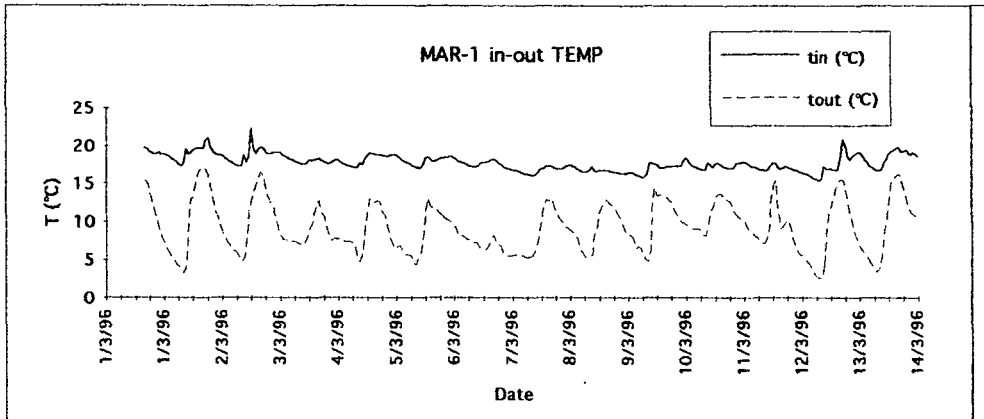
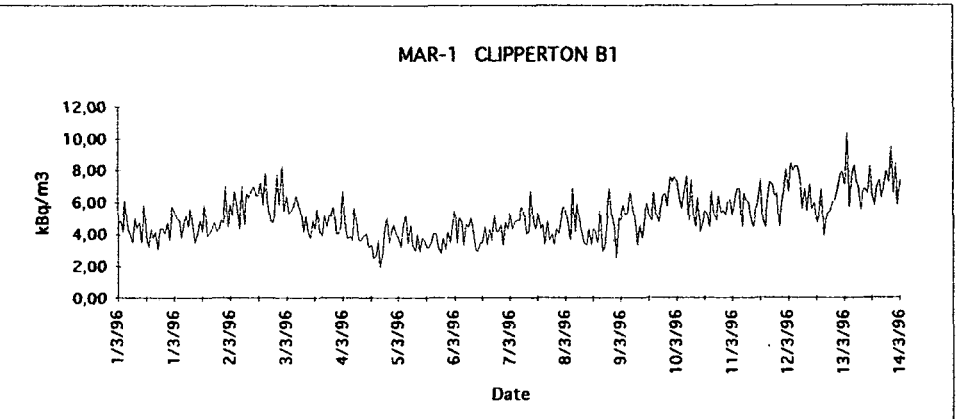
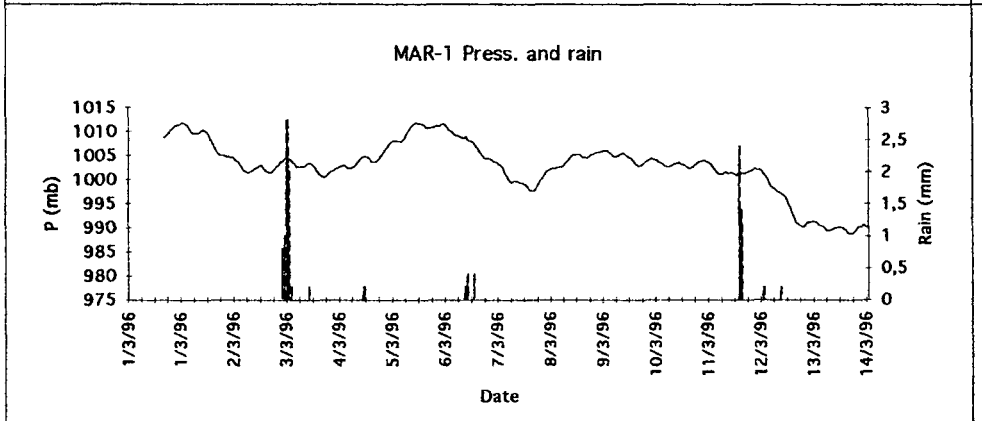
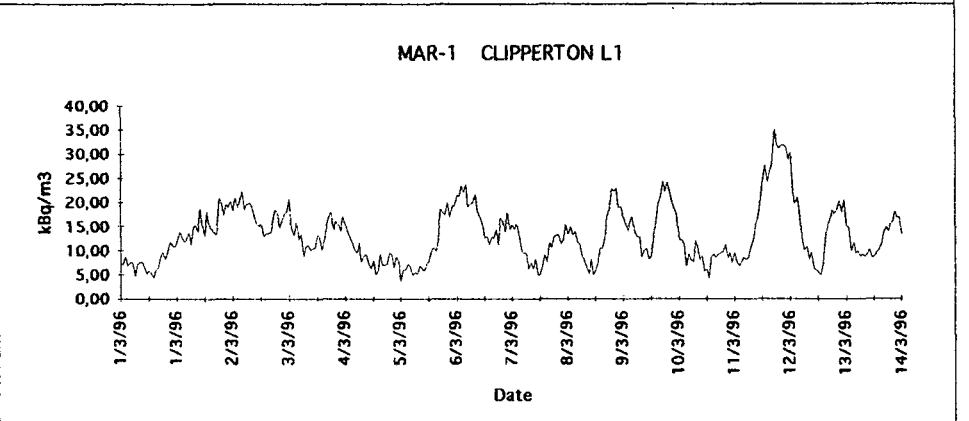
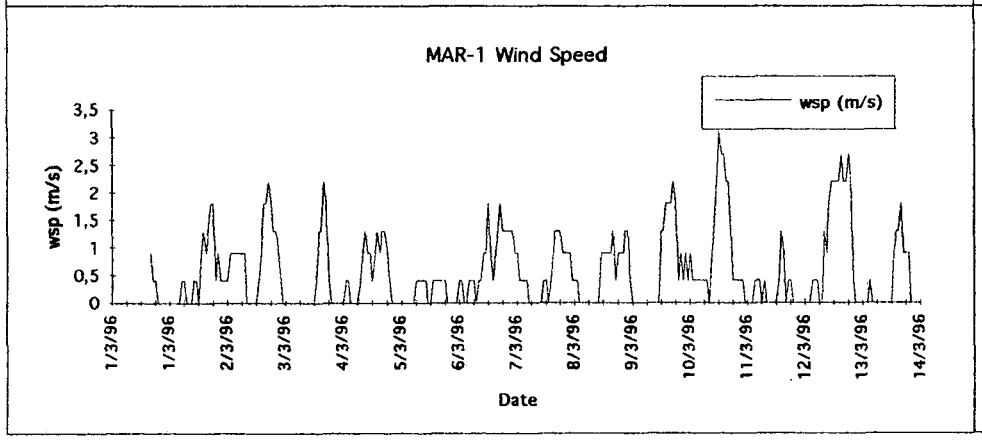
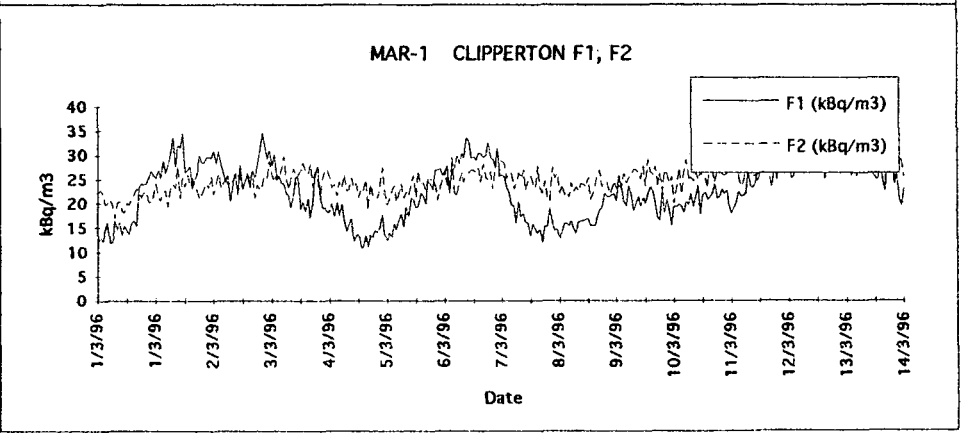

MAR-1 in-out TEMP
tin (°C)
tout (°C)
T (°C)
Date

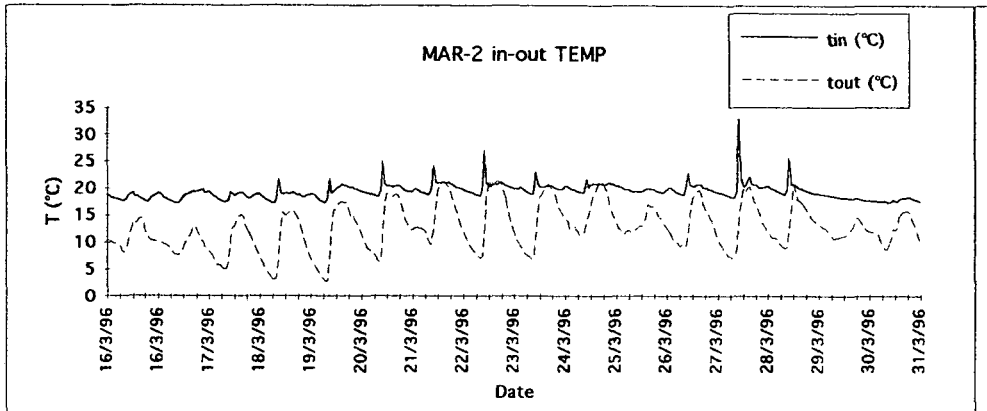

MAR-1 CLIPPERTON B1
kBq/m3
Date

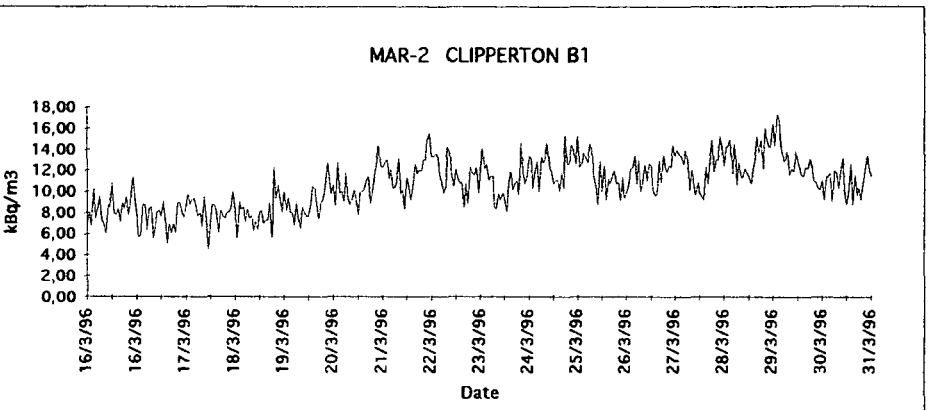

MAR-1 Press. and rain
P (mb)
Rain (mm)
Date

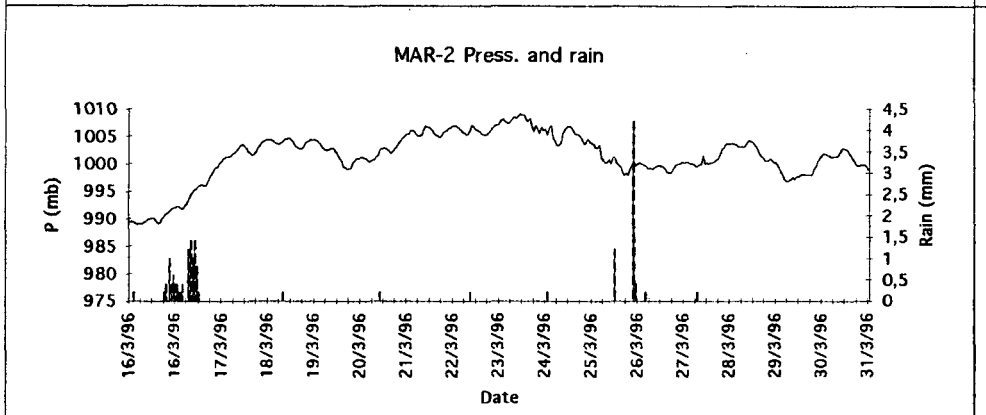

MAR-1 CLIPPERTON L1
kBq/m3
Date

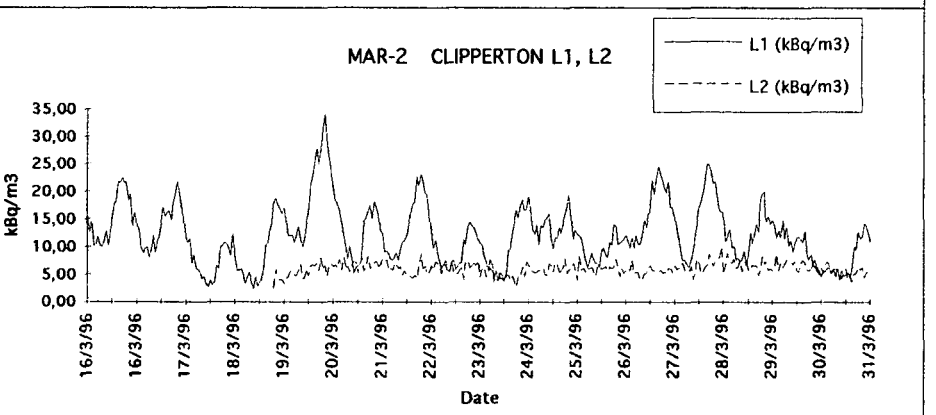

MAR-1 Wind Speed
wsp (m/s)
Date

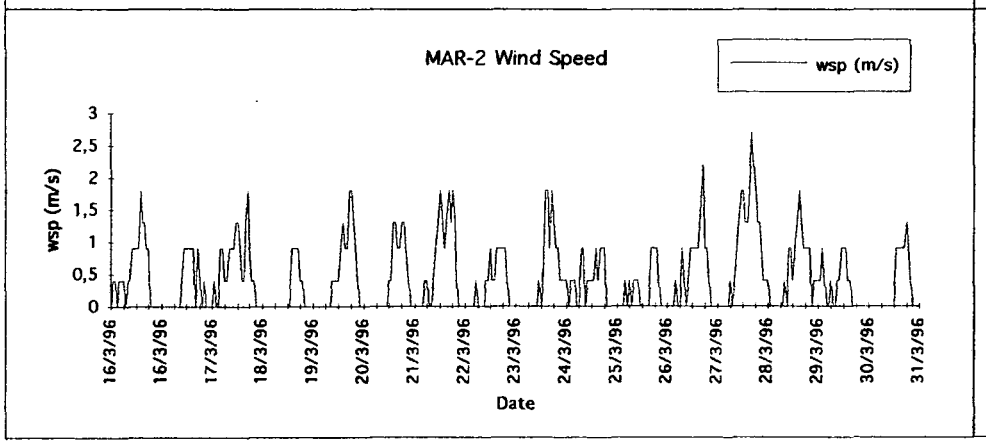

MAR-1 CLIPPERTON F1; F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
Date

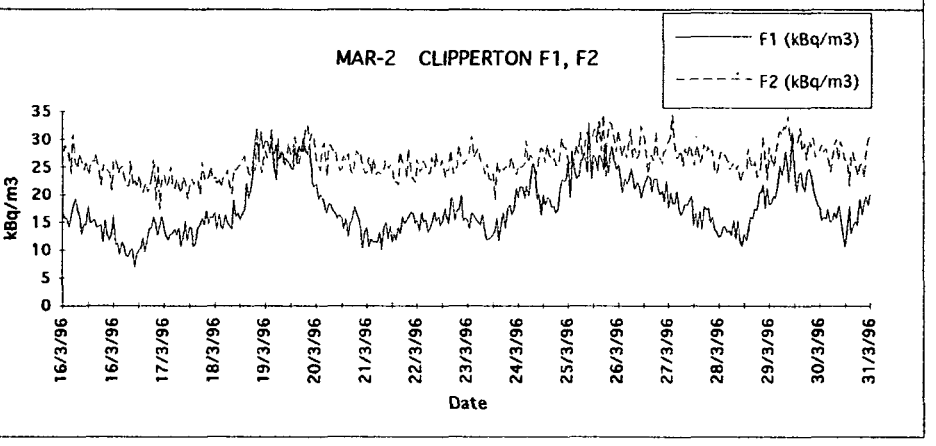

MAR-2 in-out TEMP
tin (°C)
tout (°C)
T (°C)
Date

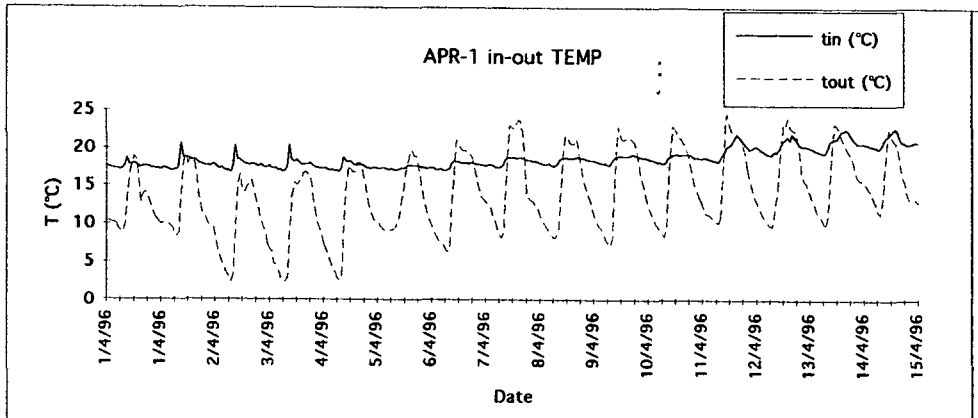

MAR-2 CLIPPERTON B1
kBq/m3
Date

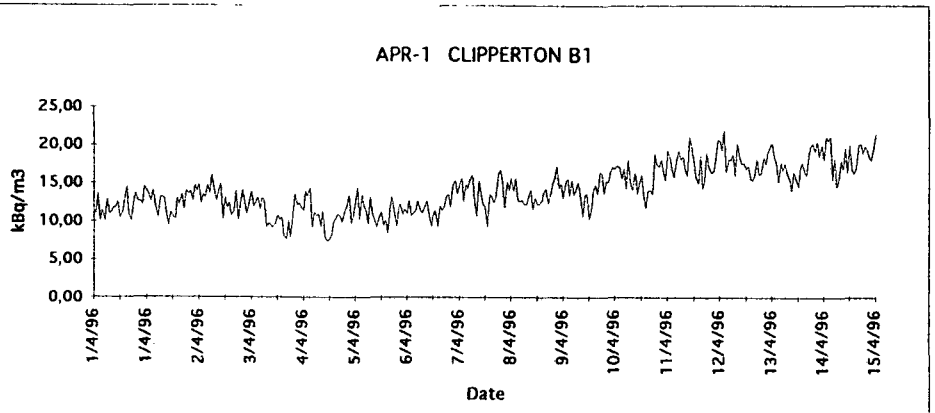

MAR-2 Press. and rain
P (mb)
Rain (mm)
Date

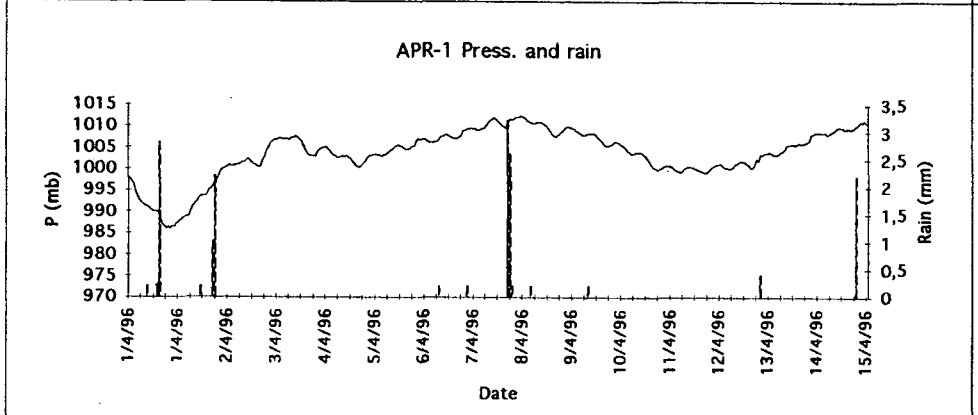

MAR-2 CLIPPERTON L1, L2
L1 (kBq/m3)
L2 (kBq/m3)
kBq/m3
Date

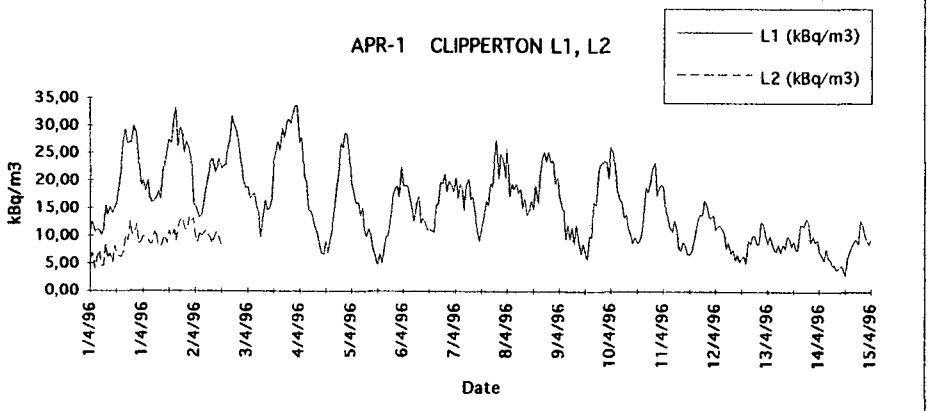

MAR-2 Wind Speed
wsp (m/s)
wsp (m/s)
Date

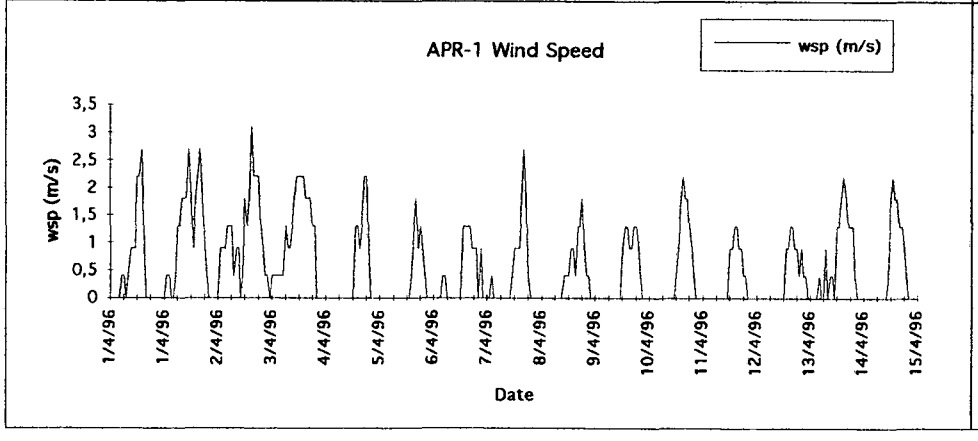

MAR-2 CLIPPERTON F1, F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
Date

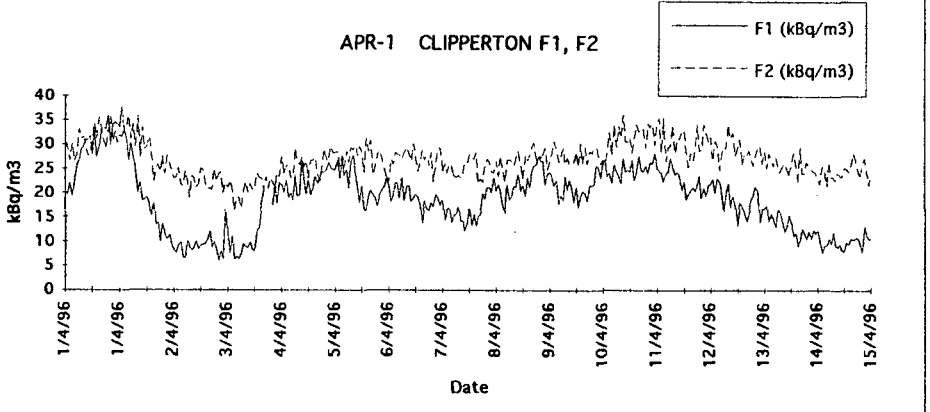

APR-1 in-out TEMP
tin (°C)
tout (°C)
T (°C)
25
20
15
10
5
0
1/4/96
2/4/96
3/4/96
4/4/96
5/4/96
6/4/96
7/4/96
8/4/96
9/4/96
10/4/96
11/4/96
12/4/96
13/4/96
14/4/96
15/4/96
Date

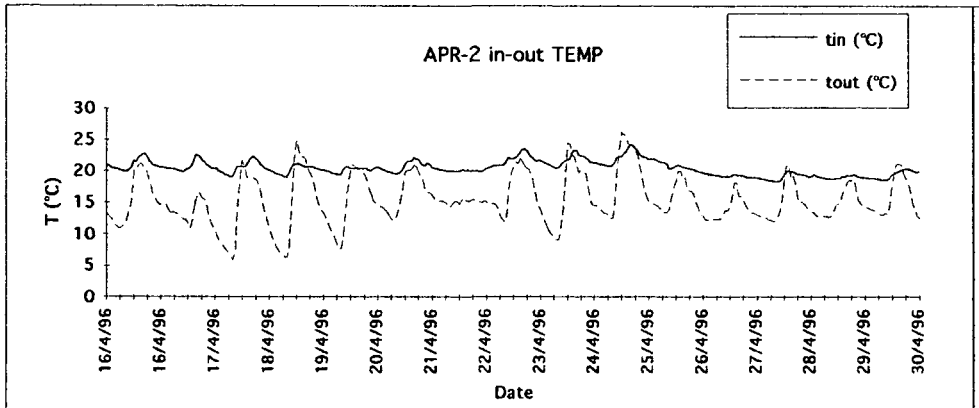

APR-1 CLIPPERTON B1
kBq/m3
25,00
20,00
15,00
10,00
5,00
0,00
1/4/96
2/4/96
3/4/96
4/4/96
5/4/96
6/4/96
7/4/96
8/4/96
9/4/96
10/4/96
11/4/96
12/4/96
13/4/96
14/4/96
15/4/96
Date

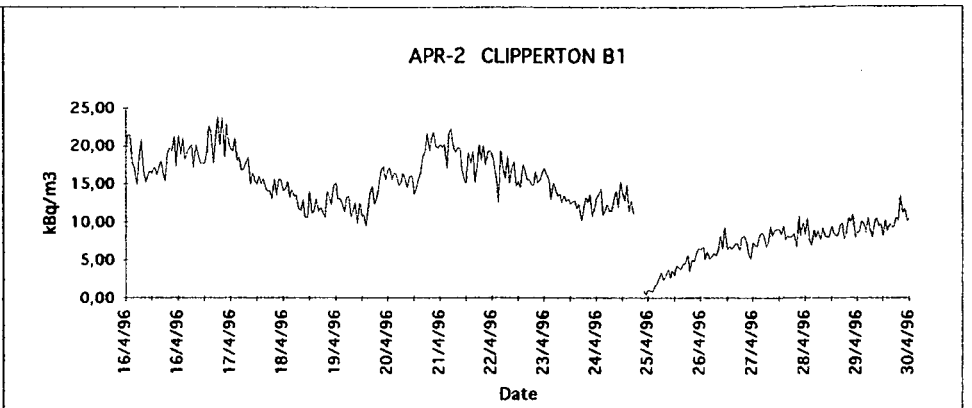

APR-1 Press. and rain
P (mb)
1015
1010
1005
1000
995
990
985
980
975
970
Rain (mm)
3,5
3
2,5
2
1,5
1
0,5
0
1/4/96
2/4/96
3/4/96
4/4/96
5/4/96
6/4/96
7/4/96
8/4/96
9/4/96
10/4/96
11/4/96
12/4/96
13/4/96
14/4/96
15/4/96
Date

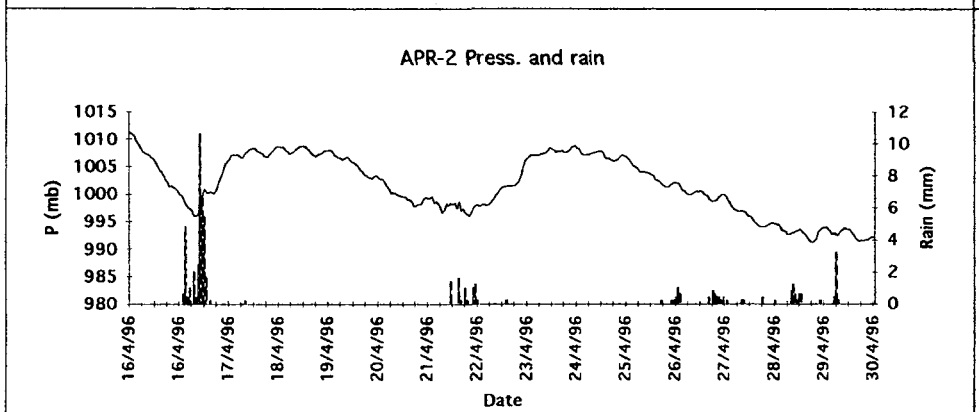

APR-1 CLIPPERTON L1, L2
L1 (kBq/m3)
L2 (kBq/m3)
kBq/m3
35,00
30,00
25,00
20,00
15,00
10,00
5,00
0,00
1/4/96
2/4/96
3/4/96
4/4/96
5/4/96
6/4/96
7/4/96
8/4/96
9/4/96
10/4/96
11/4/96
12/4/96
13/4/96
14/4/96
15/4/96
Date

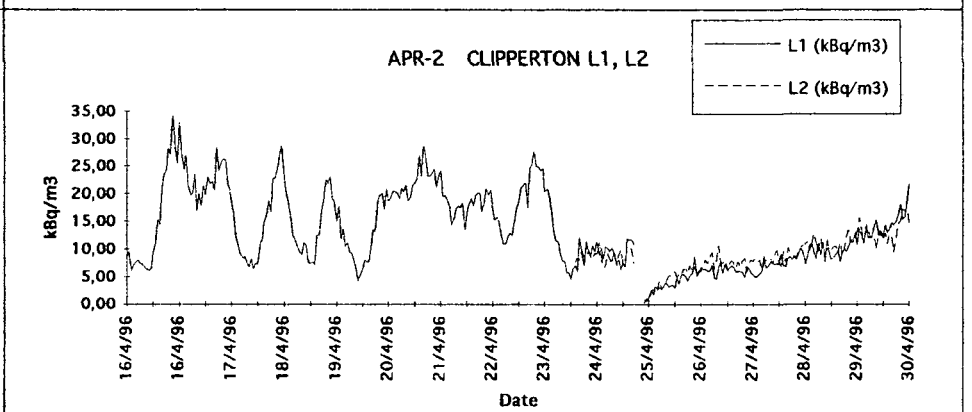

APR-1 Wind Speed
wsp (m/s)
wsp (m/s)
3,5
3
2,5
2
1,5
1
0,5
0
1/4/96
2/4/96
3/4/96
4/4/96
5/4/96
6/4/96
7/4/96
8/4/96
9/4/96
10/4/96
11/4/96
12/4/96
13/4/96
14/4/96
15/4/96
Date

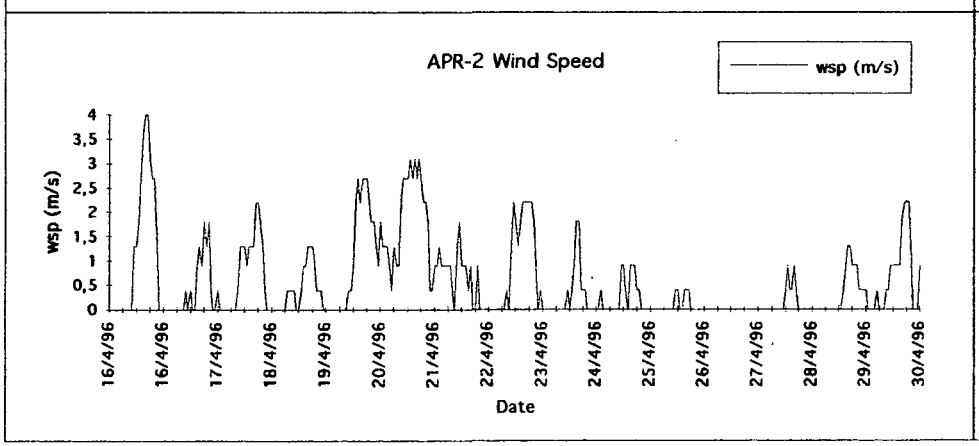

APR-1 CLIPPERTON F1, F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
40
35
30
25
20
15
10
5
0
1/4/96
2/4/96
3/4/96
4/4/96
5/4/96
6/4/96
7/4/96
8/4/96
9/4/96
10/4/96
11/4/96
12/4/96
13/4/96
14/4/96
15/4/96
Date

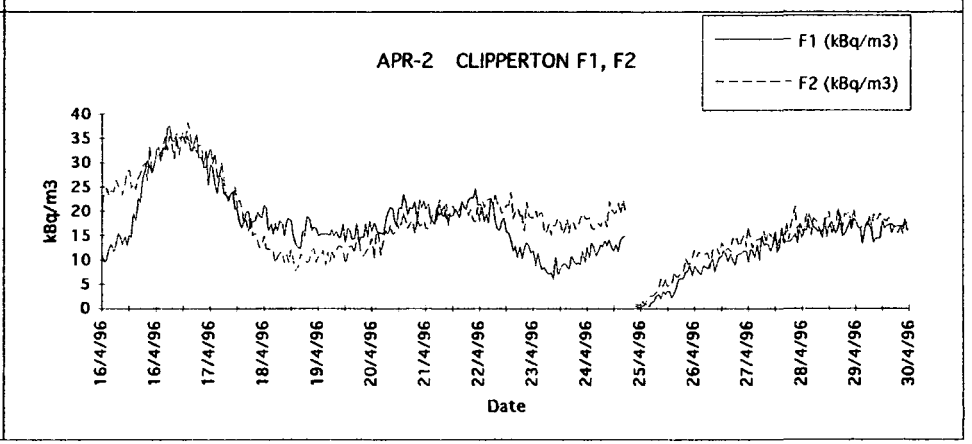

APR-2 in-out TEMP
tin (°C)
tout (°C)
T (°C)
Date

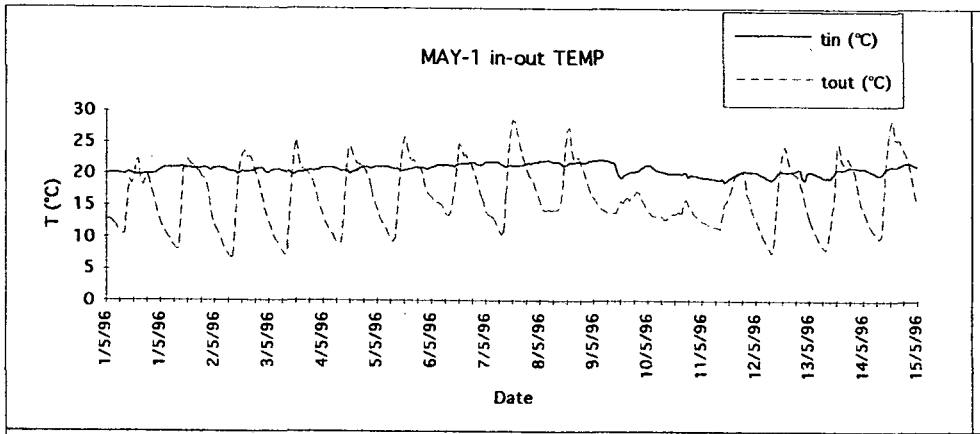

APR-2 CLIPPERTON B1
kBq/m3
Date

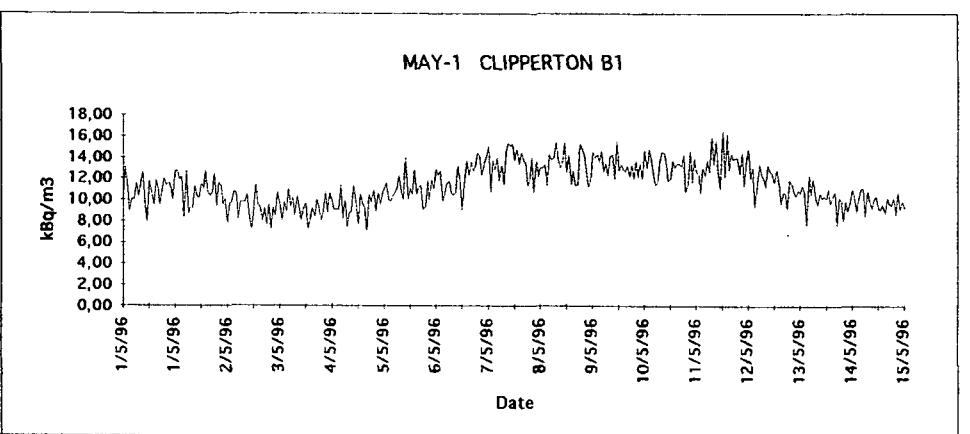

APR-2 Press. and rain
P (mb)
Rain (mm)
Date

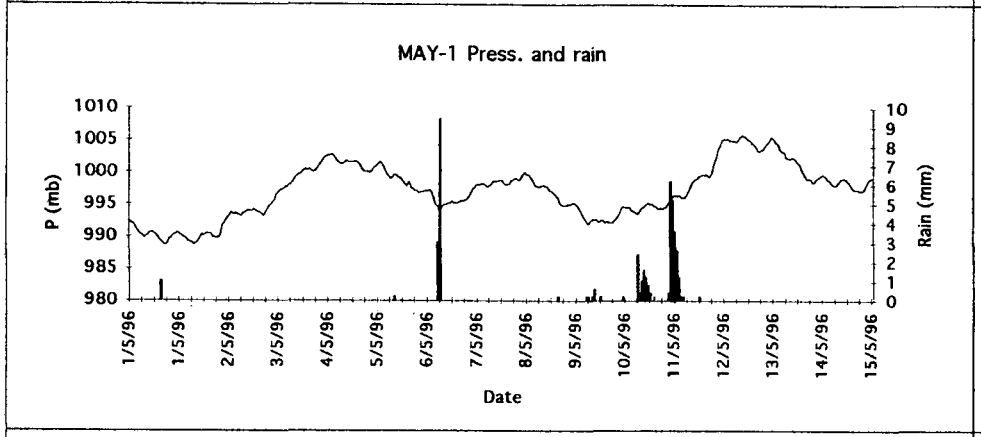

APR-2 CLIPPERTON L1, L2
L1 (kBq/m3)
L2 (kBq/m3)
kBq/m3
Date

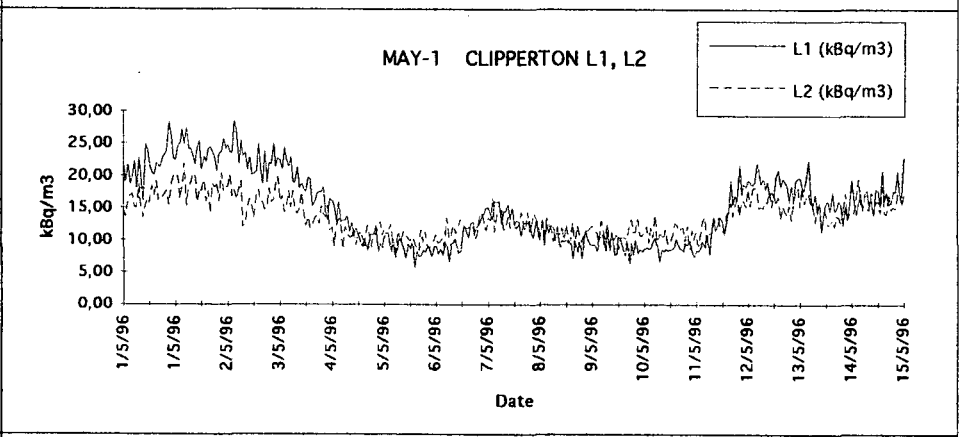

APR-2 Wind Speed
wsp (m/s)
Date

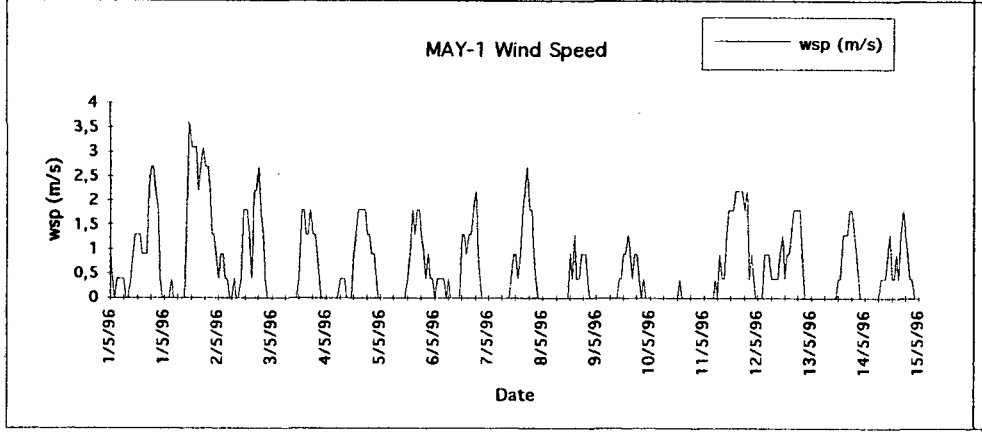

APR-2 CLIPPERTON F1, F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
Date

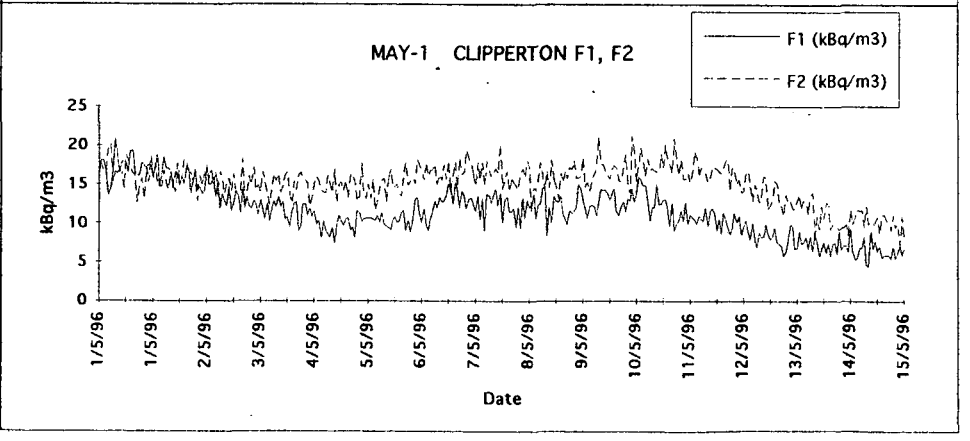

MAY-1 in-out TEMP
tin (°C)
tout (°C)
T (°C)
Date

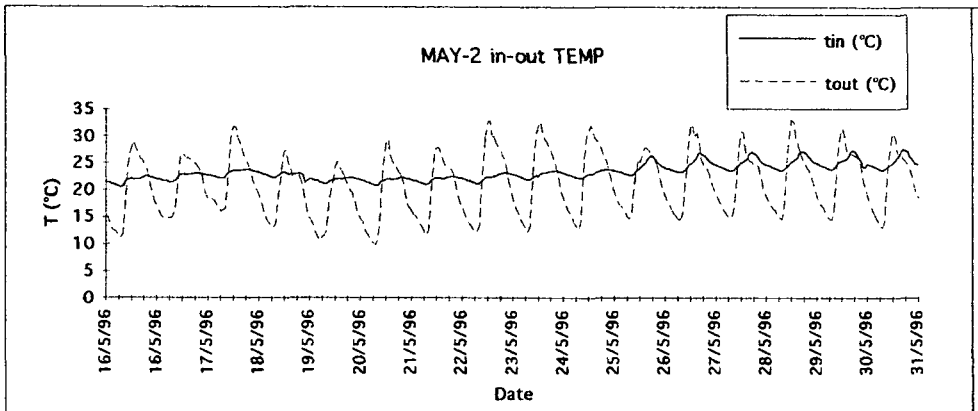

MAY-1 CLIPPERTON B1
kBq/m3
Date

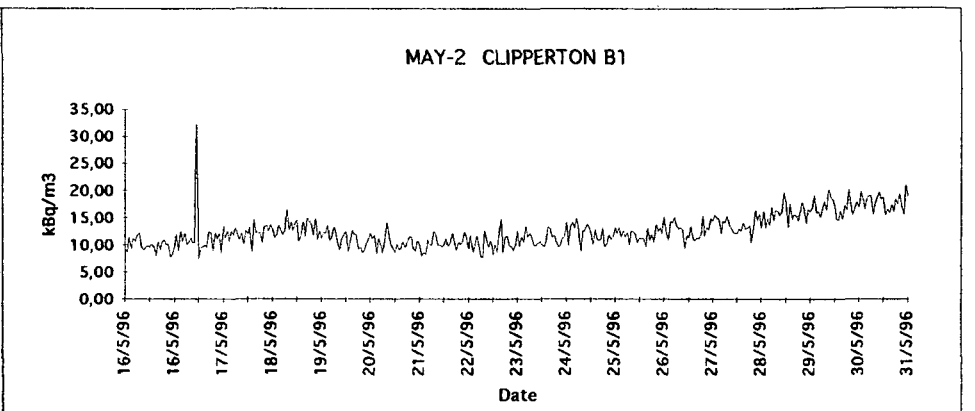

MAY-1 Press. and rain
P (mb)
Rain (mm)
Date

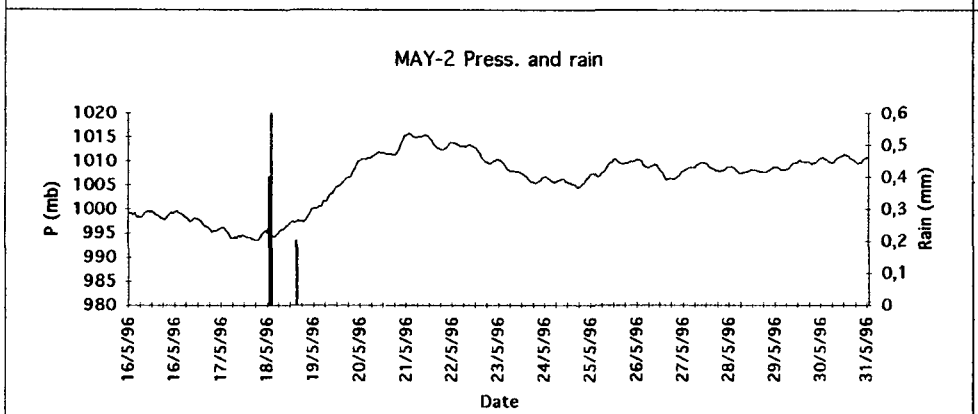

MAY-1 CLIPPERTON L1, L2
L1 (kBq/m3)
L2 (kBq/m3)
kBq/m3
Date

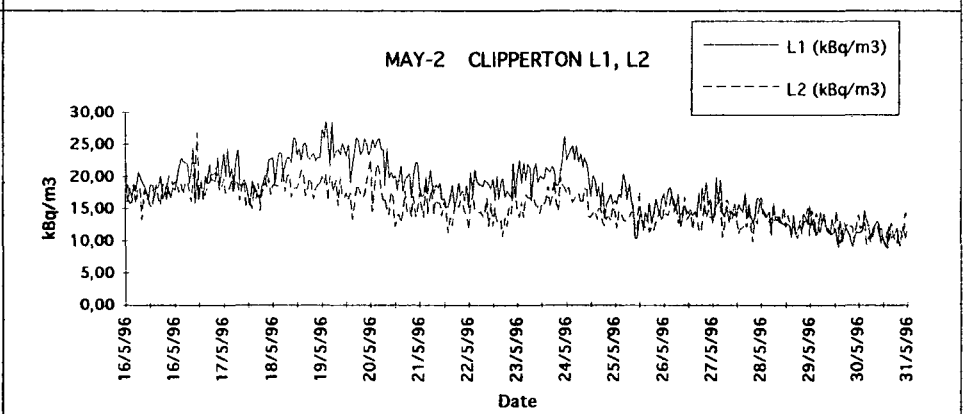

MAY-1 Wind Speed
wsp (m/s)
Date

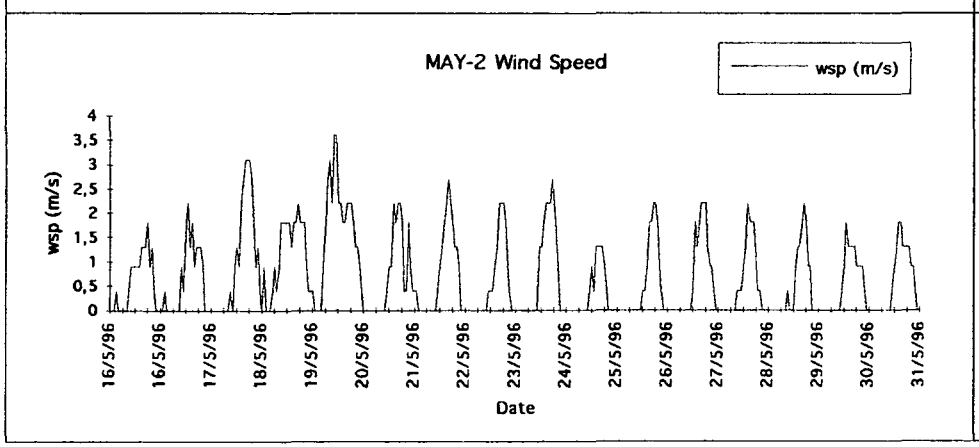

MAY-1 CLIPPERTON F1, F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
Date

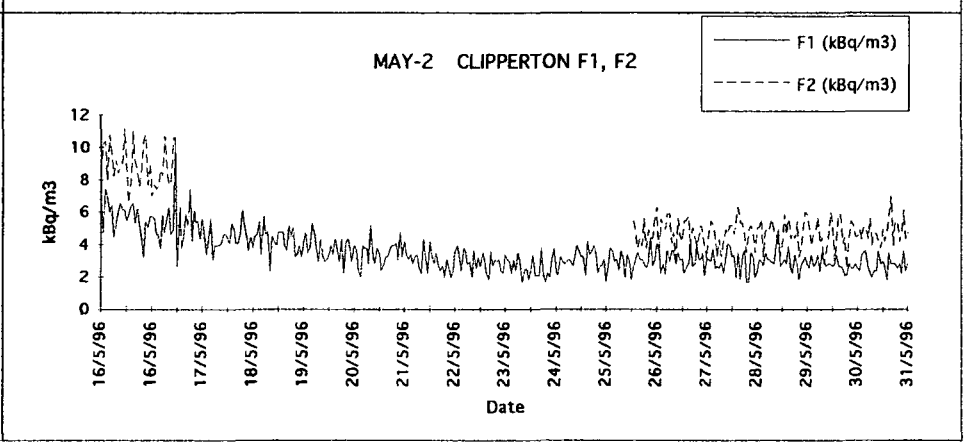

MAY-2 in-out TEMP
tin (°C)
tout (°C)
T (°C)
Date

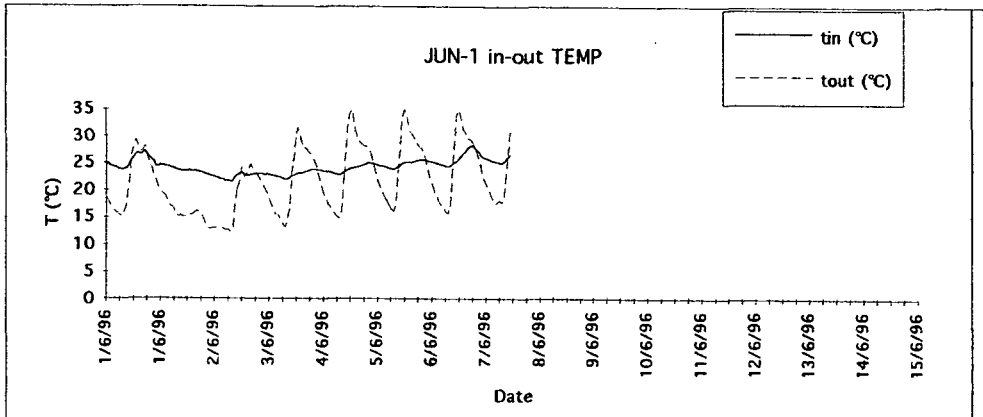

MAY-2 CLIPPERTON B1
kBq/m3
Date

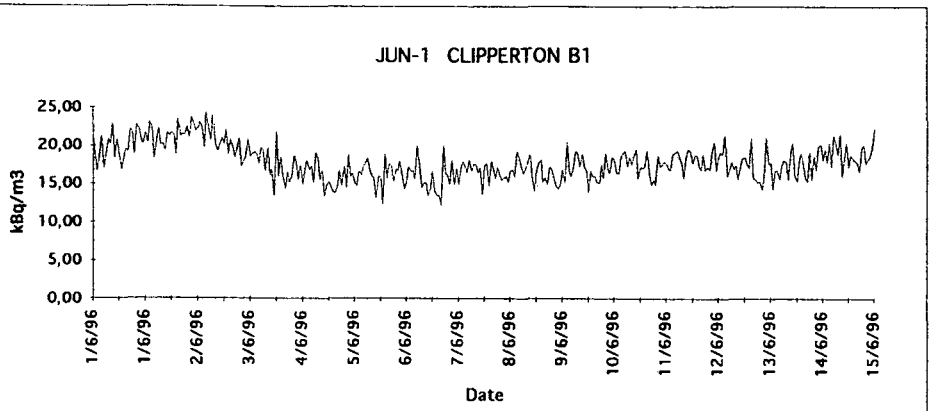

MAY-2 Press. and rain
P (mb)
Rain (mm)
Date

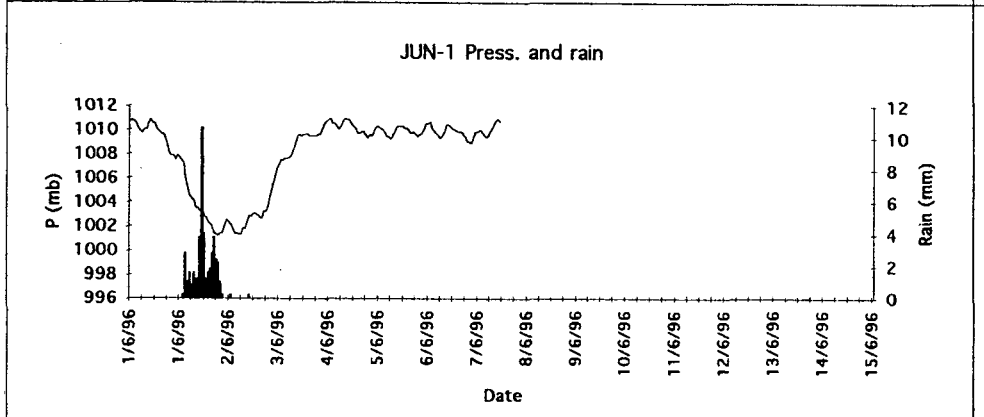

MAY-2 CLIPPERTON L1, L2
L1 (kBq/m3)
L2 (kBq/m3)
kBq/m3
Date

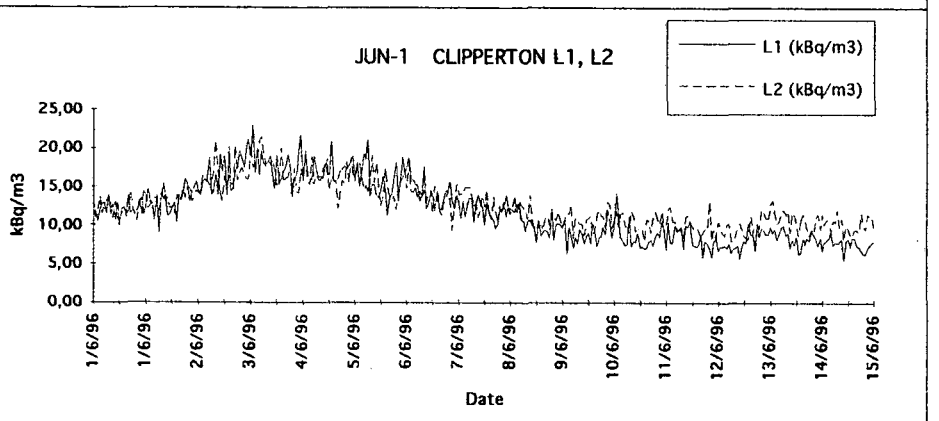

MAY-2 Wind Speed
wsp (m/s)
wsp (m/s)
Date

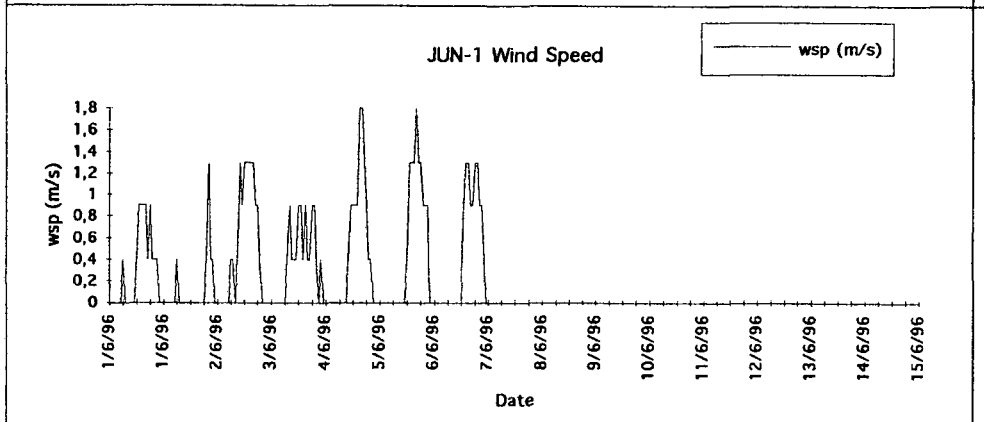

MAY-2 CLIPPERTON F1, F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
Date

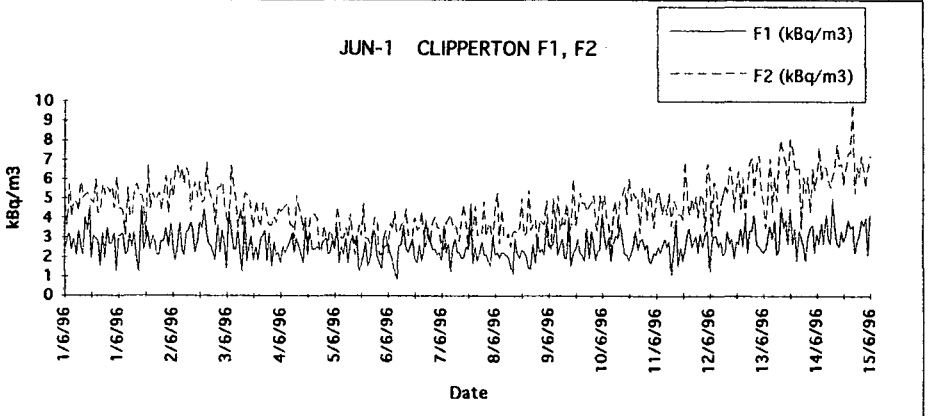

JUN-1 in-out TEMP
tin (°C)
tout (°C)
T (°C)
Date

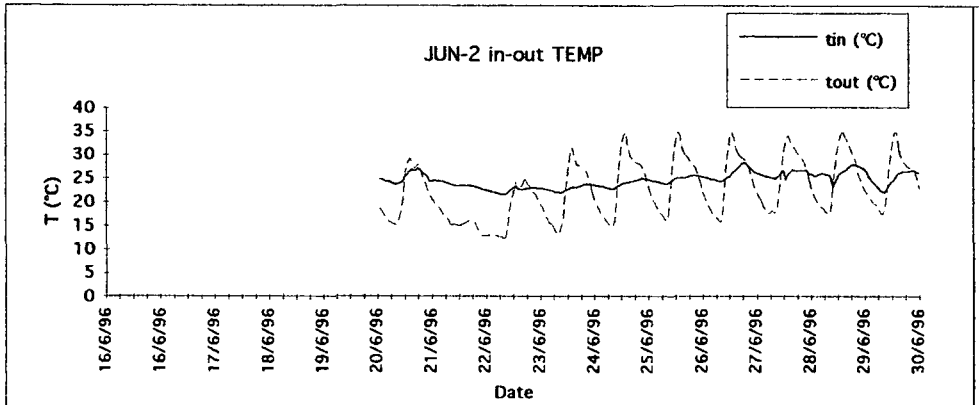

JUN-1 CLIPPERTON B1
kBq/m3
Date

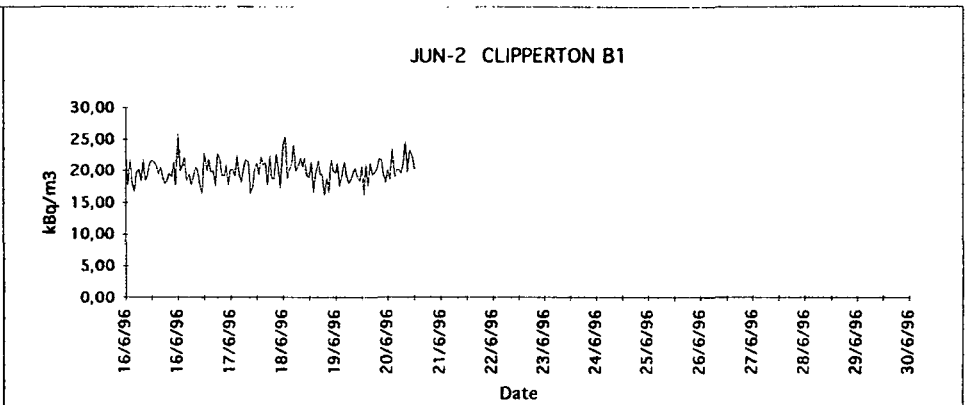

JUN-1 Press. and rain
P (mb)
Rain (mm)
Date

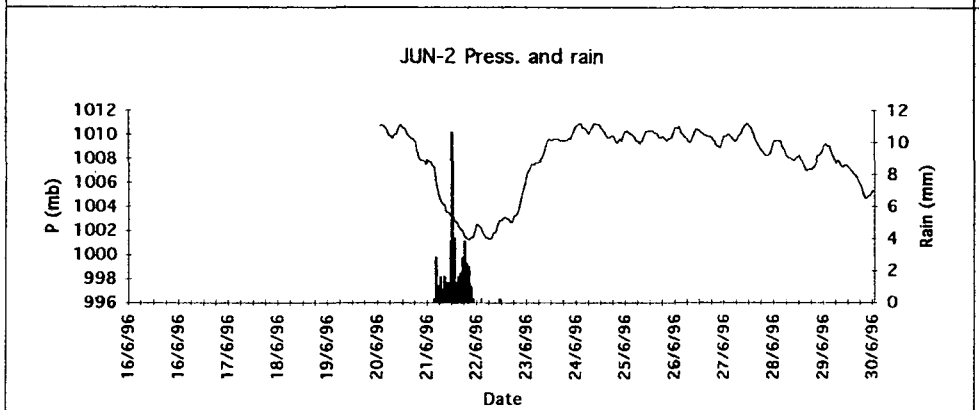

JUN-1 CLIPPERTON L1, L2
L1 (kBq/m3)
L2 (kBq/m3)
kBq/m3
Date

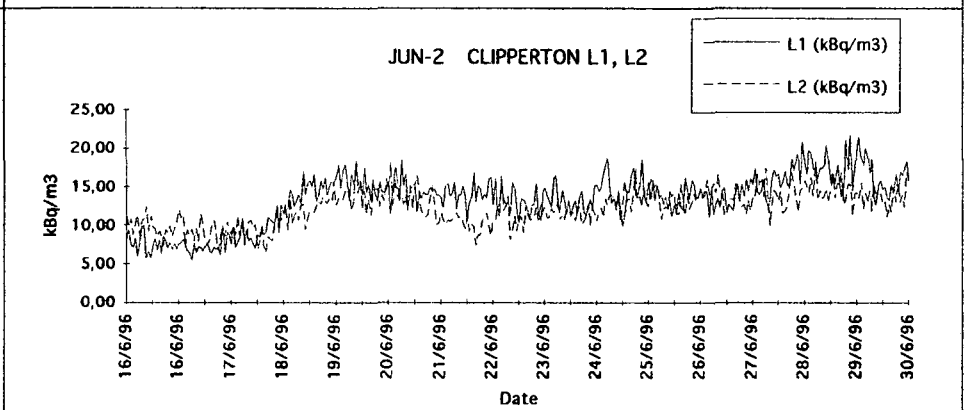

JUN-1 Wind Speed
wsp (m/s)
Date

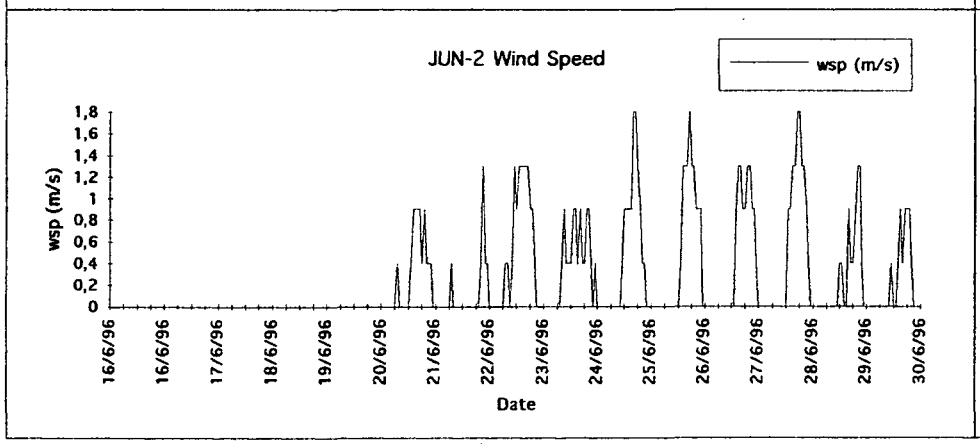

JUN-1 CLIPPERTON F1, F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
Date

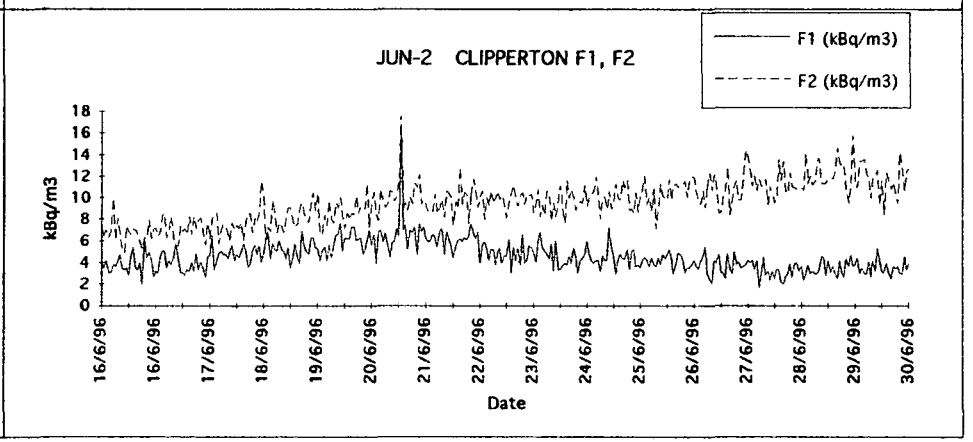

JUN-2 in-out TEMP
tin (°C)
tout (°C)
T (°C)
Date

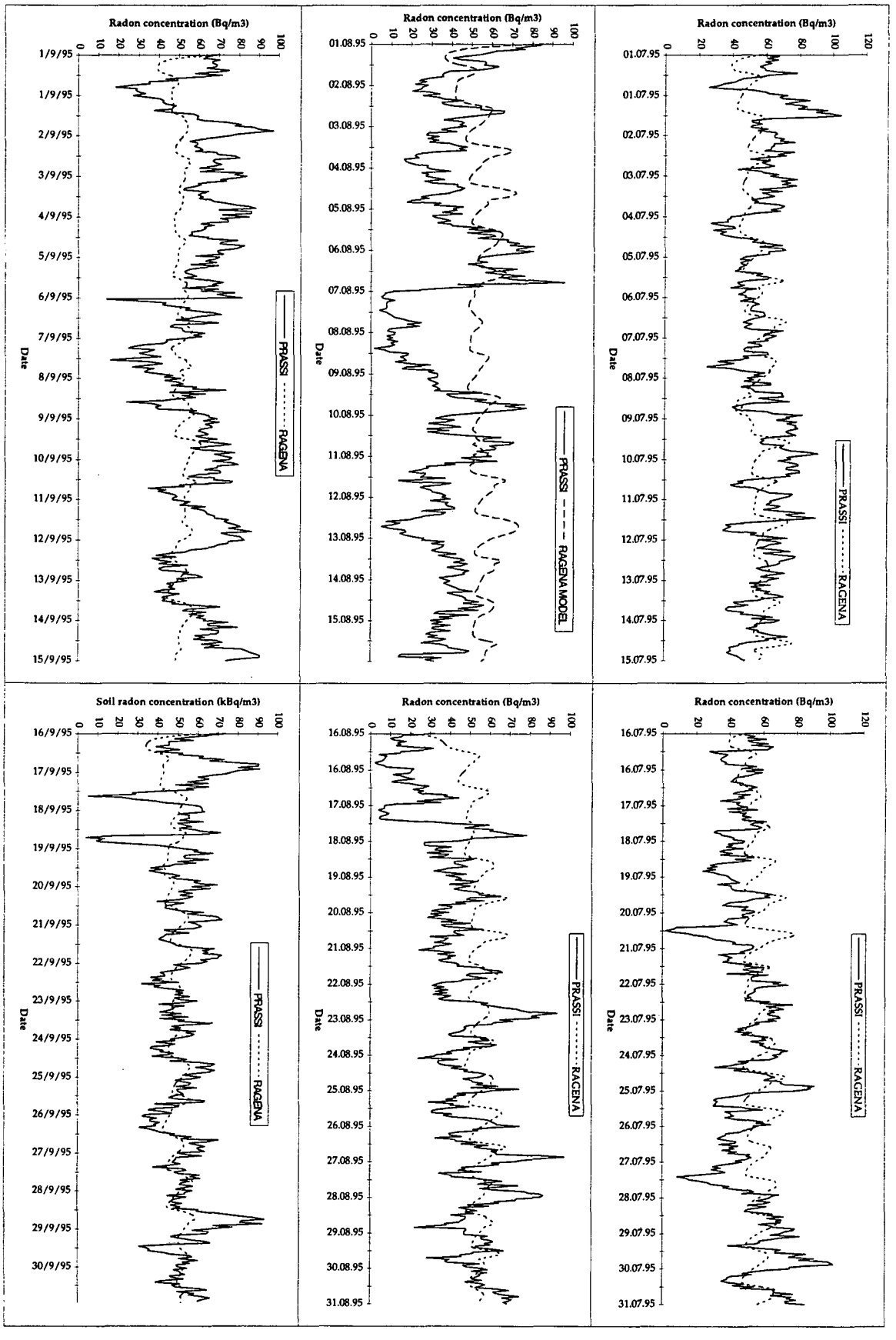

JUN-2 CLIPPERTON B1
kBq/m3
Date


JUN-2 Press. and rain
P (mb)
Rain (mm)
Date

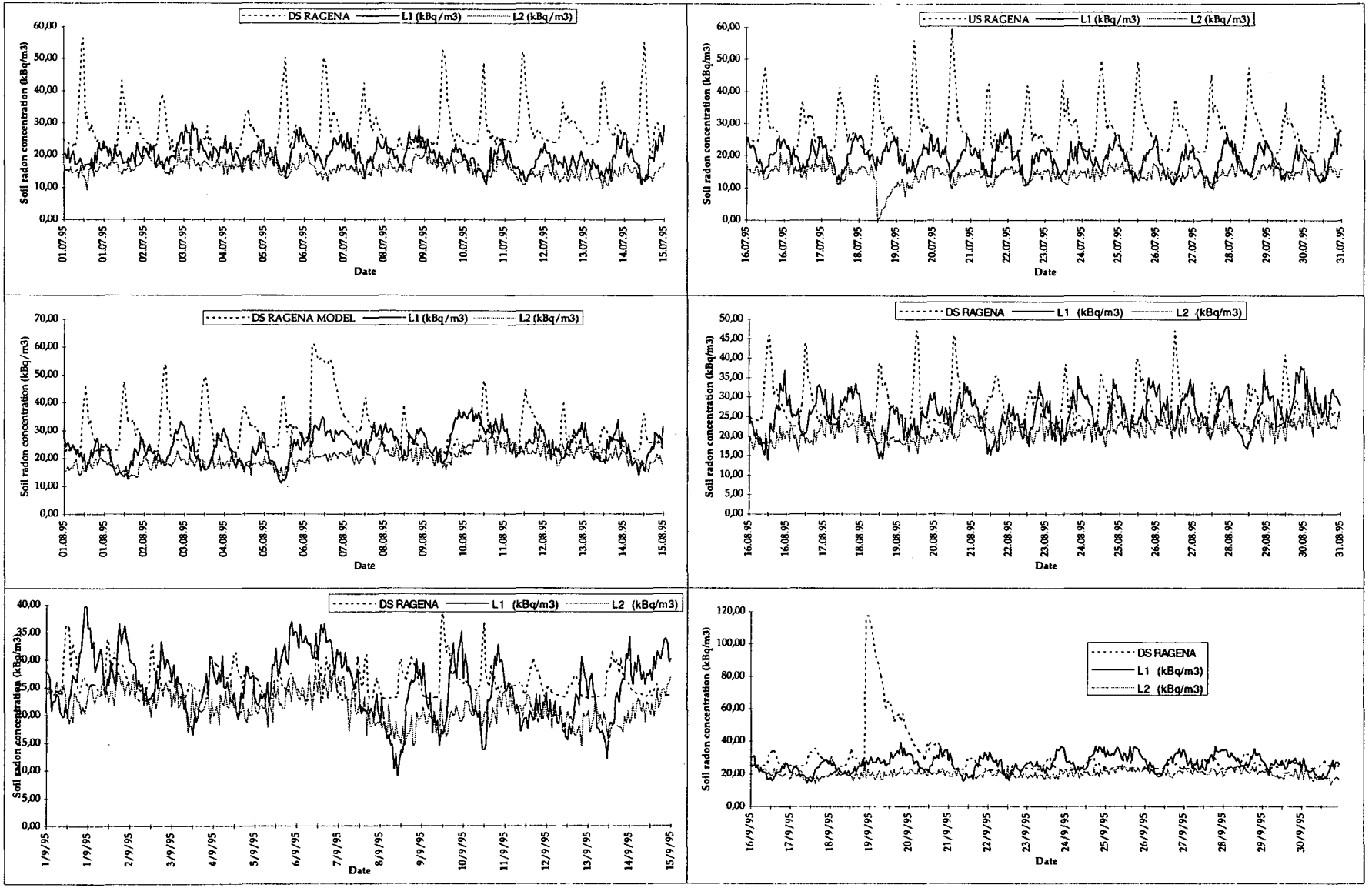

JUN-2 CLIPPERTON L1, L2
L1 (kBq/m3)
L2 (kBq/m3)
kBq/m3
Date


JUN-2 Wind Speed
wsp (m/s)
wsp (m/s)
Date

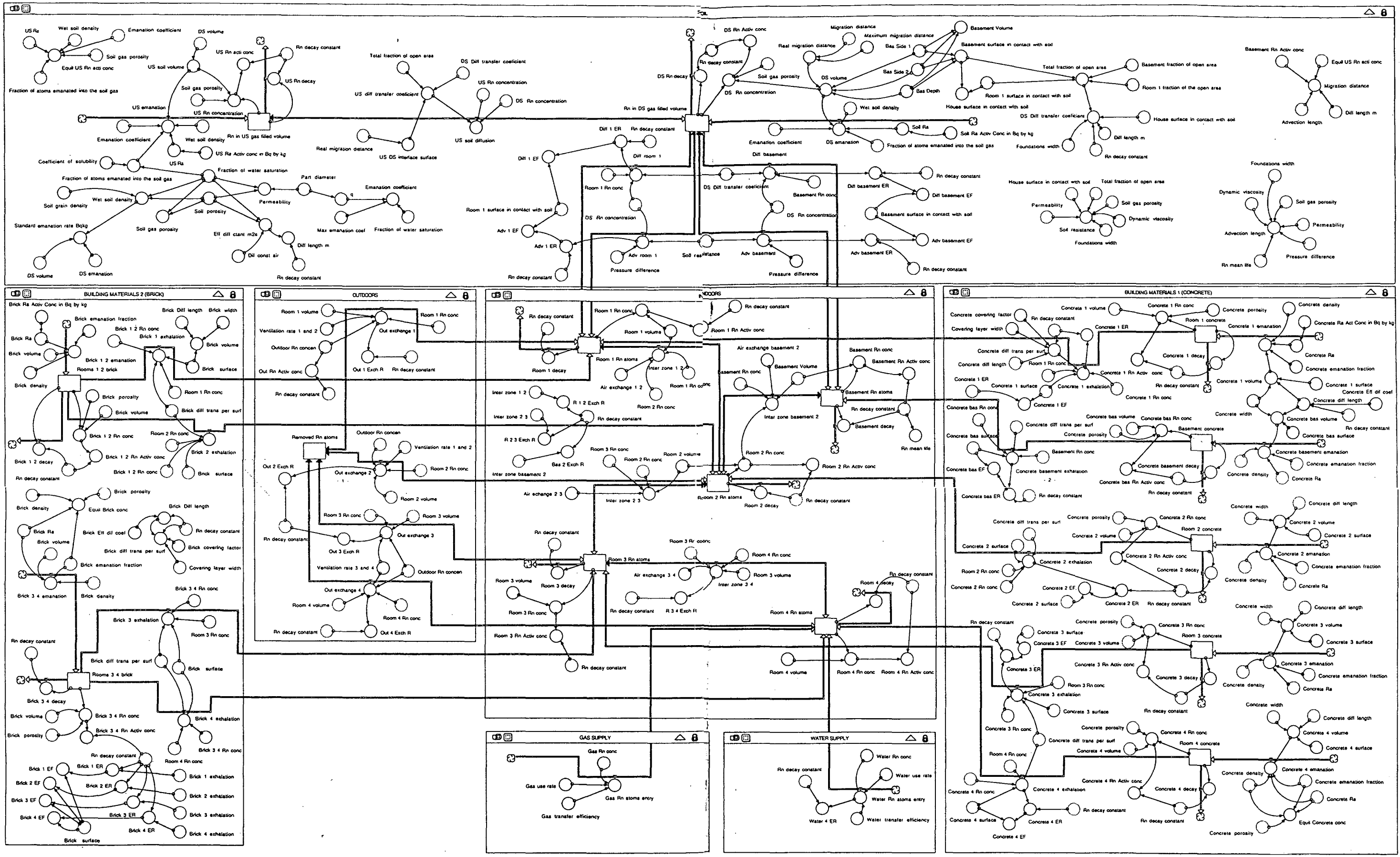

JUN-2 CLIPPERTON F1, F2
F1 (kBq/m3)
F2 (kBq/m3)
kBq/m3
Date


Radon concentration (Bq/m3)
Soil radon concentration (kBq/m3)
Date
PRASSI
RAGENA
RAGENA MODEL

RAGENA-clippertons L1 and L2 comparison of soil radon dynamics



ANNEX 3


SOIL
US Ra
Wet soil density
Emanation coefficient
Soil gas porosity
Equil US Rn acti conc
Fraction of atoms emanated into the soil gas
DS volume
US Rn acti conc
Rn decay constant
US soil volume
US Rn decay
Soil gas porosity
US emanation
US Rn concentration
Emanation coefficient
Wet soil density
Rn in US gas filled volume
US Ra Activ conc in Bq by kg
US Ra
Coefficient of solubility
Fraction of water saturation
Fraction of atoms emanated into the soil gas
Part diameter
Emanation coefficient
Soil grain density
Wet soil density
Permeability
Soil porosity
Soil gas porosity
Standard emanation rate Bq/kg
Eff diff ctant m2s
Diff length m
Dif const air
Rn decay constant
DS volume
DS emanation
Total fraction of open area
DS Diff transfer coeficient
US Rn concentration
US diff transfer coeficient
DS Rn concentration
Real migration distance
US DS interface surface
US soil diffusion
DS Rn Activ conc
Rn decay constant
DS Rn decay
Soil gas porosity
DS Rn concentration
Rn in DS gas filled volume
Diff 1 ER
Rn decay constant
Diff room 1
Diff 1 EF
Room 1 Rn conc
DS Diff transfer coeficient
Basement Rn conc
DS Rn concentration
Room 1 surface in contact with soil
OS Rn concentration
Adv 1 EF
Adv 1 ER
Adv room 1
Soil resistance
Adv basement
Rn decay constant
Pressure difference
Pressure difference
Migration distance
Maximum migration distance
Real migration distance
Bas Side 1
Basement Volume
Basement surface in contact with soil
Bas Side 2
DS volume
Bas Depth
Room 1 surface in contact with soil
House surface in contact with soil
Wet soil density
Soil Ra
Soil Ra Activ Conc in Bq by kg
Emanation coefficient
DS emanation
Fraction of atoms emanated into the soil gas
Diff basement
Total fraction of open area
Basement fraction of open area
Room 1 fraction of the open area
DS Diff transfer coeficient
House surface in contact with soil
Diff length m
Foundations width
Rn decay constant
Diff basement ER
Rn decay constant
Diff basement EF
Basement surface in contact with soil
Adv basement EF
Adv basement ER
Rn decay constant
Basement Rn Activ conc
Equil US Rn acti conc
Migration distance
Diff length m
Advection length
House surface in contact with soil
Total fraction of open area
Permeability
Soil gas porosity
Dynamic viscosity
Soil resistance
Foundations width
Foundations width
Dynamic viscosity
Soil gas porosity
Permeability
Advection length
Pressure difference
Rn mean life
BUILDING MATERIALS 2 (BRICK)
Brick Ra Activ Conc in Bq by kg
Brick emanation fraction
Brick Diff length
Brick width
Brick Ra
Brick 1 2 Rn conc
Brick 1 exhalation
Brick volume
Brick volume
Brick 1 2 emanation
Brick surface
Brick density
Rooms 1 2 brick
Room 1 Rn conc
Brick porosity
Brick diff trans per surf
Brick volume
Brick 1 2 Rn conc
Room 2 Rn conc
Brick 1 2 decay
Brick 1 2 Rn Activ conc
Brick 2 exhalation
Rn decay constant
Brick 1 2 Rn conc
Bnck surface
Brick porosity
Brick density
Equil Brick conc
Brick Diff length
Brick Ra
Brick Eff dif coef
Rn decay constant
Brick volume
Brick diff trans per surf
Brick covering factor
Brick emanation fraction
Covering layer width
Brick 3 4 emanation
Brick density
Brick 3 4 Rn conc
Brick 3 exhalation
Room 3 Rn conc
Rn decay constant
Brick diff trans per surf
Brick surface
Rooms 3 4 brick
Brick 3 4 decay
Brick volume
Brick 3 4 Rn conc
Brick 4 exhalation
Brick porosity
Brick 3 4 Rn Activ conc
Brick 3 4 Rn conc
Rn decay constant
Room 4 Rn conc
Brick 1 EF
Brick 1 ER
Brick 1 exhalation
Brick 2 EF
Brick 2 ER
Brick 2 exhalation
Brick 3 EF
Brick 3 ER
Brick 3 exhalation
Brick 4 EF
Brick 4 ER
Brick 4 exhalation
Brick surface
OUTDOORS
Room 1 volume
Room 1 Rn conc
Ventilation rate 1 and 2
Out exchange 1
Outdoor Rn concen
Out Rn Activ conc
Out 1 Exch R
Rn decay constant
Rn decay constant
Removed Rn atoms
Outdoor Rn concen
Ventilation rate 1 and 2
Out 2 Exch R
Out exchange 2
Room 2 Rn conc
Room 2 volume
Room 3 Rn conc
Room 3 volume
Out exchange 3
Rn decay constant
Out 3 Exch R
Ventilation rate 3 and 4
Outdoor Rn concen
Out exchange 4
Room 4 volume
Room 4 Rn conc
Rn decay constant
Out 4 Exch R
INDOORS
Rn decay constant
Room 1 Rn conc
Room 1 volume
Room 1 Rn Activ conc
Room 1 decay
Room 1 Rn atoms
Inter zone 1 2
Air exchange 1 2
Room 1 Rn conc
Room 2 Rn conc
Inter zone 1 2
R 1 2 Exch R
Inter zone 2 3
Rn decay constant
R 2 3 Exch R
Bas 2 Exch R
Room 3 Rn conc
Room 2 Rn conc
Room 2 volume
Inter zone basement 2
Air exchange 2 3
Inter zone 2 3
Room 2 Rn atoms
Room 2 decay
Rn decay constant
Air exchange basement 2
Basement Rn conc
Basement Rn Activ conc
Basement Rn conc
Basement Volume
Basement Rn atoms
Inter zone basement 2
Rn decay constant
Basement decay
Rn mean life
Room 2 Rn conc
Room 2 Rn Activ conc
Rn decay constant
Room 3 Rn atoms
Room 3 Rr coonc
Room 4 Rn conc
Air exchange 3 4
Room 3 volume
Inter zone 3 4
Rn decay constant
R 3 4 Exch R
Room 3 volume
Room 3 decay
Room 3 Rn conc
Room 3 Rn Activ conc
Rn decay constant
Rn decay constant
Room 4 decay
Room 4 Rn atoms
Room 4 volume
Room 4 Rn conc
Room 4 Rn Activ conc
BUILDING MATERIALS 1 (CONCRETE)
Concrete covering factor
Concrete 1 volume
Concrete 1 Rn conc
Concrete porosity
Concrete density
Rn decay constant
Covering layer width
Room 1 concrete
Concrete 1 ER
Concrete 1 emanation
Concrete Ra Act Conc in Bq by kg
Concrete diff trans per surf
Concrete 1 decay
Concrete Ra
Concrete diff length
Room 1 Rn conc
Concrete 1 Rn Activ conc
Concrete emanation fraction
Concrete 1 ER
Concrete 1 surface
Concrete 1 exhalation
Concrete 1 volume
Concrete 1 surface
Rn decay constant
Concrete Eff dif coef
Concrete 1 Rn conc
Concrete diff length
Concrete 1 EF
Concrete bas Rn conc
Concrete bas volume
Concrete bas Rn conc
Concrete width
Concrete diff trans per surf
Concrete bas volume
Rn decay constant
Concrete bas surface
Concrete porosity
Basement concrete
Concrete bas surface
Basement Rn conc
Concrete basement emanation
Concrete bas EF
Concrete basement exhalation
Concrete basement decay
Concrete emanation fraction
Concrete density
Concrete Ra
Concrete bas Rn Activ conc
Concrete bas ER
Rn decay constant
Rn decay constant
Concrete width
Concrete diff length
Concrete diff trans per surf
Concrete porosity
Concrete 2 Rn conc
Concrete 2 volume
Concrete 2 surface
Room 2 concrete
Concrete 2 surface
Concrete 2 emanation
Concrete 2 exhalation
Concrete 2 Rn Activ conc
Concrete emanation fraction
Room 2 Rn conc
Concrete 2 decay
Concrete density
Concrete Ra
Concrete 2 Rn conc
Concrete 2 EF
Concrete 2 ER
Concrete 2 surface
Rn decay constant
Rn decay constant
Concrete width
Concrete diff length
Concrete 3 surface
Concrete porosity
Concrete 3 Rn conc
Concrete 3 volume
Concrete 3 surface
Concrete 3 EF
Concrete 3 volume
Room 3 concrete
Concrete 3 ER
Concrete 3 Rn Activ conc
Concrete 3 emanation
Concrete 3 decay
Concrete emanation fraction
Room 3 Rn conc
Concrete density
Concrete Ra
Concrete 3 exhalation
Concrete 3 surface
Rn decay constant
Concrete width
Concrete 3 Rn conc
Concrete porosity
Concrete diff length
Concrete 4 volume
Concrete diff trans per surf
Concrete 4 surface
Concrete 4 volume
Room 4 concrete
Room 4 Rn conc
Concrete 4 emanation
Concrete 4 Rn Activ conc
Concrete density
Concrete emanation fraction
Concrete 4 Rn conc
Concrete 4 exhalation
Concrete 4 decay
Concrete Ra
Concrete 4 surface
Concrete 4 ER
Rn decay constant
Rn decay constant
Equil Concrete conc
Concrete porosity
Concrete 4 EF
GAS SUPPLY
Gas Rn conc
Gas use rate
Gas Rn atoms entry
Gas transfer efficiency
WATER SUPPLY
Water Rn conc
Rn decay constant
Water use rate
Water Rn atoms entry
Water 4 ER
Water transfer efficiency
Environmental parameters
Barometric press
Rainfall
Soil temp
Temp diffe
Wind

ANNEX 4

UMWELTFORSCHUNGSZENTRUM LEIPZIG-HALLE GMBH
SEKTION ANALYTIK - ABTEILUNG UMWELTRADIOAKTIVITÄT UND -ISOTOPE
Permoserstraße 15, 04318 Leipzig ☎ (0341) 2352297 FAX: (0341)2352625

REPORT

Measurement of radionuclides in soil samples from surroundings of the test house in Barcelona by gammaspectrometry

Dr. H.C. Treutler
Dr. K. Freyer

Leipzig, August 18, 1995

Measurement technique

The sampling was done by the coworkers of Barcelona. There was no information about the sample origin (depth, location). The samples were dryed under 80 °C and milled to a grain size of ≤ 1 mm. Stones in the samples were not milled and also not measured. About 100 g of the milled sample material was filled in a cylindrical sample container (volume: 108 cm^3).
The gammaspectrometrical measurements were done using HPGe detector with 0.5 mm beryllium window. It has an energy resolution of 570 eV on the level of 122 keV. The passive shielding consists of 105 mm lead, 2 mm copper and 4 mm plexiglass. The detector and the measuring geometry were calibrated with certified reference material RGU-1 and RGK-1 from the International Atomic Energy Agency (IAEA) and with a calibration mixture solution sold by Physikalisch-Technische Bundesanstalt Braunschweig, Germany.
The gamma spectra were evaluated by the commercial software „GAMMAW" (Dr. Westmeier Gesellschaft für Kernspektrometrie mbH). For the calculation of the specific activities of the determined radionuclides the following γ-energies were used:

Th-234:	63.3 keV	(3,8 %)
Ra-226 was calculated by its daughter nuclides		
Pb-214:	351.9 keV	(37.1 %)
	295.2 keV	(19.2 %)
Bi-214:	609.3 keV	(46.1 %)
	1120.6 keV	(15.0 %)
Pb-210:	46.5 keV	(4.05 %)
Ac-228:	911.1 keV	(29.0 %)
	968.9 keV	(17.0 %)
	338.4 keV	(12.0 %)
K-40:	1460.8 keV	(10.7 %)

Results

In the table 1 the specific activities of these radionuclides in the soil samples are summarized. The radionuclides Th-234, Ra-226 and Pb-210 are members of the decay chain of uranium-238. Because of the relative short half life time of Th-234 (24.1 d) it is really in radioactive equilibrium with U-238. Therefore it is possible to calculate the uranium content of the samples (table 2).
Ac-228 (half life time: 6.1 h) comes from the decay chain of Th-232. It is the second daughter nuclide in this chain after Ra-228 (half life time: 6.7 a). On the

understanding of stable conditions in the sampling region in the last 50 years Ac-228 is in radioactive equilibrium with Th-232 and under this asumption the thorium content of the samples was calculated (table 2).
Average uranium concentrations are [1] in

- acid igneous 3.0 µg/g,
- intermediate igneous 1.5 µg/g,
- basic igneous 0.6 µg/g.

Average contents of Ra-226, Th-232 and K-40 are [1] in

- igneous	Ra-226: 48 Bq/kg	Th-232: 48 Bq/kg	K-40: 800 Bq/kg
- sedimentary sandstones	15 Bq/kg	25 Bq/kg	240 Bq/kg
- shales	15 Bq/kg	40 Bq/kg	800 Bq/kg
- limestones	15 Bq/kg	5 Bq/kg	80 Bq/kg

Under this point of view the uranium and thorium contents of the measured soil samples are in the normal environmental level.

[1] M. Eisenbud, Environmental Radioactivity from Natural, Industrial, and Military Sources, Academic Press, San Diego, New York ..., 1987.

Table 1: Specific activities of Th-234, Ra-226, Pb-210, Ac-228 and K-40 in soil samples from the surroundings of the Barcelona test house

sample	mass [g]	det.	specific activity [Bq/kg]				
			Th-234	Ra-226	Pb-210	Ac-228	K-40
AM1	114,5	2	39 ± 3	33 ± 1	35 ± 1	53 ± 2	605 ± 19
AM2	107,0	2	33 ± 5	31 ± 2	35 ± 7	41 ± 2	506 ± 29
AM3	116,9	2	39 ± 9	33 ± 3	41 ± 5	49 ± 2	521 ± 28
AM4	114,0	1	20 ± 8	18 ± 2	16 ± 7	29 ± 1	336 ± 12
B1	108,4	1	29 ± 13	25 ± 2	32 ± 10	39 ± 2	495 ± 16
B2	108,3	1	28 ± 10	24 ± 1	30 ± 10	37 ± 2	498 ± 18
D1	104,8	2	37 ± 13	32 ± 3	41 ± 9	38 ± 3	526 ± 21
D2	111,1	2	30 ± 6	31 ± 4	40 ± 2	44 ± 2	434 ± 23
D3	103,8	2	26 ± 3	29 ± 2	38 ± 4	35 ± 2	452 ± 19
D4	95,0	1	36 ± 11	30 ± 3	35 ± 10	39 ± 2	483 ± 17
D5	108,6	1	37 ± 13	33 ± 3	39 ± 4	49 ± 2	603 ± 17
D6	120,1	2	31 ± 5	28 ± 1	34 ± 3	41 ± 2	495 ± 20
D8	105,8	1	36 ± 14	37 ± 3	57 ± 10	59 ± 3	695 ± 21
F1	98,5	1	31 ± 9	28 ± 2	36 ± 10	39 ± 2	456 ± 23
F2	102,2	2	29 ± 3	30 ± 2	38 ± 2	40 ± 2	478 ± 22
F3	106,4	1	31 ± 14	27 ± 3	27 ± 6	36 ± 3	460 ± 14
JM1	148,1	2	25 ± 6	19 ± 2	19 ± 2	34 ± 2	701 ± 25
JM2	99,6	2	32 ± 7	31 ± 2	40 ± 5	37 ± 2	518 ± 29
JS1	116,9	1	43 ± 10	40 ± 1	47 ± 7	55 ± 2	653 ± 18
JS2	128,9	1	44 ± 10	40 ± 2	45 ± 5	54 ± 2	598 ± 16
L1	108,4	1	22 ± 9	13 ± 1	25 ± 7	21 ± 1	279 ± 13
L2	105,7	1	32 ± 6	25 ± 2	32 ± 7	42 ± 2	563 ± 17
L3	104,0	2	27 ± 7	27 ± 2	34 ± 5	38 ± 2	545 ± 28
PA1	97,3	1	24 ± 10	15 ± 2	28 ± 8	23 ± 1	311 ± 15
PA2	129,3	1	22 ± 2	21 ± 1	23 ± 4	32 ± 1	392 ± 10
RC1*	123,5	2	34 ± 3	28 ± 1	29 ± 4	45 ± 2	684 ± 36
RC1**	108,1	1	34 ± 9	31 ± 2	45 ± 8	47 ± 2	589 ± 17
RC2	100,5	2	31 ± 6	33 ± 2	45 ± 12	40 ± 1	512 ± 20

* 20 cm depth** 100 cm depth

Table 2: Uranium and thorium contents of the soil samples

sample	content [µg/g]	
	uranium	thorium
AM1	3.2 ± 0.2	13.1 ± 0.5
AM2	2.7 ± 0.4	10.1 ± 0.5
AM3	3.2 ± 0.7	12.1 ± 0.5
AM4	1.6 ± 0.6	7.2 ± 0.2
B1	2.3 ± 1.1	9.6 ± 0.5
B2	2.3 ± 0.8	9.2 ± 0.5
D1	3.0 ± 1.1	9.4 ± 0.7
D2	2.4 ± 0.5	10.9 ± 0.5
D3	2.1 ± 0.2	8.7 ± 0.5
D4	2.9 ± 0.9	9.7 ± 0.5
D5	3.0 ± 1.1	12.1 ± 0.5
D6	2.5 ± 0.4	10.1 ± 0.5
D8	2.9 ± 1.1	14.6 ± 0.7
F1	2.5 ± 1.1	9.6 ± 0.5
F2	2.3 ± 0.2	9.9 ± 0.5
F3	2.5 ± 1.1	8.9 ± 0.7
JM1	2.0 ± 0.5	8.4 ± 0.5
JM2	2.6 ± 0.6	9.2 ± 0.5
JS1	3.5 ± 0.8	13.6 ± 0.5
JS2	3.6 ± 0.8	13.4 ± 0.5
L1	1.8 ± 0.7	5.2 ± 0.2
L2	2.6 ± 0.5	10.4 ± 0.5
L3	2.2 ± 0.6	9.4 ± 0.5
PA1	1.9 ± 0.8	5.7 ± 0.2
PA2	1.8 ± 0.2	7.9 ± 0.2
RC1*	2.8 ± 0.2	11.1 ± 0.5
RC1**	2.8 ± 0.7	11.6 ± 0.5
RC2	2.5 ± 0.5	9.9 ± 0.2

* 20 cm depth ** 100 cm depth