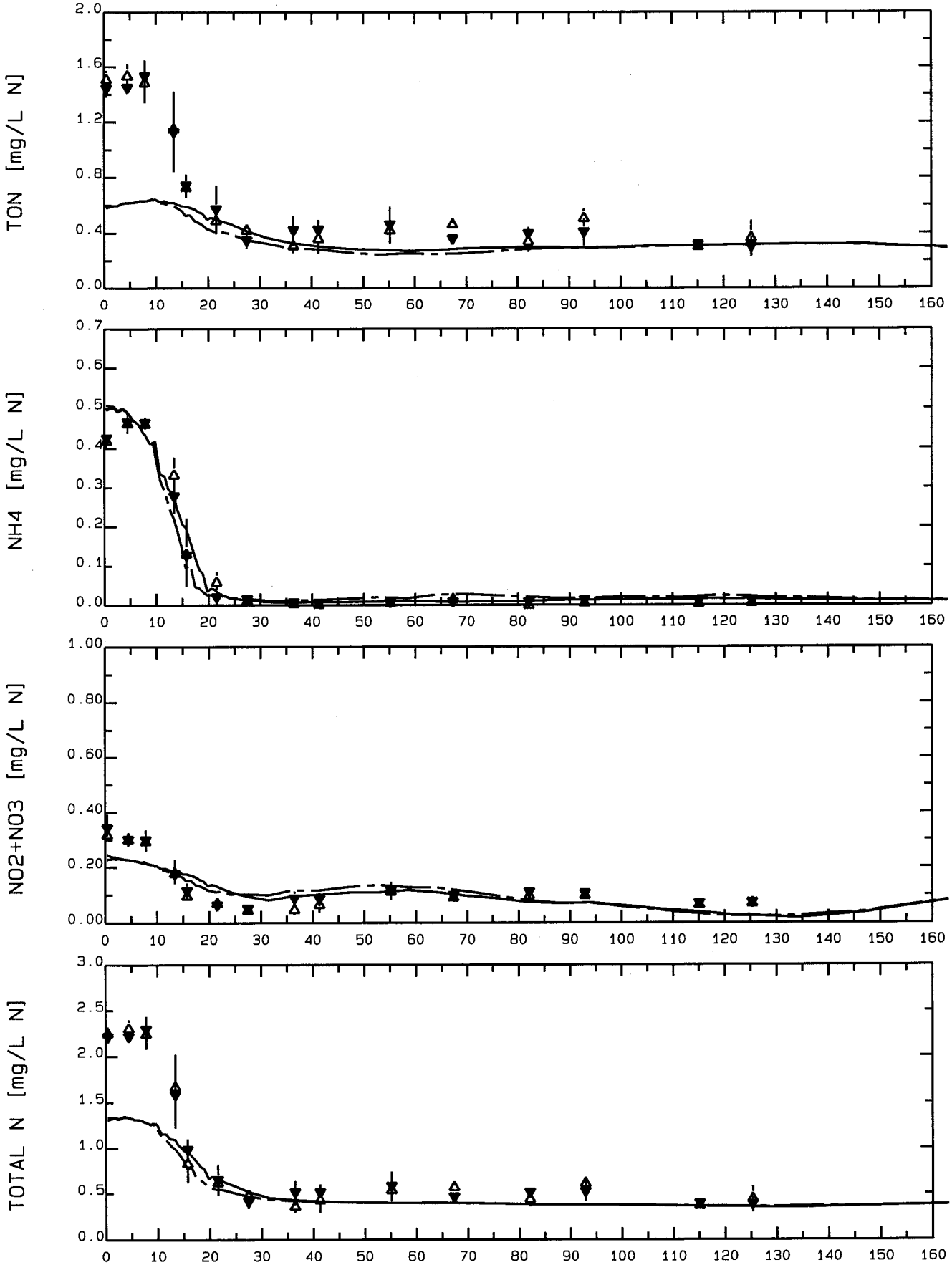


EAST RIVER AND LONG ISLAND SOUND [Mile From BATTERY]
SWEM 1988-89 VALIDATION

——— SURFACE MODEL
– – – BOTTOM MODEL

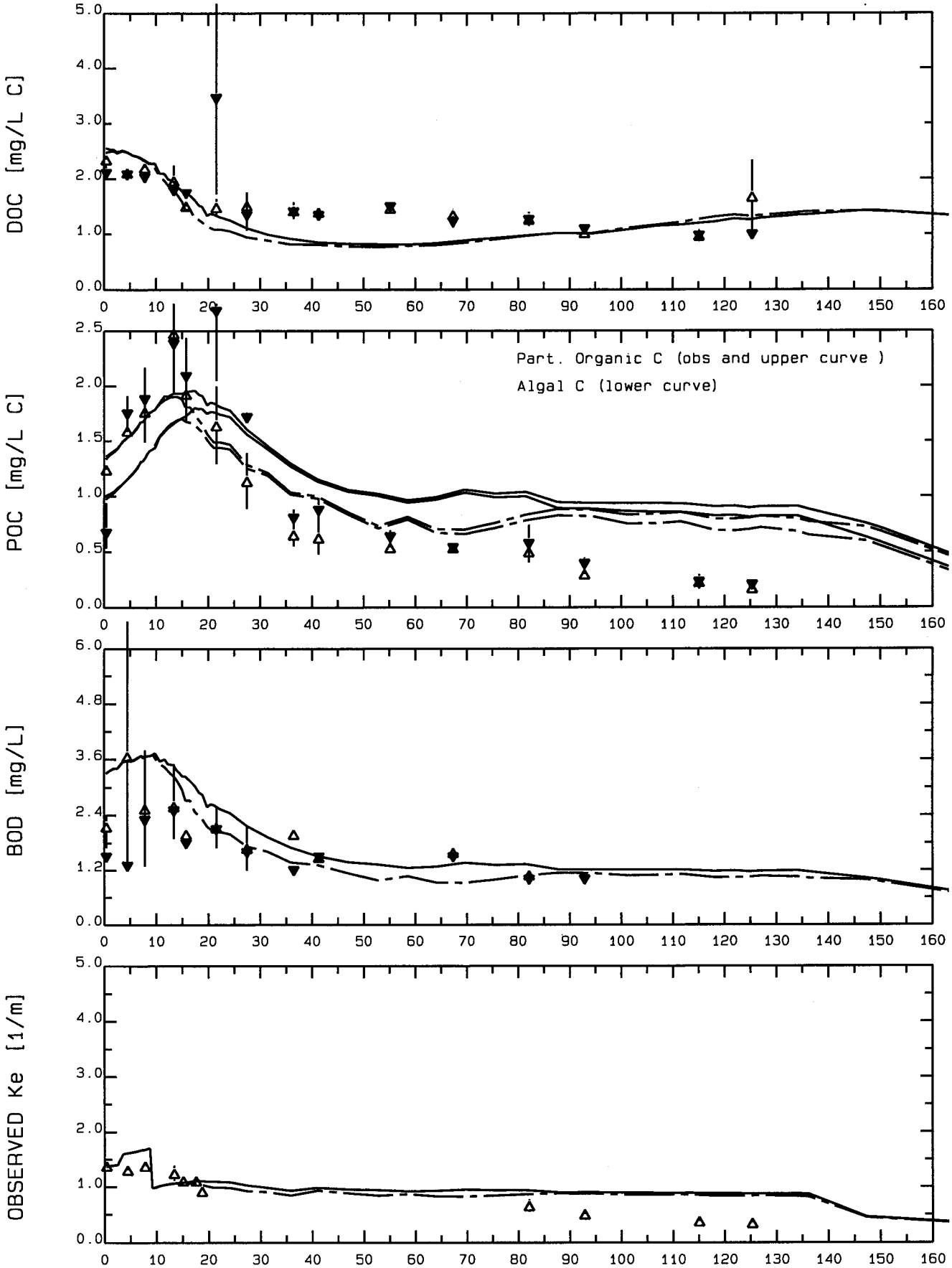
SWEM SPATIAL PROFILE - 8902

HydroQual SWEM Run 37



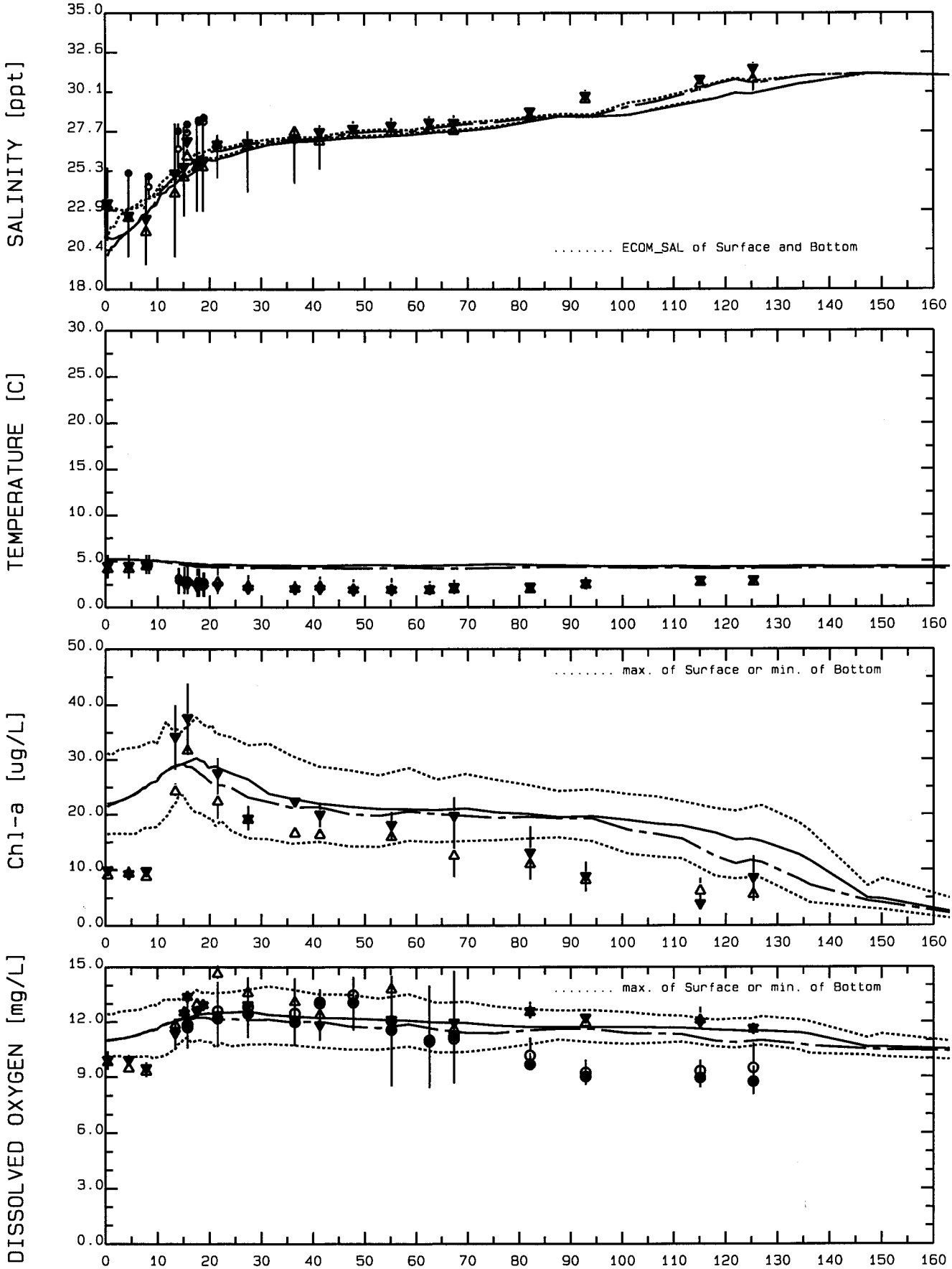
SWEM SPATIAL PROFILE - 8902

HydroQual SWEM Run 37



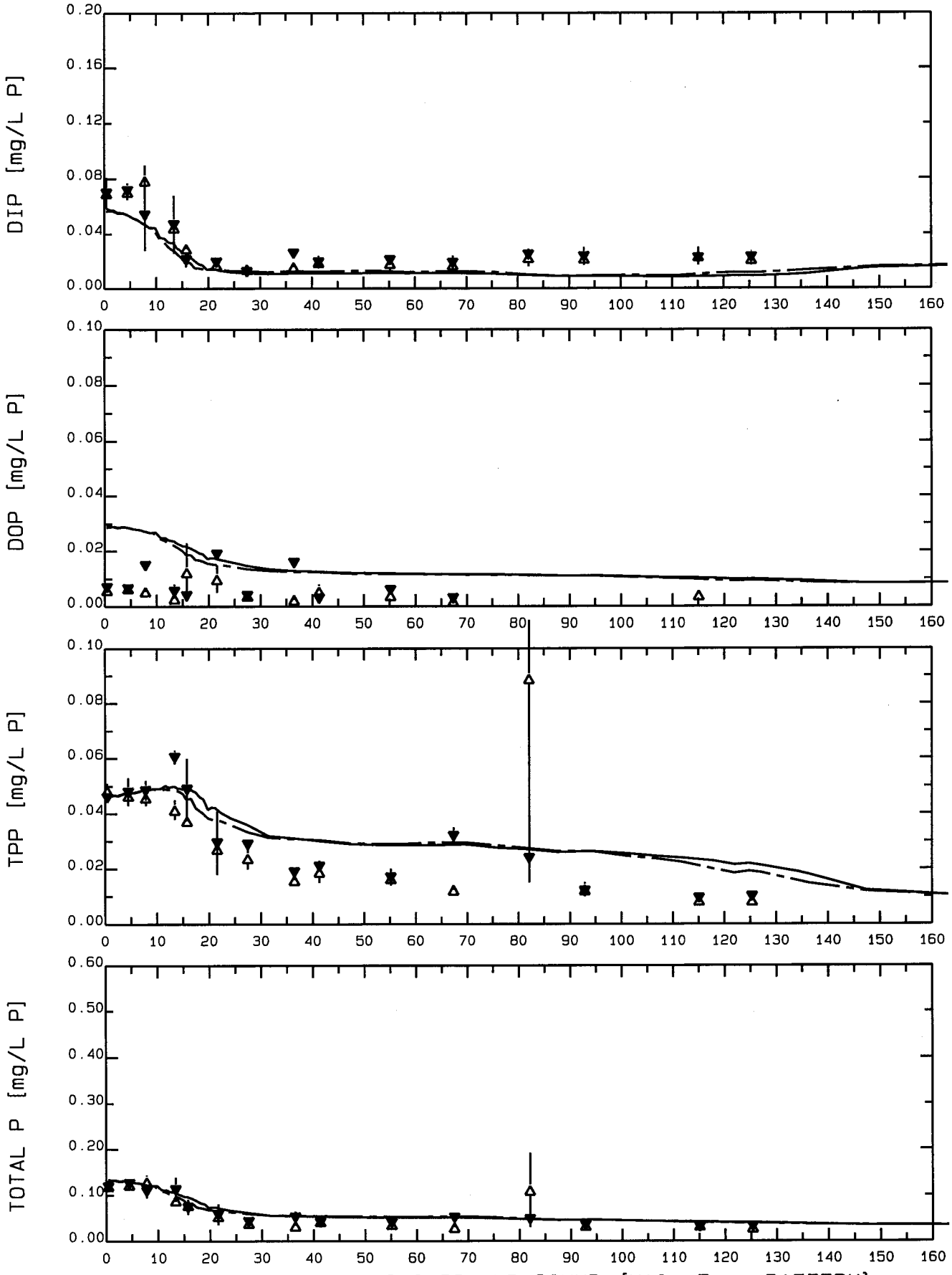
SWEM SPATIAL PROFILE - 8902

HydroQual SWEM Run 37



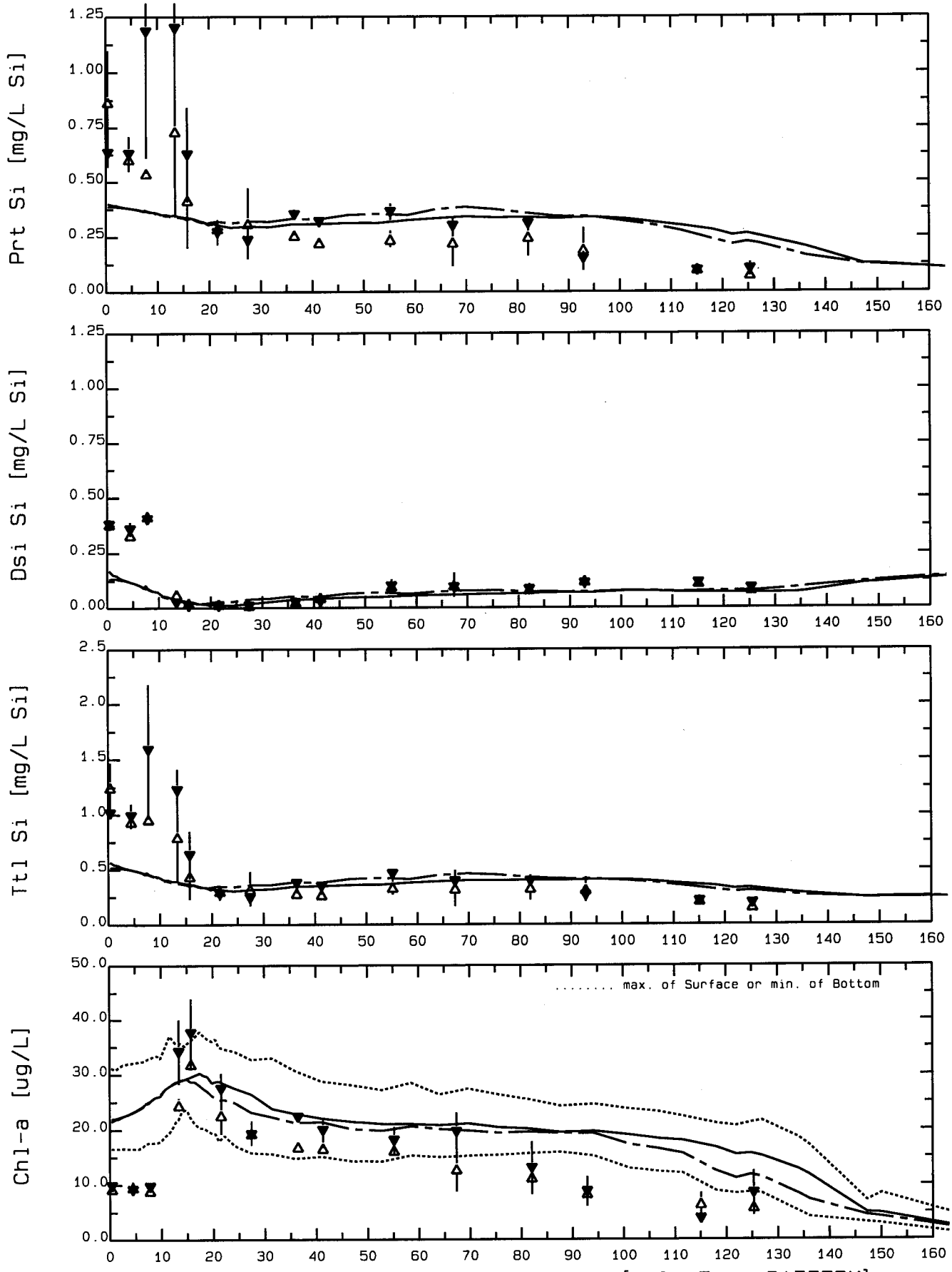
SWEM SPATIAL PROFILE - 8903

HydroQual SWEM Run 37



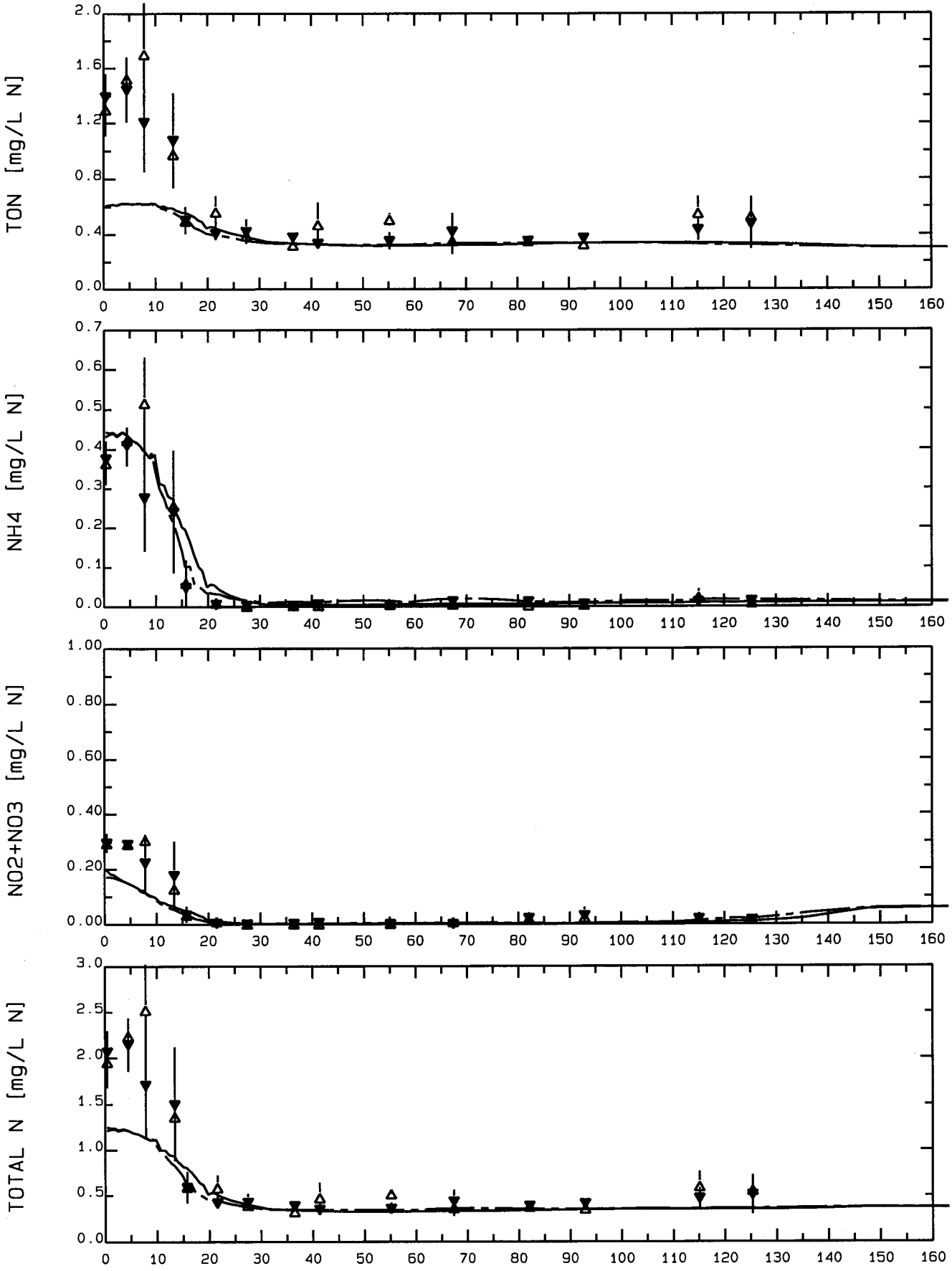
SWEM SPATIAL PROFILE - 8903

HydroQual SWEM Run 37



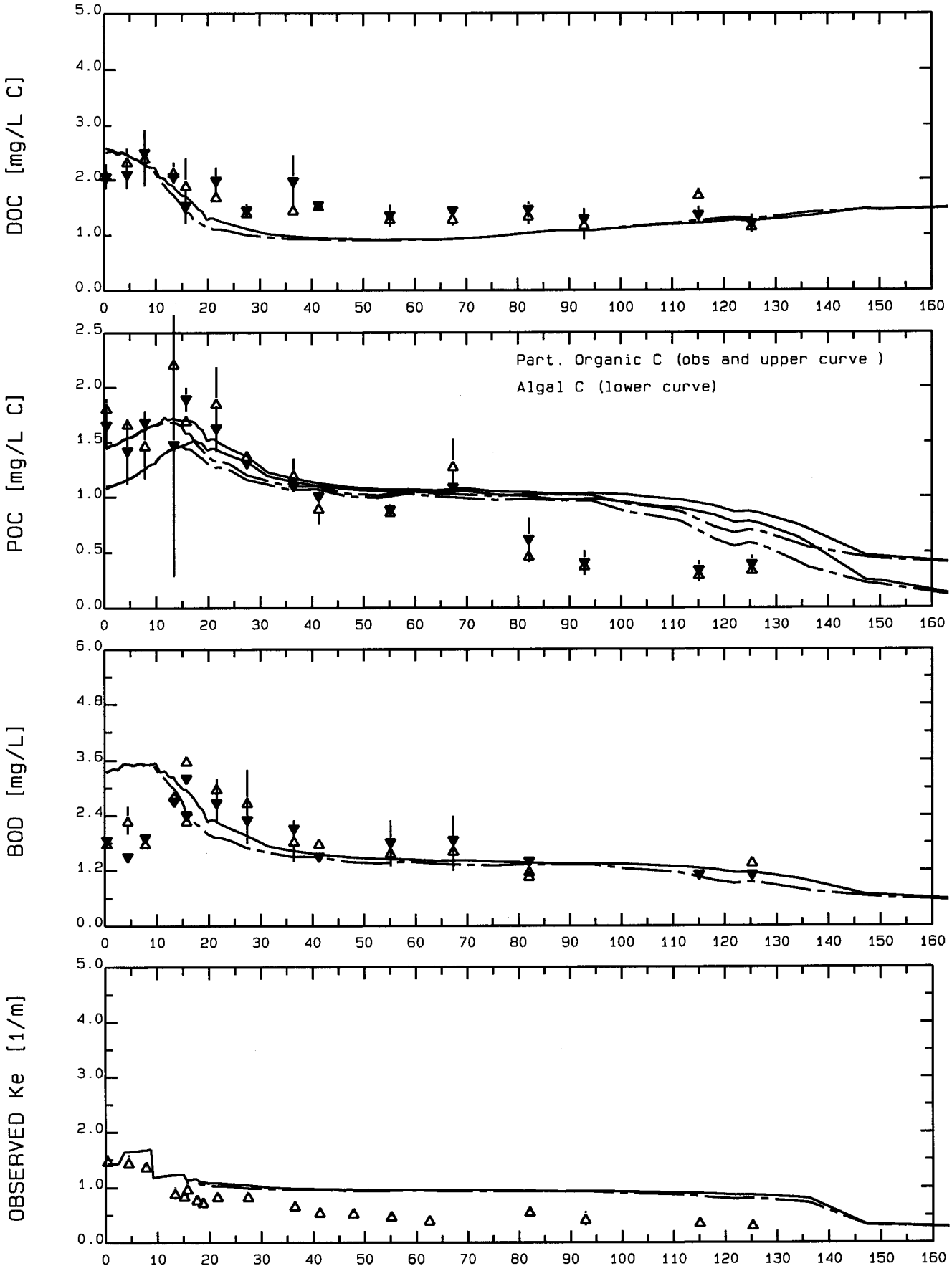
SWEM SPATIAL PROFILE - 8903

HydroQual SWEM Run 37



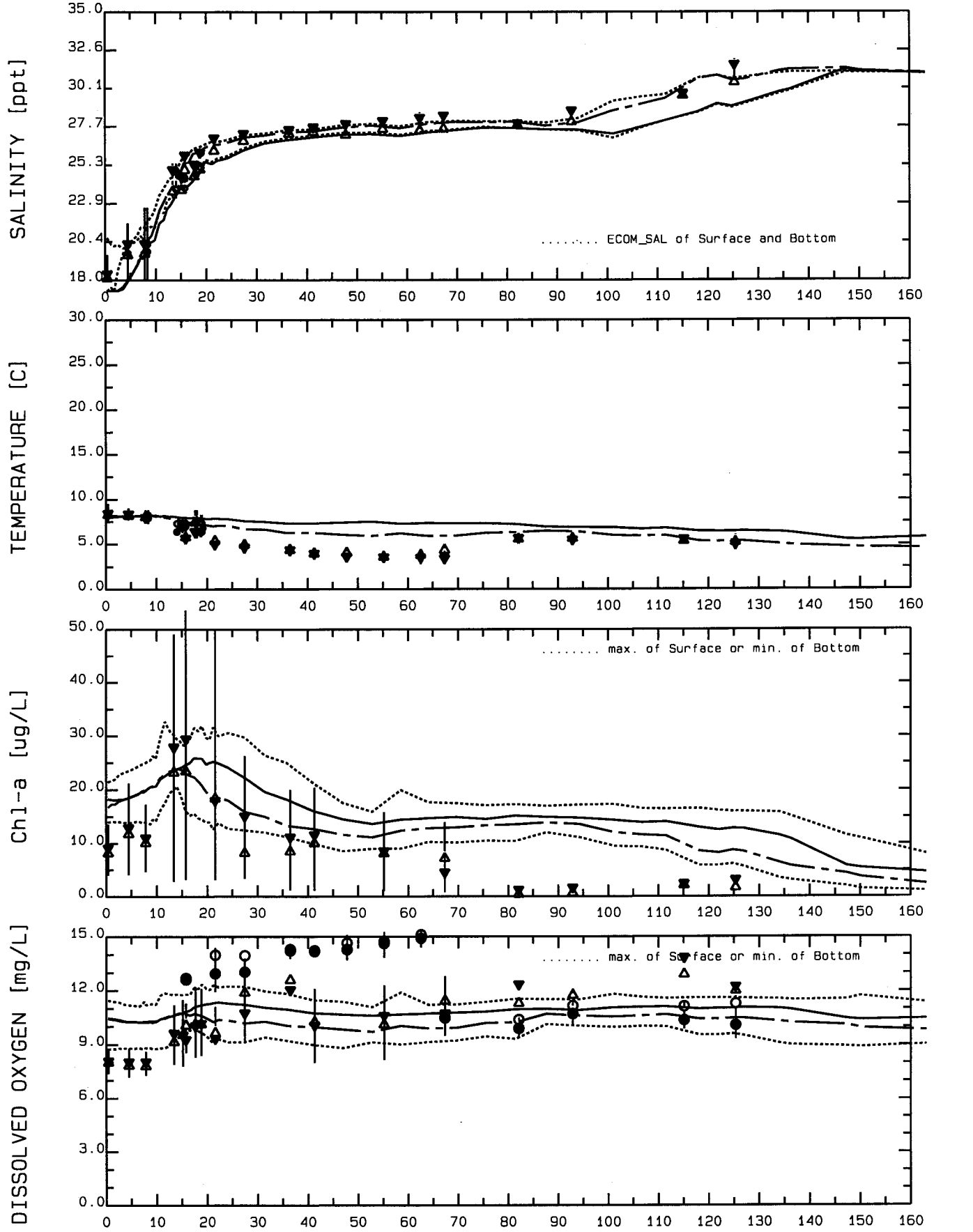
SWEM SPATIAL PROFILE - 8903

HydroQual SWEM Run 37



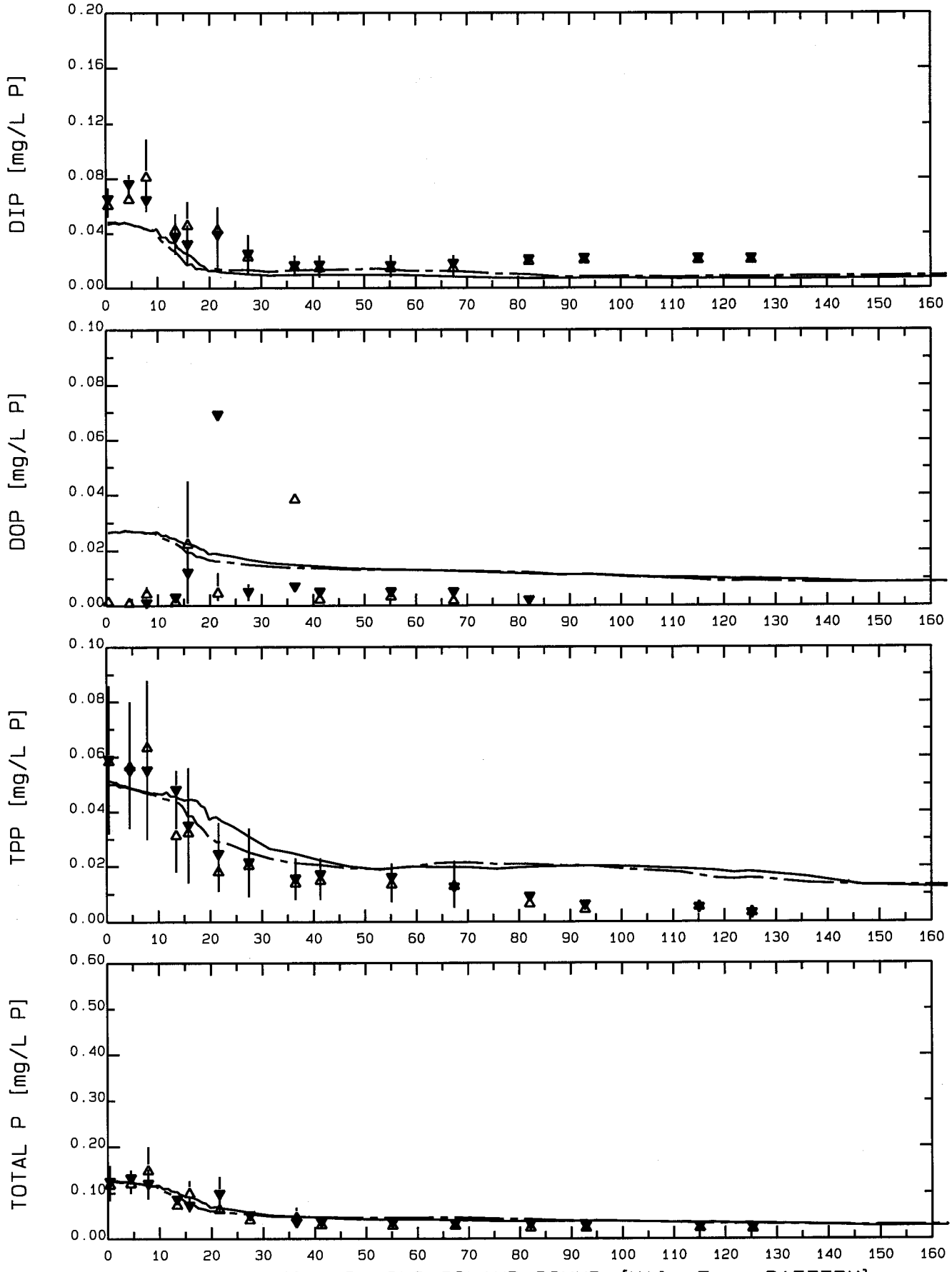
SWEM SPATIAL PROFILE - 8903

HydroQual SWEM Run 37



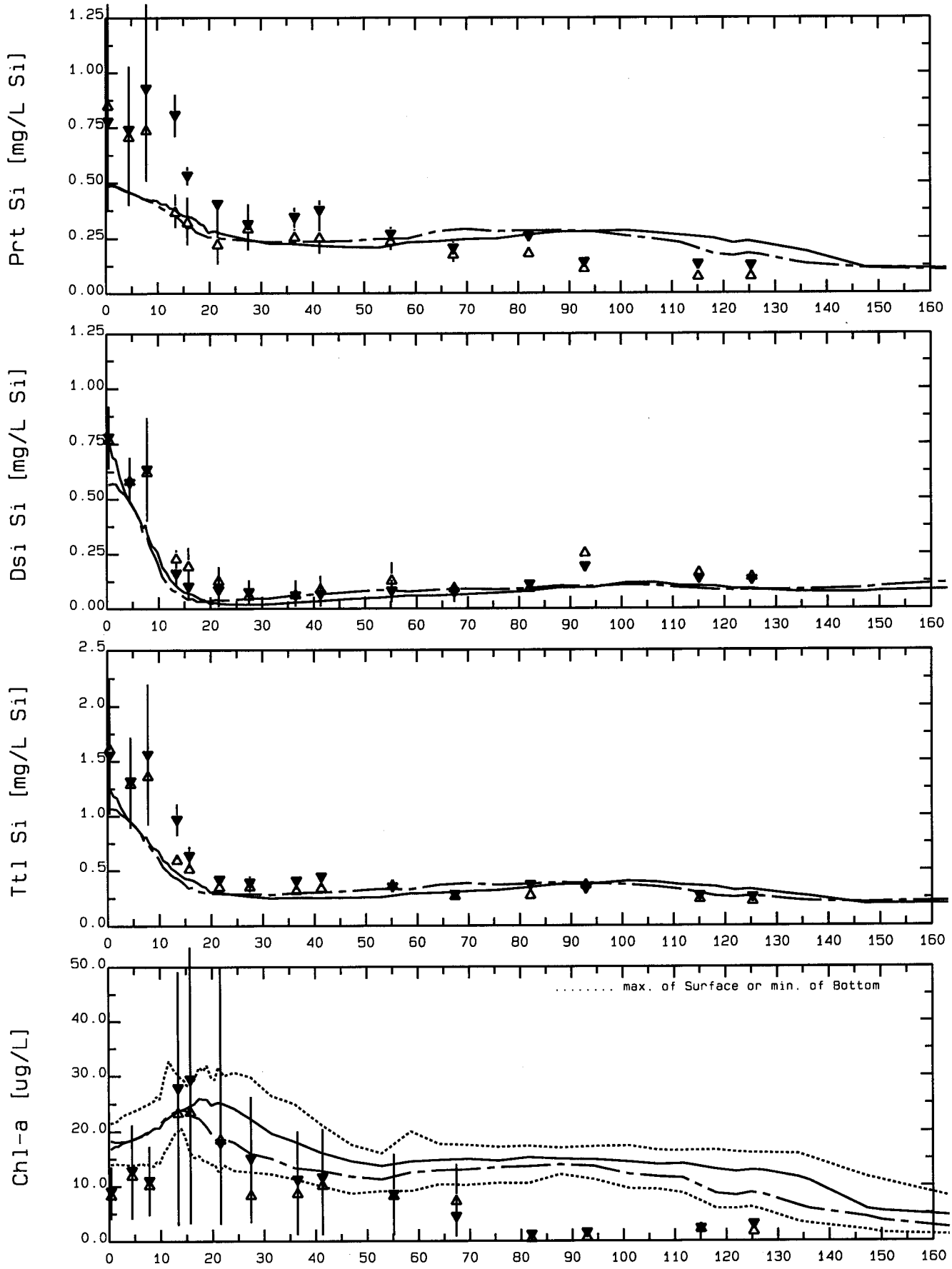
SWEM SPATIAL PROFILE - 8904

HydroQual SWEM Run 37



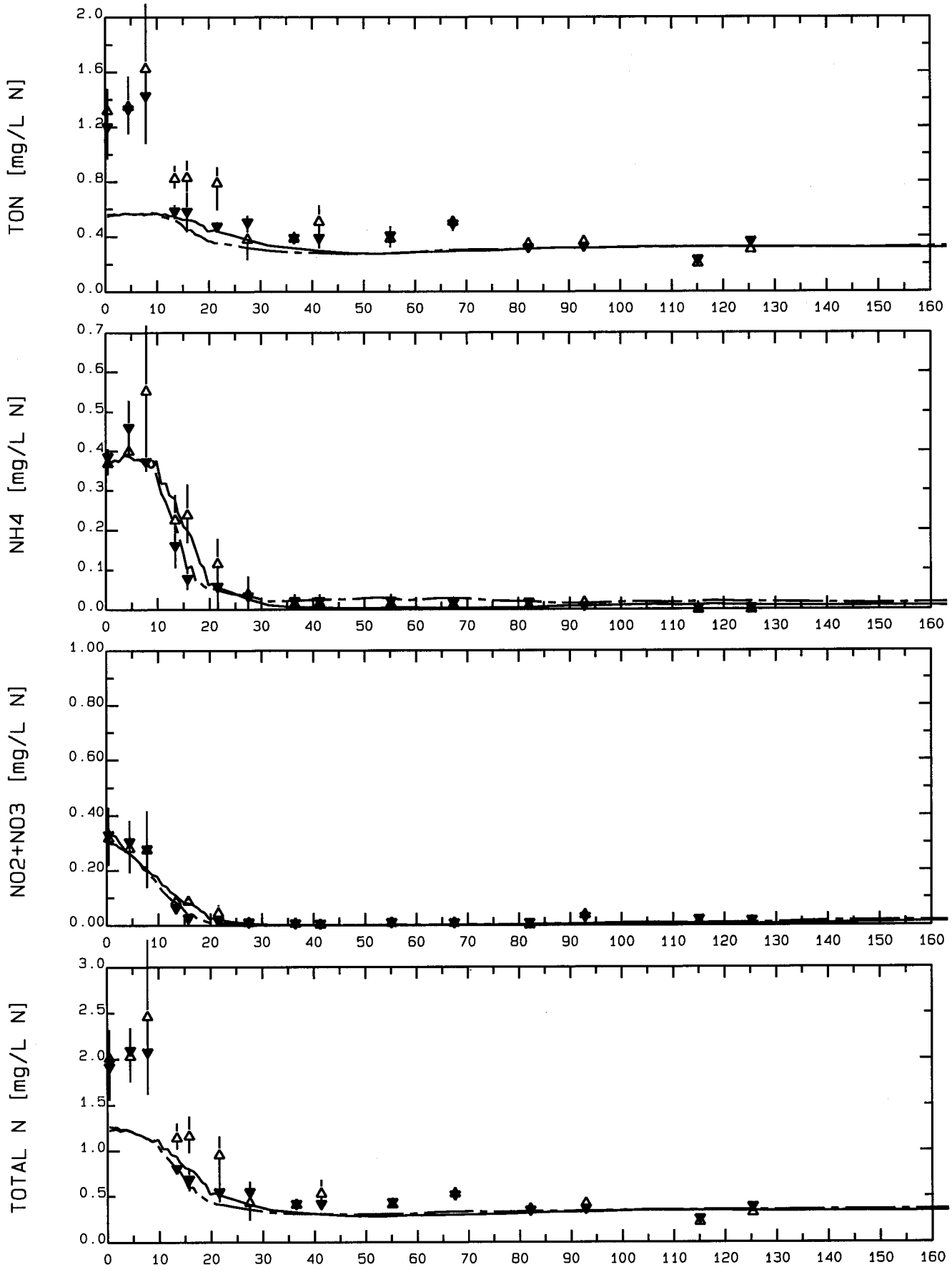
SWEM SPATIAL PROFILE - 8904

HydroQual SWEM Run 37



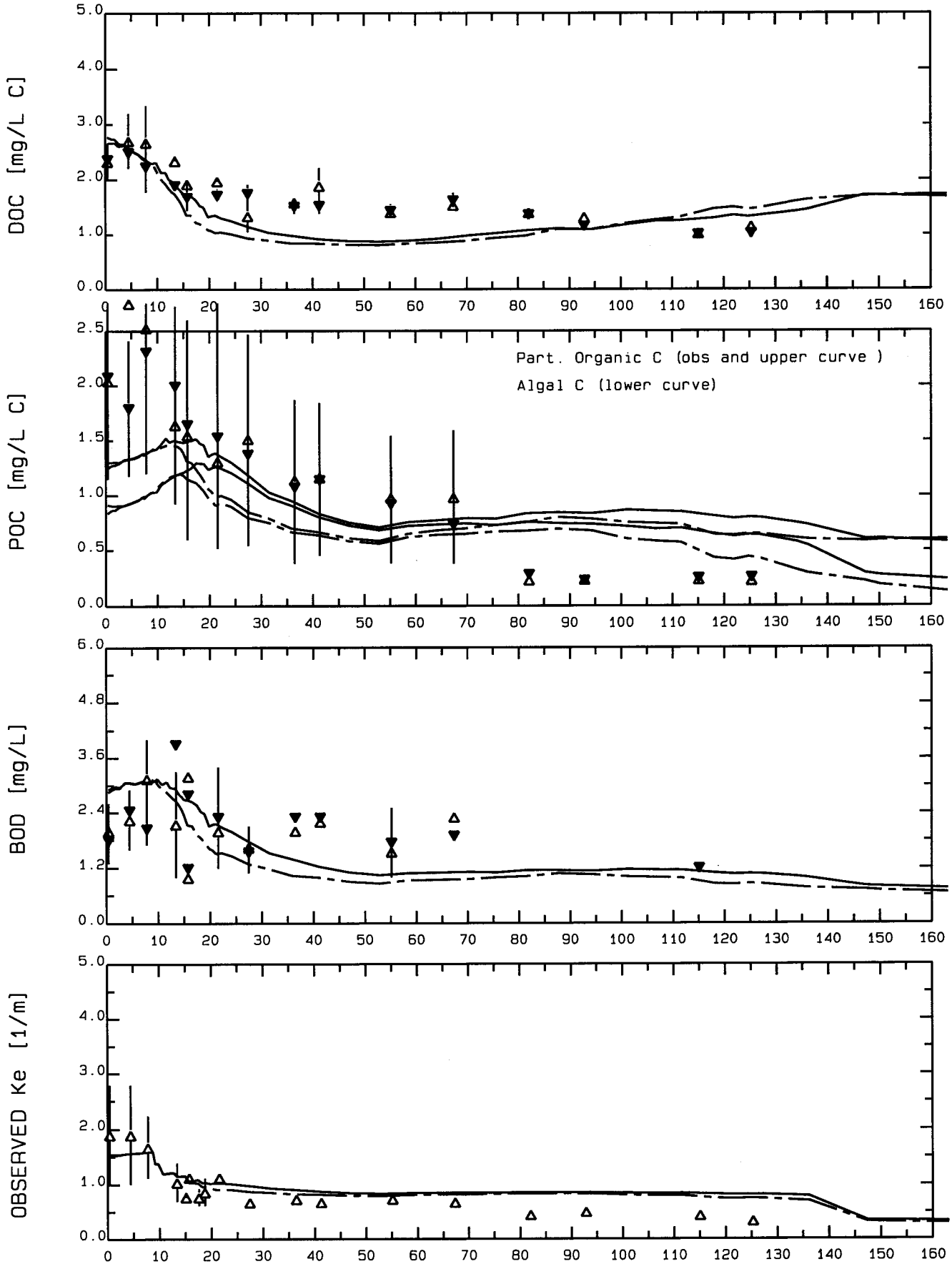
SWEM SPATIAL PROFILE - 8904

HydroQual SWEM Run 37



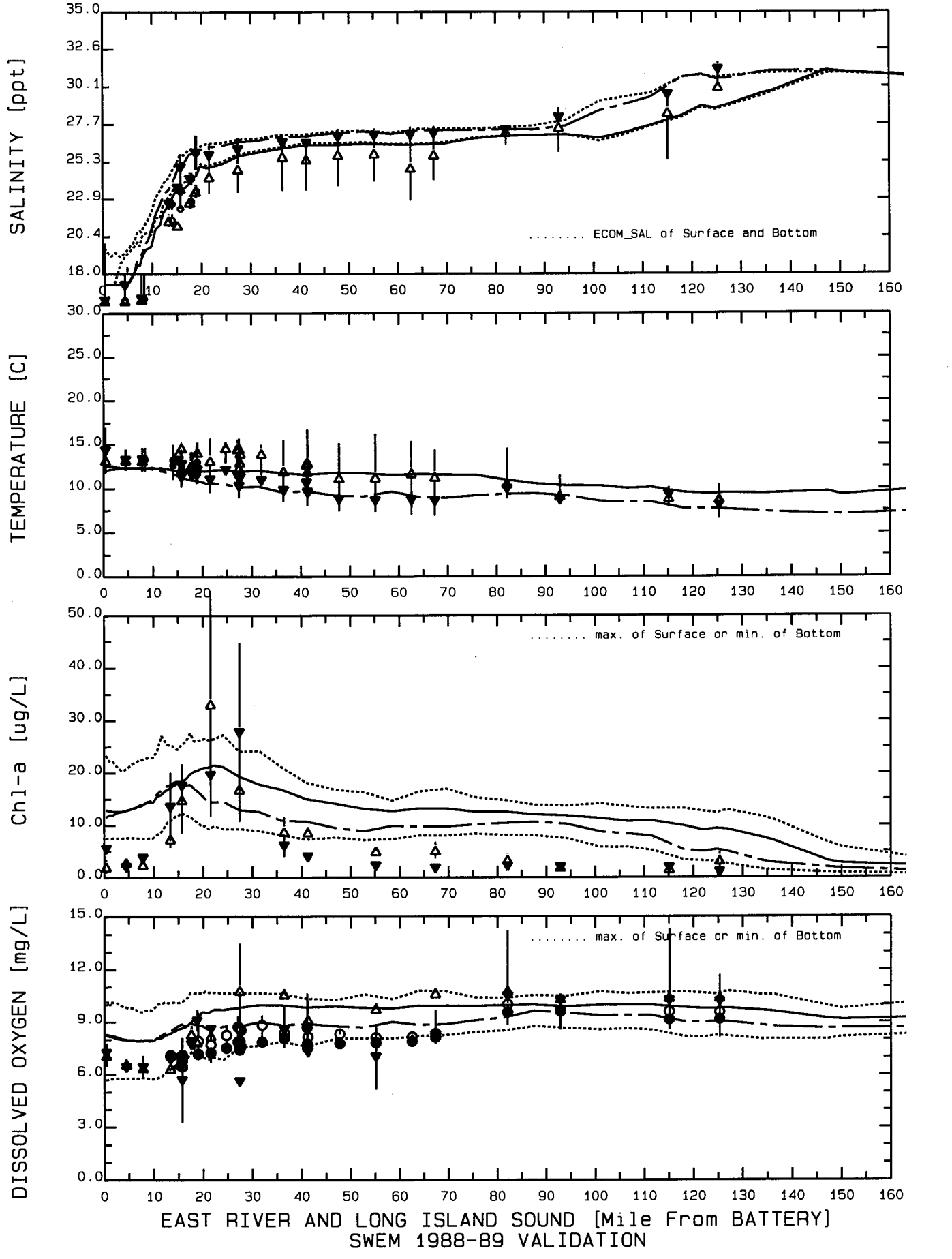
SWEM SPATIAL PROFILE - 8904

HydroQual SWEM Run 37



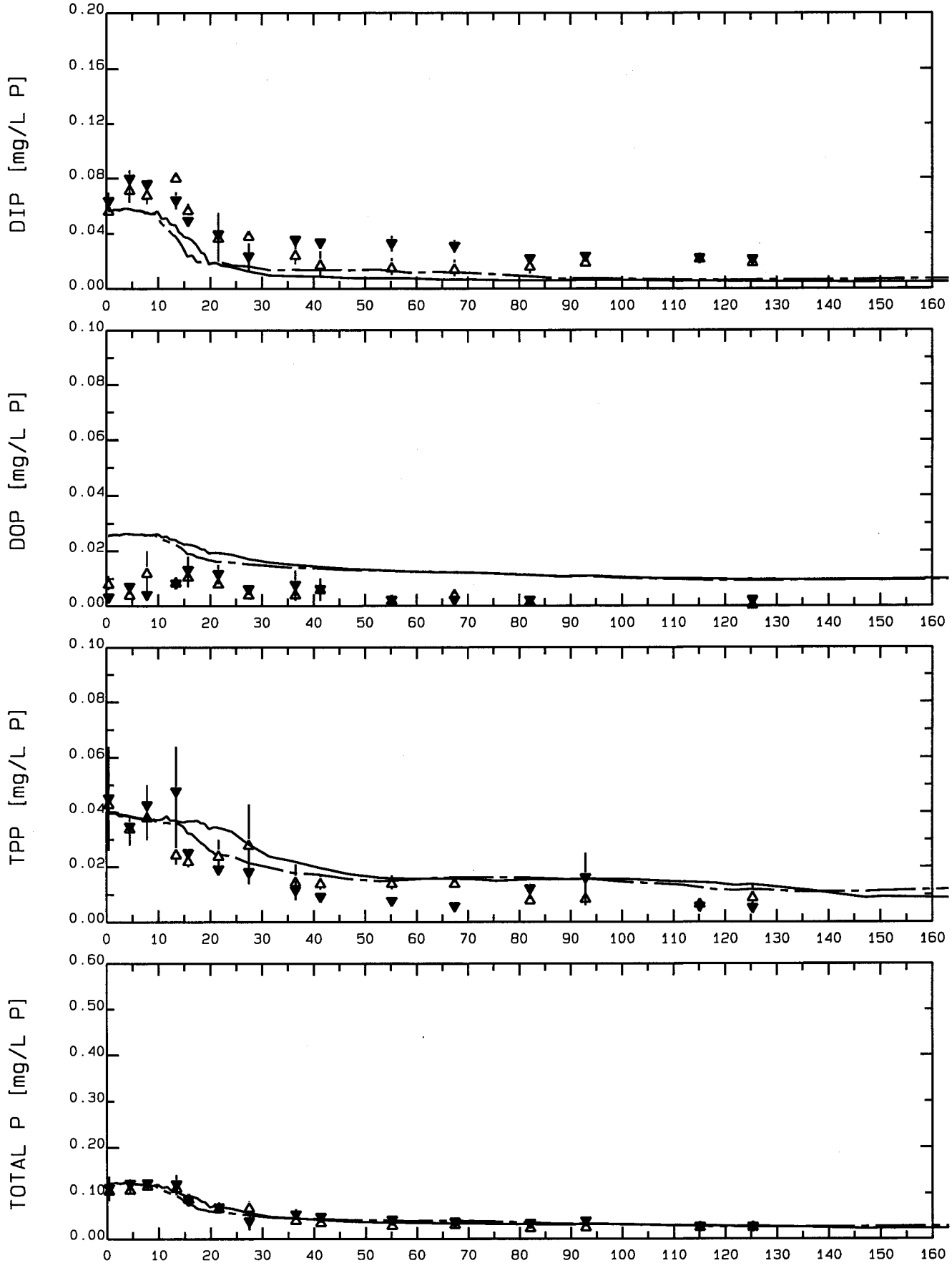
SWEM SPATIAL PROFILE - 8904

HydroQual SWEM Run 37



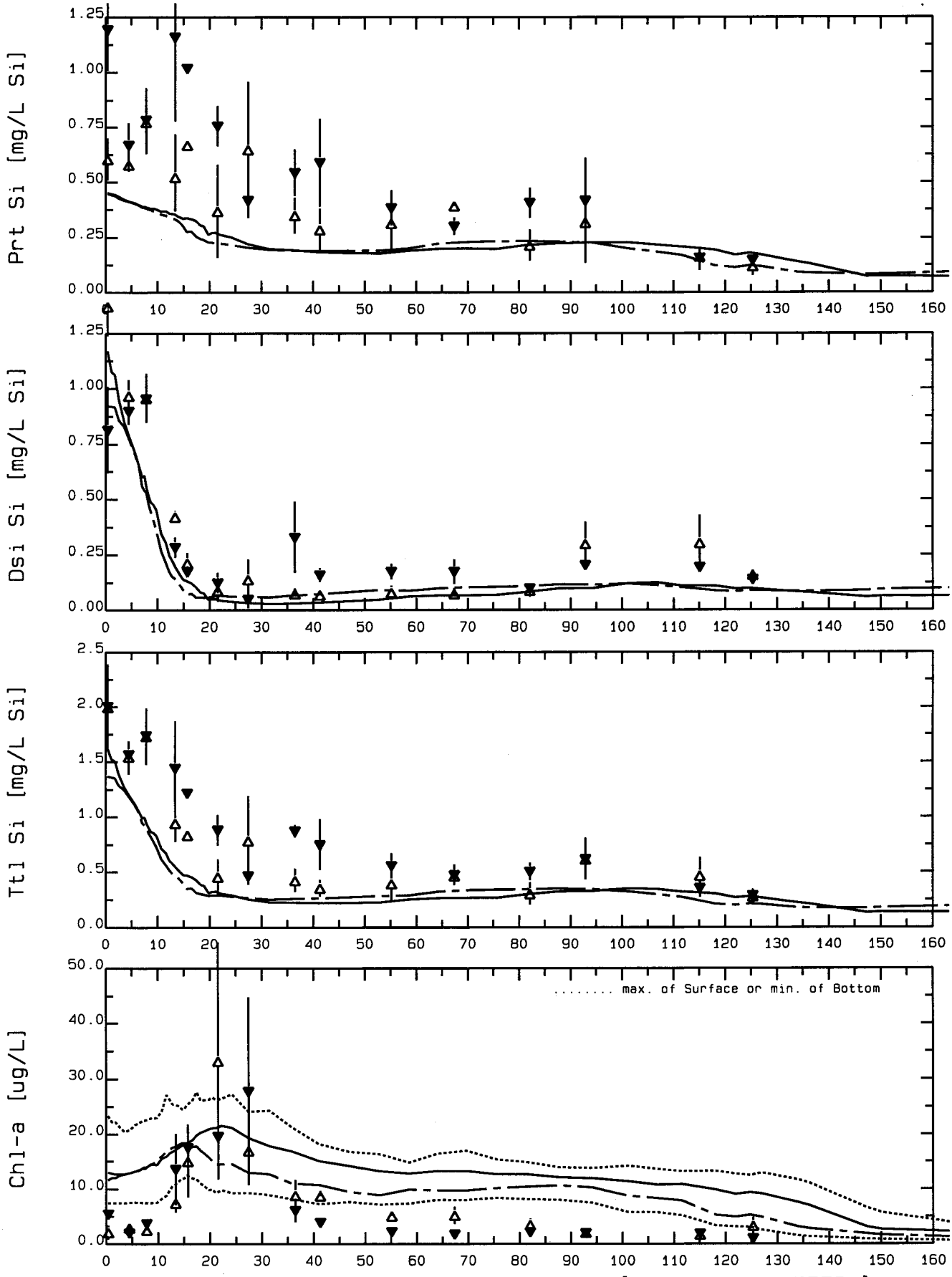
SWEM SPATIAL PROFILE - 8905

HydroQual SWEM Run 37



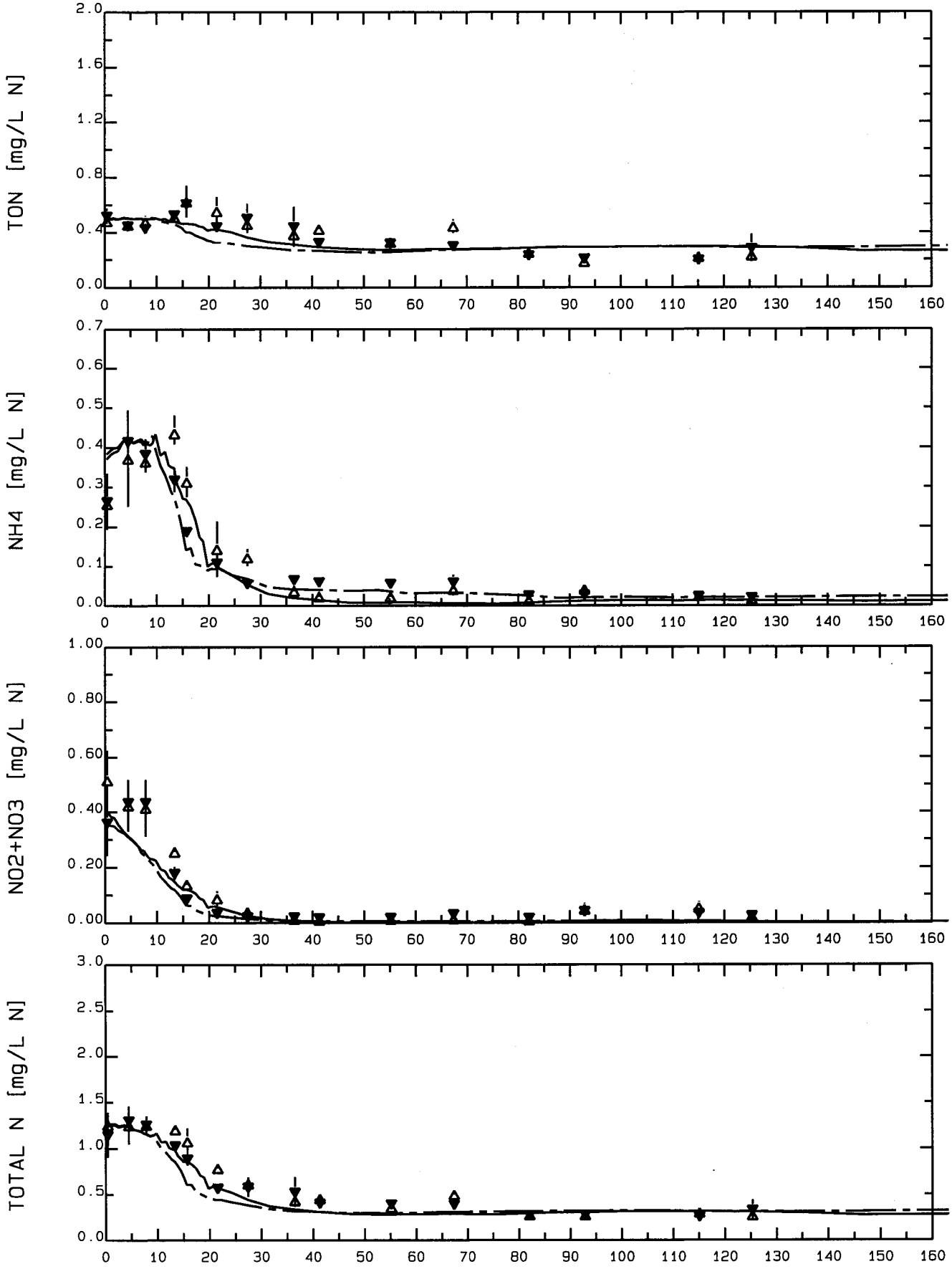
SWEM SPATIAL PROFILE - 8905

HydroQual SWEM Run 37



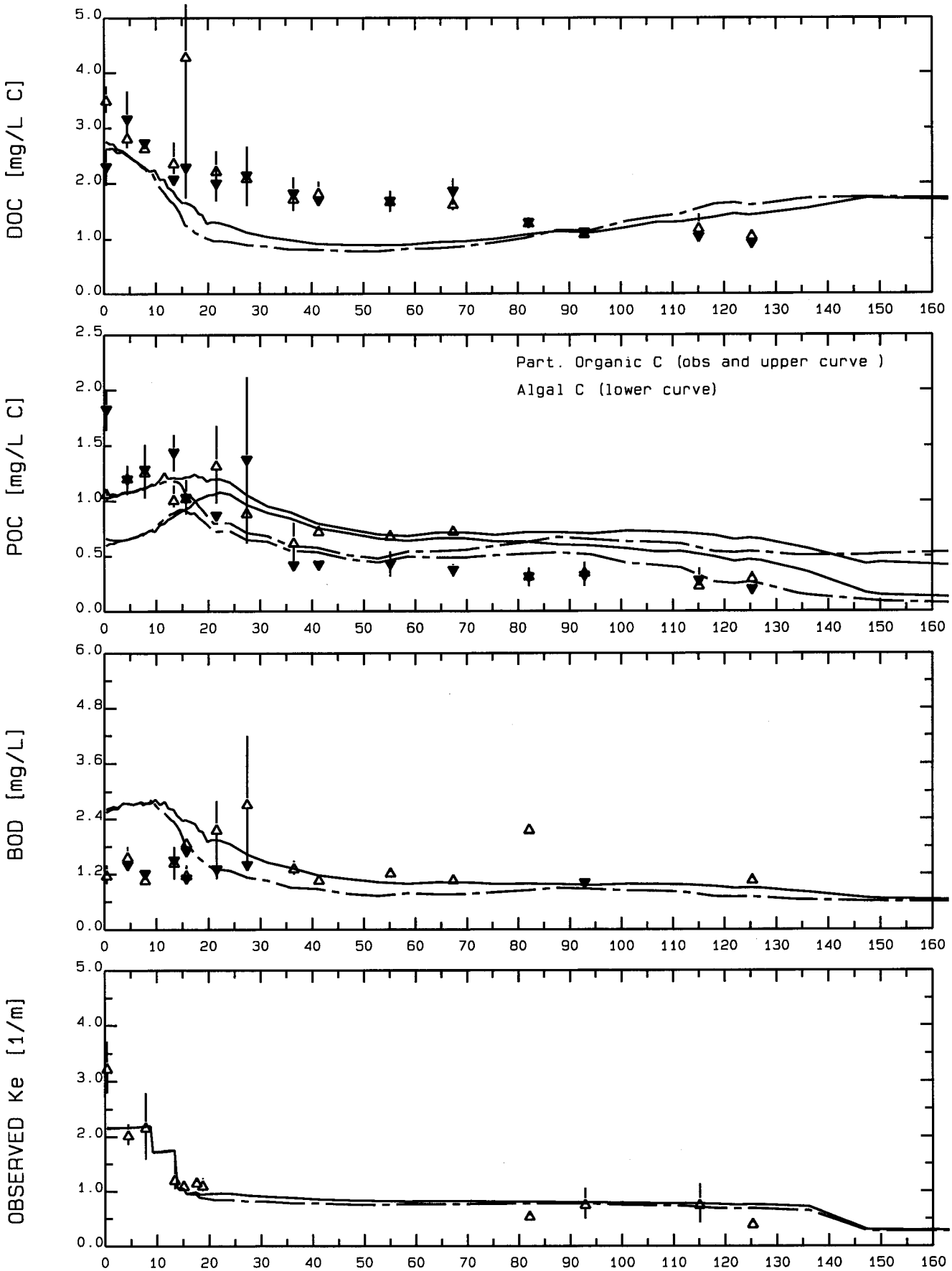
SWEM SPATIAL PROFILE - 8905

HydroQual SWEM Run 37



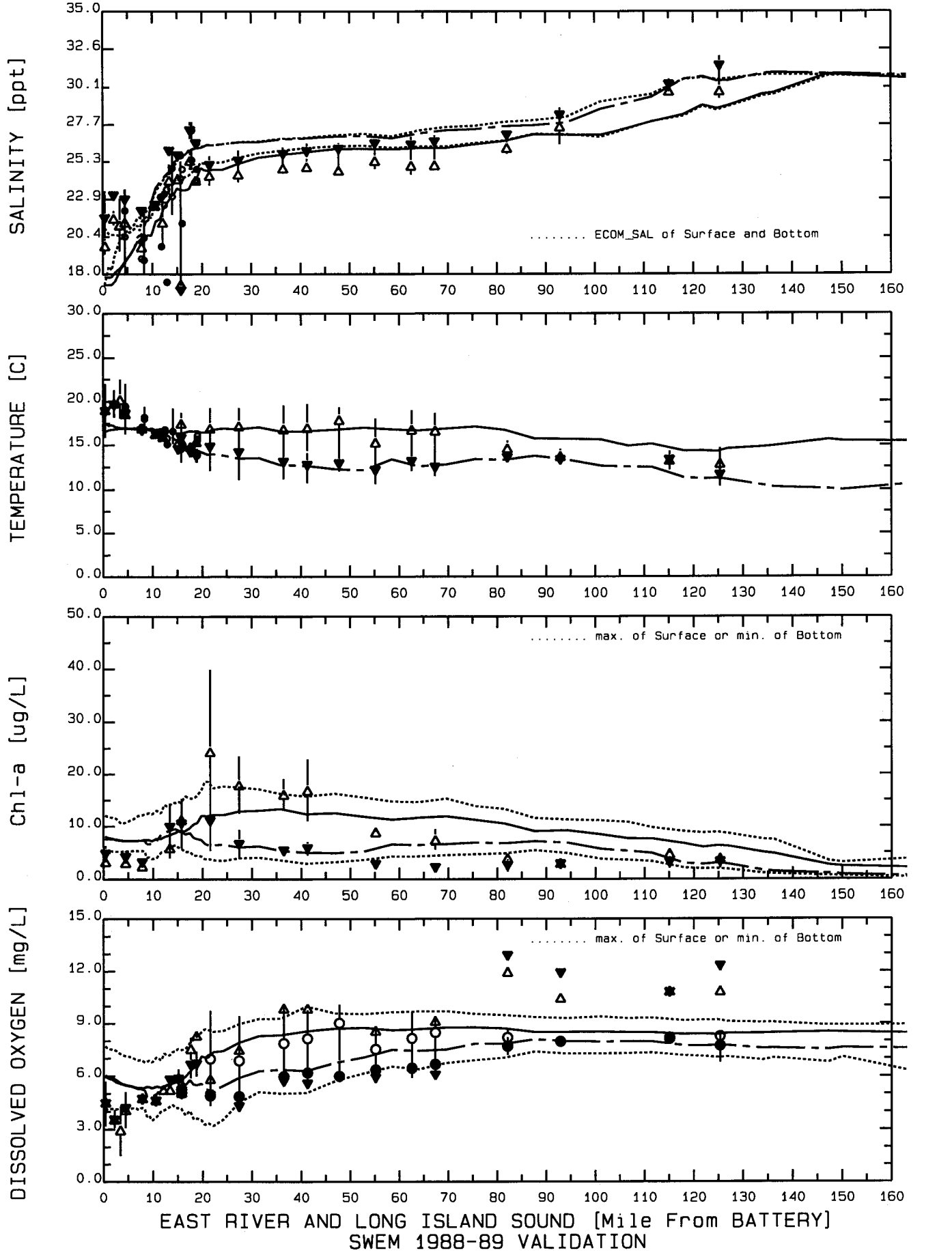
SWEM SPATIAL PROFILE - 8905

HydroQual SWEM Run 37



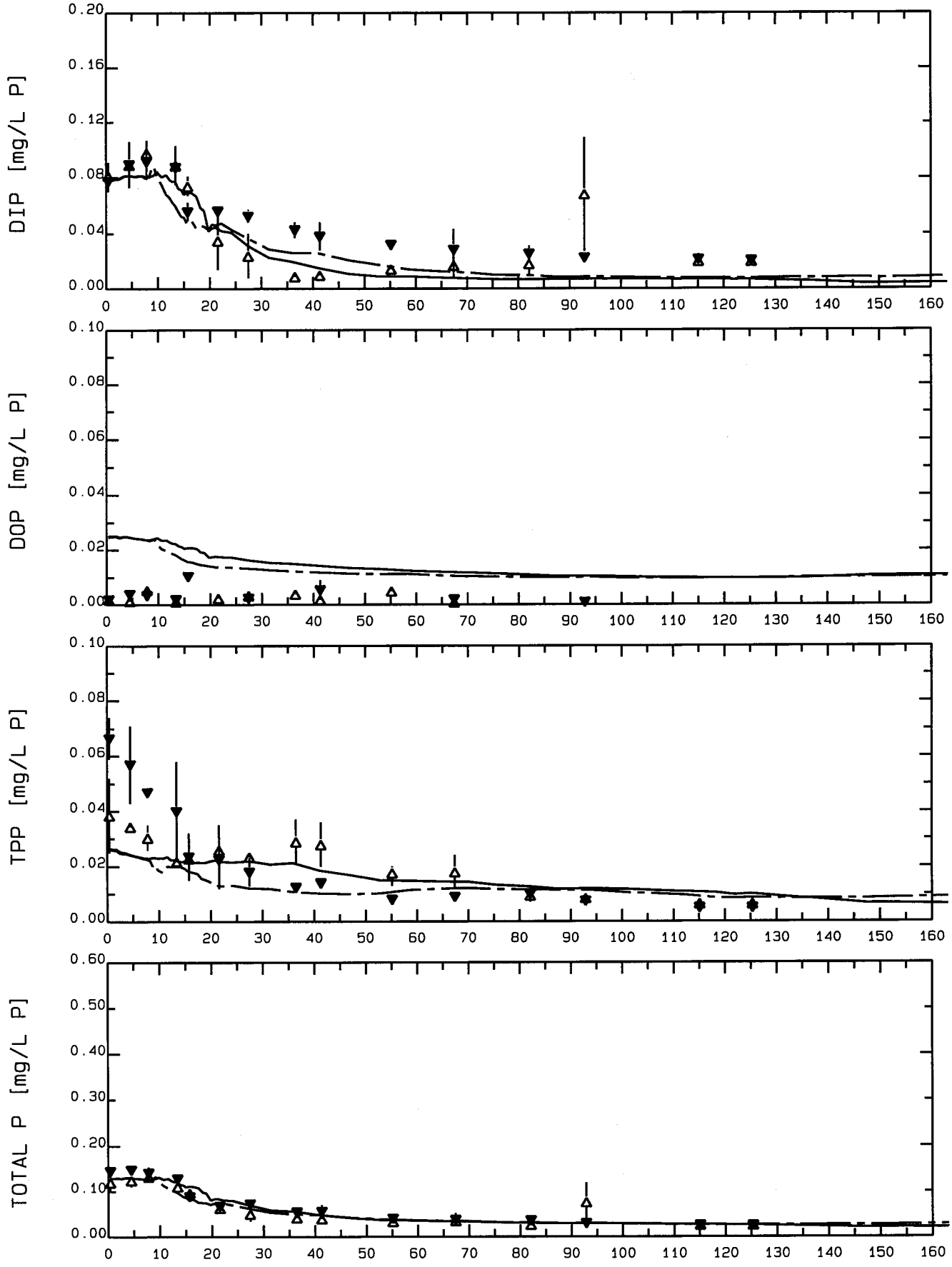
SWEM SPATIAL PROFILE - 8905

HydroQual SWEM Run 37



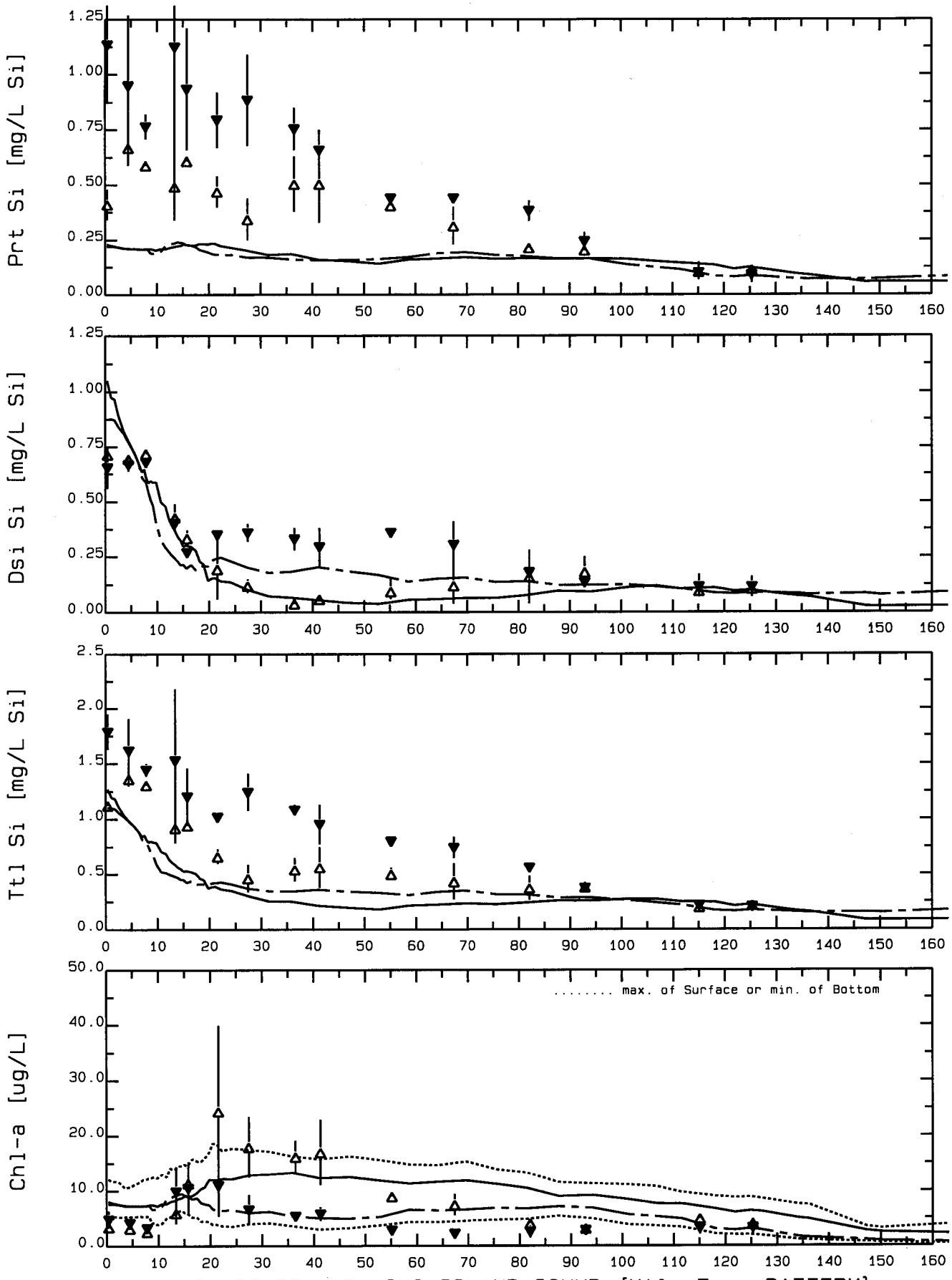
SWEM SPATIAL PROFILE - 8906

HydroQual SWEM Run 37



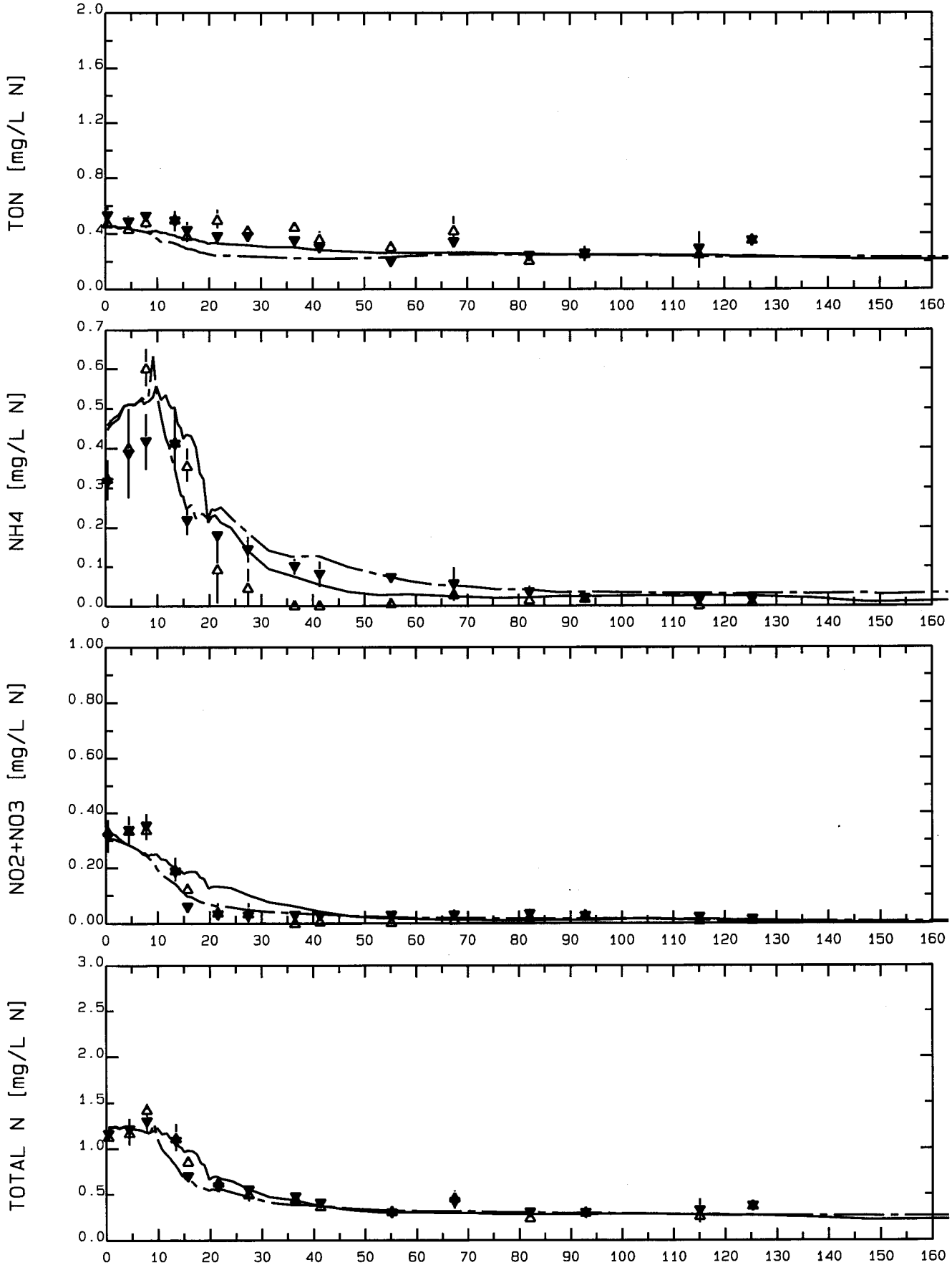
SWEM SPATIAL PROFILE - 8906

HydroQual SWEM Run 37



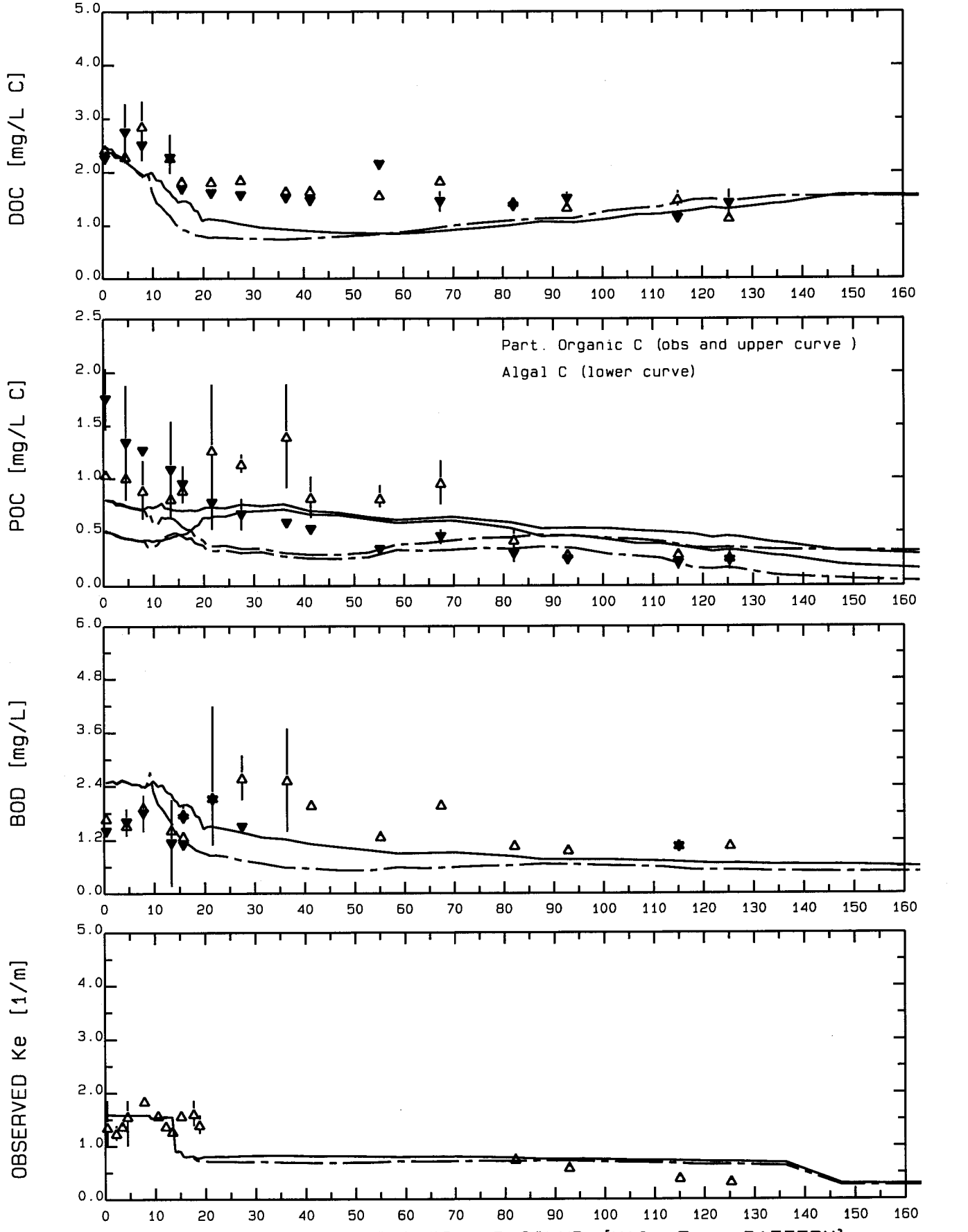
SWEM SPATIAL PROFILE - 8906

HydroQual SWEM Run 37



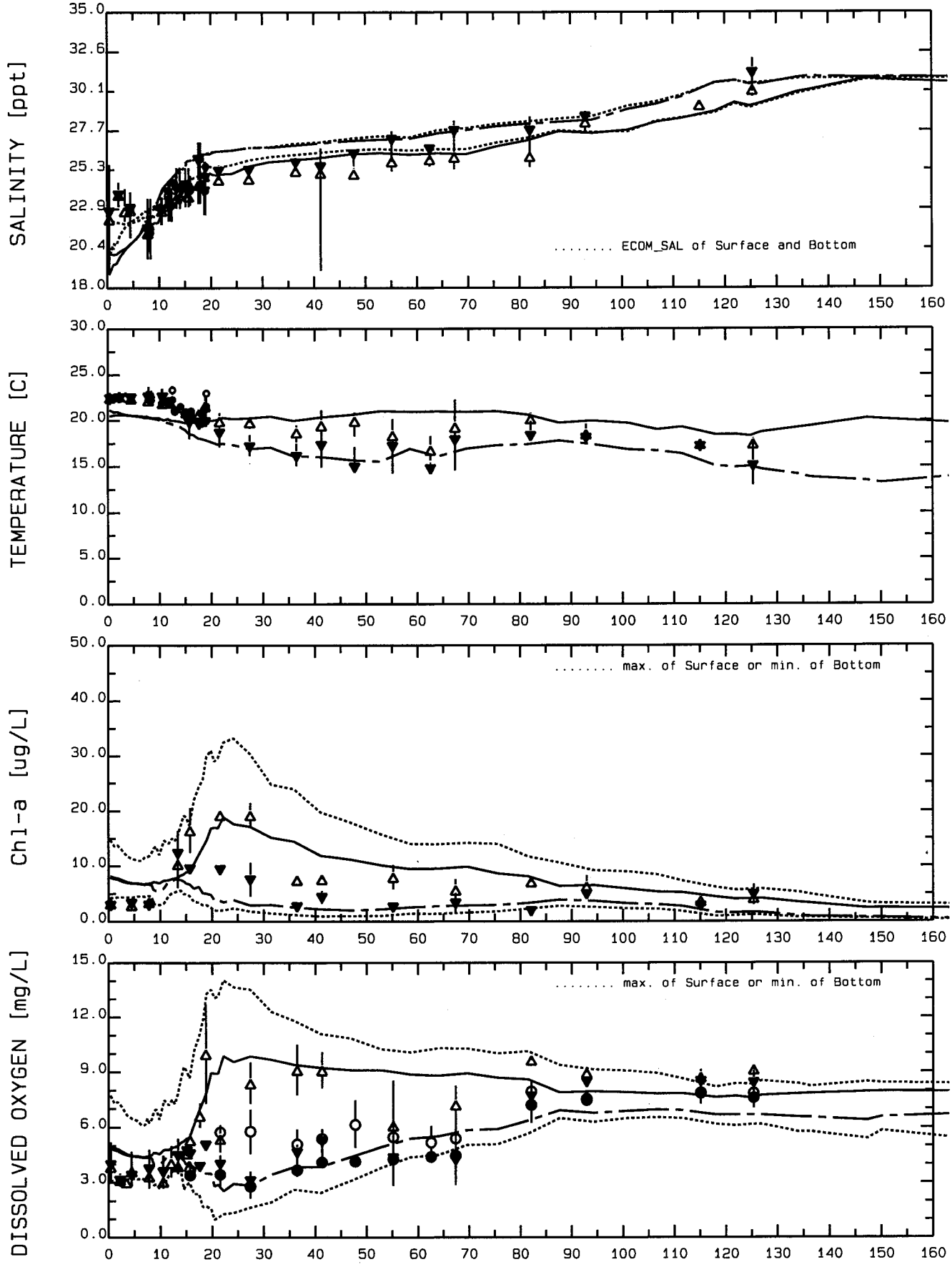
SWEM SPATIAL PROFILE - 8906

HydroQual SWEM Run 37



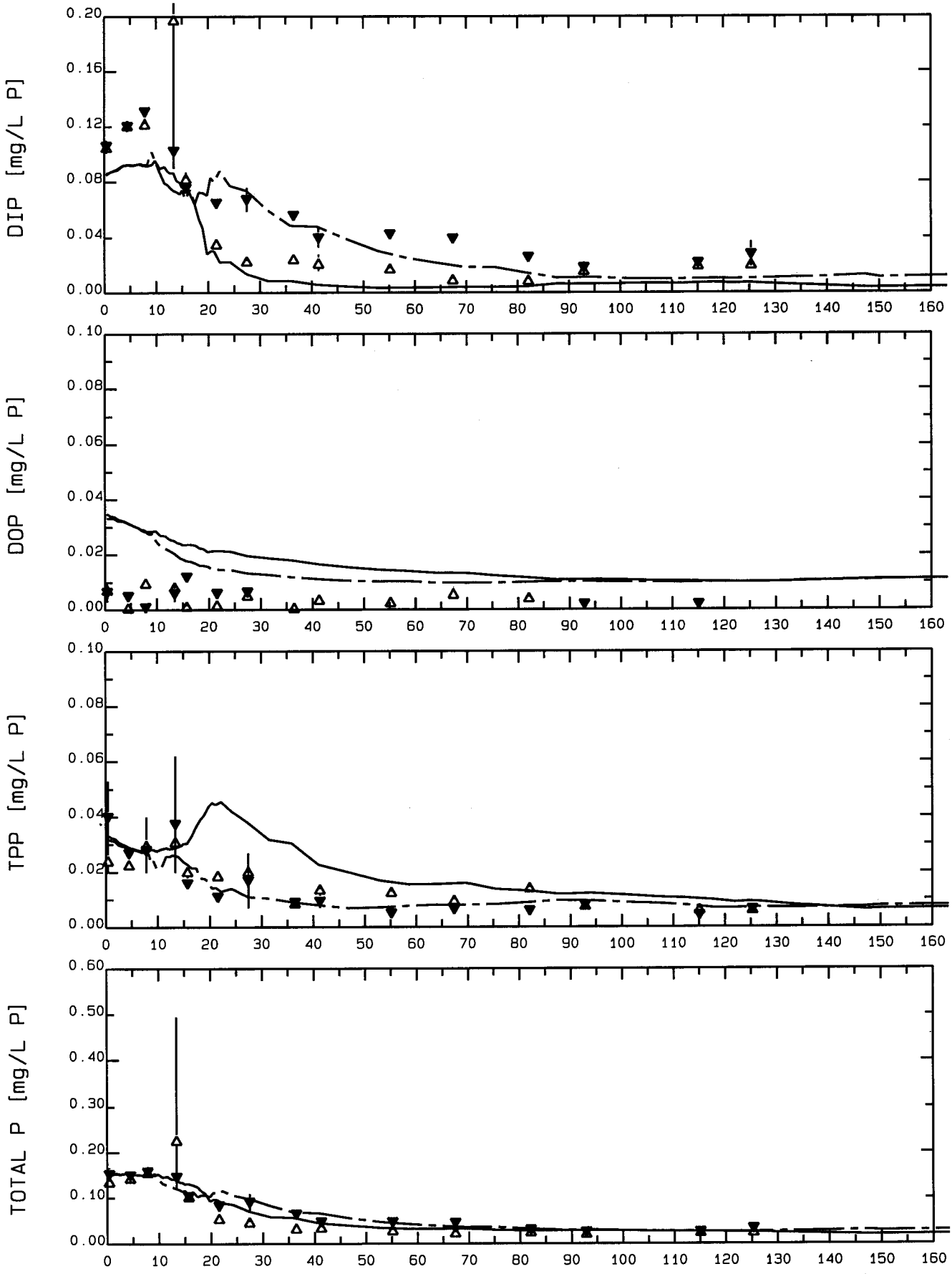
SWEM SPATIAL PROFILE - 8906

HydroQual SWEM Run 37



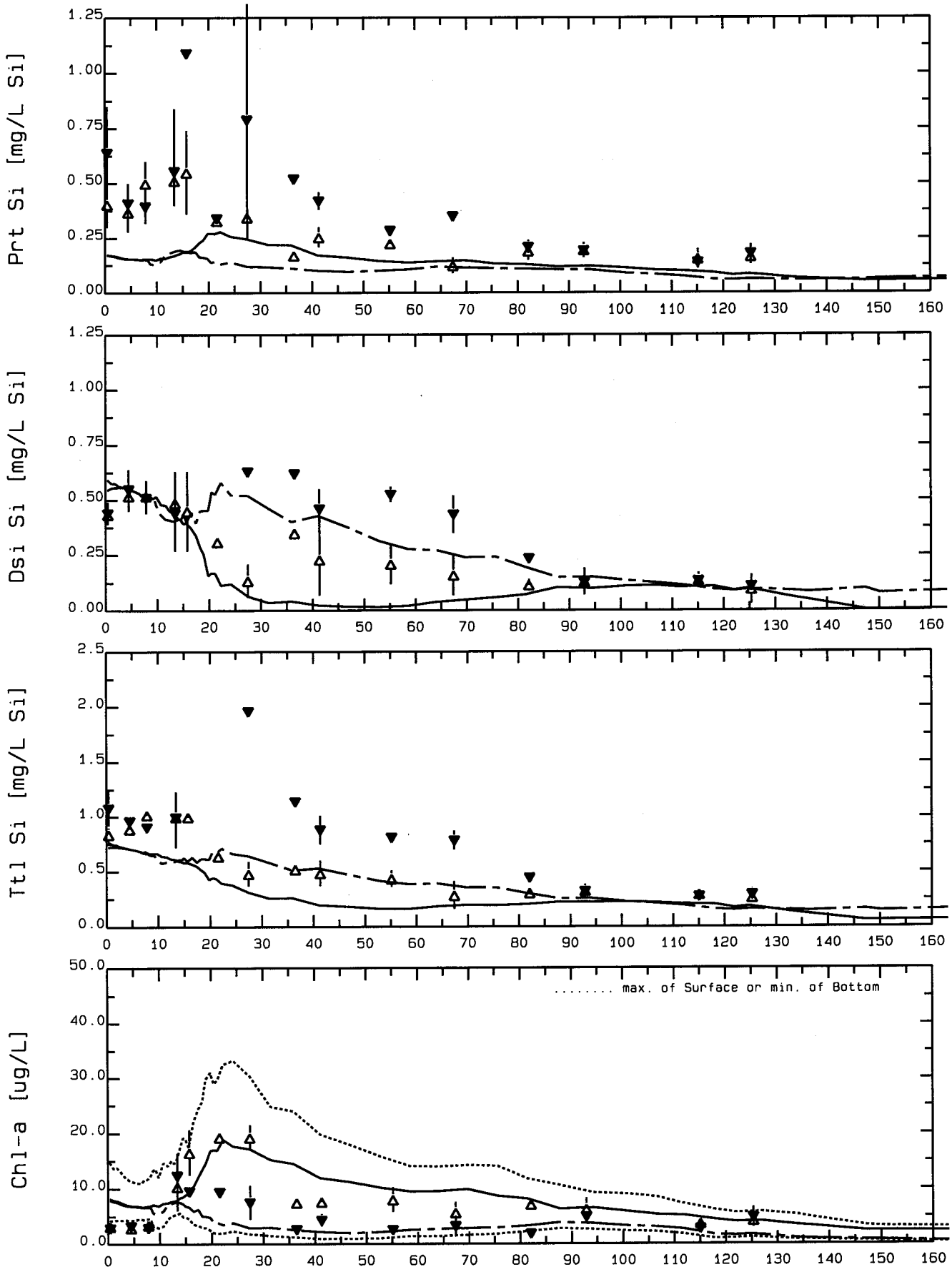
SWEM SPATIAL PROFILE - 8907

HydroQual SWEM Run 37



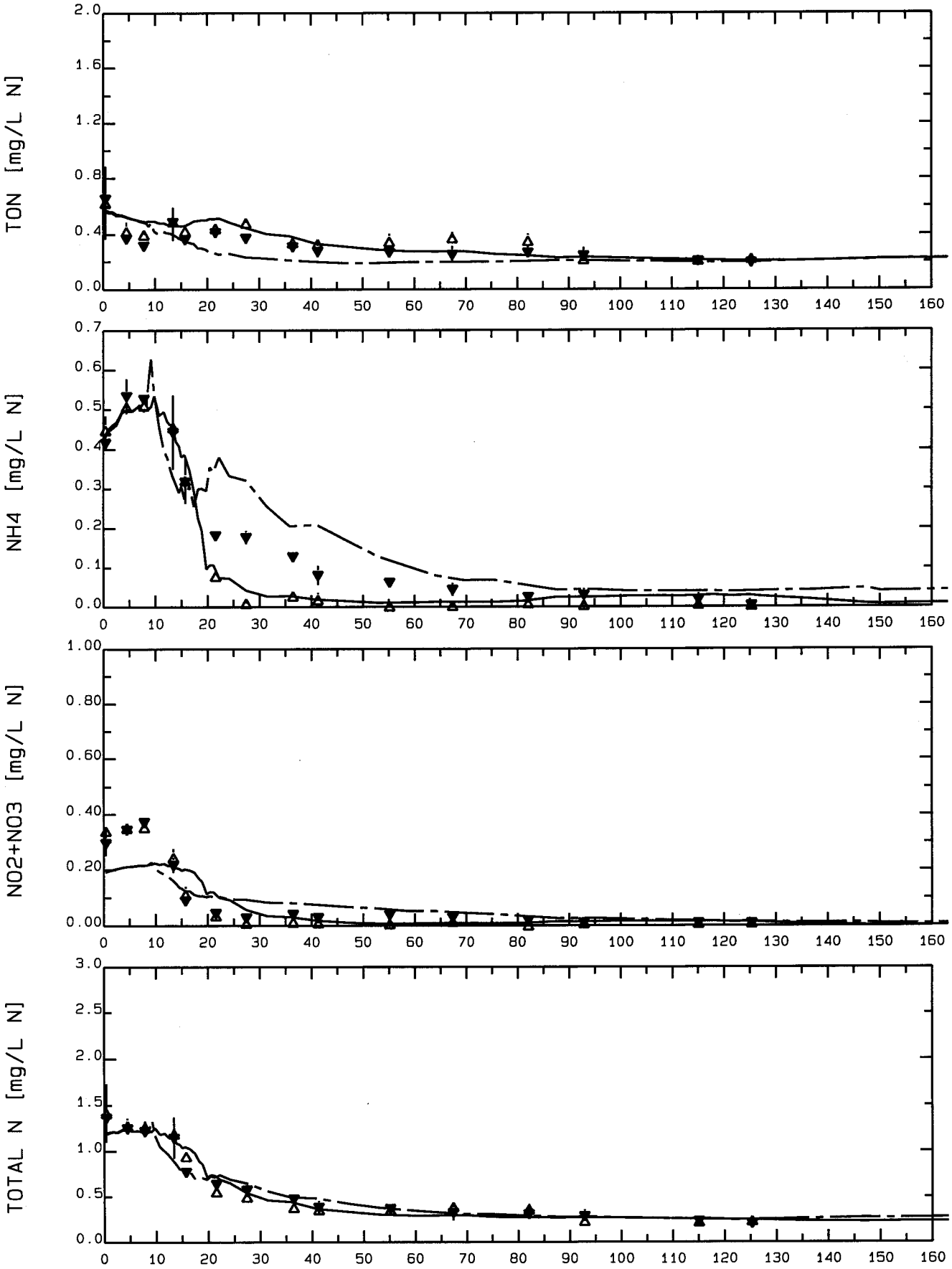
SWEM SPATIAL PROFILE - 8907

HydroQual SWEM Run 37



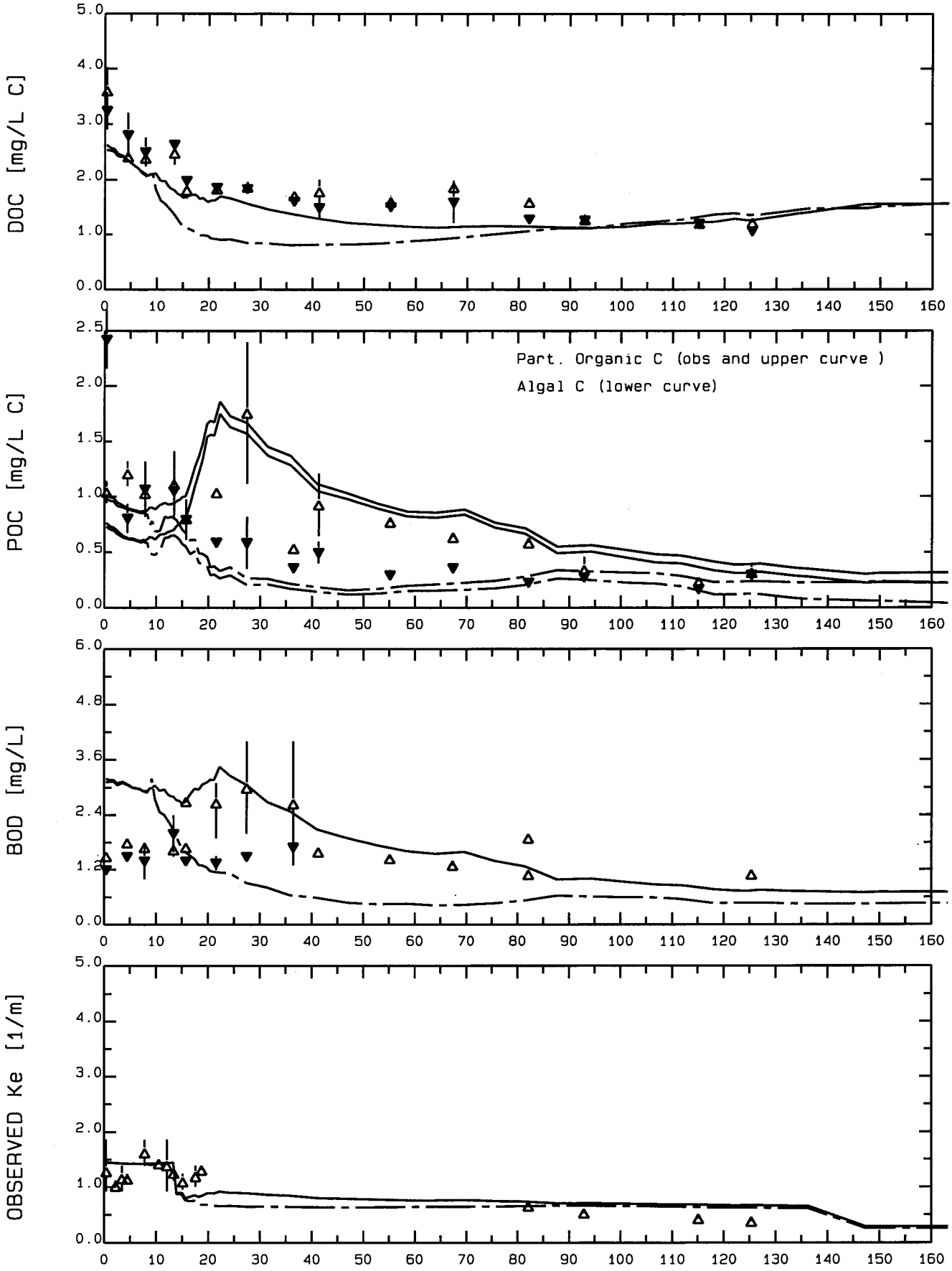
SWEM SPATIAL PROFILE - 8907

HydroQual SWEM Run 37



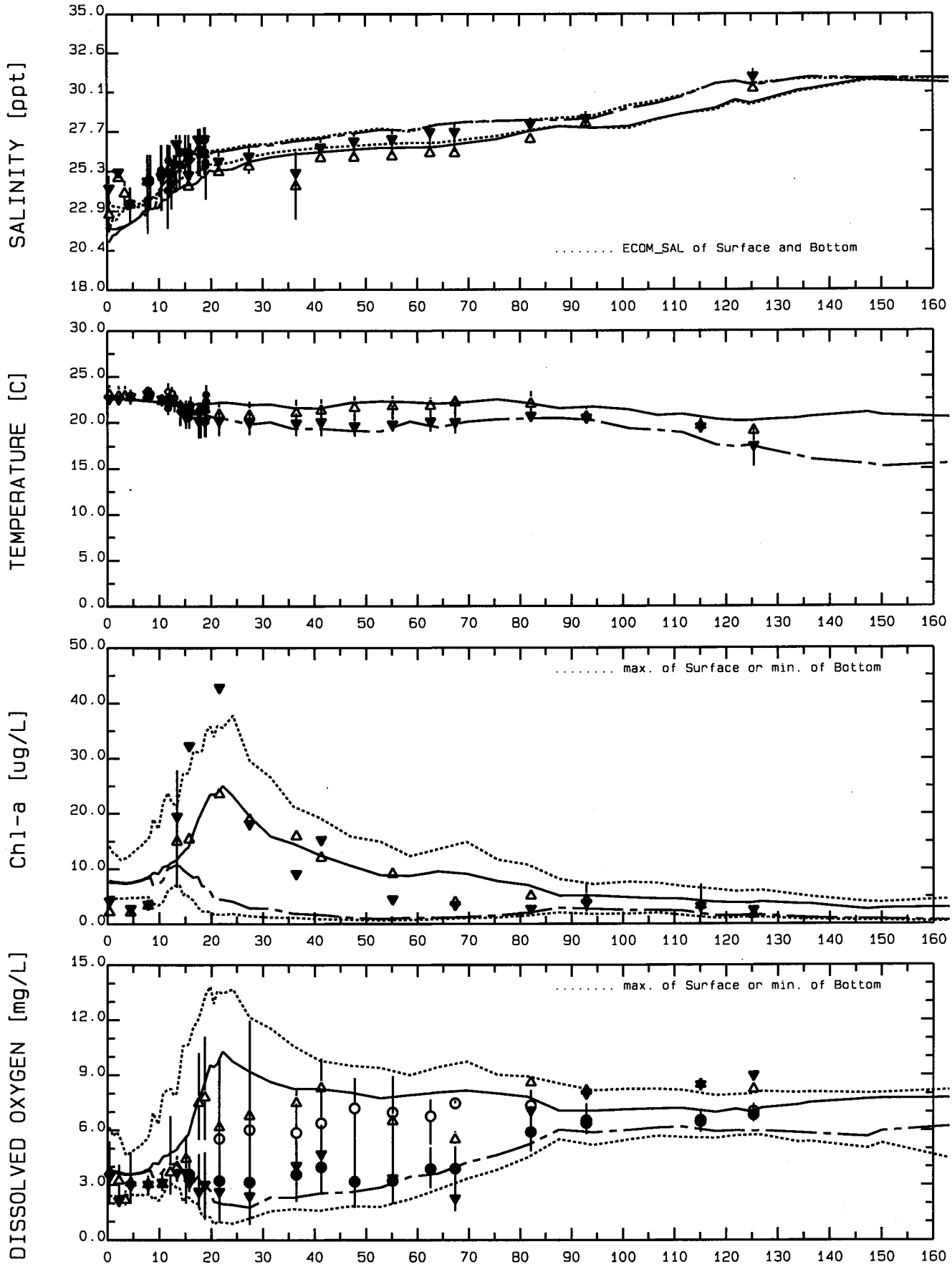
SWEM SPATIAL PROFILE - 8907

HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8907

HydroQual SWEM Run 37

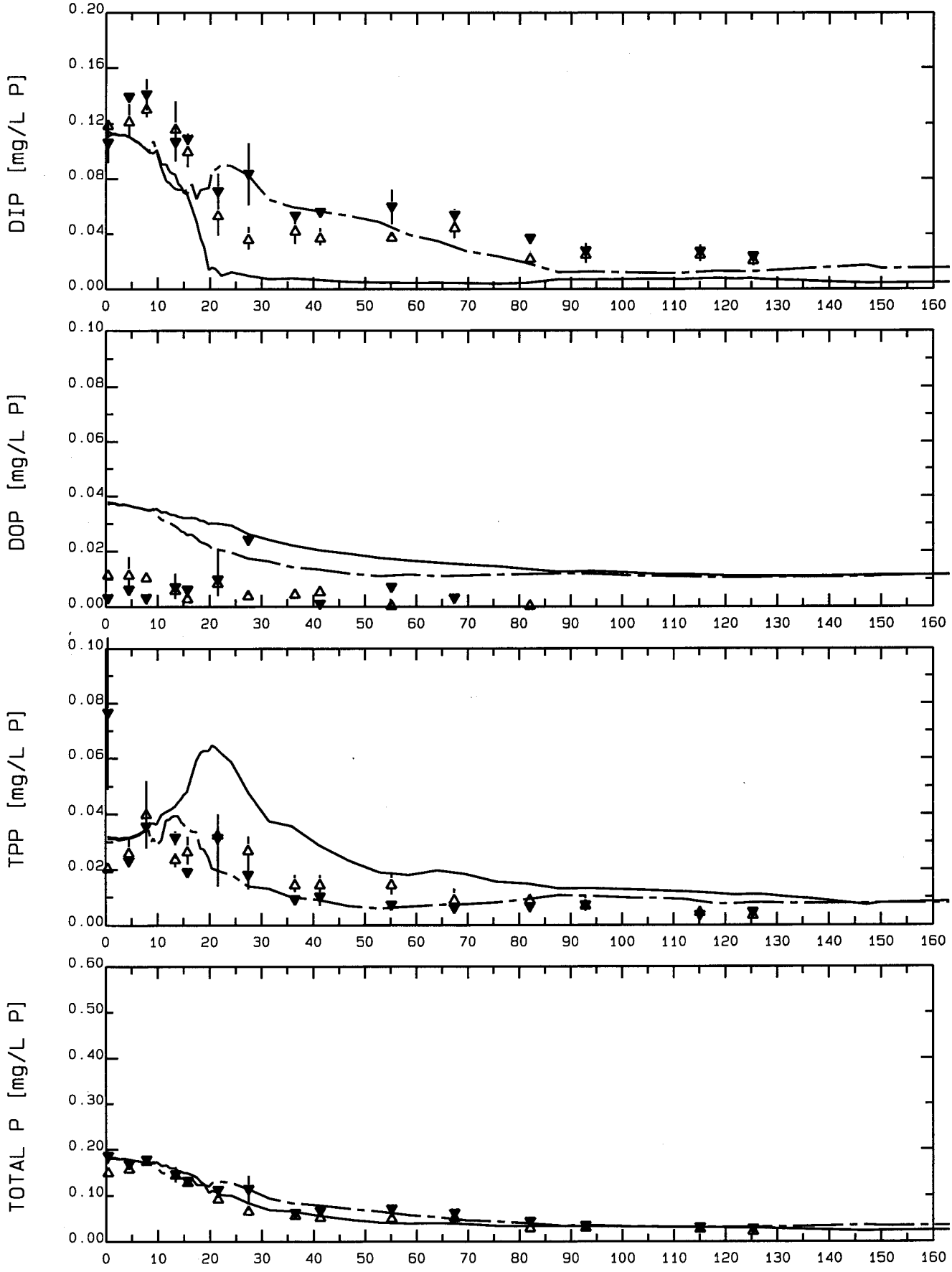


EAST RIVER AND LONG ISLAND SOUND [Mile From BATTERY]
SWEM 1988-89 VALIDATION

——— SURFACE MODEL
– – – BOTTOM MODEL

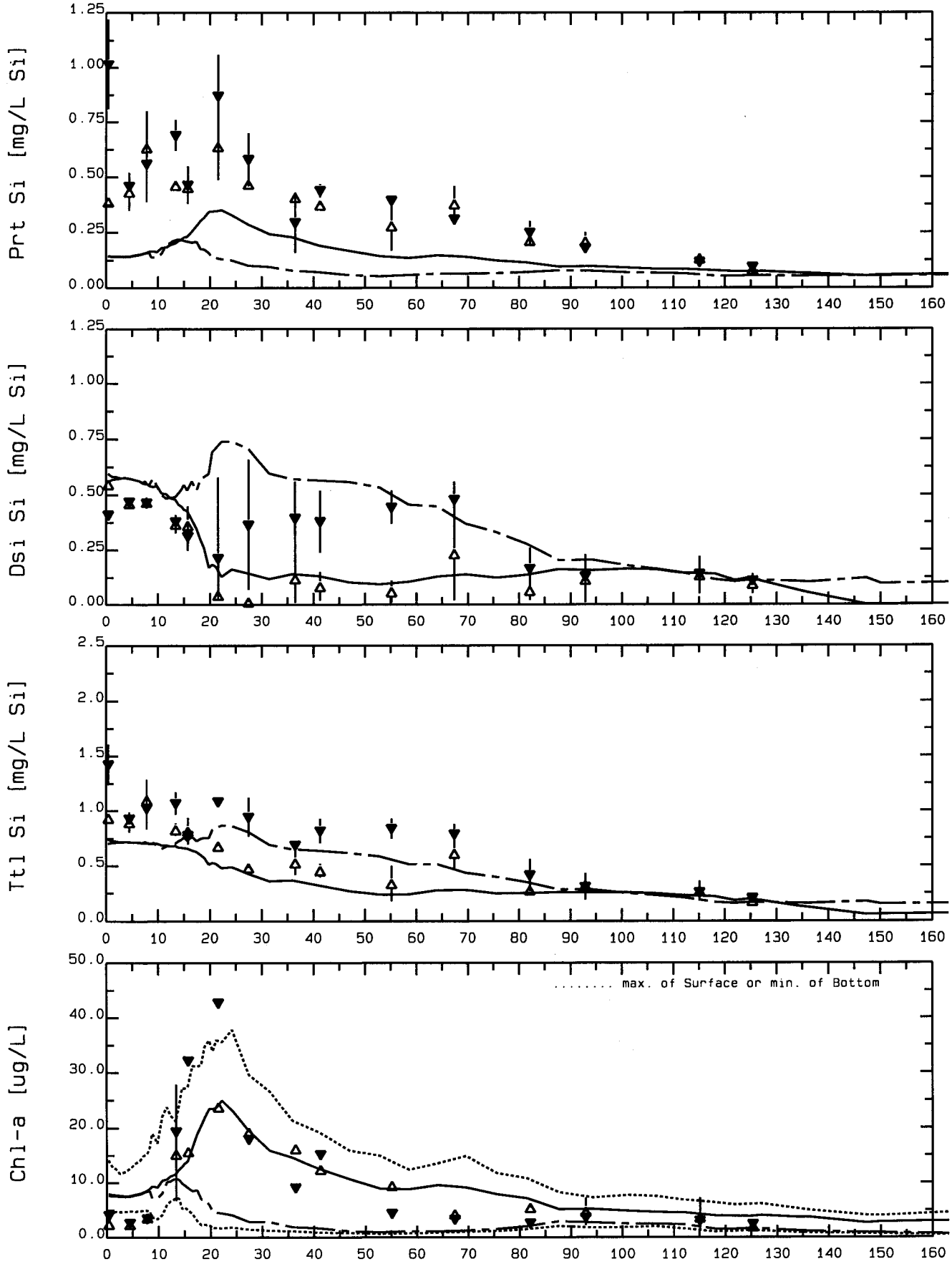
SWEM SPATIAL PROFILE - 8908

HydroQual SWEM Run 37



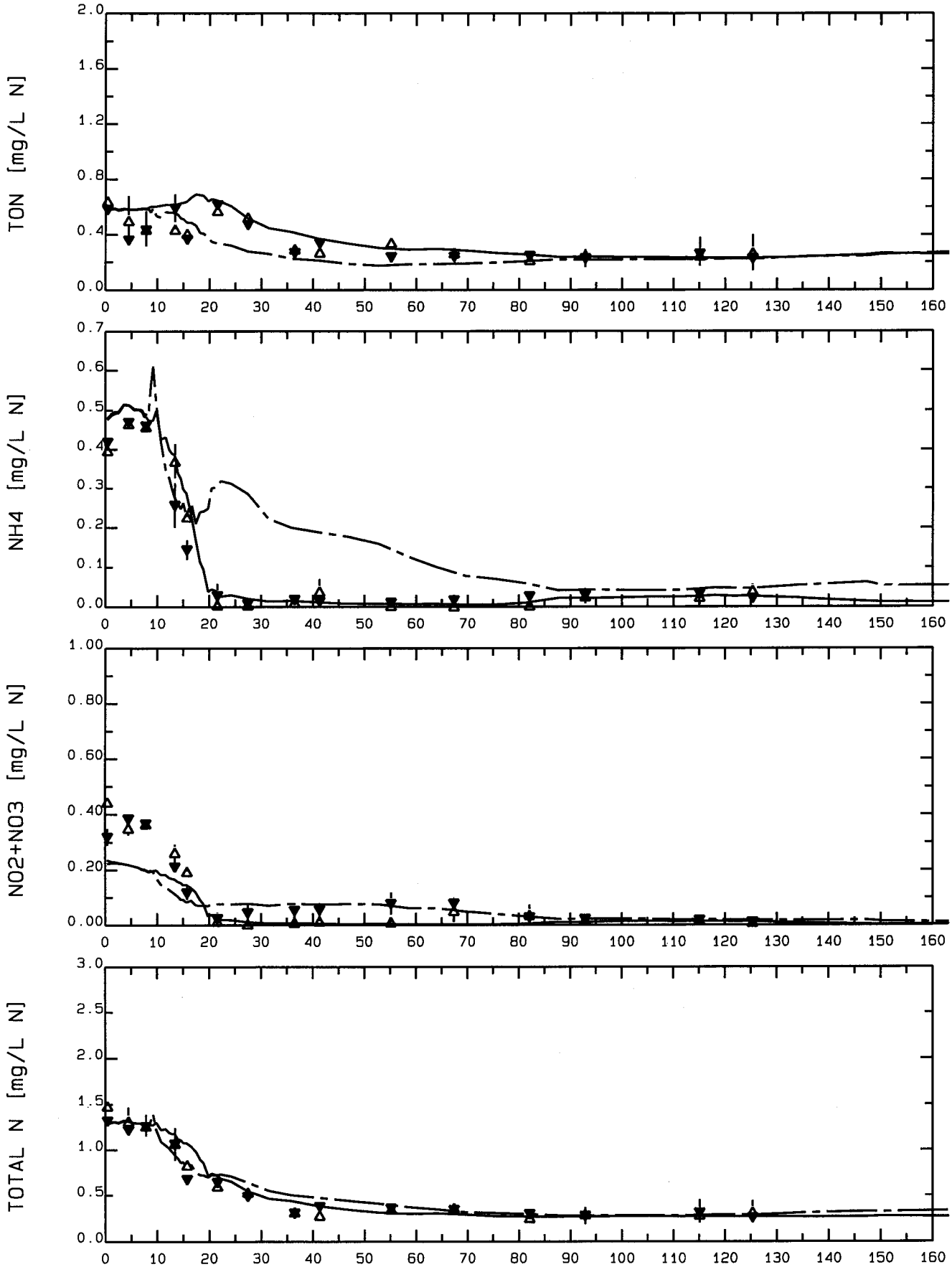
SWEM SPATIAL PROFILE - 8908

HydroQual SWEM Run 37



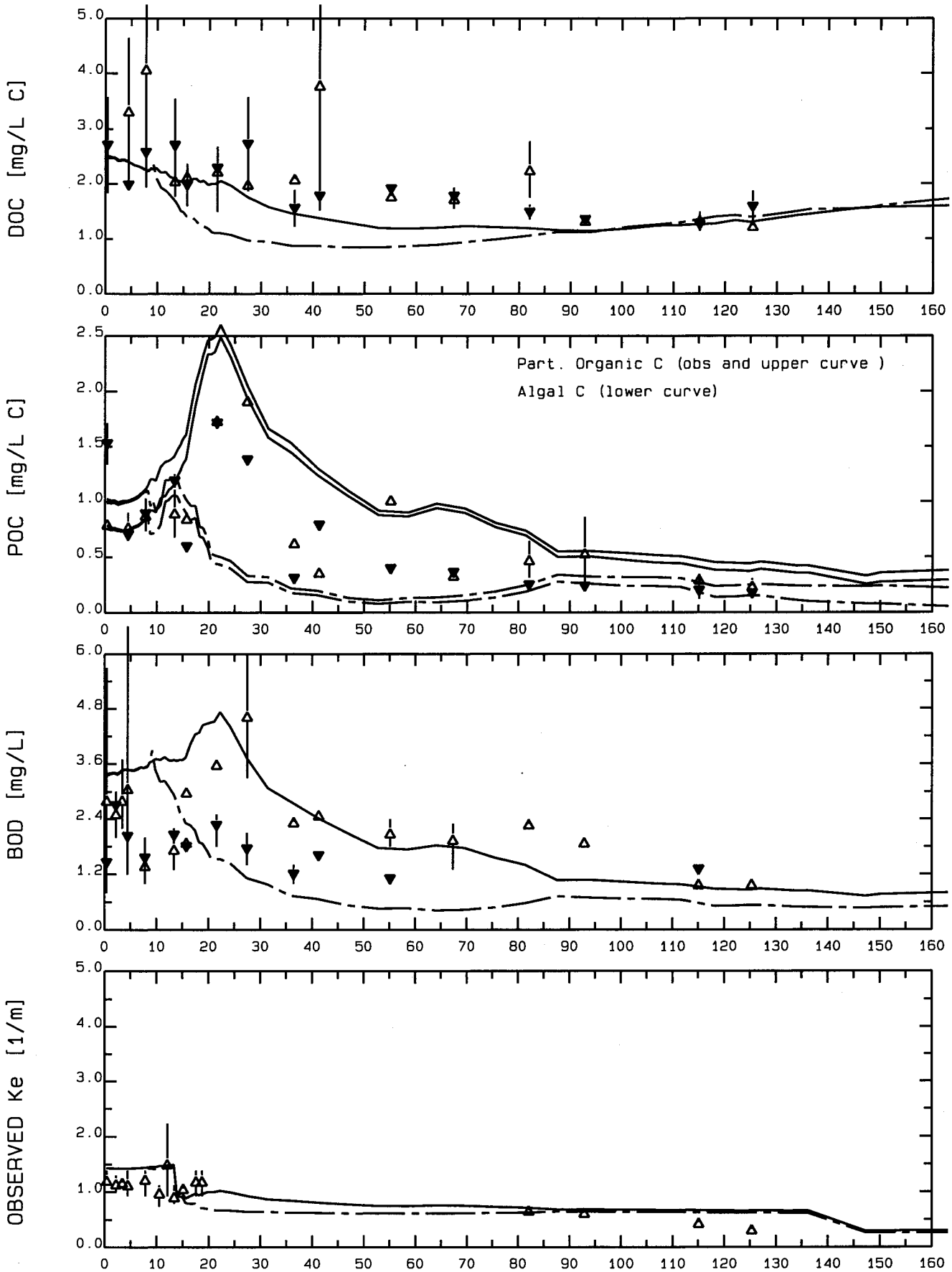
SWEM SPATIAL PROFILE - 8908

HydroQual SWEM Run 37



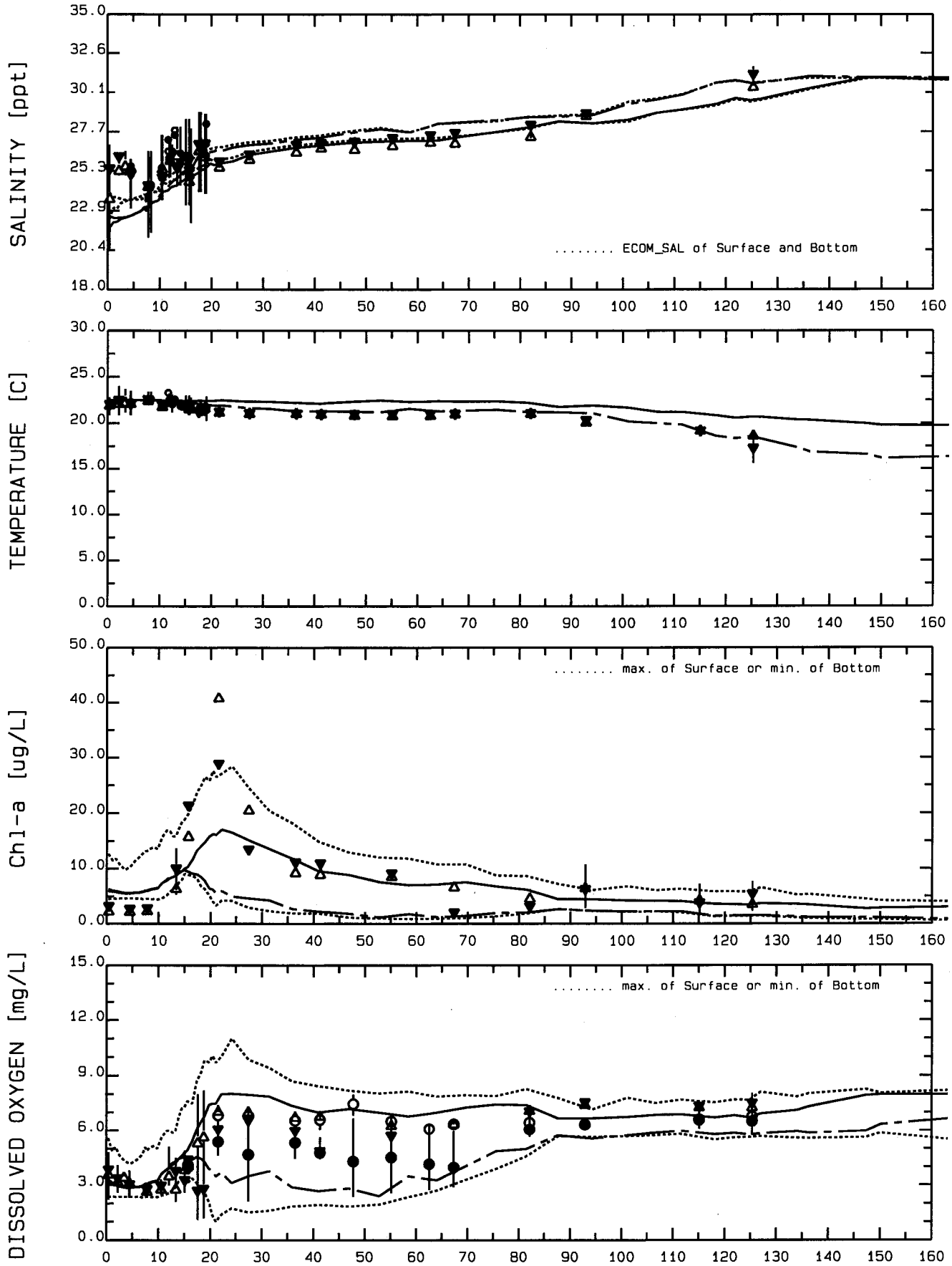
SWEM SPATIAL PROFILE - 8908

HydroQual SWEM Run 37



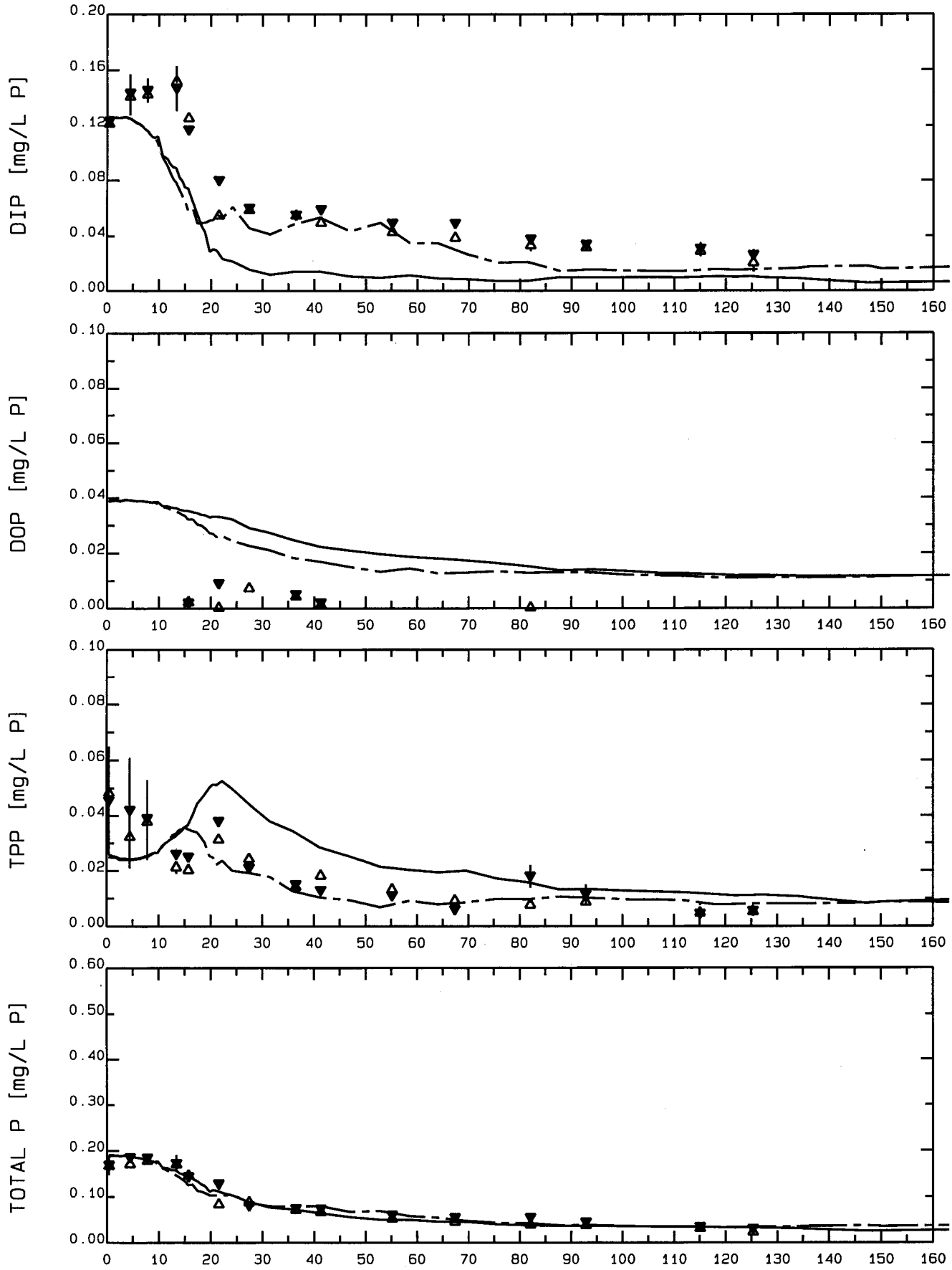
SWEM SPATIAL PROFILE - 8908

HydroQual SWEM Run 37



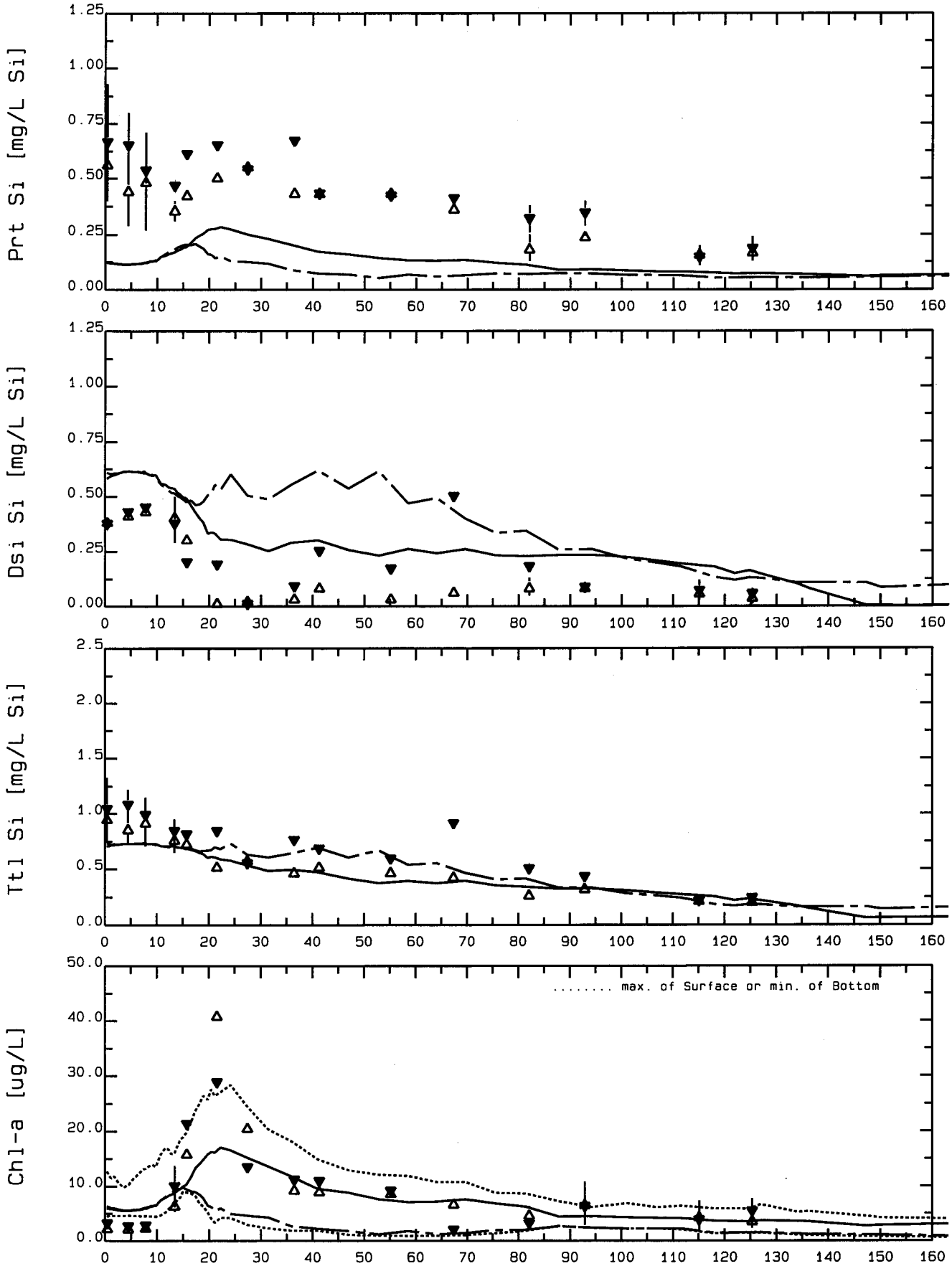
SWEM SPATIAL PROFILE - 8909

HydroQual SWEM Run 37



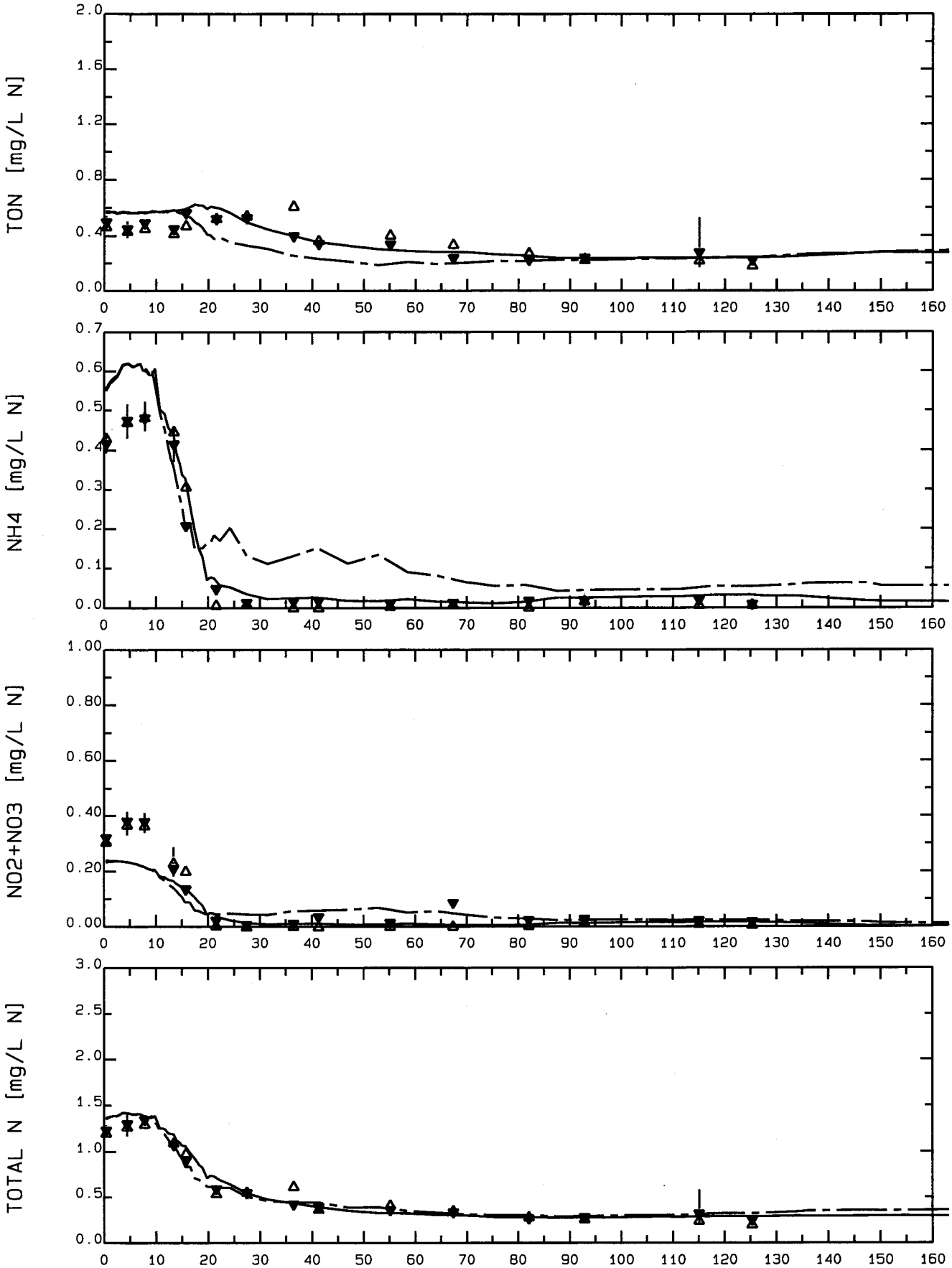
SWEM SPATIAL PROFILE - 8909

HydroQual SWEM Run 37



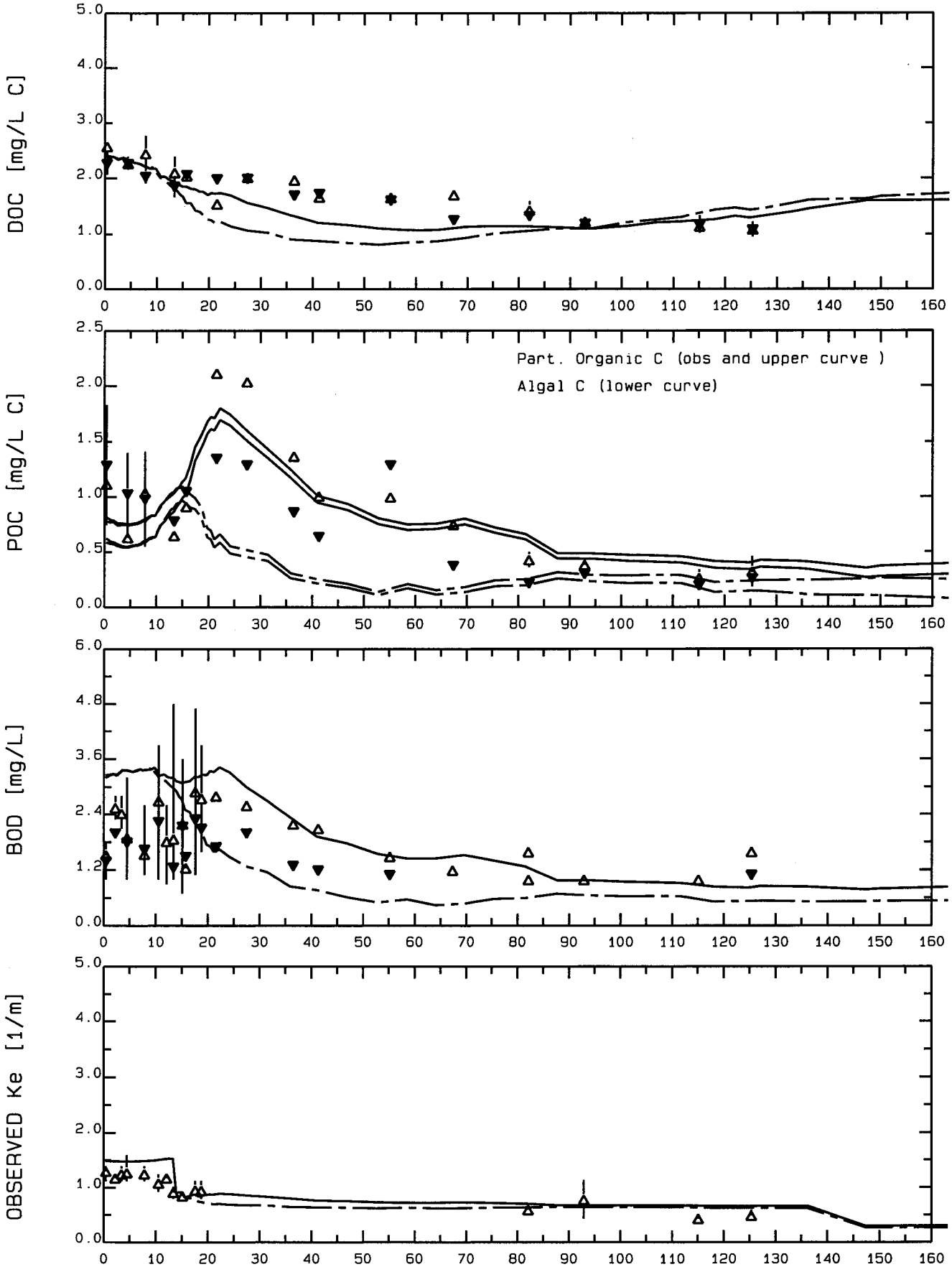
SWEM SPATIAL PROFILE - 8909

HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8909

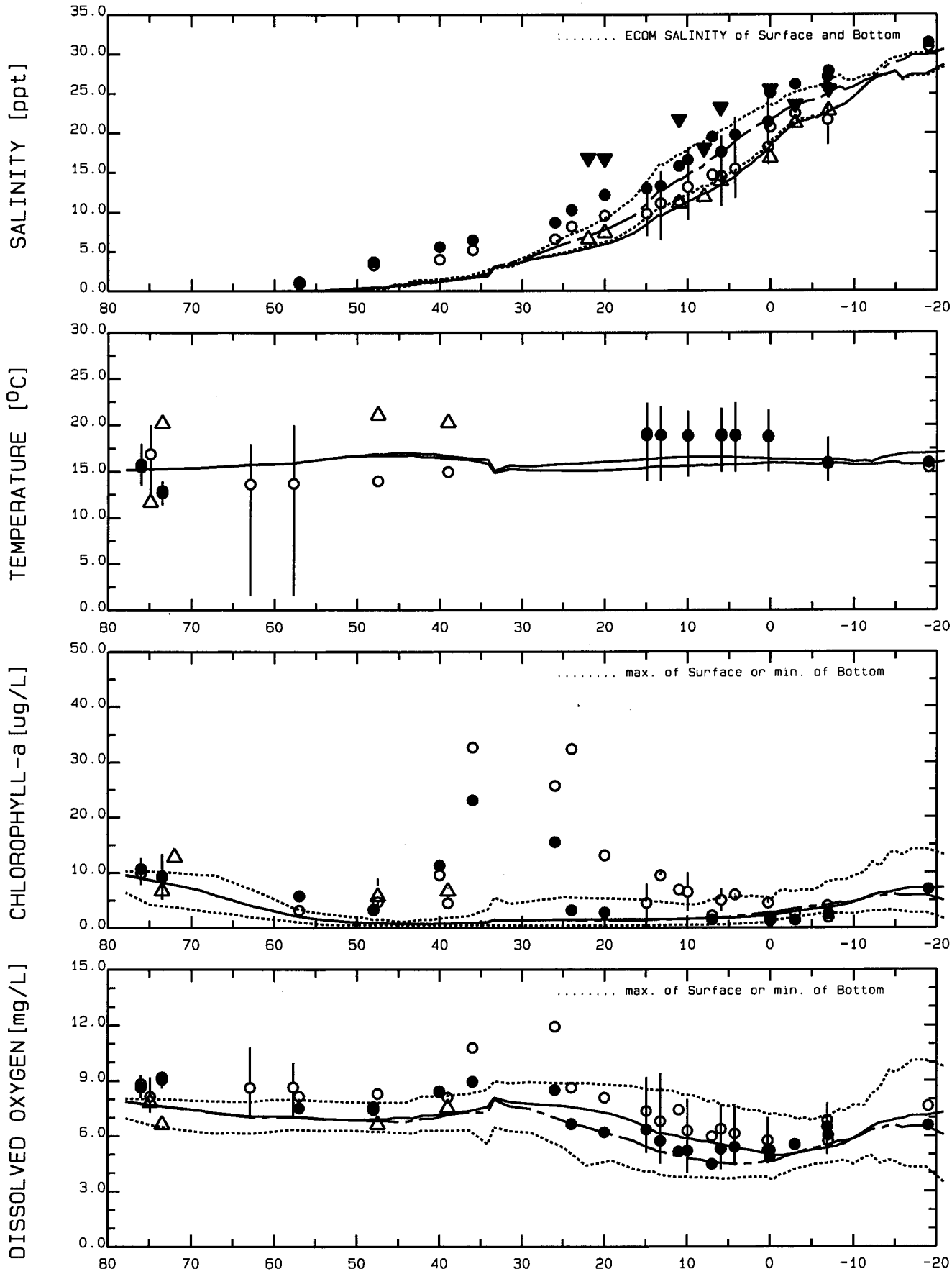
HydroQual SWEM Run 37



SWEM SPATIAL PROFILE - 8909

HydroQual SWEM Run 37

SPATIAL DISTRIBUTIONS OF HUDSON RIVER, UPPER BAY, LOWER BAY

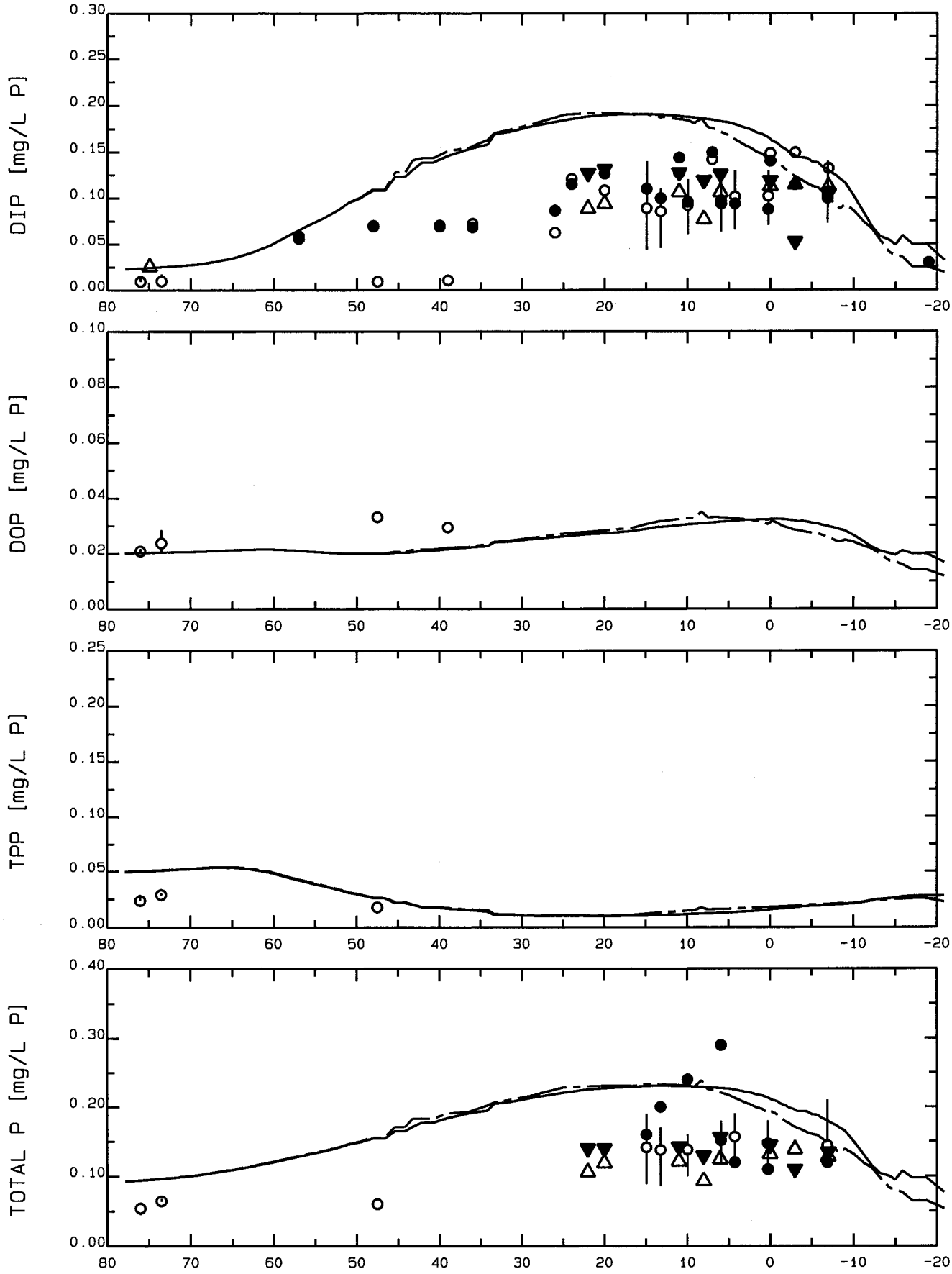


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

DATE: Tue Jun 9 TIME: 15:14:36
HydroQual SWEM Run# 37

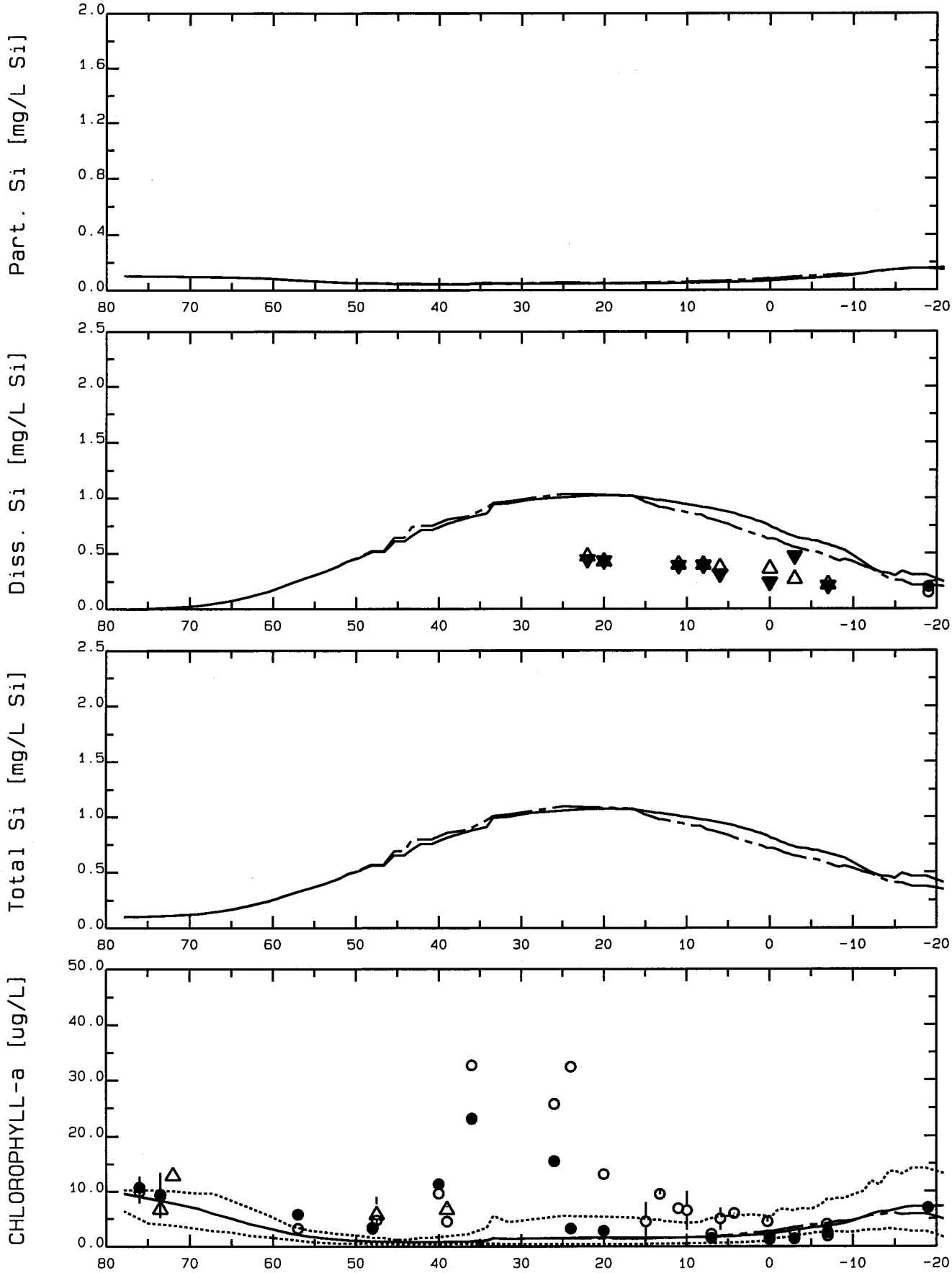
SPATIAL PROFILE - 8810



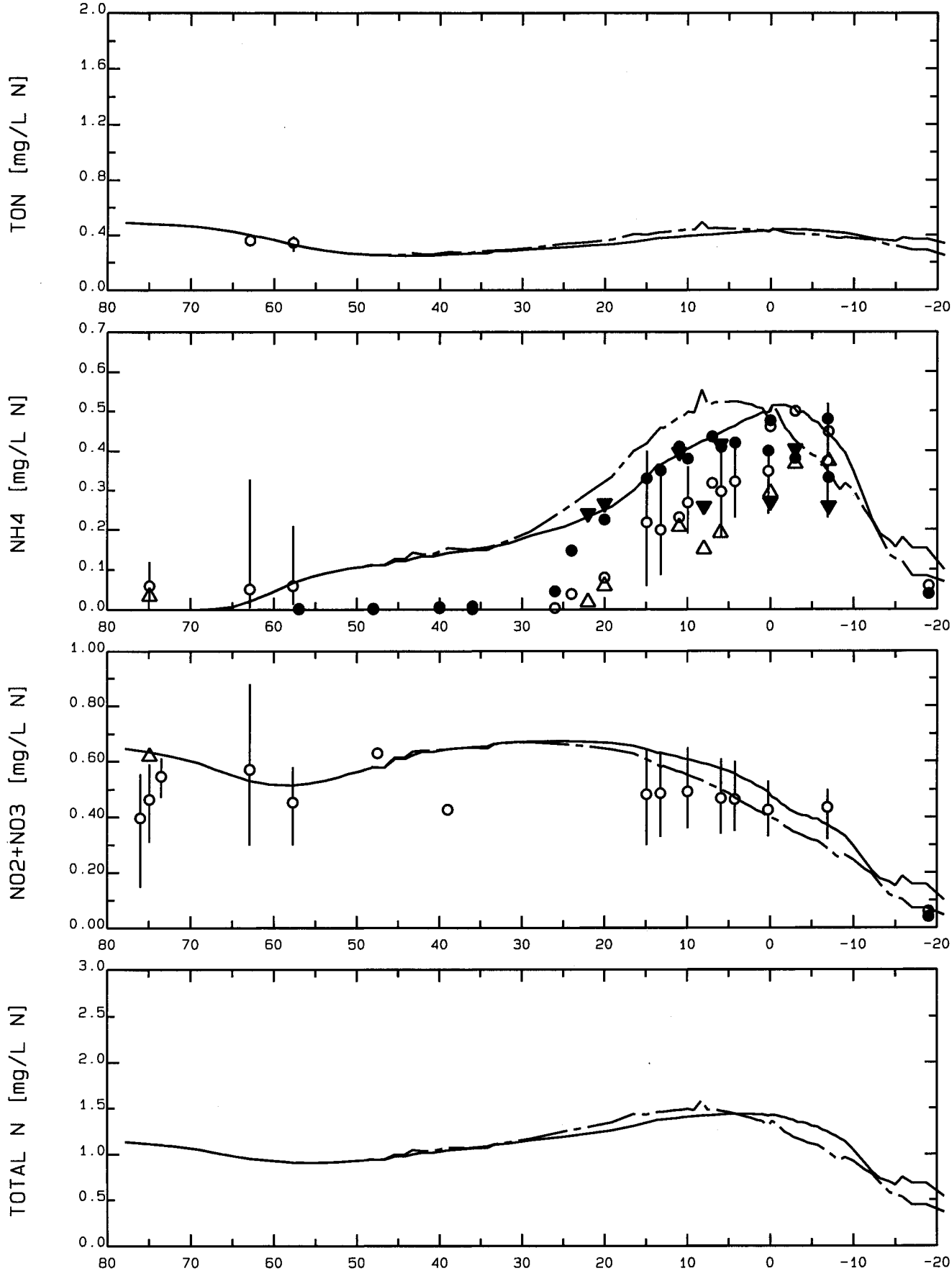
HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8810



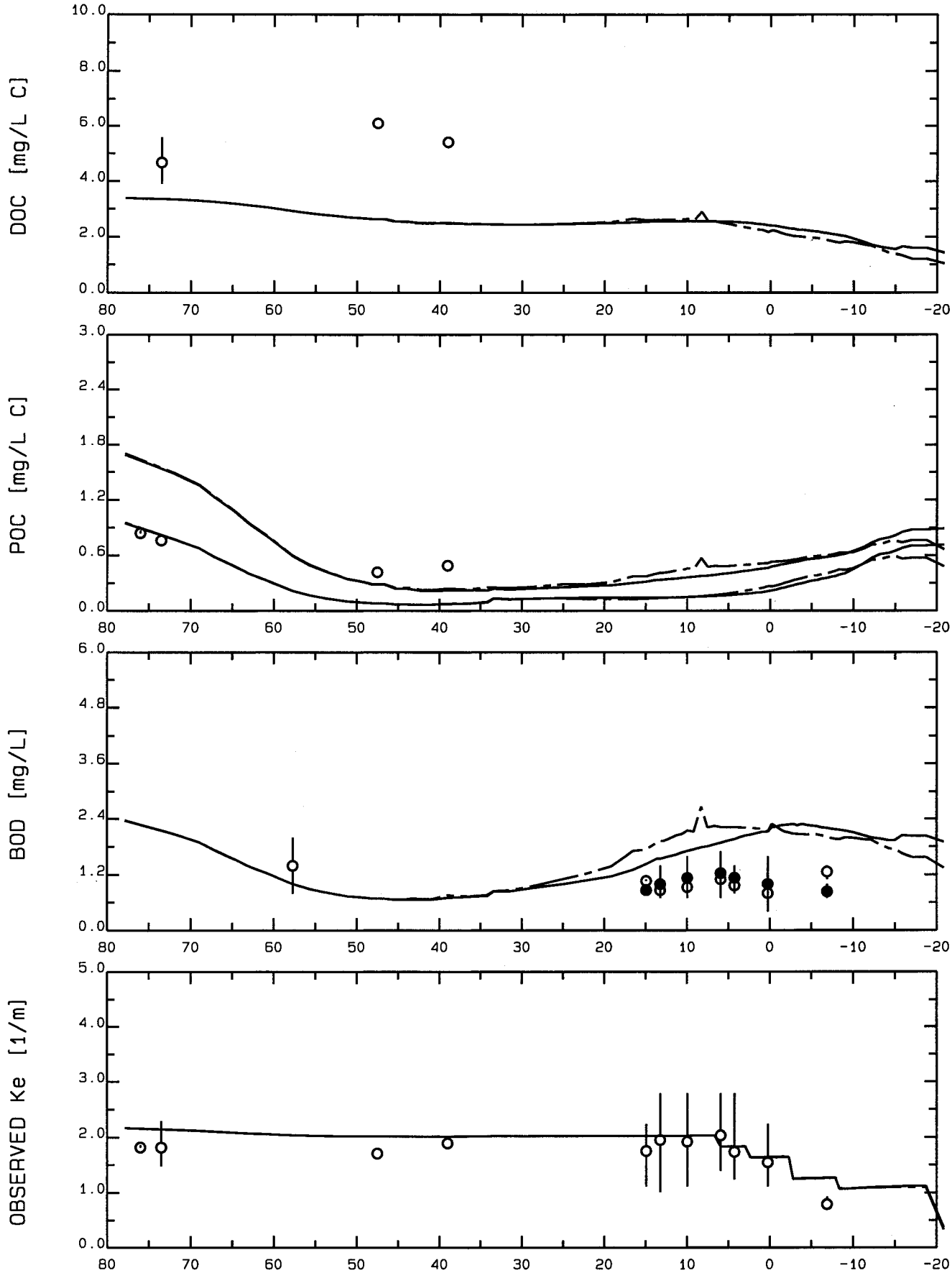
SPATIAL PROFILE - 8810



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

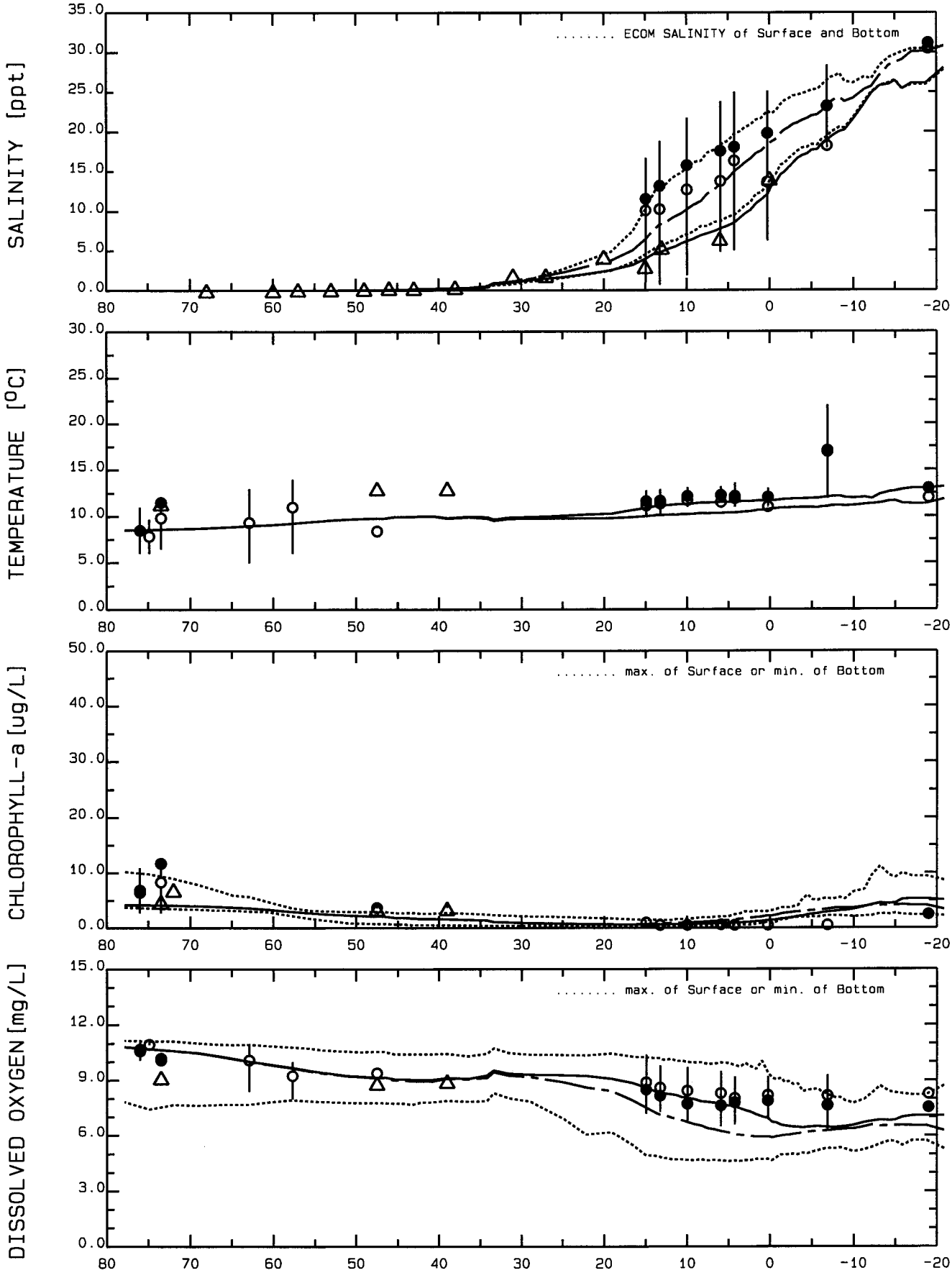
SPATIAL PROFILE - 8810



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8810

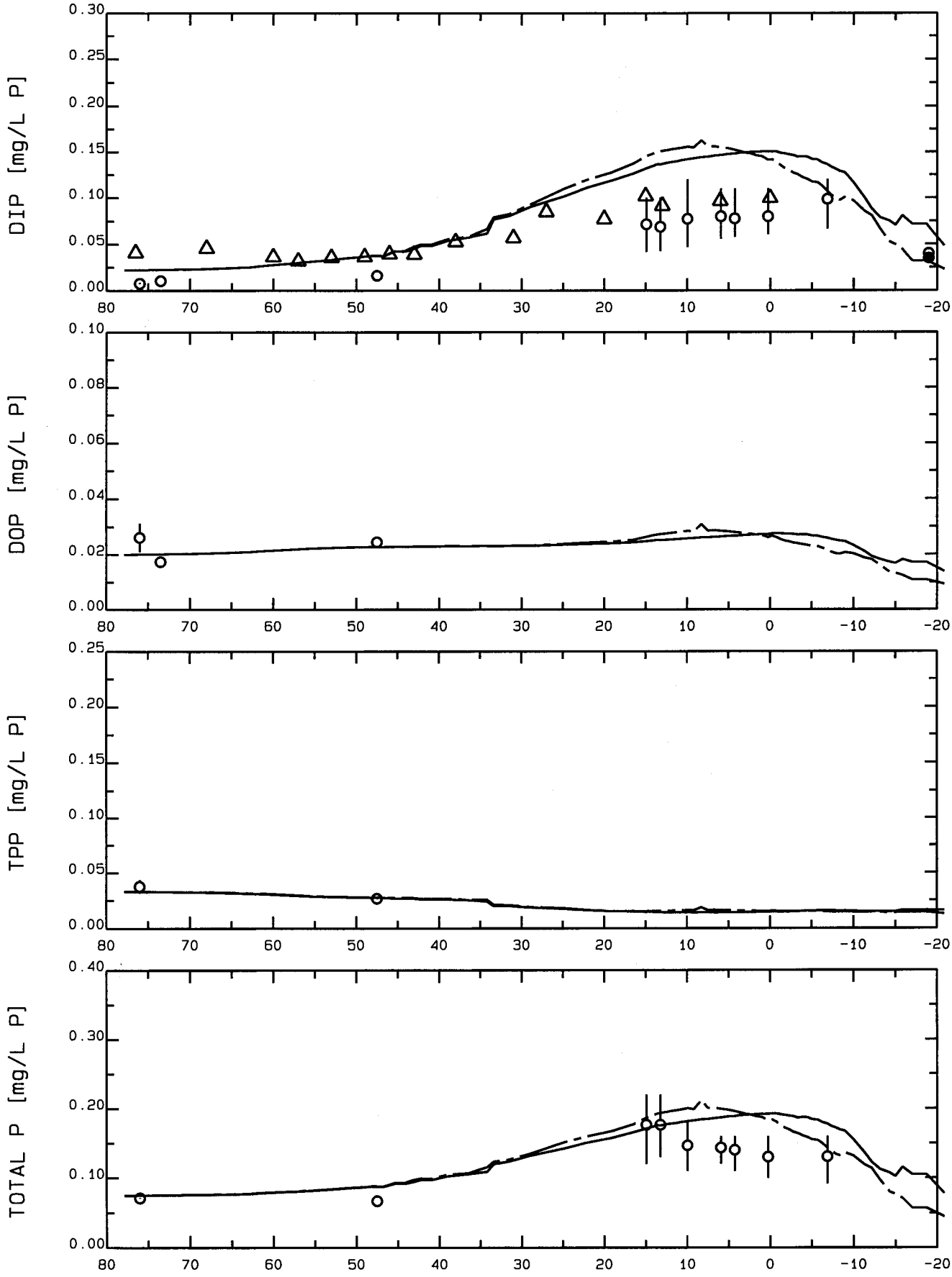


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

DATE: Tue Jun 9 TIME: 15:15:27
HydroQual SWEM Run# 37

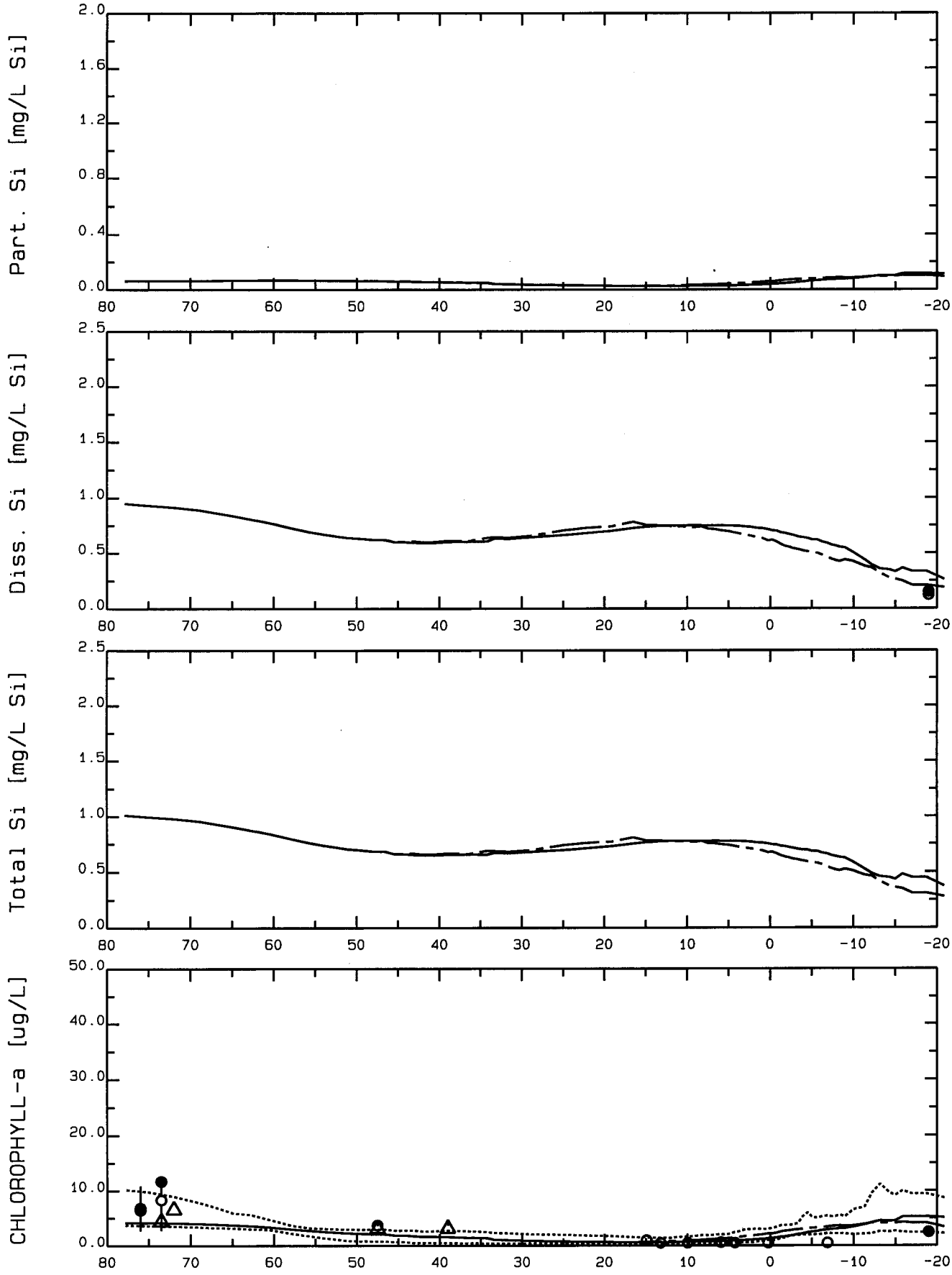
SPATIAL PROFILE - 8811



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

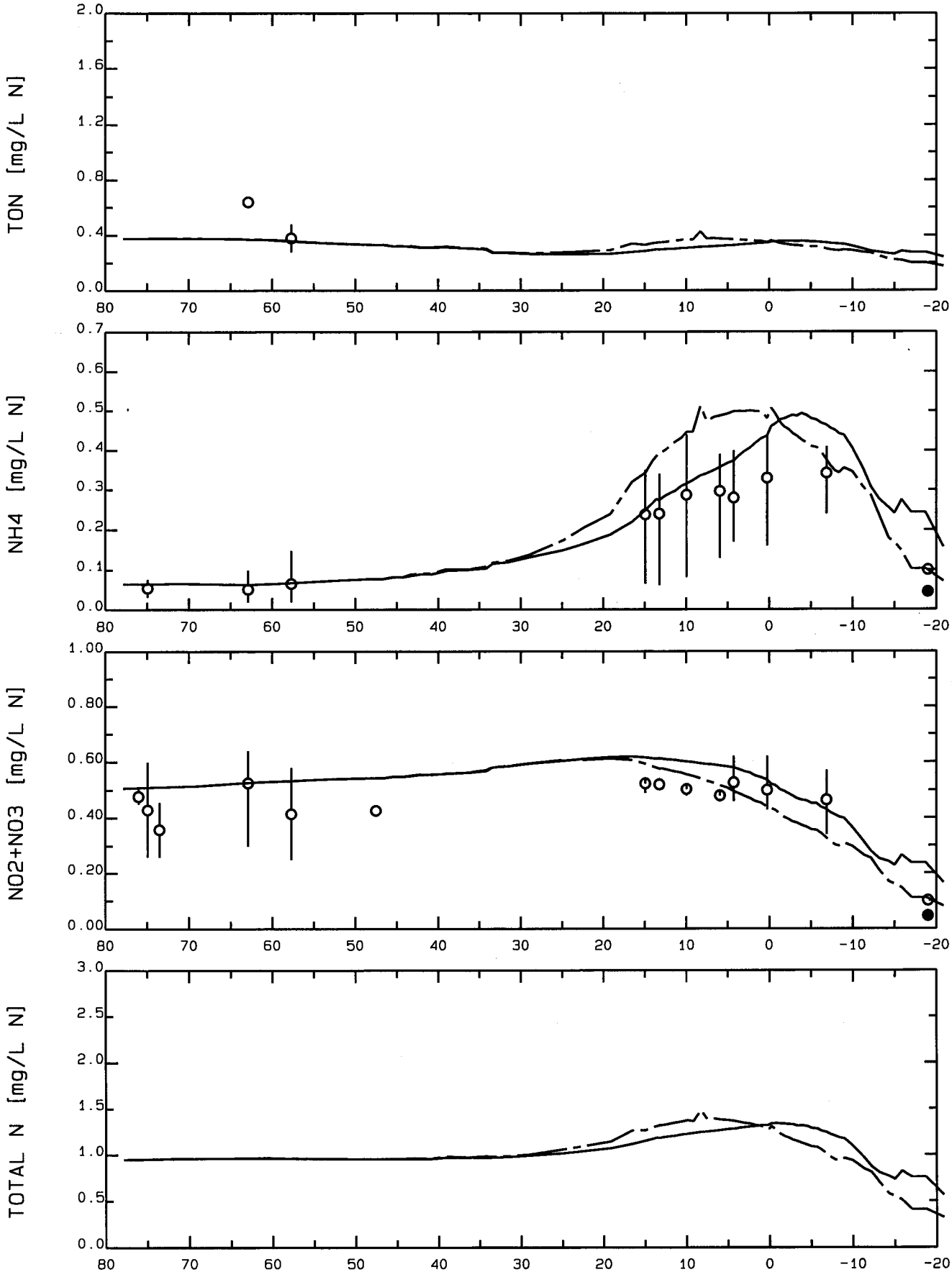
SPATIAL PROFILE - 8811



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

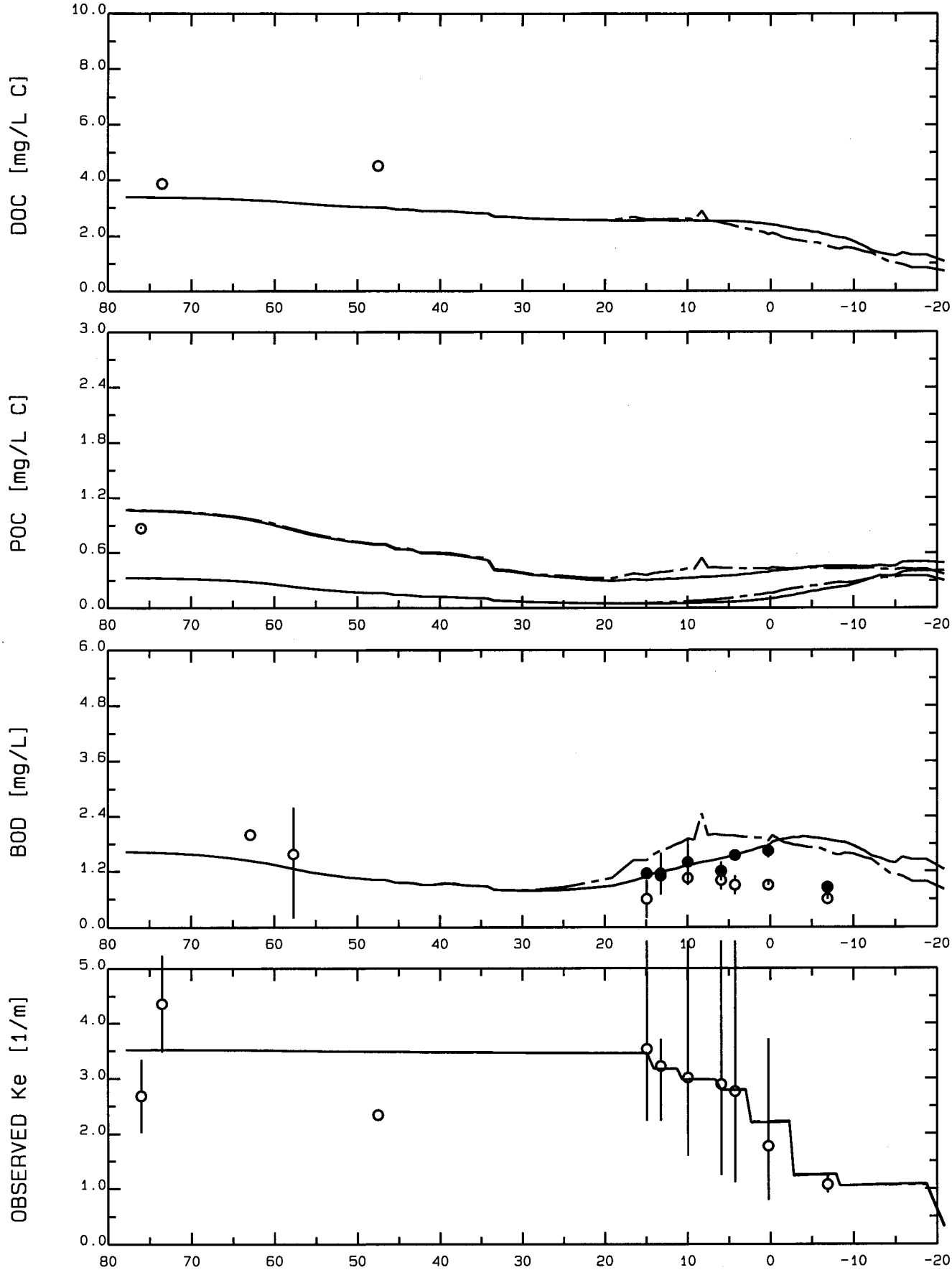
SPATIAL PROFILE - 8811



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

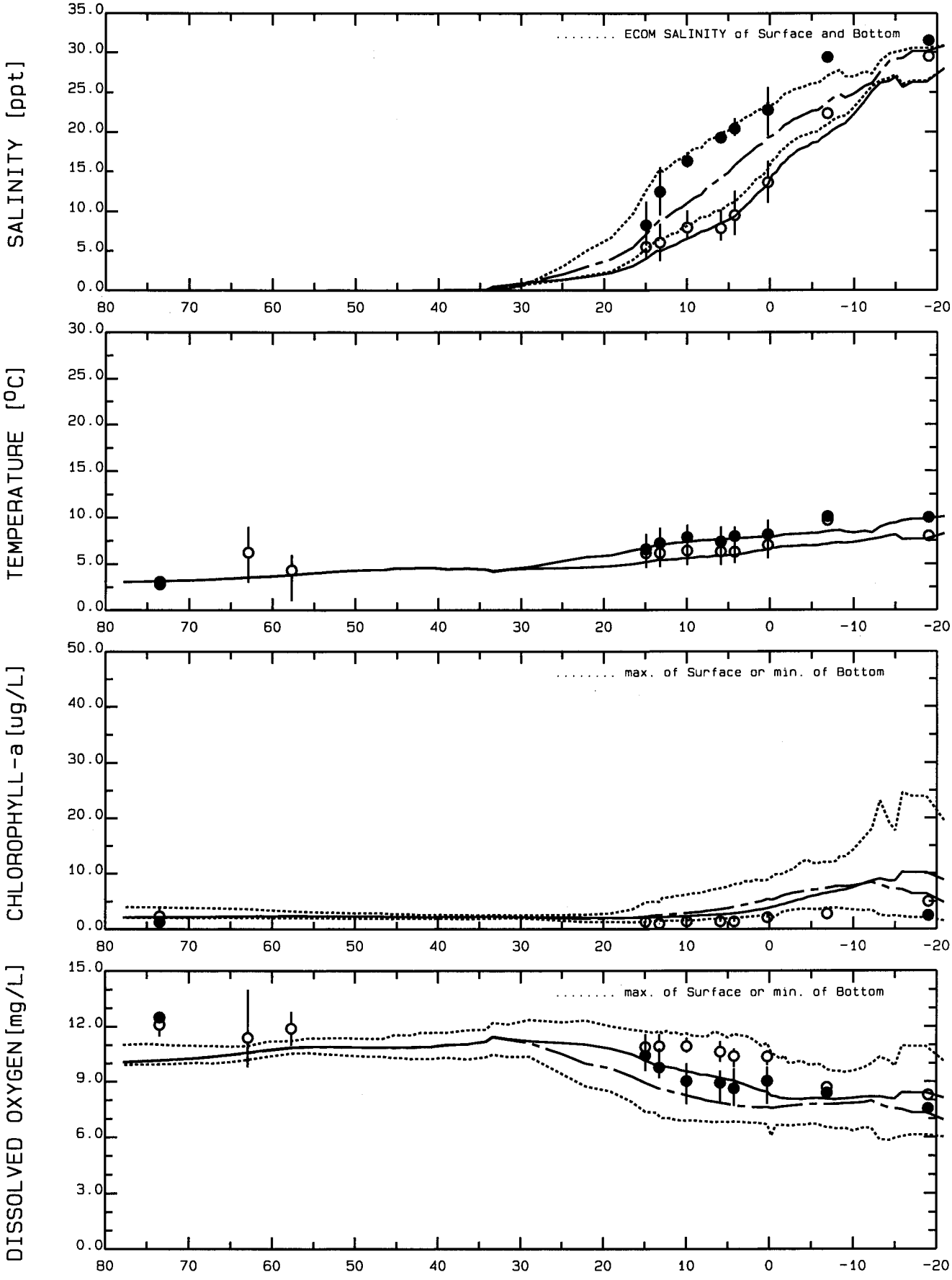
SPATIAL PROFILE - 8811



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

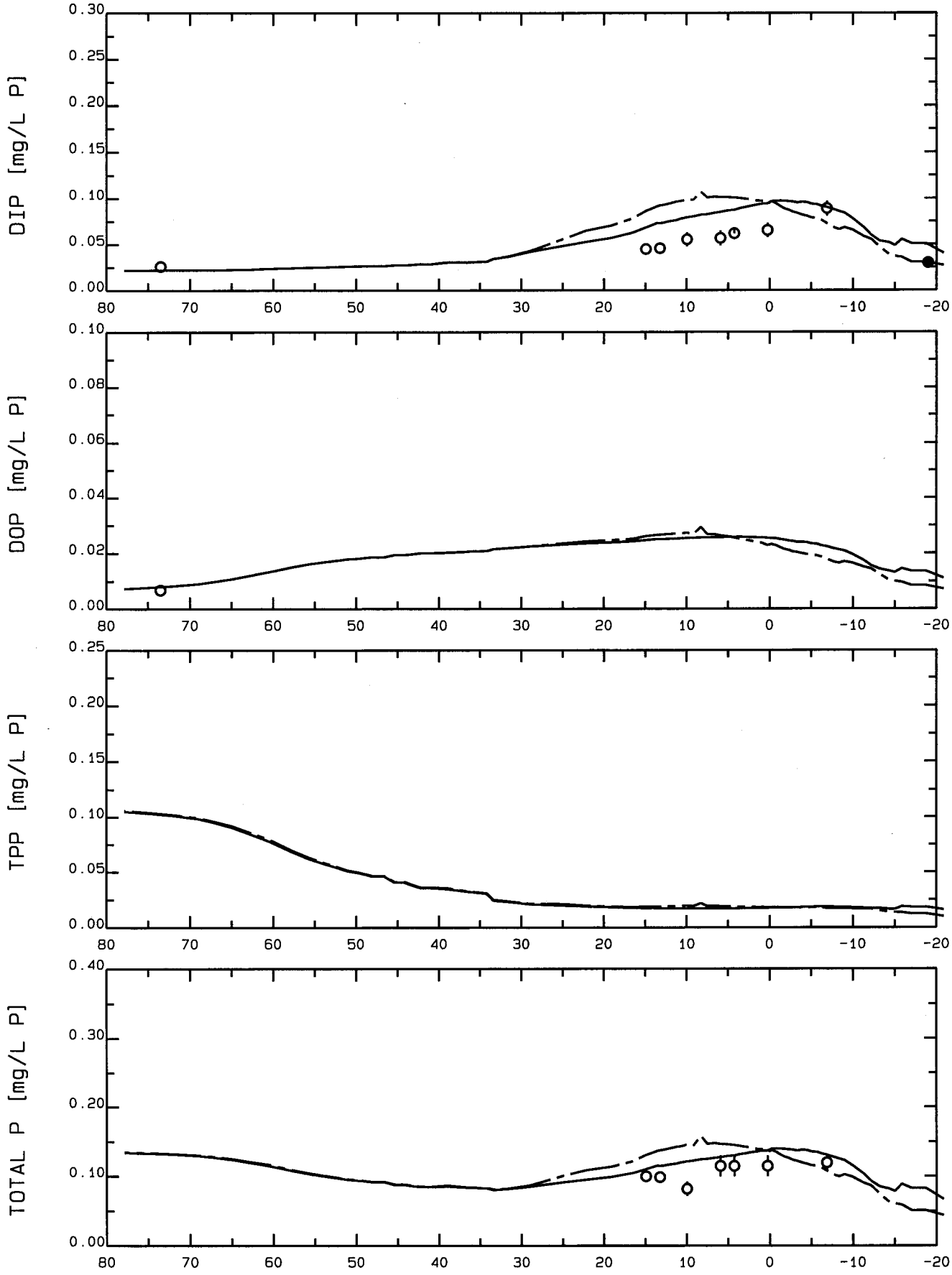
SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8811



DATE: Tue Jun 9 TIME: 15:16:19 SPATIAL PROFILE - 8812

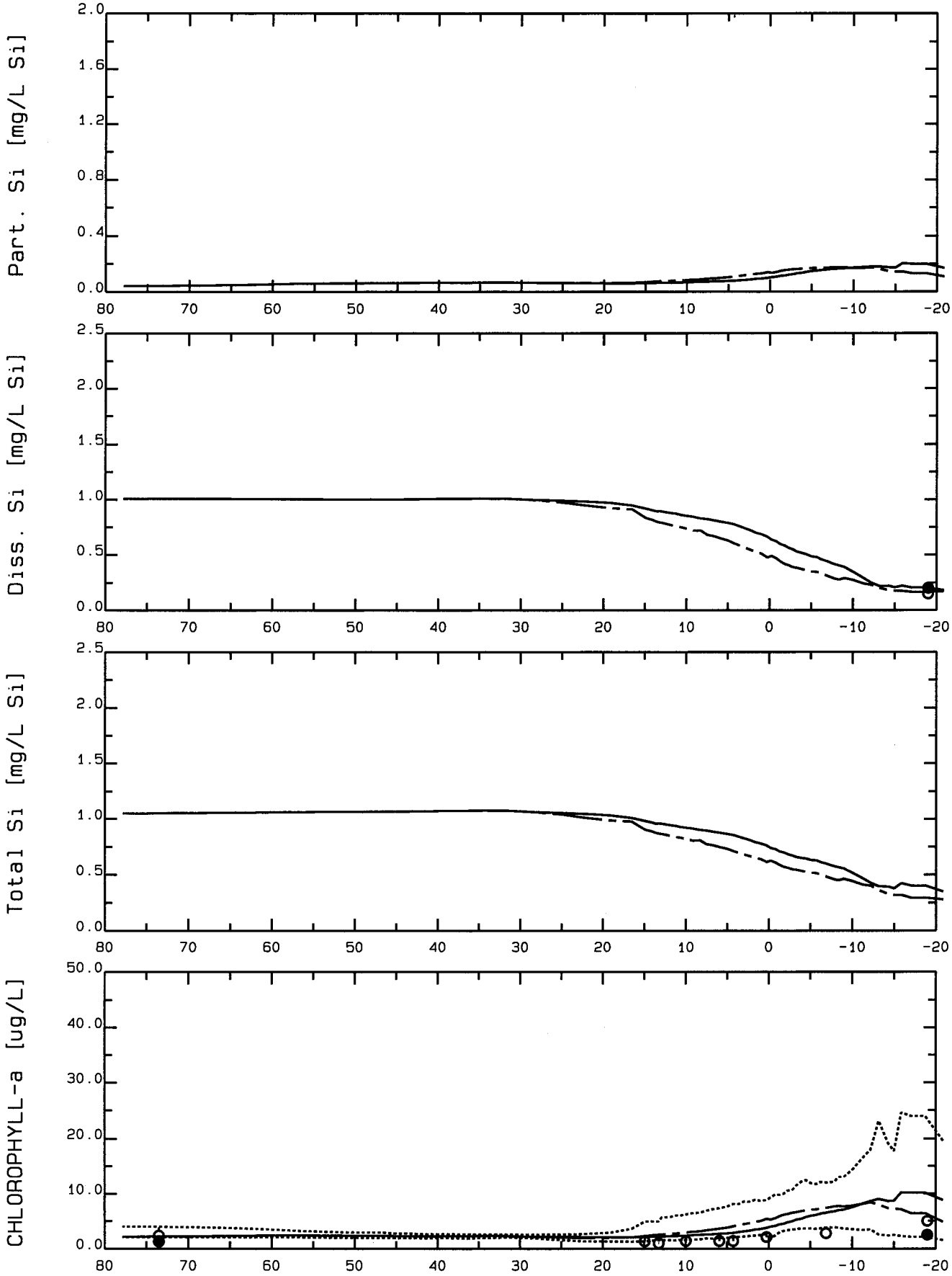
HydroQual SWEM Run# 37



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

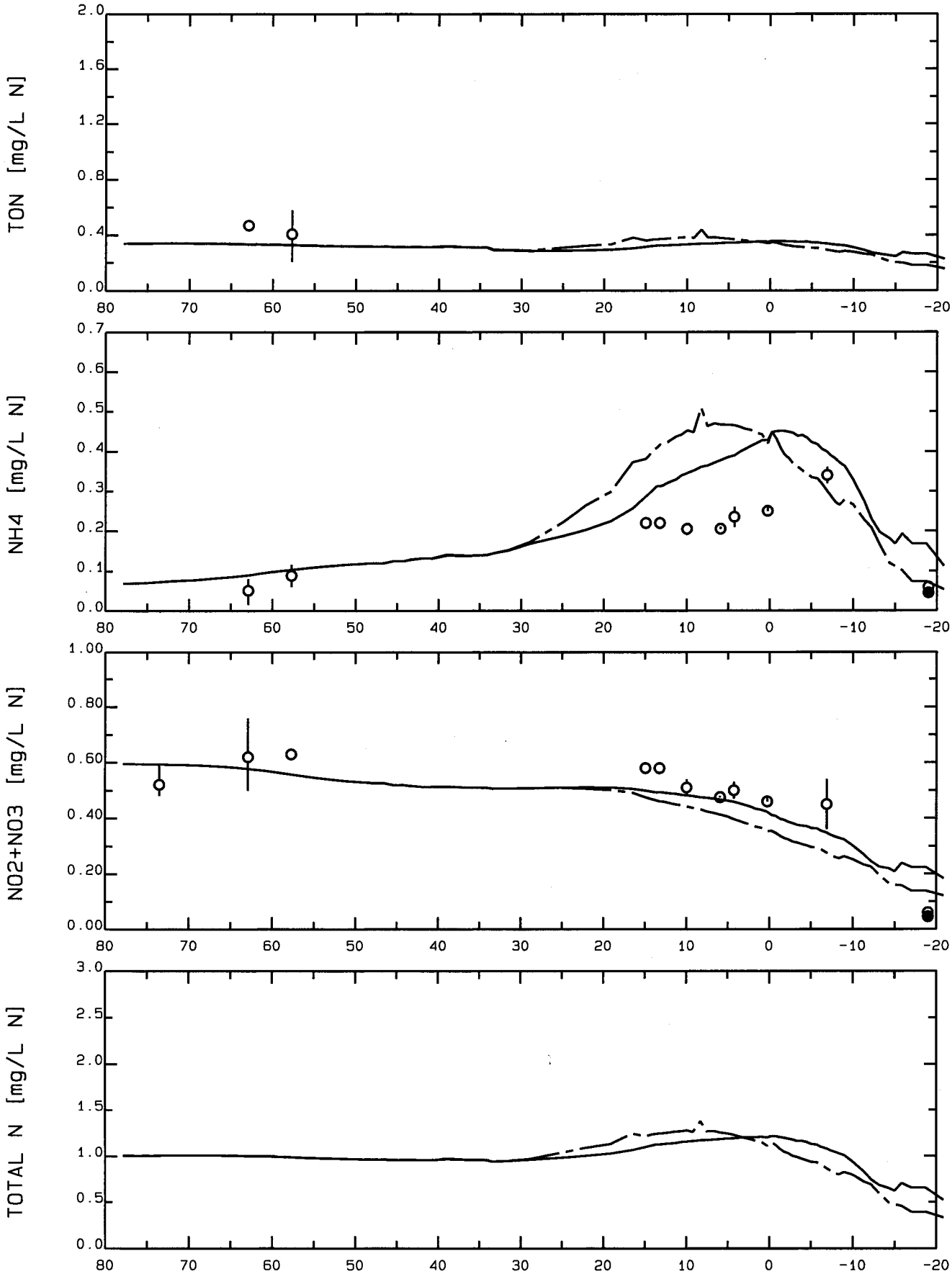
SPATIAL PROFILE - 8812



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

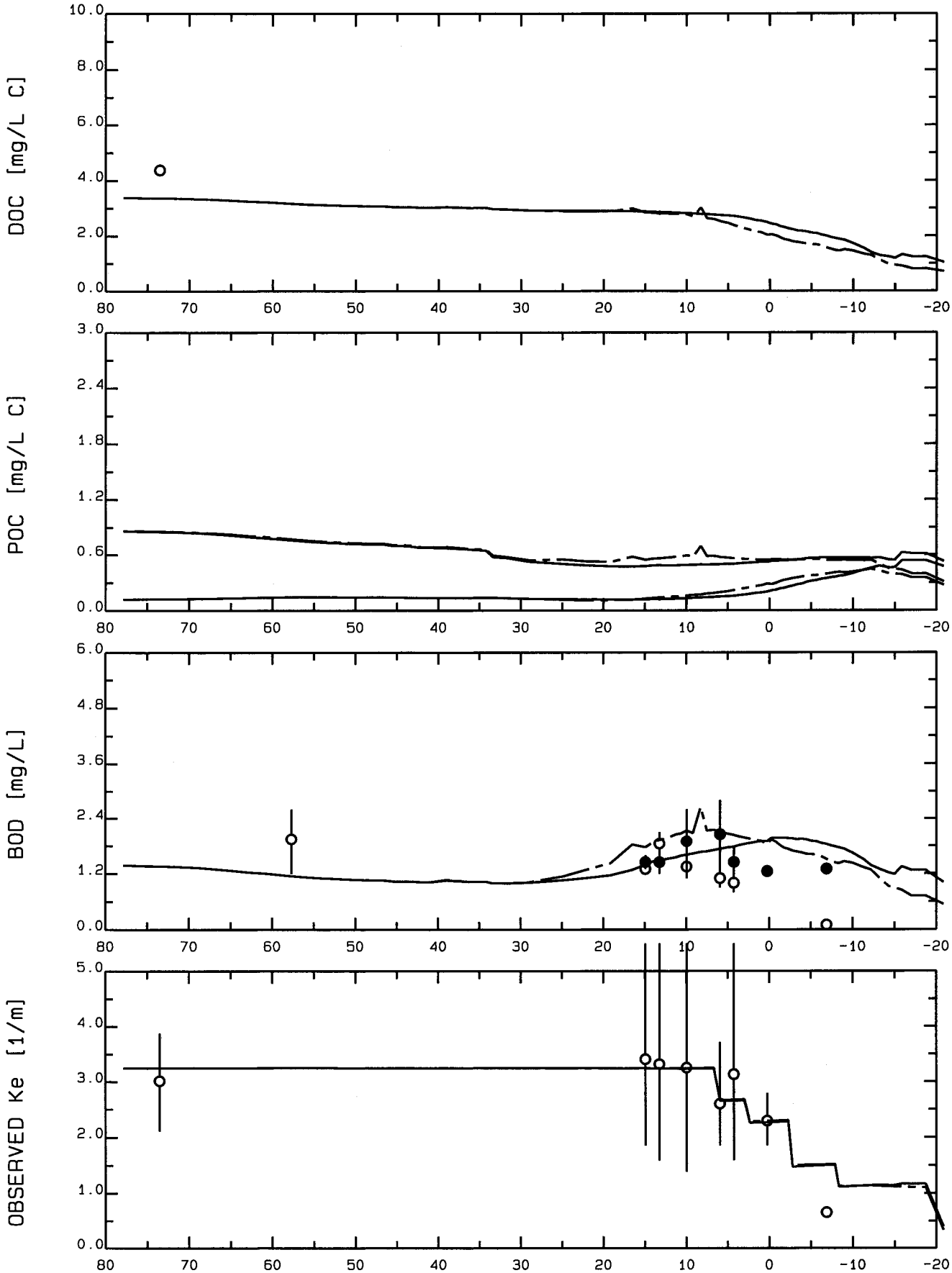
SPATIAL PROFILE - 8812



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

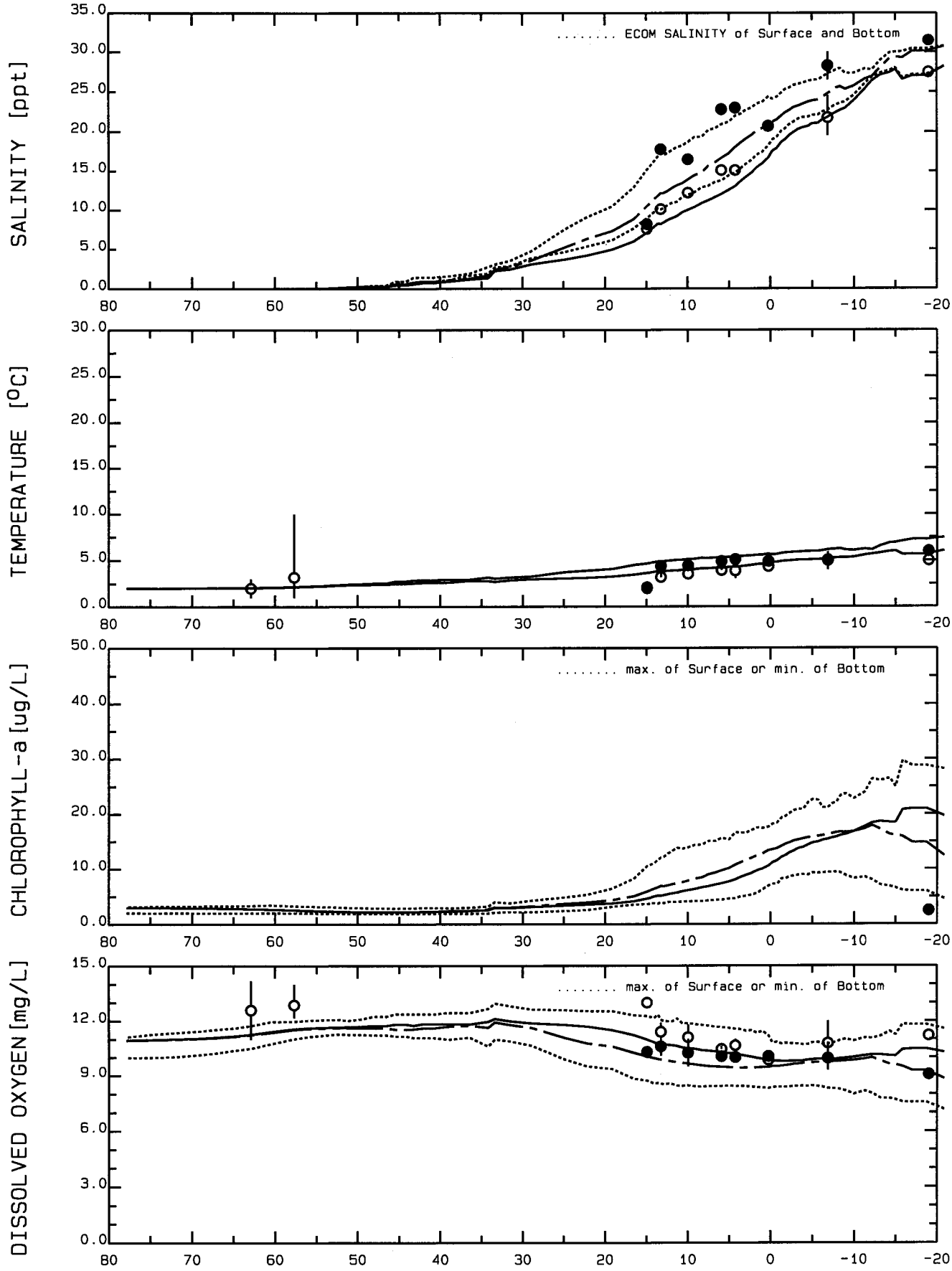
SPATIAL PROFILE - 8812



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8812

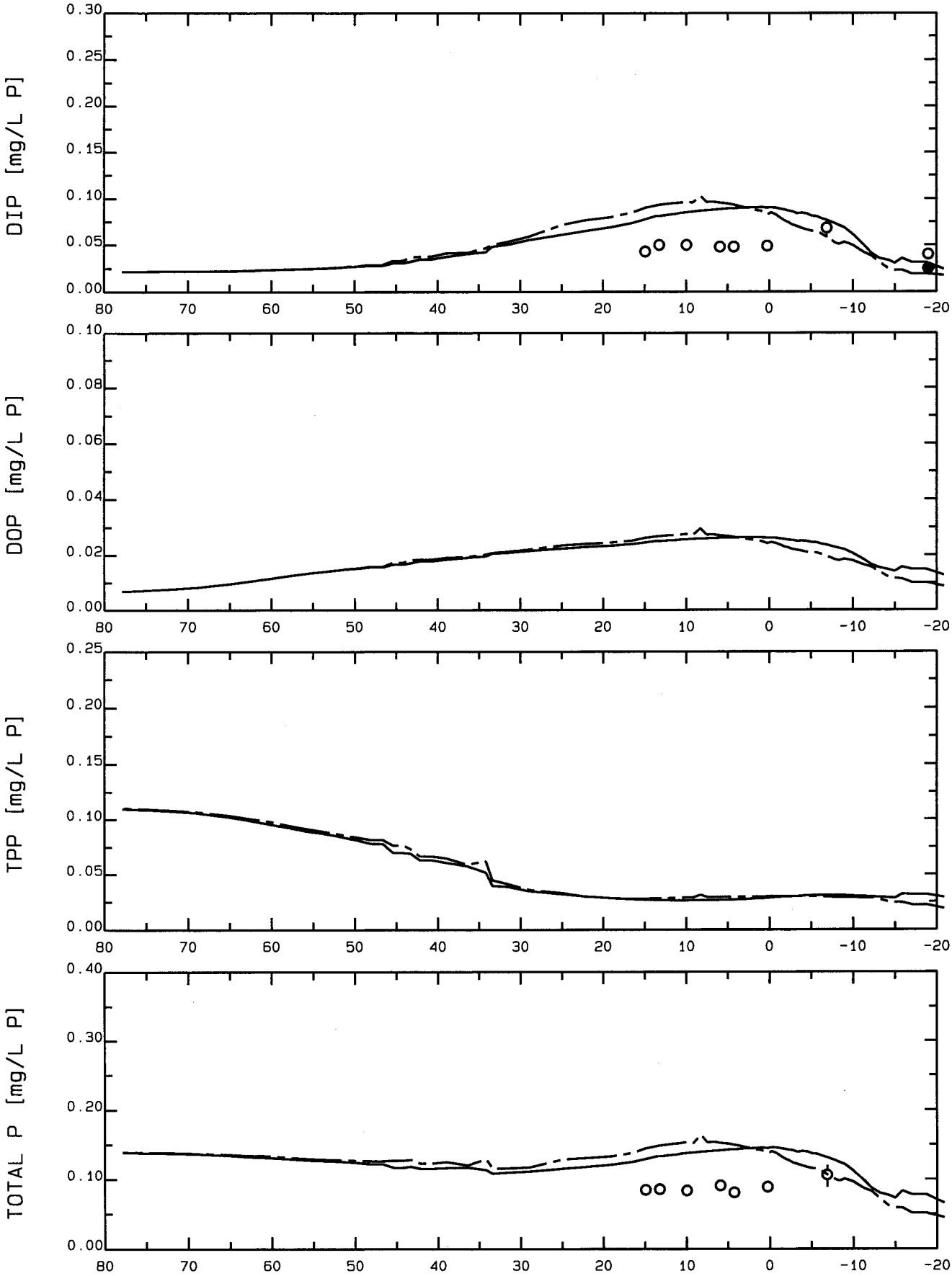


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

DATE: Tue Jun 9 TIME: 15:17:15
HydroQual SWEM Run# 37

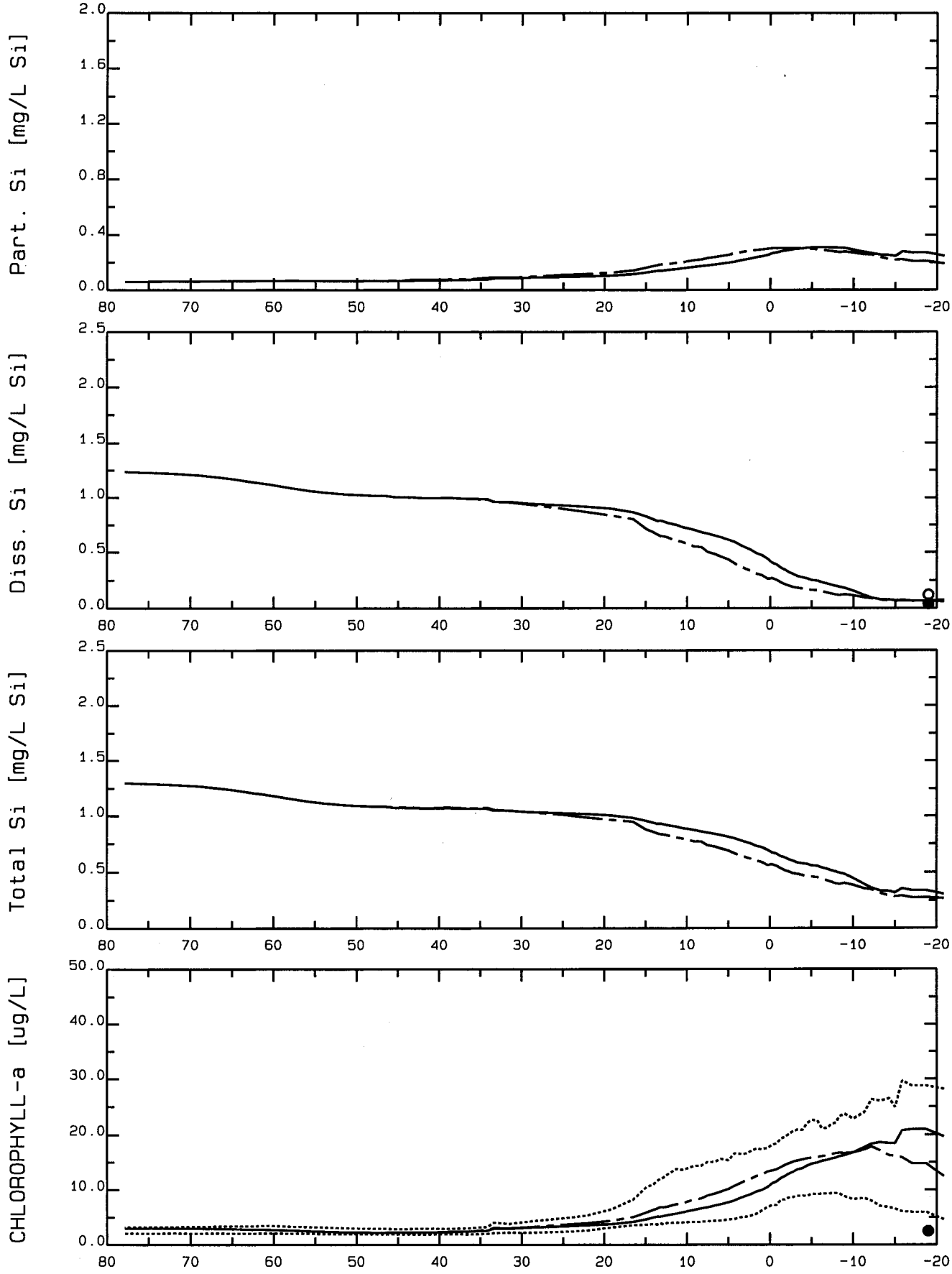
SPATIAL PROFILE - 8901



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

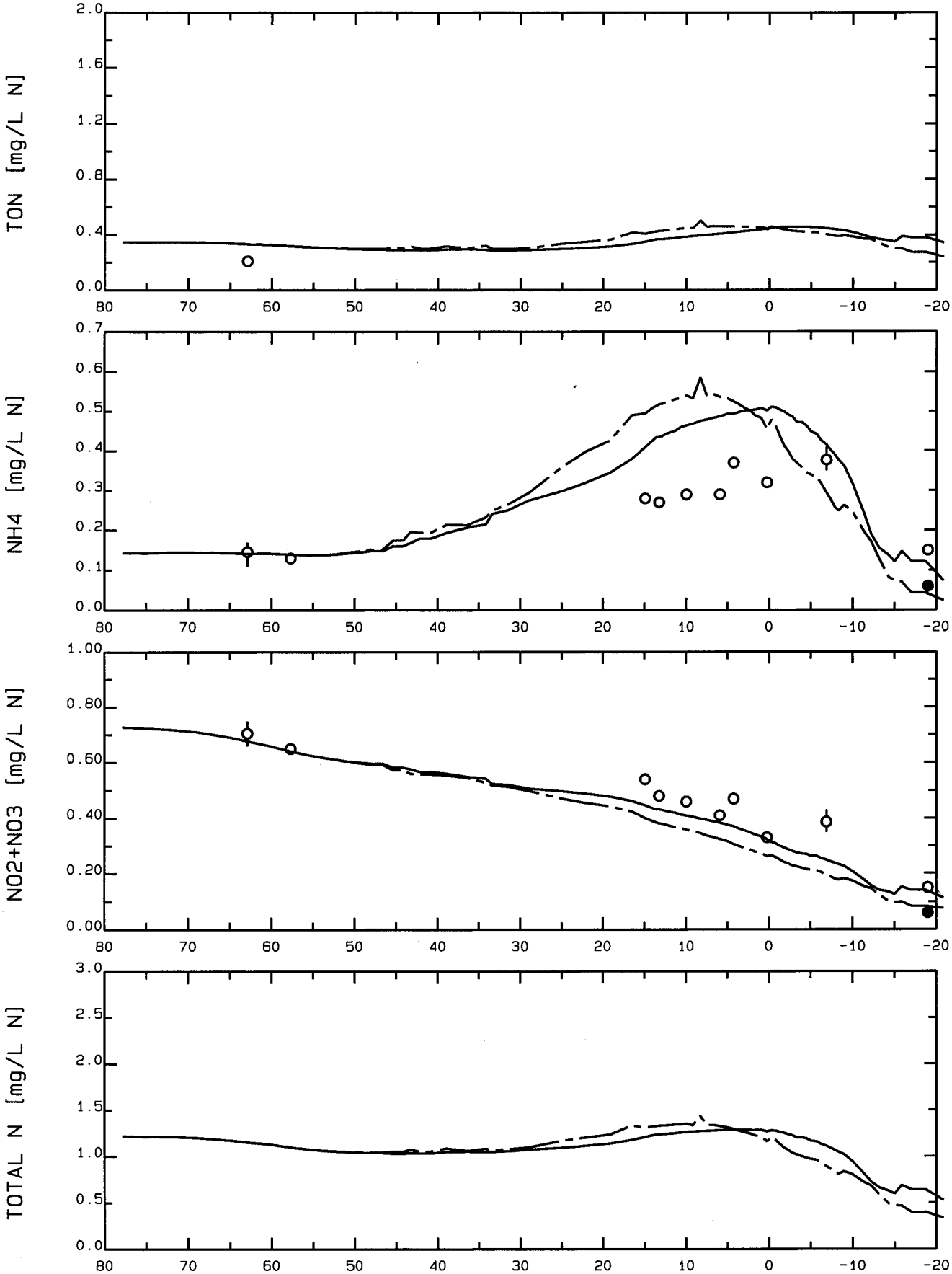
SPATIAL PROFILE - 8901

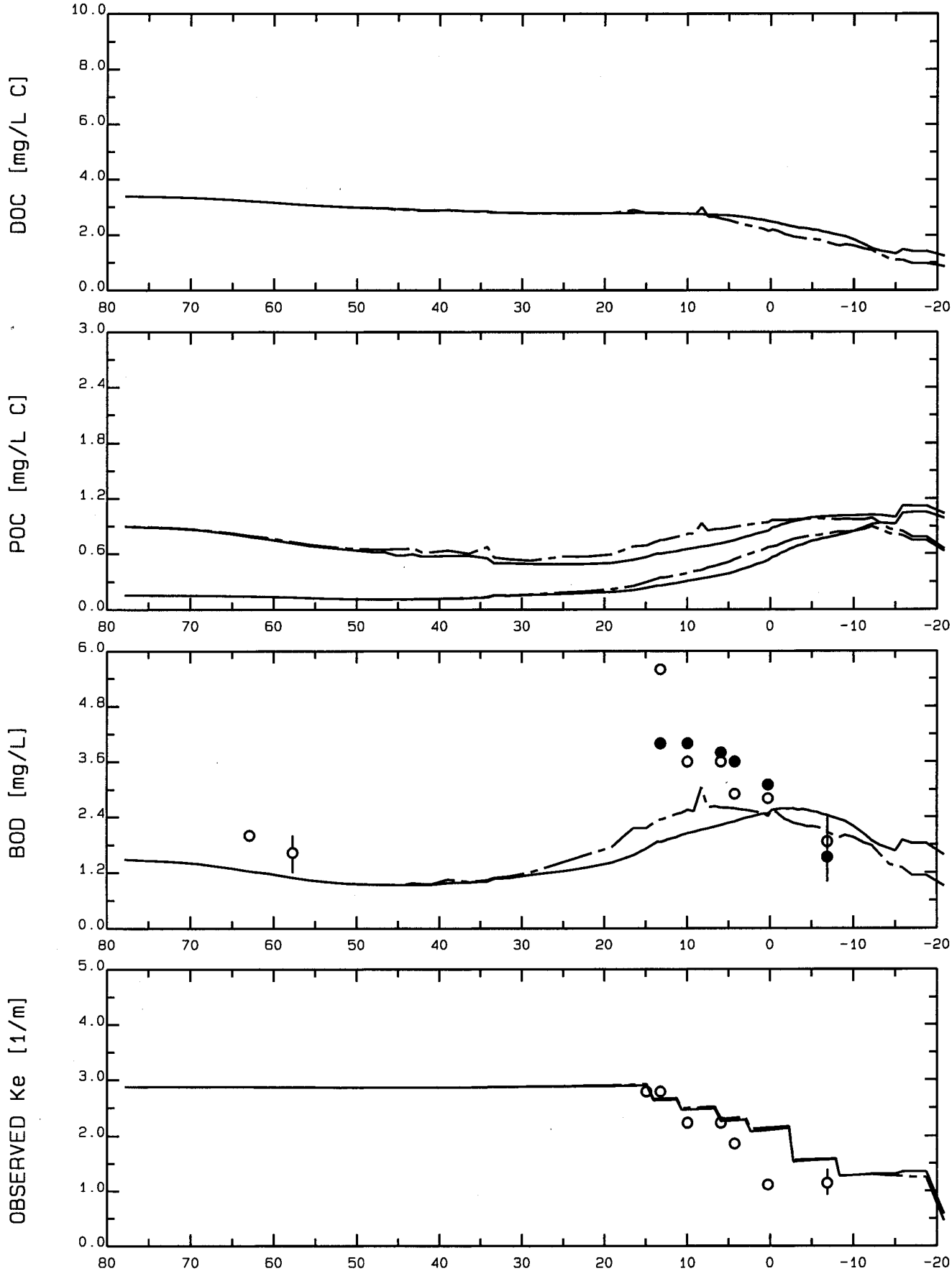


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8901

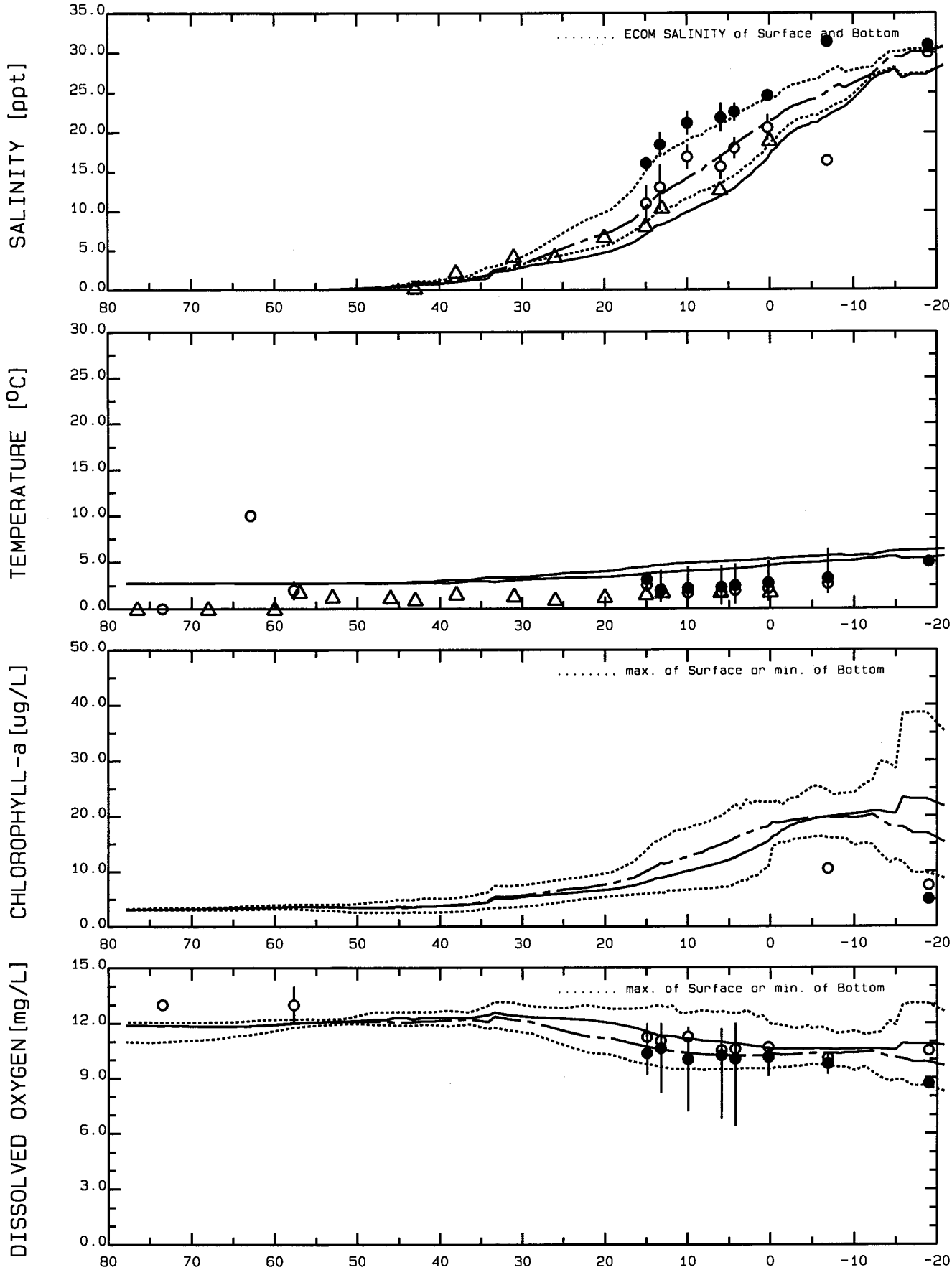

TON [mg/L N]
NH4 [mg/L N]
NO2+NO3 [mg/L N]
TOTAL N [mg/L N]
80 70 60 50 40 30 20 10 0 -10 -20
HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION
SURFACE MODEL
BOTTOM MODEL
SPATIAL PROFILE - 8901



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8901

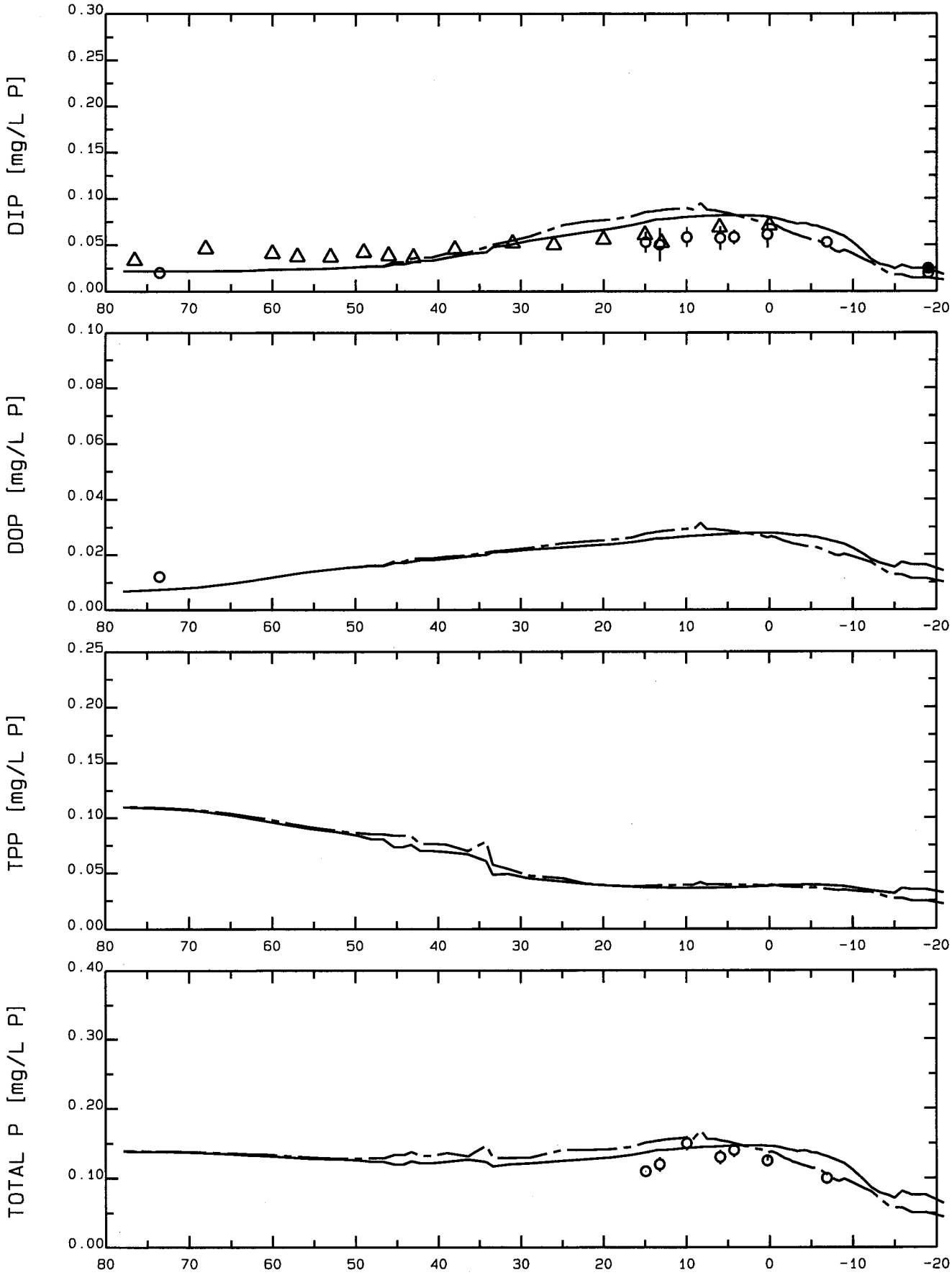


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

DATE: Tue Jun 9 TIME: 15:18:15
HydroQual SWEM Run# 37

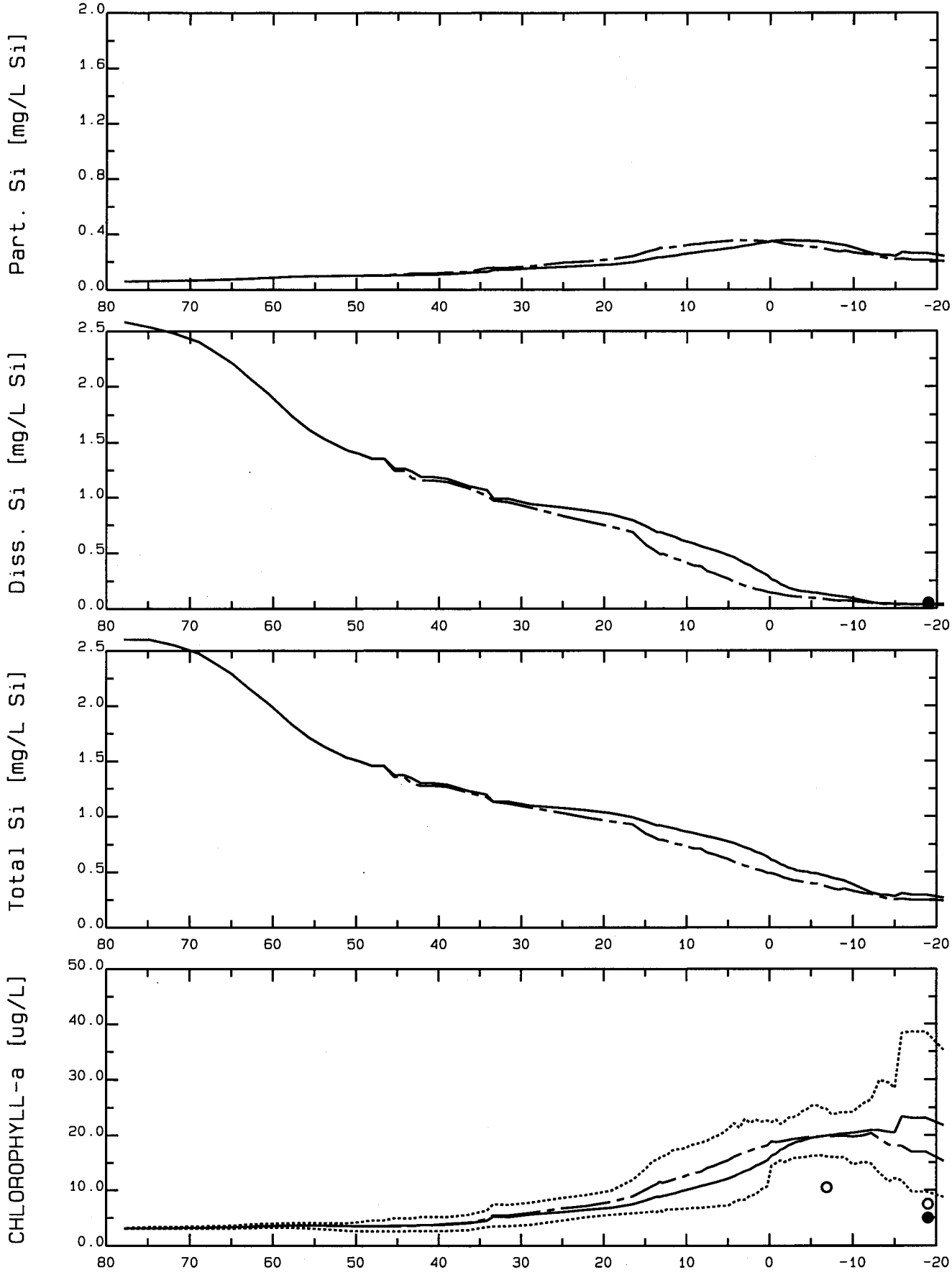
SPATIAL PROFILE - 8902



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

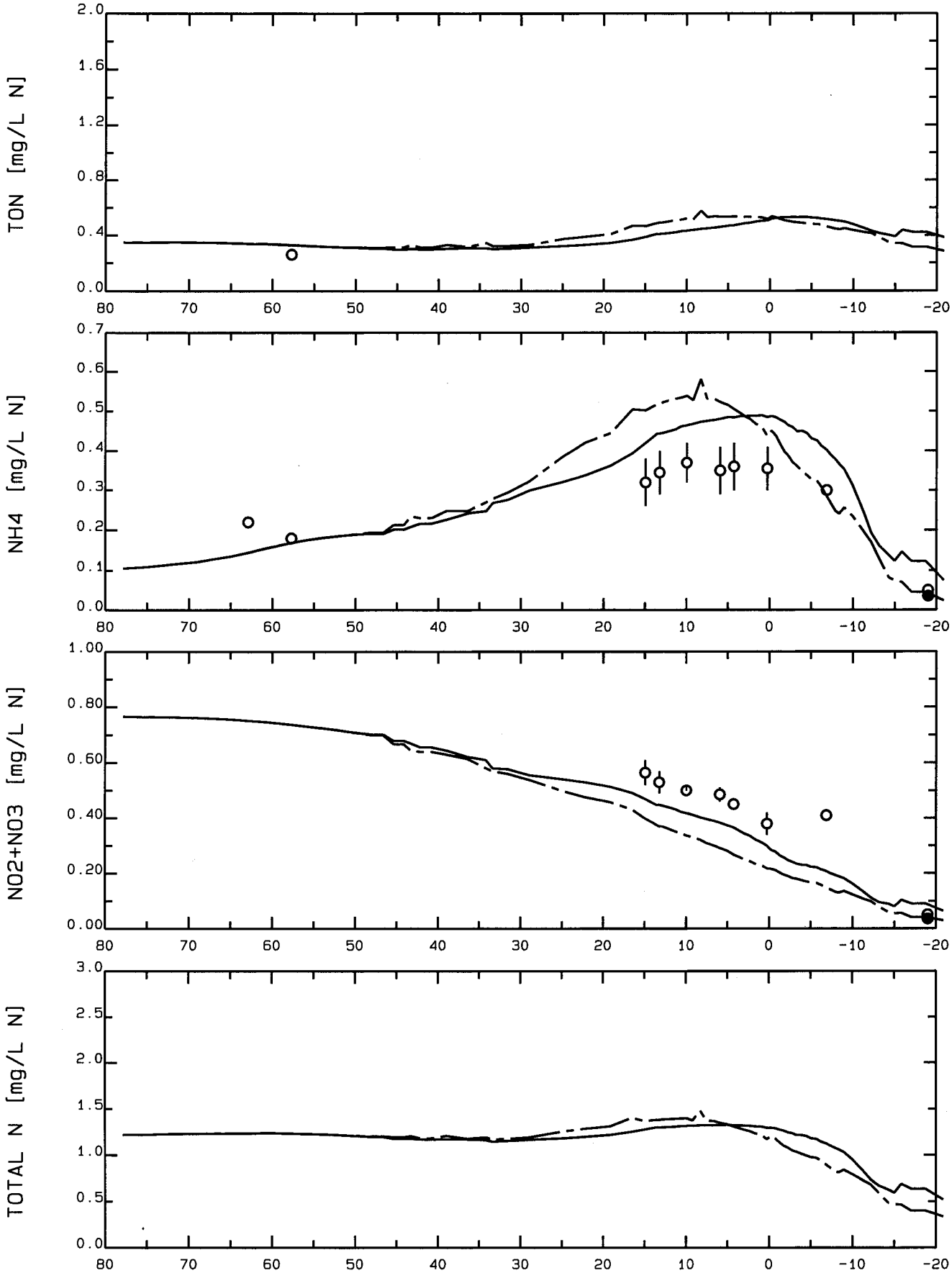
SPATIAL PROFILE - 8902

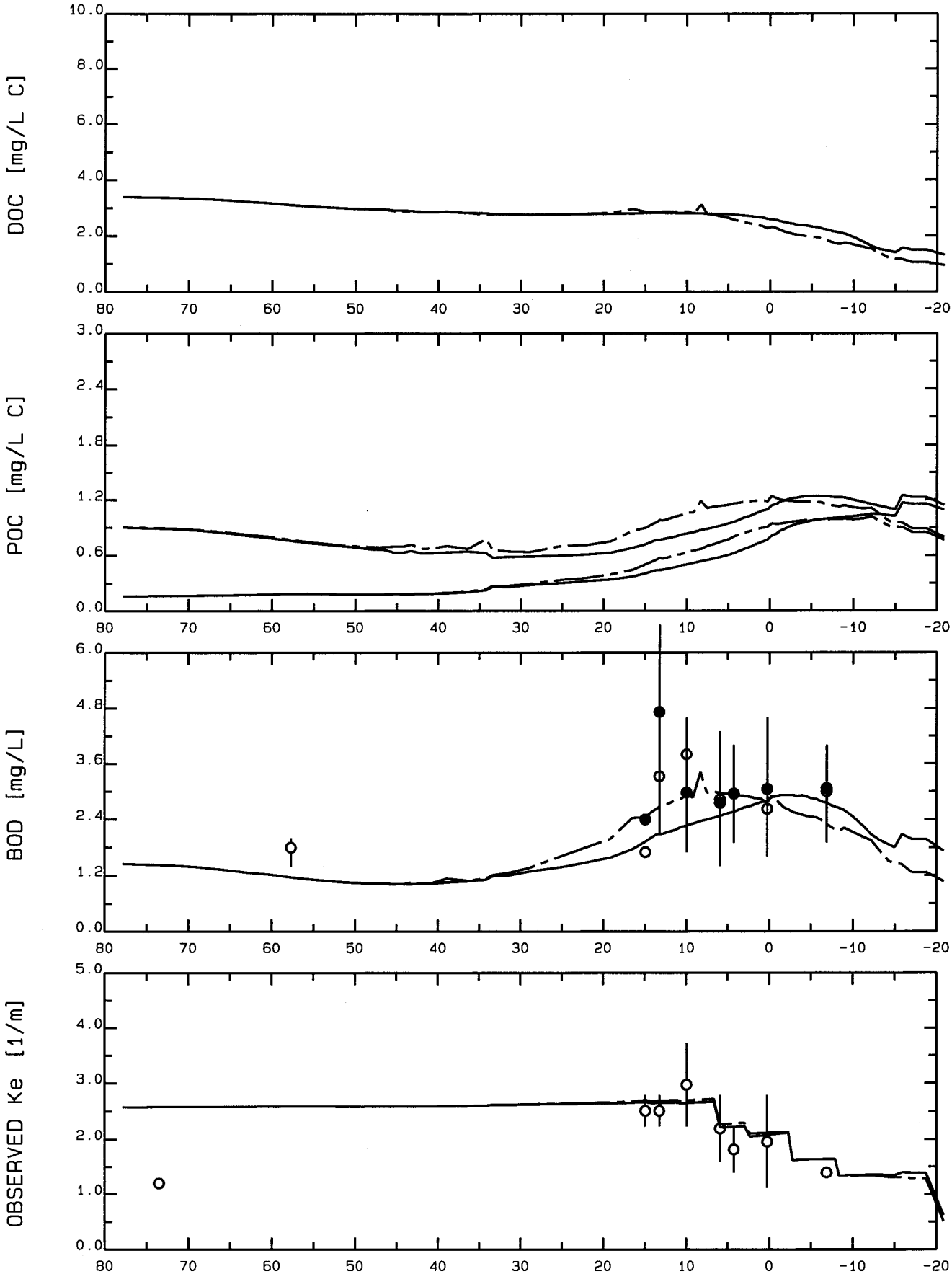


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8902

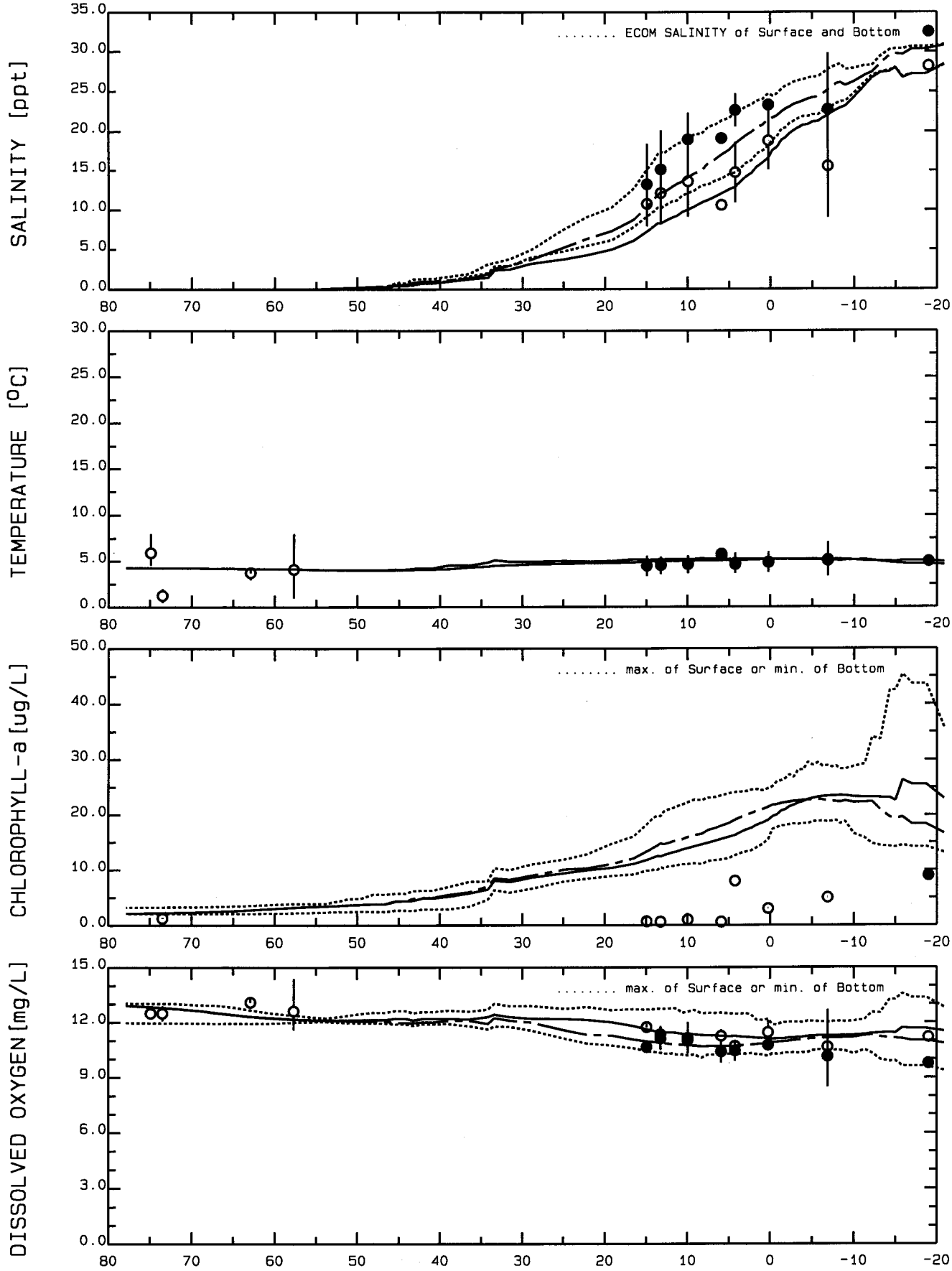

TON [mg/L N]
NH4 [mg/L N]
NO2+NO3 [mg/L N]
TOTAL N [mg/L N]
80 70 60 50 40 30 20 10 0 -10 -20
HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION
SURFACE MODEL
BOTTOM MODEL
SPATIAL PROFILE - 8902



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8902

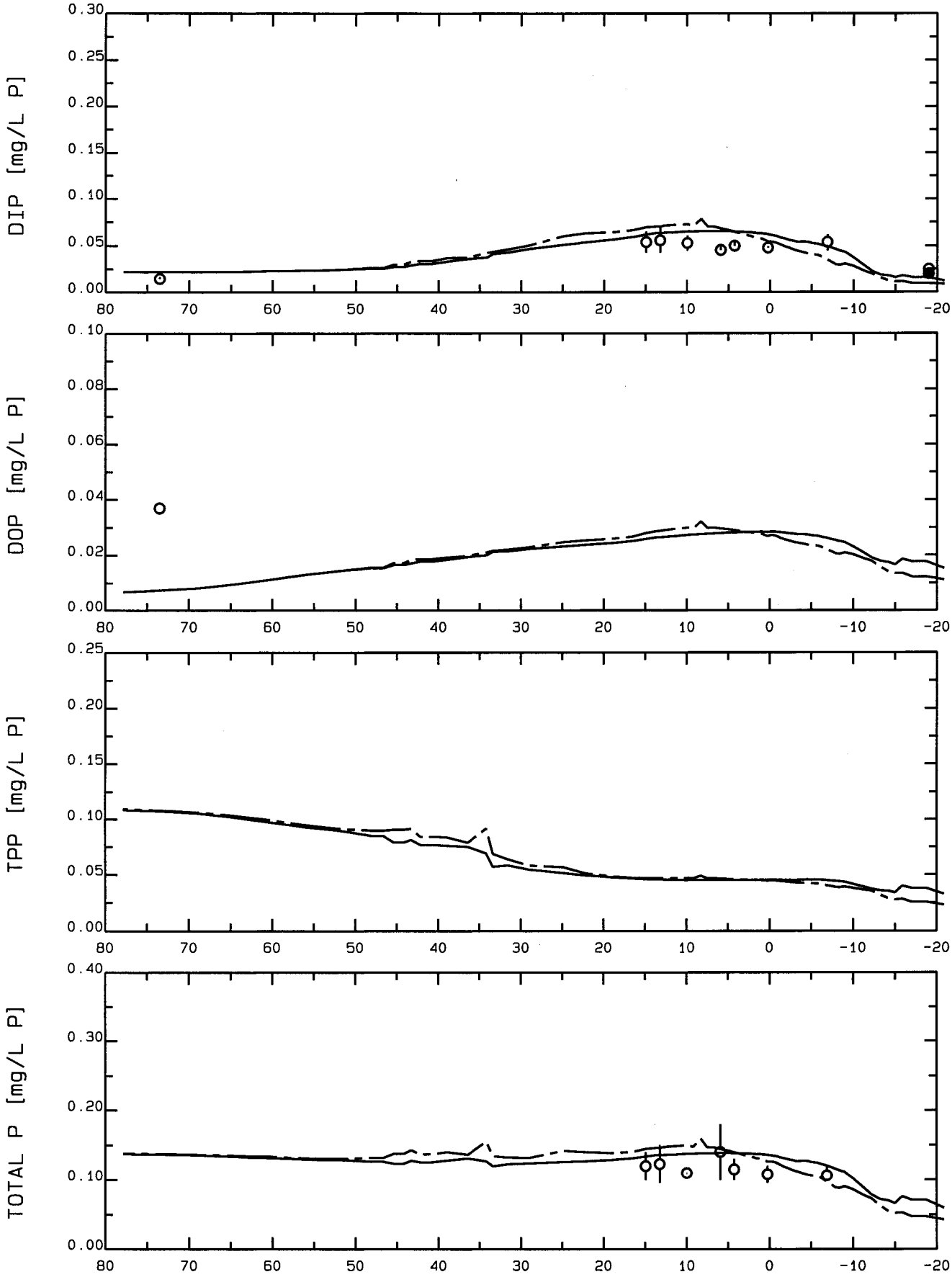


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

DATE: Tue Jun 9 TIME: 15:19:20
HydroQual SWEM Run# 37

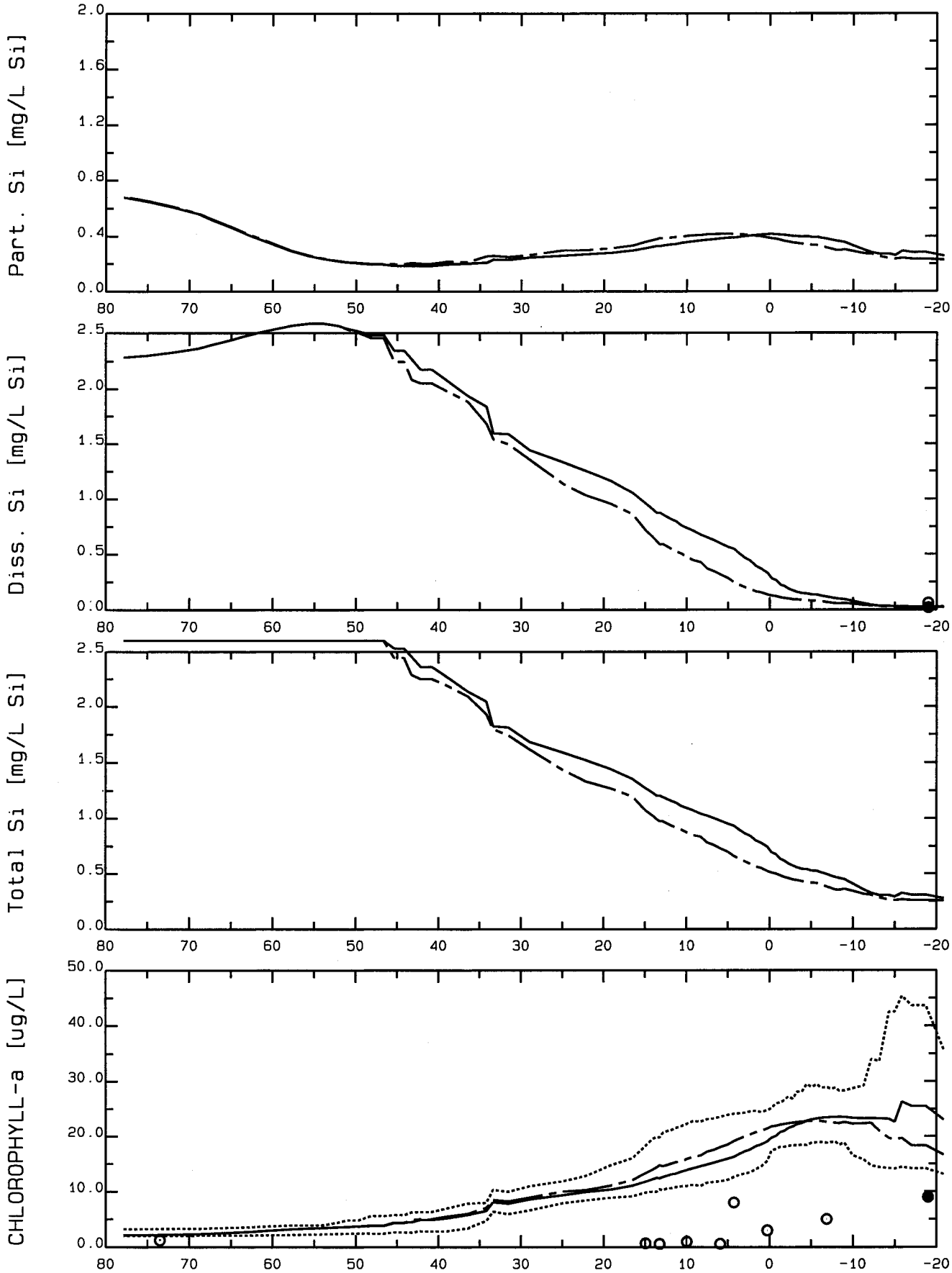
SPATIAL PROFILE - 8903



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

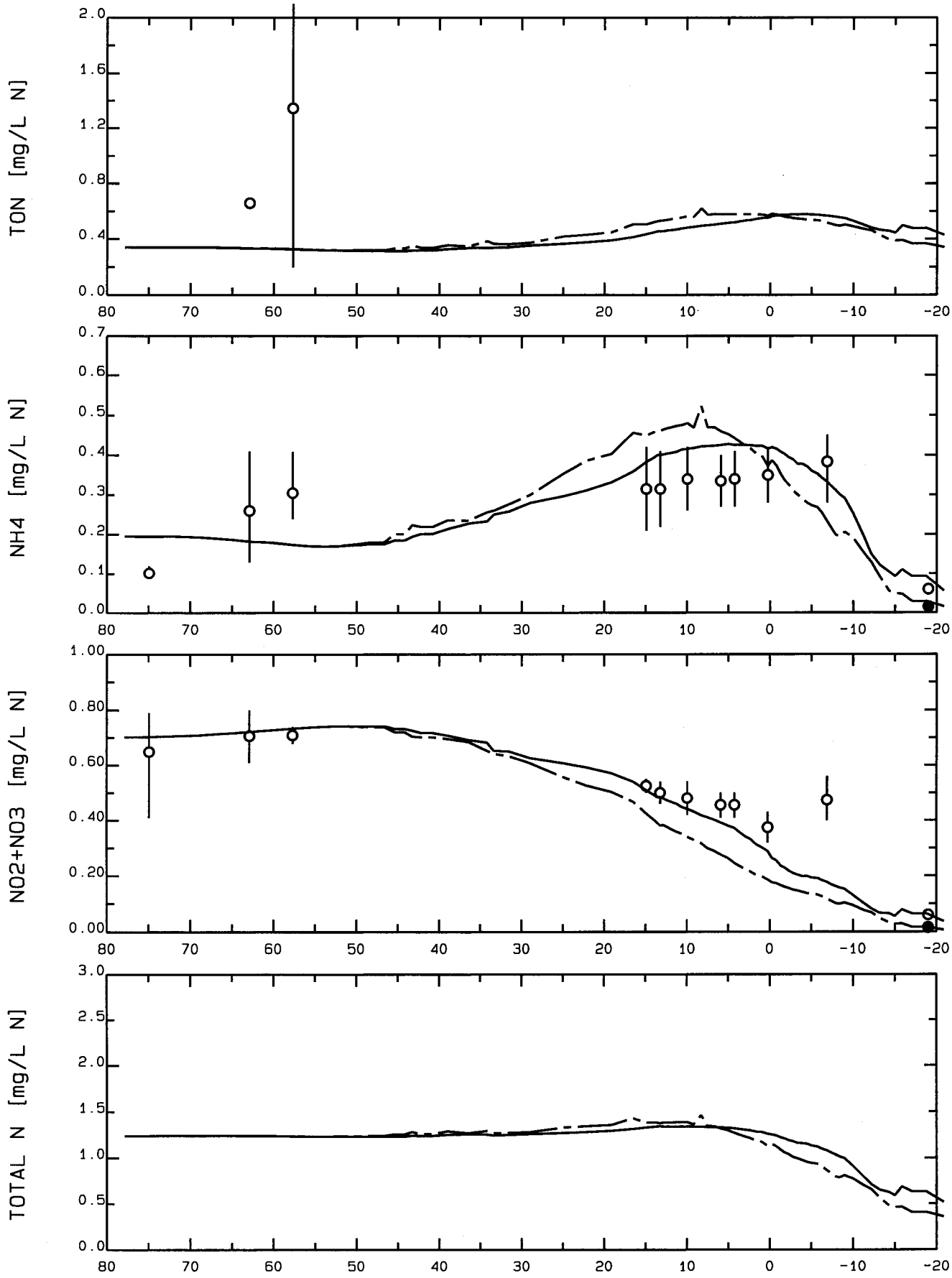
SPATIAL PROFILE - 8903



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

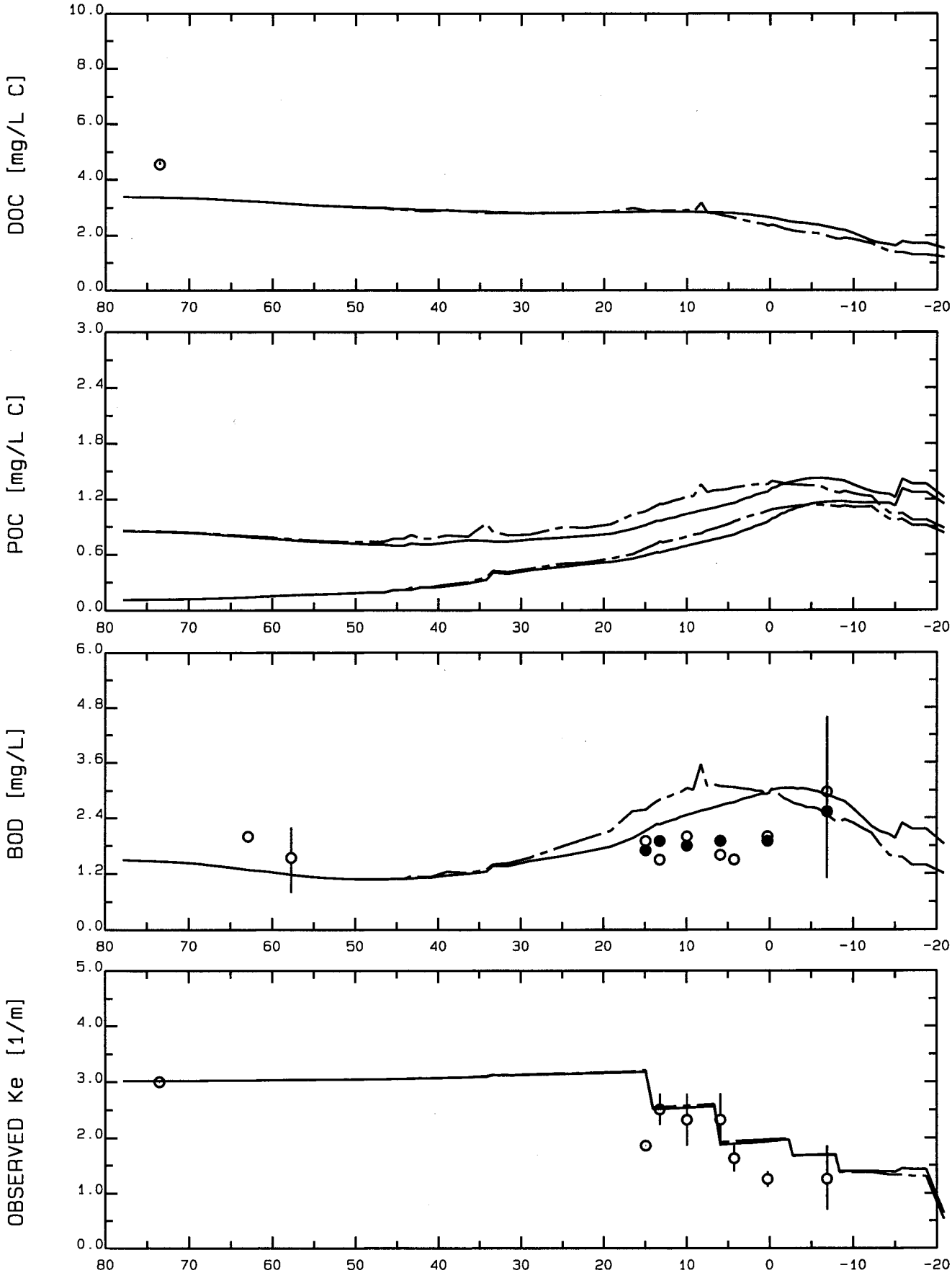
SPATIAL PROFILE - 8903



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

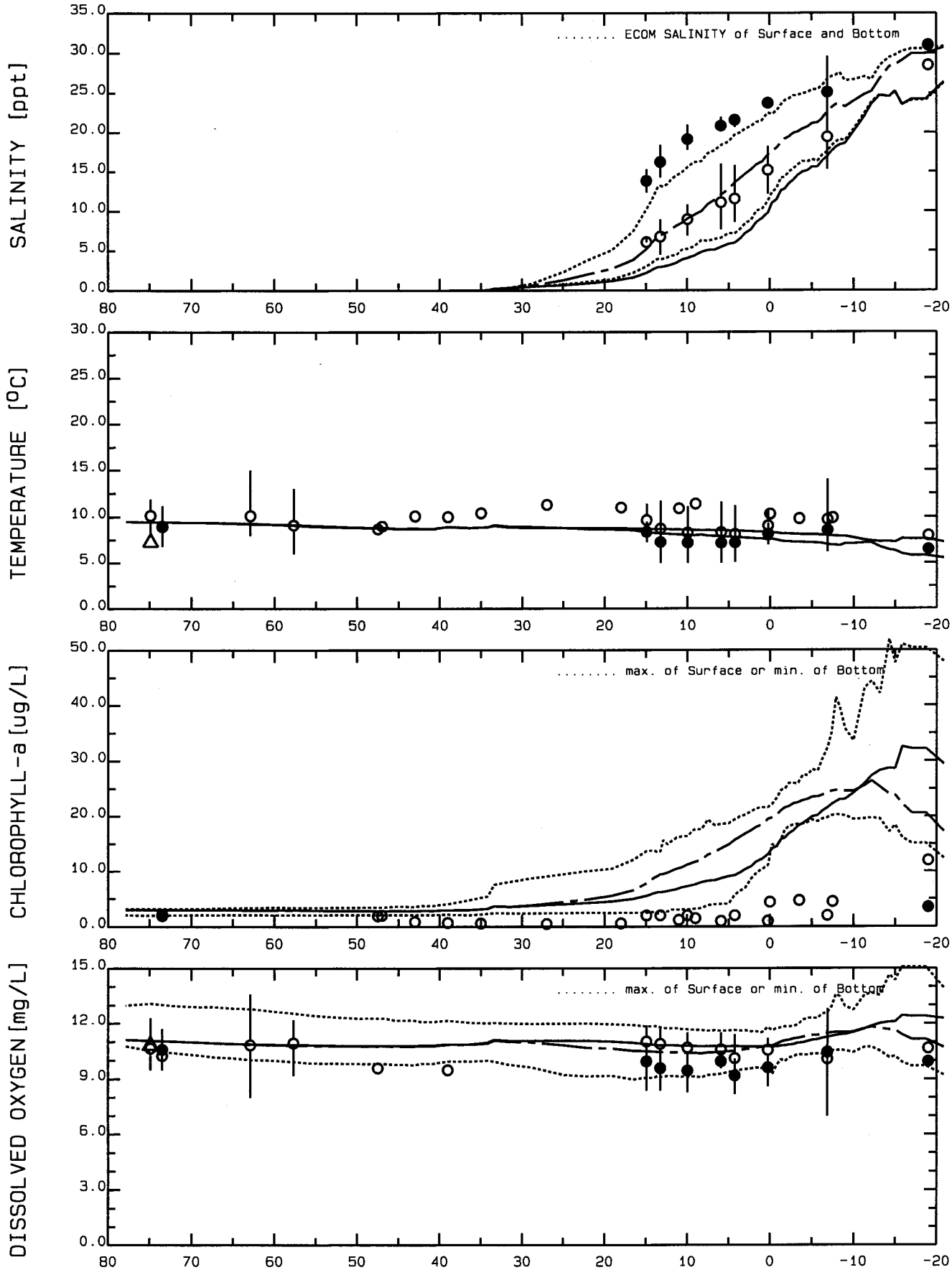
SPATIAL PROFILE - 8903



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8903

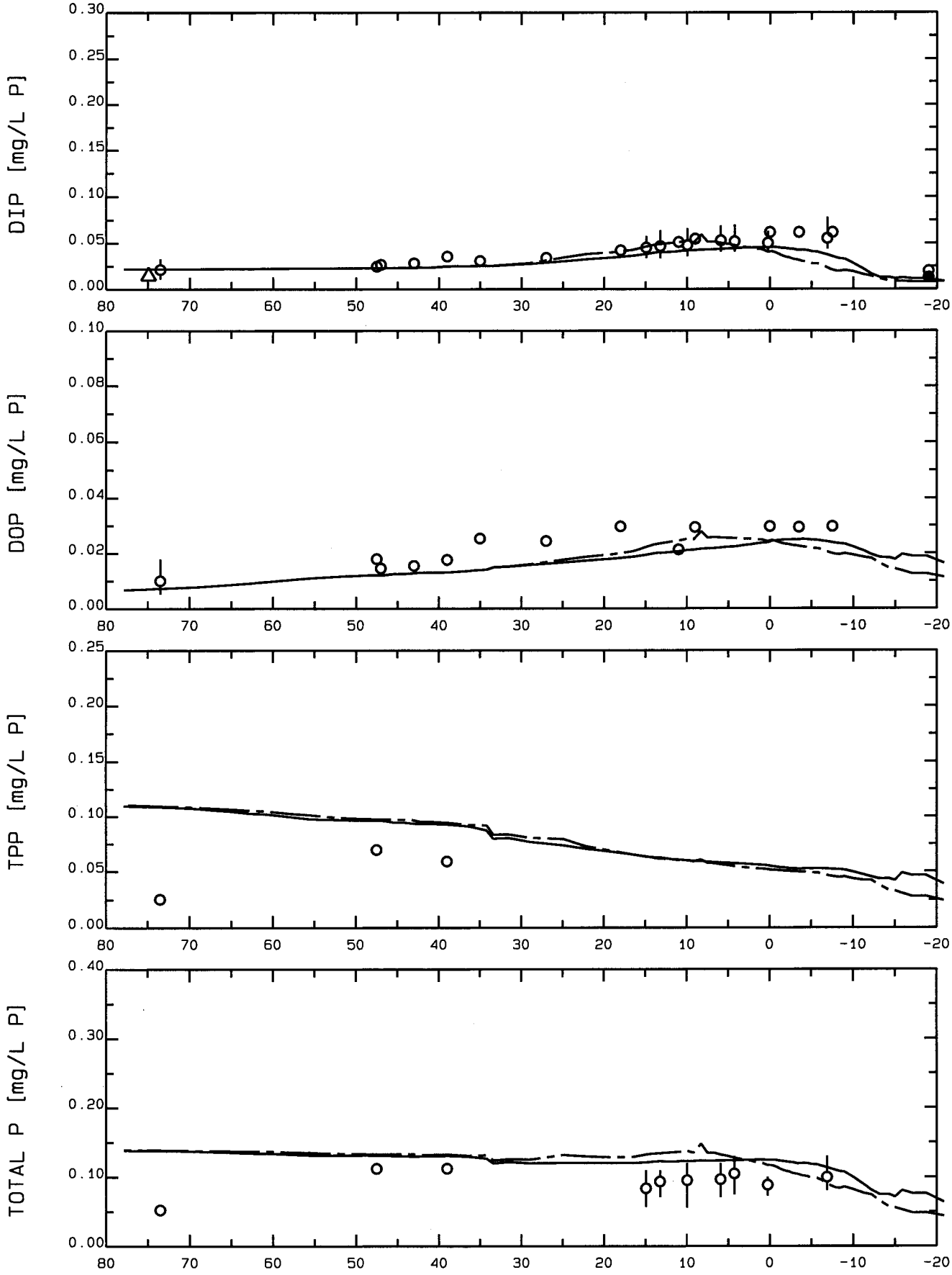


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

DATE: Tue Jun 9 TIME: 15:20:29
HydroQual SWEM Run# 37

SPATIAL PROFILE - 8904

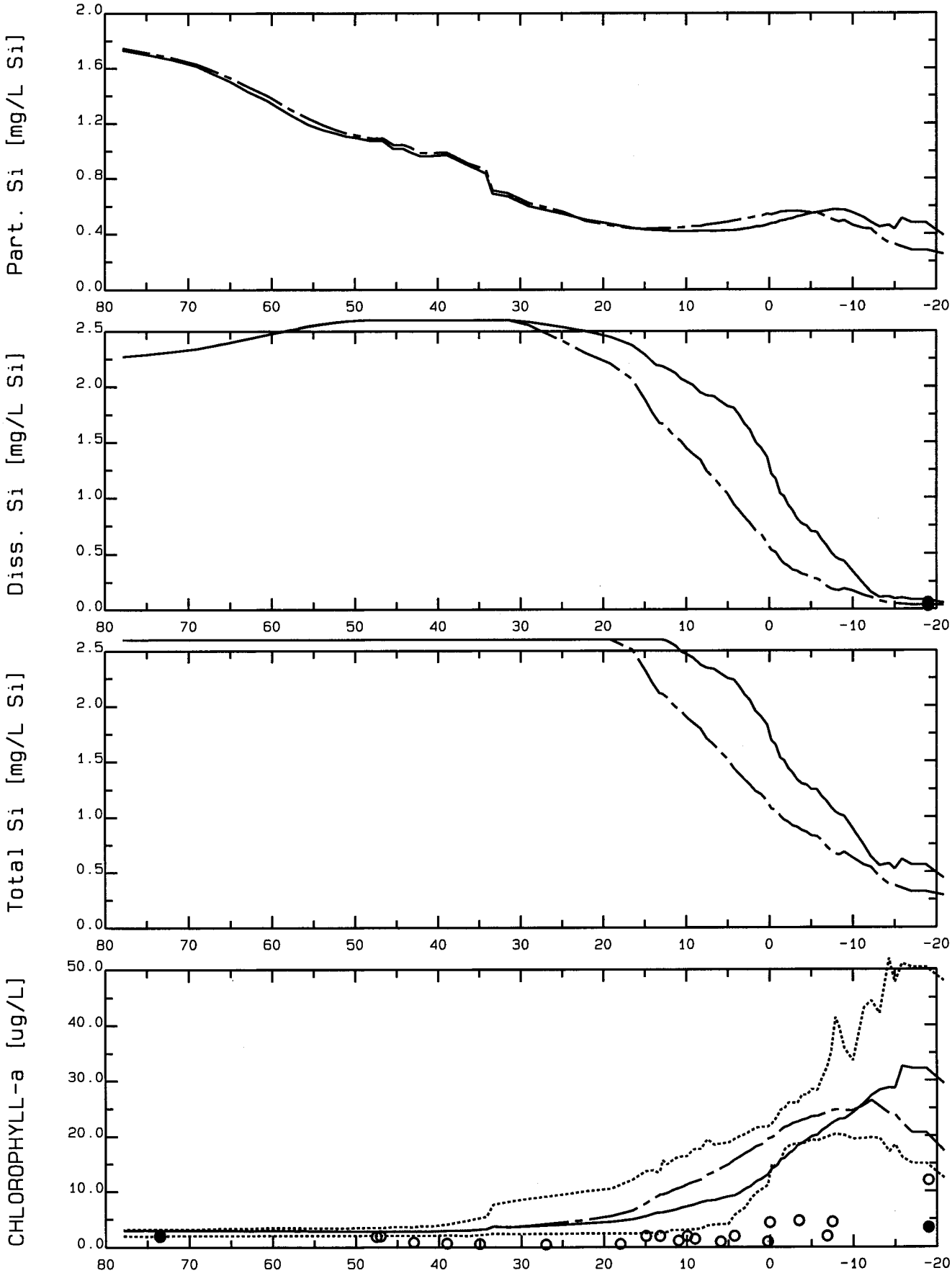
——— SURFACE MODEL
— — — BOTTOM MODEL



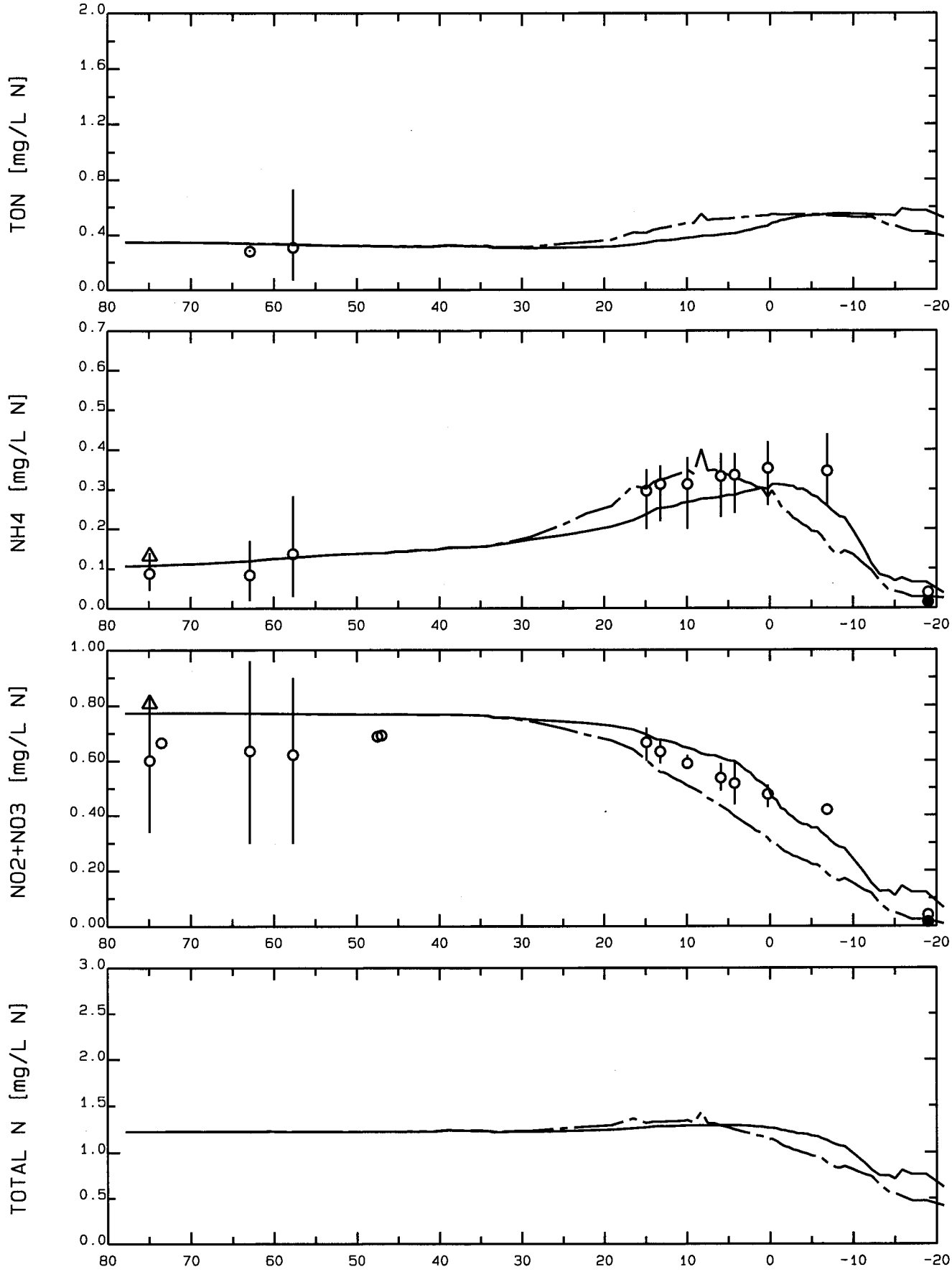
HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8904



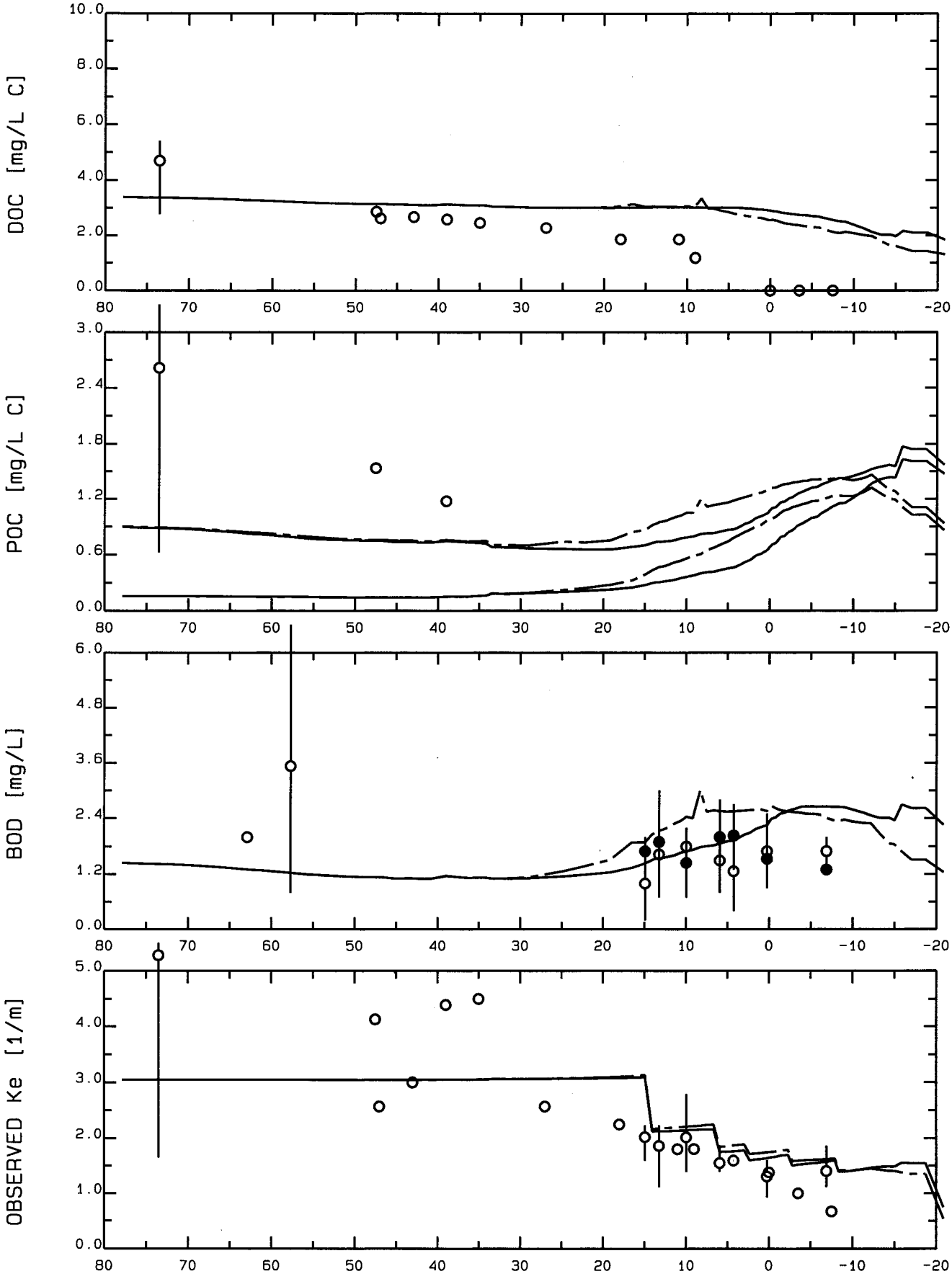
SPATIAL PROFILE - 8904



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

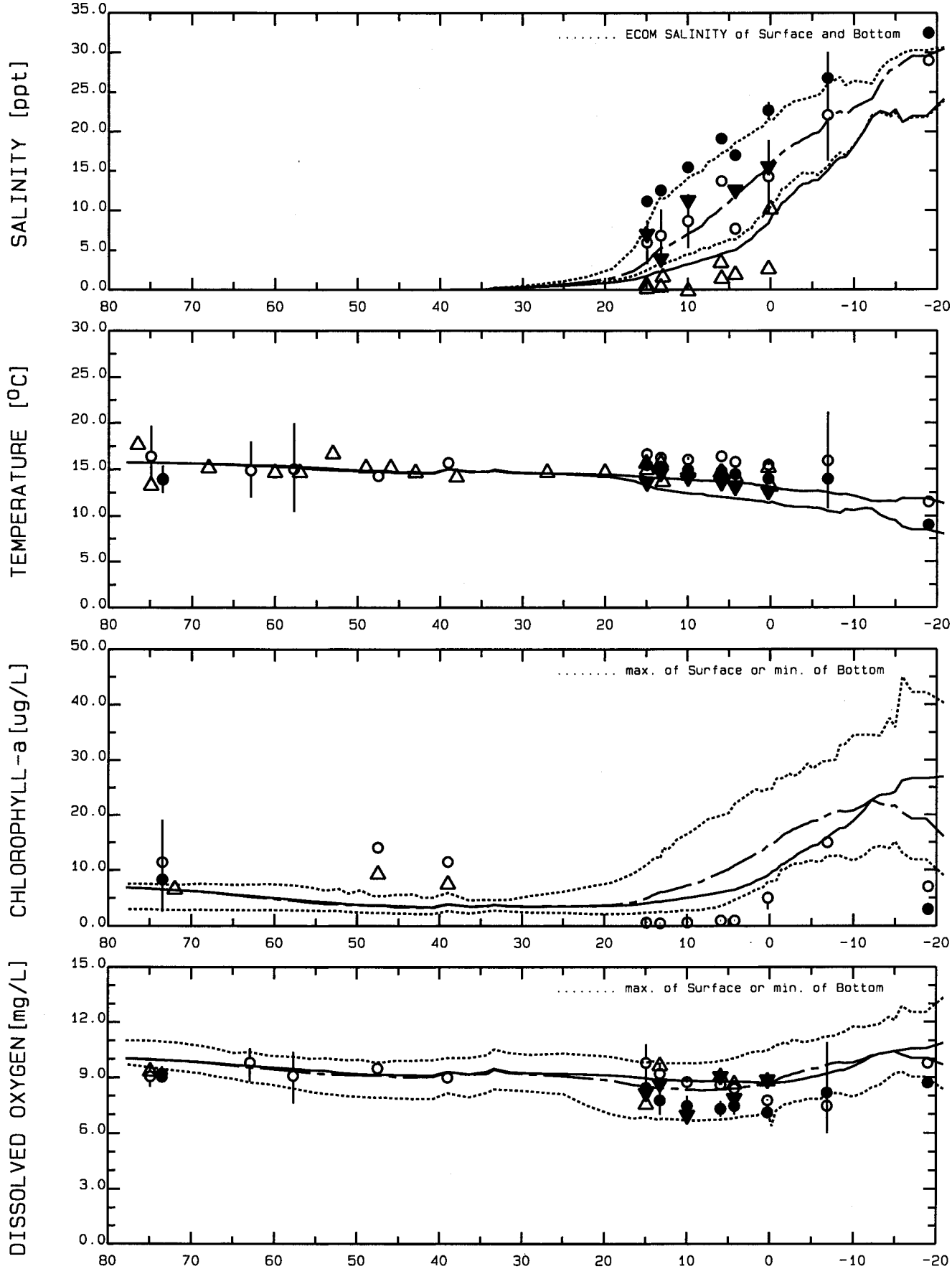
SPATIAL PROFILE - 8904



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

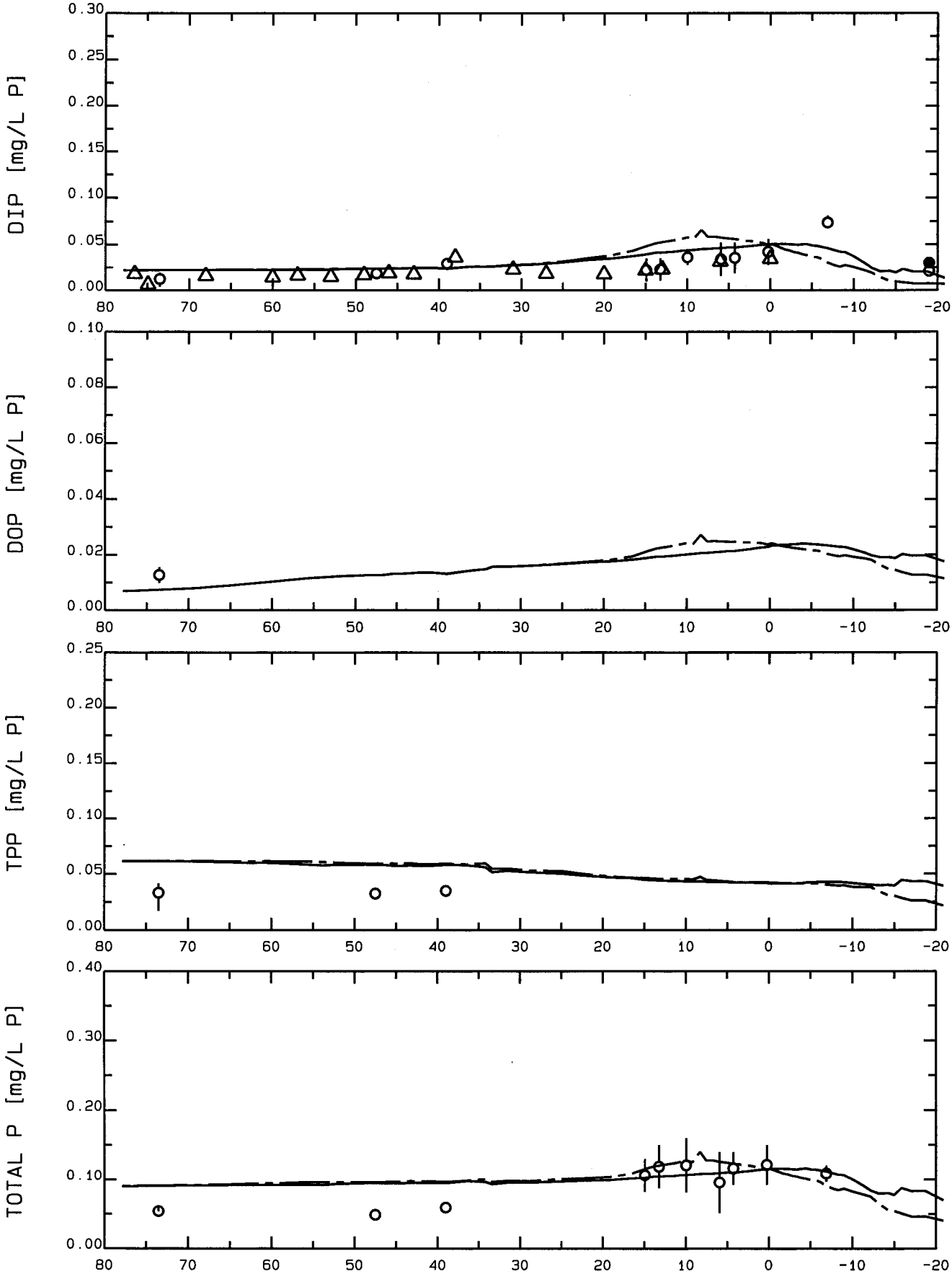
SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8904



DATE: Tue Jun 9 TIME: 15:21:41 SPATIAL PROFILE - 8905

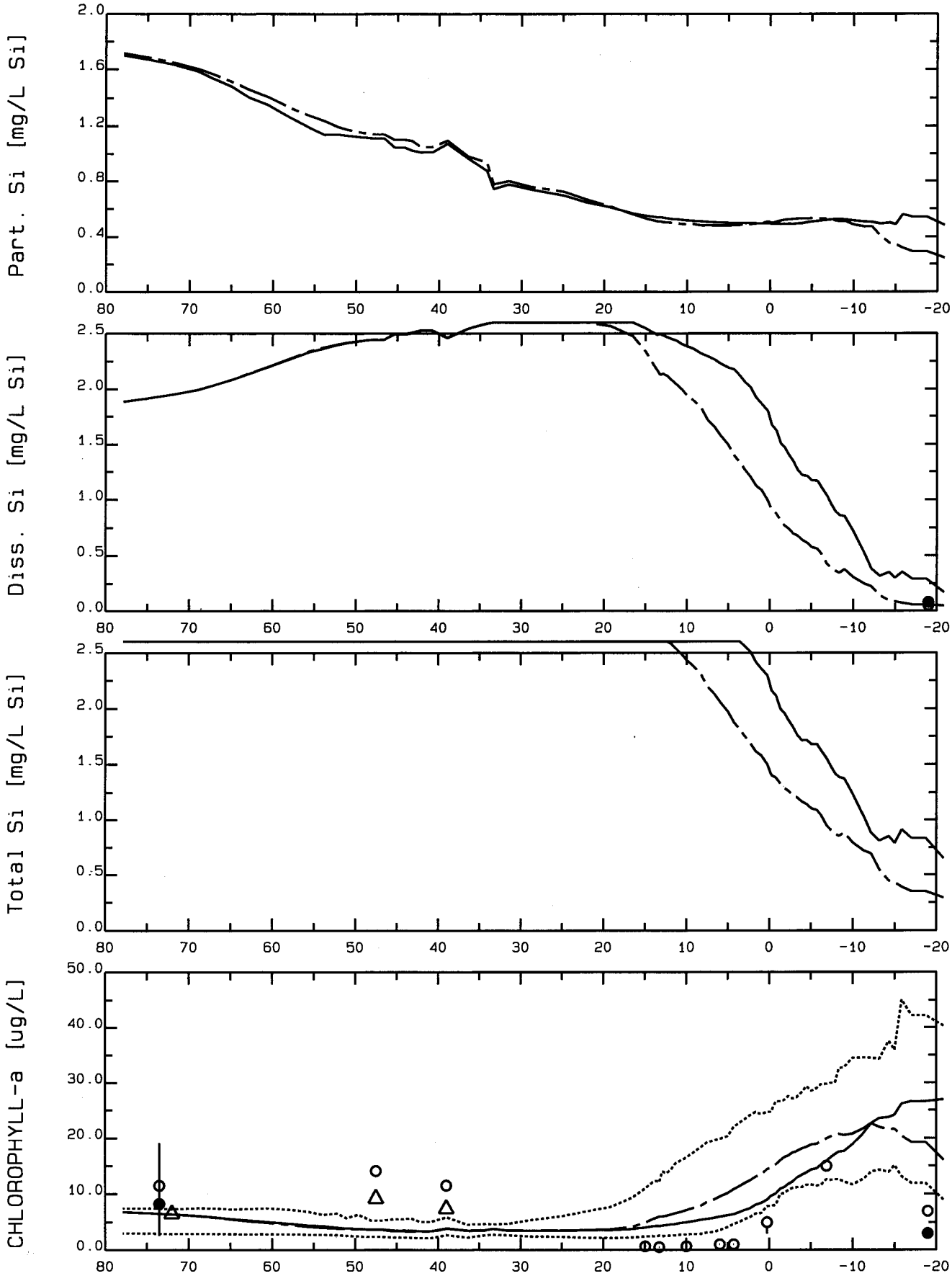
HydroQual SWEM Run# 37



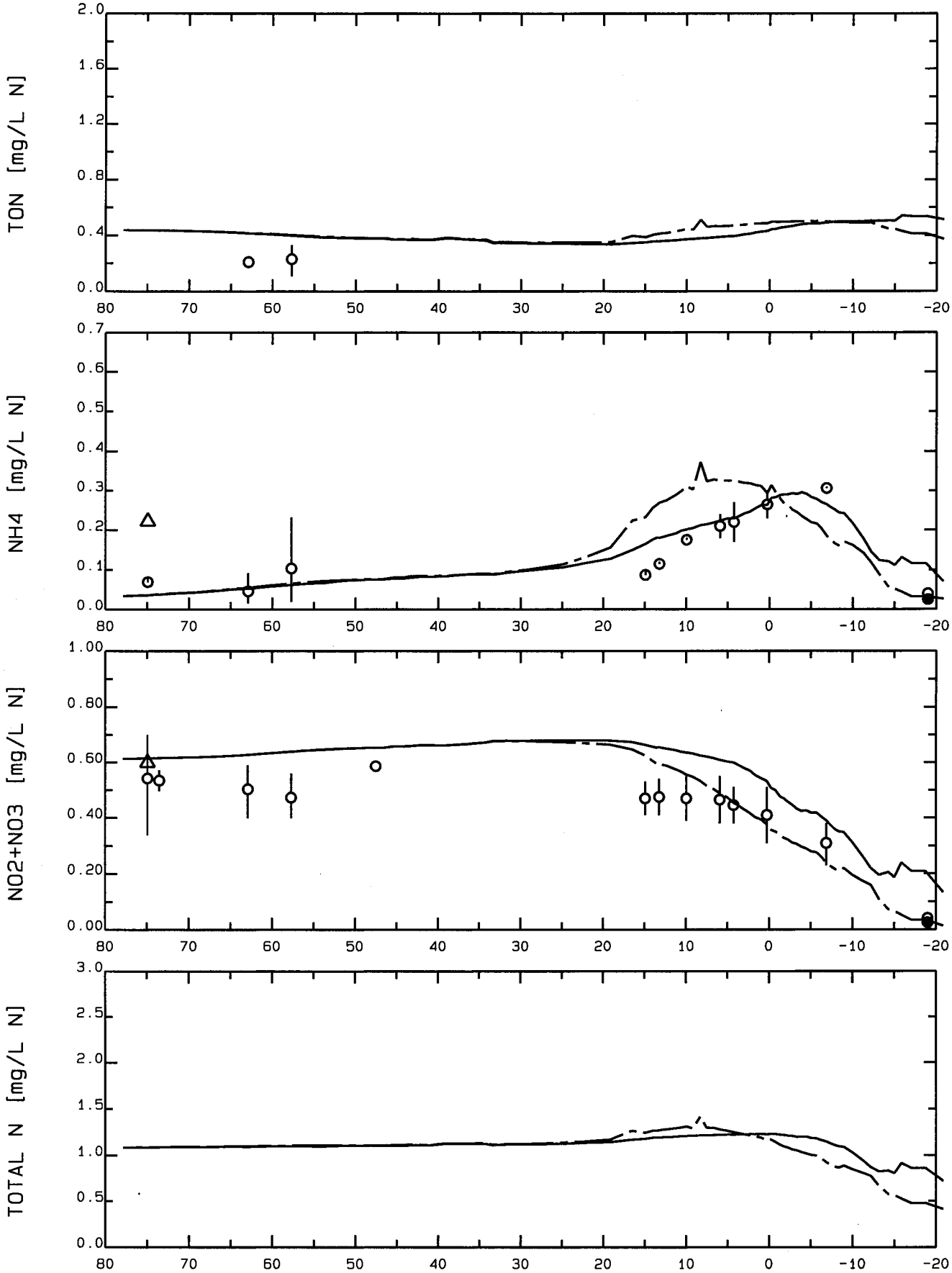
HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8905



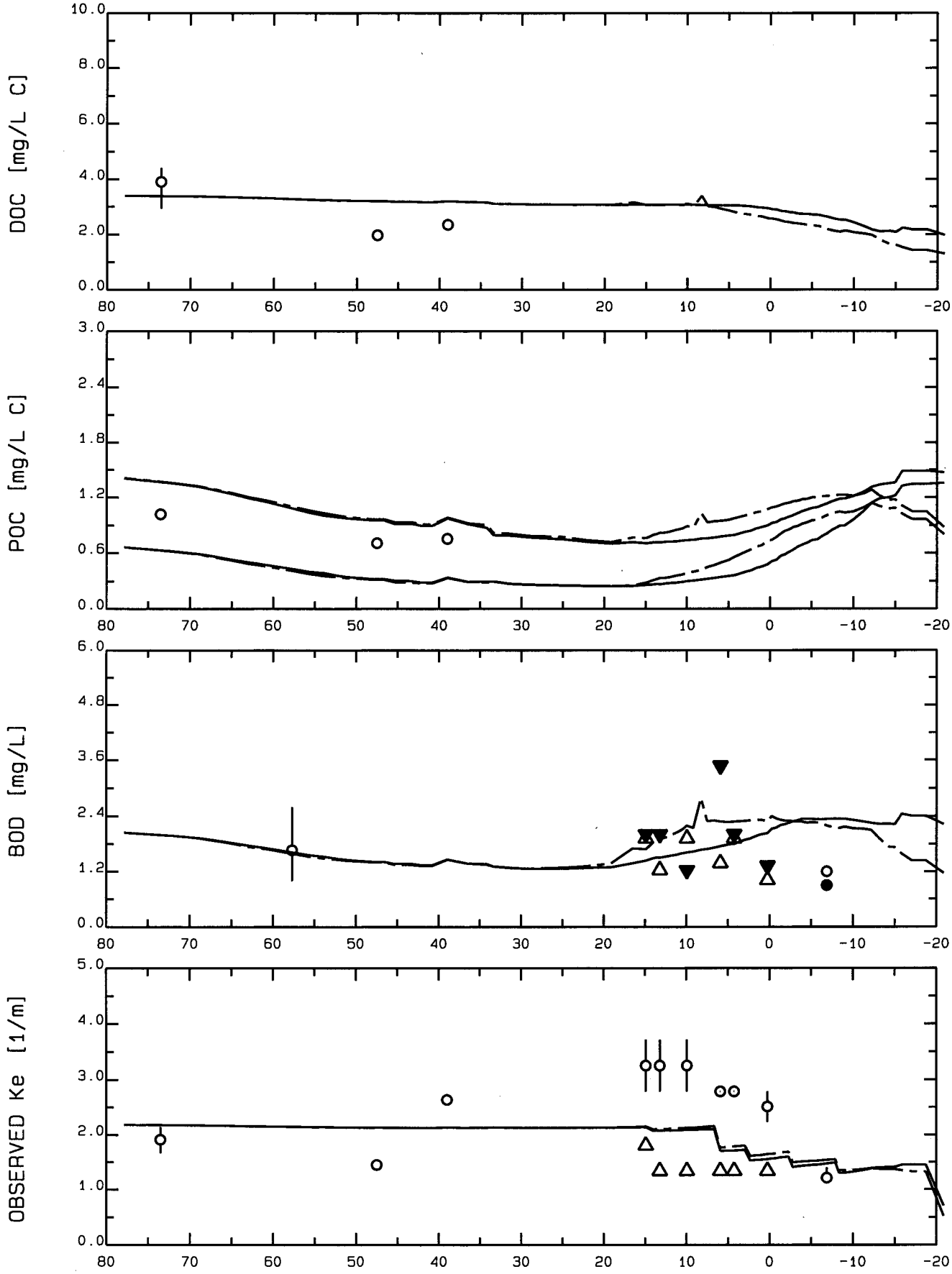
SPATIAL PROFILE - 8905



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

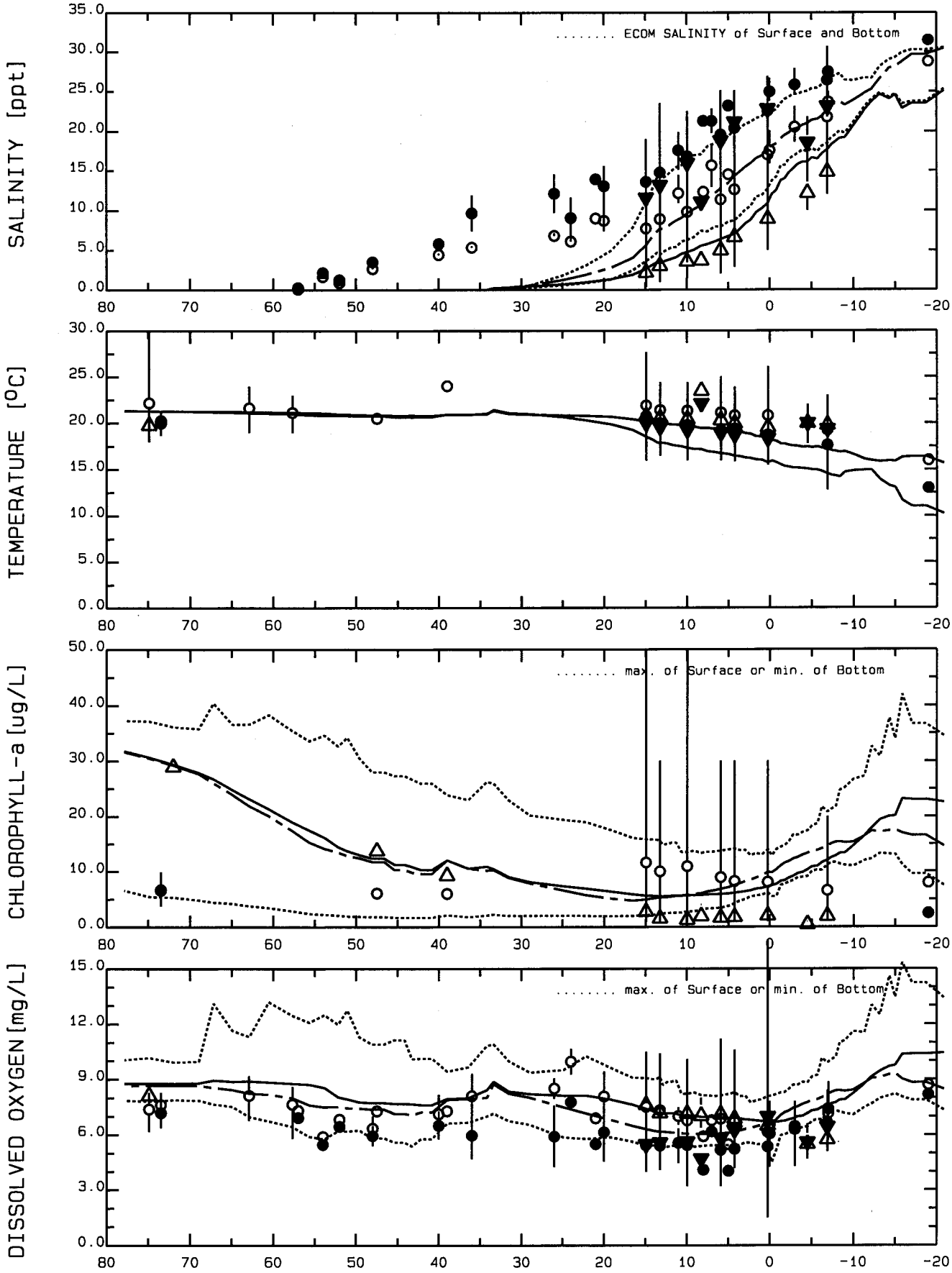
SPATIAL PROFILE - 8905



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8905

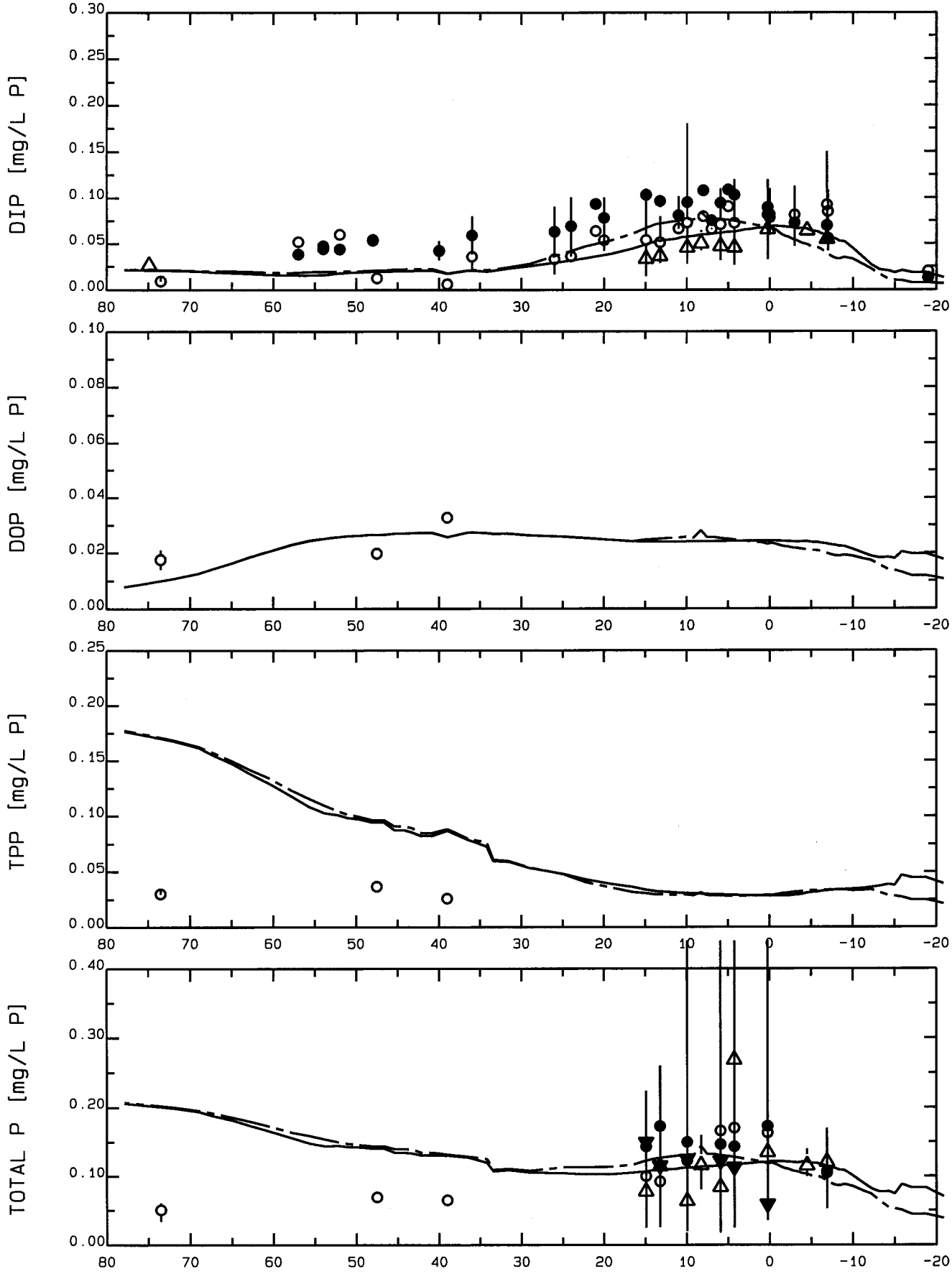


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

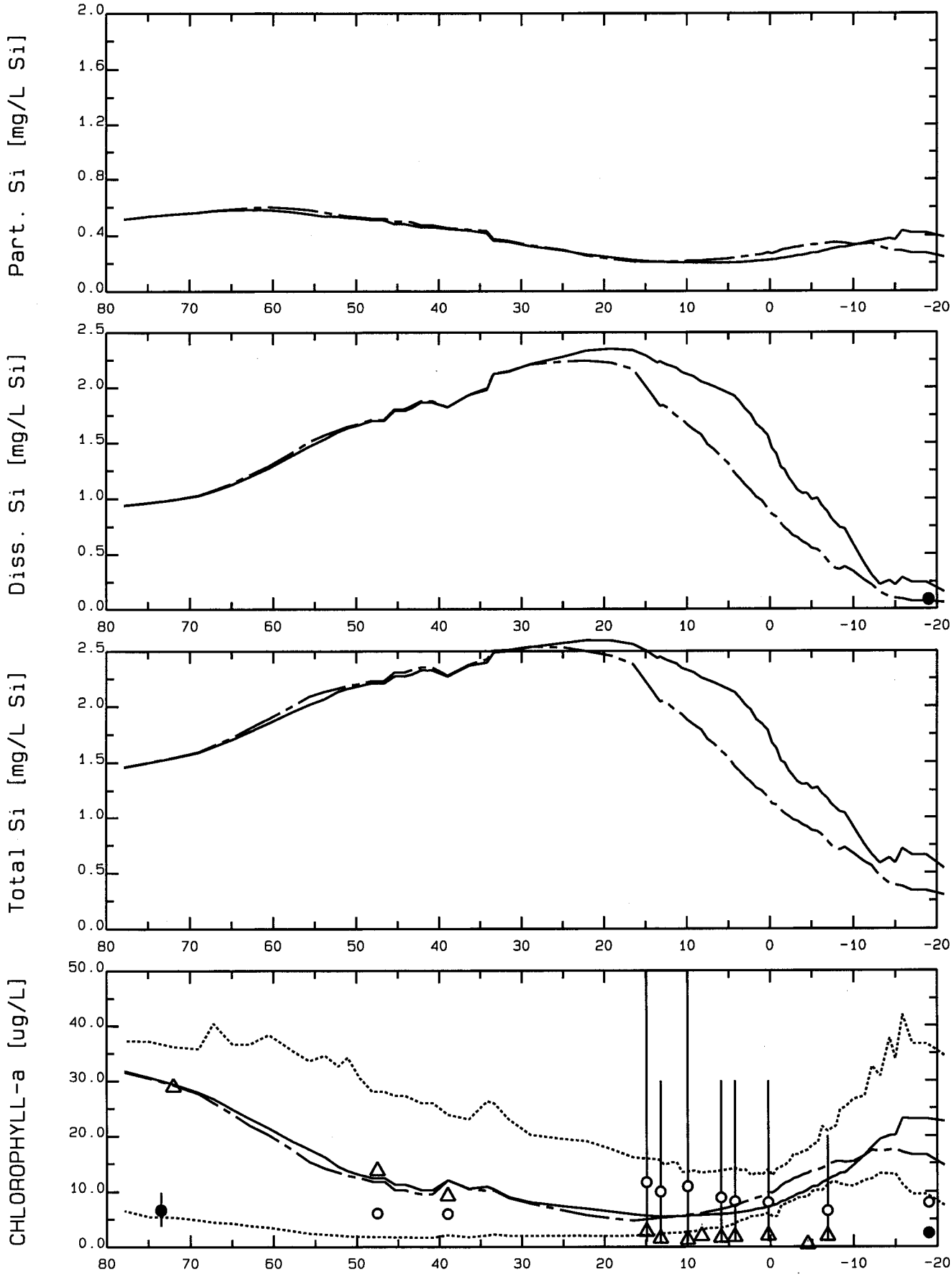
SURFACE MODEL
BOTTOM MODEL

DATE: Tue Jun 9 TIME: 15:22:57 SPATIAL PROFILE - 8906

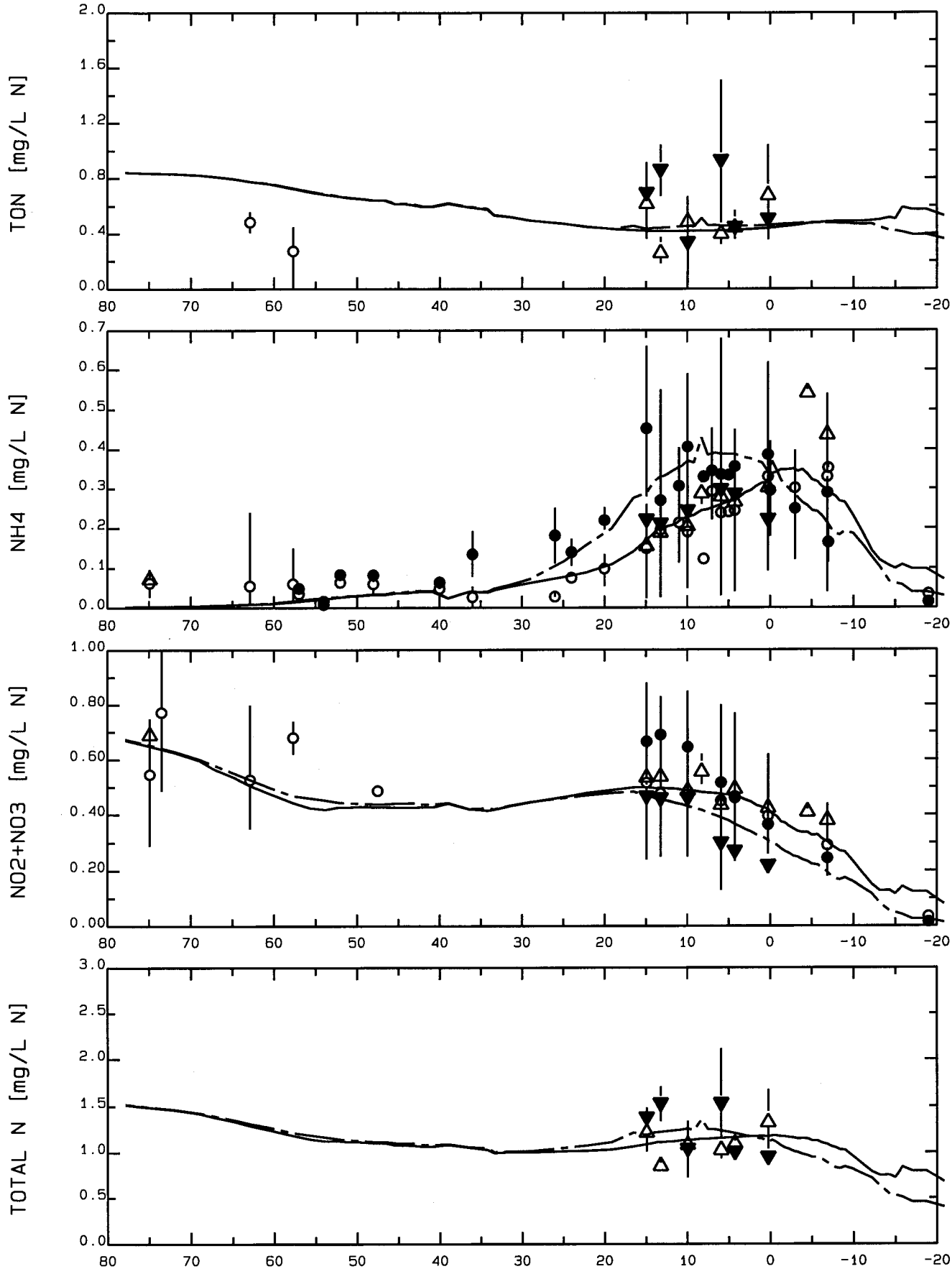
HydroQual SWEM Run# 37

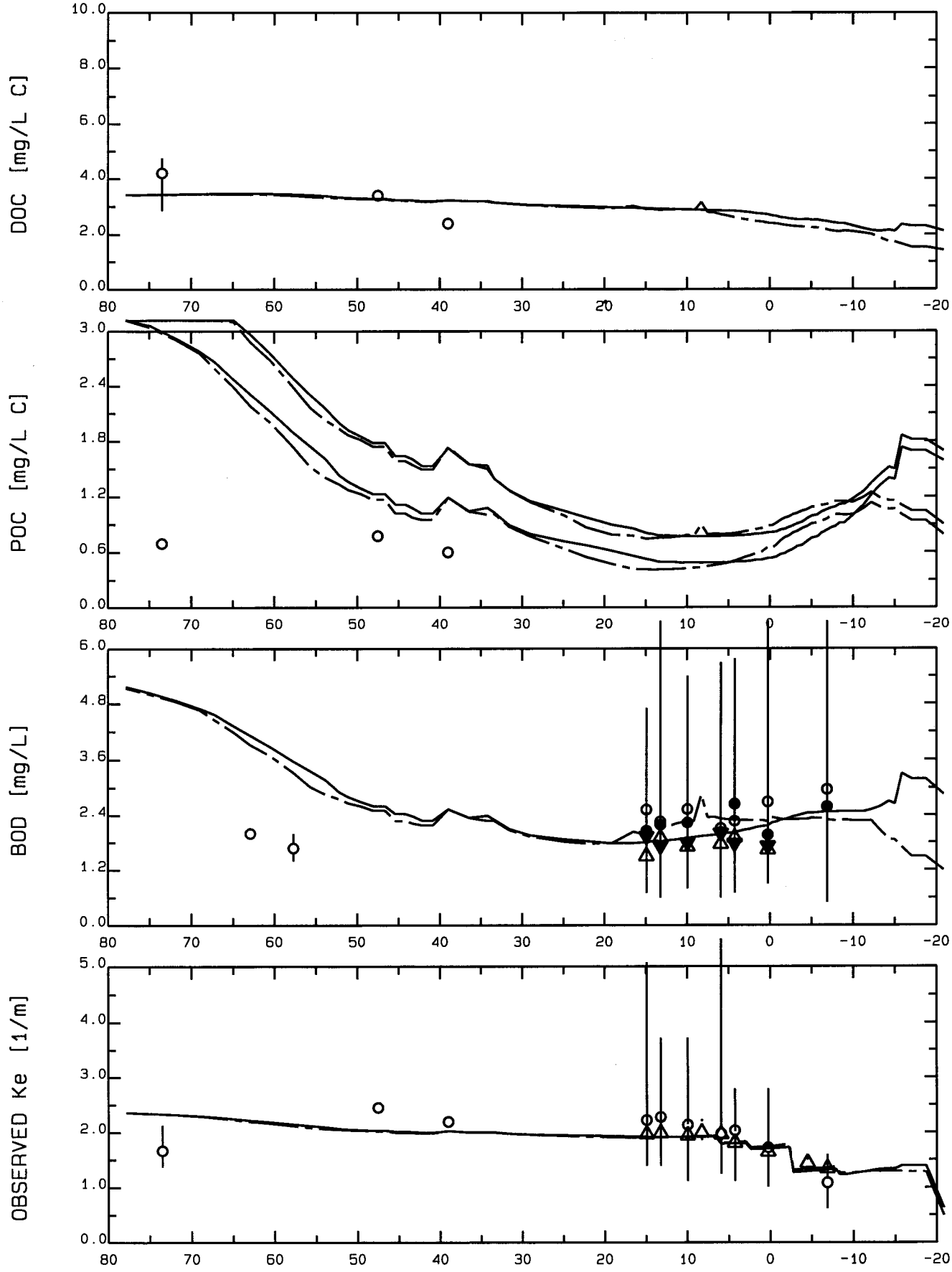


SPATIAL PROFILE - 8906



SPATIAL PROFILE - 8906

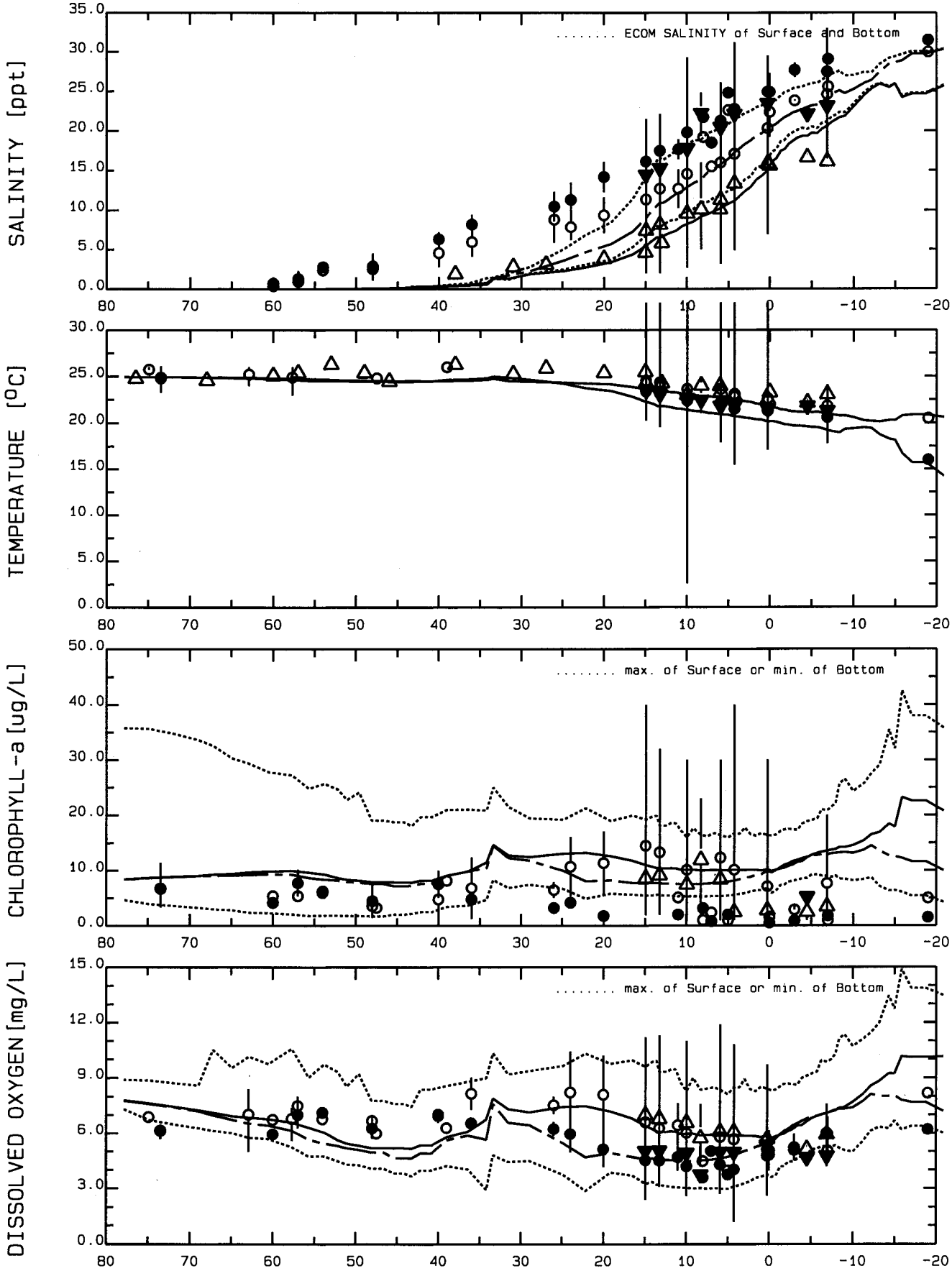

TON [mg/L N]
NH4 [mg/L N]
NO2+NO3 [mg/L N]
TOTAL N [mg/L N]
80 70 60 50 40 30 20 10 0 -10 -20
HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION
SURFACE MODEL
BOTTOM MODEL
SPATIAL PROFILE - 8906



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

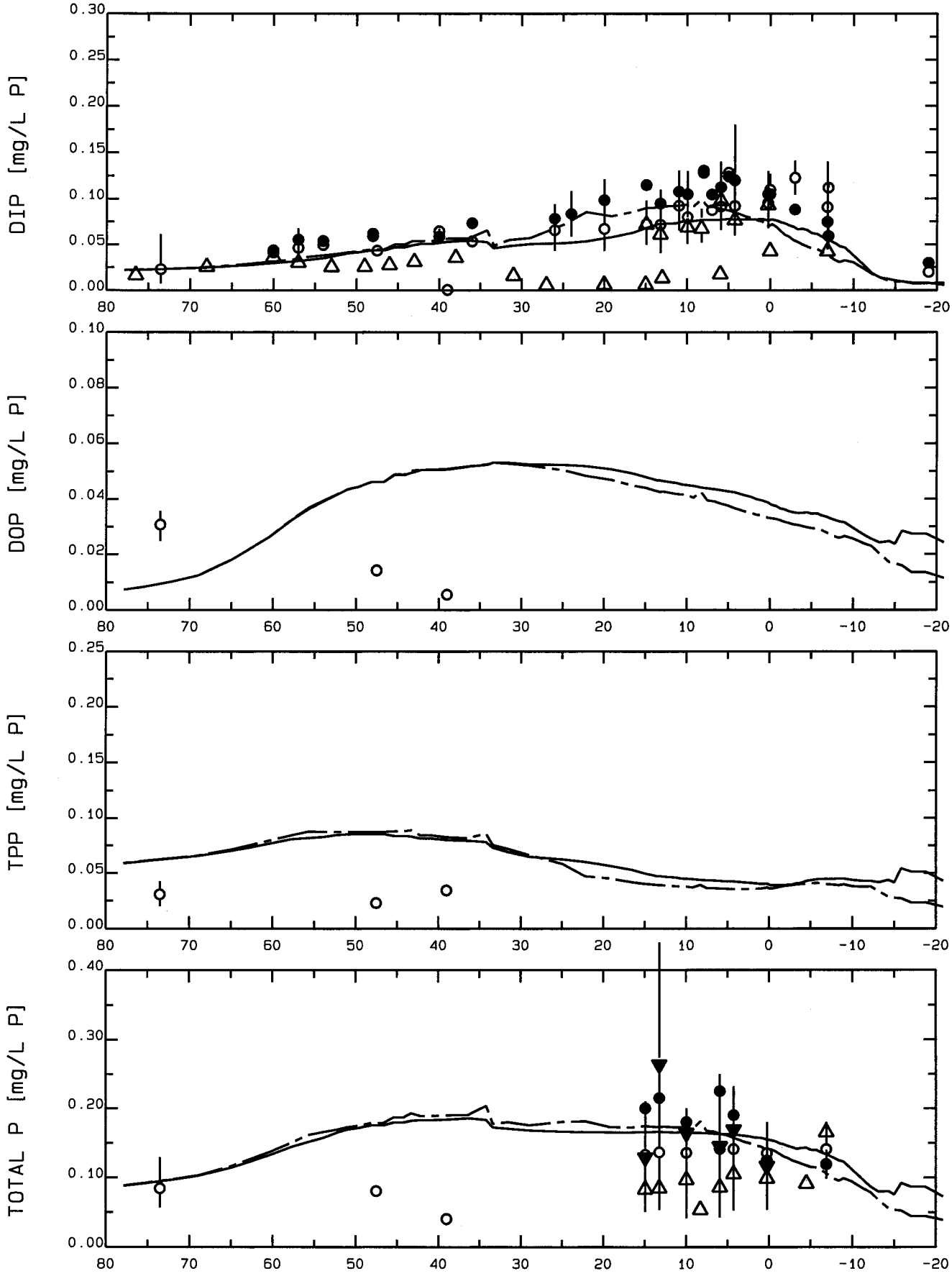
SPATIAL PROFILE - 8906



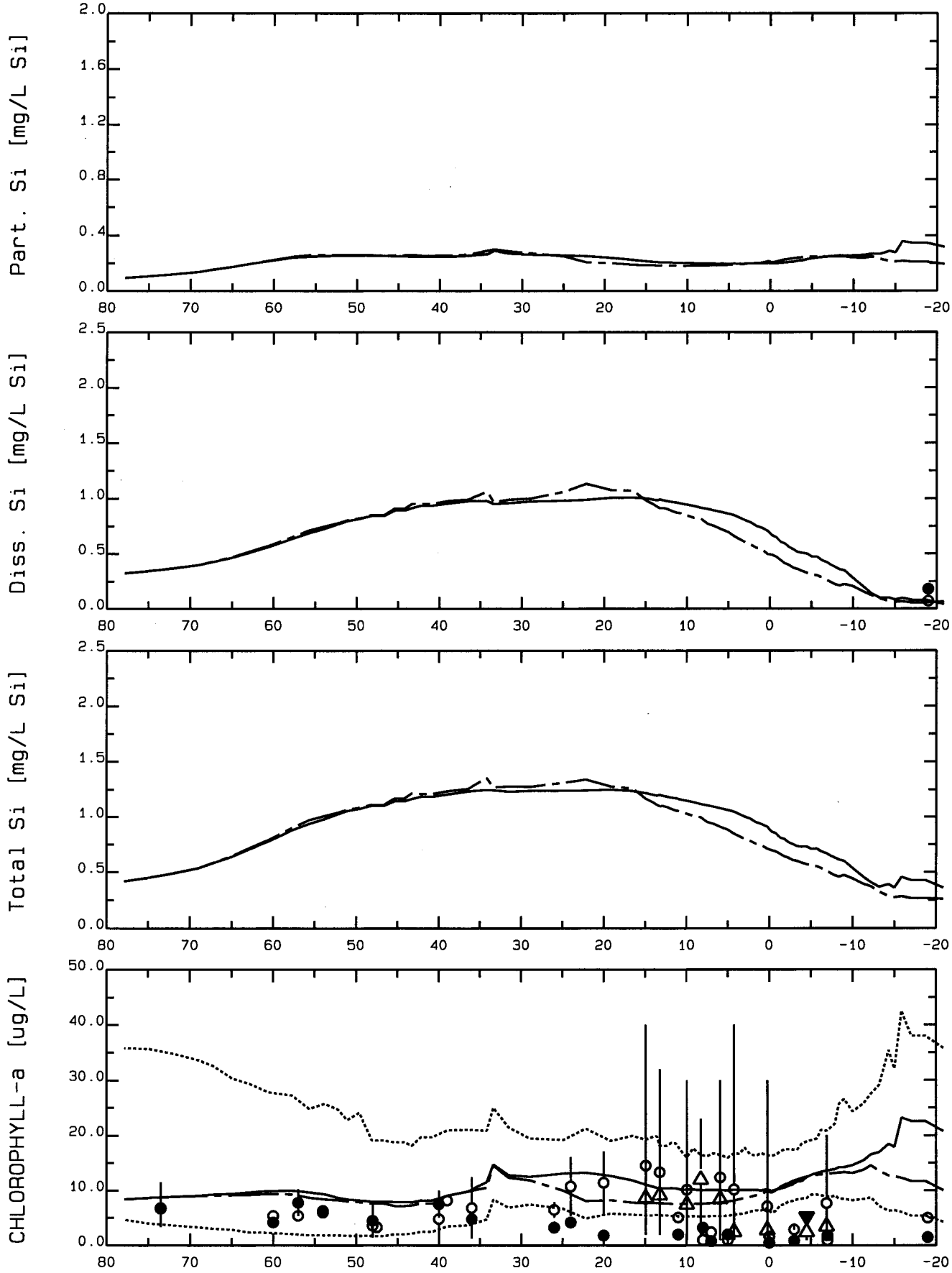
DATE: Tue Jun 9 TIME: 15:24:18

HydroQual SWEM Run# 37

SPATIAL PROFILE - 8907



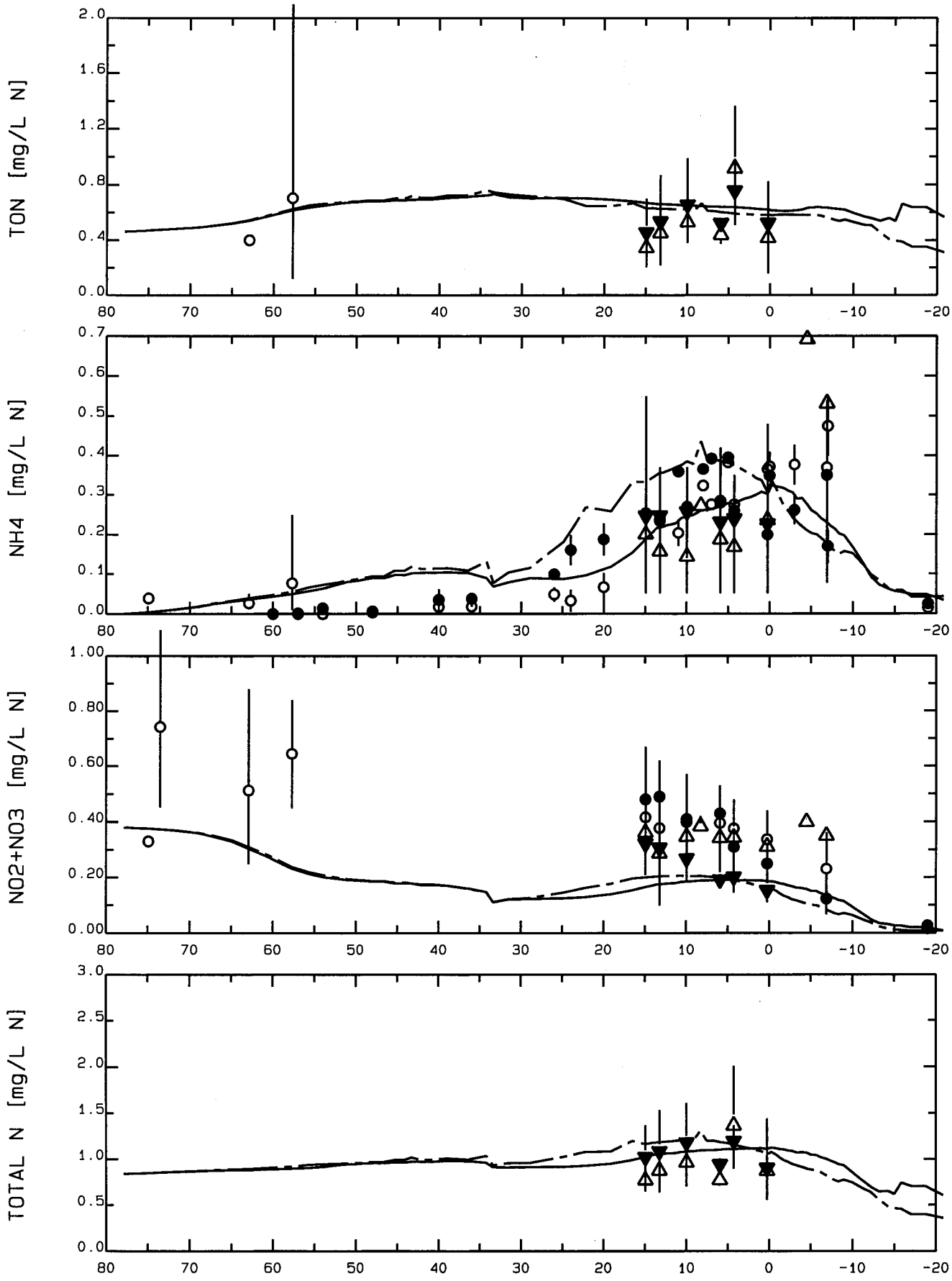
SPATIAL PROFILE - 8907



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

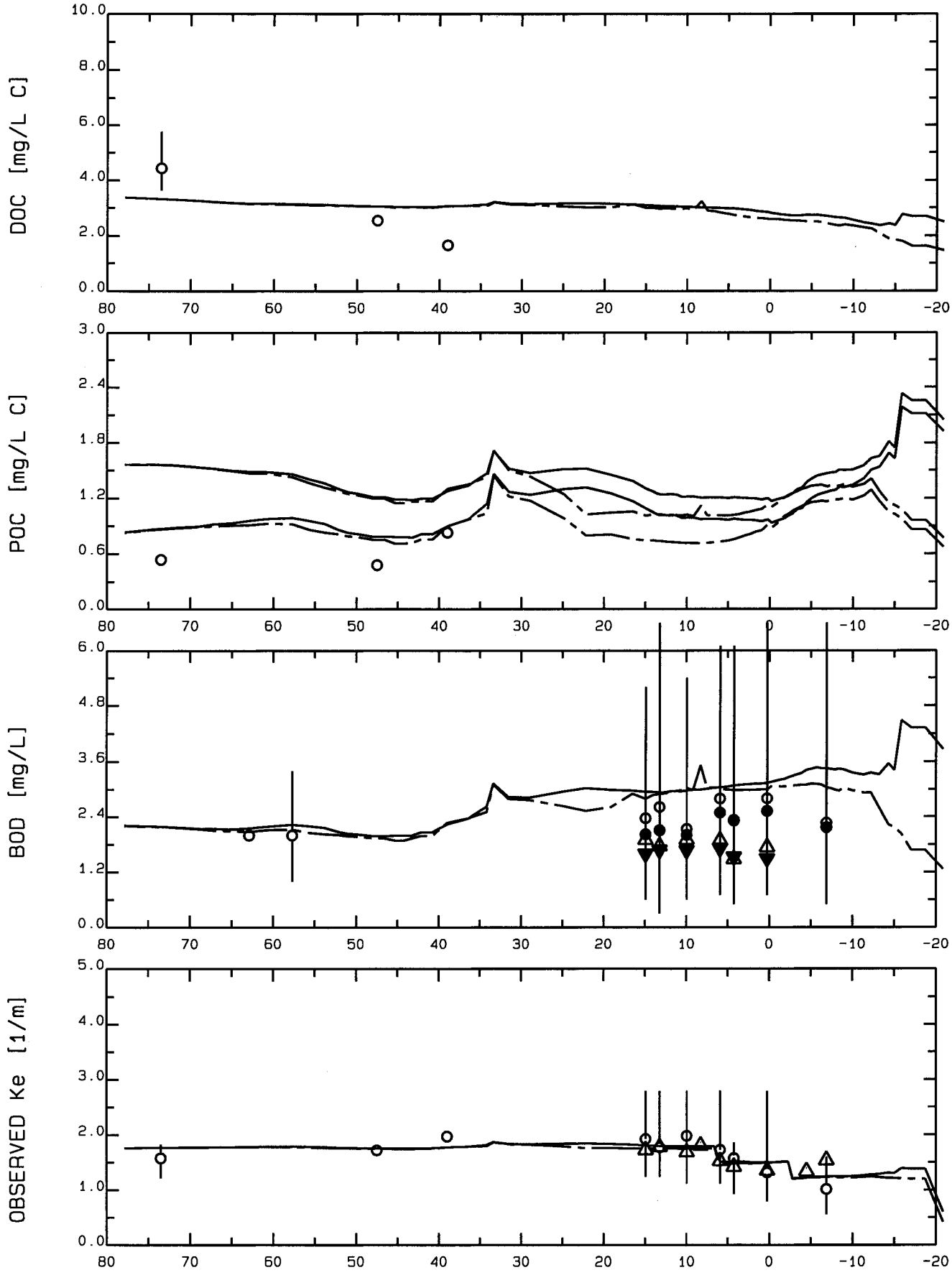
SPATIAL PROFILE - 8907



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

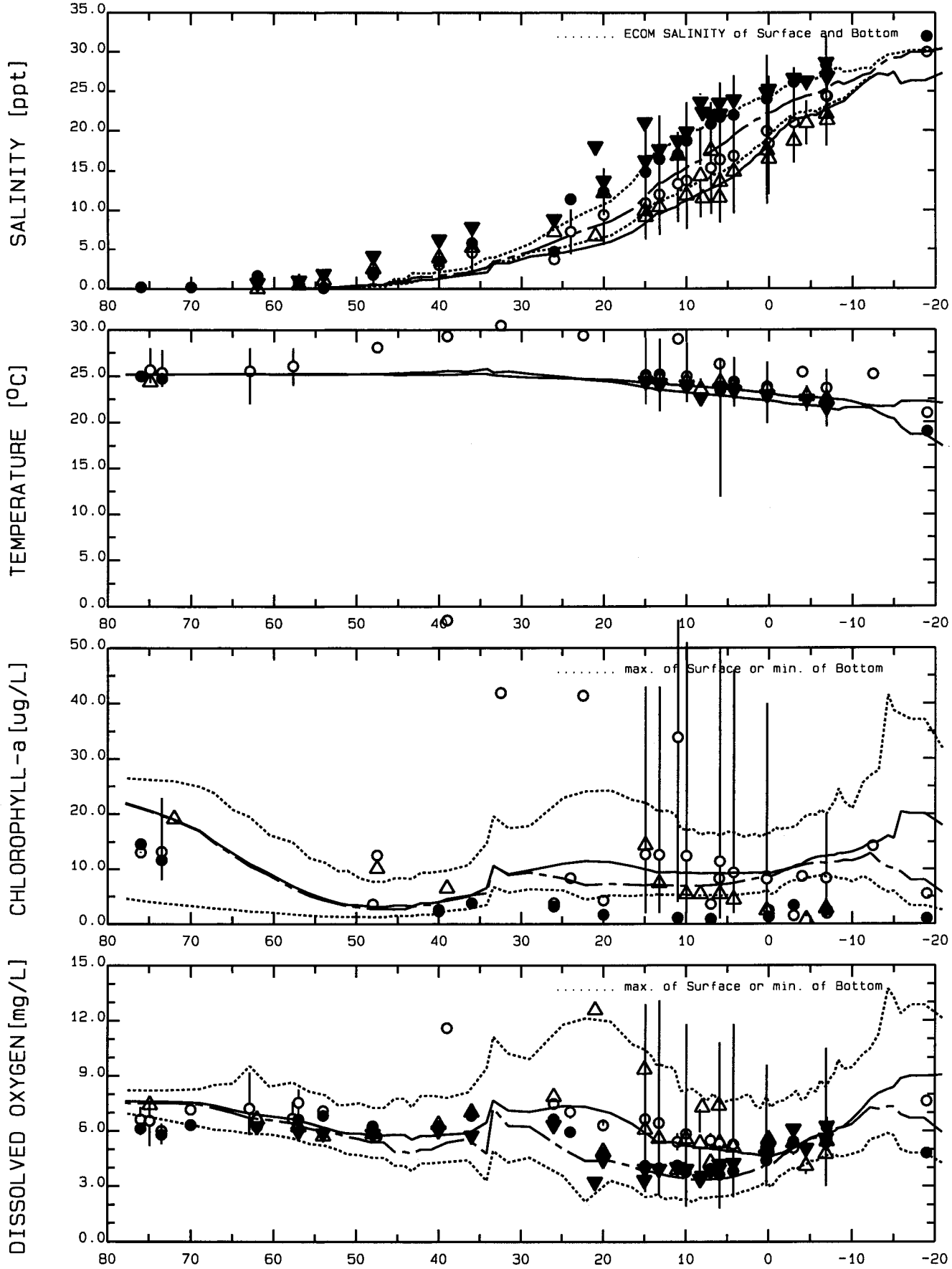
SPATIAL PROFILE - 8907



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

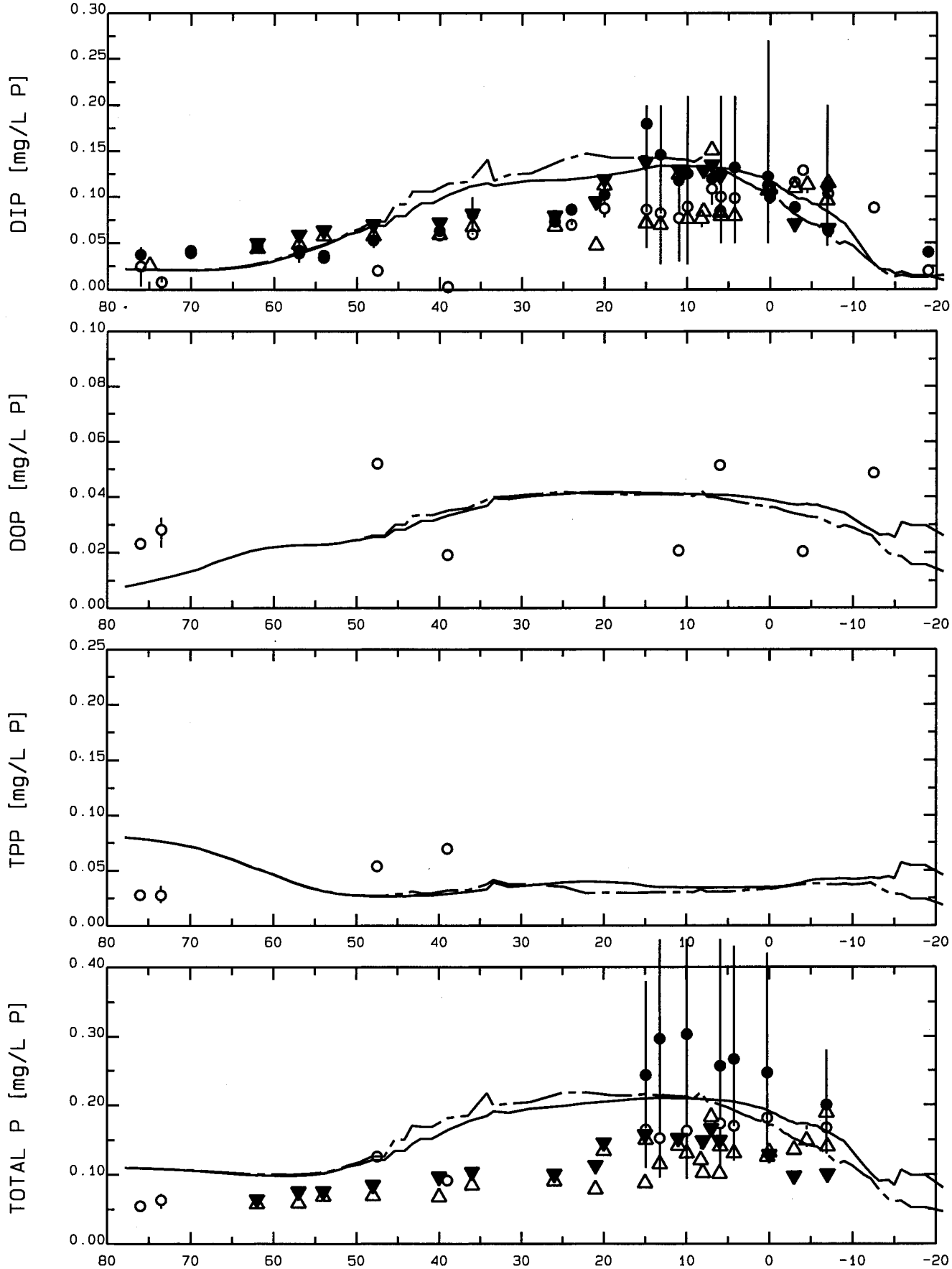
SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8907

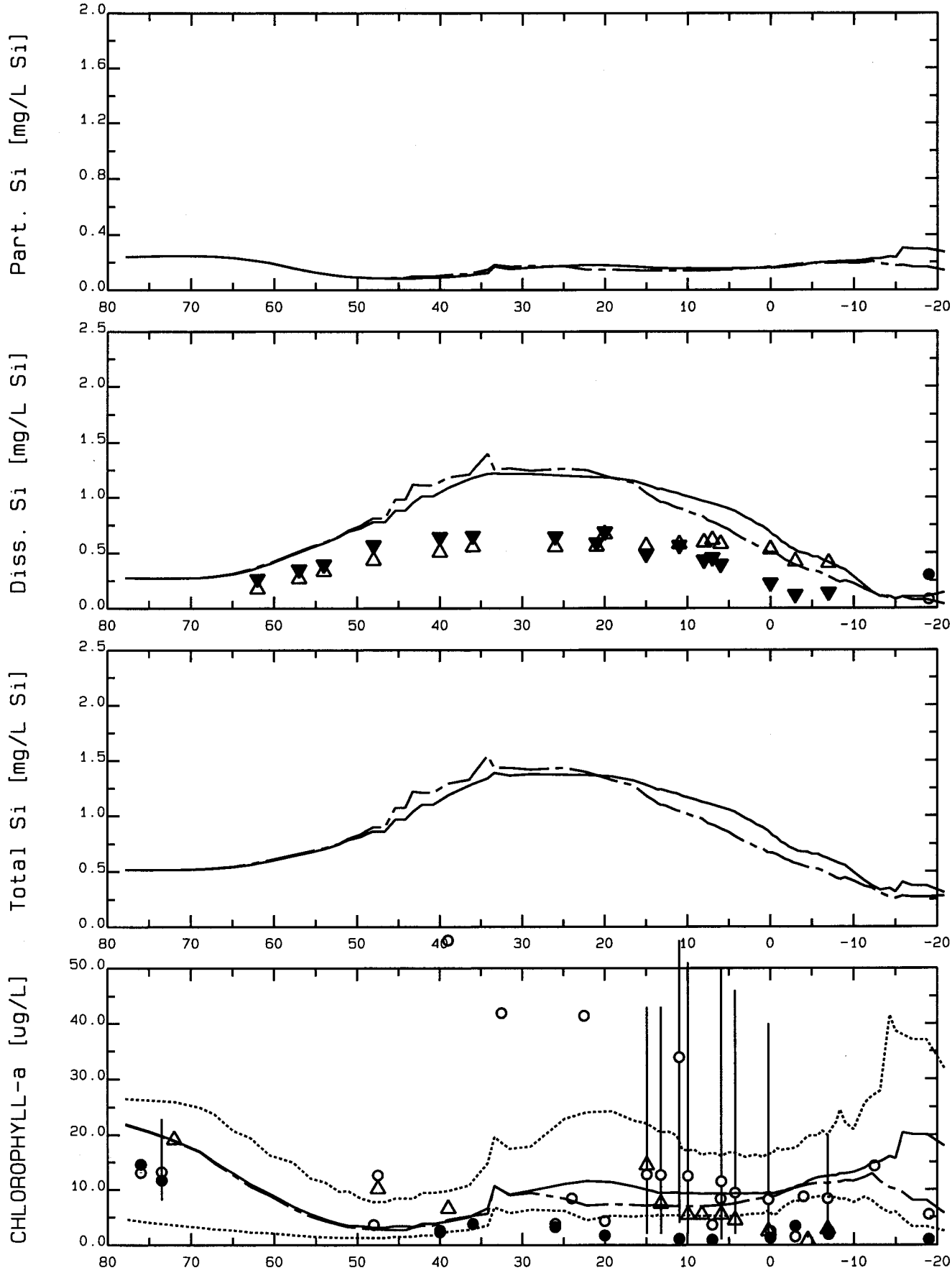


DATE: Tue Jun 9 TIME: 15:25:43 SPATIAL PROFILE - 8908

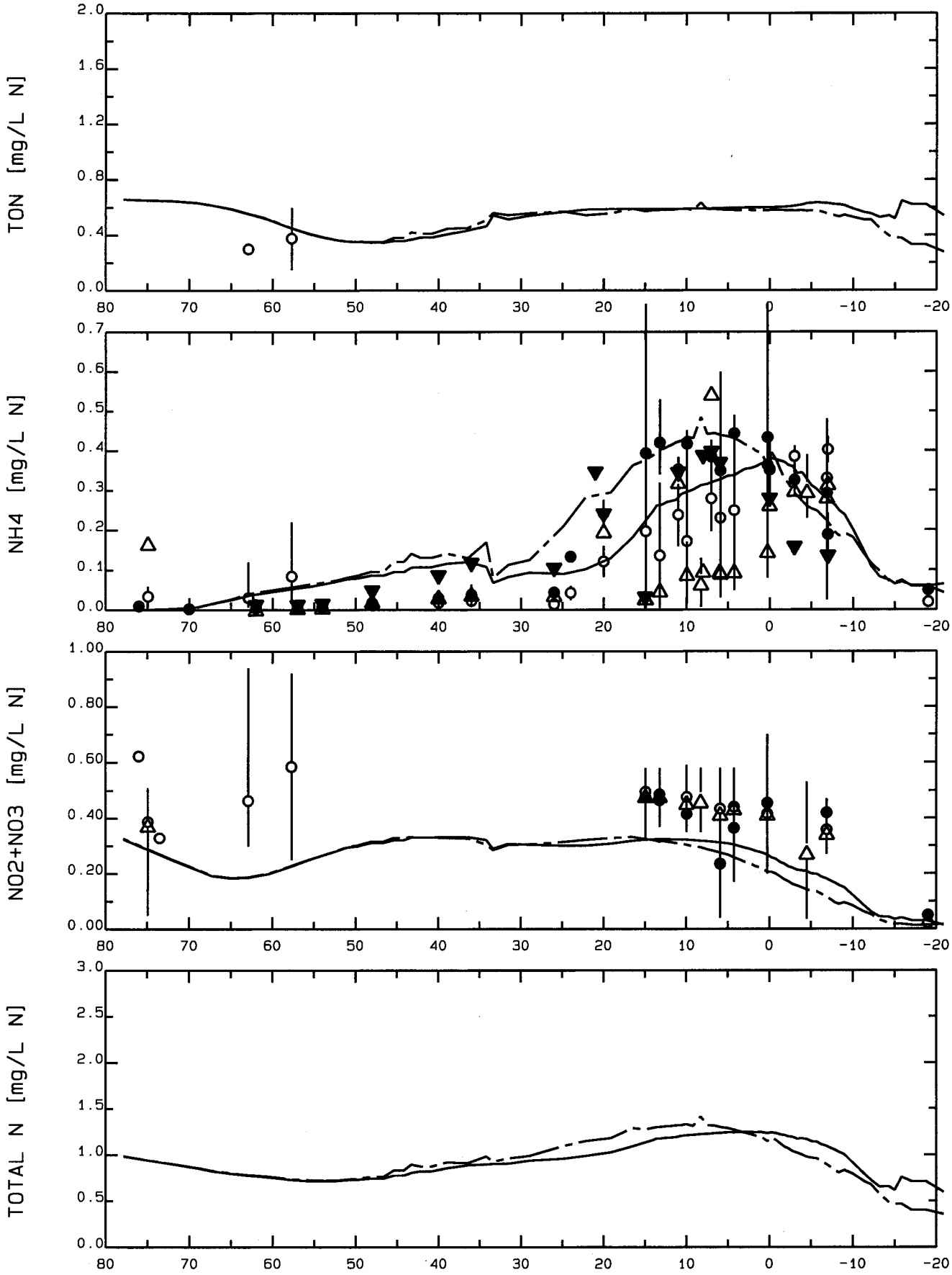
HydroQual SWEM Run# 37



SPATIAL PROFILE - 8908



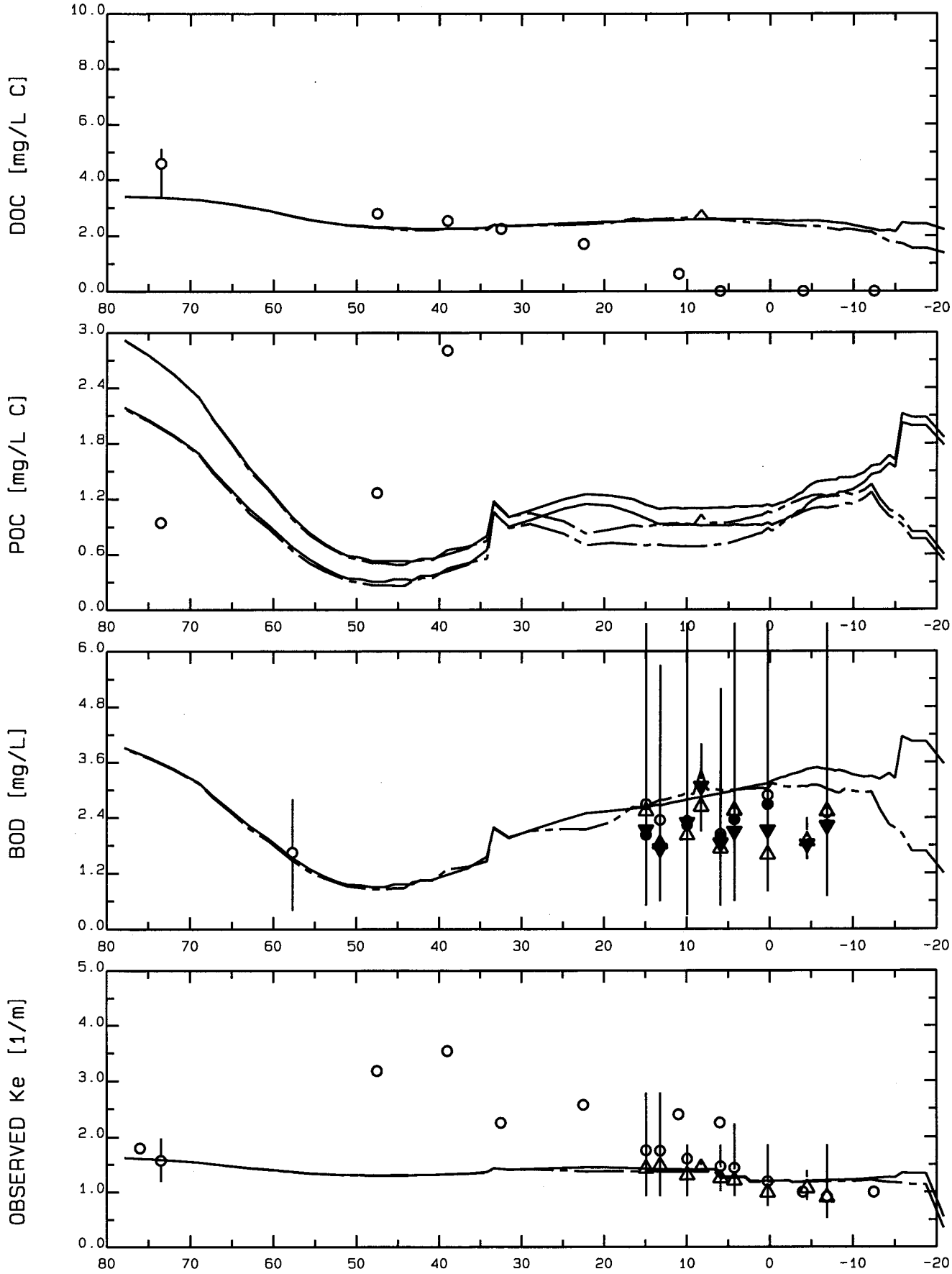
SPATIAL PROFILE - 8908



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

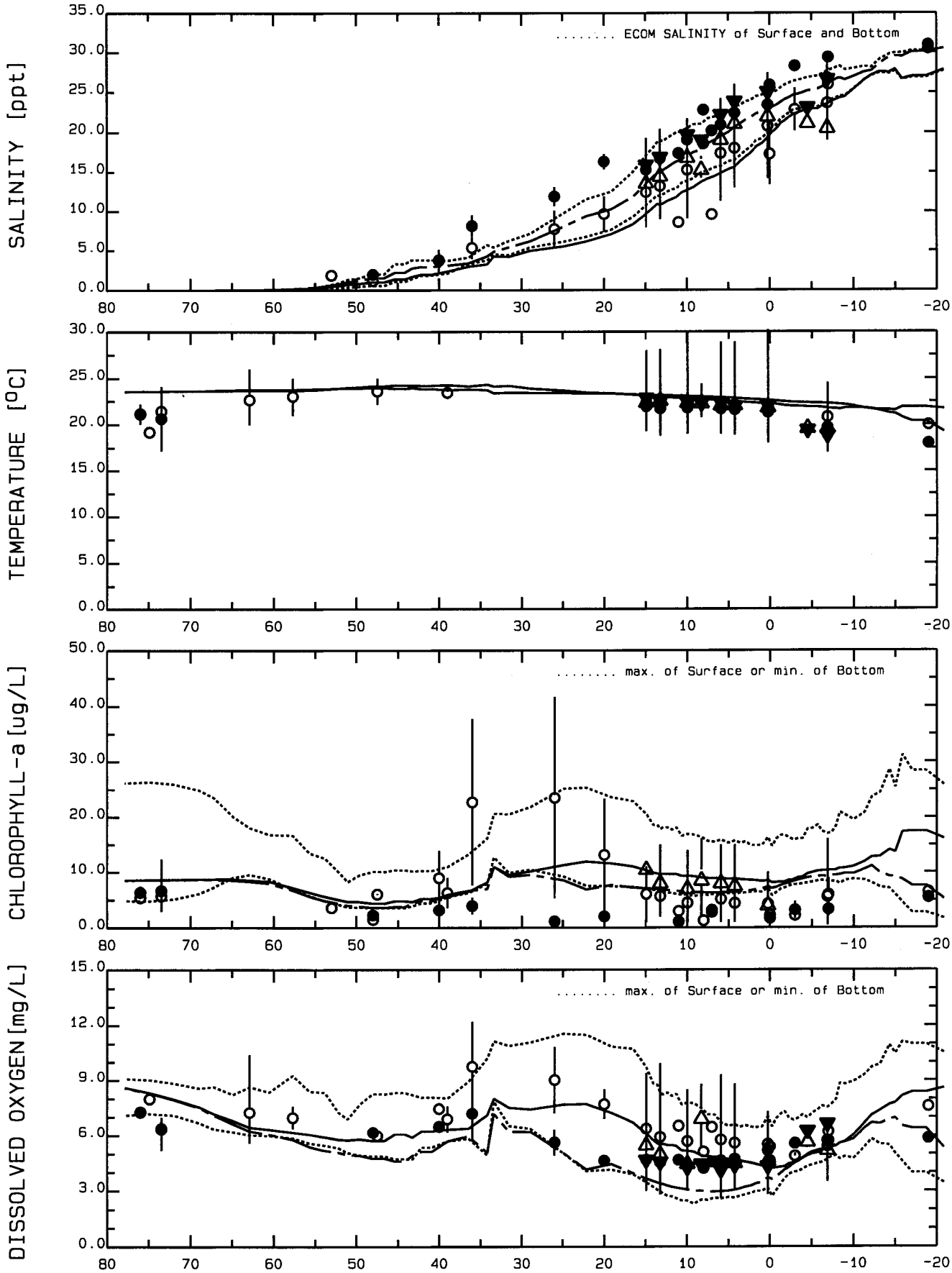
SPATIAL PROFILE - 8908



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

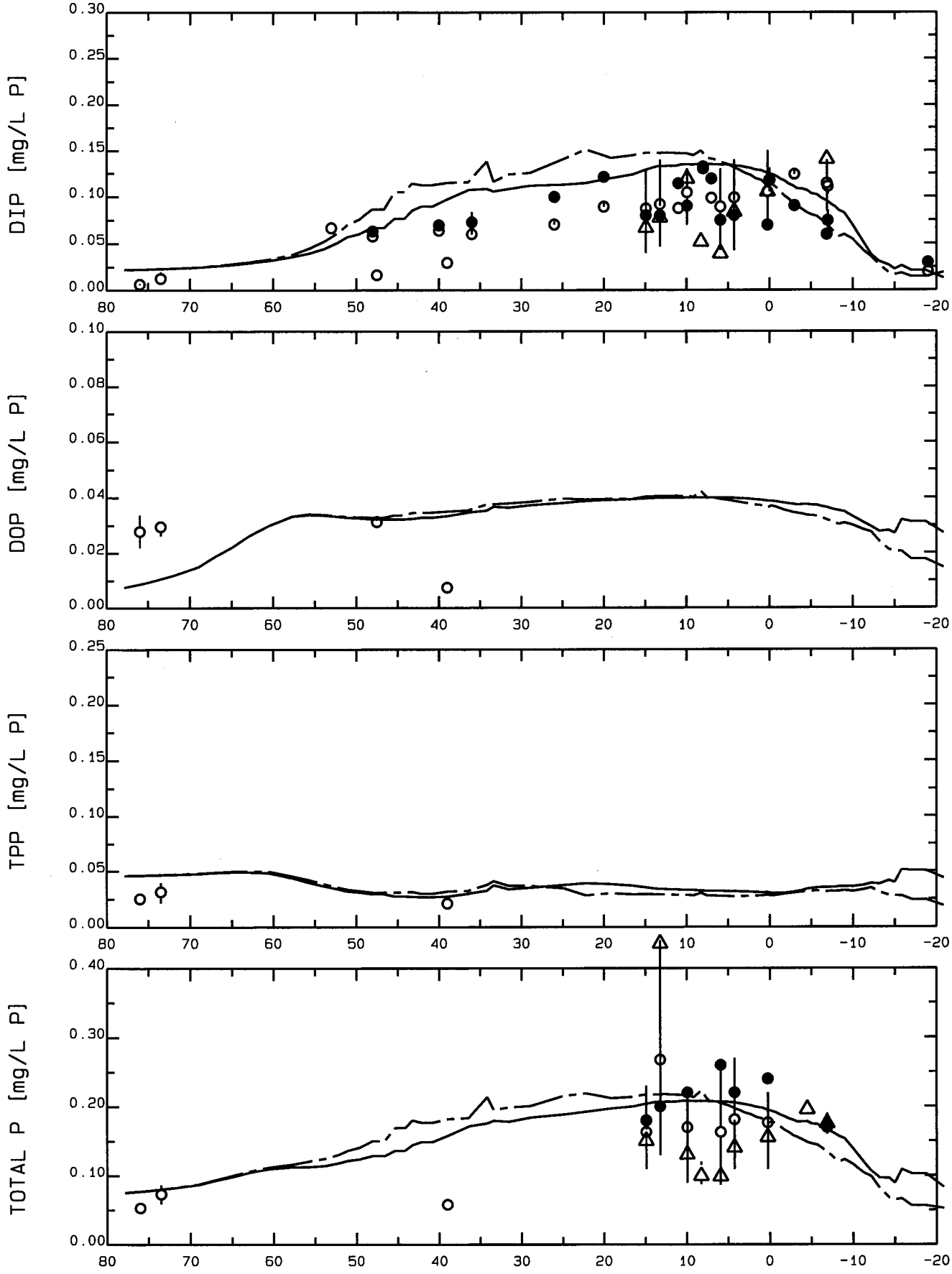
SPATIAL PROFILE - 8908



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

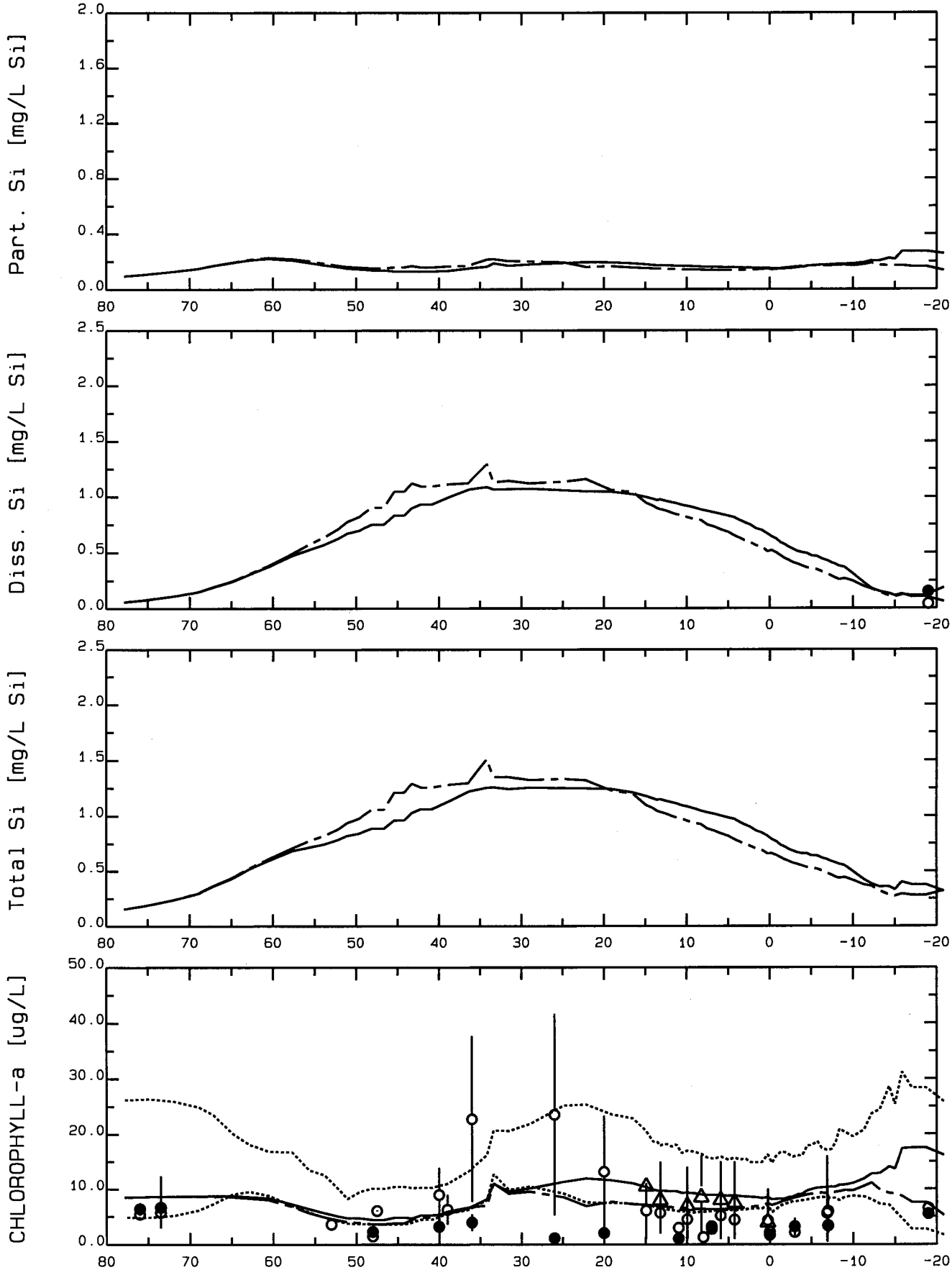
DATE: Tue Jun 9 TIME: 15:27:11 SPATIAL PROFILE - 8909
HydroQual SWEM Run# 37



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

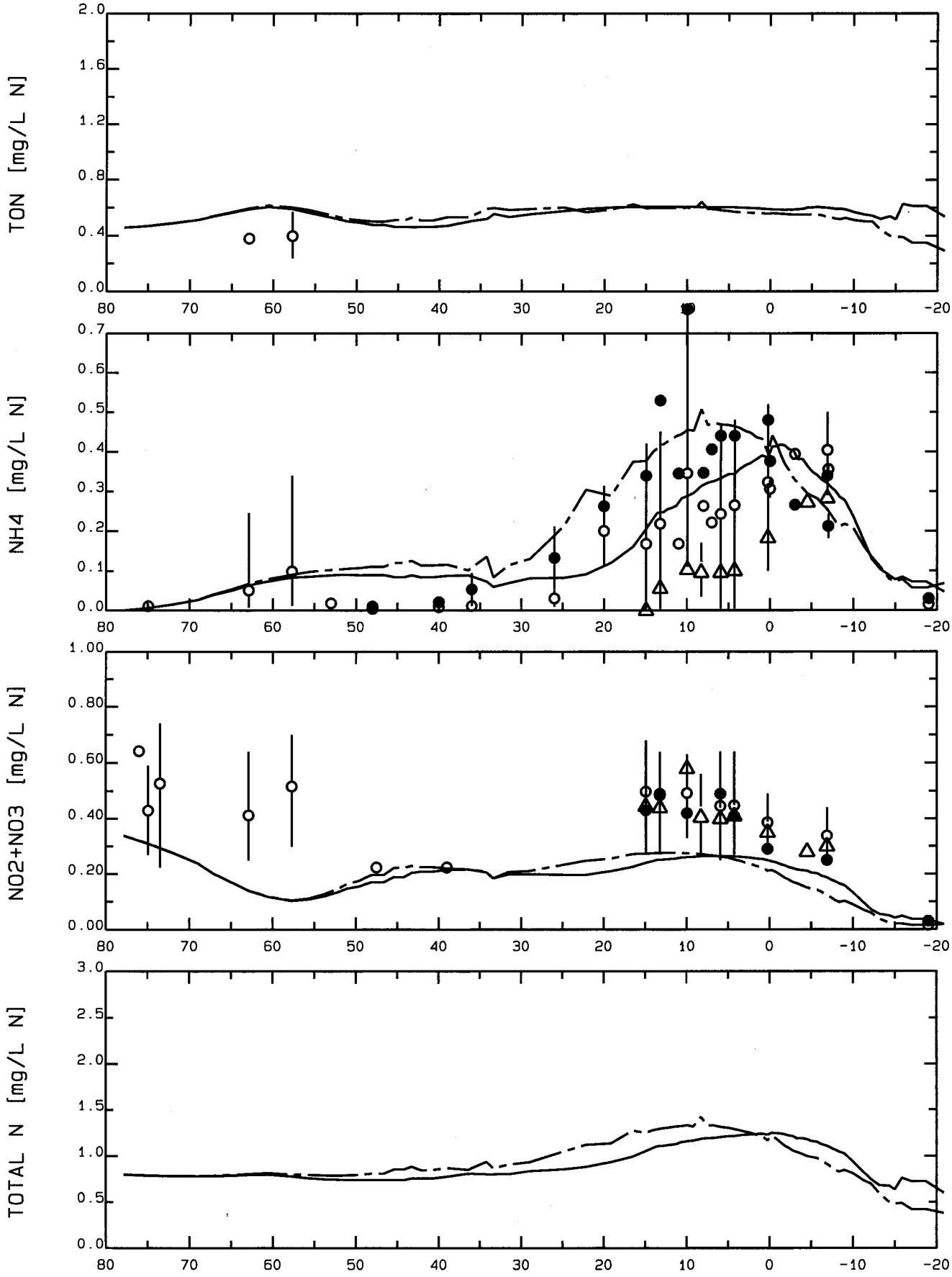
SPATIAL PROFILE - 8909



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

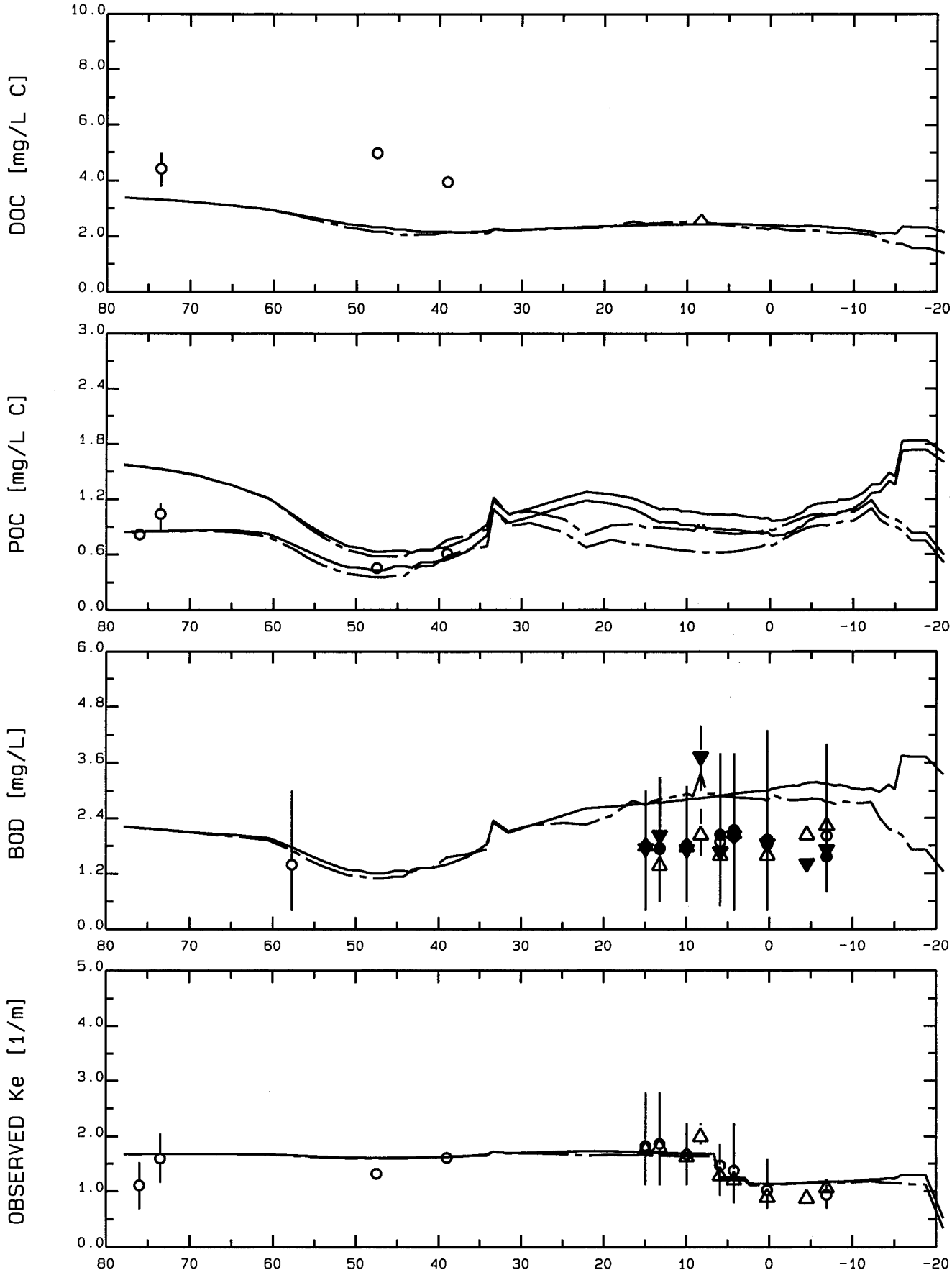
SPATIAL PROFILE - 8909



HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8909

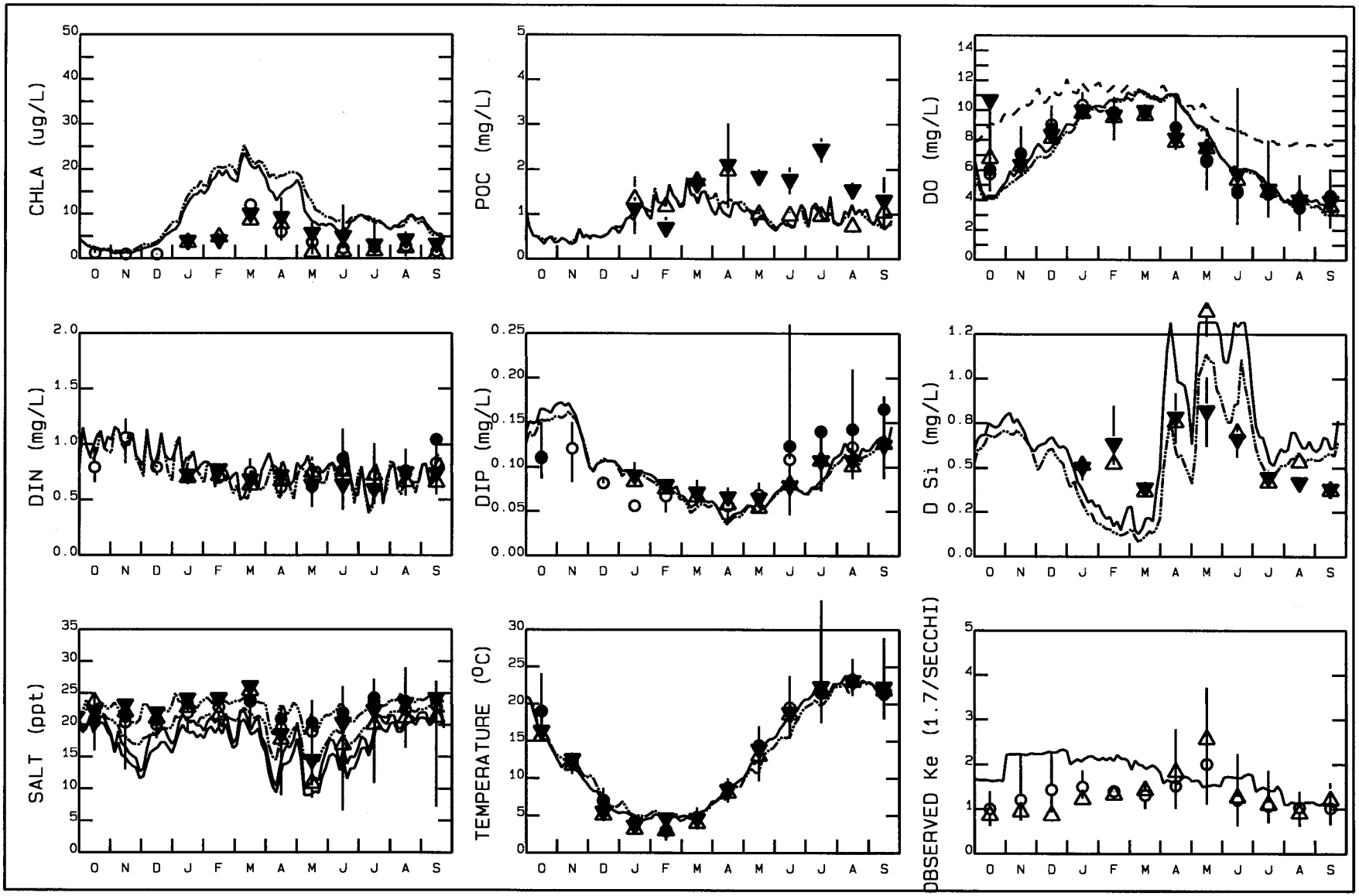


HUDSON, UPPER AND LOWER BAY, OCEAN
RUN37 - SWEM VALIDATION

SURFACE MODEL
BOTTOM MODEL

SPATIAL PROFILE - 8909

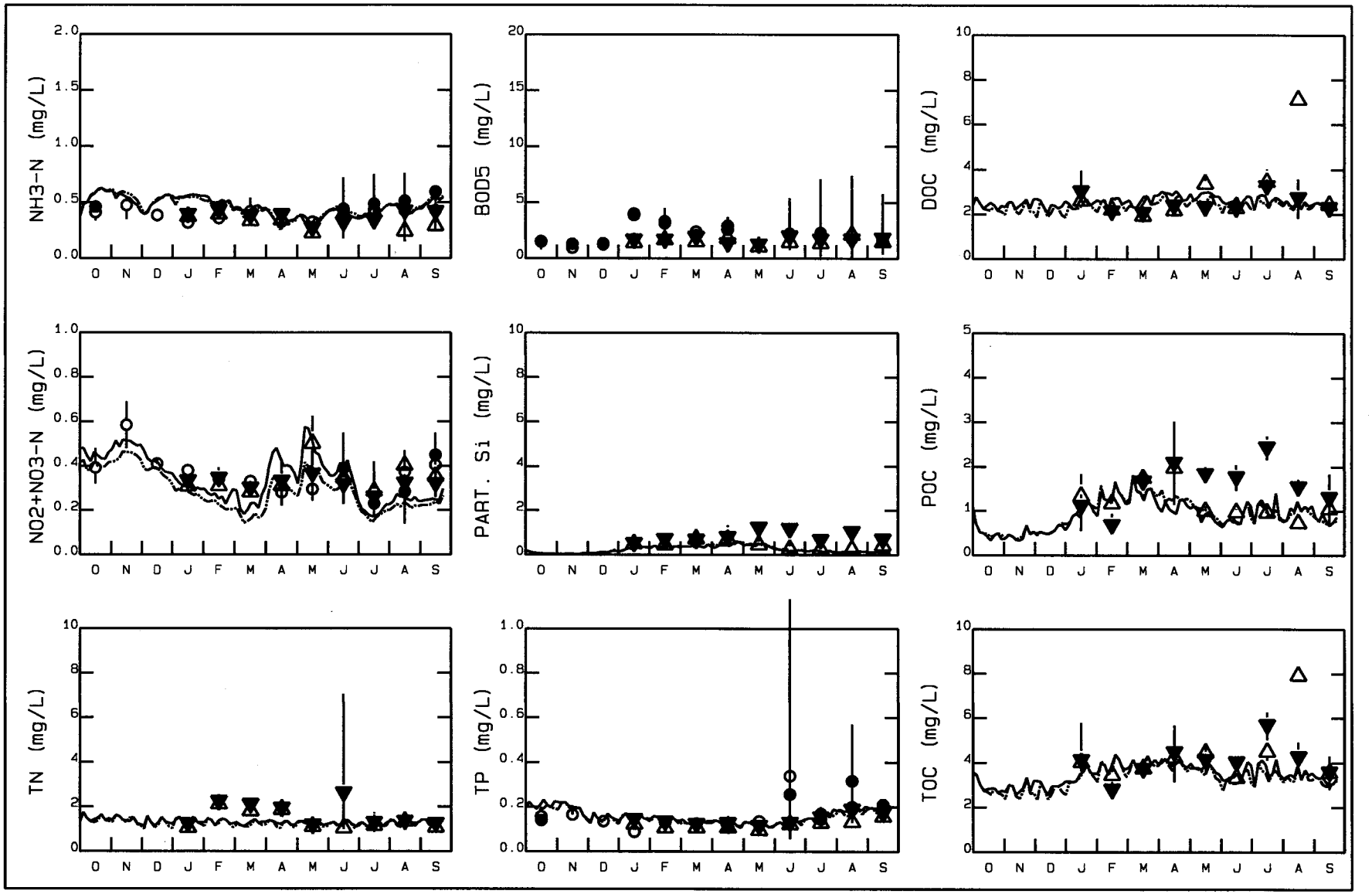
TEMPORAL DISTRIBUTIONS OF LOWER EAST RIVER



STATION 125 LOWER EAST RIVER-PIER 10

SWEM RUN 37 SWEM VALIDATION

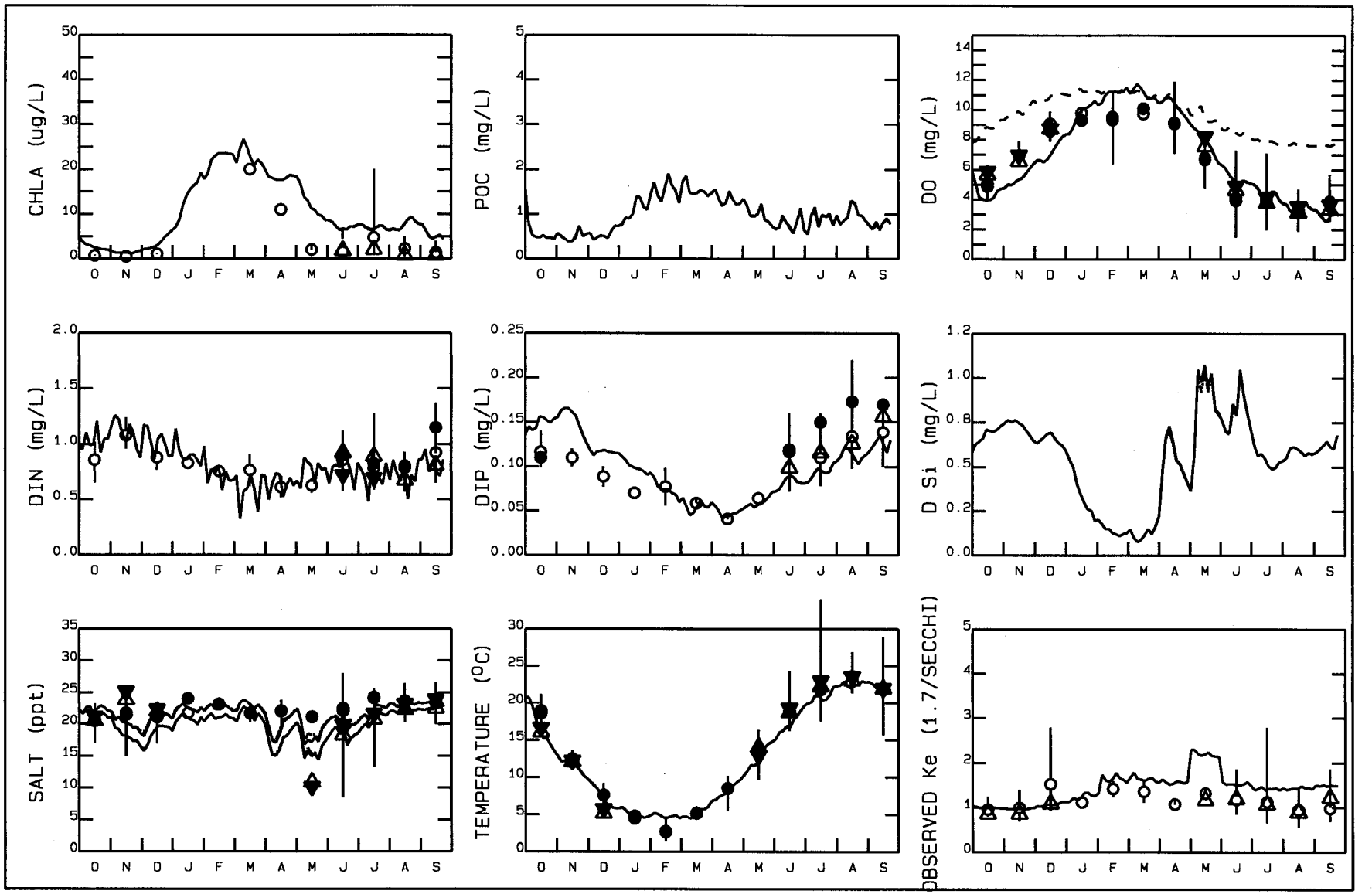
DATE: Tue Jun 9 TIME: 15:58:00



STATION 125 LOWER EAST RIVER-PIER 10

SWEM RUN 37 SWEM VALIDATION

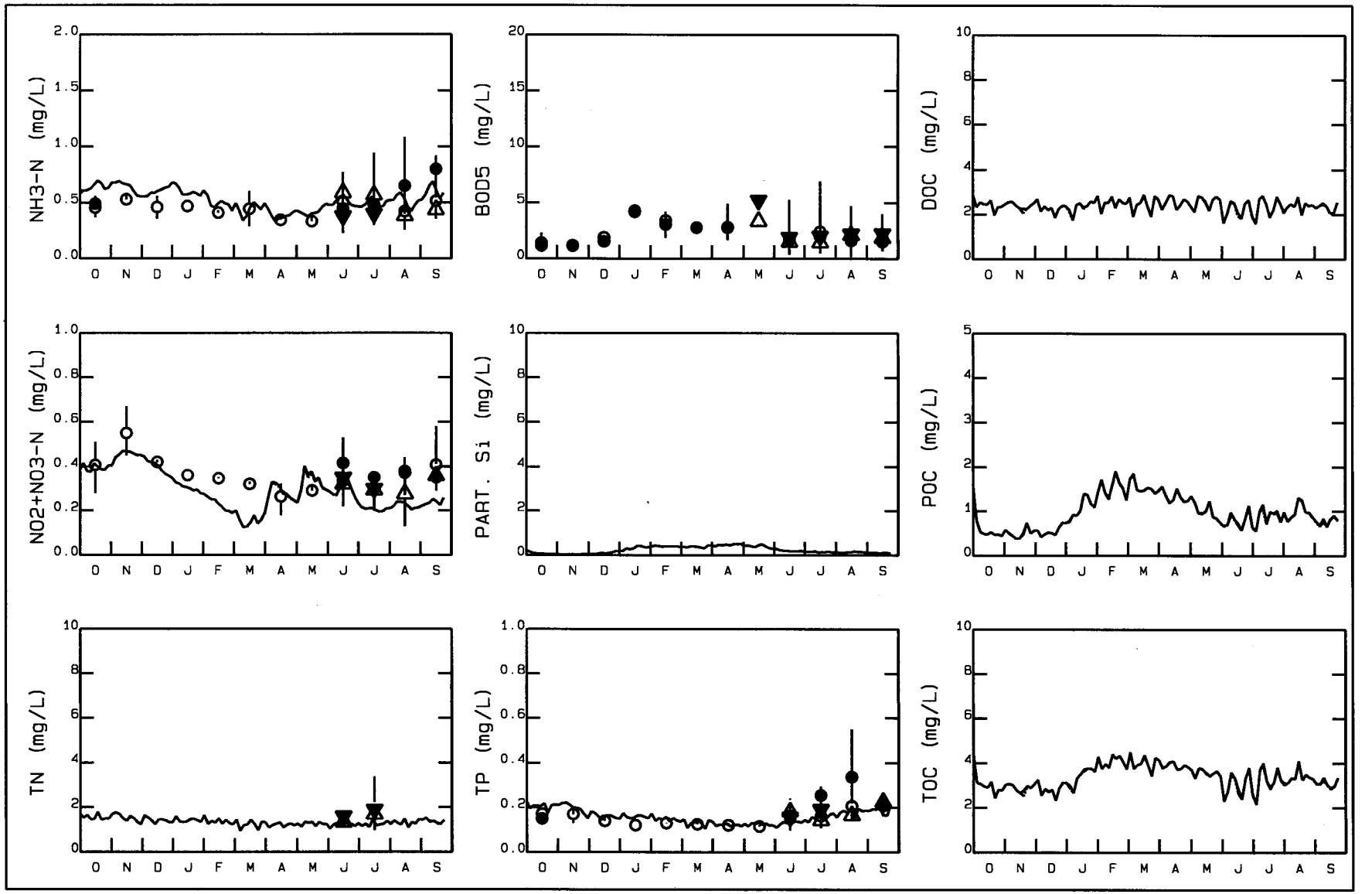
DATE: Tue Jun 9 TIME: 15:58:00



STATION 127 LOWER EAST RIVER-23rd STREET

SWEM RUN 37 SWEM VALIDATION

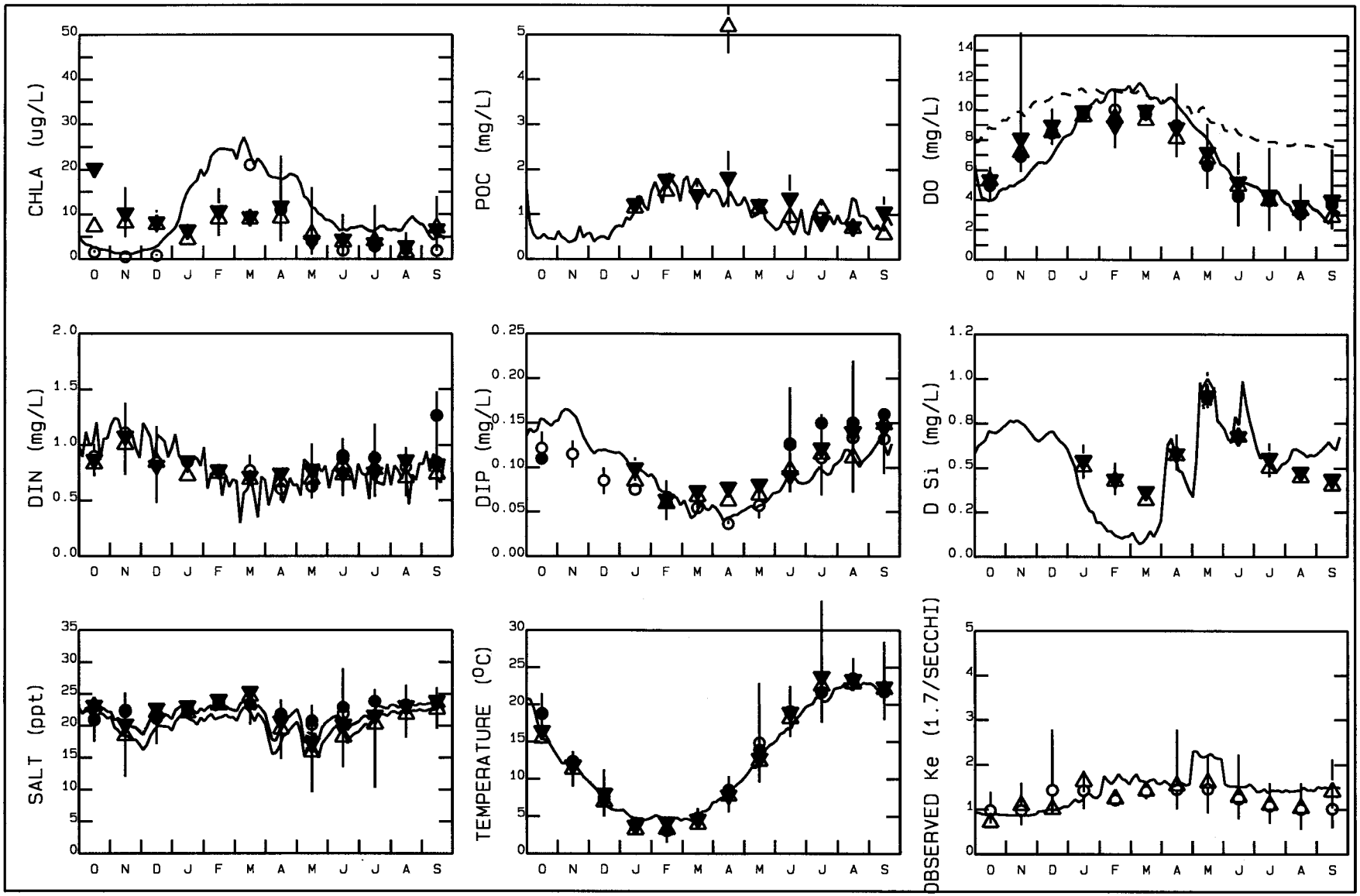
DATE: Tue Jun 9 TIME: 15:58:33



STATION 127 LOWER EAST RIVER-23rd STREET

SWEM RUN 37 SWEM VALIDATION

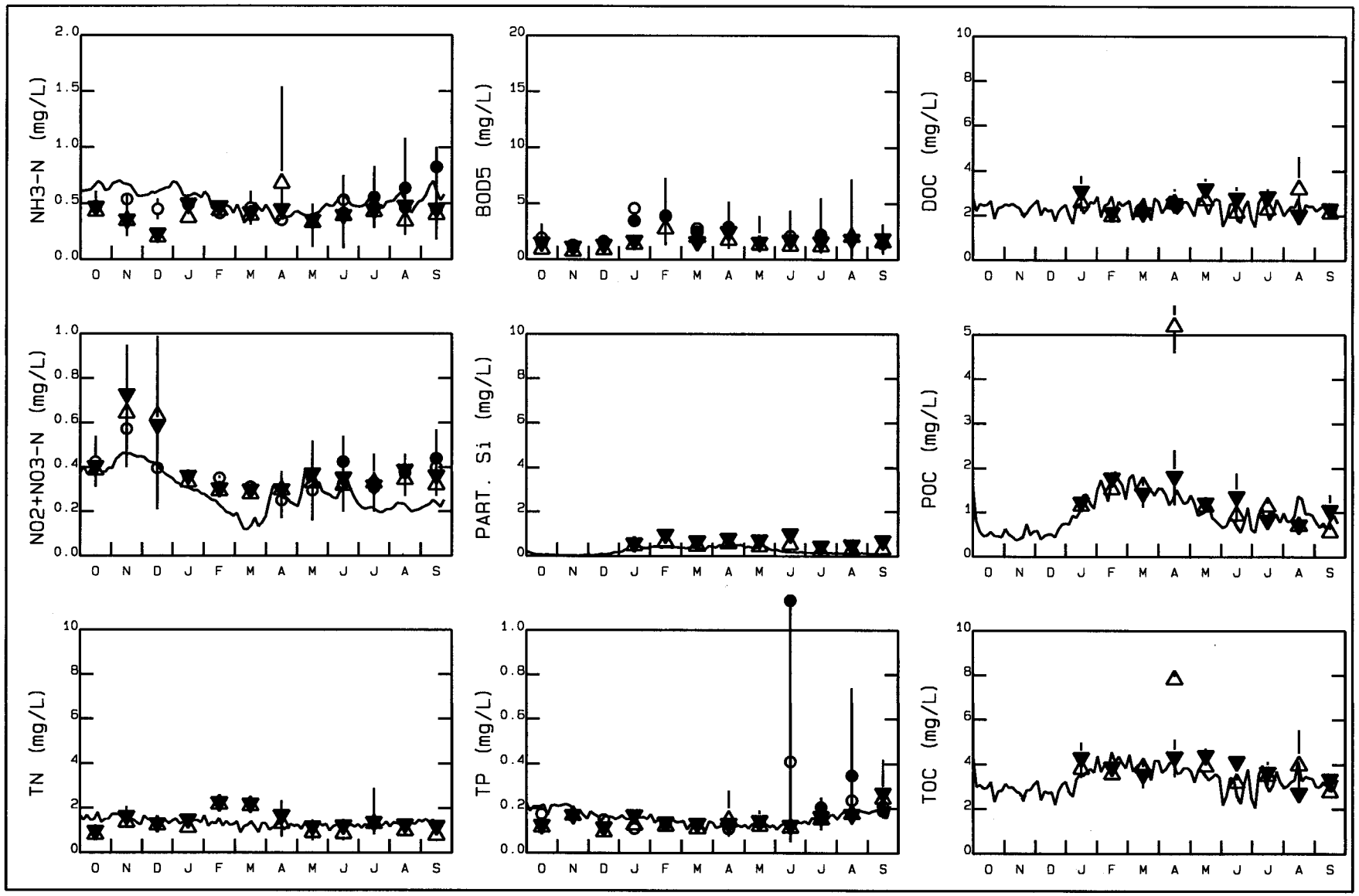
DATE: Tue Jun 9 TIME: 15:58:33



STATION 116 LOWER EAST RIVER-42nd STREET

SWEM RUN 37 SWEM VALIDATION

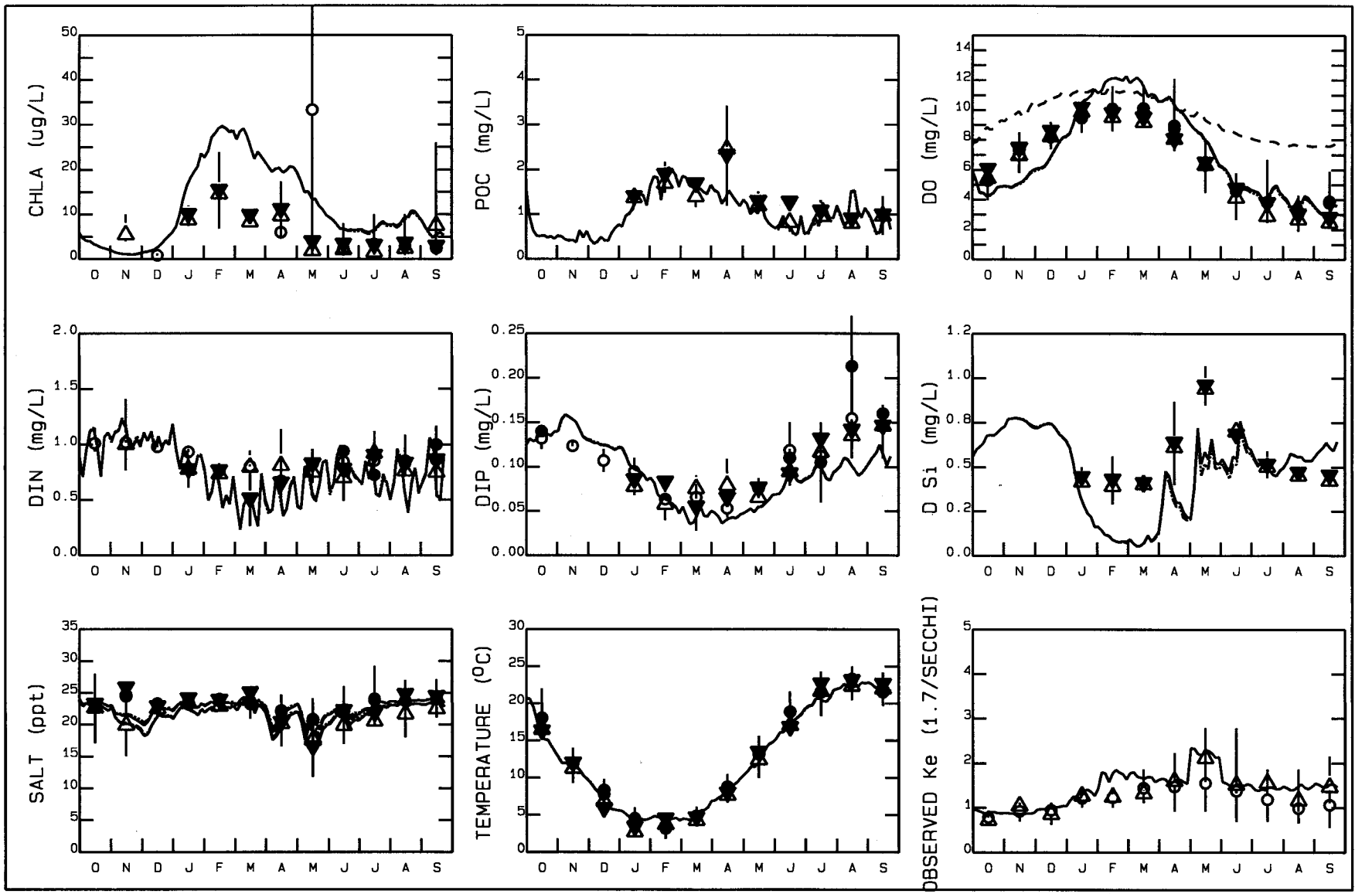
DATE: Tue Jun 9 TIME: 15:59:07



STATION 116 LOWER EAST RIVER-42nd STREET

SWEM RUN 37 SWEM VALIDATION

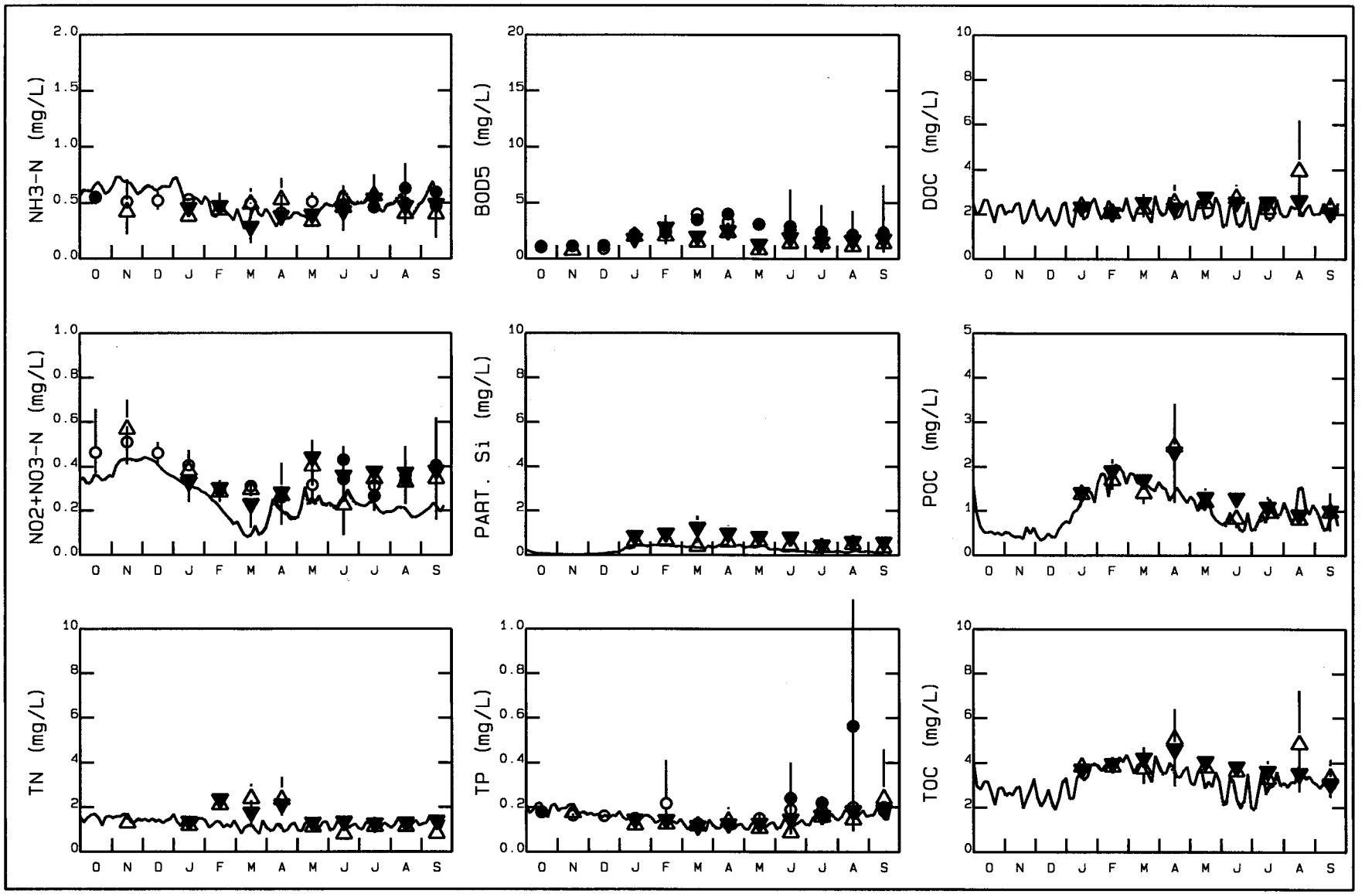
DATE: Tue Jun 9 TIME: 15:59:07



STATION 117 LOWER EAST RIVER-HELL GATE

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 15:59:42

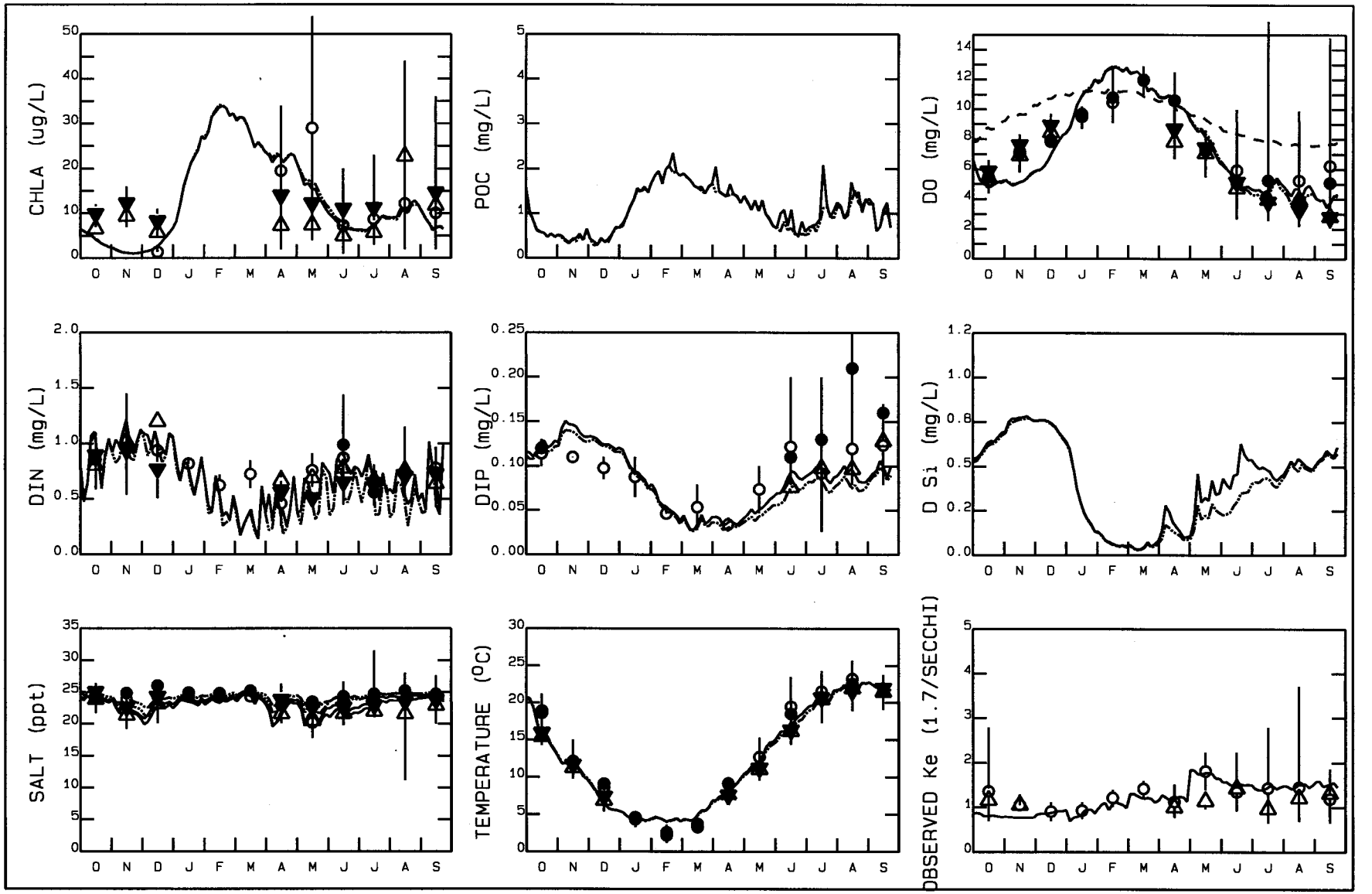


STATION 117 LOWER EAST RIVER-HELL GATE

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 15:59:42

TEMPORAL DISTRIBUTIONS OF UPPER EAST RIVER

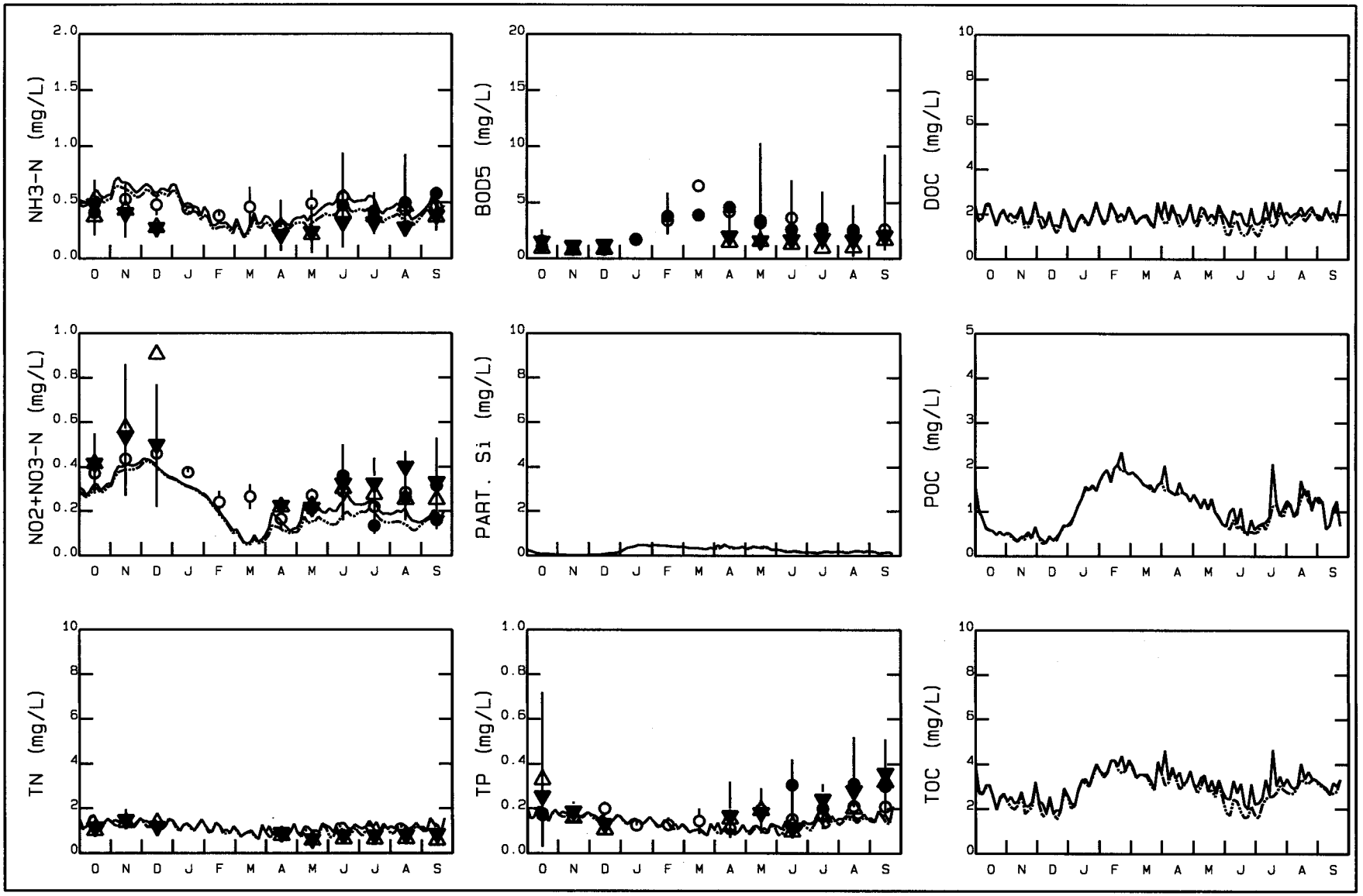


STATION 115 UPPER EAST RIVER-BRONX RIVER

SWEM RUN 37

SWEM VALIDATION

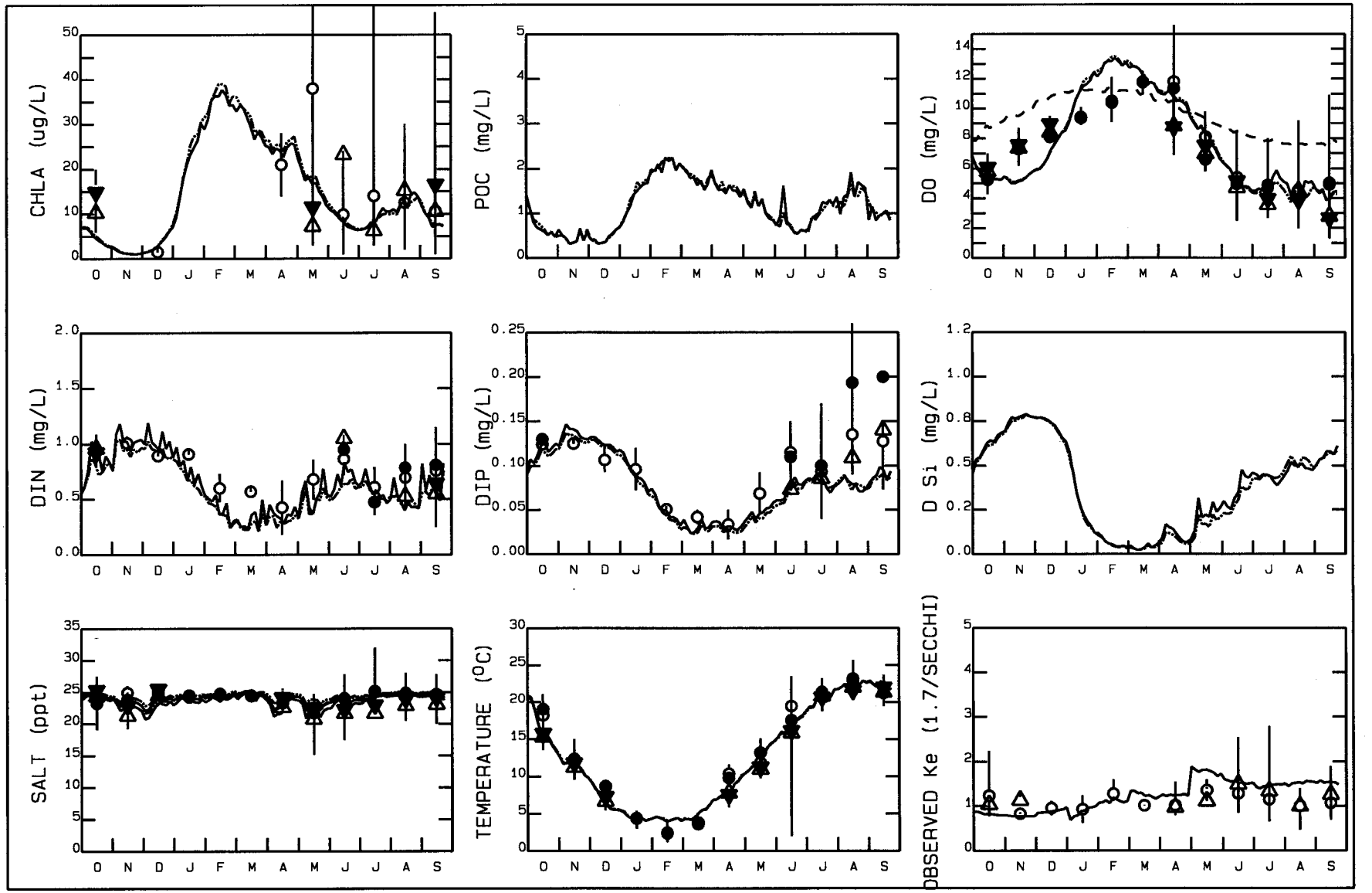
DATE: Tue Jun 9 TIME: 16:00:16



STATION 115 UPPER EAST RIVER-BRONX RIVER

SWEM RUN 37 SWEM VALIDATION

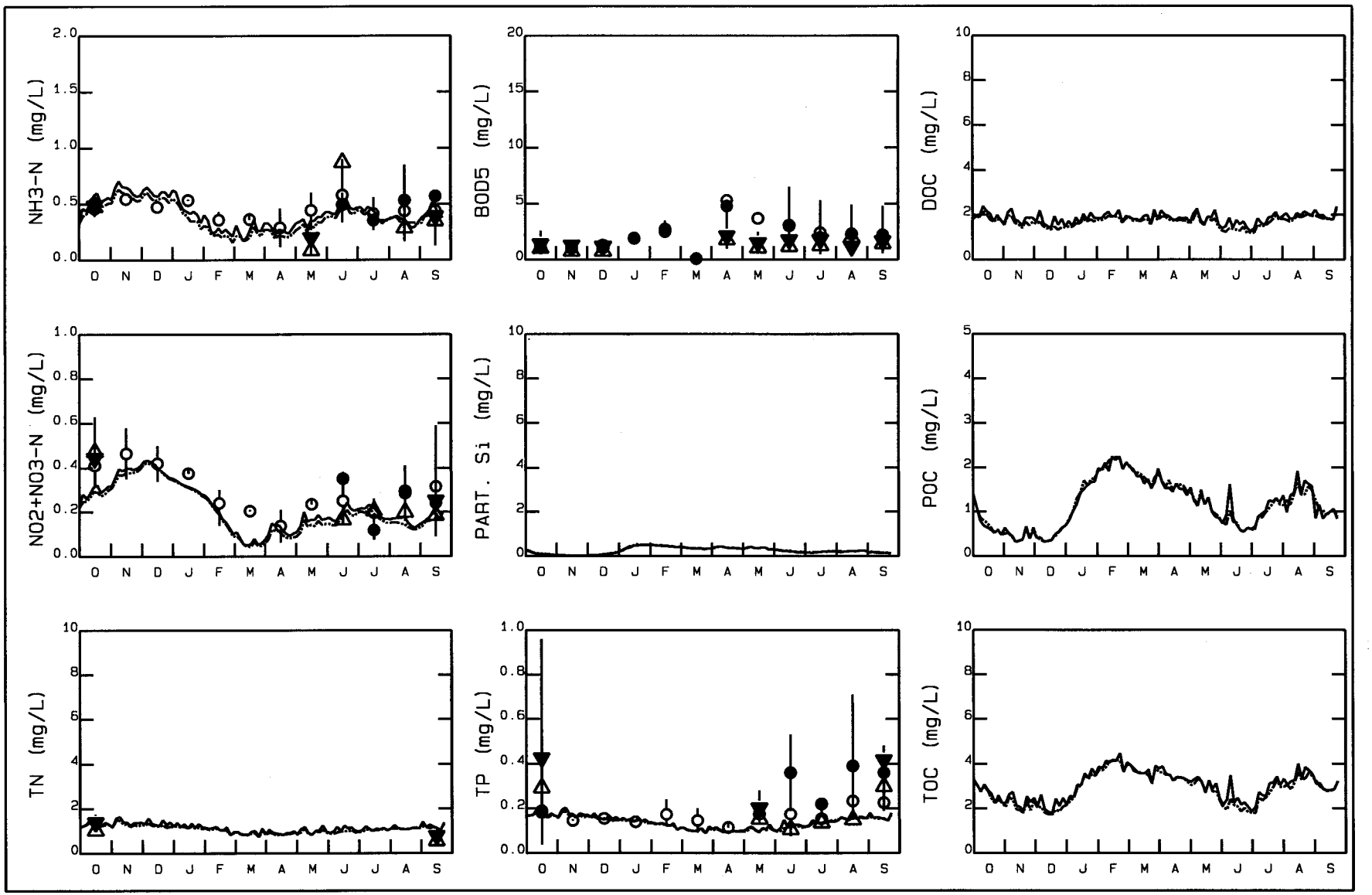
DATE: Tue Jun 9 TIME: 16:00:16



STATION 114 UPPER EAST RIVER-WESTCHESTER CREEK

SWEM RUN 37 SWEM VALIDATION

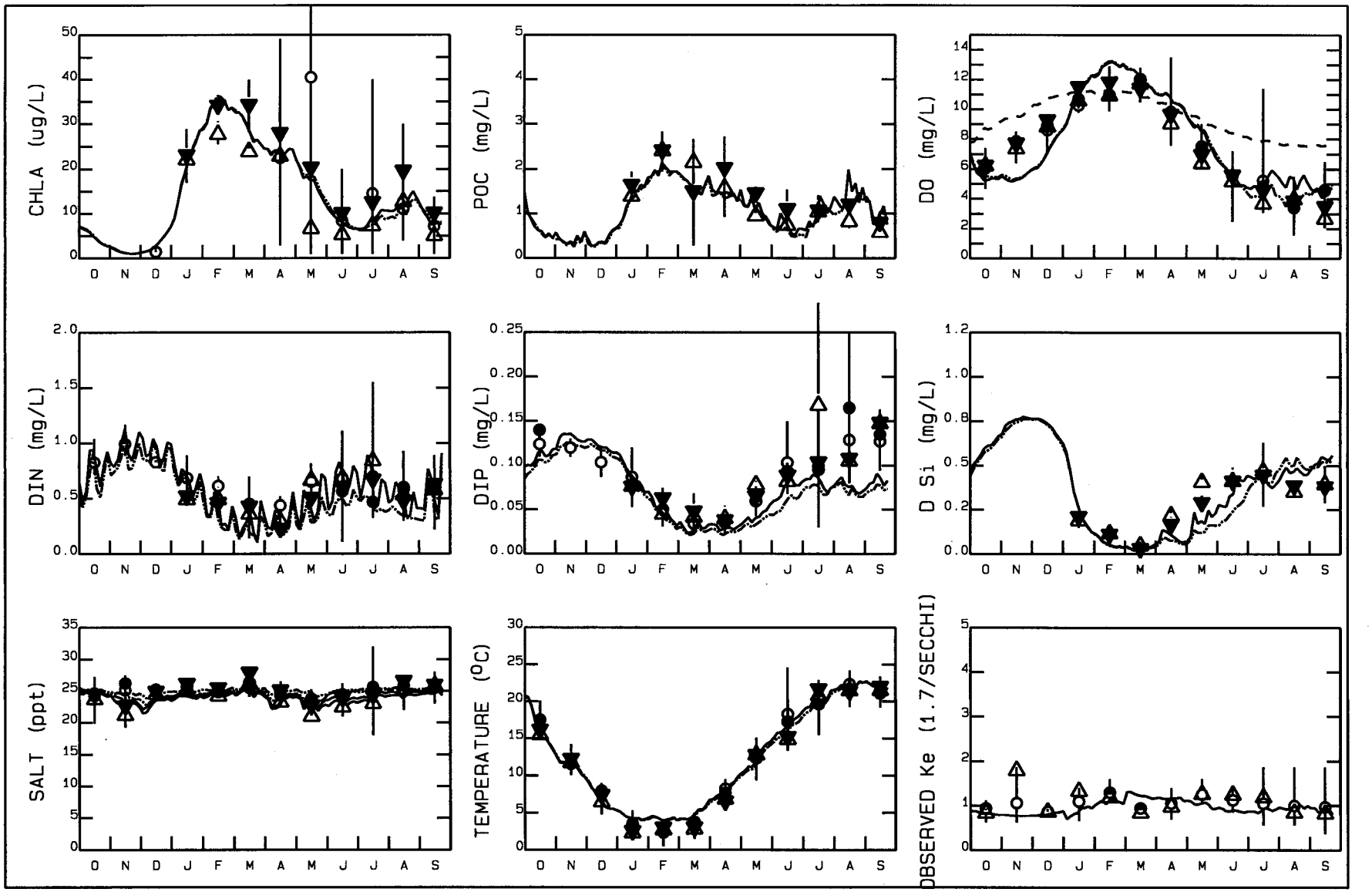
DATE: Tue Jun 9 TIME: 16:03:38



STATION 114 UPPER EAST RIVER-WESTCHESTER CREEK

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:03:38

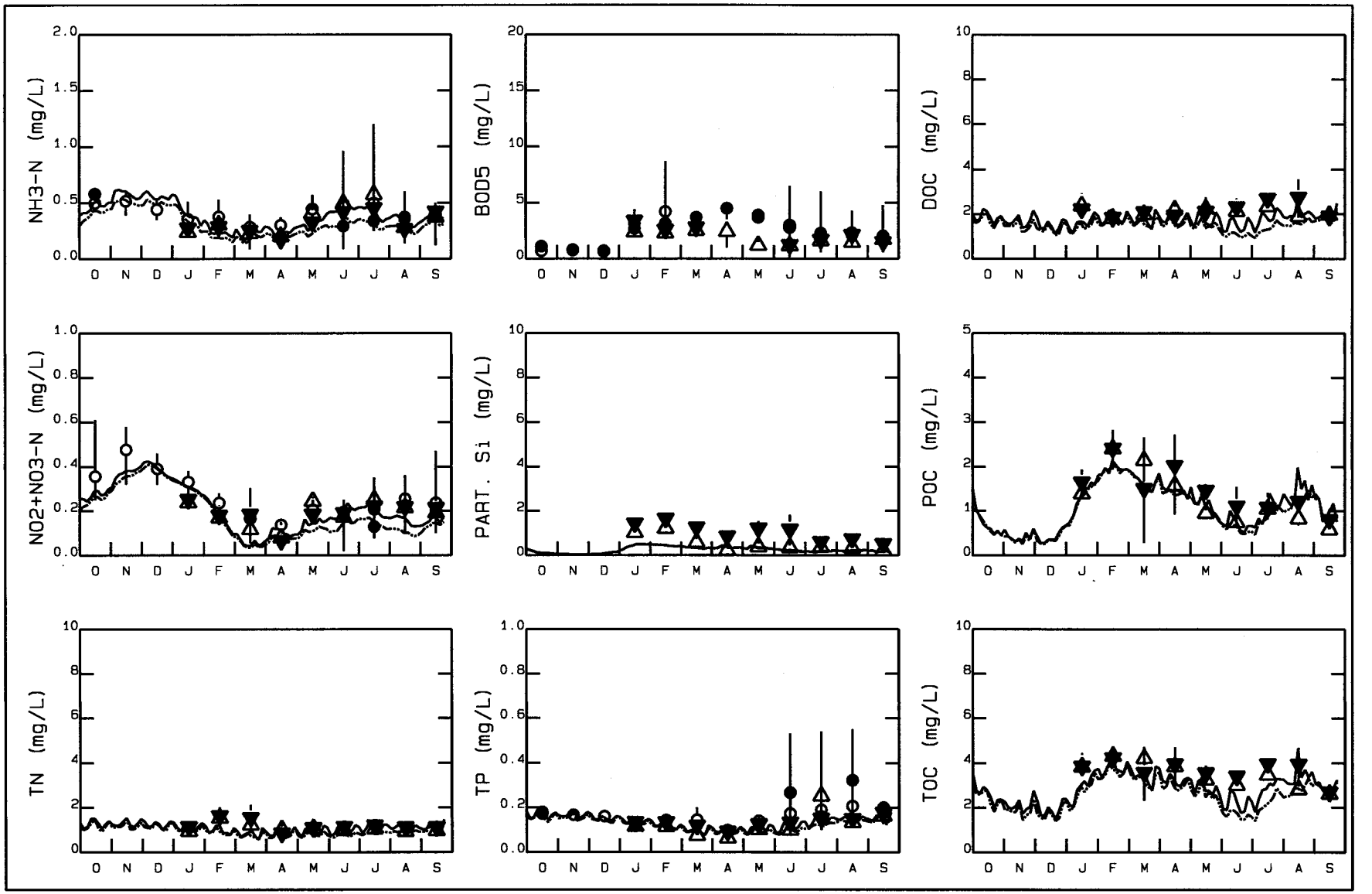


STATION 119 UPPER EAST RIVER-WHITESTONE

SWEM RUN 37

SWEM VALIDATION

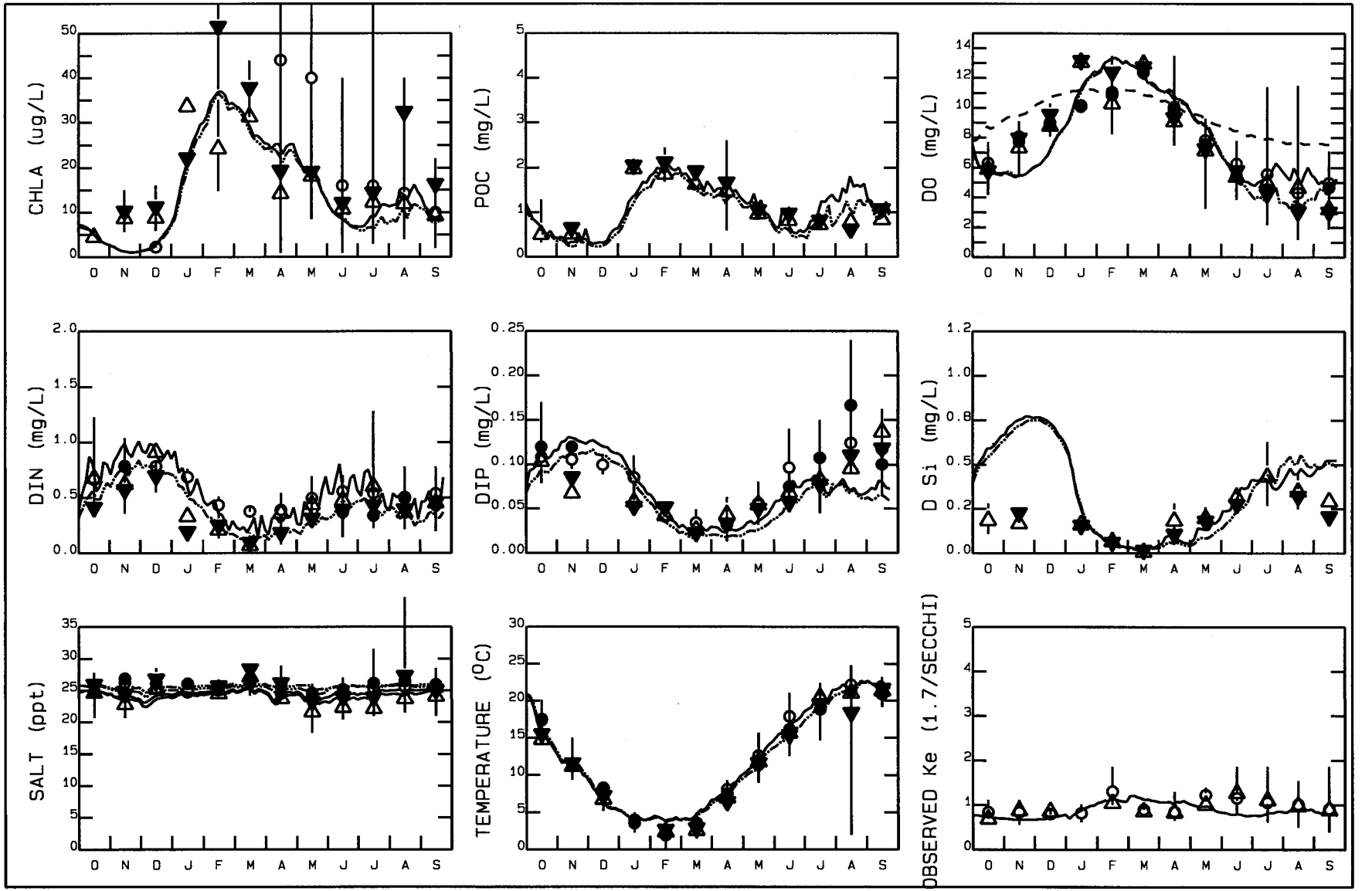
DATE: Tue Jun 9 TIME: 16:00:50



STATION 119 UPPER EAST RIVER-WHITESTONE

SWEM RUN 37 SWEM VALIDATION

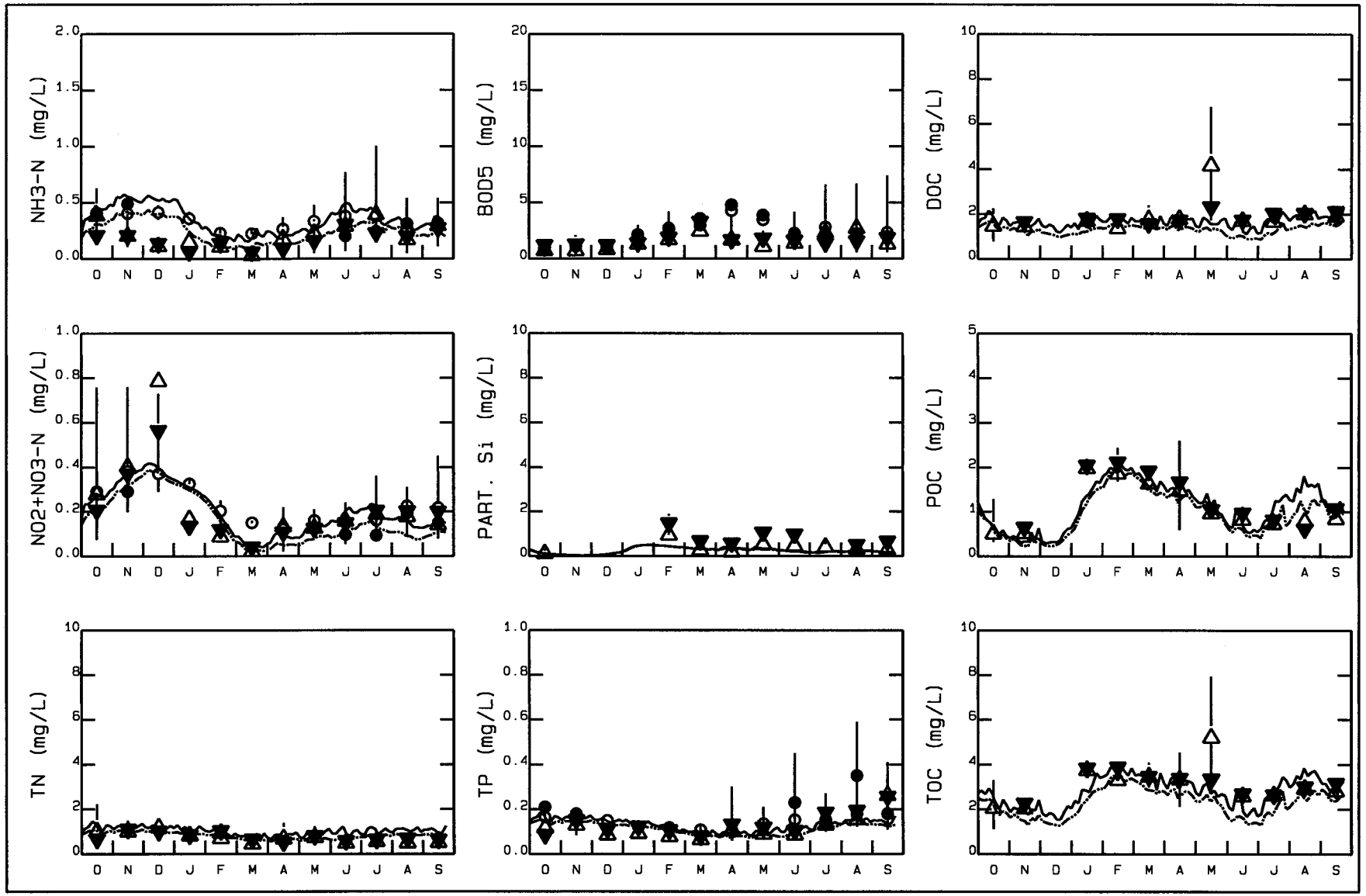
DATE: Tue Jun 9 TIME: 16:00:50



STATION 120 UPPER EAST RIVER-THROGS NECK

SWEM RUN 37 SWEM VALIDATION

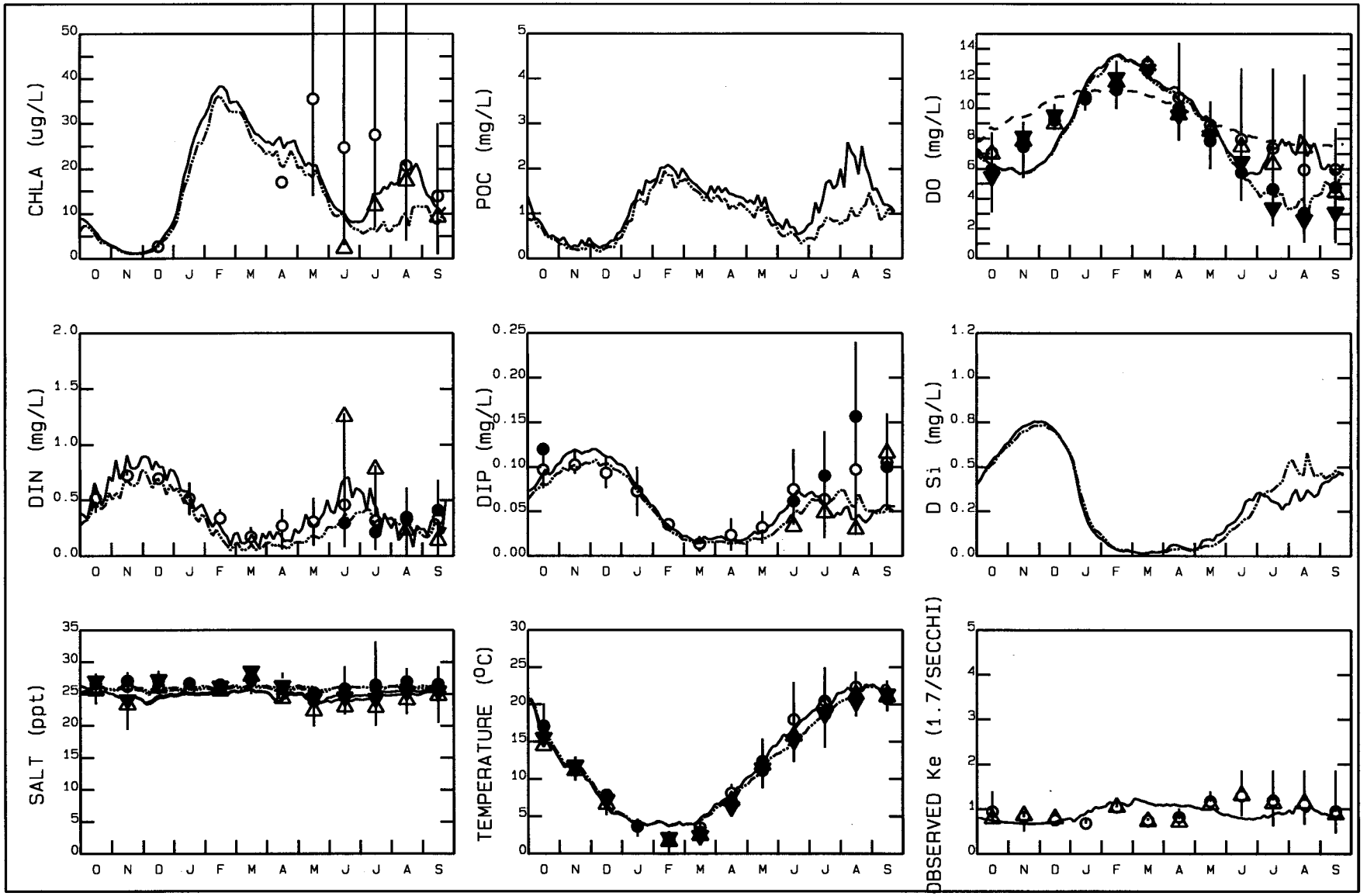
DATE: Tue Jun 9 TIME: 16:01:24



STATION 120 UPPER EAST RIVER-THROGS NECK

SWEM RUN 37 SWEM VALIDATION

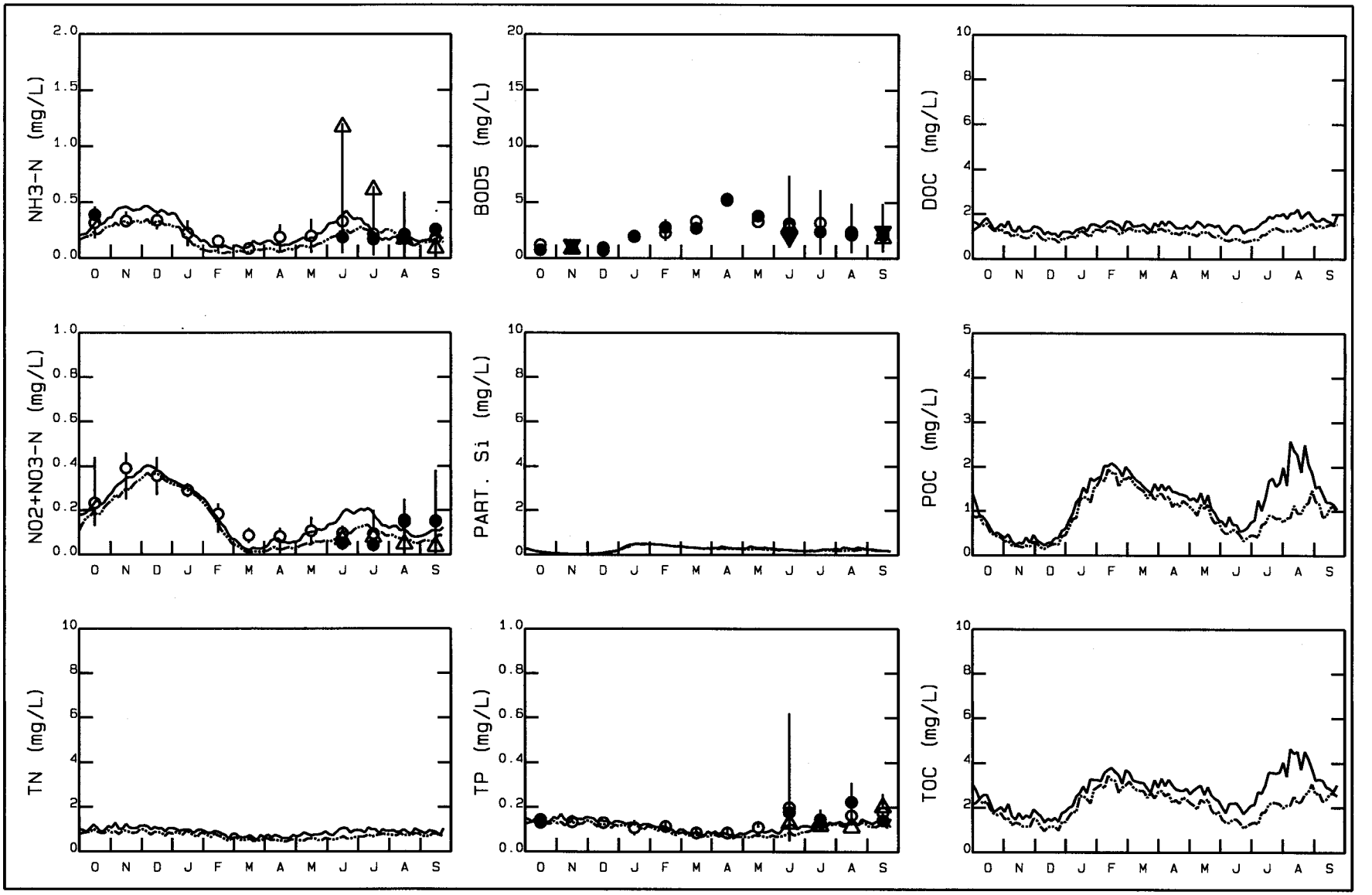
DATE: Tue Jun 9 TIME: 16:01:24



STATION 121 UPPER EAST RIVER-STEPPING STONES

SWEM RUN 37 SWEM VALIDATION

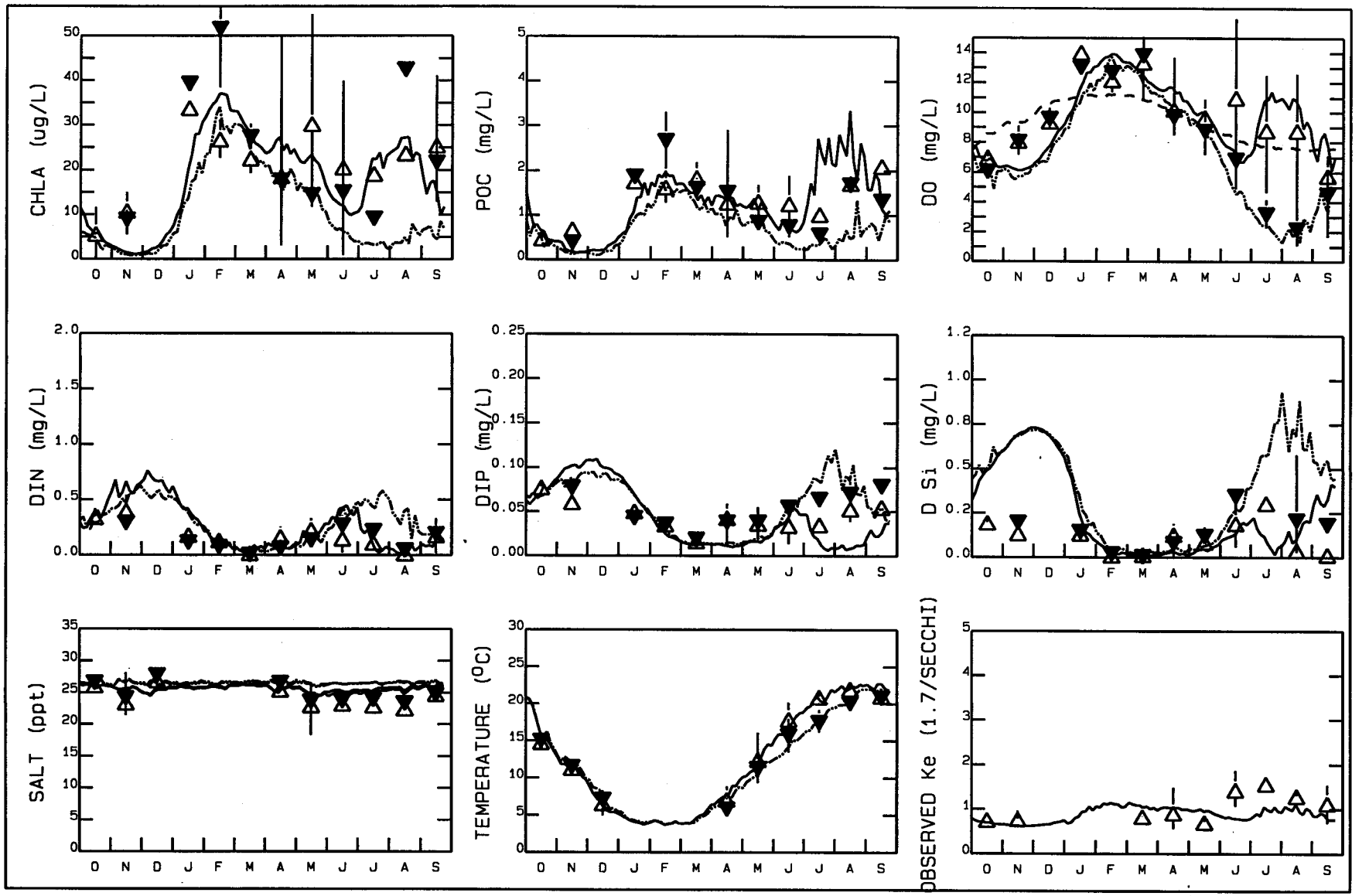
DATE: Tue Jun 9 TIME: 16:01:58



STATION 121 UPPER EAST RIVER-STEPPING STONES

SWEM RUN 37 SWEM VALIDATION

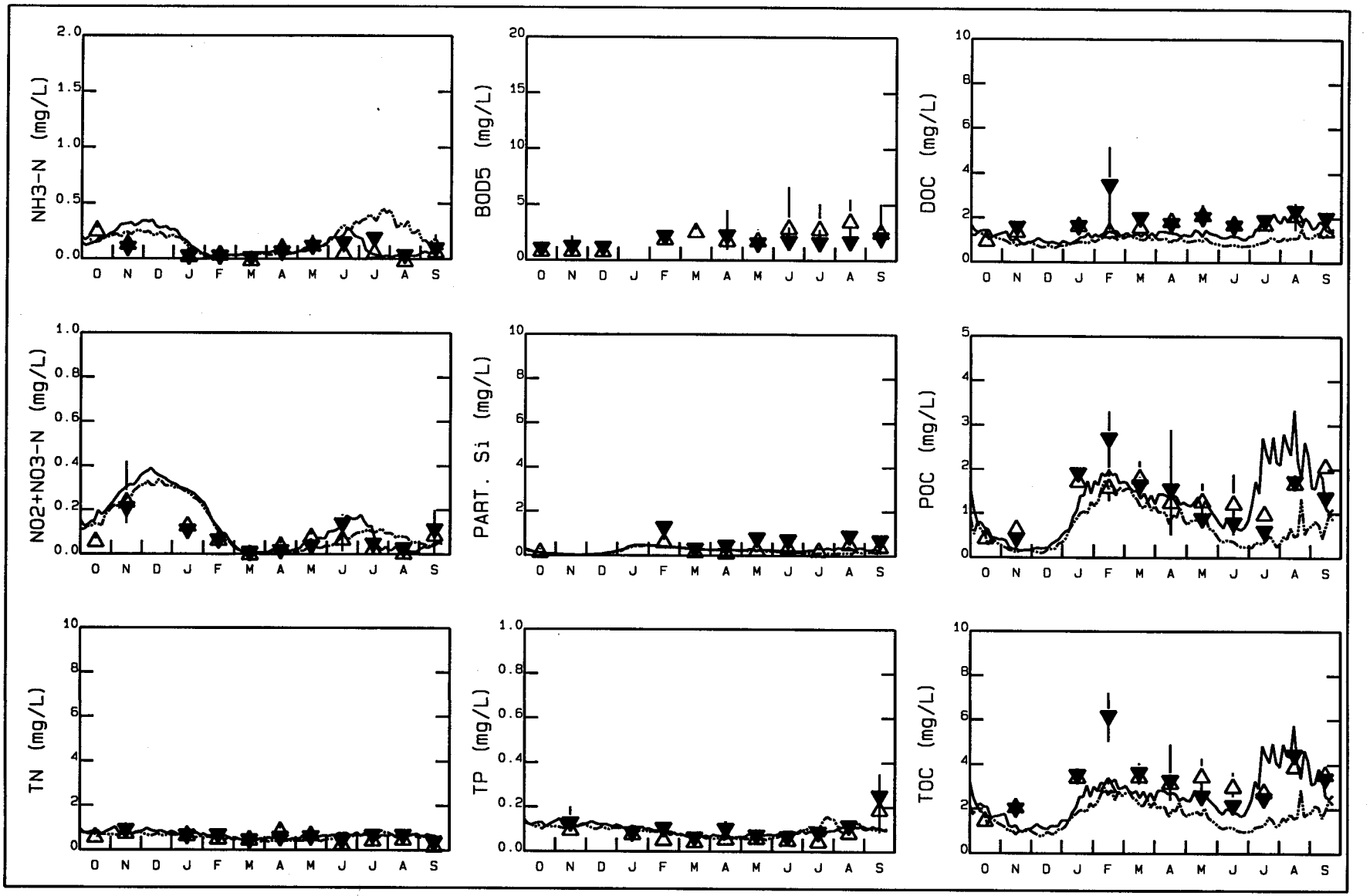
DATE: Tue Jun 9 TIME: 16:01:58



STATION 105 UPPER EAST RIVER-LIS MP23

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:02:32

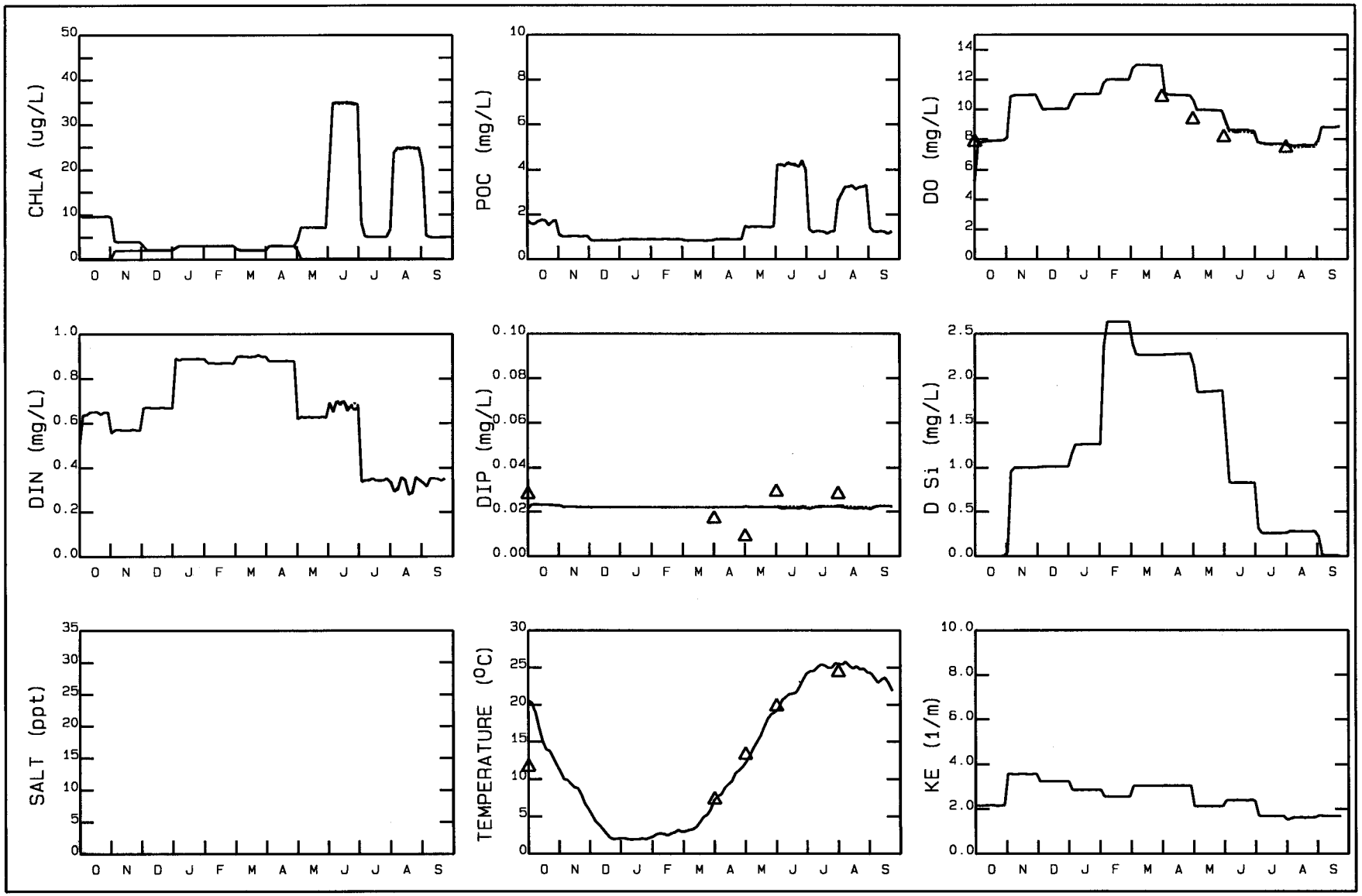


STATION 105 UPPER EAST RIVER-LIS MP23

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:02:32

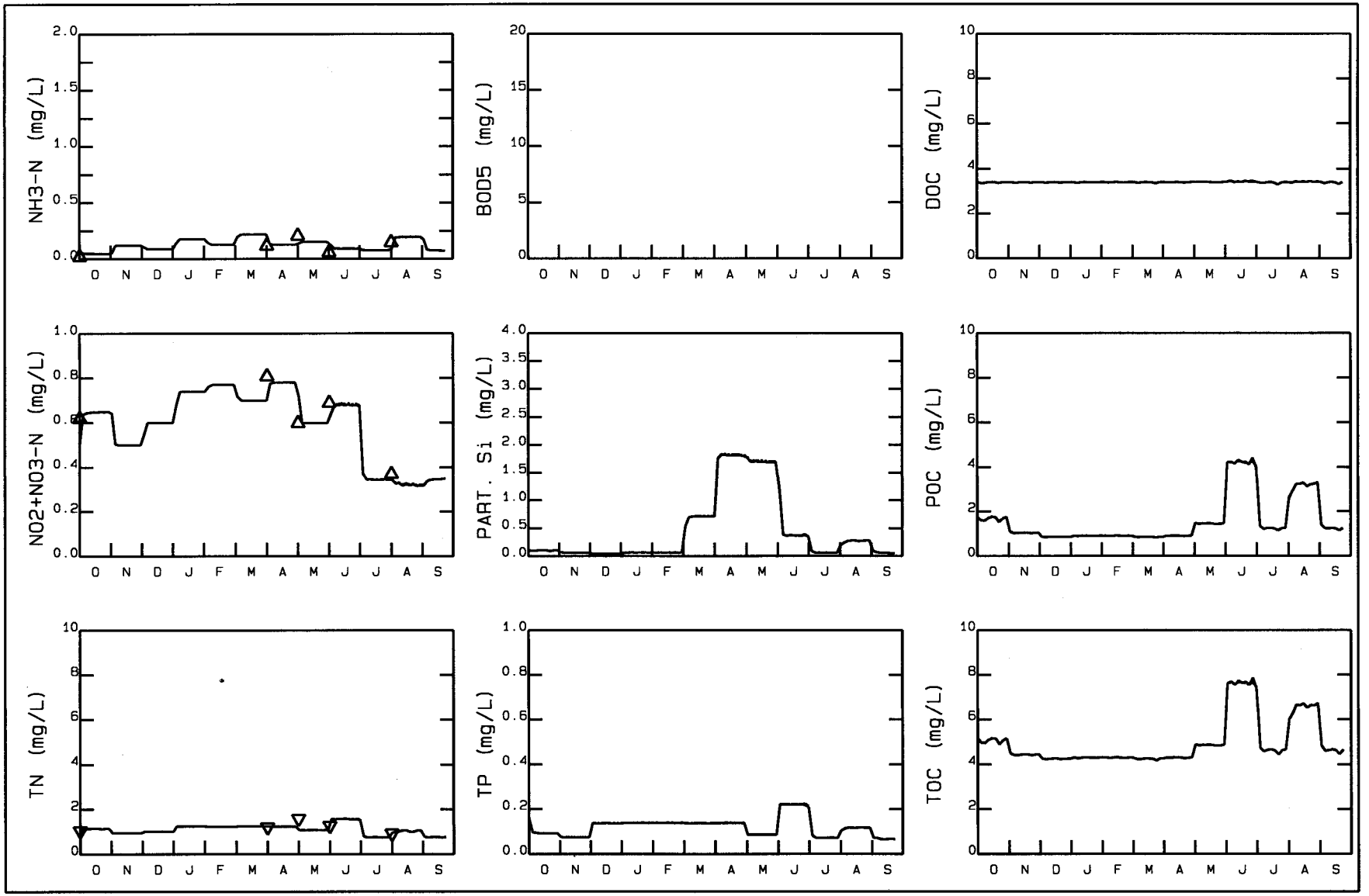
TEMPORAL DISTRIBUTIONS OF HUDSON RIVER, UPPER BAY, LOWER BAY



HUDSON RIVER-POUGHKEEPSIE

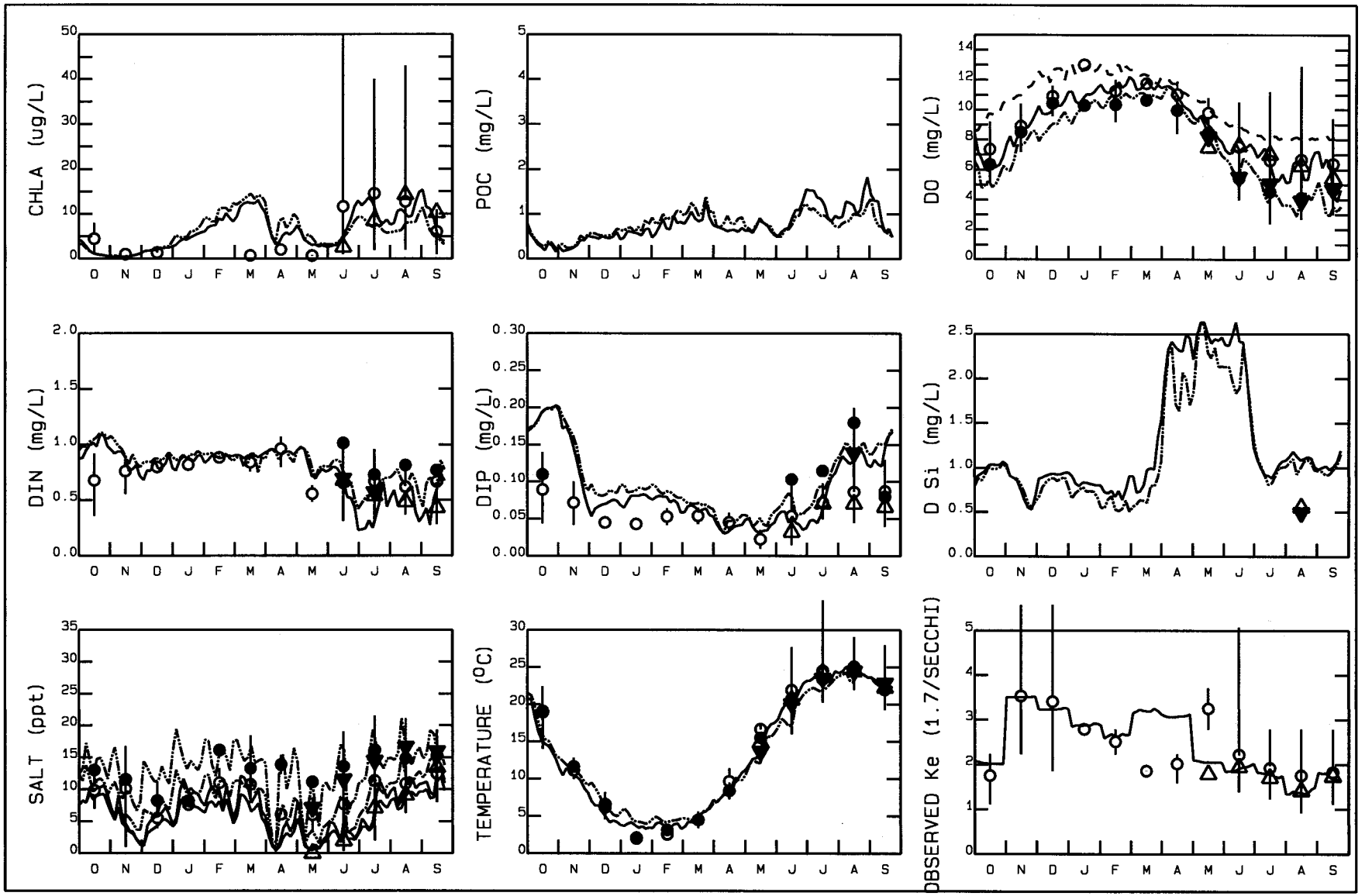
SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:08:39



HUDSON RIVER-POUGHKEEPSIE

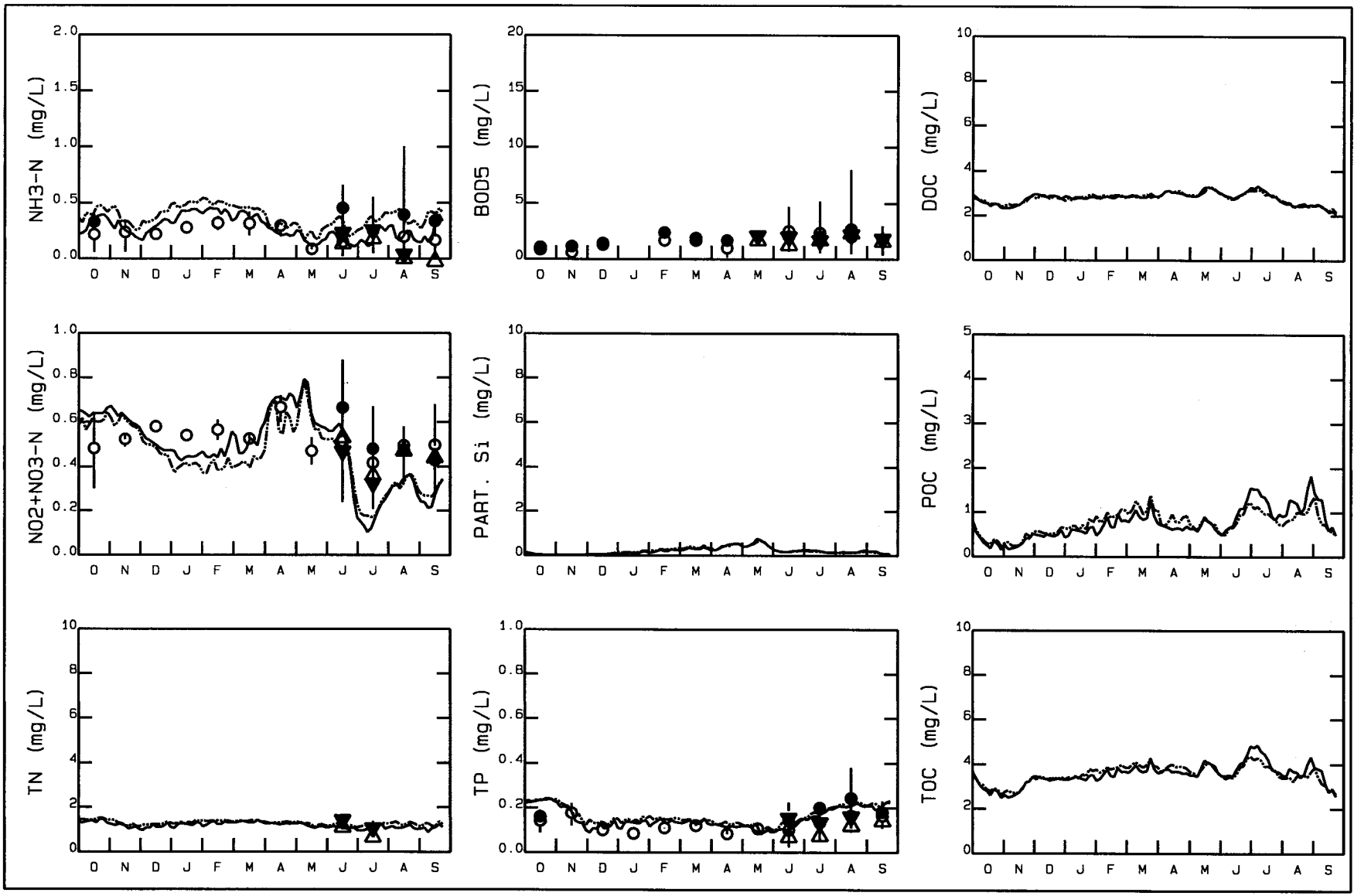
SWEM RUN 37 SWEM VALIDATION



STATION 149 HUDSON RIVER-MT ST VINCENT

SWEM RUN 37 SWEM VALIDATION

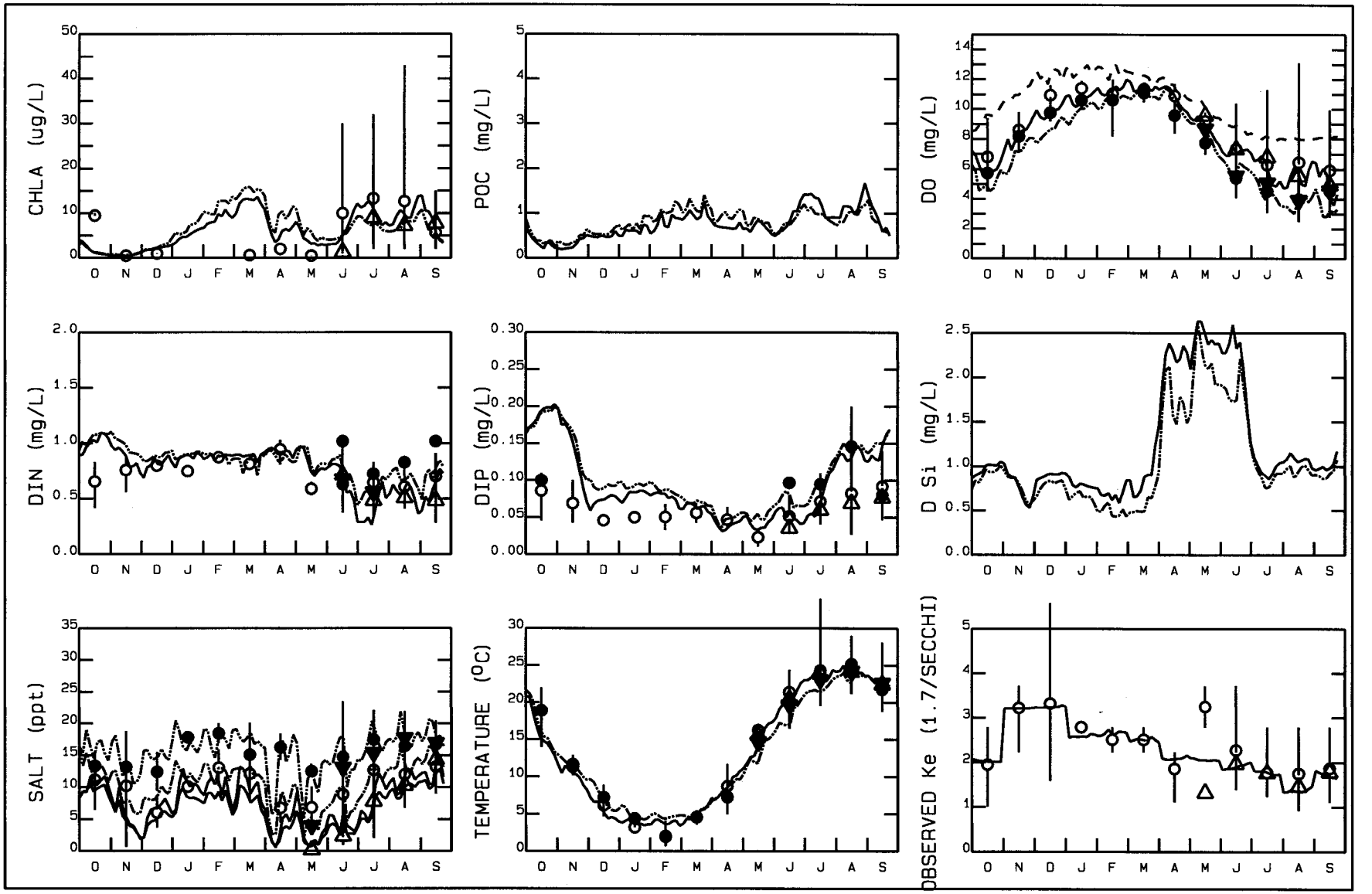
DATE: Tue Jun 9 TIME: 15:49:24



STATION 149 HUDSON RIVER-MT ST VINCENT

SWEM RUN 37 SWEM VALIDATION

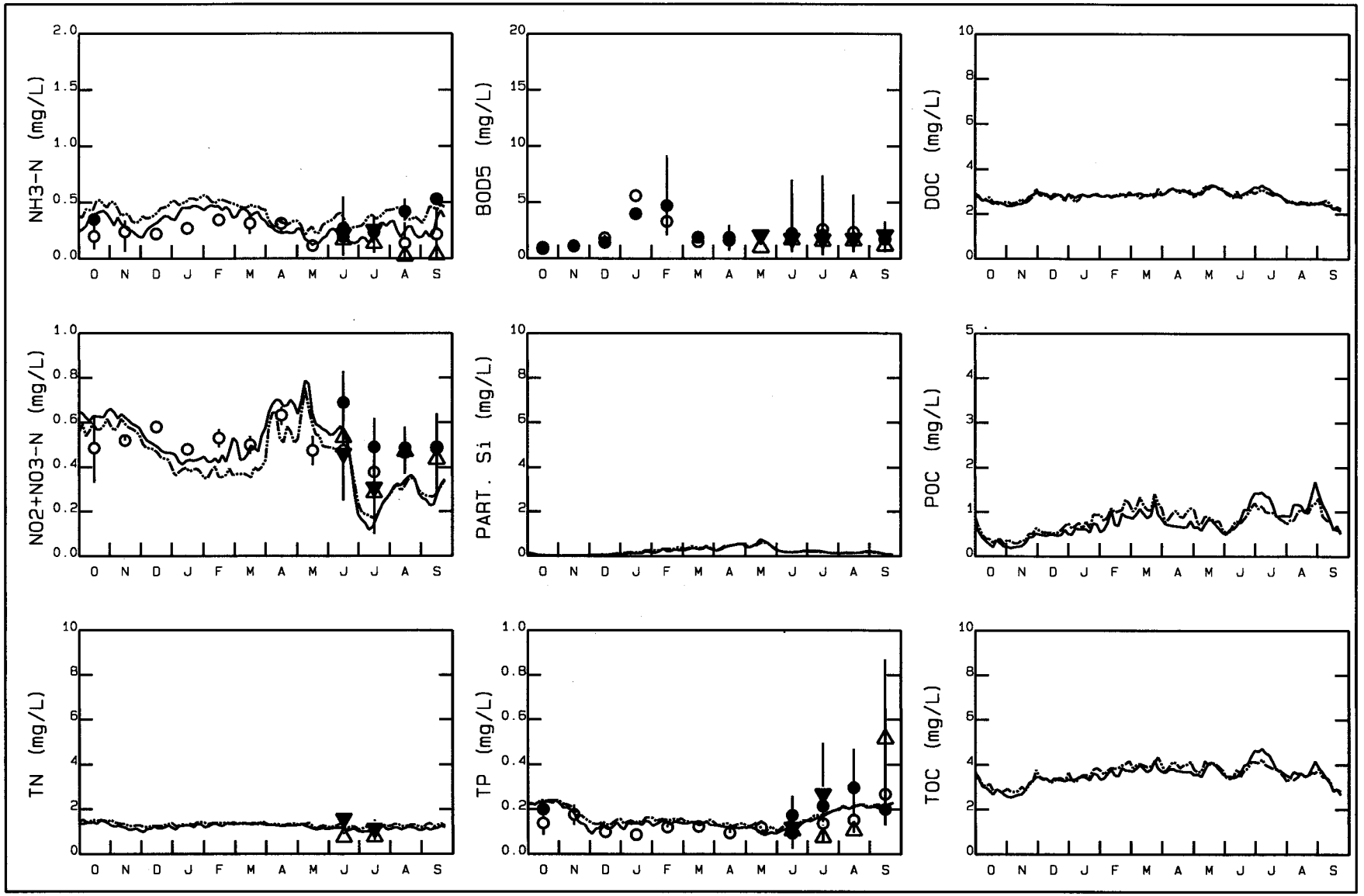
DATE: Tue Jun 9 TIME: 15:49:24



STATION 151 HUDSON RIVER-SPUYTEN DUYVIL

SWEM RUN 37 SWEM VALIDATION

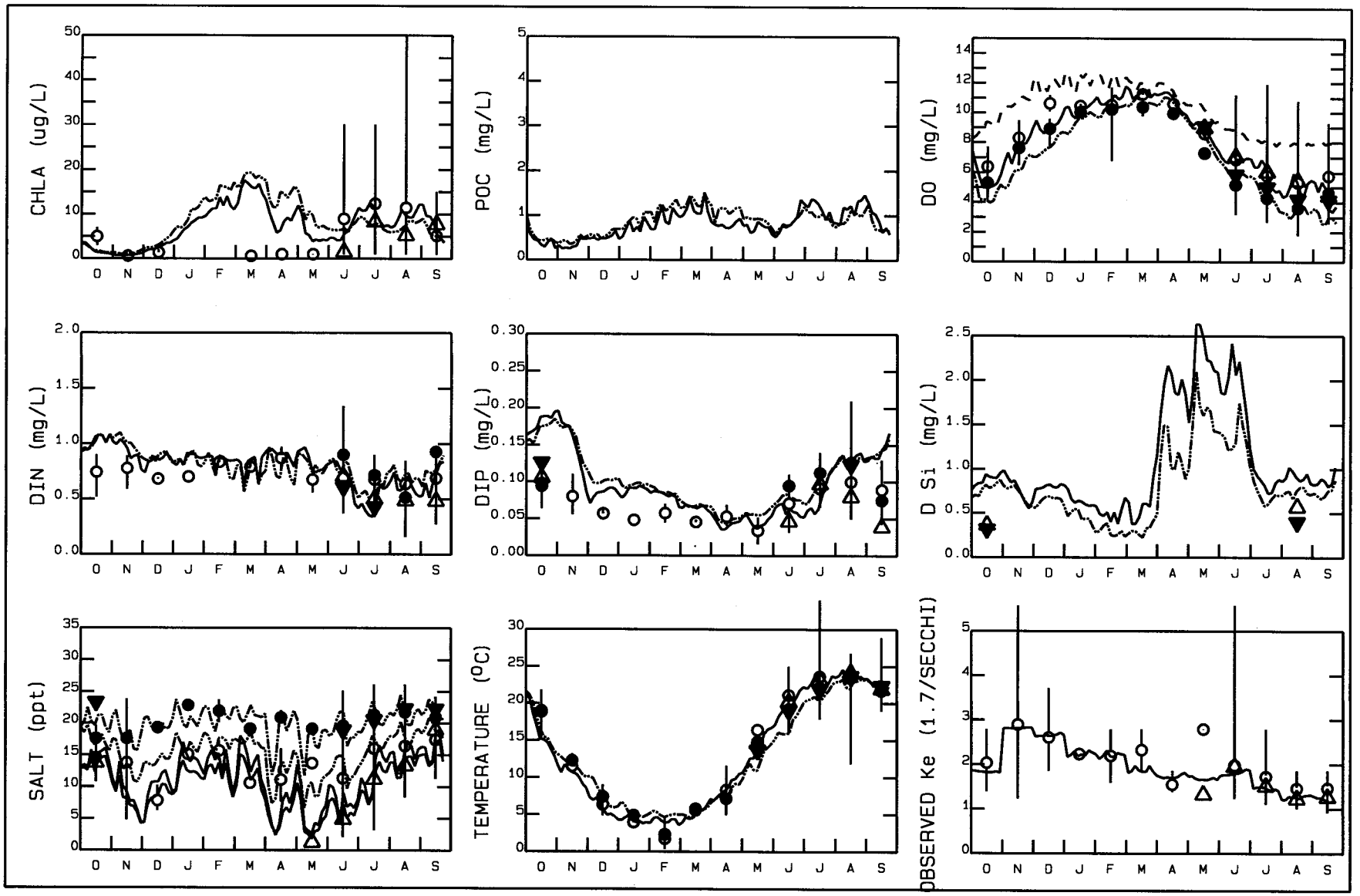
DATE: Tue Jun 9 TIME: 15:50:03



STATION 151 HUDSON RIVER-SPUYTEN DUYVIL

SWEM RUN 37 SWEM VALIDATION

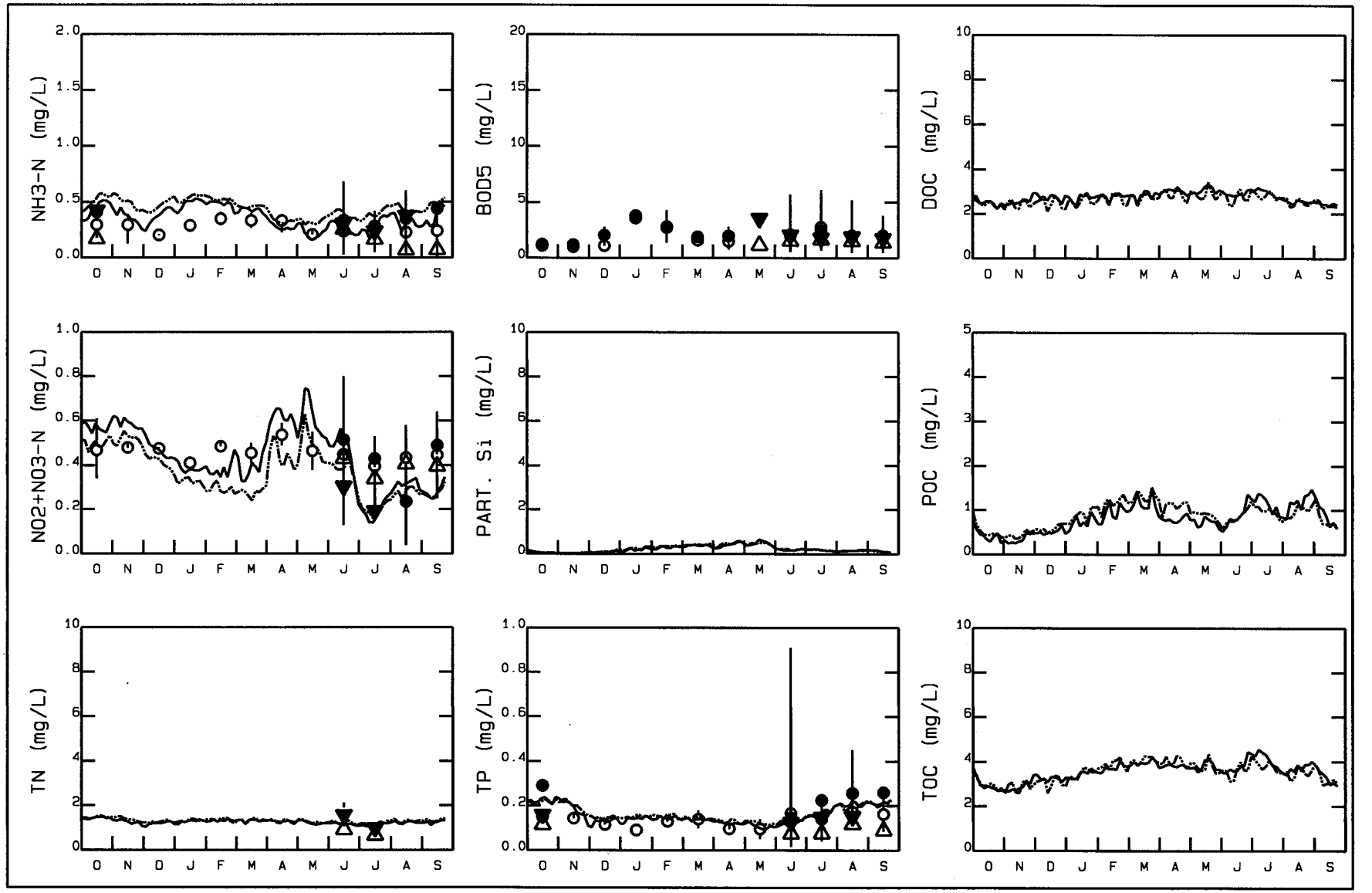
DATE: Tue Jun 9 TIME: 15:50:03



STATION 153 HUDSON RIVER-72nd STREET

SWEM RUN 37 SWEM VALIDATION

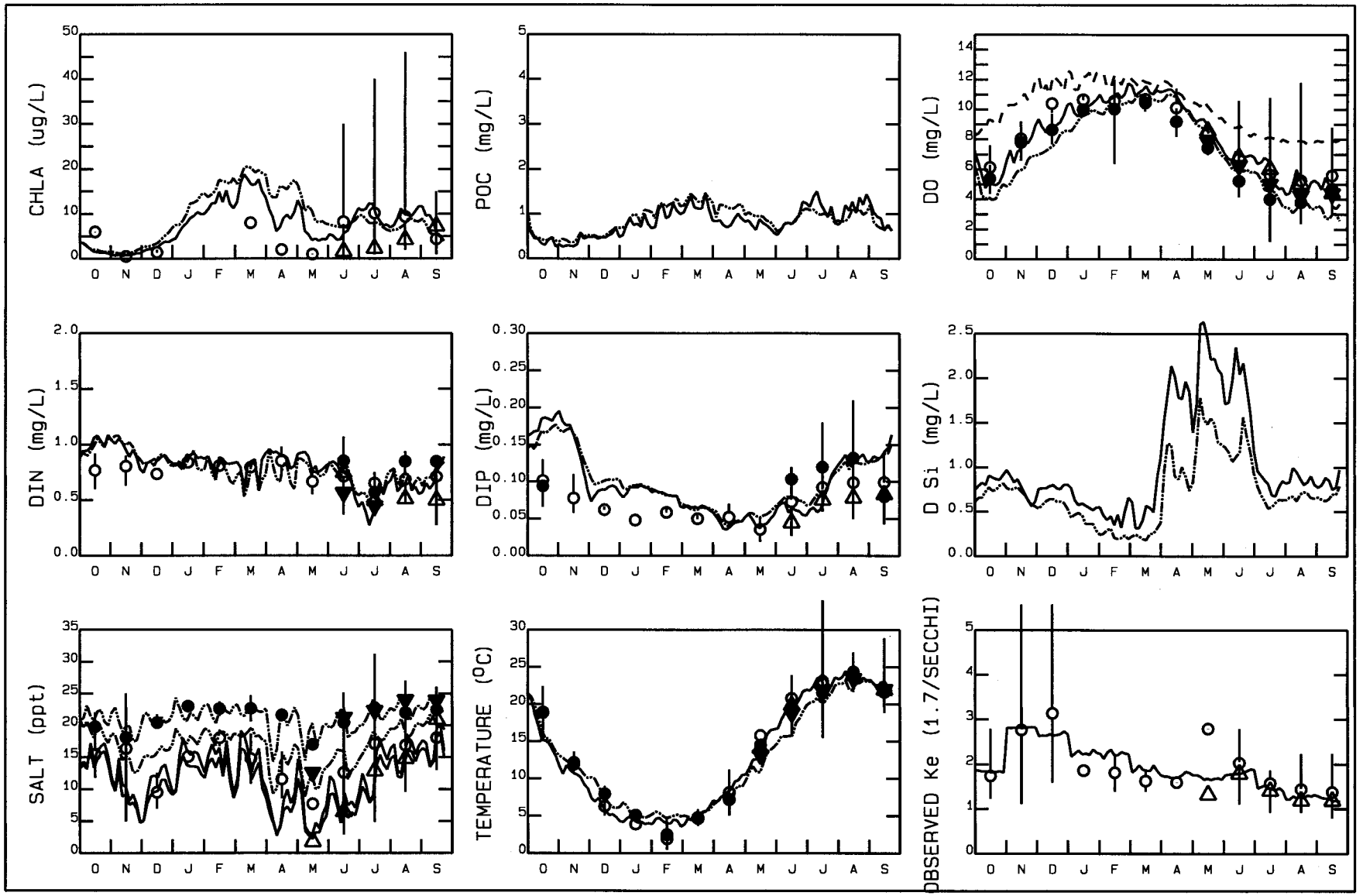
DATE: Tue Jun 9 TIME: 15:51:19



STATION 153 HUDSON RIVER-72nd STREET

SWEM RUN 37 SWEM VALIDATION

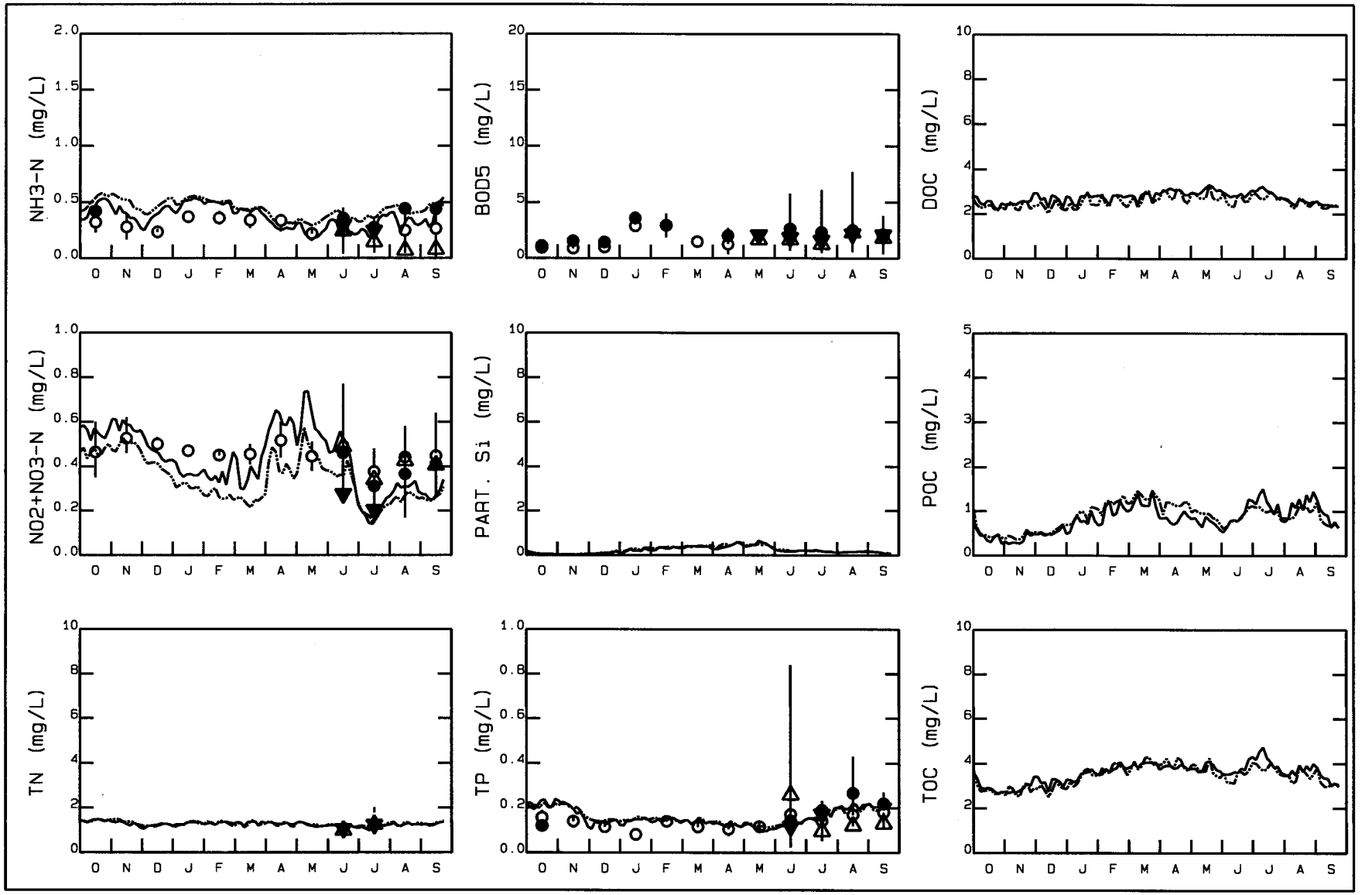
DATE: Tue Jun 9 TIME: 15:51:19



STATION 155 HUDSON RIVER-42nd STREET

SWEM RUN 37 SWEM VALIDATION

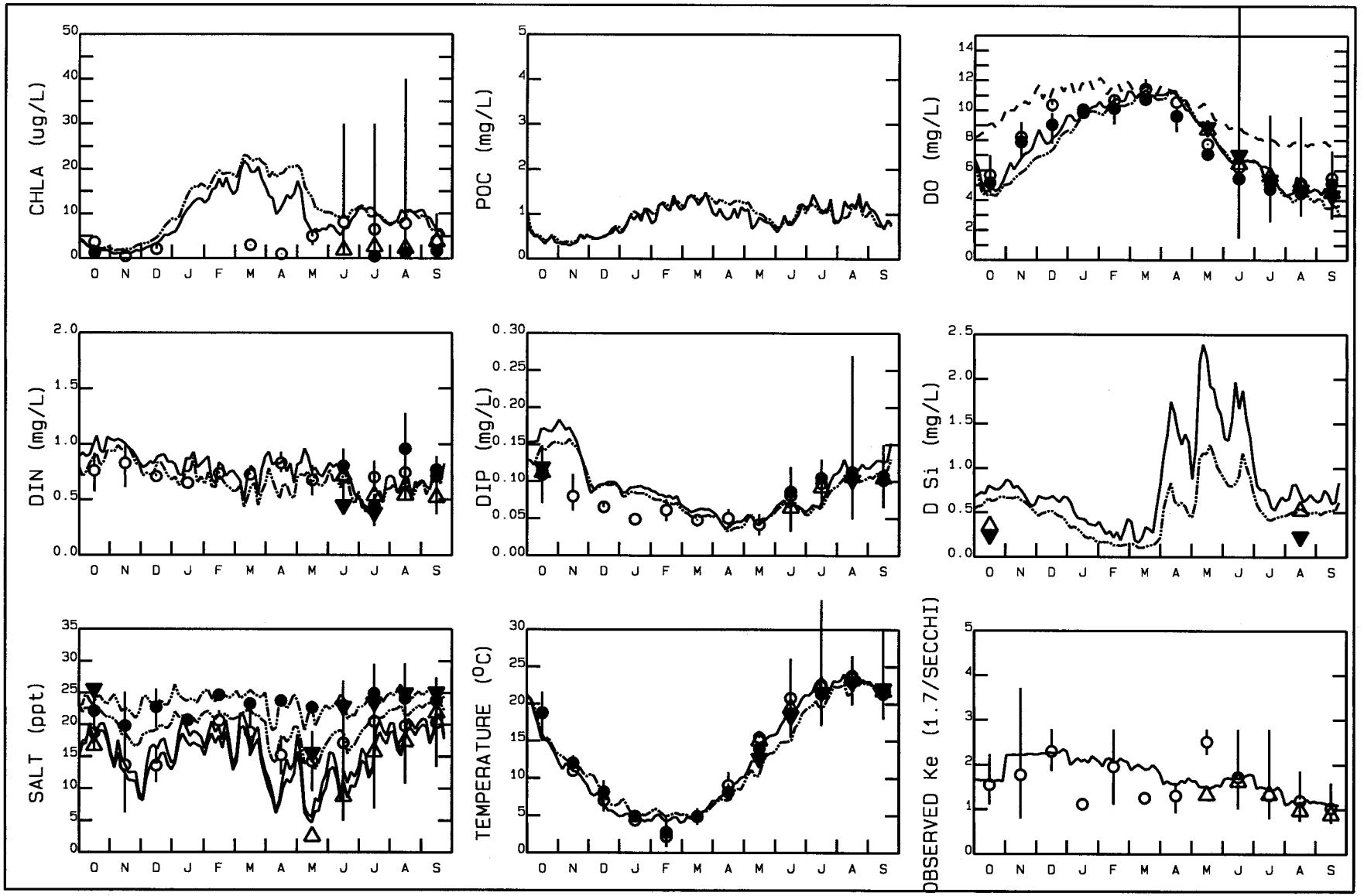
DATE: Tue Jun 9 TIME: 15:51:57



STATION 155 HUDSON RIVER-42nd STREET

SWEM RUN 37 SWEM VALIDATION

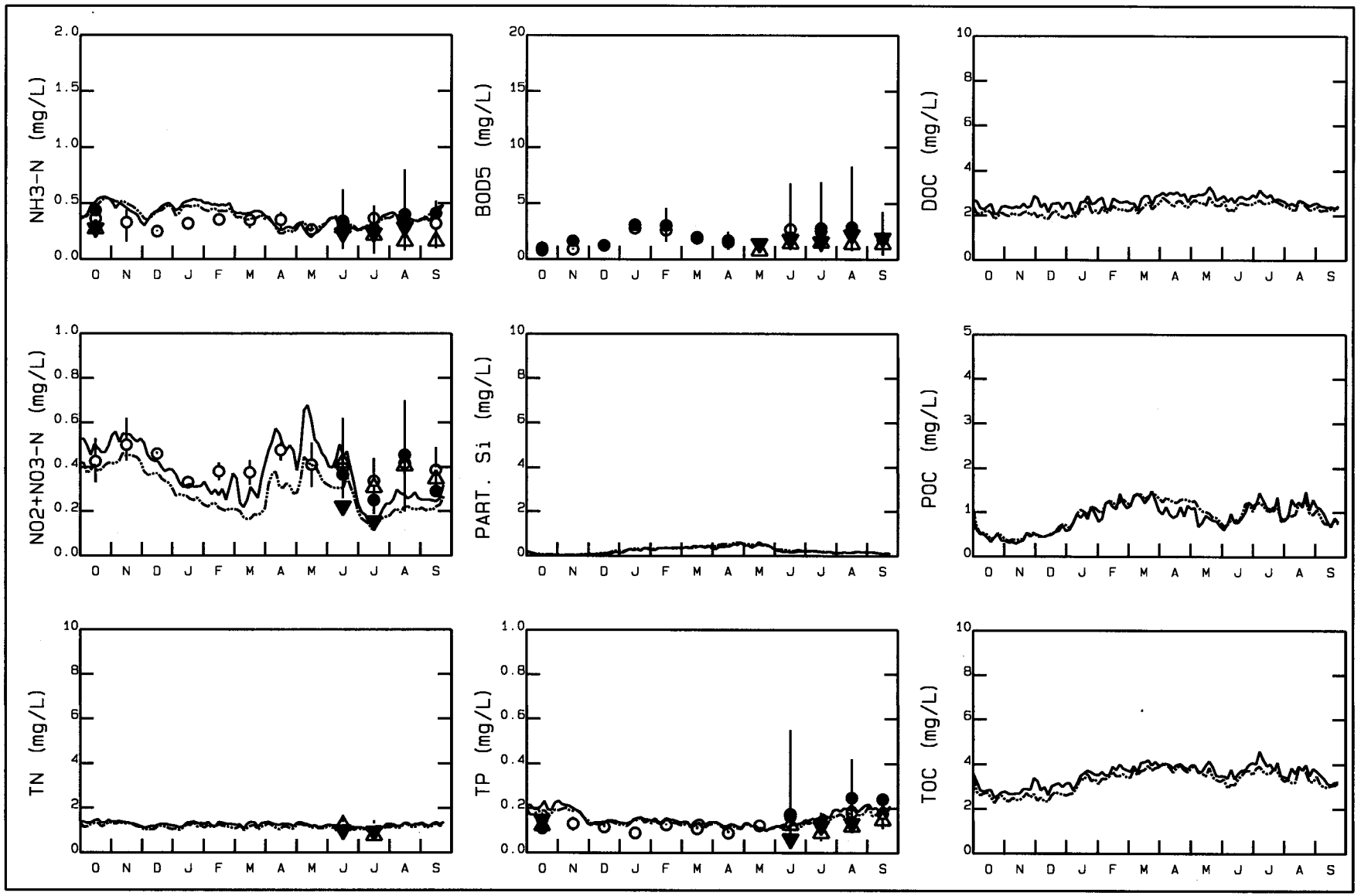
DATE: Tue Jun 9 TIME: 15:51:57



STATION 156 THE BATTERY

SWEM RUN 37 SWEM VALIDATION

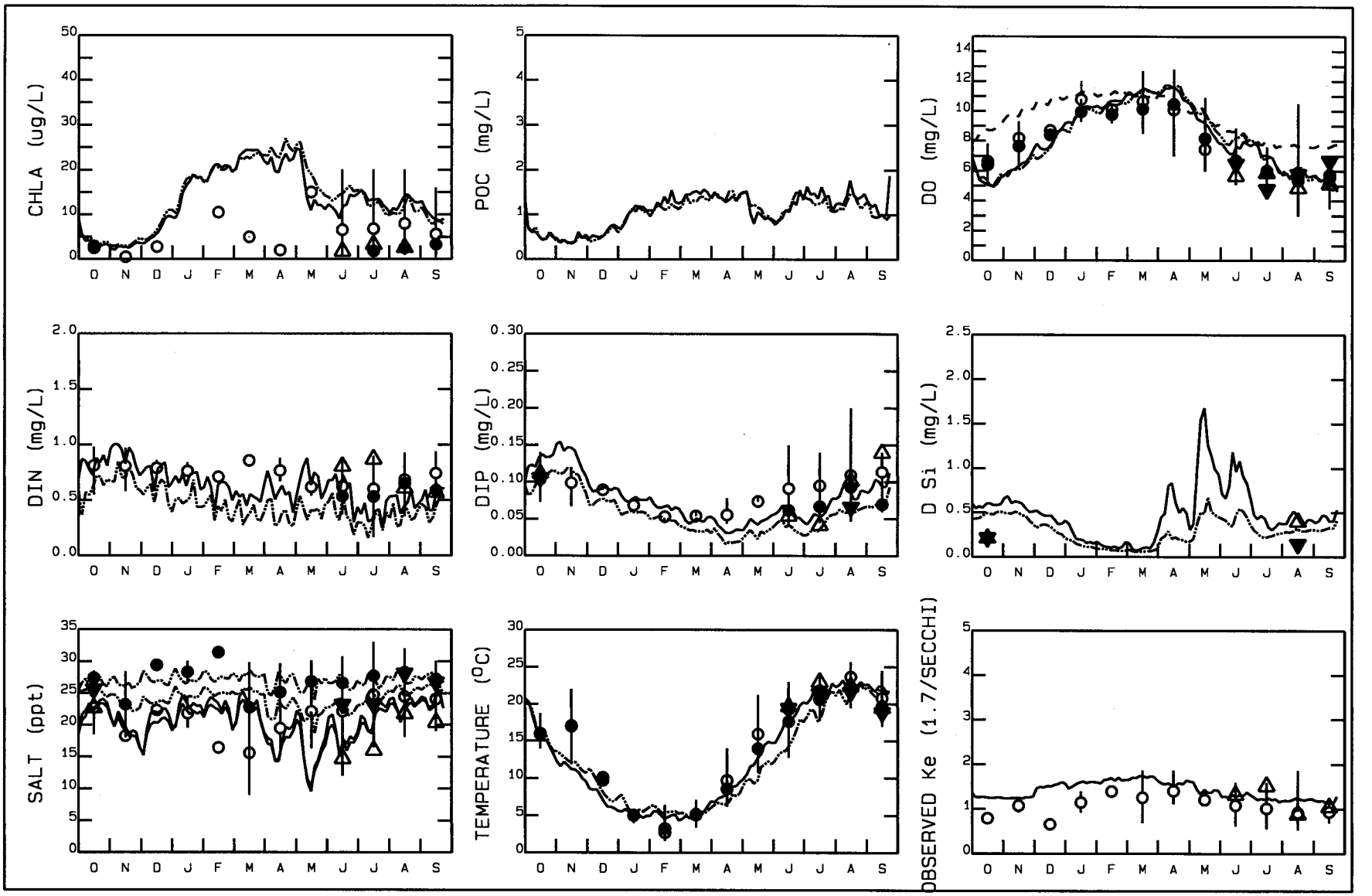
DATE: Tue Jun 9 TIME: 15:52:36



STATION 156 THE BATTERY

SWEM RUN 37 SWEM VALIDATION

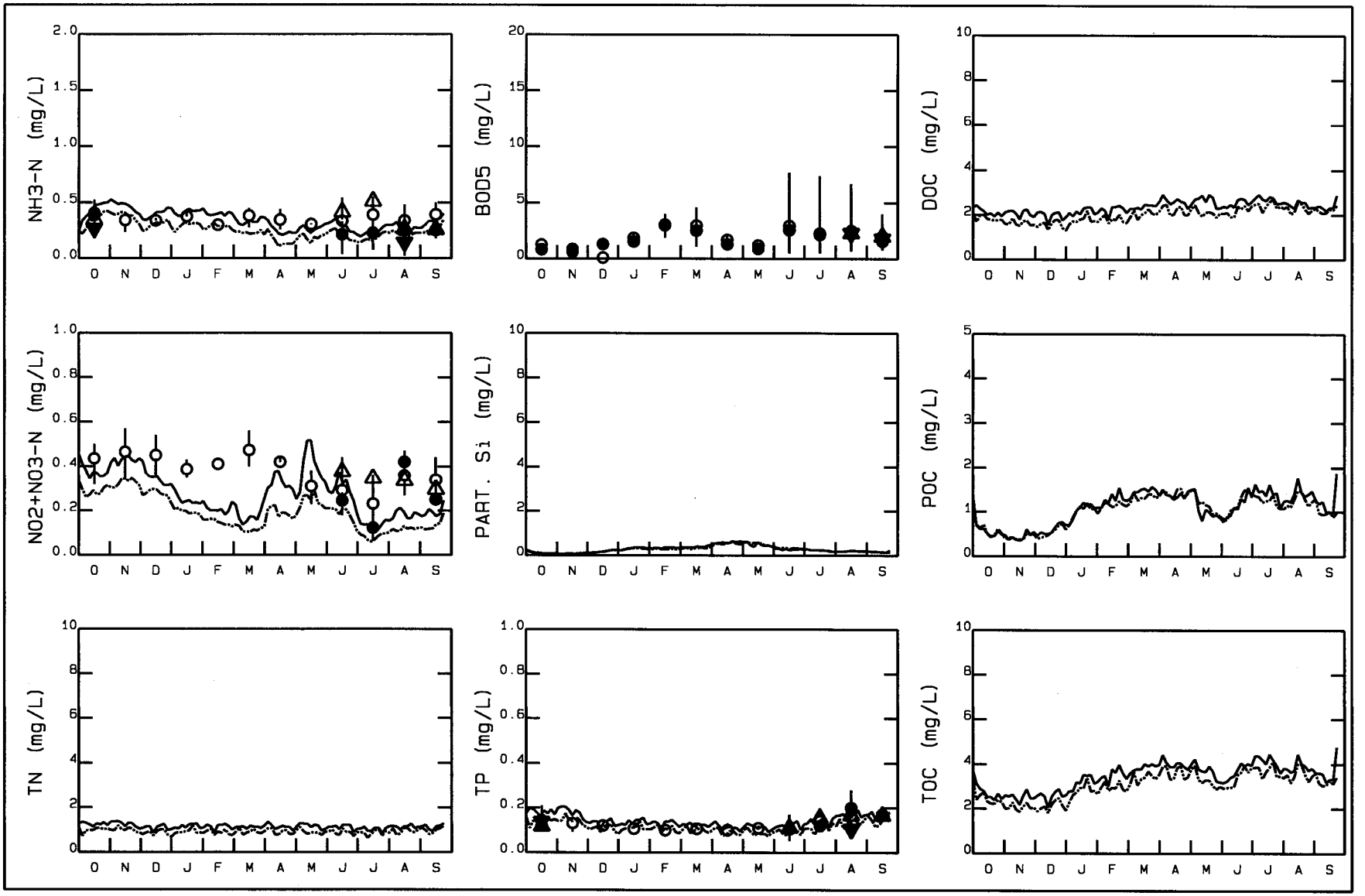
DATE: Tue Jun 9 TIME: 15:52:36



STATION 159 THE NARROWS

SWEM RUN 37 SWEM VALIDATION

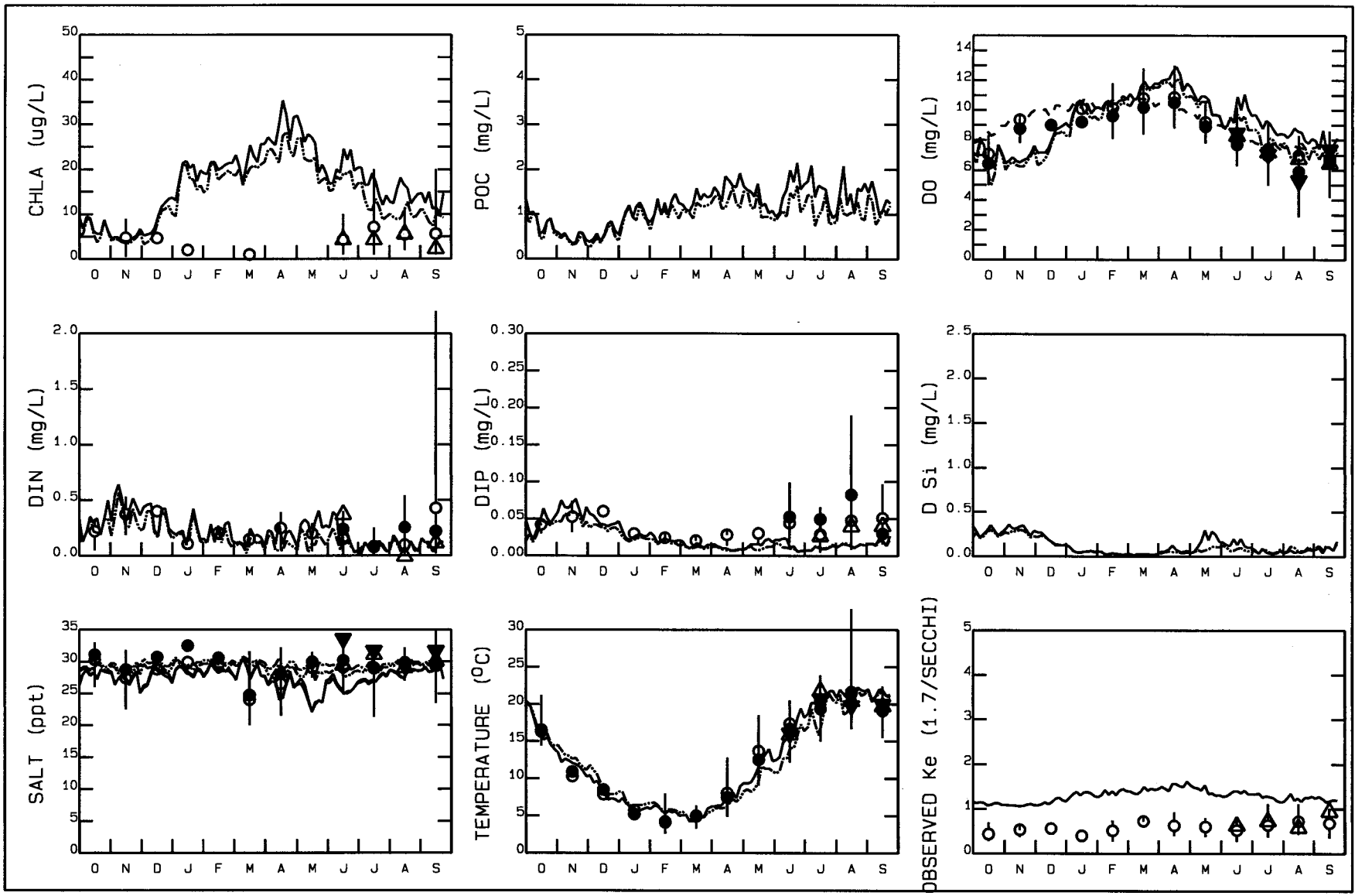
DATE: Tue Jun 9 TIME: 15:53:14



STATION 159 THE NARROWS

SWEM RUN 37 SWEM VALIDATION

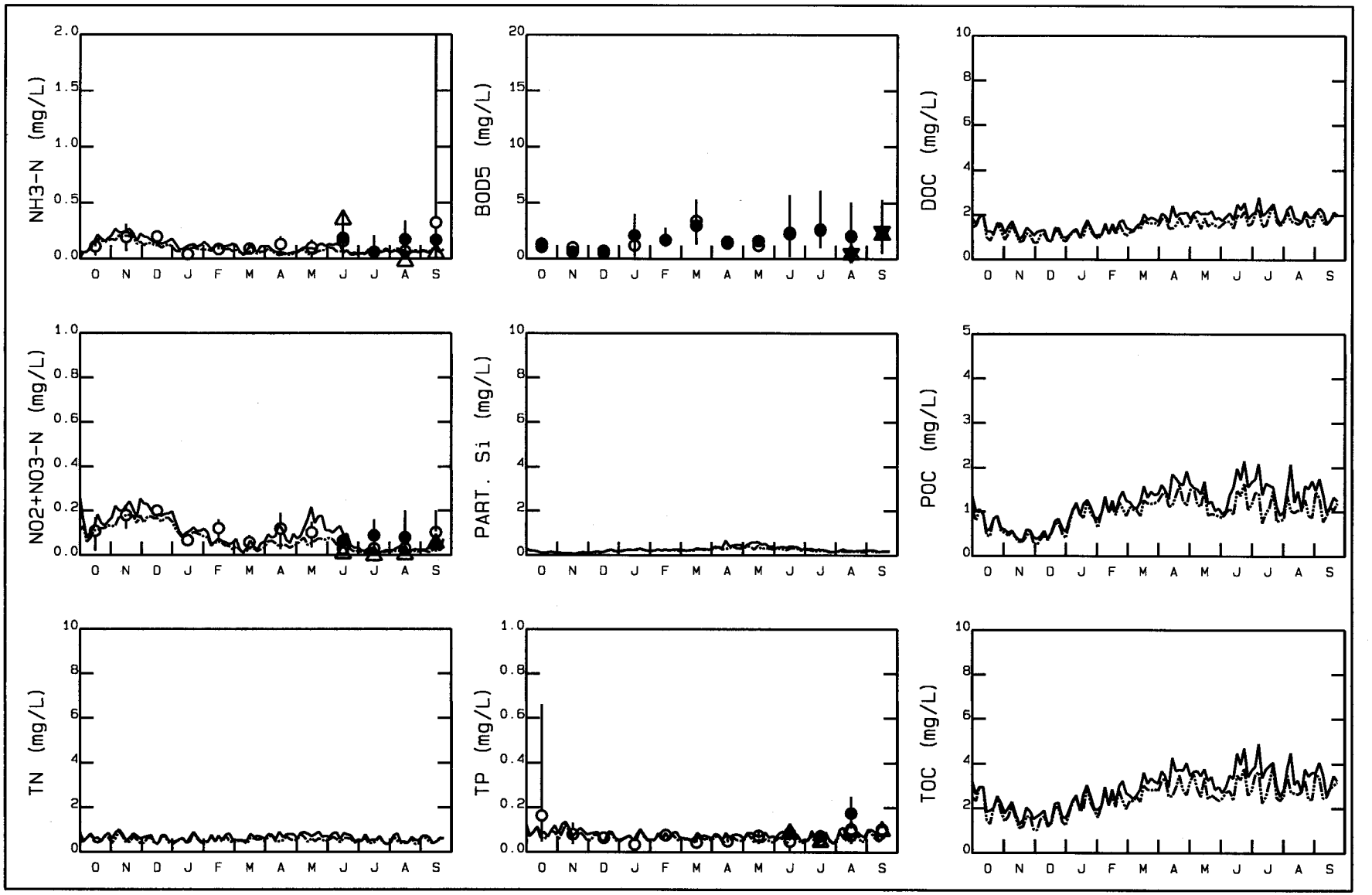
DATE: Tue Jun 9 TIME: 15:53:14



STATION 150 LOWER BAY-ROCKAWAY POINT

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 15:53:52

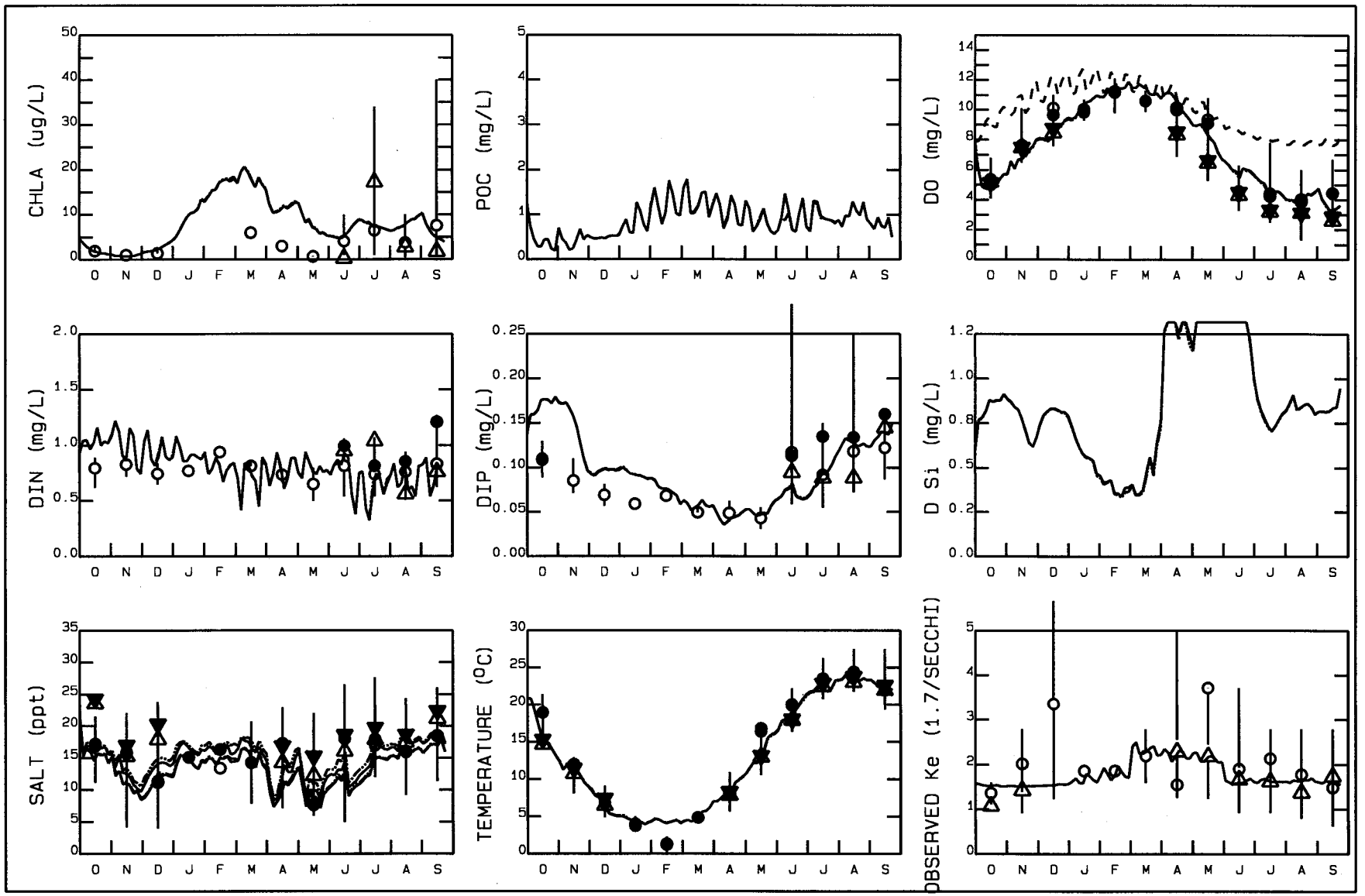


STATION 150 LOWER BAY-ROCKAWAY POINT

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 15:53:52

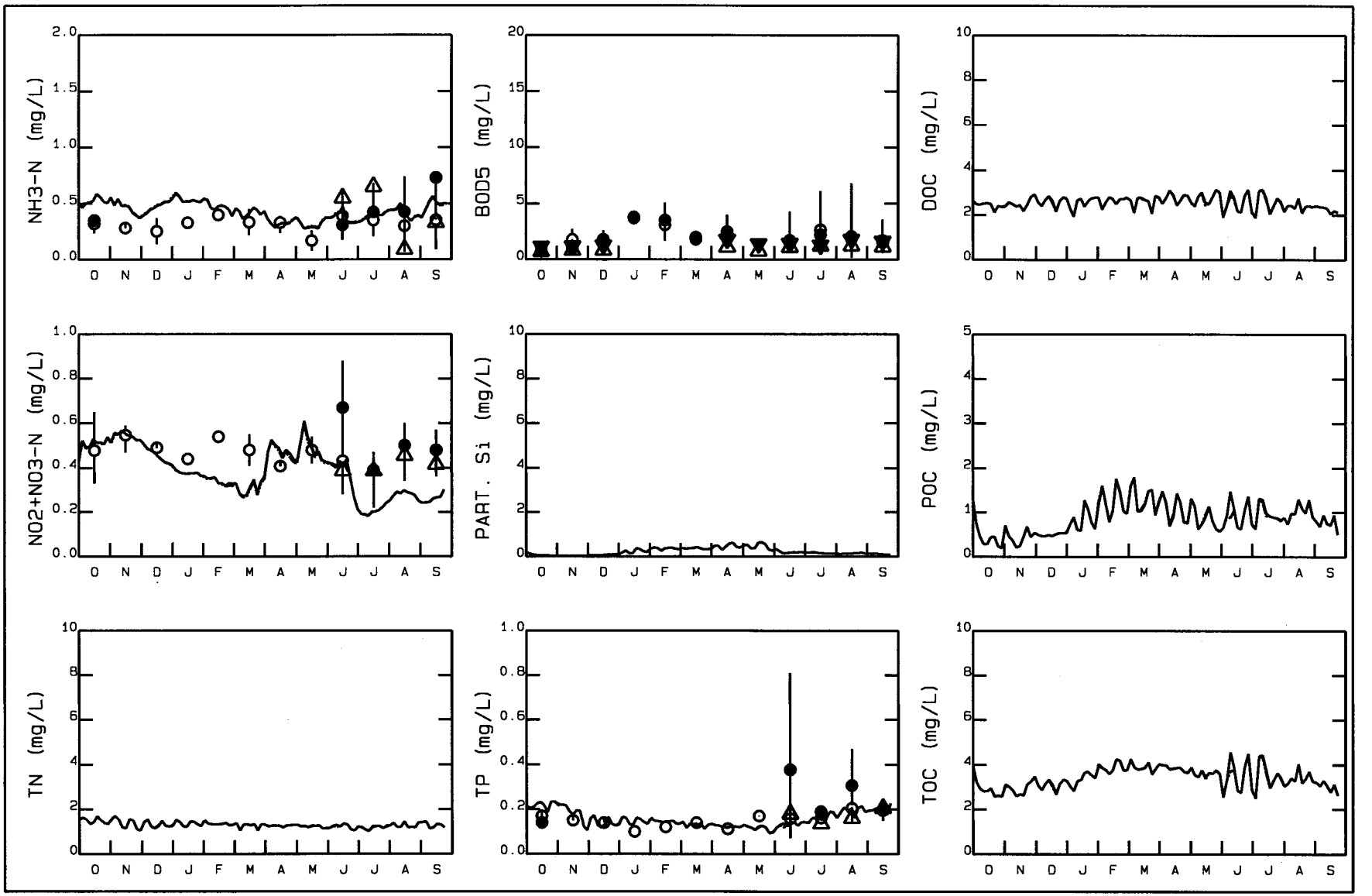
TEMPORAL DISTRIBUTIONS OF HARLEM RIVER



STATION 123 HARLEM RIVER-155th STREET

SWEM RUN 37 SWEM VALIDATION

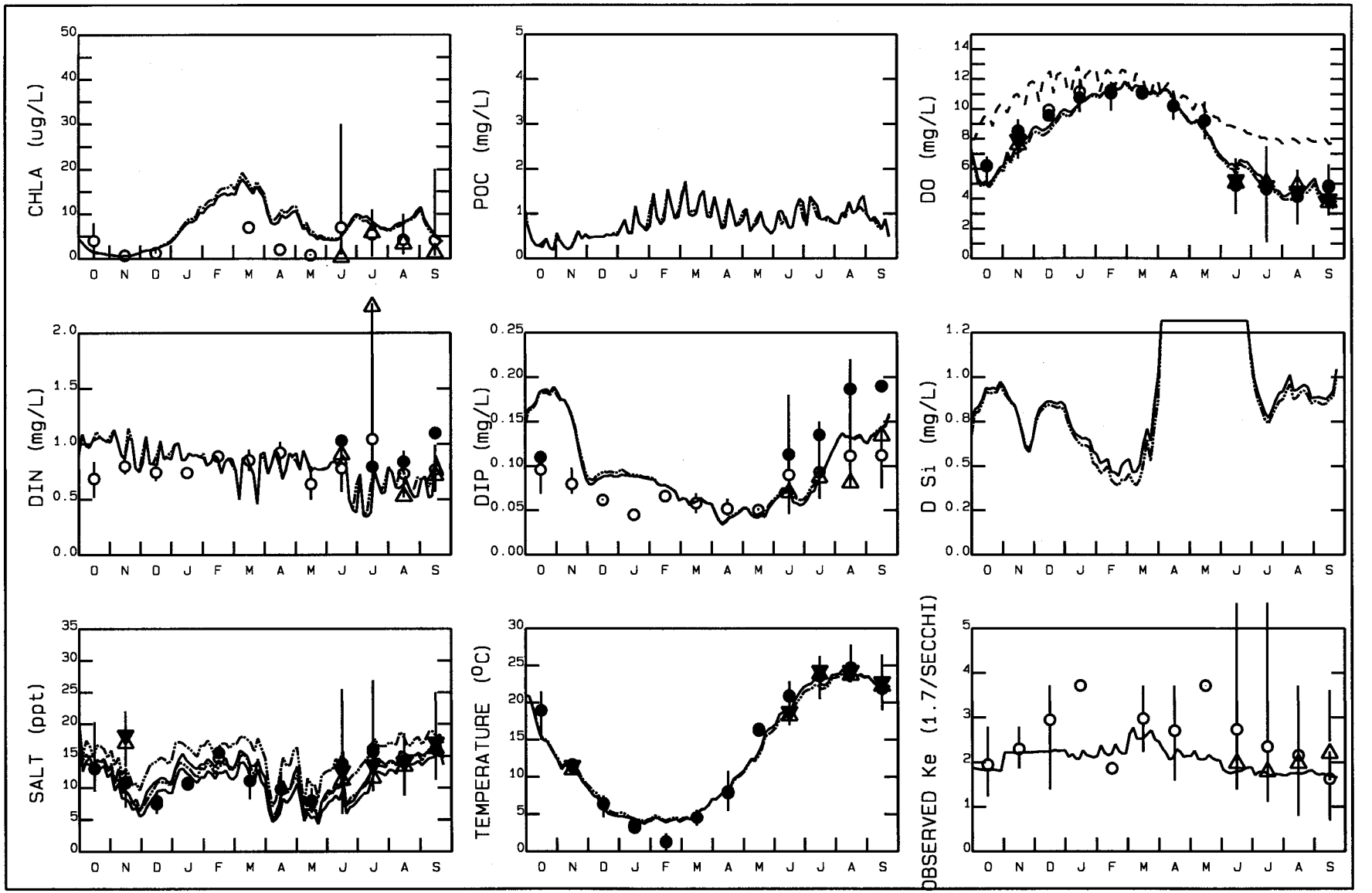
DATE: Tue Jun 9 TIME: 15:57:26



STATION 123 HARLEM RIVER-155th STREET

SWEM RUN 37 SWEM VALIDATION

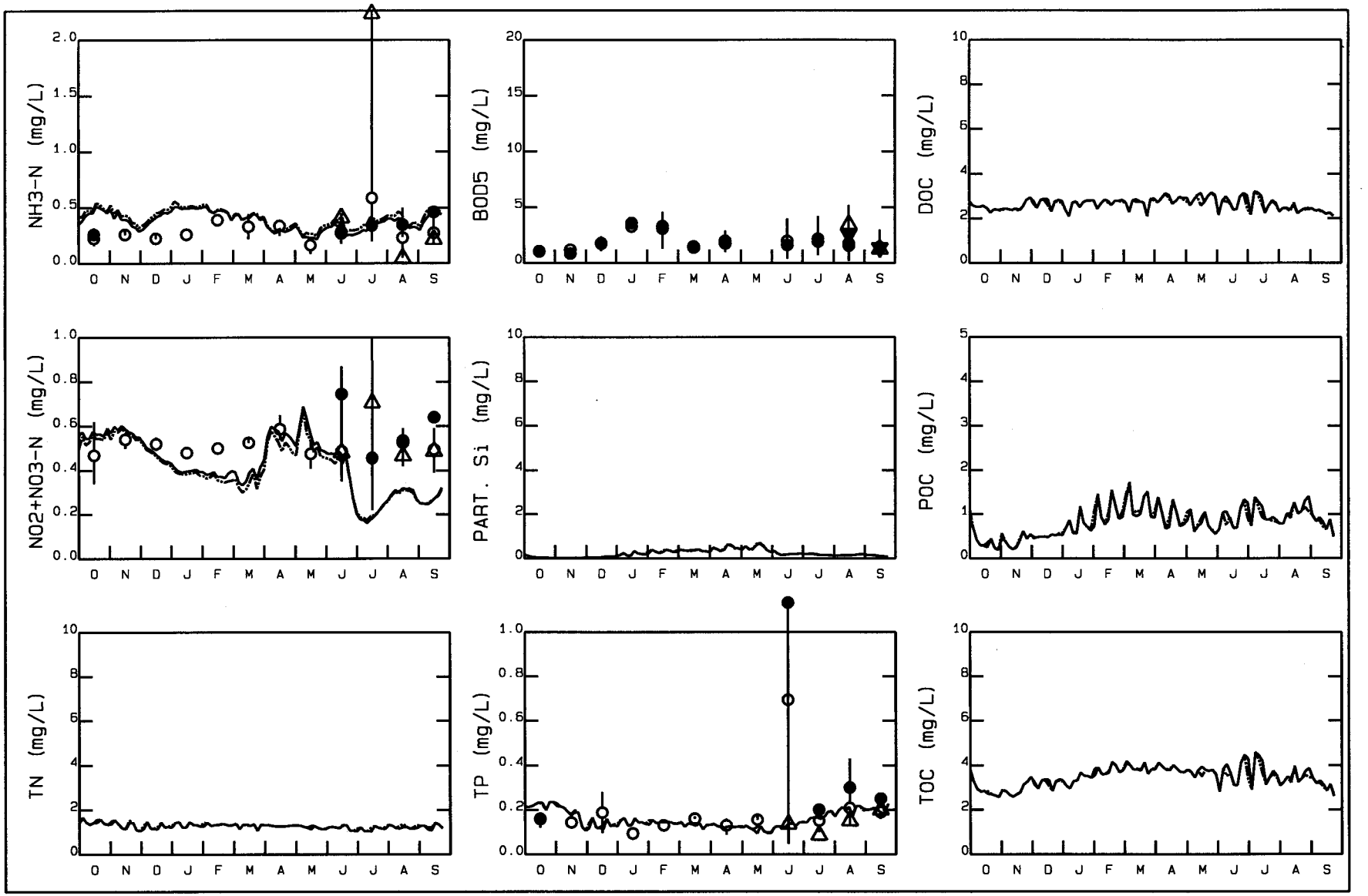
DATE: Tue Jun 9 TIME: 15:57:26



STATION 122 HARLEM RIVER-CON ED

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:03:05

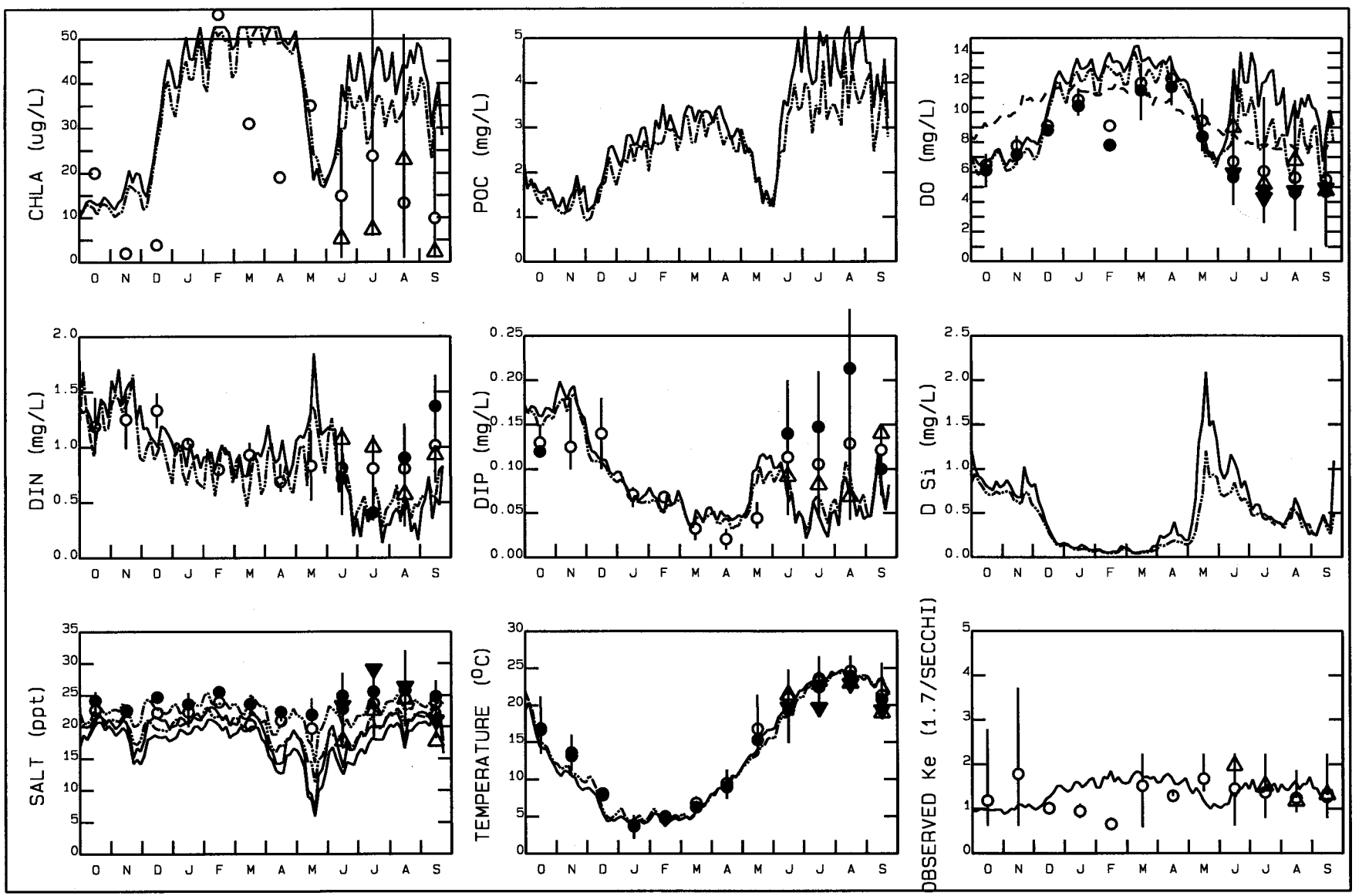


STATION 122 HARLEM RIVER-CON ED

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:03:05

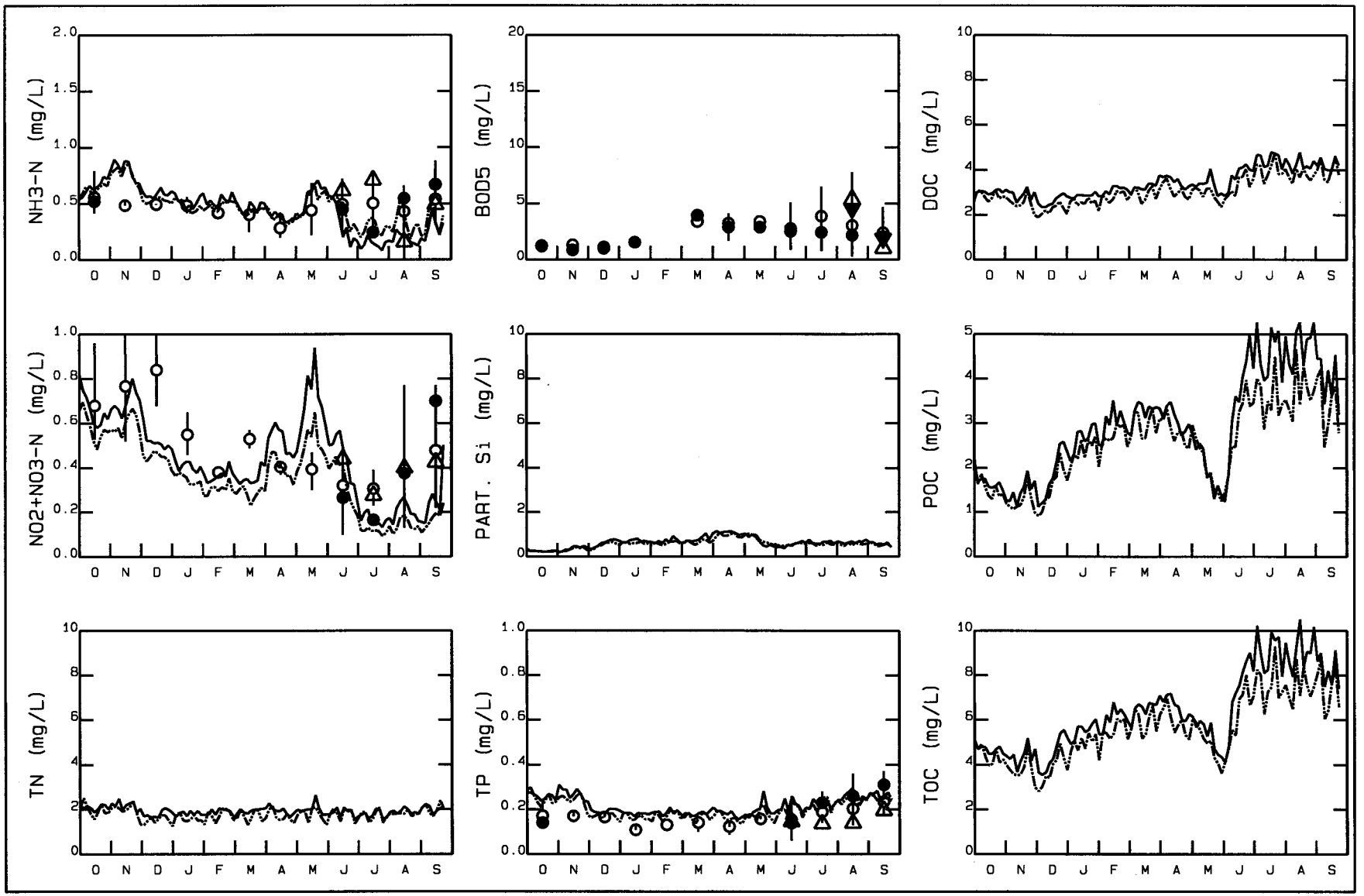
TEMPORAL DISTRIBUTIONS OF RARITAN BAY



STATION 147 RARITAN BAY-MIDDLESEX

SWEM RUN 37 SWEM VALIDATION

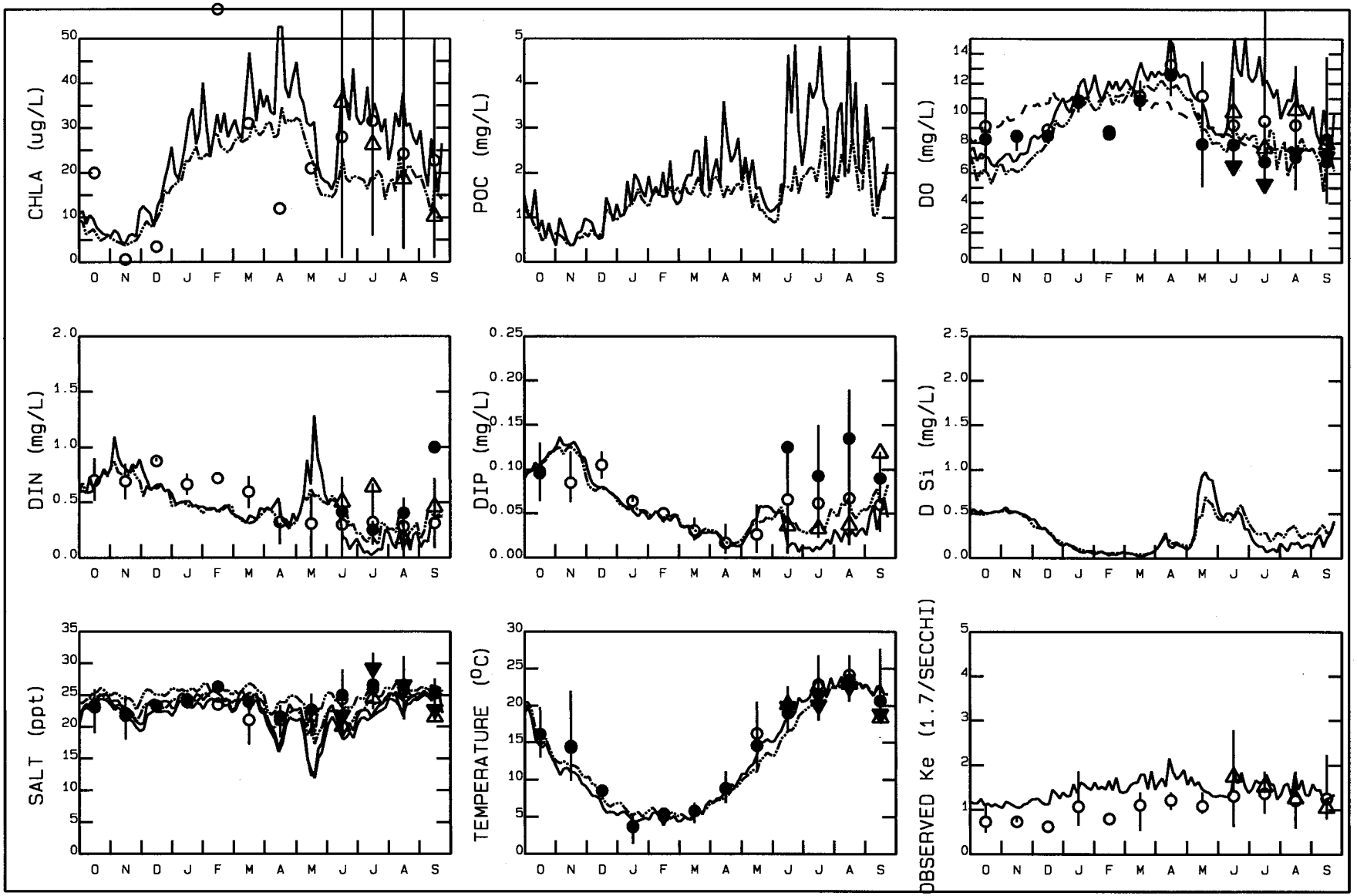
DATE: Tue Jun 9 TIME: 16:04:13



STATION 147 RARITAN BAY-MIDDLESEX

SWEM RUN 37 SWEM VALIDATION

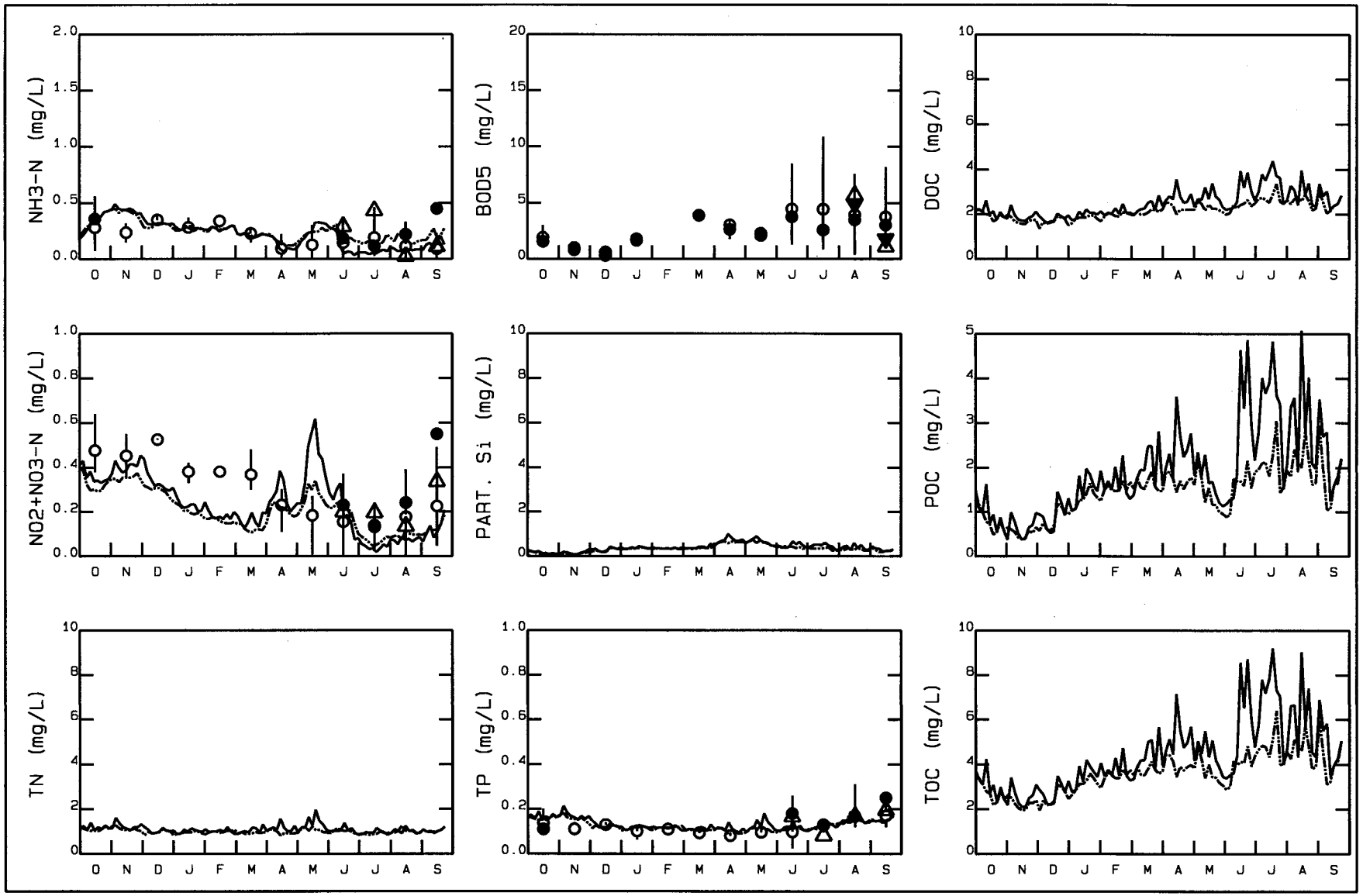
DATE: Tue Jun 9 TIME: 16:04:13



STATION 148 RARITAN BAY-ORCHARD LIGHT

SWEM RUN 37 SWEM VALIDATION

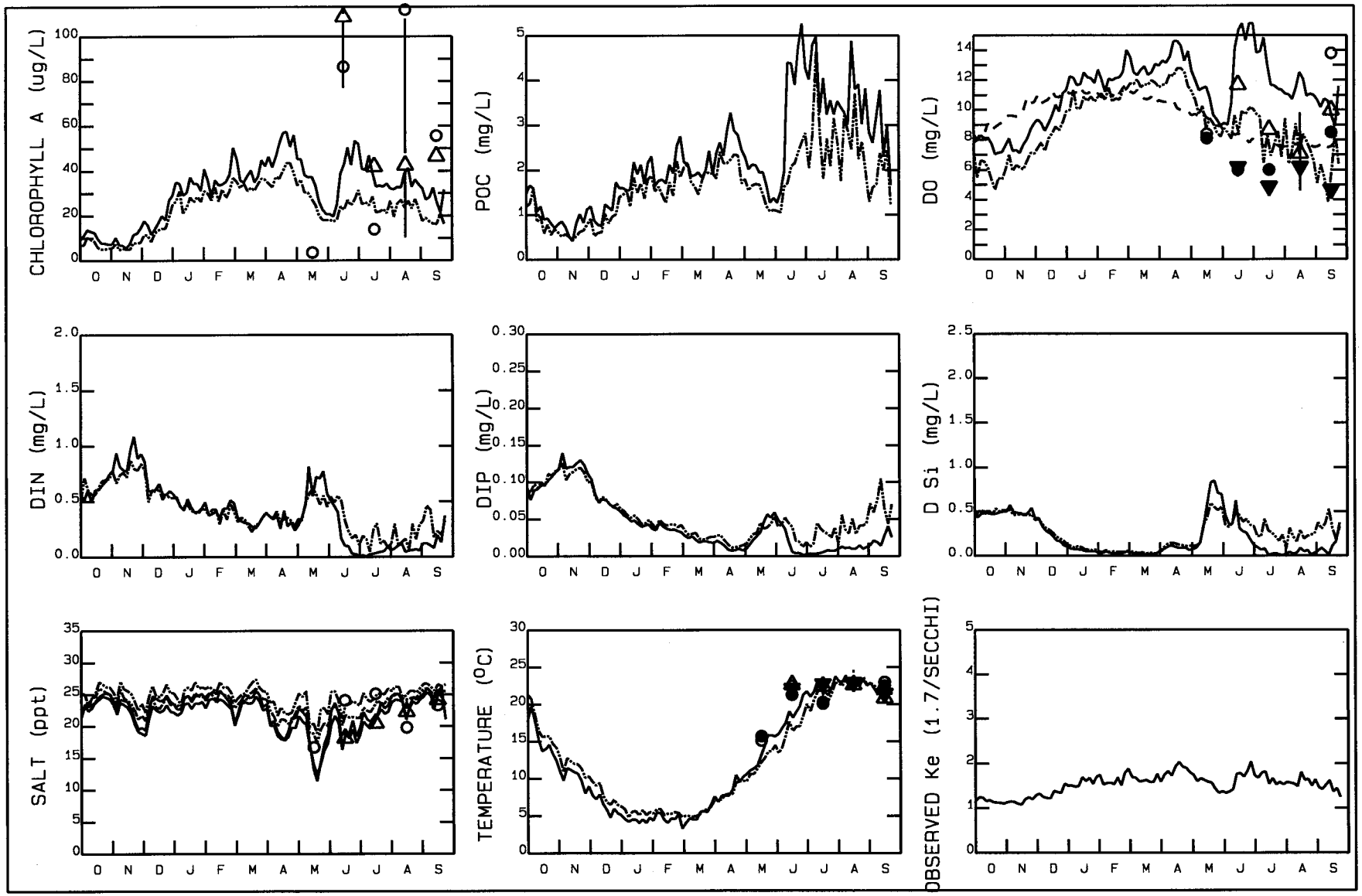
DATE: Tue Jun 9 TIME: 16:04:45



STATION 148 RARITAN BAY-ORCHARD LIGHT

SWEM RUN 37 SWEM VALIDATION

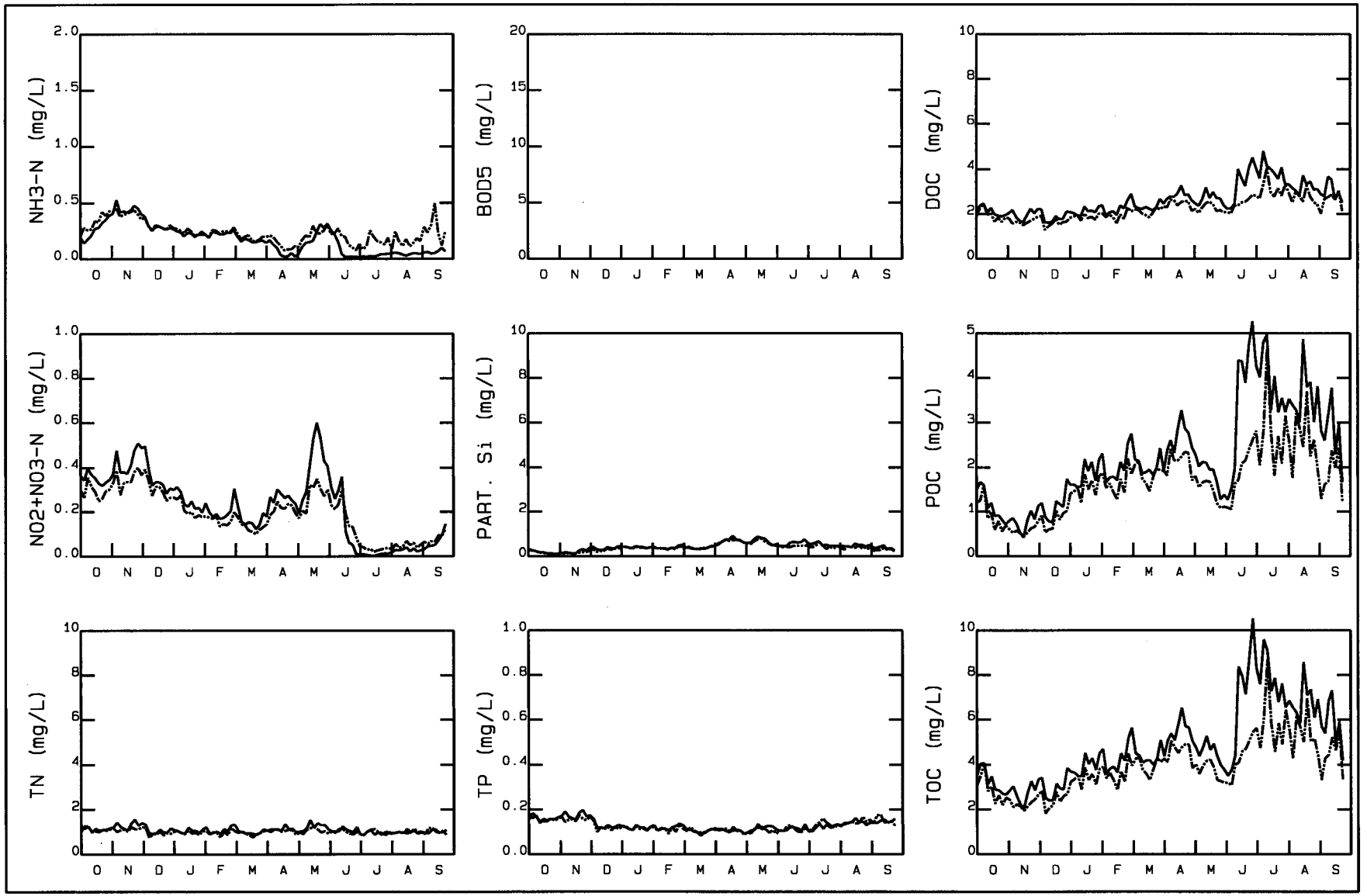
DATE: Tue Jun 9 TIME: 16:04:45



STATION 400 RARITAN BAY-ATLANTIC HIGHLANDS

SWEM RUN 37 SWEM VALIDATION

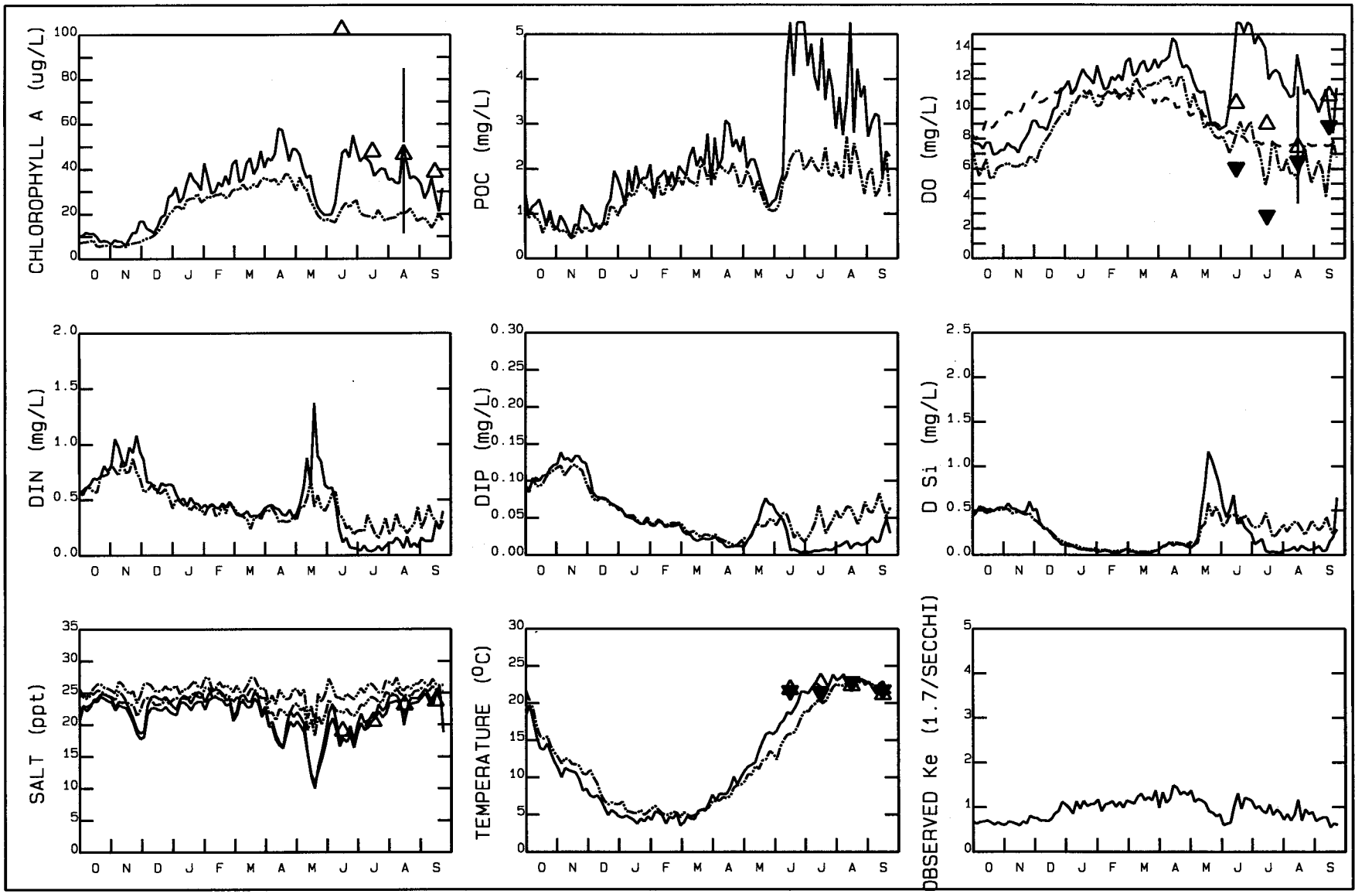
DATE: Tue Jun 9 TIME: 16:08:02



STATION 400 RARITAN BAY-ATLANTIC HIGHLANDS

SWEM RUN 37 SWEM VALIDATION

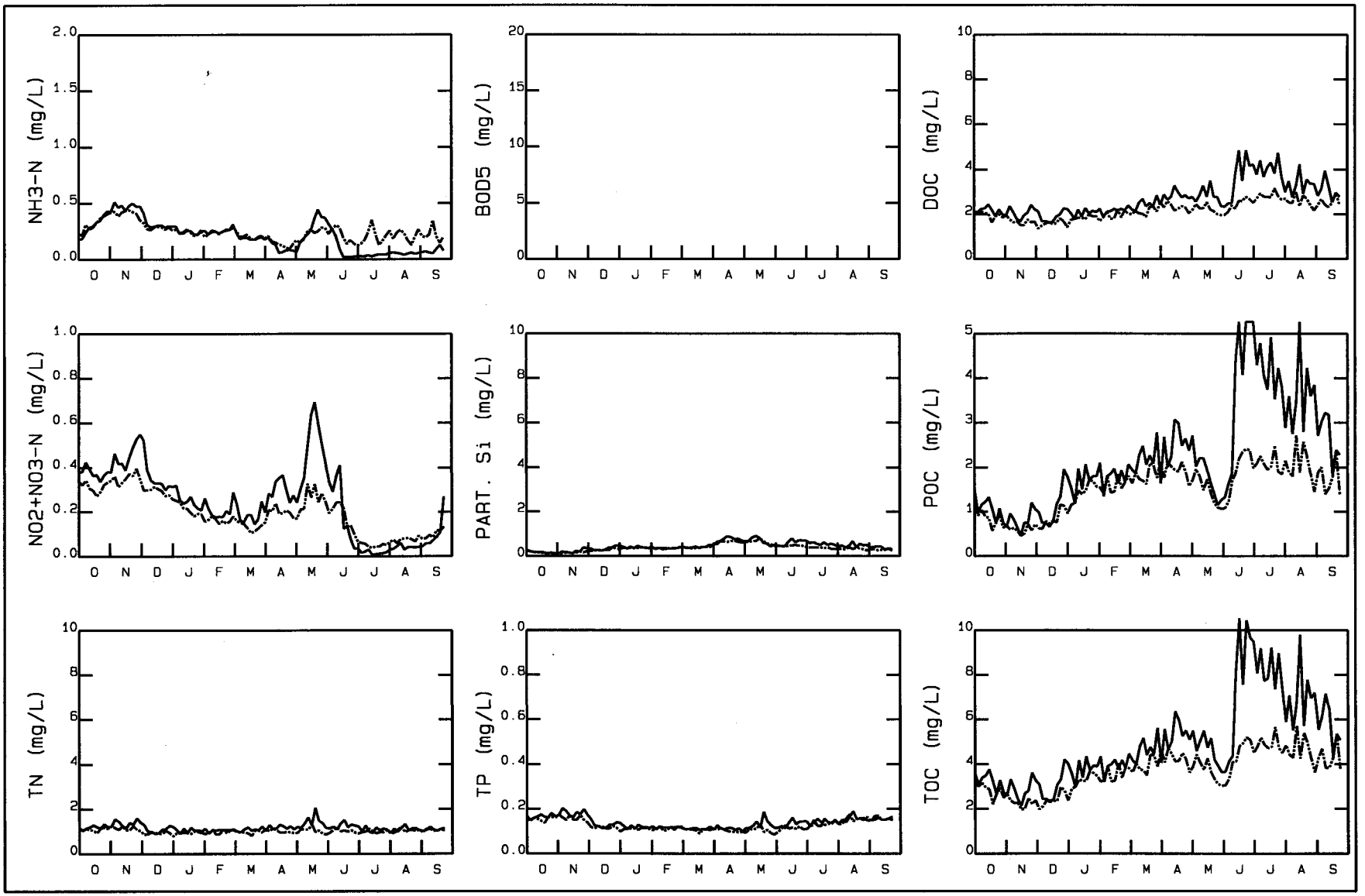
DATE: Tue Jun 9 TIME: 16:08:02



STATION 401 RARITAN BAY-NE POINT COMFORT

SWEM RUN 37 SWEM VALIDATION

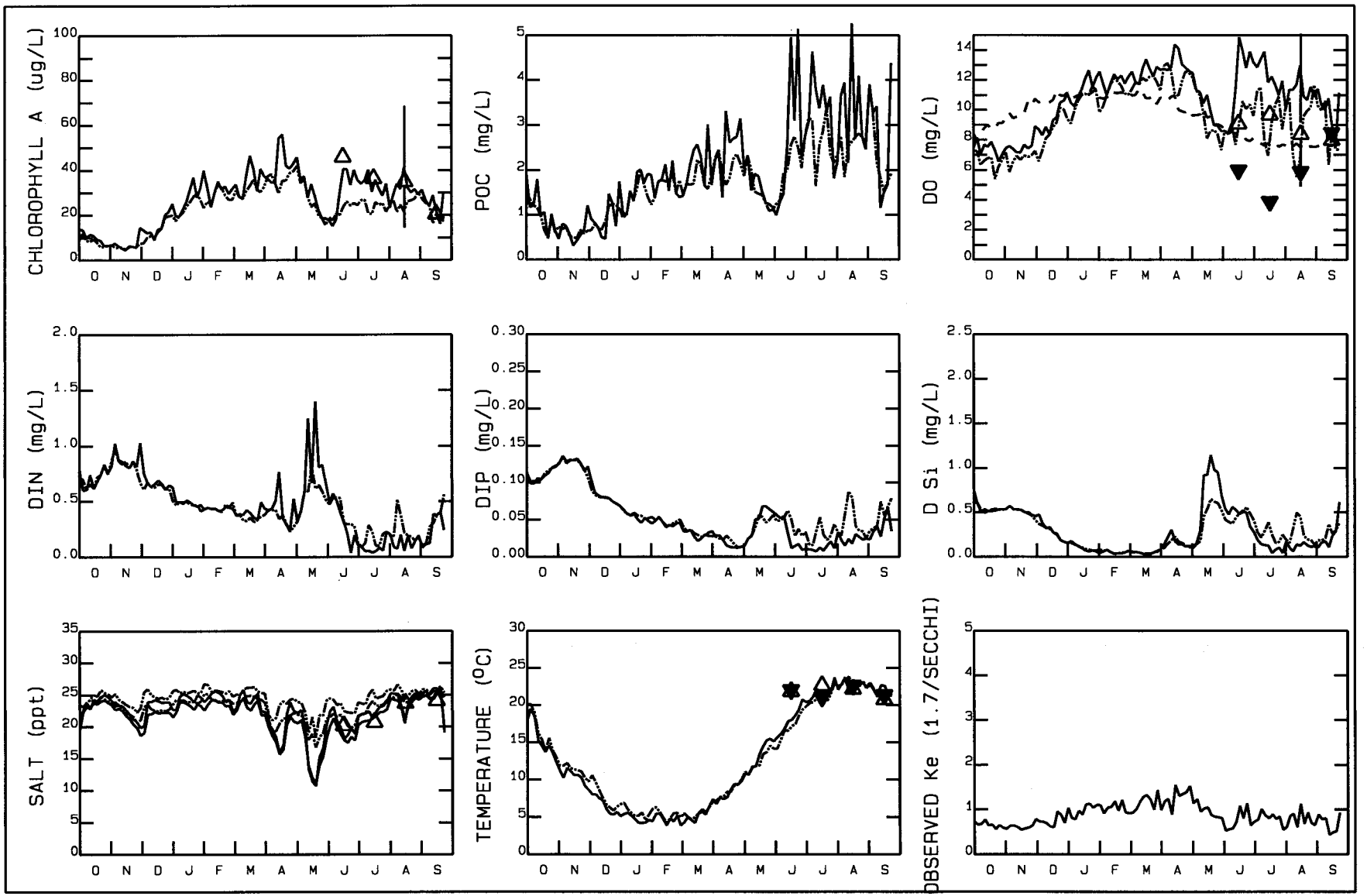
DATE: Tue Jun 9 TIME: 16:08:14



STATION 401 RARITAN BAY-NE POINT COMFORT

SWEM RUN 37 SWEM VALIDATION

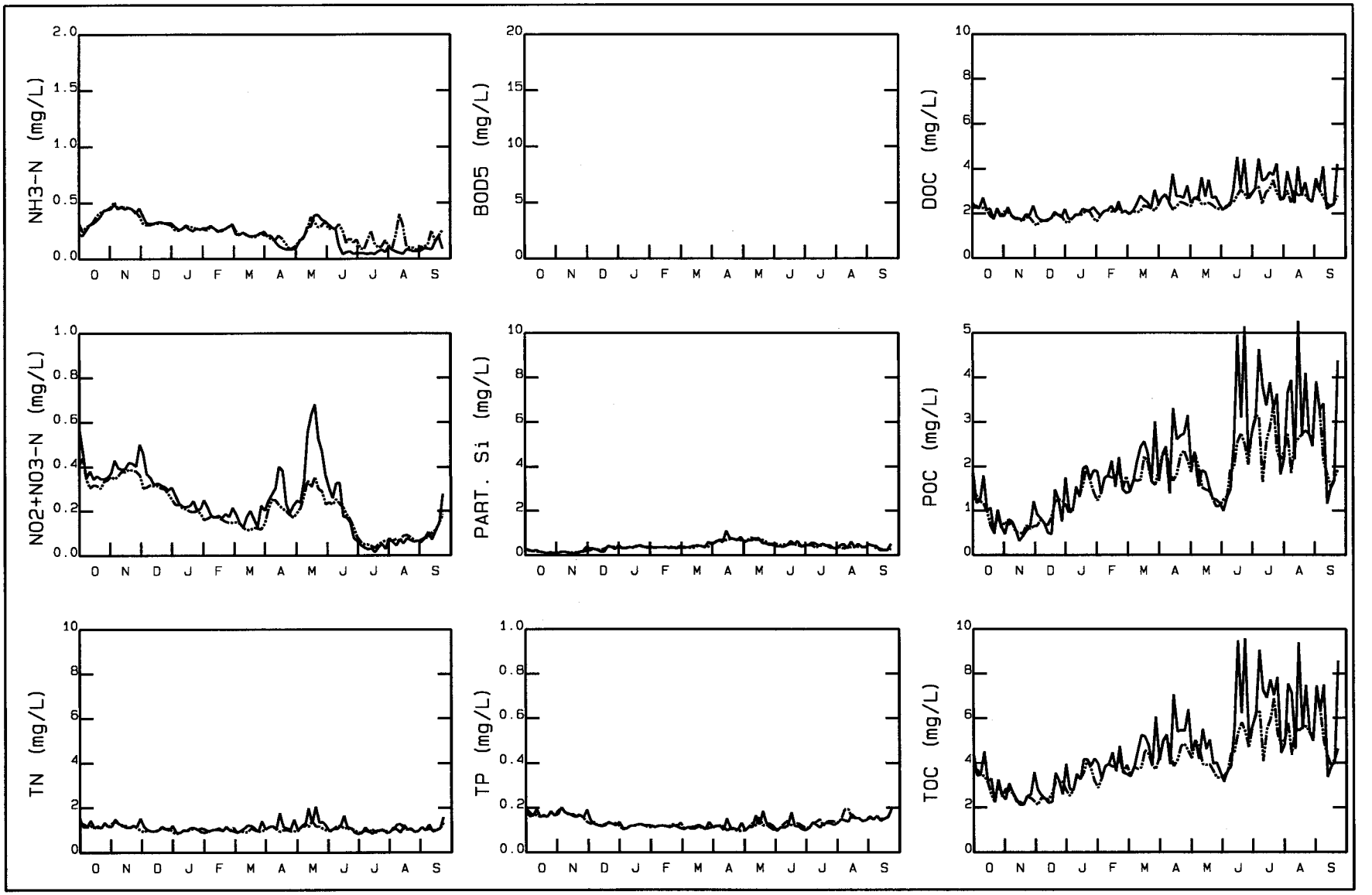
DATE: Tue Jun 9 TIME: 16:08:14



STATION 402 RARITAN BAY-OFF STATEN ISLAND

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:08:26

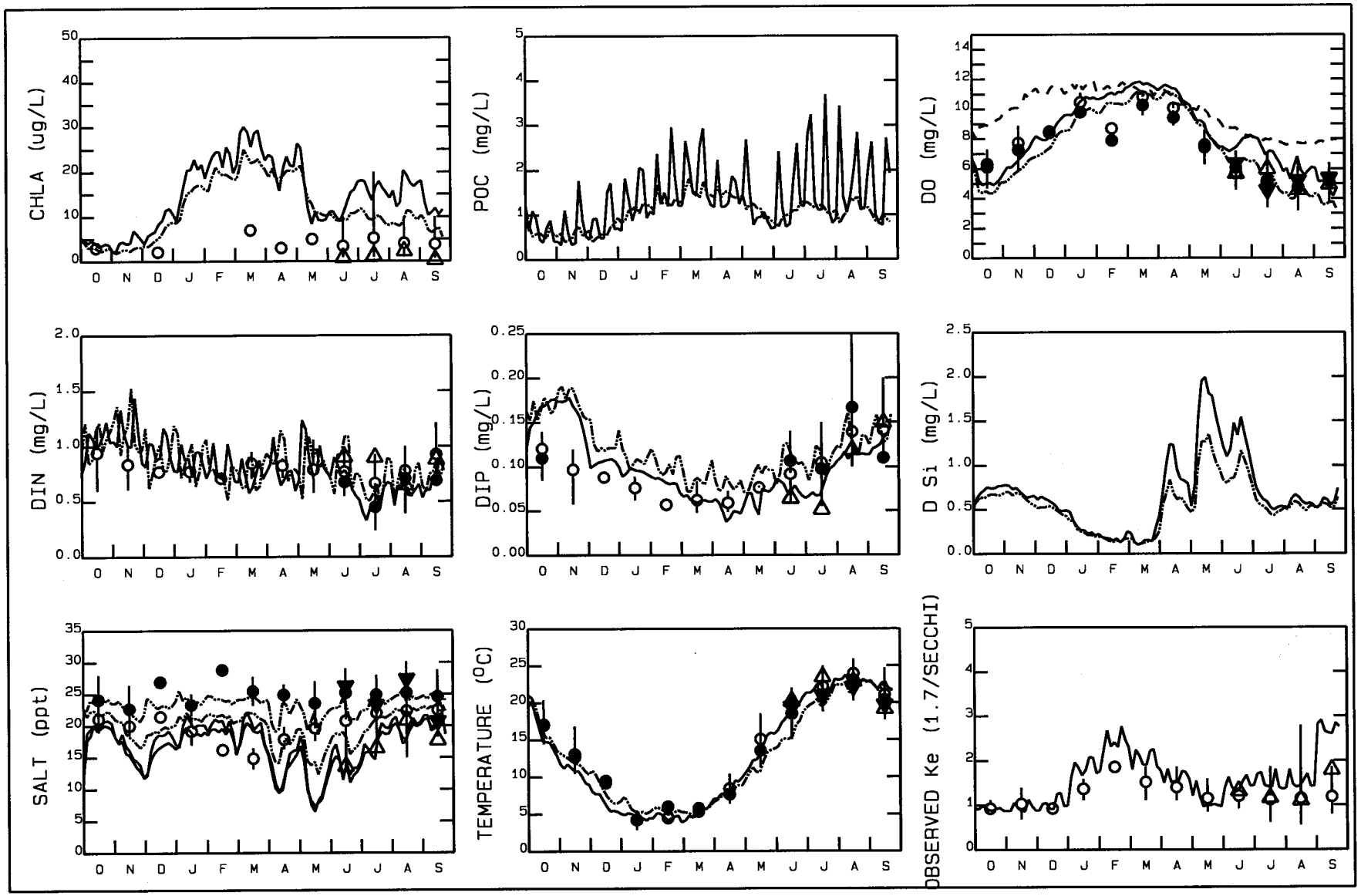


STATION 402 RARITAN BAY-OFF STATEN ISLAND

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:08:26

TEMPORAL DISTRIBUTIONS OF KILL VAN KULL, ARTHUR KILL

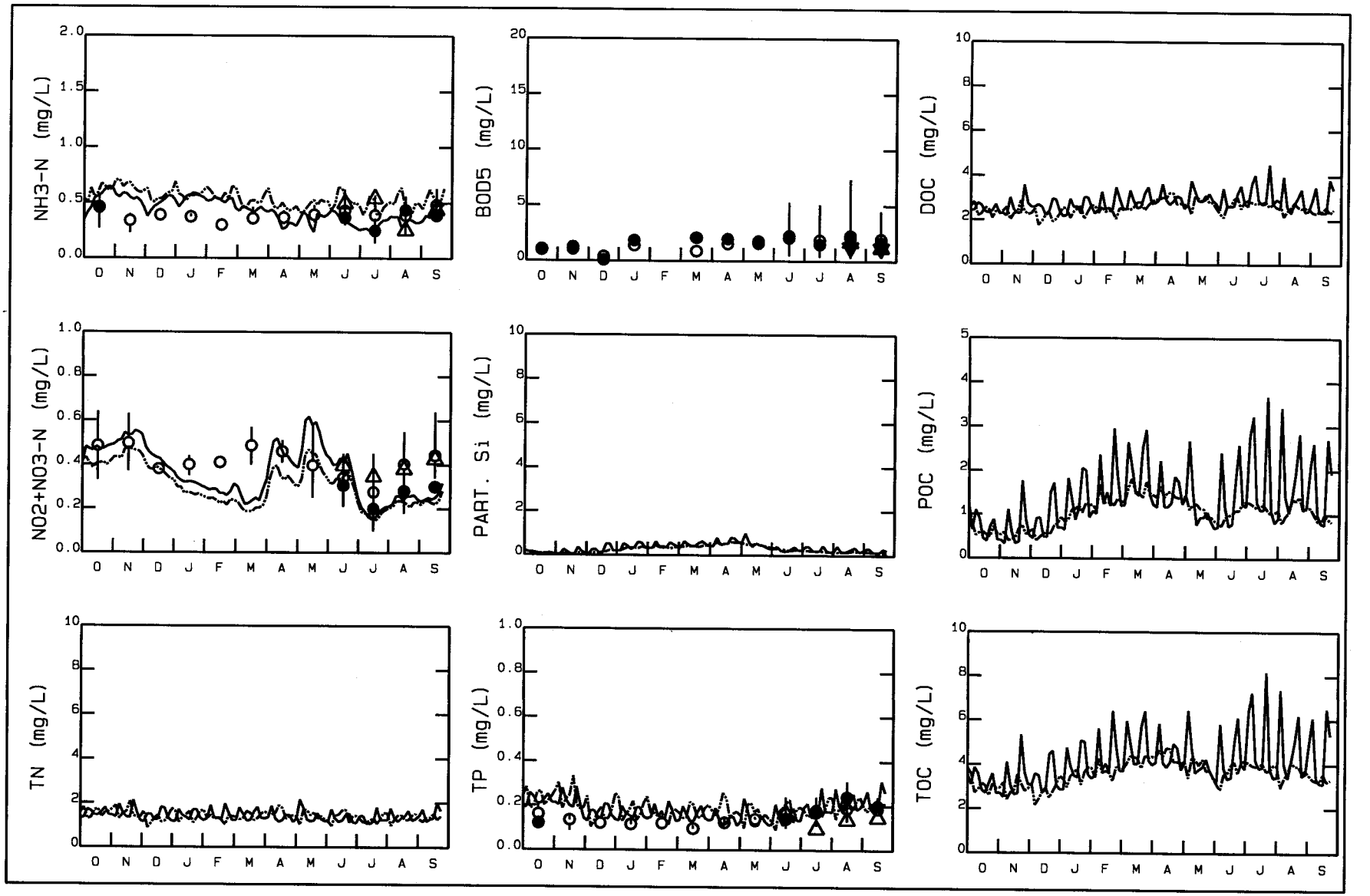


STATION 142 KILL VAN KULL-NEW BRIGHTON

SWEM RUN 37

SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:05:18

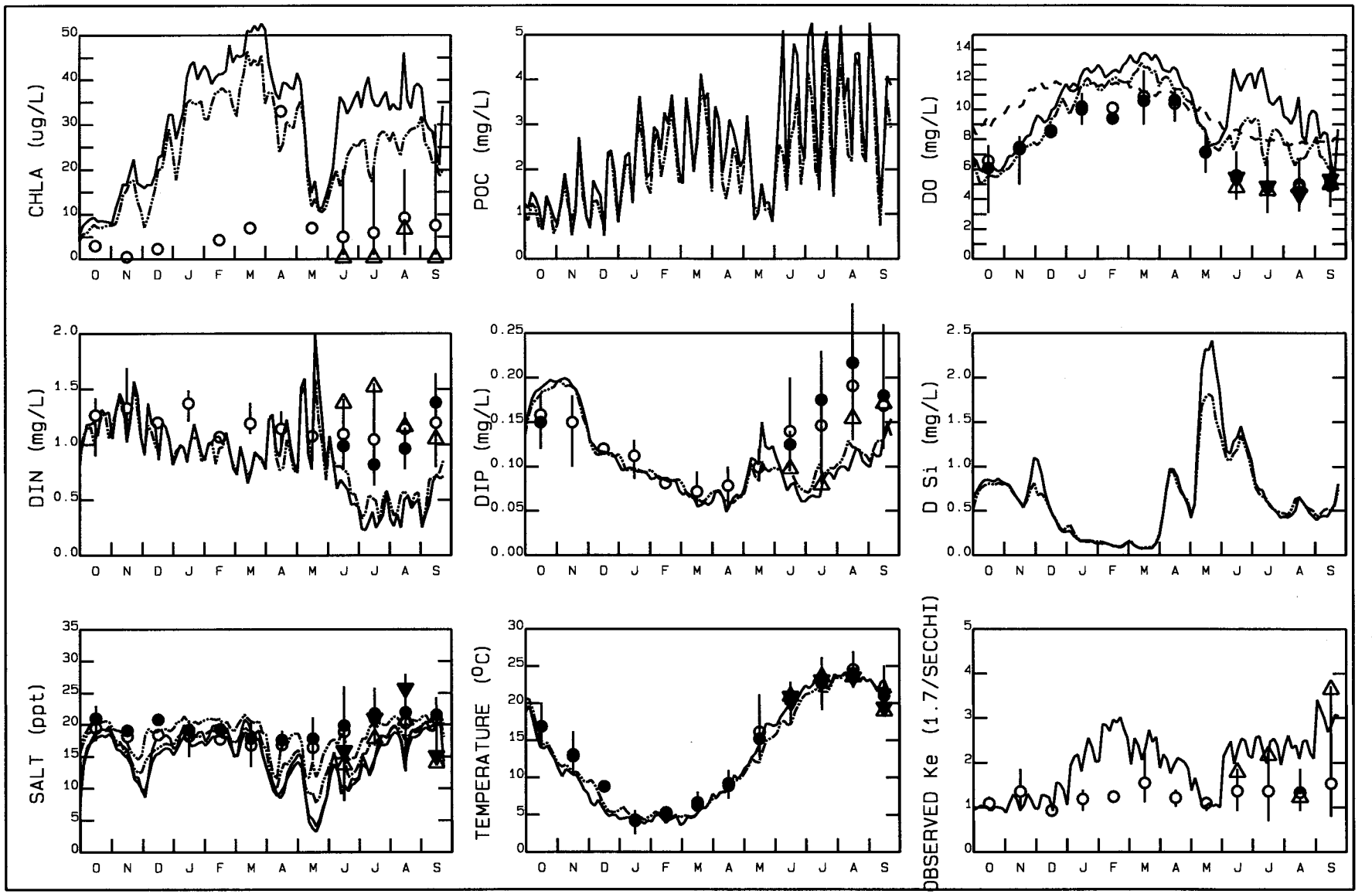


STATION 142 KILL VAN KULL-NEW BRIGHTON

SWEM RUN 37

SWEM VALIDATION

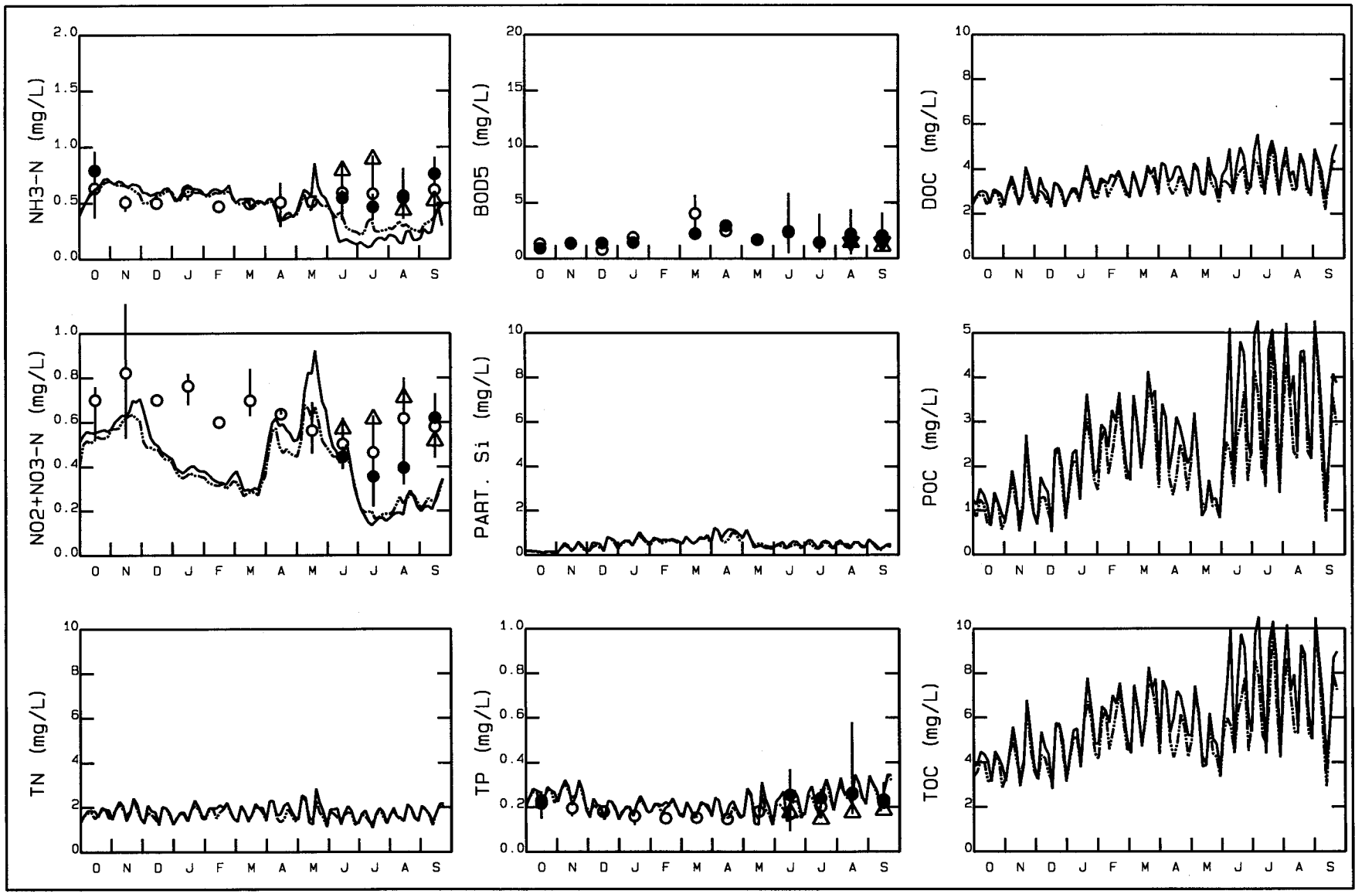
DATE: Tue Jun 9 TIME: 16:05:18



STATION 143 KILL VAN KULL-SHOOTERS ISLAND

SWEM RUN 37 SWEM VALIDATION

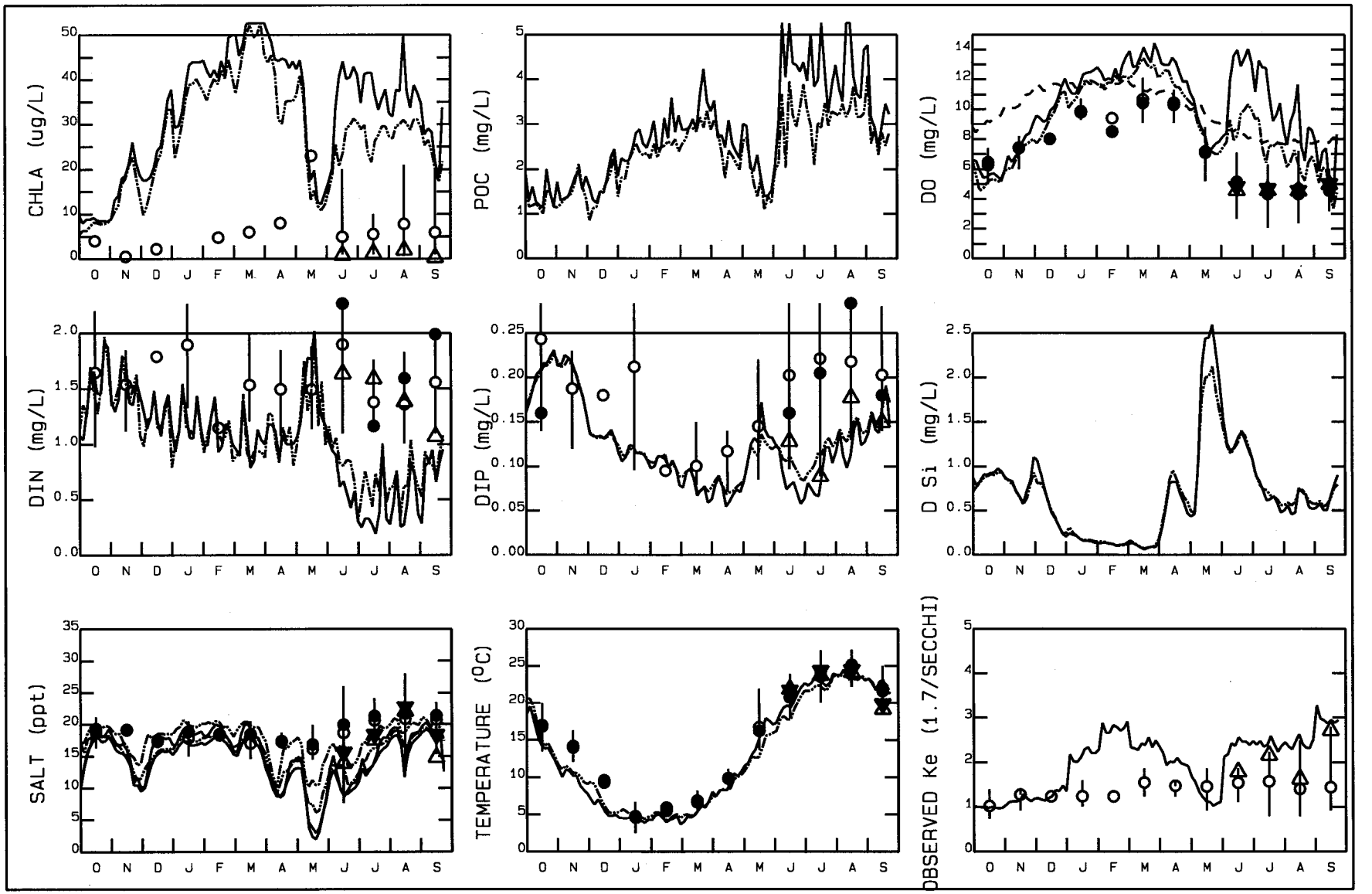
DATE: Tue Jun 9 TIME: 16:05:50



STATION 143 KILL VAN KULL-SHOOTERS ISLAND

SWEM RUN 37 SWEM VALIDATION

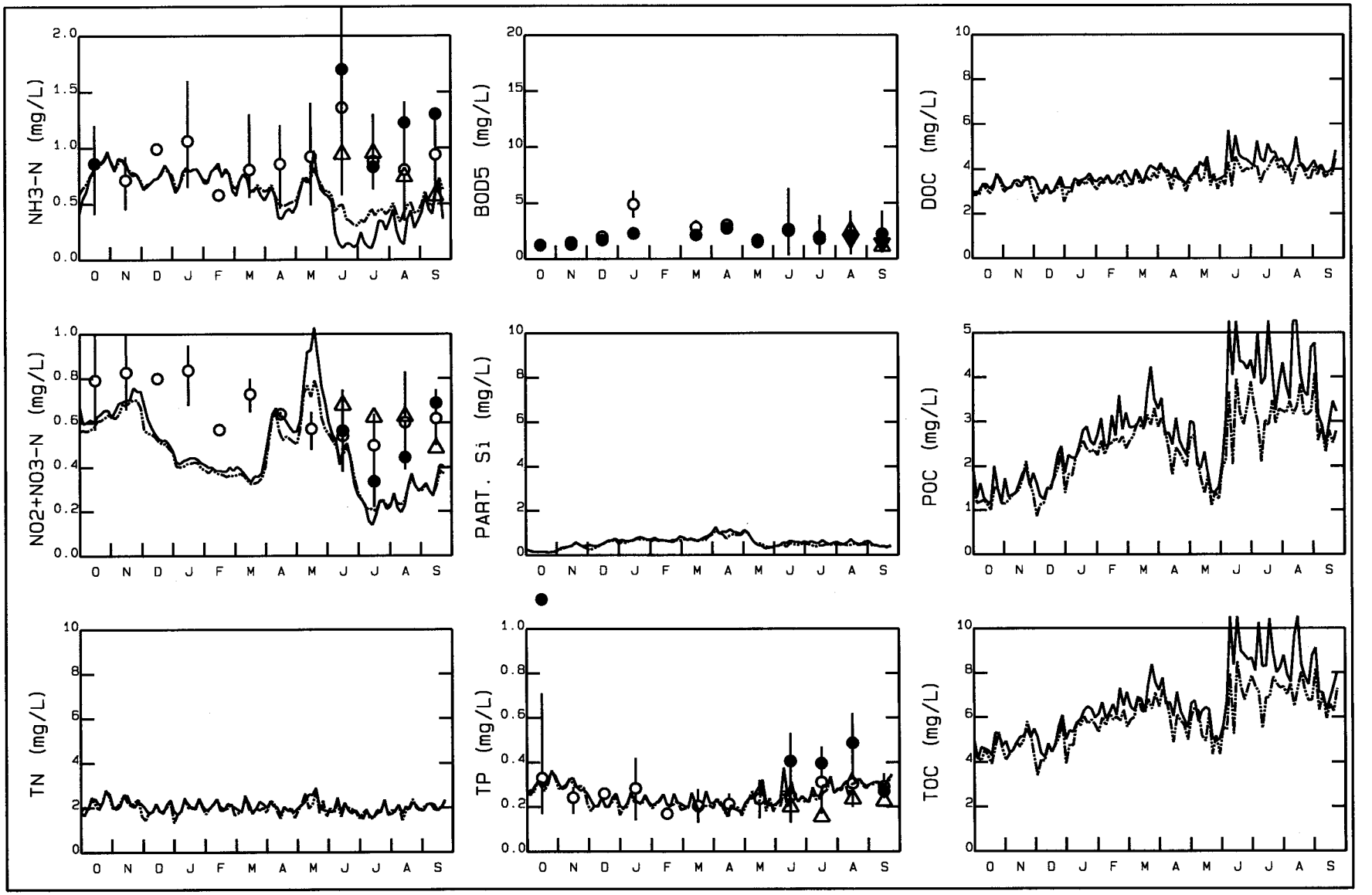
DATE: Tue Jun 9 TIME: 16:05:50



STATION 144 ARTHUR KILL-ELIZABETH

SWEM RUN 37 SWEM VALIDATION

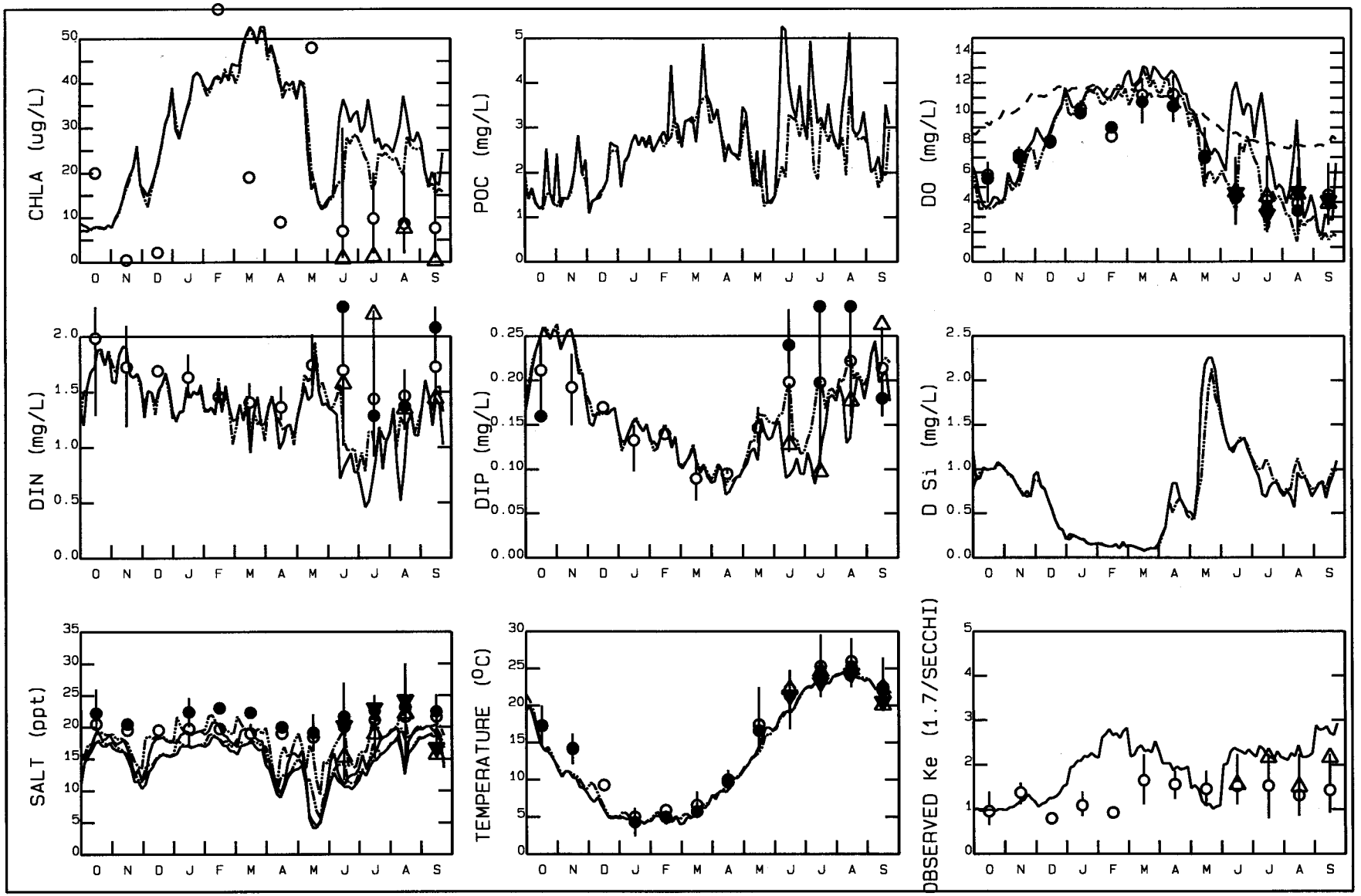
DATE: Tue Jun 9 TIME: 16:06:23



STATION 144 ARTHUR KILL-ELIZABETH

SWEM RUN 37 SWEM VALIDATION

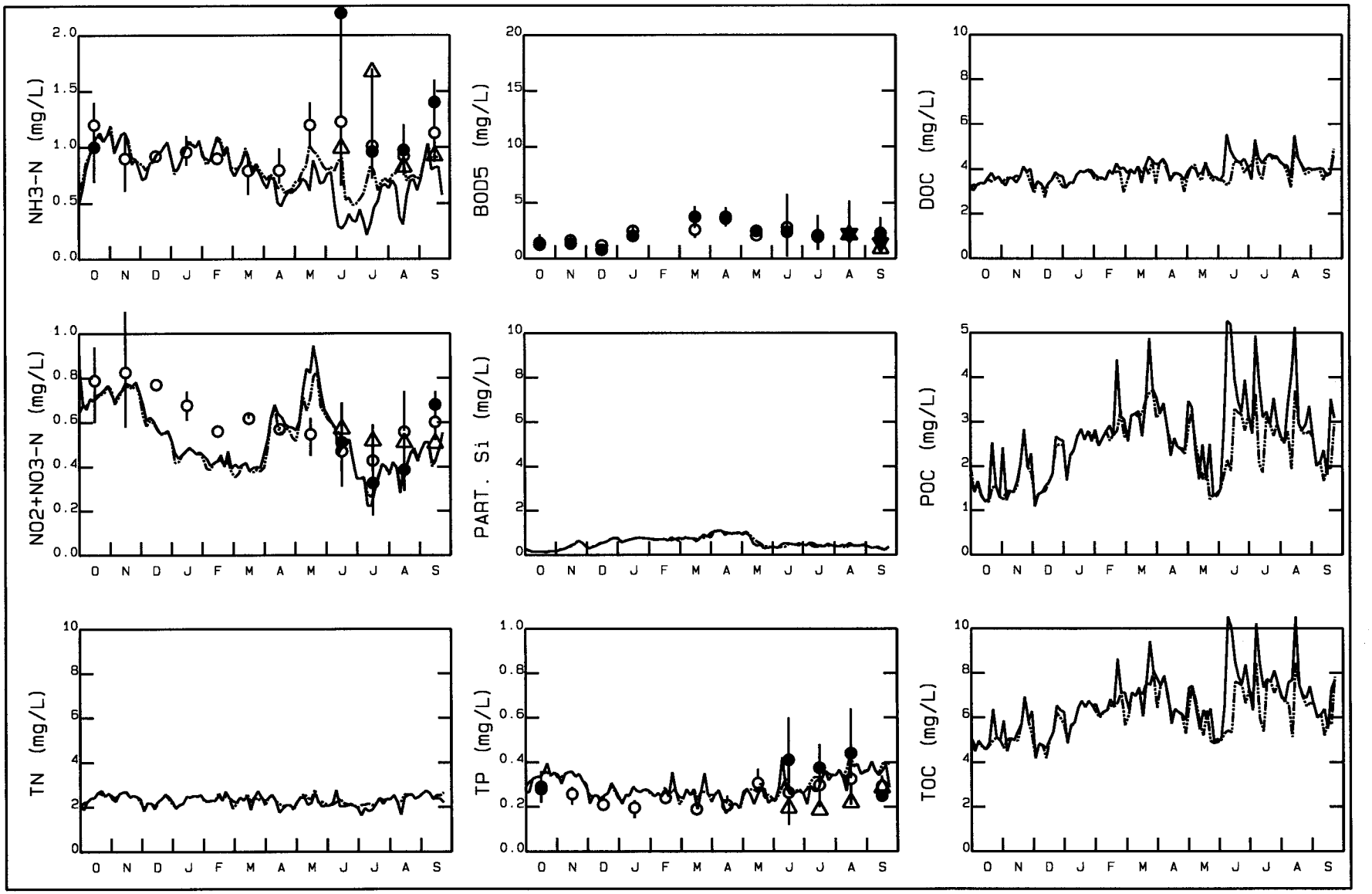
DATE: Tue Jun 9 TIME: 16:06:23



STATION 145 ARTHUR KILL-FRESH KILLS

SWEM RUN 37 SWEM VALIDATION

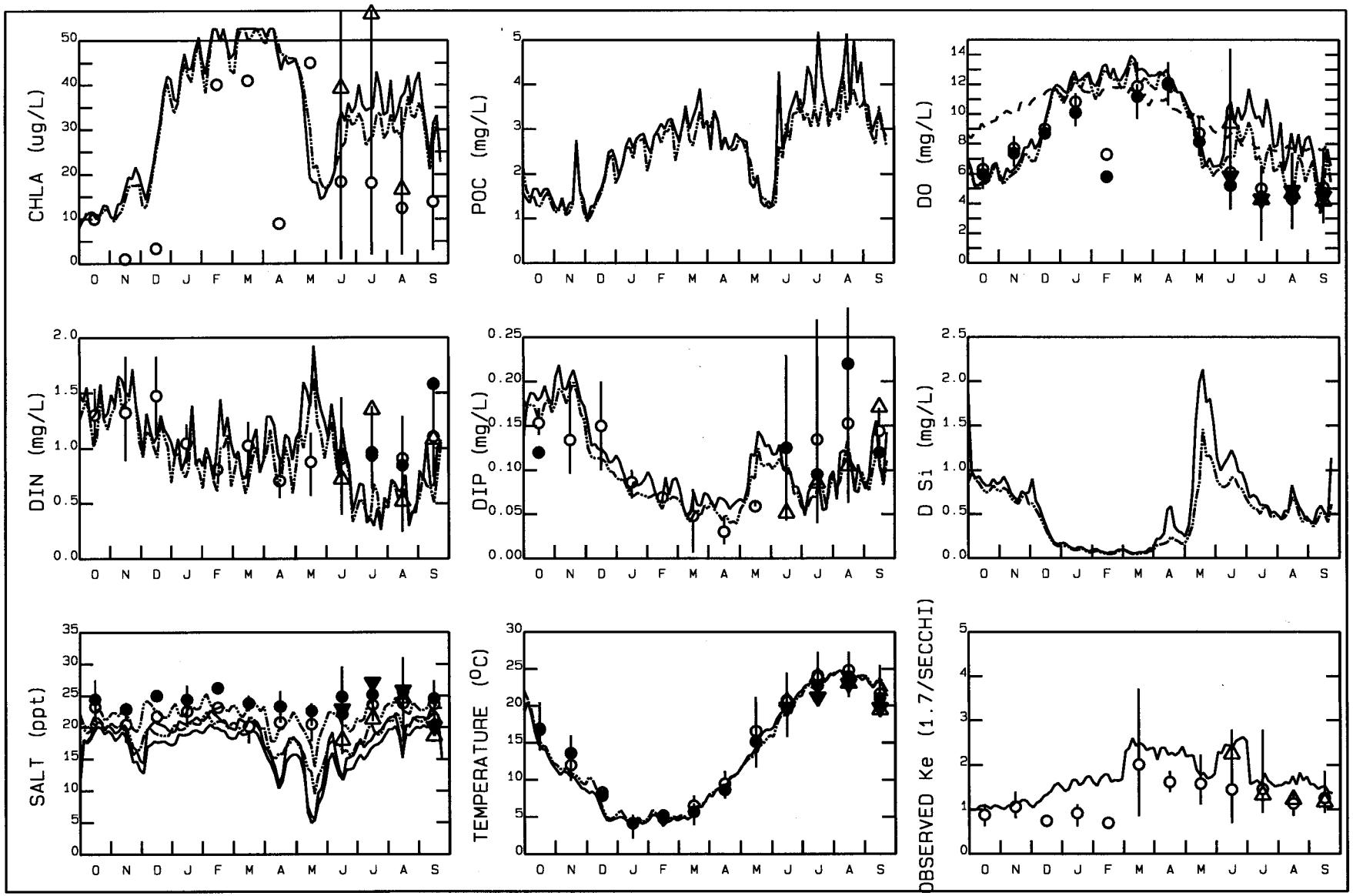
DATE: Tue Jun 9 TIME: 16:06:56



STATION 145 ARTHUR KILL-FRESH KILLS

SWEM RUN 37 SWEM VALIDATION

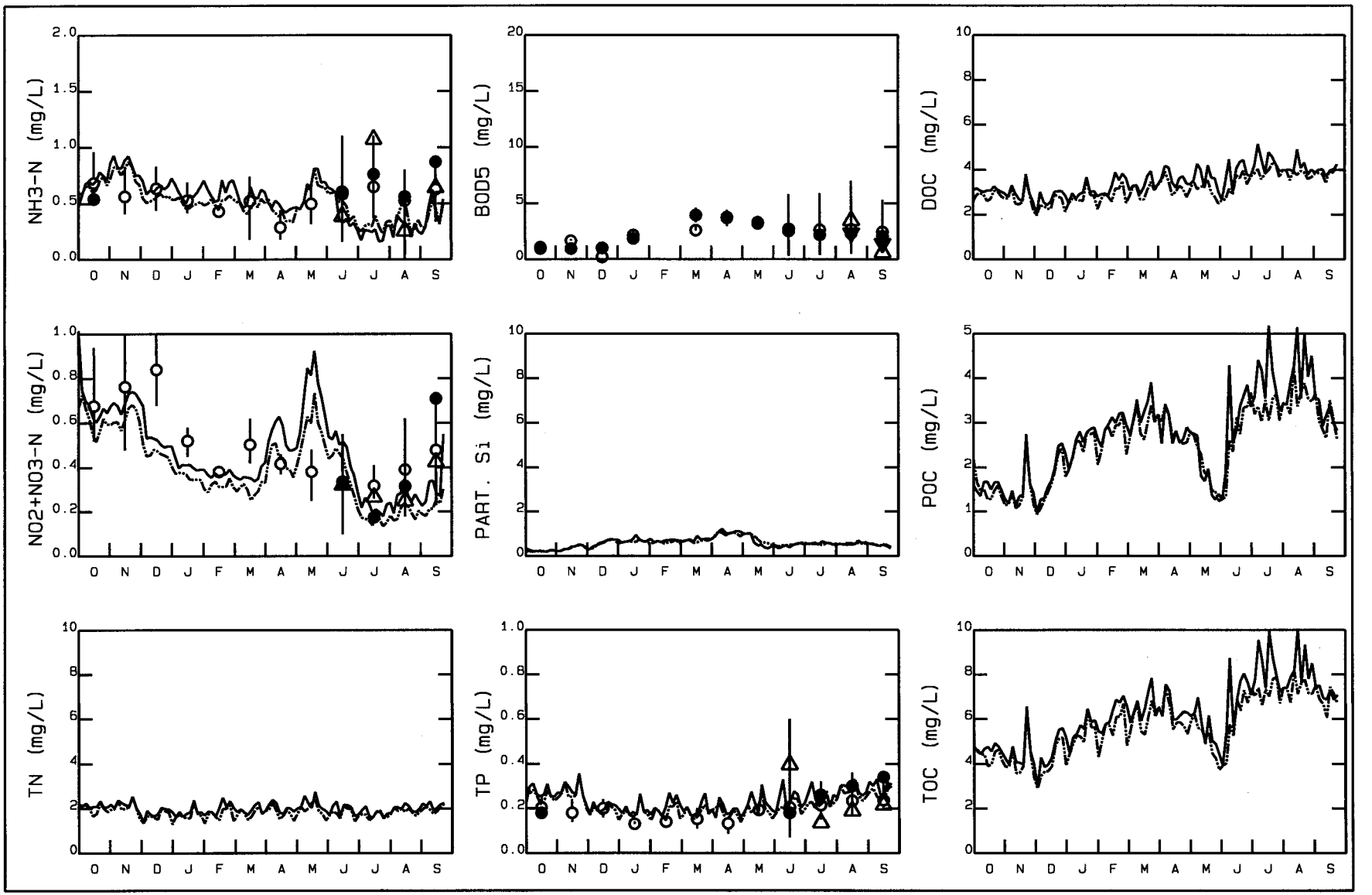
DATE: Tue Jun 9 TIME: 16:06:56



STATION 146 ARTHUR KILL-TOTTENVILLE

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:07:29

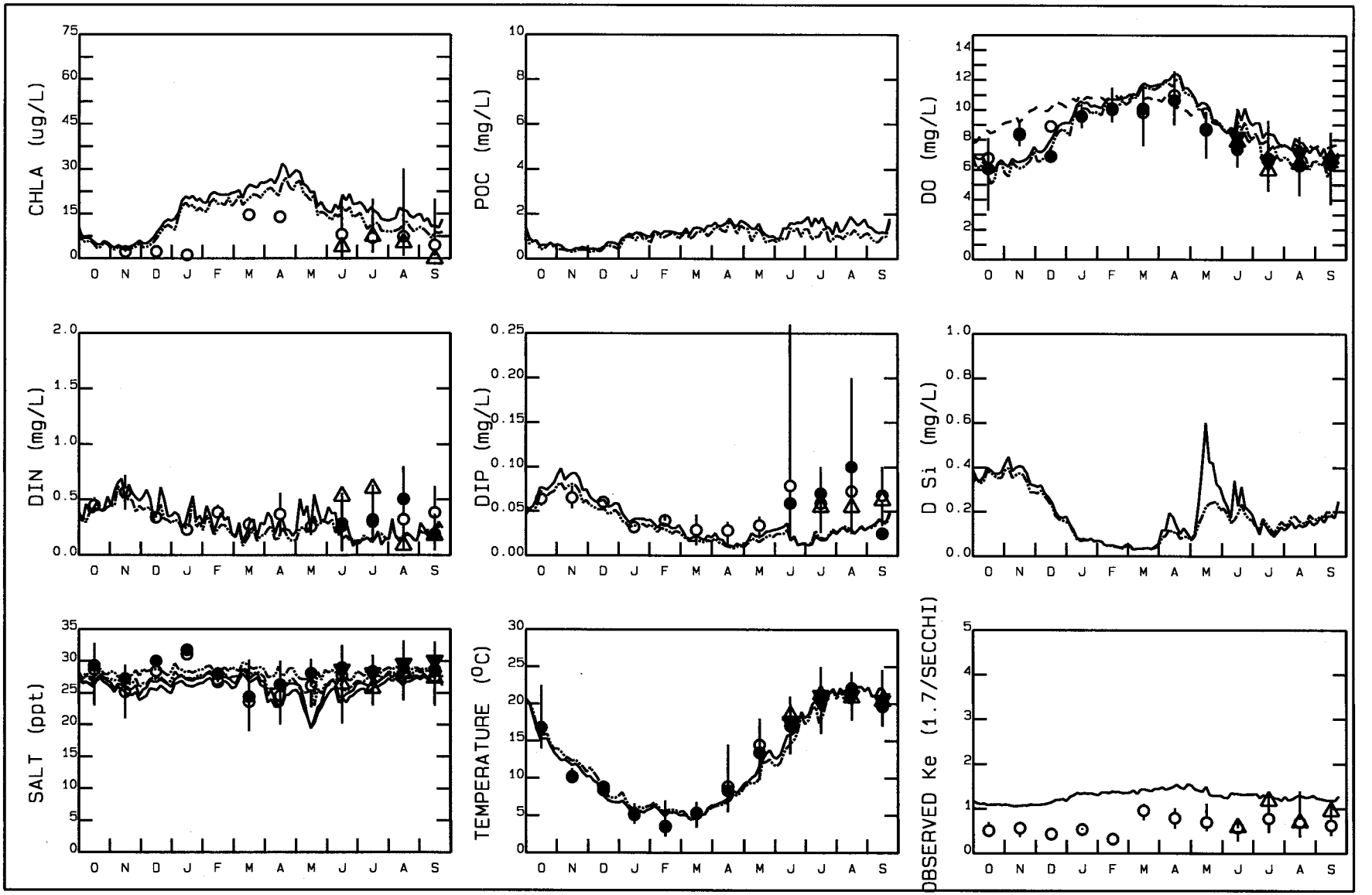


STATION 146 ARTHUR KILL-TOTTENVILLE

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 16:07:29

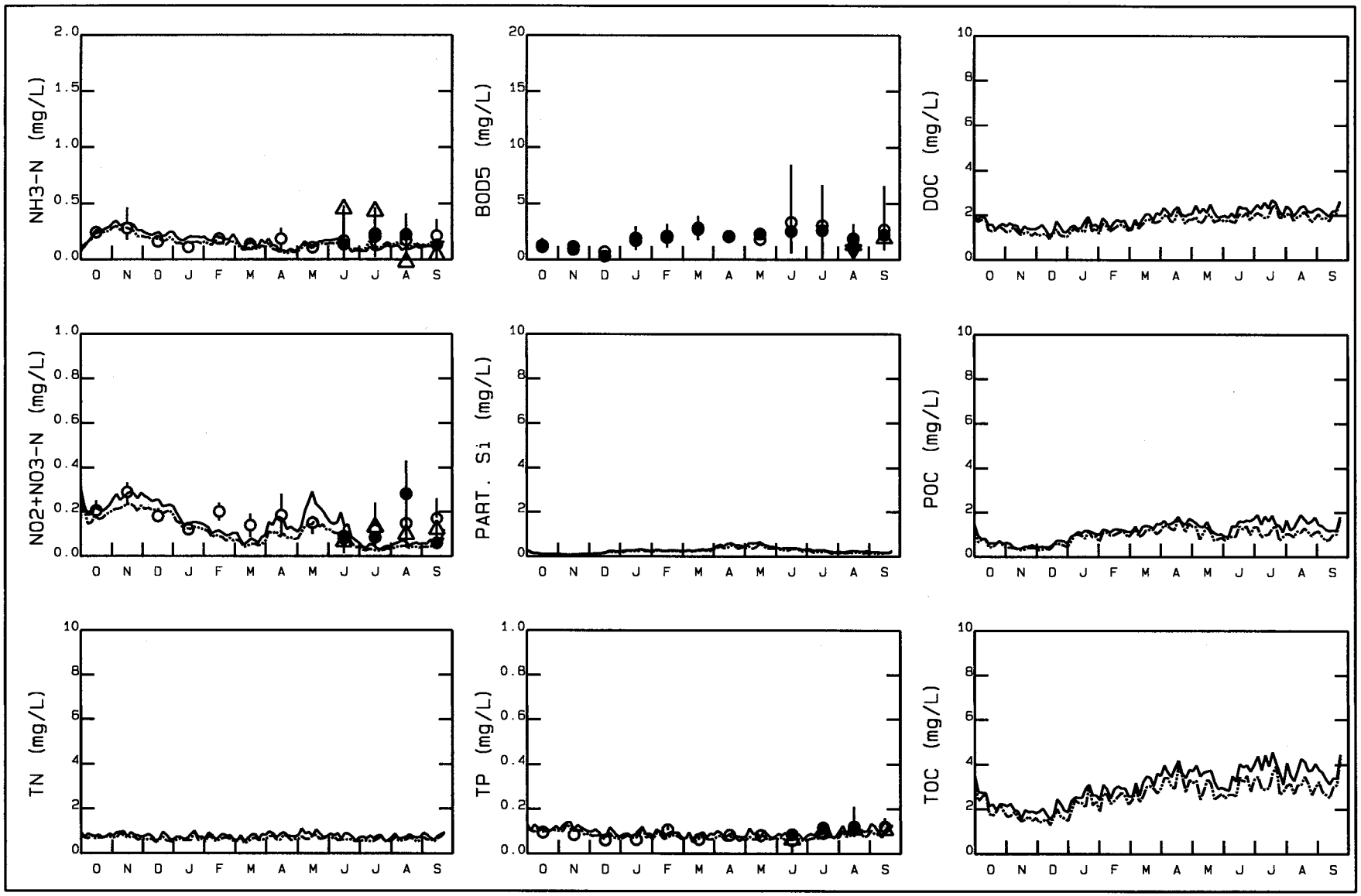
TEMPORAL DISTRIBUTIONS OF JAMAICA BAY



STATION 160 JAMAICA BAY-STEEPLECHASE

SWEM RUN 37 SWEM VALIDATION

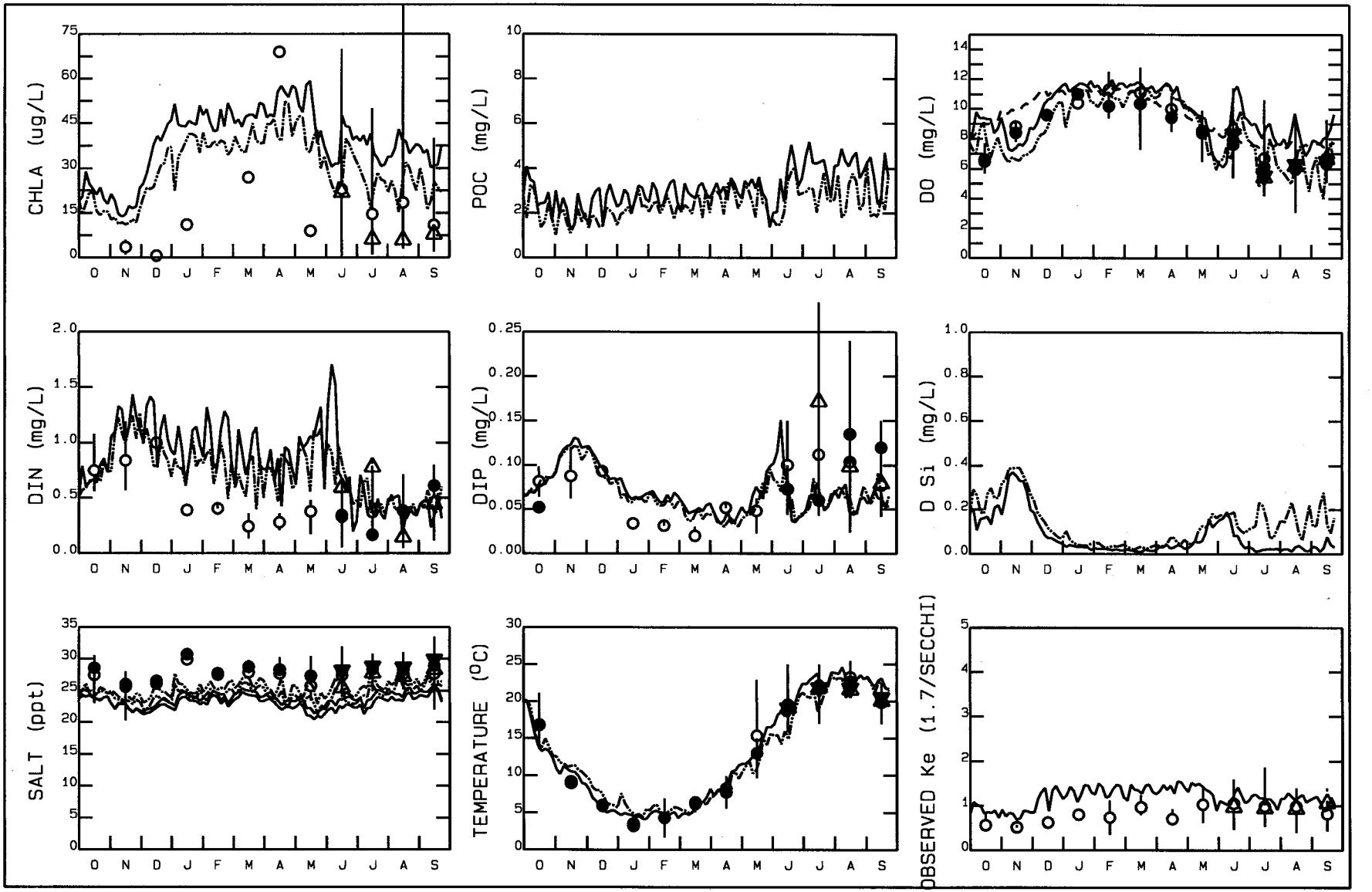
DATE: Tue Jun 9 TIME: 15:54:41



STATION 160 JAMAICA BAY-STEEPLECHASE

SWEM RUN 37 SWEM VALIDATION

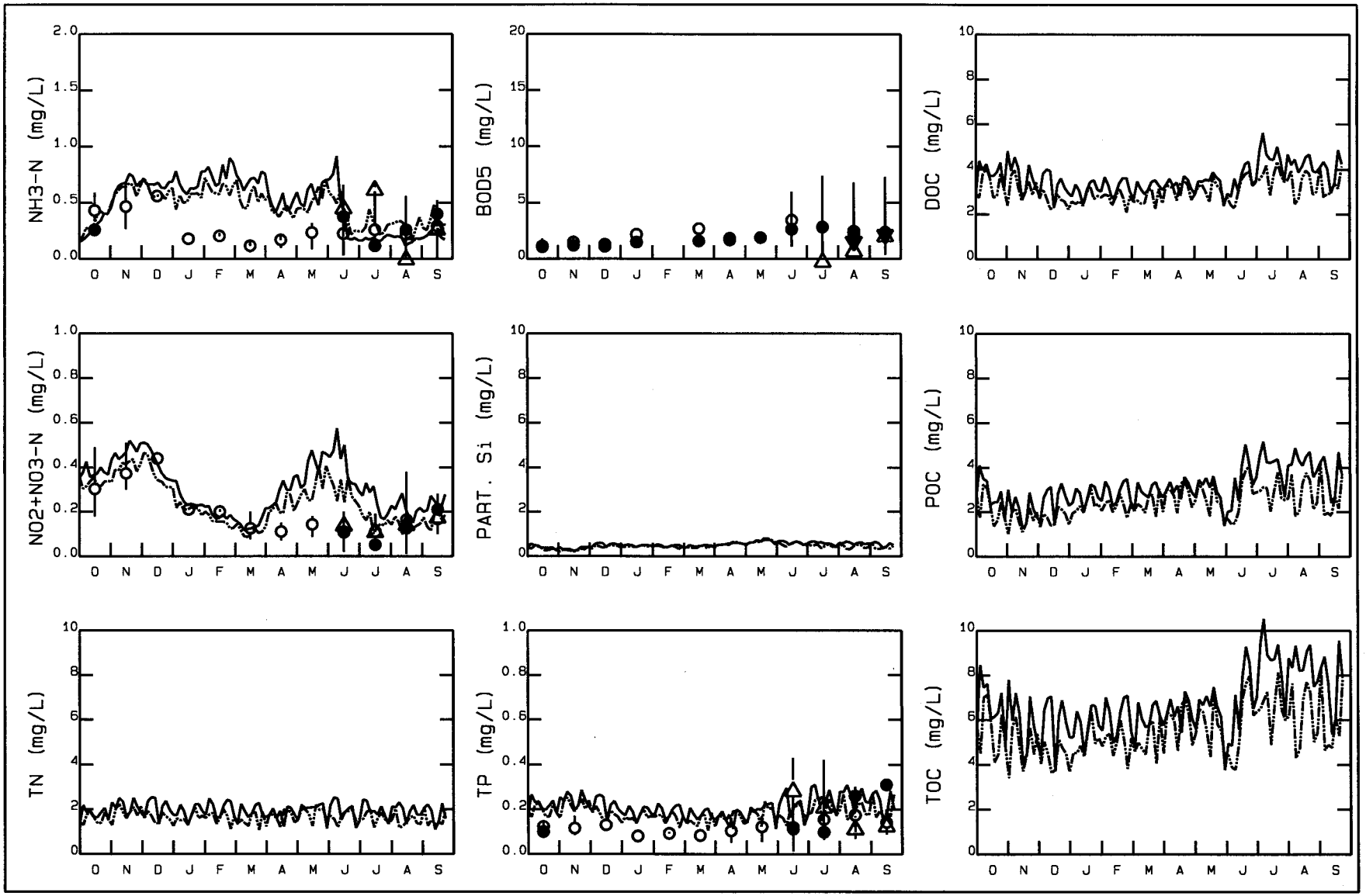
DATE: Tue Jun 9 TIME: 15:54:41



STATION 133 JAMAICA BAY-ROCKAWAY INLET

SWEM RUN 37 SWEM VALIDATION

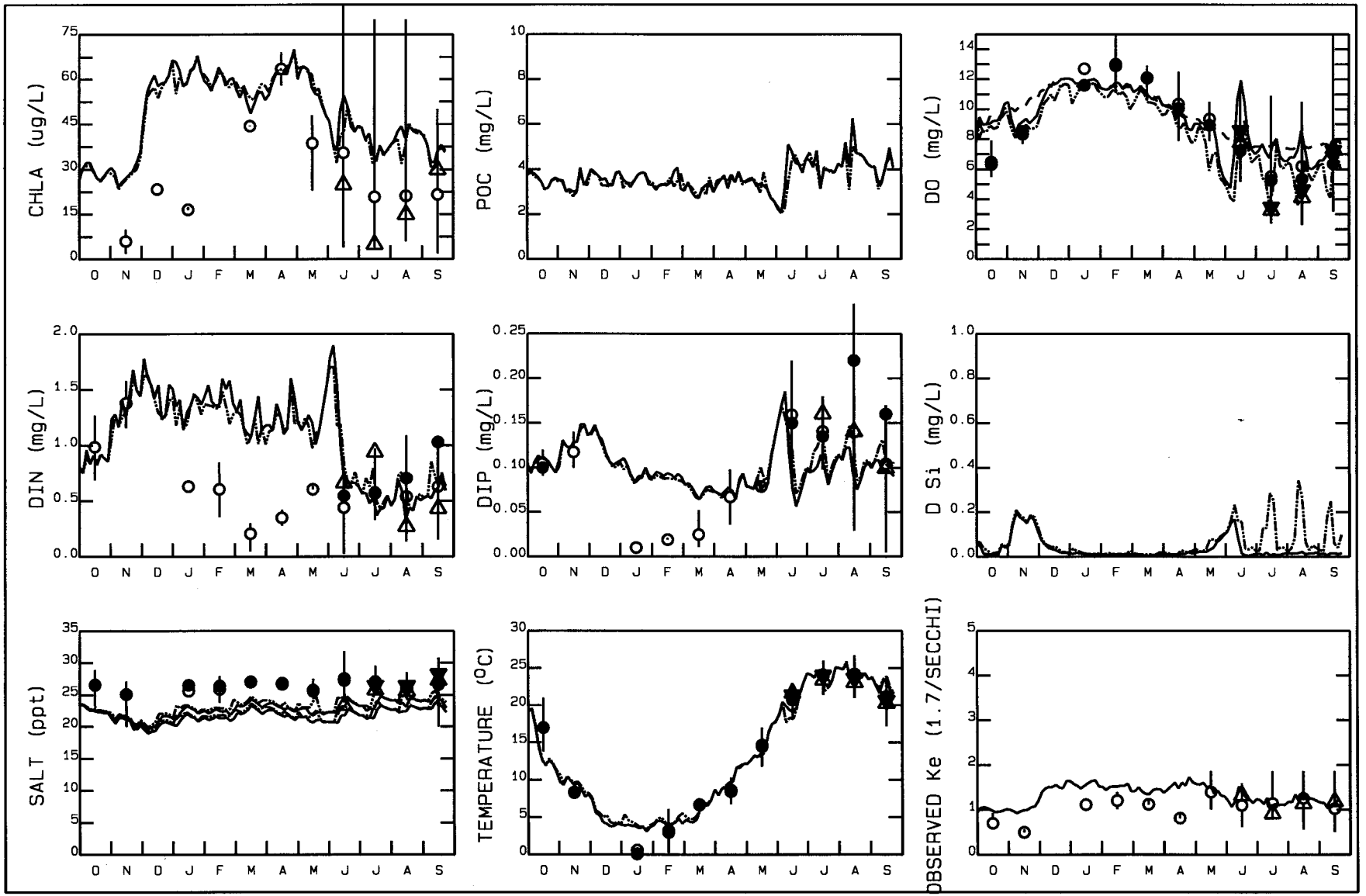
DATE: Tue Jun 9 TIME: 15:55:14



STATION 133 JAMAICA BAY-ROCKAWAY INLET

SWEM RUN 37 SWEM VALIDATION

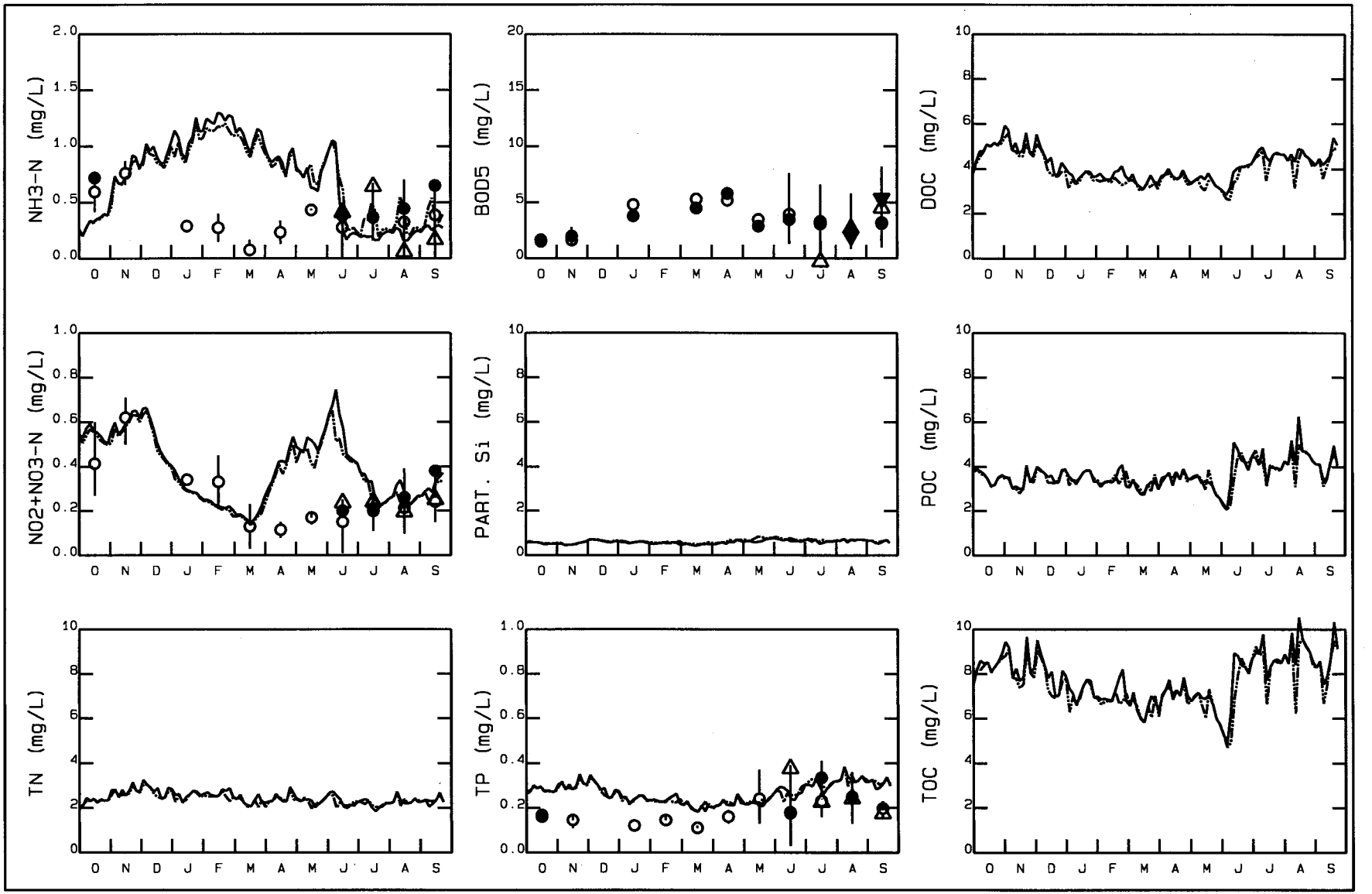
DATE: Tue Jun 9 TIME: 15:55:14



STATION 138 JAMAICA BAY-BEACH CHANNEL

SWEM RUN 37 SWEM VALIDATION

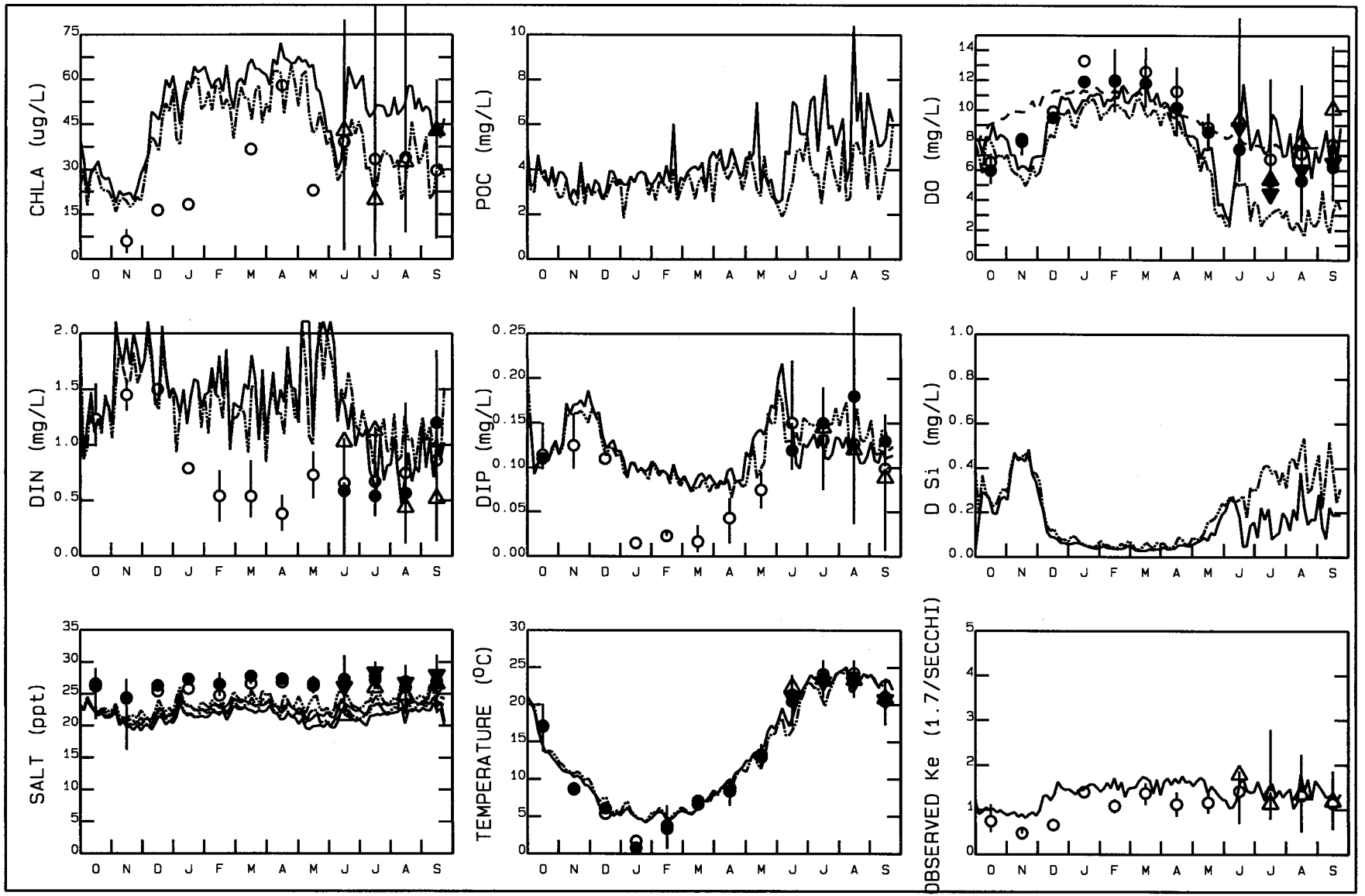
DATE: Tue Jun 9 TIME: 15:55:47



STATION 138 JAMAICA BAY-BEACH CHANNEL

SWEM RUN 37 SWEM VALIDATION

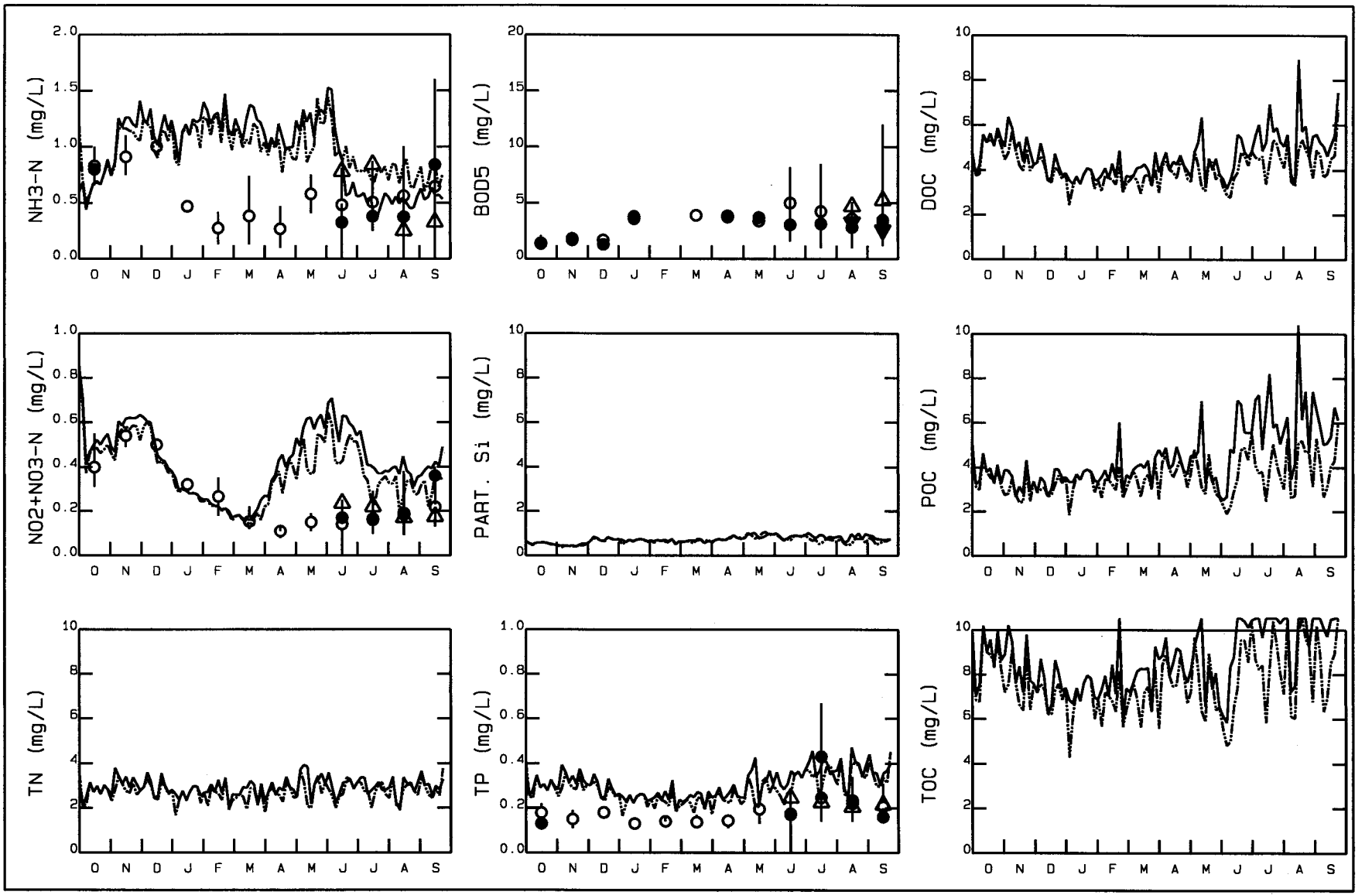
DATE: Tue Jun 9 TIME: 15:55:47



STATION 137 JAMAICA BAY-CANARSIE

SWEM RUN 37 SWEM VALIDATION

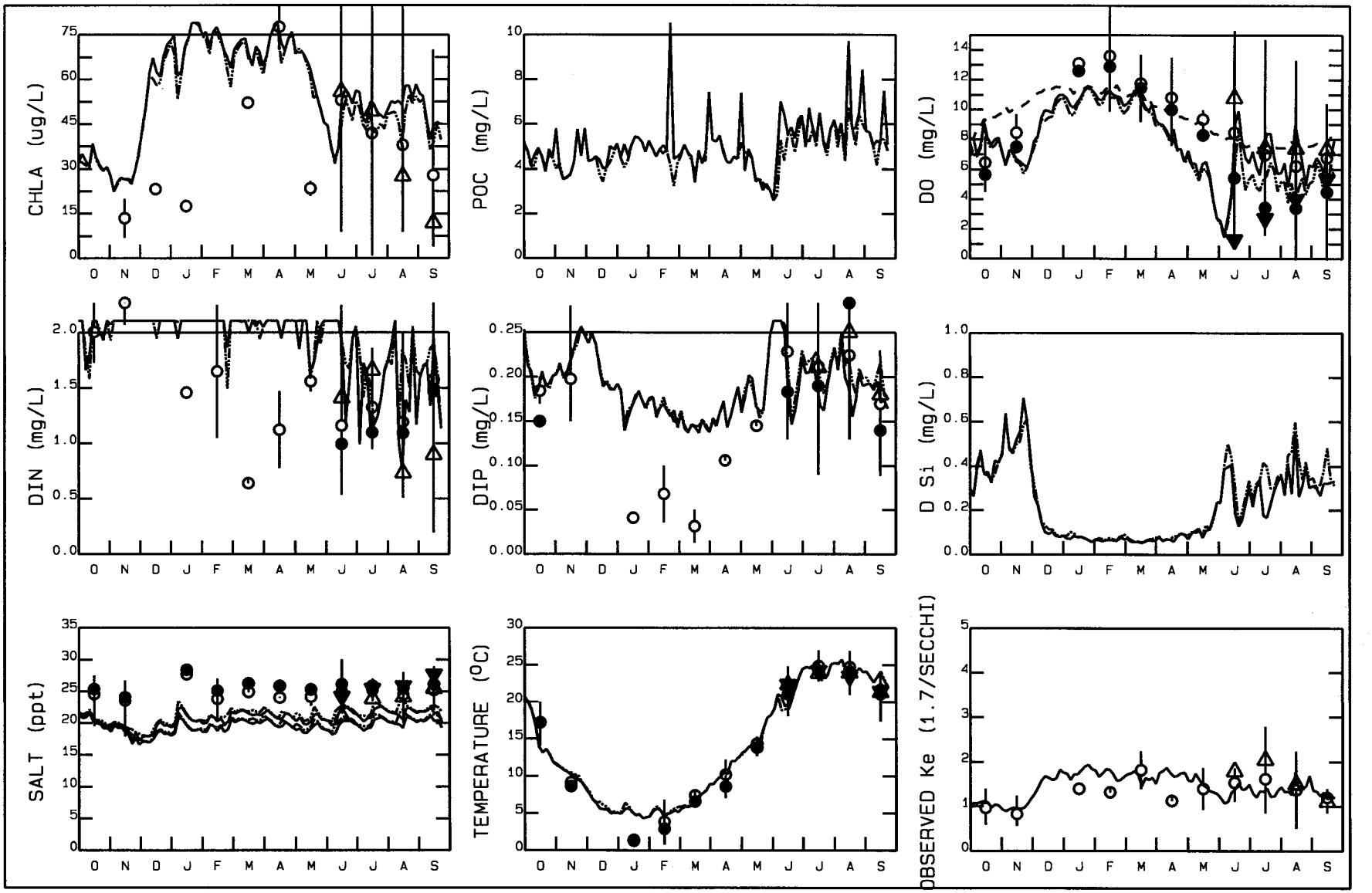
DATE: Tue Jun 9 TIME: 15:56:21



STATION 137 JAMAICA BAY-CANARSIE

SWEM RUN 37 SWEM VALIDATION

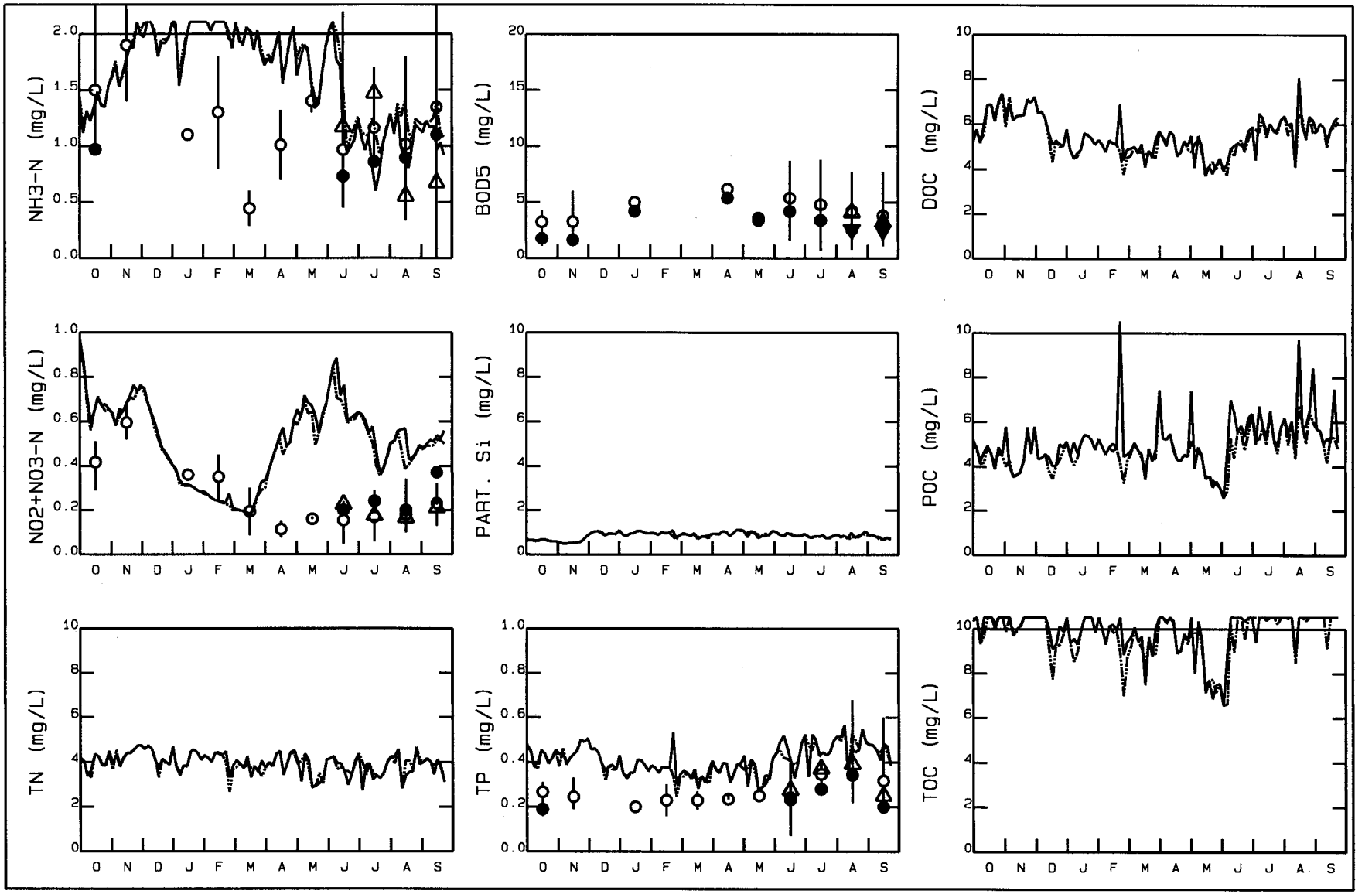
DATE: Tue Jun 9 TIME: 15:56:21



STATION 139 JAMAICA BAY-BERGEN BASIN

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 15:56:54



STATION 139 JAMAICA BAY-BERGEN BASIN

SWEM RUN 37 SWEM VALIDATION

DATE: Tue Jun 9 TIME: 15:56:54