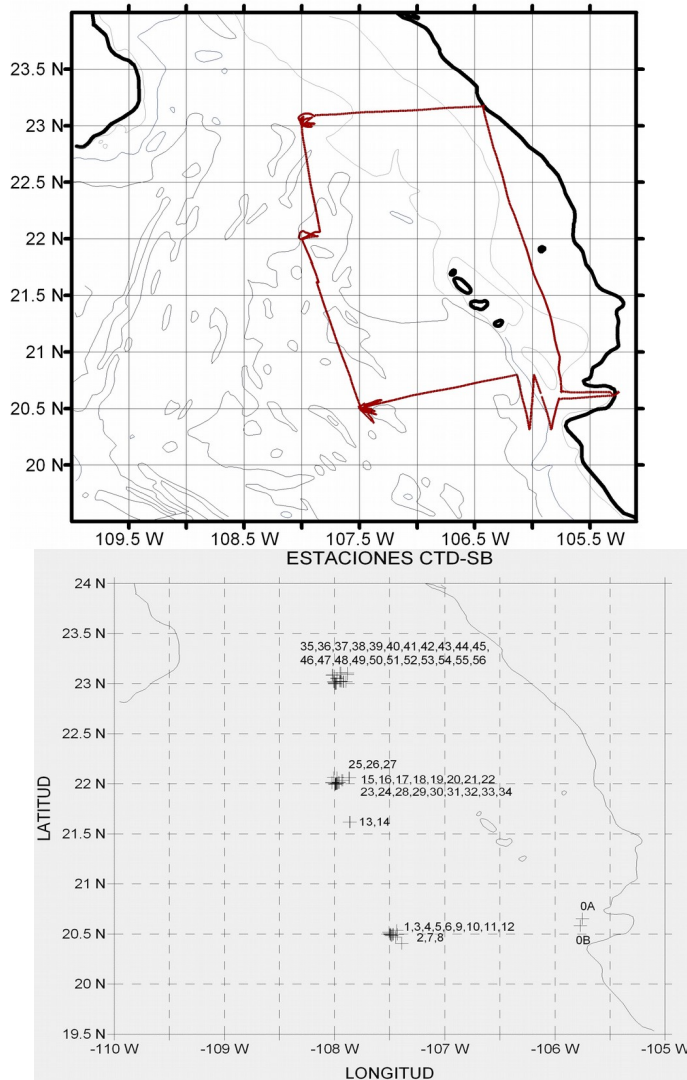


Mexican UNAM R/V El Puma Aerosols and Oceanographic Data

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1. Introduction

This data report describes the physical, chemical and biological measurements related with biogenic aerosols (dimethylsulfide, DMS) and the data recorded in both seawater column and air during a cruise of the *R/V Puma- UNAM* in the Eastern Pacific. These measurements were part of the North American Monsoon Experiment (NAME), carried out from August 4 to 16 in 2004. The study area cruise track (Figure 1 a) and the particular sampling sites (Fig. 1b) where this report data were obtained are shown below.



2. Measurements

2.1 Instruments

In order to measure physical and bio optical variables into the water column, it used 1) the CTD-Rosette system belonging to the ship (Marc III/Woce type, Fig. 2a) with Niskin bottles (10 L) and 2) the CTD with bio-optics package from WET Labs, Inst. (Fig. 2b) which contains the following sensors:

C-Star— Transmissometer. Measures underwater beam transmittance.

ECO FL—Fluorometer. Measures chlorophyll-a fluorescence.

ECO VSF—Determines the Volume Scattering Function at three distinct angles: 100, 125, and 150 degrees.

CTD—Determines conductivity, temperature, and depth of water (Sea-Bird SBE-37SI).

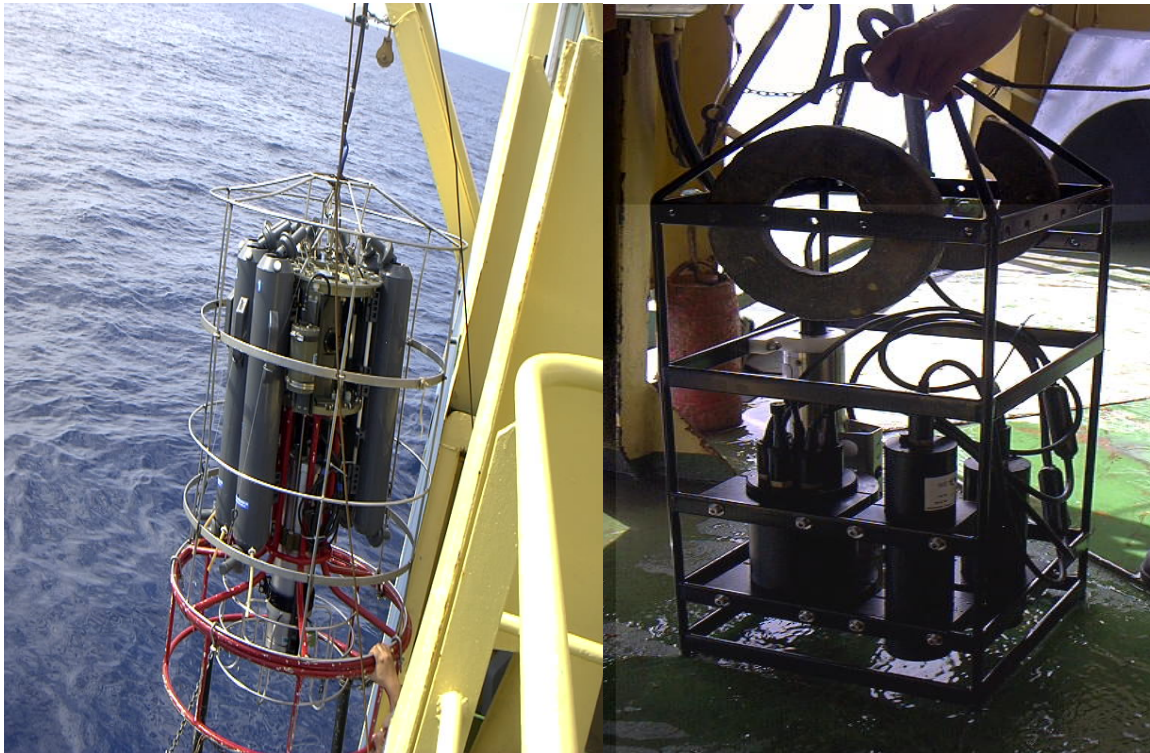


Fig. 2a) CTD-Rosette System

Fig. 2b) CTD and Bio-optical sensors

In order to trace SO_2 air concentrations, the SO_2 analyzer (API Model 100A) monitored permanently the air (sensitivity in ranges from 0 - 50 ppb to 0 to 20 ppm) taking care to avoid the ship emissions (Fig. 3)



2.2 Water sampling

Diurnal sea water samples were taken in each point at least three times (around 6 am, 12 and 6 pm), three night samples (around 11 pm) were collected during the campaign. The Niskin bottles from the CTD-Rosette system provided the samples from three depths (surface, around 30-60 meters and above the mixed layer). Six types of subsamples were prepared to analyze:

- dissolved DMSP plus DMS (in 20 ml vials with 2 ml KOH)
- dissolved DMSP (10 minutes of He flux into a 30 ml sample before store it in a 20 ml. vial with 2 ml KOH)
- dissolved DMS (in 20 ml vials with 2 ml of distilled H₂O)
- particulate DMSP (filters GF/F Whatman)
- Chlorophyll a (filters GF/F Whatman)
- Taxonomy (250 ml. preserved with acetate lugol)

The DMS-DMSP samples were analyzed in a Gas Chromatograph (Agilent 6890 plus) with FPD detector (column Chromosil 330) and linked to a Tekmar 3000 purge&trap system. Chlorophyll a concentration was determined by means of extraction with acetone 90% according to standard fluorometric procedures.

3. Results

All the data described here are available from Dr. Martinez-Arroyo. The primary data sets consist of :

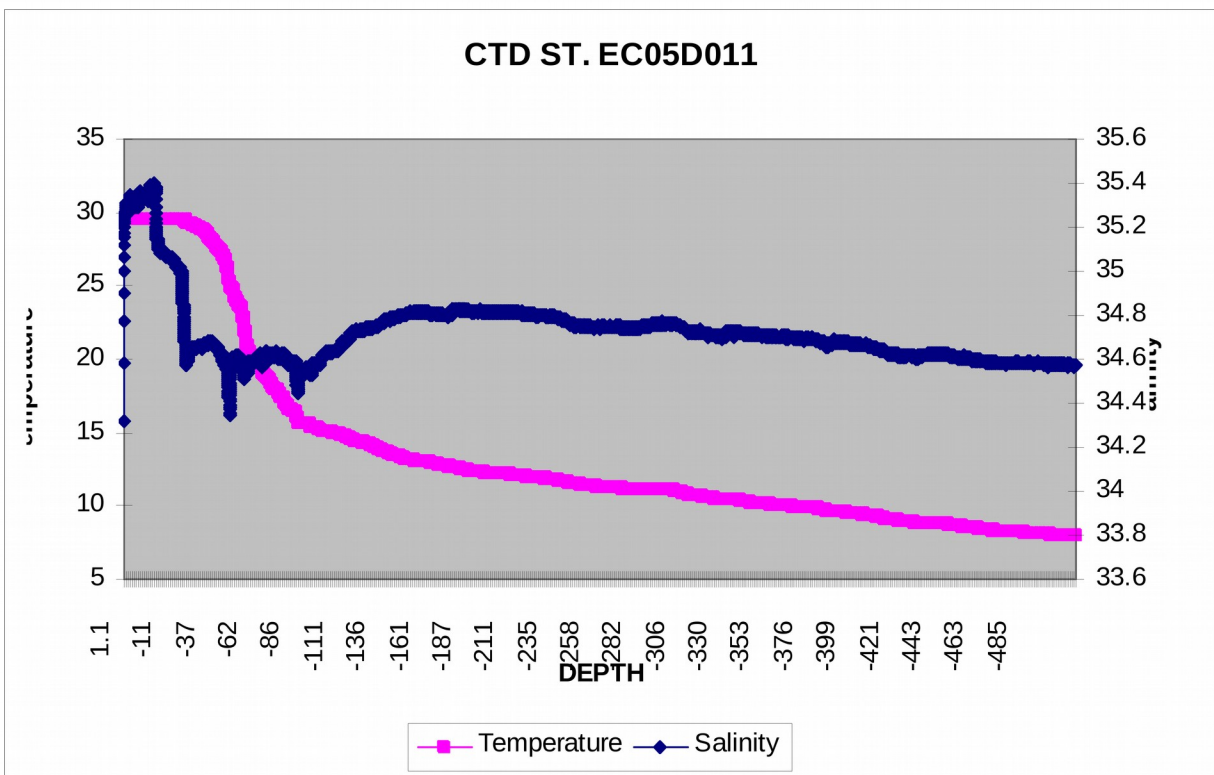
CTD.- Sea water temperature and salinity from surface to 400 m. Only the last station on August 16 the depth reached was 2500 m (Table 1)

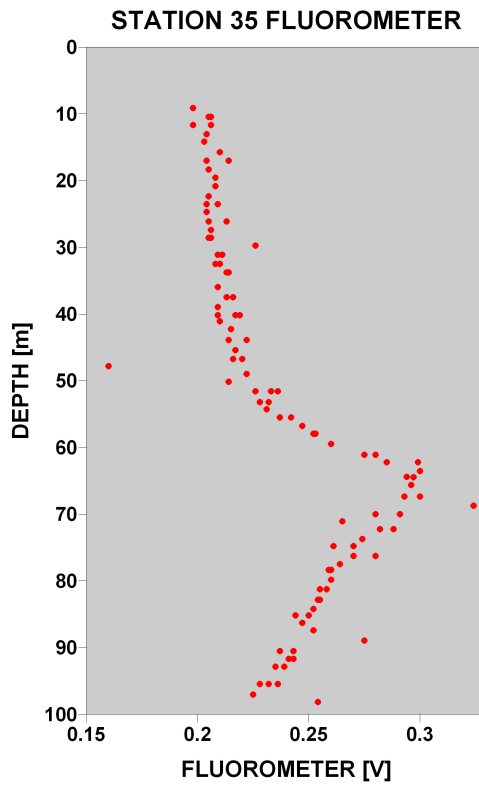
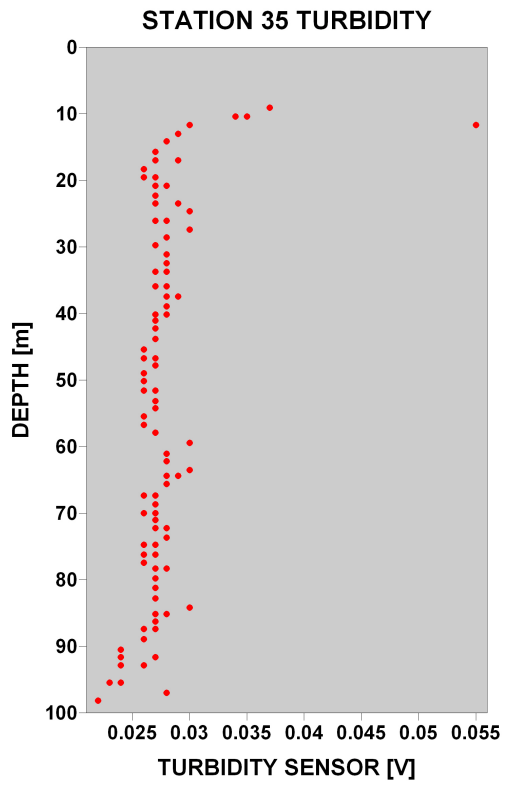
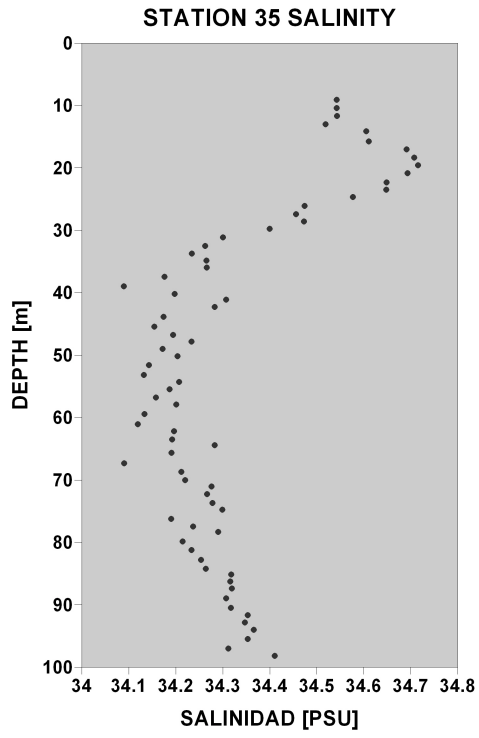
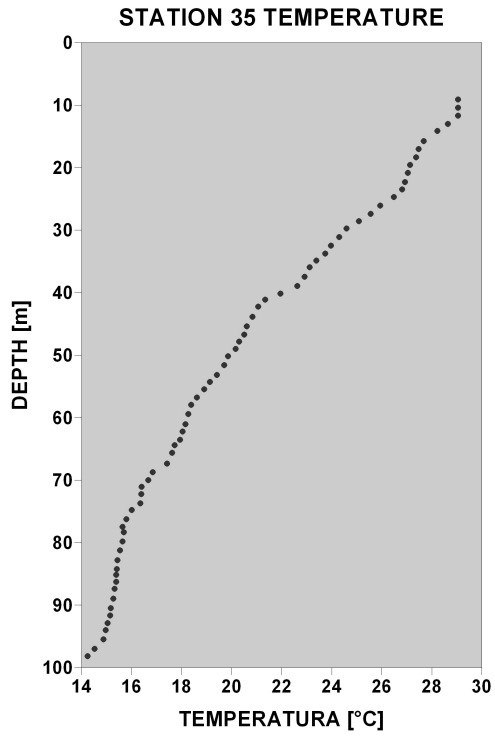
CTD/WET LABS.- Sea water temperature, turbidity, chlorophyll fluorescence and salinity (Table 2).

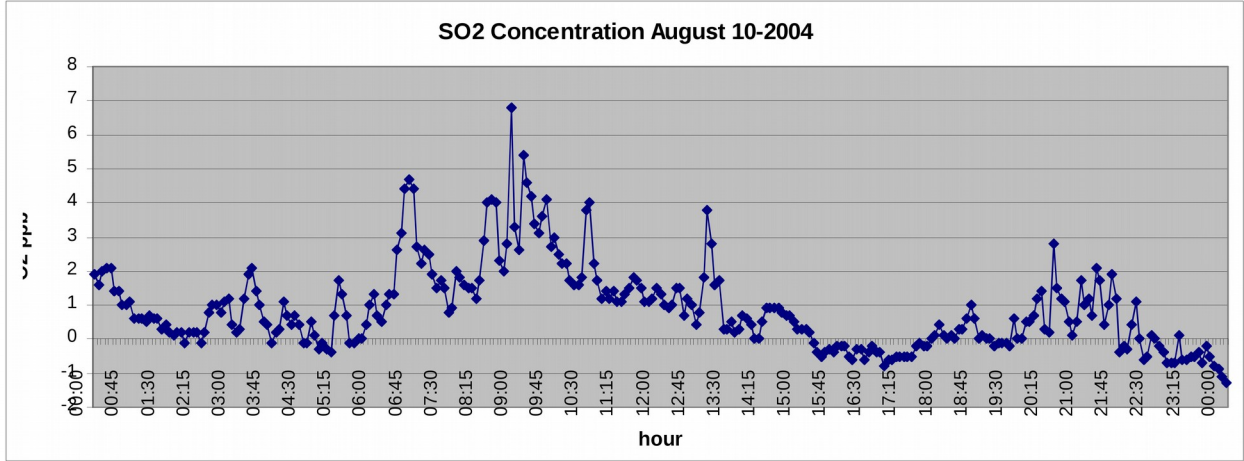
SO₂ Monitor.- Dioxide sulfur air concentrations 24 hours along all the track.

DMS and DMSP (particulate and dissolved) in 26 sample stations, three levels depth.

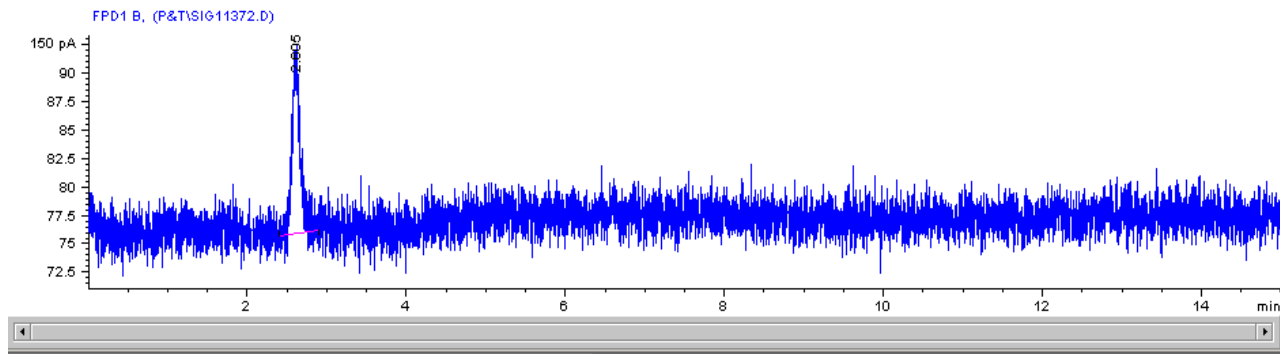
Some graphic examples of the results:







GAS CHROMATOGRAM



File Information	
GC-File	SIG11372.D
File Path	C:\HPCHEM\1\DATA\P&T\
Date	27/08/2004 11:08:23 a.m.
Sample	Ago.16-4-DMSP
Sample Info	Muestra de agosto 16-#4 DMSP 80 mt.,9a.m. Inyec s. de muestra [sin E.I.]
Barcode	
Operator	mary
Method	FPD_PT.M

#	Time	Area	Height	Width	Symmetry
1	2.605	113.1	14.4	0.132	0.847

TABLE 1

DATE	INITIAL HOUR	INITIAL LATITUDEE	INITIAL LONGITUDE	FINAL HOUR	FINAL LATITUDE D	FINAL LONGITUDE D
04-Ago-04	09:39:42	20 39.159	105 45.103	09:39:42	20 39.159	105 45.103
04-Ago-04	18:09:59	20 34.944	105 46.122	18:41:08	20 35.527	105 46.092
05-Ago-04	12:47:59	20 30.235	107 29.858	13:34:00	20 30.410	107 29.927
06-Ago-04	09:29:10	20 29.151	107 29.090	10:16:00	20 29.068	107 29.250
06-Ago-04	10:22:00	20 29.044	107 29.265	10:22:00	20 29.044	107 29.265
06-Ago-04	16:11:00	20 30.929	107 30.270	16:38:00	20 31.044	107 30.317
06-Ago-04	23:15:28	20 29.769	107 28.484	23:38:47	20 29.767	107 28.292
07-Ago-04	12:56:00	20 27.400	107 25.816	13:21:35	20 27.080	107 25.529
07-Ago-04	17:08:18	20 23.234	107 22.972	17:32:55	20 22.838	107 22.715
07-Ago-04	19:10:57	20 29.852	107 29.935	19:32:00	20 29.622	107 29.707
08-Ago-04	10:18:52	20 29.802	107 28.455	10:38:52	20 29.752	107 28.119
08-Ago-04	15:54:00	20 28.772	107 22.395	16:14:35	20 28.647	107 22.022
08-Ago-04	17:23:29	20 29.935	107 29.842	17:46:21	20 29.801	107 29.453
09-Ago-04	06:12:53	20 29.707	107 26.134	06:36:59	20 29.297	107 25.818
09-Ago-04	17:12:38	21 37.177	107 52.283	17:57:20	21 37.113	107 51.970
09-Ago-04	20:45:35	21 47.558	107 55.150	21:27:36	21 47.278	107 54.851
10-Ago-04	10:13:57	22 0.286	108 1.186	10:56:14	22 0.512	108 1.360
11-Ago-04	09:02:14	21 59.720	107 59.761	09:45:12	21 59.653	107 59.784
12-Ago-04	14:48:12	22 1.43	107 57.182	15:16:20	22 1.355	107 56.985
13-Ago-04	10:41:30	23 1.670	108 0.581	11:19:47	23 1.971	108 0.698
13-Ago-04	23:01:10	22 59.492	107 56.966	23:22:34	22 59.500	107 56.809
14-Ago-04	19:18:10	23 3.794	107 56.606	19:45:36	23 3.786	107 56.426
15-Ago-04	06:34:06	23 1.460	107 57.375	06:56:00	23 1.511	107 57.164
15-Ago-04	13:14:54	23 1.273	107 54.037	13:41:21	23 1.260	107 53.914
15-Ago-04	22:01:31	23 0.236	107 59.634	22:25:12	23 0.349	107 59.792
16-Ago-04	09:01	23 4.772	108 1.420	09:26:54	23 4.965	108 1.262
16-Ago-04	14:58:07	23 6.507	107 57.332	15:18:12	23 6.491	107 57.108
16-Ago-04	22:17:25	23 5.107	107 53.265	00:05	23 5.391	107 53.007

TABLE 2

DATE	INITIAL HOUR	INITIAL LATITUDE	INITIAL LONGITUDE	HOUR END	LATITUDE END	LONGITUDE END	STATION FILE
04-Ago-04	09:39:42	20 39.159	105 45.103	09:39:42	20 39.159	105 45.103	est_00
04-Ago-04	18:09:59	20 34.944	105 46.122	18:41:08	20 35.527	105 46.092	est_00b
05-Ago-04	12:15:49	20 30.083	107 29.789	12:47:50	20 30.235	107 29.858	est_01
05-Ago-04	19:10:00	20 32.277	107 26.192	19:43:53	20 32.424	107 25.747	est_02
06-Ago-04	10:31:31	20 29.025	107 29.293	11:02:00	20 29.052	107 29.303	est_03
06-Ago-04	16:41:00	20 31.057	107 30.323	17:13:37	20 31.215	107 30.352	est_04
06-Ago-04	23:42:00	20 29.770	107 28.266	00:09:24	20 29.789	107 27.959	est_05
07-Ago-04	10:05:10	20 29.089	107 28.667	10:37:06	20 28.781	107 27.984	est_06
07-Ago-04	11:55:17	20 28.120	107 26.719	12:04	20 28.018	107 26.562	est_07
07-Ago-04	16:14:01	20 24.254	107 23.424	16:44:26	20 23.681	107 23.149	est_08
07-Ago-04	19:37:01	20 29.586	107 29.659	20:07:34	20 29.330	107 29.273	est_09
08-Ago-04	10:43:11	20 29.742	107 28.032	11:13:53	20 29.689	107 27.438	est_10
08-Ago-04	17:49:42	20 29.772	107 29.386	18:20:19	20 29.534	107 28.812	est_11
09-Ago-04	06:39:34	20 29.703	107 25.784	07:14:25	20 29.762	107 25.243	est_12
09-Ago-04	18:00:46	21 37.105	107 51.920	18:33:14	21 37.021	107 51.600	est_13
09-Ago-04	18:34:14	21 37.021	107 51.600	19:05:15	21 36.989	107 51.327	est_14
10-Ago-04	11:00:34	22 0.546	108 1.380	11:29:53	22 0.754	108 1.409	est_15
10-Ago-04	11:41:40	22 0.839	108 1.416	13:44:00	22 1.891	108 1.216	est_16
10-Ago-04	17:02:56	22 3.683	108 0.453	17:33:05	22 3.858	108 0.159	est_17
10-Ago-04	20:47:23	22 3.816	107 58.593	21:17:28	22 3.641	107 58.387	est_18
11-Ago-04	09:52:30	21 59.648	107 59.797	10:23:01	21 59.683	107 59.746	est_19
11-Ago-04	10:49:19	21 59.749	107 59.645	11:20:56	21 59.846	107 59.495	est_20
11-Ago-04	11:25:36	21 59.855	107 59.465	11:58:18	21 59.971	107 59.305	est_21
11-Ago-04	12:00:47	21 59.977	107 59.290	12:32:46	22 0.038	107 59.130	est_22
11-Ago-04	12:36:38	22 0.041	107 58.936	13:09:13	22 0.084	107 58.936	est_23
11-Ago-04	13:11:56	22 0.089	107 58.923	13:45:03	22 0.186	107 58.744	est_24
11-Ago-04	16:57:32	22 0.966	107 57.727	17:28:00	22 1.278	107 57.391	est_25
11-Ago-04	19:54:06	22 2.132	107 56.110	20:29:56	22 2.202	107 55.643	est_26
11-Ago-04	20:29:15	22 2.203	107 55.639	21:04:11	22 2.226	107 55.190	est_27
12-Ago-04	10:53:33	22 0.066	107 58.891	11:25:34	22 0.111	107 58.715	est_28
12-Ago-04	11:26:56	22 0.111	107 58.712	12:02:52	22 0.219	107 58.414	est_29
12-Ago-04	12:06:15	22 0.245	107 58.370	12:40:29	22 0.419	107 58.053	est_30
12-Ago-04	13:28:46	22 0.597	107 57.711	14:00:01	22 0.734	107 57.537	est_31
12-Ago-04	14:01:03	22 0.736	107 57.534	14:32:12	22 0.991	107 557.298	est_32
12-Ago-04	21:55:07	22 3.636	107 52.264	22:28:17	22 3.617	107 51.807	est_33
12-Ago-04	22:28:17	22 3.617	107 51.807	23:05:59	22 3.665	107 51.371	est_34
13-Ago-04	09:18:32	23 0.875	108 0.209	09:50:07	23 1.157	108 0.387	est_35
13-Ago-04	09:51:07	23 1.157	108 0.387	10:21:48	23 1.457	108 0.515	est_36
13-Ago-04	17:42:58	22 59.950	107 59.747	18:17:20	23 0.031	107 59.346	est_37
13-Ago-04	18:18:20	23 0.031	107 59.346	18:50:06	23 0.008	107 59.007	est_38
13-Ago-04	18:55:24	22 59.995	107 58.959	19:30:29	22 59.863	107 58.632	est_39
14-Ago-04	14:16:00	23 3.137	107 58.719	14:47:59	23 3.241	107 58.609	est_40
14-Ago-04	14:48:59	23 3.241	107 58.609	15:18:41	23 3.352	107 58.459	est_41
15-Ago-04	06:59:56	23 1.510	107 57.120	07:31:07	23 1.474	107 56.766	est_42
15-Ago-04	07:32:41	23 1.474	107 56.766	08:04:59	23 1.403	107 56.409	est_43
15-Ago-04	08:13:08	23 1.386	107 56.328	08:45:55	23 1.332	107 55.994	est_44
15-Ago-04	10:20:17	23 1.191	107 55.292	10:53:01	23 1.192	107 55.068	est_45

15-Ago-04	10:53:01	23 1.192	107 55.068	11:24:00	23 1.212	107 54.830	est_46
15-Ago-04	13:53:26	23 1.241	107 53.871	14:23:38	23 1.167	107 53.741	est_47
15-Ago-04	14:24:53	23 1.166	107 53.740	15:02:51	23 1.155	107 53.589	est_48
15-Ago-04	21:26:40	23 0.004	107 59.549	21:56:41	23 0.204	107 59.620	est_49
15-Ago-04	22:37:27	23 0.401	107 59.882	23:12:10	23 0.546	108 0.188	est_50
16-Ago-04	09:41:24	23 5.056	108 1.176	10:14:28	23 5.253	108 0.906	est_51
16-Ago-04	10:15:01	23 5.253	108 0.906	10:46:45	23 5.479	108 0.610	est_52
16-Ago-04	15:26:02	23 6.481	107 57.013	15:57:02	23 6.428	107 56.571	est_53
16-Ago-04	15:58:02	23 6.426	107 56.557	16:32:00	23 6.377	107 56.071	est_54
17-Ago-04	00:14:51	23 6.377	107 52.995	00:46:57	23 5.549	107 52.932	est_55
17-Ago-04	00:47:57	23 5.562	107 52.928	01:20:05	23 5.602	107 52.898	est_56