

RELATÓRIO FINAL DO PROJETO DE INICIAÇÃO CIENTÍFICA

ATIVIDADE CONVECTIVA NO BRASIL ATRAVÉS DE DADOS DIGITAIS DE IMAGENS DE SATÉLITE - FASE - 2

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1. INTRODUÇÃO

Os satélites ambientais são os grandes responsáveis pela obtenção de informações do meio ambiente para aplicações em Meteorologia, Hidrologia ou exploração de recursos naturais.

Uma das utilizações dos satélites em meteorologia é a capacidade de realização de estimativas de precipitação como pode ser visto em Moraes, J. C. (1992).

Convencionalmente o monitoramento da precipitação é feito através de pluviômetros ou pluviógrafos que no entanto não reproduzem com fidelidade o campo total de precipitação que ocorre sobre uma área.

A análise da precipitação por satélite apresenta inúmeras vantagens sobre os métodos convencionais como por exemplo fazer estimativas em tempo real sobre grandes áreas ou áreas de difícil acesso, além de ser de baixo custo operacional.

Nos últimos anos surgiram várias técnicas que possibilitam estimar a precipitação de nuvens convectivas. Estas técnicas utilizam imagens infravermelho com resolução temporal de até trinta minutos. As primeiras técnicas utilizaram dados do canal infravermelho termal (IV) e/ou visível (VIS). Algumas delas acoplam modelos de física de nuvens, outras valem-se da análise dos atributos das nuvens convectivas num certo local e contém informações sobre a distribuição espacial e temporal da temperatura do topo das nuvens para inferir de forma indireta a distribuição e a intensidade da precipitação. Outra opção consiste na utilização de dados na faixa espectral de microondas.

A calibração das estimativas é feita comparando os resultados com as estimativas feitas com radar meteorológico ou com medidas feitas por instrumentos convencionais.

As técnicas podem ser divididas em manual, interativa e automática segundo a proposta de D' Souza et al. (1990) e mencionadas em Scofield, G. B. (1994).

TÉCNICAS MANUAIS

As técnicas manuais foram desenvolvidas quando se dispunha apenas de imagens em forma de papel fotográfico e visavam estimar precipitação para períodos superiores a seis horas. Estas técnicas exigem que os dados sejam interpretados por um especialista experiente. Elas estão divididas em técnicas de indexação e de evolução temporal.

TÉCNICAS INTERATIVAS

Combinam a capacidade de interpretação humana com as facilidades computacionais. Entretanto, procedimentos de interpretação interativos exigem tempo e os resultados obtidos por diferentes analistas variam consideravelmente. As técnicas mais comumente utilizadas são as de evolução temporal e bi-espectral.

TÉCNICAS AUTOMÁTICAS

Fornecem estimativas de precipitação diretamente não exigindo a manipulação dos dados por parte de analistas. Isto significa que todos os dados são inseridos no sistema computacional pelo usuário. Estas técnicas foram desenvolvidas para estimar a precipitação em menor período de tempo (tempo quase real), e para maior período de tempo (10 dias a

um mês). As técnicas automáticas são sub-divididas em monoespectral, biespectral, climatológica e padrão de reconhecimento.

Alguns métodos de estimativa são apresentados em Martin et al. (1990), que estimaram as precipitações diárias sobre a Bacia Amazônica; Stout et al. (1979), que estimaram chuva convectiva durante o GATE; Scofield, G. B. (1994), que fez estimativas de precipitação para a região de São Paulo.

Técnicas de estimativa de precipitação sugerem que os satélites mostram "Skill" em estimar áreas de chuva em vez de estimar quantidade de chuva. Essa hipótese foi investigada por Lovejoy e Austin (1979), quando examinaram os erros em estimar áreas de chuvas dos dados de satélite separadamente dos erros envolvidos em estimar a quantidade de chuva dentro das áreas.

Neste estudo será feita uma análise das áreas de atividade convectiva associada a precipitação sem, entretanto, neste estágio do trabalho, realizar uma estimativa da quantidade de chuva. Os dados digitais de imagens de satélite no canal infravermelho indicam, através de seus valores, regiões de nuvens convectivas (que produzem forte precipitação). Informações sobre a relação de dados de satélite com nuvens convectivas foram dadas no relatório anterior (03/07/1995).

Na primeira parte do trabalho "Atividade convectiva no Brasil através de dados digitais de imagens de satélite", foi desenvolvida a metodologia e foram analisados os primeiros resultados com dados de 1993. Nesta segunda parte (fase 2), foram completados os dados de 1993 e 1994, para as análises mensais, sazonais e interanual.

O objetivo deste trabalho é documentar a atividade convectiva sobre a América do Sul nos anos de 1993 e 1994 e fazer uma análise de distribuição dessa atividade em diversas regiões do Brasil.

2. PROCEDIMENTOS METODOLOGICOS

-Para analisar a ocorrência de atividade convectiva no Brasil durante os meses dos anos de 1993 e 1994 e apresentar uma discussão da variação interanual, era necessário fazer a recuperação de grande parte dos dados digitais das imagens de satélite destes anos, como foi dito no último relatório. A maioria das imagens é das 18TMG, porém algumas tiveram que ser obtidas para as 19TMG.

-Neste trabalho conseguiu-se recuperar boa parte dessas imagens e pôde-se então concluir o cálculo das médias mensais dos valores digitais maiores ou iguais a 120 bem como sua porcentagem nas 5 regiões definidas.

-Para poder analisar a atividade convectiva no nordeste durante os 5 primeiros meses do ano, foi criada uma sexta região (NE-nordeste) muito embora ela abranja apenas uma parte do nordeste.

Ela está delimitada assim:

NE: 3,25S - 10,75S, 43,75W - 33,75W.

Algumas pequenas alterações no algoritmo do programa selecreg.exe foram suficientes para esta tarefa.

As outras regiões são:

A: 4.25N - 10.75S, 76.25W - 51.25W.

B: 0.75S - 10.75S, 51.25W - 33.75W.

C: 10.75S - 20.75S, 76.25W - 51.25W.

D: 10.75S - 20.75, 51.25W - 33.75W.

E: 20.75S - 33.75S, 61.25W - 33.75W.

-A variabilidade diária foi observada através de cartas de isolinhas dia a dia, essa variabilidade também pode ser vista de uma maneira mais objetiva através de gráficos das séries temporais da média e porcentagem diária calculadas para cada área. A porcentagem diz respeito a fração da área coberta por valores acima de 120.

-Quando vemos os gráficos com as séries temporais das médias diárias calculadas, fica difícil verificar como se comportou cada região durante o ano todo, por isso, foi criado um gráfico mostrando quantos dias em cada mês a porcentagem da região com valores maiores ou iguais a 120 esteve acima de 50 %.

-Como mencionado no relatório anterior (fase 1), cada mês possui uma matriz (28 x 30) de valores de níveis de cinza que corresponde a uma média geral do mês. Partindo disso fez-se a análise da média das estações do ano:

Verão: dezembro, janeiro e fevereiro.

Outono: março, abril e maio.

Inverno: junho, julho e agosto.

Primavera: setembro, outubro e novembro.

Cada estação é mostrada em uma carta que corresponde a uma média de cada três meses como foi especificado.

Observação: as figuras referentes aos meses de janeiro e fevereiro 1993 precisarão ser analisadas novamente pois algumas imagens foram obtidas quando o satélite estava mudando a órbita e os dados contém algumas defasagens com relação a posição, além disso o mês de dezembro de 1994 será também reanalisado, pois as imagens obtidas estavam na projeção Mercator e não na projeção utilizada nas outras imagens.

PROGRAMAS ELABORADOS

Os programas feitos neste trabalho tiveram o propósito maior de automatizar o serviço pois o cálculo de algumas médias e anomalias usadas não necessitaram de fórmulas muito complicadas.

Assim sendo a questão foi elaborar programas capazes de:

- processar várias imagens de uma só vez;

- providenciar as medidas certas para o caso de não existir a imagem de um determinado dia ou horário;

-e algumas vezes reconhecer, através do nome do arquivo, o horário, mês e ano que a imagem pertence para poder contruir matrizes distintas.

Outros programas também foram criados para transformar matrizes gravadas como texto em arquivos binários para que pudessem ser visualizadas como gráficos ou cartas meteorológicas.

A linguagem usada para a construção dos programas foi C e Fortran, além do grads (Grid Analysis and Display System) que é um pacote gráfico para visualização de imagens, e as consultas foram feitas em Schildt, H. (1988) e Cereda & Maldonado (1987).

No anexo V podem ser vistos os algoritmos elaborados nesta fase.

3. RESULTADOS

3.1. MÉDIAS DA ATIVIDADE CONVECTIVA

3.1.1. MÉDIAS MENSAIS

As médias mensais nos dão um idéia do comportamento da atividade convectiva durante um determinado mês, isto é, elas nos permitem avaliar as diferenças climáticas entre os meses ou entre um ano e outro.

Para melhorar a visualização das médias as cartas foram coloridas e cada cor corresponde a um valor entre os níveis de cinza que estejam dentro de um intervalo. A escala varia de 80 a 220 e os intervalos variam de 20 em 20.

Quando analisamos os 12 meses de um único ano notamos que existe grande nebulosidade no Brasil nos meses de janeiro e fevereiro. Essa nebulosidade diminui a partir de então e atinge o seu ponto mais baixo durante os meses de inverno.

As diferenças climáticas entre os meses podem ser vistas nas figuras 2 e 3 para todos os meses de 1993 e 1994.

3.1.2. ESTAÇÕES DO ANO

Essas cartas nos dão um resumo da atividade convectiva durante as 4 estações do ano sendo interessante também fazer a comparação interanual para analisar as diferenças climáticas ocorridas ou não. Um exemplo é dado nas figuras 4 e 5, do verão, outono, inverno e primavera de 1993 e 1994.

Comparando os dois anos estudados vemos que desde a região Amazônica até o sudeste do país a convecção teve uma atividade mais intensa durante o verão de 93 do que o de 94.

Entretanto nota-se que o extremo nordeste do Brasil esteve mais seco durante os primeiros meses de 93 e apresentou certa nebulosidade em 94.

Percebe-se também que durante os meses de inverno, ao longo de toda a região nordeste estendendo-se pelo centro-oeste do país, o clima esteve mais seco em 93.

3.2. GRÁFICOS

3.2.1. REGIÕES A, B, C, D, e E

A variação diária da atividade convectiva no decorrer dos meses nas diferentes regiões é analisada através de gráficos com séries temporais.

Temos assim dois gráficos: o primeiro mostra a média de todos os valores maiores ou iguais a 120 e o segundo mostra a porcentagem que esses valores ocupam dentro da região especificada.

Assim, quando quisermos ter uma idéia geral de como estava o tempo naquela região num determinado dia, o segundo gráfico é sem dúvida mais decisivo enquanto que o primeiro é apenas quantitativo.

Sabemos que a região B compreende boa parte do nordeste, a região A corresponde ao norte do país e a região E ao sul onde passam as frentes frias. Os gráficos referentes às áreas são apresentados no anexo I. Analisando as figuras observa-se que a atividade

convectiva diminui notavelmente na região B nos meses de inverno e se mantém quase estável o ano todo nas regiões A e E.

Nota-se que houve mais dias com porcentagem acima de 50% em todas as áreas em janeiro de 93, indicando um ano com atividade convectiva em uma área maior comparado a 94.

3.2.2. REGIÃO NE - NORDESTE

Essa região compreende uma área do nordeste onde a estação chuvosa ocorre nos meses de março, abril e maio.

Os gráficos tirados para essa região se limitam aos 5 primeiros meses do ano pois sabemos que durante os meses de inverno e início da primavera a atividade convectiva nessa área é extremamente baixa, ainda assim, pela observação dos gráficos durante o ano podemos notar que dificilmente os valores de níveis de cinza acima de 120 ocupam mais de 50% dessa região sendo que isso ocorre mais no verão.

Um exemplo dos gráficos para essa região pode ser visto nas figuras do anexo II para todos os meses de 93 e 94. Nota-se que em abril de 94 a porcentagem foi mais alta na maior parte dos dias.

A figura 1 mostra todas as regiões estudadas.

3.2.3. VARIAÇÃO ANUAL

Na tabela I é mostrado o número de imagens analisadas em cada mês (n) e o número de dias em que cada região esteve ocupada em mais de 50% de sua área por níveis de cinza acima de 120 (d). Um índice já construído através dessa tabela, que mostra (n/d), é apresentado nas figuras do anexo III para cada área. Os valores de (d) para cada área são mostrados no anexo III. Em todas as áreas a atividade convectiva ocorre mais frequentemente no verão.

3.2.4. ANOMALIAS DIÁRIAS

Gráficos com as séries temporais de anomalias foram feitos para se ter uma idéia do comportamento da atividade convectiva em uma determinada área em relação à média calculada para os anos de 1993 e 1994.

Nestes gráficos pode-se observar em quais dias houve nebulosidade acima do normal dos padrões esperados para certos períodos, em cada área. As figuras 6 a 11 mostram exemplos de dias que tiveram anomalias extremas para cada área estudada.

A sequência de figuras com gráficos em questão pode ser vista no anexo IV.

4. CONCLUSÃO

Durante este período de estudo foi feita a coletânea dos dados digitais das imagens de satélite que faltavam, aplicados os métodos de análise, e realizado o estudo dos resultados.

Além dos gráficos com as séries temporais, foram identificados os períodos de grande atividade convectiva nas diversas regiões do Brasil. As variações mensais, sazonais e interanuais puderam ser observadas. A extensão da área convectiva dentro de cada região

pode ser analisada através dos gráficos. Os resultados também indicam em quais épocas do ano existe mais atividade convectiva nas diversas regiões.

As figuras e gráficos nos anexos formam um catálogo para consulta e análises posteriores que serão realizadas para discursos mais detalhados da variabilidade da atividade convectiva no Brasil.

Os resultados mostram que a utilização desses dados é uma ferramenta importante para analisar a atividade convectiva sobre o Brasil, pois as configurações obtidas são coerentes com a climatologia de precipitação convencional.

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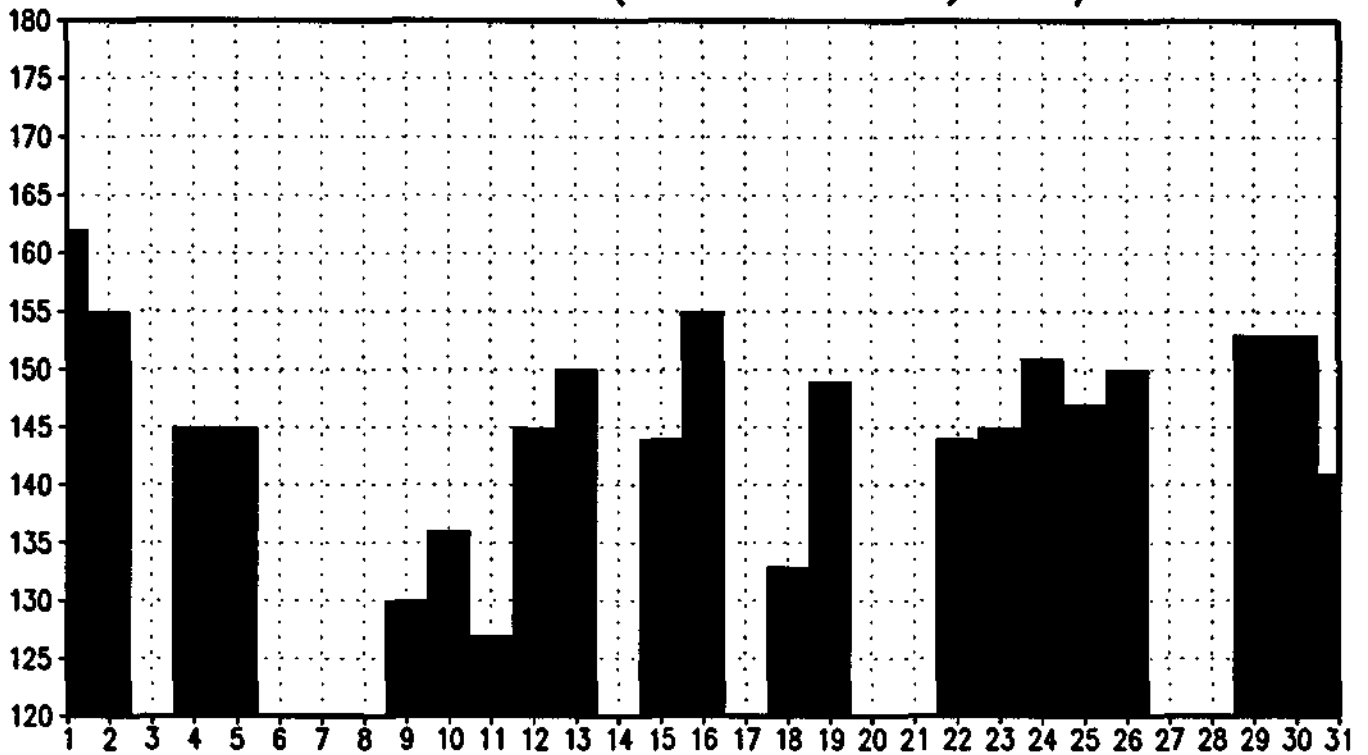
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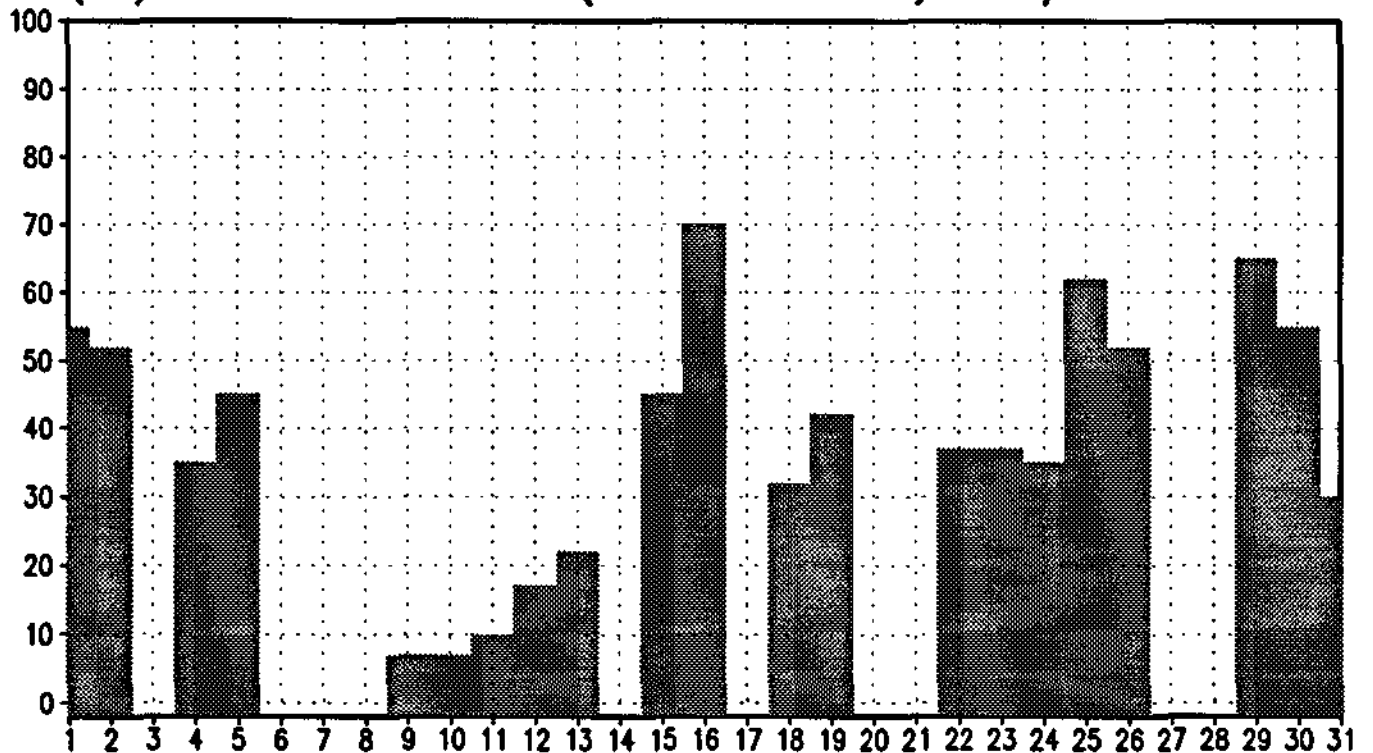
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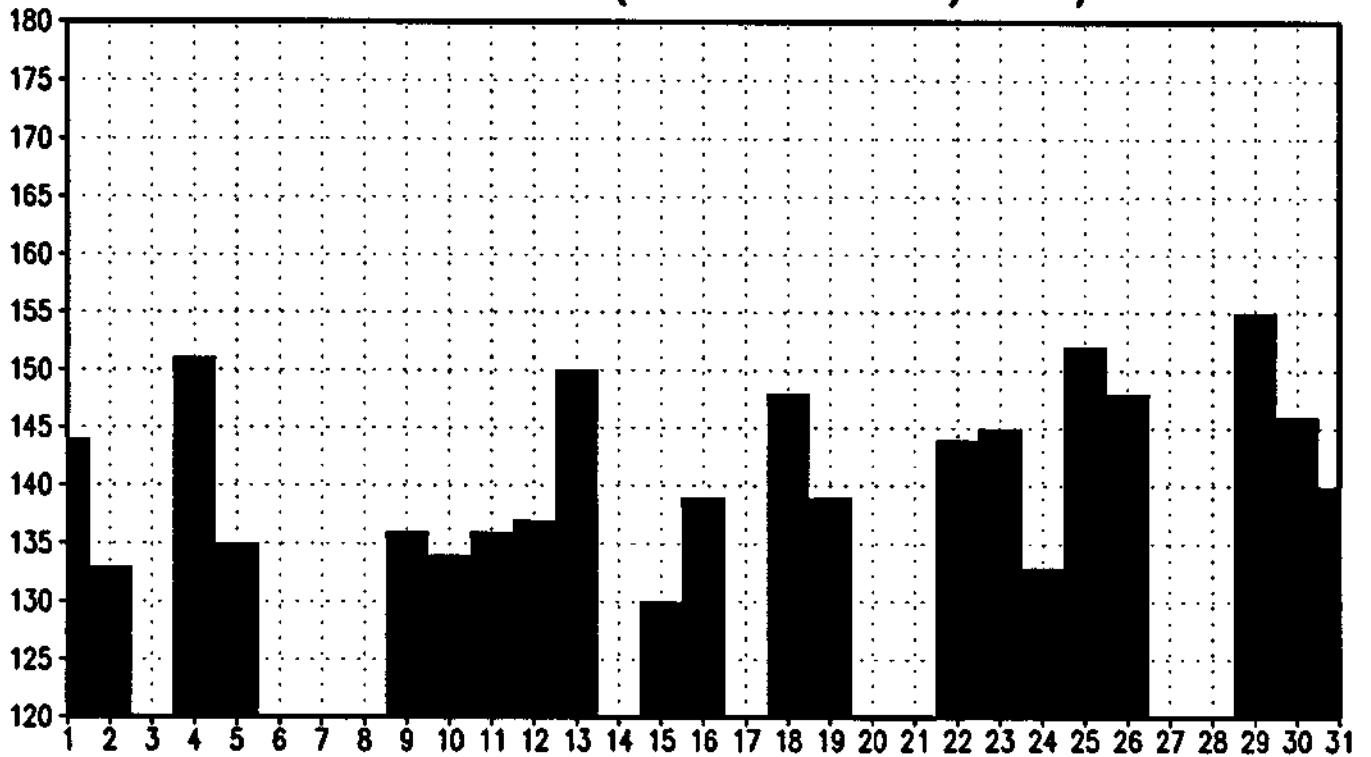
MEDIA DE VALORES (≥ 120 'B') 03/93 18TMG



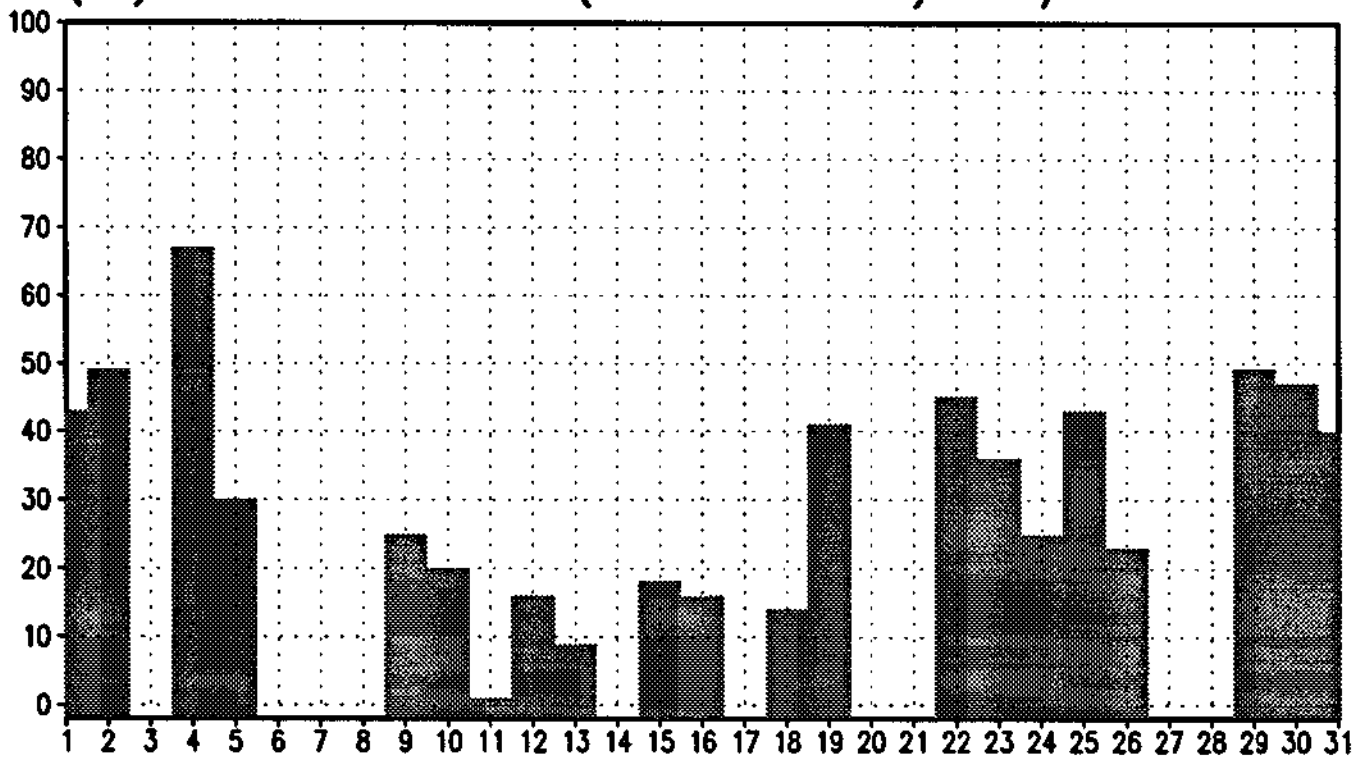
(%) DE VALORES (≥ 120 'B') 03/93 18TMG



MEDIA DE VALORES (≥ 120 'C') 03/93 18TMG



(%) DE VALORES (≥ 120 'C') 03/93 18TMG



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Uma análise qualitativa da distribuição de chuvas pode ser realizada através do estudo das imagens de satélite. Essas imagens, no canal infravermelho, fornecem os níveis de cinza relacionados com a altura das nuvens. Dessa forma é possível identificar as nuvens que tem grande desenvolvimento vertical e que são associadas a uma grande atividade convectiva.

De posse de grande parte dos dados digitais das imagens de satélite de 1993 e 1994 é possível fazer a análise e comparação de qualquer mês compreendido entre esses dois anos. Os estudos que estão sendo feitos com esses dados constam das análises das médias diárias, mensais, anuais, regionais e das estações do ano além da verificação da anomalia diária e da variação mensal. Os resultados desses estudos são mostrados em gráficos e cartas com isolinhas e são obtidos através da manipulação dos valores dos níveis de cinza de cada imagem.

O objetivo deste trabalho é mostrar o comportamento da atividade convectiva em diferentes épocas do ano em várias regiões da América do Sul.

Paralelamente ao estudo descrito está a elaboração de algoritmos para programas feitos em linguagem C e Fortran além de outros usados no pacote gráfico do GRADS (Grid Analysis and Display System). A construção de tais programas são fundamentais para a automatização do serviço.

Cartas com isolinhas das médias mensais dão uma idéia do comportamento da atividade convectiva durante um determinado mês permitindo avaliar as diferenças climáticas entre os meses ou anos, cartas das estações do ano dão um resumo da atividade convectiva durante as 4 estações do ano e as cartas das médias anuais avaliam a atividade convectiva em um determinado ano.

Gráficos do comportamento da atividade convectiva em 5 áreas que cobrem o Brasil focalizam a variação diária da atividade convectiva no decorrer dos meses nas diferentes regiões.

A variação anual em cada área é analisada em termos do número de dias com porcentagem de valores superior a 50%. Duas áreas são apresentadas como exemplo na fig. 1 (áreas A e D).

Gráficos das anomalias diárias são elaborados para destacar os períodos com máxima atividade em cada área. Cartas espaciais desses dias mostram exemplos da distribuição de chuvas para casos de extrema atividade convectiva em cada região.

Exemplos da distribuição espacial para dias extremos de anomalia positiva são mostrados na fig. 2 para a região norte e sudeste.

DIVISAO DE AREAS

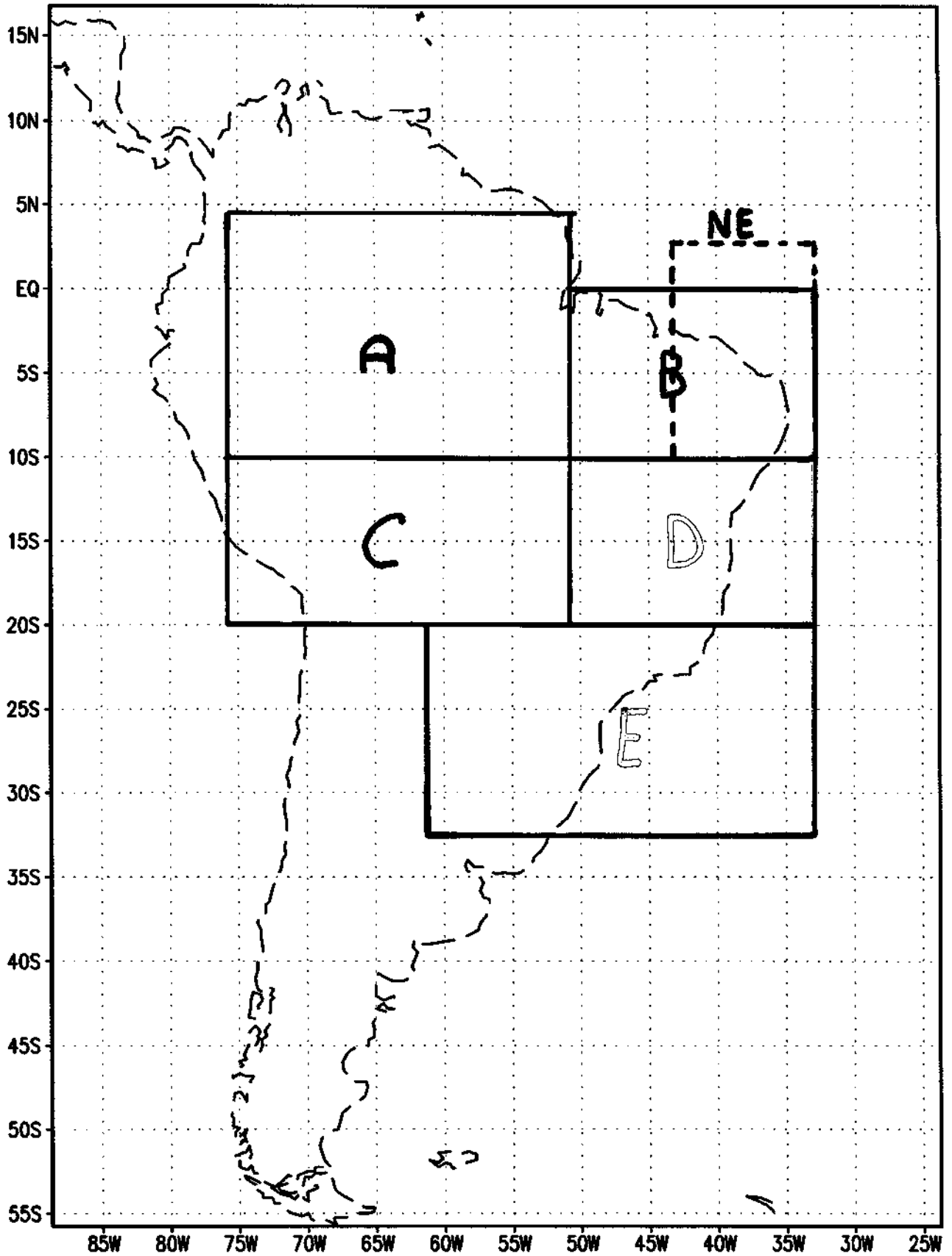
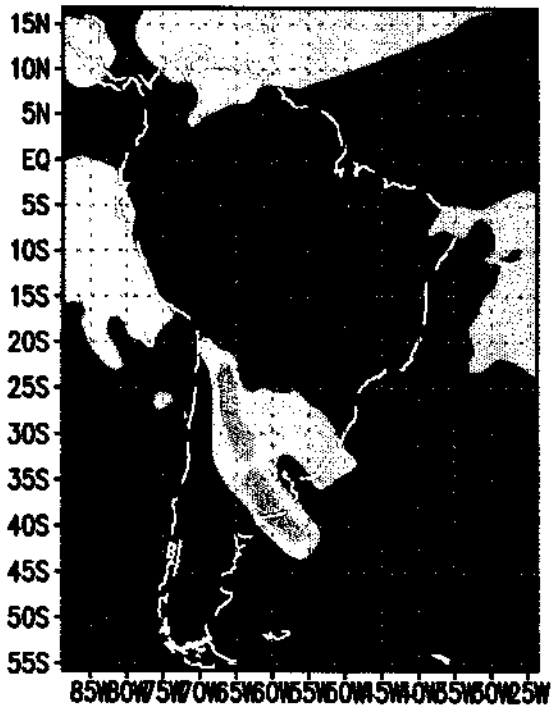
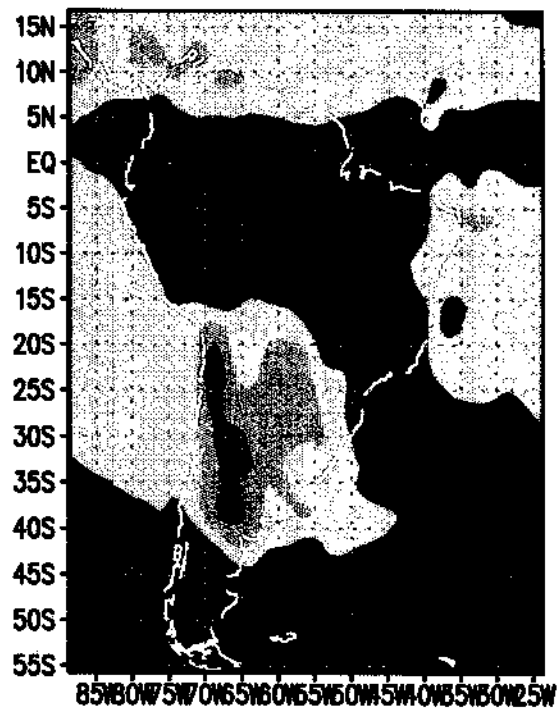


Fig. 1) Mapa mostrando as áreas que foram estudadas

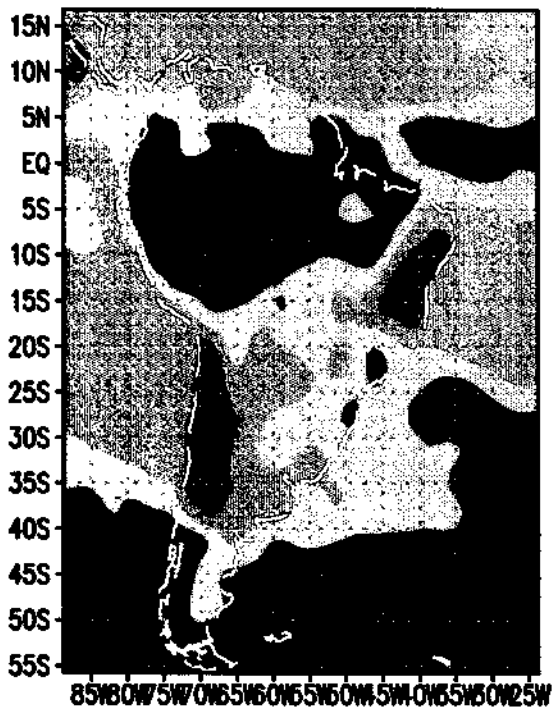
01/93 18TMG



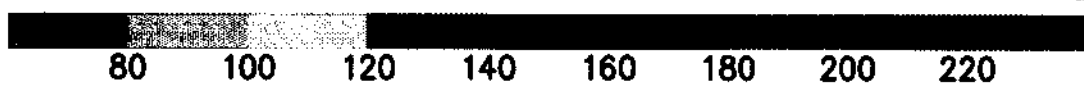
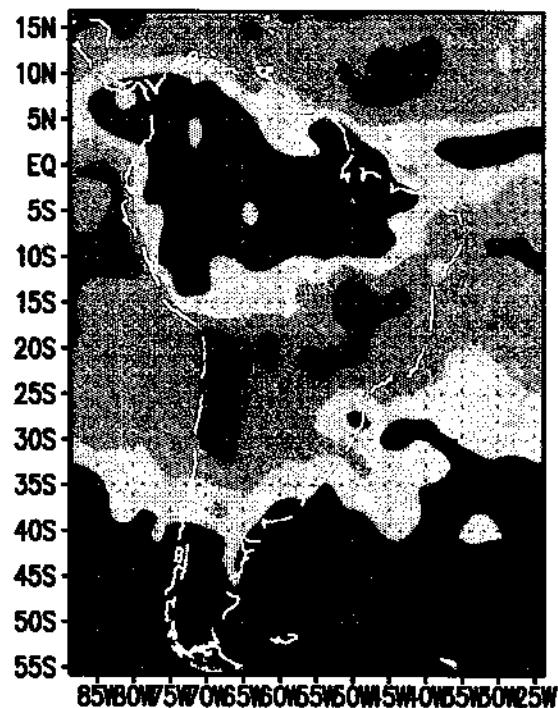
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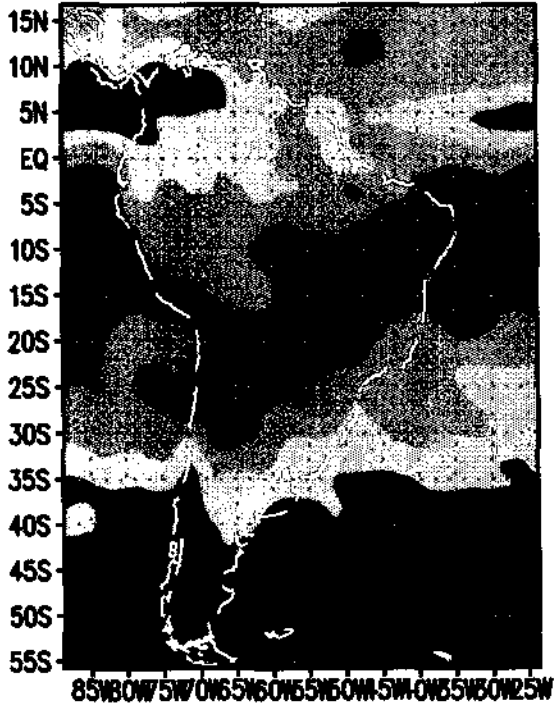
04/93 19TMG



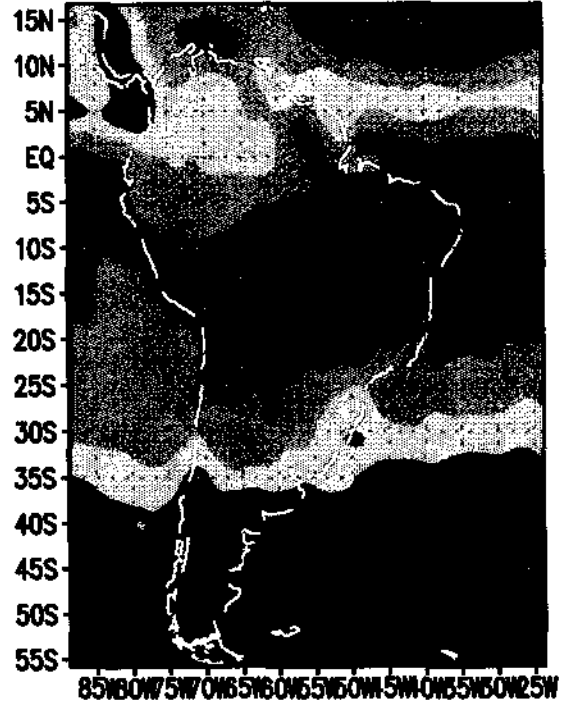
GrADS: COLA/UMCP

Fig. 2) Médias mensais mostrando os meses de 1993.

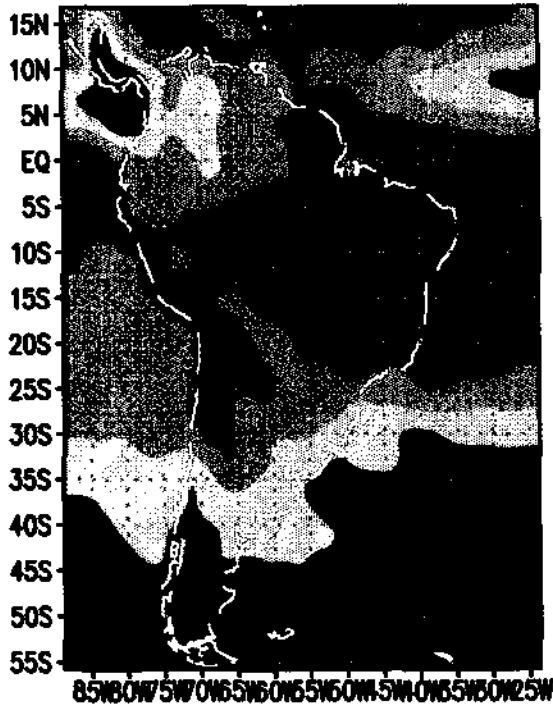
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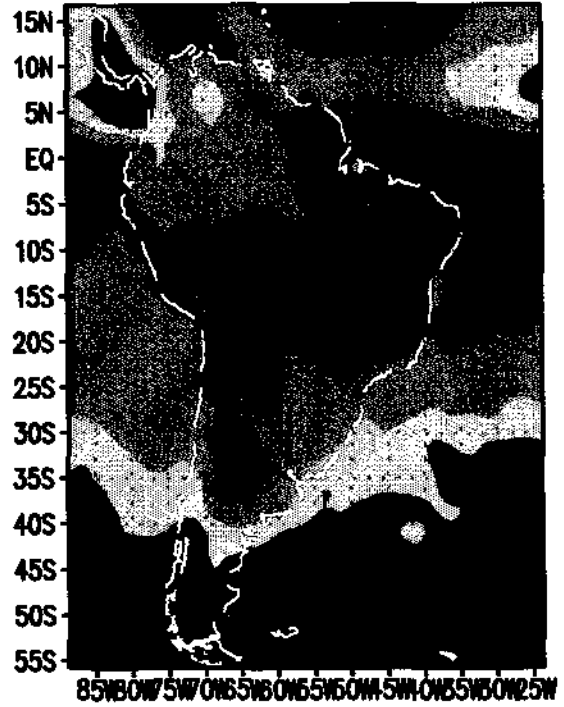
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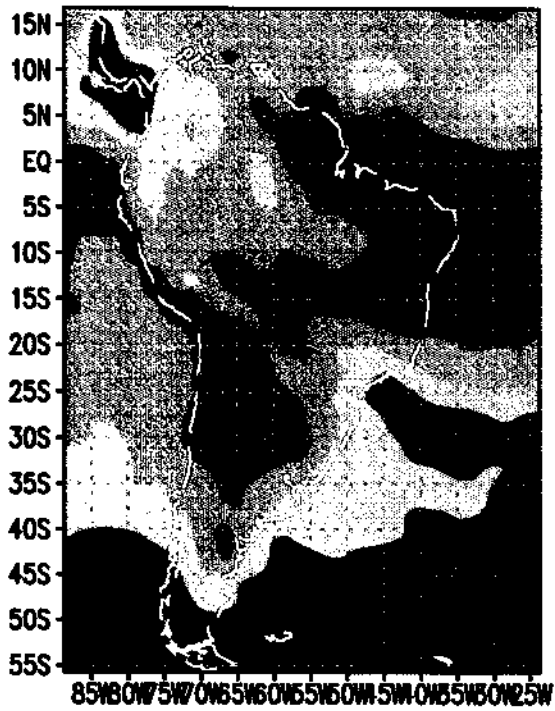
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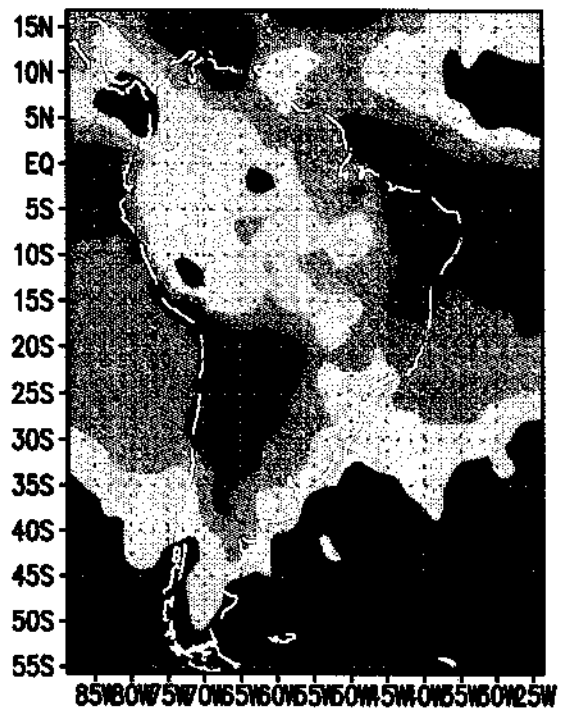
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Fig. 2) Continuação.

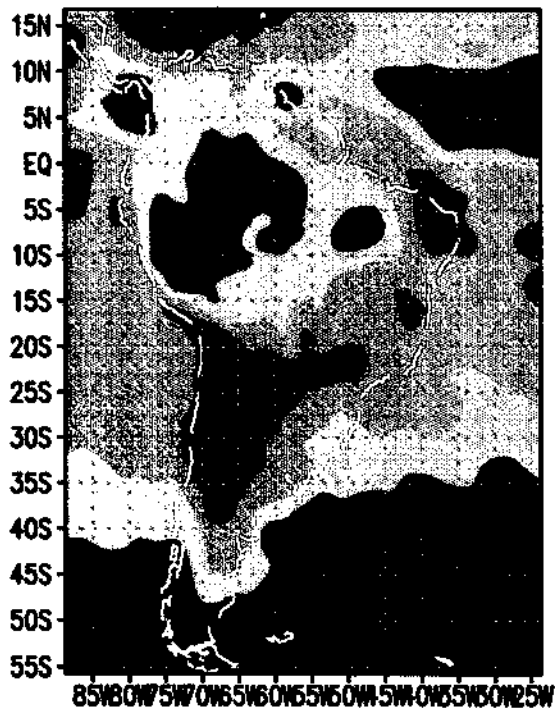
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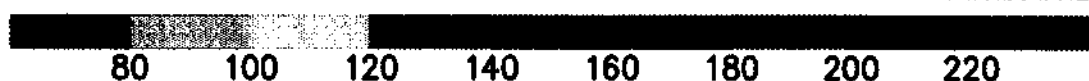
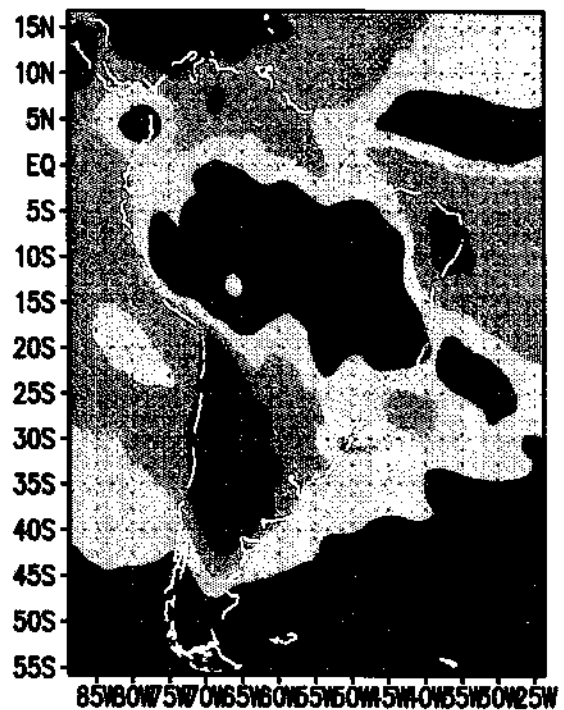
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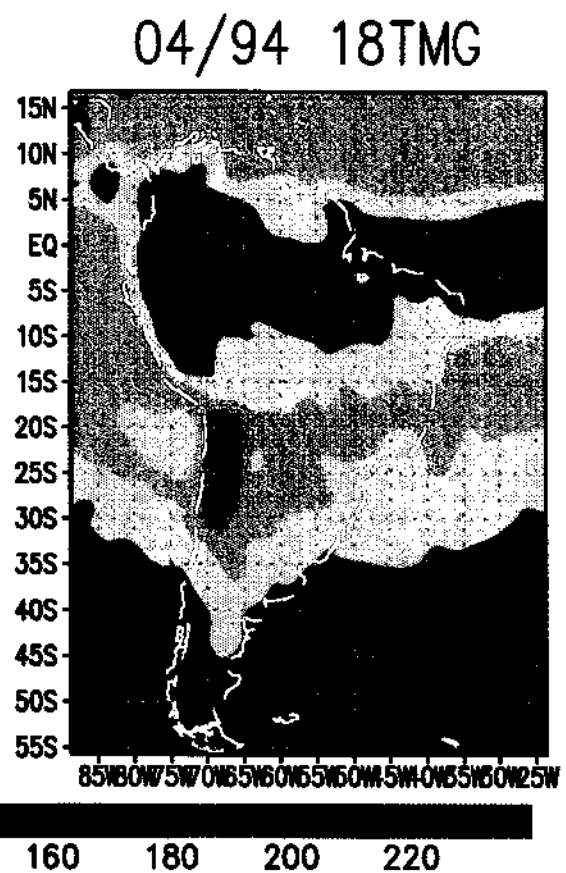
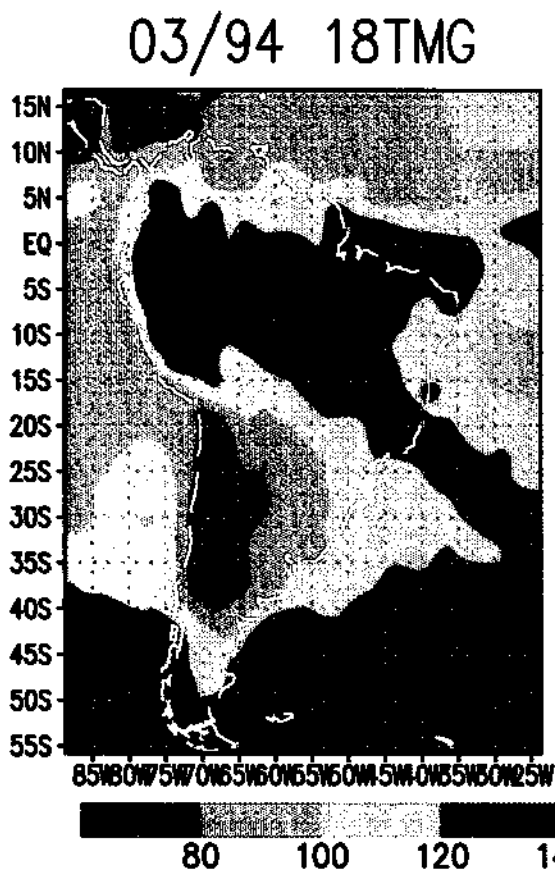
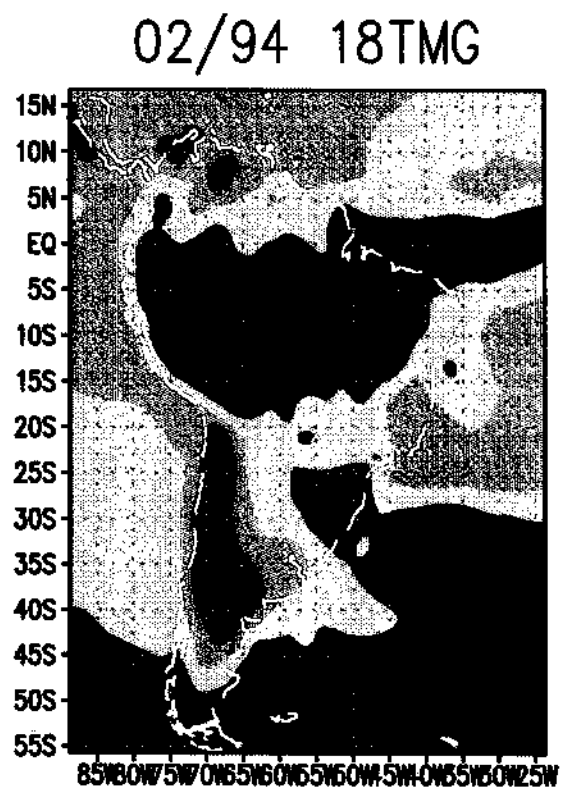
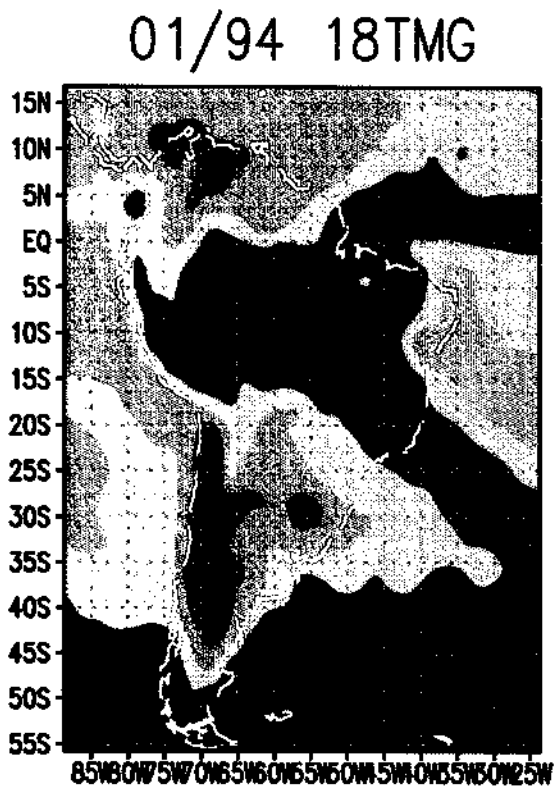


12/93 19TMG



GrADS: COLA/UMCP

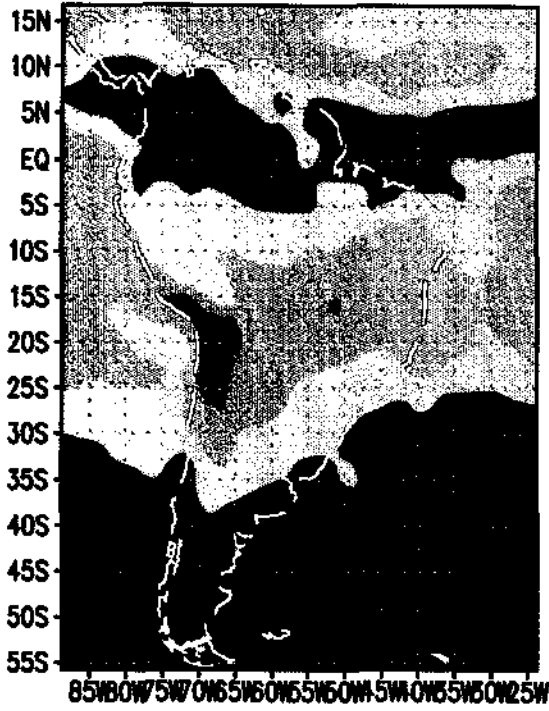
Fig. 2) Continuação.



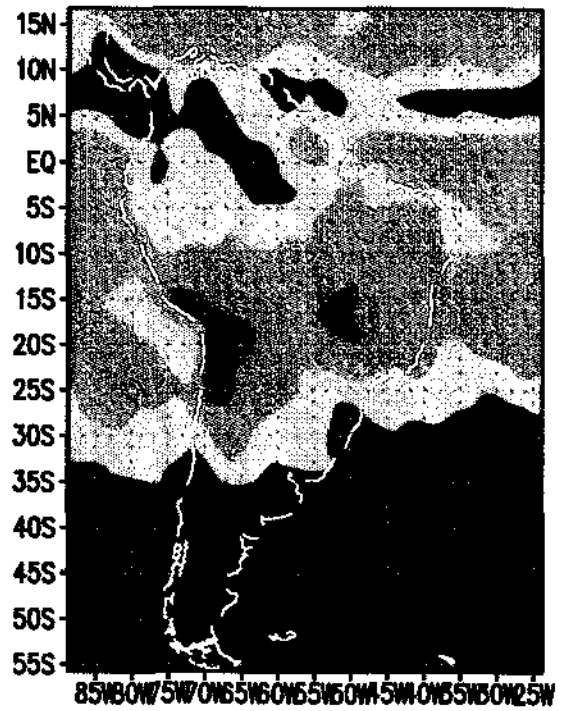
GrADS: COLA/UMCP

Fig. 3) Médias mensais mostrando os meses de 1994.

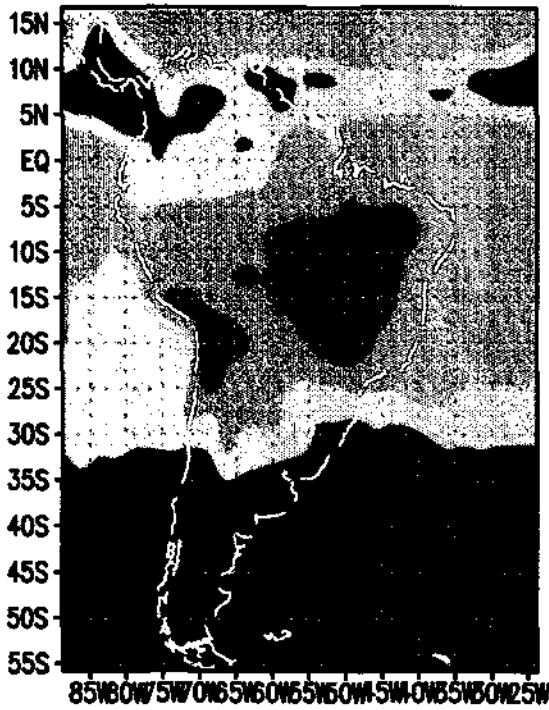
05/94 18TMG



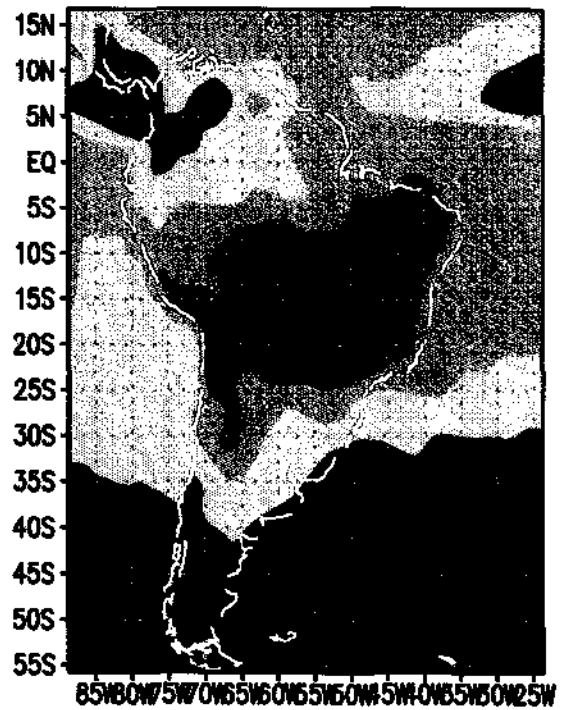
06/94 18TMG



07/94 18TMG



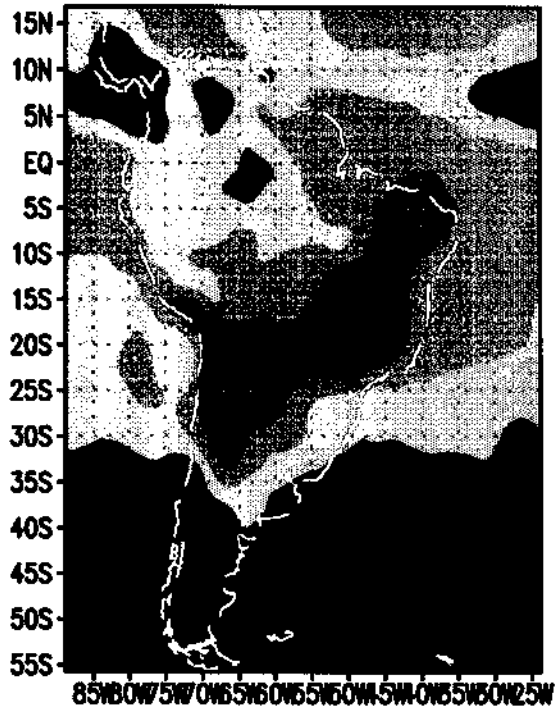
08/94 18TMG



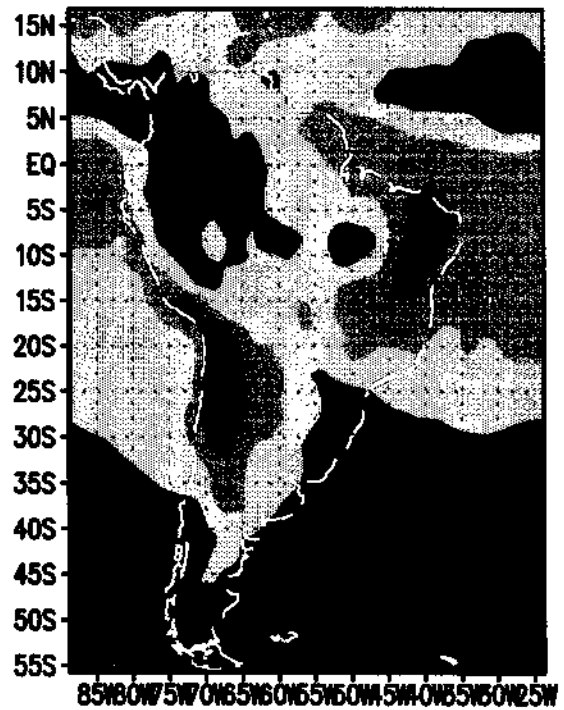
GrADS: COLA/UMCP

Fig. 3) Continuação.

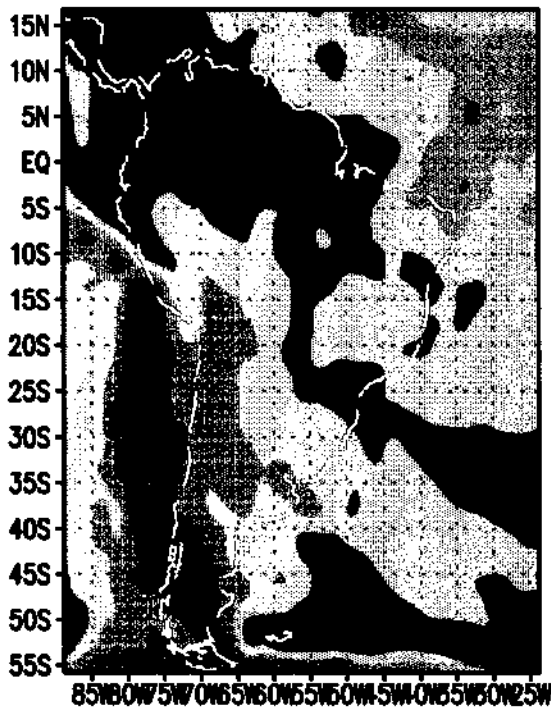
09/94 18TMG



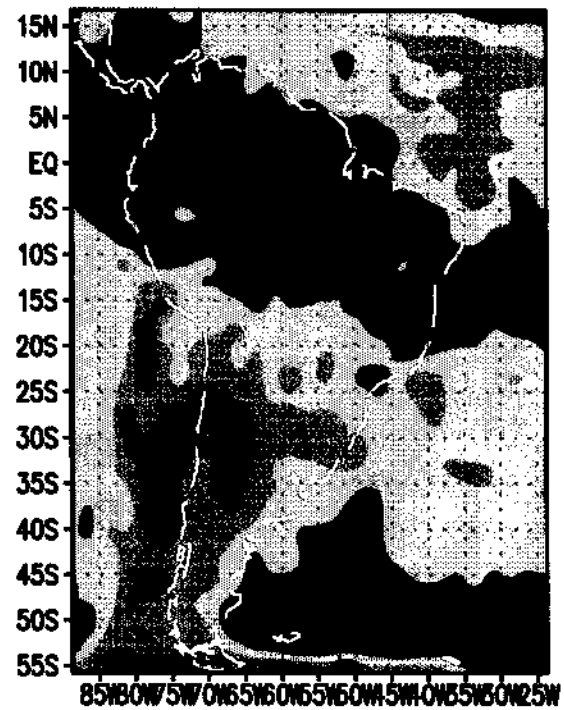
10/94 18TMG



11/94 18TMG



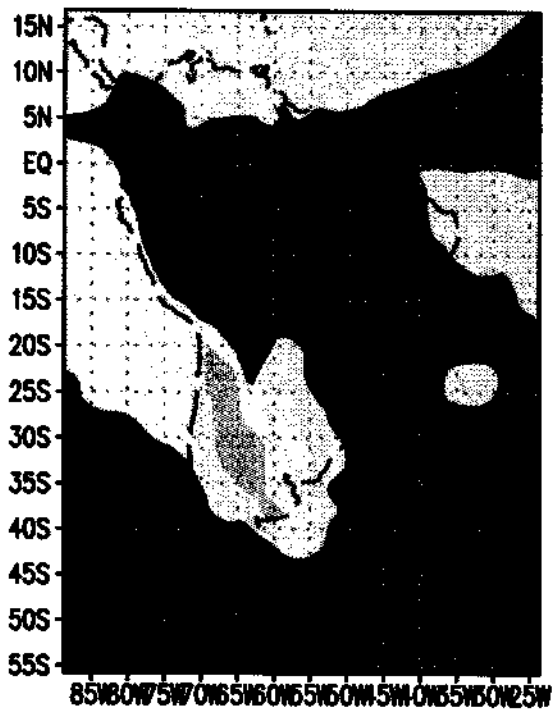
12/94 18TMG



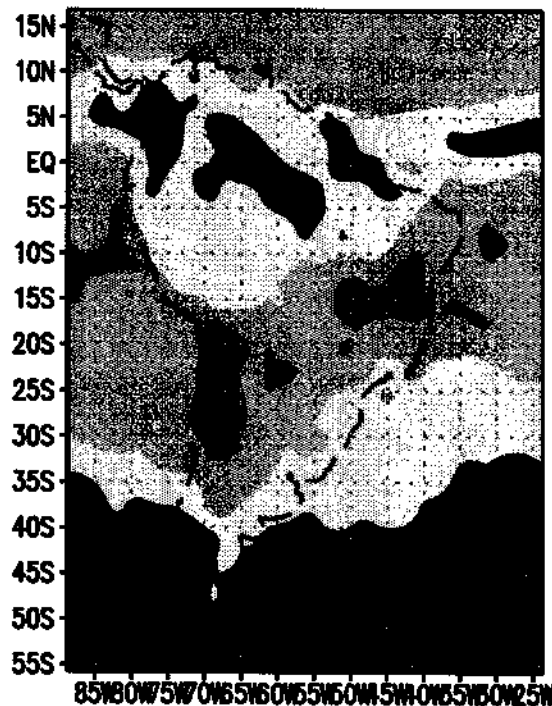
80 100 120 140 160 180 200 220

Fig. 3) Continuação.

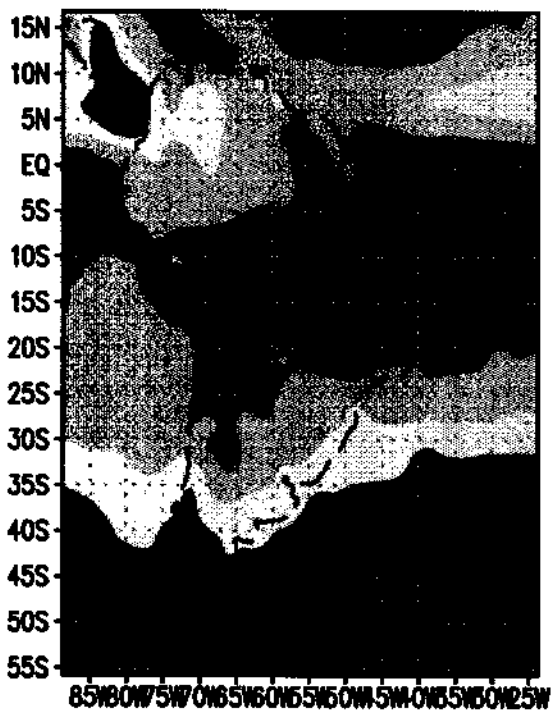
VERAO 93 18TMG



OUTONO 93 18TMG



INVERNO 93 18TMG



PRIMAVERA 93 18TMG

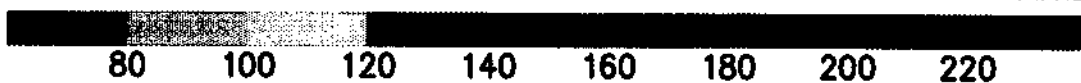
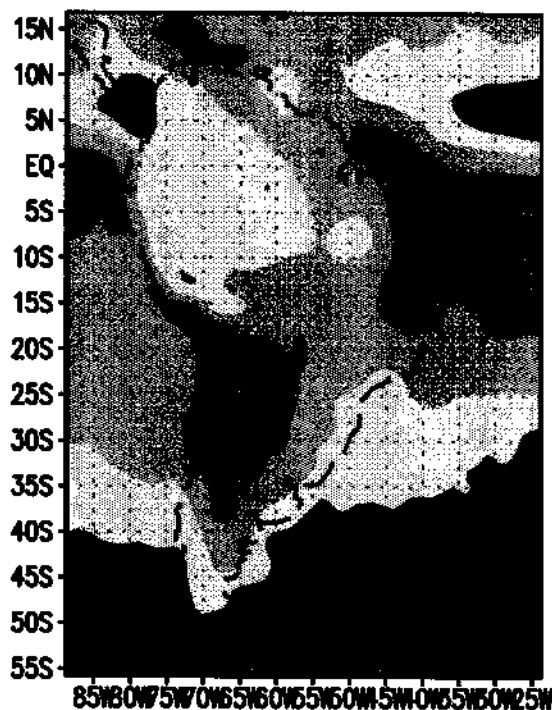
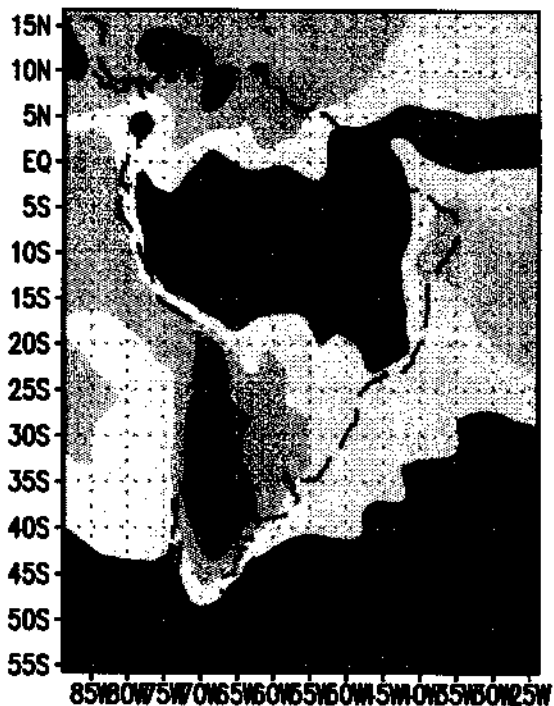
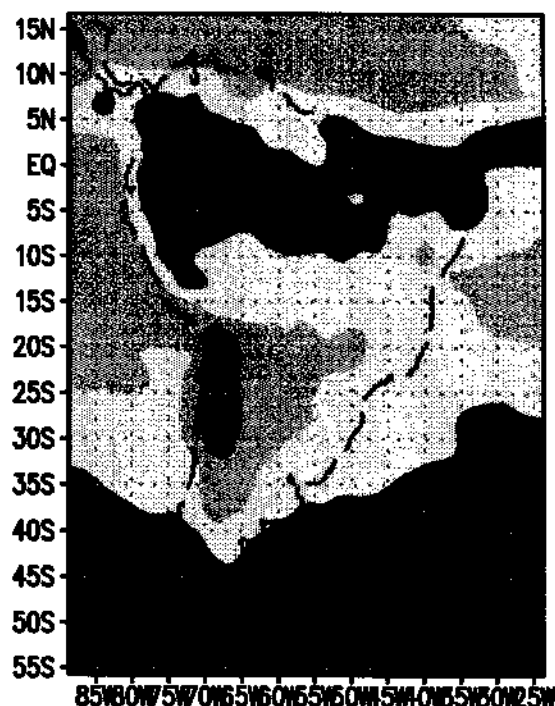


Fig. 4) Médias das estações para o ano de 1993.

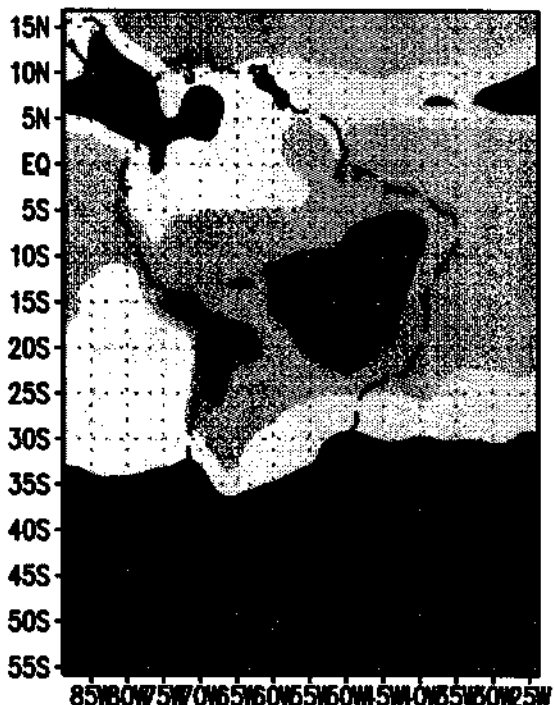
VERAO 94 18TMG



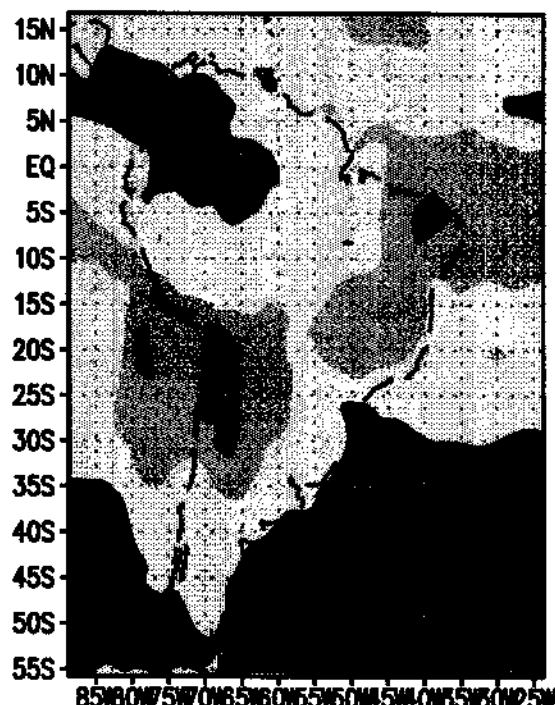
OUTONO 94 18TMG



INVERNO 94 18TMG



PRIMAVERA 94 18TMG



80 100 120 140 160 180 200 220

Fig. 5) Médias das estações para o ano de 1994.

(anom. extrem.) A 18/12/93 18TMG

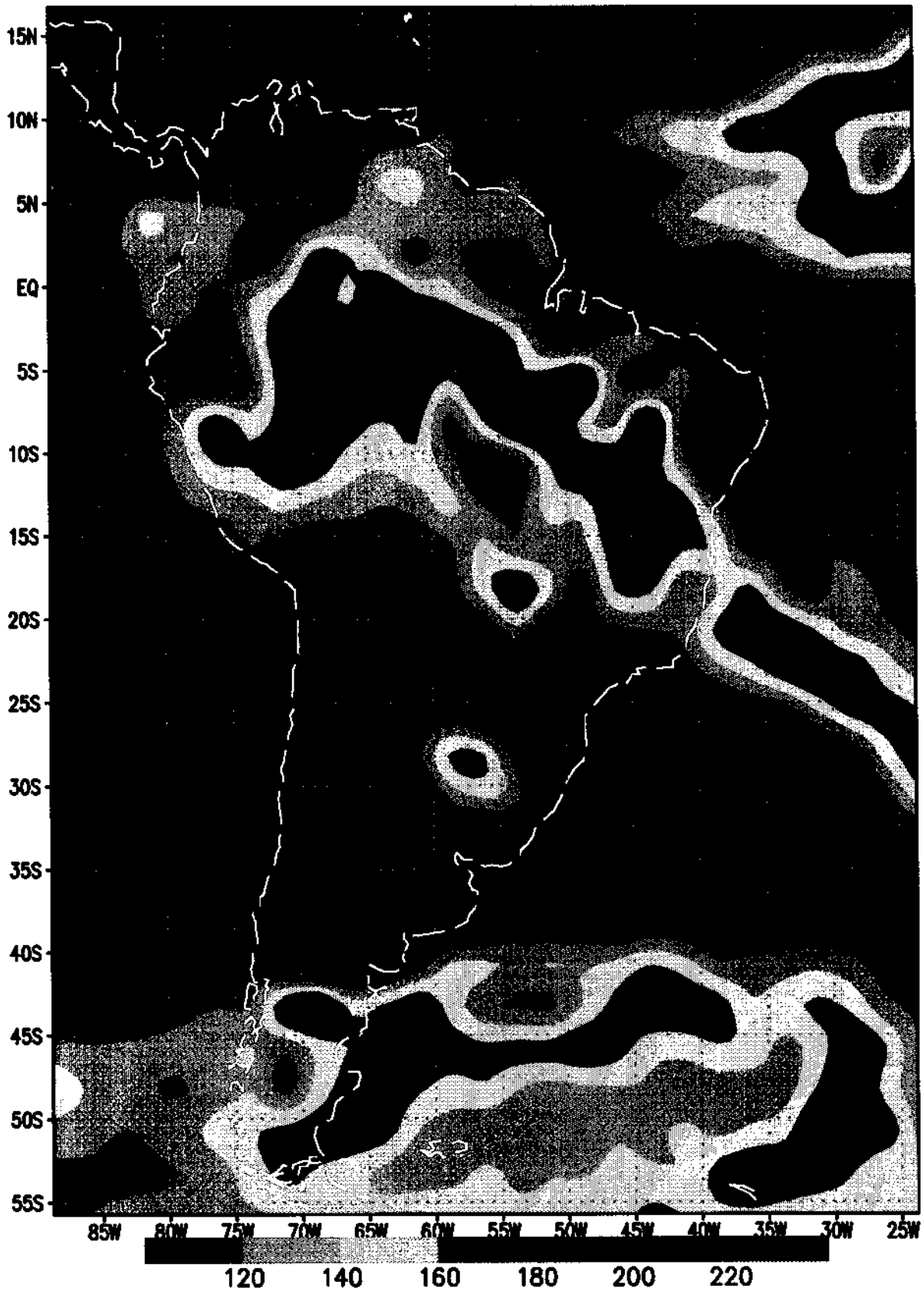


Fig. 6) Dia de anomalia extrema na área A.

(anom. extrem.) B 20/11/94 18TMG

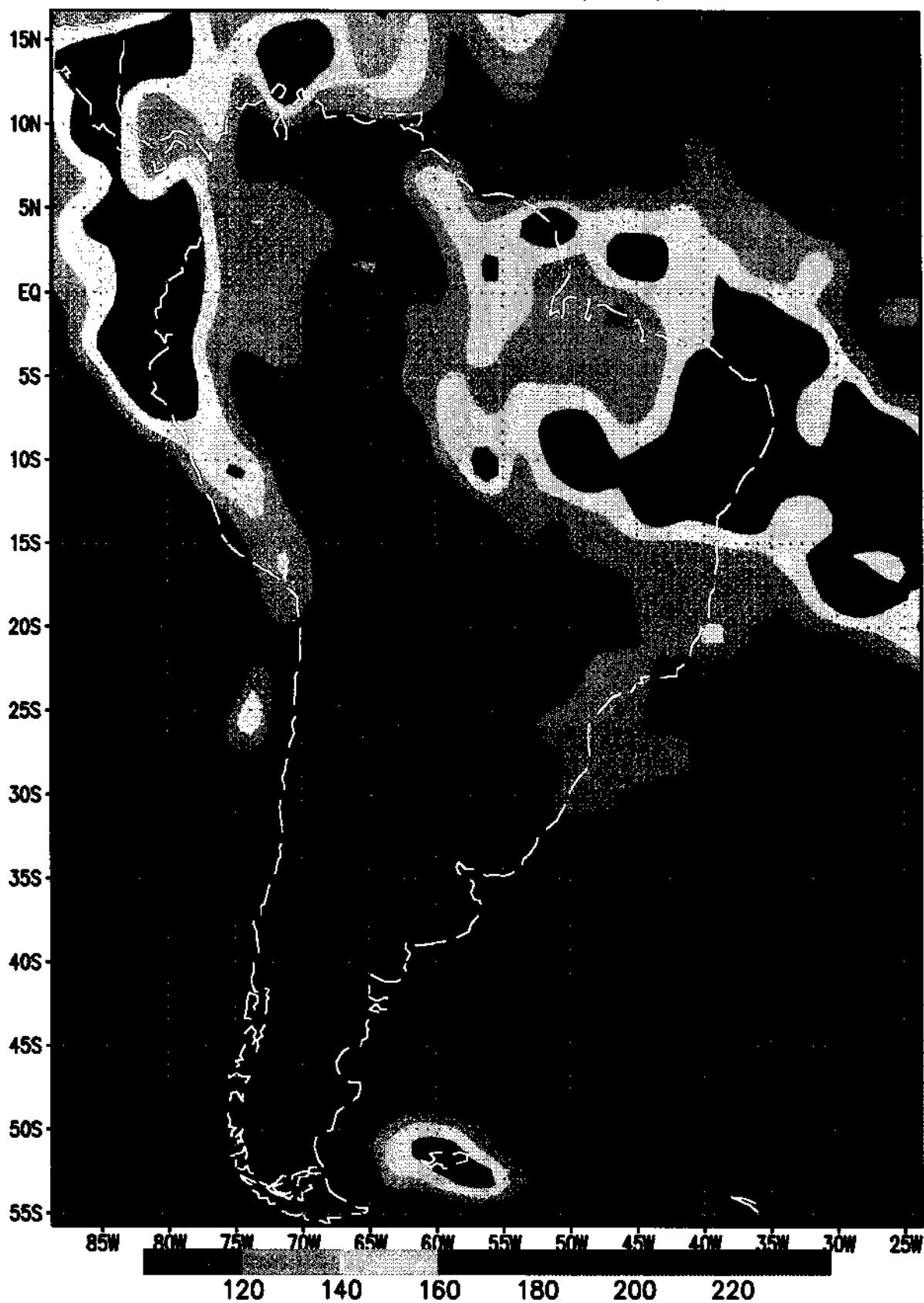


Fig. 7) Dia de anomalia extrema na área B.

(anom. extrem.) C 04/12/94 18TMG

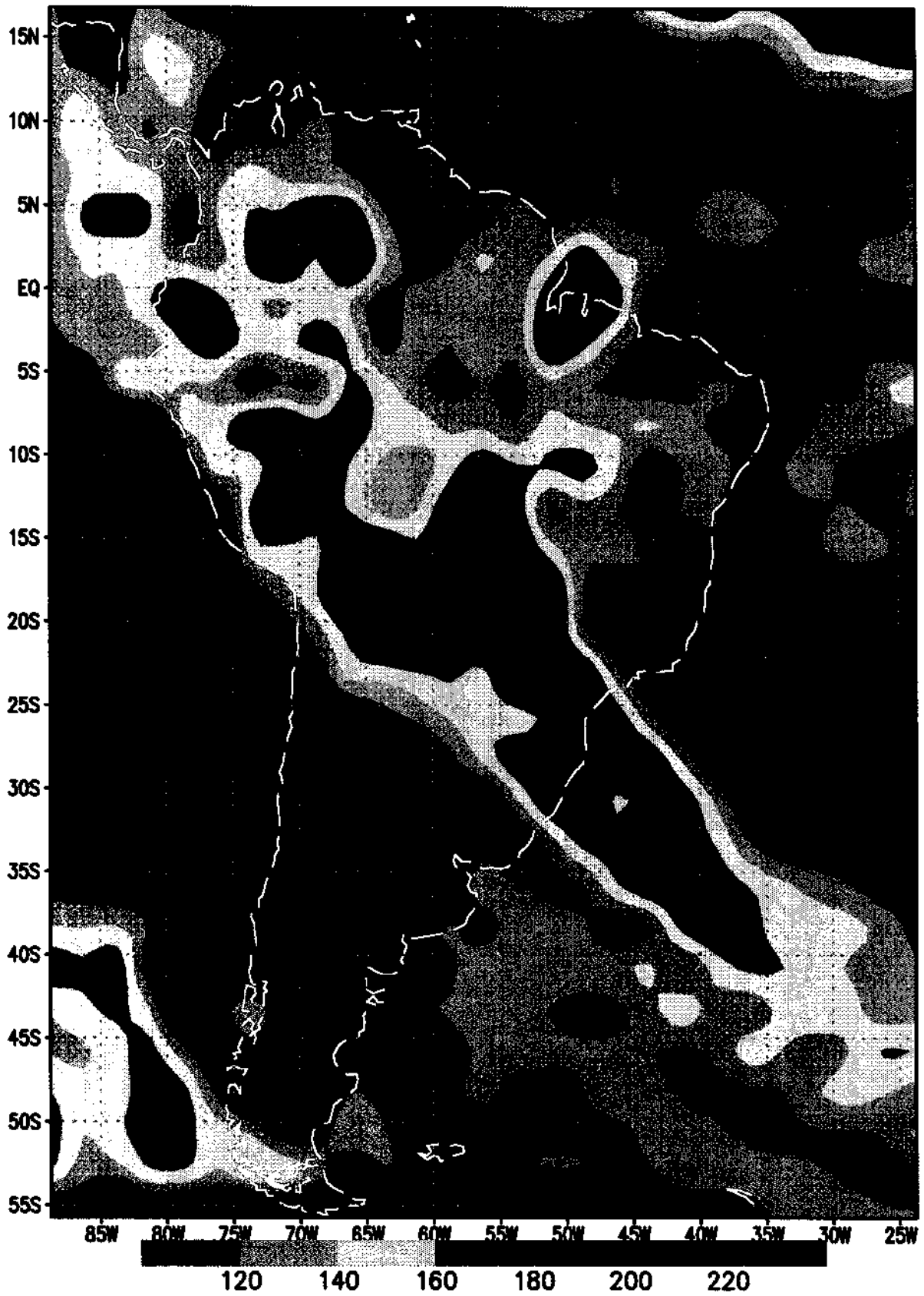


Fig. 8) Dia de anomalia extrema na área C.

(anom. extrem.) D 05/03/94 18TMG

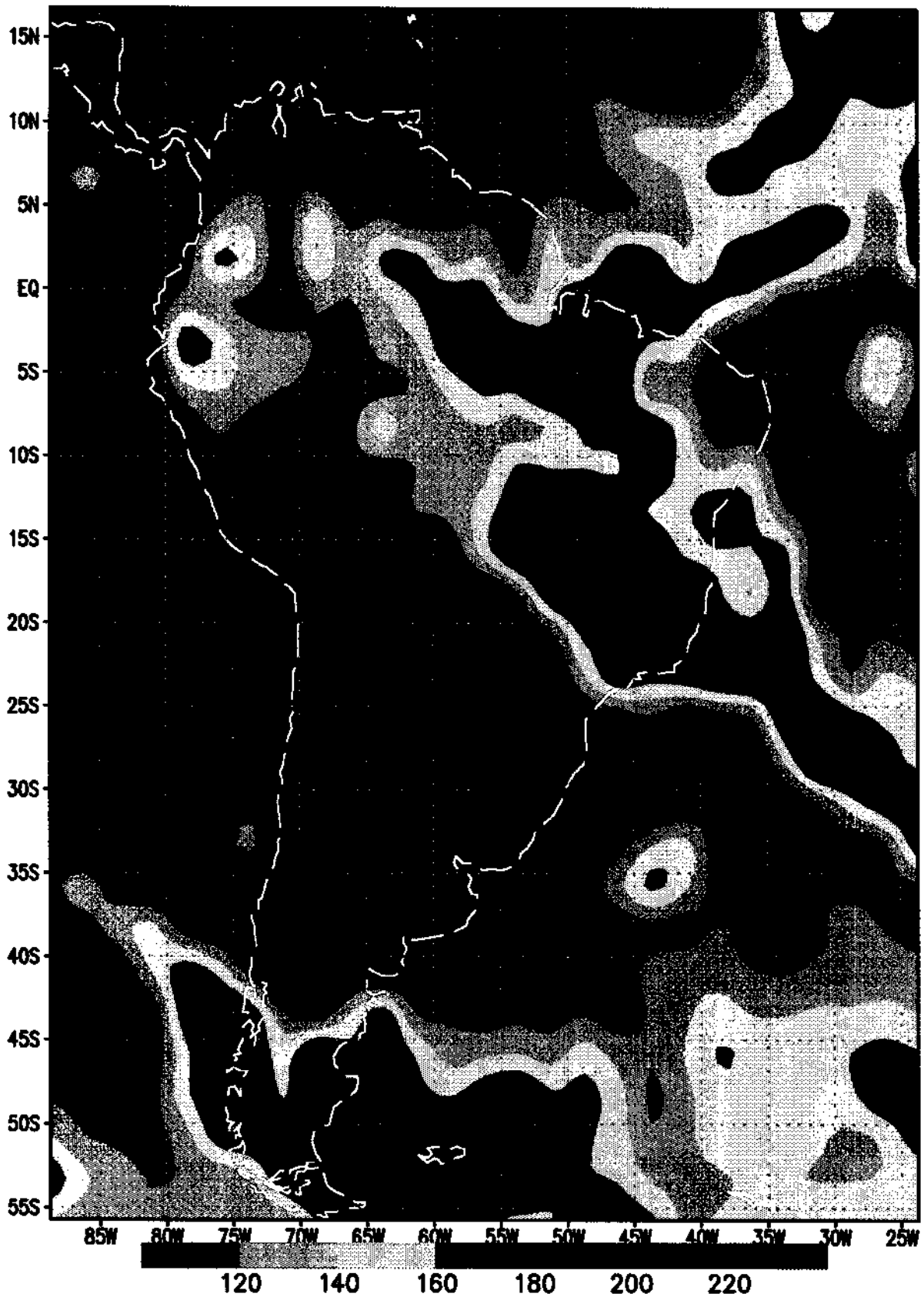


Fig. 9) Dia de anomalia extrema na área D.

(anom. extrem.) E 28/11/94 18TMG

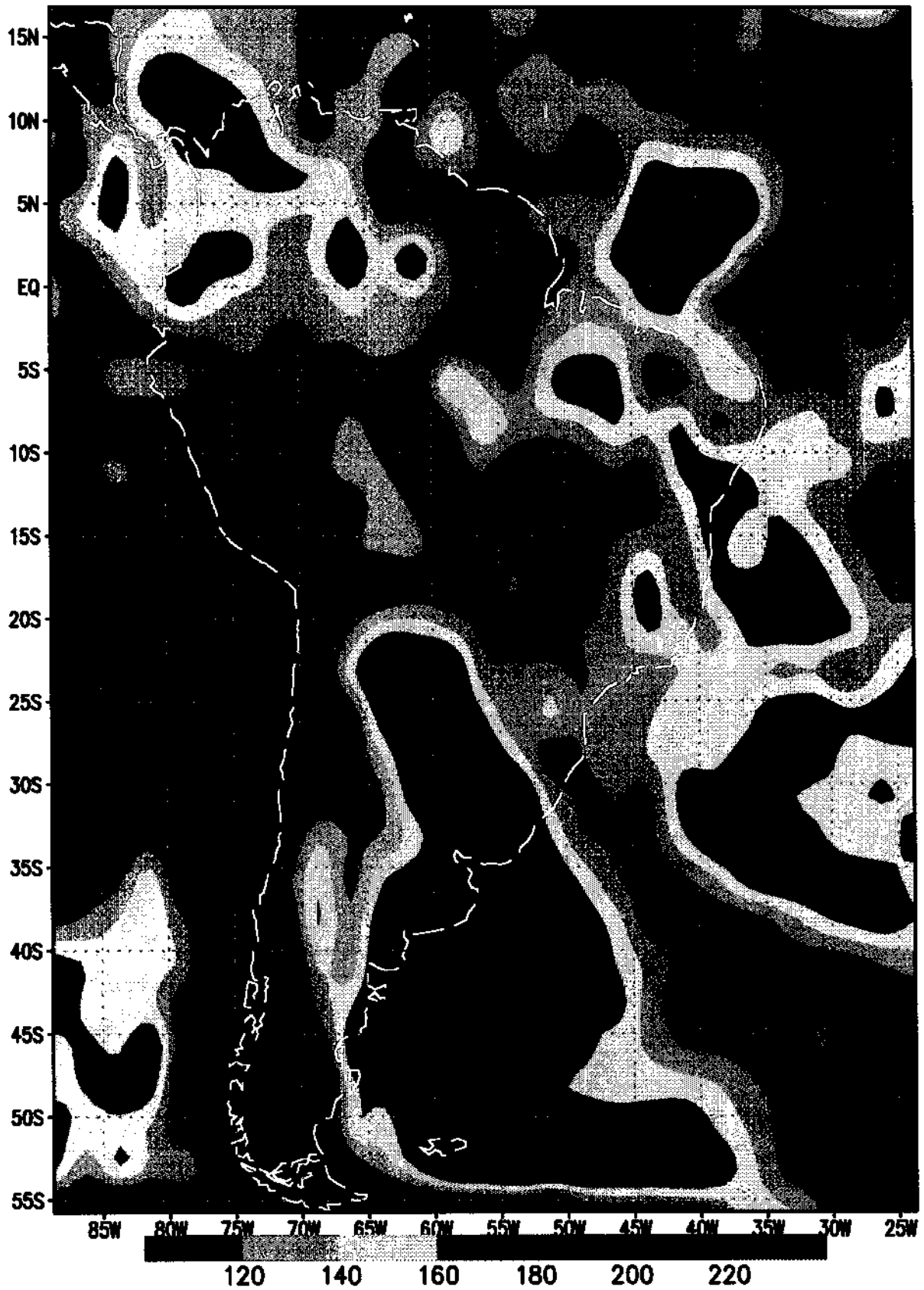


Fig. 10) Dia de anomalia extrema na área E.

(anom. extrem.) NE 27/02/94 18TMG

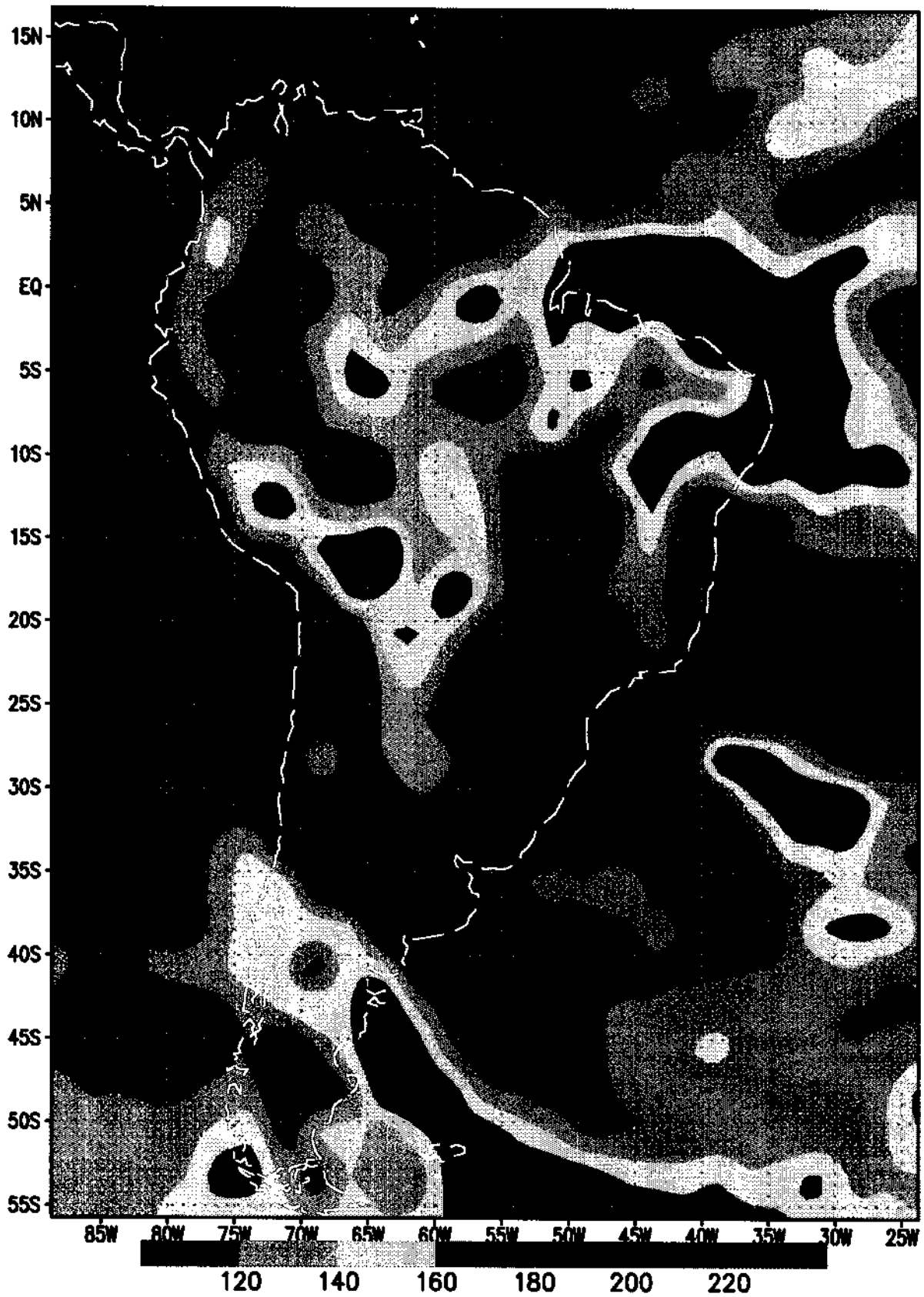


Fig. 11) Dia de anomalia extrema na área NE.

TABELA DE IMAGENS

NUMERO DE DIAS COM % \geq 50% / NÚMERO DE IMAGENS NO MÊS

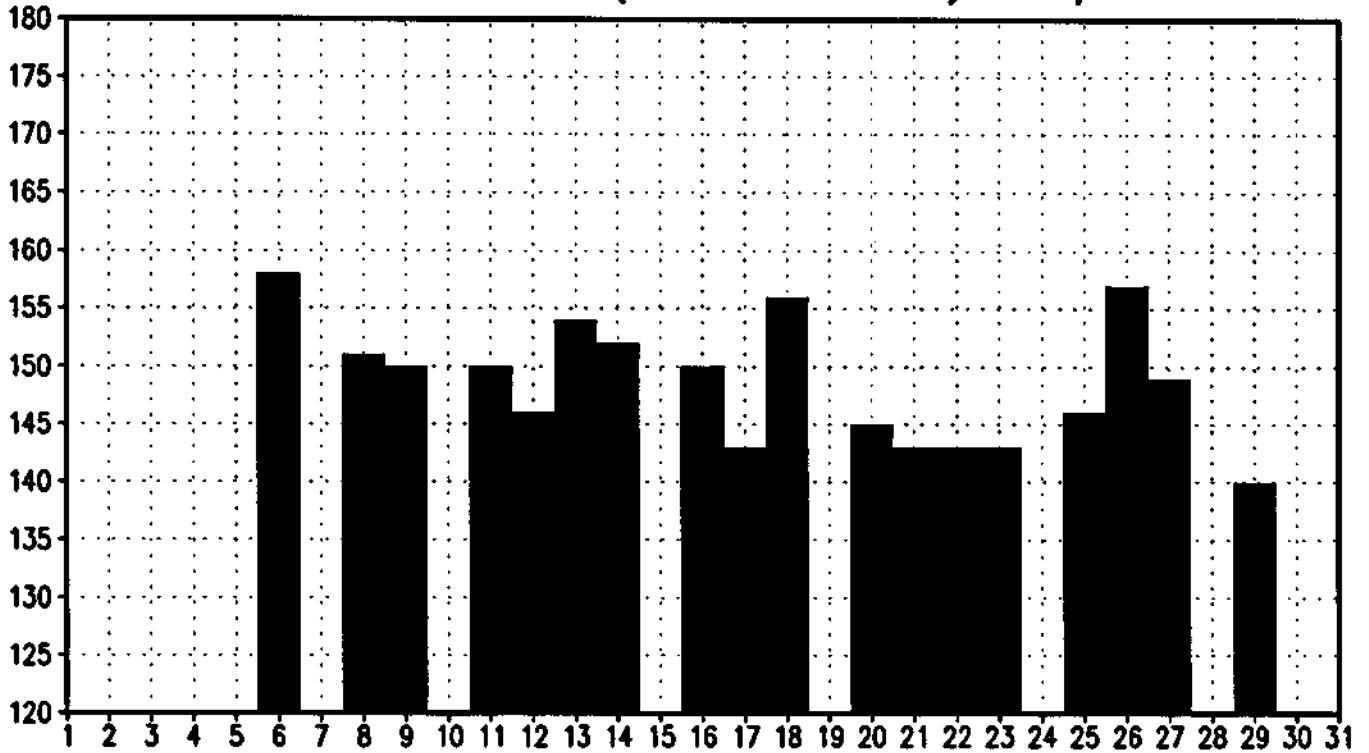
	A		B		C		D		E		NE	
	93	94	93	94	93	94	93	94	93	94	93	94
1	18/18	7/16	14/18	9/16	18/18	8/16	13/18	9/16	10/18	1/16	12/18	4/16
2	9/10	23/24	8/10	19/24	6/10	10/24	7/10	7/24	4/10	3/24	4/10	14/24
3	13/21	22/31	7/21	27/31	1/21	8/31	0/21	17/31	2/21	1/31	1/21	16/31
4	11/15	14/26	7/15	16/26	0/15	4/26	0/15	1/26	1/15	0/26	4/15	12/26
5	1/30	10/31	2/30	8/31	0/30	0/31	1/30	0/31	3/30	4/31	2/30	5/31
6	0/25	2/29	0/25	0/29	1/25	1/29	0/25	0/29	1/25	3/29	0/25	1/29
7	0/28	0/31	0/28	0/31	0/28	0/31	0/28	0/31	3/28	5/31	0/28	0/31
8	0/28	0/28	0/28	0/28	0/28	1/28	0/28	0/28	0/28	0/28	0/28	0/28
9	0/27	1/28	0/27	0/28	0/27	1/28	0/27	0/28	4/27	1/28	0/27	0/28
10	0/26	6/31	0/26	0/31	1/26	8/31	1/26	2/31	2/26	9/31	0/26	0/31
11	7/19	13/26	2/19	14/26	2/19	5/26	0/19	12/26	0/19	11/26	0/19	13/26
12	5/25	11/11	4/25	7/11	8/25	2/11	14/25	7/11	5/25	1/11	2/25	7/11

TABELA I

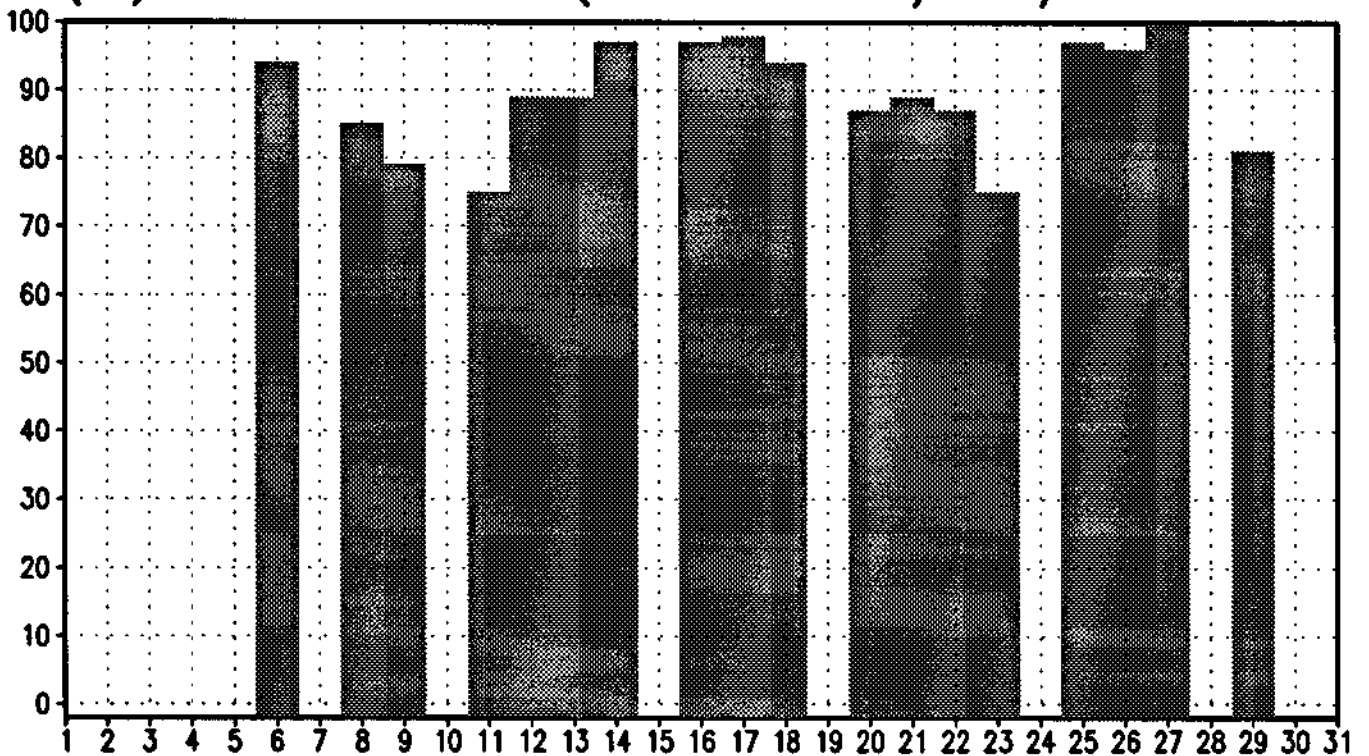
ANEXO I

SEQUÊNCIA DE GRÁFICOS COM AS SÉRIES
TEMPORAIS DAS MÉDIAS E PORCENTAGENS
DIÁRIAS DAS ÁREAS A, B, C, D e E PARA CADA MÊS
DE 1993 E 1994.

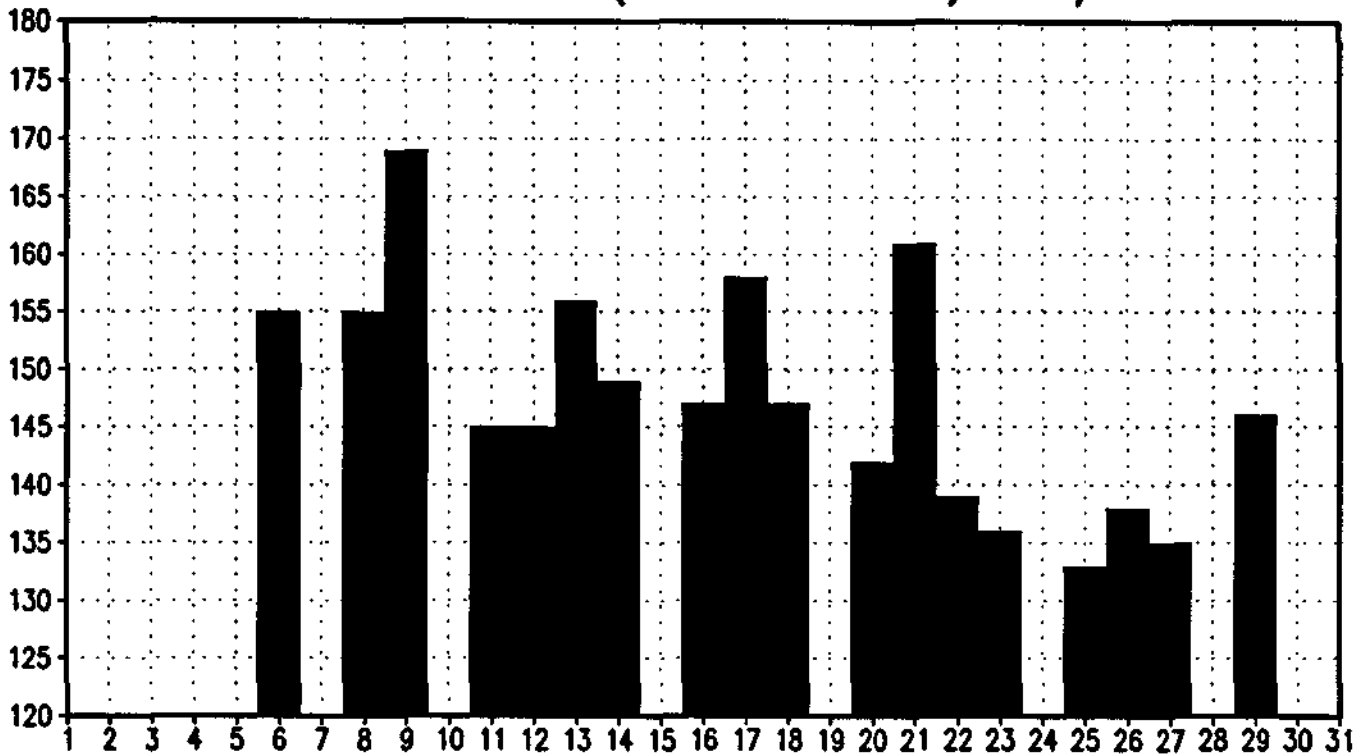
MEDIA DE VALORES (≥ 120 'A') 01/93 18TMG



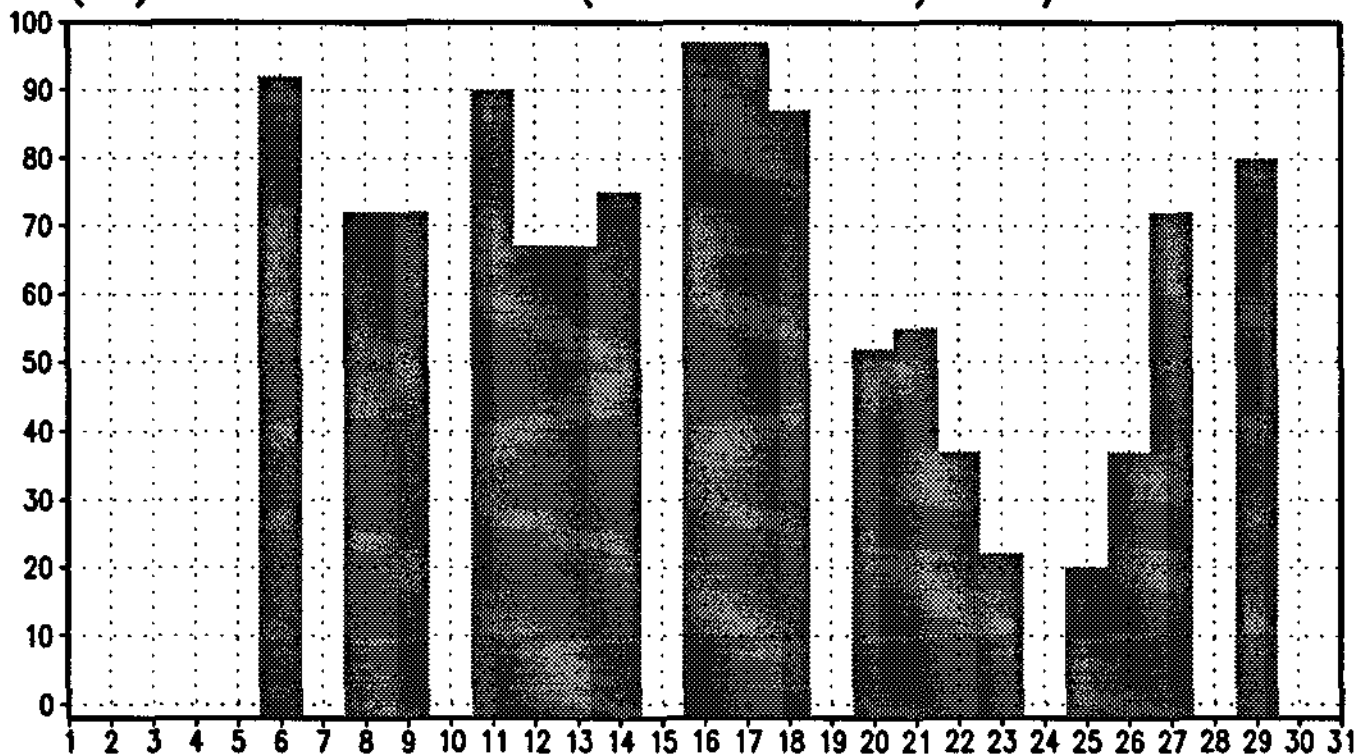
(%) DE VALORES (≥ 120 'A') 01/93 18TMG



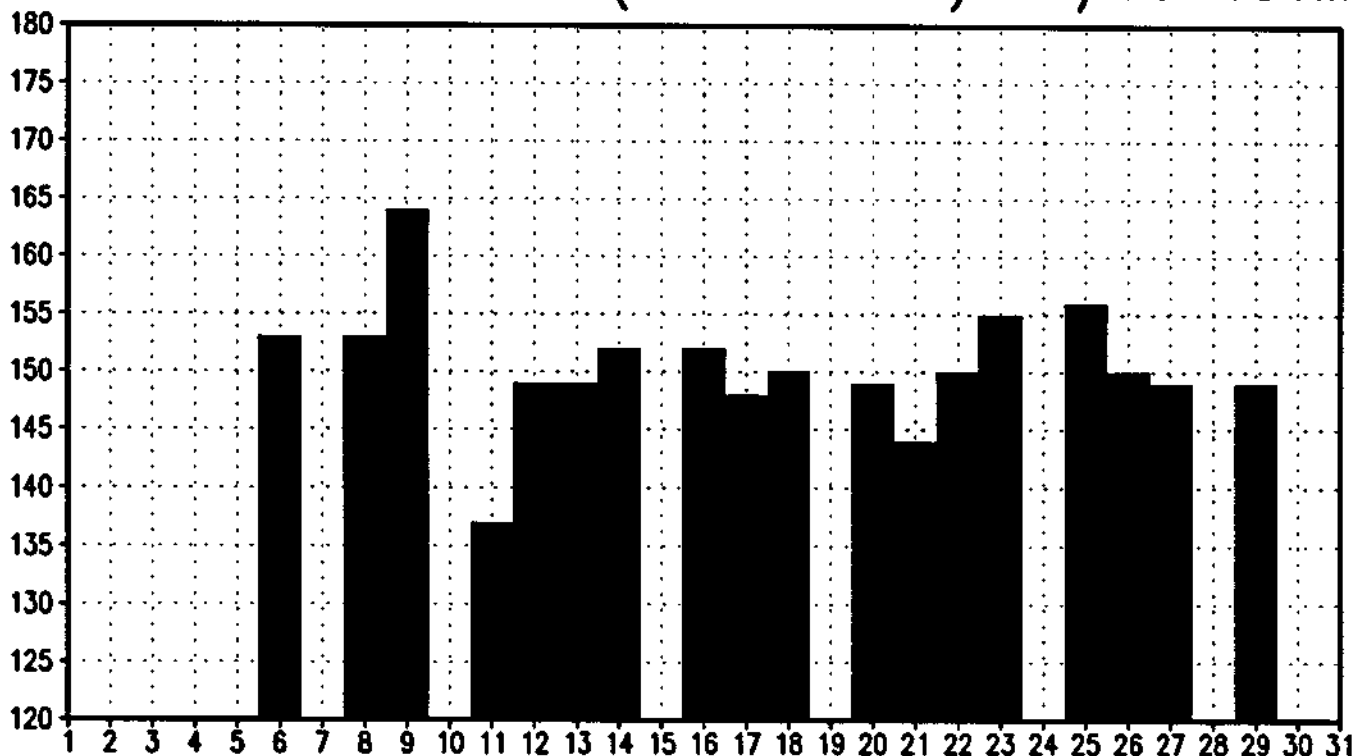
MEDIA DE VALORES (≥ 120 'B') 01/93 18TMG



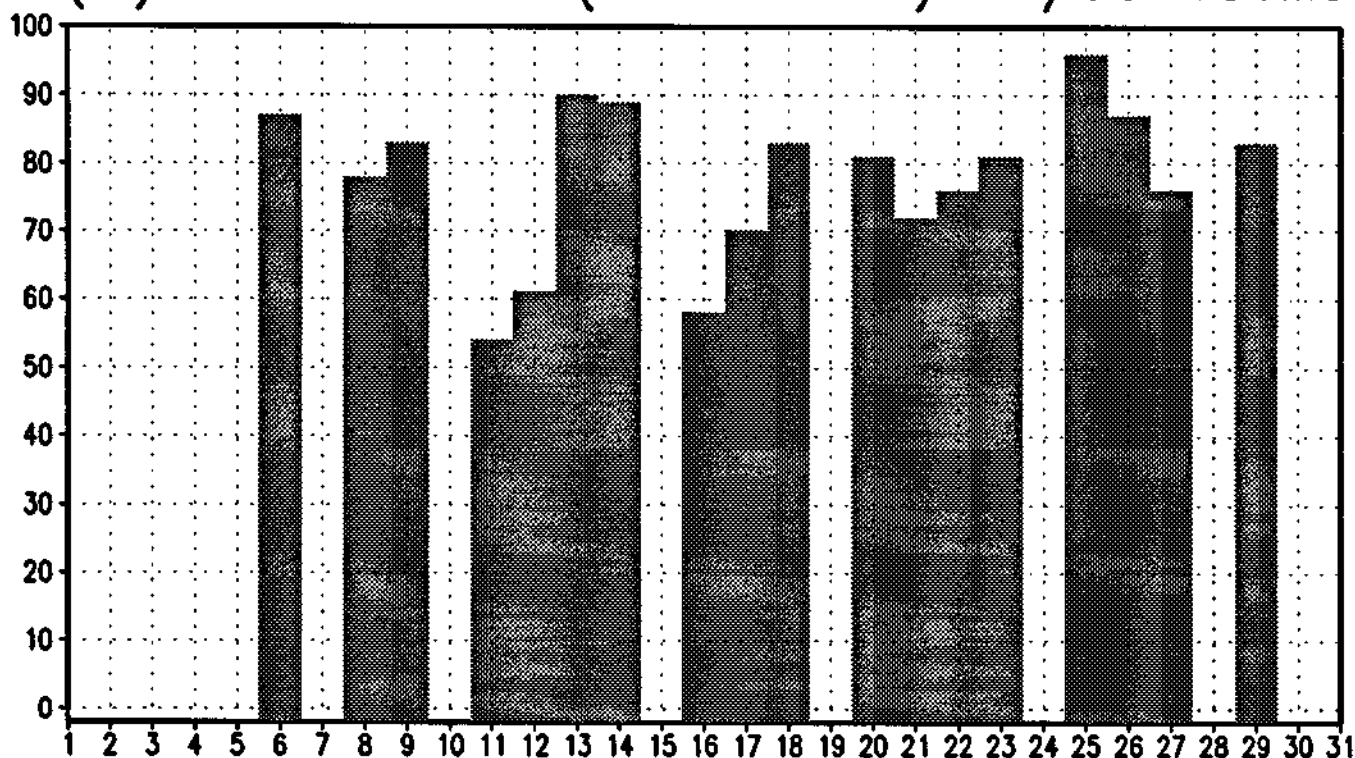
(%) DE VALORES (≥ 120 'B') 01/93 18TMG



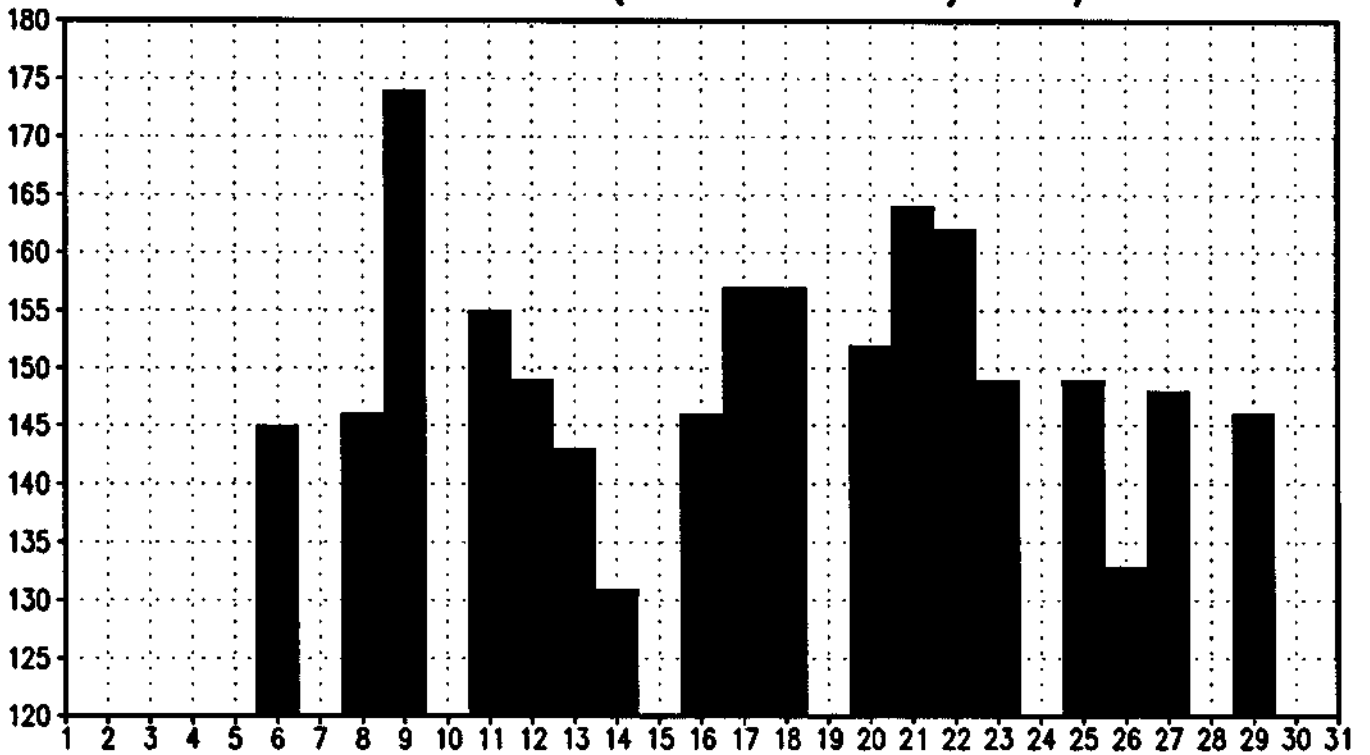
MEDIA DE VALORES (≥ 120 'C') 01/93 18TMG



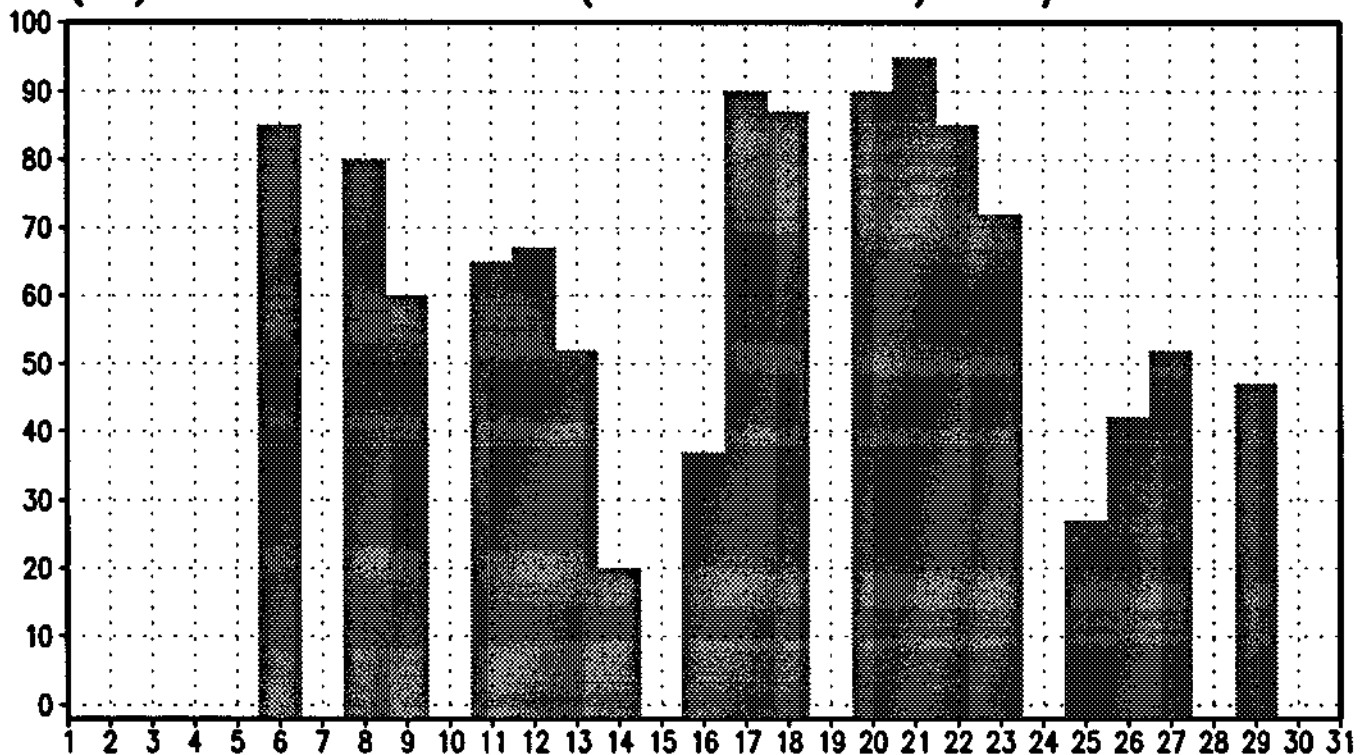
(%) DE VALORES (≥ 120 'C') 01/93 18TMG



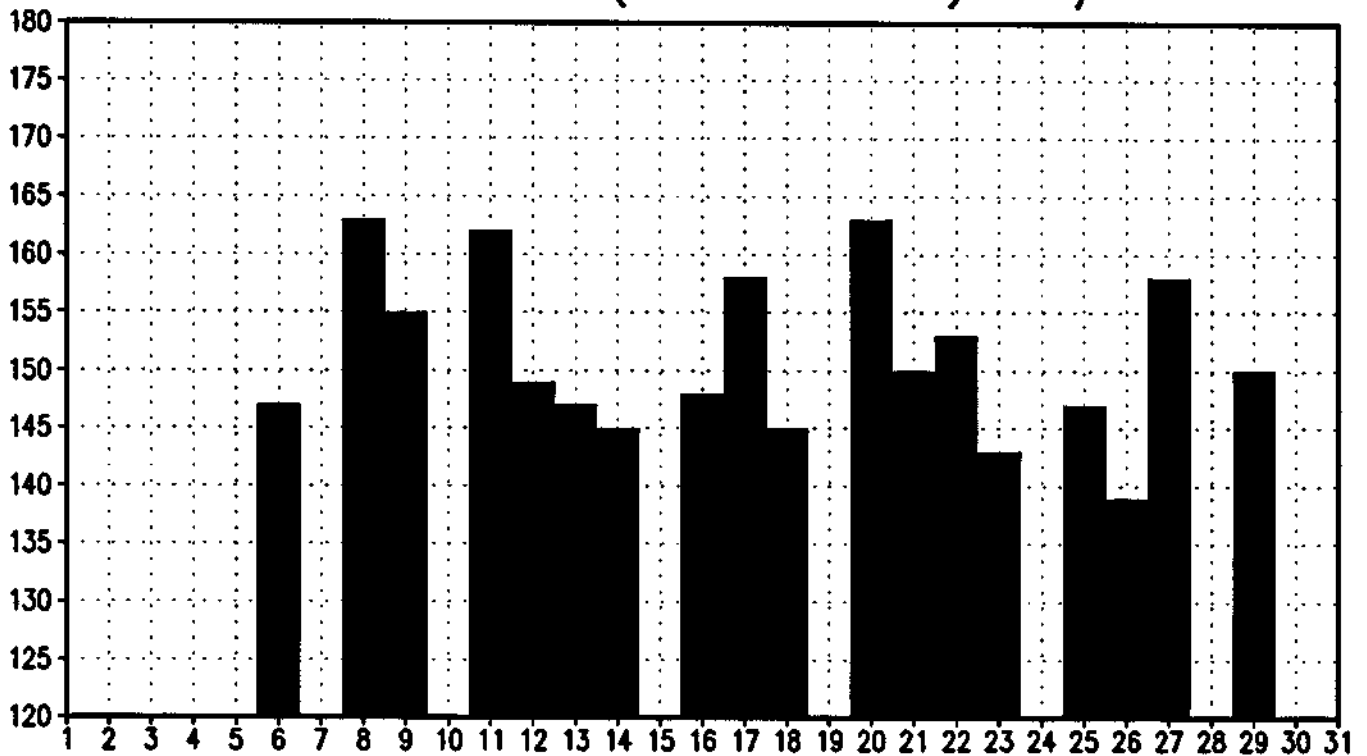
MEDIA DE VALORES (≥ 120 'D') 01/93 18TMG



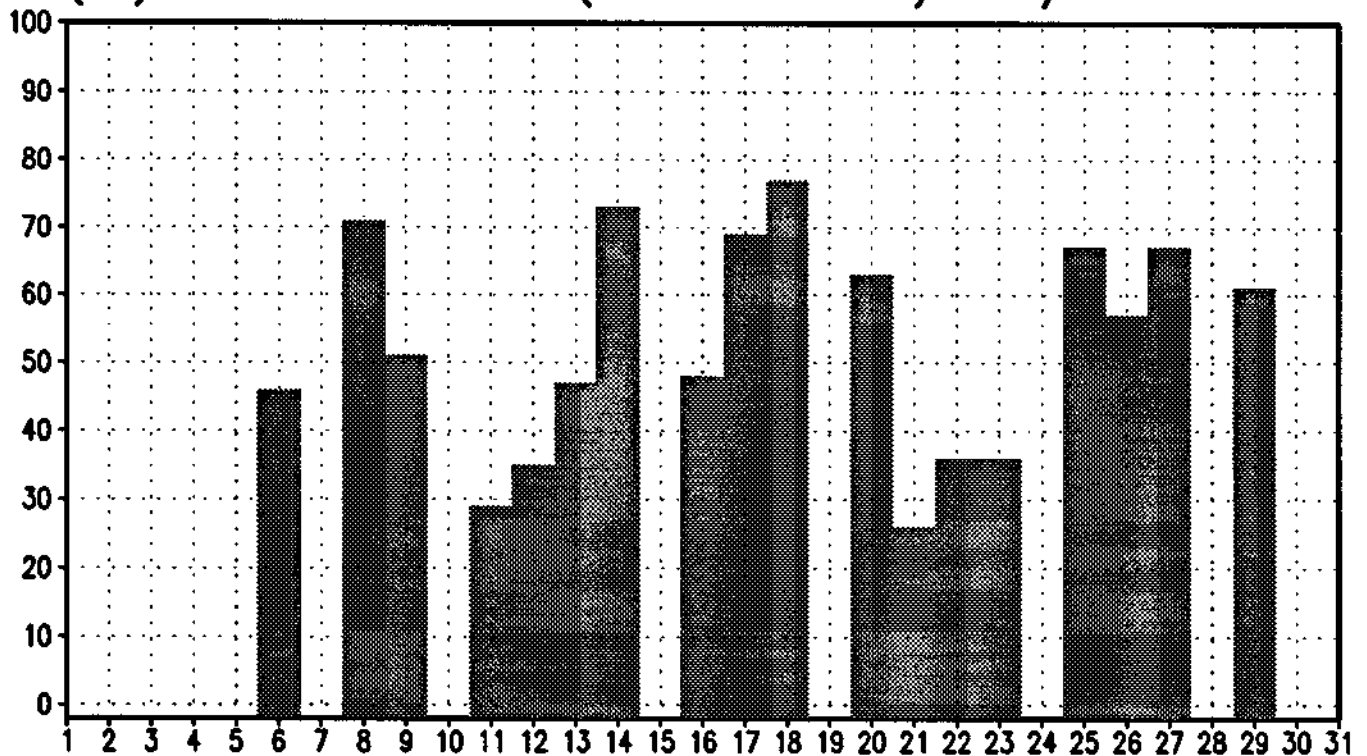
(%) DE VALORES (≥ 120 'D') 01/93 18TMG



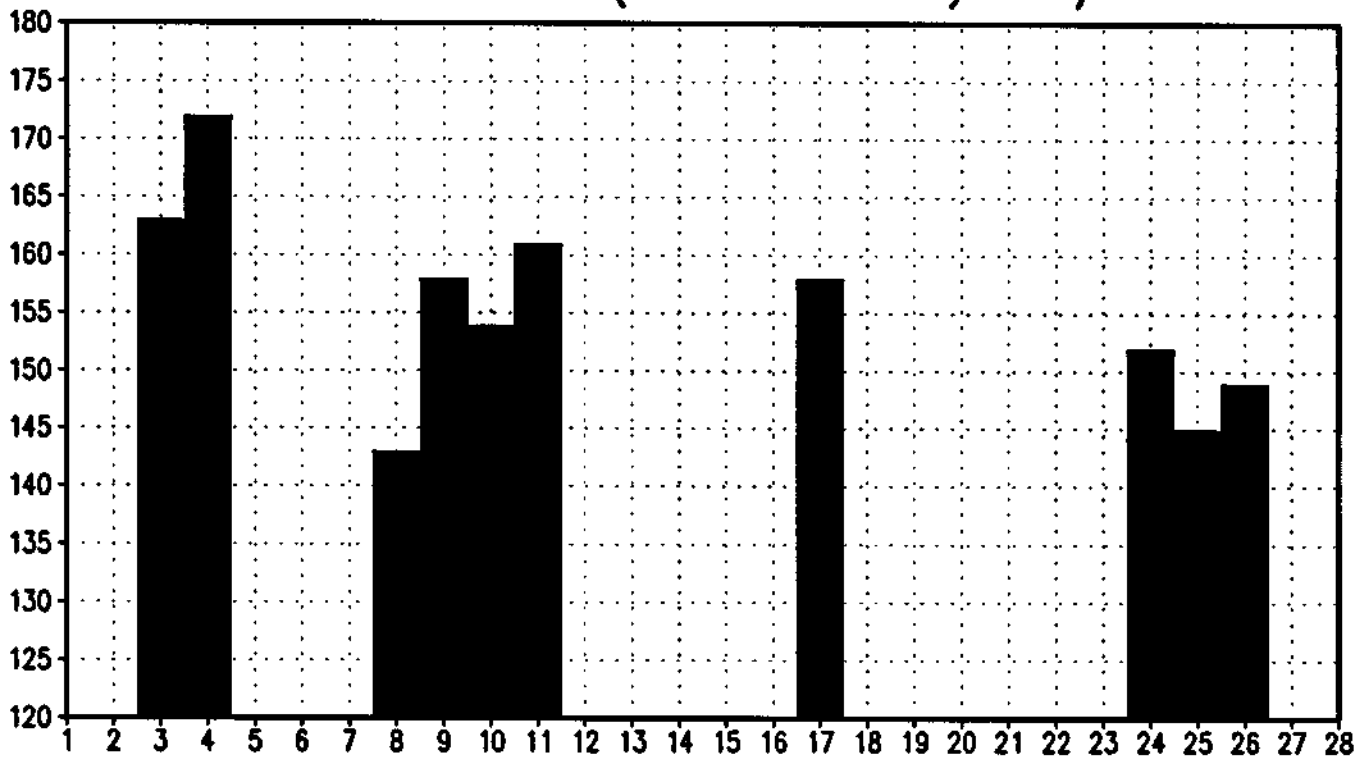
MEDIA DE VALORES (≥ 120 'E') 01/93 18TMG



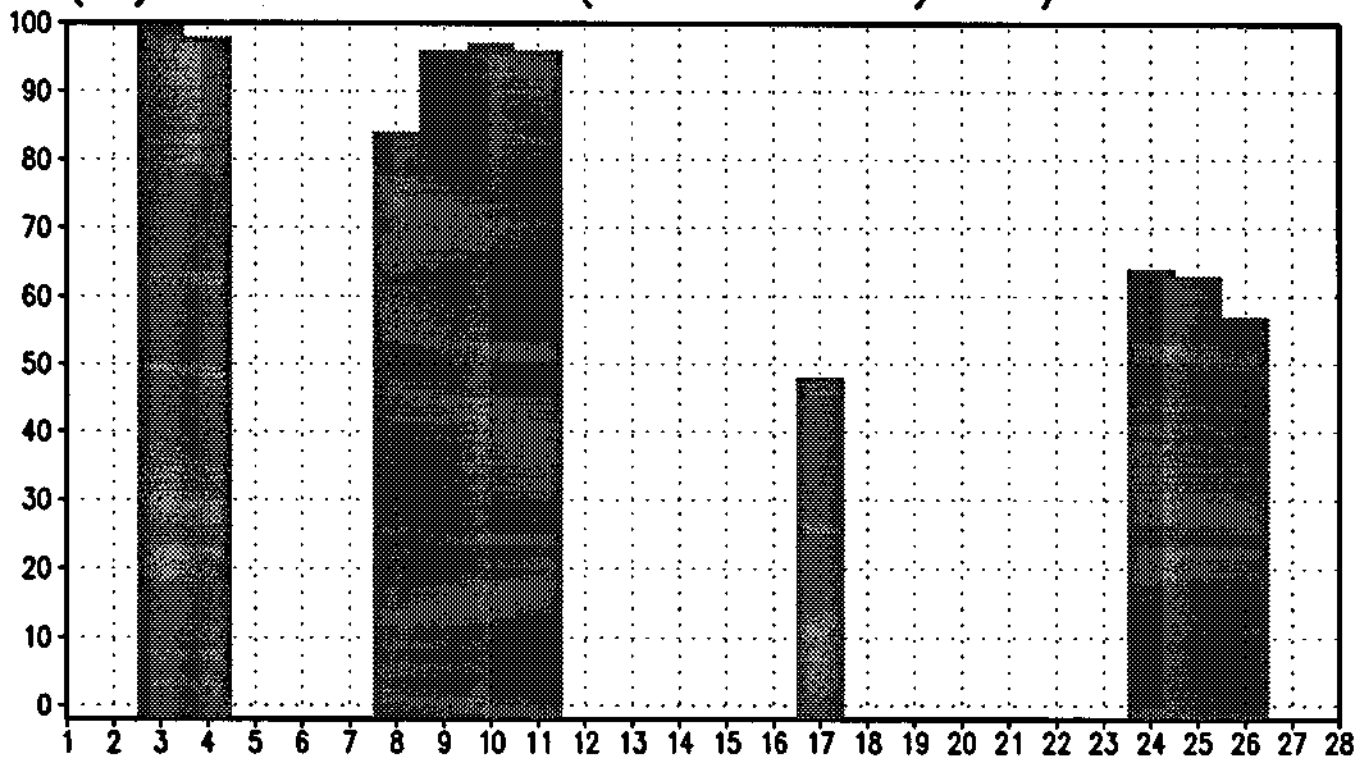
(%) DE VALORES (≥ 120 'E') 01/93 18TMG



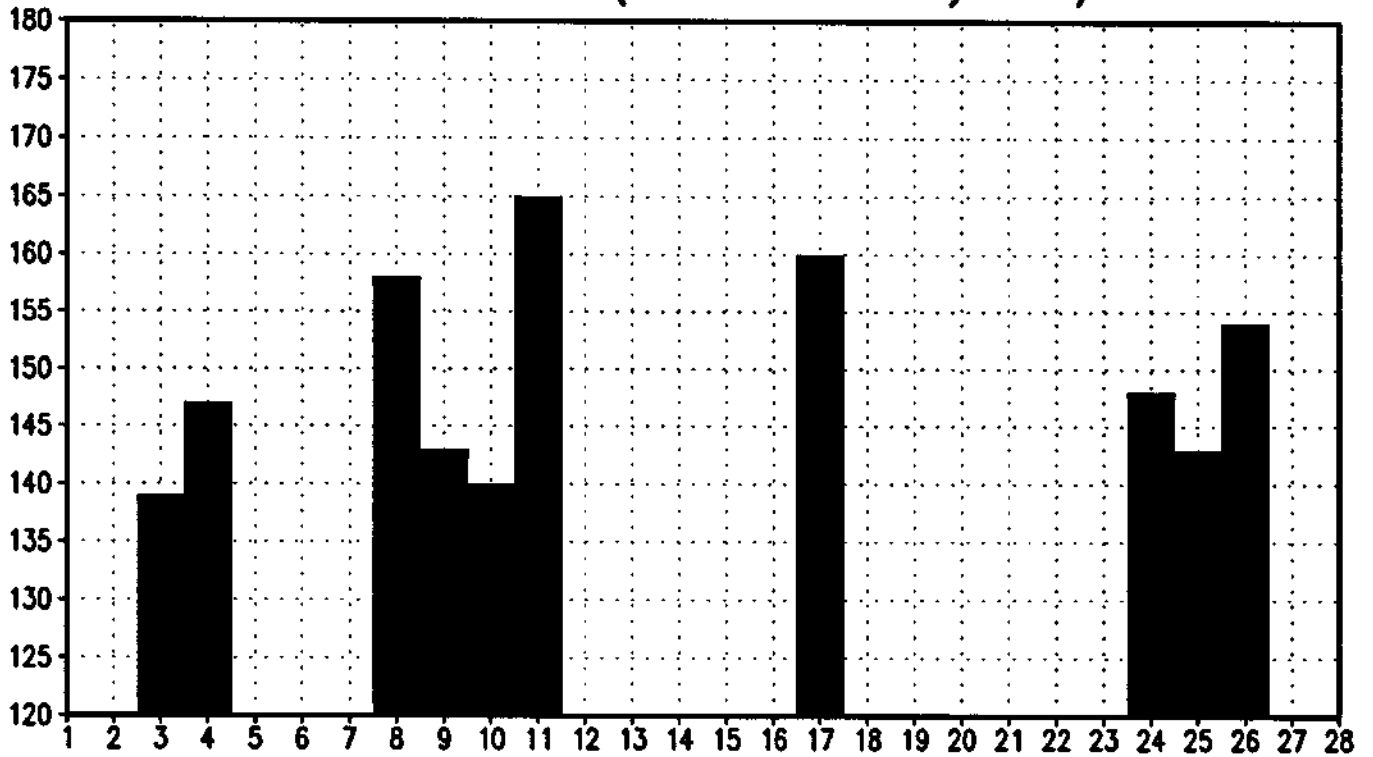
MEDIA DE VALORES (≥ 120 'A') 02/93 18TMG



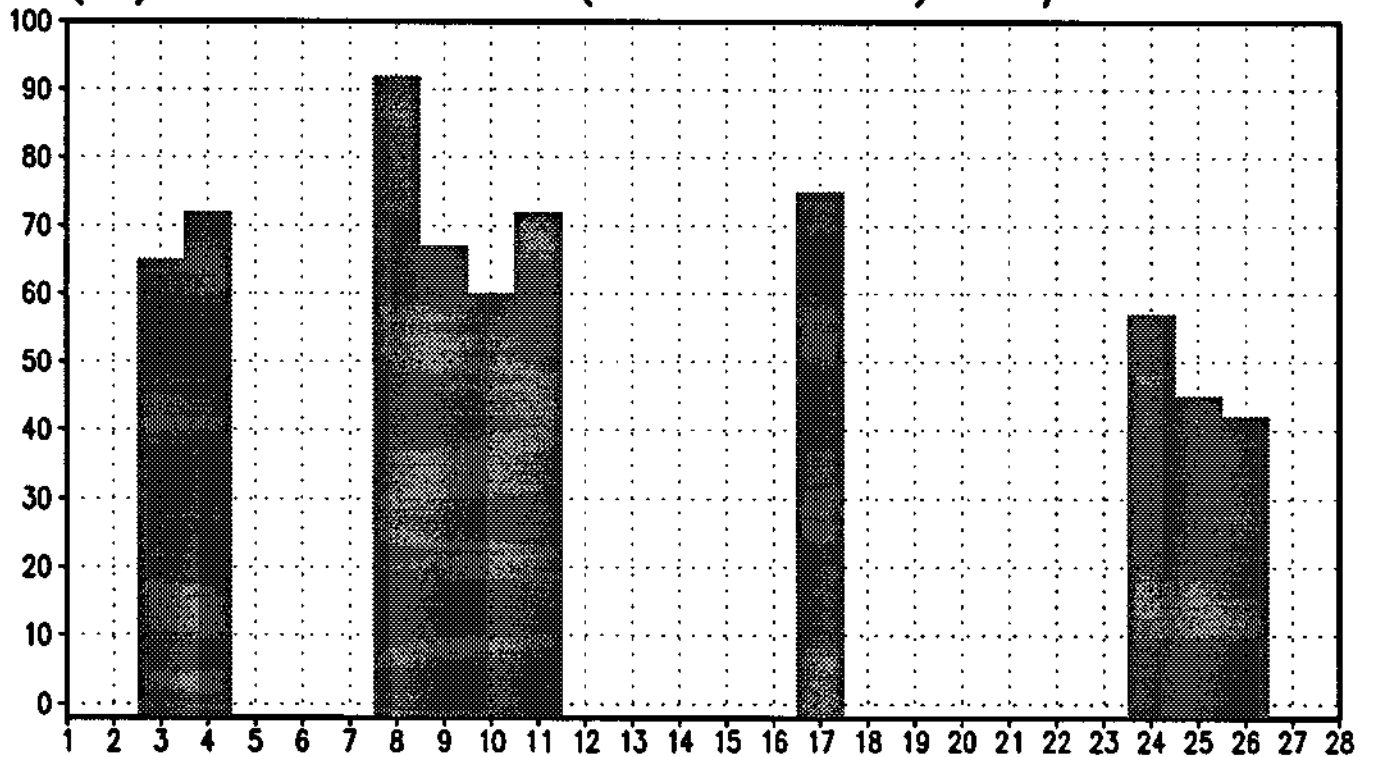
(%) DE VALORES (≥ 120 'A') 02/93 18TMG



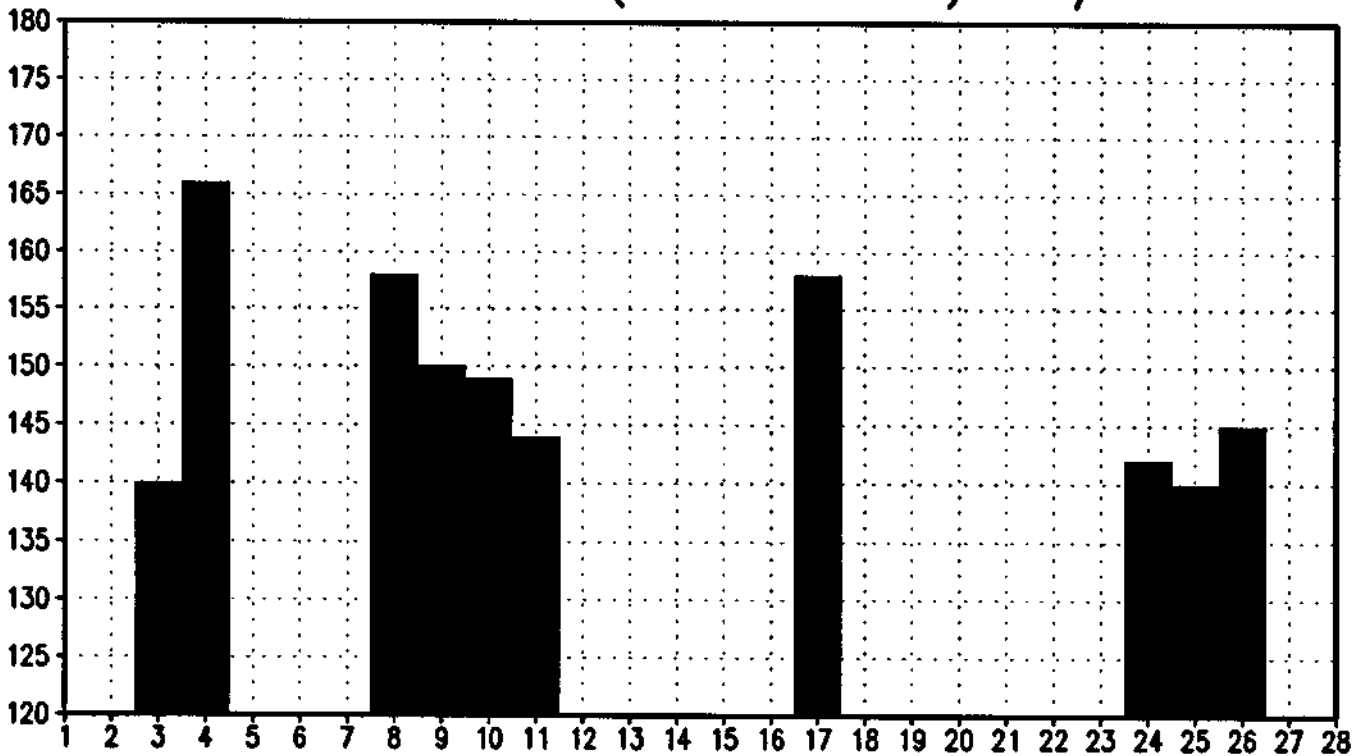
MEDIA DE VALORES (≥ 120 'B') 02/93 18TMG



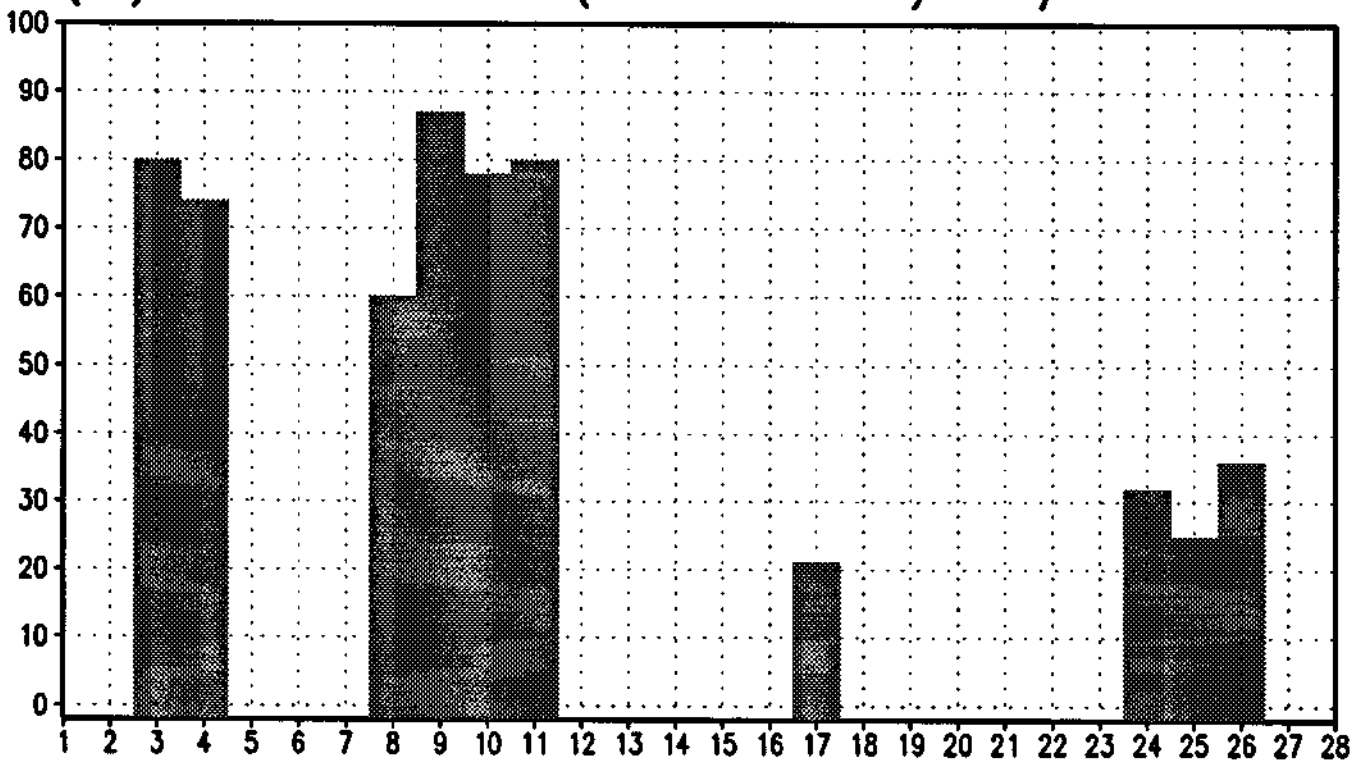
(%) DE VALORES (≥ 120 'B') 02/93 18TMG



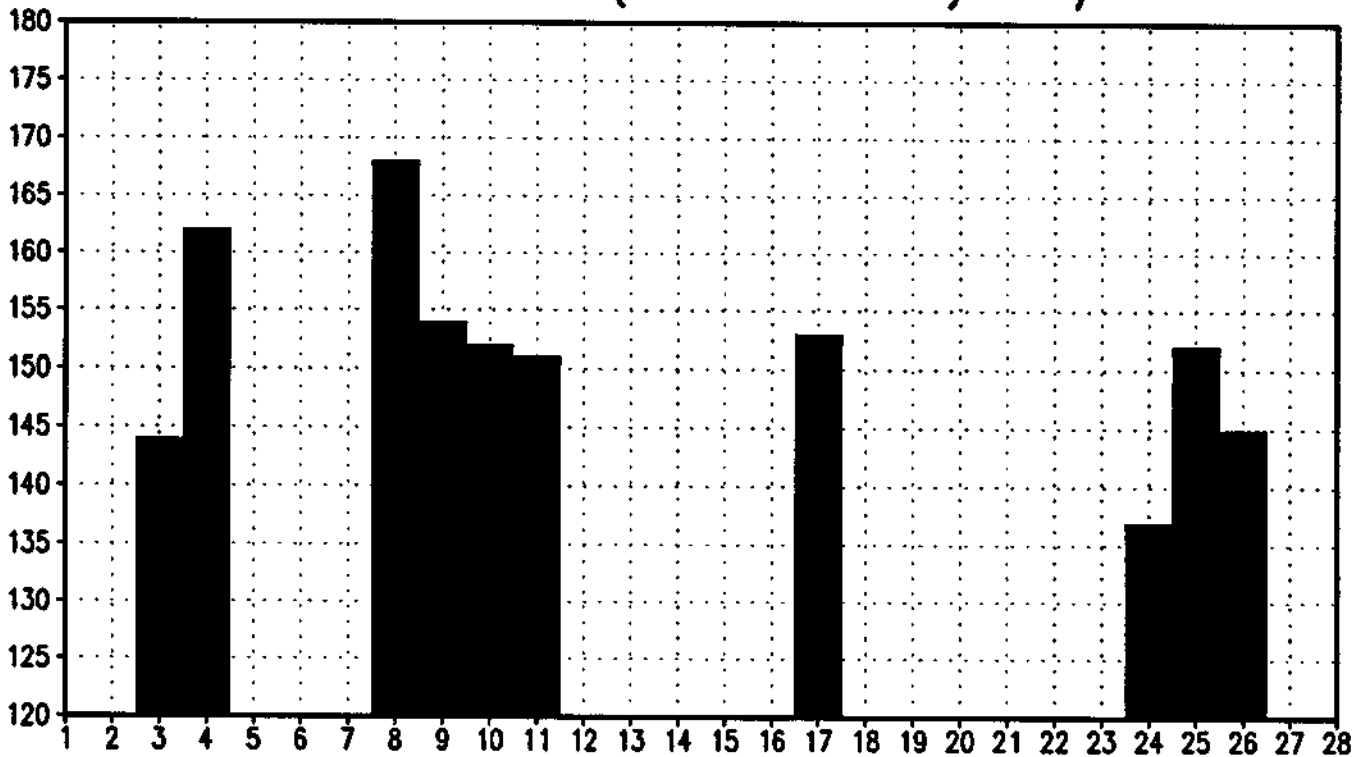
MEDIA DE VALORES (≥ 120 'C') 02/93 18TMG



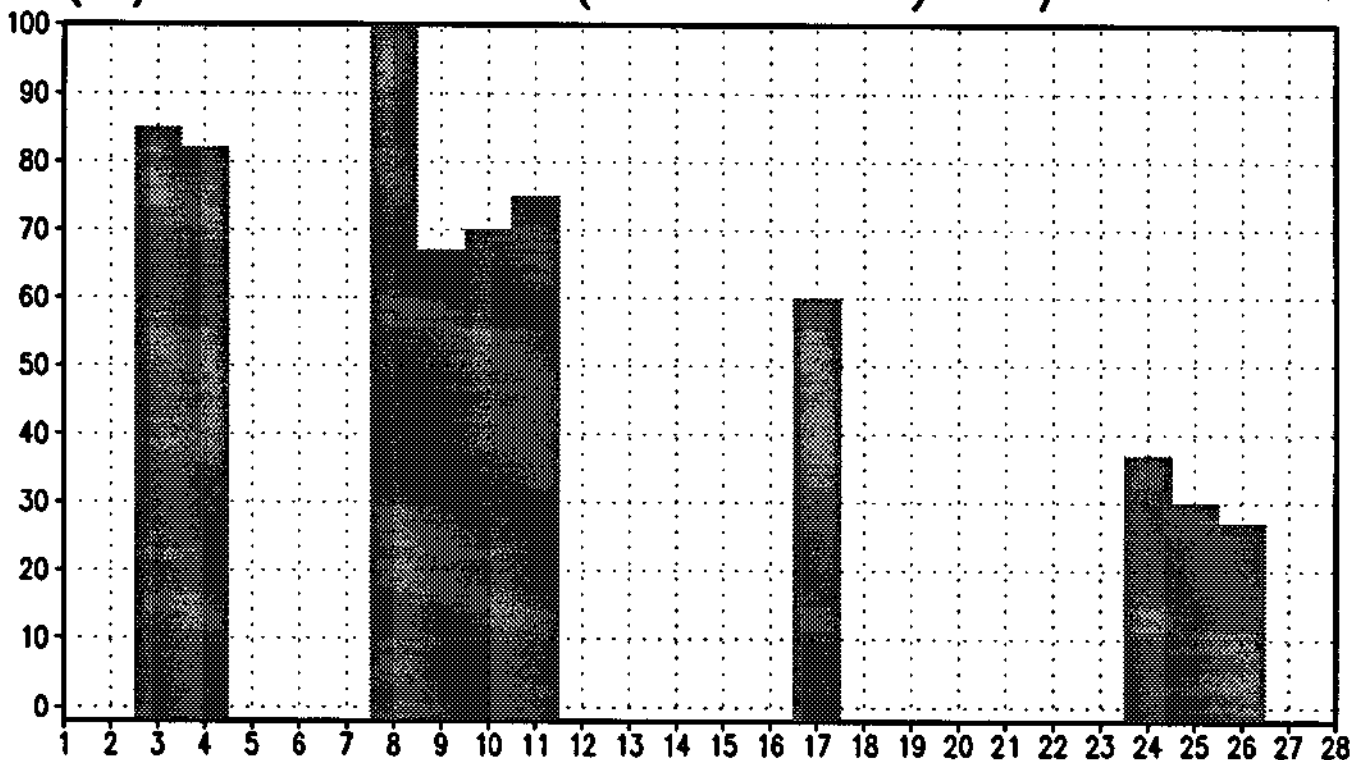
(%) DE VALORES (≥ 120 'C') 02/93 18TMG



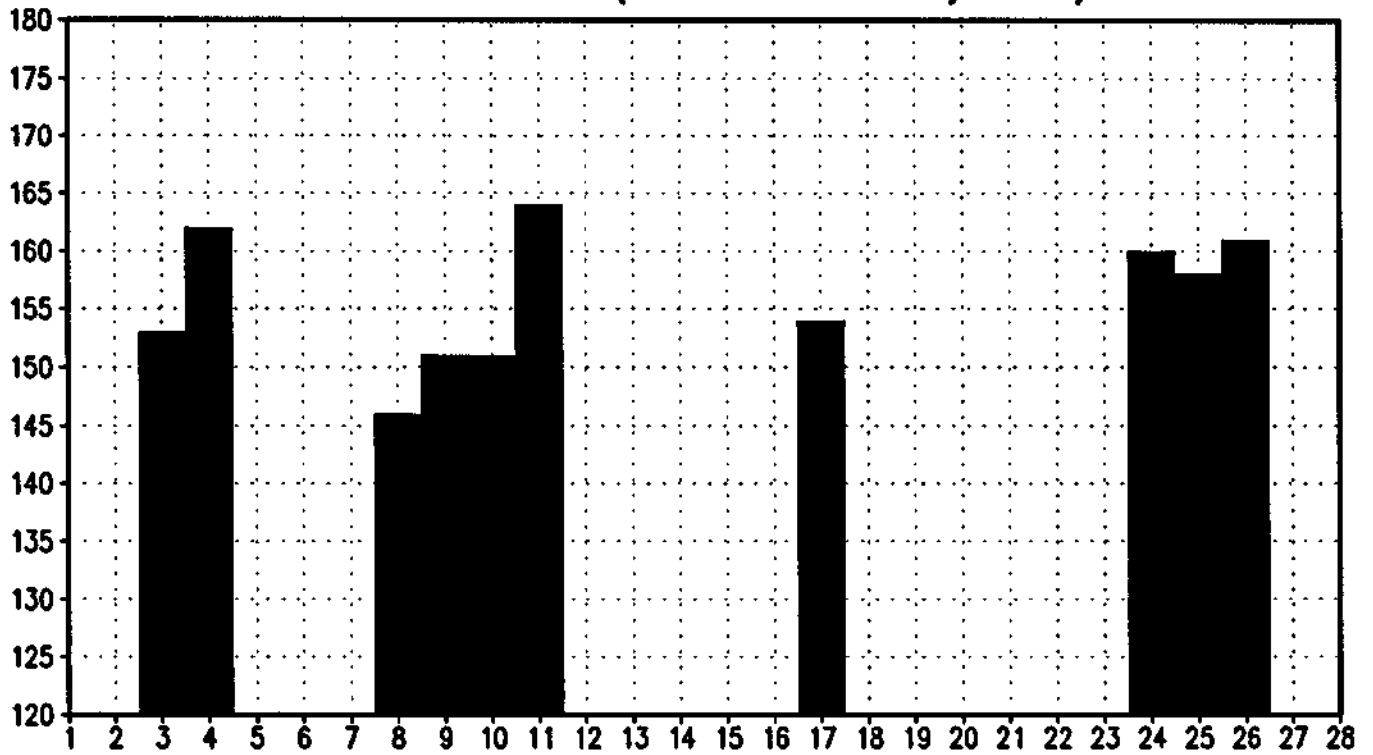
MEDIA DE VALORES (≥ 120 'D') 02/93 18TMG



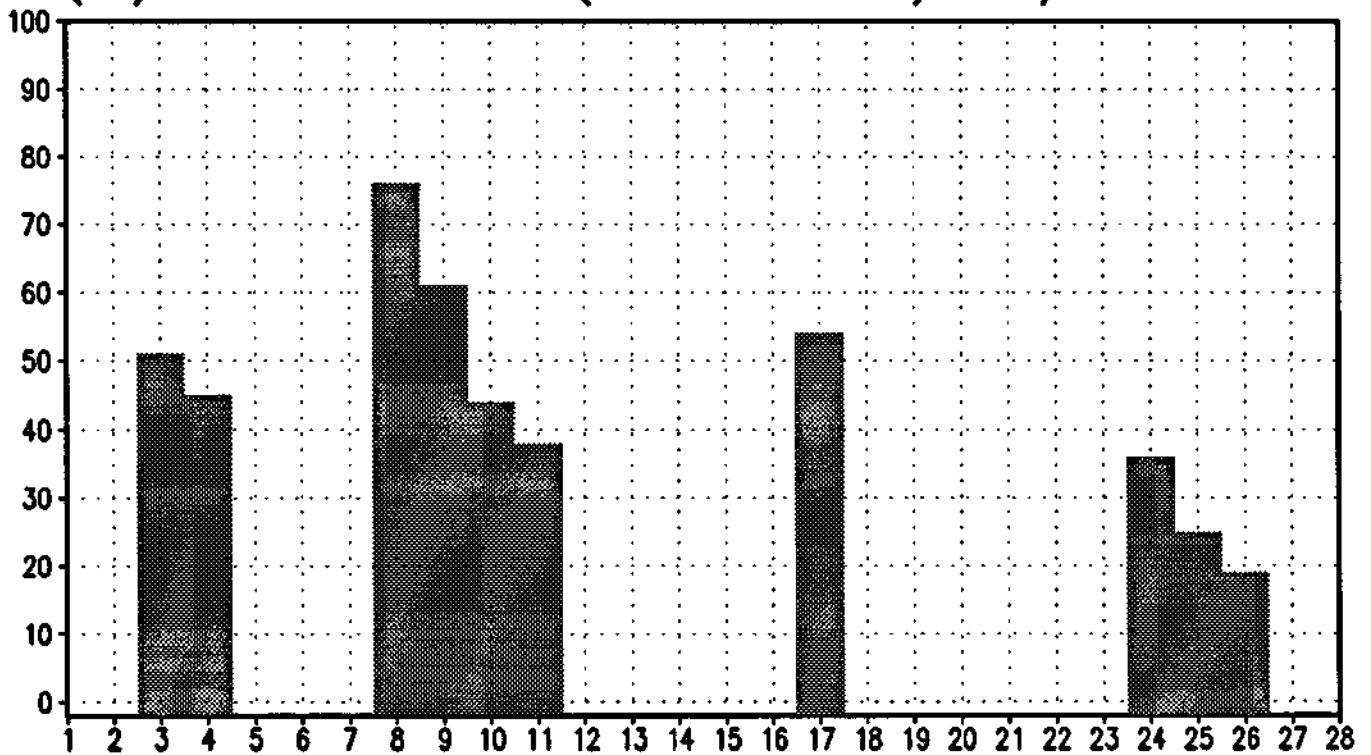
(%) DE VALORES (≥ 120 'D') 02/93 18TMG



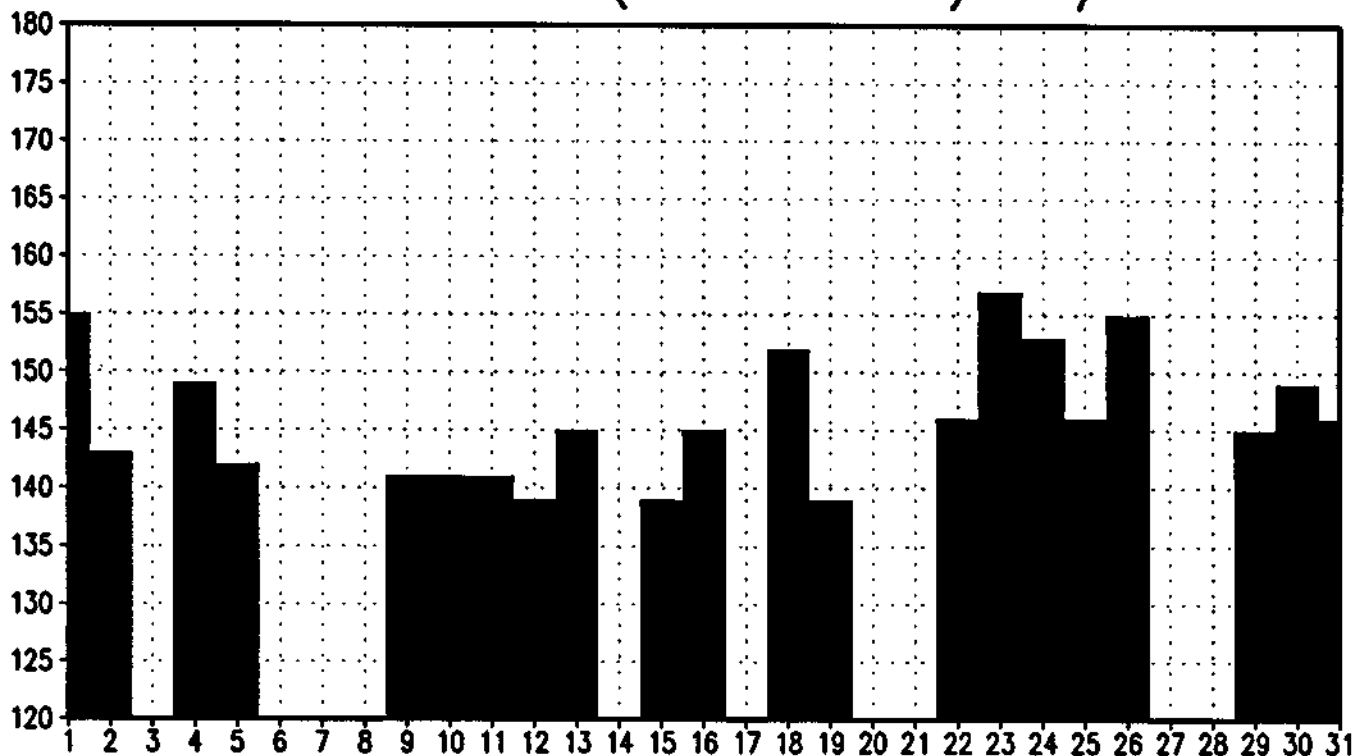
MEDIA DE VALORES (≥ 120 'E') 02/93 18TMG



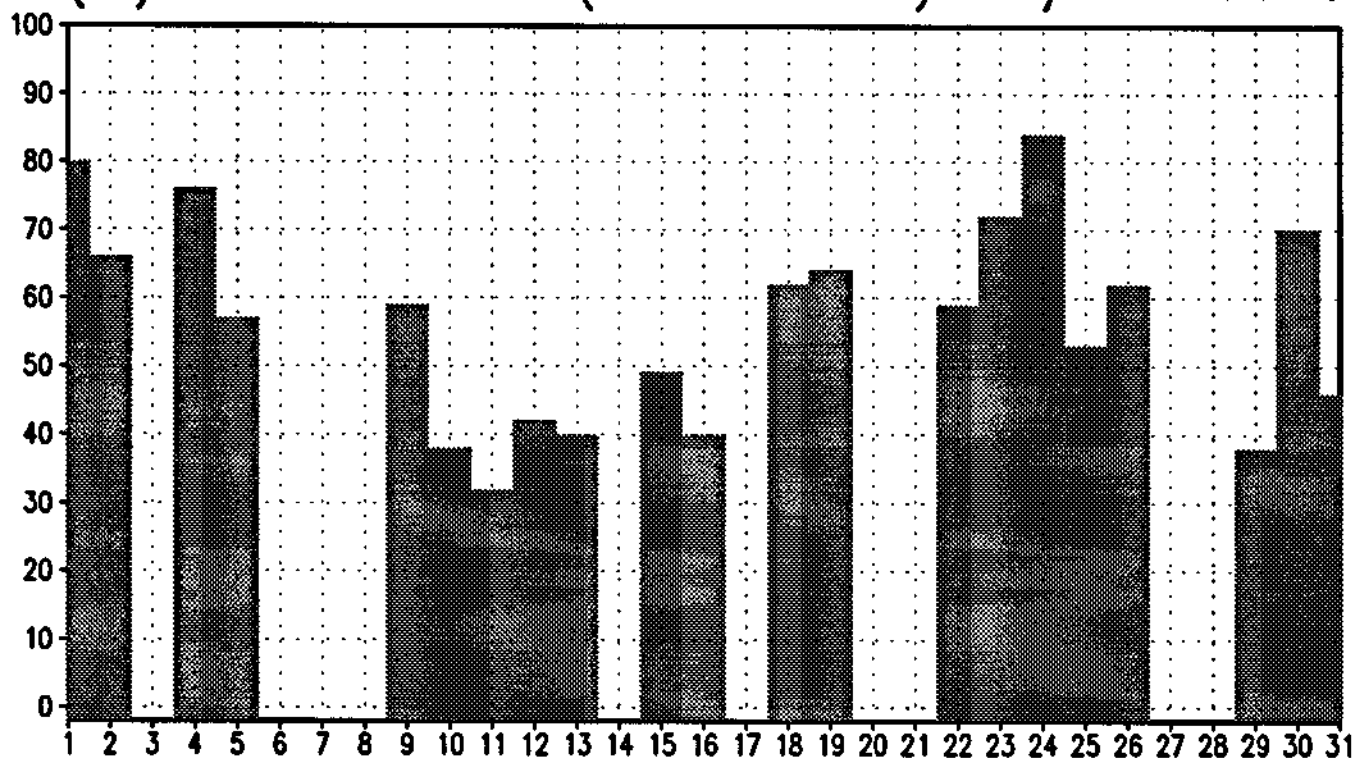
(%) DE VALORES (≥ 120 'E') 02/93 18TMG



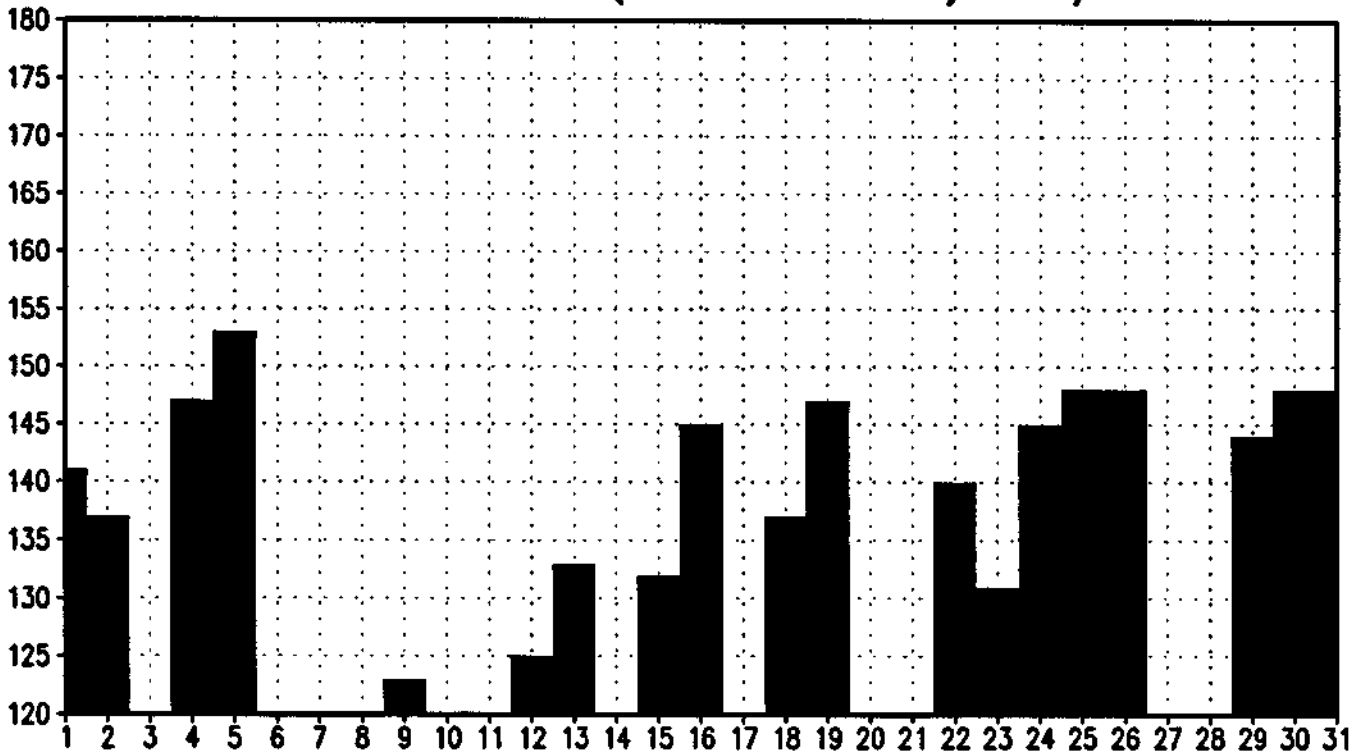
MEDIA DE VALORES (≥ 120 'A') 03/93 18TMG



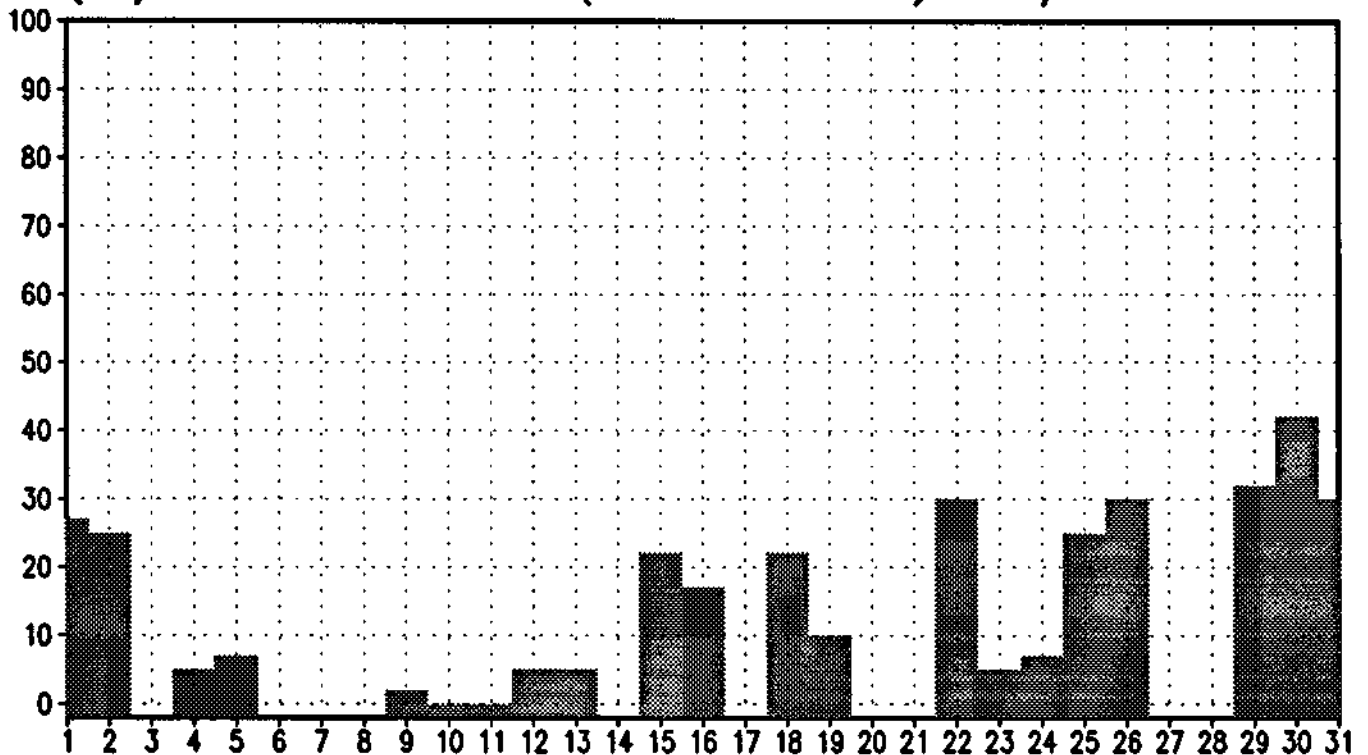
(%) DE VALORES (≥ 120 'A') 03/93 18TMG



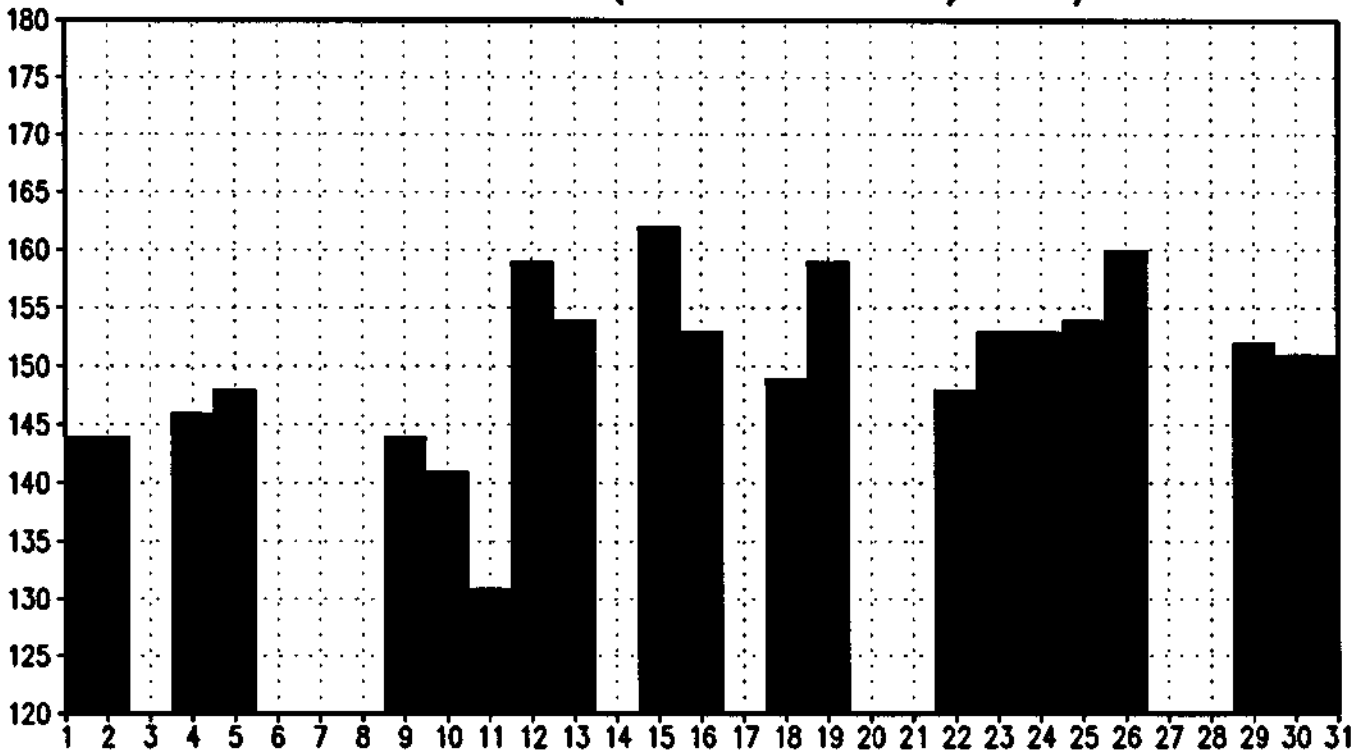
MEDIA DE VALORES (≥ 120 'D') 03/93 18TMG



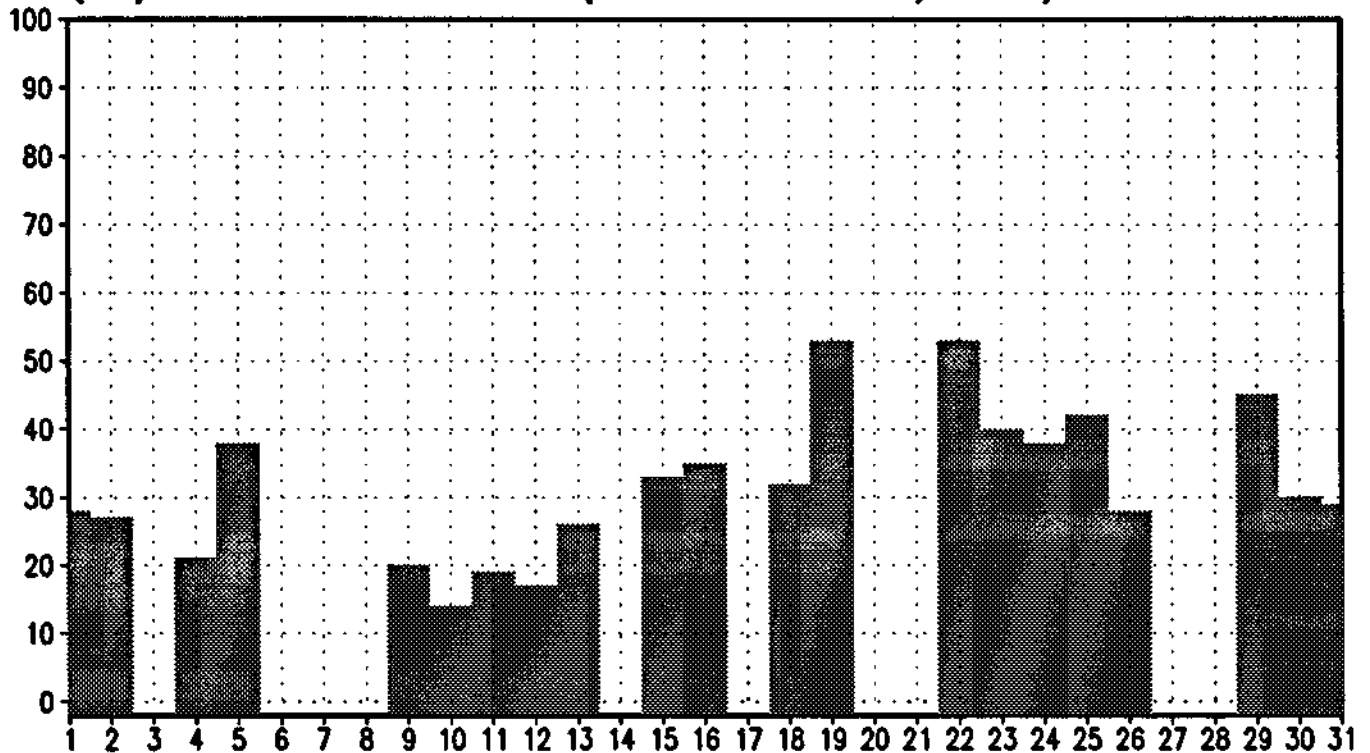
(%) DE VALORES (≥ 120 'D') 03/93 18TMG



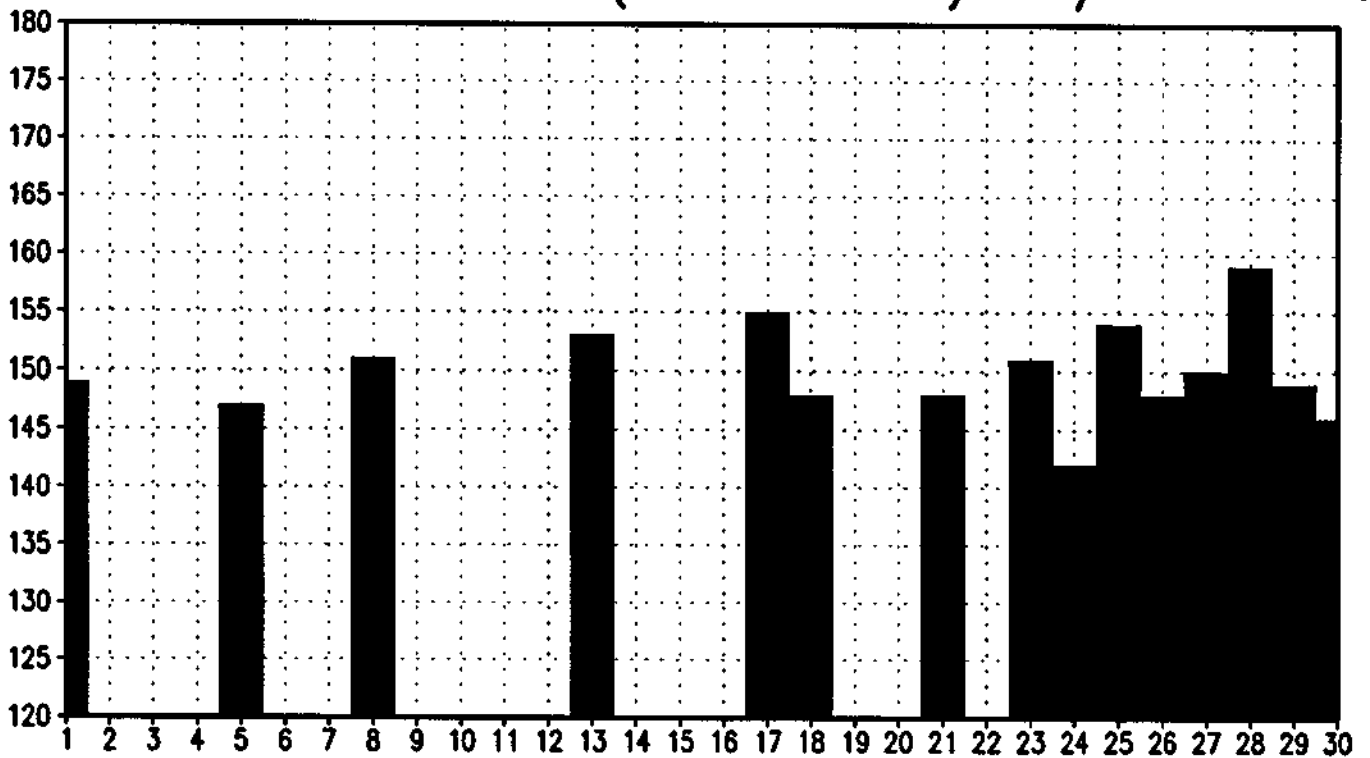
MEDIA DE VALORES (≥ 120 'E') 03/93 18TMG



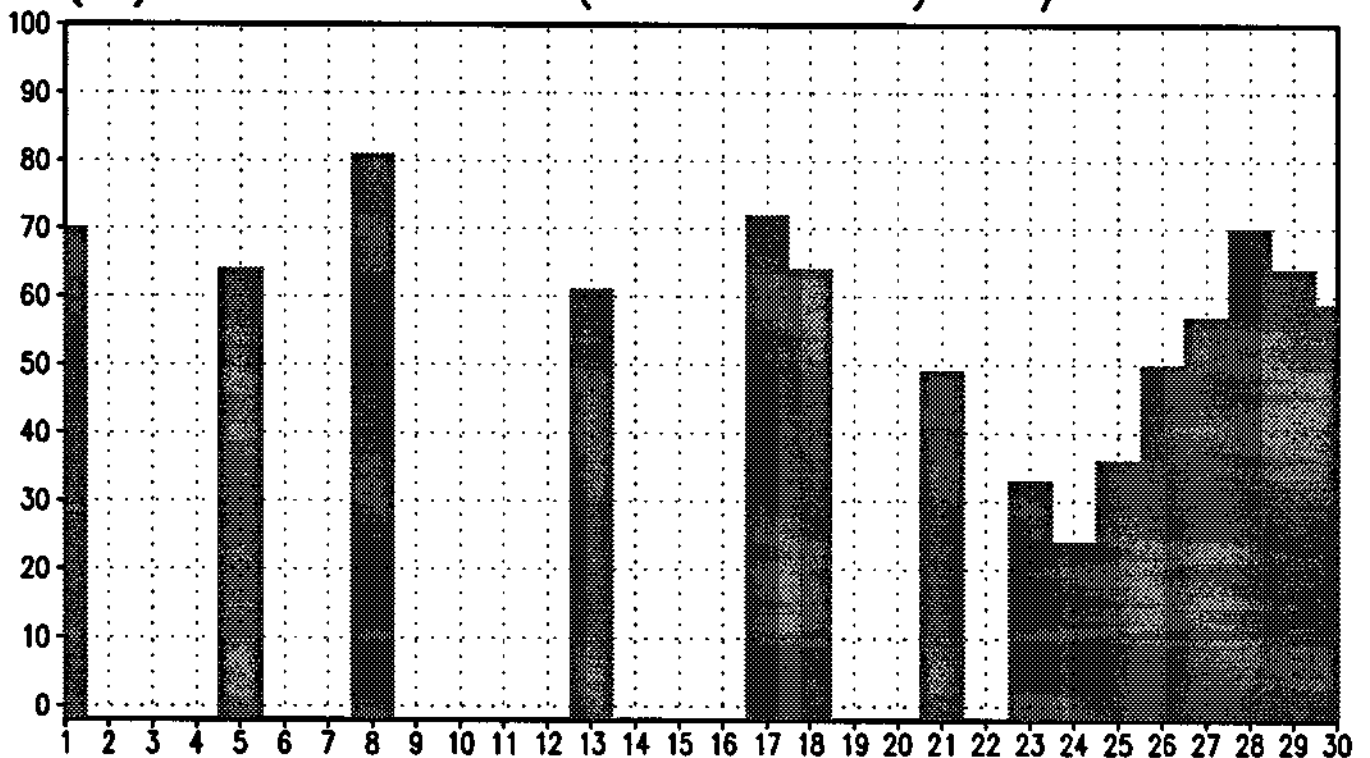
(%) DE VALORES (≥ 120 'E') 03/93 18TMG



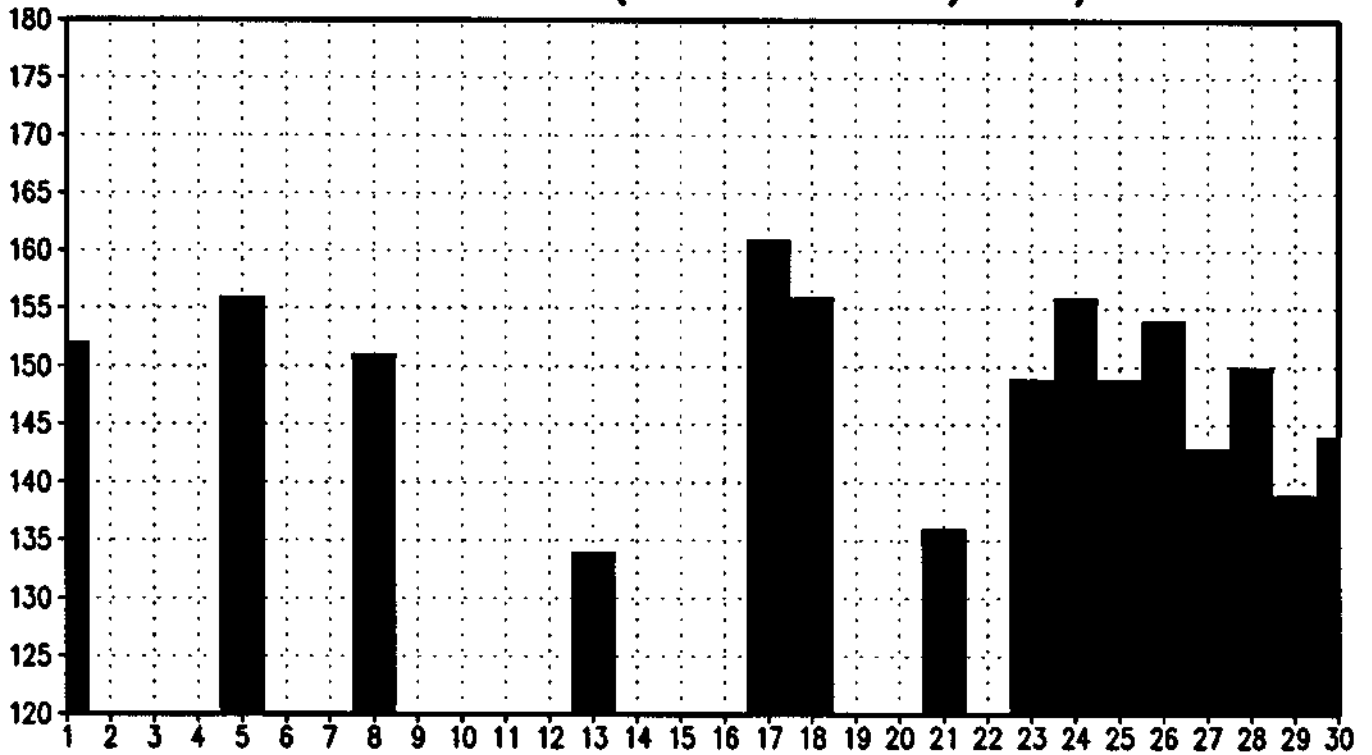
MEDIA DE VALORES (≥ 120 'A') 04/93 19TMG



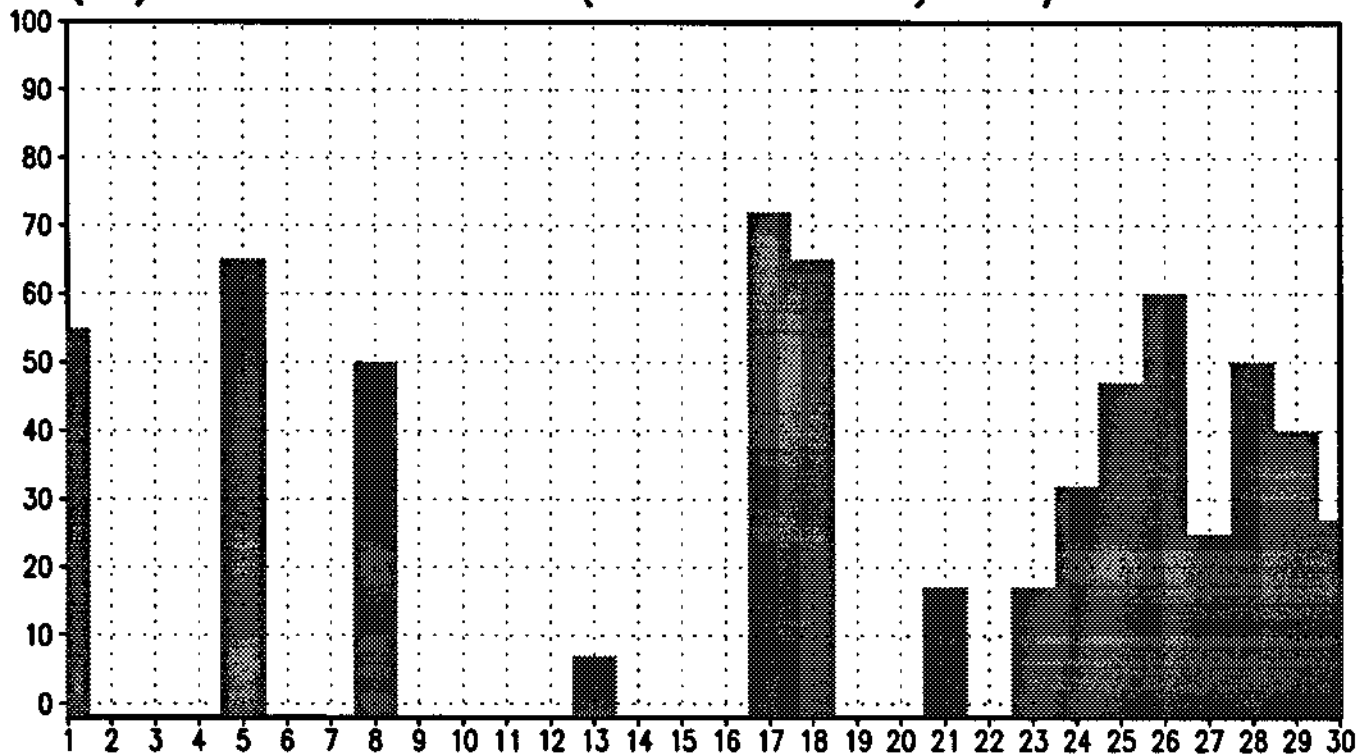
(%) DE VALORES (≥ 120 'A') 04/93 19TMG



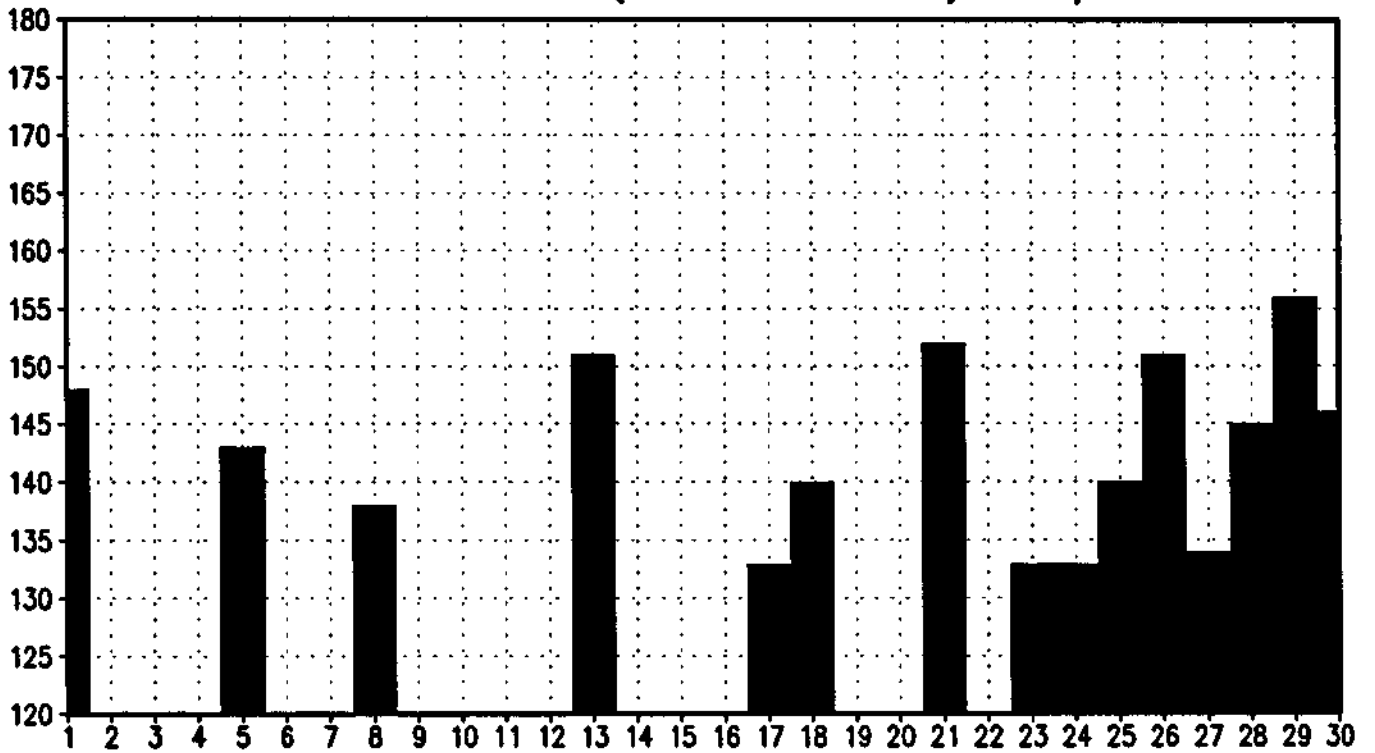
MEDIA DE VALORES (≥ 120 'B') 04/93 19TMG



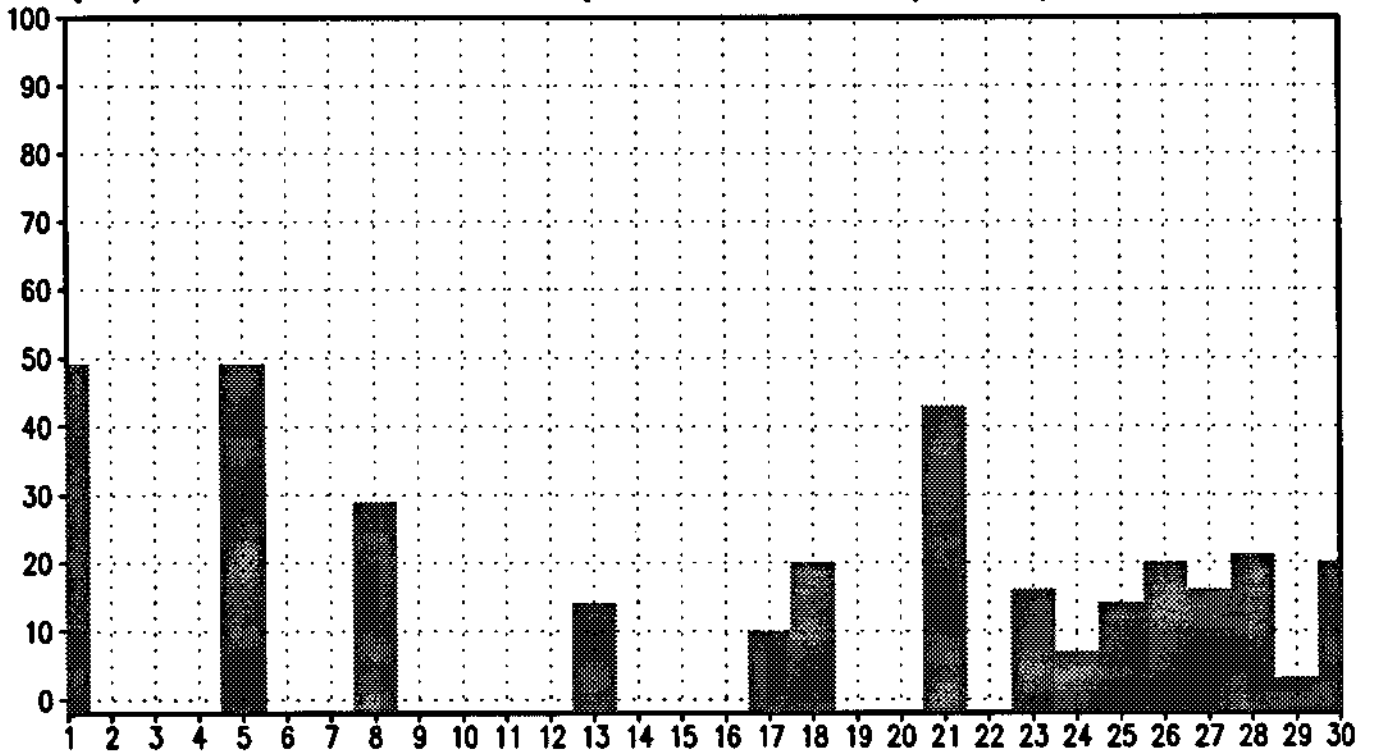
(%) DE VALORES (≥ 120 'B') 04/93 19TMG



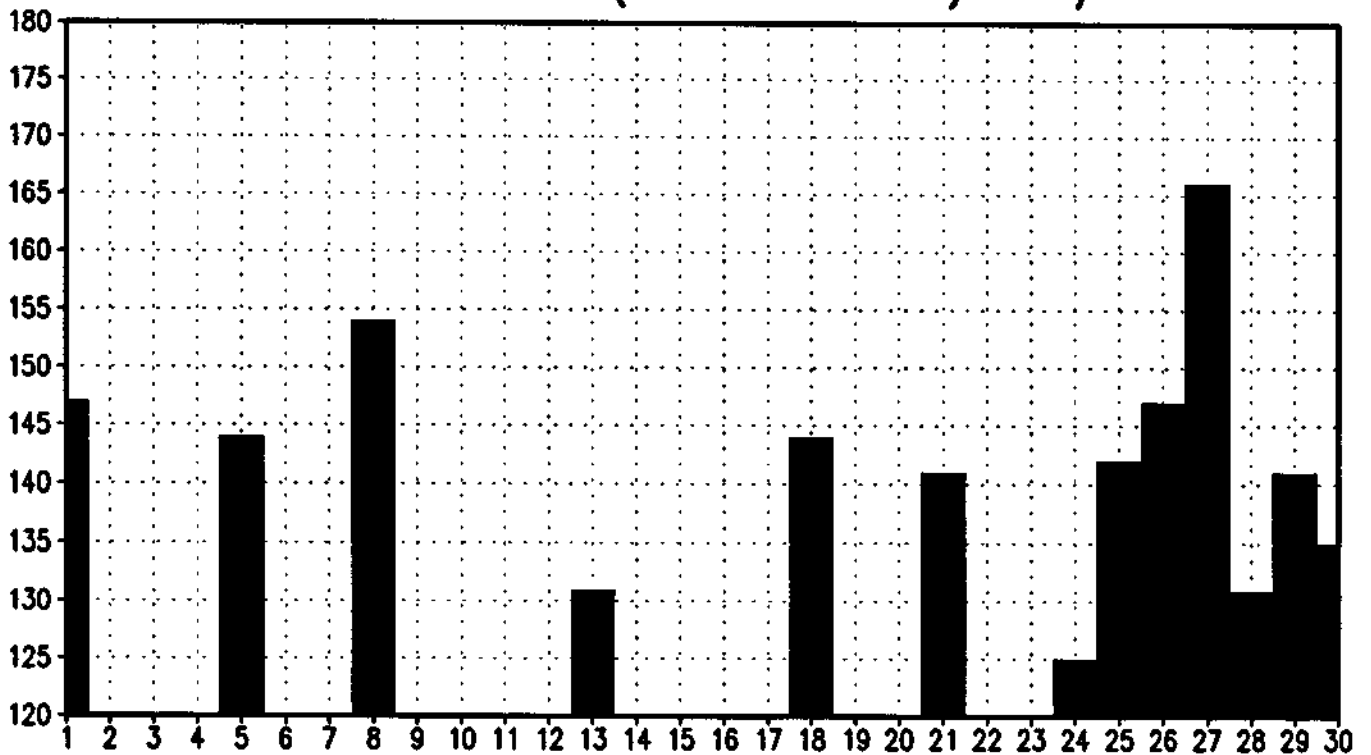
MEDIA DE VALORES (≥ 120 'C') 04/93 19TMG



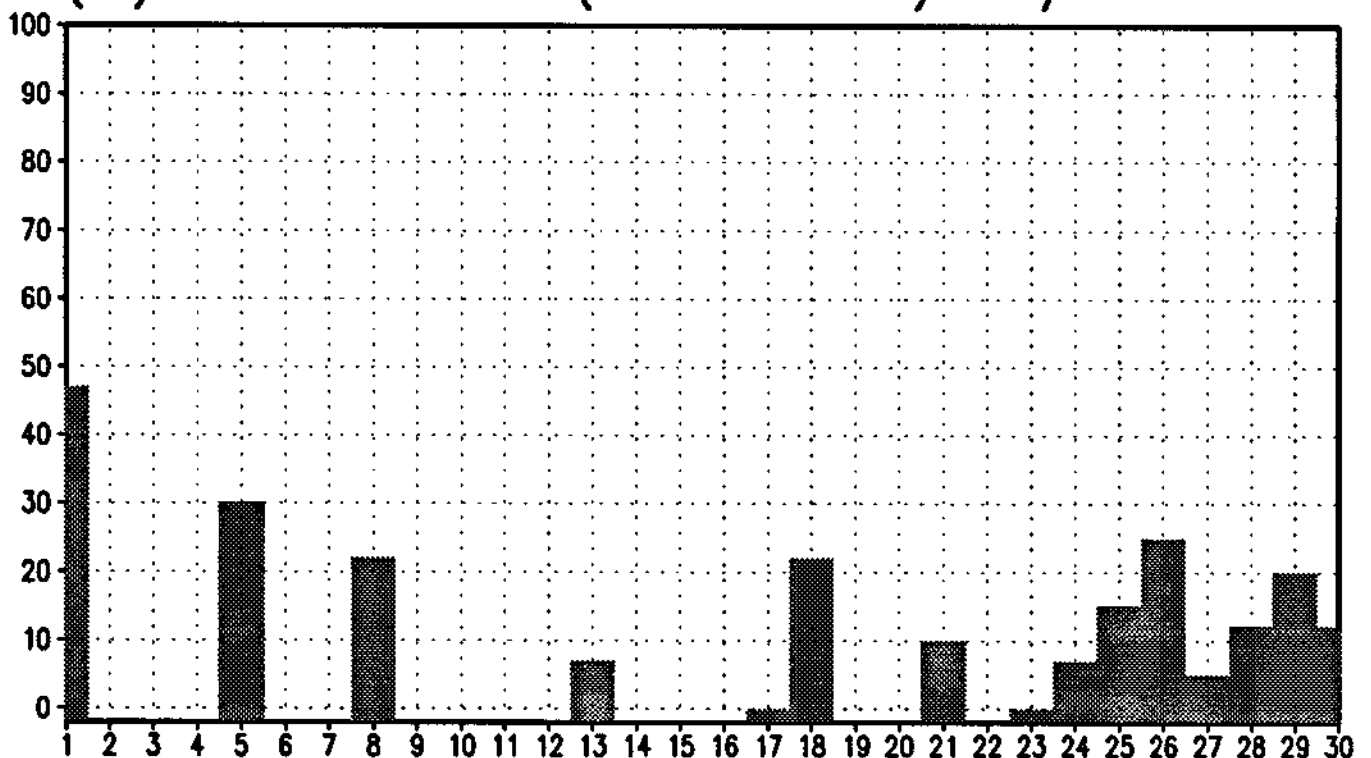
(%) DE VALORES (≥ 120 'C') 04/93 19TMG



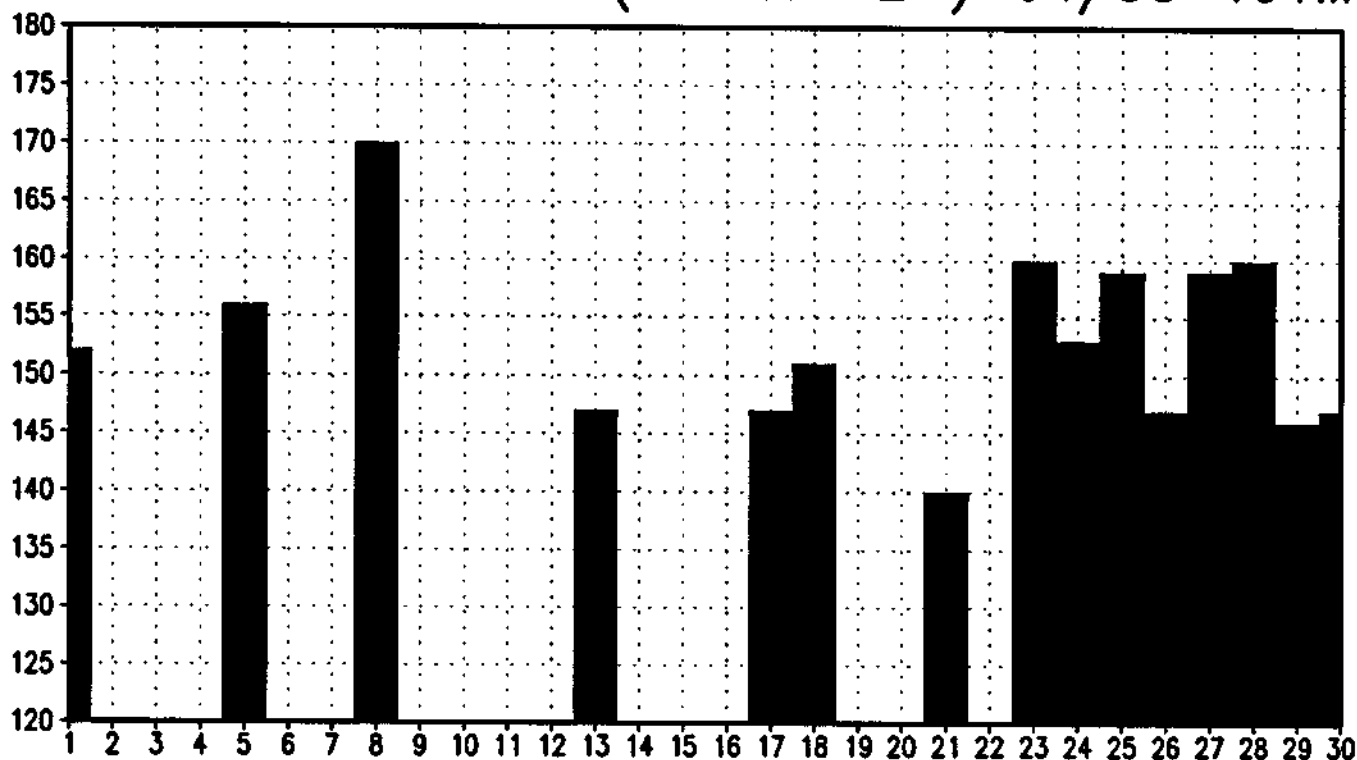
MEDIA DE VALORES (≥ 120 'D') 04/93 19TMG



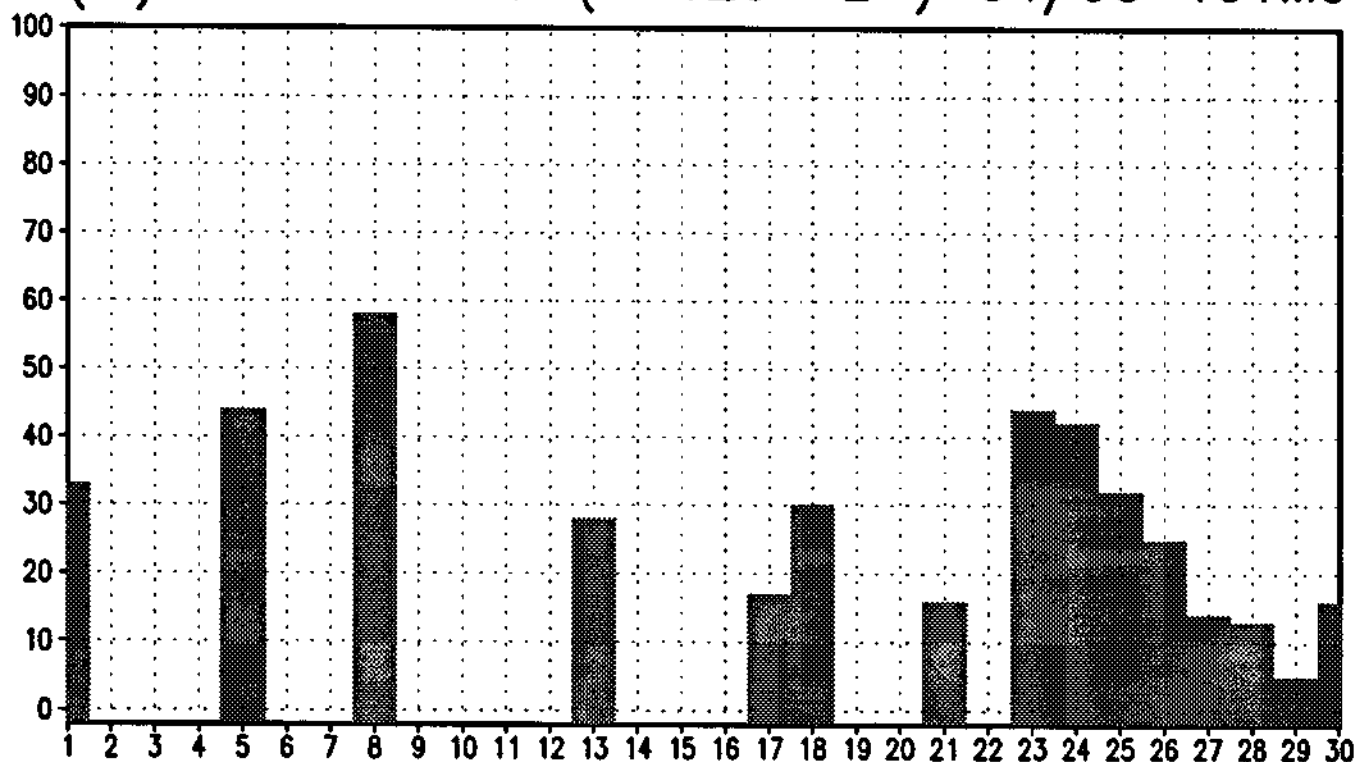
(%) DE VALORES (≥ 120 'D') 04/93 19TMG



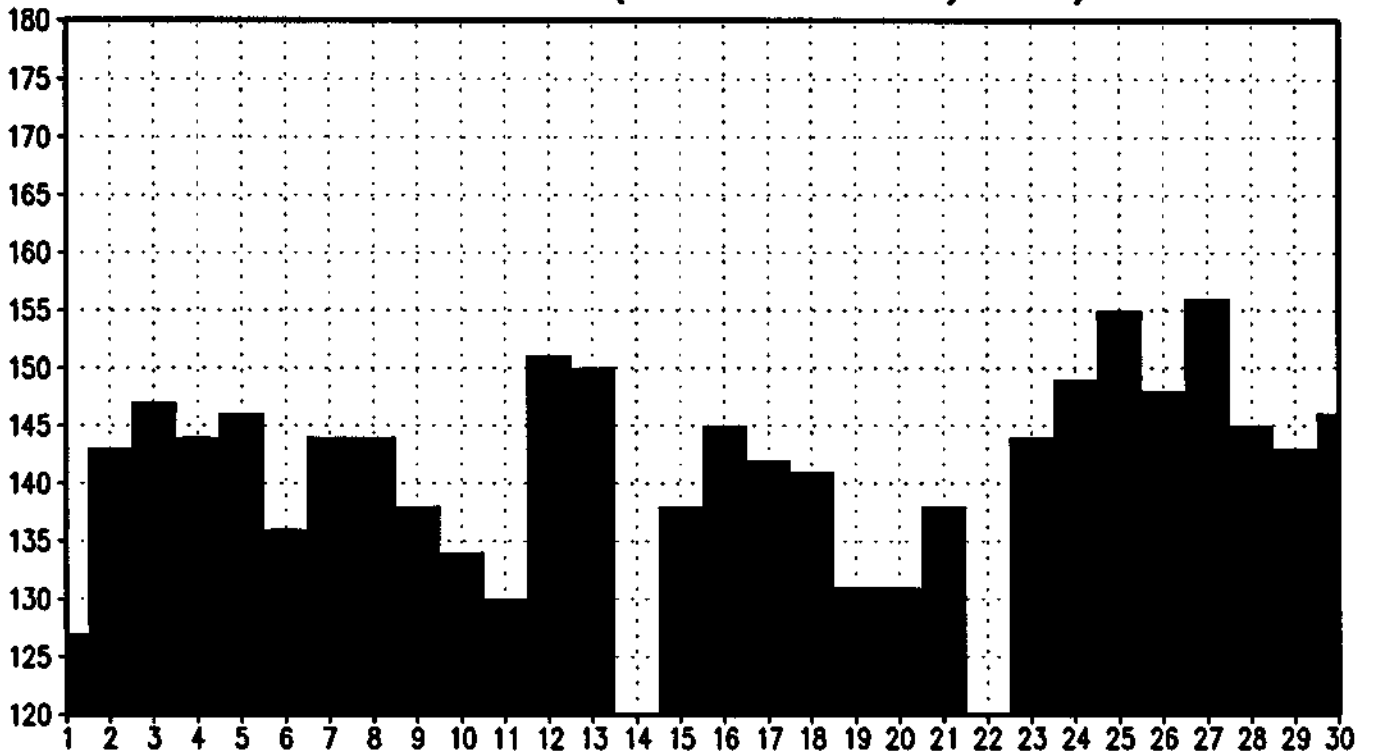
MEDIA DE VALORES (≥ 120 'E') 04/93 19TMG



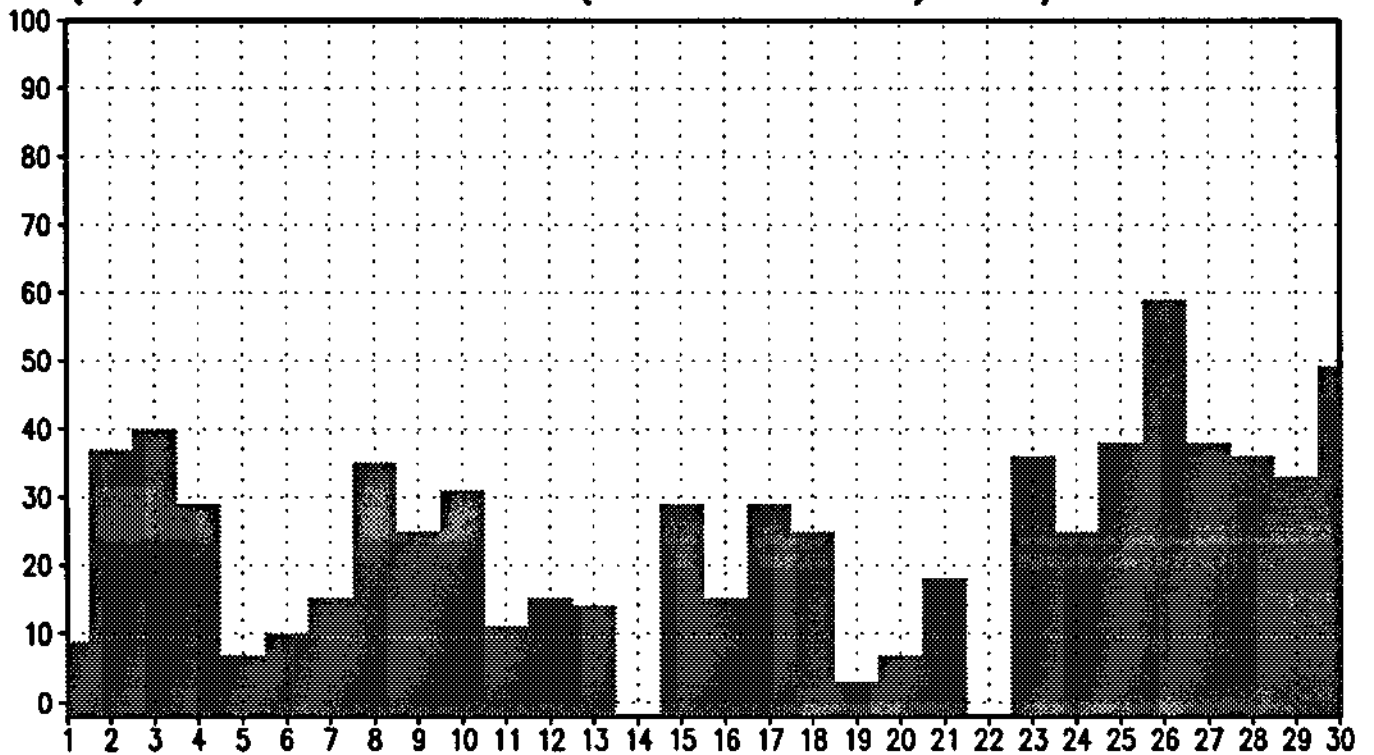
(%) DE VALORES (≥ 120 'E') 04/93 19TMG



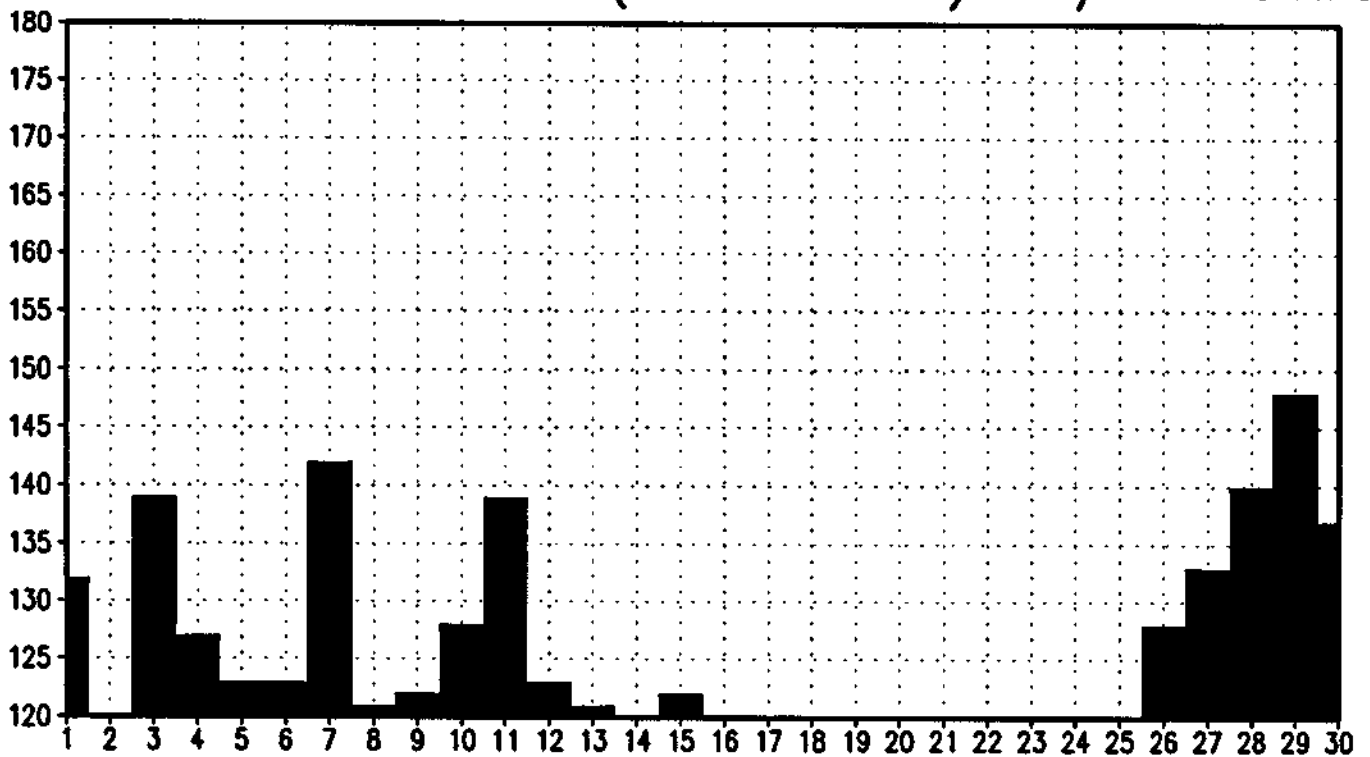
MEDIA DE VALORES (≥ 120 'A') 09/94 18TMG



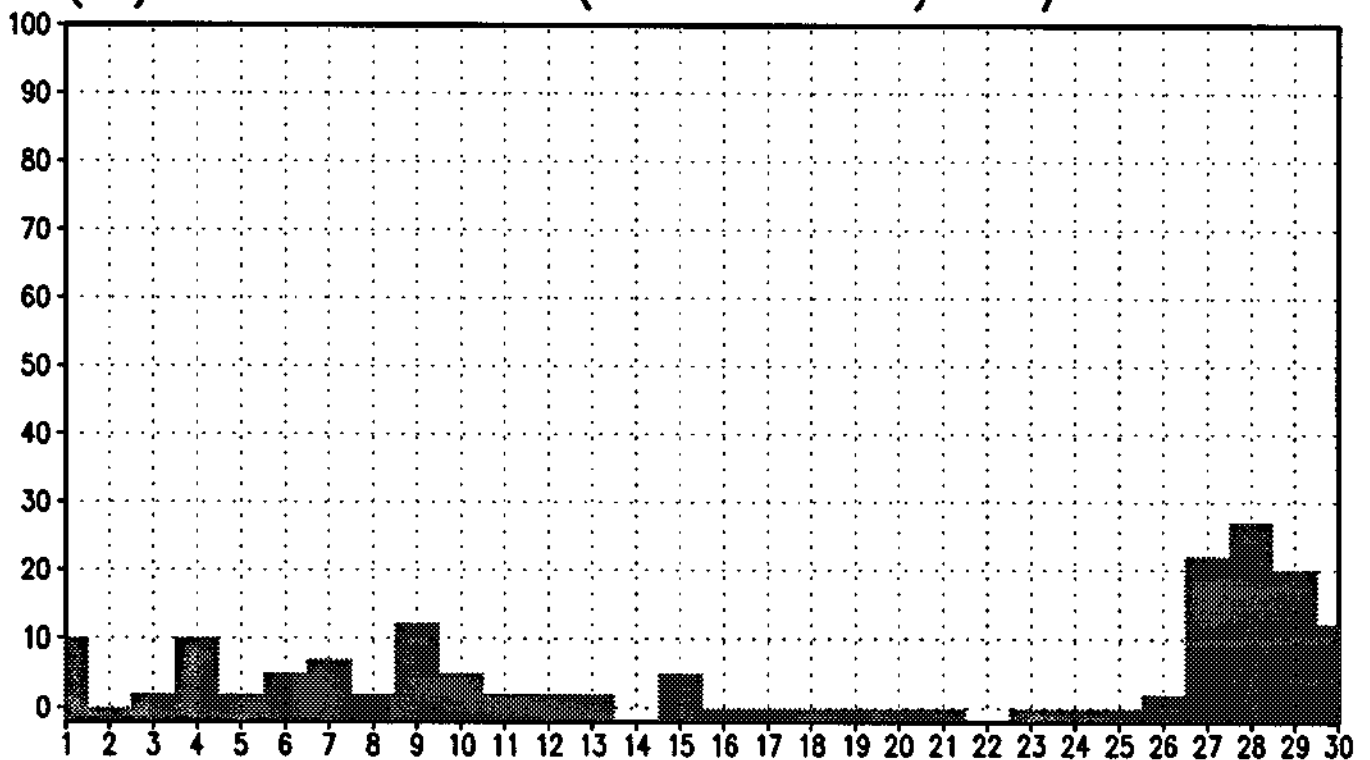
(%) DE VALORES (≥ 120 'A') 09/94 18TMG



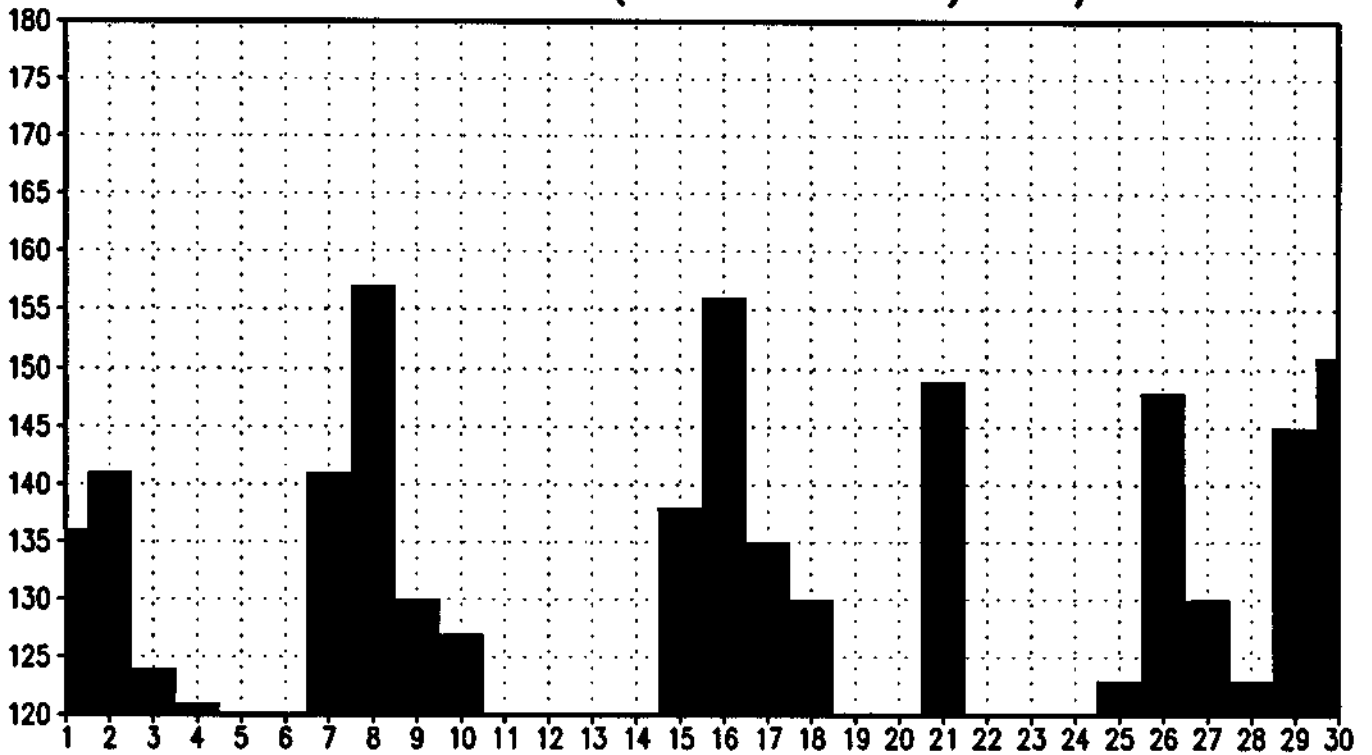
MEDIA DE VALORES (≥ 120 'B') 09/94 18TMG



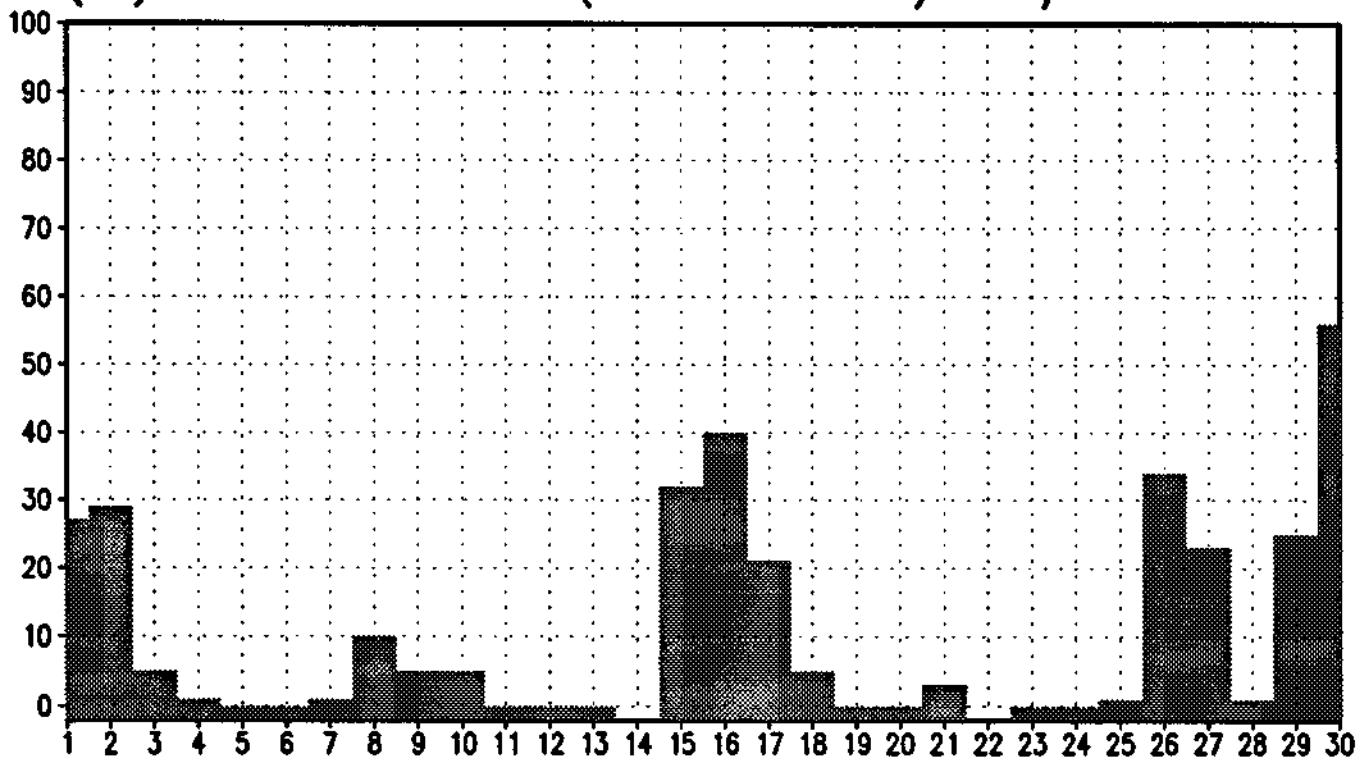
(%) DE VALORES (≥ 120 'B') 09/94 18TMG



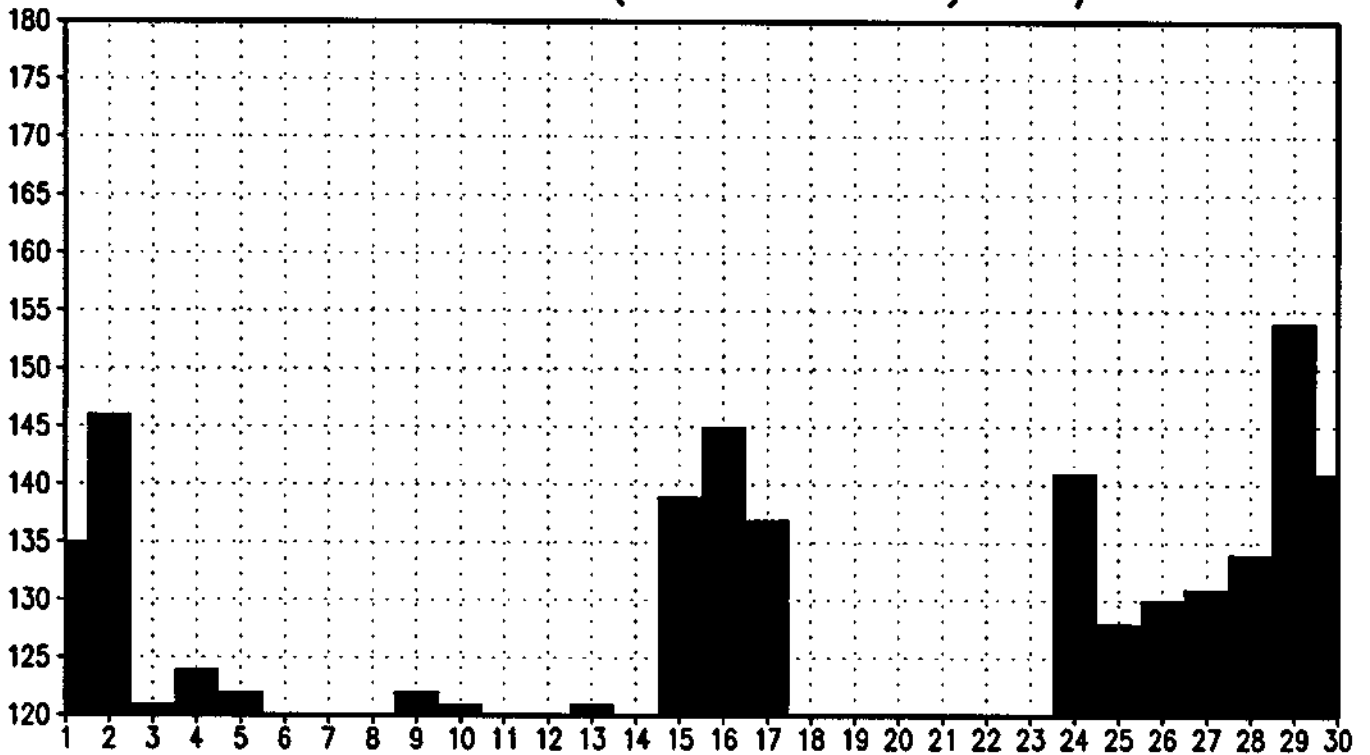
MEDIA DE VALORES (≥ 120 'C') 09/94 18TMG



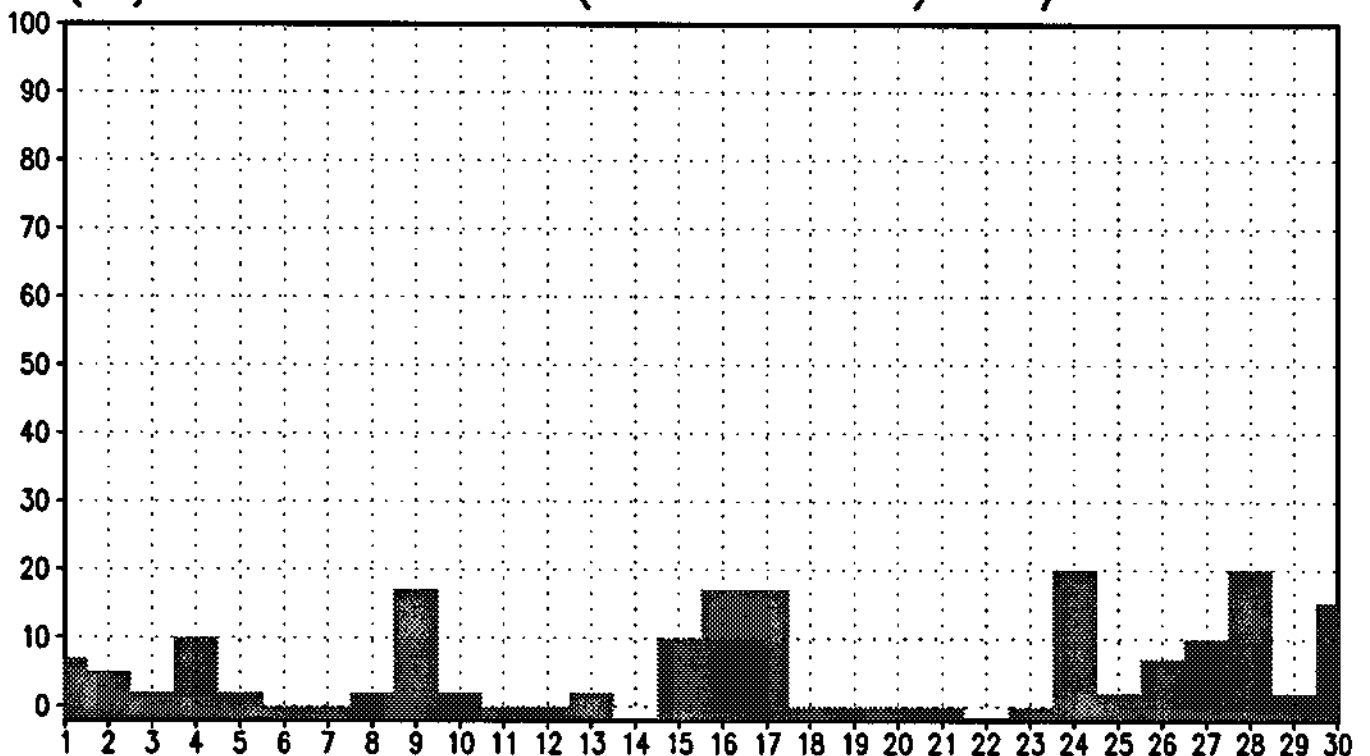
(%) DE VALORES (≥ 120 'C') 09/94 18TMG



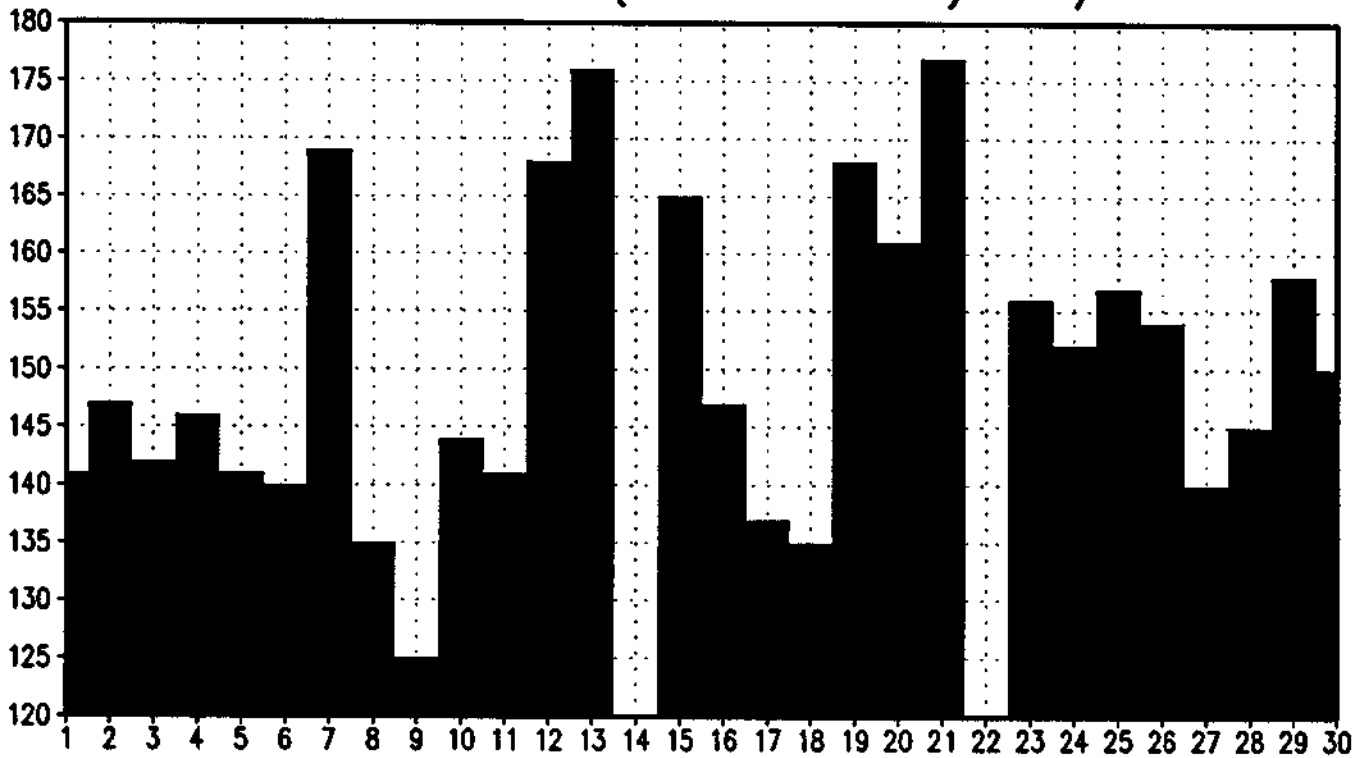
MEDIA DE VALORES (≥ 120 'D') 09/94 18TMG



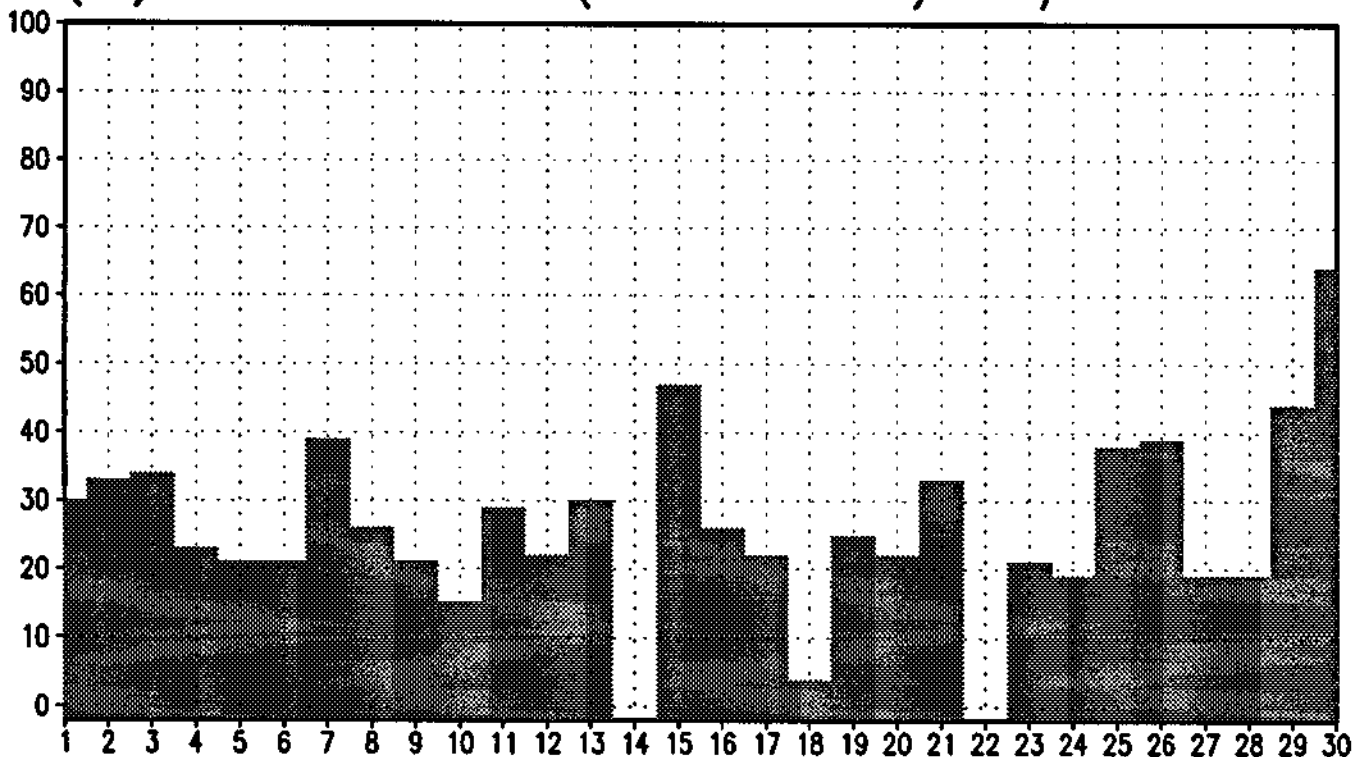
(%) DE VALORES (≥ 120 'D') 09/94 18TMG



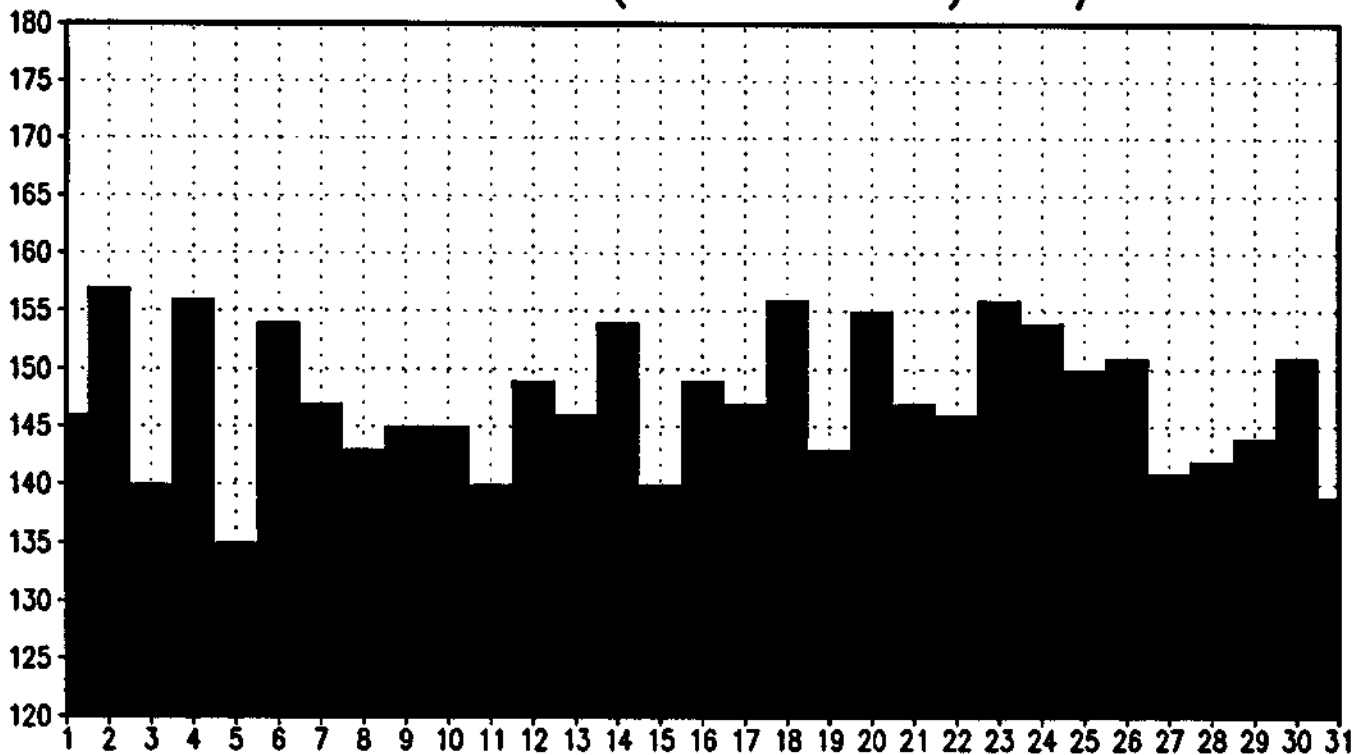
MEDIA DE VALORES (≥ 120 'E') 09/94 18TMG



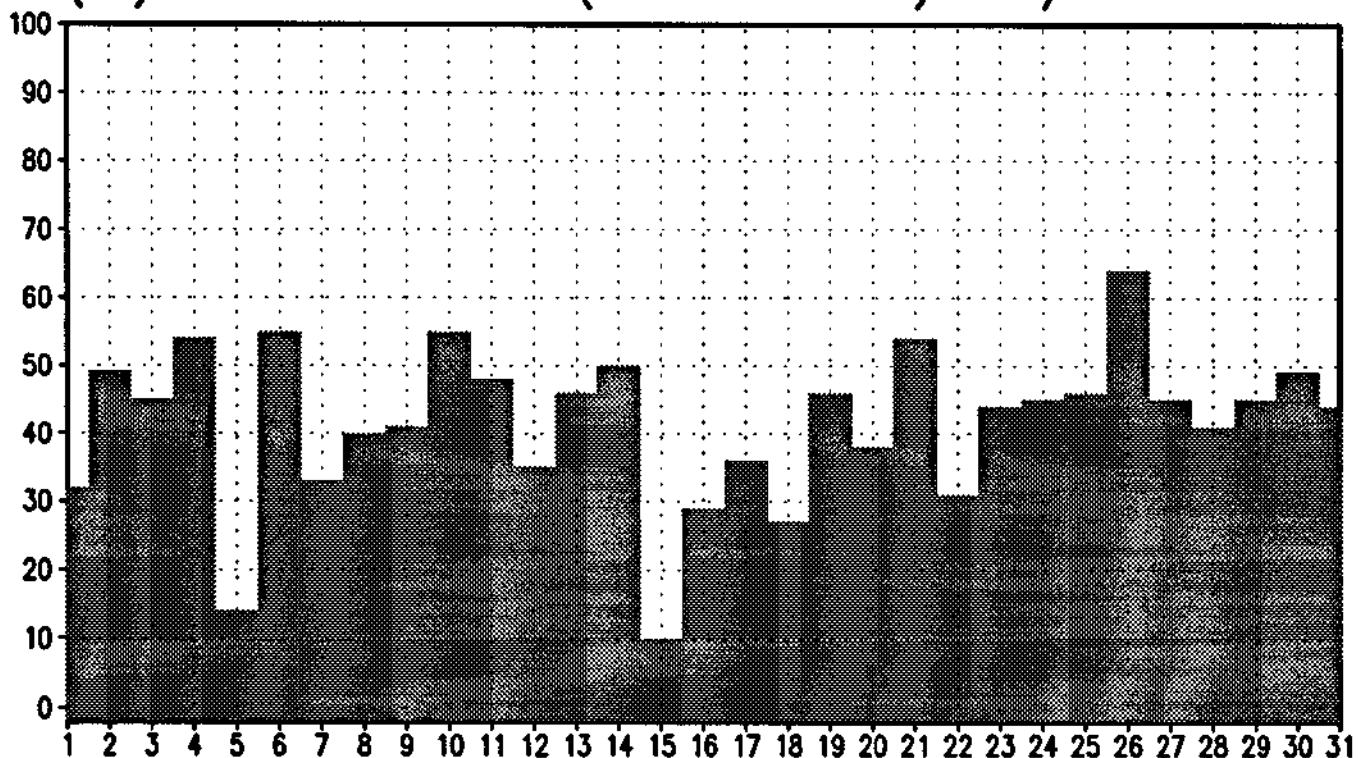
(%) DE VALORES (≥ 120 'E') 09/94 18TMG



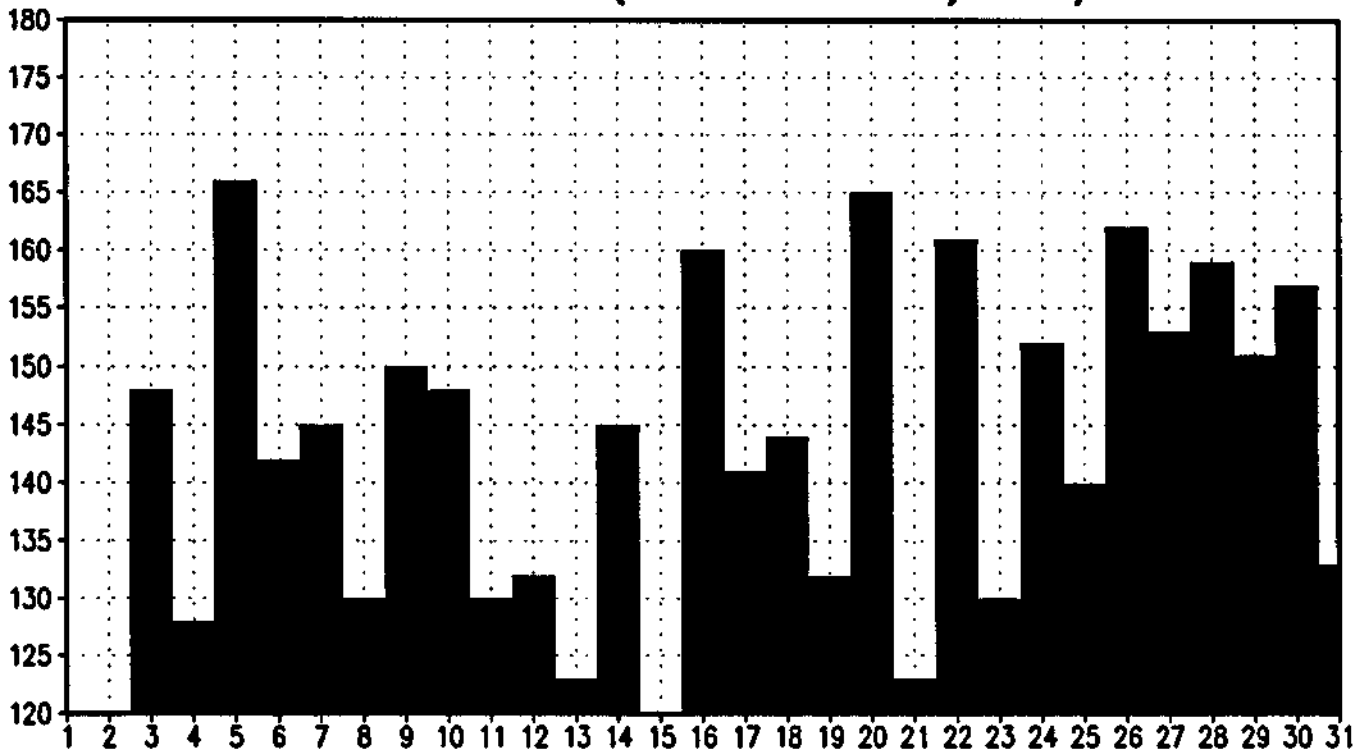
MEDIA DE VALORES (≥ 120 'A') 10/94 18TMG



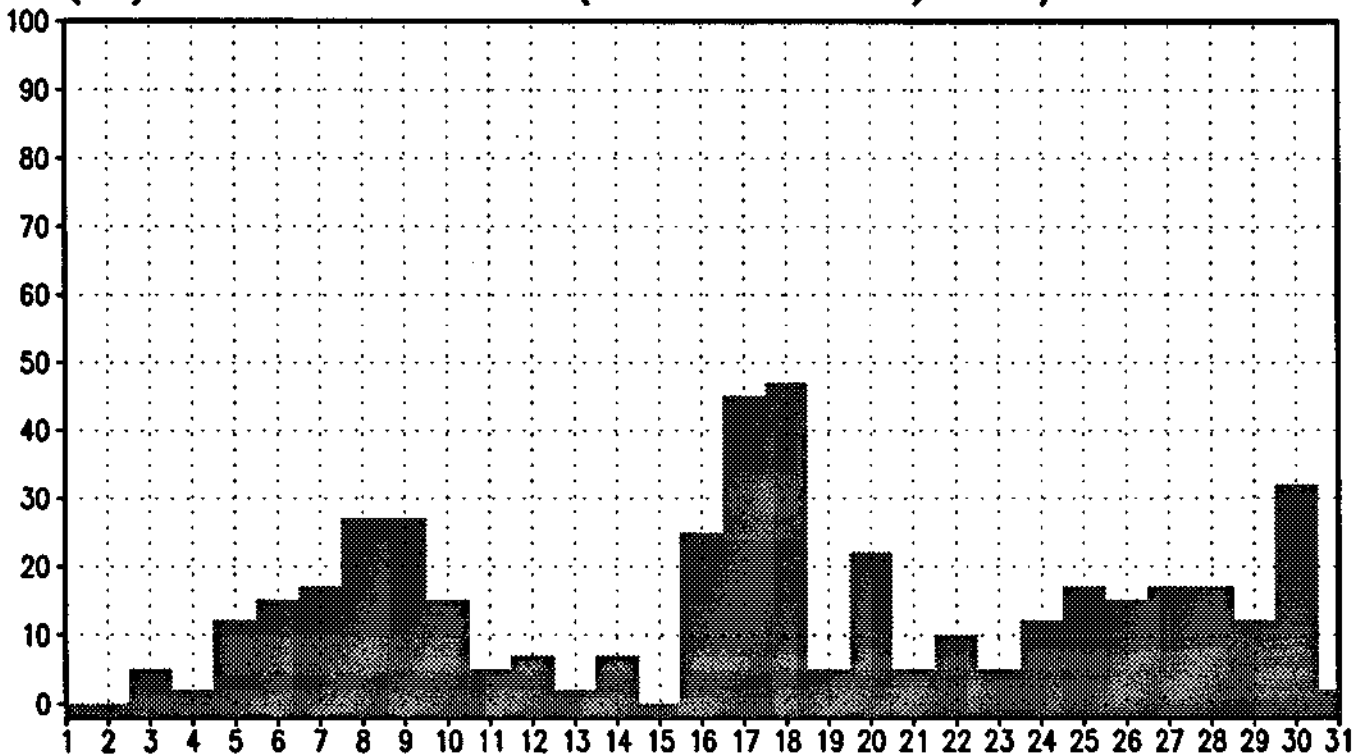
(%) DE VALORES (≥ 120 'A') 10/94 18TMG



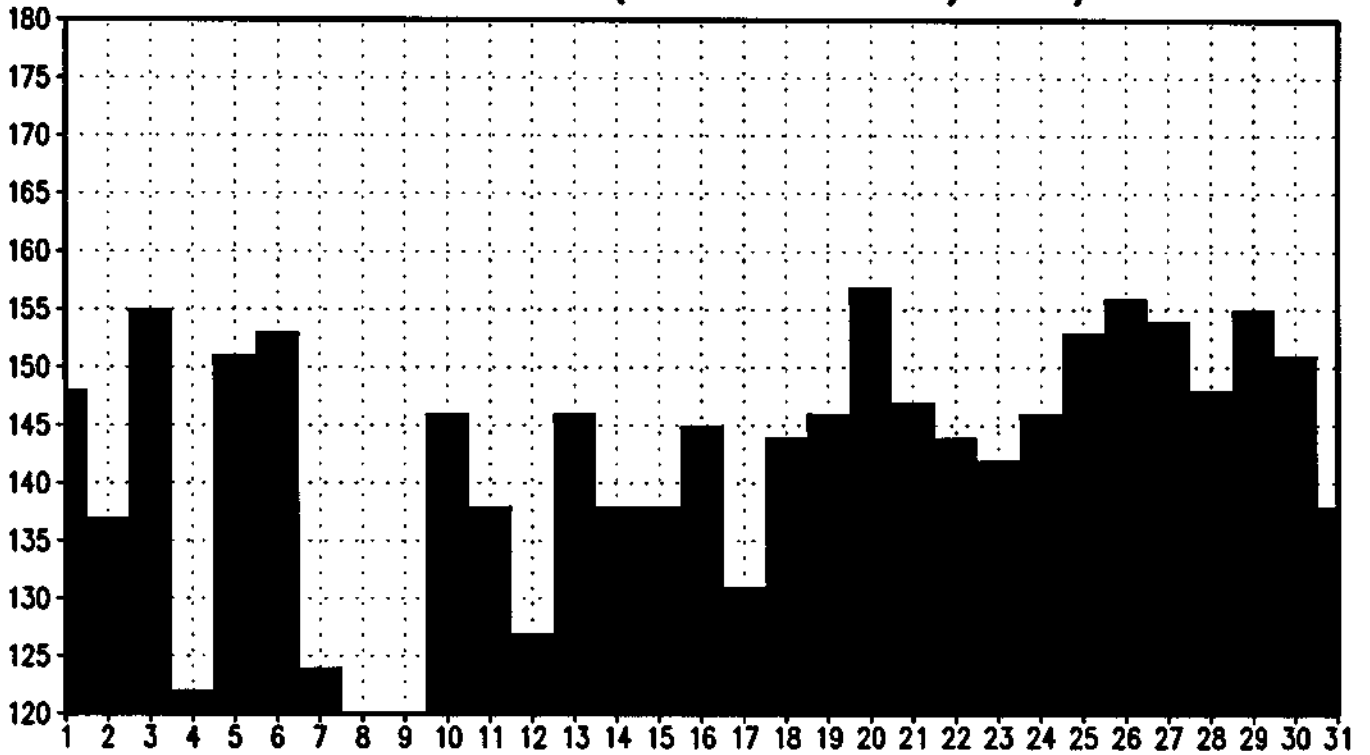
MEDIA DE VALORES (≥ 120 'B') 10/94 18TMG



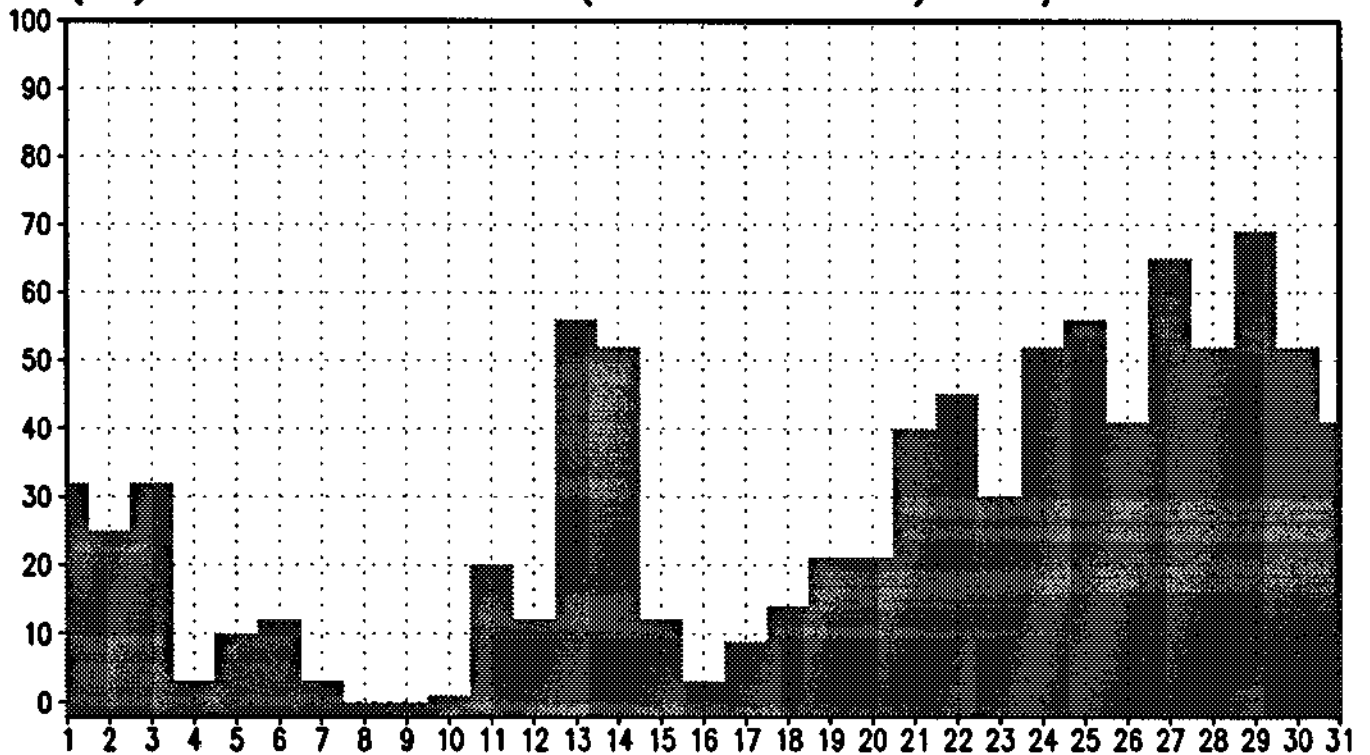
(%) DE VALORES (≥ 120 'B') 10/94 18TMG



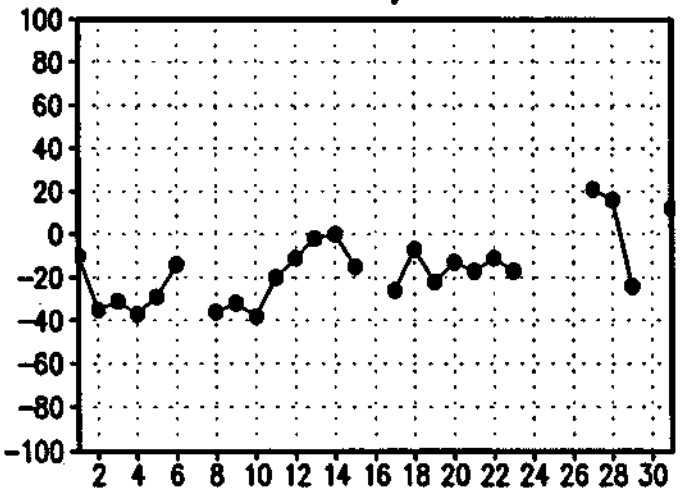
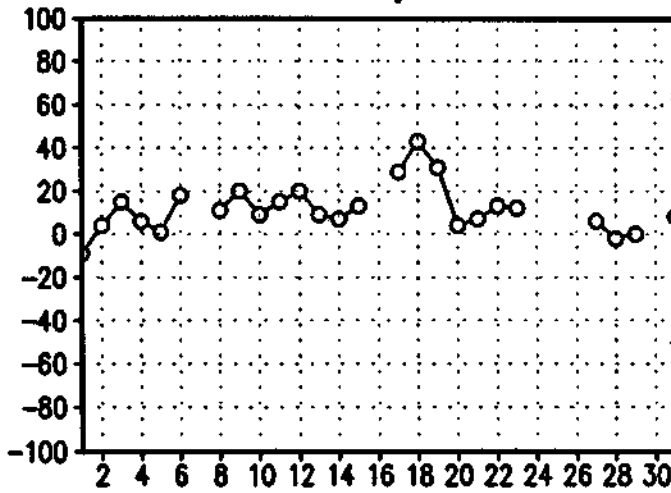
MEDIA DE VALORES (≥ 120 'C') 10/94 18TMG



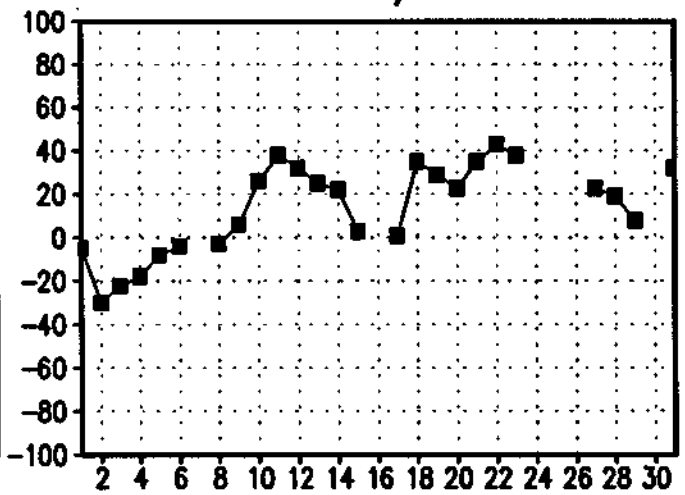
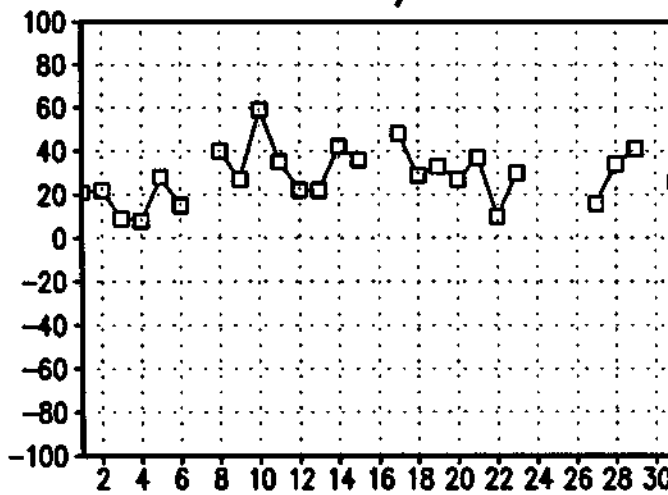
(%) DE VALORES (≥ 120 'C') 10/94 18TMG



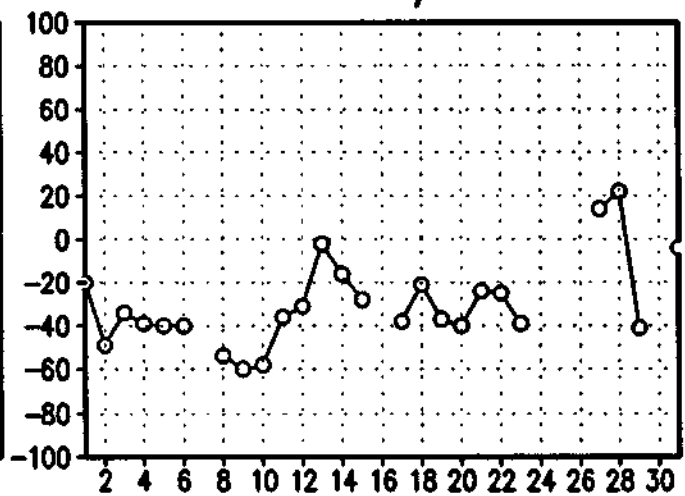
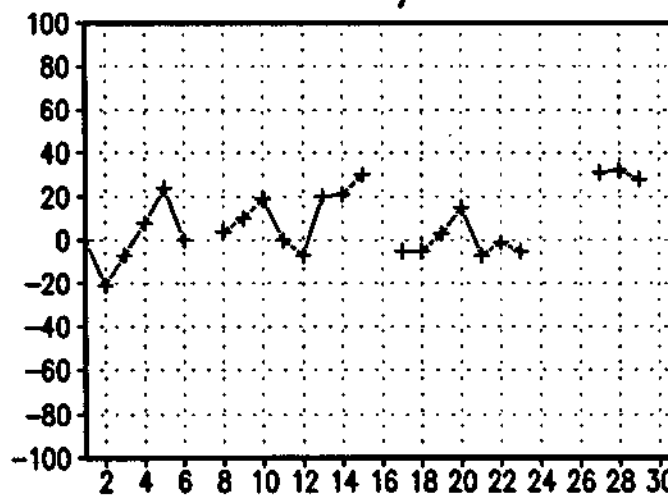
ANOM. A 12/93 18TMG ANOM. B 12/93 18TMG



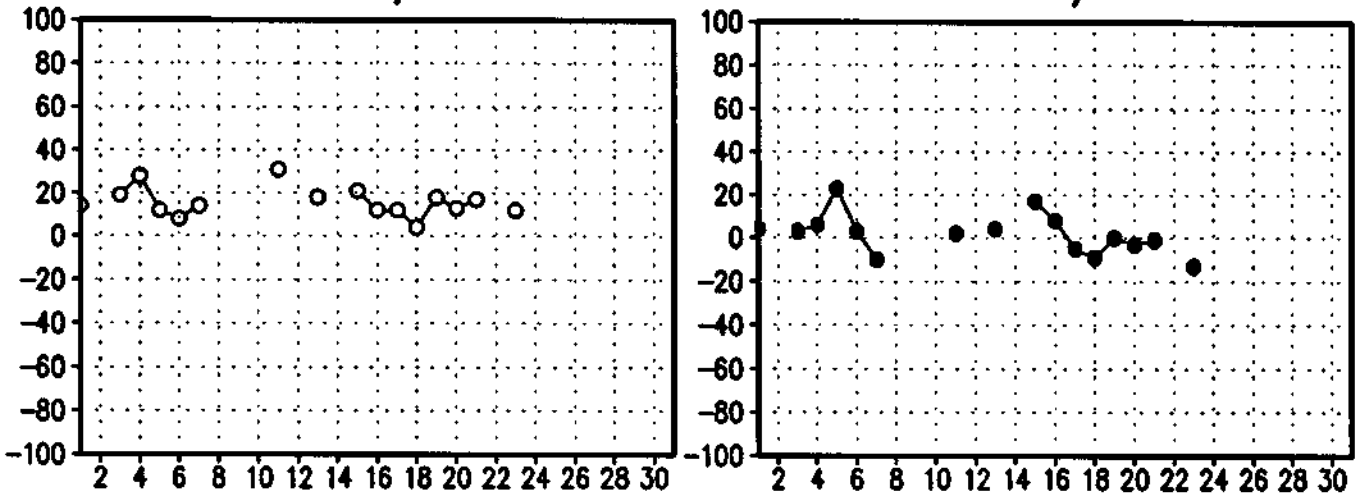
ANOM. C 12/93 18TMG ANOM. D 12/93 18TMG



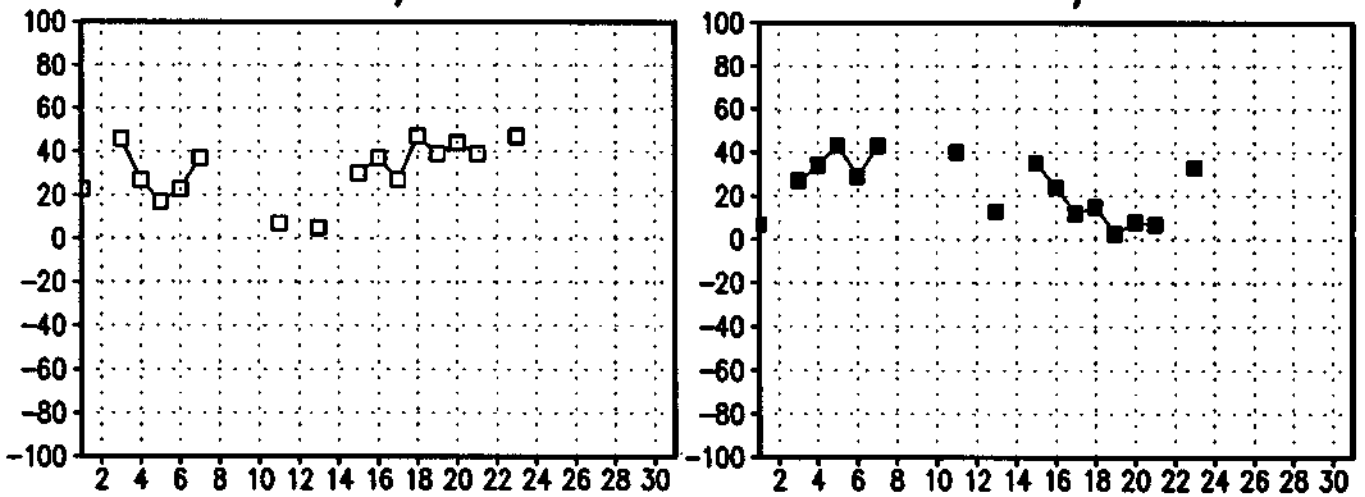
ANOM. E 12/93 18TMG ANOM. NE 12/93 18TMG



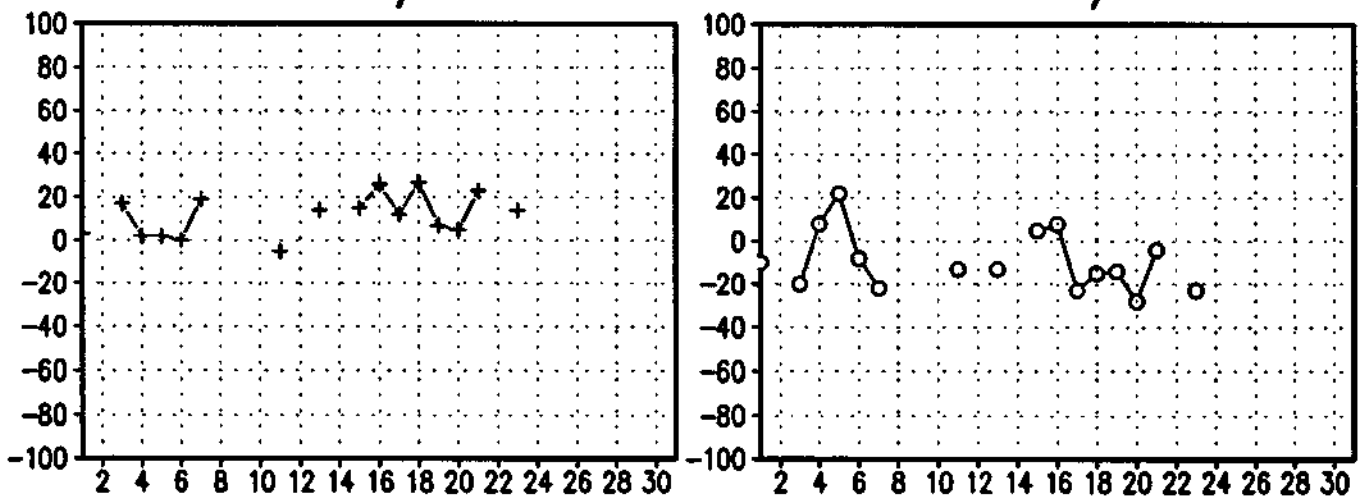
ANOM. A 01/94 18TMG ANOM. B 01/94 18TMG



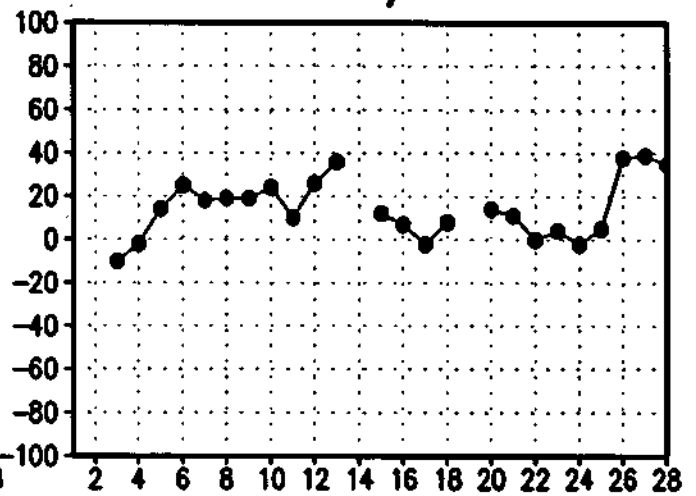
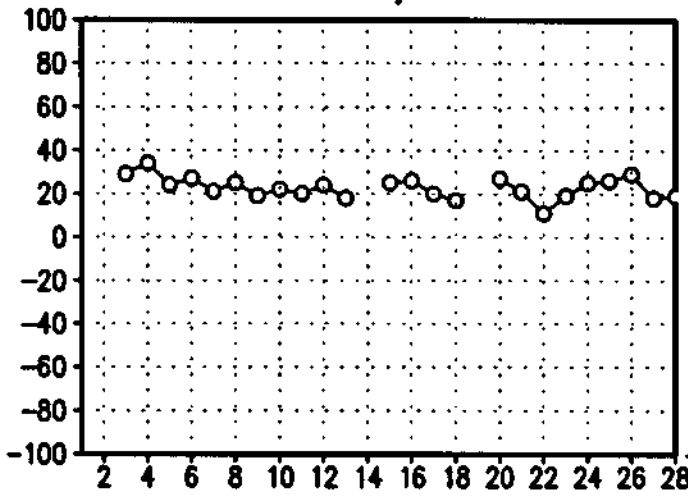
ANOM. C 01/94 18TMG ANOM. D 01/94 18TMG



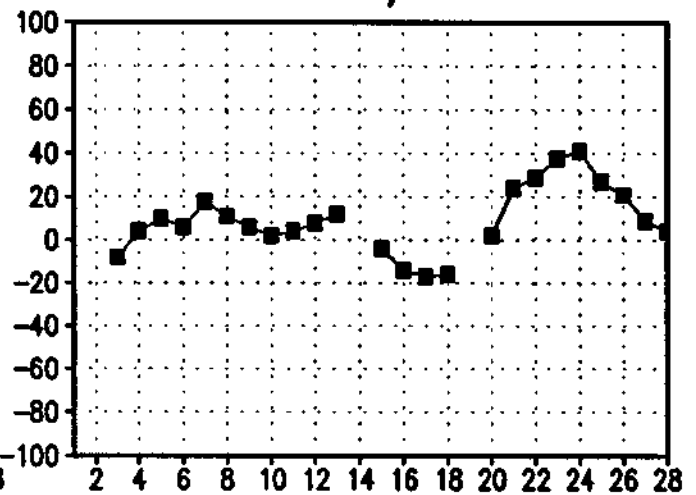
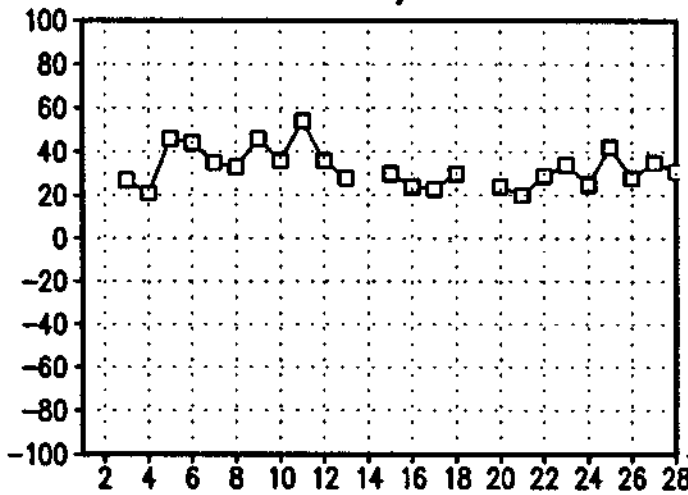
ANOM. E 01/94 18TMG ANOM. NE 01/94 18TMG



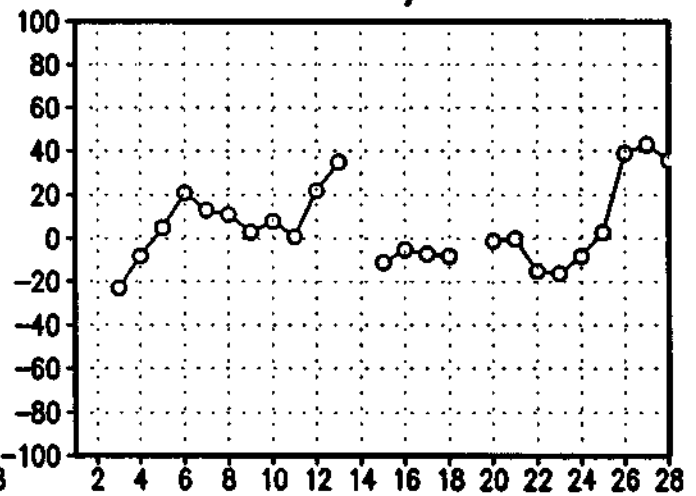
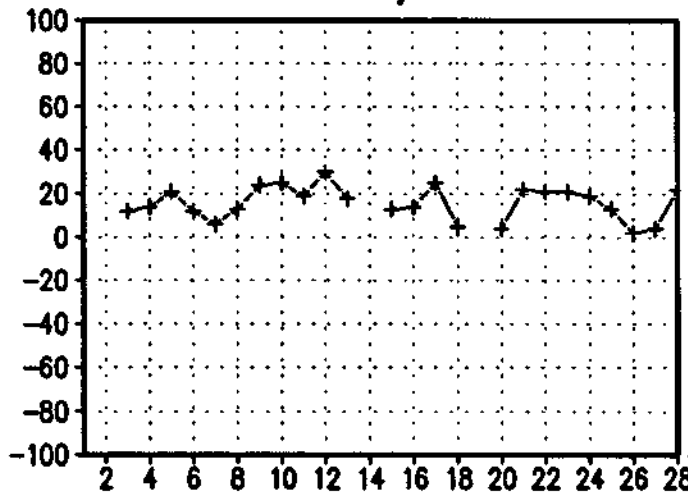
ANOM. A 02/94 18TMG ANOM. B 02/94 18TMG



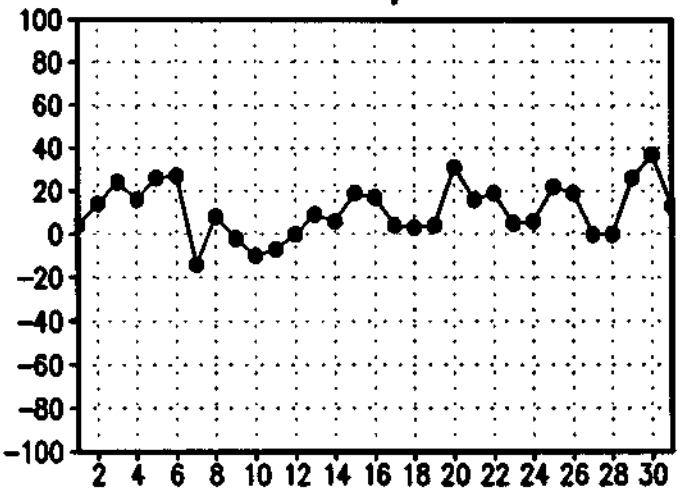
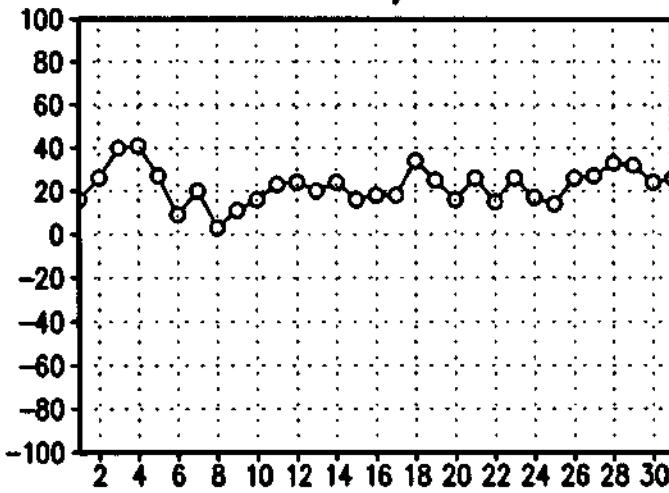
ANOM. C 02/94 18TMG ANOM. D 02/94 18TMG



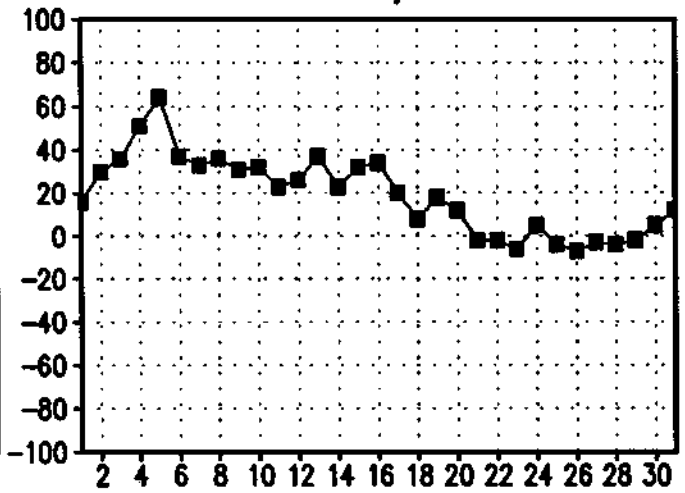
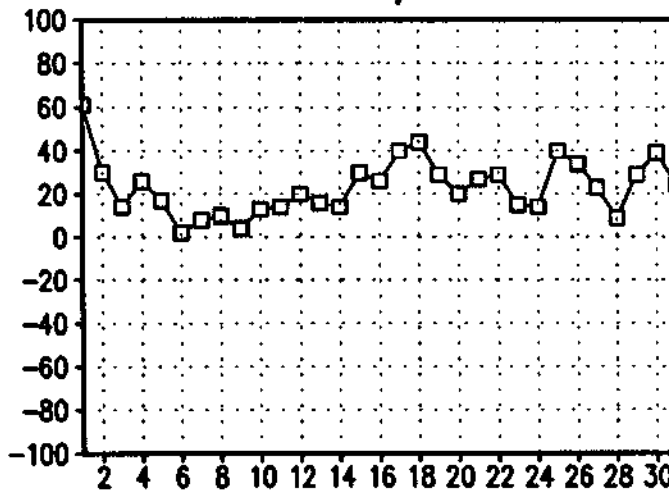
ANOM. E 02/94 18TMG ANOM. NE 02/94 18TMG



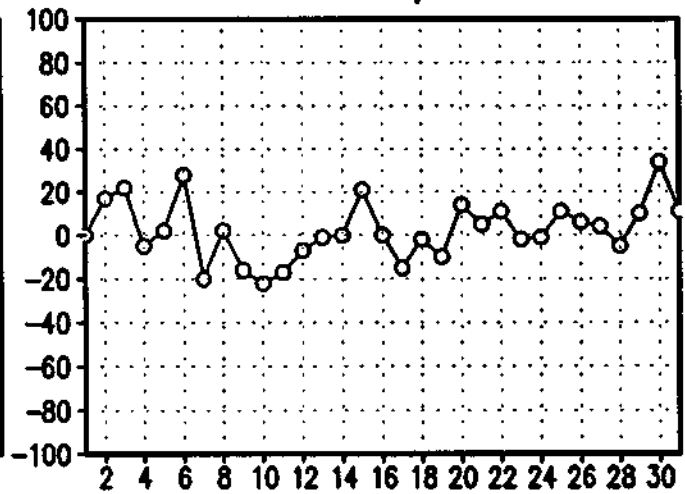
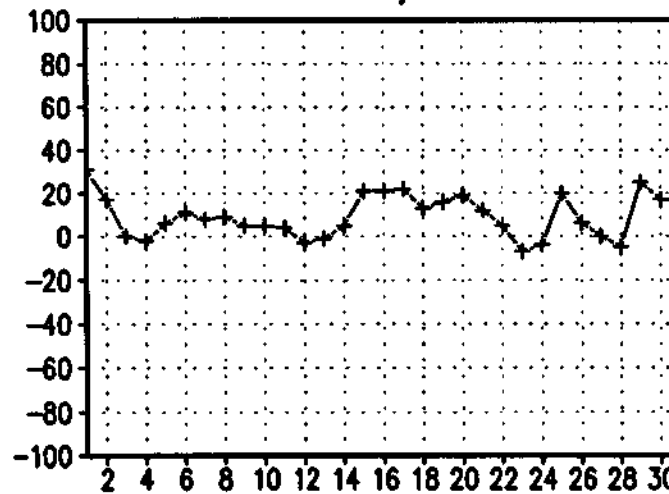
ANOM. A 03/94 18TMG ANOM. B 03/94 18TMG



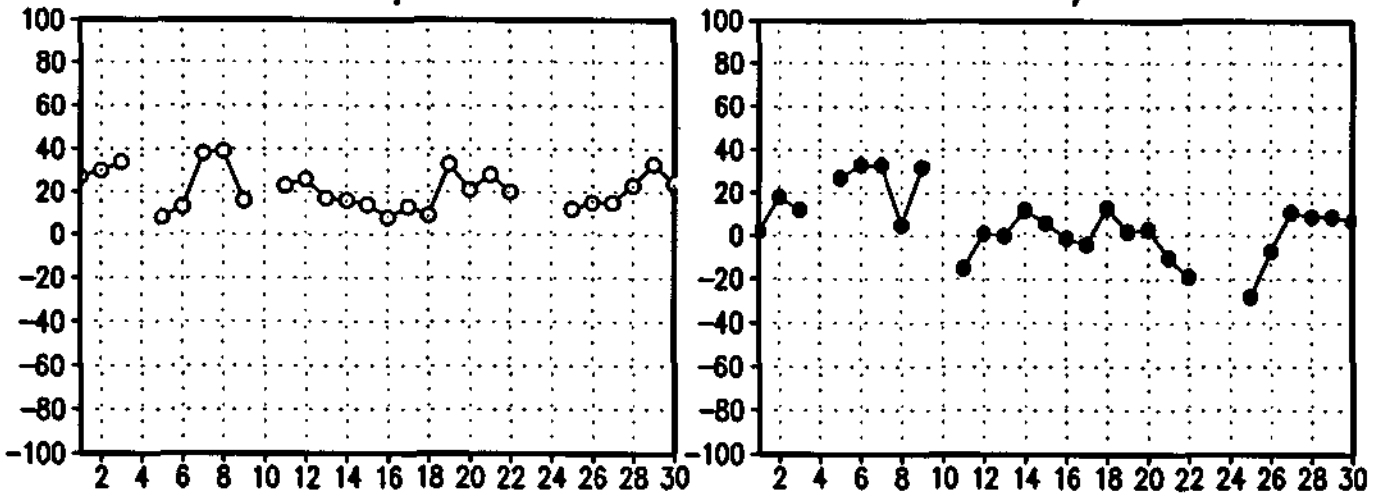
ANOM. C 03/94 18TMG ANOM. D 03/94 18TMG



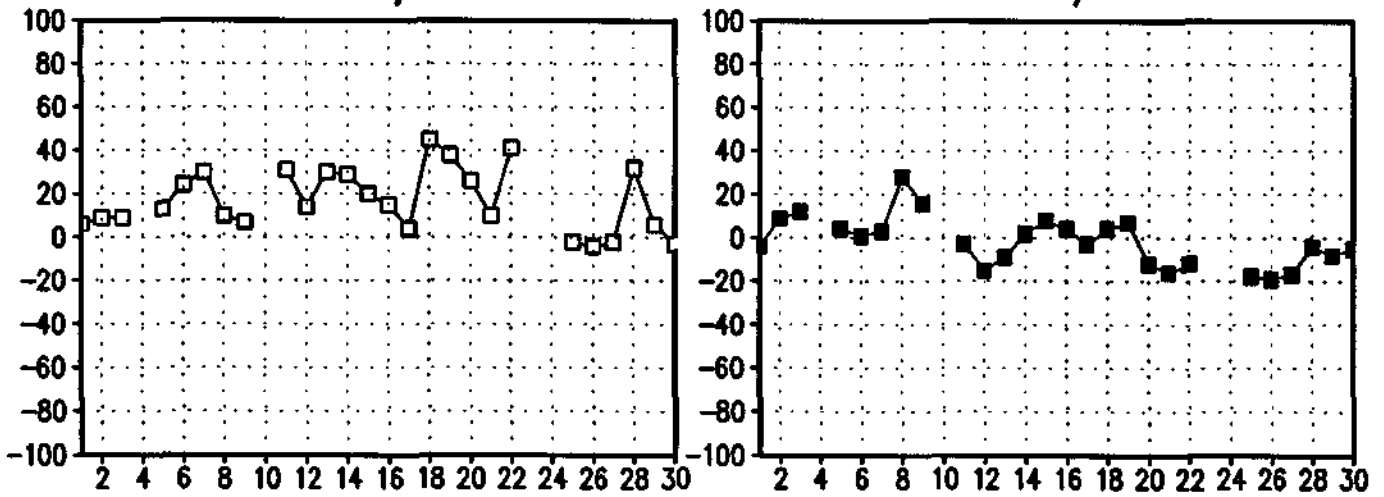
ANOM. E 03/94 18TMG ANOM. NE 03/94 18TMG



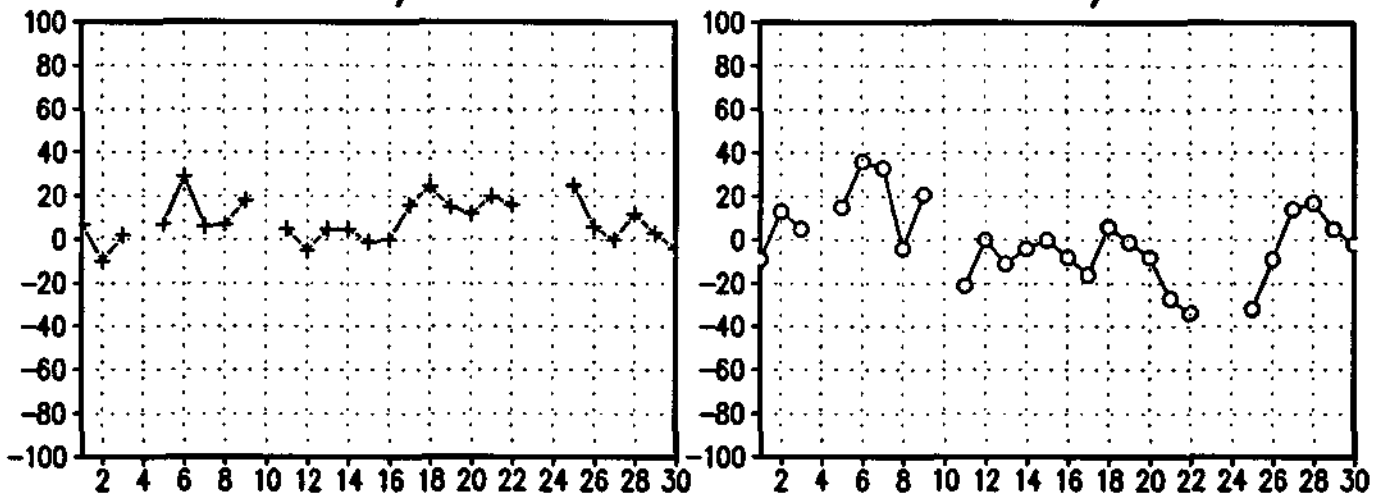
ANOM. A 04/94 18TMG ANOM. B 04/94 18TMG



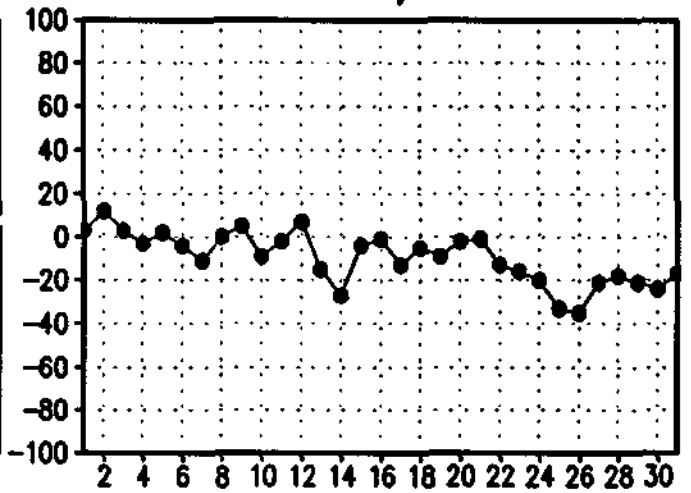
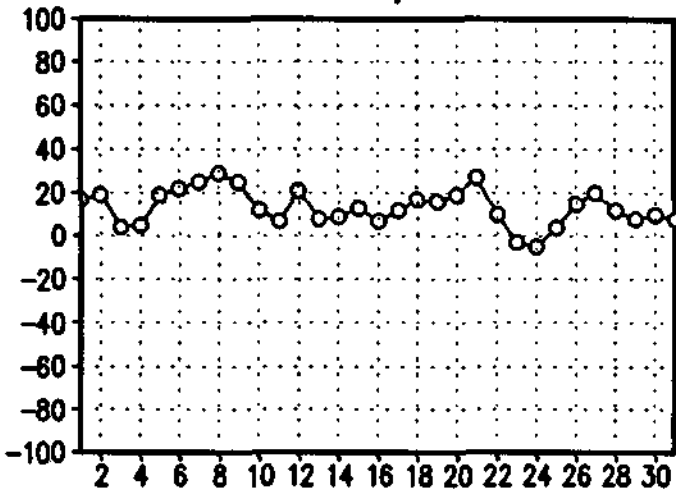
ANOM. C 04/94 18TMG ANOM. D 04/94 18TMG



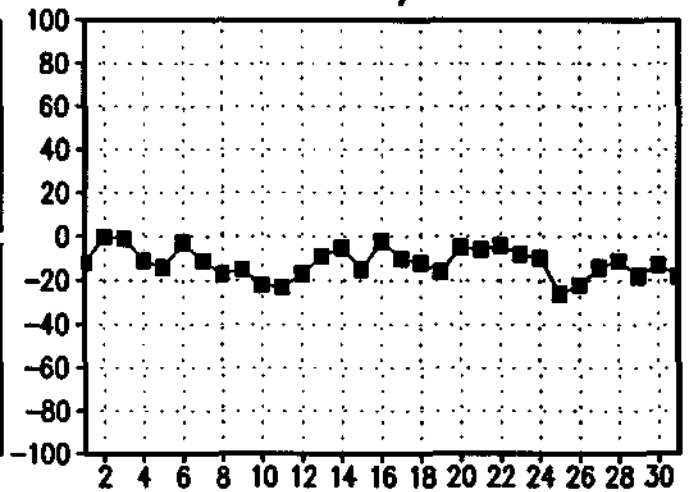
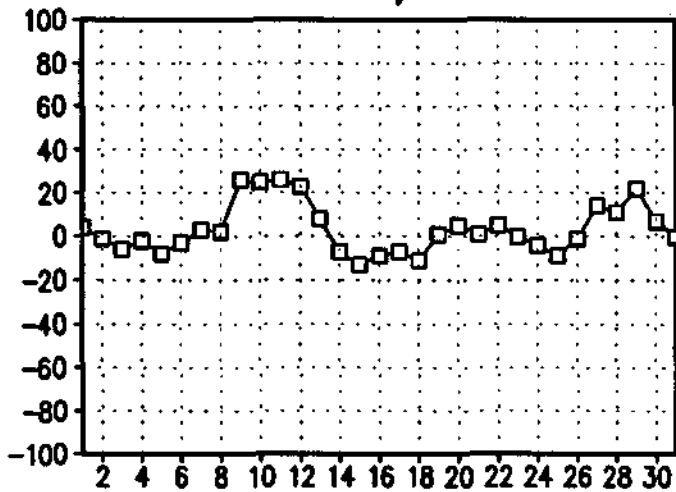
ANOM. E 04/94 18TMG ANOM. NE 04/94 18TMG



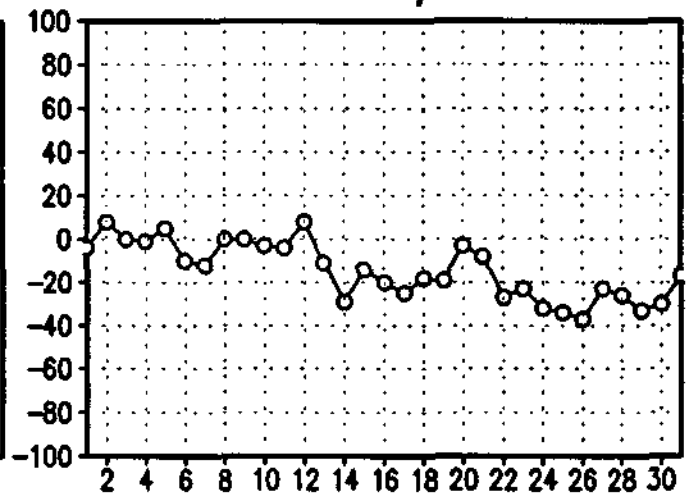
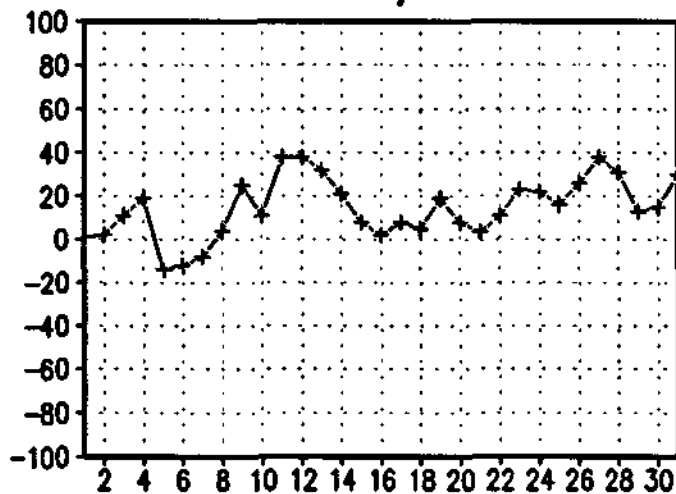
ANOM. A 05/94 18TMG ANOM. B 05/94 18TMG



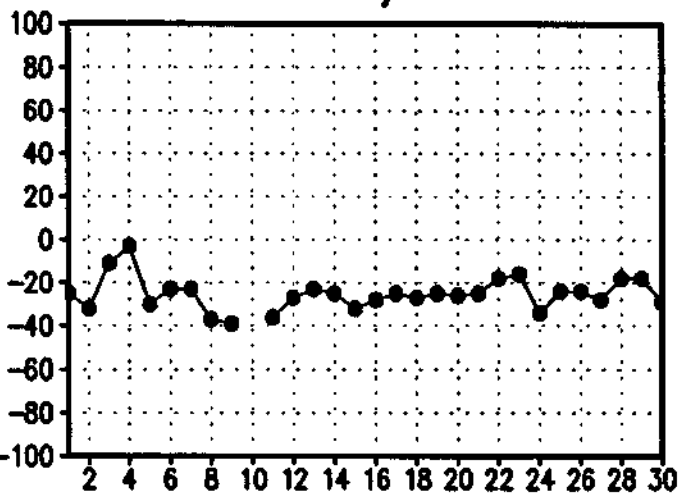
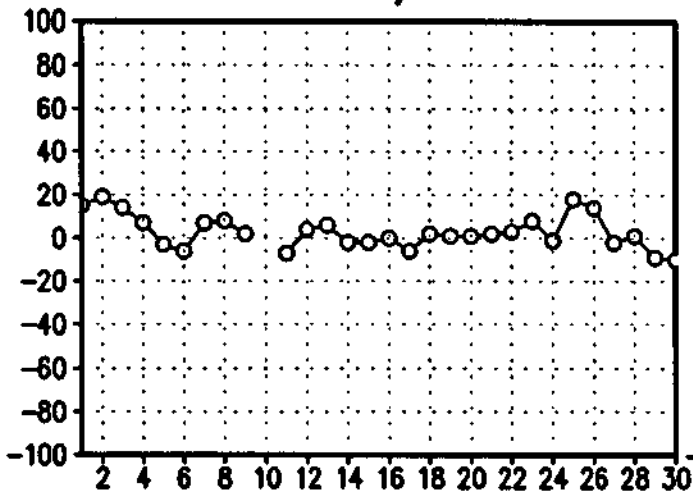
ANOM. C 05/94 18TMG ANOM. D 05/94 18TMG



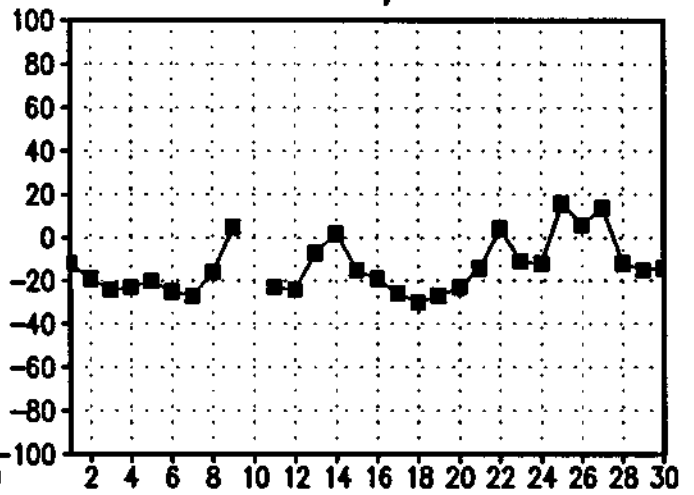
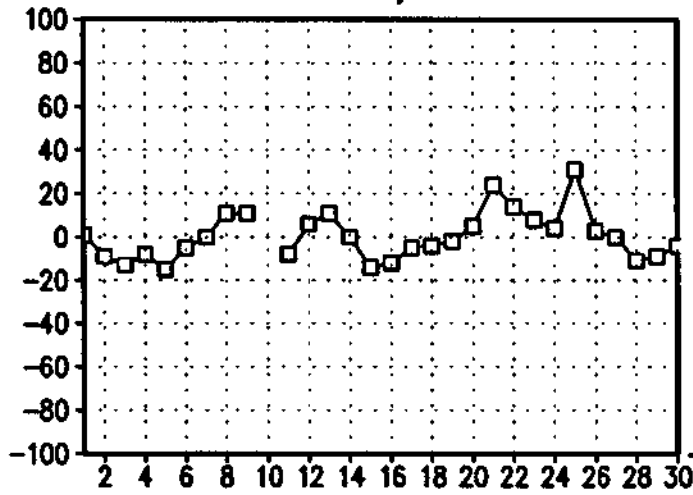
ANOM. E 05/94 18TMG ANOM. NE 05/94 18TMG



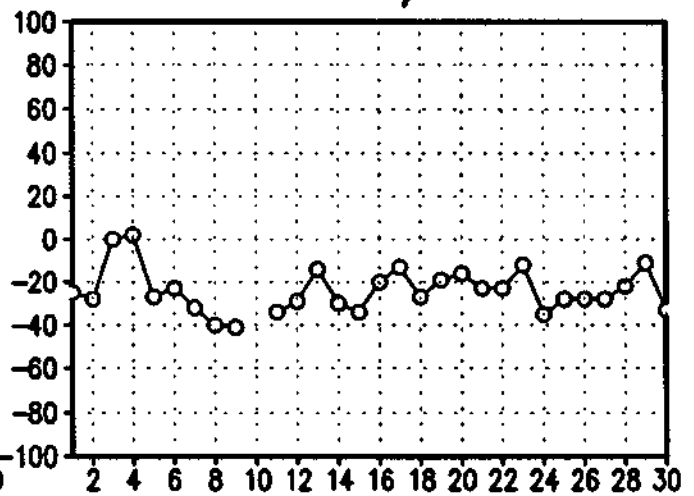
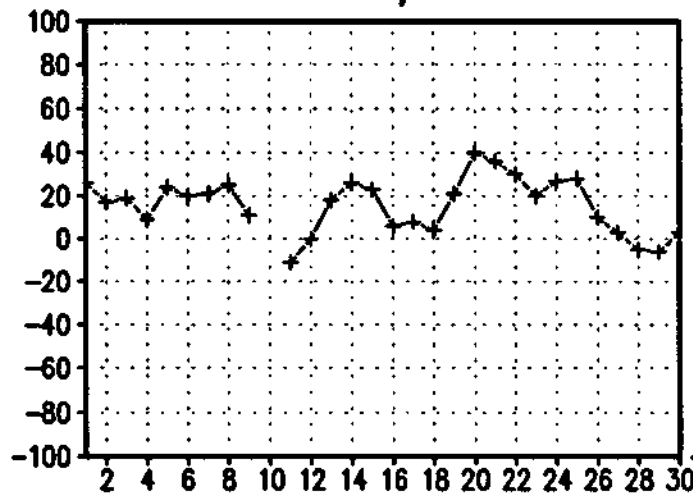
ANOM. A 06/94 18TMG ANOM. B 06/94 18TMG



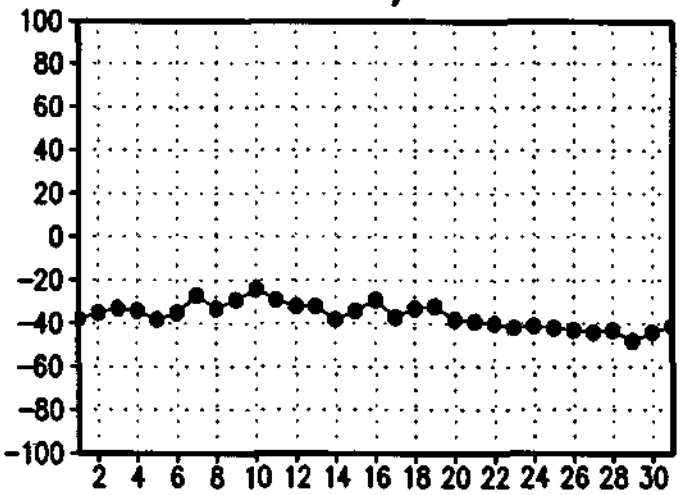
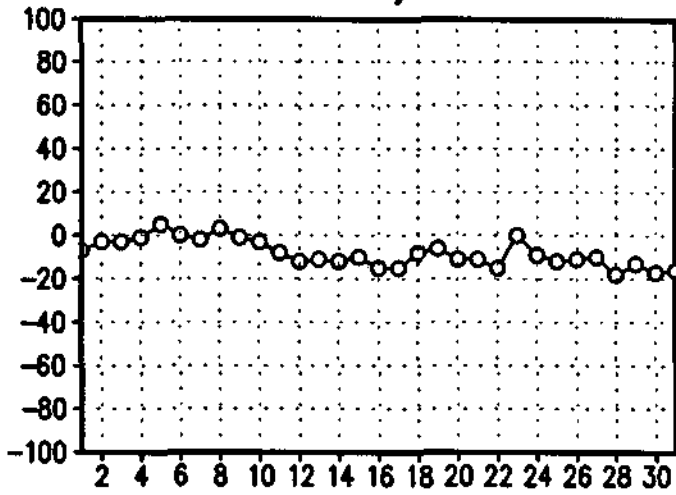
ANOM. C 06/94 18TMG ANOM. D 06/94 18TMG



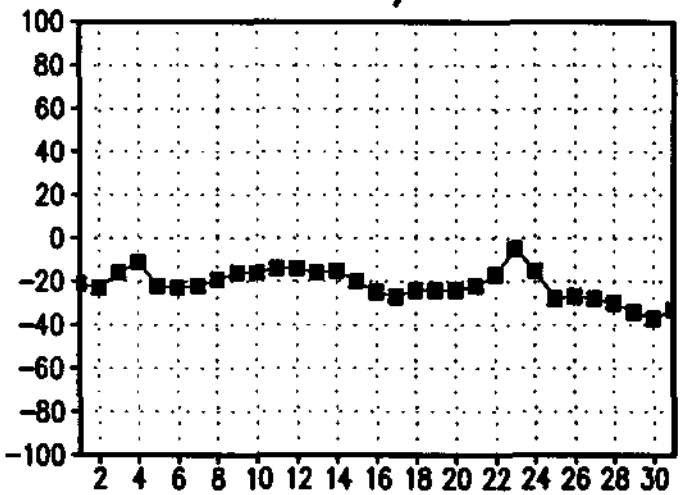
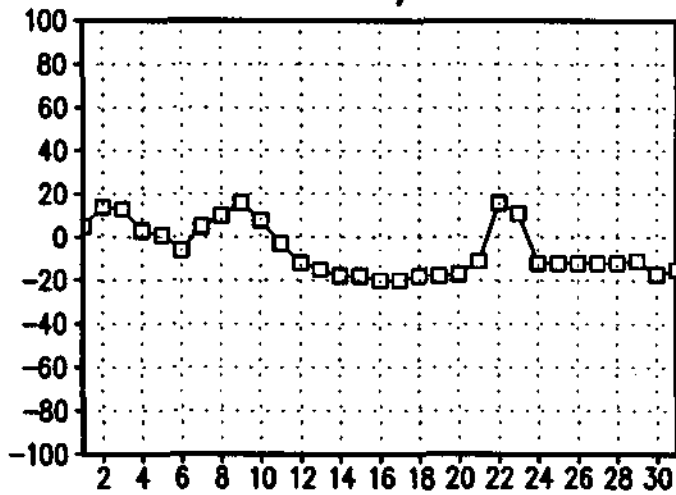
ANOM. E 06/94 18TMG ANOM. NE 06/94 18TMG



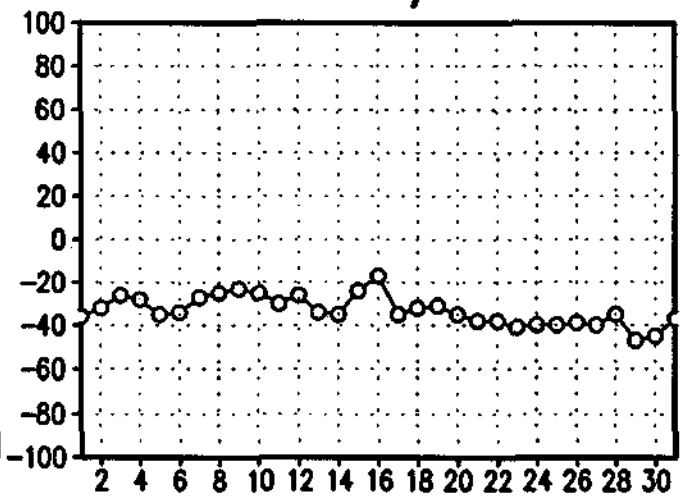
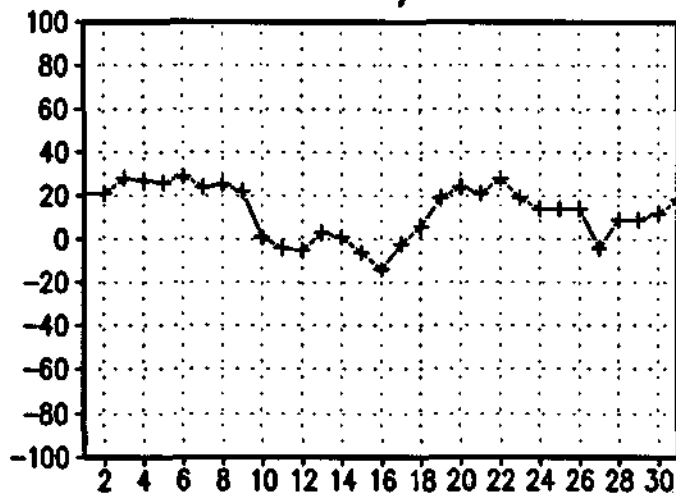
ANOM. A 07/94 18TMG ANOM. B 07/94 18TMG



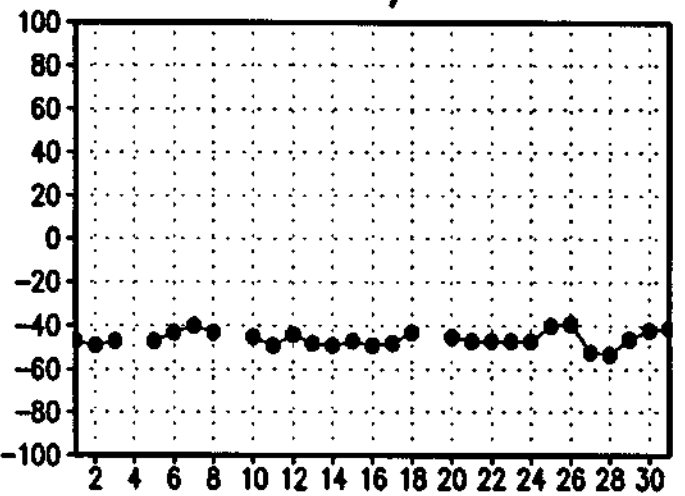
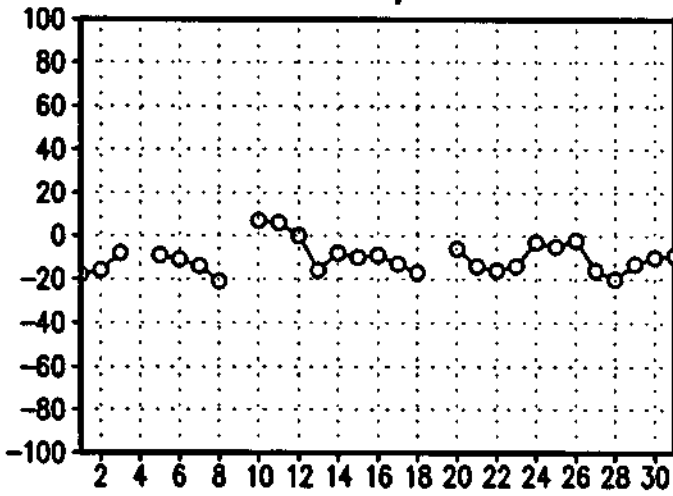
ANOM. C 07/94 18TMG ANOM. D 07/94 18TMG



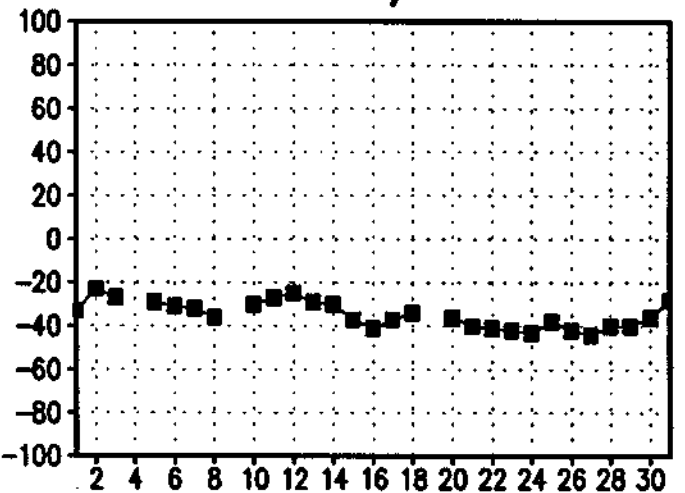
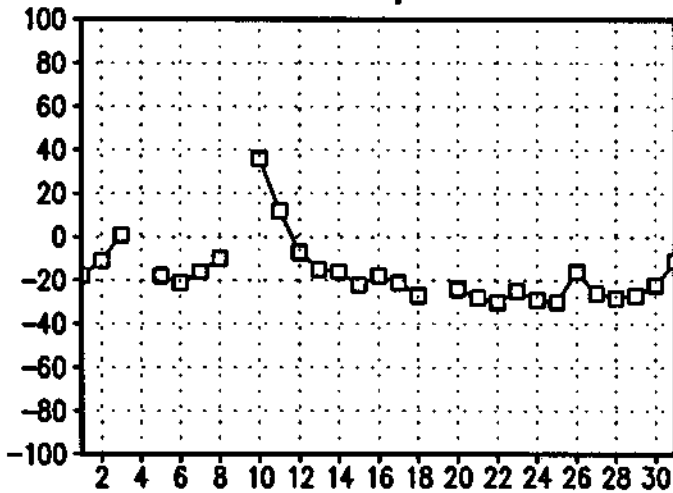
ANOM. E 07/94 18TMG ANOM. NE 07/94 18TMG



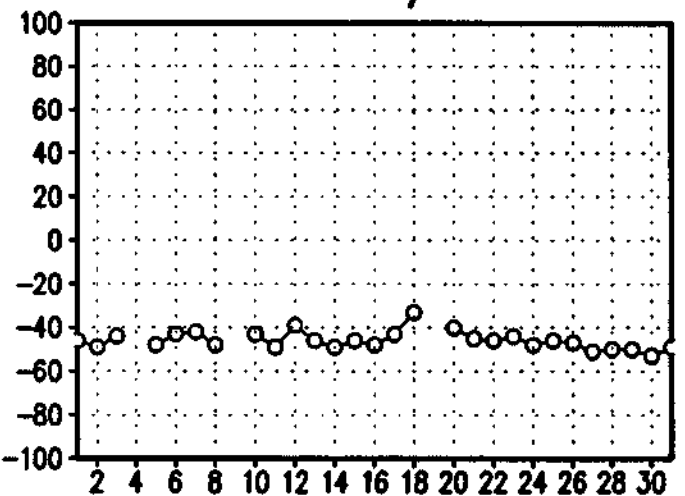
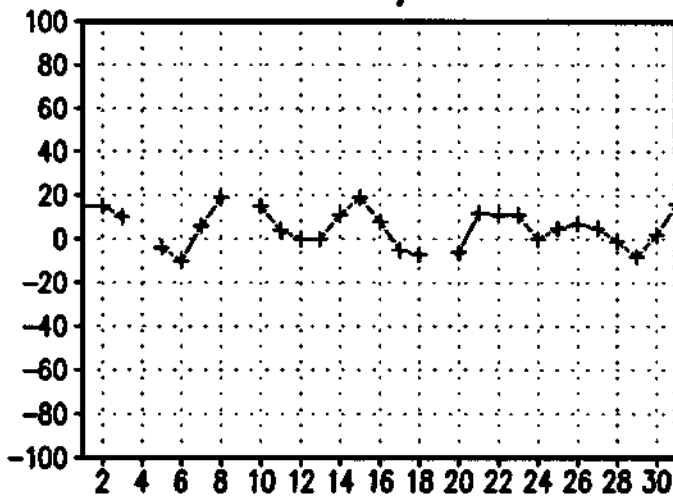
ANOM. A 08/94 18TMG ANOM. B 08/94 18TMG



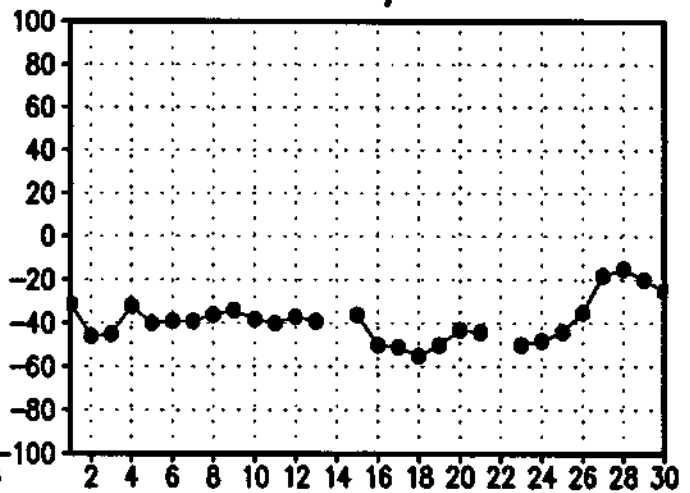
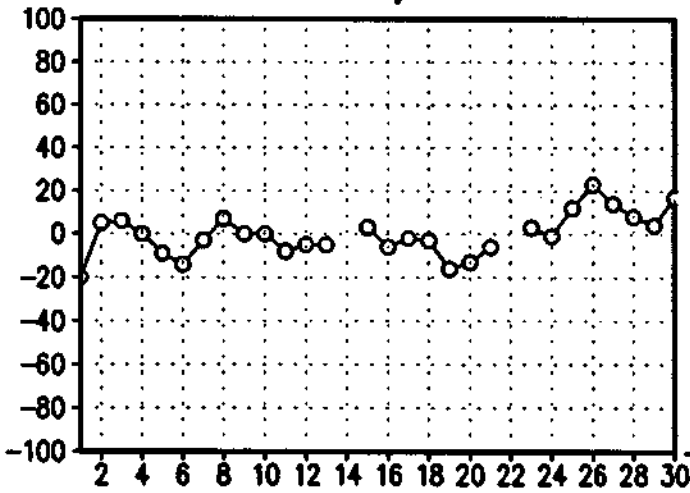
ANOM. C 08/94 18TMG ANOM. D 08/94 18TMG



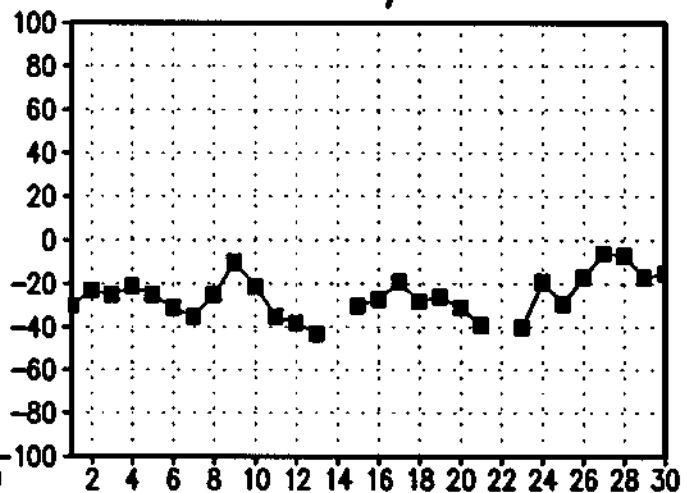
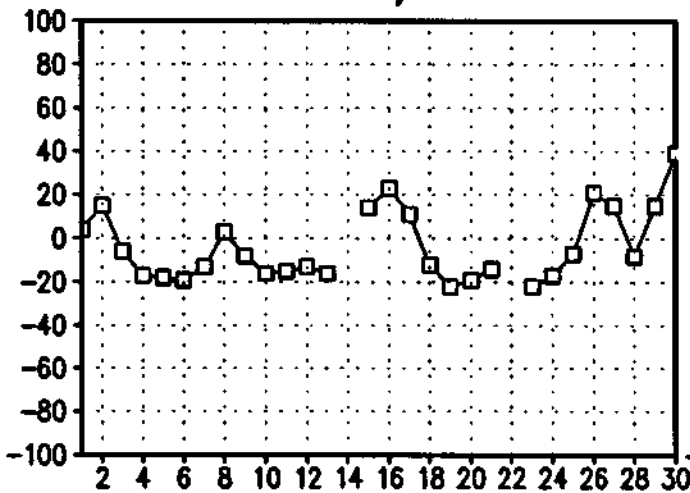
ANOM. E 08/94 18TMG ANOM. NE 08/94 18TMG



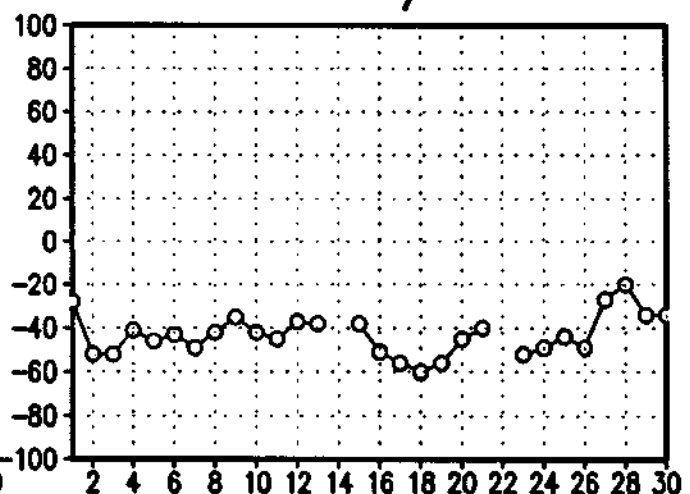
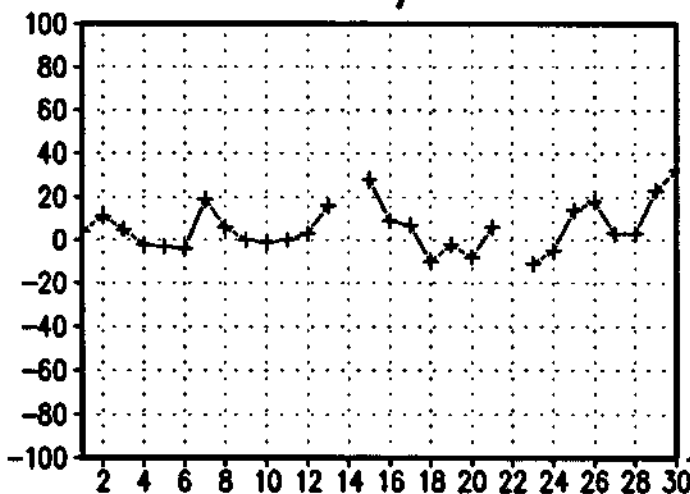
ANOM. A 09/94 18TMG ANOM. B 09/94 18TMG



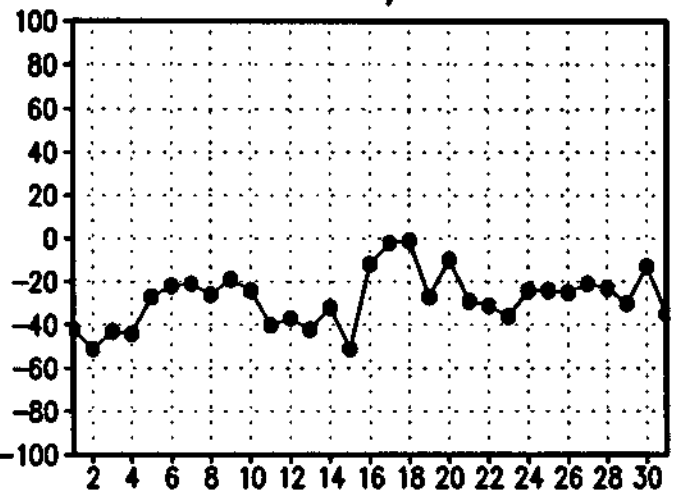
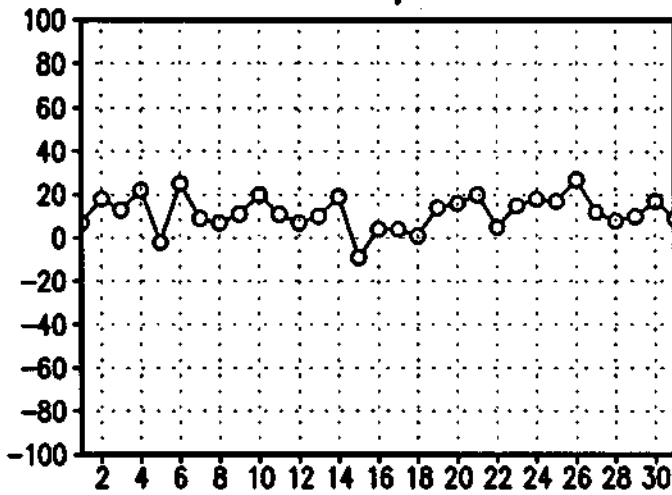
ANOM. C 09/94 18TMG ANOM. D 09/94 18TMG



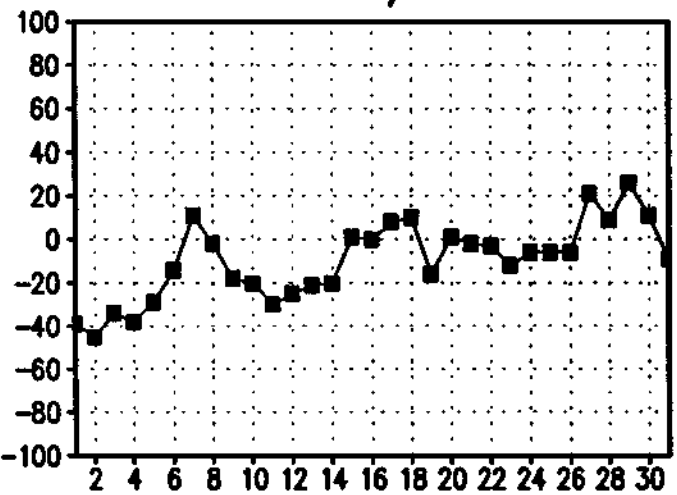
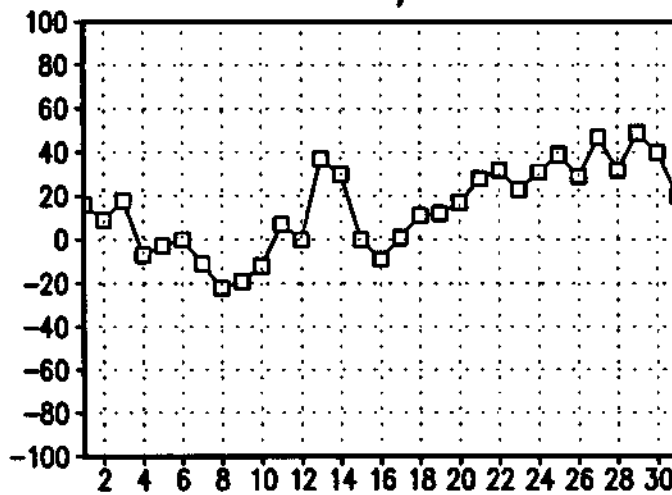
ANOM. E 09/94 18TMG ANOM. NE 09/94 18TMG



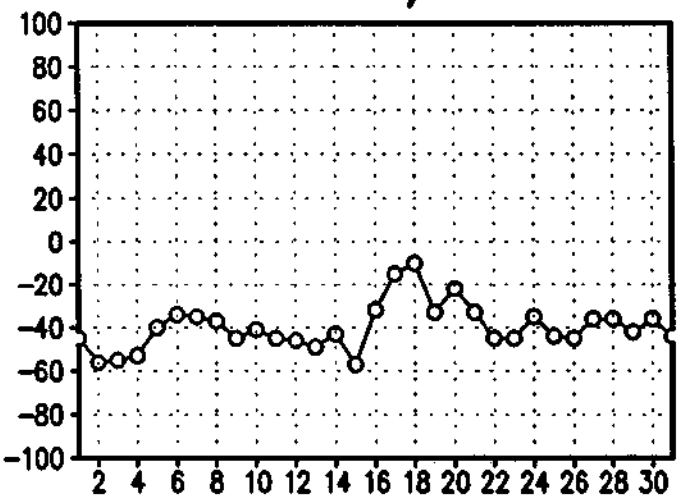
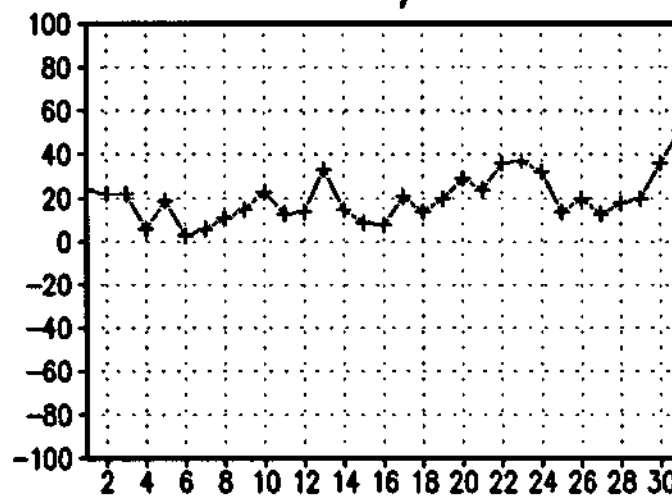
ANOM. A 10/94 18TMG ANOM. B 10/94 18TMG



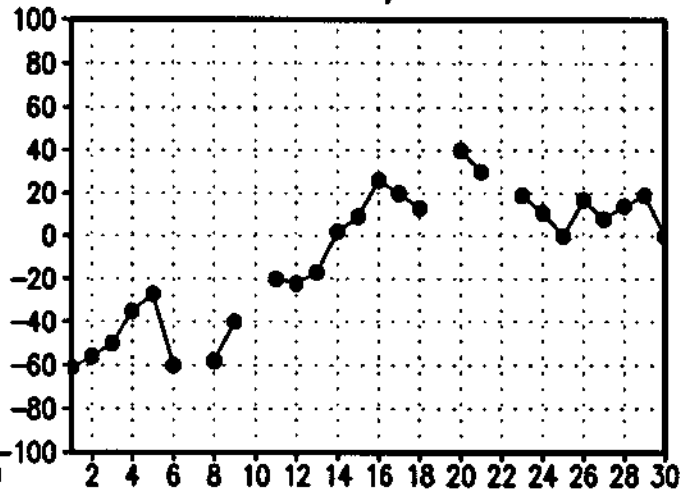
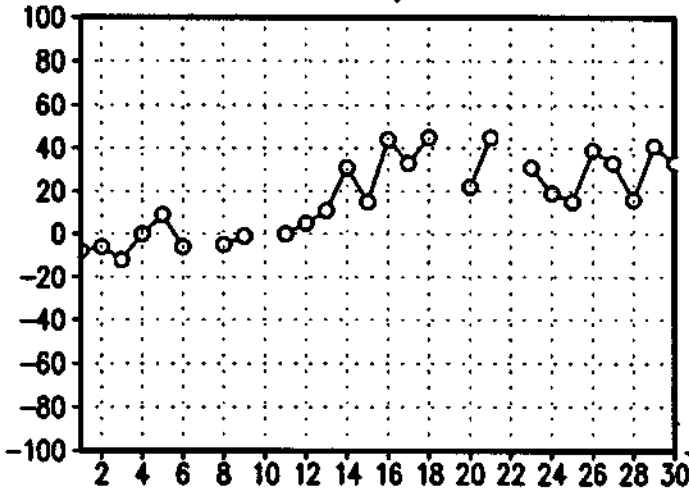
ANOM. C 10/94 18TMG ANOM. D 10/94 18TMG



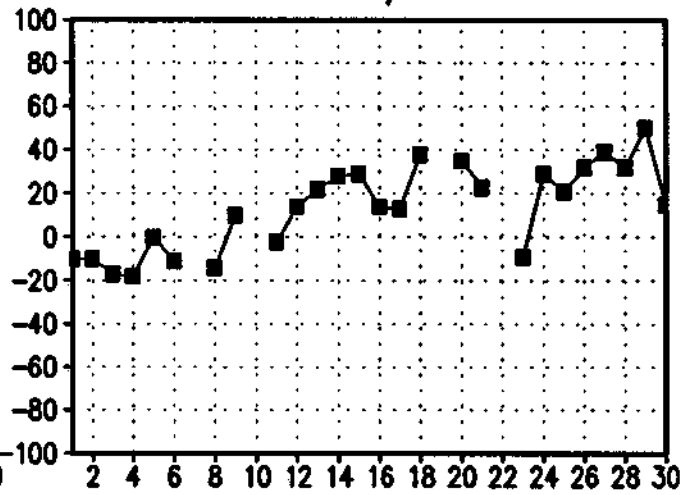
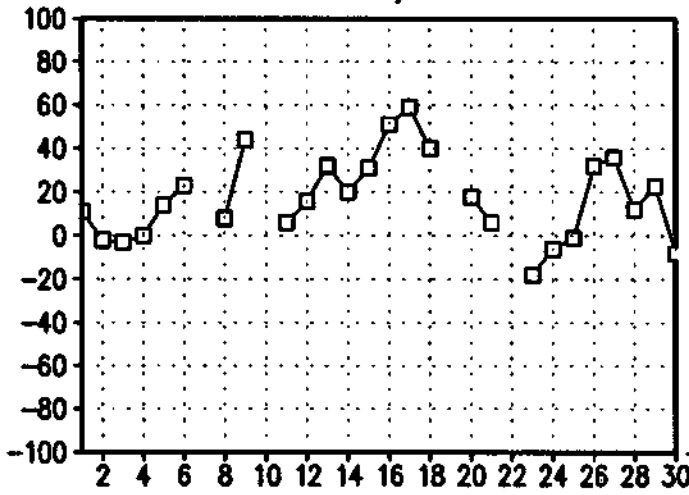
ANOM. E 10/94 18TMG ANOM. NE 10/94 18TMG



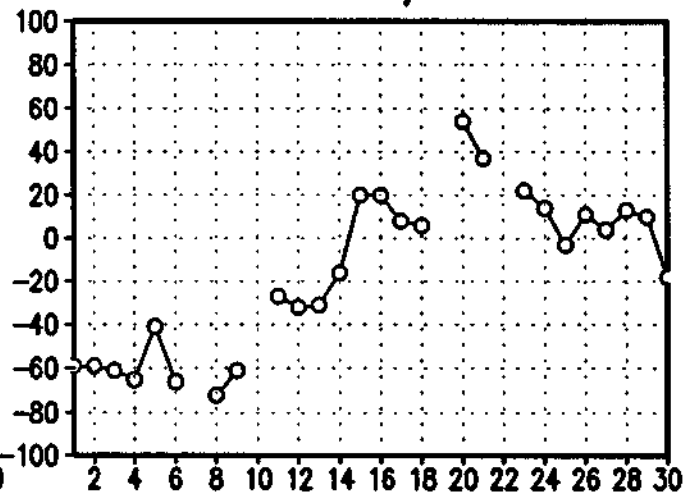
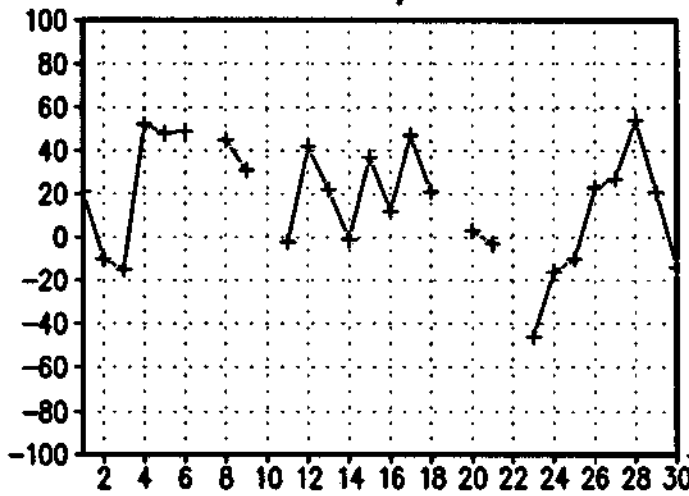
ANOM. A 11/94 18TMG ANOM. B 11/94 18TMG



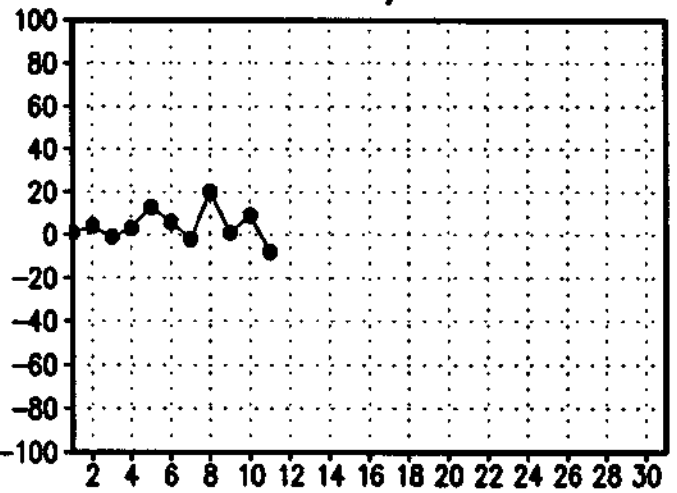
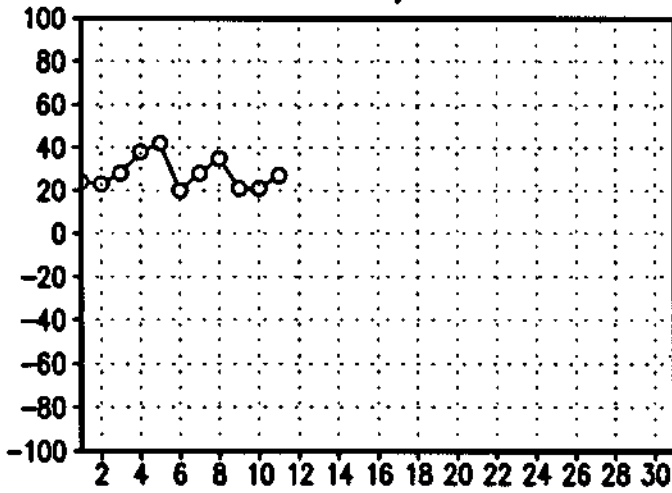
ANOM. C 11/94 18TMG ANOM. D 11/94 18TMG



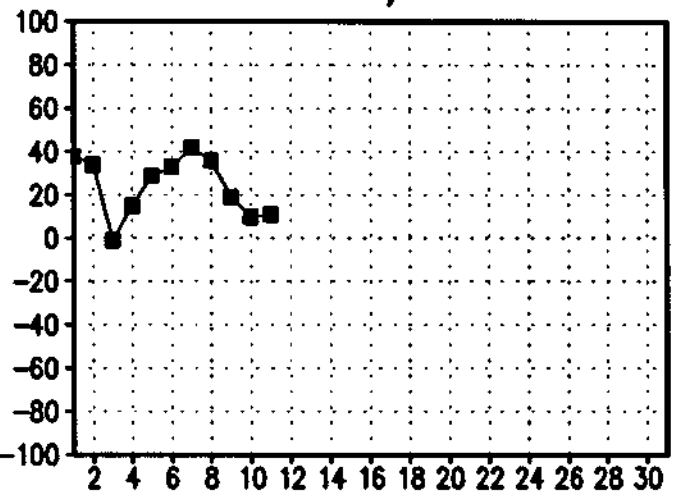
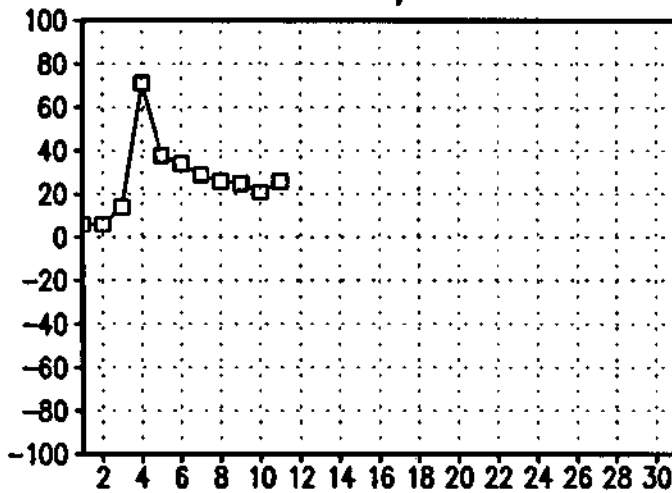
ANOM. E 11/94 18TMG ANOM. NE 11/94 18TMG



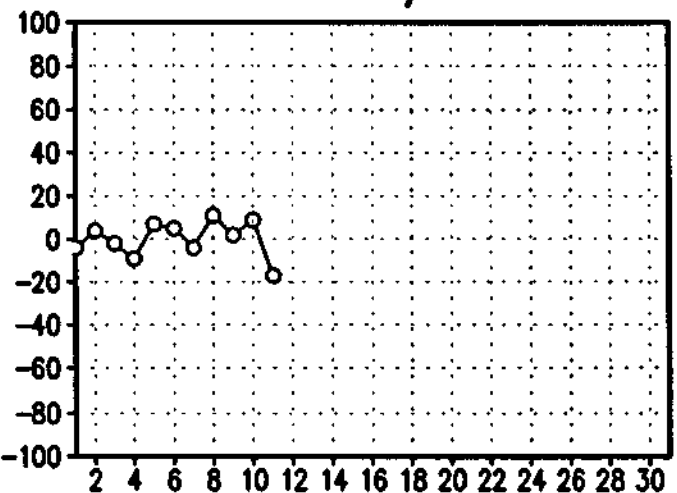
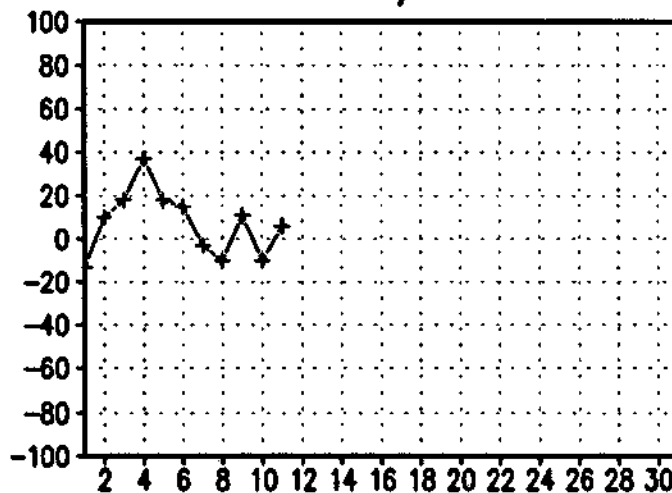
ANOM. A 12/94 18TMG ANOM. B 12/94 18TMG



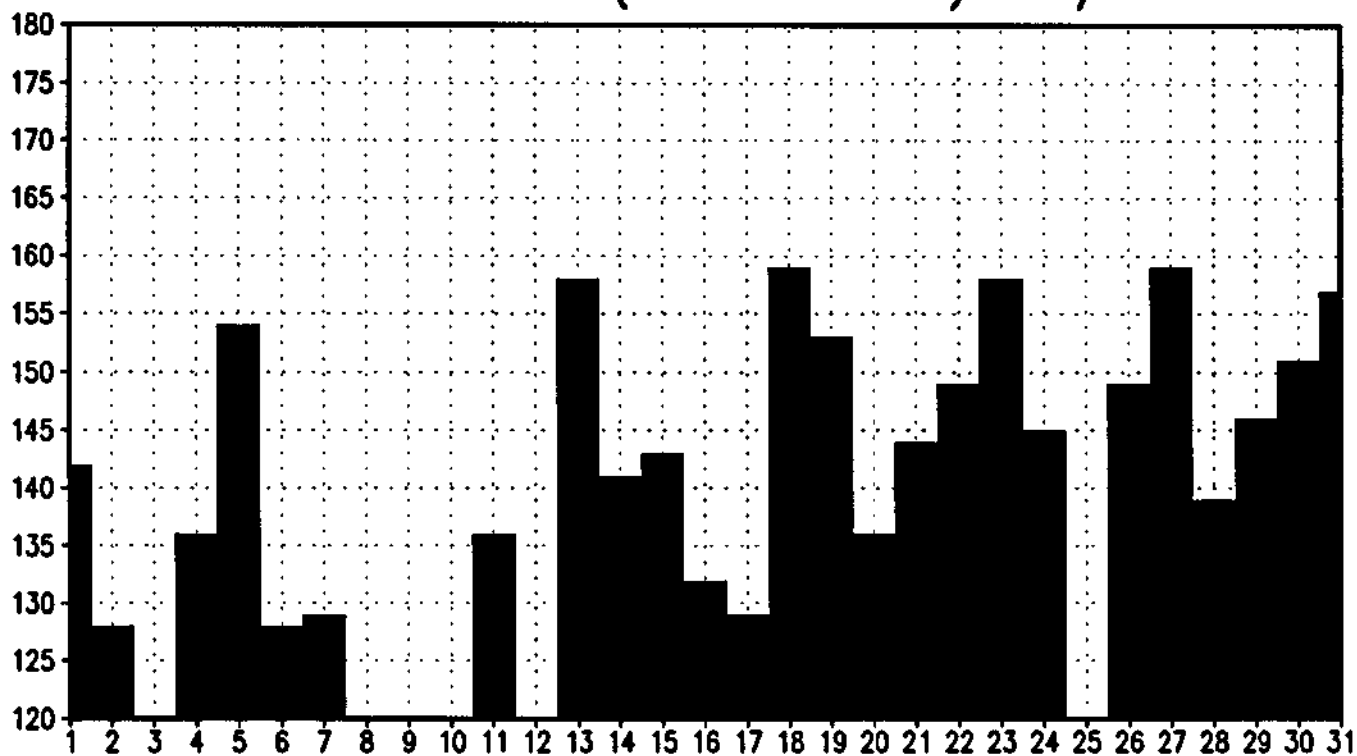
ANOM. C 12/94 18TMG ANOM. D 12/94 18TMG



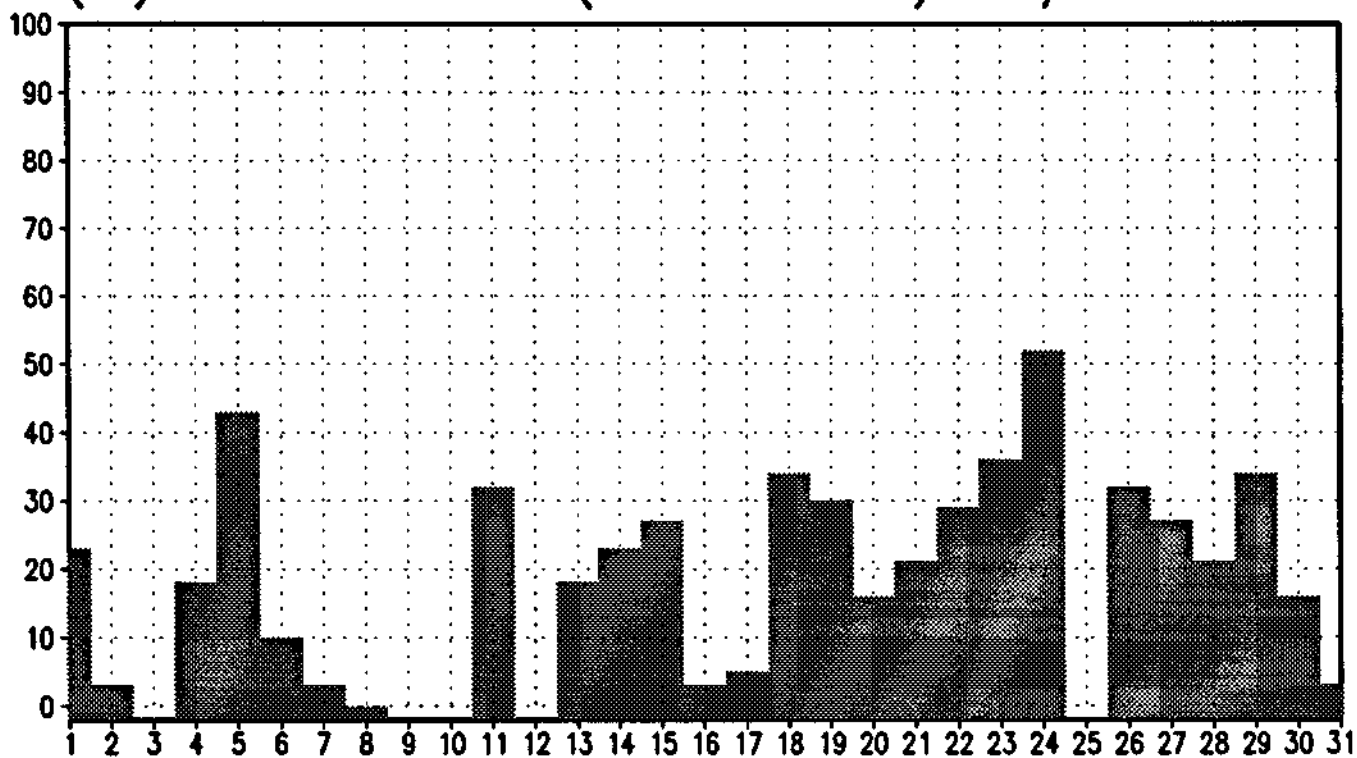
ANOM. E 12/94 18TMG ANOM. NE 12/94 18TMG



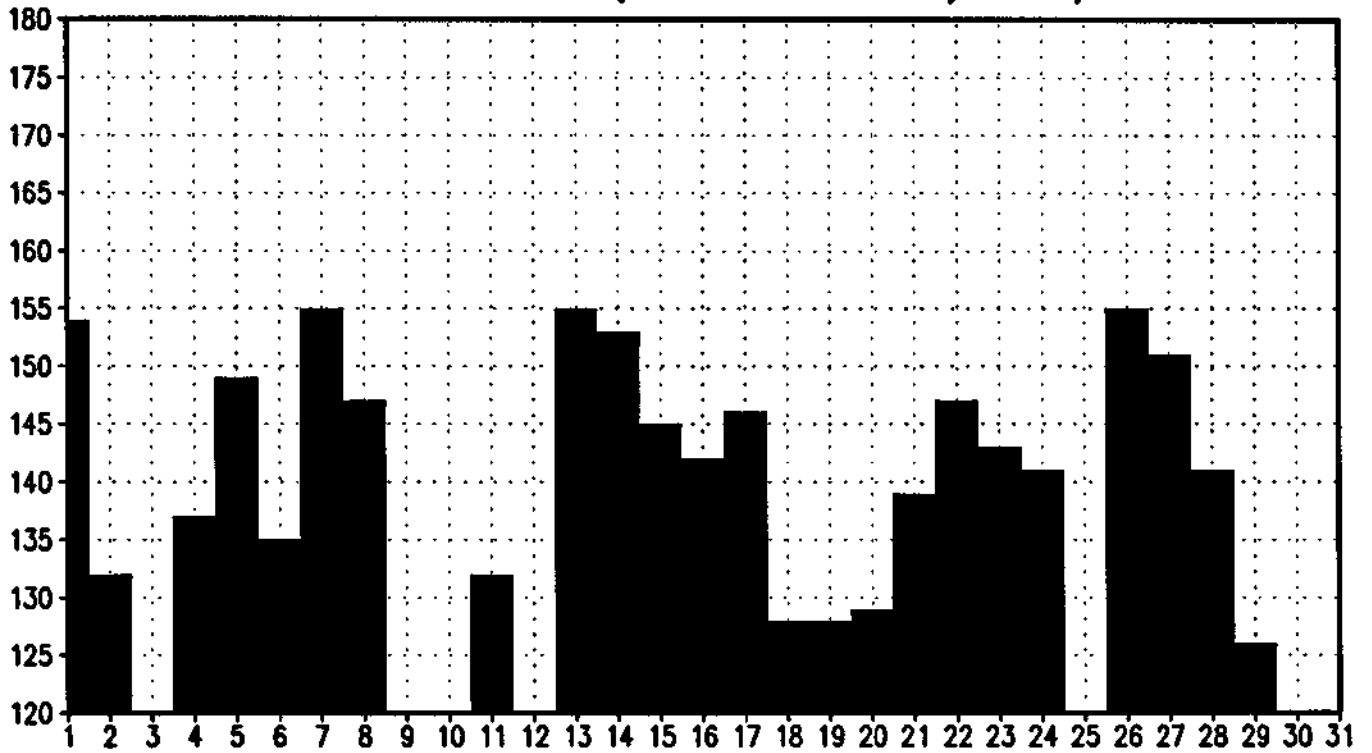
MEDIA DE VALORES (≥ 120 'C') 10/93 18TMG



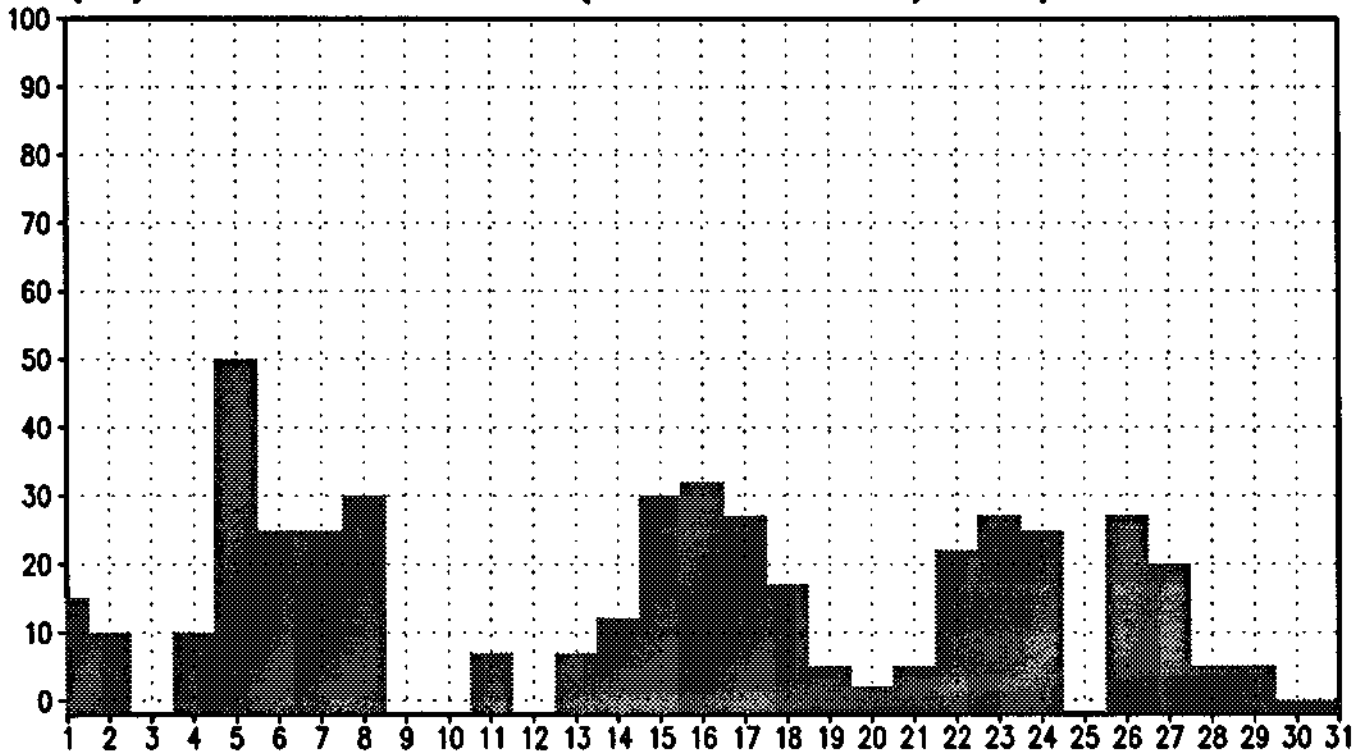
(%) DE VALORES (≥ 120 'C') 10/93 18TMG



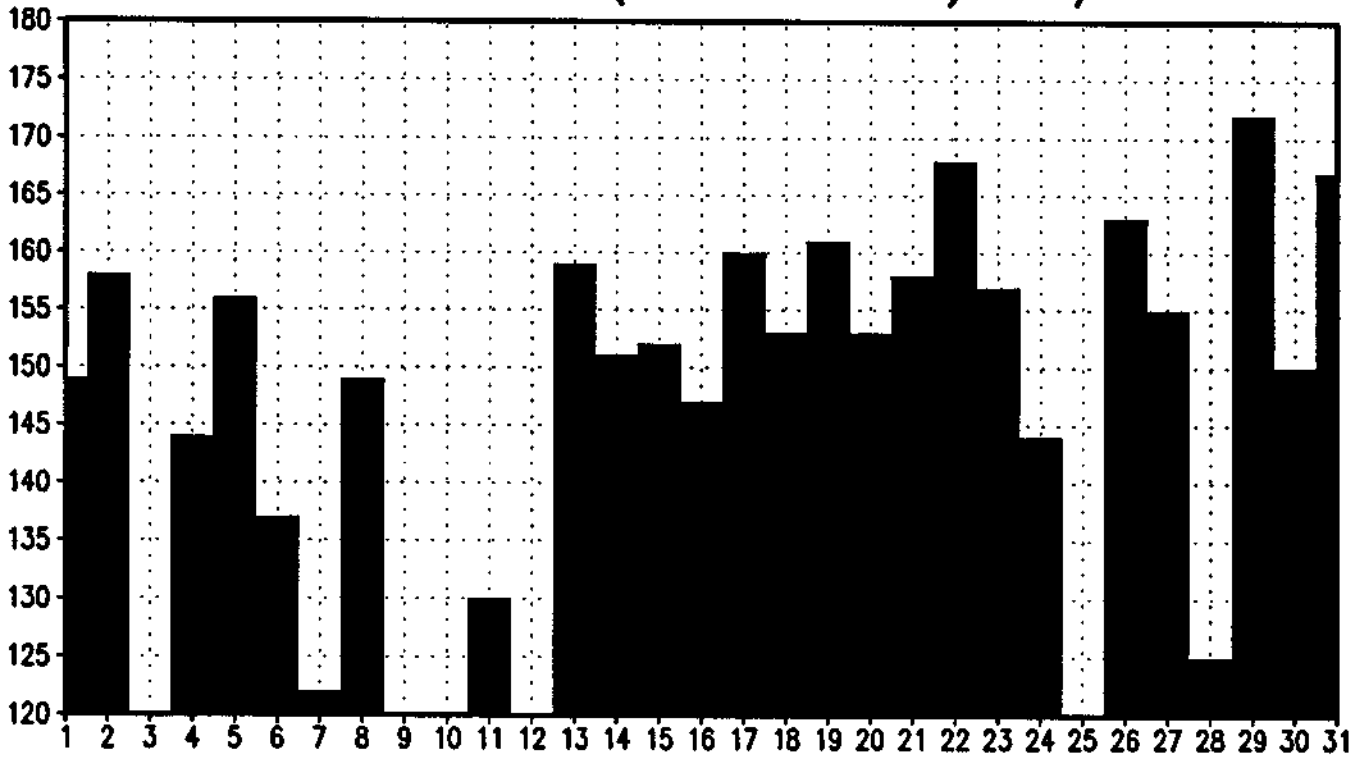
MEDIA DE VALORES (≥ 120 'D') 10/93 18TMG



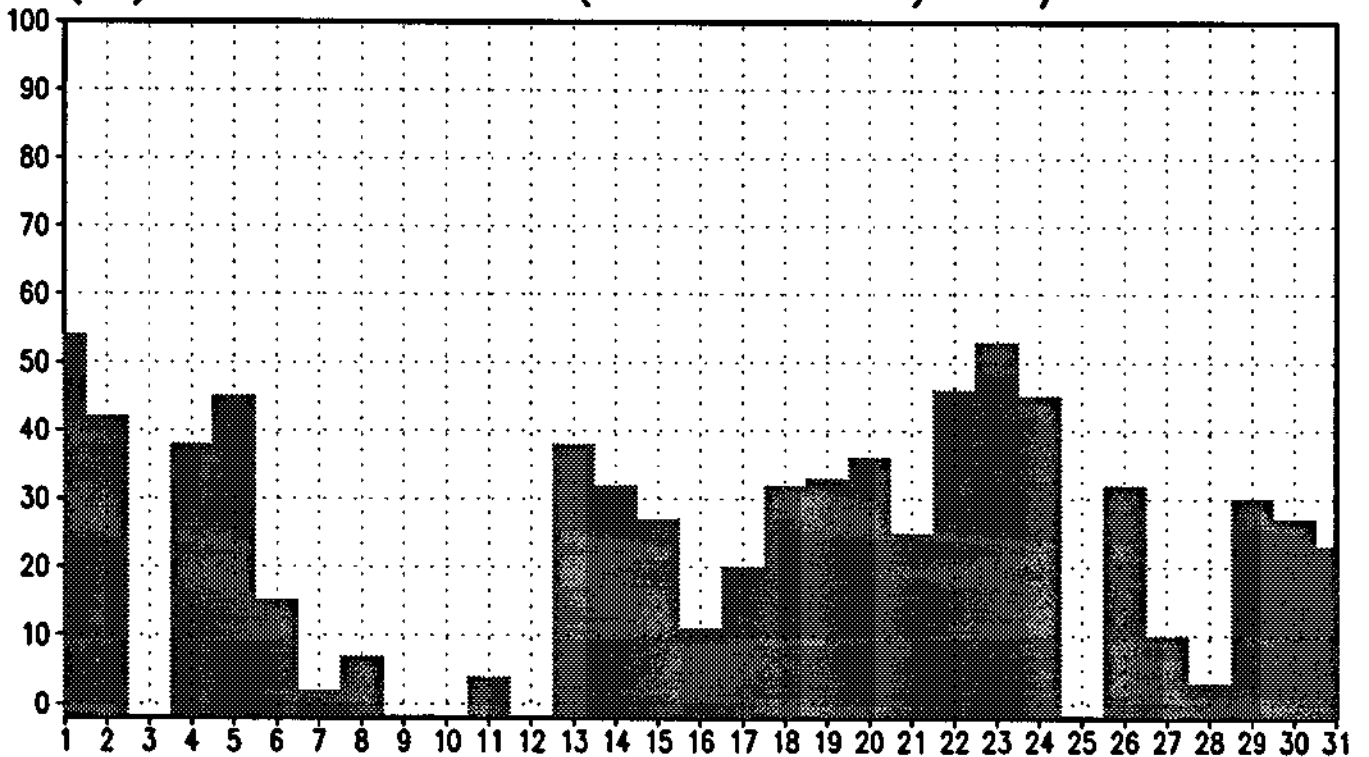
(%) DE VALORES (≥ 120 'D') 10/93 18TMG



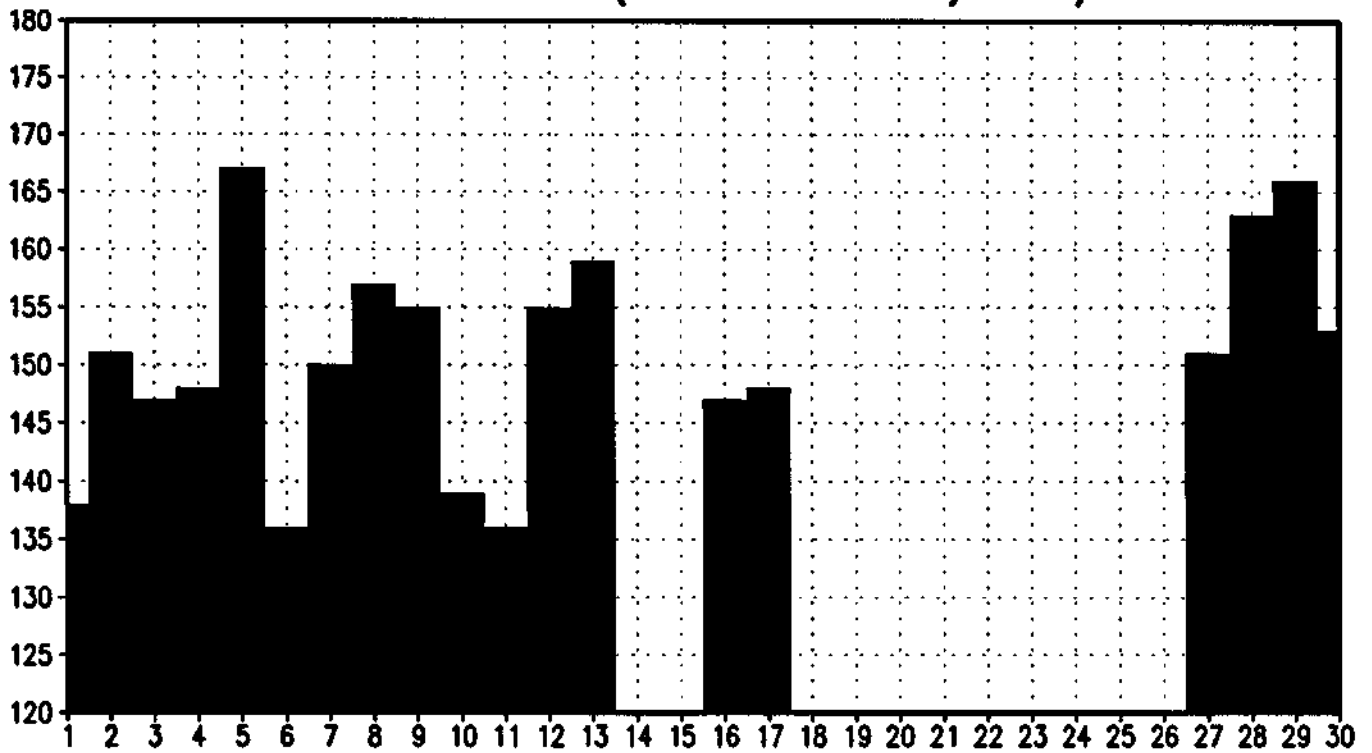
MEDIA DE VALORES (≥ 120 'E') 10/93 18TMG



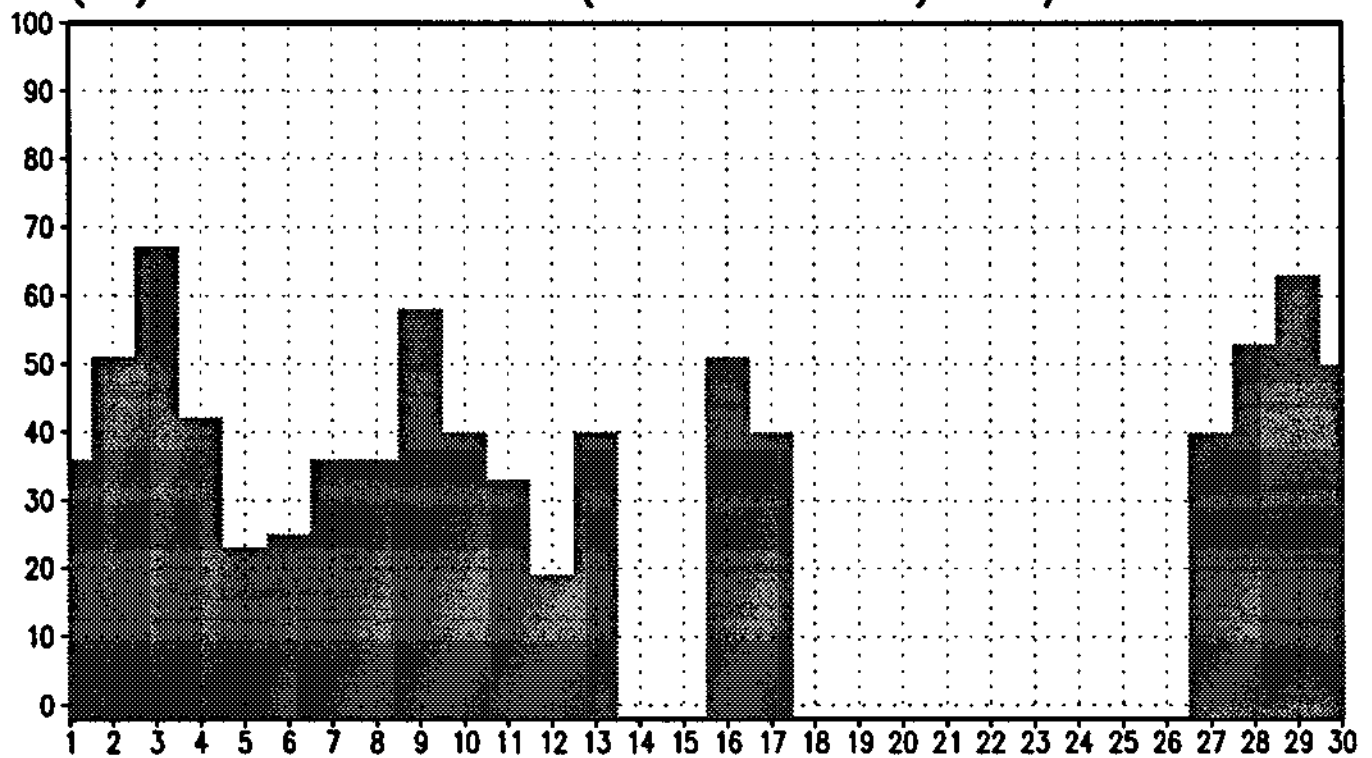
(%) DE VALORES (≥ 120 'E') 10/93 18TMG



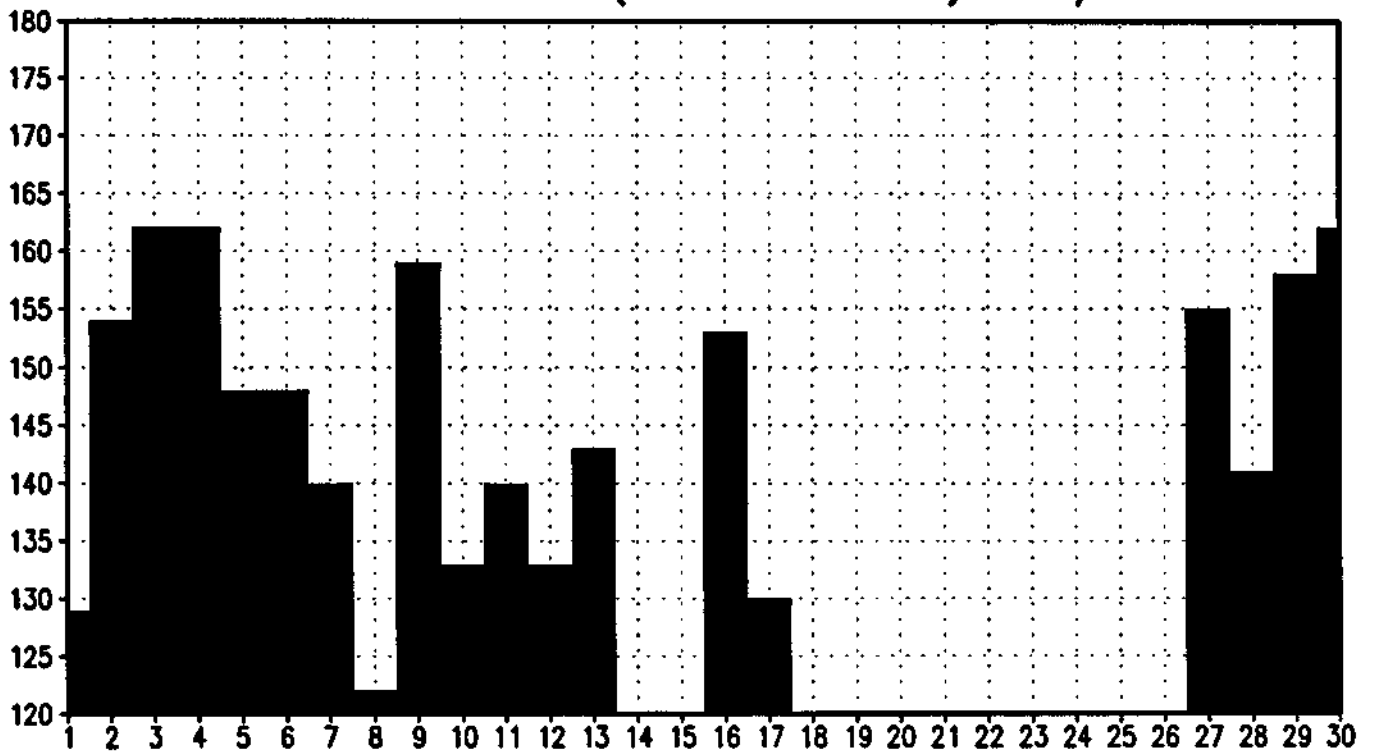
MEDIA DE VALORES (≥ 120 'A') 11/93 18TMG



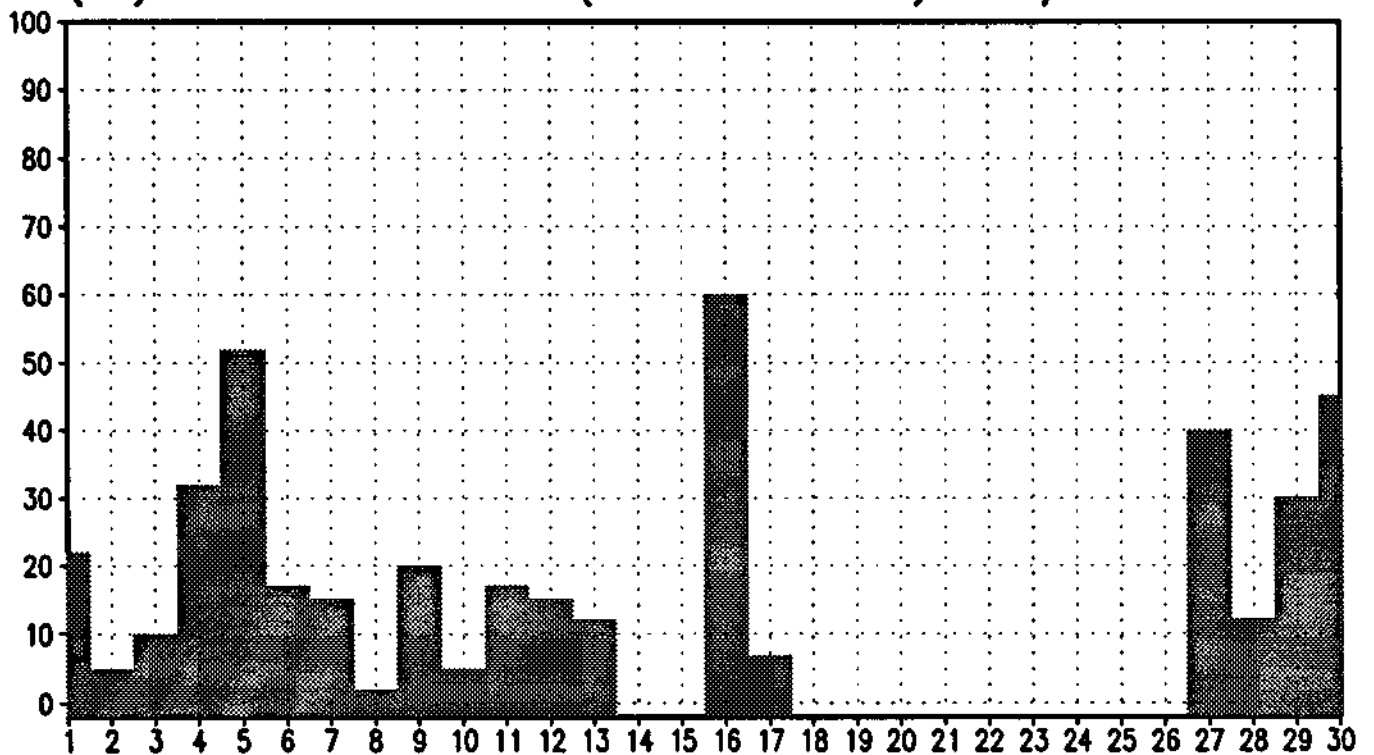
(%) DE VALORES (≥ 120 'A') 11/93 18TMG



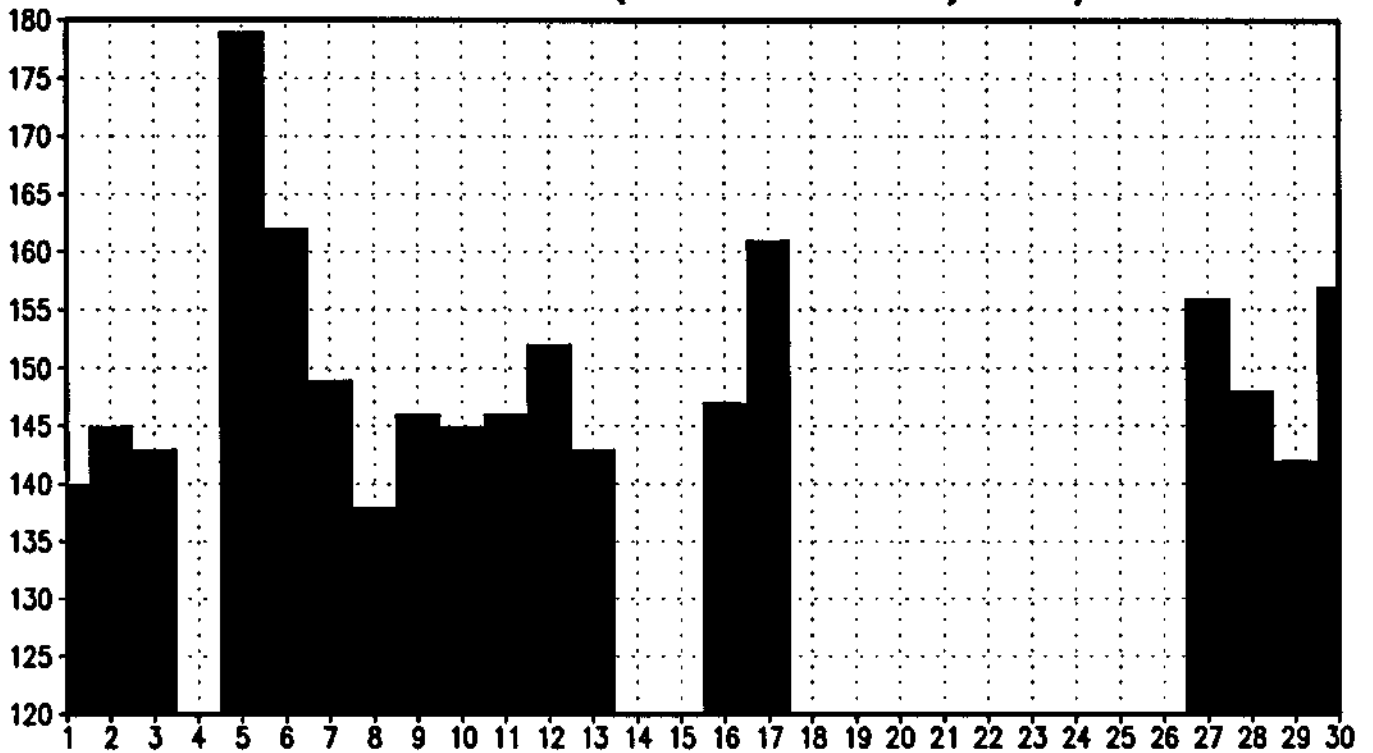
MEDIA DE VALORES (≥ 120 'B') 11/93 18TMG



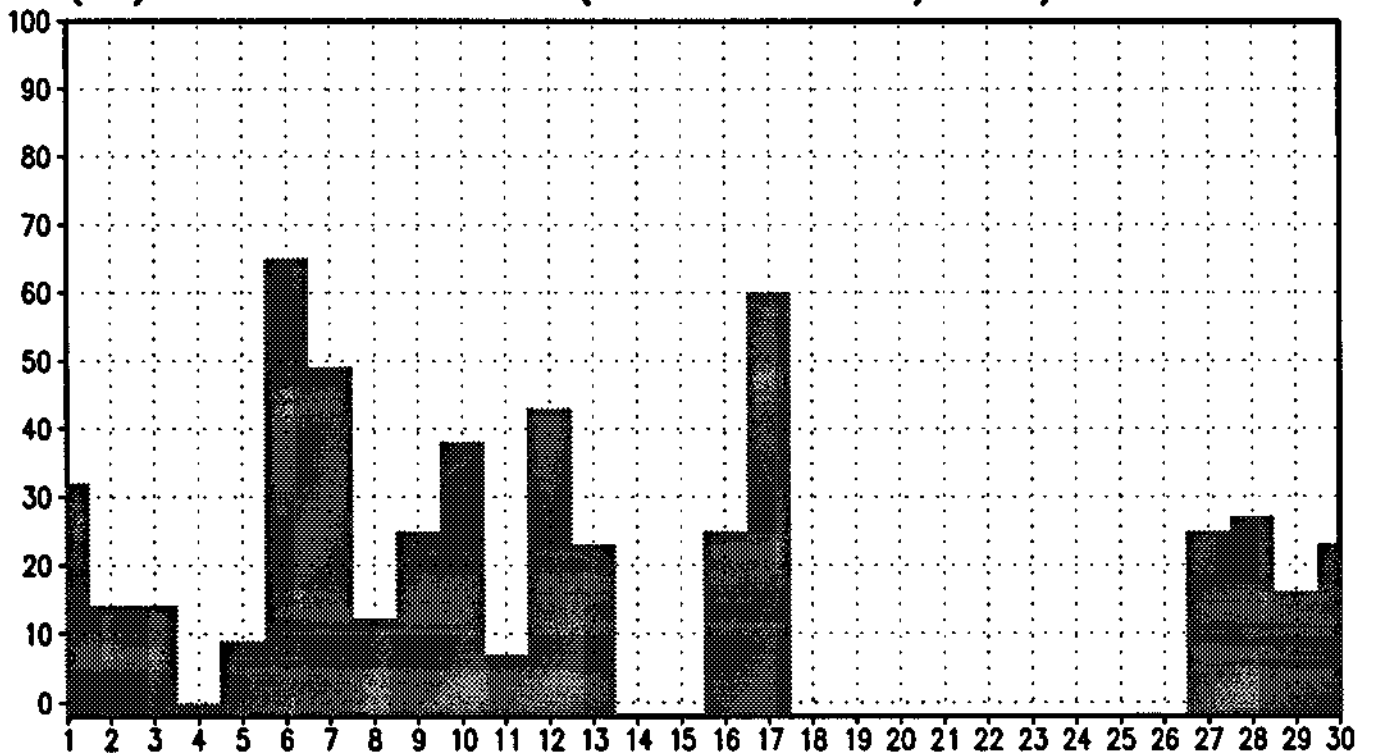
(%) DE VALORES (≥ 120 'B') 11/93 18TMG



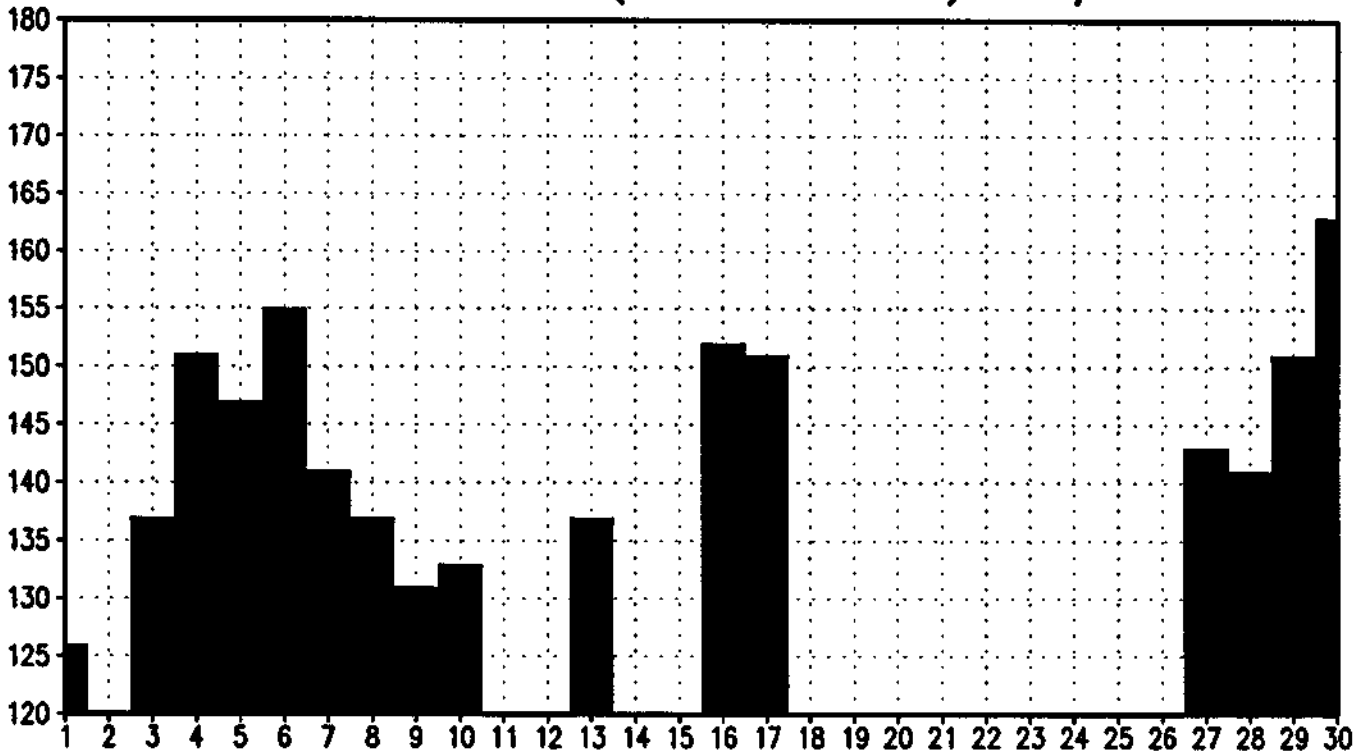
MEDIA DE VALORES (≥ 120 'C') 11/93 18TMG



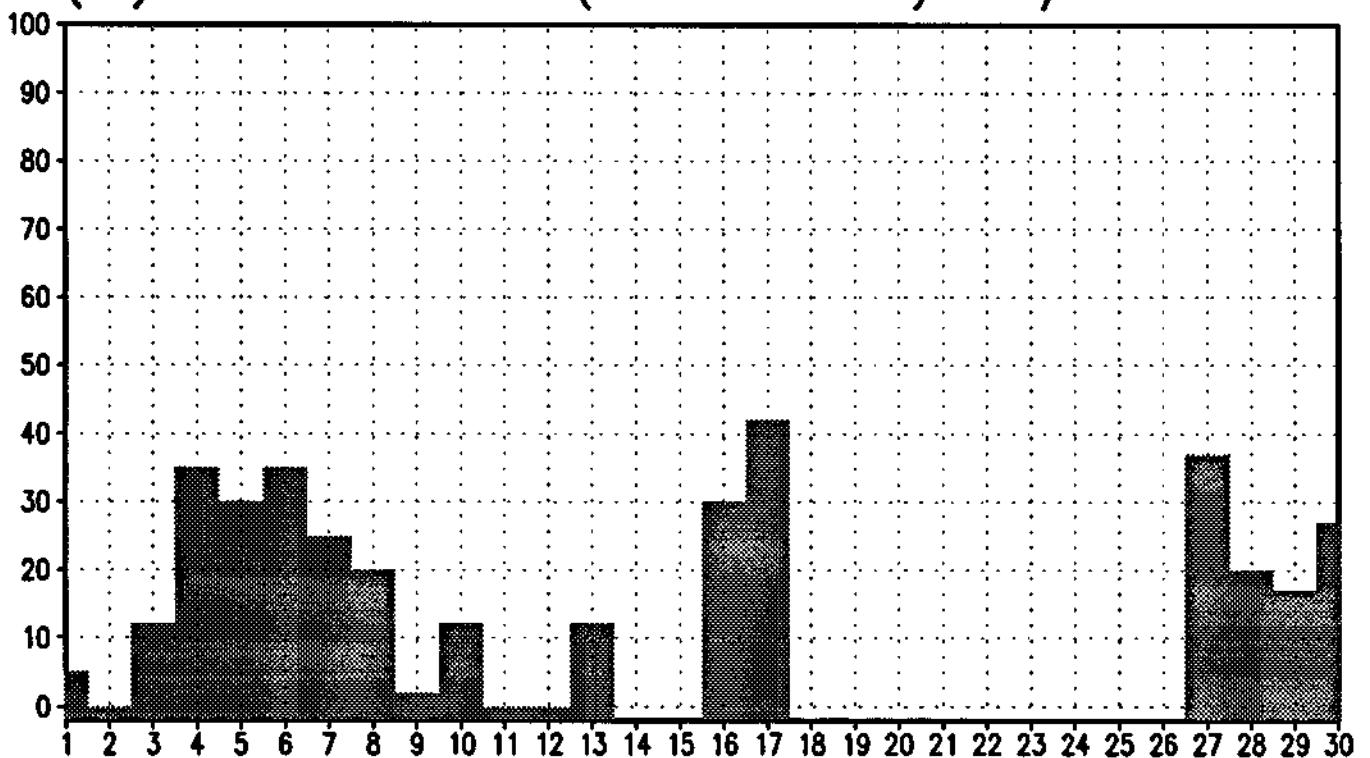
(%) DE VALORES (≥ 120 'C') 11/93 18TMG



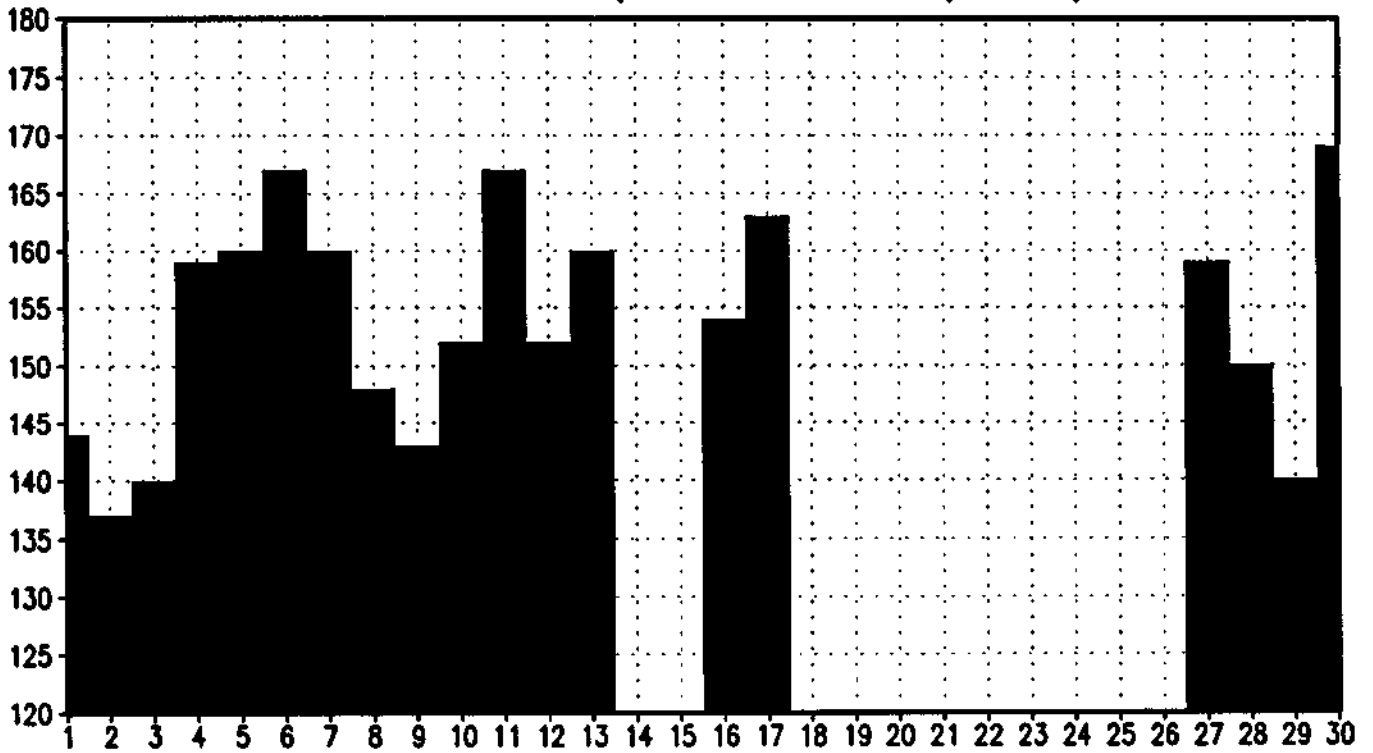
MEDIA DE VALORES (≥ 120 'D') 11/93 18TMG



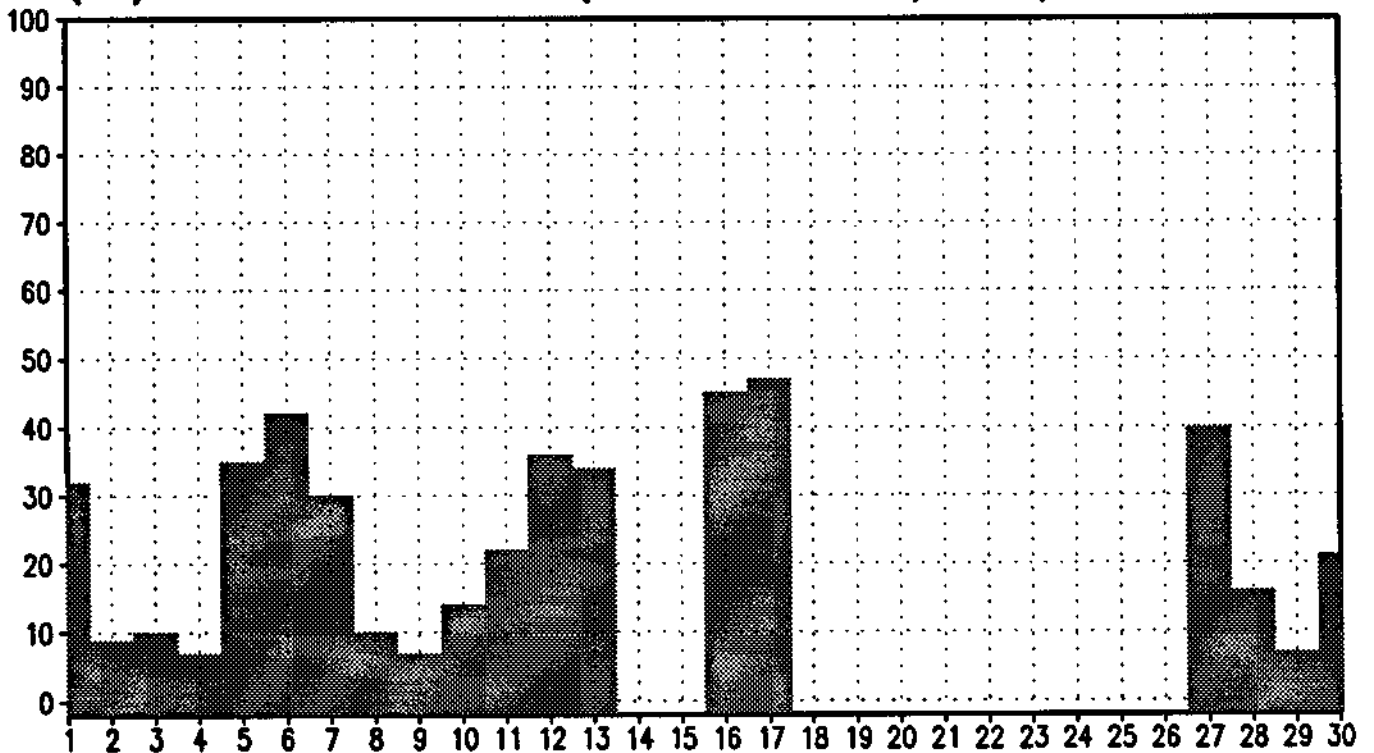
(%) DE VALORES (≥ 120 'D') 11/93 18TMG



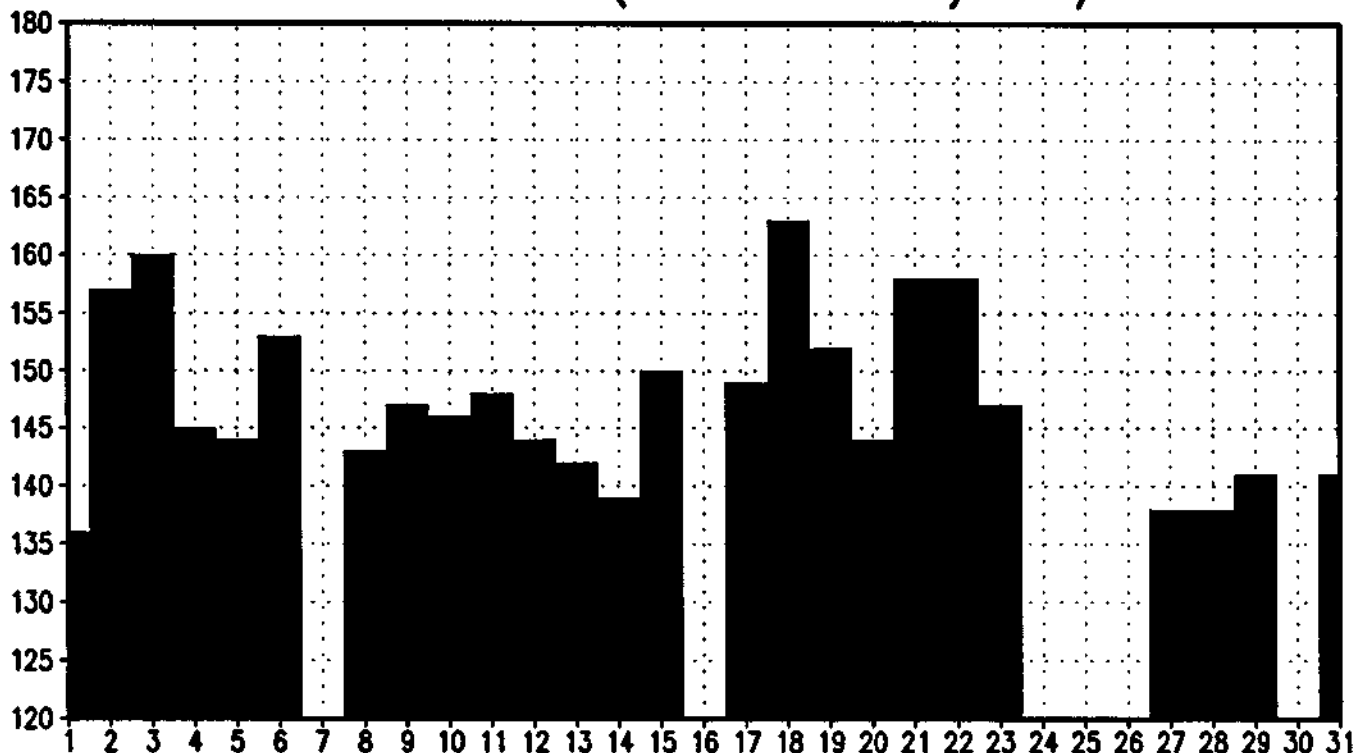
MEDIA DE VALORES (≥ 120 'E') 11/93 18TMG



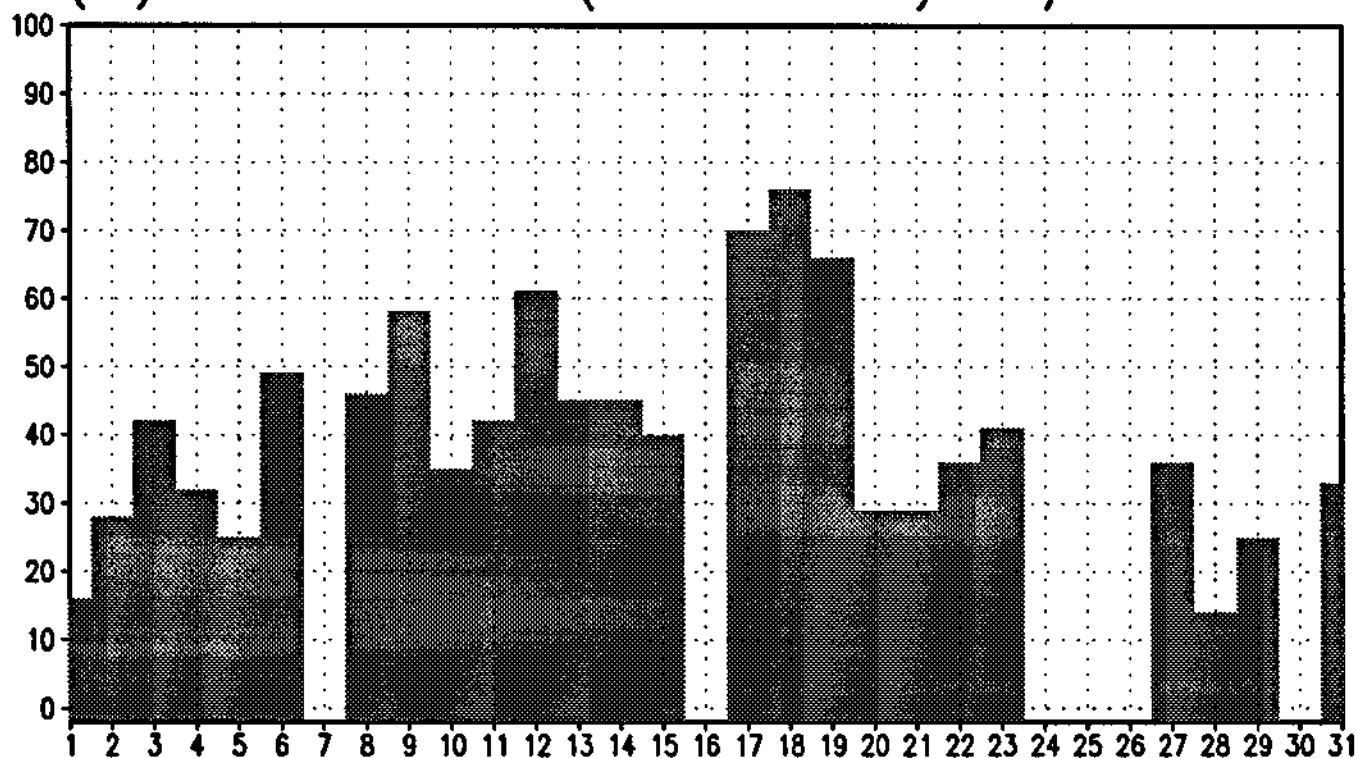
(%) DE VALORES (≥ 120 'E') 11/93 18TMG



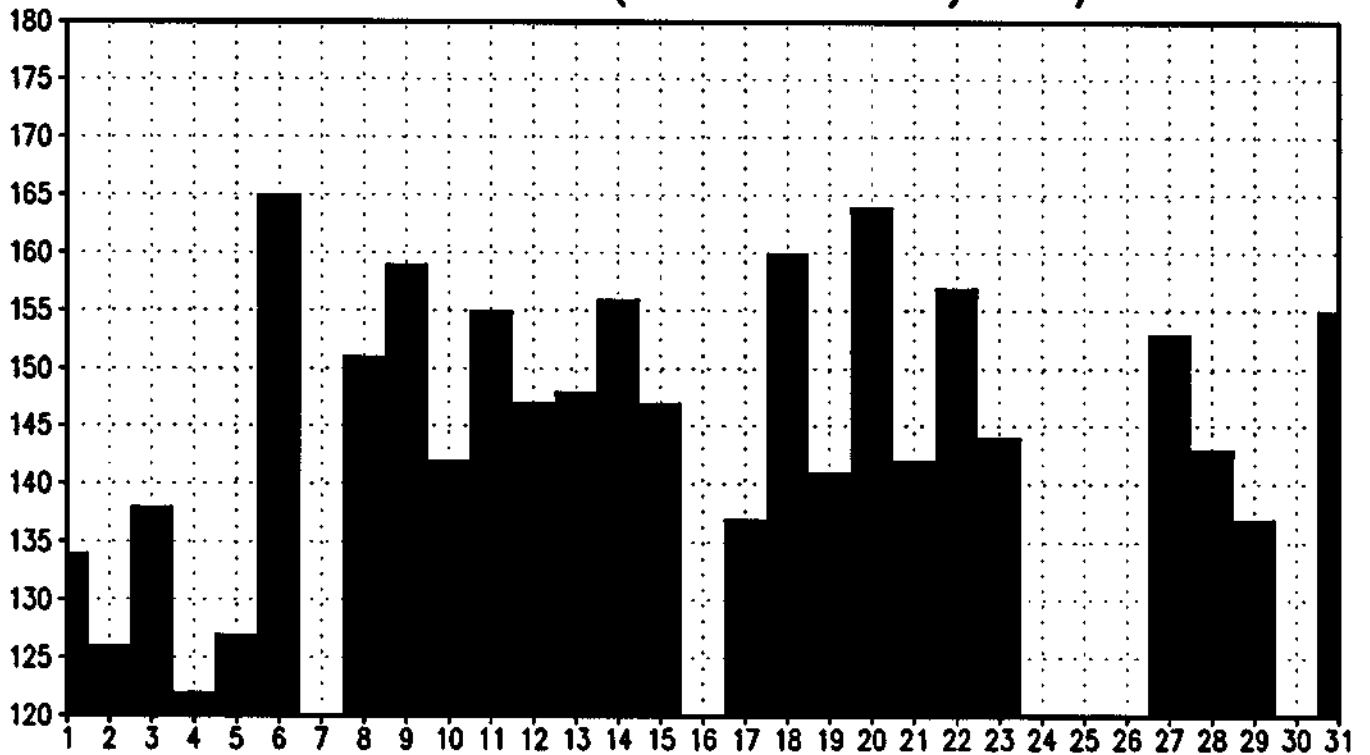
MEDIA DE VALORES (≥ 120 'A') 12/93 18TMG



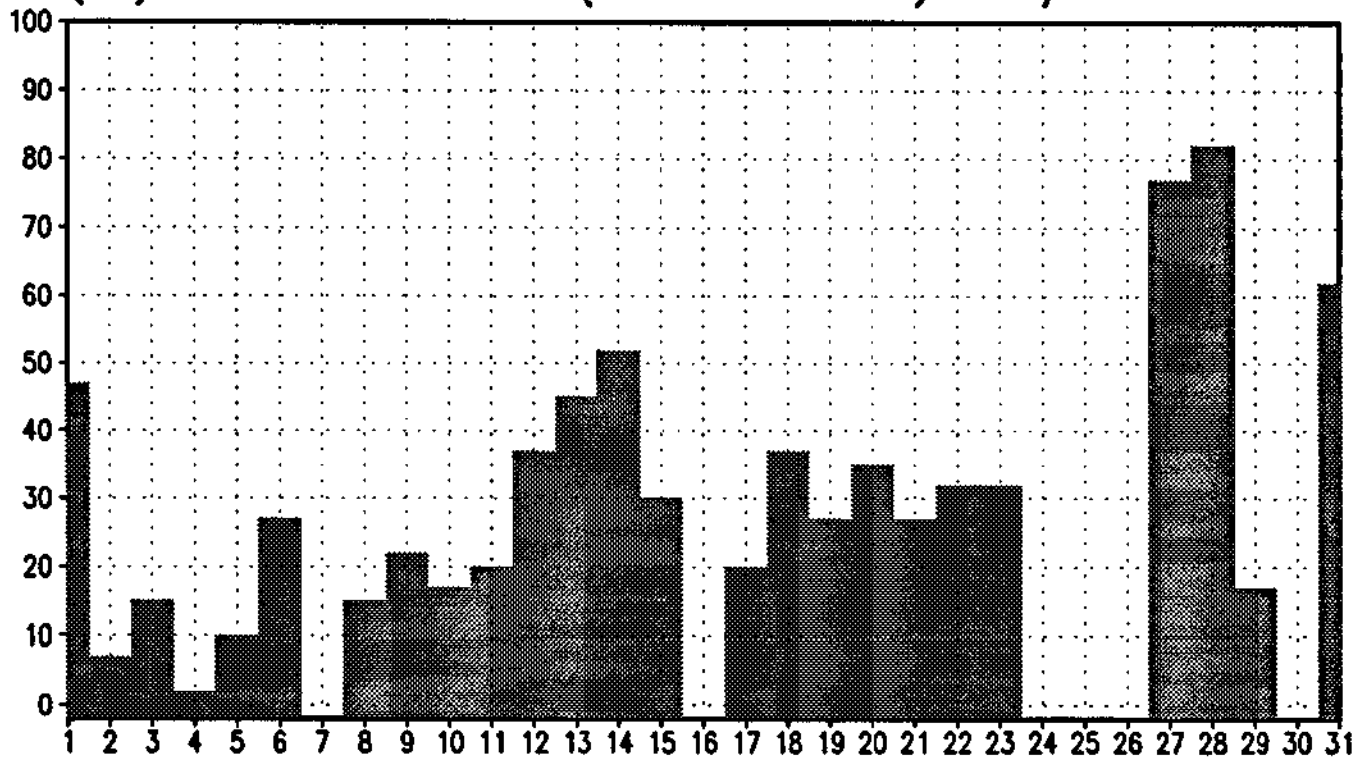
(%) DE VALORES (≥ 120 'A') 12/93 18TMG



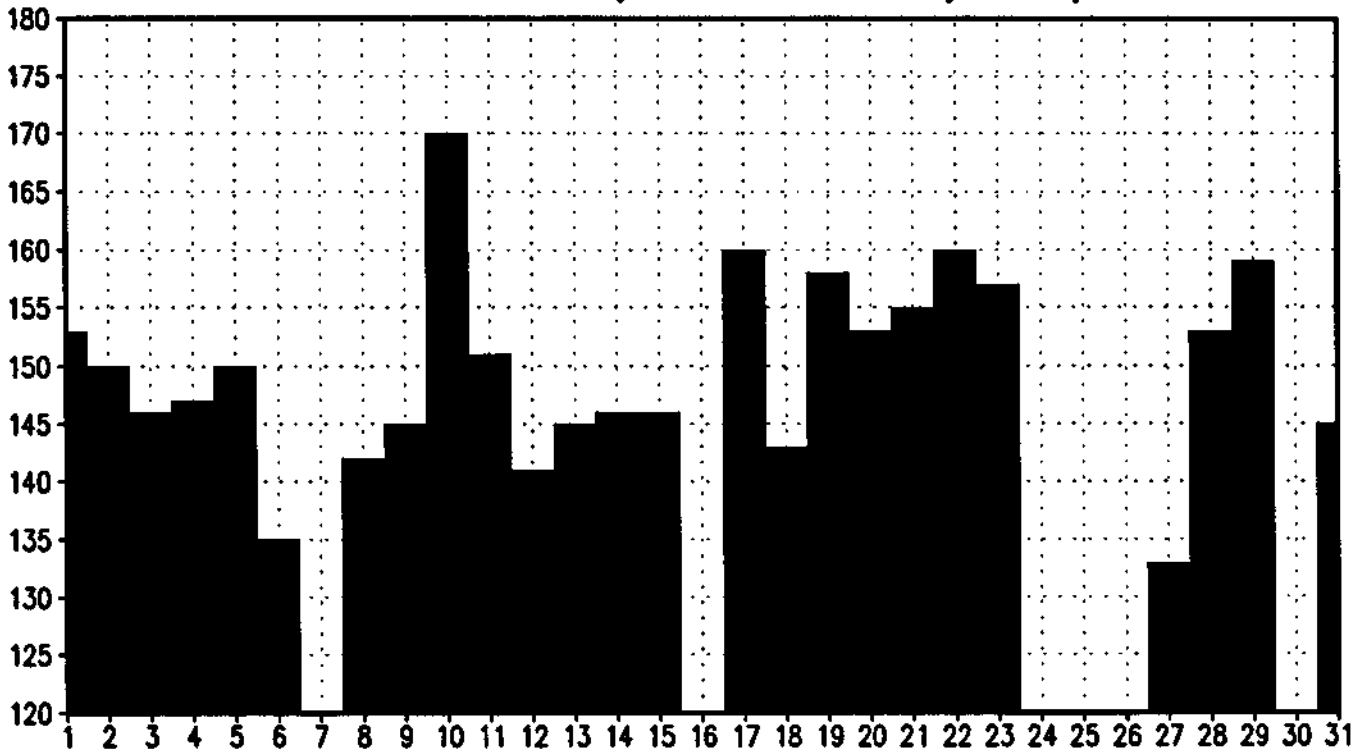
MEDIA DE VALORES (≥ 120 'B') 12/93 18TMG



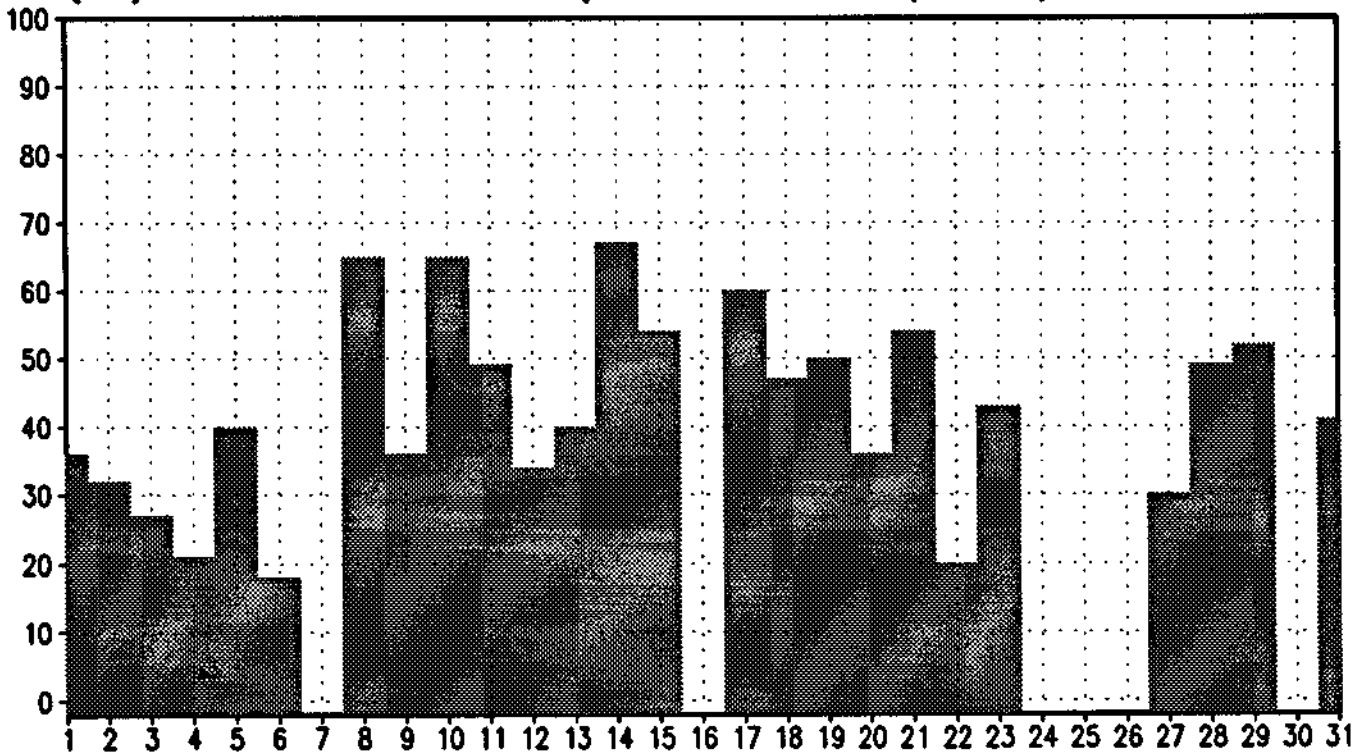
(%) DE VALORES (≥ 120 'B') 12/93 18TMG



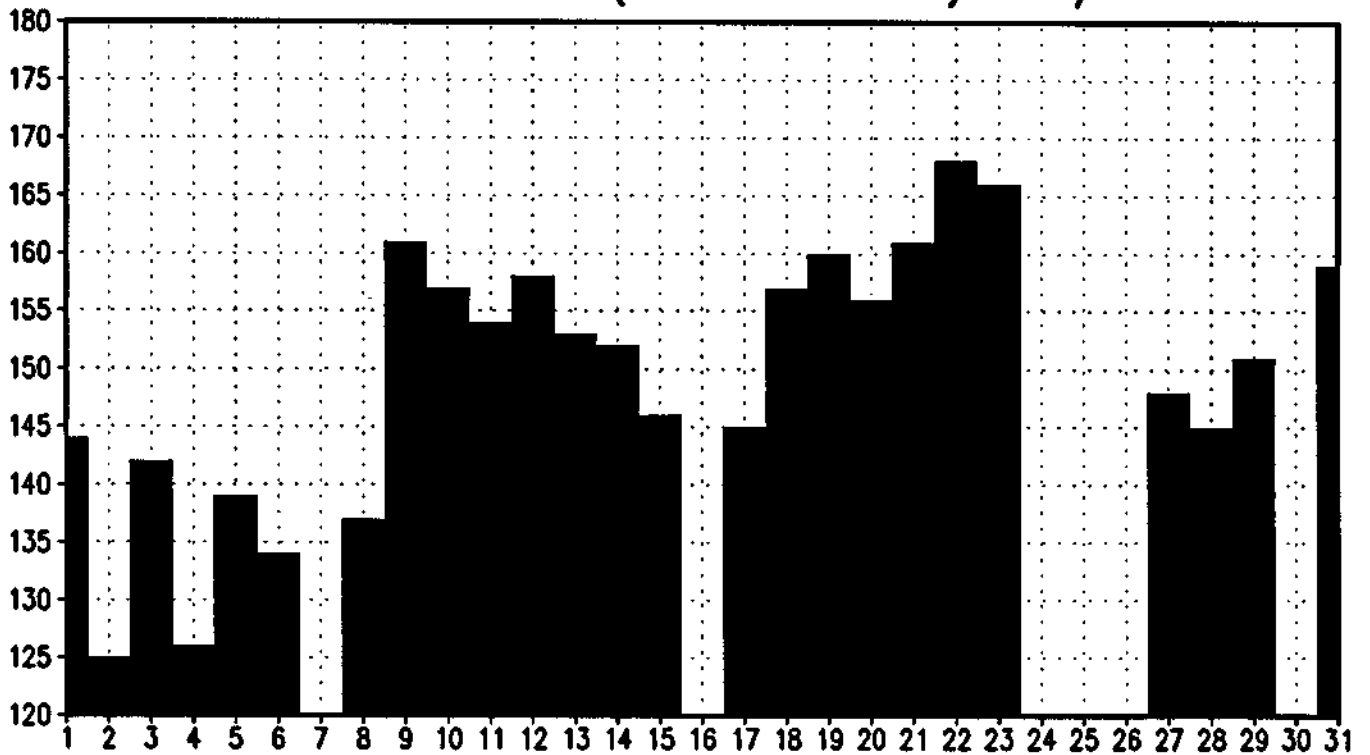
MEDIA DE VALORES (≥ 120 'C') 12/93 18TMG



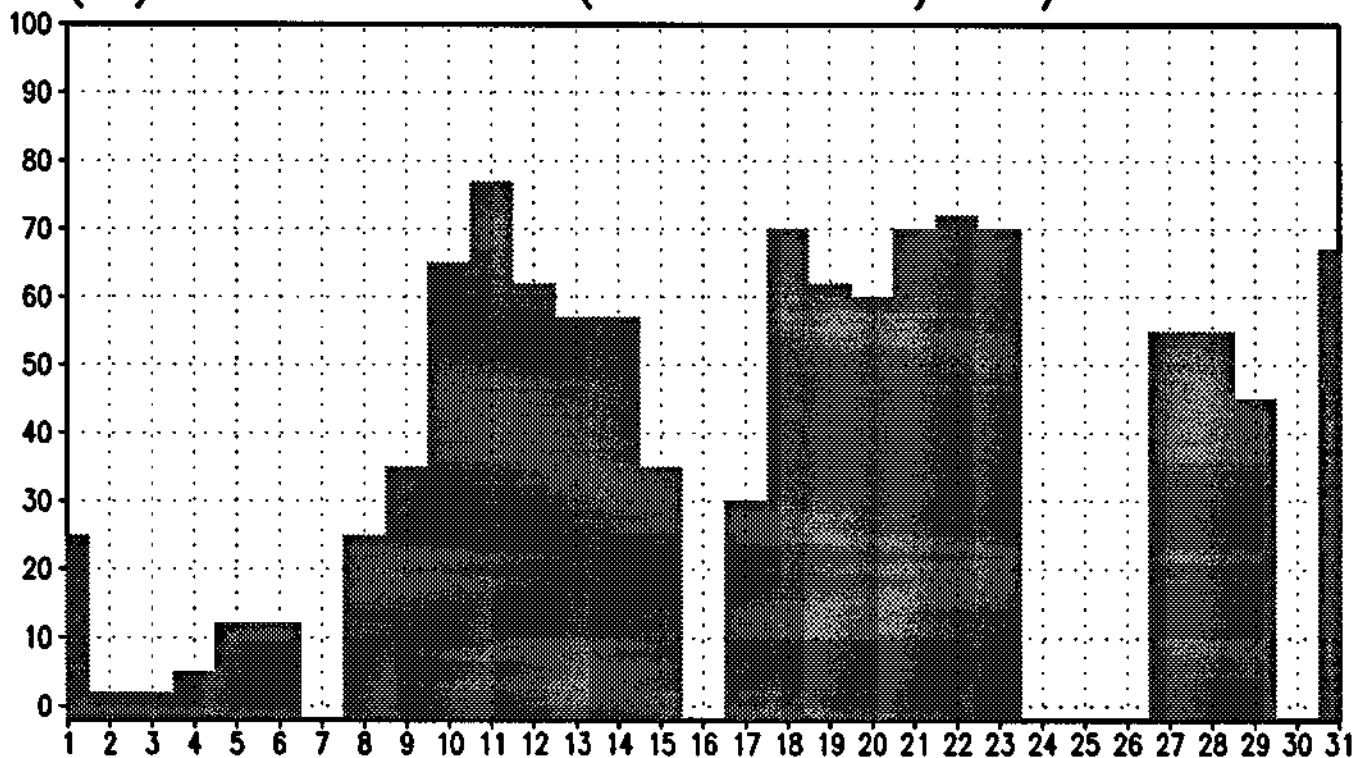
(%) DE VALORES (≥ 120 'C') 12/93 18TMG



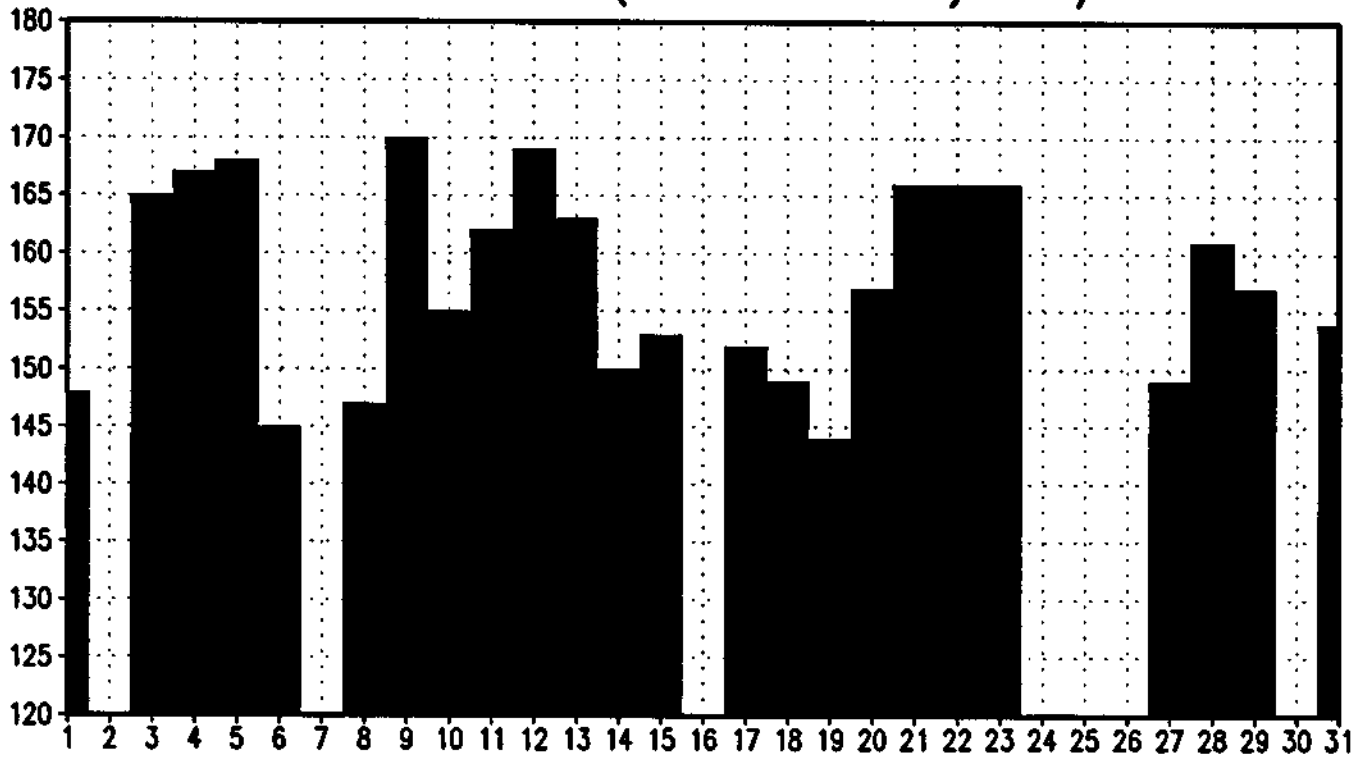
MEDIA DE VALORES (≥ 120 'D') 12/93 18TMG



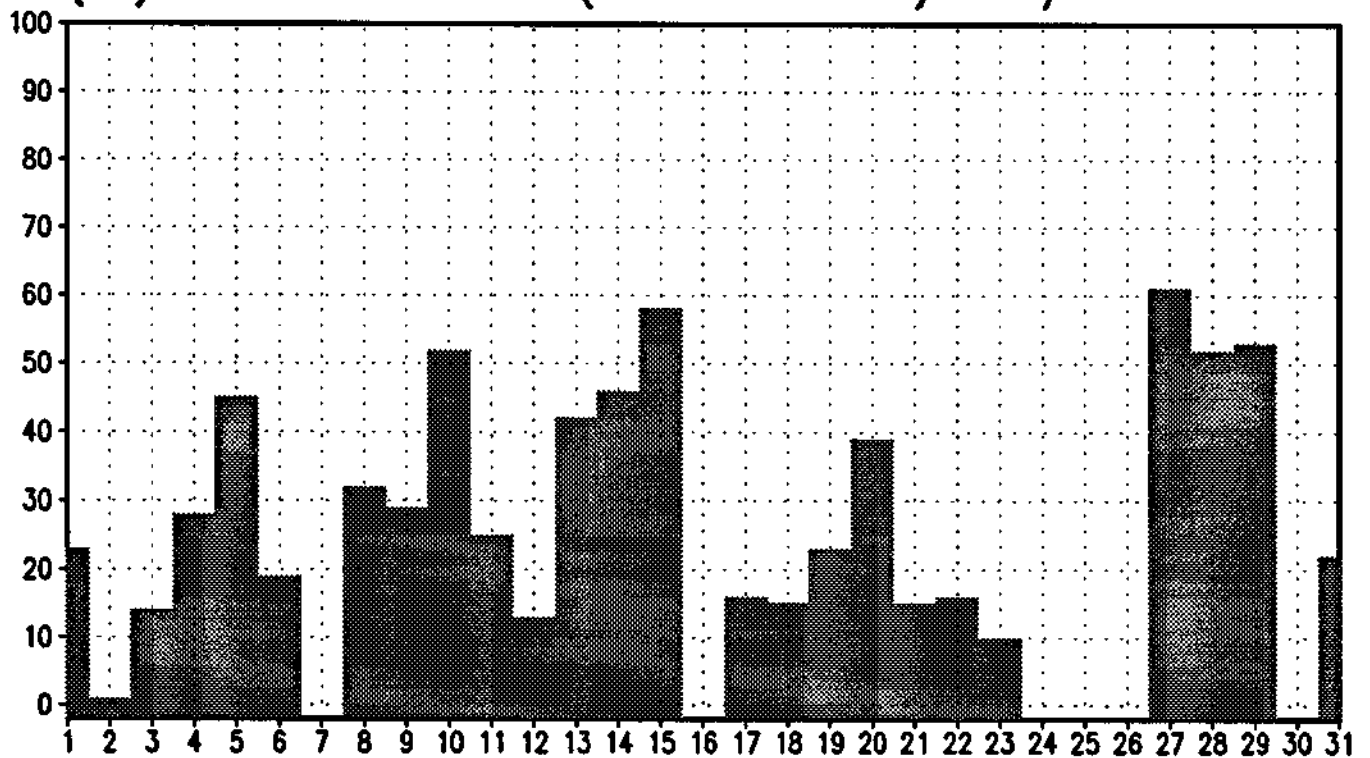
(%) DE VALORES (≥ 120 'D') 12/93 18TMG



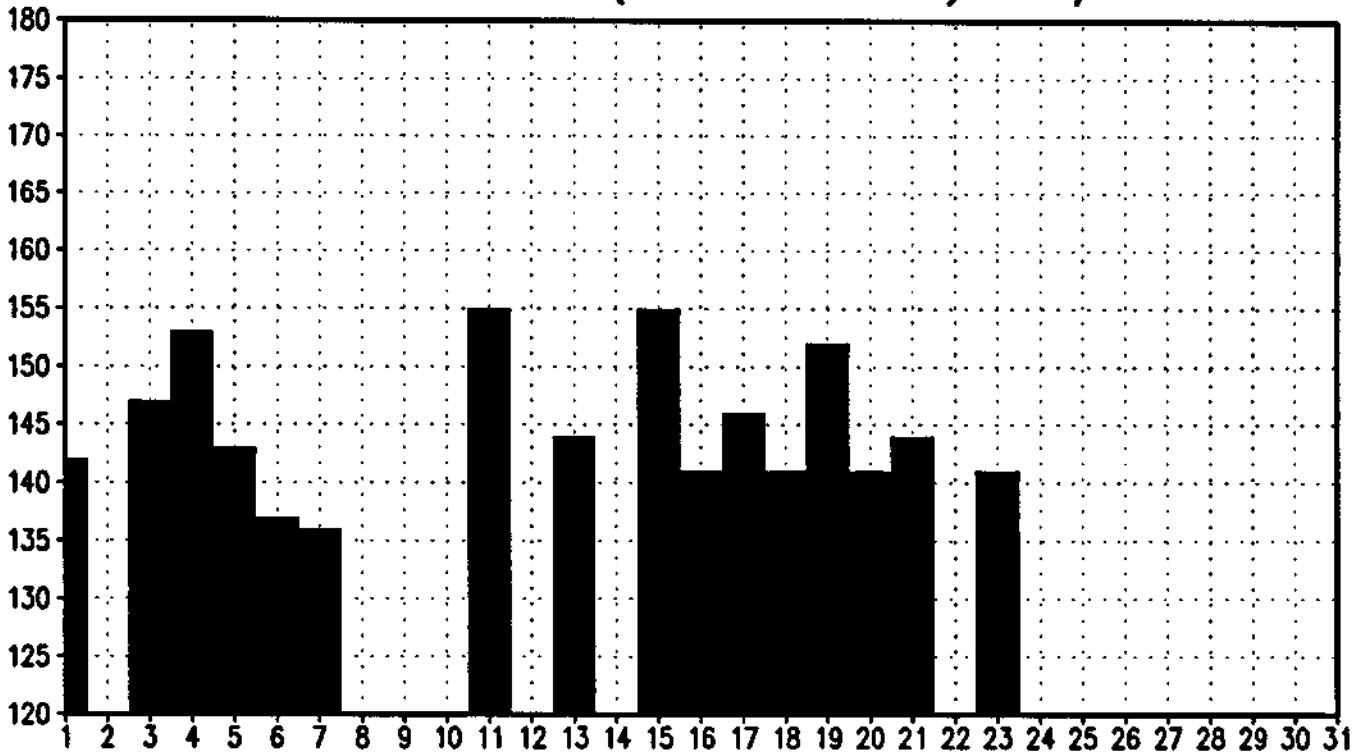
MEDIA DE VALORES (≥ 120 'E') 12/93 18TMG



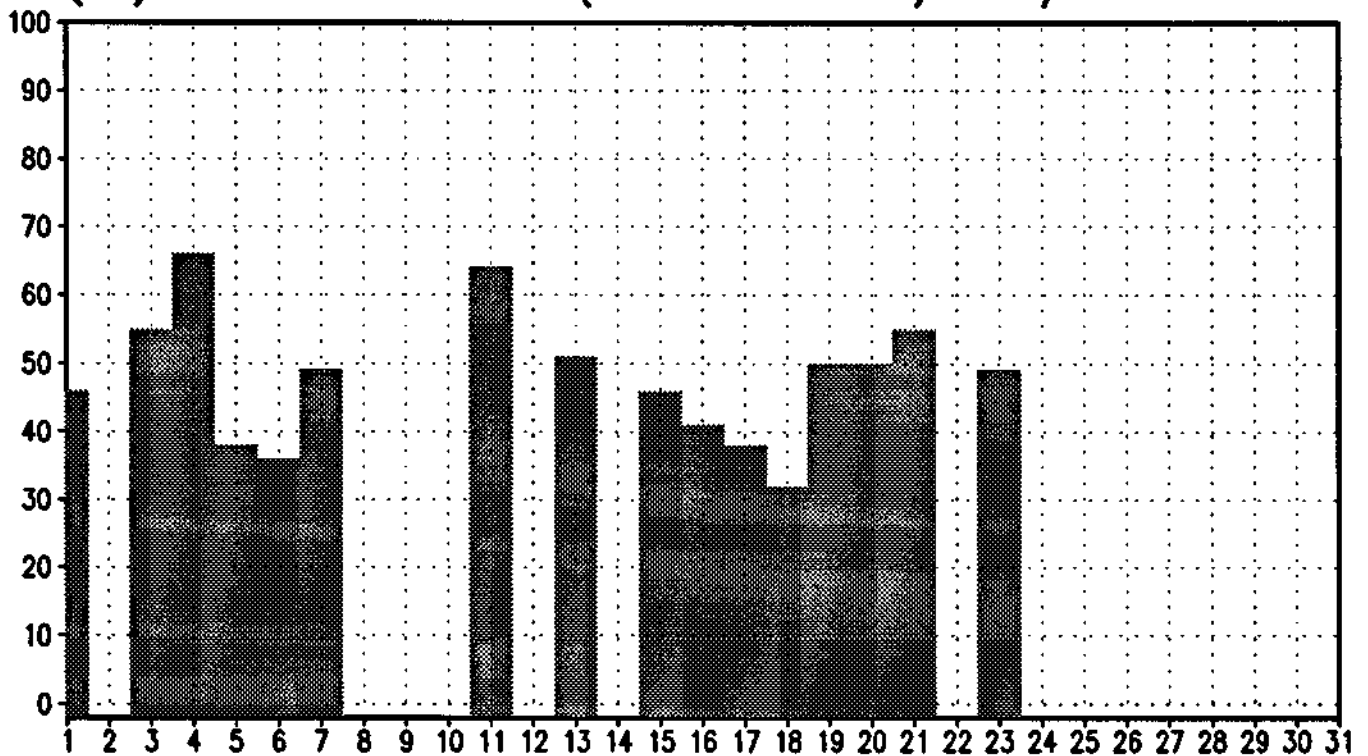
(%) DE VALORES (≥ 120 'E') 12/93 18TMG



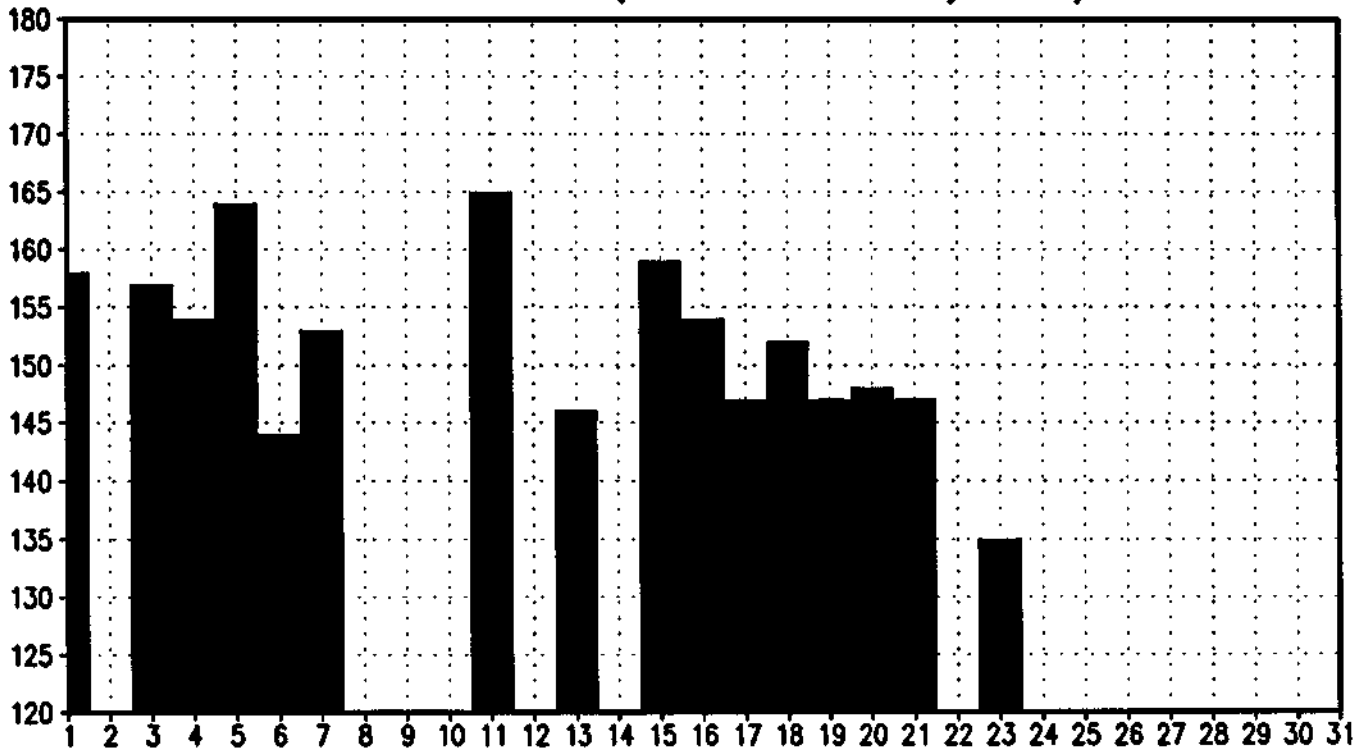
MEDIA DE VALORES (≥ 120 'A') 01/94 18TMG



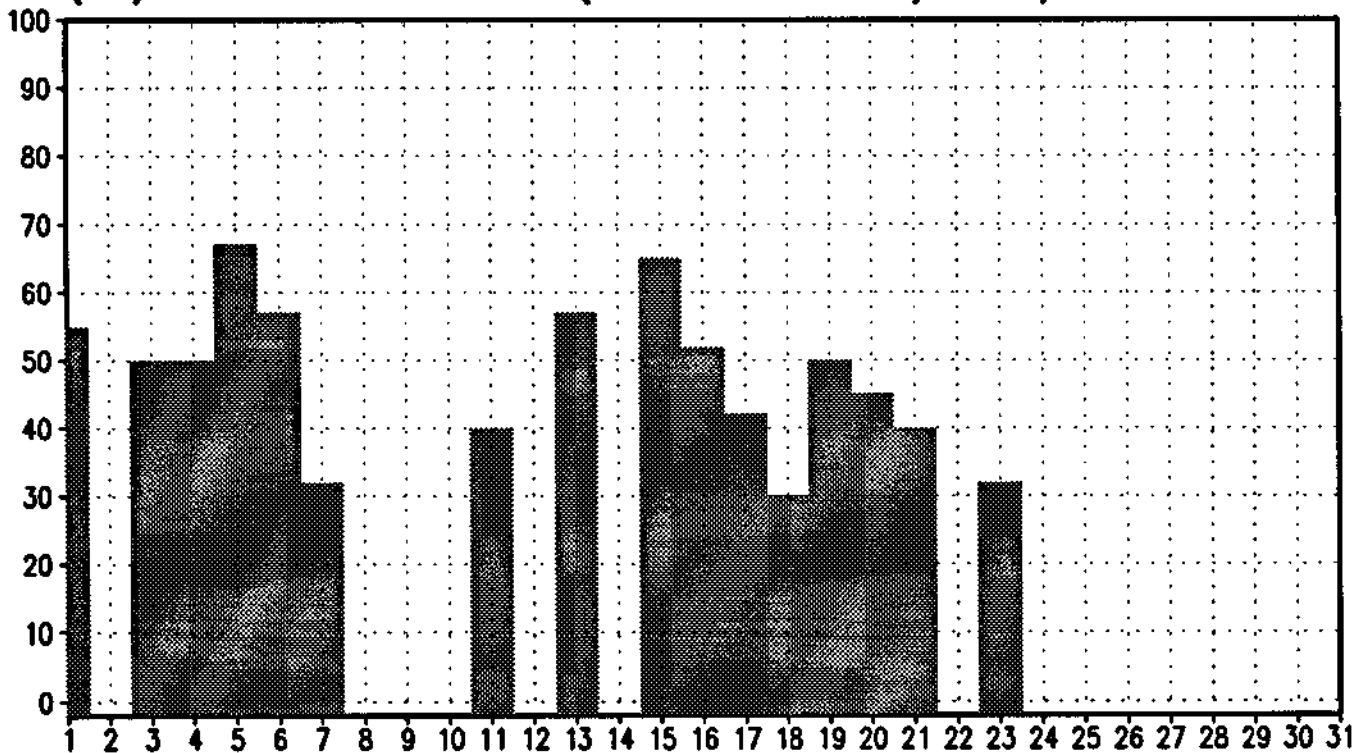
(%) DE VALORES (≥ 120 'A') 01/94 18TMG



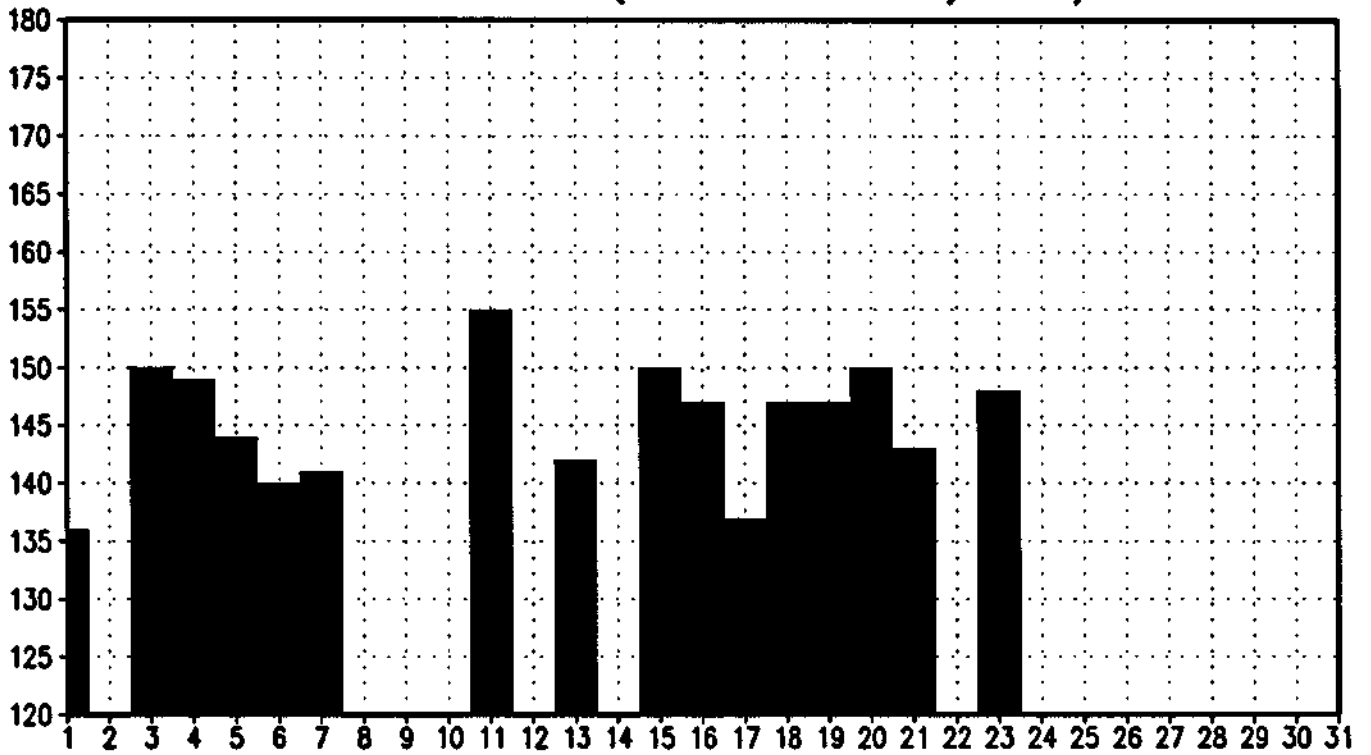
MEDIA DE VALORES (≥ 120 'B') 01/94 18TMG



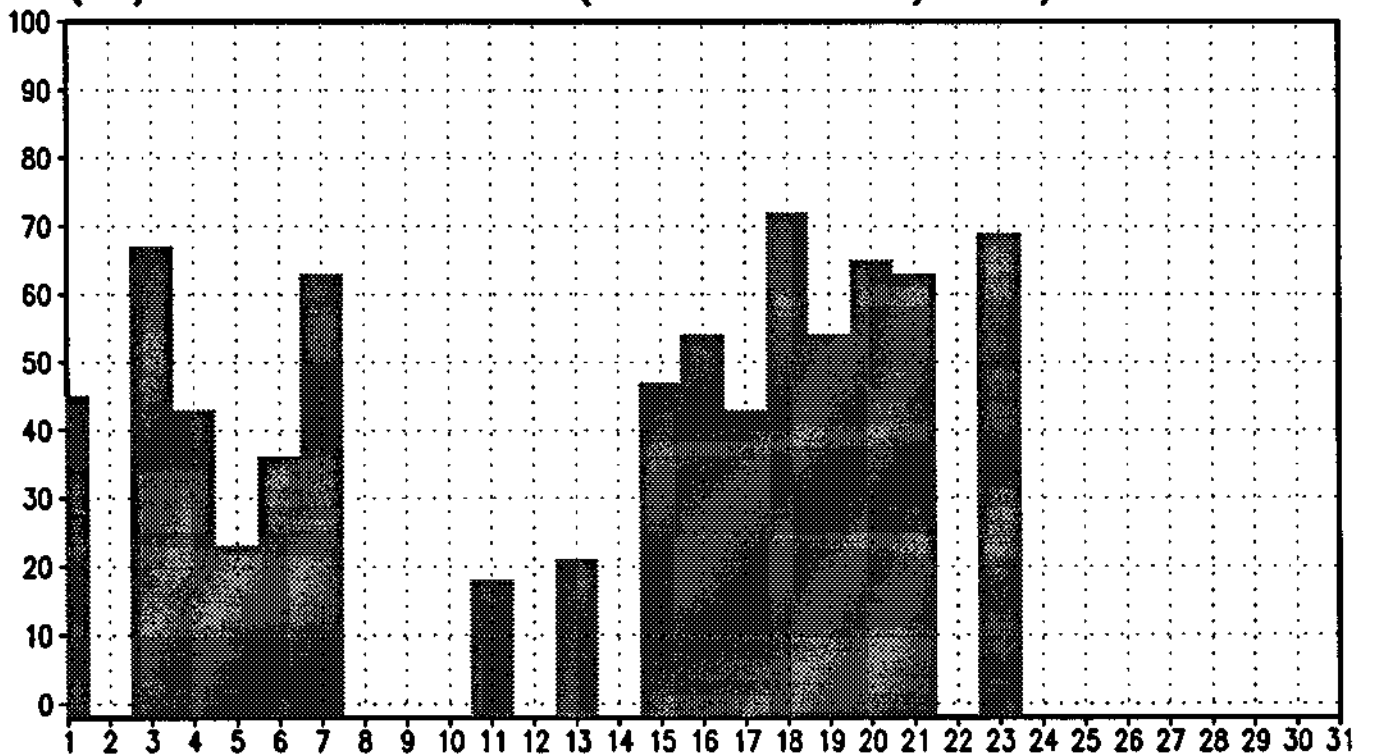
(%) DE VALORES (≥ 120 'B') 01/94 18TMG



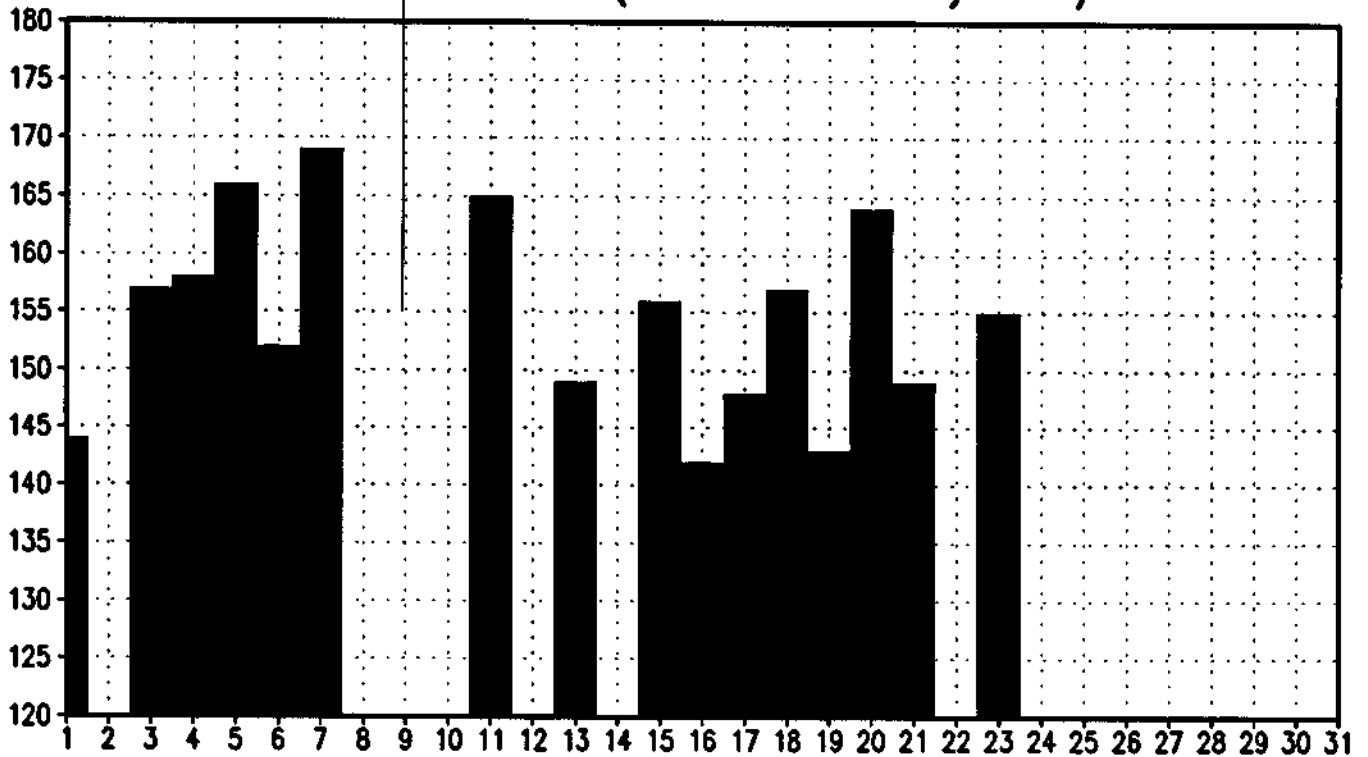
MEDIA DE VALORES (≥ 120 'C') 01/94 18TMG



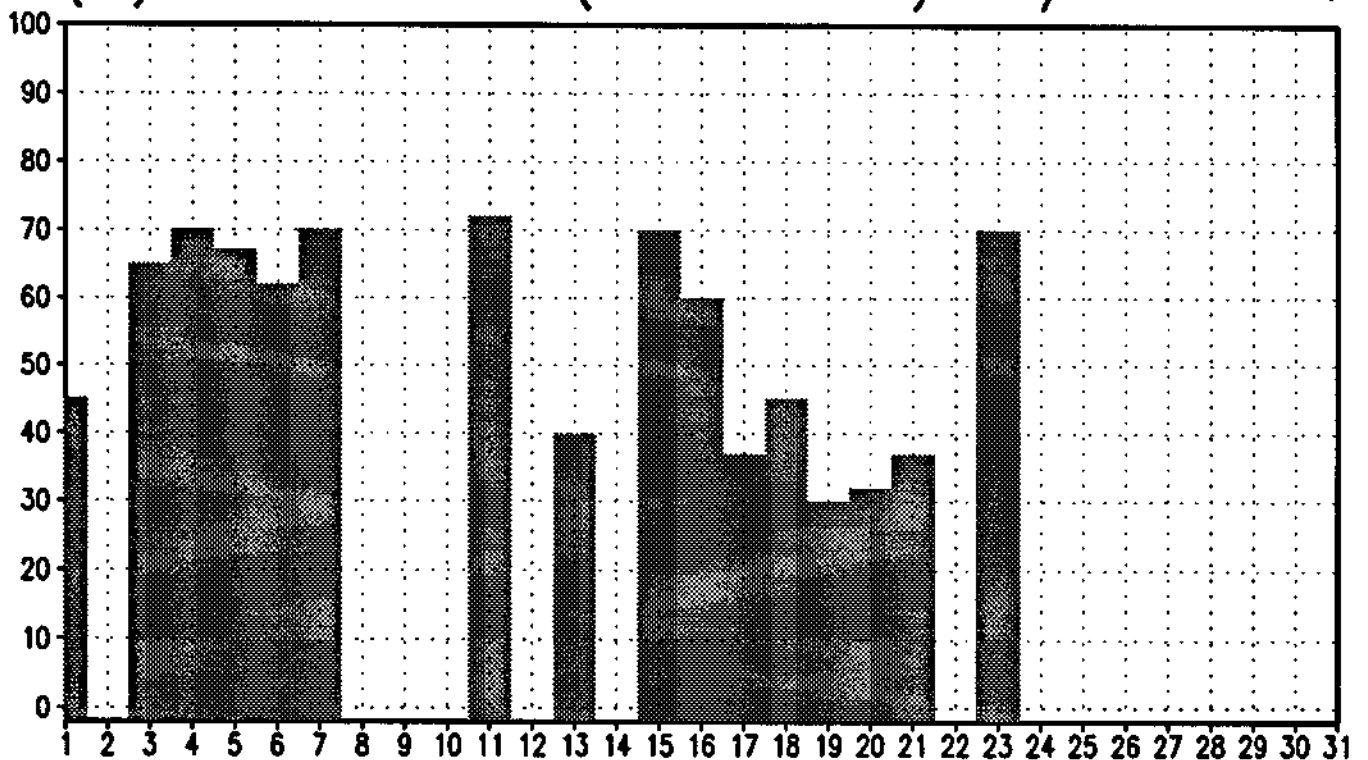
(%) DE VALORES (≥ 120 'C') 01/94 18TMG



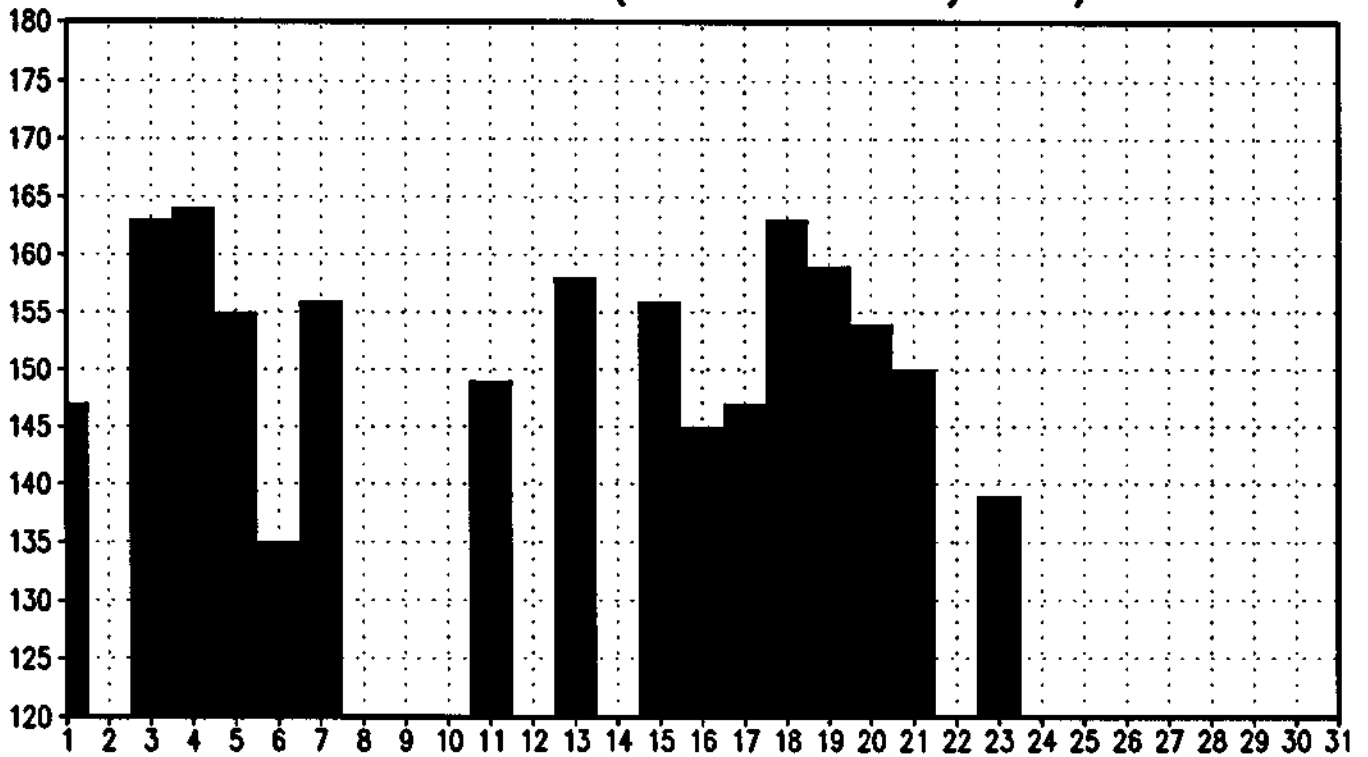
MEDIA DE VALORES (≥ 120 'D') 01/94 18TMG



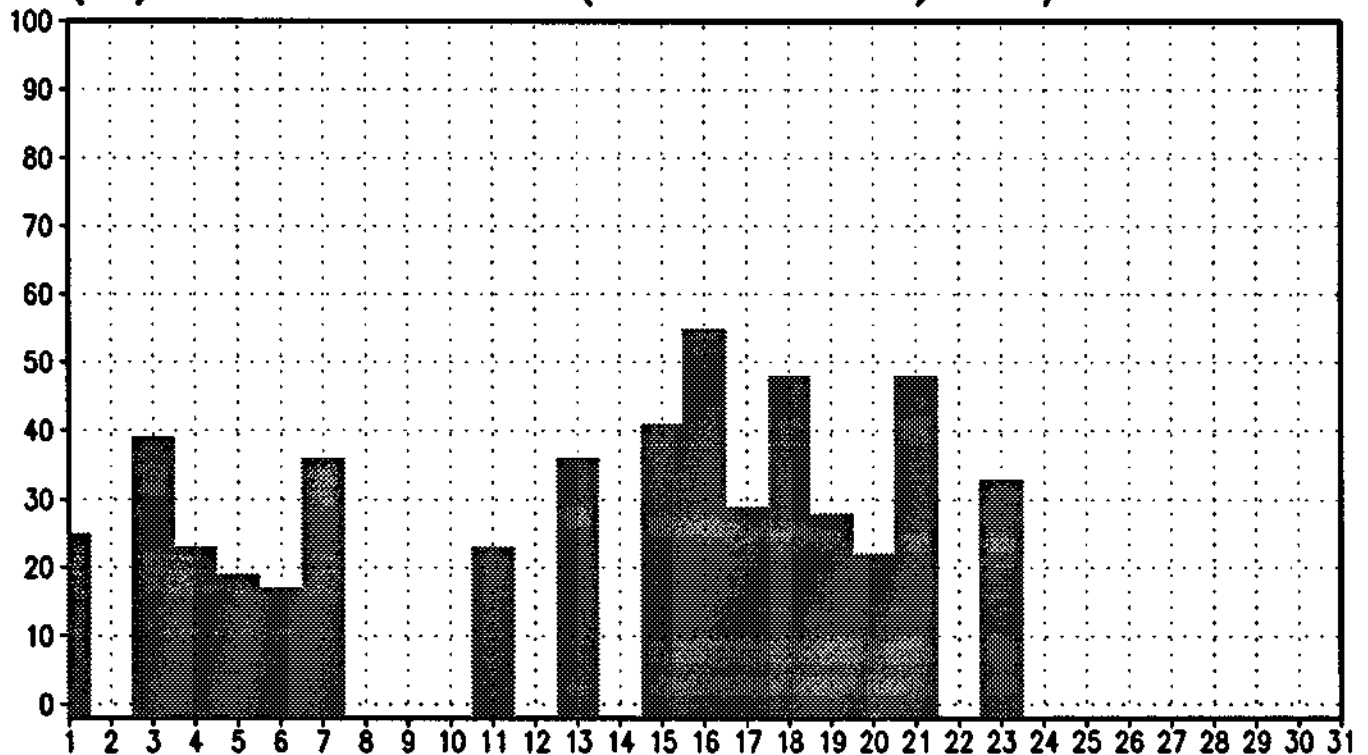
(%) DE VALORES (≥ 120 'D') 01/94 18TMG



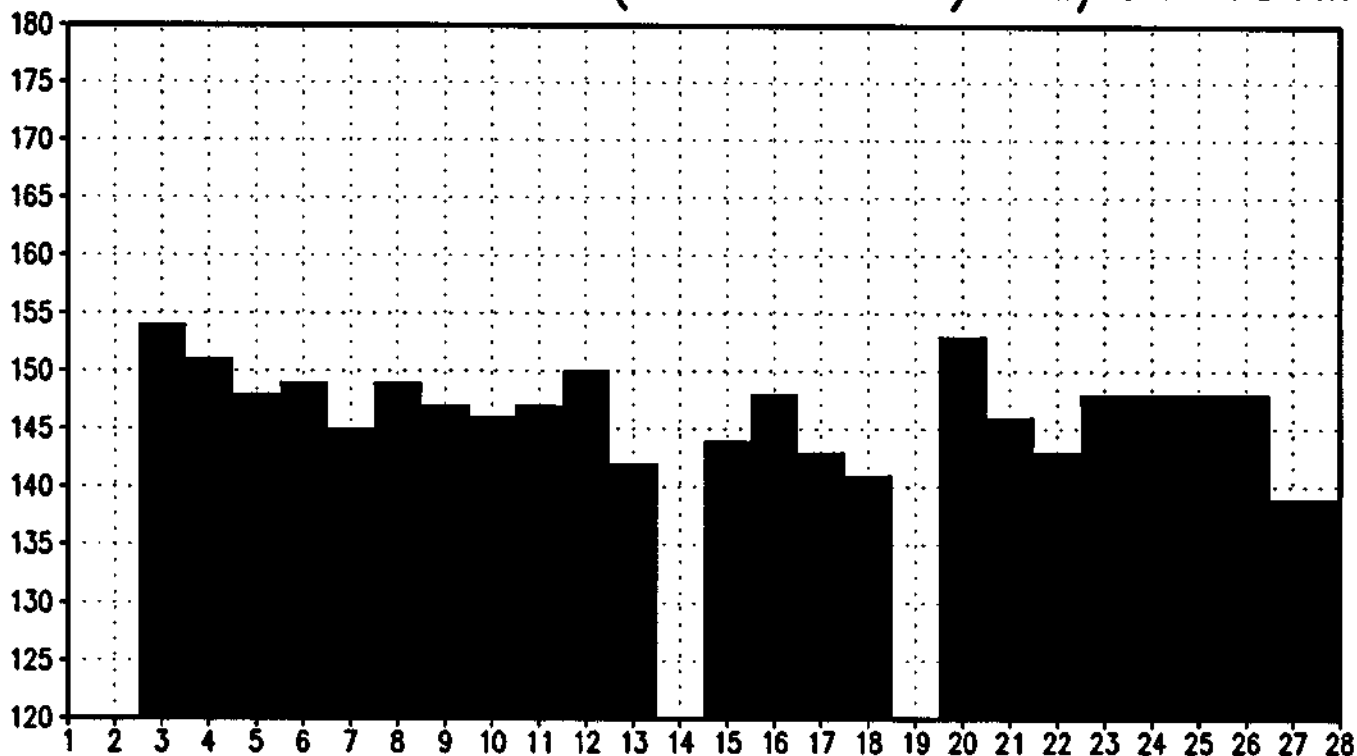
MEDIA DE VALORES (≥ 120 'E') 01/94 18TMG



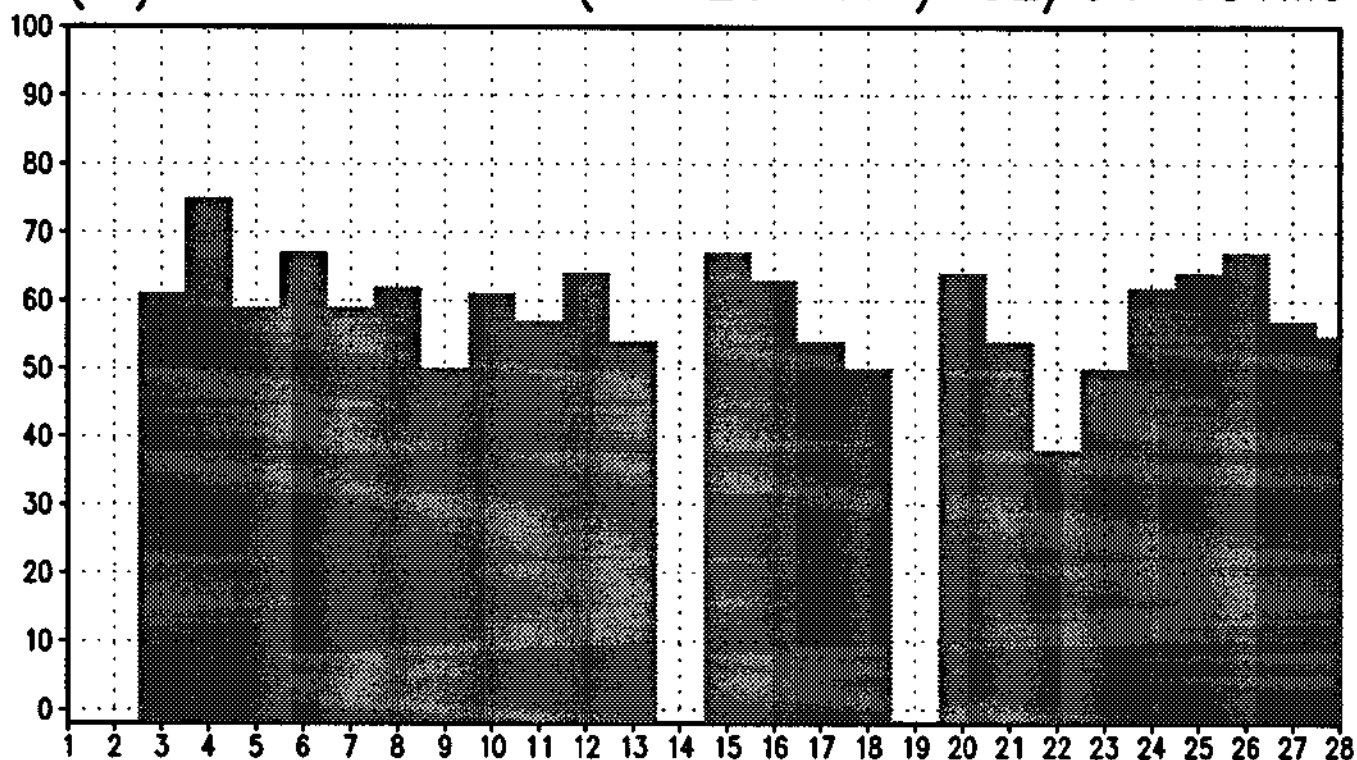
(%) DE VALORES (≥ 120 'E') 01/94 18TMG



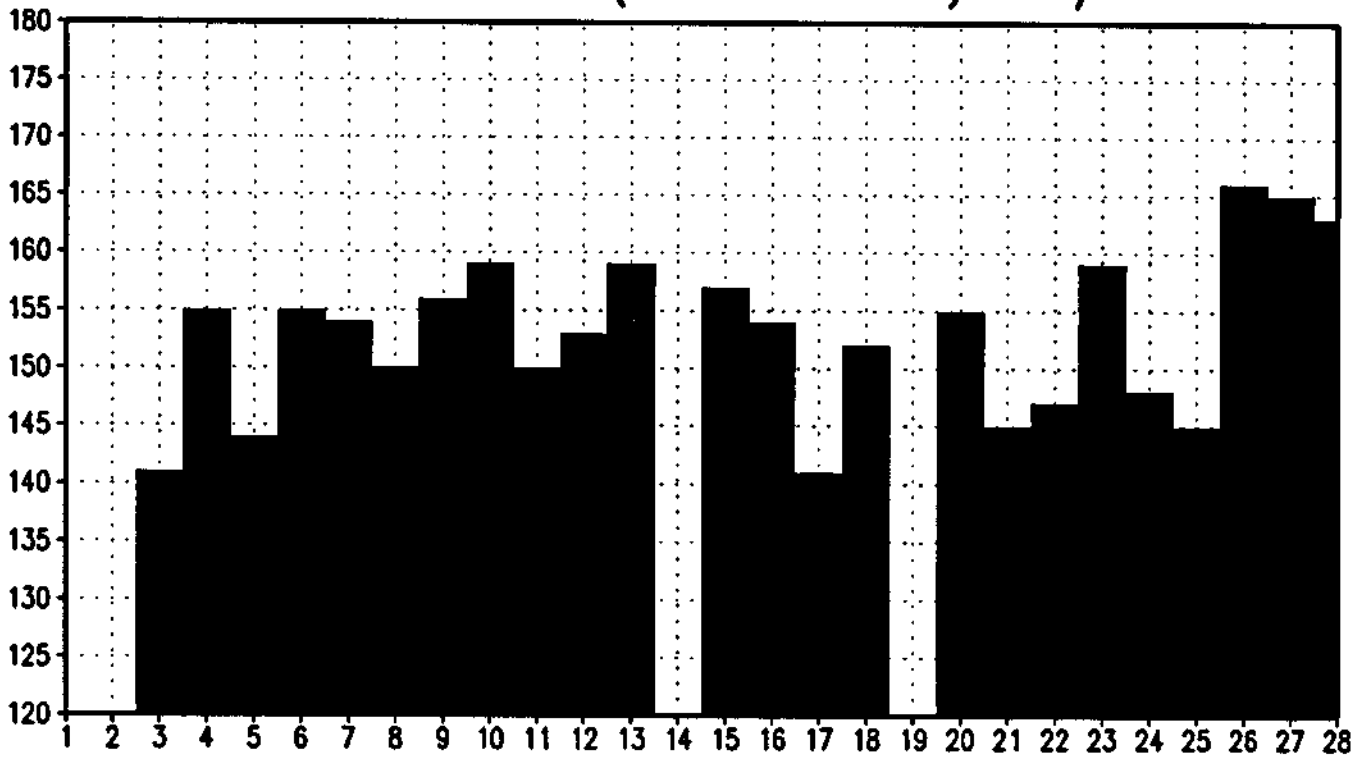
MEDIA DE VALORES (≥ 120 'A') 02/94 18TMG



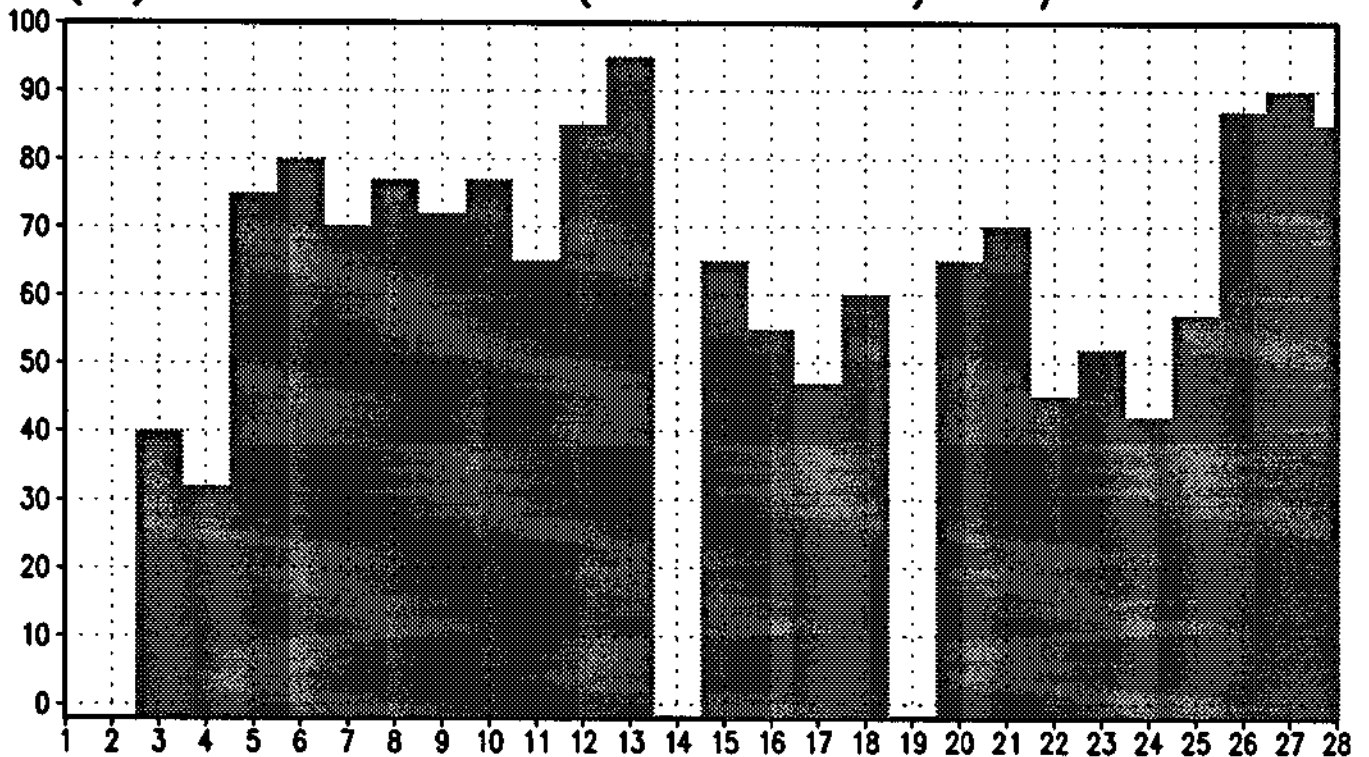
(%) DE VALORES (≥ 120 'A') 02/94 18TMG



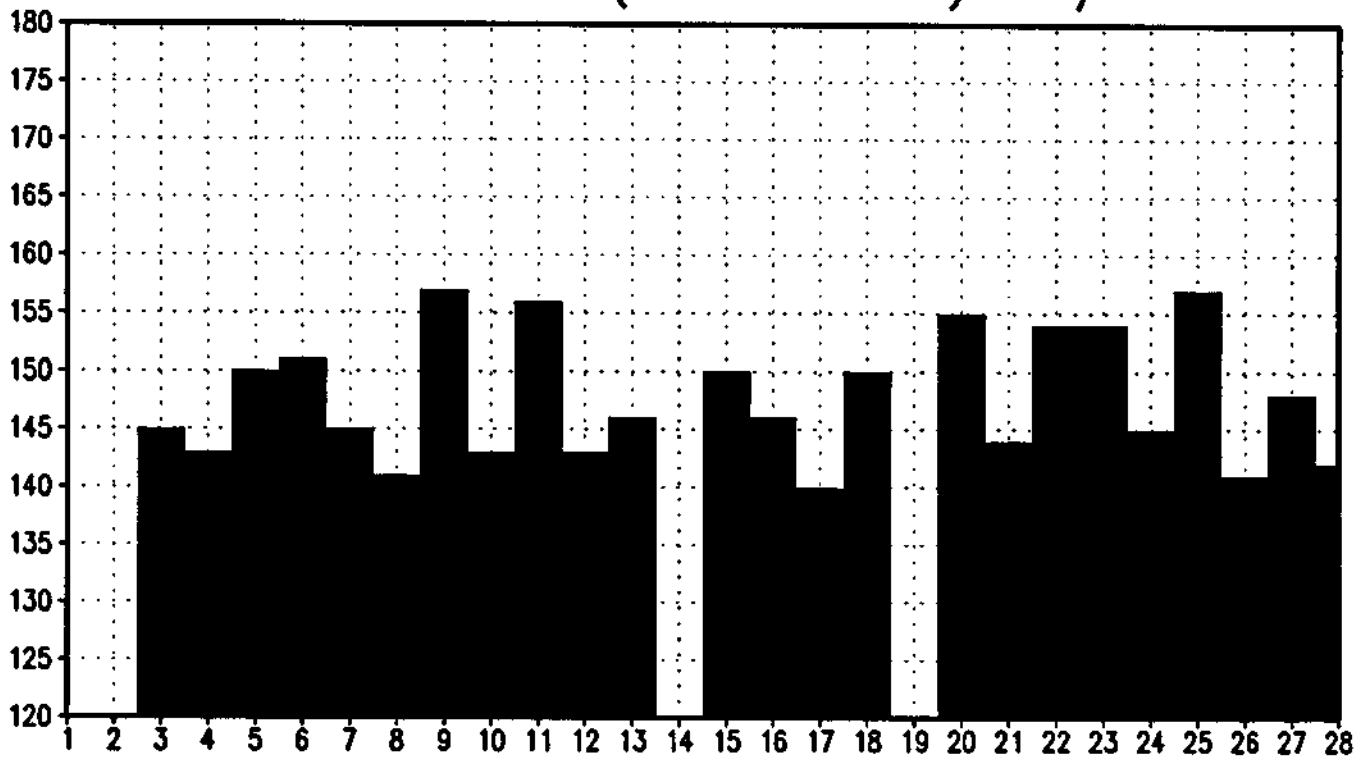
MEDIA DE VALORES (≥ 120 'B') 02/94 18TMG



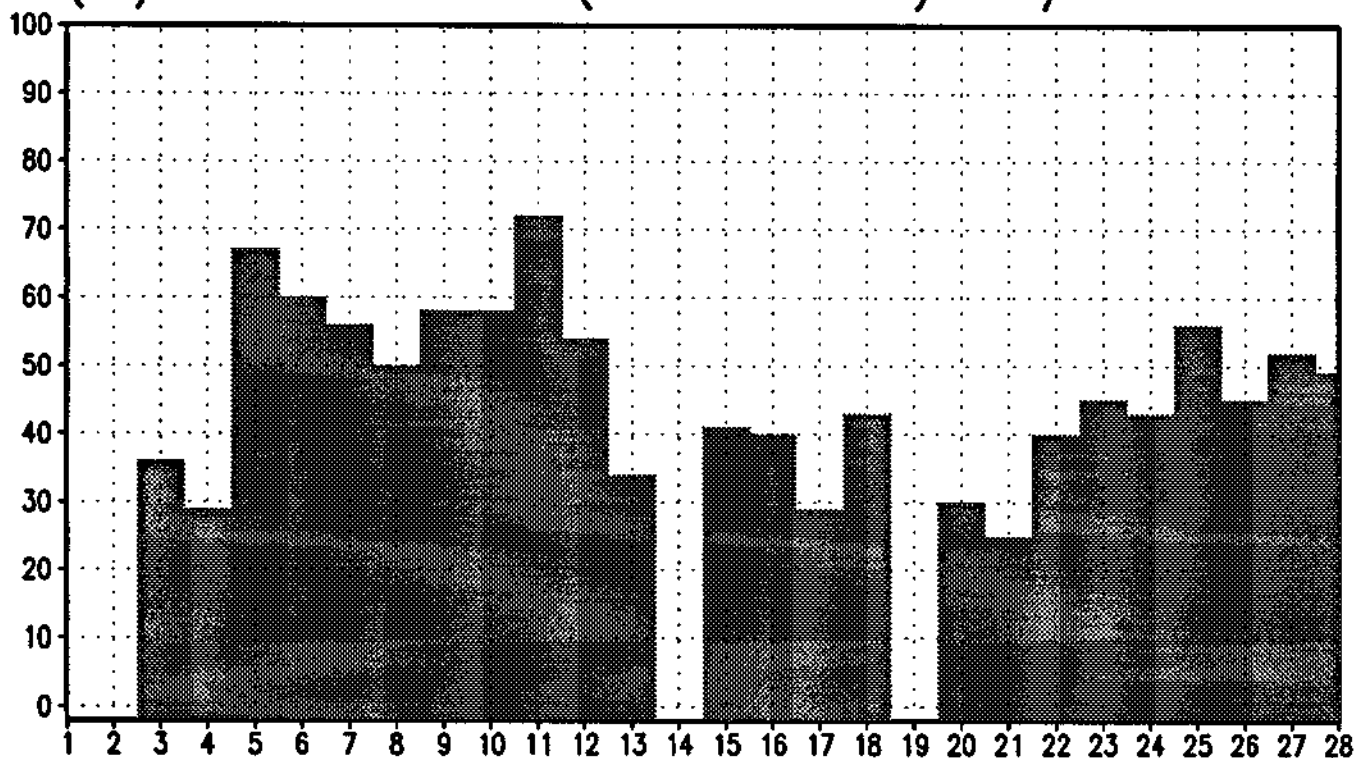
(%) DE VALORES (≥ 120 'B') 02/94 18TMG



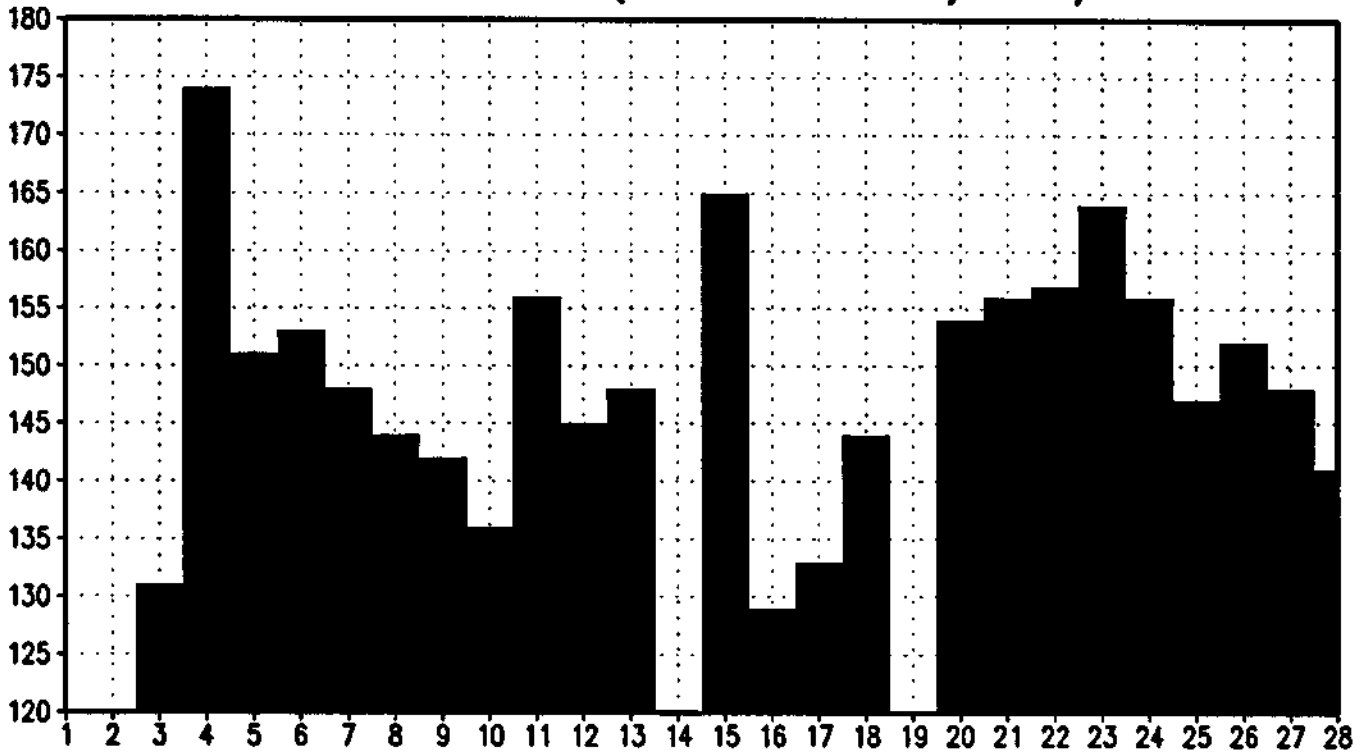
MEDIA DE VALORES (≥ 120 'C') 02/94 18TMG



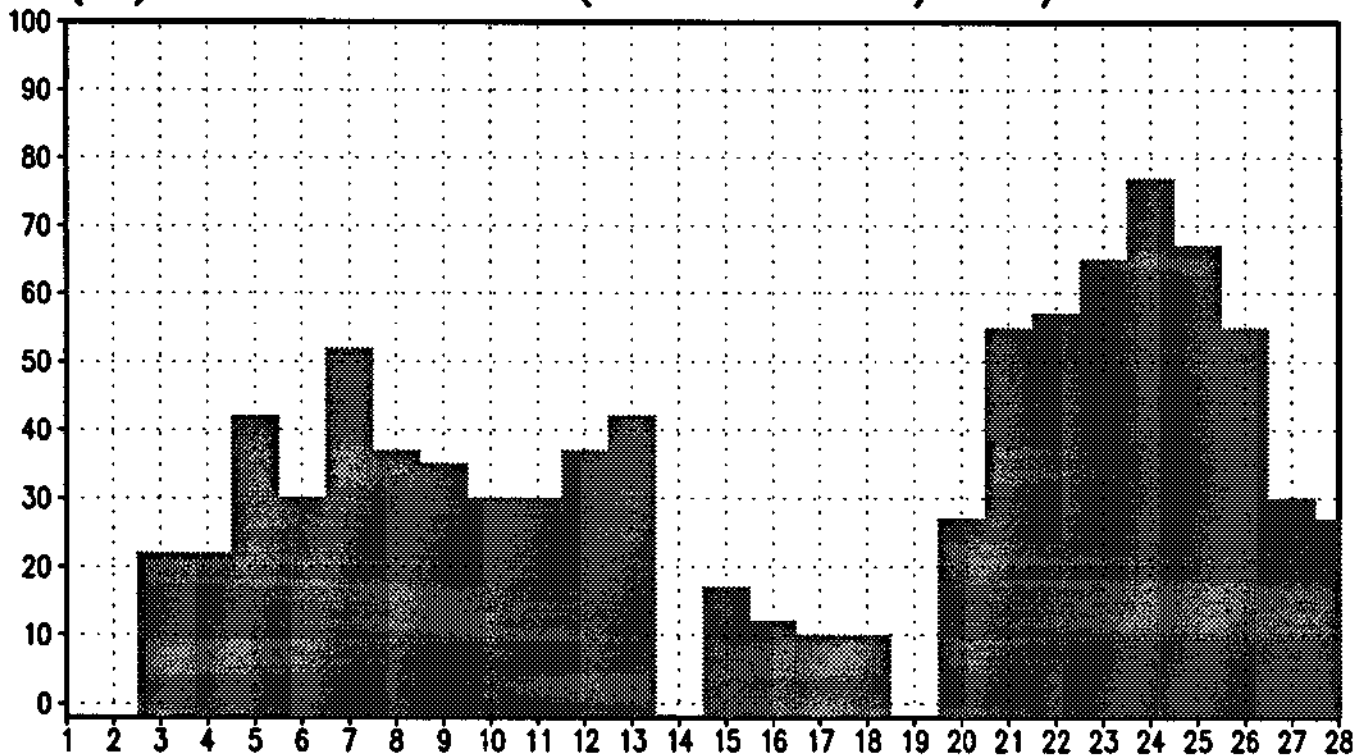
(%) DE VALORES (≥ 120 'C') 02/94 18TMG



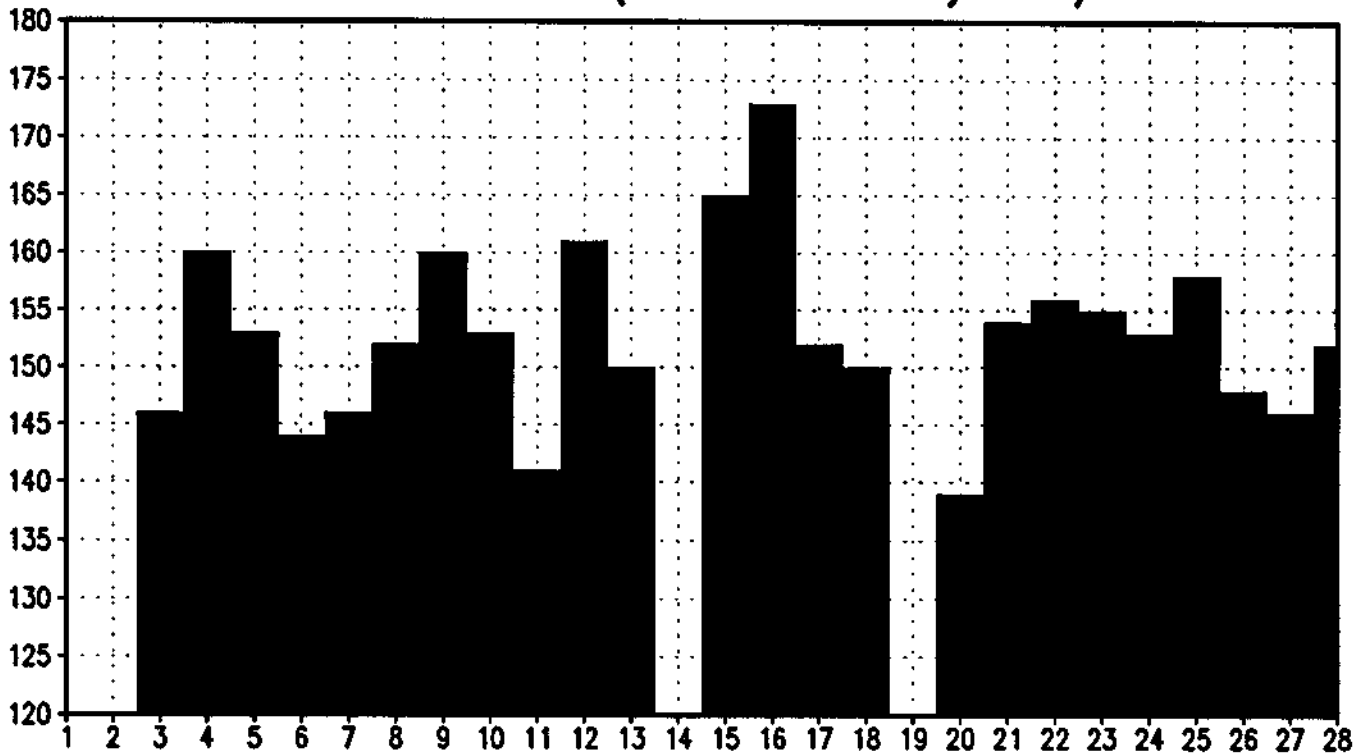
MEDIA DE VALORES (≥ 120 'D') 02/94 18TMG



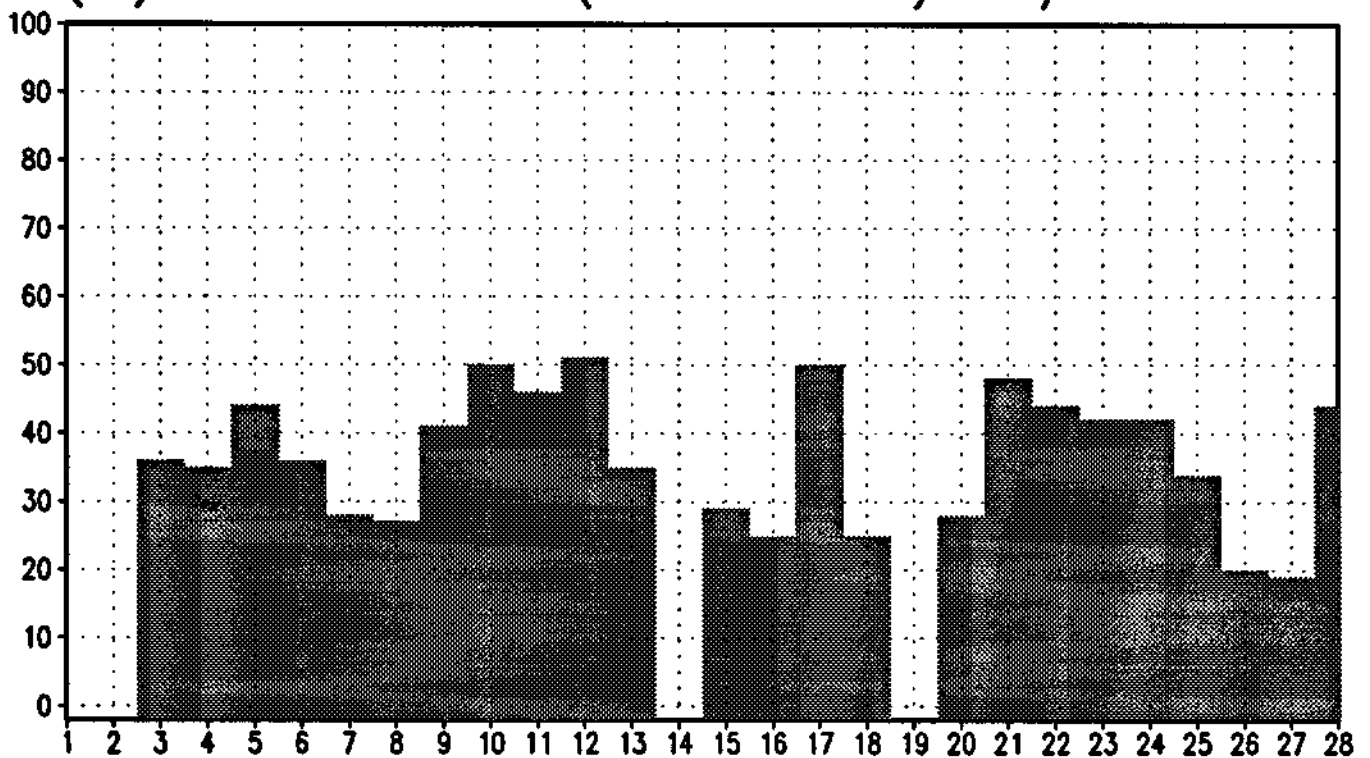
(%) DE VALORES (≥ 120 'D') 02/94 18TMG



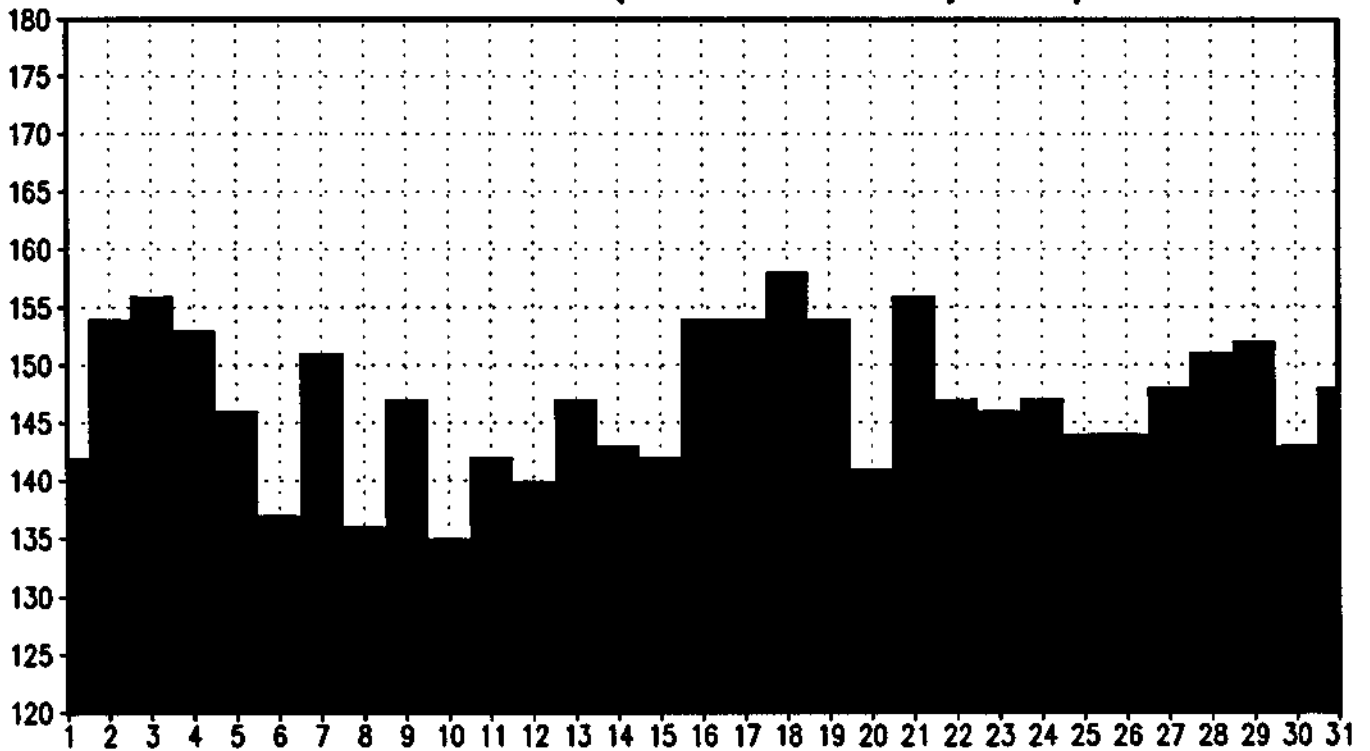
MEDIA DE VALORES (≥ 120 'E') 02/94 18TMG



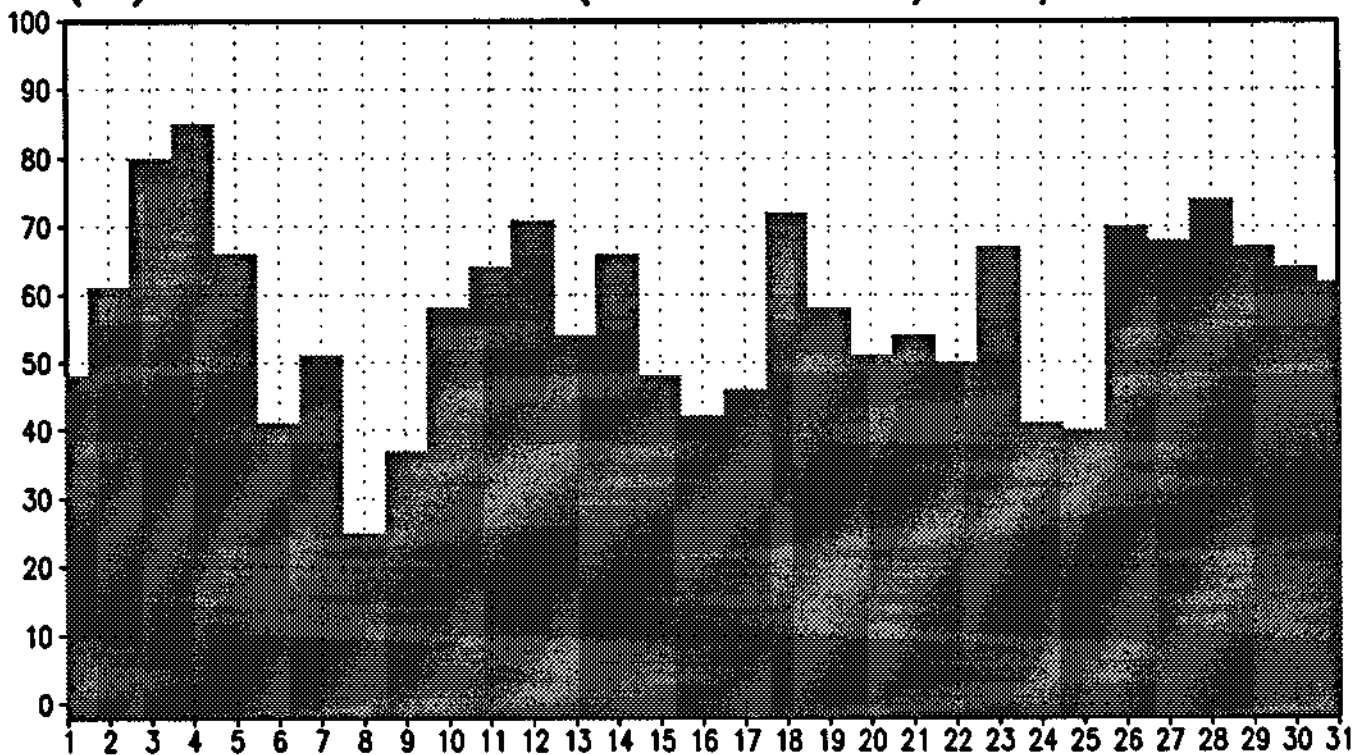
(%) DE VALORES (≥ 120 'E') 02/94 18TMG



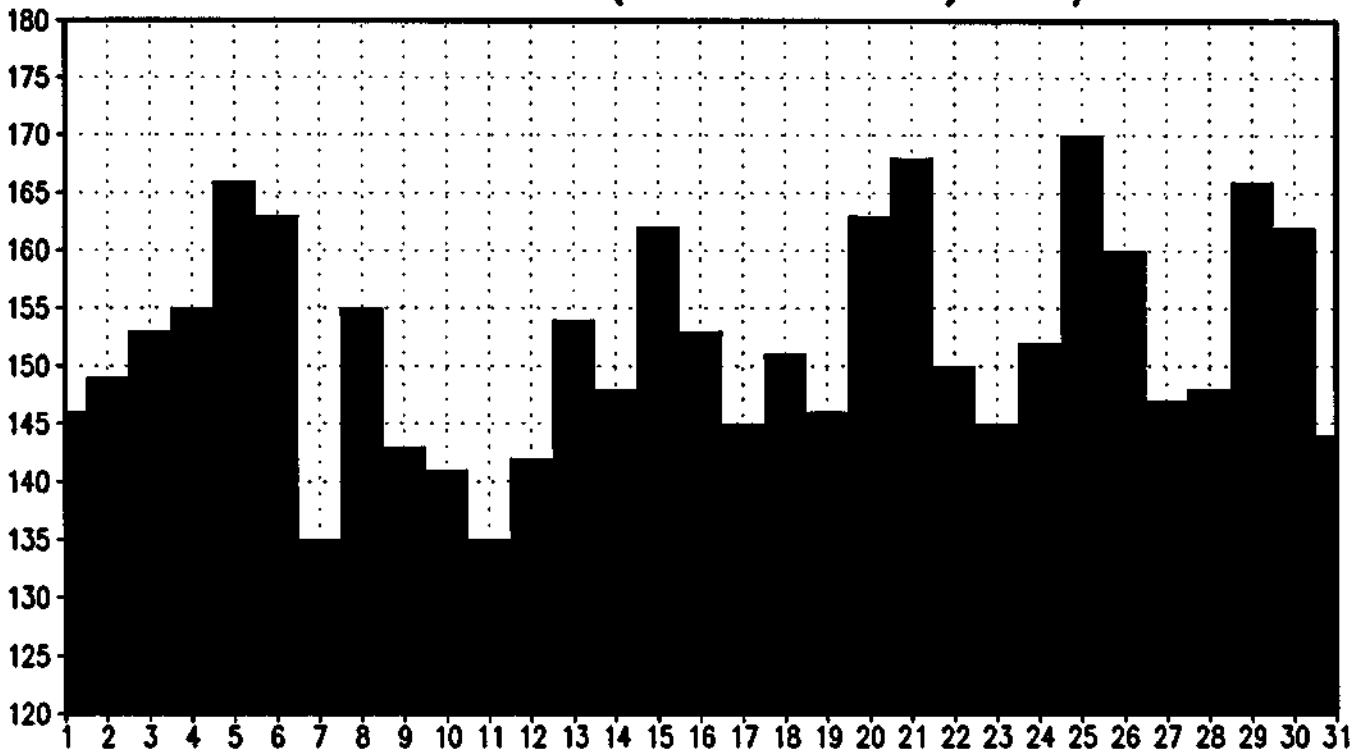
MEDIA DE VALORES (≥ 120 'A') 03/94 18TMG



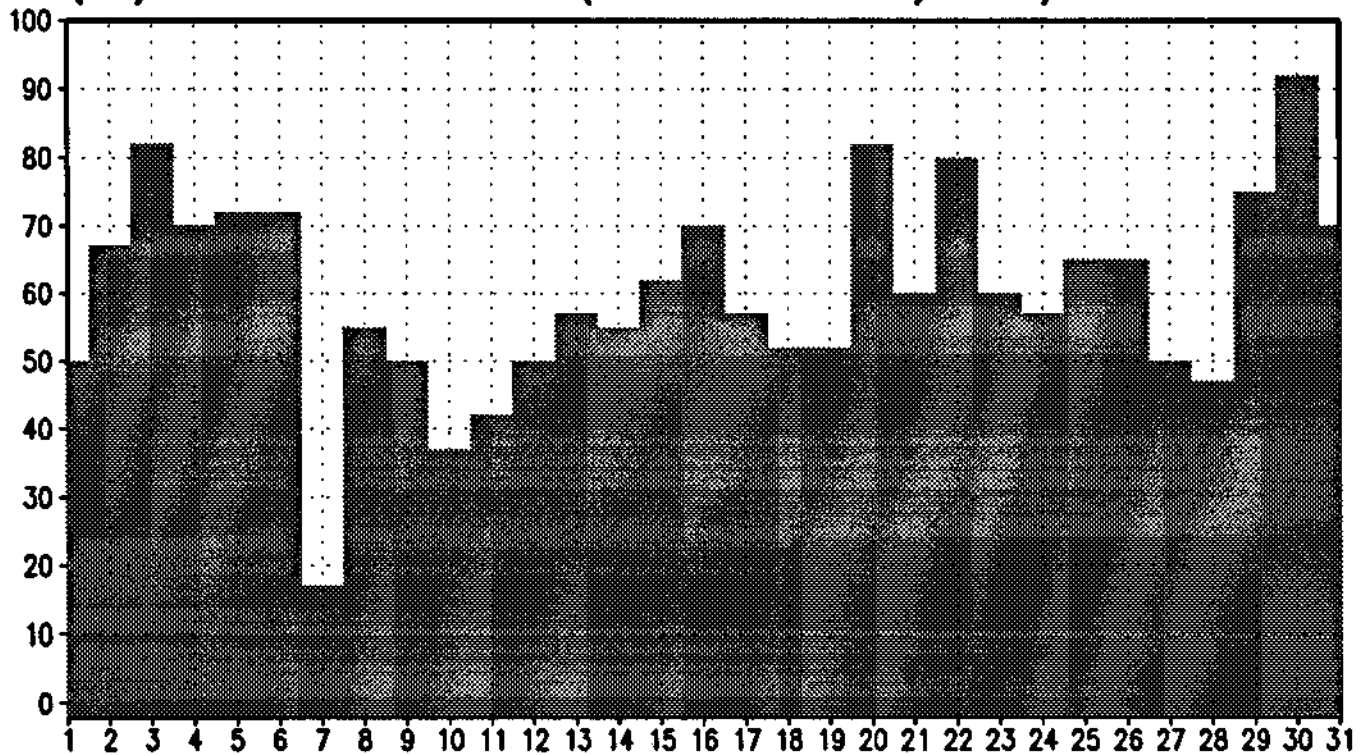
(%) DE VALORES (≥ 120 'A') 03/94 18TMG



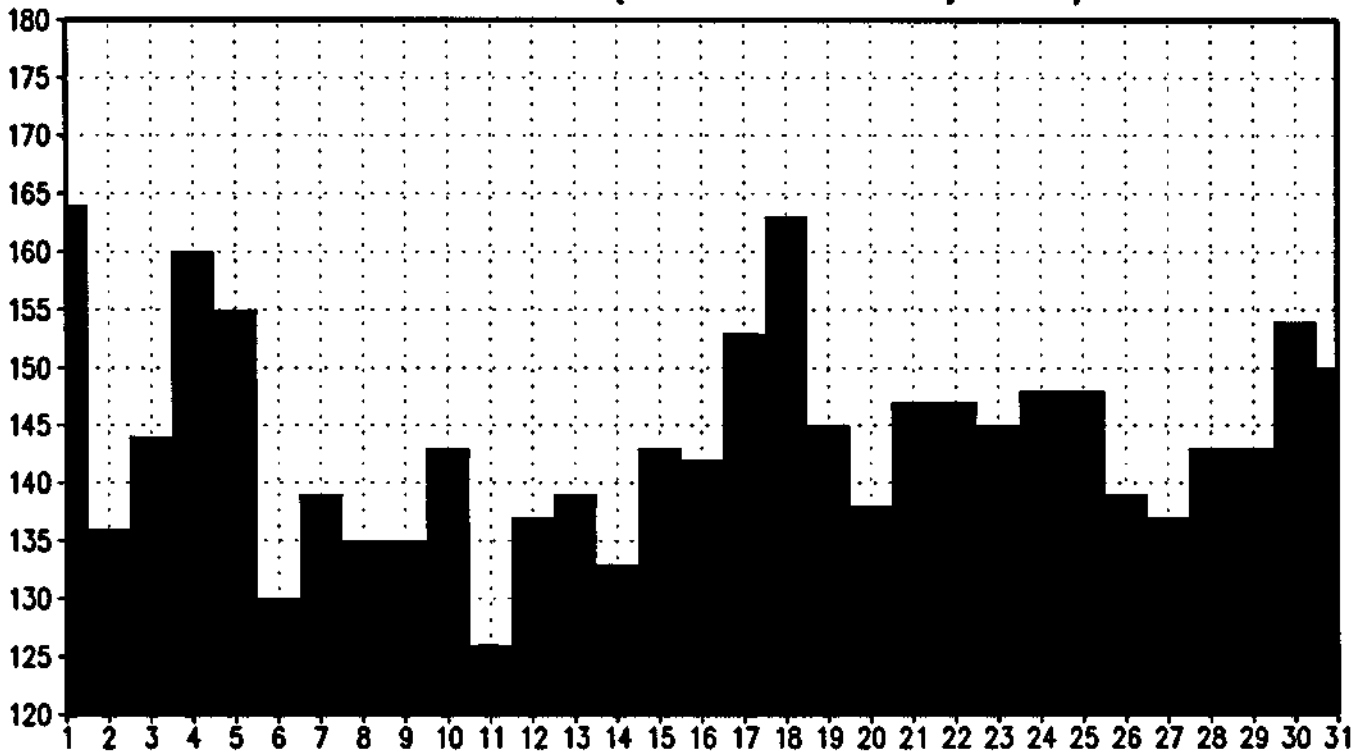
MEDIA DE VALORES (≥ 120 'B') 03/94 18TMG



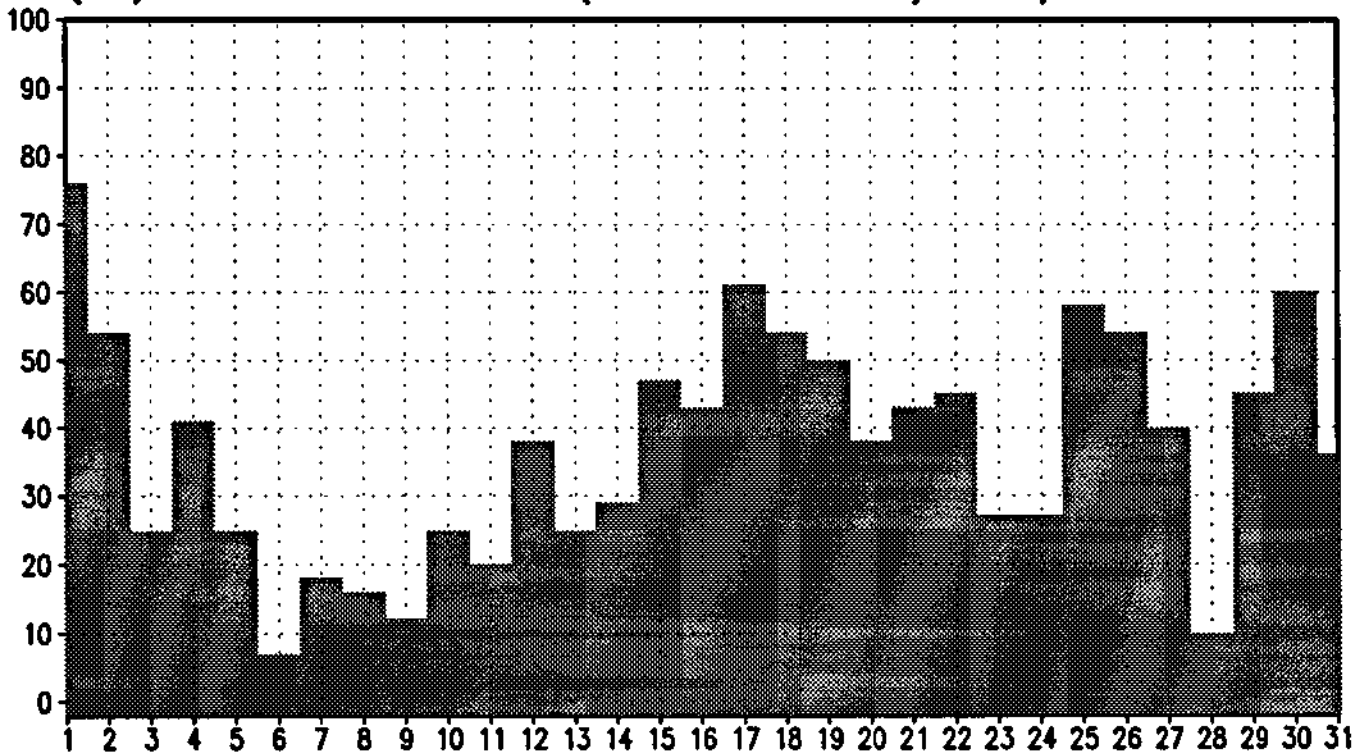
(%) DE VALORES (≥ 120 'B') 03/94 18TMG



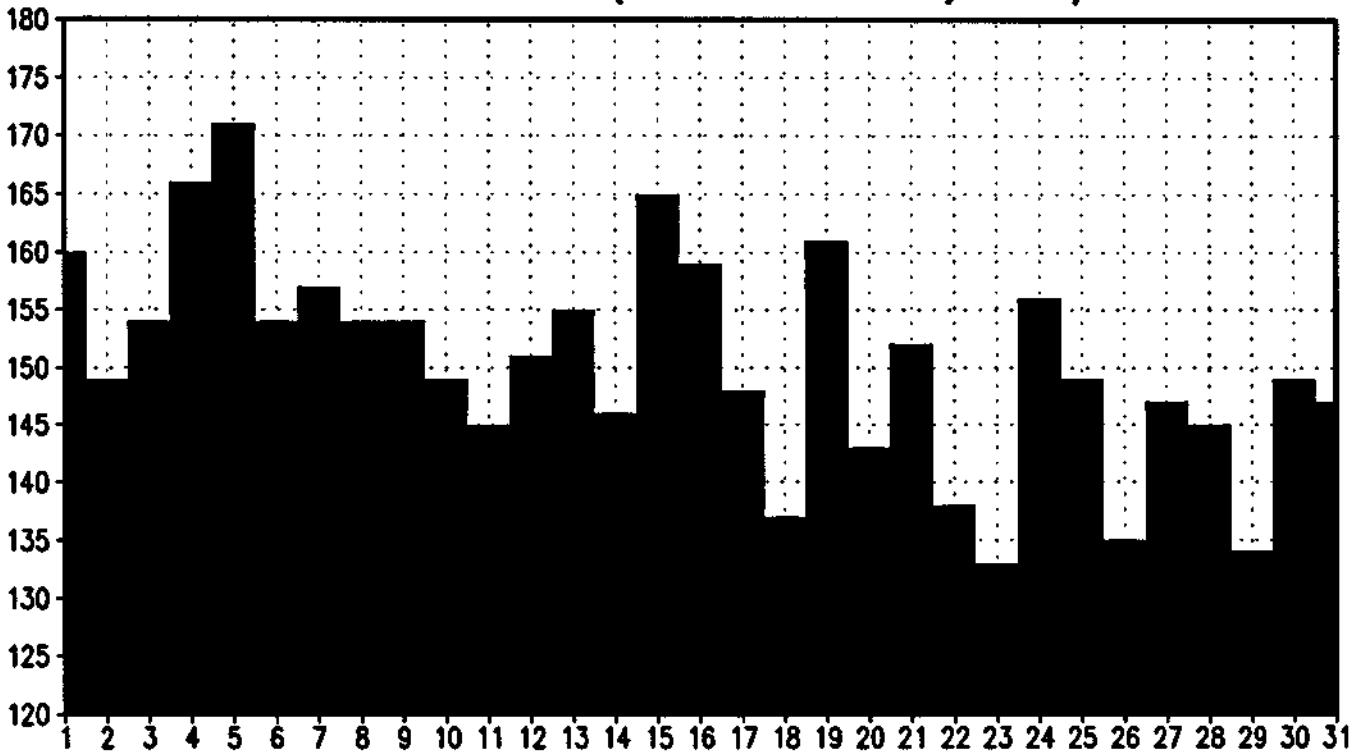
MEDIA DE VALORES (≥ 120 'C') 03/94 18TMG



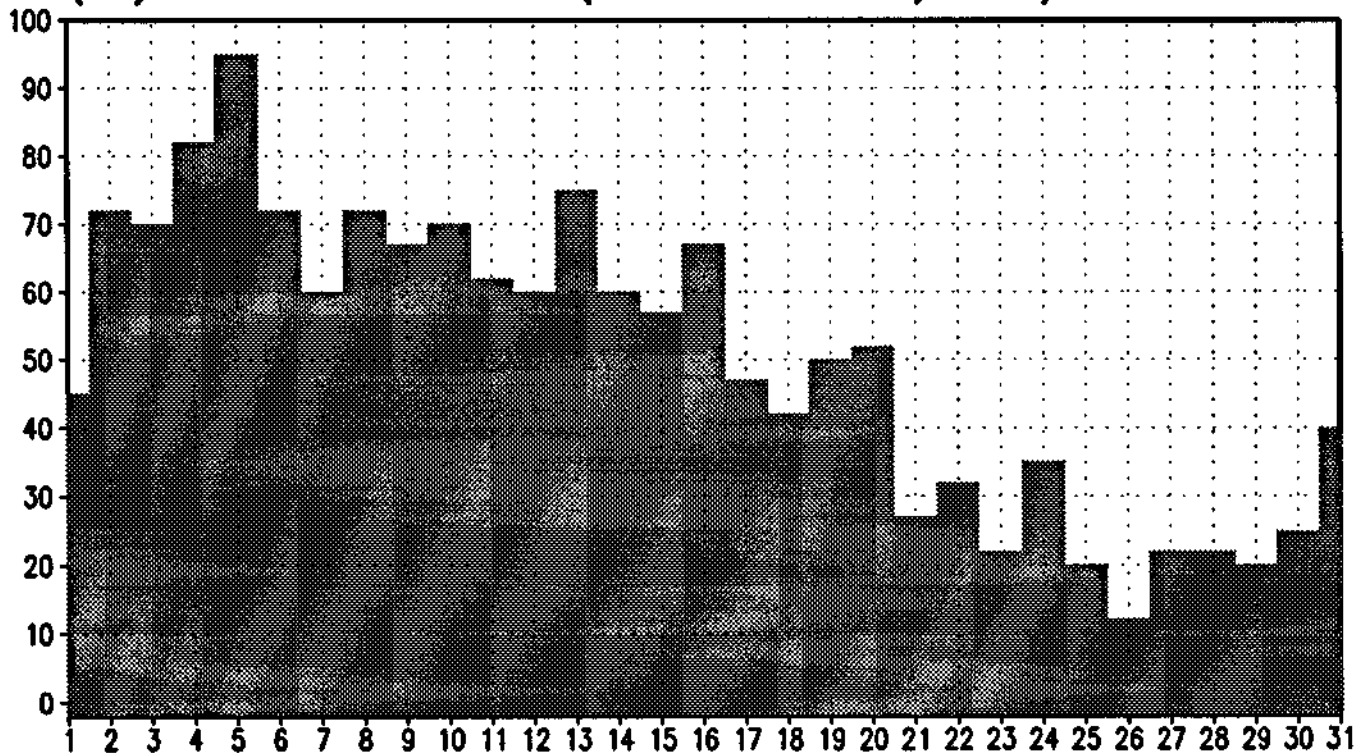
(%) DE VALORES (≥ 120 'C') 03/94 18TMG



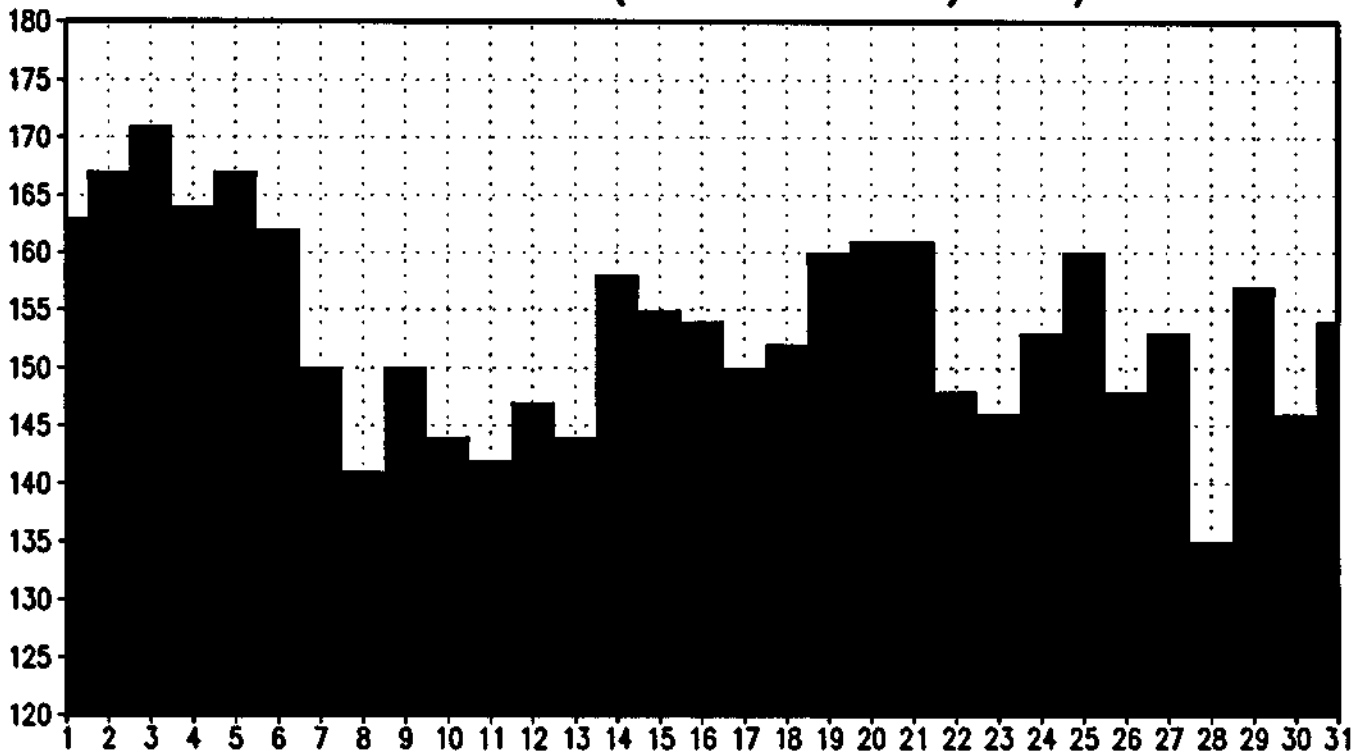
MEDIA DE VALORES (≥ 120 'D') 03/94 18TMG



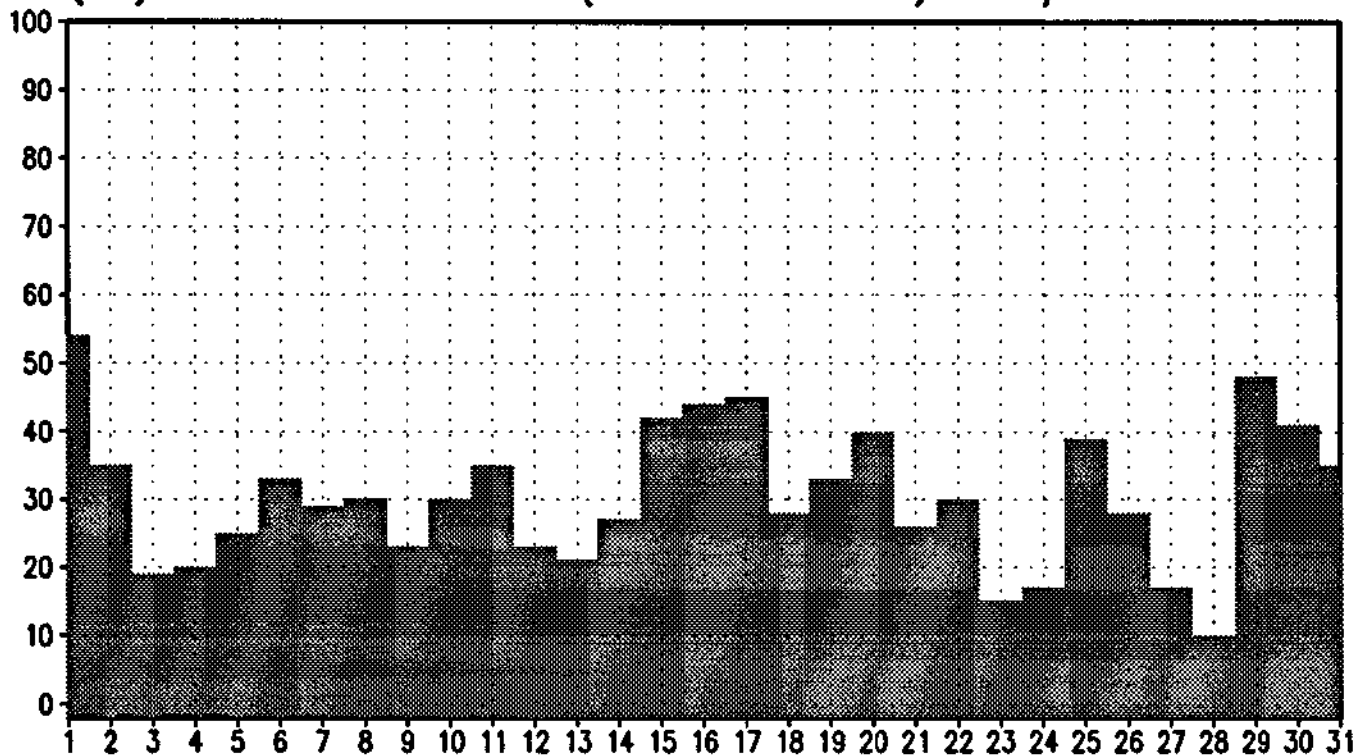
(%) DE VALORES (≥ 120 'D') 03/94 18TMG



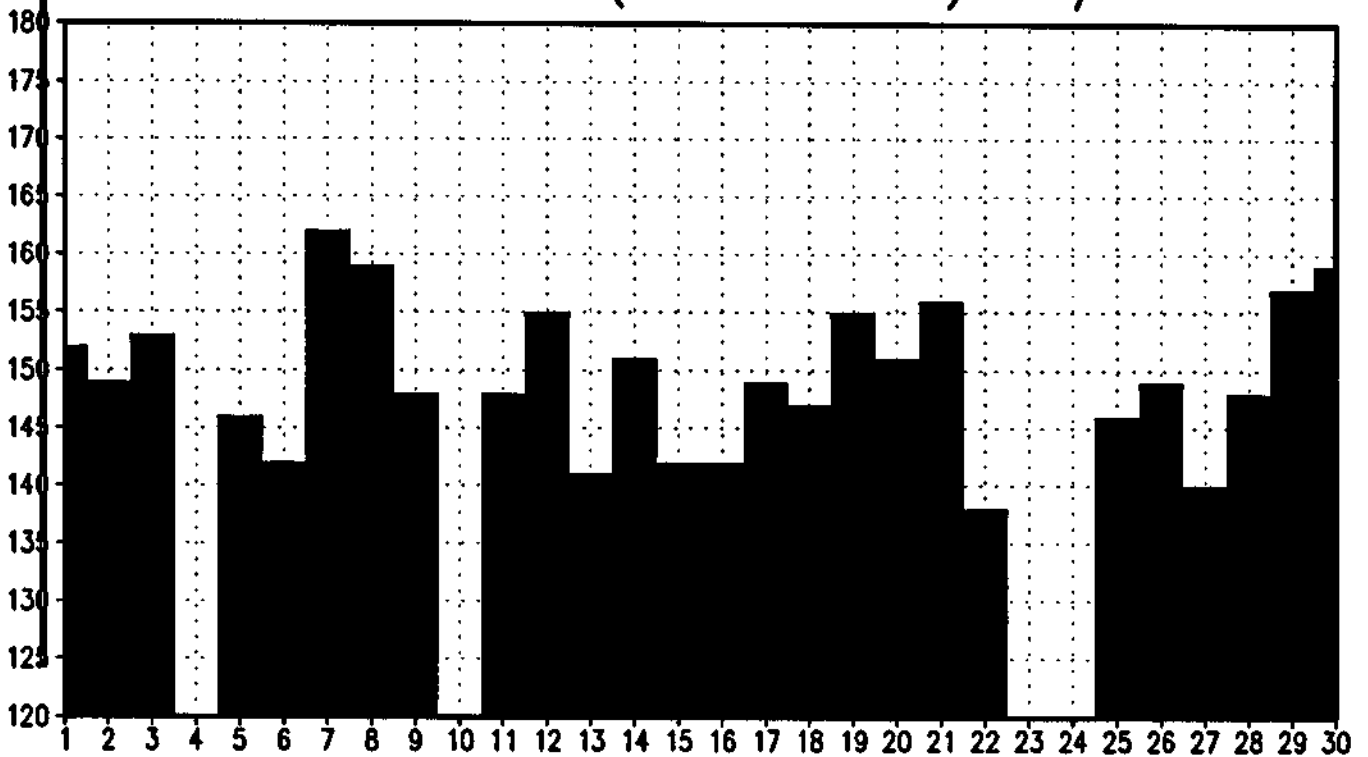
MEDIA DE VALORES (≥ 120 'E') 03/94 18TMG



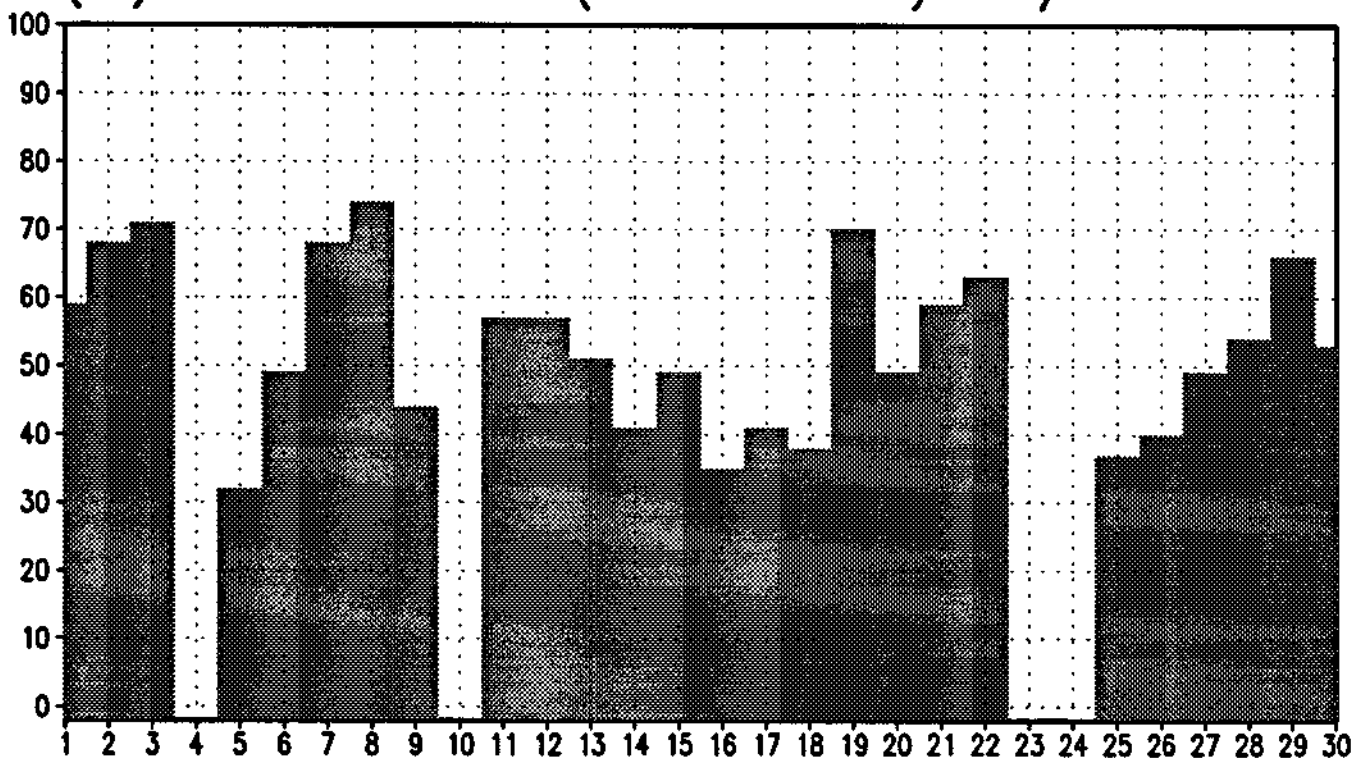
(%) DE VALORES (≥ 120 'E') 03/94 18TMG



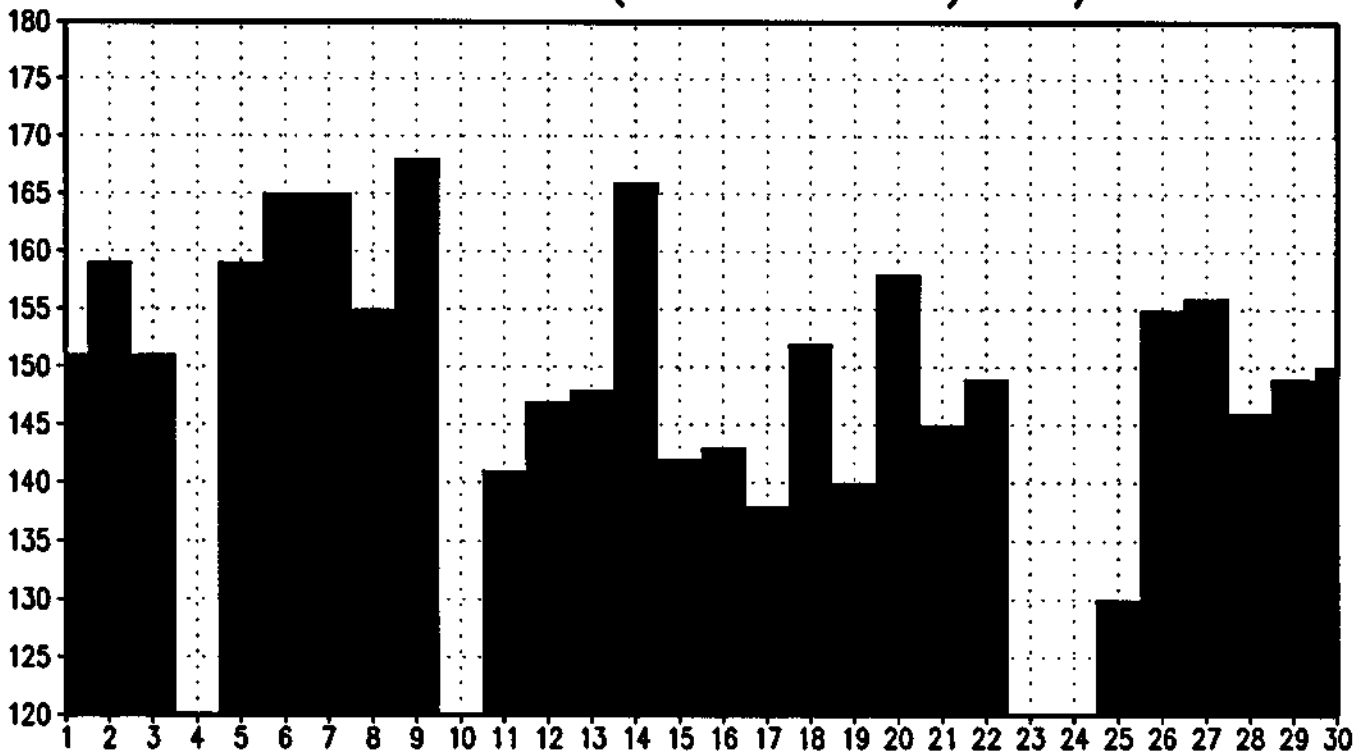
MEDIA DE VALORES (≥ 120 'A') 04/94 18TMG



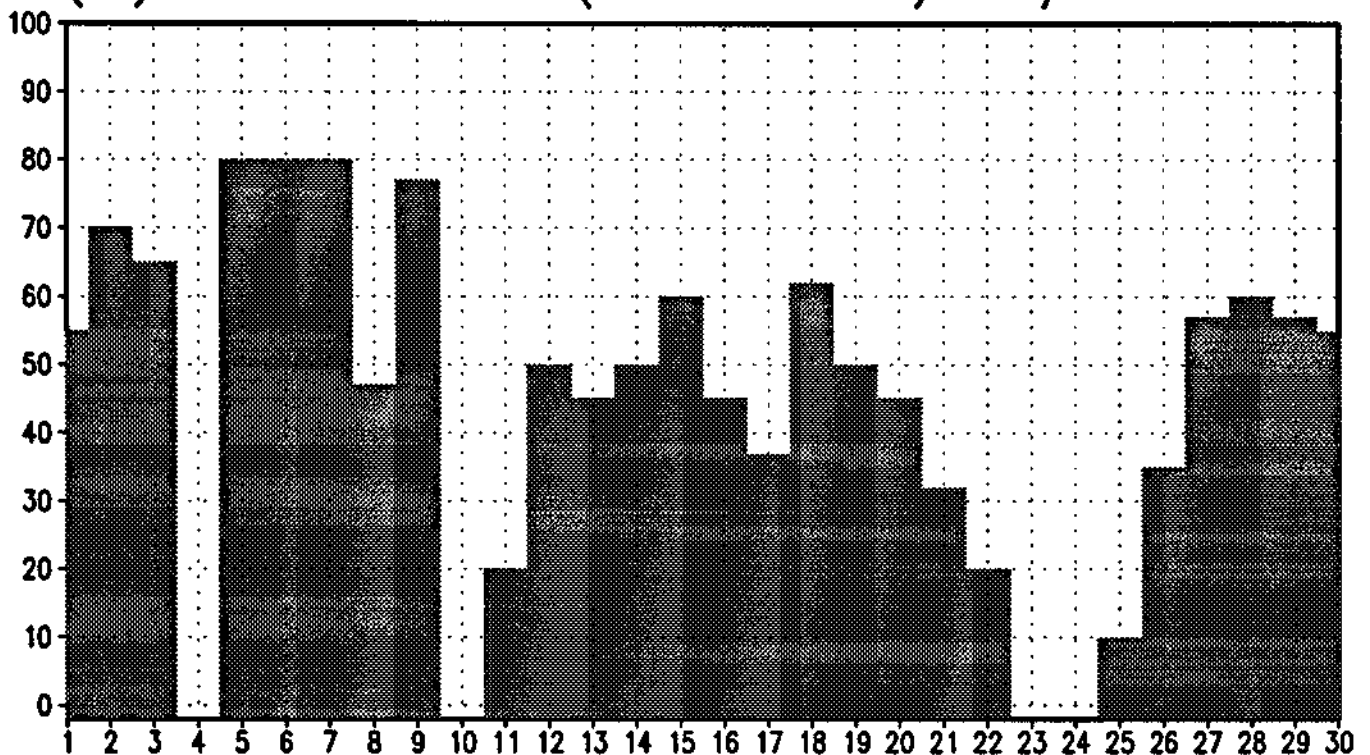
(%) DE VALORES (≥ 120 'A') 04/94 18TMG



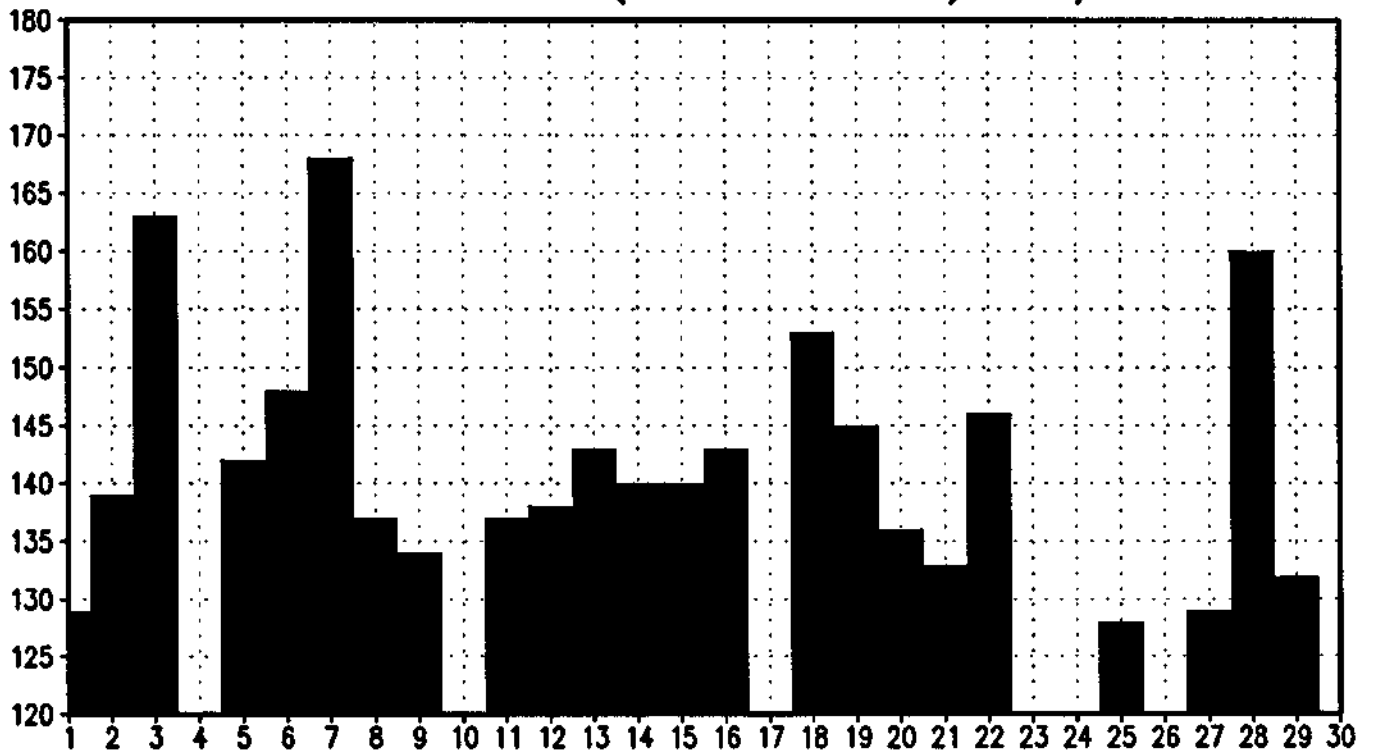
MEDIA DE VALORES (≥ 120 'B') 04/94 18TMG



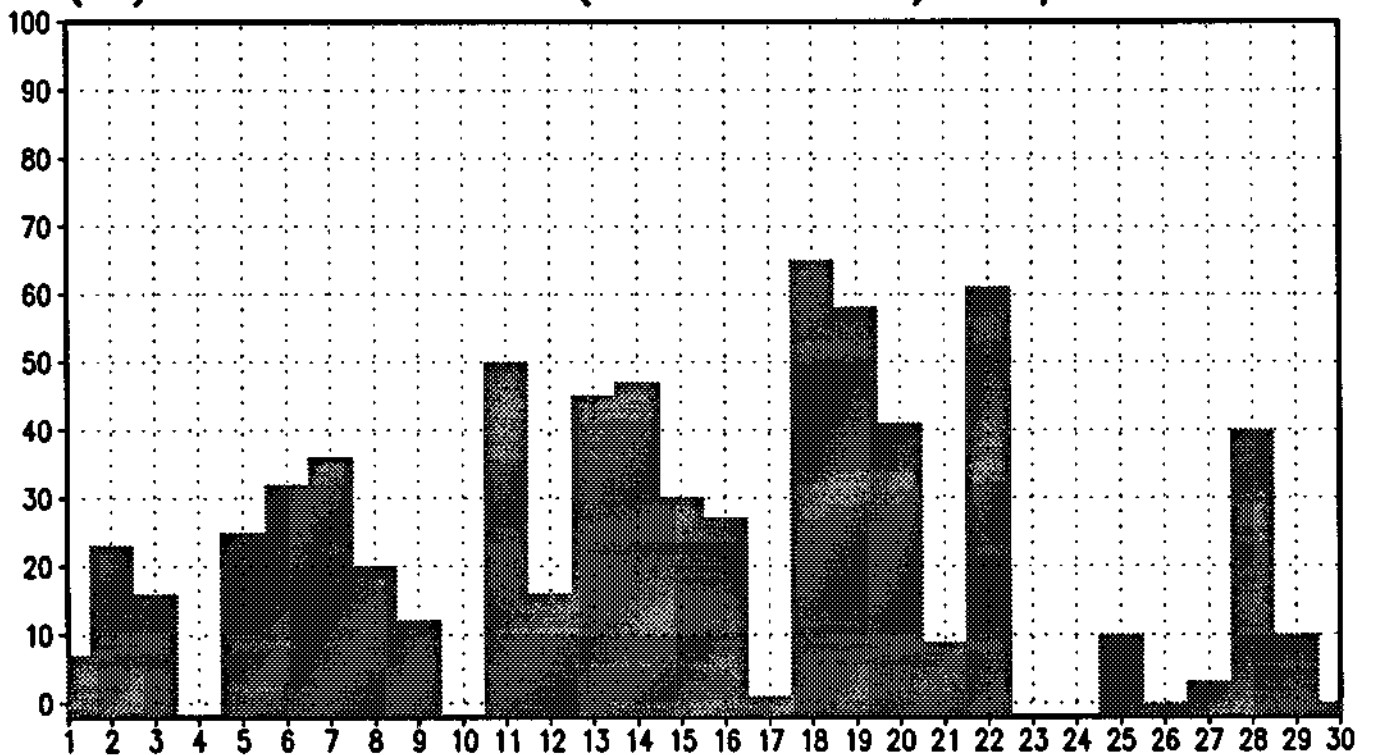
(%) DE VALORES (≥ 120 'B') 04/94 18TMG



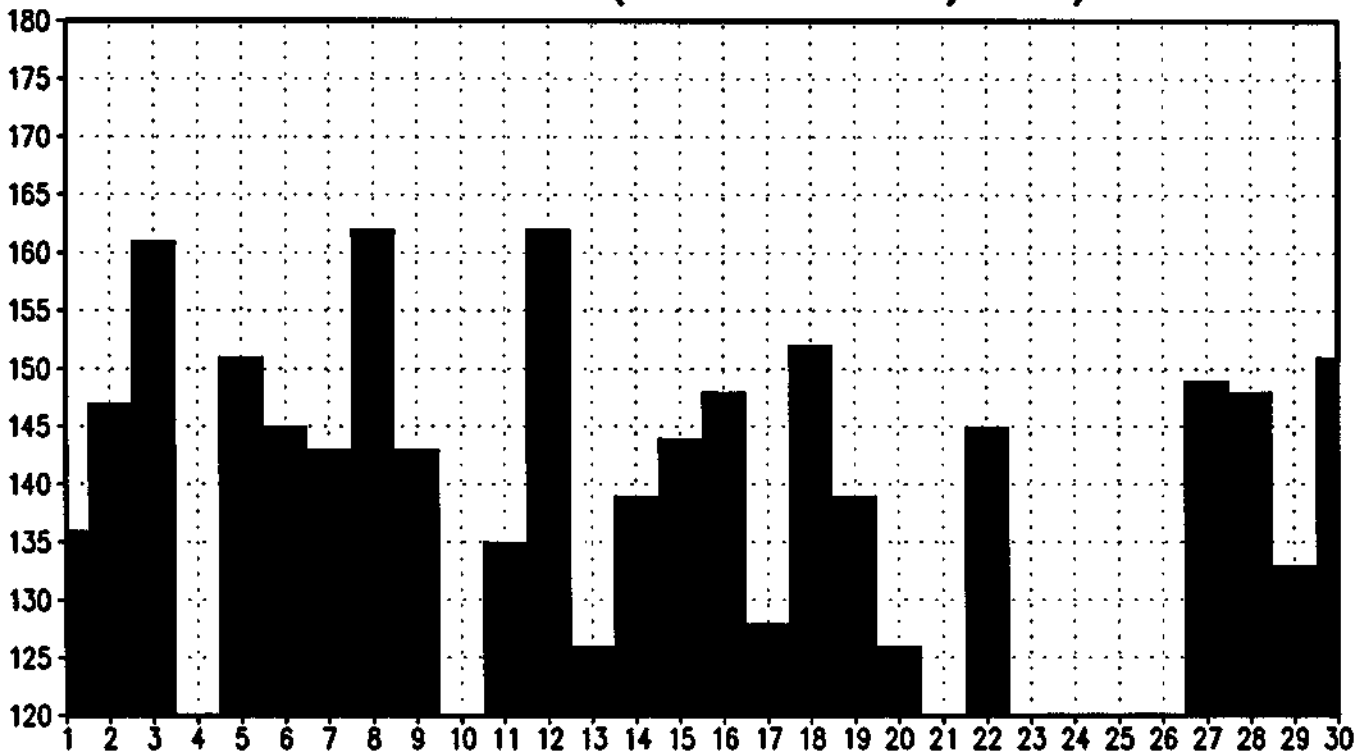
MEDIA DE VALORES (≥ 120 'C') 04/94 18TMG



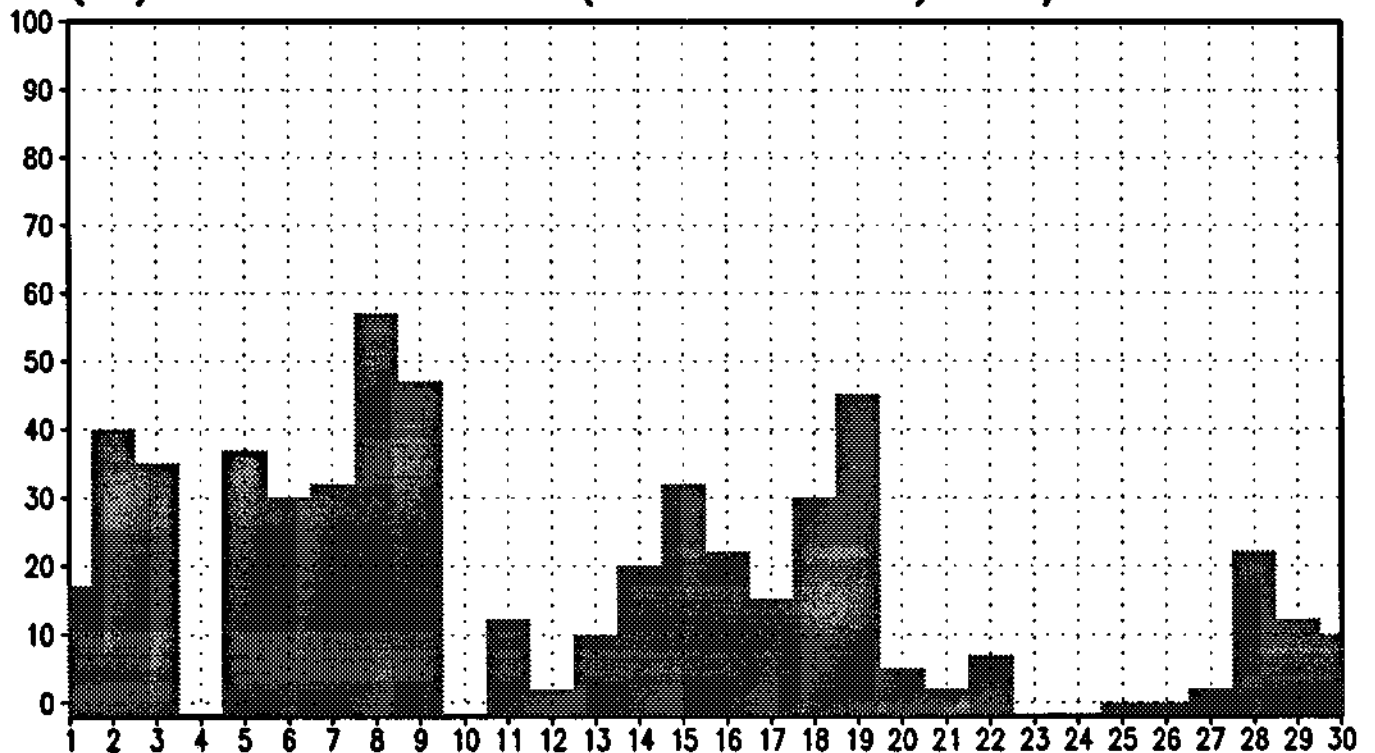
(%) DE VALORES (≥ 120 'C') 04/94 18TMG



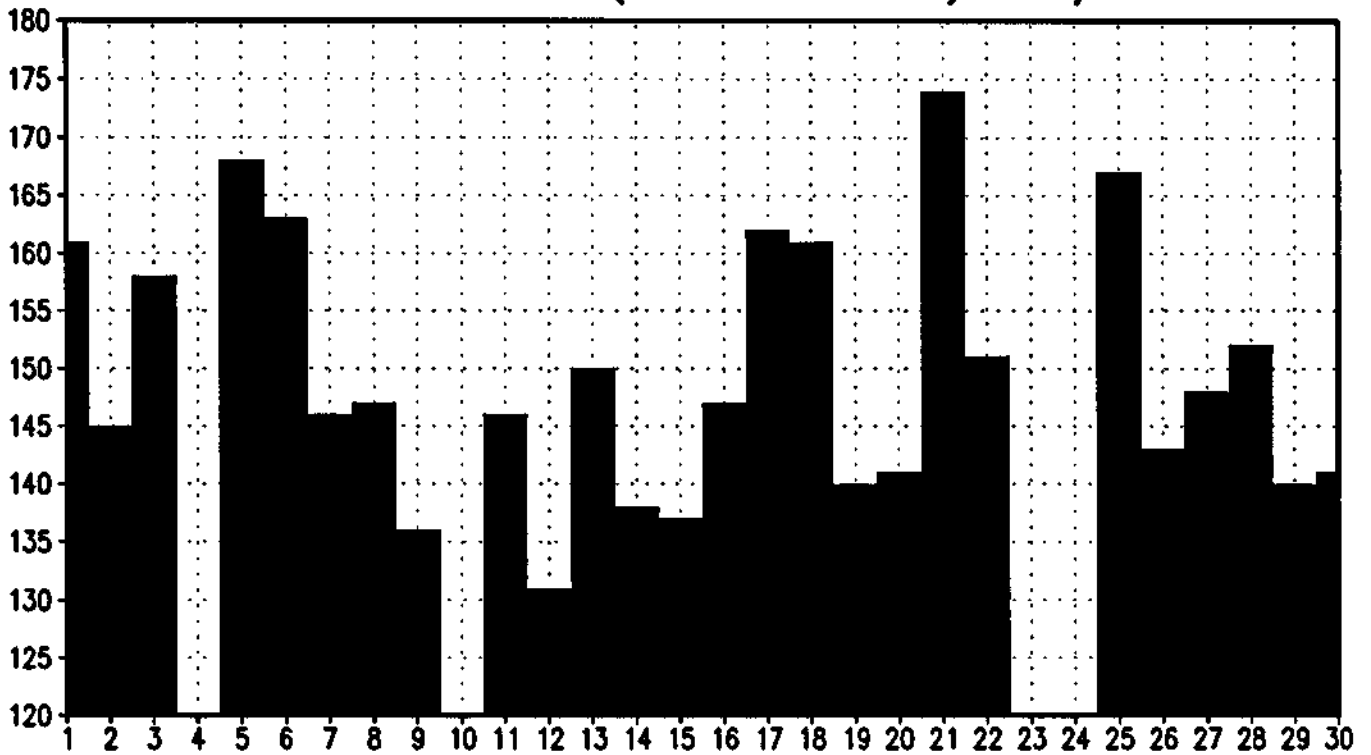
MEDIA DE VALORES (≥ 120 'D') 04/94 18TMG



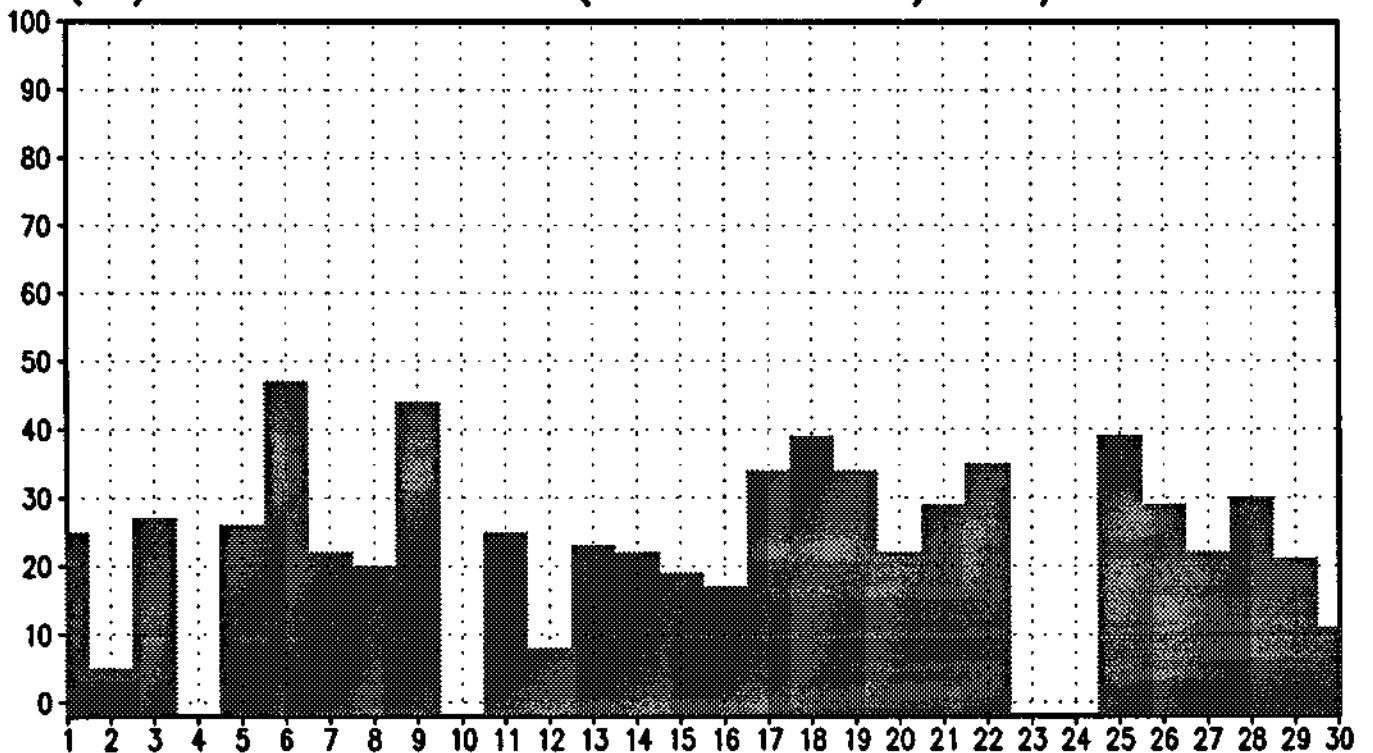
(%) DE VALORES (≥ 120 'D') 04/94 18TMG



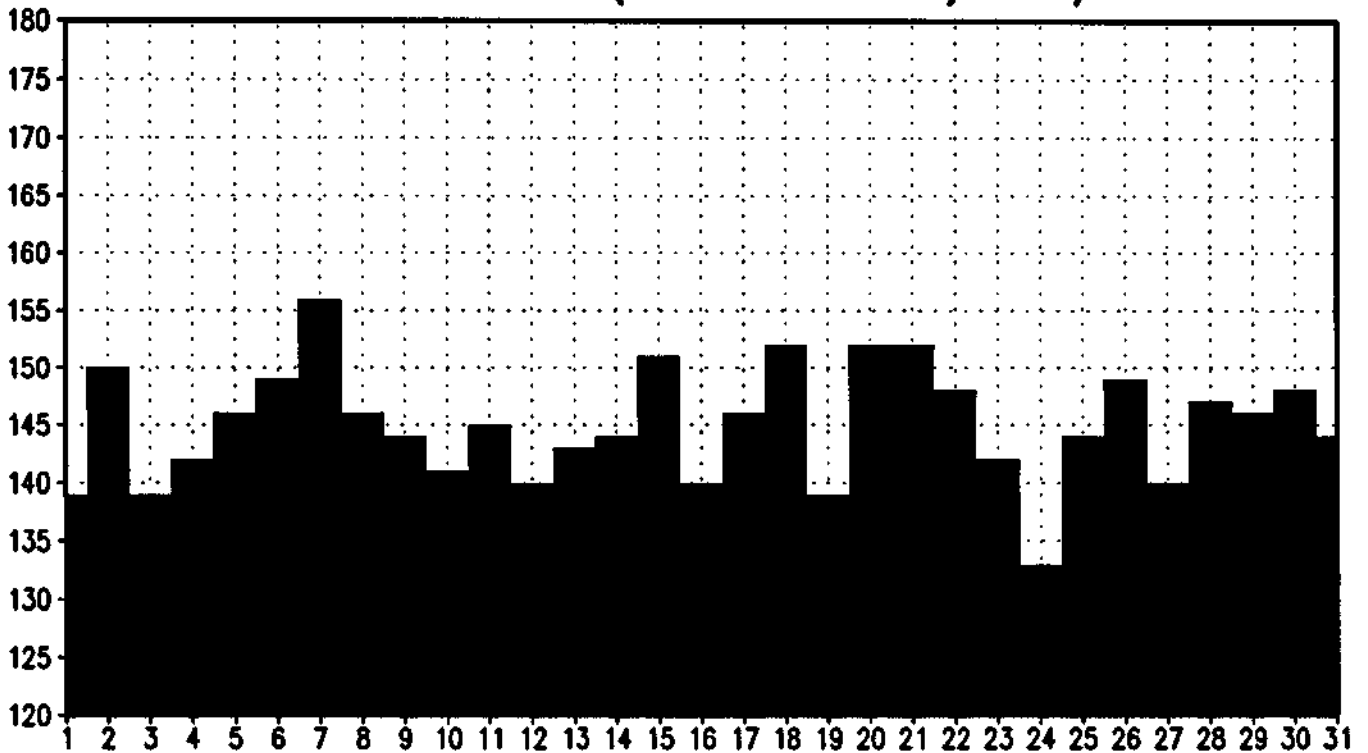
MEDIA DE VALORES (≥ 120 'E') 04/94 18TMG



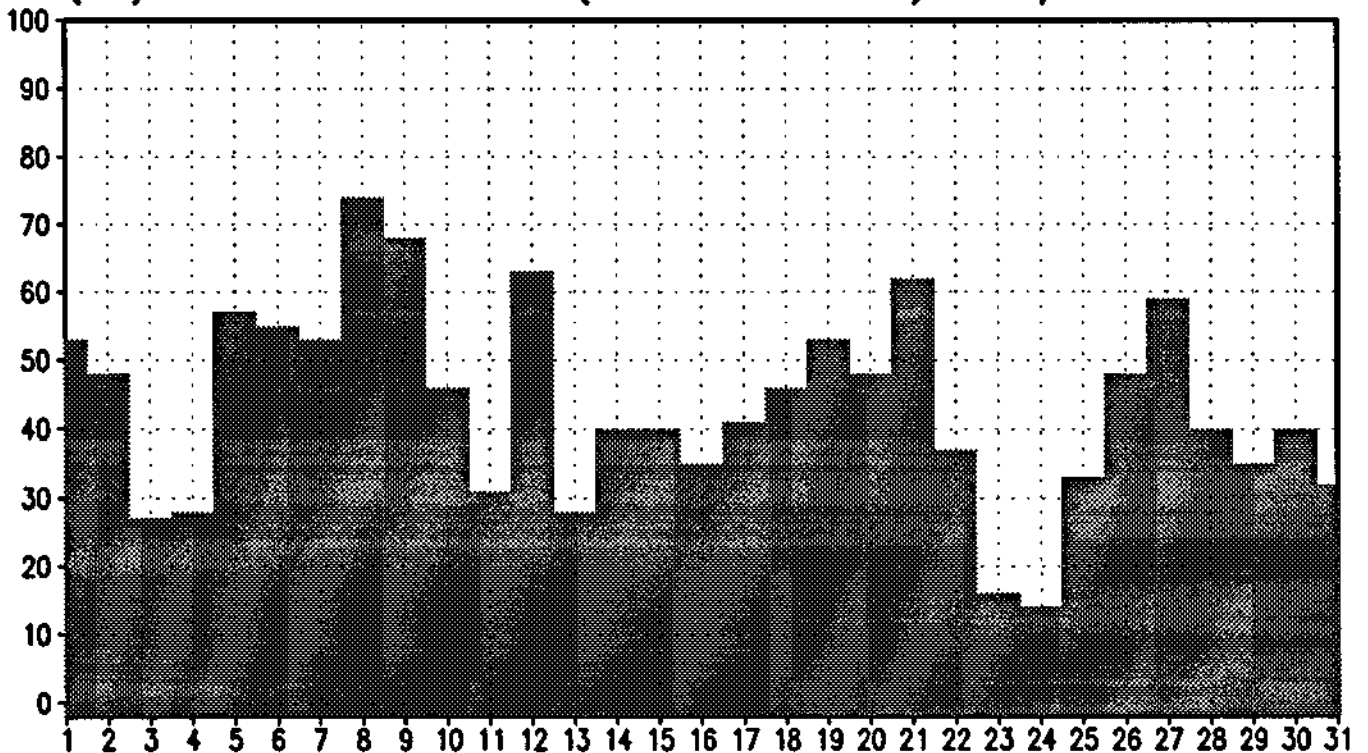
(%) DE VALORES (≥ 120 'E') 04/94 18TMG



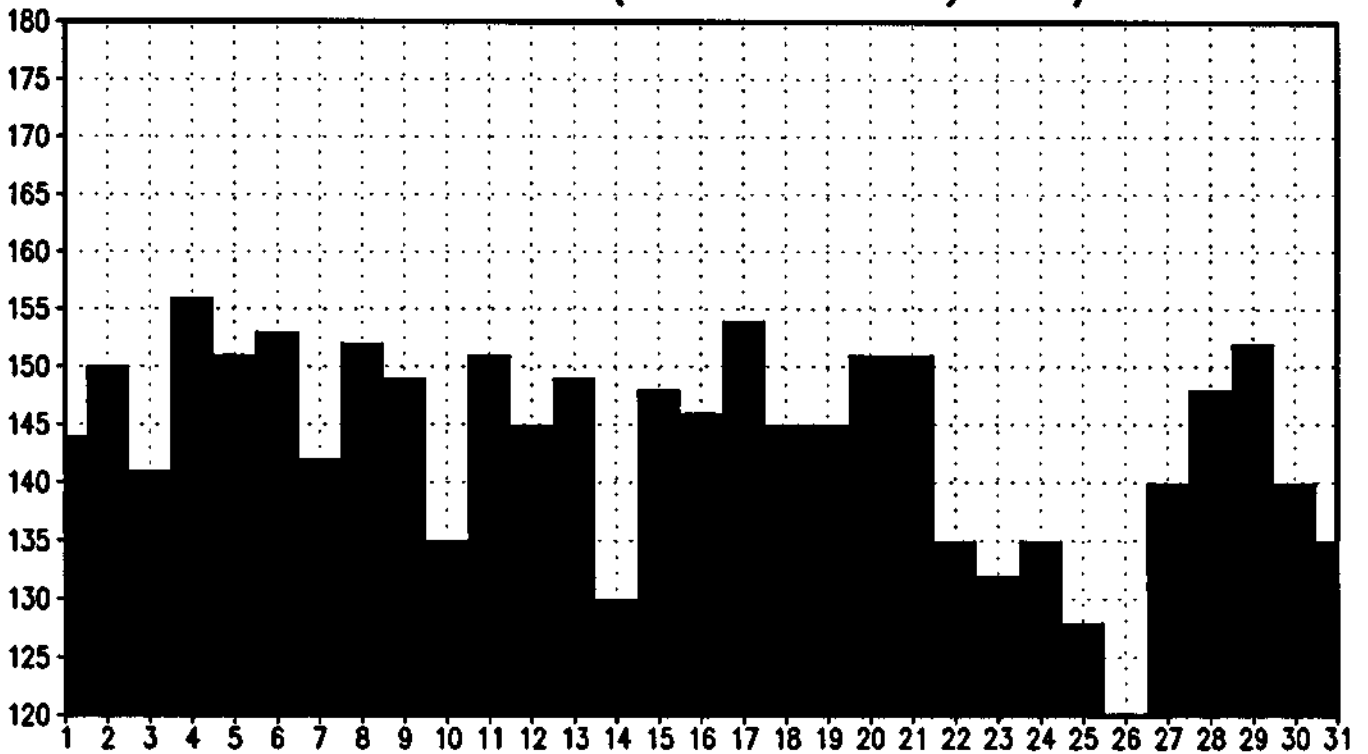
MEDIA DE VALORES (≥ 120 'A') 05/94 18TMG



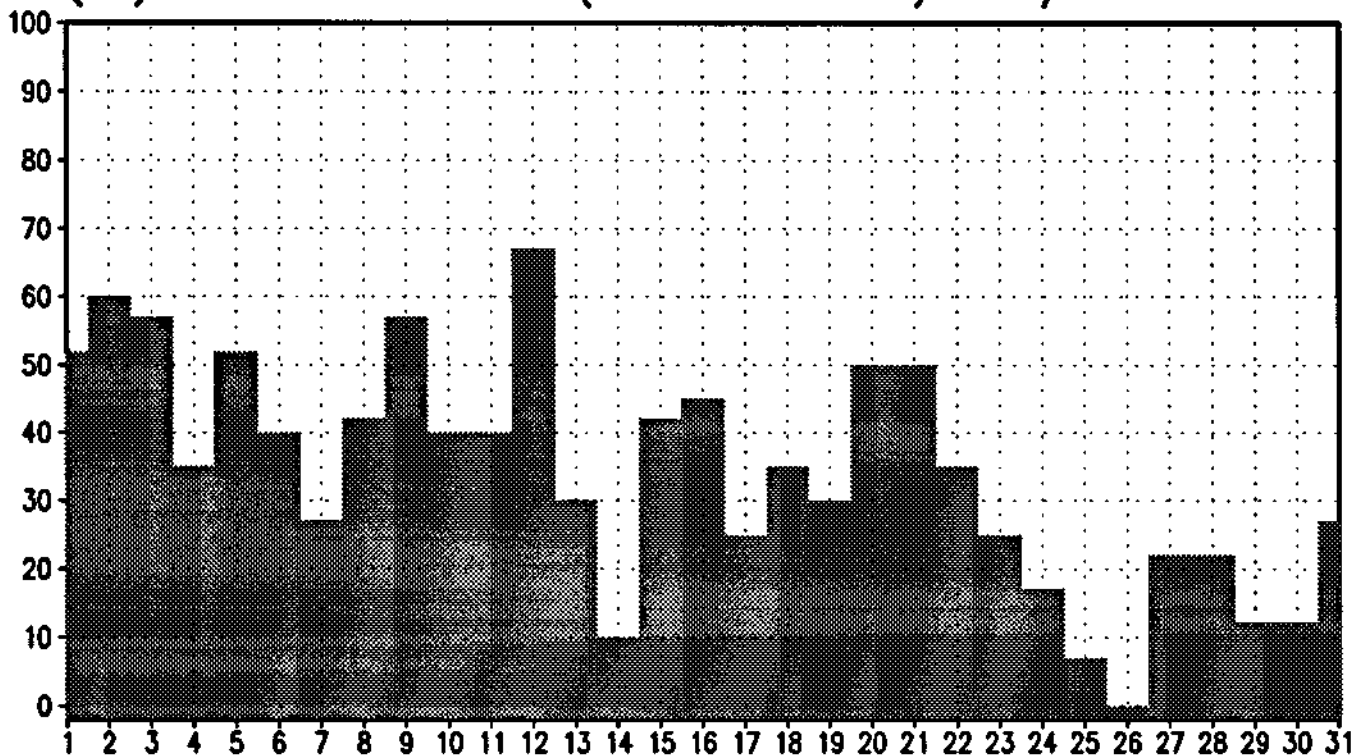
(%) DE VALORES (≥ 120 'A') 05/94 18TMG



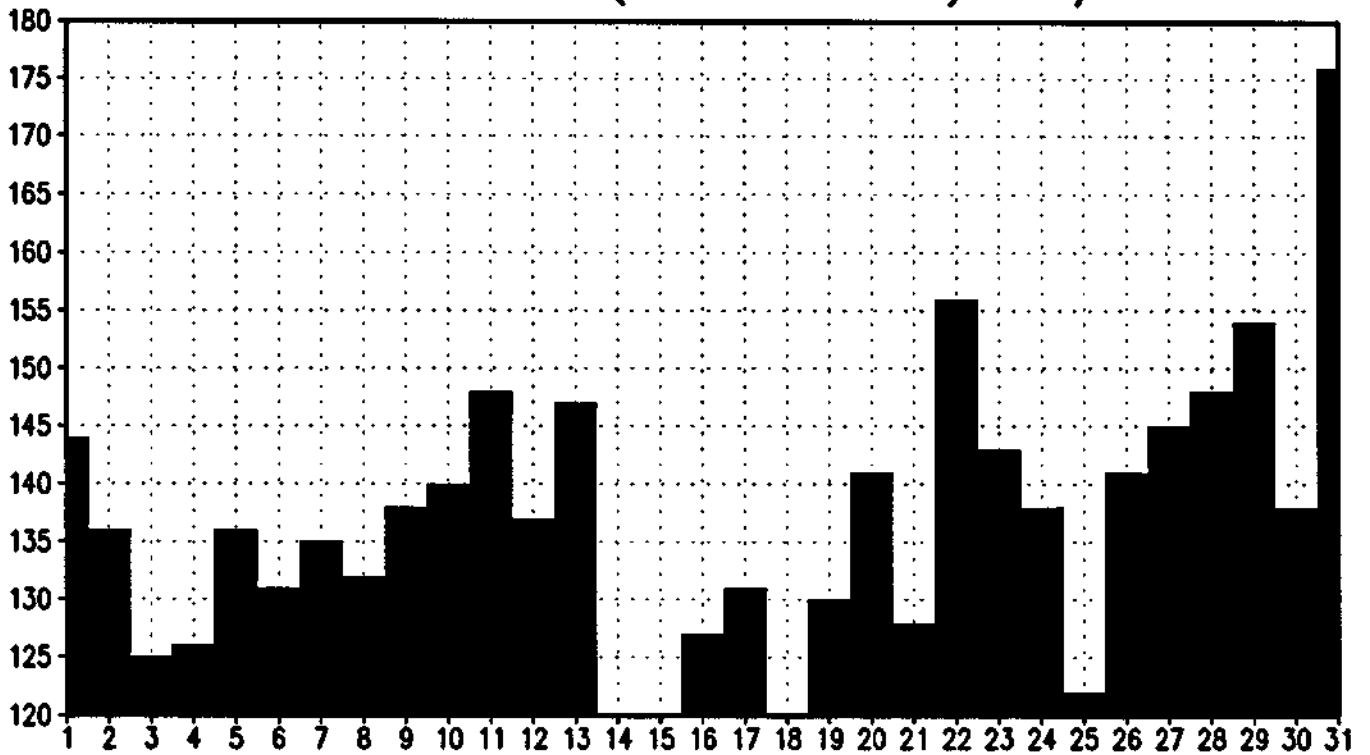
MEDIA DE VALORES (≥ 120 'B') 05/94 18TMG



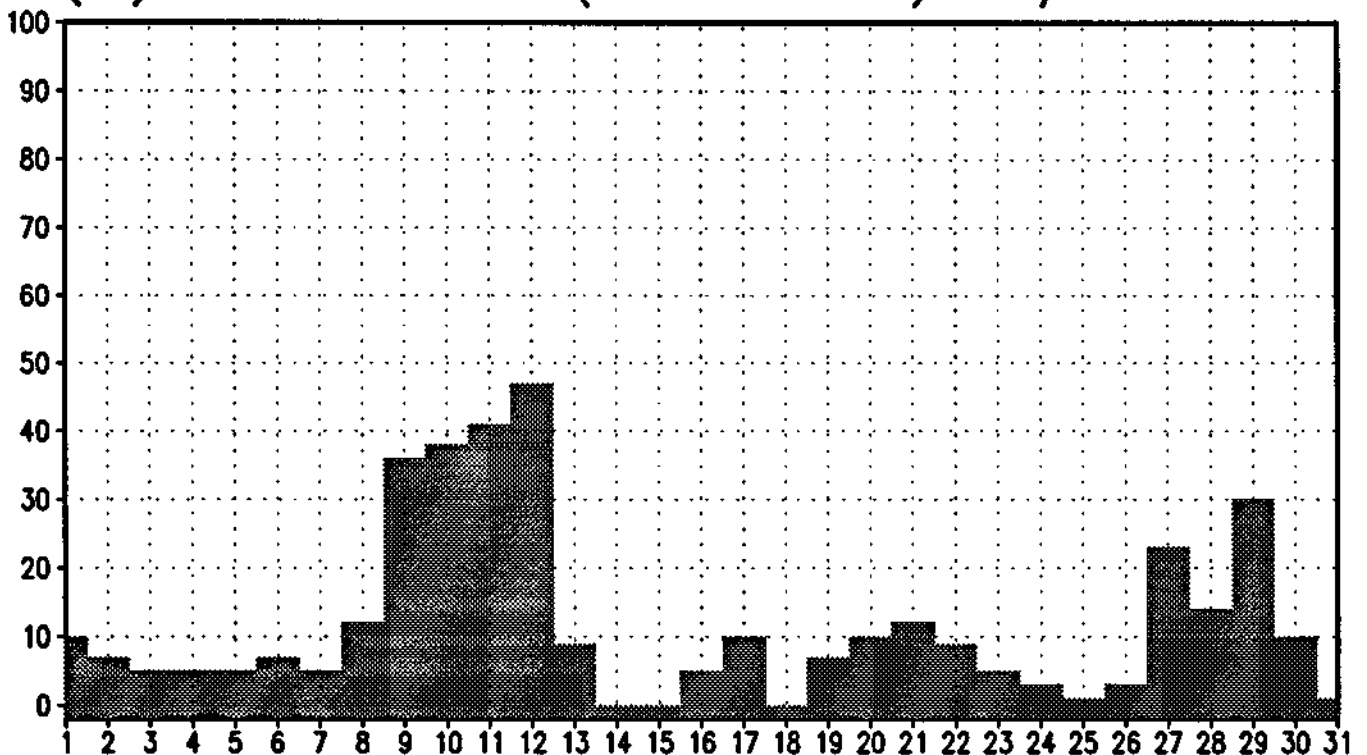
(%) DE VALORES (≥ 120 'B') 05/94 18TMG



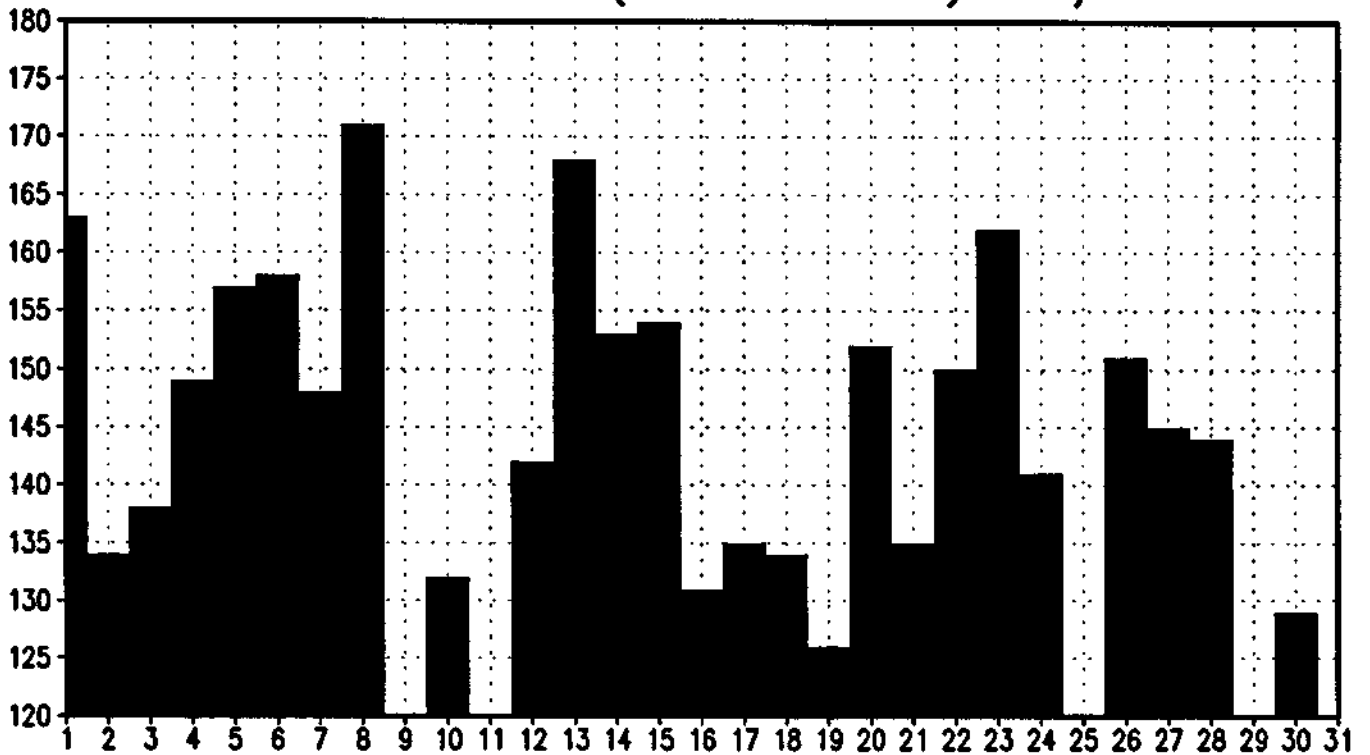
MEDIA DE VALORES (≥ 120 'C') 05/94 18TMG



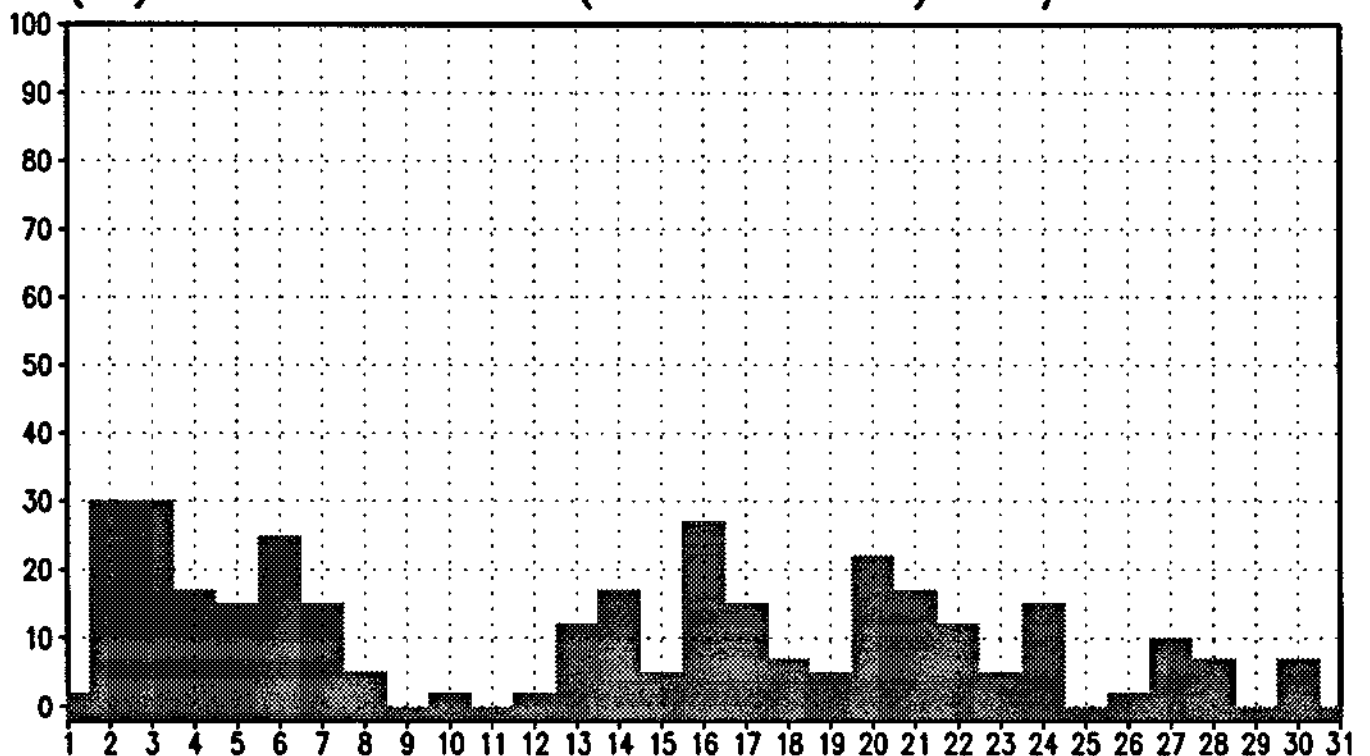
(%) DE VALORES (≥ 120 'C') 05/94 18TMG



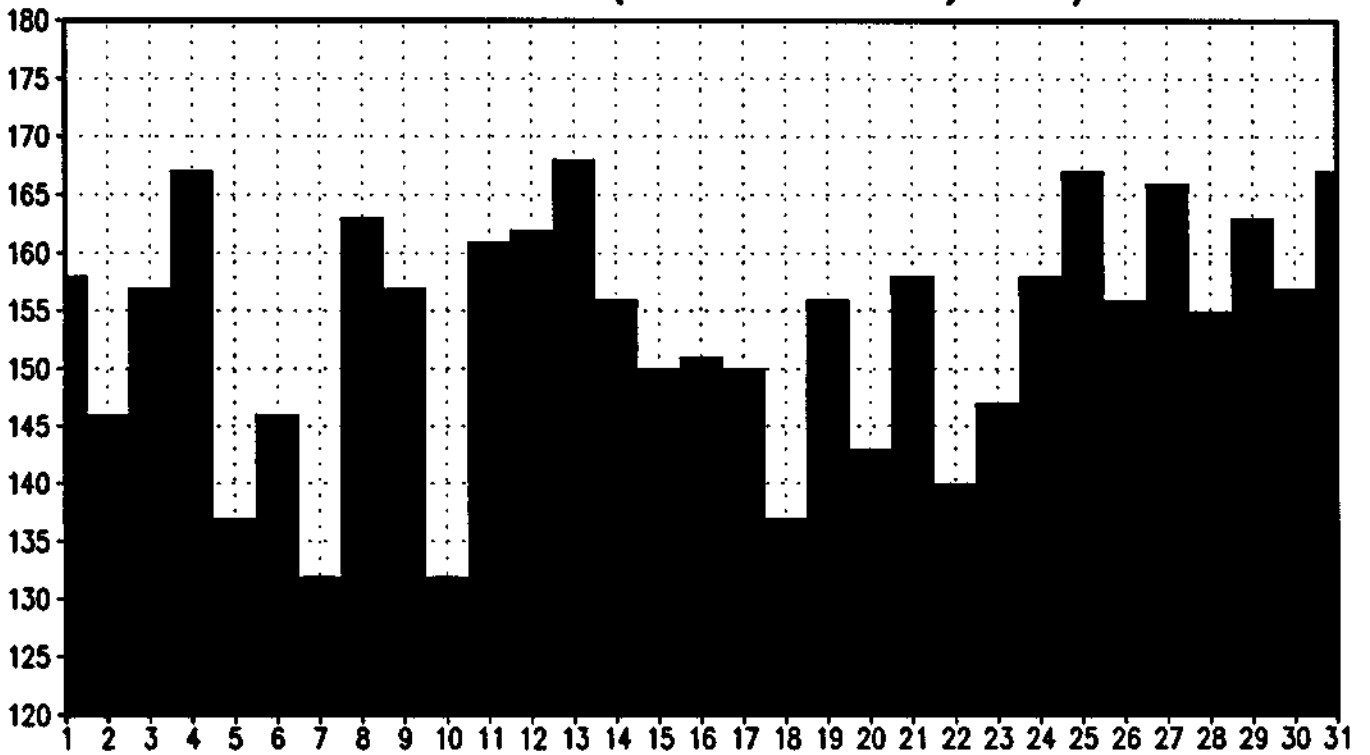
MEDIA DE VALORES (≥ 120 'D') 05/94 18TMG



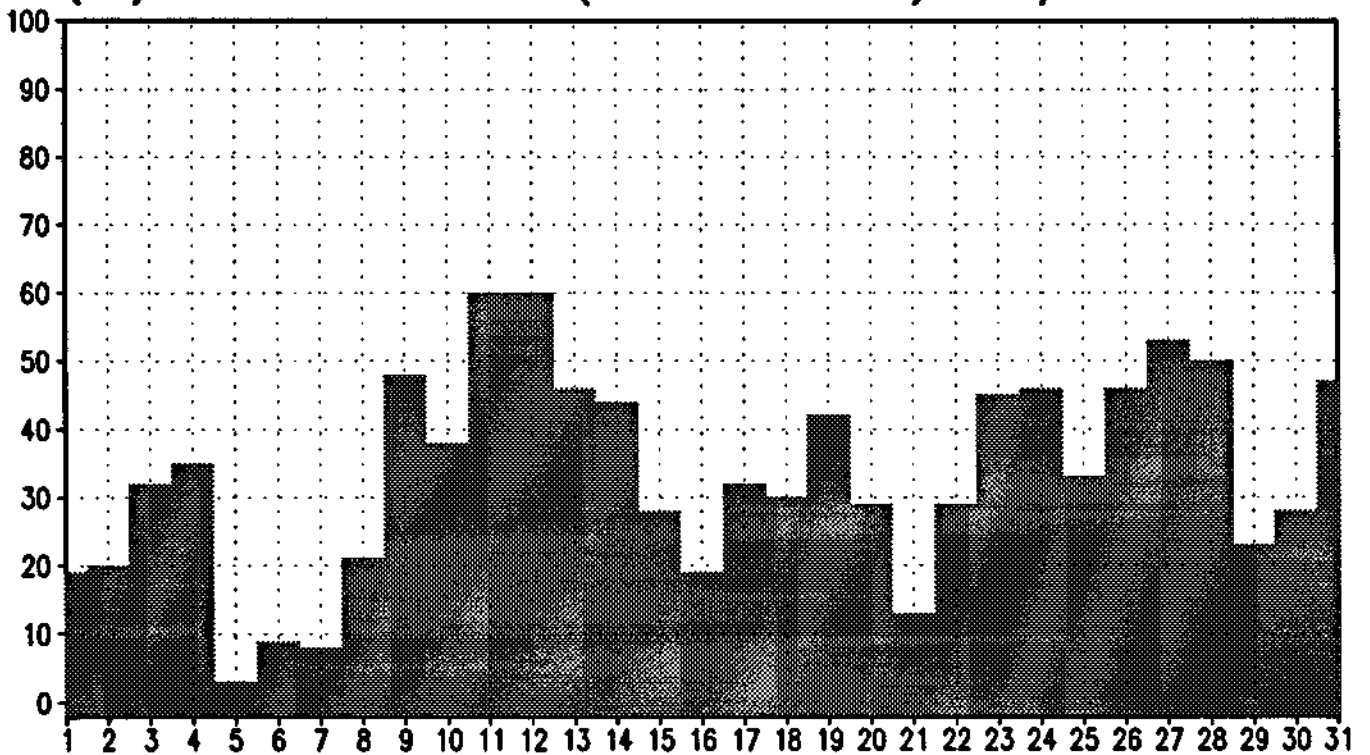
(%) DE VALORES (≥ 120 'D') 05/94 18TMG



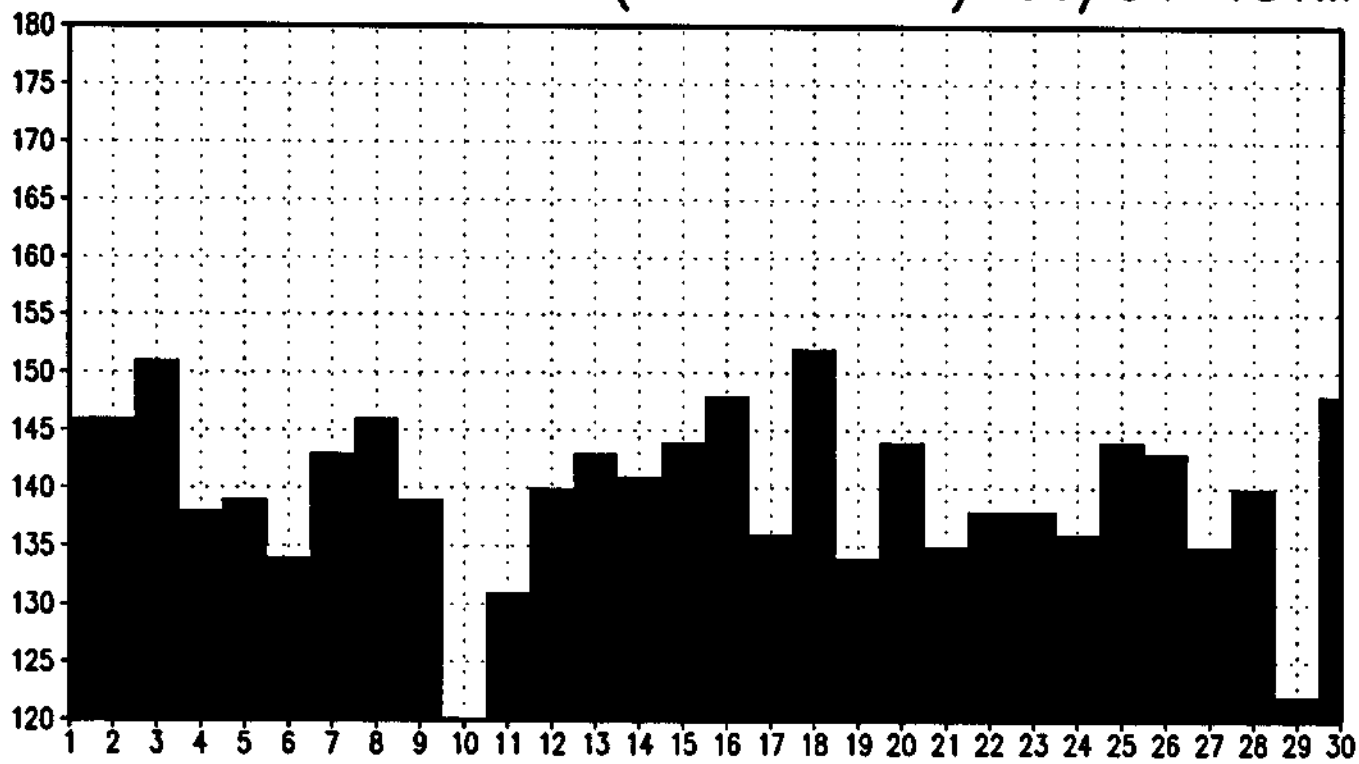
MEDIA DE VALORES (≥ 120 'E') 05/94 18TMG



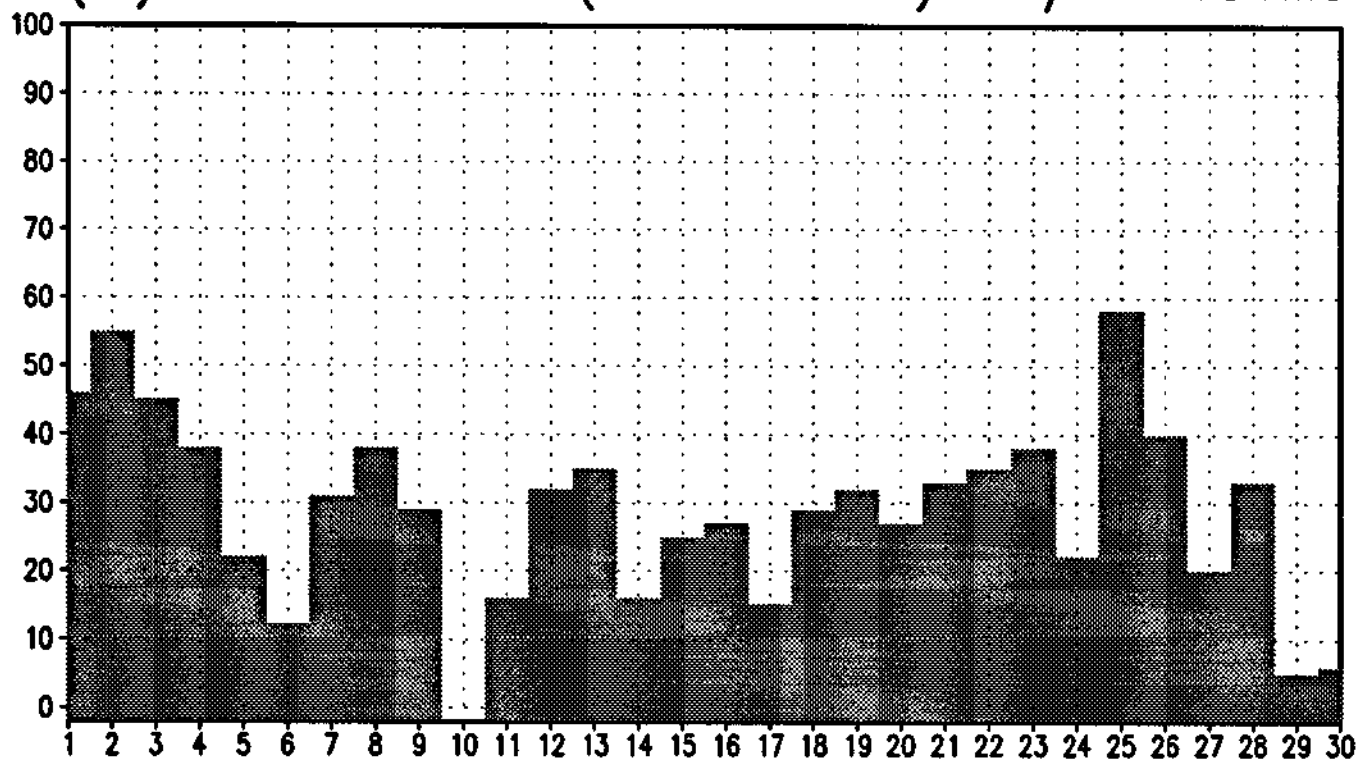
(%) DE VALORES (≥ 120 'E') 05/94 18TMG



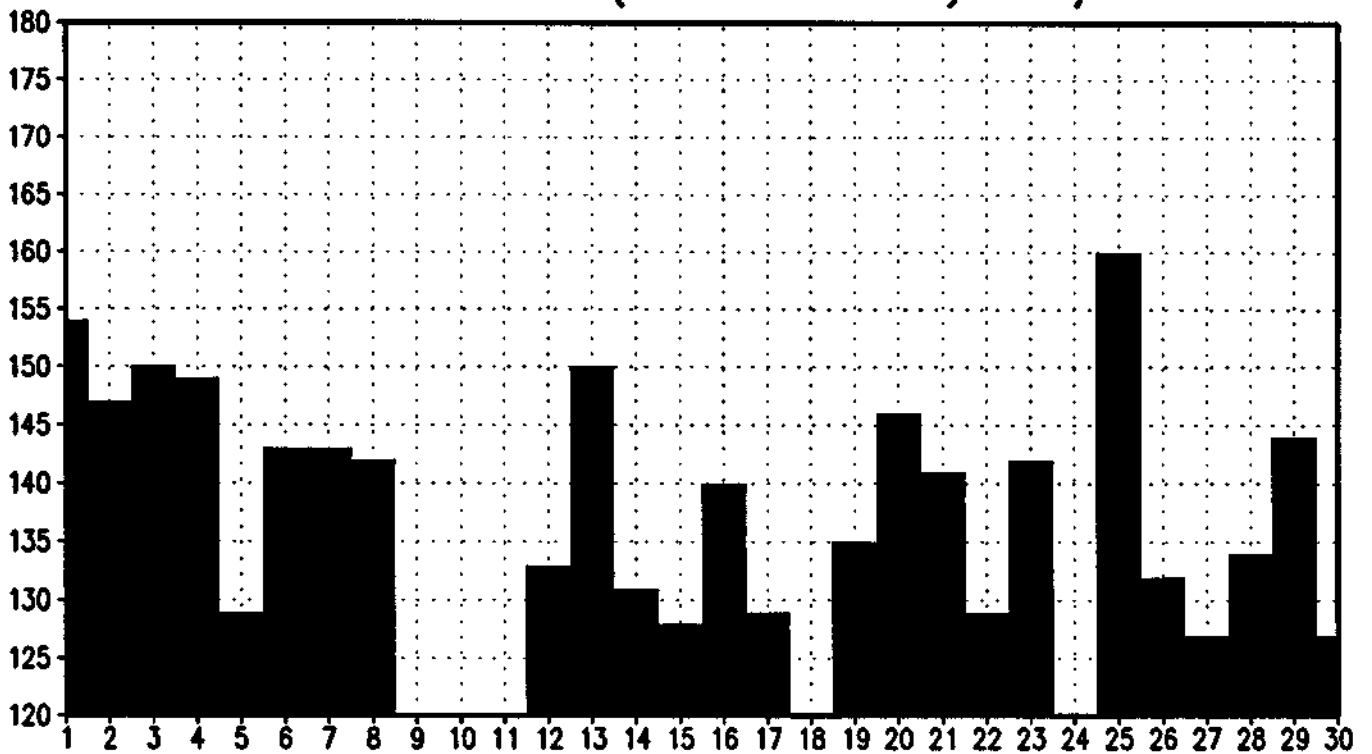
MEDIA DE VALORES (≥ 120 'A') 06/94 18TMG



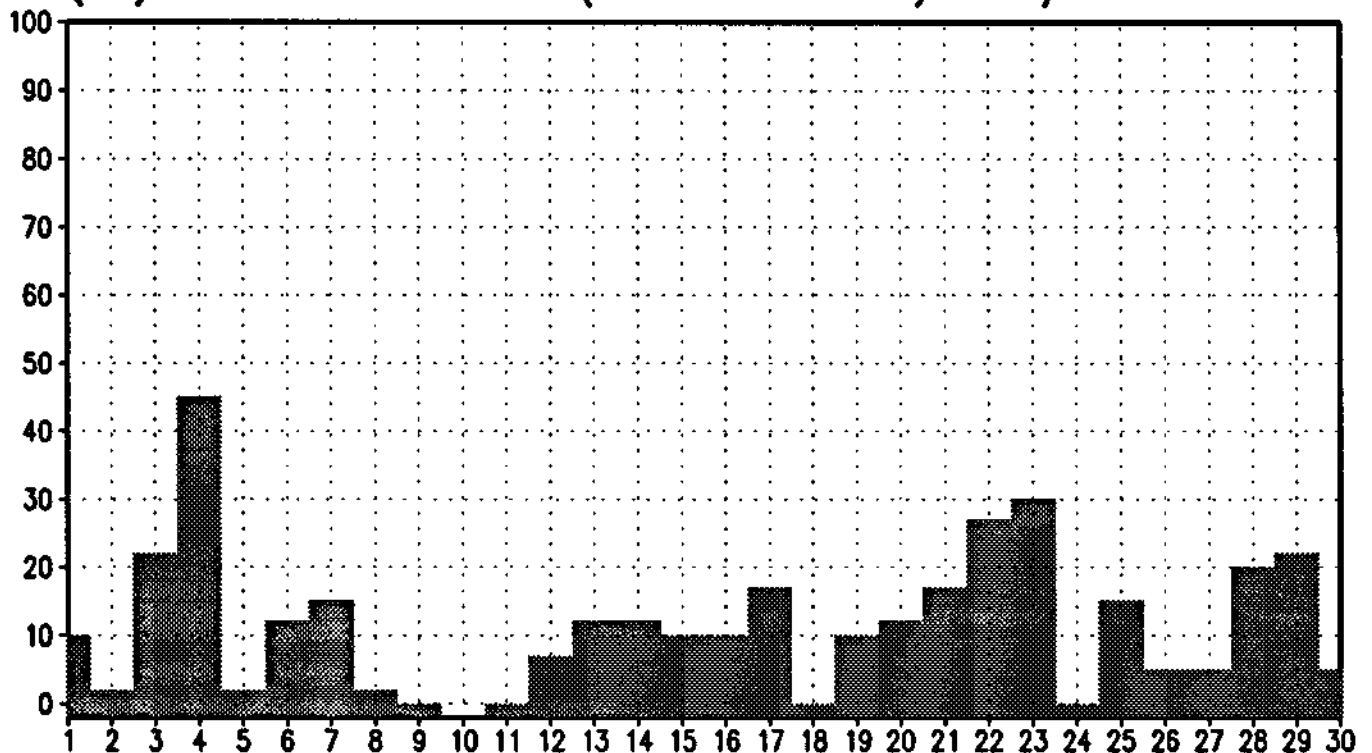
(%) DE VALORES (≥ 120 'A') 06/94 18TMG



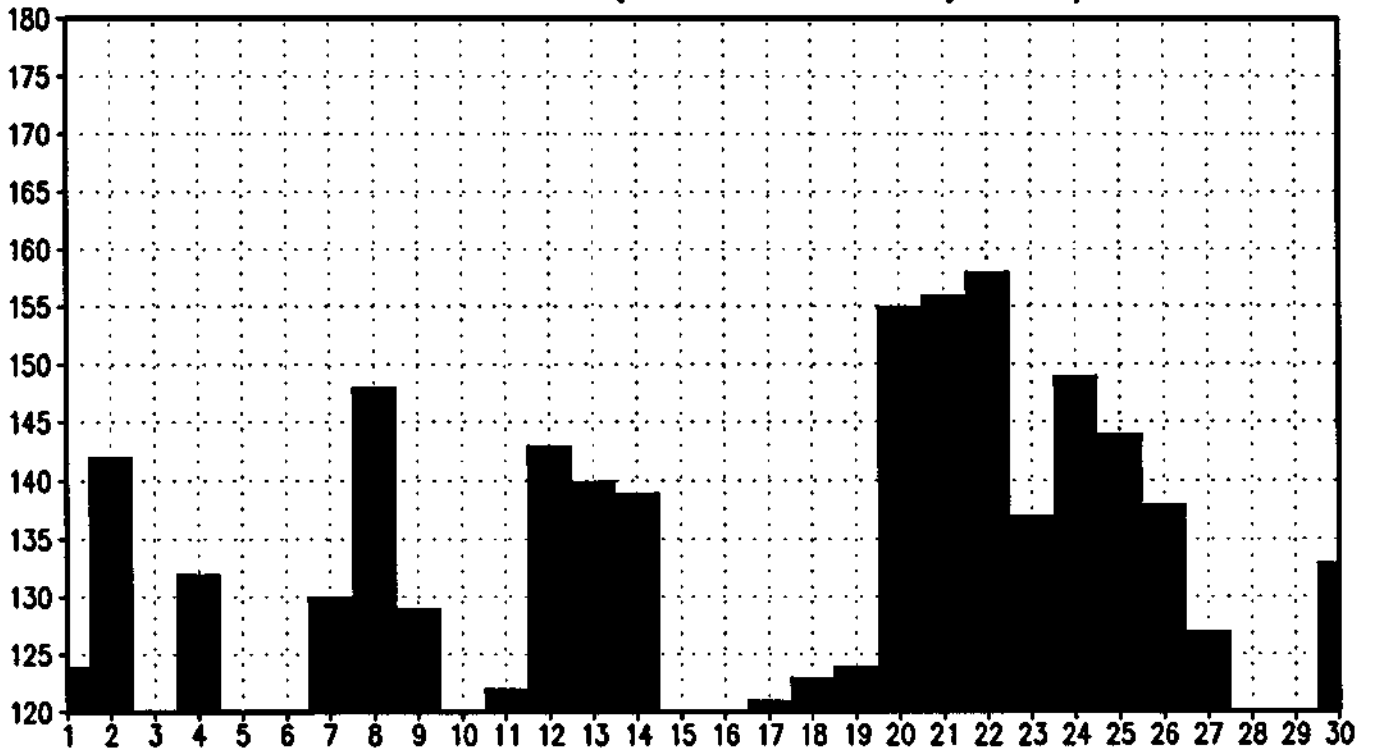
MEDIA DE VALORES (≥ 120 'B') 06/94 18TMG



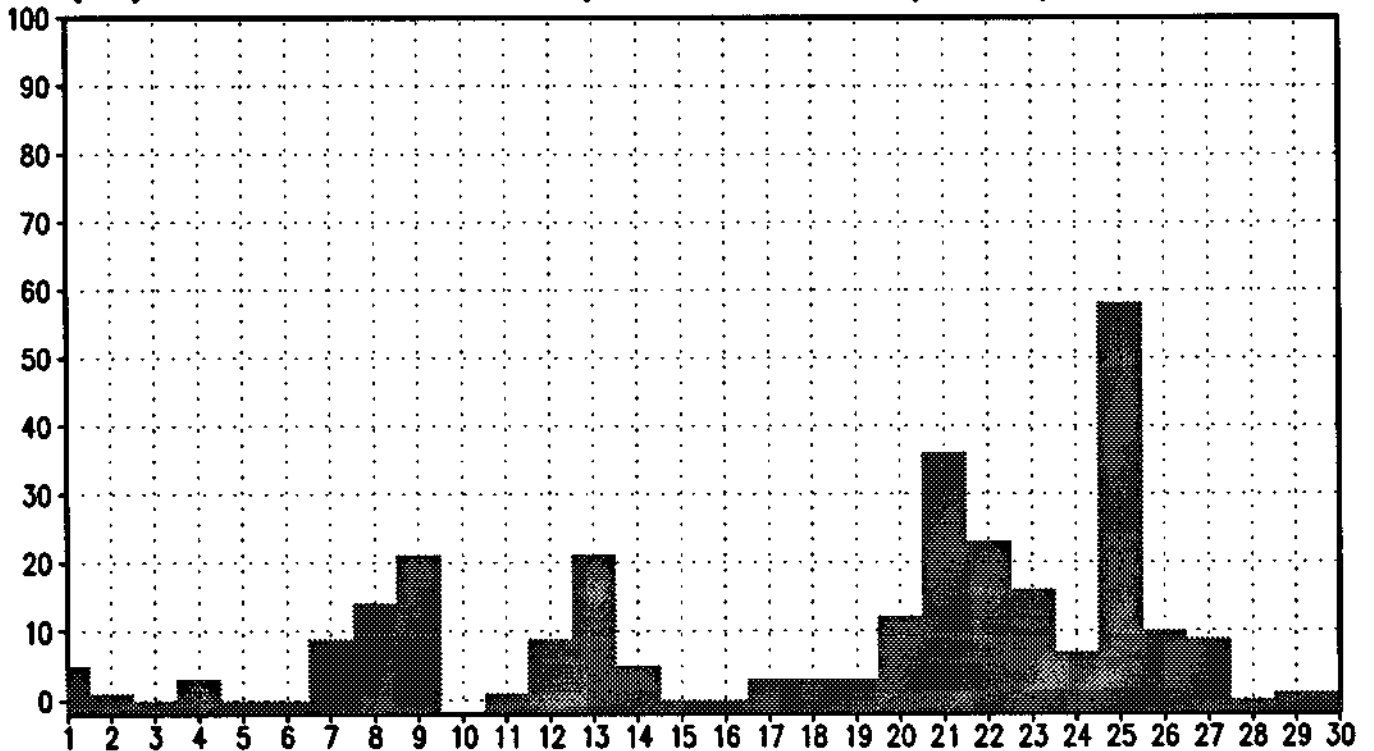
(%) DE VALORES (≥ 120 'B') 06/94 18TMG



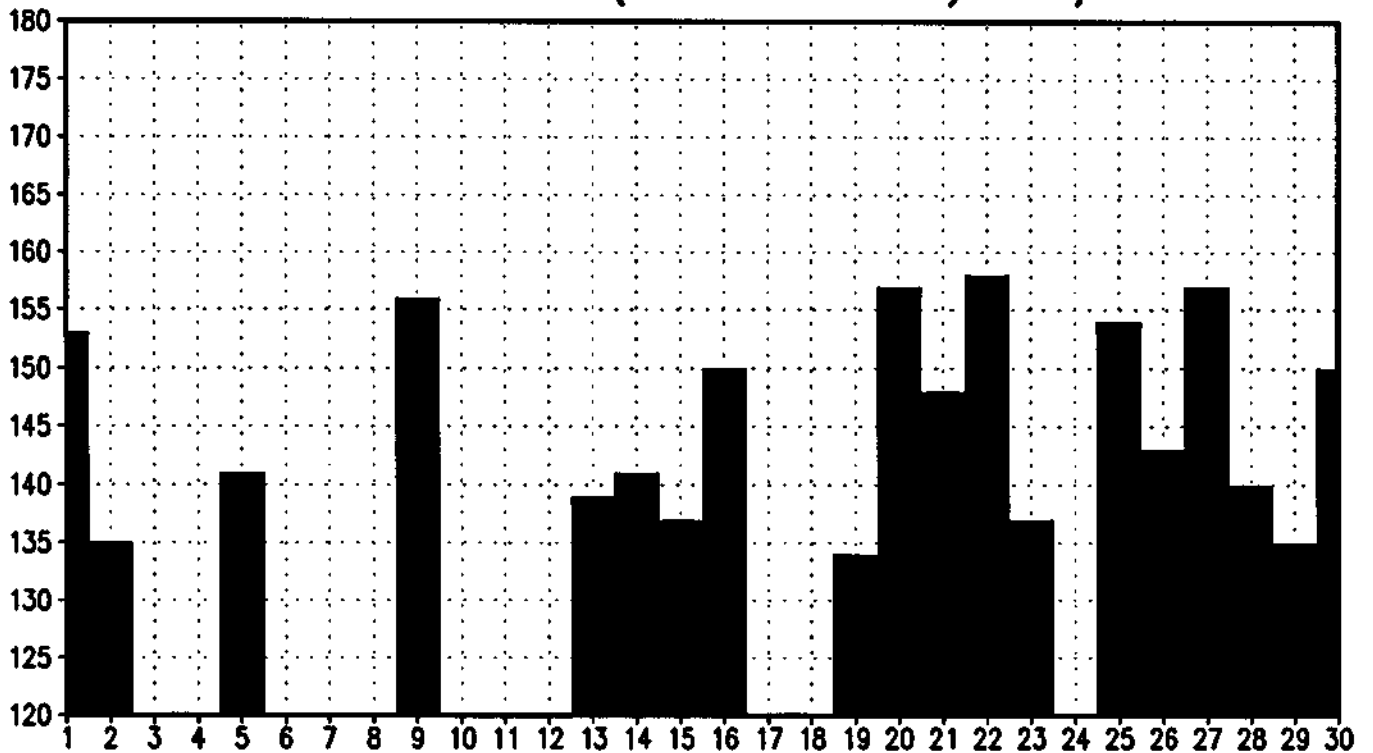
MEDIA DE VALORES (≥ 120 'C') 06/94 18TMG



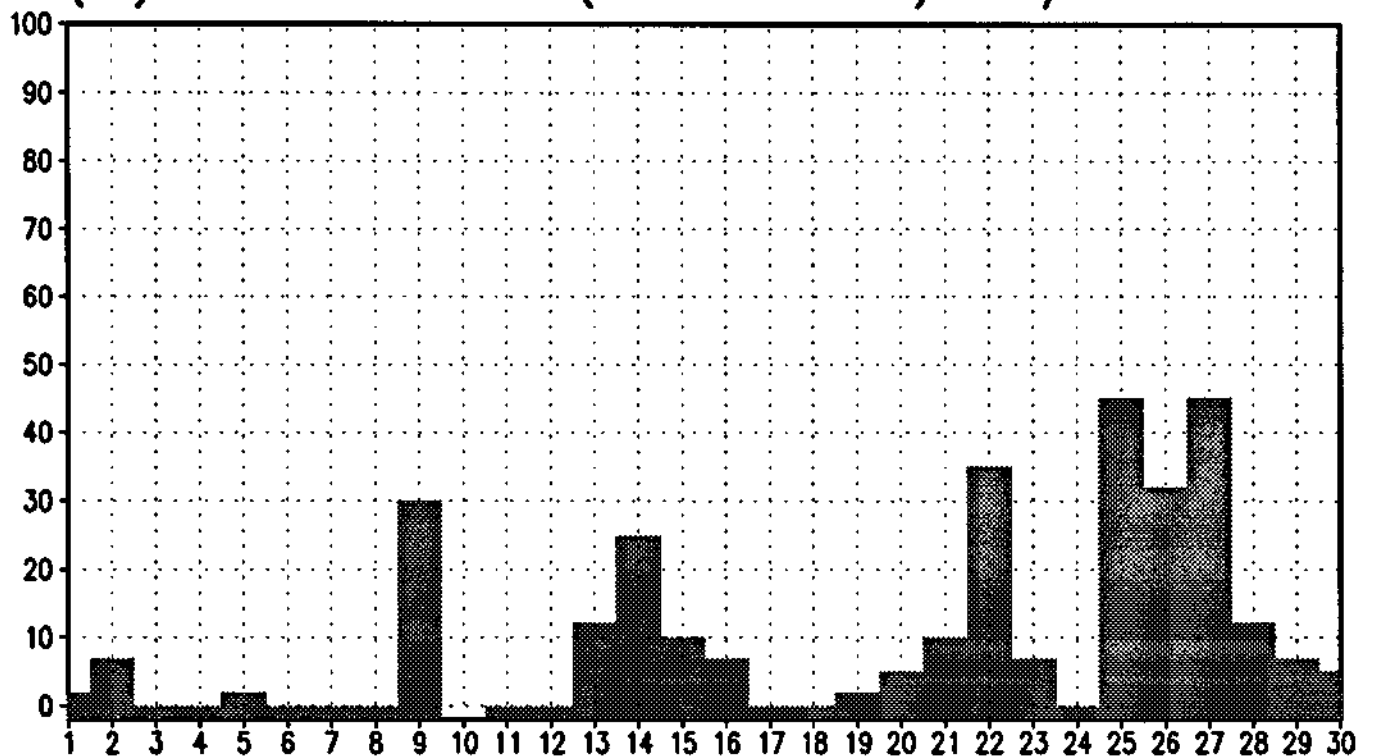
(%) DE VALORES (≥ 120 'C') 06/94 18TMG



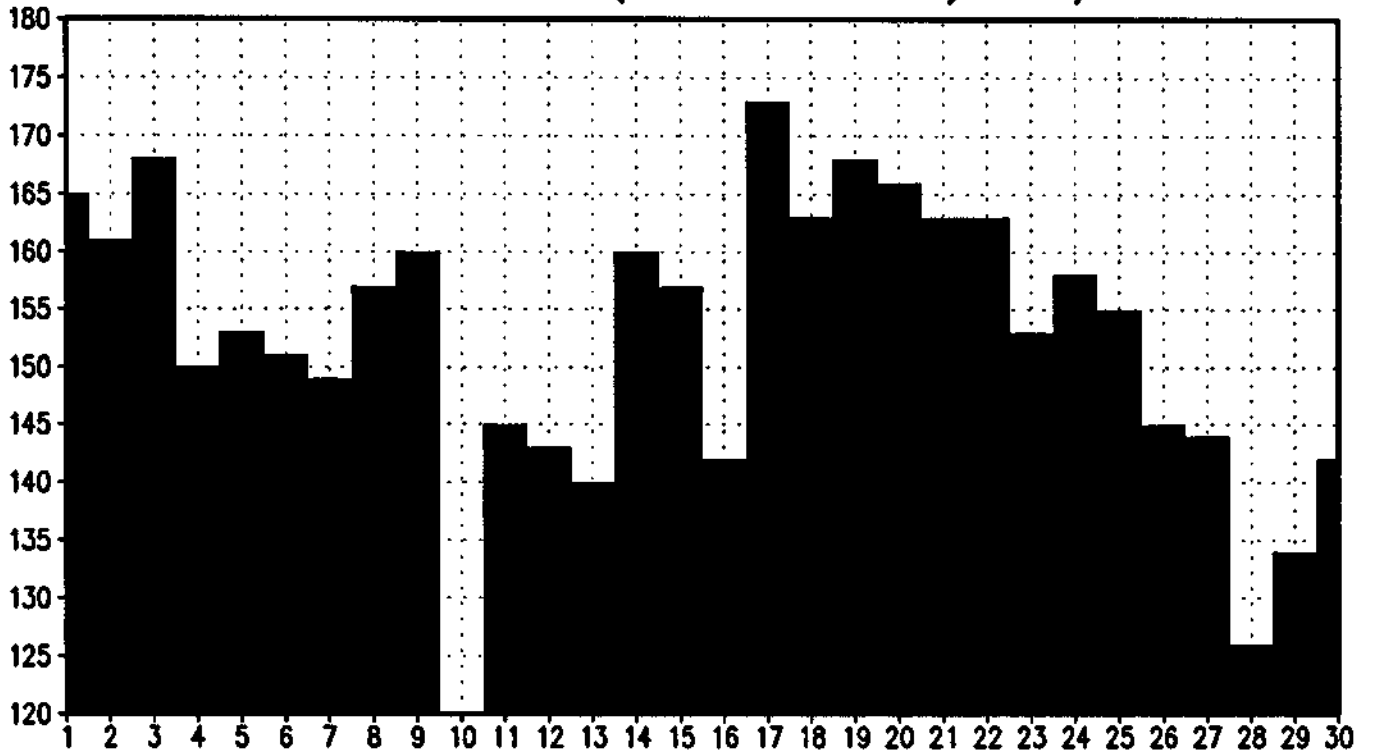
MEDIA DE VALORES (≥ 120 'D') 06/94 18TMG



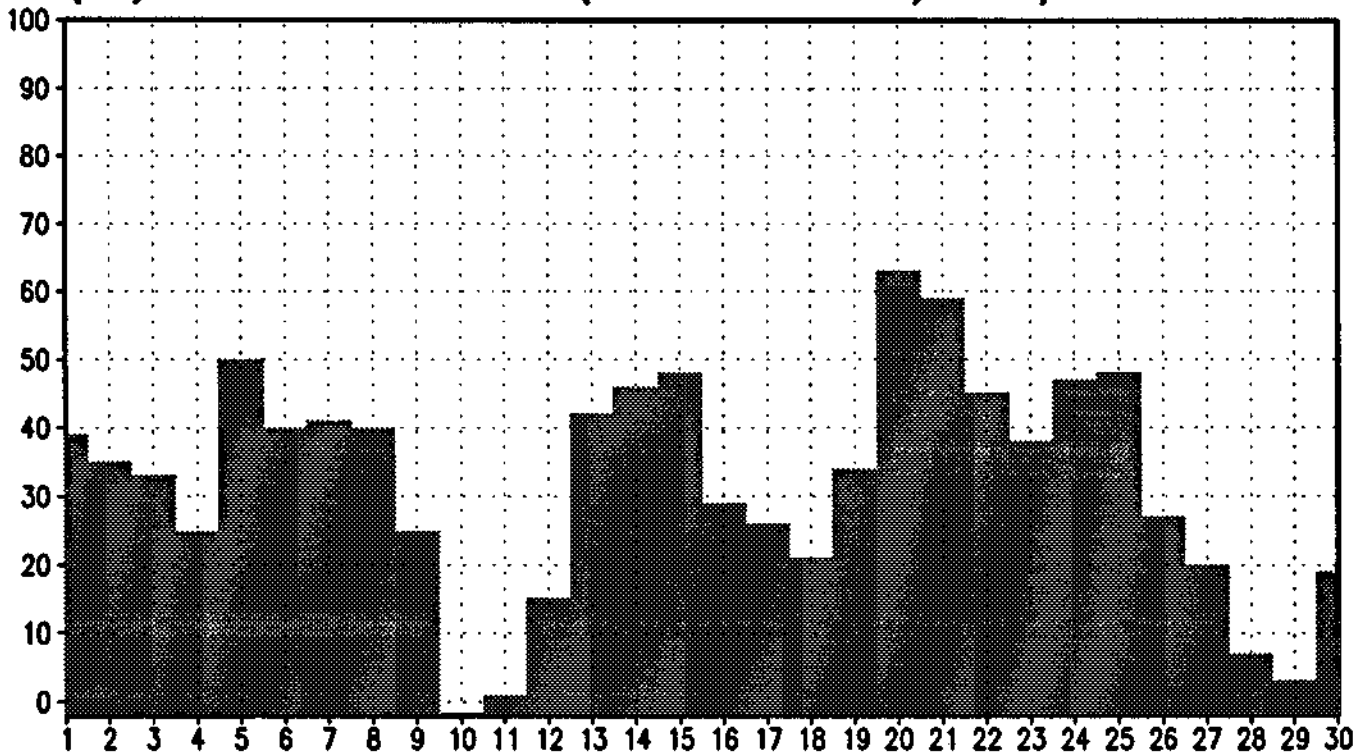
(%) DE VALORES (≥ 120 'D') 06/94 18TMG



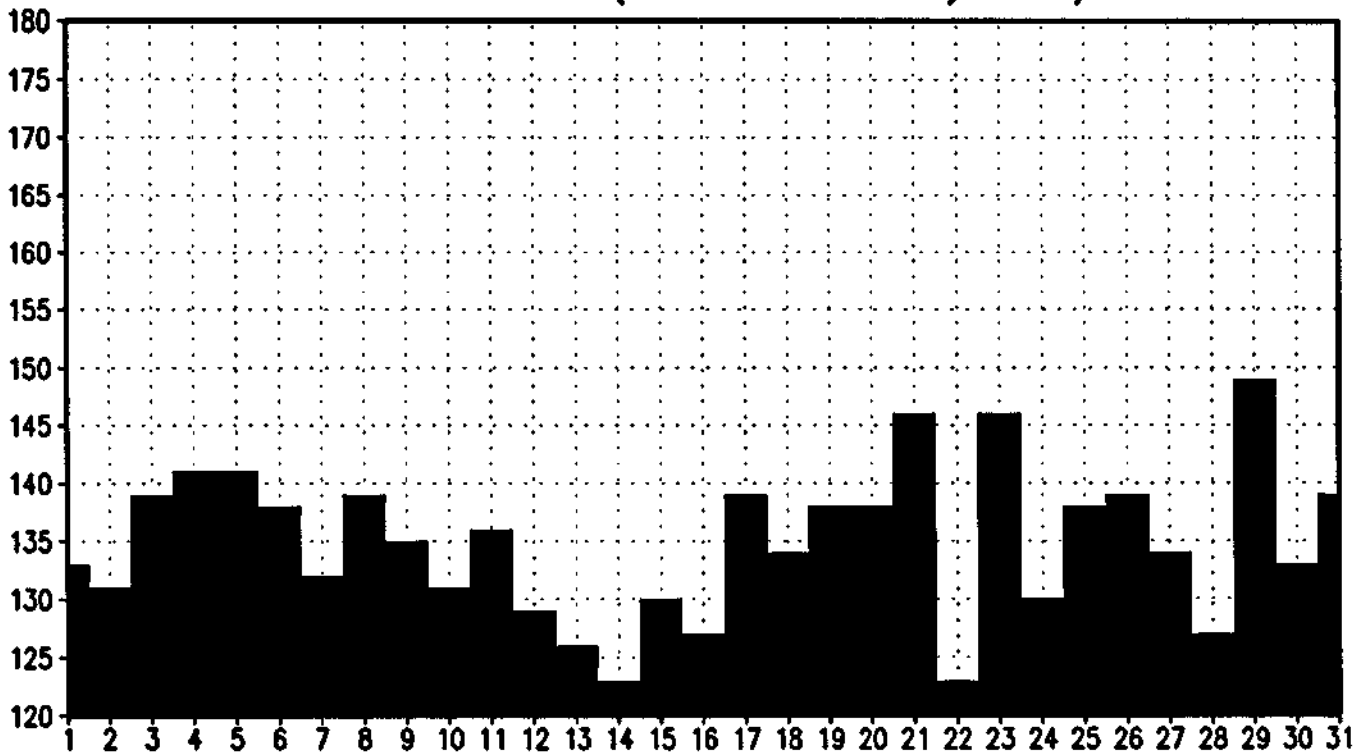
MEDIA DE VALORES (≥ 120 'E') 06/94 18TMG



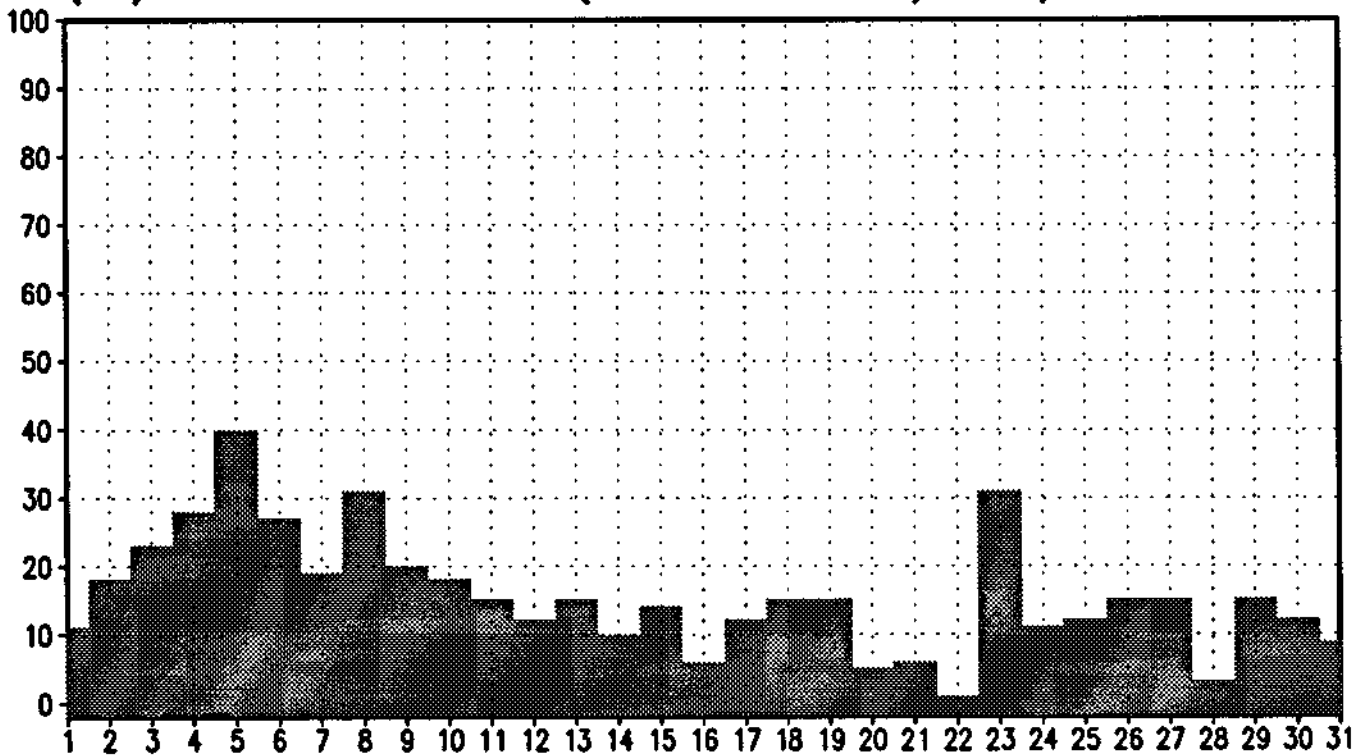
(%) DE VALORES (≥ 120 'E') 06/94 18TMG



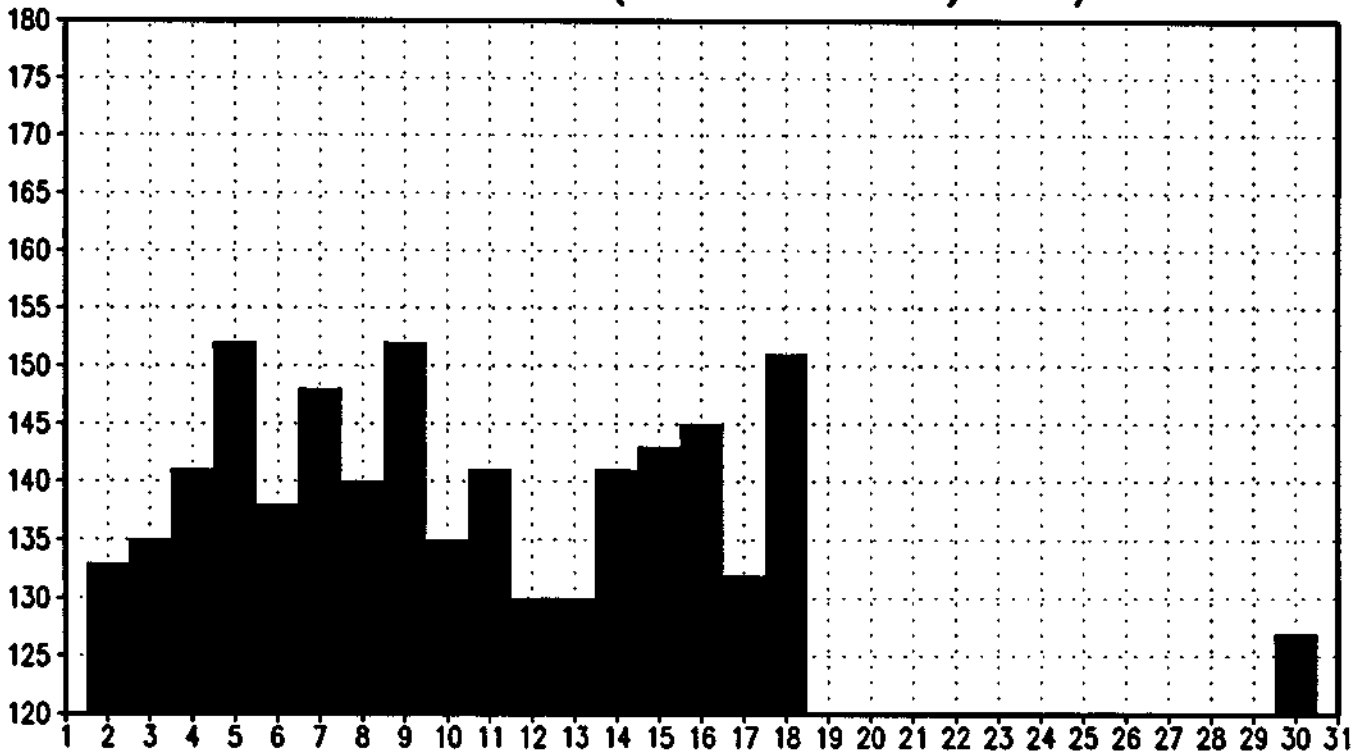
MEDIA DE VALORES (≥ 120 'A') 07/94 18TMG



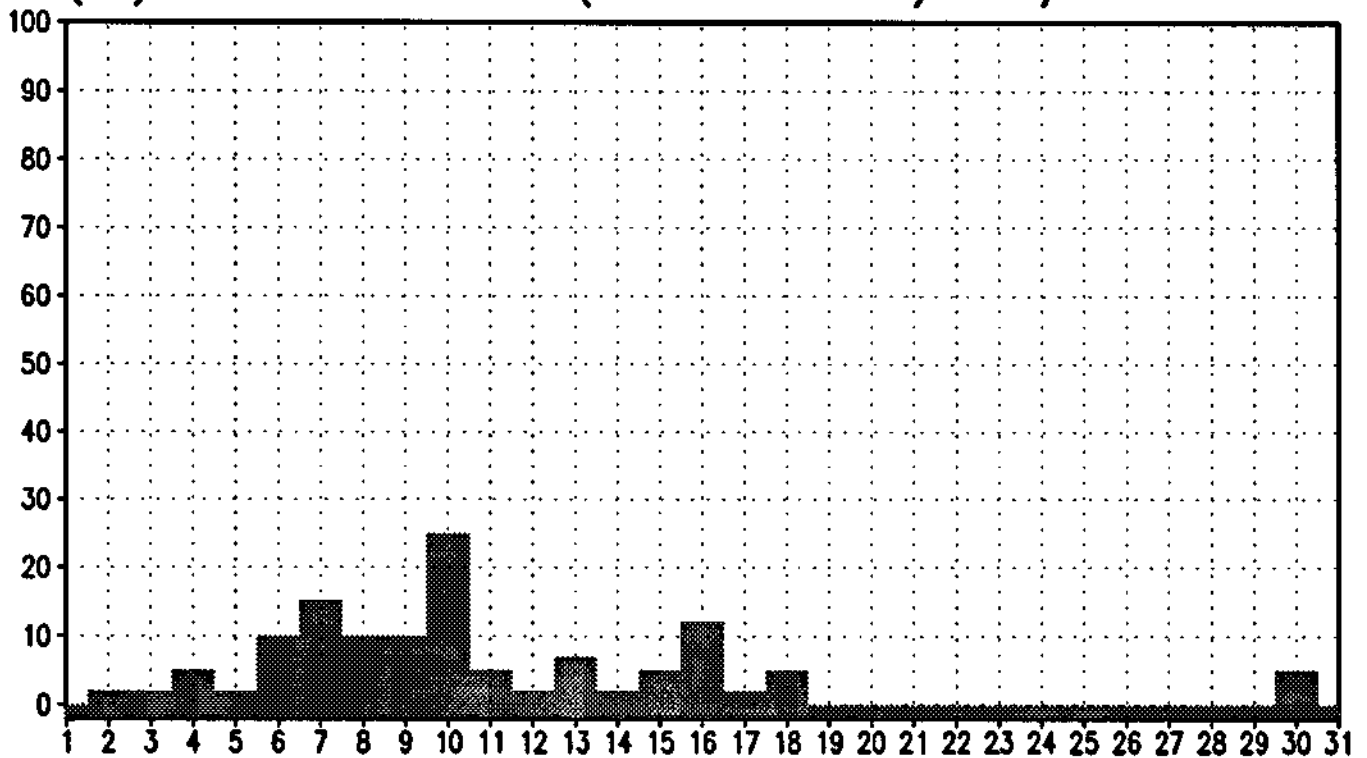
(%) DE VALORES (≥ 120 'A') 07/94 18TMG



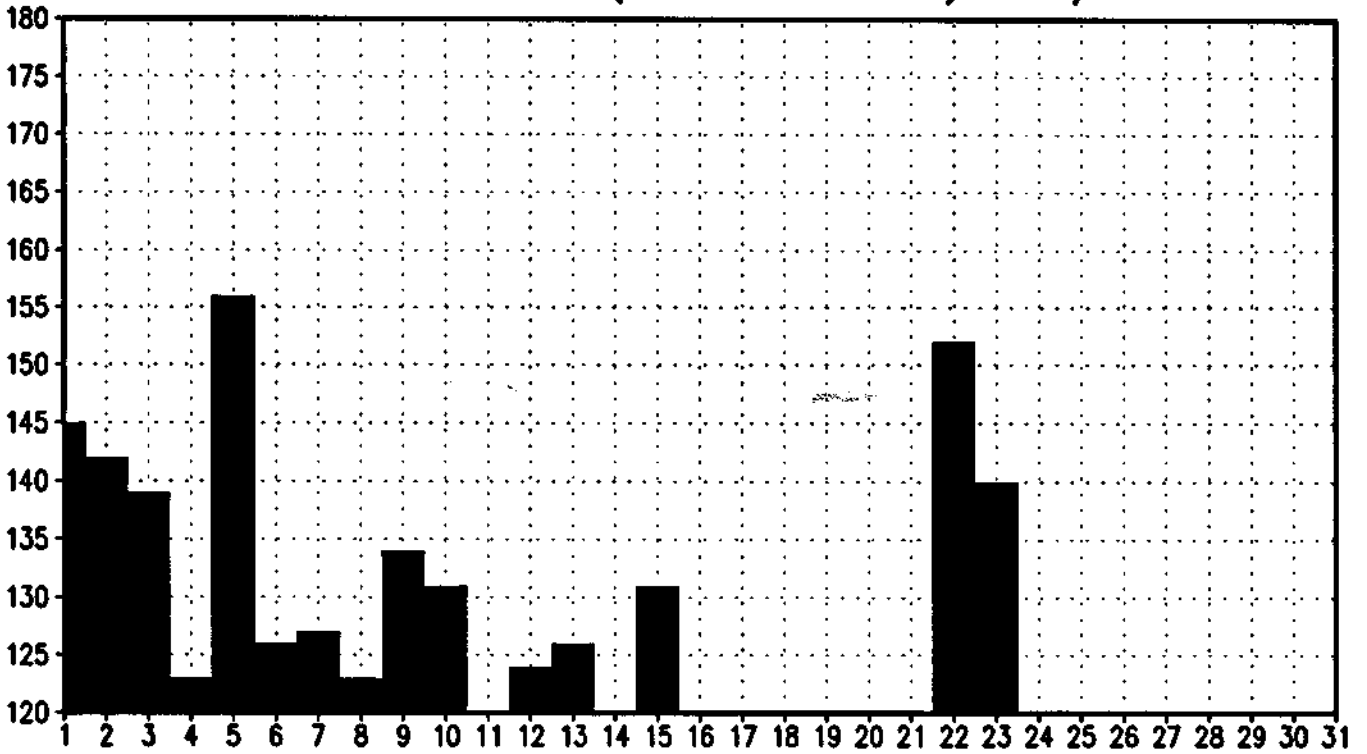
MEDIA DE VALORES (≥ 120 'B') 07/94 18TMG



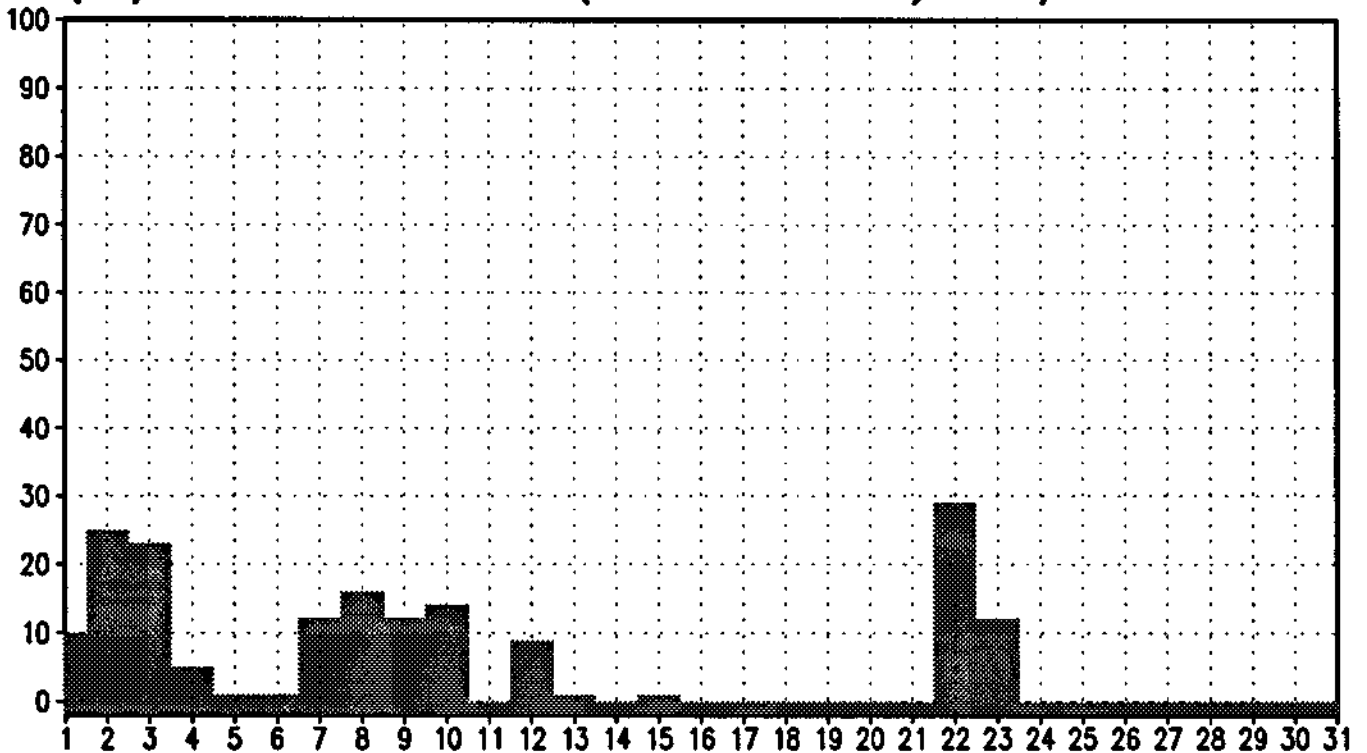
(%) DE VALORES (≥ 120 'B') 07/94 18TMG



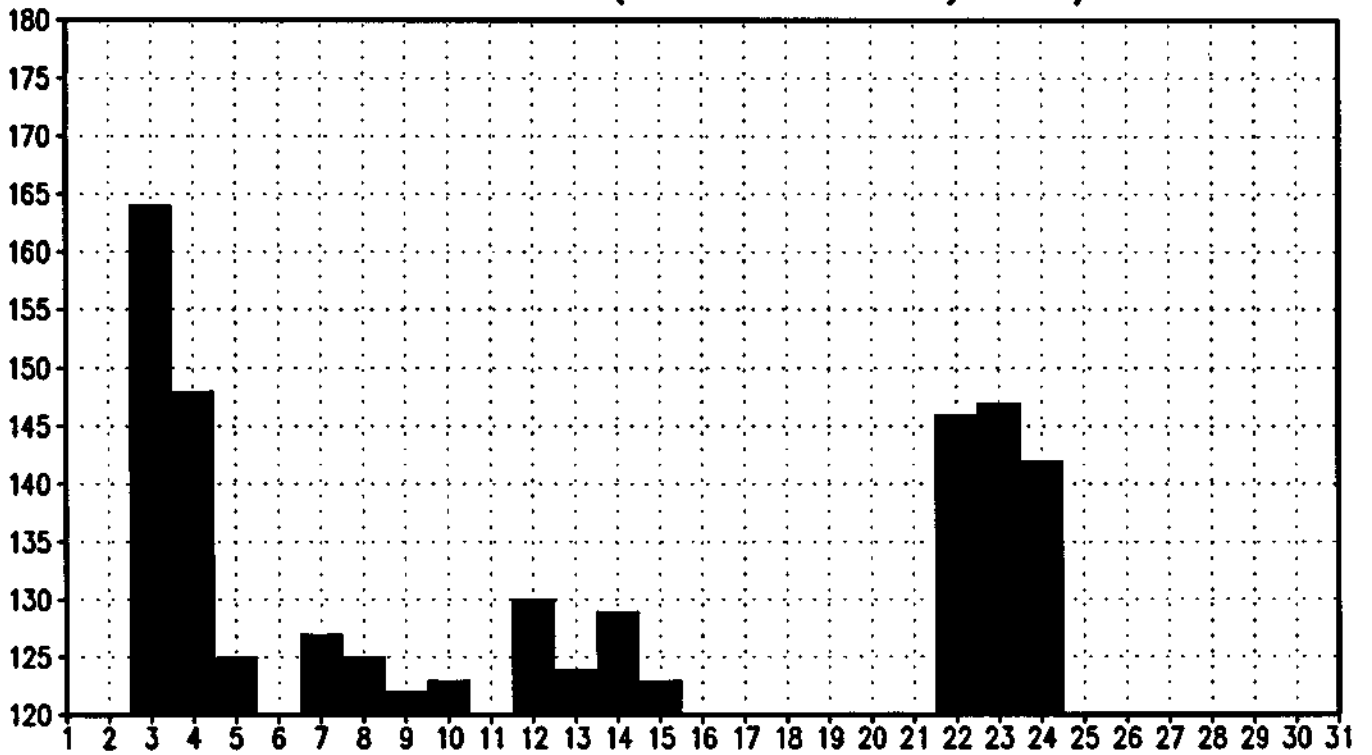
MEDIA DE VALORES (≥ 120 'C') 07/94 18TMG



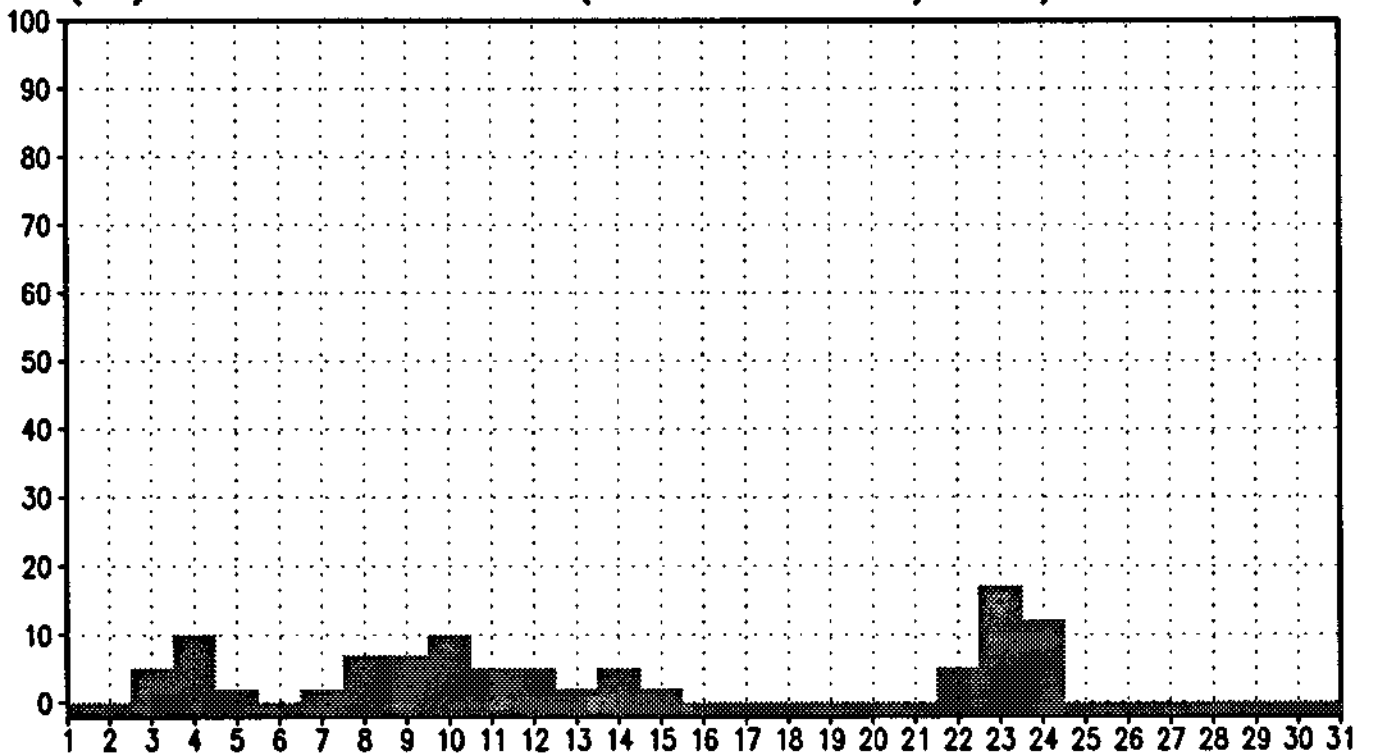
(%) DE VALORES (≥ 120 'C') 07/94 18TMG



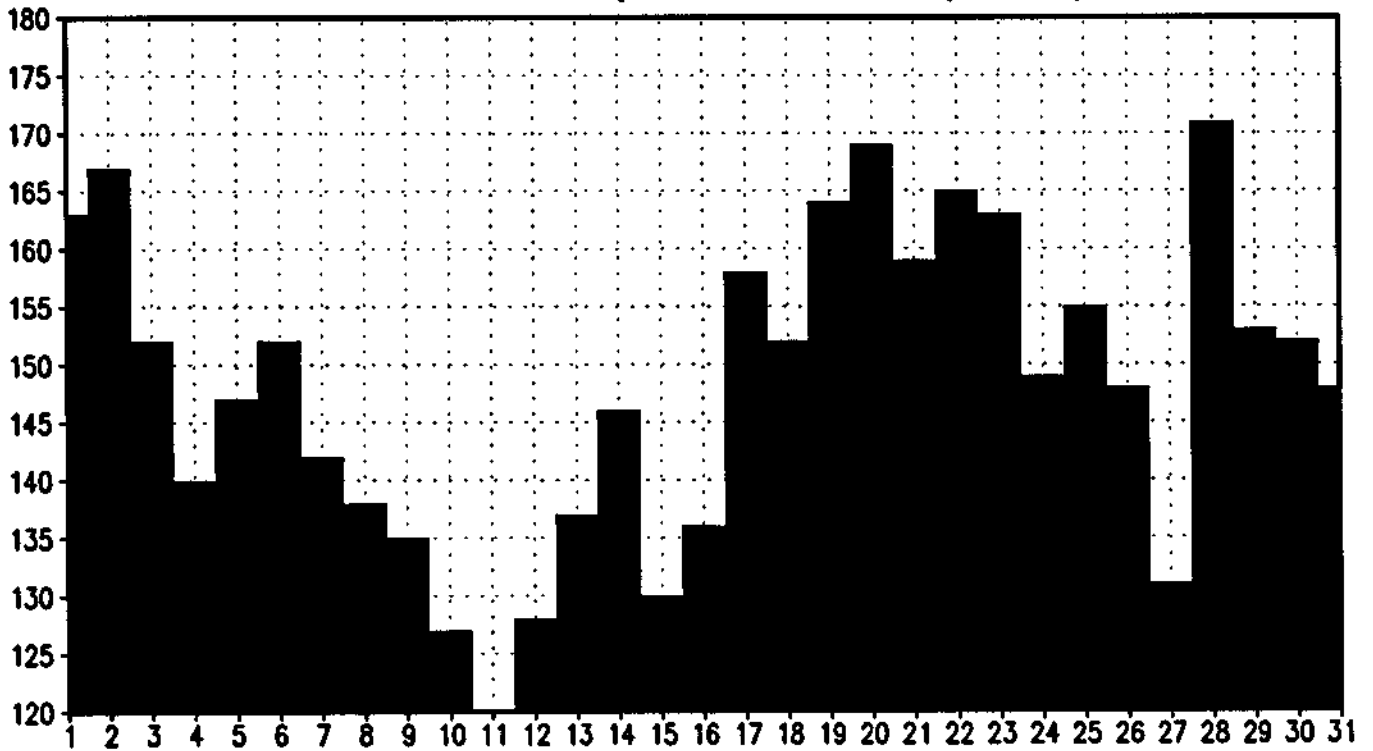
MEDIA DE VALORES (≥ 120 'D') 07/94 18TMG



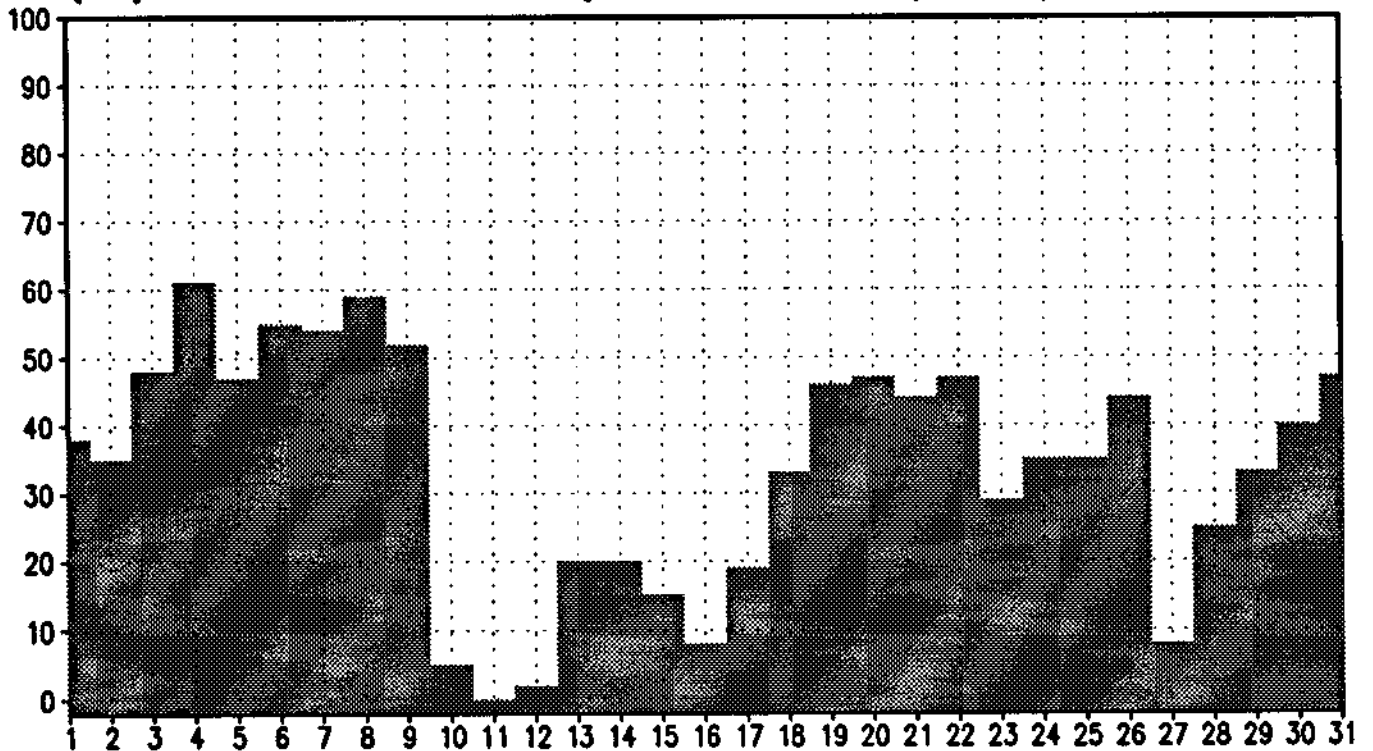
(%) DE VALORES (≥ 120 'D') 07/94 18TMG



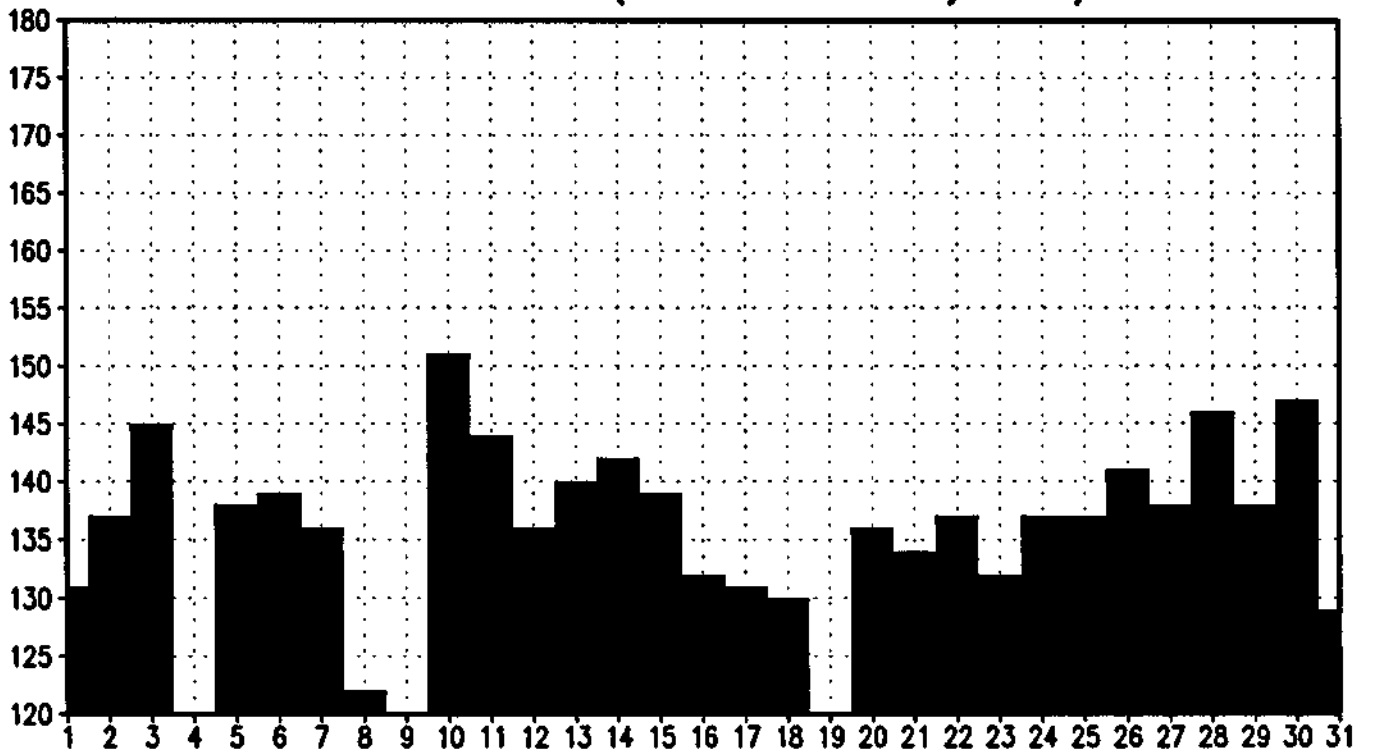
MEDIA DE VALORES (≥ 120 'E') 07/94 18TMG



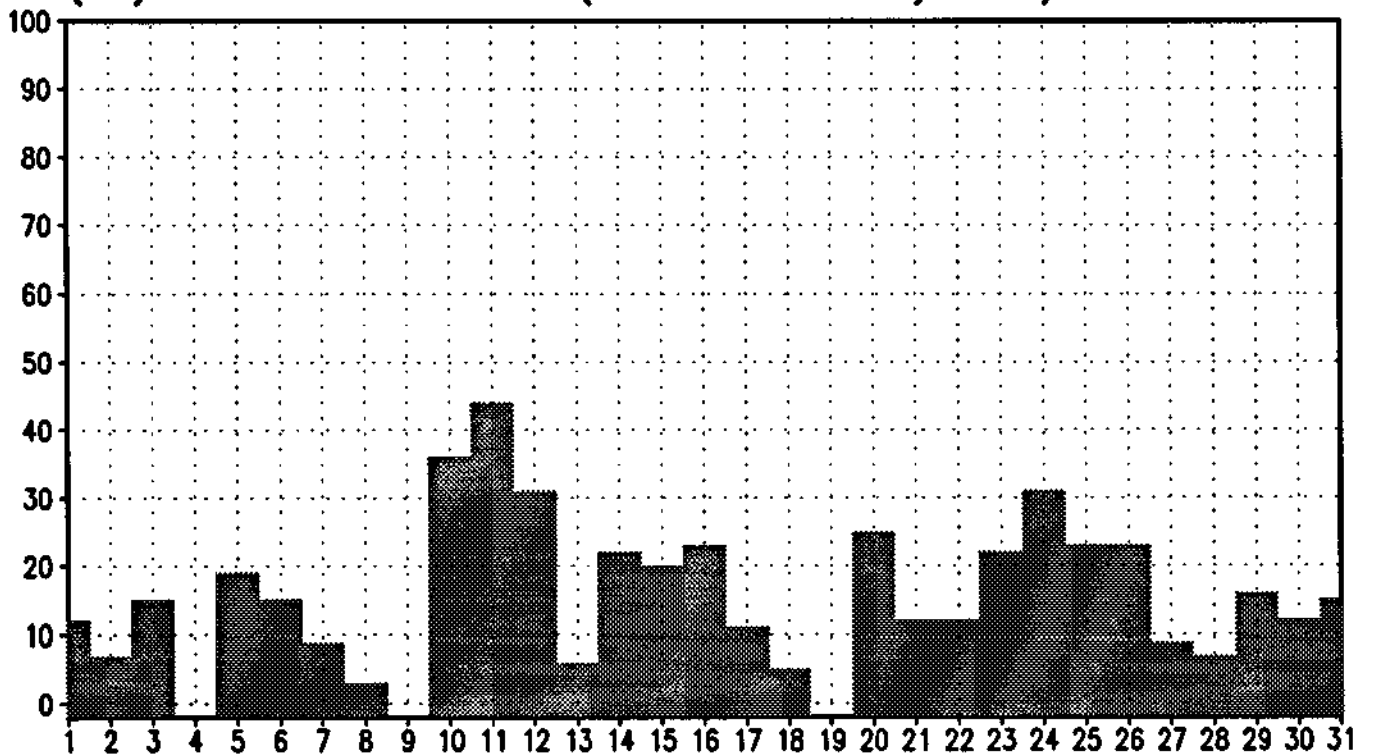
(%) DE VALORES (≥ 120 'E') 07/94 18TMG



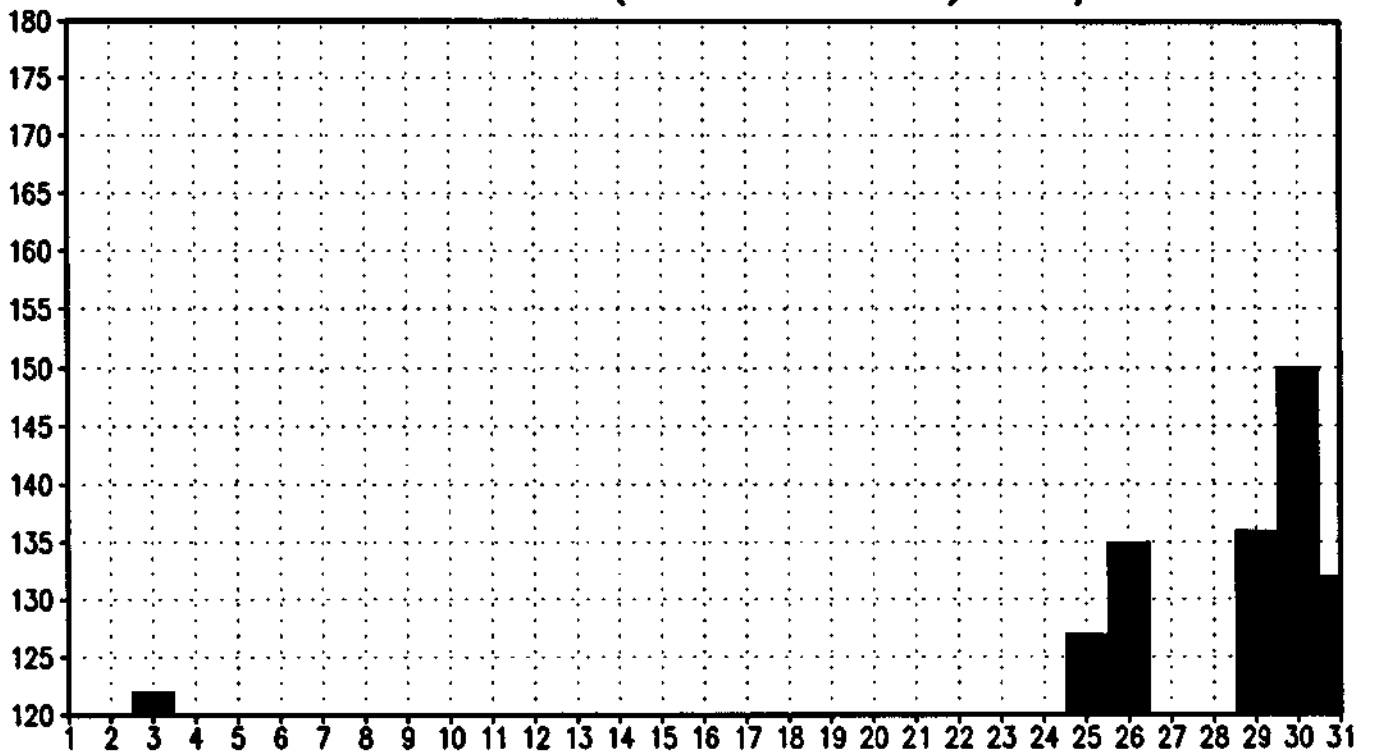
MEDIA DE VALORES (≥ 120 'A') 08/94 18TMG



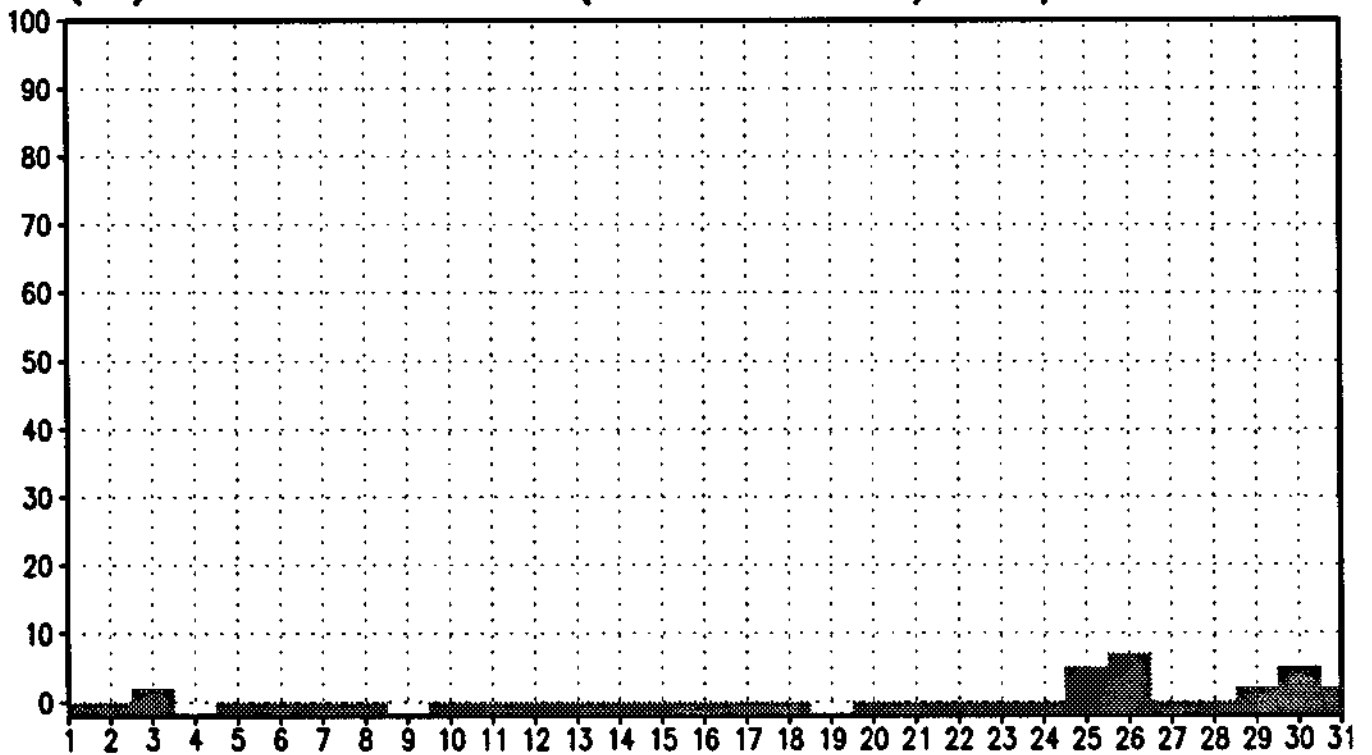
(%) DE VALORES (≥ 120 'A') 08/94 18TMG



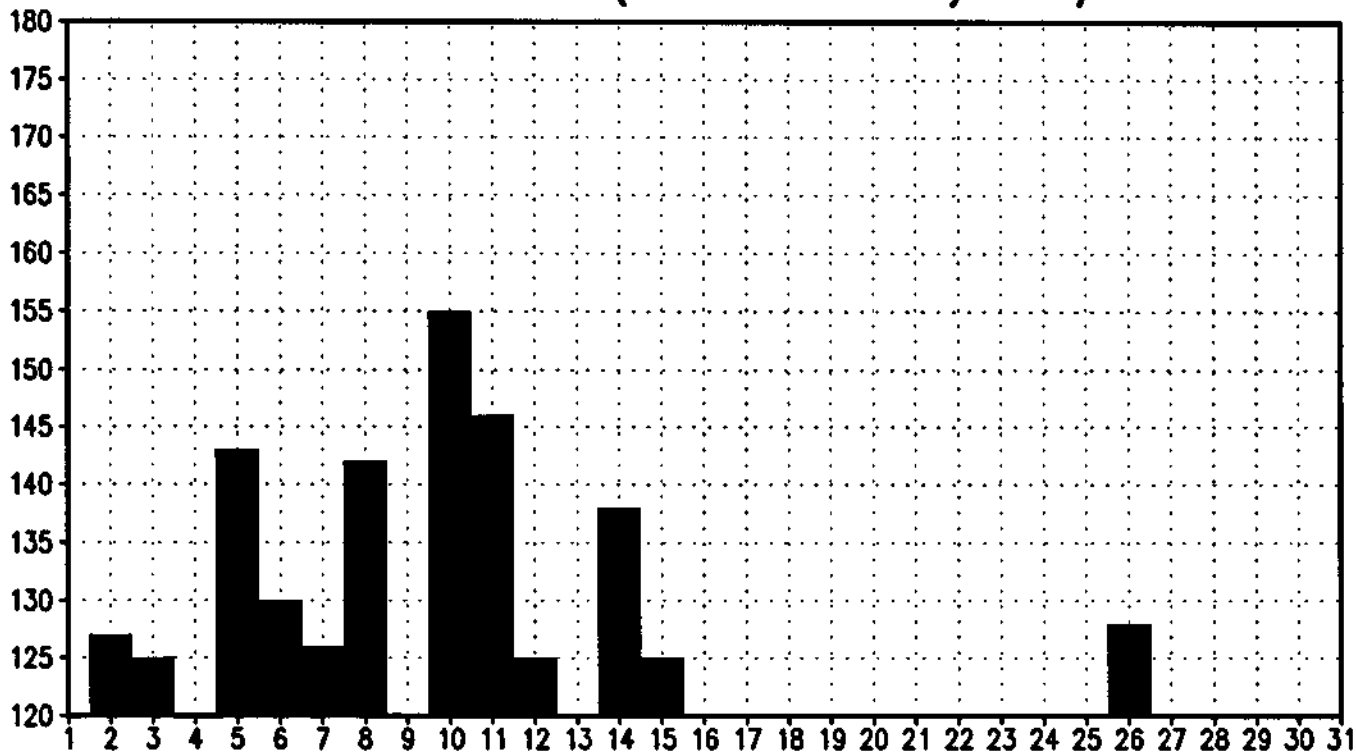
MEDIA DE VALORES (≥ 120 'B') 08/94 18TMG



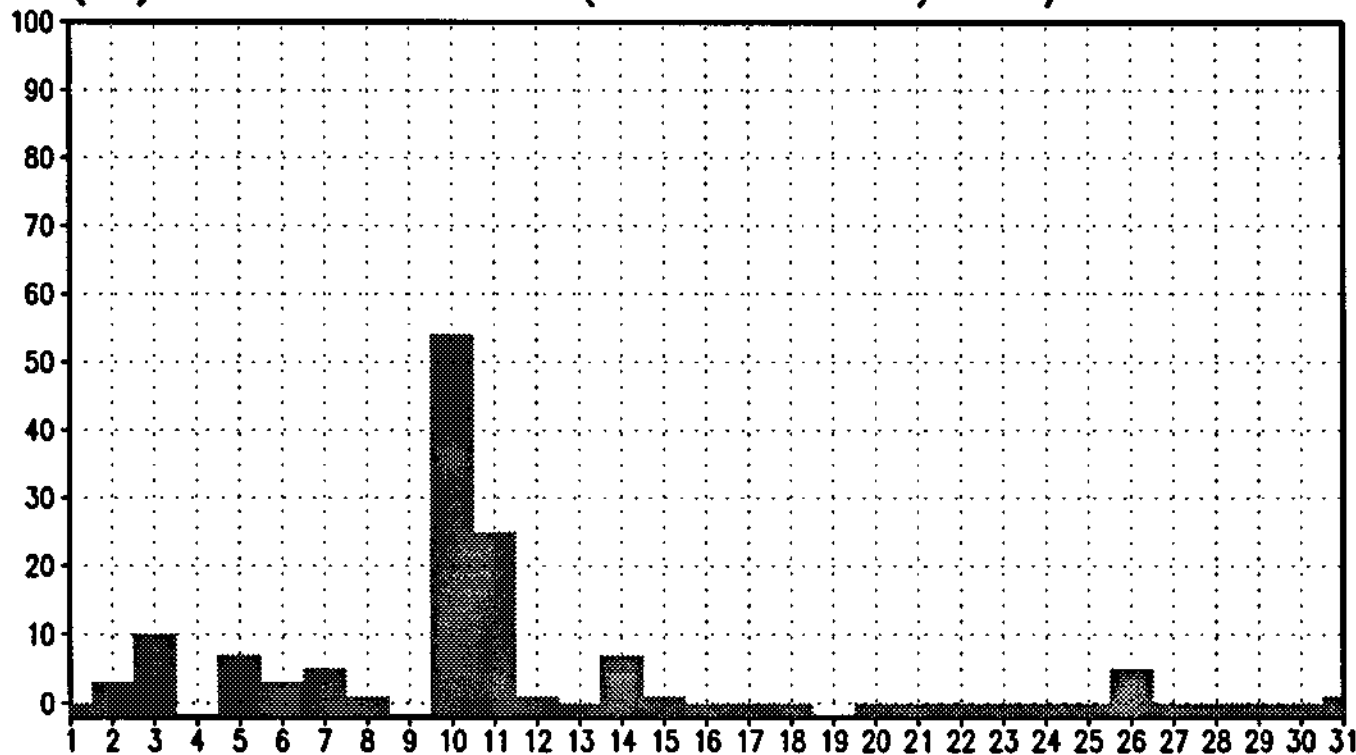
(%) DE VALORES (≥ 120 'B') 08/94 18TMG



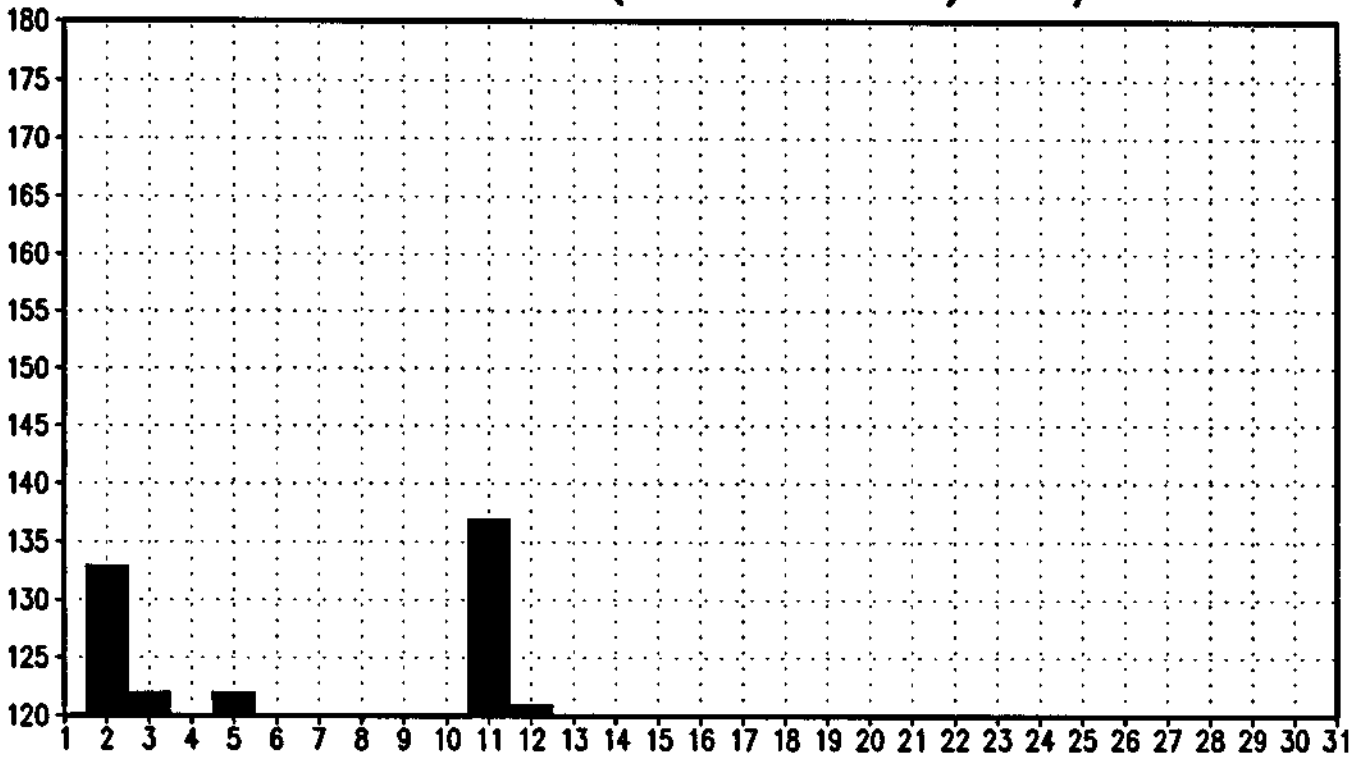
MEDIA DE VALORES (≥ 120 'C') 08/94 18TMG



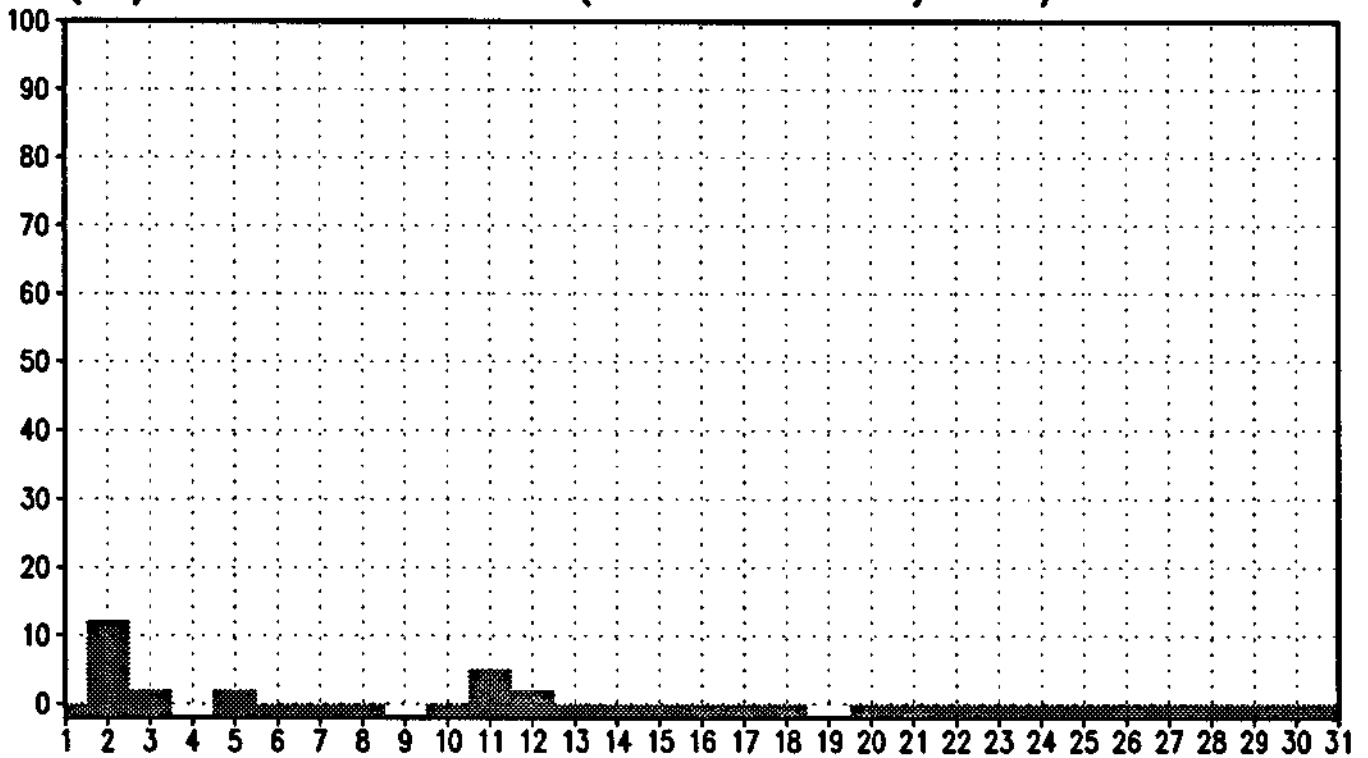
(%) DE VALORES (≥ 120 'C') 08/94 18TMG



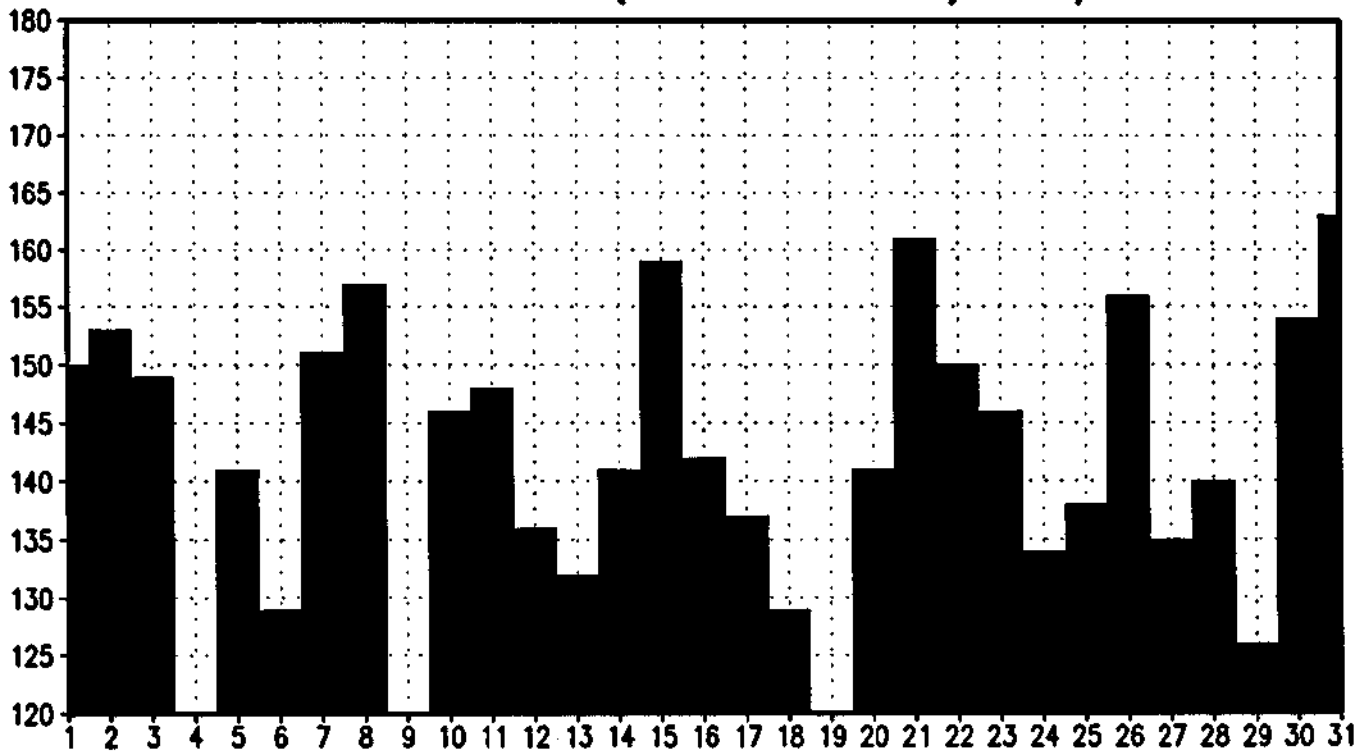
MEDIA DE VALORES (≥ 120 'D') 08/94 18TMG



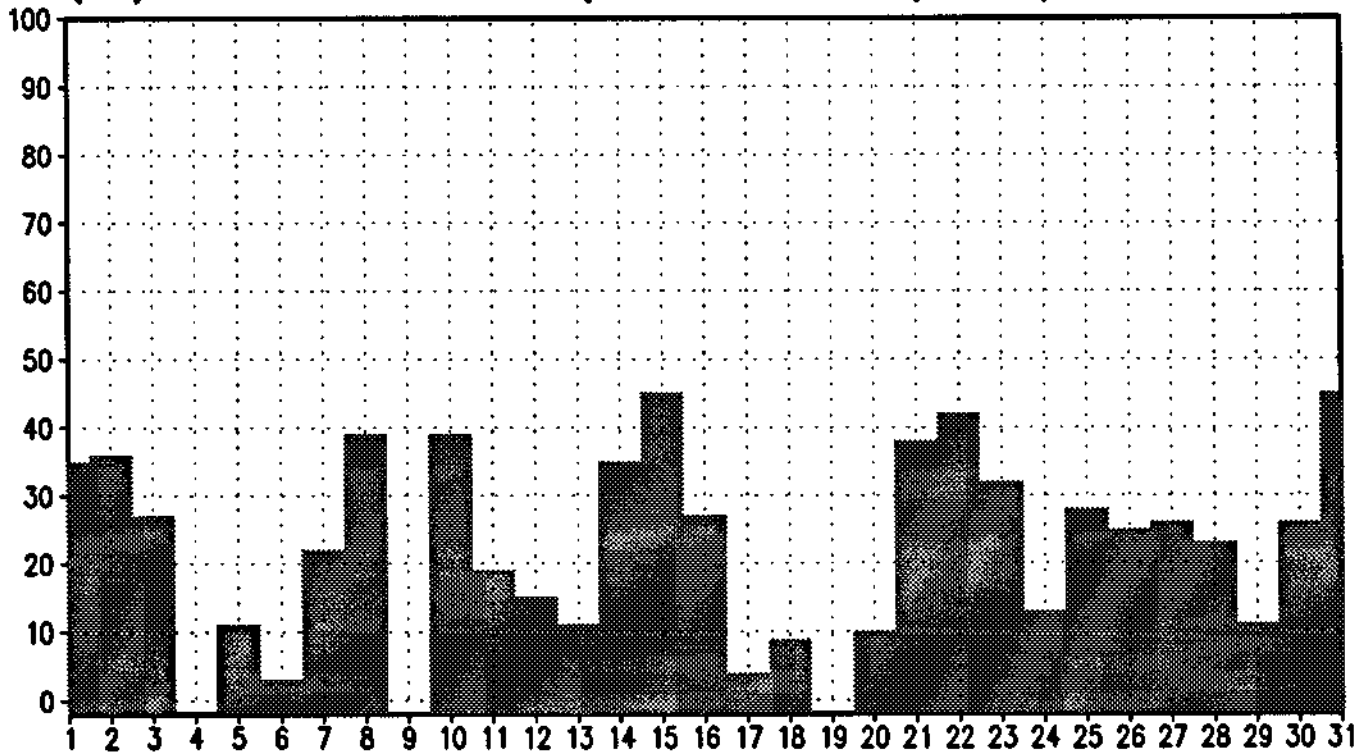
(%) DE VALORES (≥ 120 'D') 08/94 18TMG



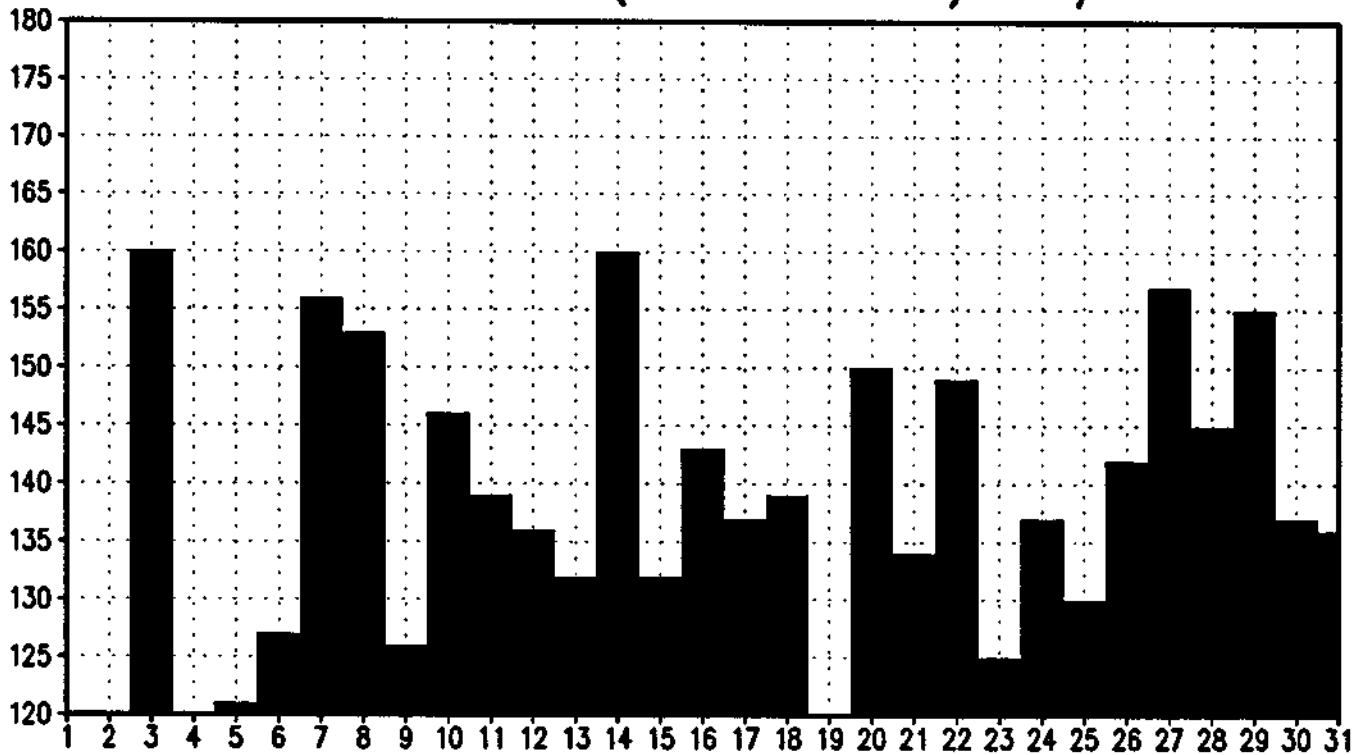
MEDIA DE VALORES (≥ 120 'E') 08/94 18TMG



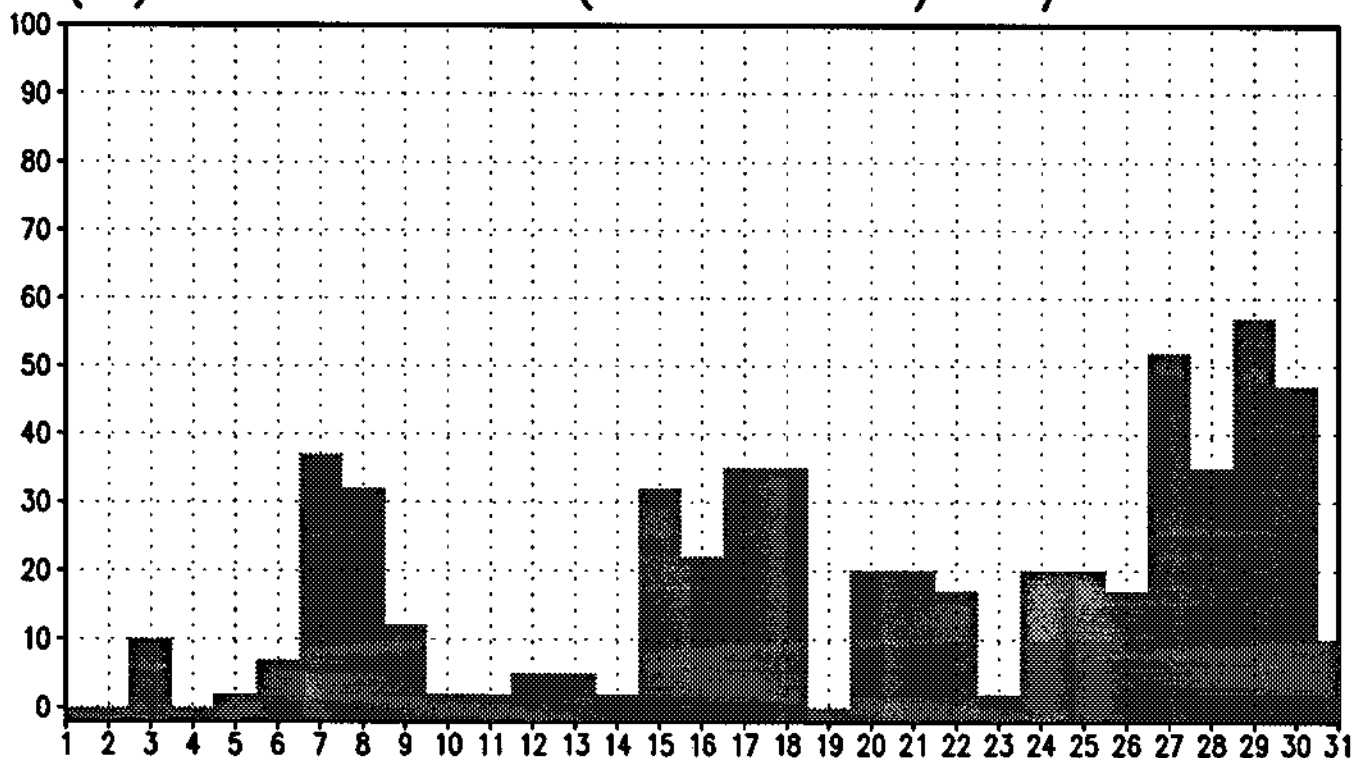
(%) DE VALORES (≥ 120 'E') 08/94 18TMG



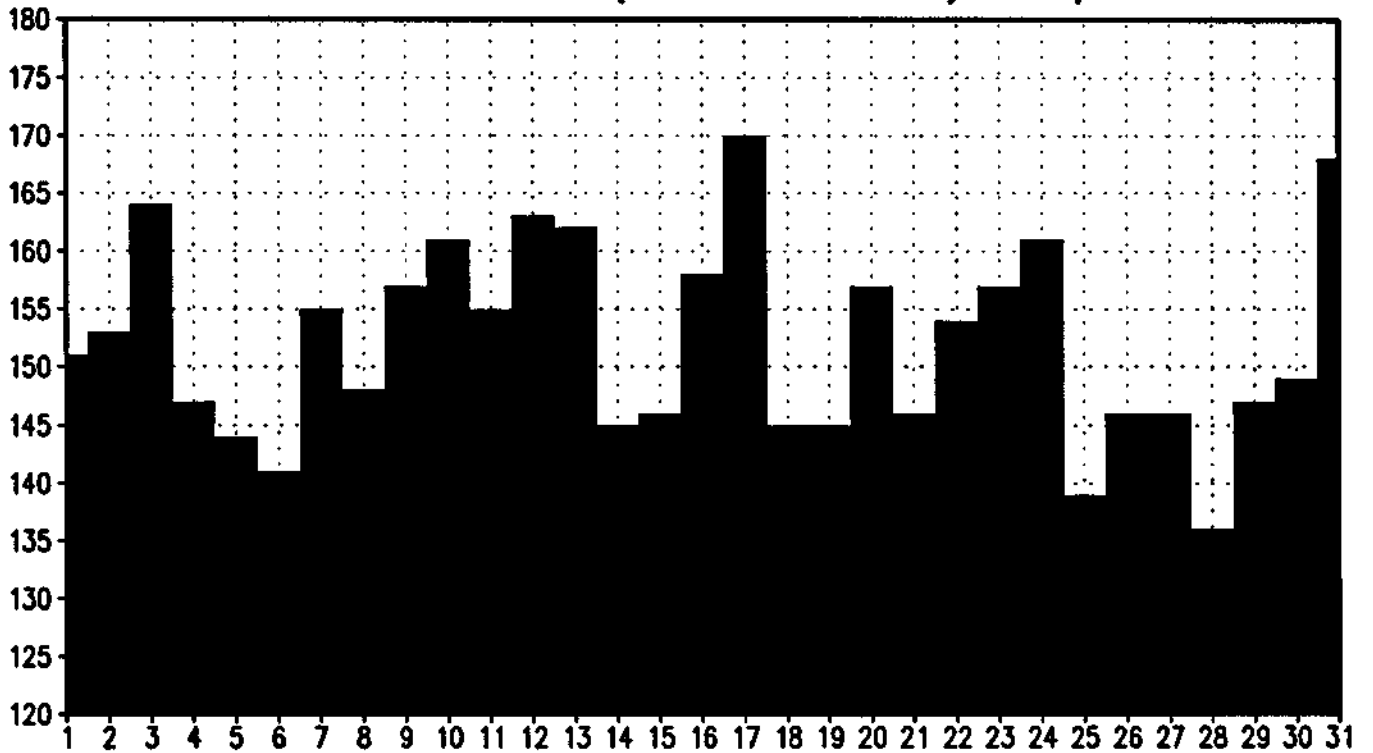
MEDIA DE VALORES (≥ 120 'D') 10/94 18TMG



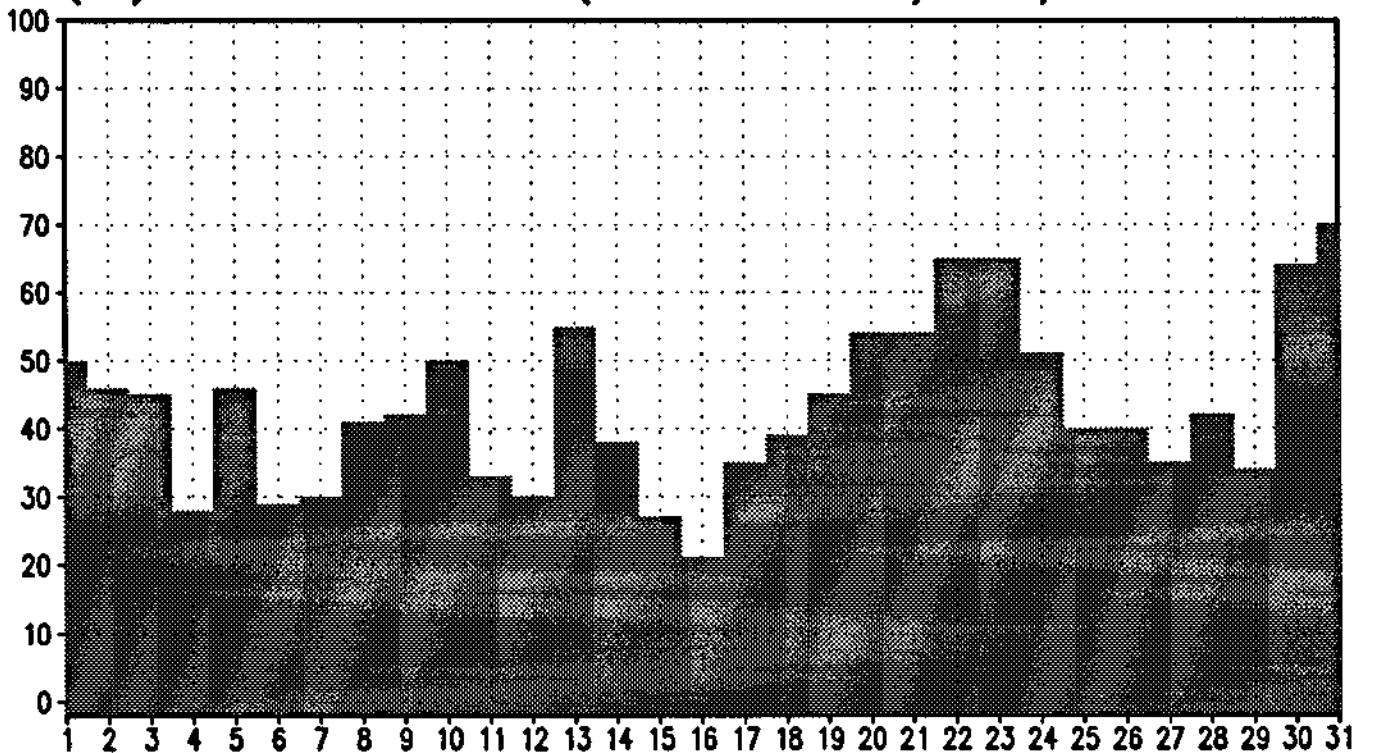
(%) DE VALORES (≥ 120 'D') 10/94 18TMG



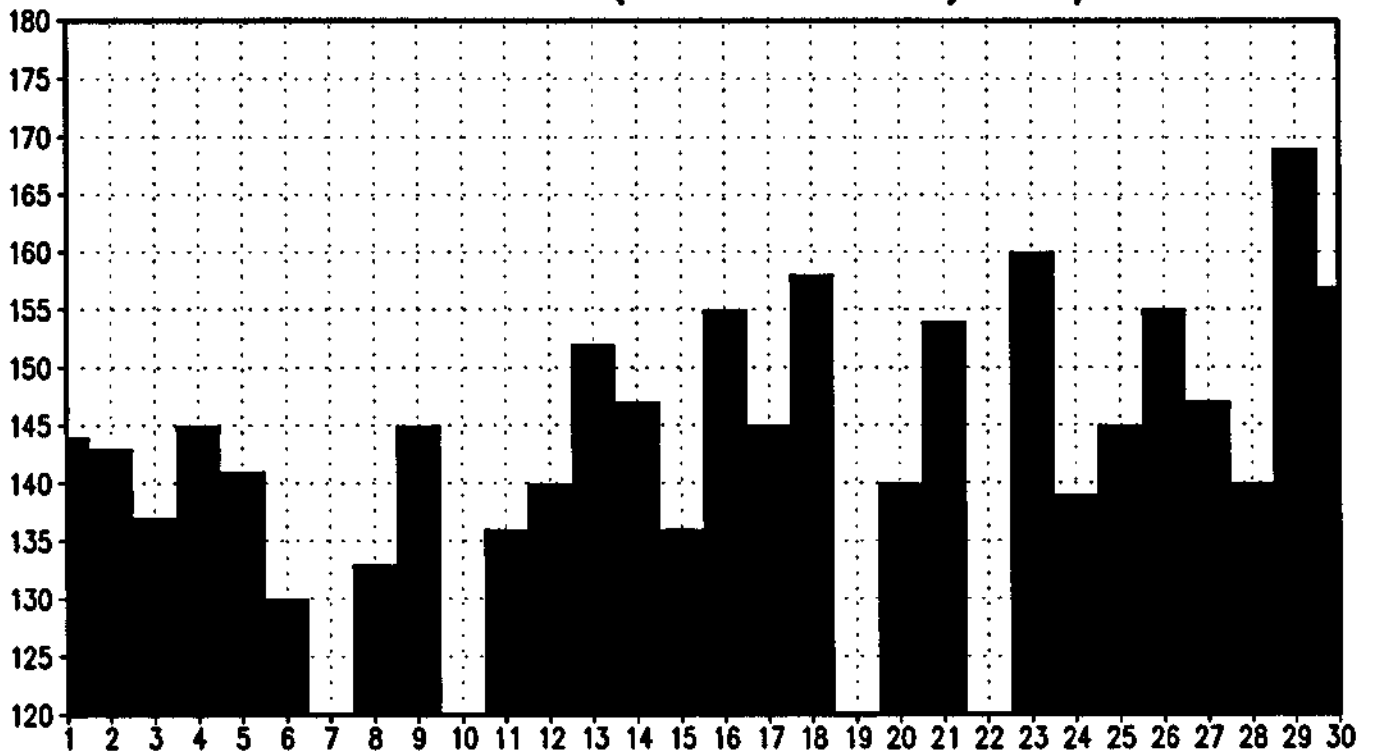
MEDIA DE VALORES (≥ 120 'E') 10/94 18TMG



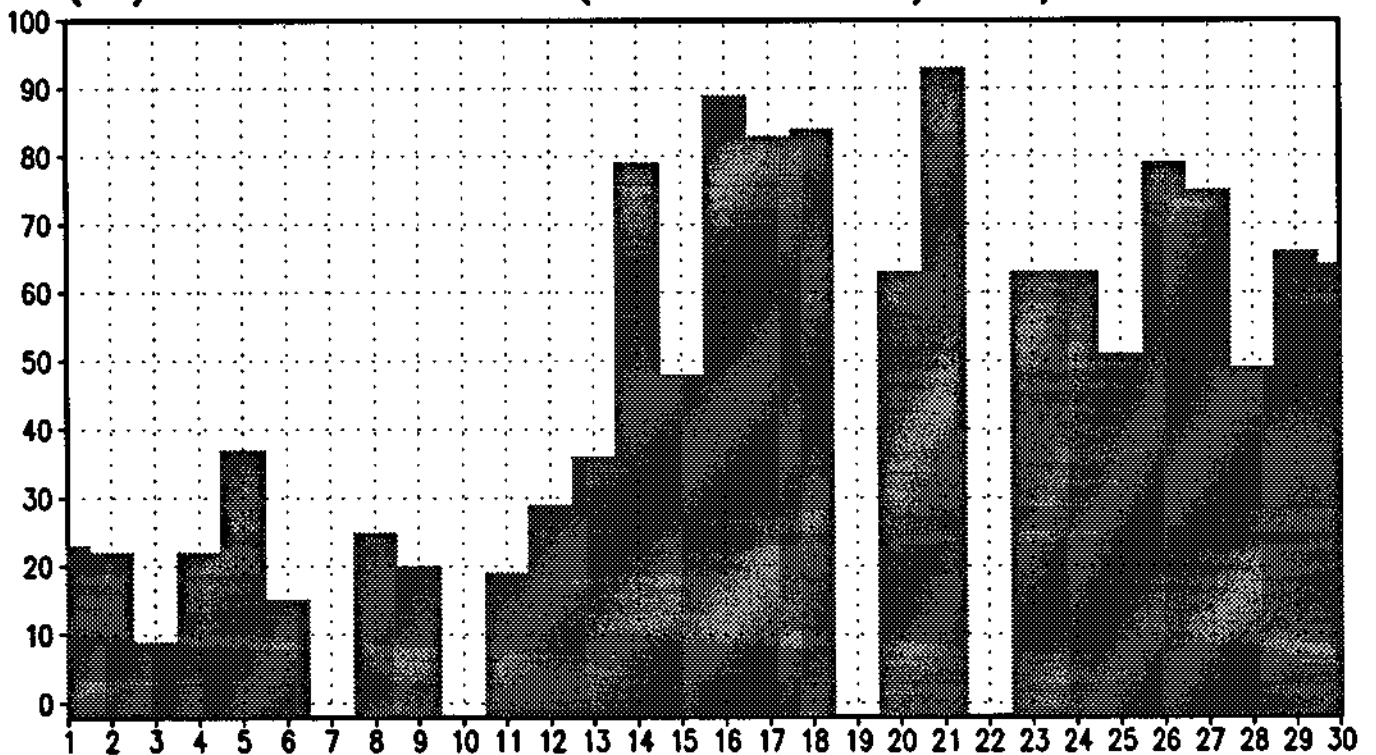
(%) DE VALORES (≥ 120 'E') 10/94 18TMG



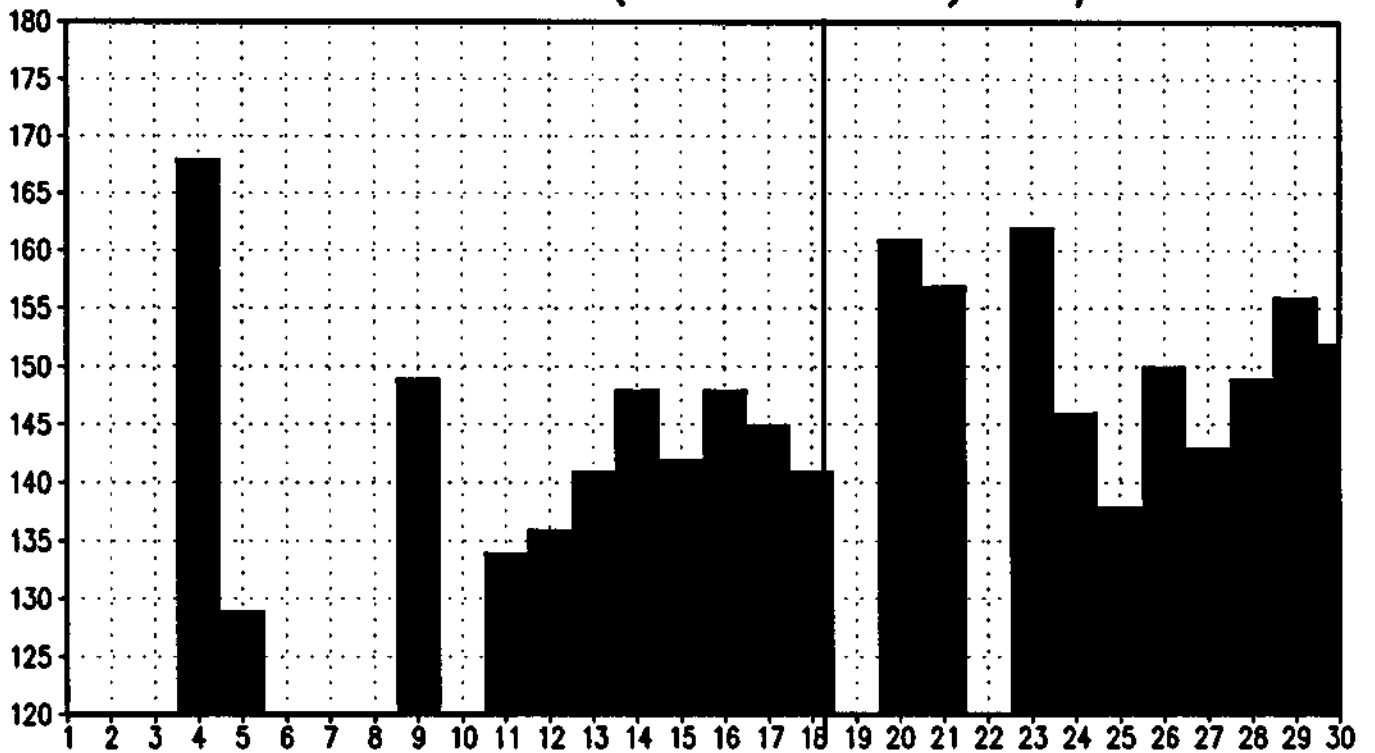
MEDIA DE VALORES (≥ 120 'A') 11/94 18TMG



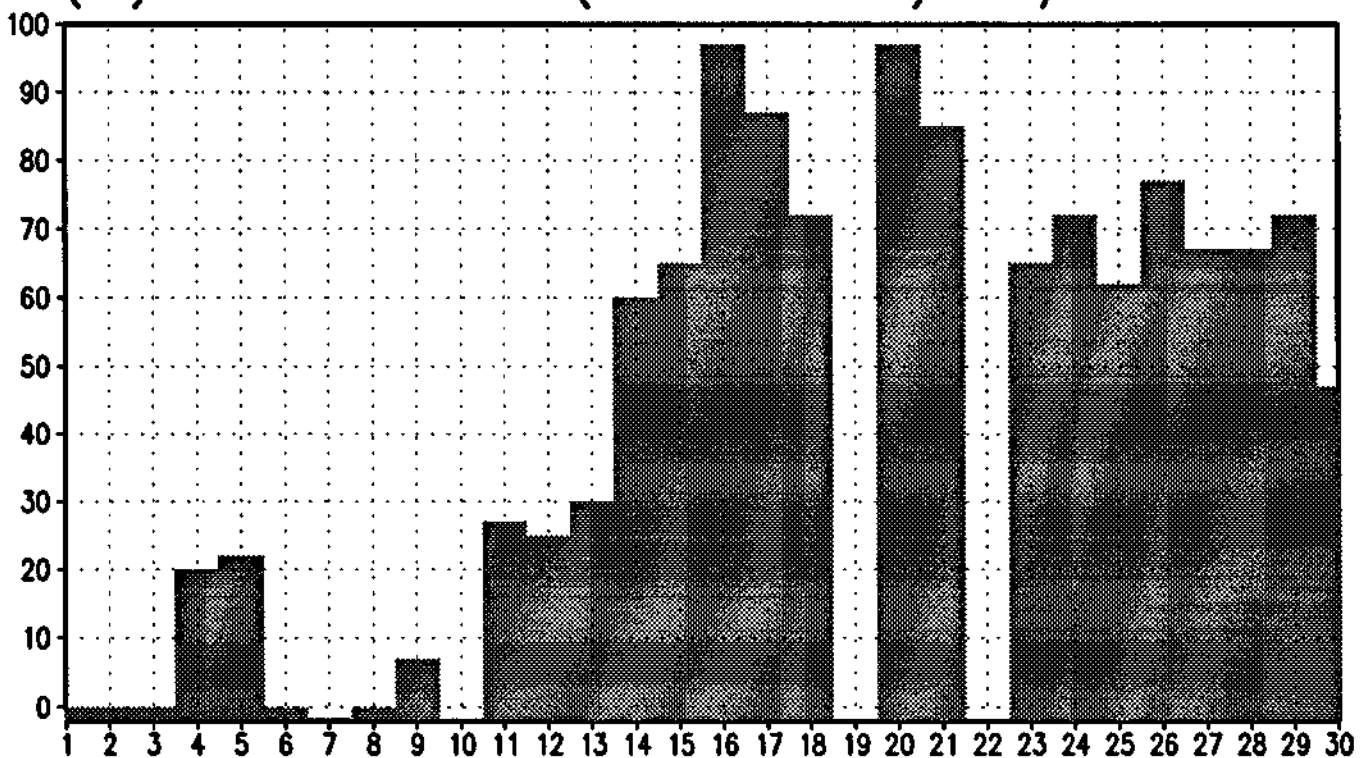
(%) DE VALORES (≥ 120 'A') 11/94 18TMG



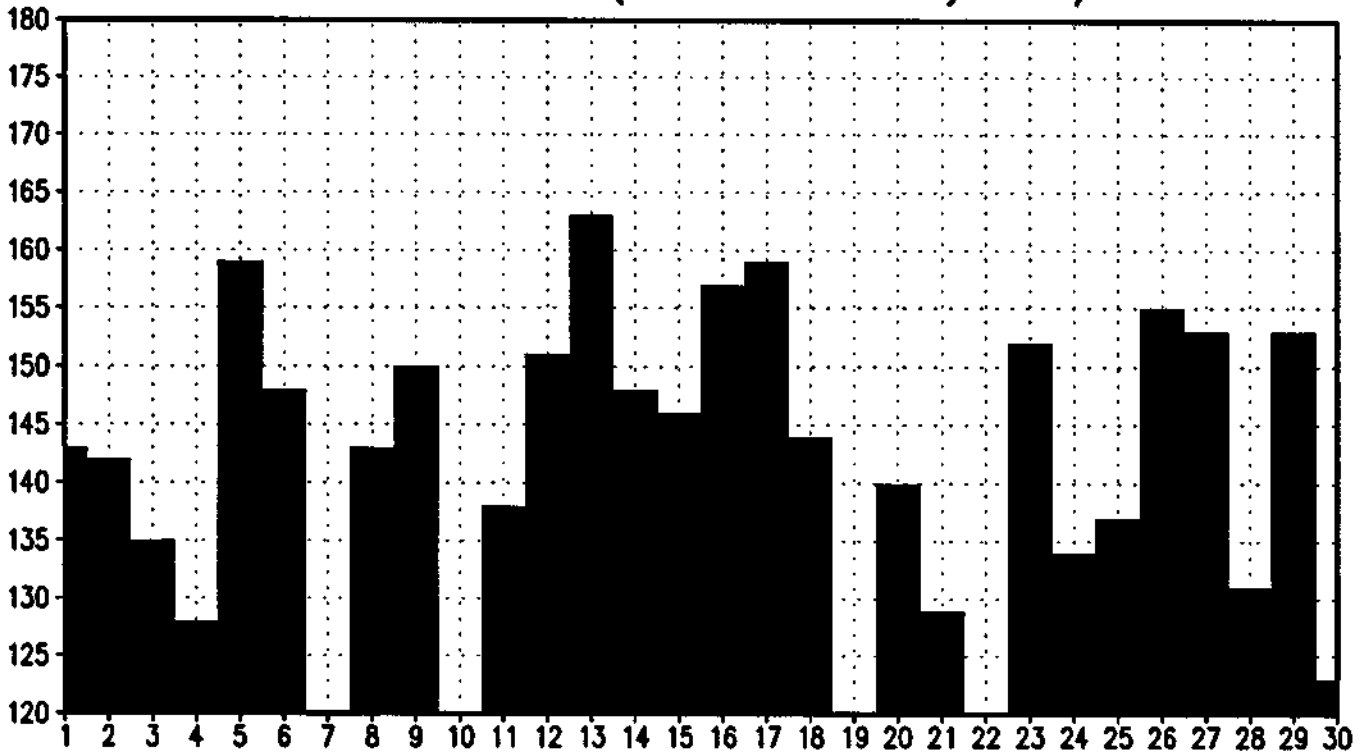
MEDIA DE VALORES (≥ 120 'B') 11/94 18TMG



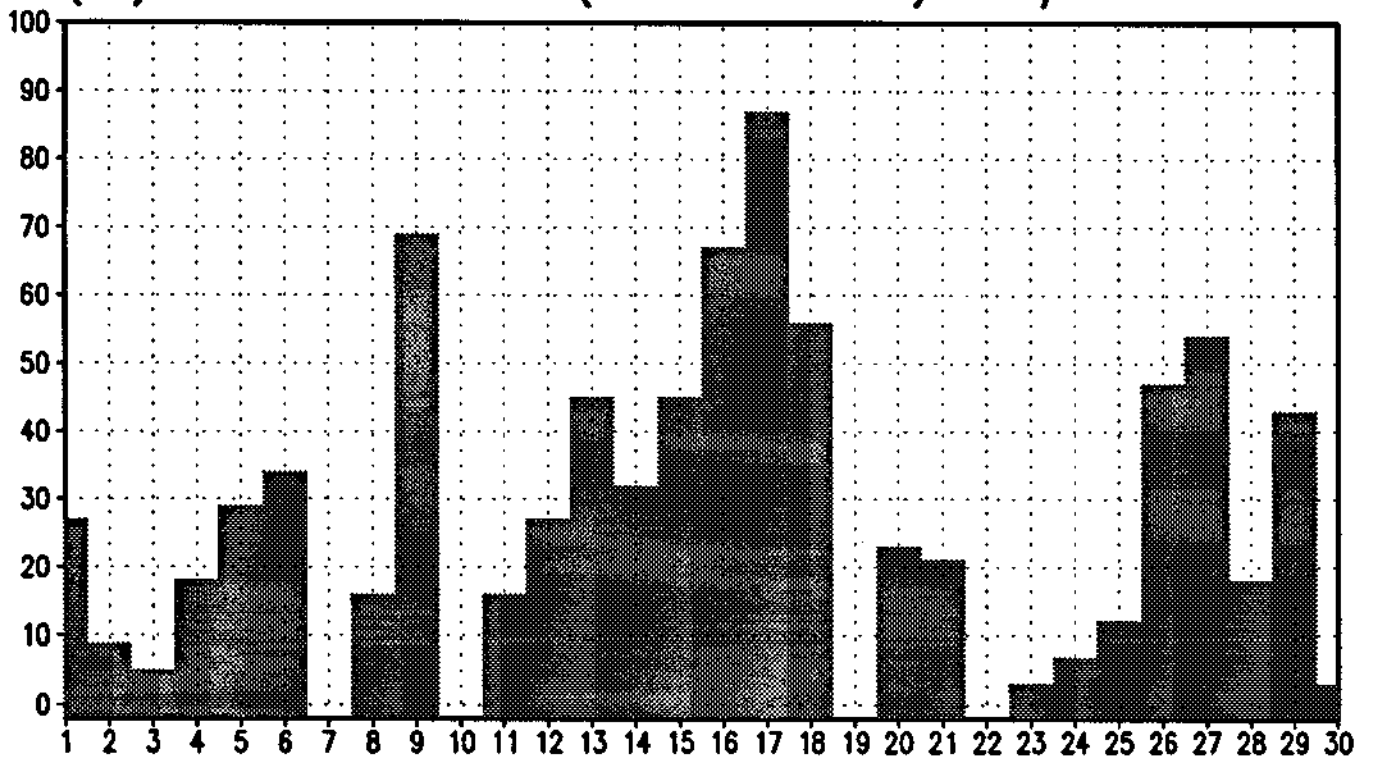
(%) DE VALORES (≥ 120 'B') 11/94 18TMG



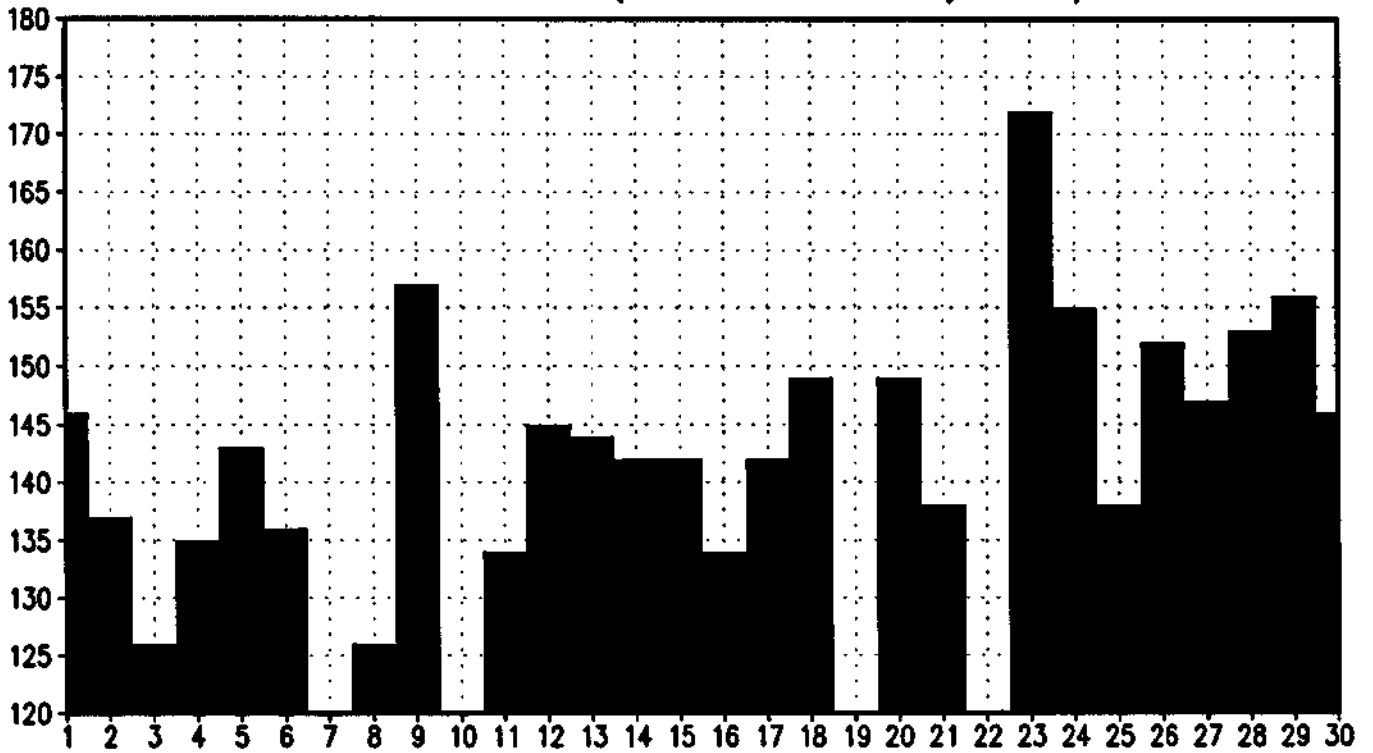
MEDIA DE VALORES (≥ 120 'C') 11/94 18TMG



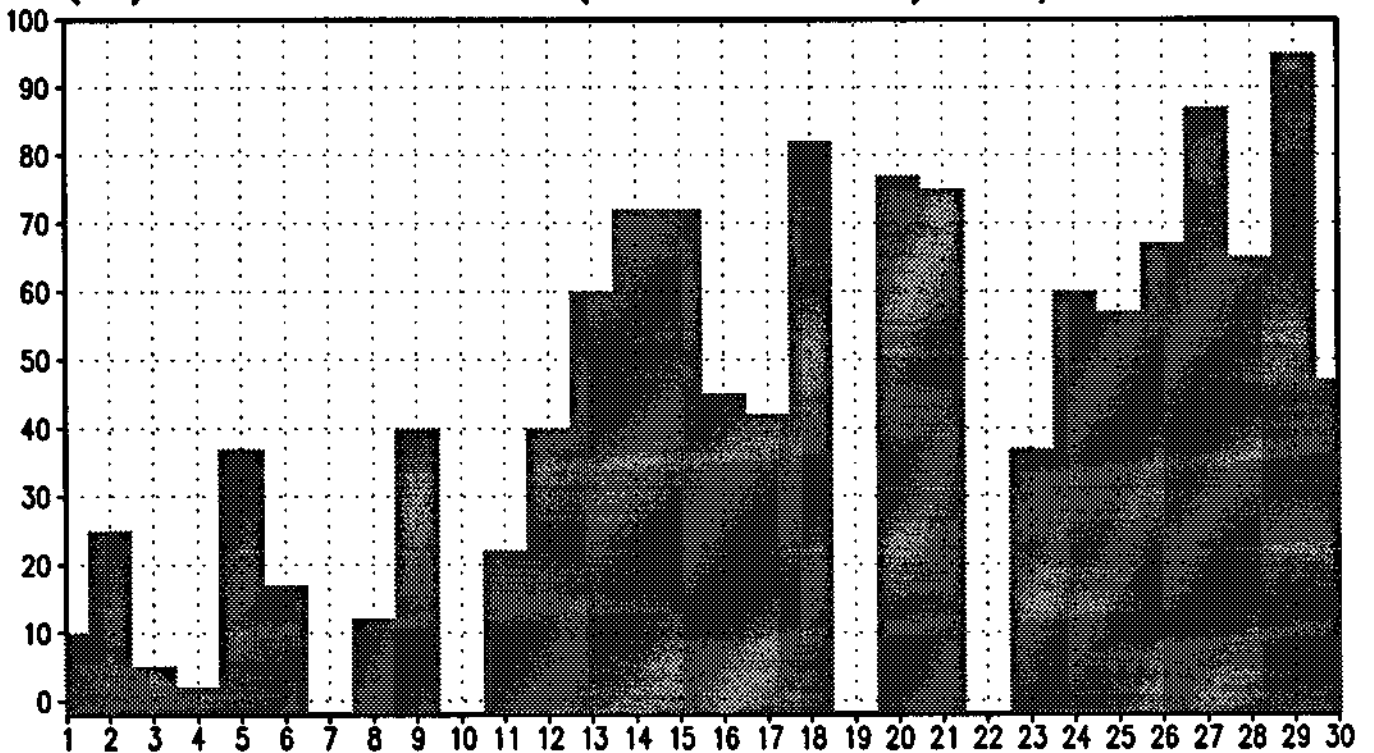
(%) DE VALORES (≥ 120 'C') 11/94 18TMG



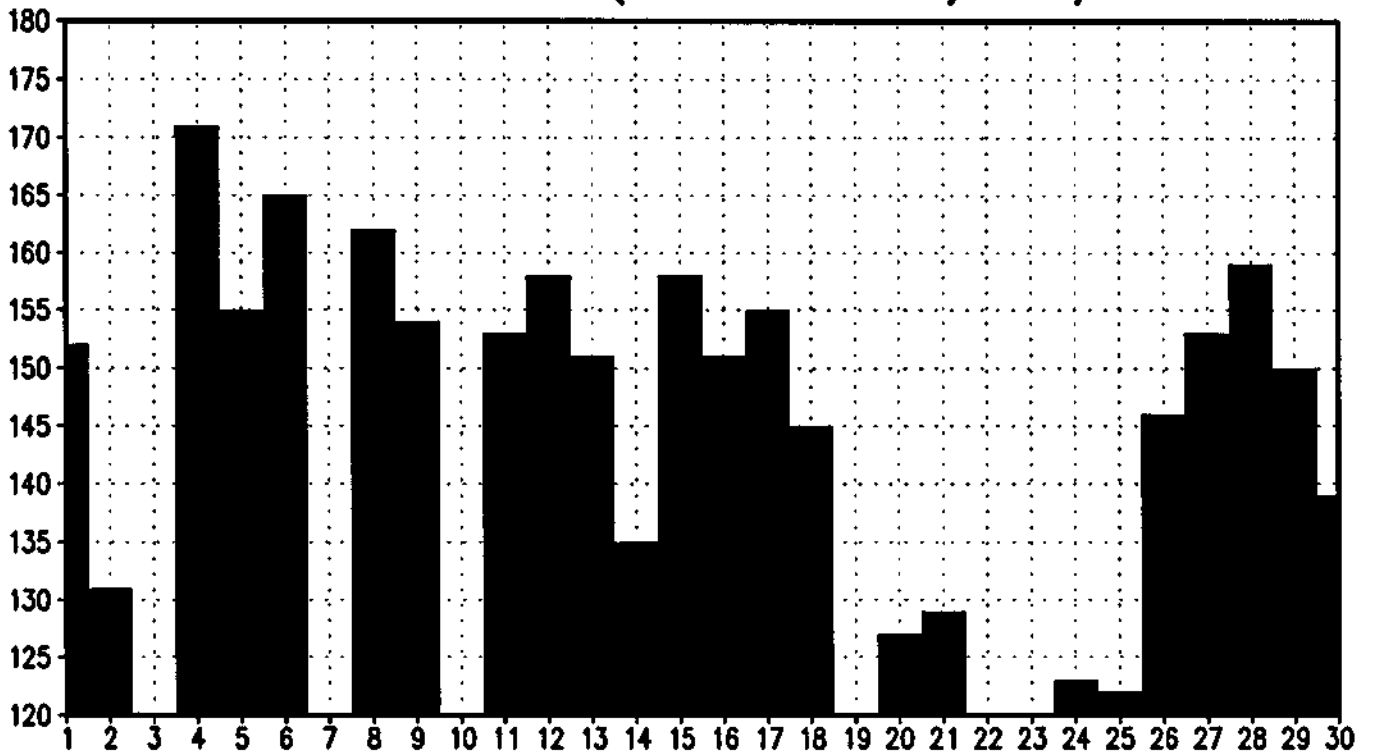
MEDIA DE VALORES (≥ 120 'D') 11/94 18TMG



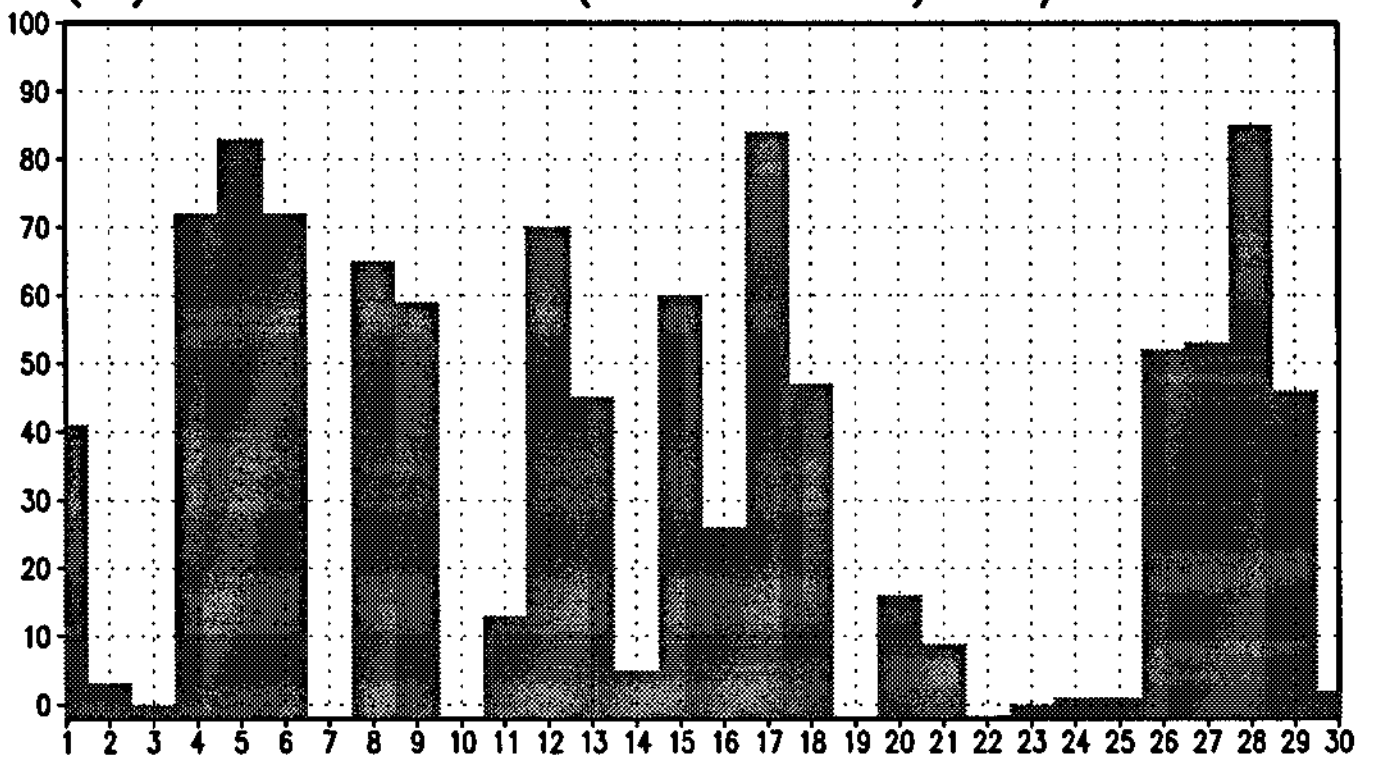
(%) DE VALORES (≥ 120 'D') 11/94 18TMG



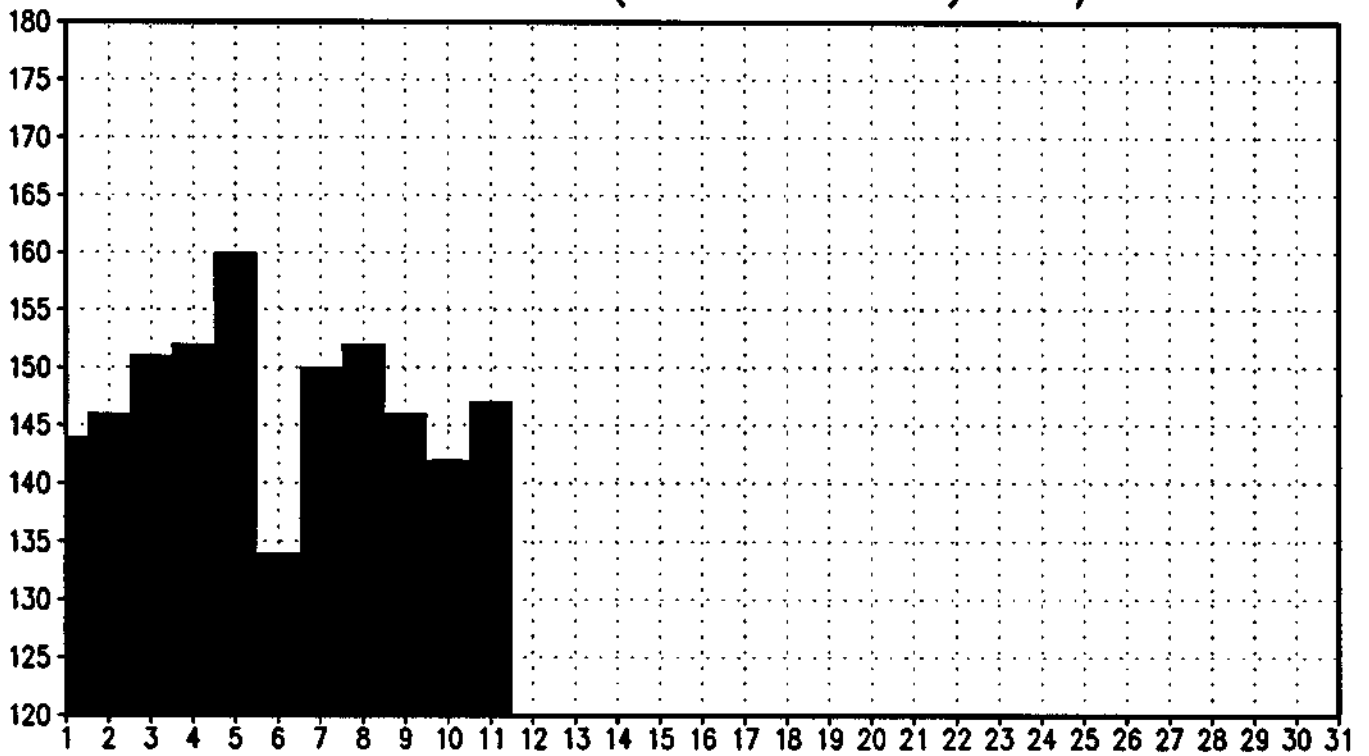
MEDIA DE VALORES (≥ 120 'E') 11/94 18TMG



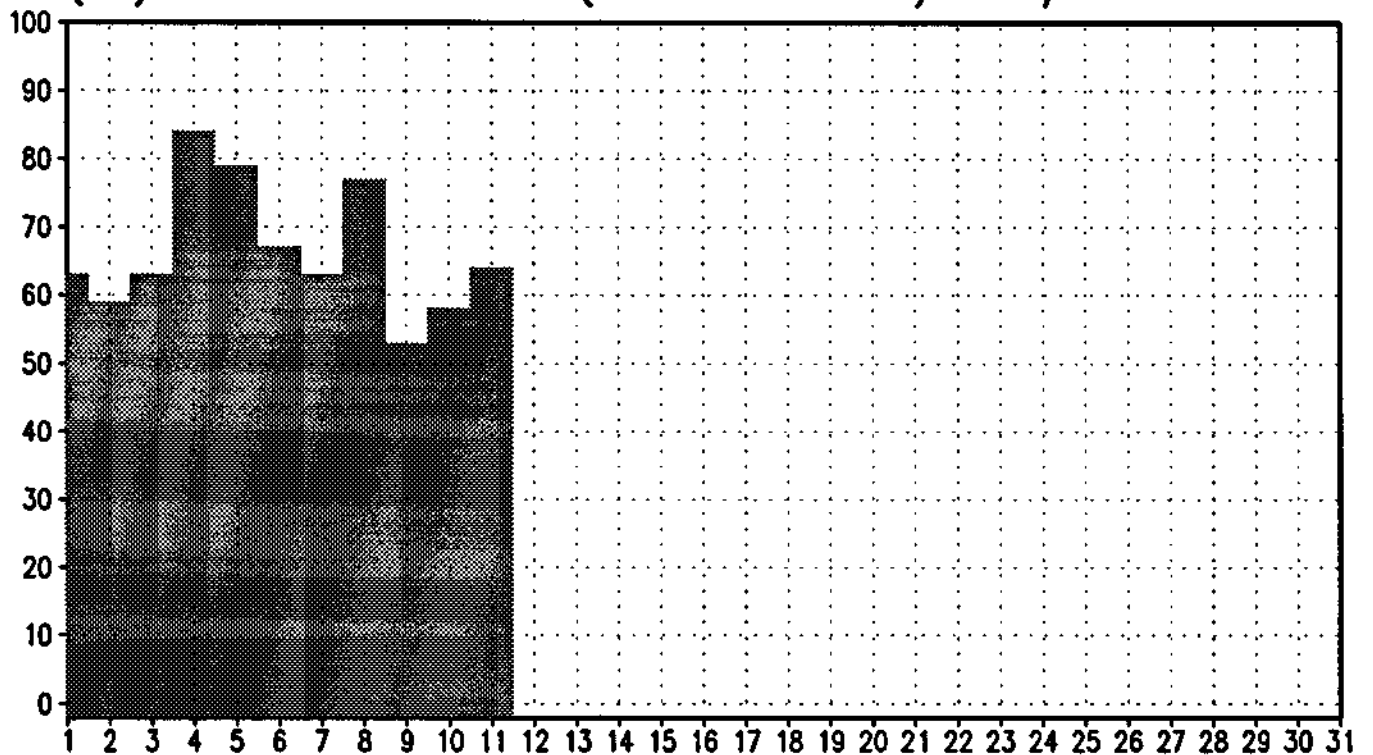
(%) DE VALORES (≥ 120 'E') 11/94 18TMG



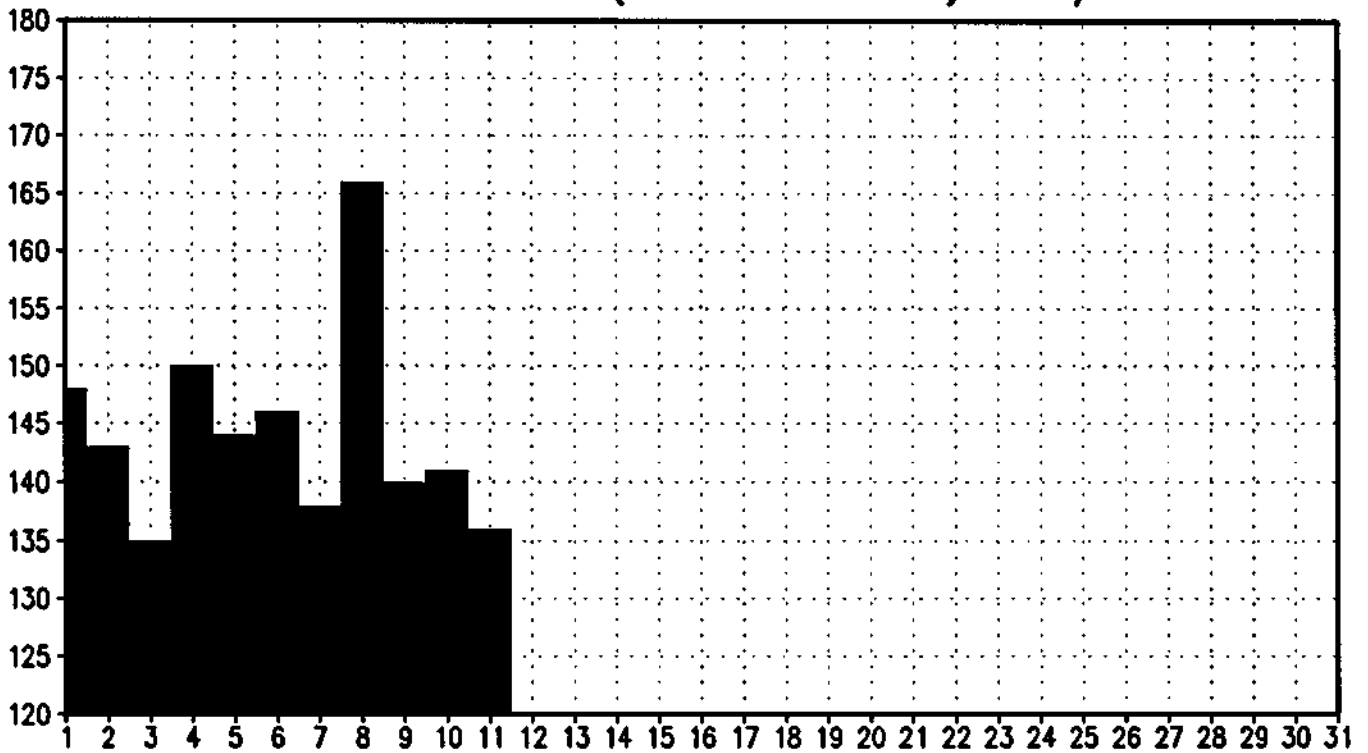
MEDIA DE VALORES (≥ 120 'A') 12/94 18TMG



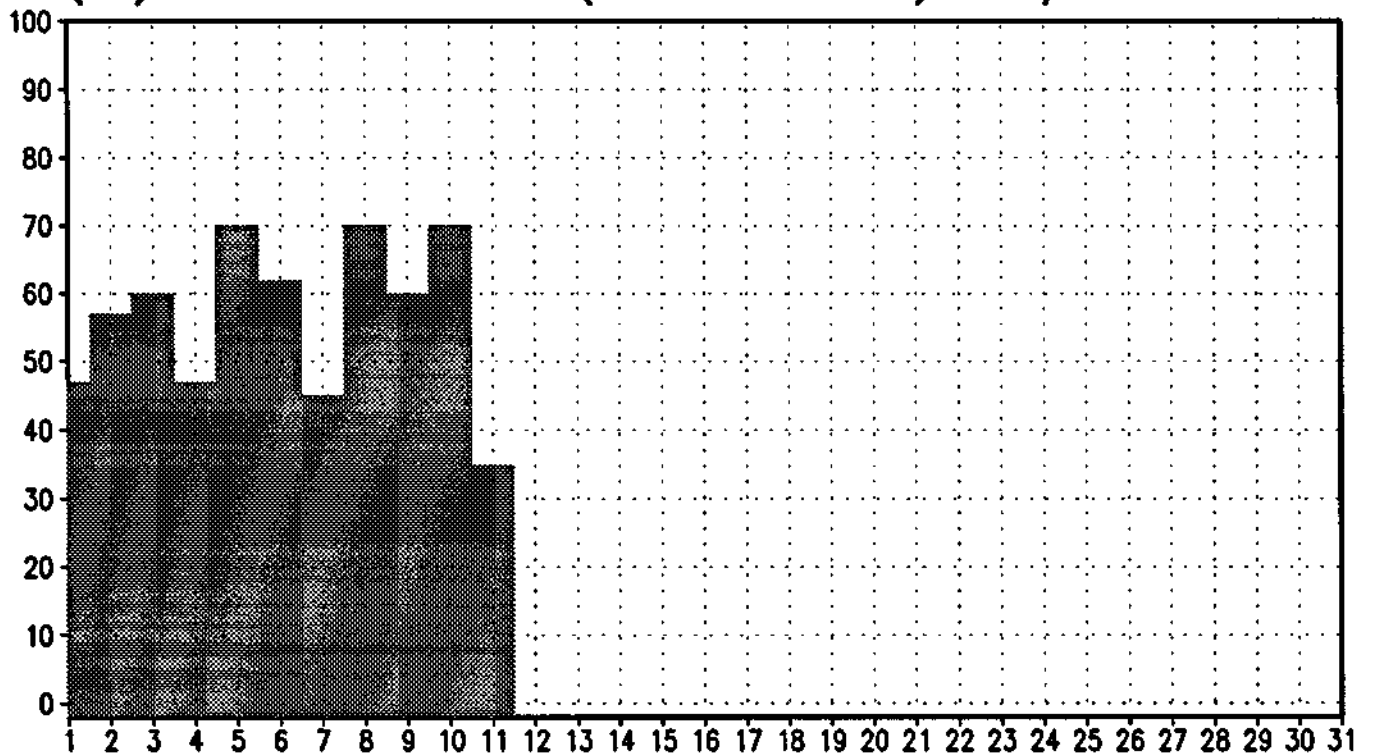
(%) DE VALORES (≥ 120 'A') 12/94 18TMG



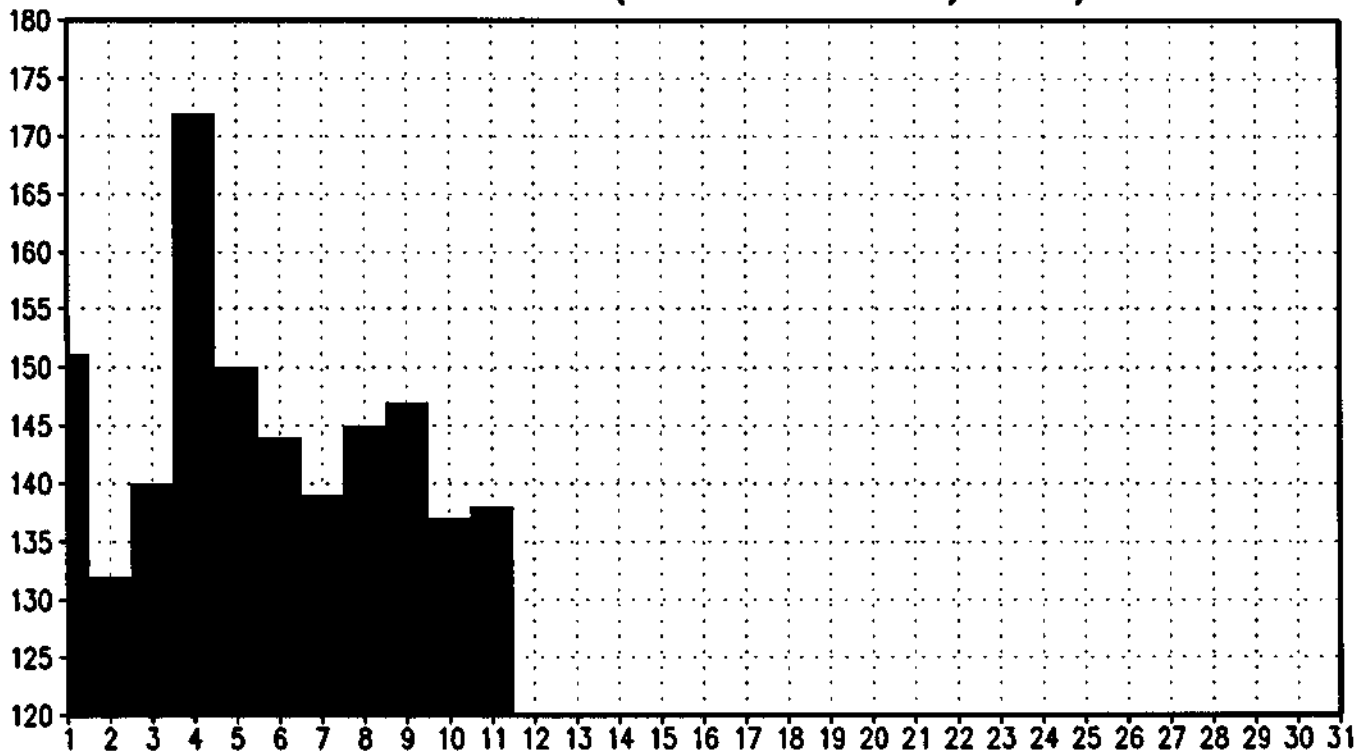
MEDIA DE VALORES (≥ 120 'B') 12/94 18TMG



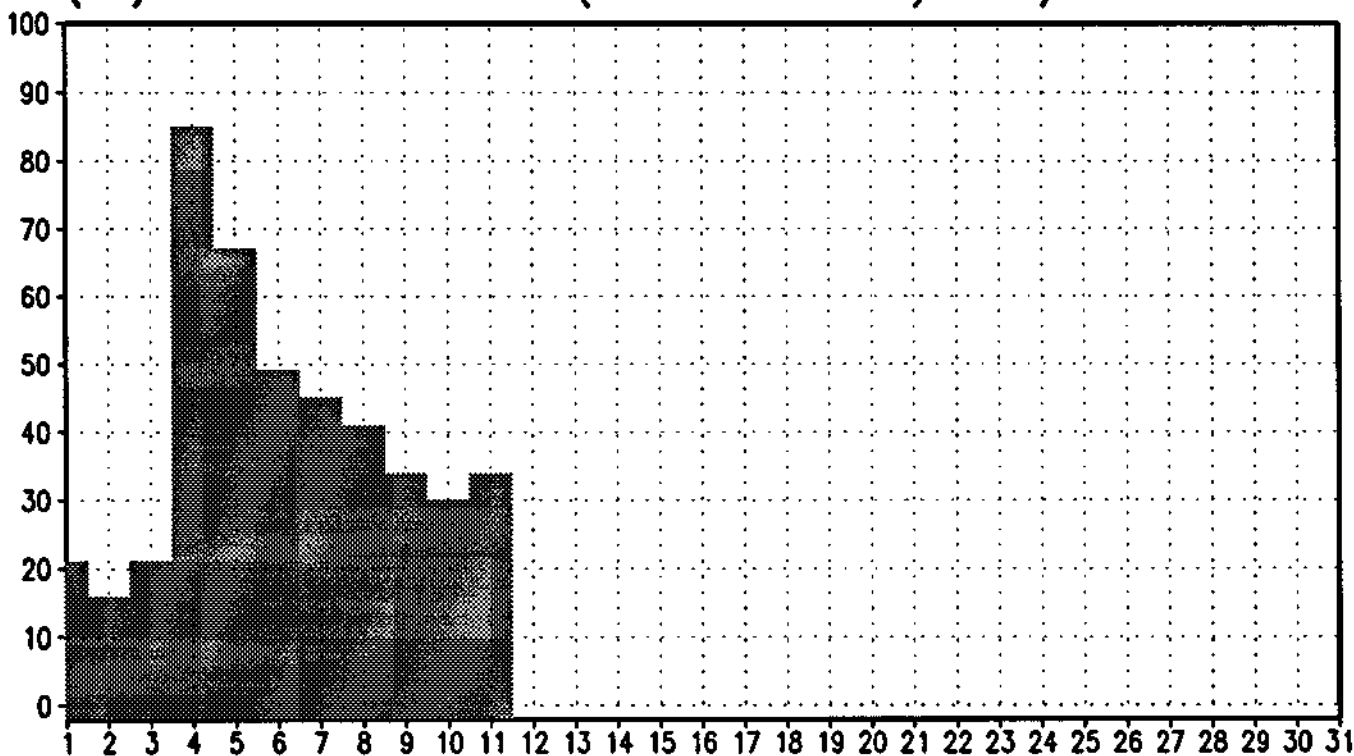
(%) DE VALORES (≥ 120 'B') 12/94 18TMG



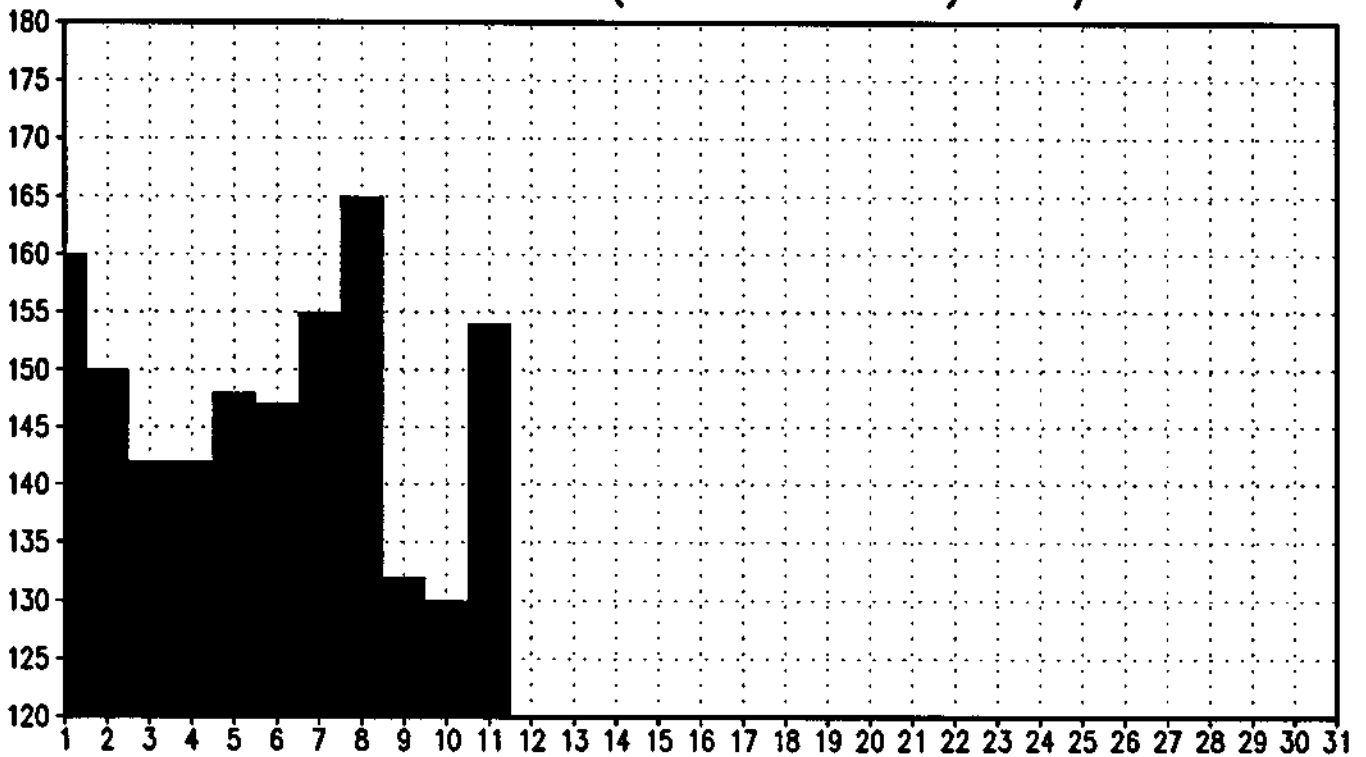
MEDIA DE VALORES (≥ 120 'C') 12/94 18TMG



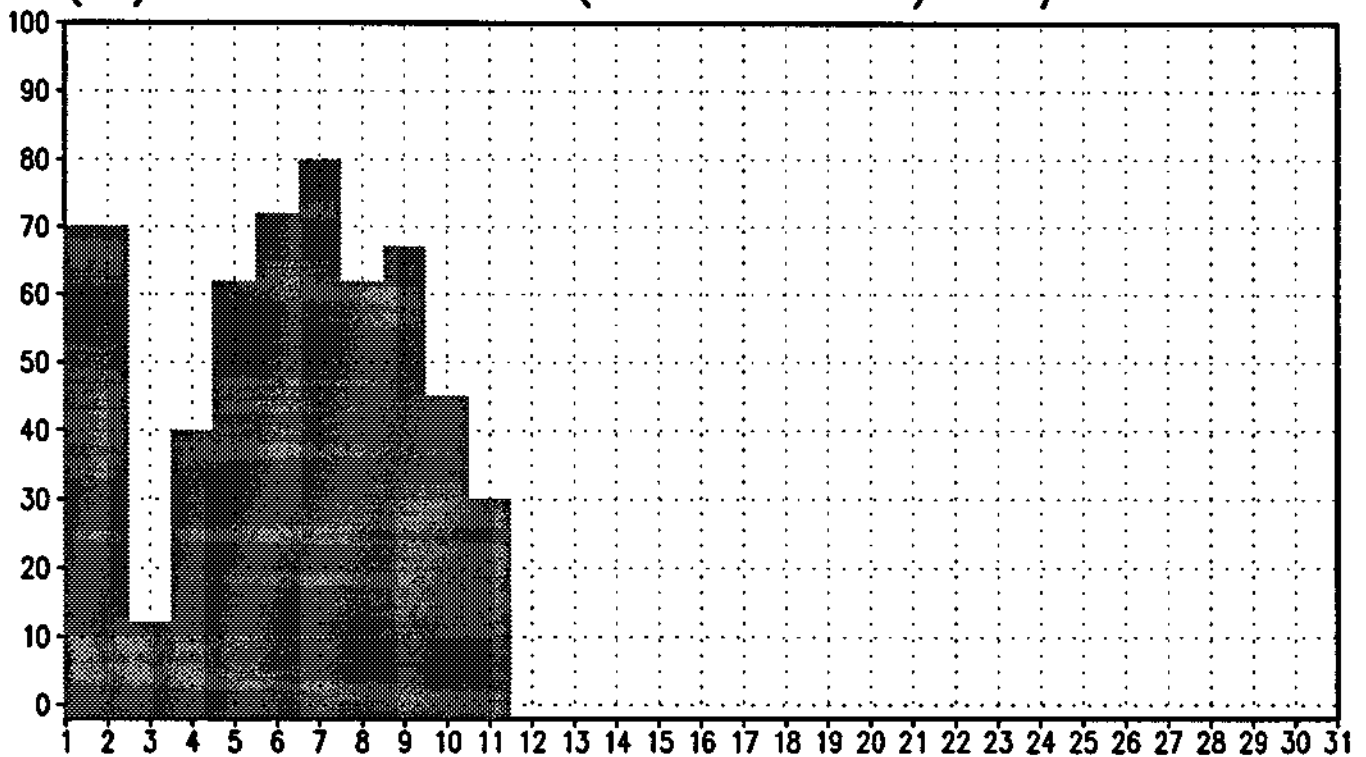
(%) DE VALORES (≥ 120 'C') 12/94 18TMG



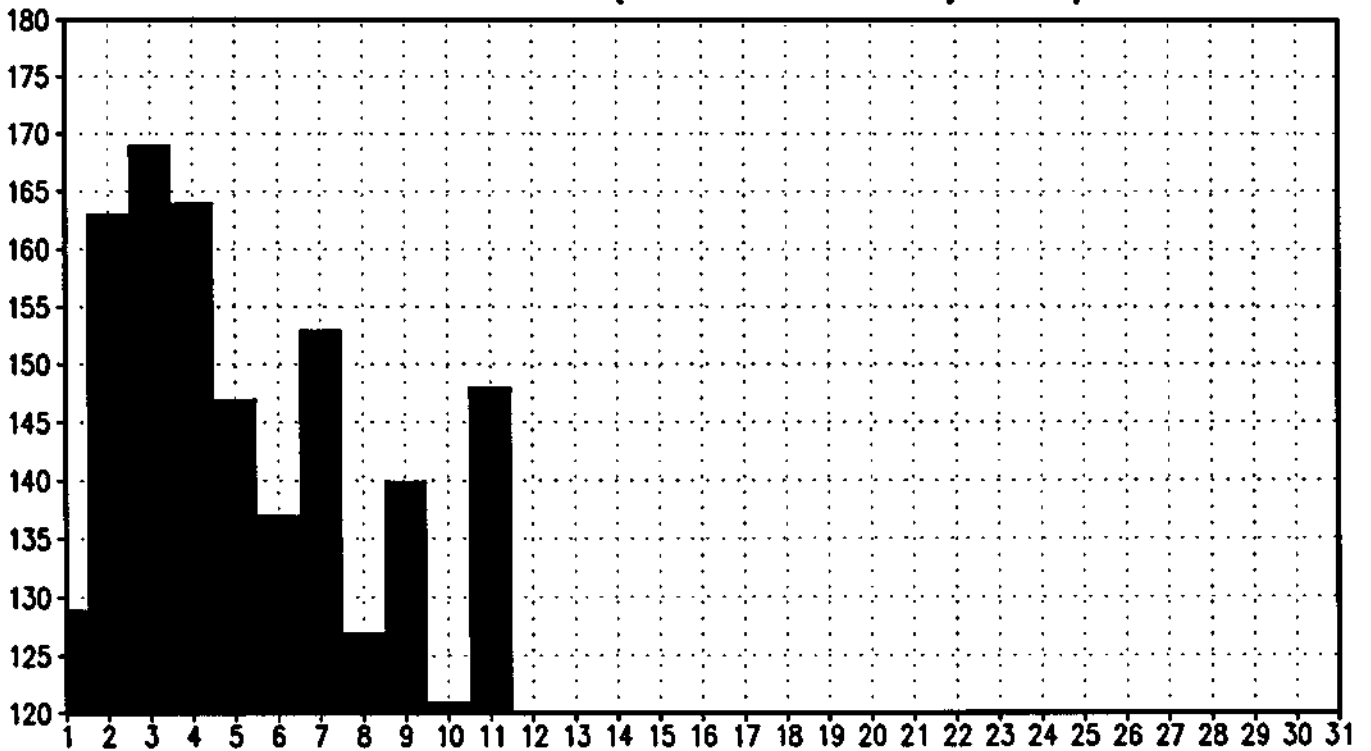
MEDIA DE VALORES (≥ 120 'D') 12/94 18TMG



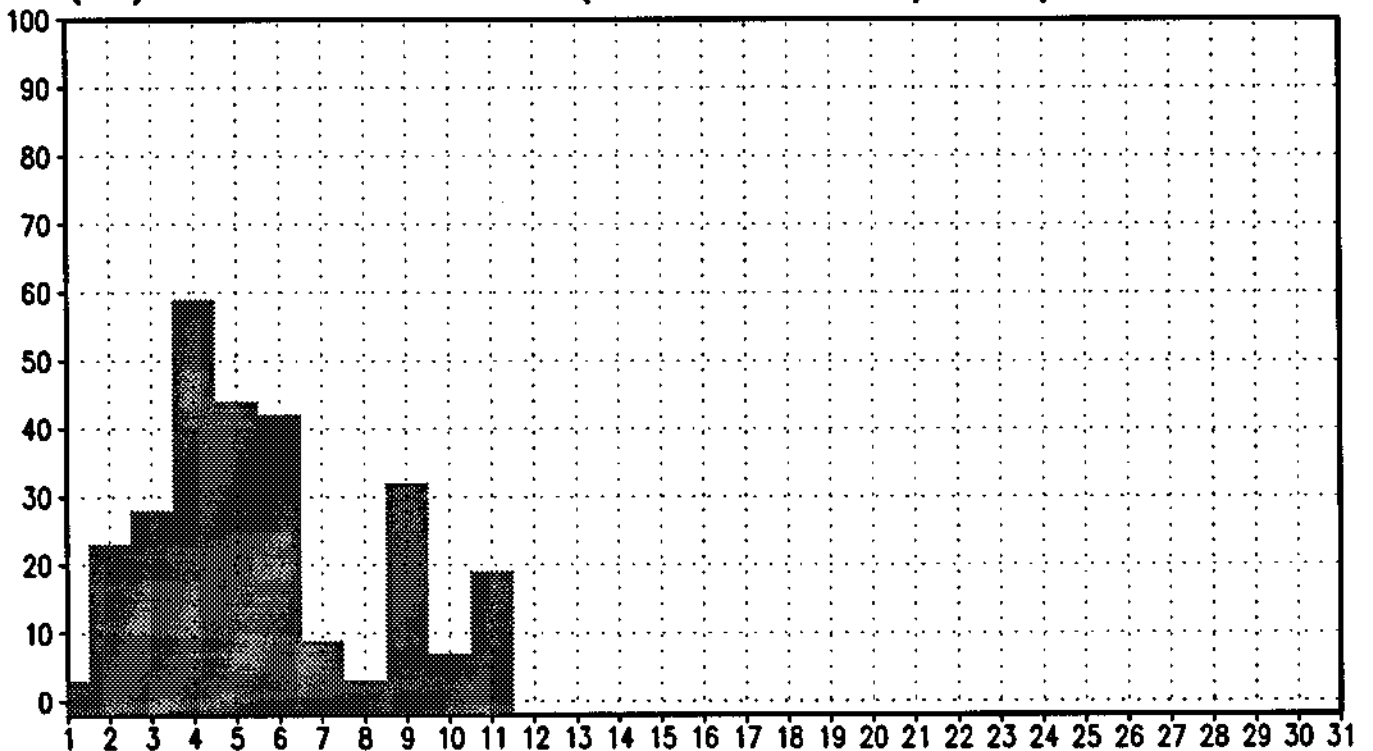
(%) DE VALORES (≥ 120 'D') 12/94 18TMG



MEDIA DE VALORES (≥ 120 'E') 12/94 18TMG



(%) DE VALORES (≥ 120 'E') 12/94 18TMG



ANEXO V

ALGORÍTMOS DOS PROGRAMAS FEITOS EM
LINGUAGEM C E FORTRAN ELABORADOS PARA
AUTOMATIZAR O ESTUDO.

cbin31x6

AUTOR: Fredy Alexandre Sargaco

RESUMO: Converte um arquivo texto contendo uma matriz 31 x 6 em um arquivo binario

ENTRADAS: Arquivo texto SAIDAS: Arquivo binario

```
PROGRAM ORDEN
CHARACTER ARQ1*15
REAL H(6,31)
INTEGER V,N
```

OS NOMES DOS ARQUIVOS EM "nomeim" DEVEM ESTAR ENTRE APOSTROFES

```
OPEN(40,FILE='nomeim',STATUS='OLD',RECL=130)
```

```
WRITE(*,*)'DIGITE QUANTOS DIAS TEM O MES'
```

```
READ(*,*)N
```

```
DO 90 V=1,24
```

```
READ(40,*)ARQ1
```

```
OPEN(8,FILE=ARQ1,STATUS='OLD',RECL=130)
```

```
ARQ1(12:13)='_b'
```

```
WRITE(*,*)ARQ1
```

```
DO 20 J=1,N
```

```
READ(8,3)(H(I,J),I=1,6)
```

```
3 FORMAT(6(f4.0))
```

```
20 CONTINUE
```

```
OPEN(10,FILE=ARQ1,STATUS='NEW',FORM='UNFORMATTED',
```

```
*ACCESS='DIRECT',RECL=4)
```

```
IREC=1
```

```
DO J=1,N
```

```
DO I=1,6
```

```
WRITE(10,REC=IREC)H(I,J)
```

```
IREC=IREC+1
```

```
ENDDO
```

```
ENDDO
```

```
90 CONTINUE
```

```
STOP
```

```
END
```

digistat

AUTOR: Fredy Alexandre Sargaco
RESUMO: Calcula uma matriz media a partir de outras matrizes
ENTRADAS: Um arquivo auxiliar contendo o nome dos arquivos de matrizes
(OBSERVACAO: as matrizes devem estar em arquivos binarios)
SAIDAS: Um arquivo contendo a matriz media

```
PROGRAM MEDISTATION
PARAMETER (N=30,M=28)
CHARACTER ARQ1*13
INTEGER V,MM,NUM,MEDINT(M,N)
REAL GG(M,N,1),SOMA(M,N,1),MEDIREAL(M,N,1)

OPEN(40,FILE='nomeim',STATUS='OLD',RECL=130)

MM=0
WRITE(*,*)'DIGITE O NUMERO DE IMAGENS DO ARQUIVO nomeim'
READ(*,*)NUM
DO 90 V=1,NUM
MM=MM+1
READ(40,*)ARQ1
OPEN(8,FILE=ARQ1,STATUS='OLD',FORM='UNFORMATTED',
*ACCESS='DIRECT',RECL=M*N)
IREC=1
DO 80 LL=1,1
READ(8,REC=IREC)((GG(I,J,LL),I=1,M),,JJ=1,N)
IREC=IREC+1
80 CONTINUE
C WRITE(*,*)GG(1,1,1)
DO 87 LL=1,1
DO 85 JJ=1,N
DO 83 I=1,M
SOMA(I,J,LL)=SOMA(I,J,LL)+GG(I,J,LL)
83 CONTINUE
85 CONTINUE
87 CONTINUE
90 CONTINUE
WRITE(*,*)'DIGITE O NOME -ENTRE ASPAS- DO ARQUIVO DA IMAGEM
*MEDIA-DA-ESTACAO'
READ(*,*)ARQ1
OPEN(30,FILE=ARQ1,STATUS='NEW',FORM='UNFORMATTED',
*ACCESS='DIRECT',RECL=M*N)
ARQ1(11:13)='fi@'
OPEN(20,FILE=ARQ1,STATUS='NEW',
*ACCESS='SEQUENTIAL',FORM='FORMATTED')
IREC=1
DO 180 LL=1,1
DO 170 JJ=1,N
DO 160 I=1,M
MEDINT(I,JJ)=SOMA(I,JJ,LL)/MM
MEDIREAL(I,JJ)=MEDINT(I,JJ)
160 CONTINUE
170 CONTINUE
180 CONTINUE
```


/******

anomalia

AUTOR: Fredy Alexandre Sargaco

RESUMO: Calcula as anomalias diarias a partir de uma media anual fazendo para cada ponto -> anomalia = dia - media anual

ENTRADAS: fe - ponteiro para arquivo de media anual
fp1 - ponteiro para arquivo auxiliar que contem o nome de todos os arquivos de matriz diaria
fp - ponteiro para cada arquivo de matriz de niveis de cinza

SAIDAS: fe - ponteiro para cada arquivo de matriz de anomalias

*****/

```
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
```

```
main ()
```

```
{
    int j,k,v[31][29],q[31][29];
    unsigned char texto[28],nome[28];
    char nomedia[20];

    FILE *fp1;
    FILE *fe;
    FILE *fp;
    FILE *fpr;

    if ((fp1 = fopen ("nomearq","rt")) == NULL)
    {
        printf("Nao existe nomearq\n");
        exit(0);
    }
    printf("DIGITE O NOME DO ARQUIVO DA MEDIA ANUAL:\n");
    gets(nomedia);
    while(!feof(fp1))
    {
        fscanf(fp1,"%s\n",nome);
        printf("nome = %s\n",nome);
        memset(v,0,sizeof(v));
        memset (texto,0,sizeof(texto));
        sprintf(texto,nome);
        texto[0]='a';
        printf("arquivo nome %s \n",nome);
        printf("arquivo texto %s \n",texto);
        if((fp = fopen(nome,"r")) == NULL)
        {
            printf("verifique se existe a imagem %s \n",nome);
            exit(0);
        }
        if((fpr = fopen(texto,"wt")) == NULL)
        {
            printf("Erro na abertura do arquivo texto %c \n",texto);
            exit(0);
        }
        if ((fe = fopen(nomedia,"r")) == NULL)
        {
            printf("verifique se existe arquivo %s \n",nomedia);
        }
    }
}
```



```
        exit(0);
    }
    for(j = 0;j <= 29;j++)
    {
        for(k = 0;k <= 27;k++)
        {
            fscanf(fe,"%d",&q[j][k]);
            fscanf(fp,"%d",&v[j][k]);
            v[j][k] = v[j][k] - q[j][k];
            fprintf (fpr,"%4d",v[j][k]);
        }
        fprintf(fpr,"\n");
    }
    fclose(fe);
    fclose(fpr);
    fclose(fp);
}
fclose(fp1);
}
```

```

        i=0;
    while(!feof(fe))
    {
        for(k=0;k<=c-1;k++)
        {
            fscanf(fe,"%d",&v[i][k]);
            if ((v[i][k] >= 50) && (v[i][k] != 999))
                total[k]=total[k]+1;
            }
            fscanf(fe,"\n");
            i=i++;
        }
        fprintf(fd,"%3d %3d %3d %3d %3d \n",total[0],total[1],total[2],total[3],total[4]);
    }
    fclose(fe);
}
fclose(fp1);
}
fclose(fp1);
fclose(fe);
fclose(fd);
}

```

/******

selecreg

AUTOR: Fredy Alexandre Sargaco

RESUMO: Seleciona todas as imagens do mes por horario, colocando em arquivos separados o resultado das medias e porcentagens para cada area. Para as imagens nao recuperadas o programa coloca valores iguais a "999" nos espacos vazios.

ENTRADAS: Arquivo com os nomes de todos os arquivos de imagens do respectivo mes.

SAIDAS: Um arquivo com medias e um arquivo com porcentagens para cada horario das imagens.

```
#include <string.h>
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
main()
{
float total;
int i,k,c=28,l=30,somador,rest,dat,v[30][28],mes,d1,d2,h,cont,dataux,opc,
    pct1,pct2,pct3,pct4,pct5,pct6;
long int nvc1,nvc2,nvc3,nvc4,nvc5,nvc6;
char nome[20],dia[4],nomepct[20],nomenvc[20],nomaux1[5],nomaux2[5],abr[20];

FILE *fp1;
FILE *fe;
FILE *fp;
FILE *fd;

printf("ESCOLHA OPCAO:\n[1]MEDIA E PORCENTAGEM\n[2]ANOMALIA\n");
scanf("%d",&opc);
if(opc == 2)
    opc = -255;
else
    opc = 120;
gets(abr);
printf("DIGITE A ABREVIACAO DO MES CORRESPONDENTE\n");
gets(abr);
strcpy(nomepct, abr);
strcpy(nomenvc, abr);
printf("DIGITE O PRIMEIRO DIA DO MES NO CALENDARIO JULIANO\n");
scanf("%d",&dat);
dataux=dat;
printf("DIGITE QUANTOS DIAS TEM O MES\n");
scanf("%d",&mes);
for(h=1;h<=24;h++)
    {
    somador=0;
    dat=dataux;
    d1=dataux;
    if((fp1 = fopen ("nomearq", "rt")) == NULL)
        {
        printf("Nao existe nomearq\n");
        exit(0);
        }
    cont=0;
    while(!feof(fp1))
    {
```

```

fscanf(fp1,"%s\n",nome);
for(i=0;i<=1;i++)
    nomaux1[i]=nome[i+6];
if(h == atoi(nomaux1))
{
    if(cont == 0)
    {
        printf("\n");
        for(i=0;i<=3;i++)
            nomaux2[i]=nome[i+4];
        strcat(nomepct, nomaux2);
        strcat(nomenvc, nomaux2);
        strcat(nomepct, ".pct");
        strcat(nomenvc, ".nvc");
        printf("saida = %s e %s\n",nomepct,nomenvc);
        if((fe = fopen(nomepct,"wt")) == NULL)
        {
            printf("ERRO NA ABERTURA DO ARQUIVO TEXTO1 %s \n",nomepct);
            exit(0);
        }
        if((fd = fopen(nomenvc,"wt")) == NULL)
        {
            printf("ERRO NA ABERTURA DO ARQUIVO TEXTO2 %s \n",nomenvc);
            exit(0);
        }
        strcpy(nomepct, abr);
        strcpy(nomenvc, abr);
    }
    printf("nome = %s\n",nome);
    for(i=0;i<=2;i++)
        dia[i]=nome[i+1];
    if (((atoi(dia)-dataux+1) > mes) || (mes > 31))
    {
        printf("\nERRO NOS DIAS DO MES QUE FORAM DIGITADOS\n\n");
        exit(0);
    }
    d2=atoi(dia);
    if((fp = fopen(nome,"rt")) == NULL)
    {
        printf("verifique se existe o arquivo %s \n",nome);
        exit(0);
    }
    for(i=0;i<=1-1;i++)
    {
        for(k=0;k<=c-1;k++)
            fscanf(fp,"%d",&v[i][k]);
            fscanf(fp,"\n");
    }
    fclose(fp);

/* MEDIA DAS 5 REGIOES (INICIO)

    REGIAO A */
    nvc1=0;
    total=0.1;
    pct1=0;
    for(i=5;i<=11;i++)
    {
        for(k=5;k<=15;k++)
        {
            if (v[i][k] >= opc)
            {

```

```

/* REGIAO E */
nvc5=0;
total=0.1;
pct5=0;
for(i=15;i<=21;i++)
{
    for(k=11;k<=22;k++)
    {
        if (v[i][k] >= opc)
        {
            total=(int)total+1;
            nvc5=nvc5+v[i][k];
        }
    }
}
pct5=(int)total*100/((21-15+1)*(22-11+1));
nvc5=nvc5/total;

/* REGIAO NE */
nvc6=0;
total=0.1;
pct6=0;
for(i=8;i<=11;i++)
{
    for(k=18;k<=22;k++)
    {
        if (v[i][k] >= opc)
        {
            total=(int)total+1;
            nvc6=nvc6+v[i][k];
        }
    }
}
pct6=(int)total*100/((11-8+1)*(22-18+1));
nvc6=nvc6/total;

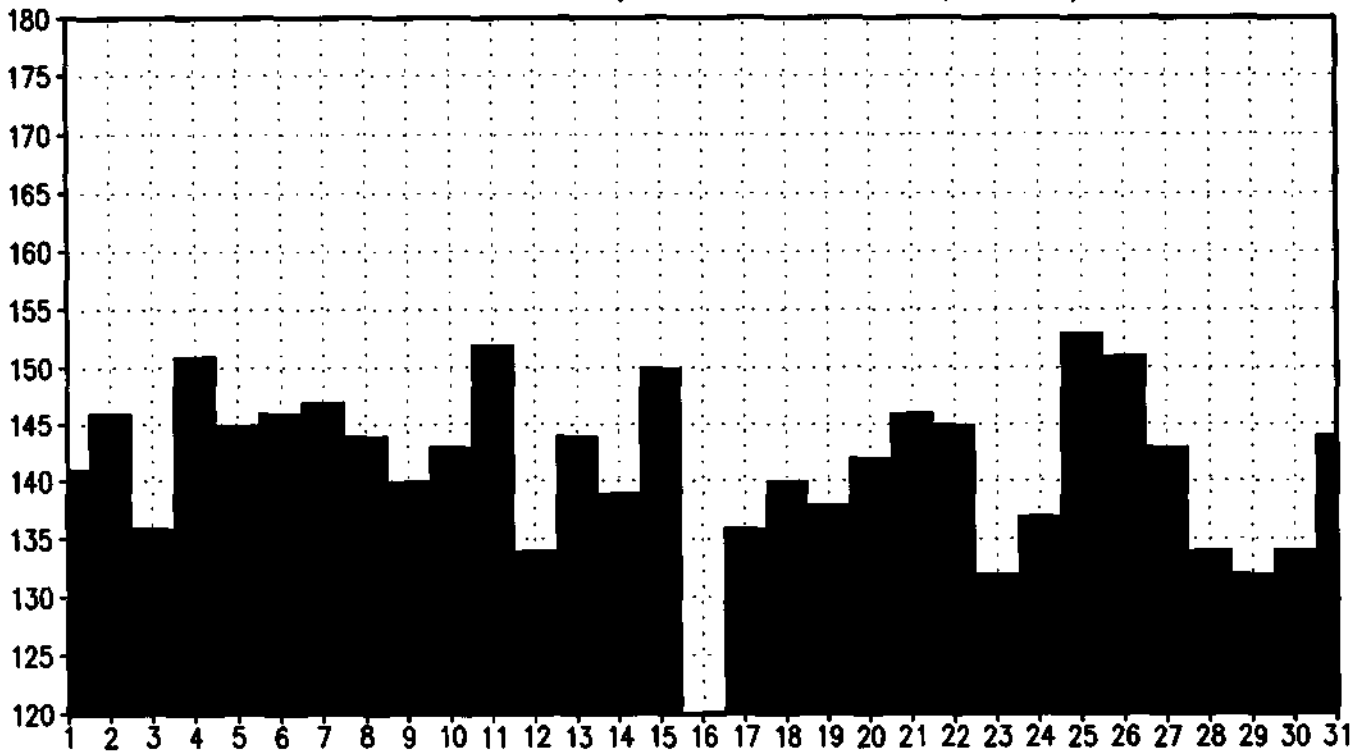
/* MEDIA DAS 5 REGIOES (FIM) */

for(i=1;i<=atoi(dia)-dat+1;i++)
{
    if (d2==d1)
    {
        fprintf(fd,"%4d%4d%4d%4d%4d%4d\n",nvc1,nvc2,nvc3,nvc4,nvc5,nvc6);
        fprintf(fe,"%4d%4d%4d%4d%4d%4d\n",pct1,pct2,pct3,pct4,pct5,pct6);
    }
    else
    {
        fprintf(fd," 999 999 999 999 999 999\n");
        fprintf(fe," 999 999 999 999 999 999\n");
    }
    d1=d1+1;
    somador=somador+1;
}
cont=1;
dat=d1;
}
}
fclose(fp1);
if(cont == 1)
{
    rest=mec-somador;
    for(i=1;i<=rest;i++)

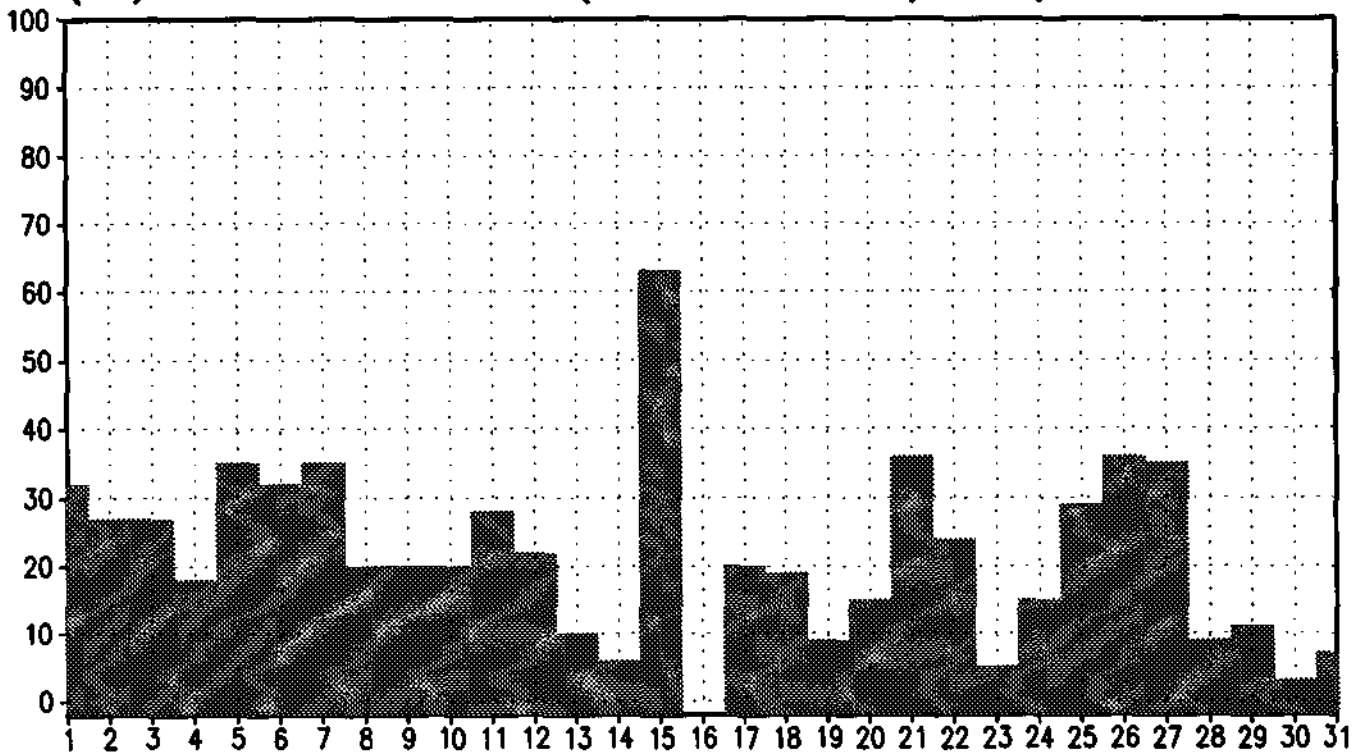
```

```
        {  
        fprintf(fd," 999 999 999 999 999 999\n");  
        fprintf(fe," 999 999 999 999 999 999\n");  
        }  
    }  
    fclose(fe);  
    fclose(fd);  
}
```

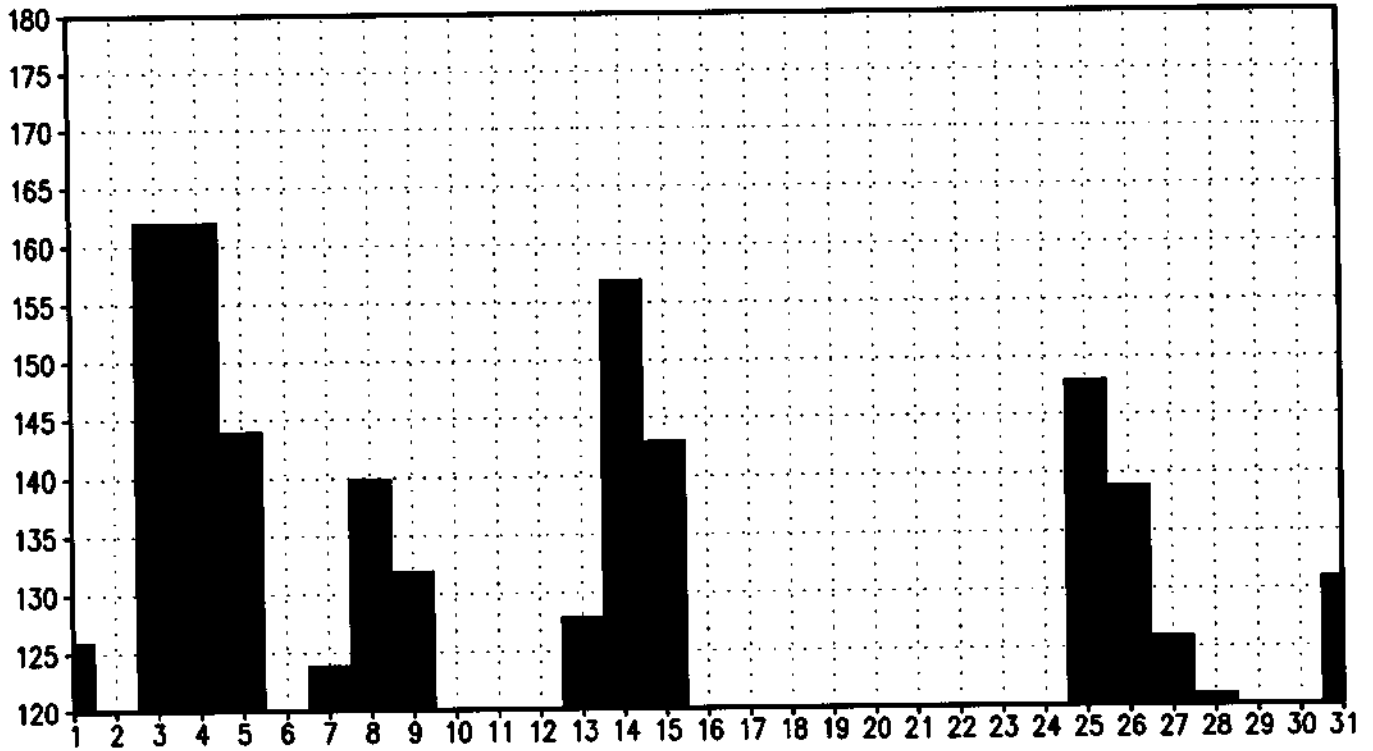
MEDIA DE VALORES (≥ 120 'A') 05/93 18TMG



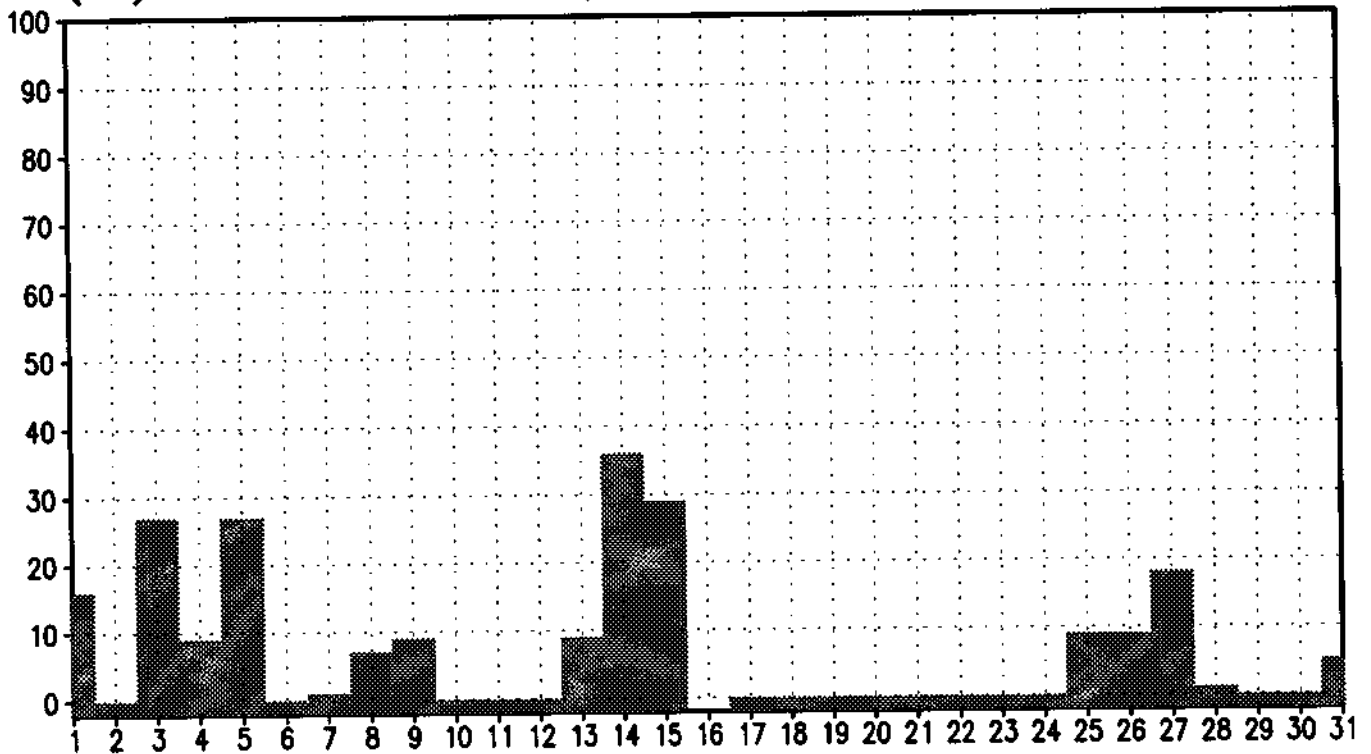
(%) DE VALORES (≥ 120 'A') 05/93 18TMG



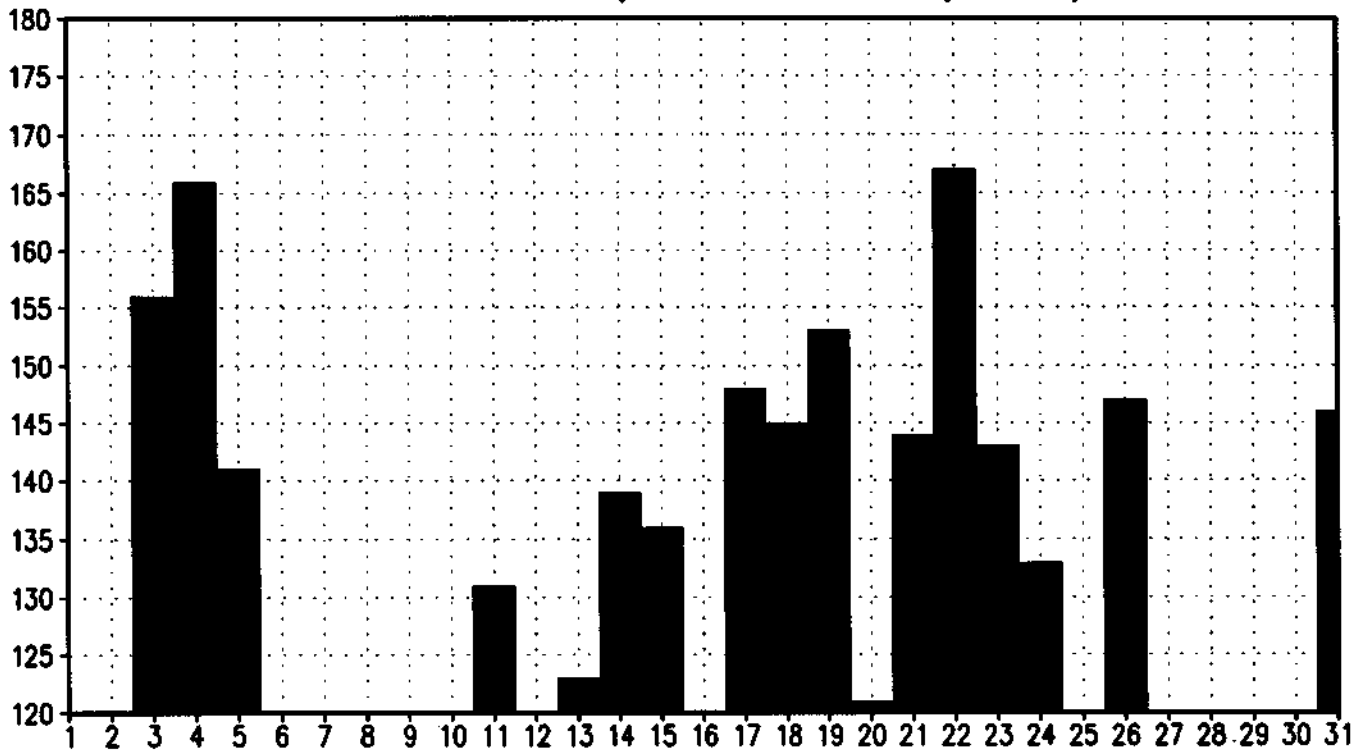
MEDIA DE VALORES (≥ 120 'C') 05/93 18TMG



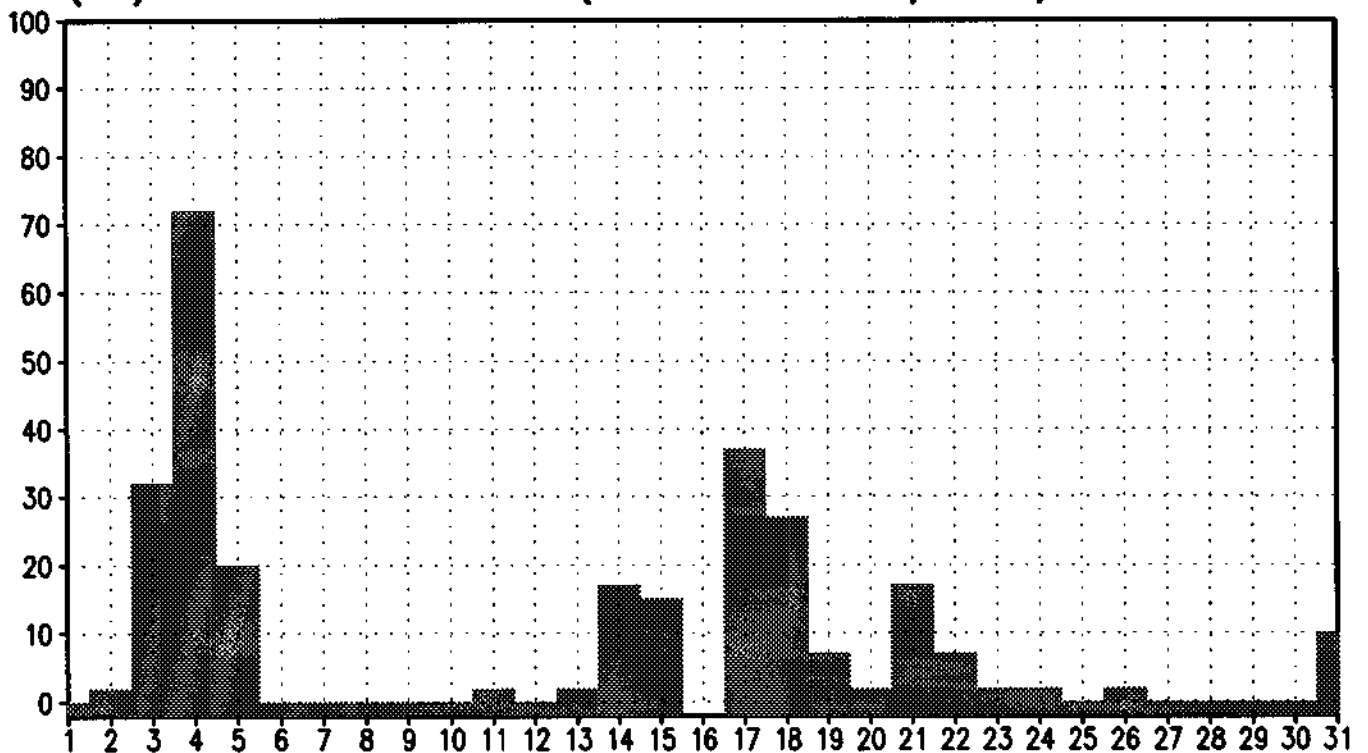
(%) DE VALORES (≥ 120 'C') 05/93 18TMG



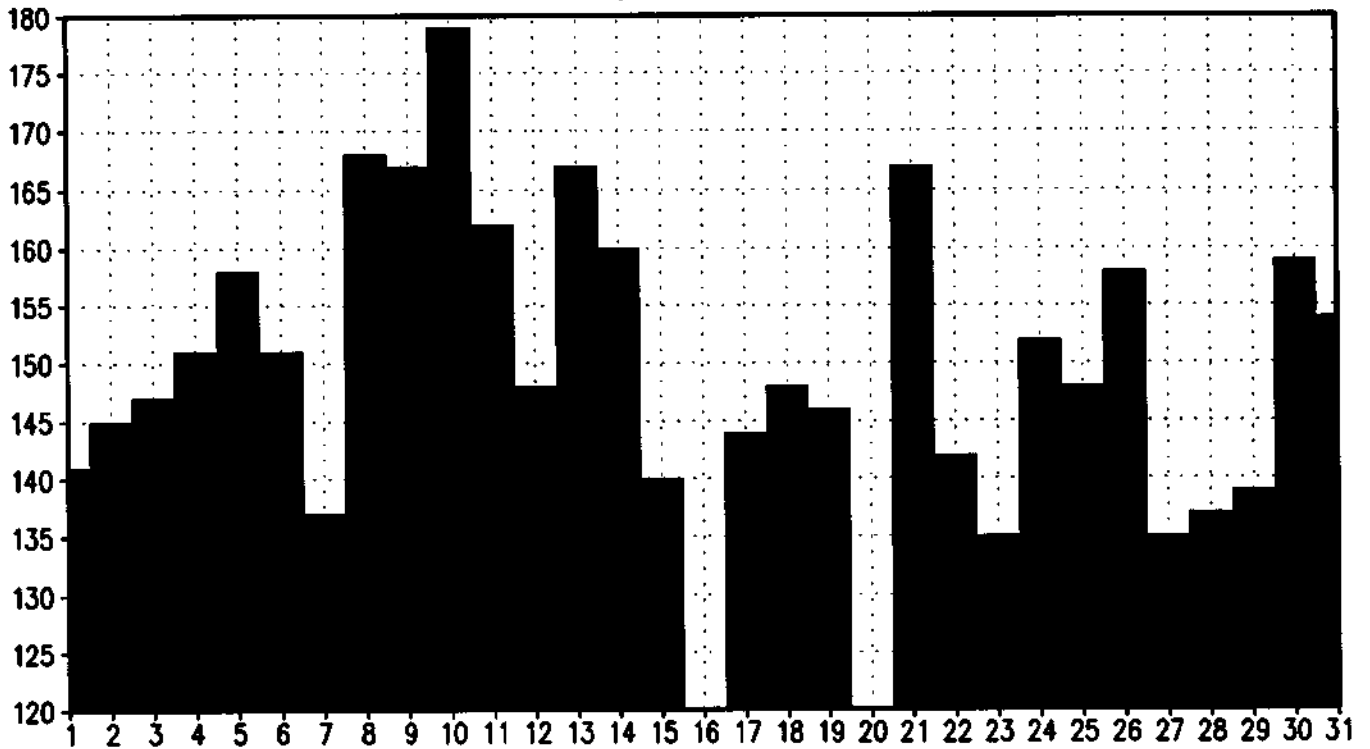
MEDIA DE VALORES (≥ 120 'D') 05/93 18TMG



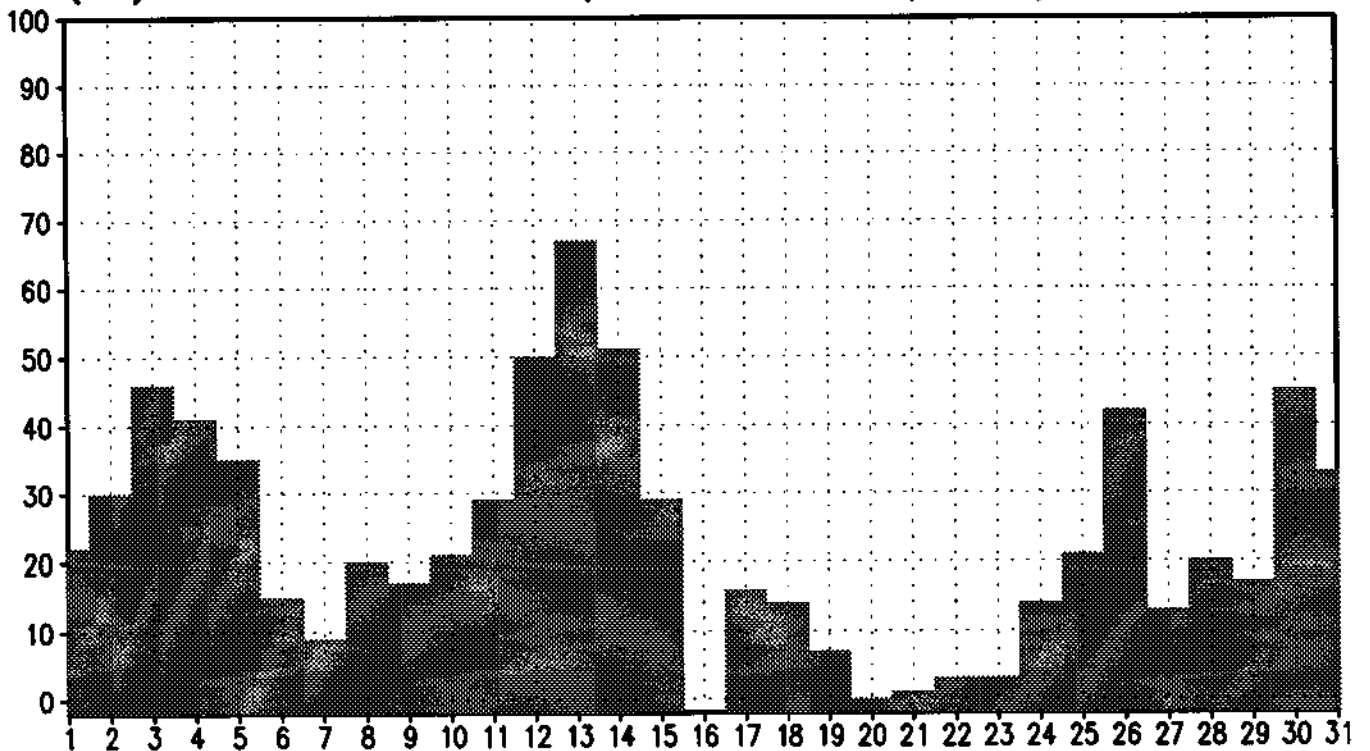
(%) DE VALORES (≥ 120 'D') 05/93 18TMG



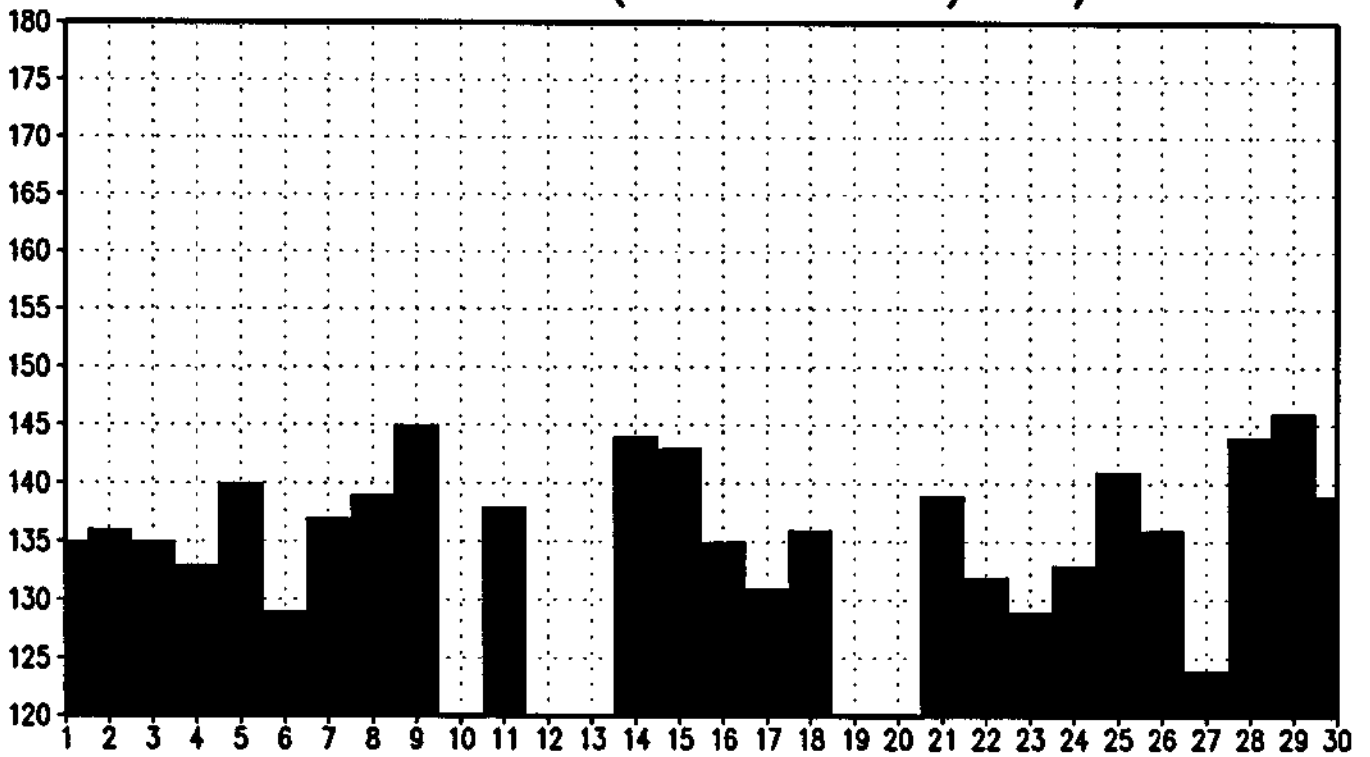
MEDIA DE VALORES (≥ 120 'E') 05/93 18TMG



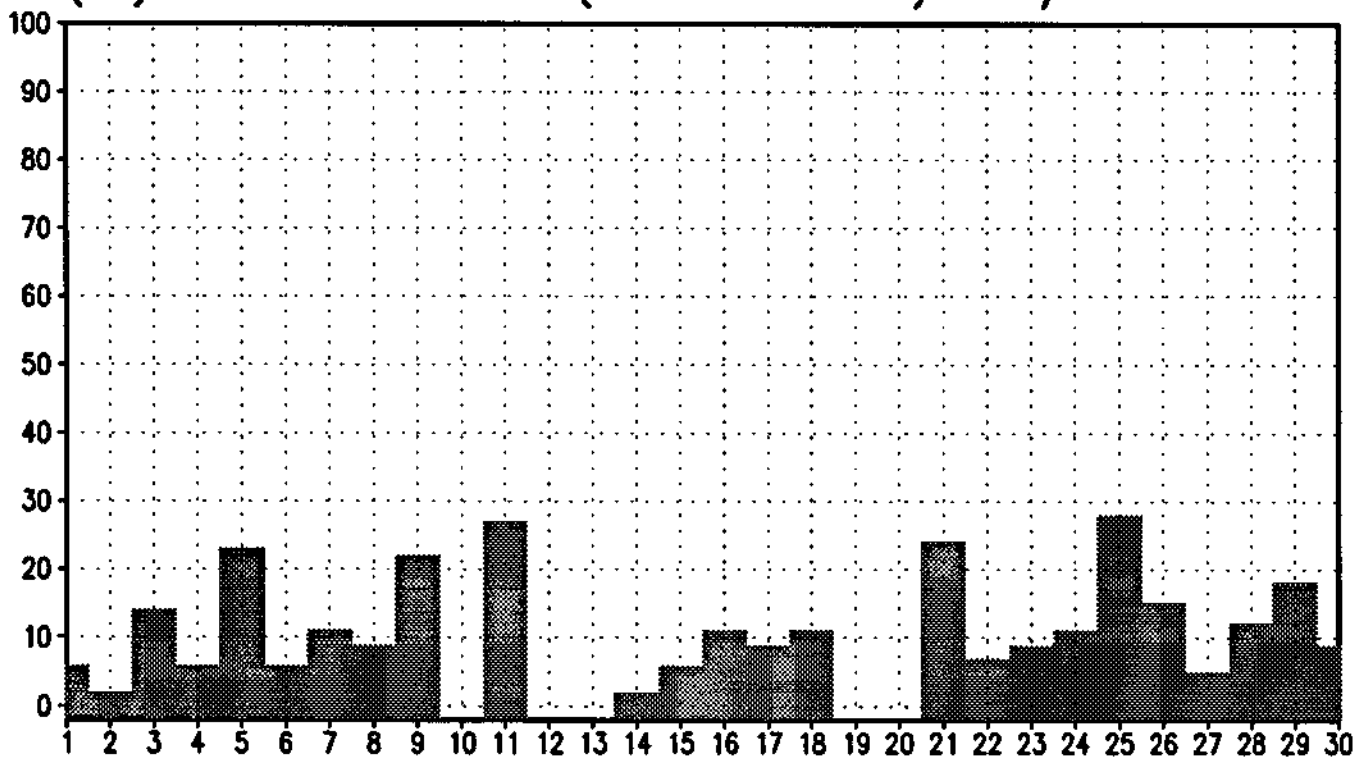
(%) DE VALORES (≥ 120 'E') 05/93 18TMG



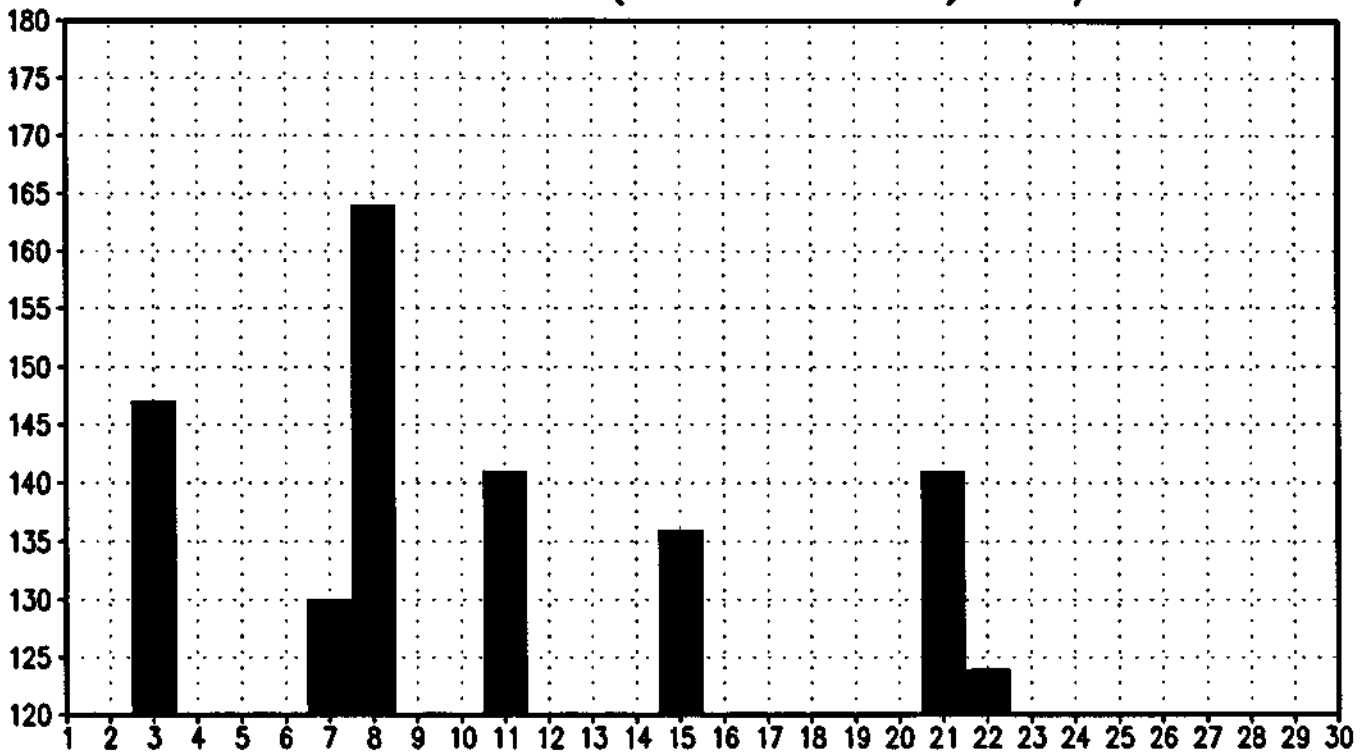
MEDIA DE VALORES (≥ 120 'A') 06/93 18TMG



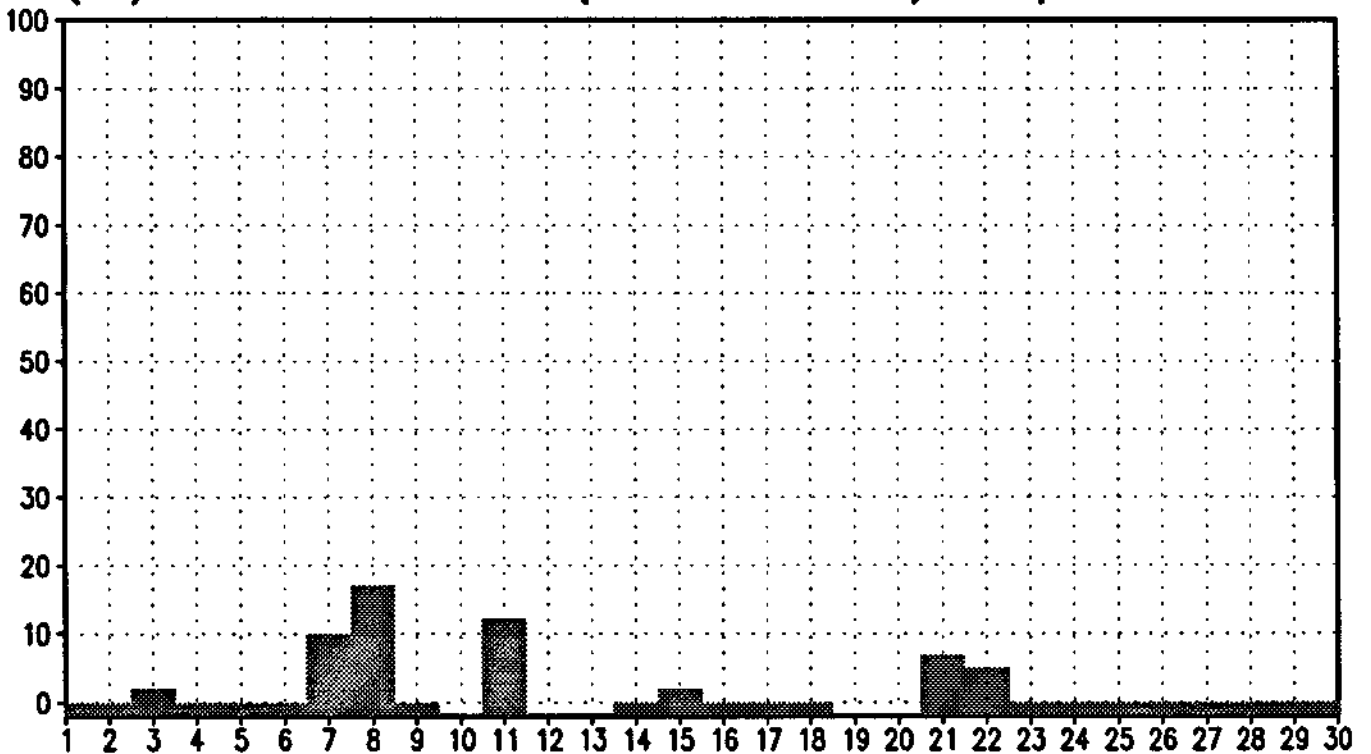
(%) DE VALORES (≥ 120 'A') 06/93 18TMG



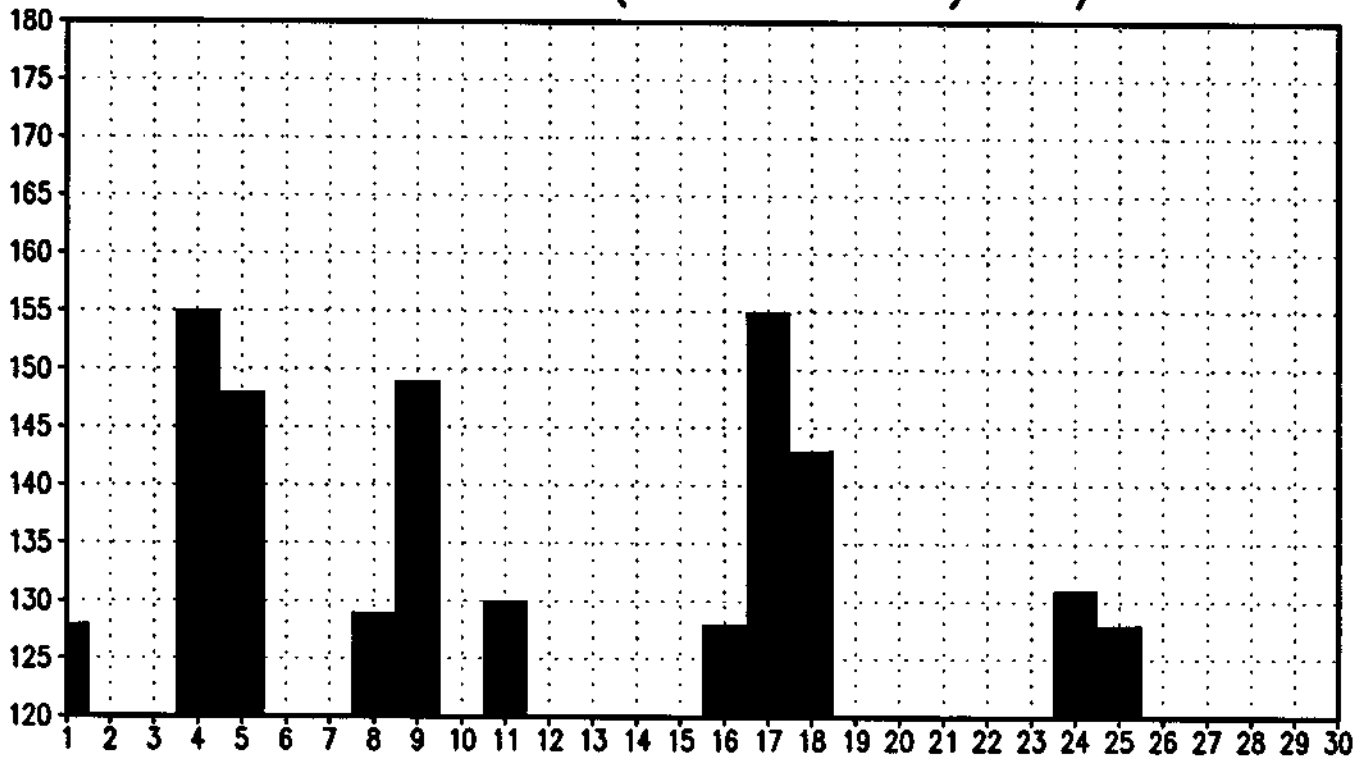
MEDIA DE VALORES (≥ 120 'B') 06/93 18TMG



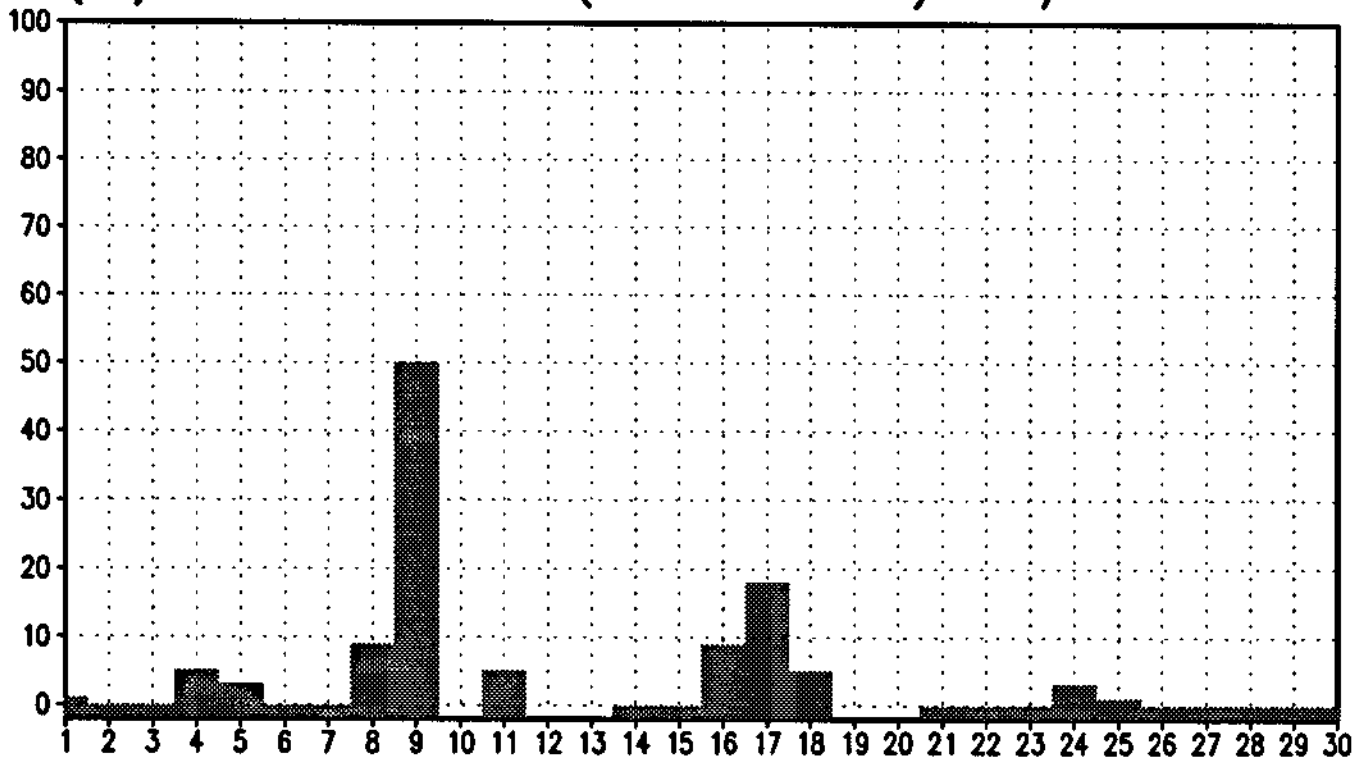
(%) DE VALORES (≥ 120 'B') 06/93 18TMG



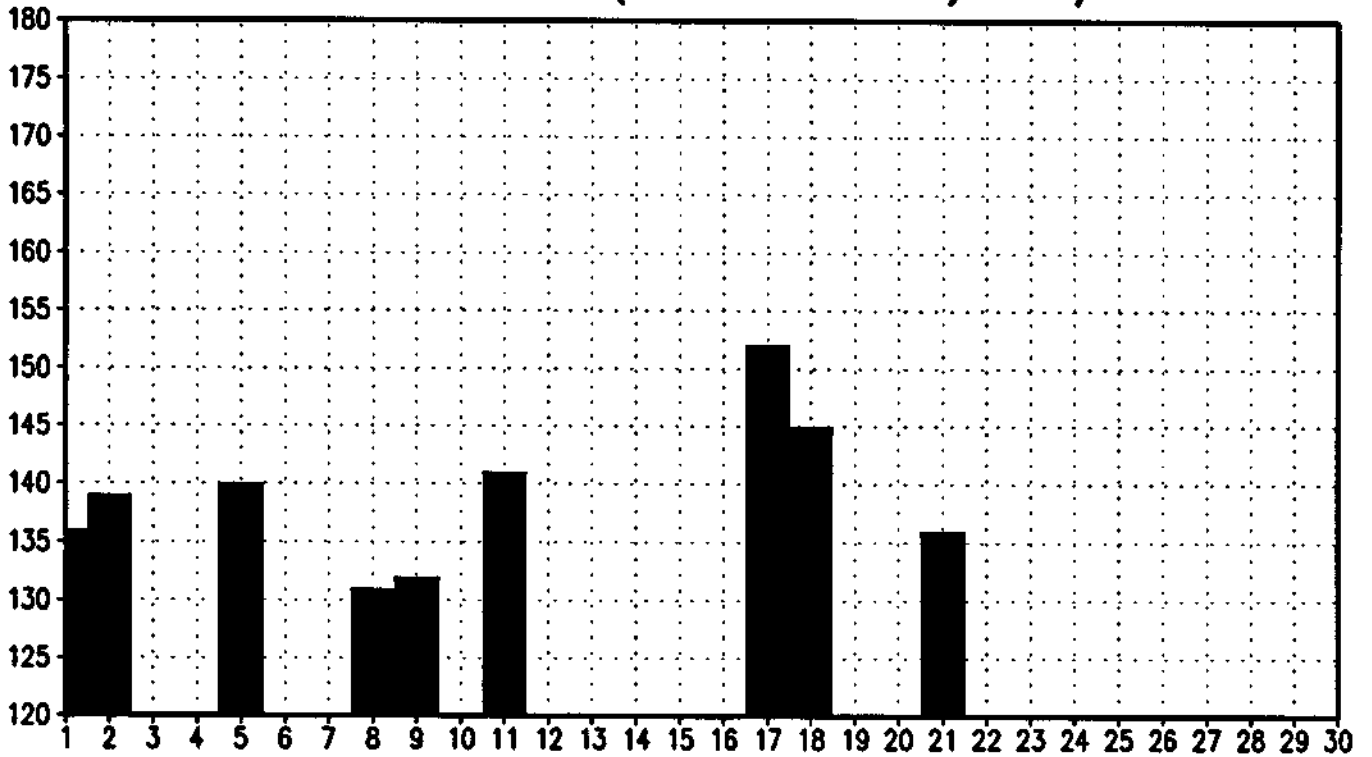
MEDIA DE VALORES (≥ 120 'C') 06/93 18TMG



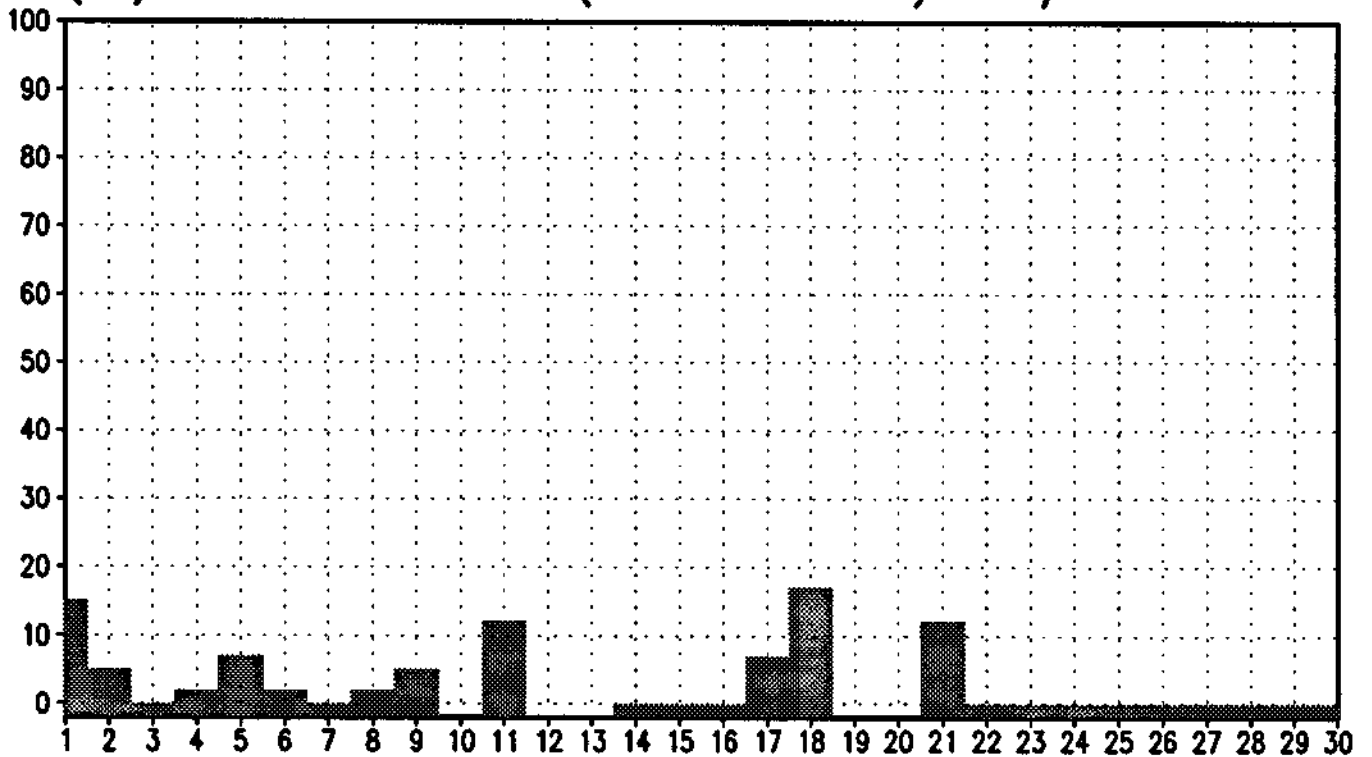
(%) DE VALORES (≥ 120 'C') 06/93 18TMG



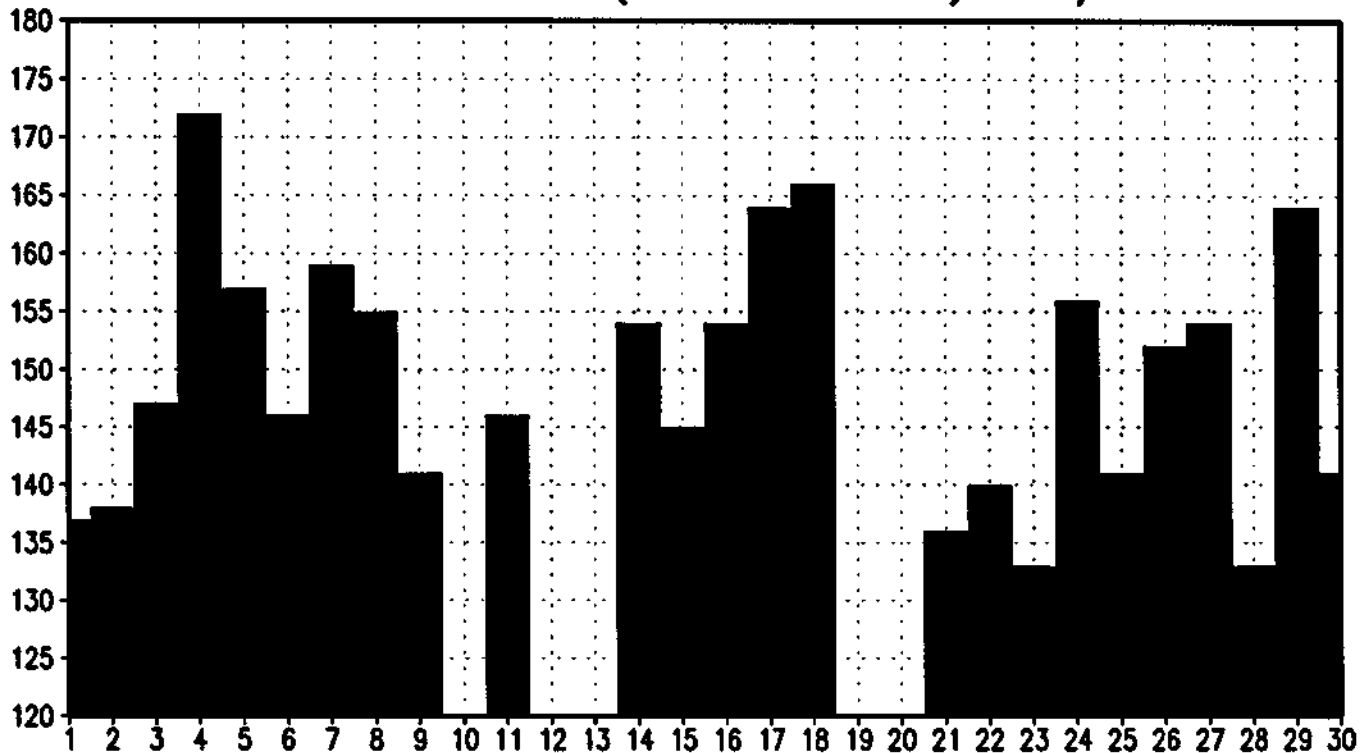
MEDIA DE VALORES (≥ 120 'D') 06/93 18TMG



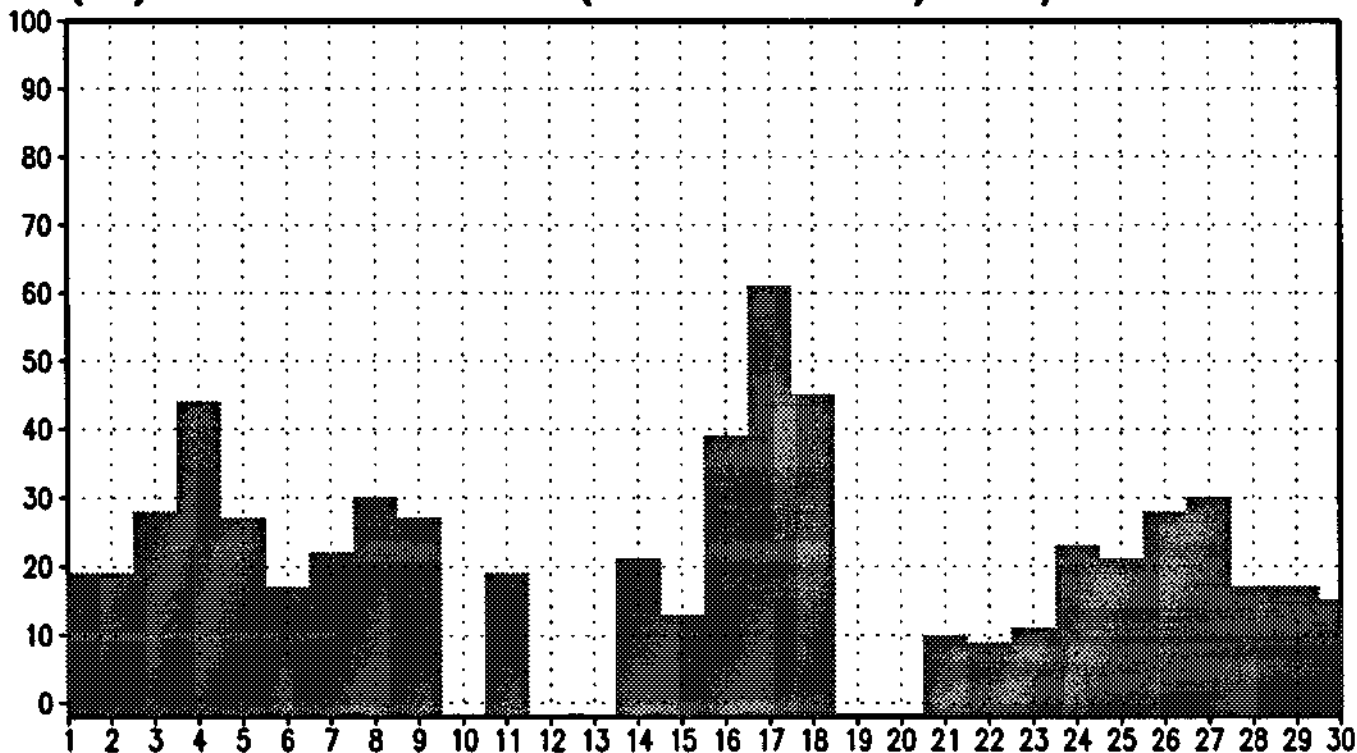
(%) DE VALORES (≥ 120 'D') 06/93 18TMG



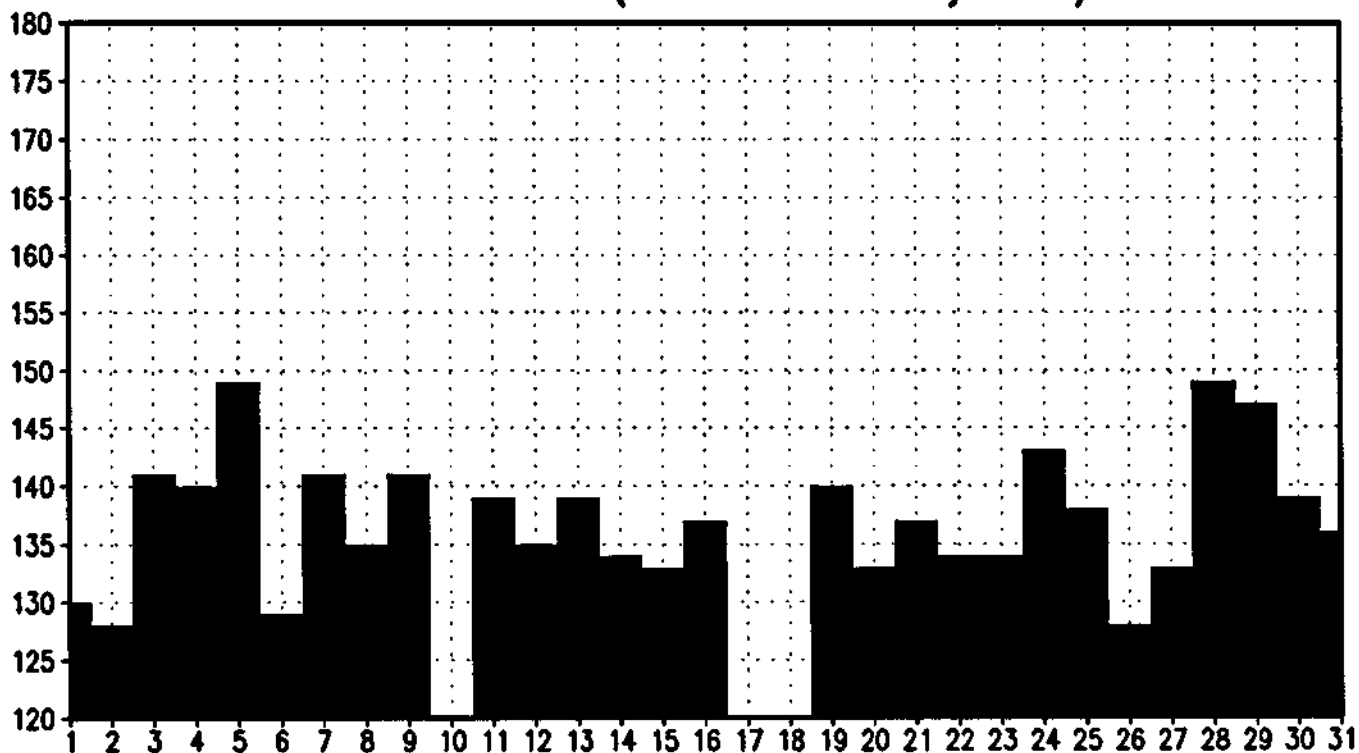
MEDIA DE VALORES (≥ 120 'E') 06/93 18TMG



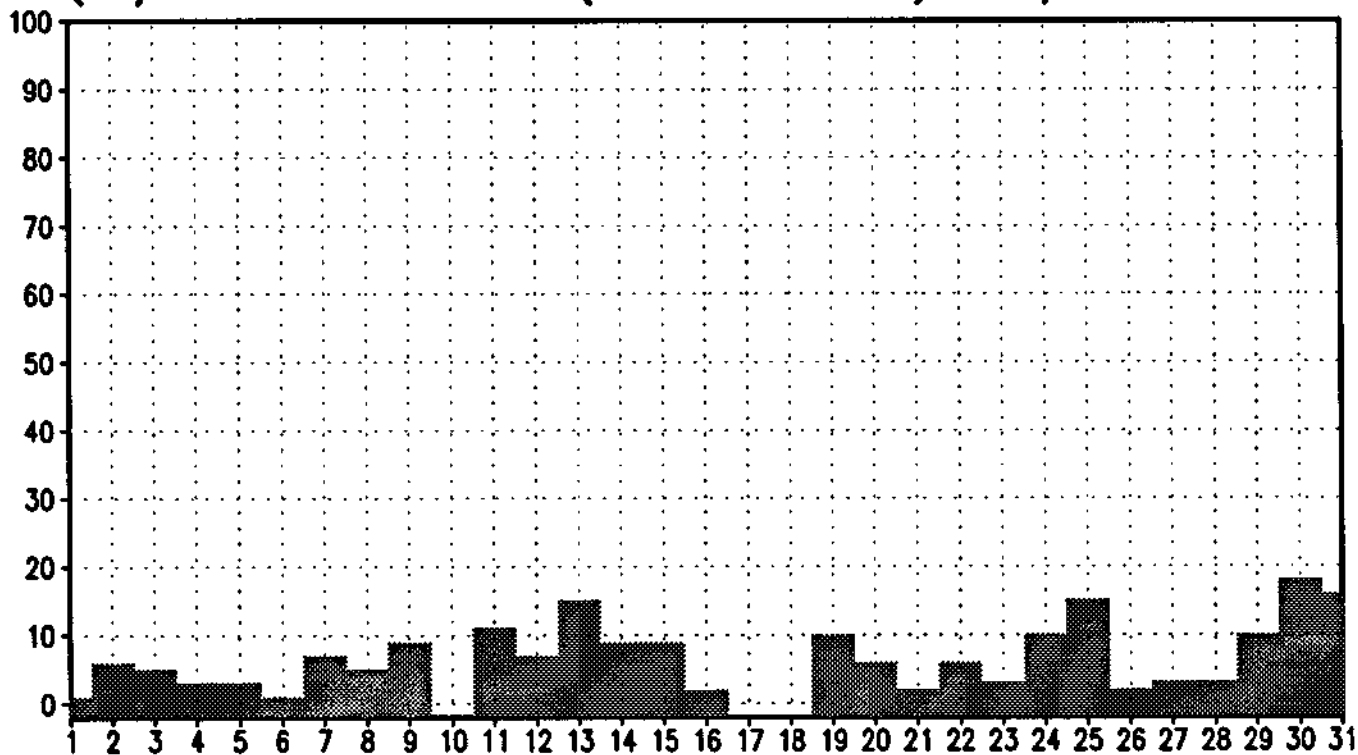
(%) DE VALORES (≥ 120 'E') 06/93 18TMG



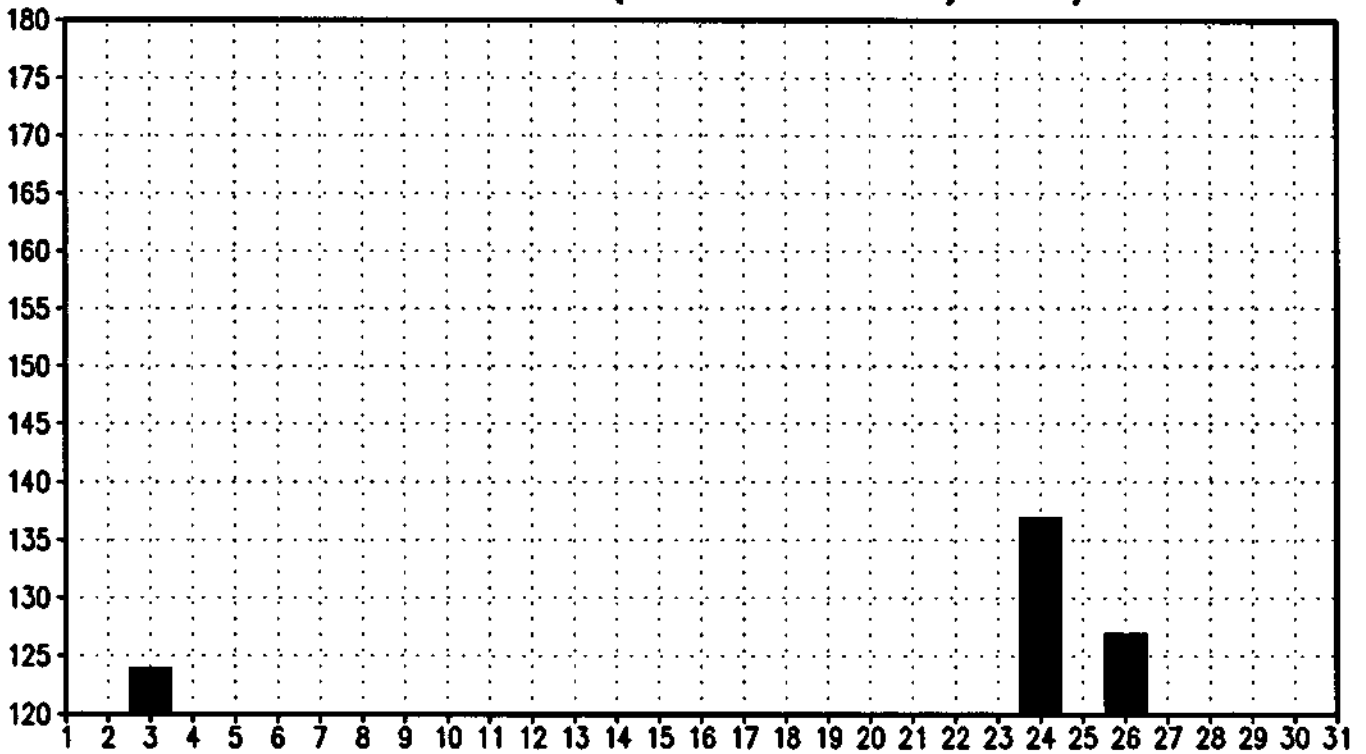
MEDIA DE VALORES (≥ 120 'A') 07/93 18TMG



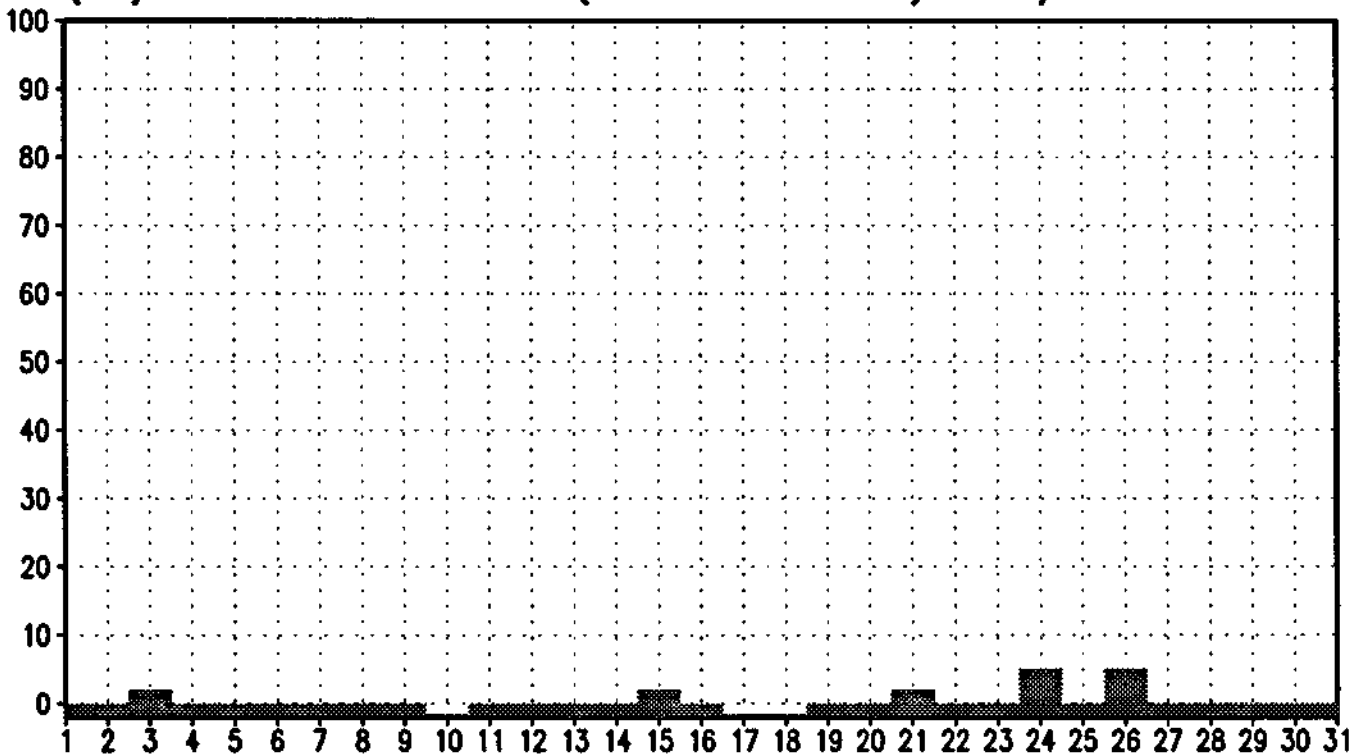
(%) DE VALORES (≥ 120 'A') 07/93 18TMG



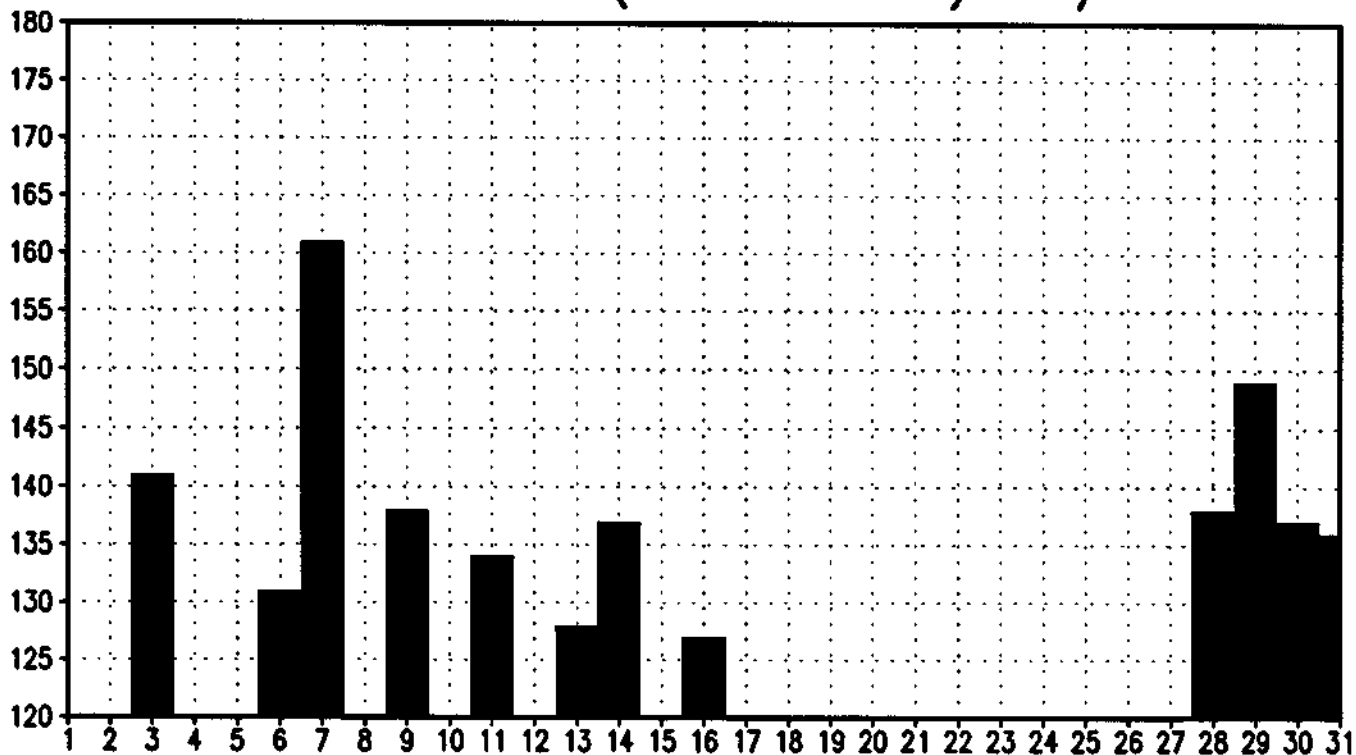
MEDIA DE VALORES (≥ 120 'B') 07/93 18TMG



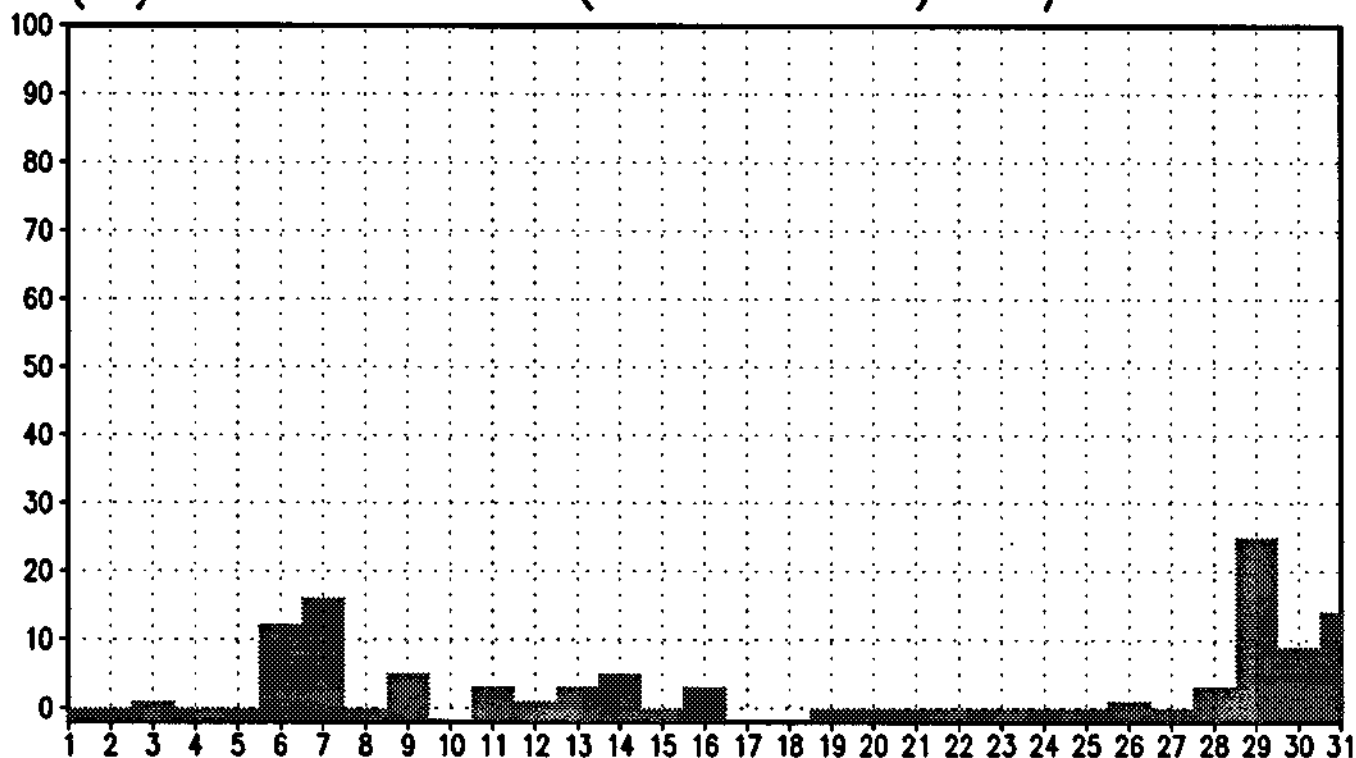
(%) DE VALORES (≥ 120 'B') 07/93 18TMG



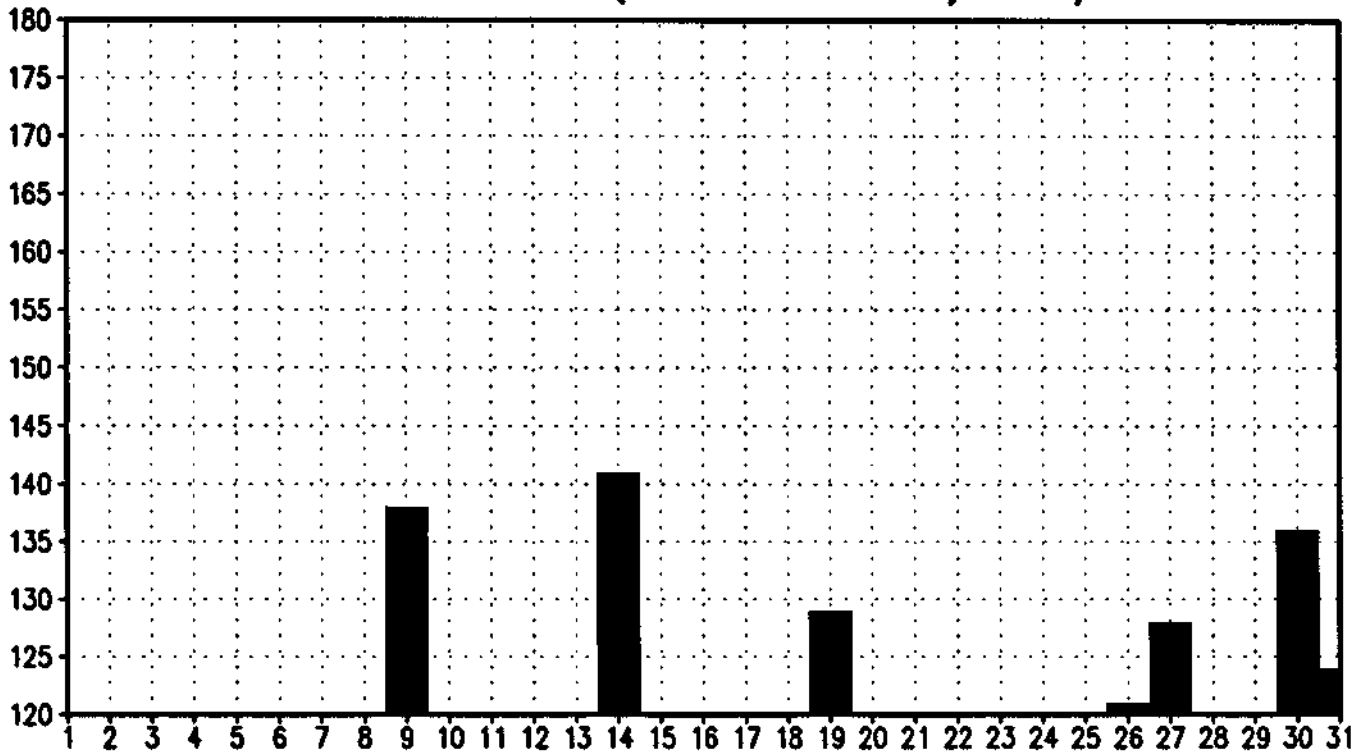
MEDIA DE VALORES (≥ 120 'C') 07/93 18TMG



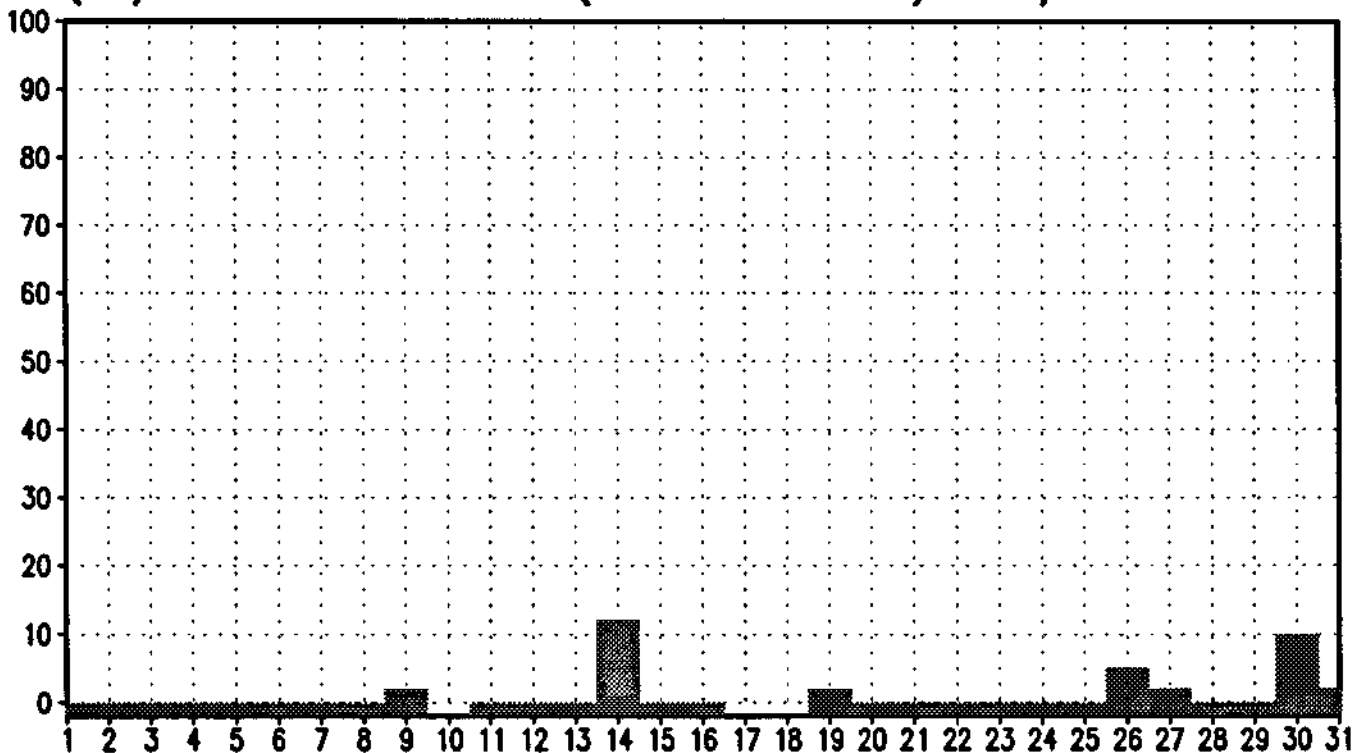
(%) DE VALORES (≥ 120 'C') 07/93 18TMG



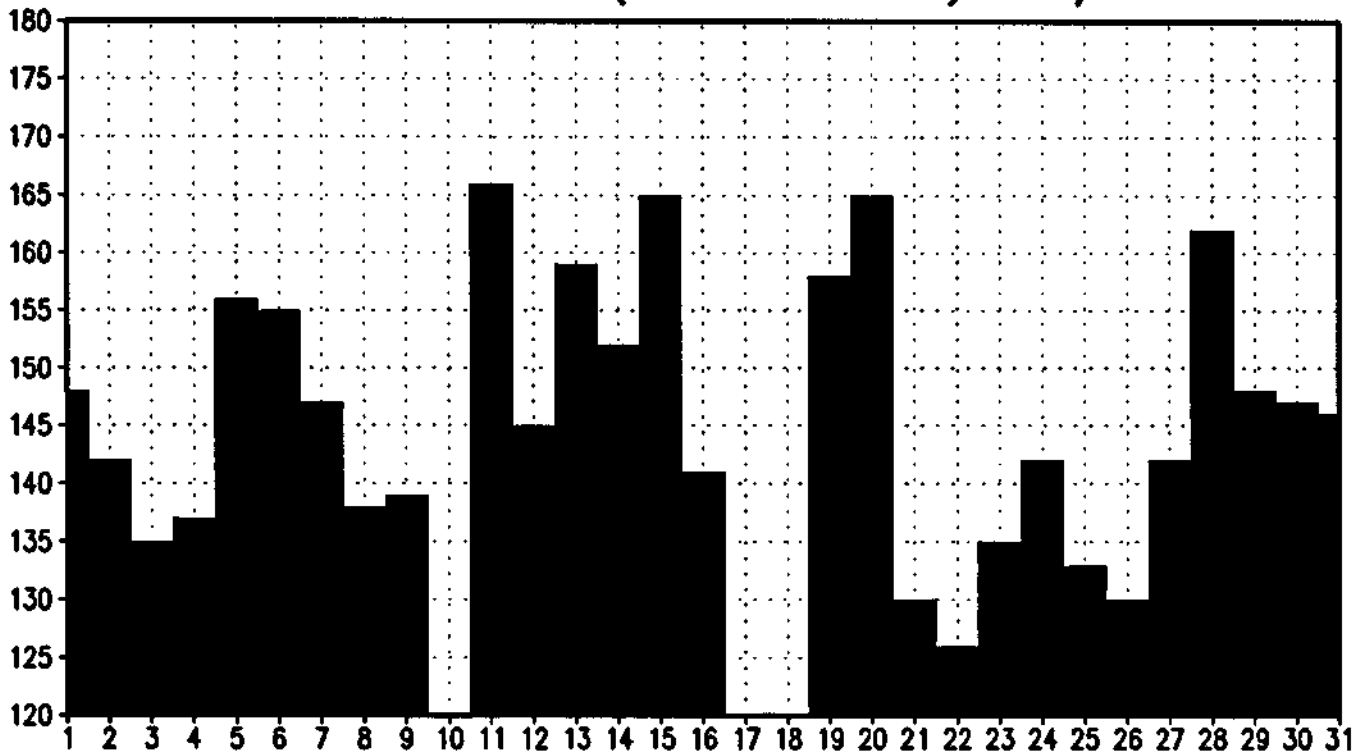
MEDIA DE VALORES (≥ 120 'D') 07/93 18TMG



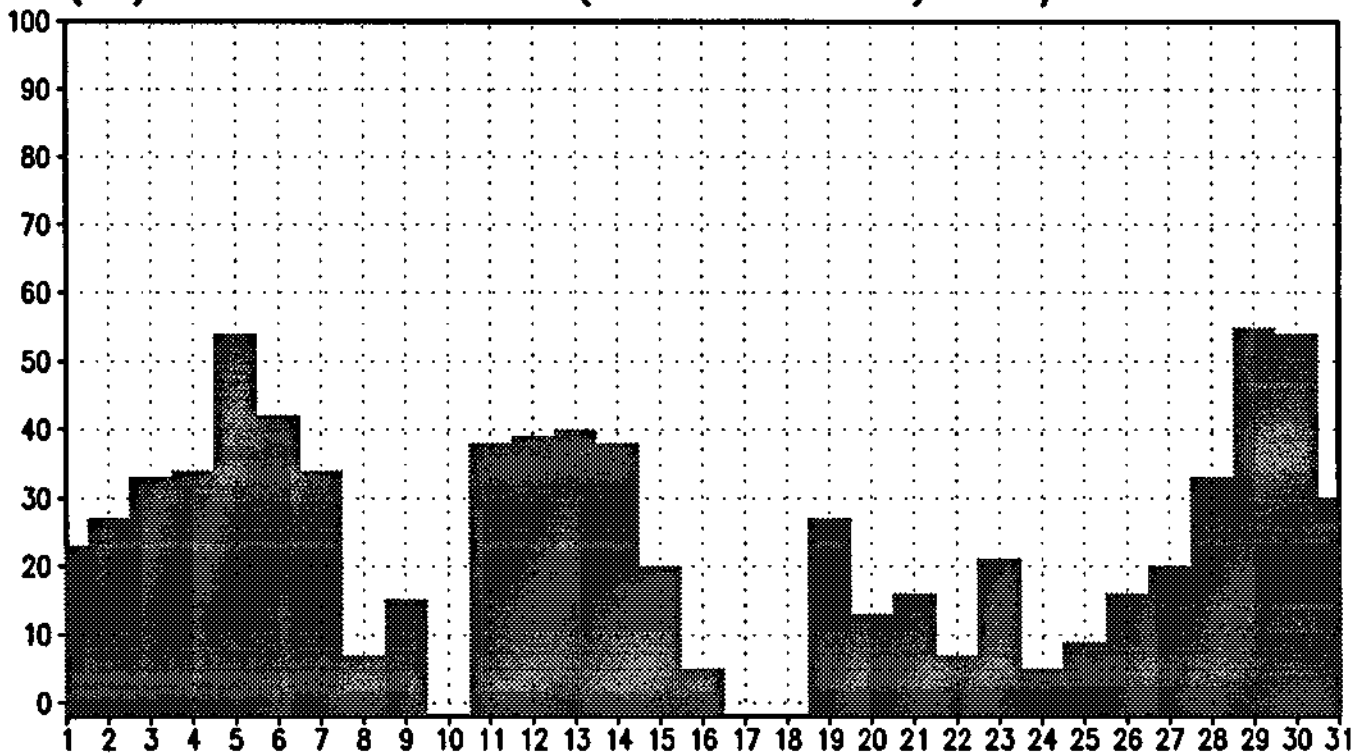
(%) DE VALORES (≥ 120 'D') 07/93 18TMG



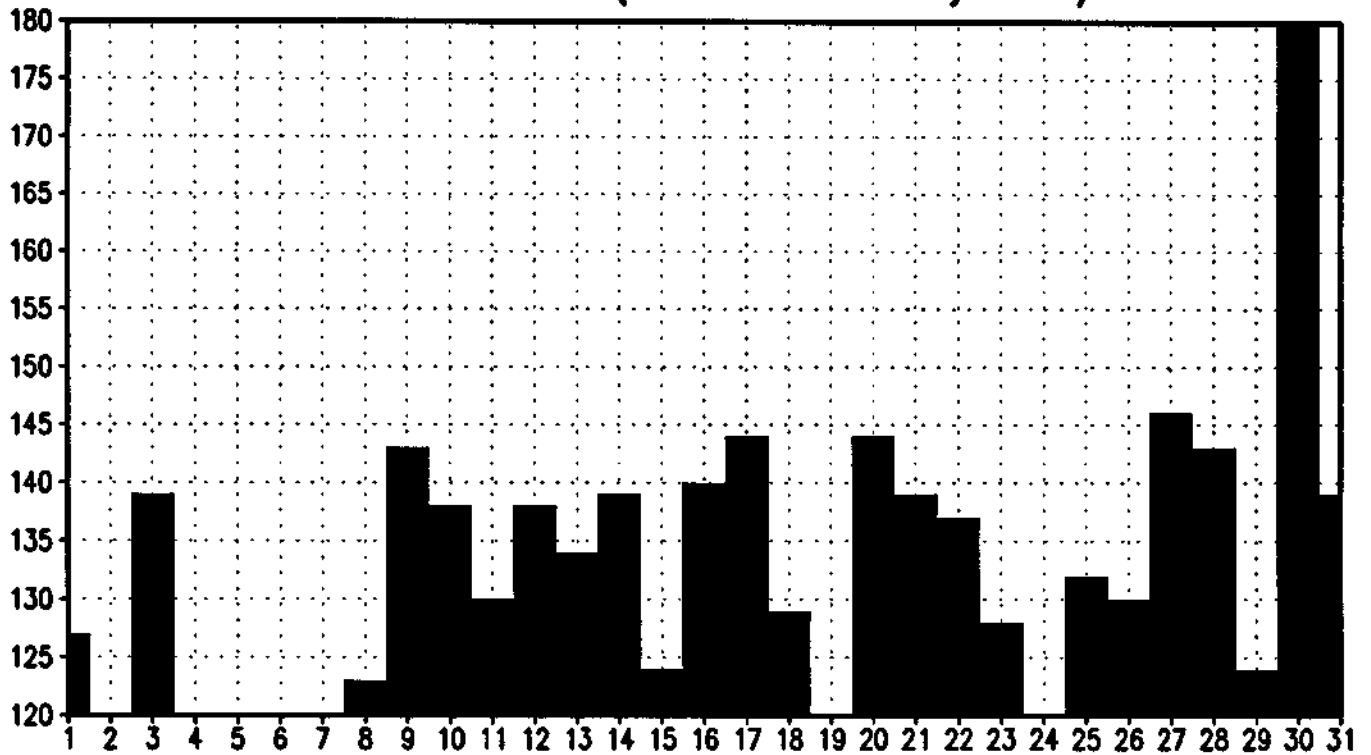
MEDIA DE VALORES (≥ 120 'E') 07/93 18TMG



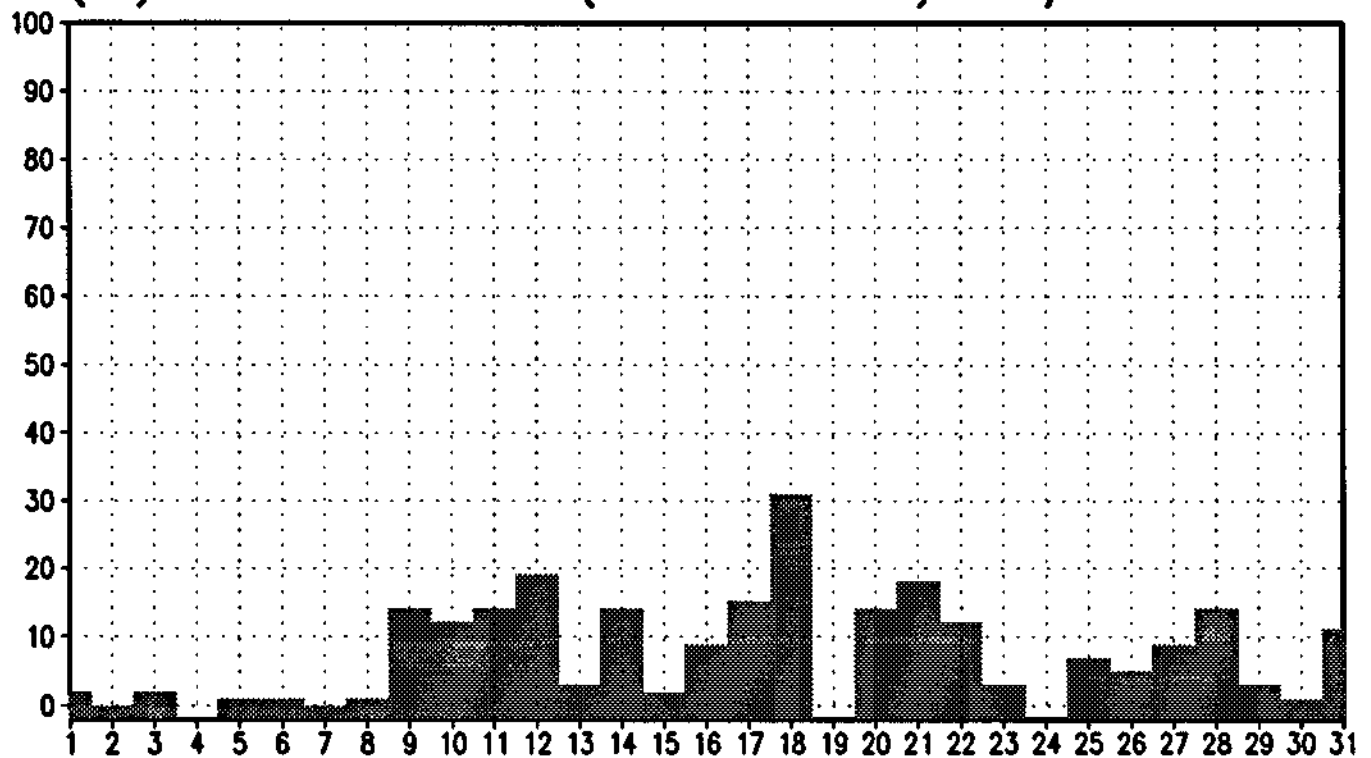
(%) DE VALORES (≥ 120 'E') 07/93 18TMG



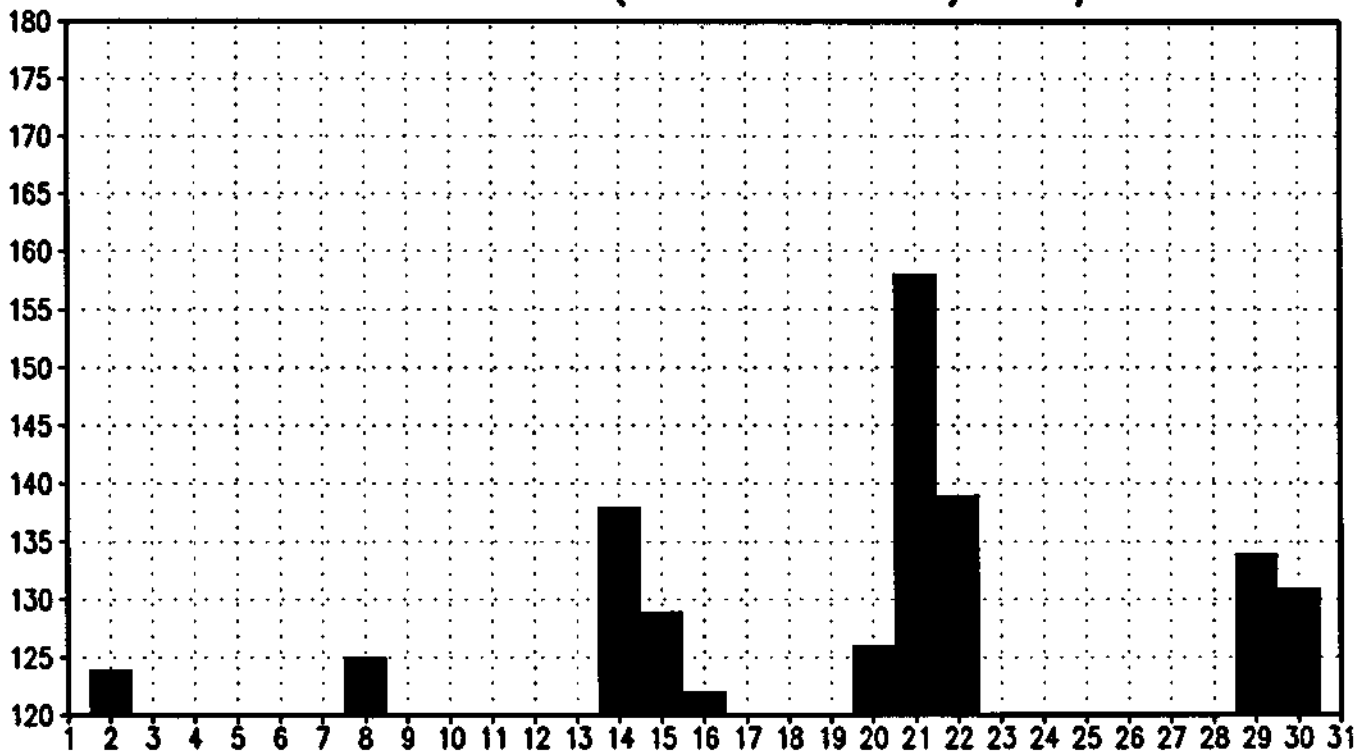
MEDIA DE VALORES (≥ 120 'A') 08/93 18TMG



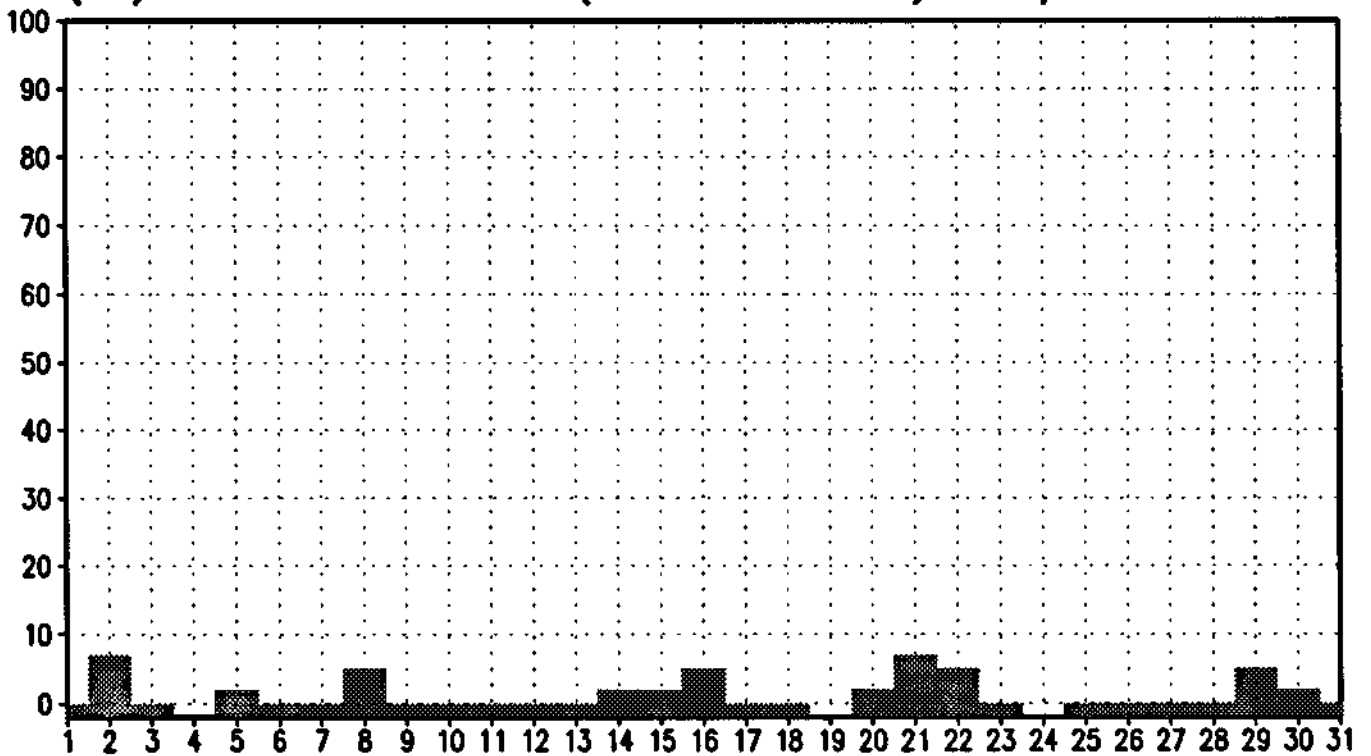
(%) DE VALORES (≥ 120 'A') 08/93 18TMG



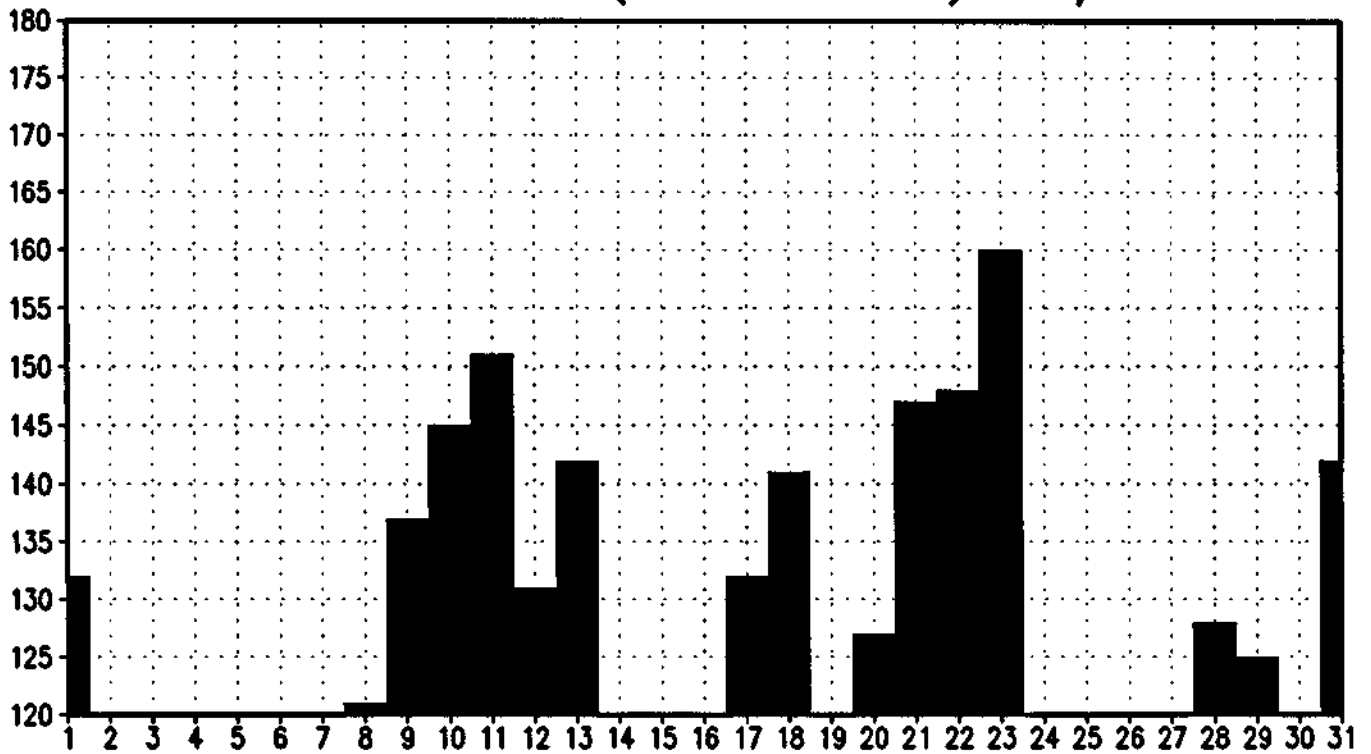
MEDIA DE VALORES (≥ 120 'B') 08/93 18TMG



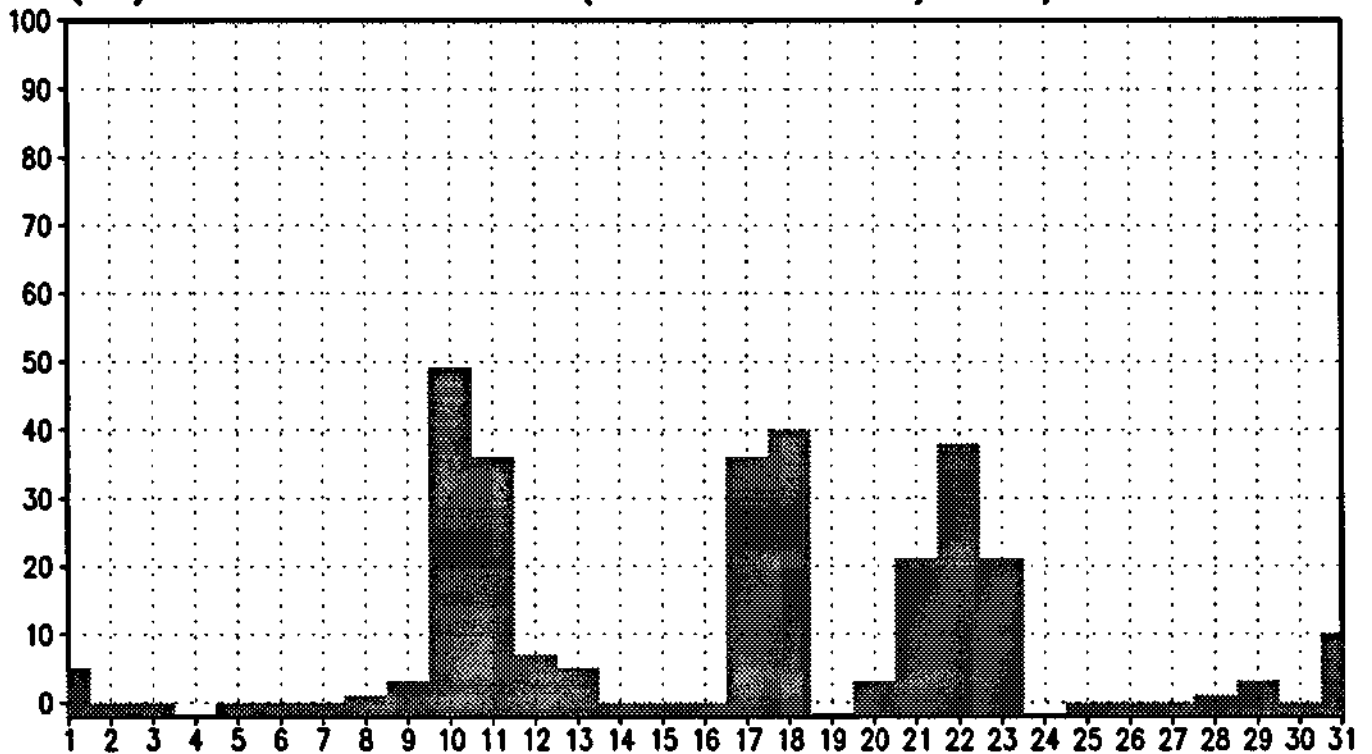
(%) DE VALORES (≥ 120 'B') 08/93 18TMG



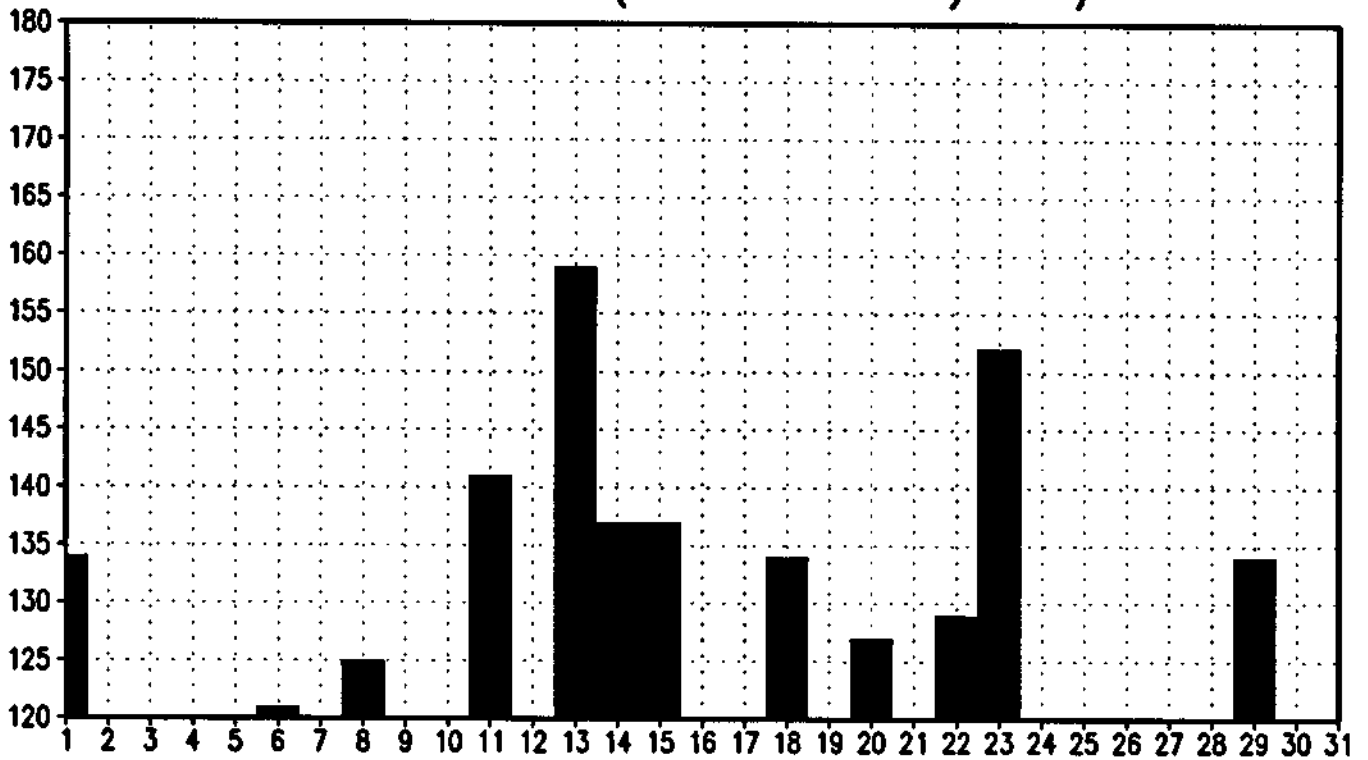
MEDIA DE VALORES (≥ 120 'C') 08/93 18TMG



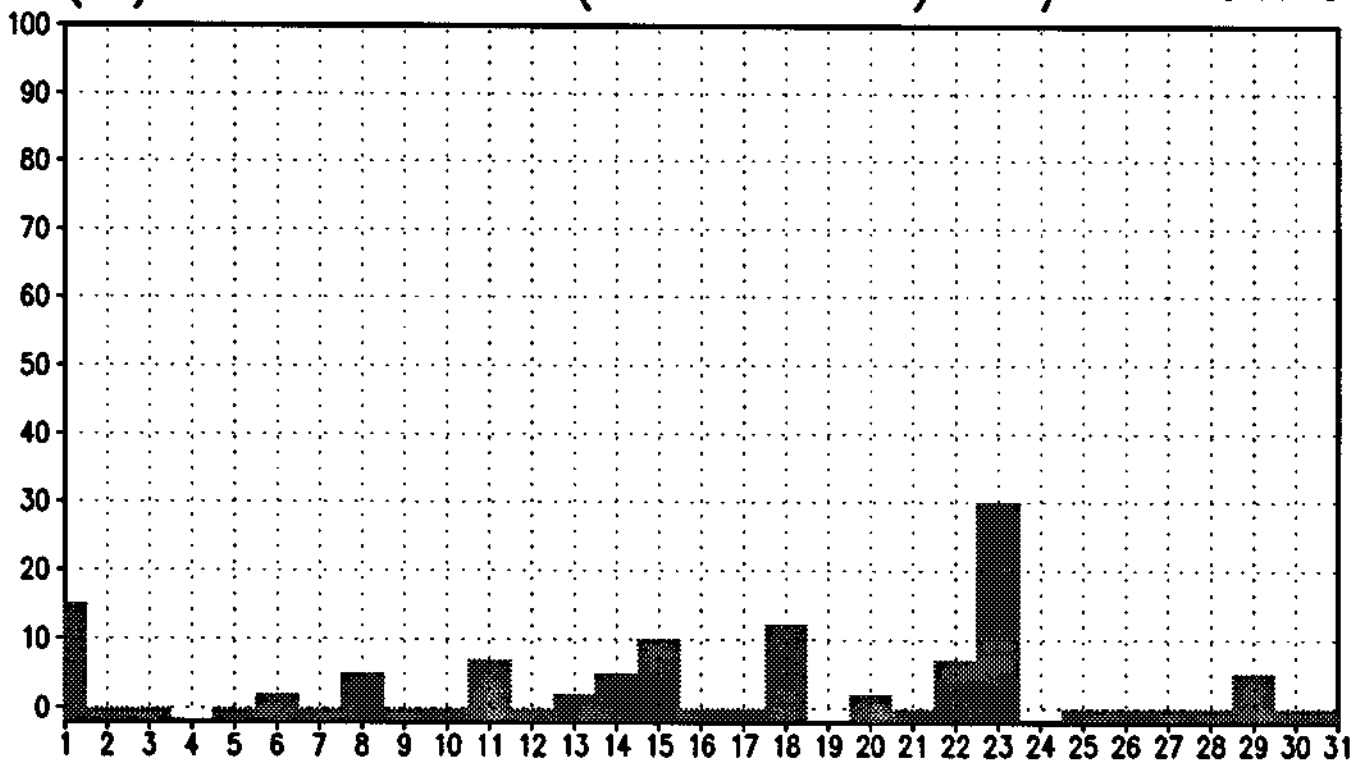
(%) DE VALORES (≥ 120 'C') 08/93 18TMG



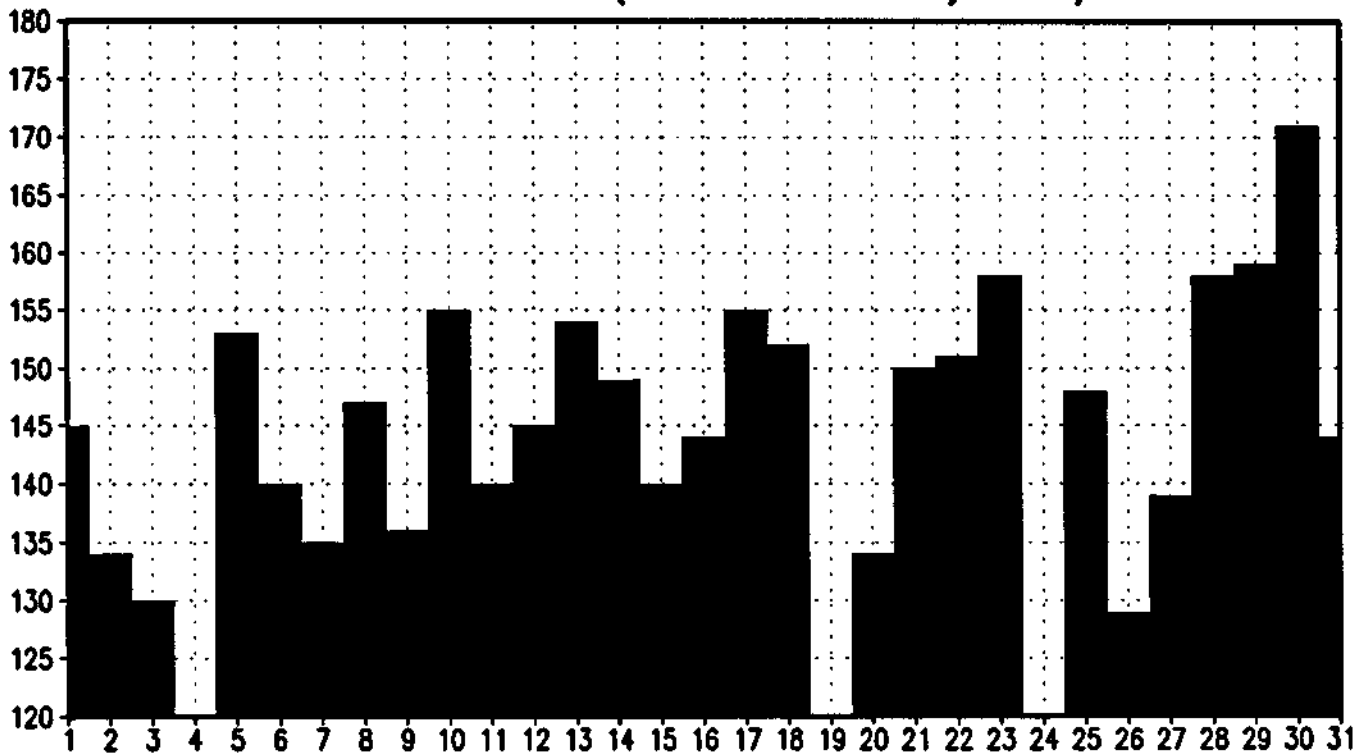
MEDIA DE VALORES (≥ 120 'D') 08/93 18TMG



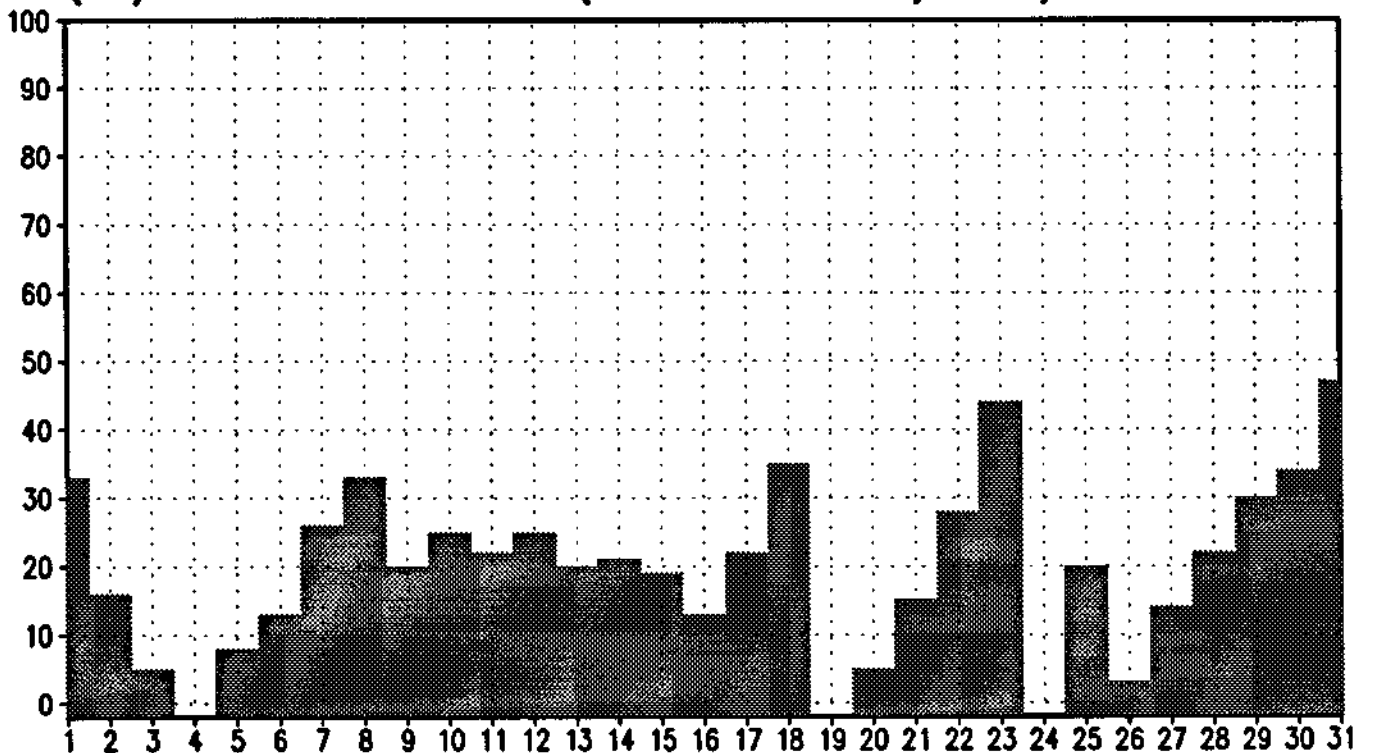
(%) DE VALORES (≥ 120 'D') 08/93 18TMG



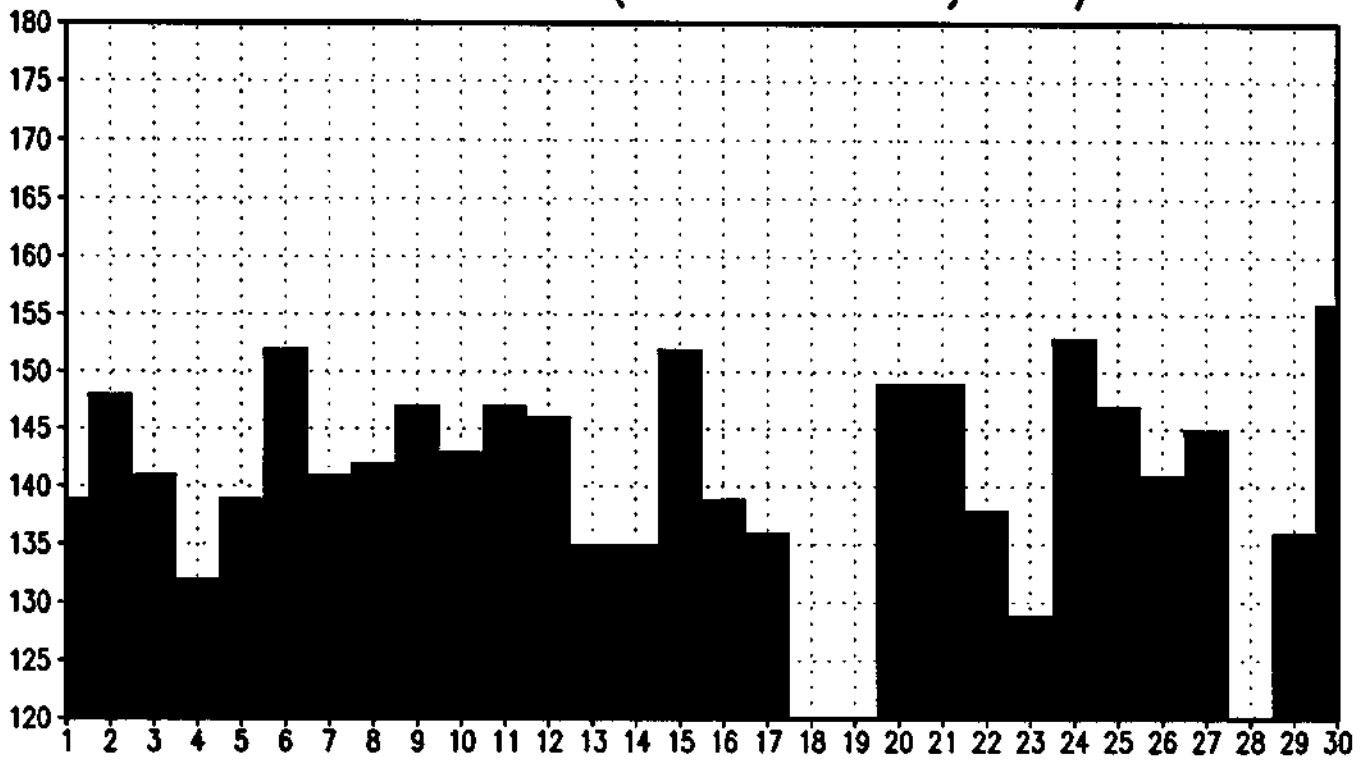
MEDIA DE VALORES (≥ 120 'E') 08/93 18TMG



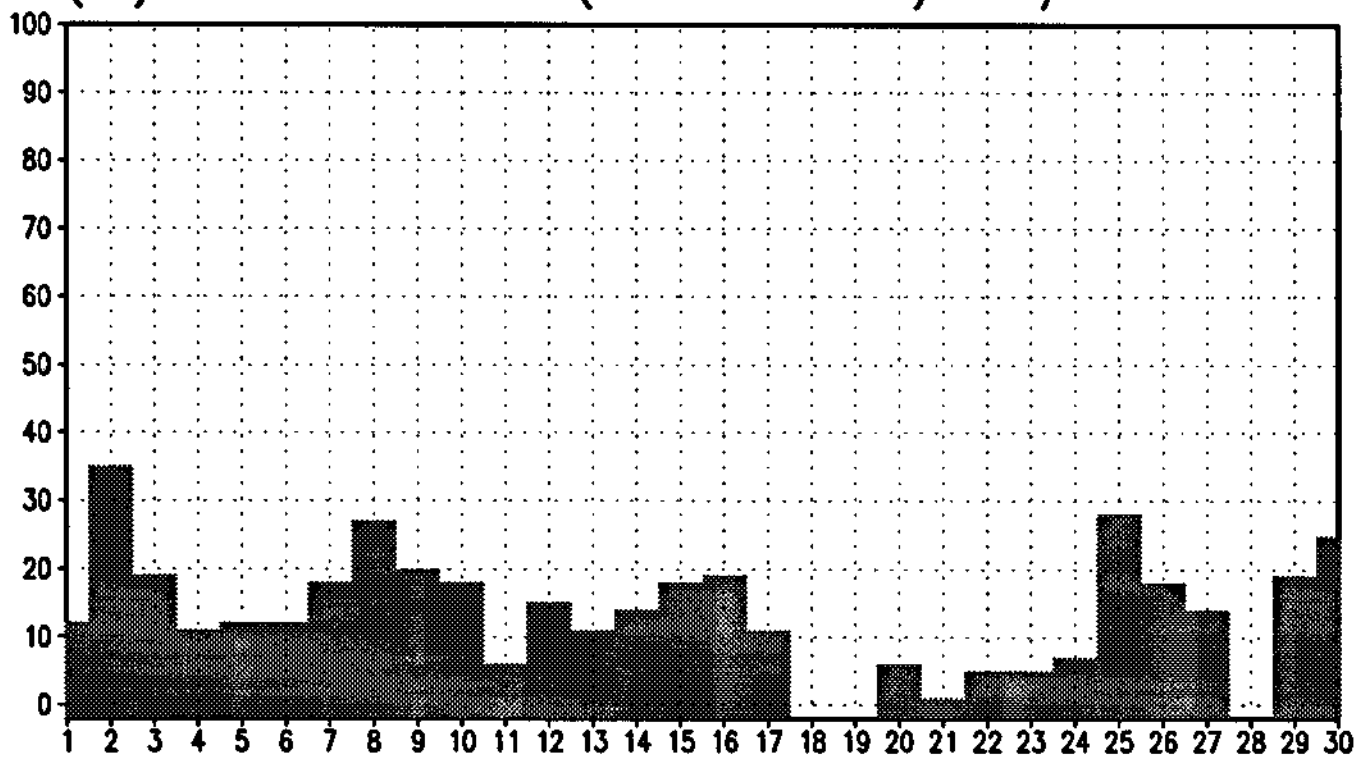
(%) DE VALORES (≥ 120 'E') 08/93 18TMG



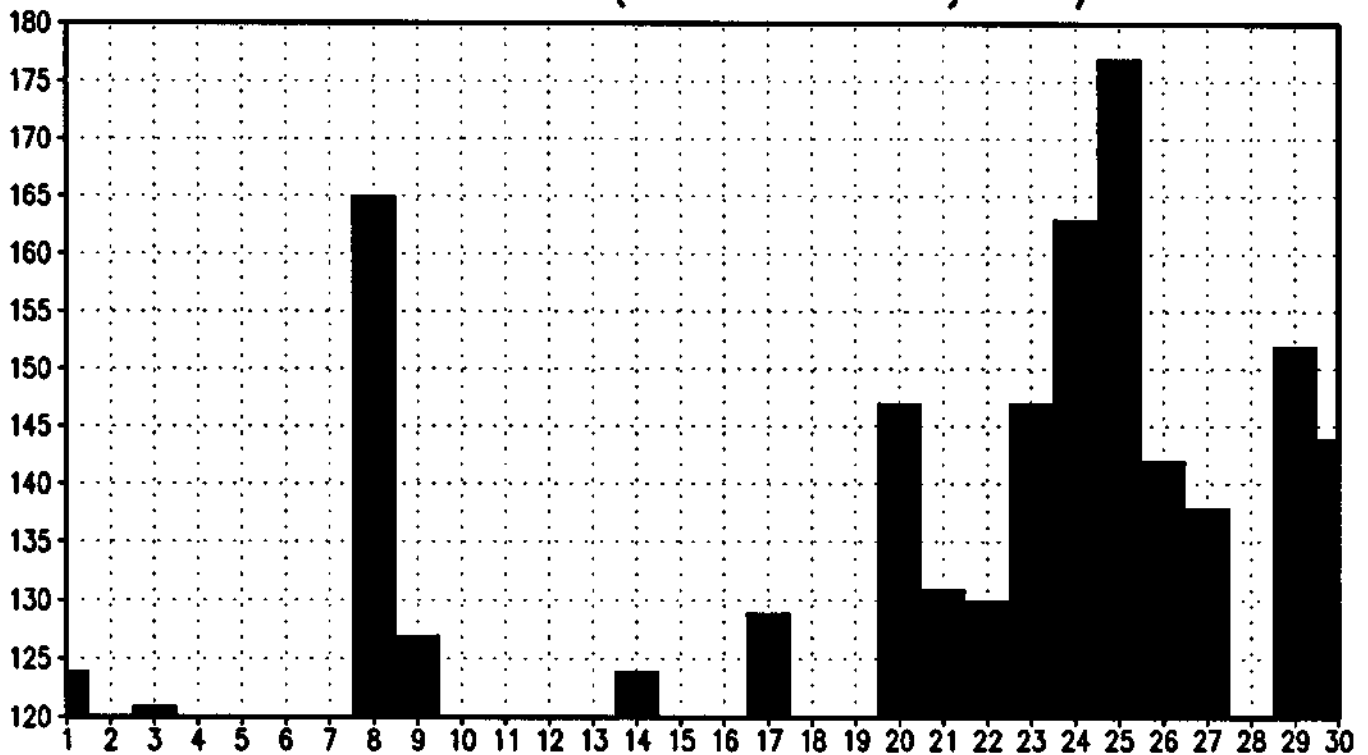
MEDIA DE VALORES (≥ 120 'A') 09/93 18TMG



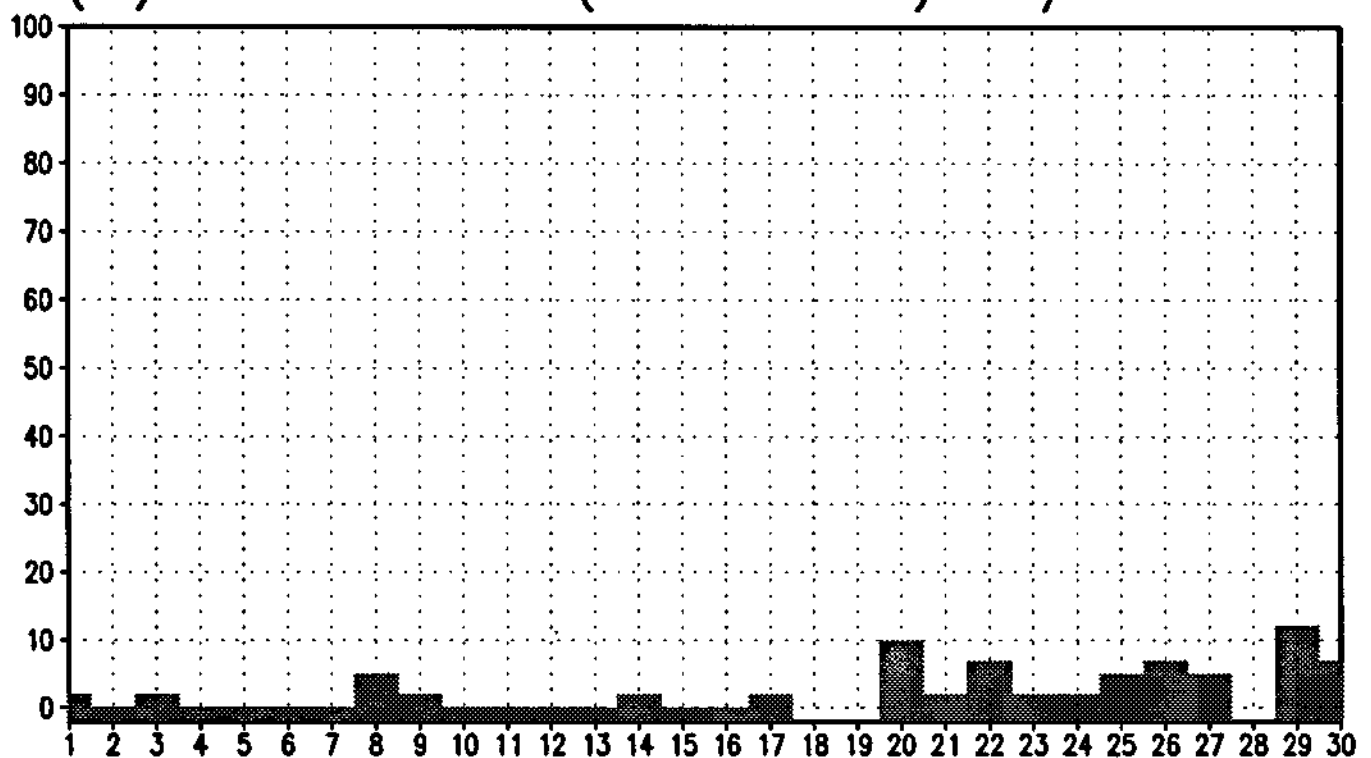
(%) DE VALORES (≥ 120 'A') 09/93 18TMG



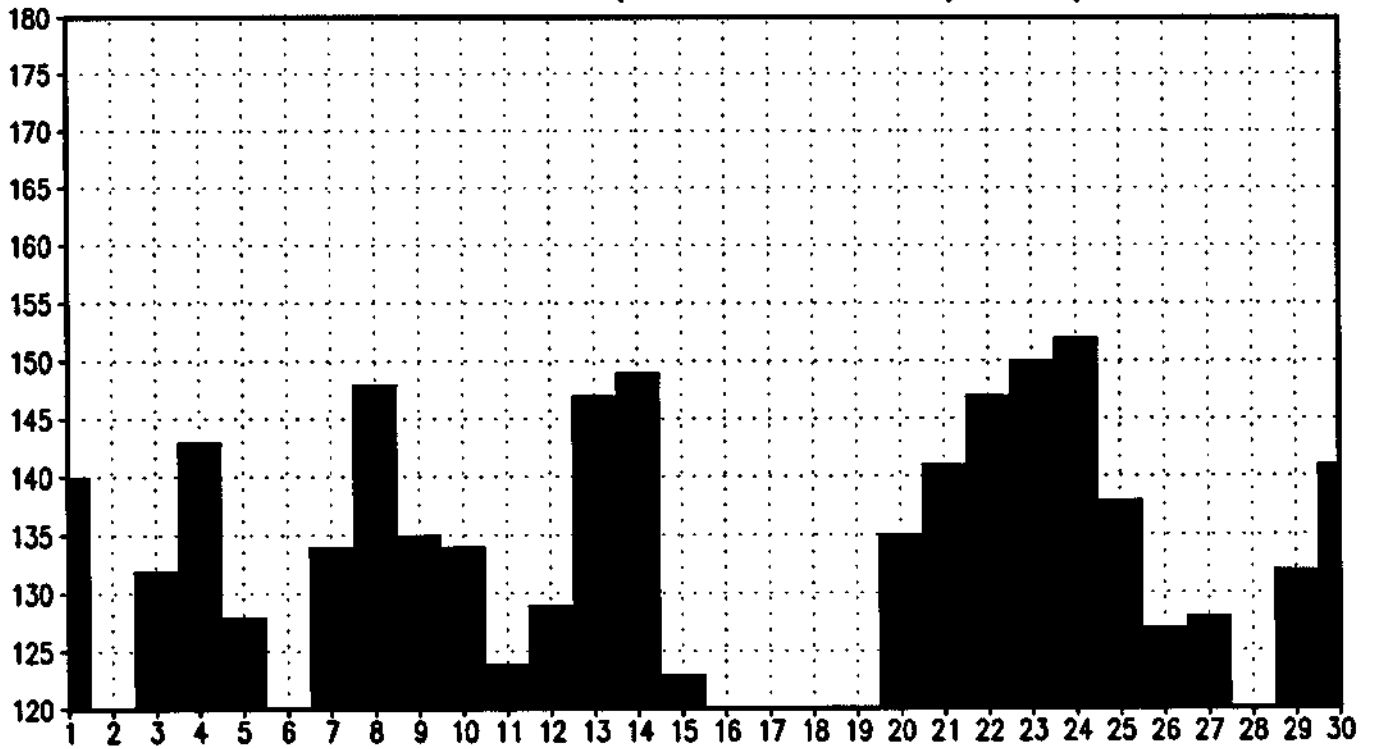
MEDIA DE VALORES (≥ 120 'B') 09/93 18TMG



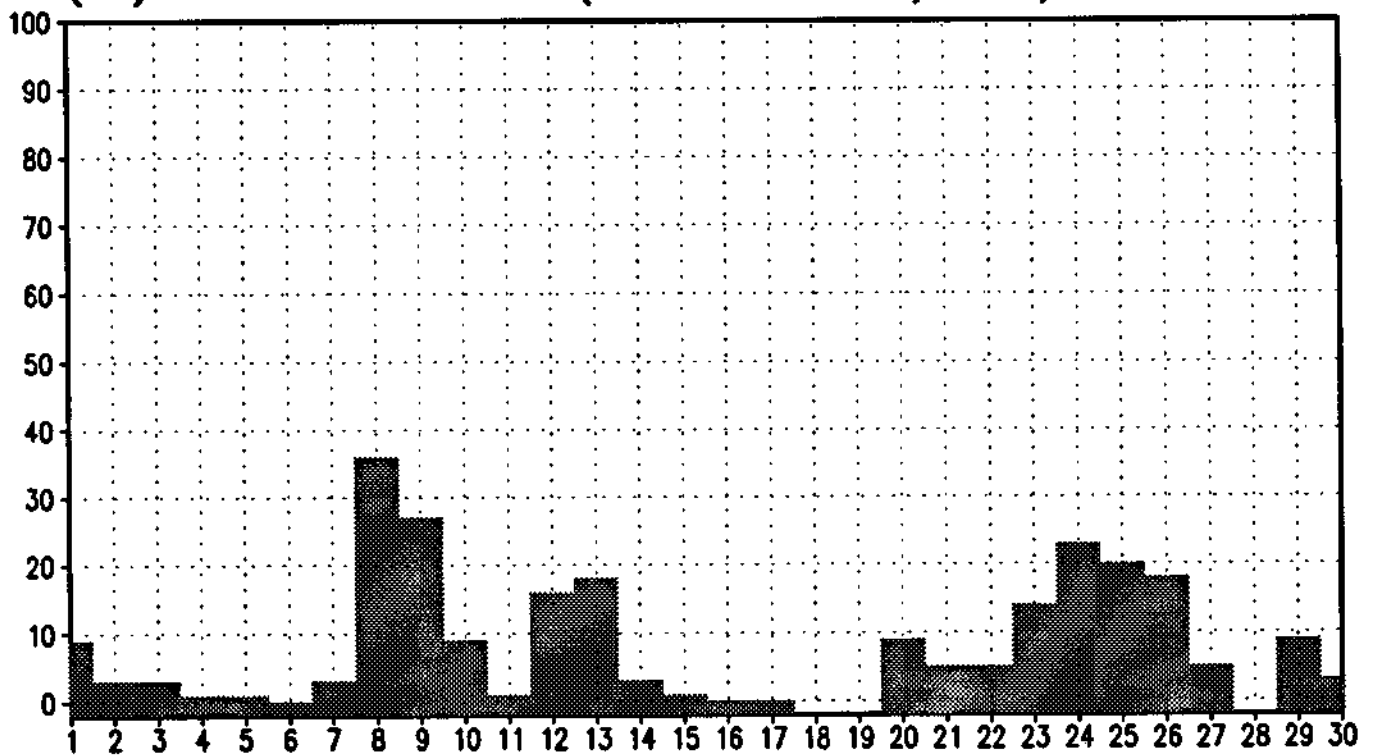
(%) DE VALORES (≥ 120 'B') 09/93 18TMG



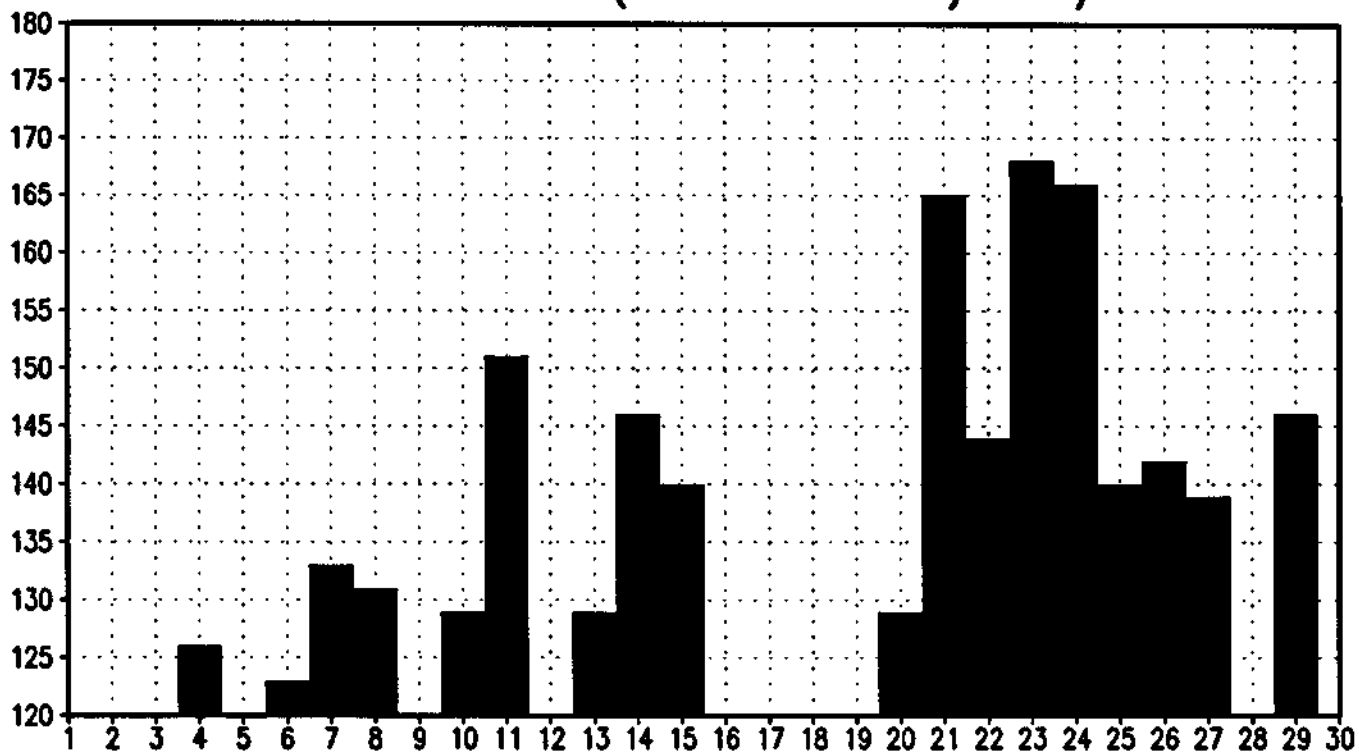
MEDIA DE VALORES (≥ 120 'C') 09/93 18TMG



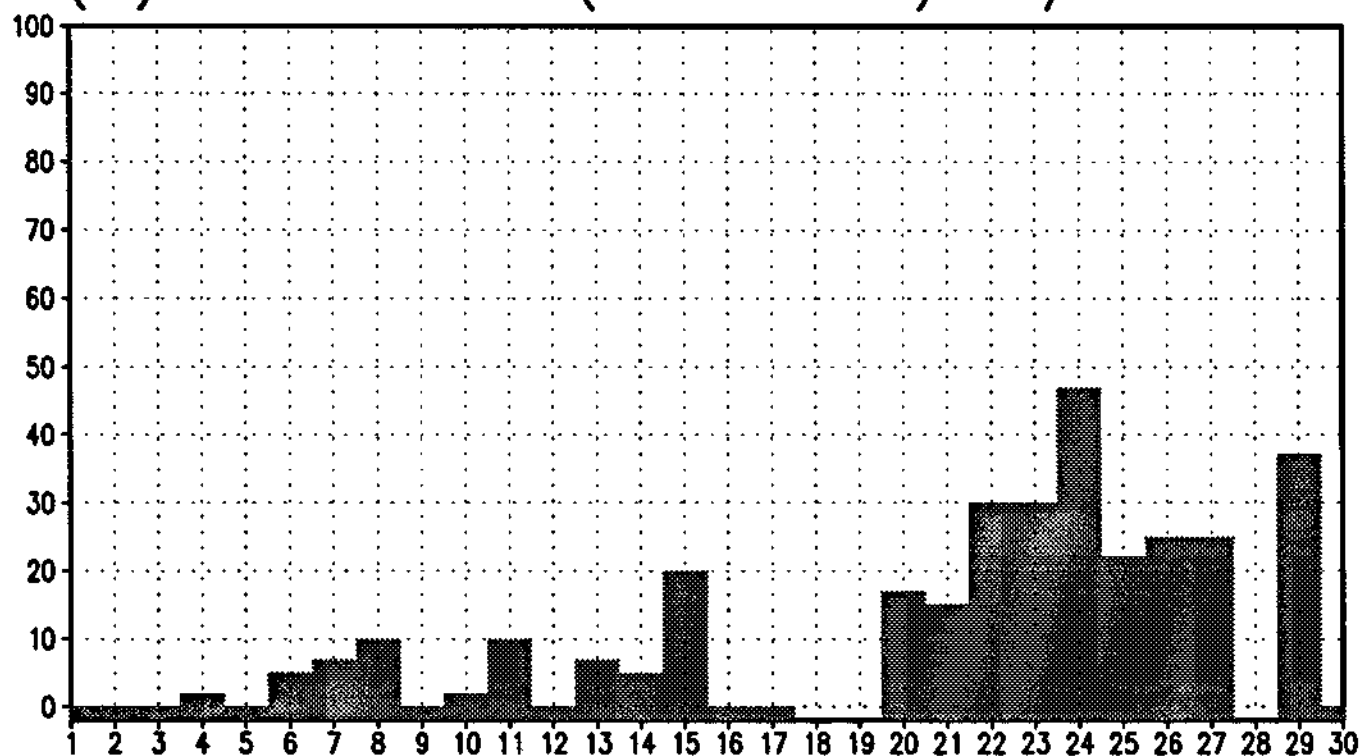
(%) DE VALORES (≥ 120 'C') 09/93 18TMG



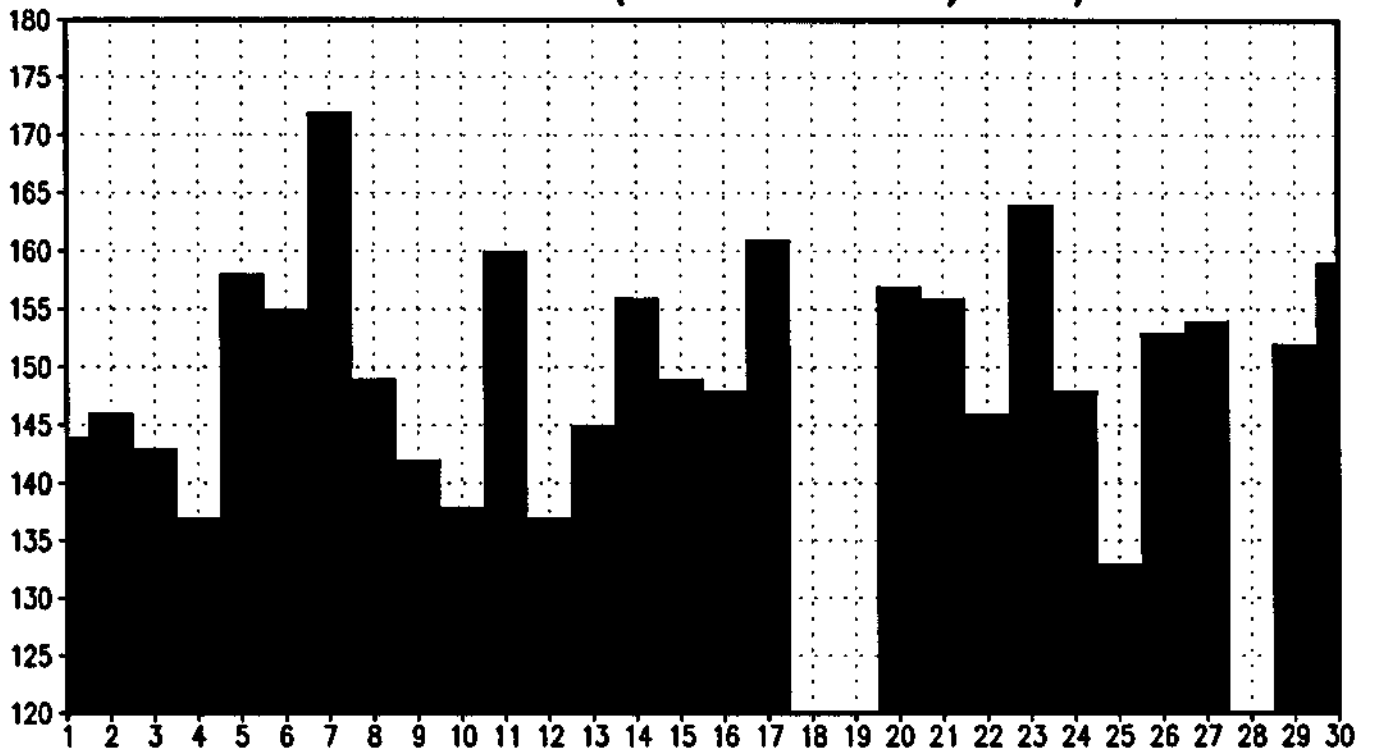
MEDIA DE VALORES (≥ 120 'D') 09/93 18TMG



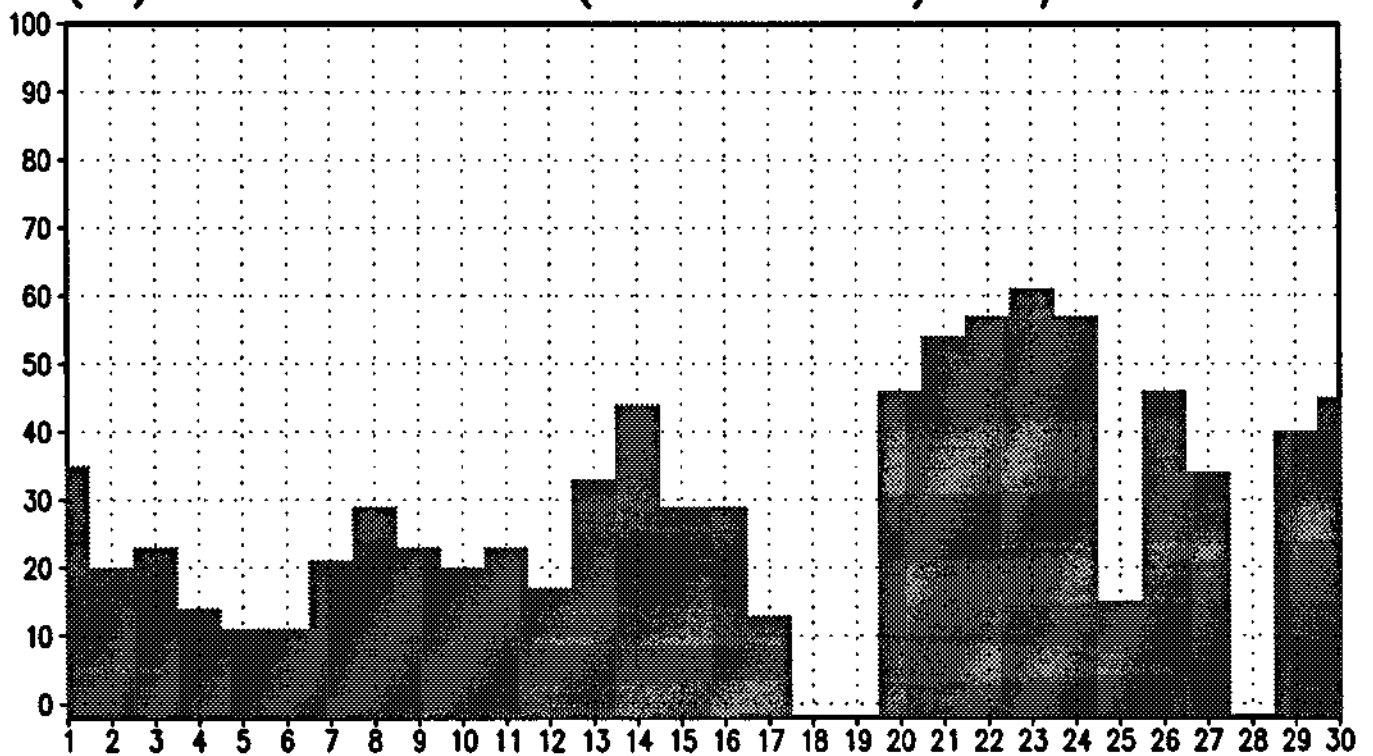
(%) DE VALORES (≥ 120 'D') 09/93 18TMG



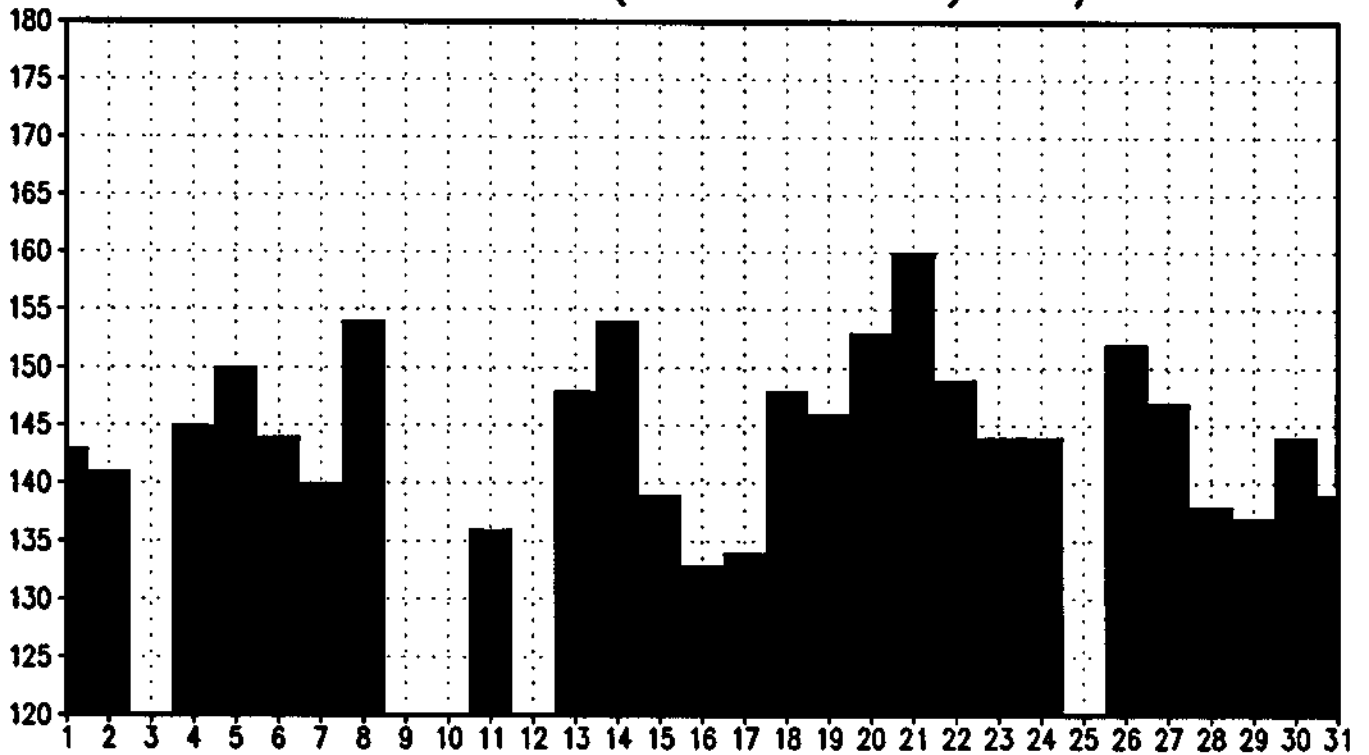
MEDIA DE VALORES (≥ 120 'E') 09/93 18TMG



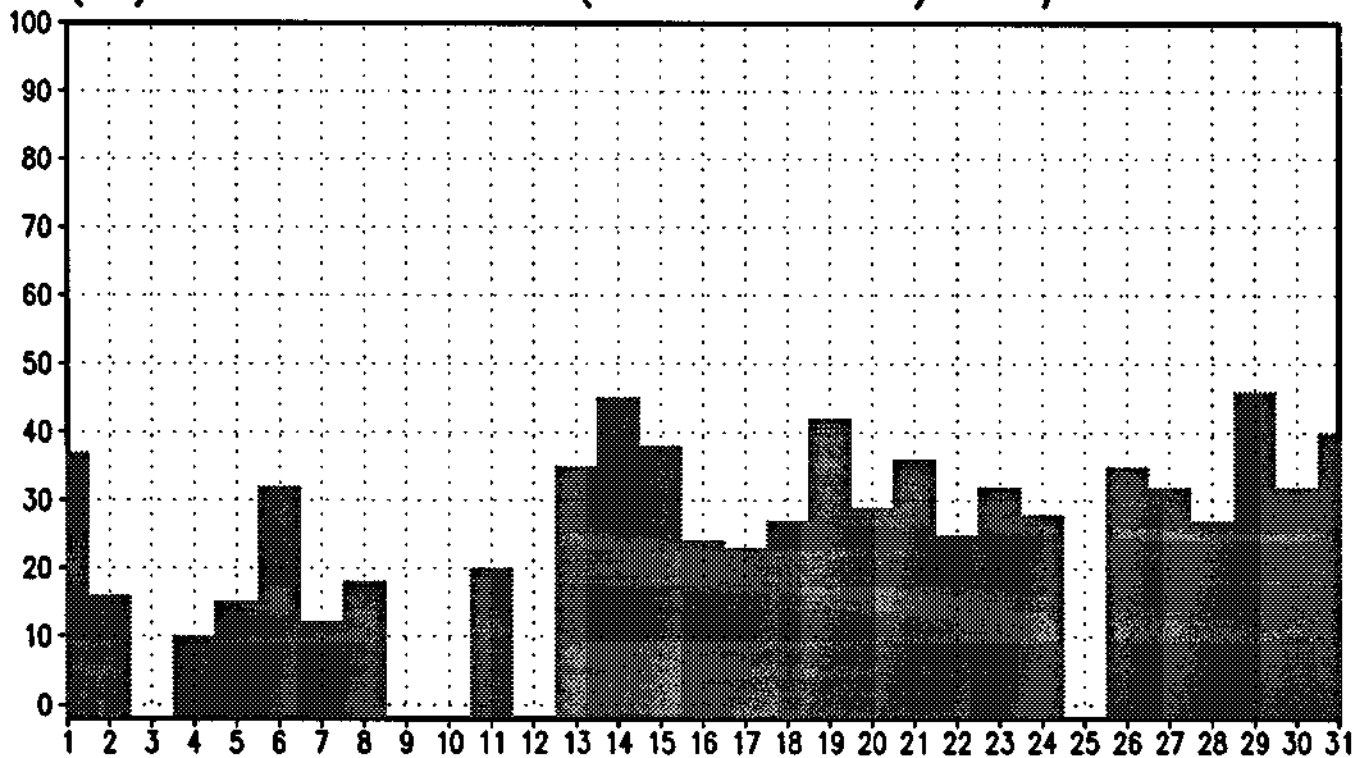
(%) DE VALORES (≥ 120 'E') 09/93 18TMG



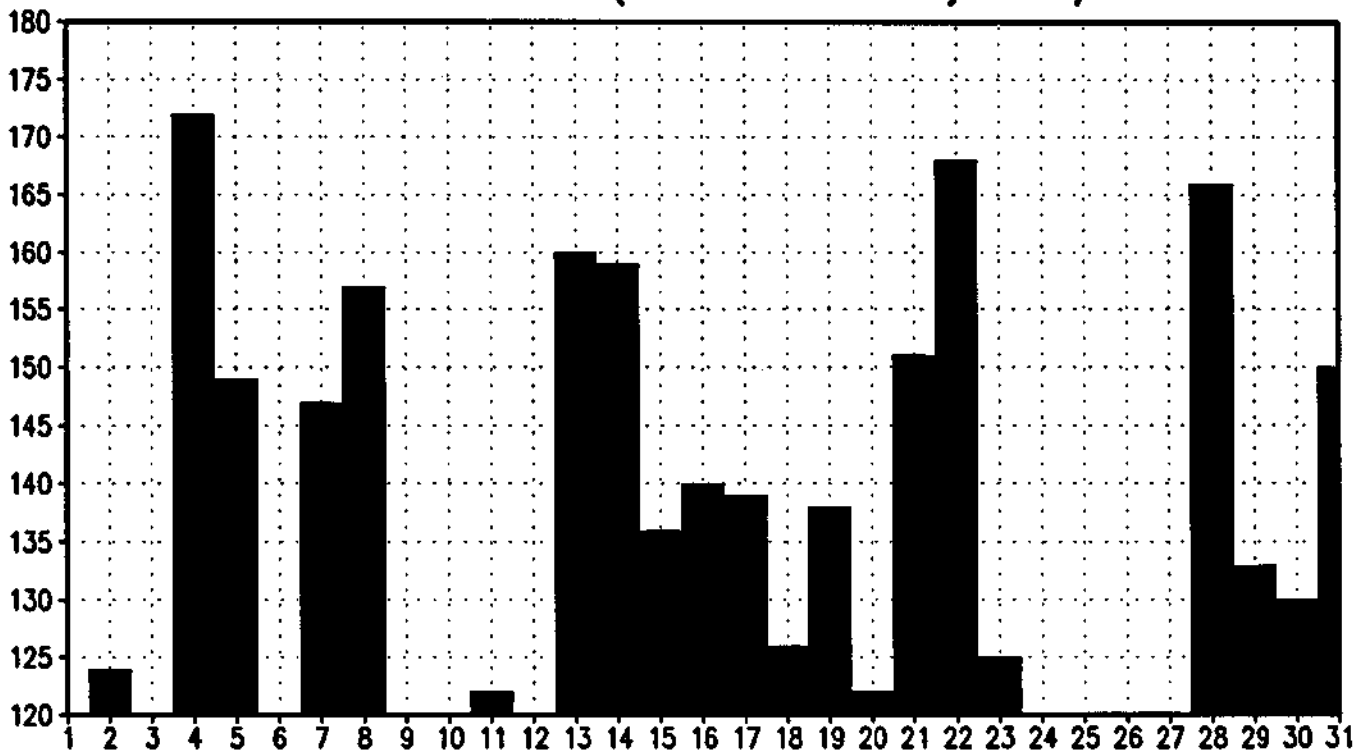
MEDIA DE VALORES (≥ 120 'A') 10/93 18TMG



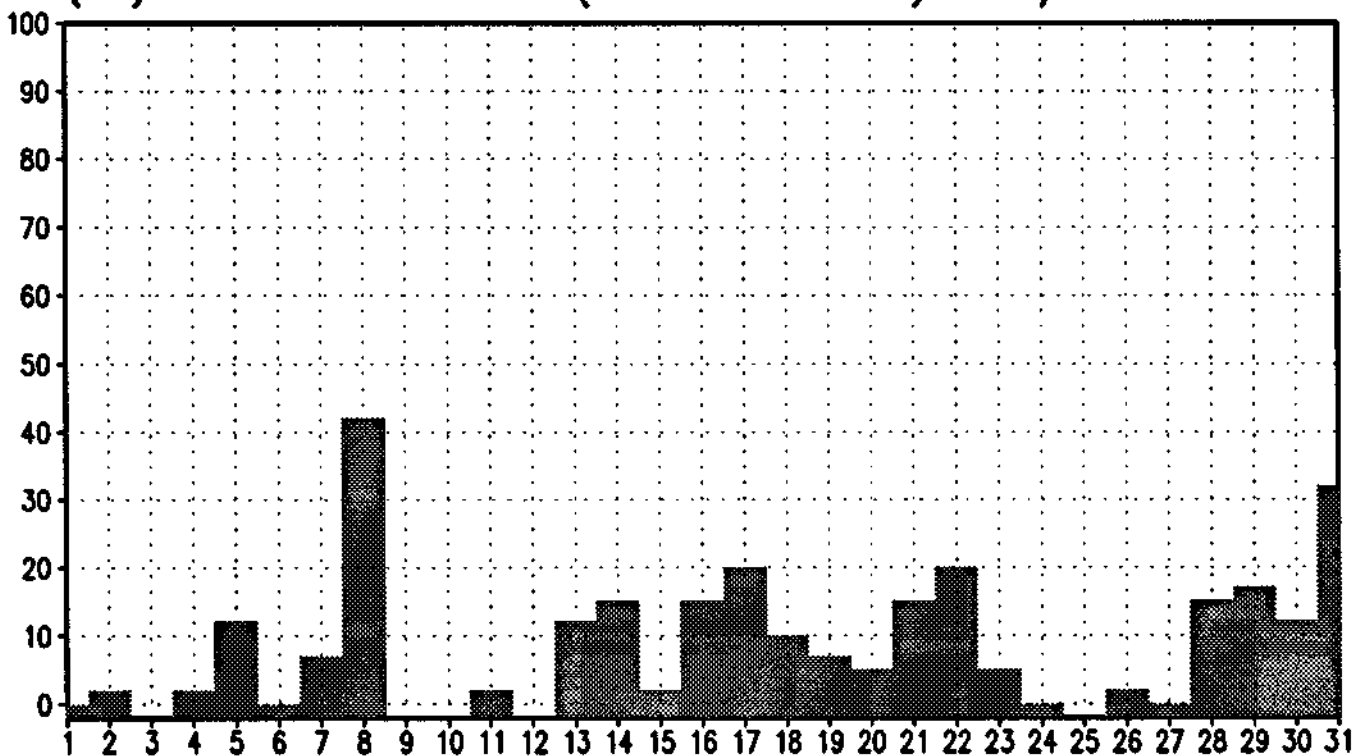
(%) DE VALORES (≥ 120 'A') 10/93 18TMG



MEDIA DE VALORES (≥ 120 'B') 10/93 18TMG



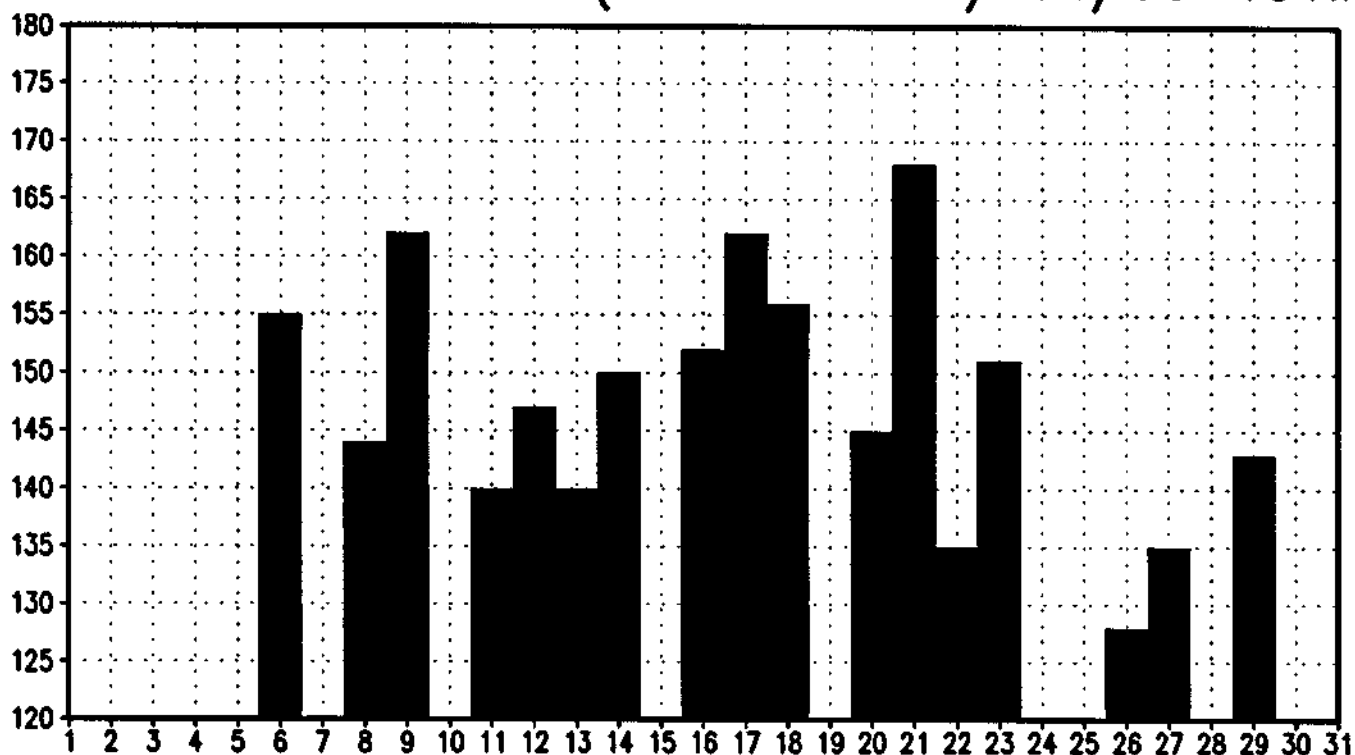
(%) DE VALORES (≥ 120 'B') 10/93 18TMG



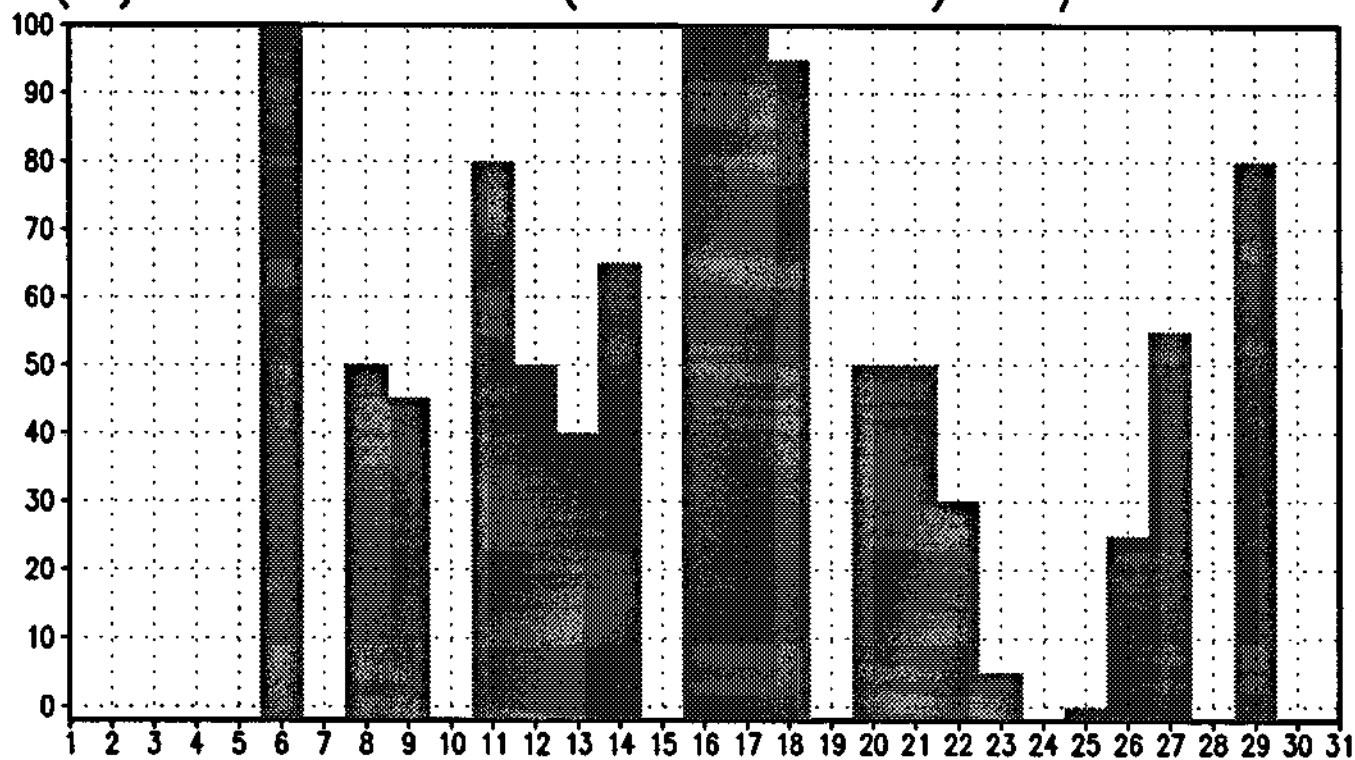
ANEXO II

SEQUÊNCIA DE GRÁFICOS COM AS SÉRIES
TEMPORAIS DAS MÉDIAS E PORCENTAGENS
DIÁRIAS DA ÁREA NE (NORDESTE) PARA CADA
MÊS DE 1993 E 1994.

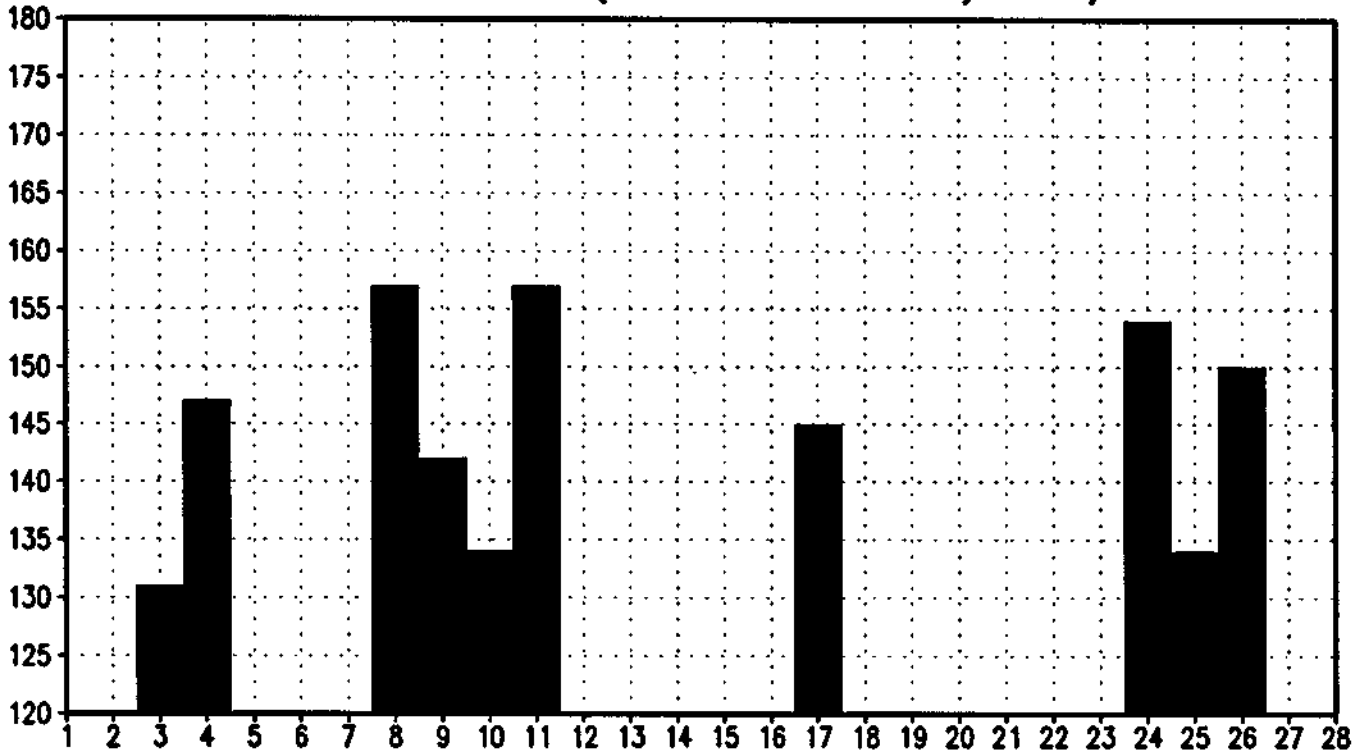
MEDIA DE VALORES (≥ 120 'NE') 01/93 18TMG



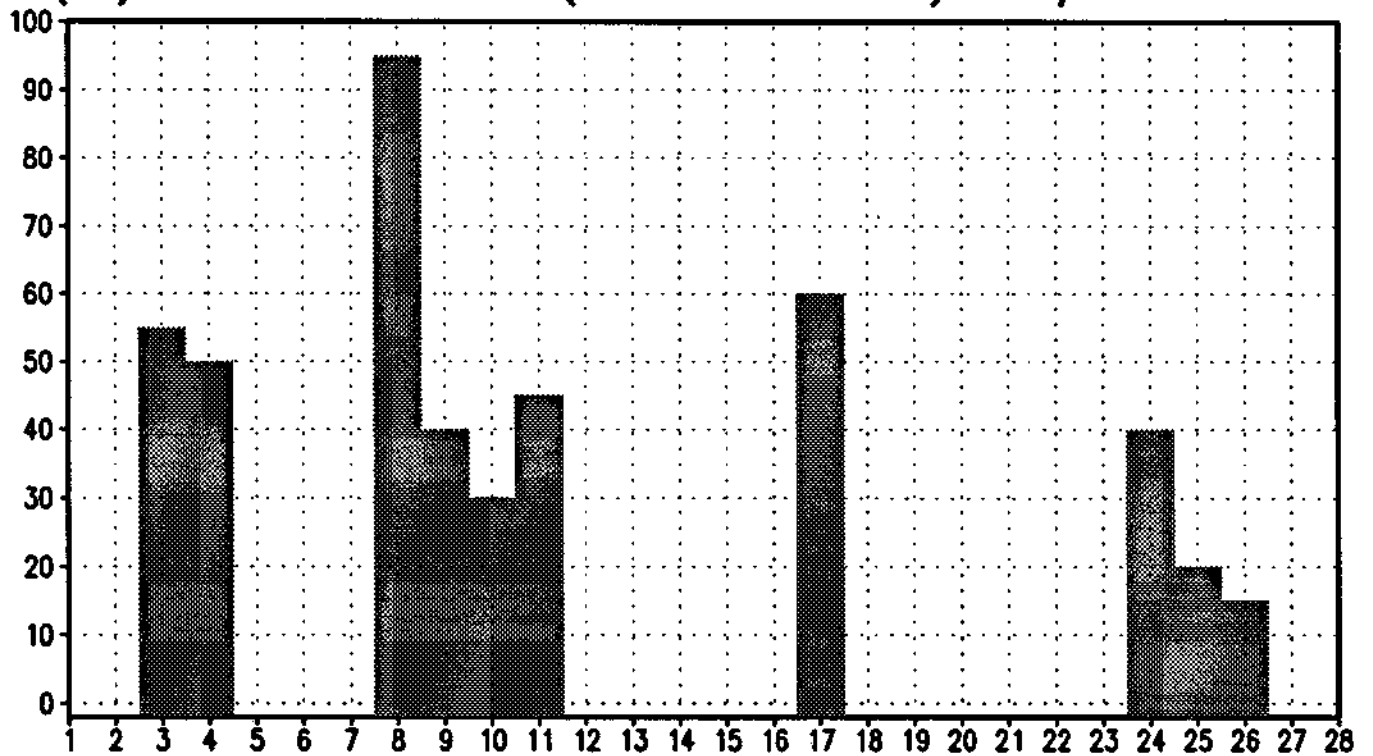
(%) DE VALORES (≥ 120 'NE') 01/93 18TMG



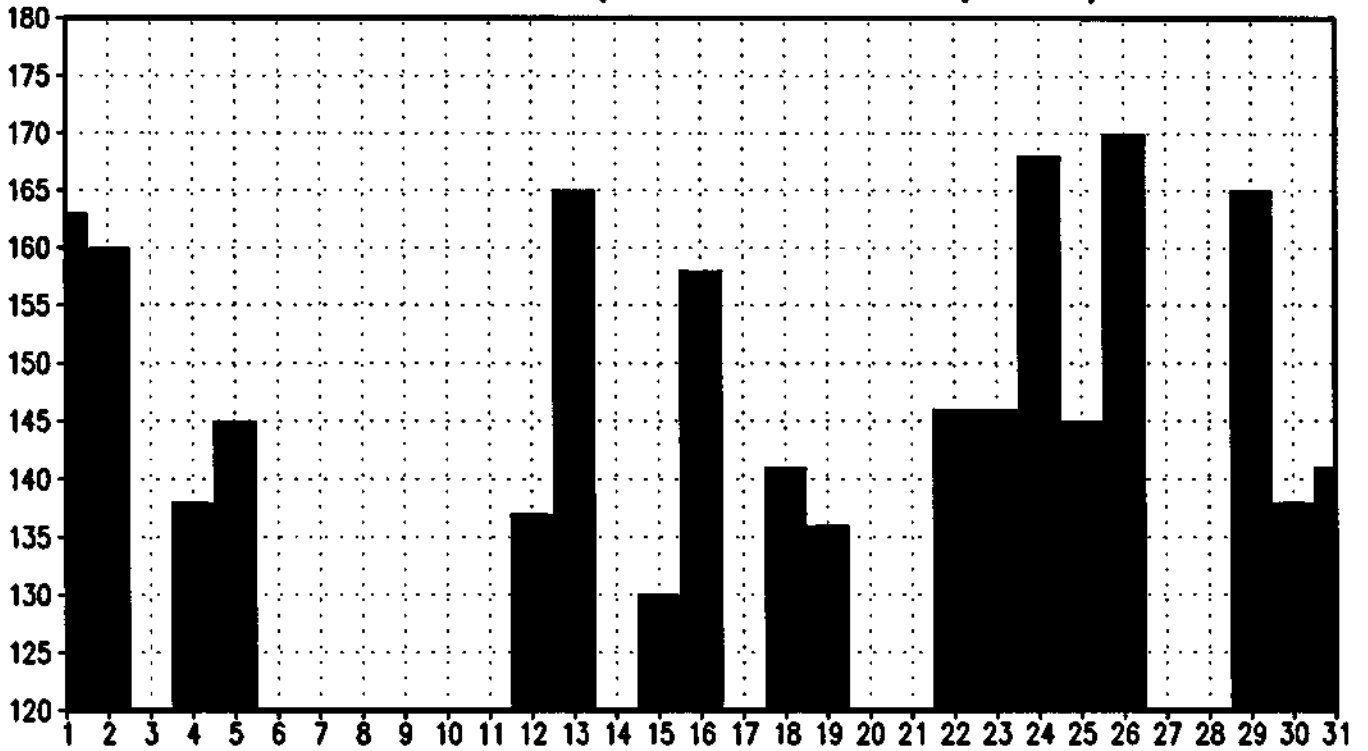
MEDIA DE VALORES (≥ 120 'NE') 02/93 18TMG



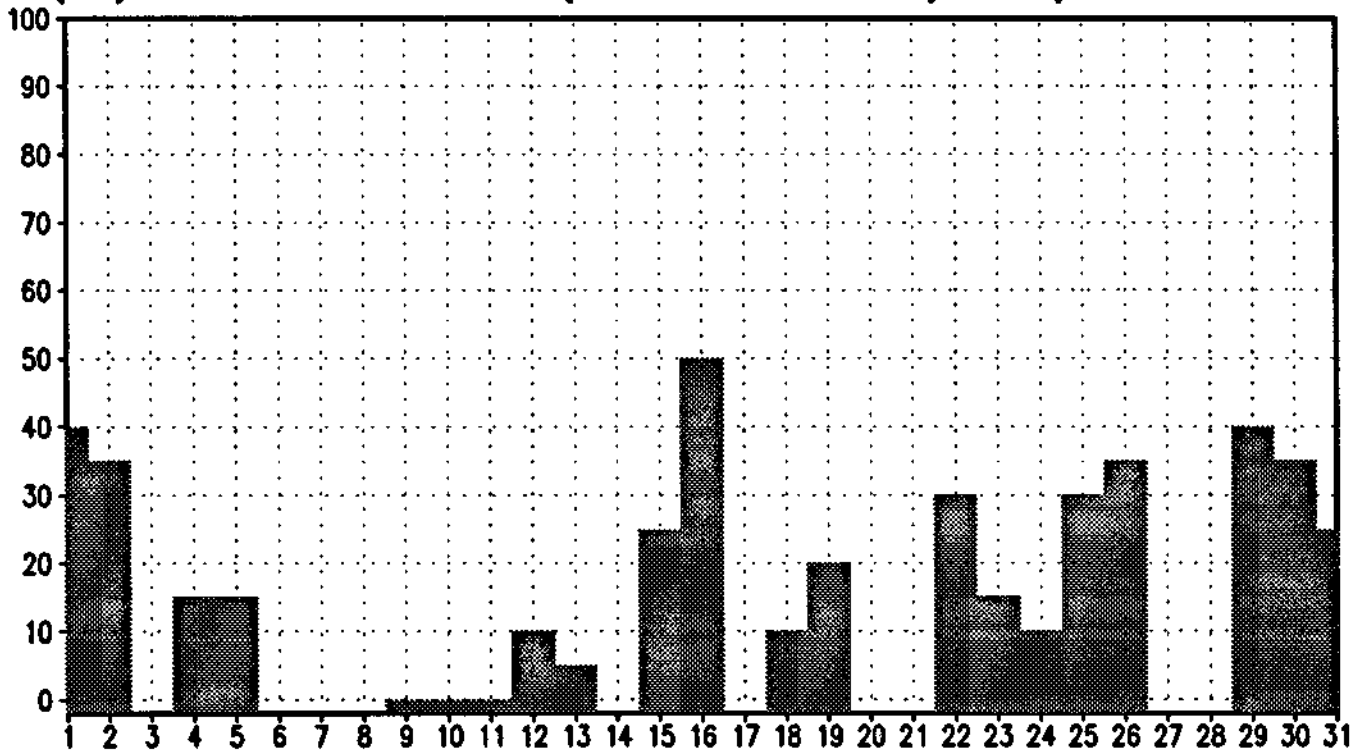
(%) DE VALORES (≥ 120 'NE') 02/93 18TMG



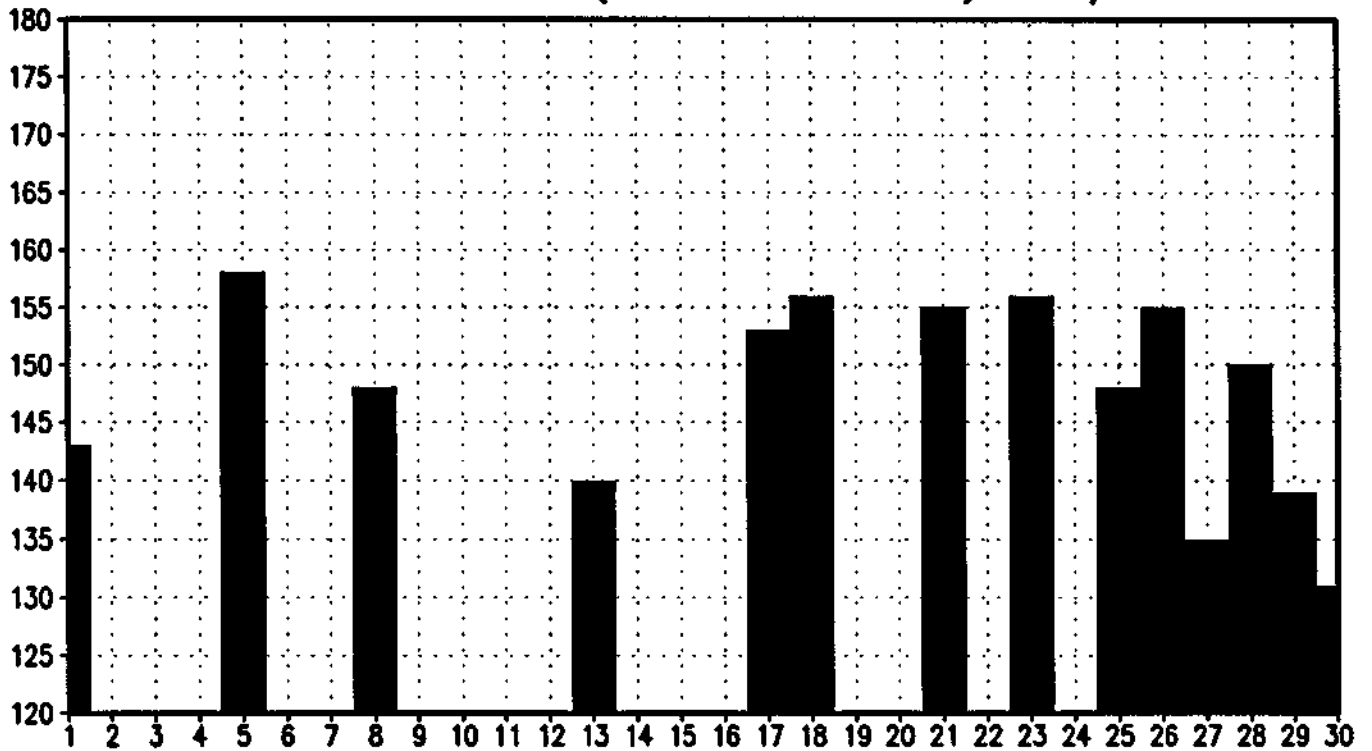
MEDIA DE VALORES (≥ 120 'NE') 03/93 18TMG



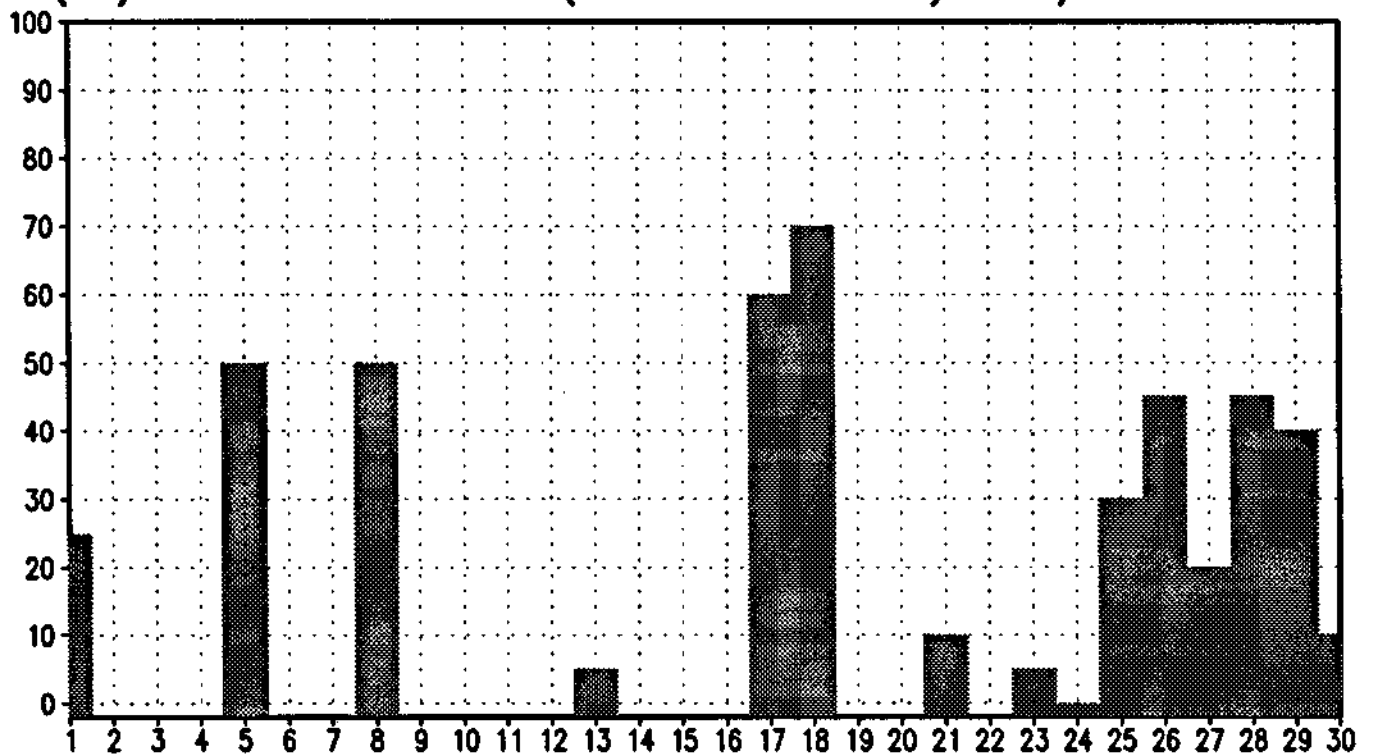
(%) DE VALORES (≥ 120 'NE') 03/93 18TMG



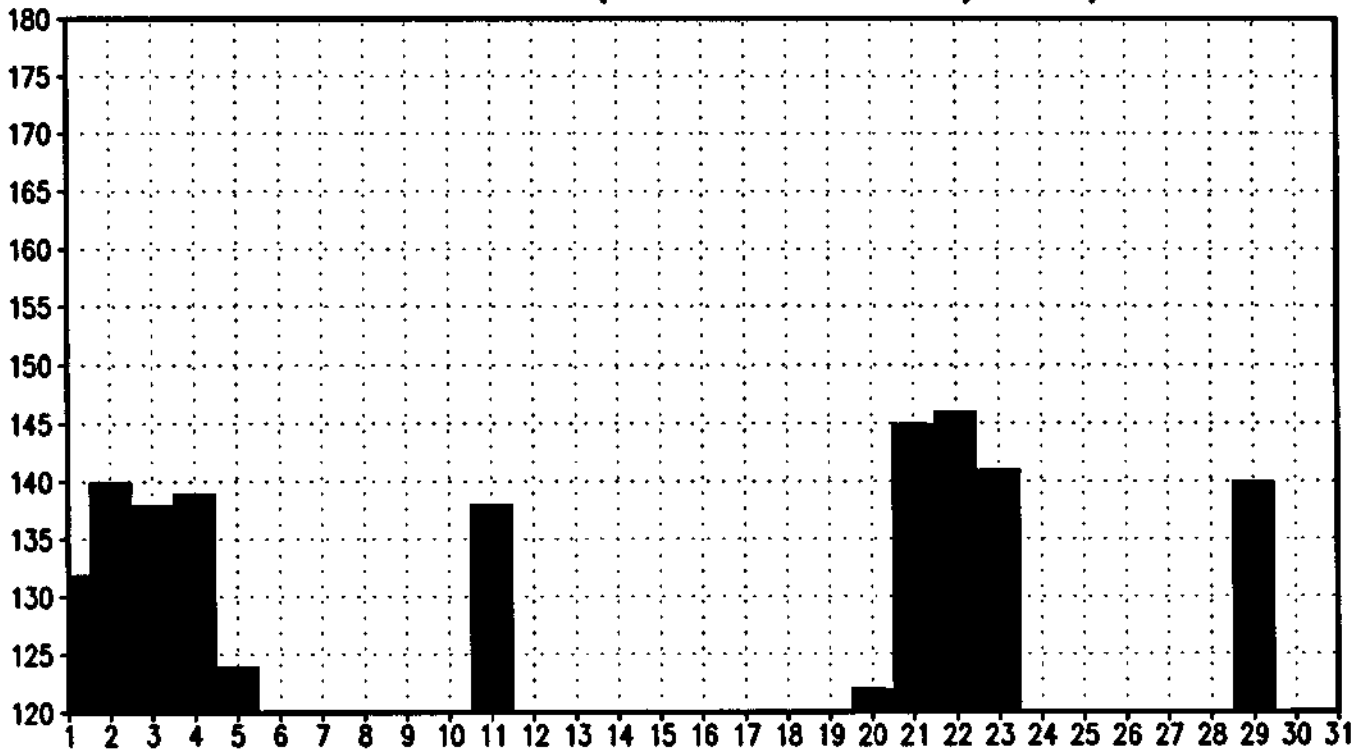
MEDIA DE VALORES (≥ 120 'NE') 04/93 19TMG



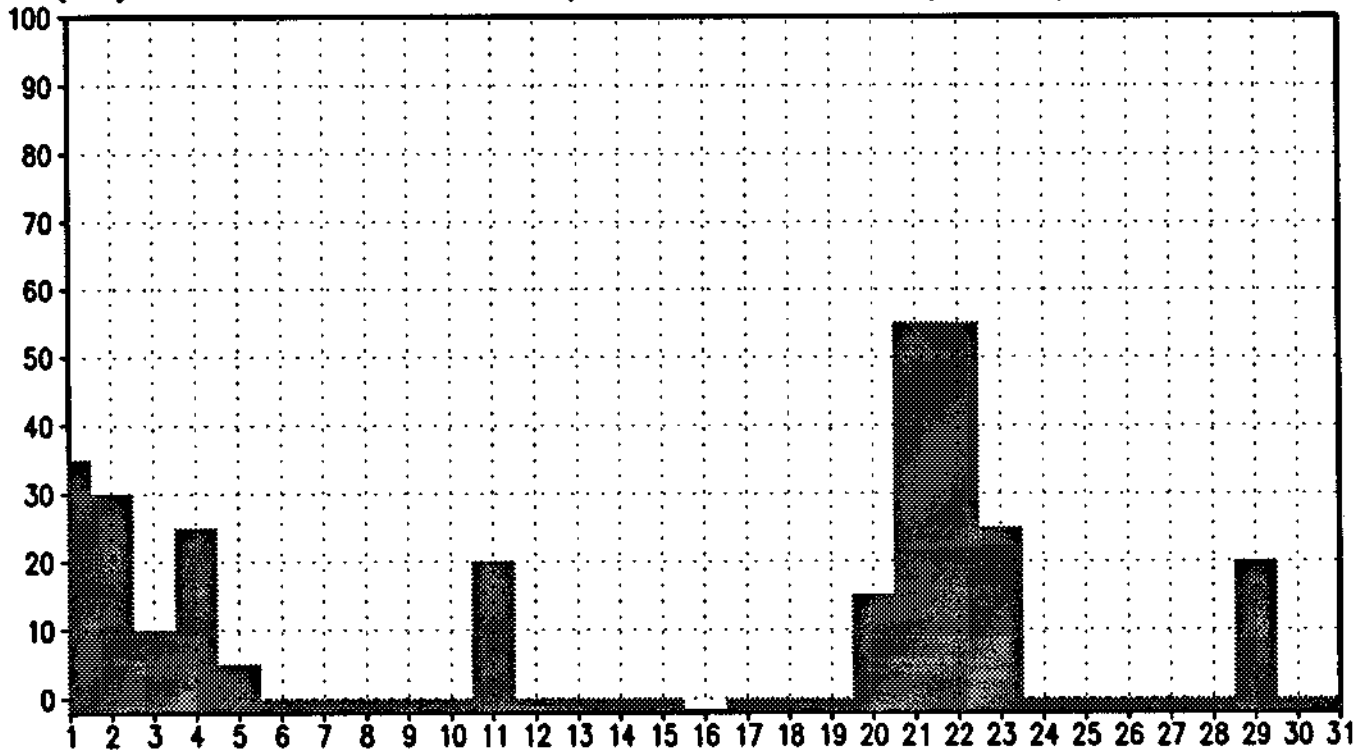
(%) DE VALORES (≥ 120 'NE') 04/93 19TMG



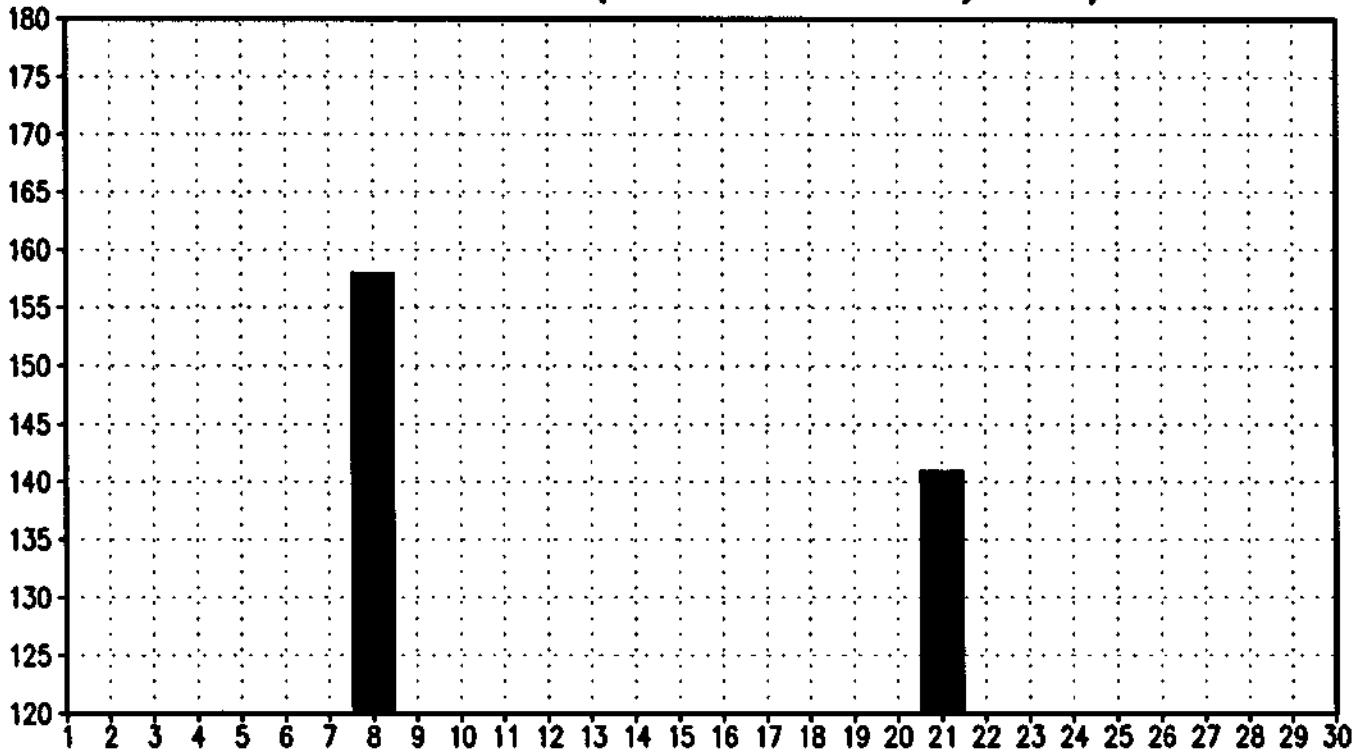
MEDIA DE VALORES (≥ 120 'NE') 05/93 18TMG



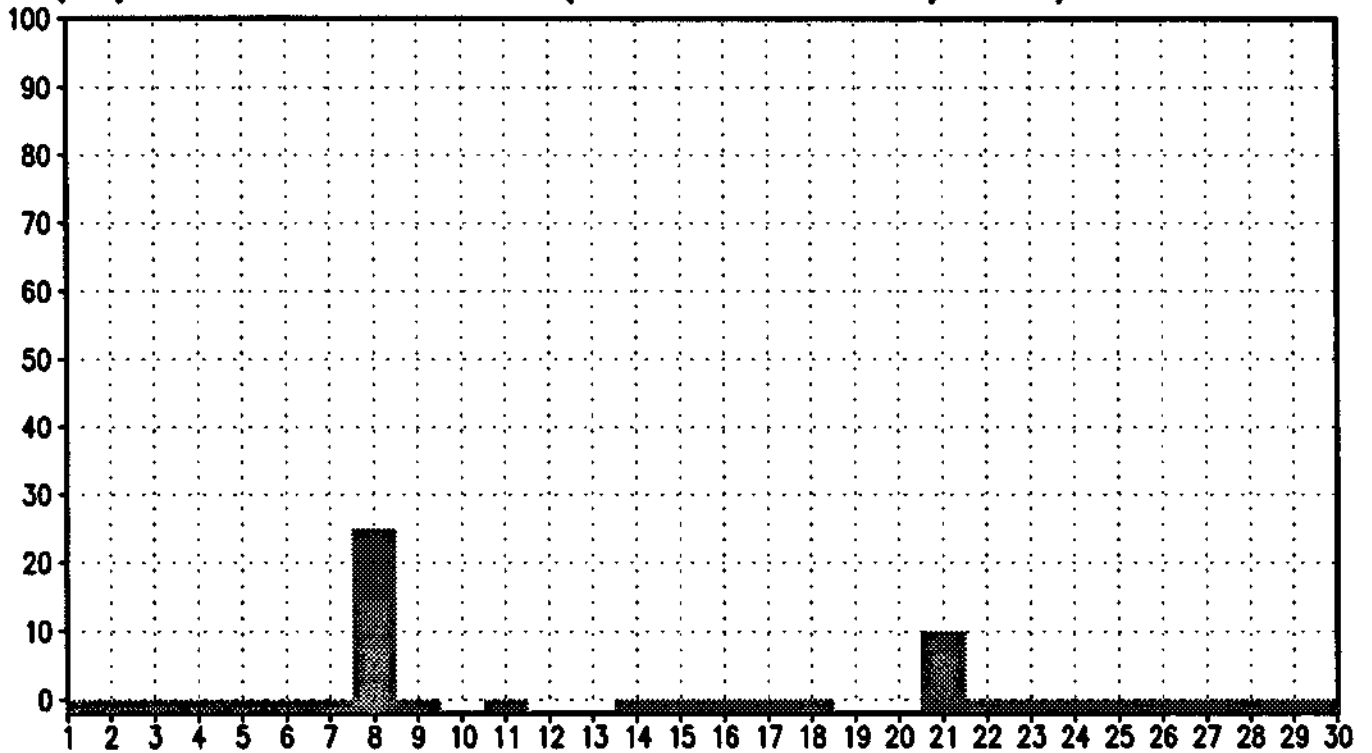
(%) DE VALORES (≥ 120 'NE') 05/93 18TMG



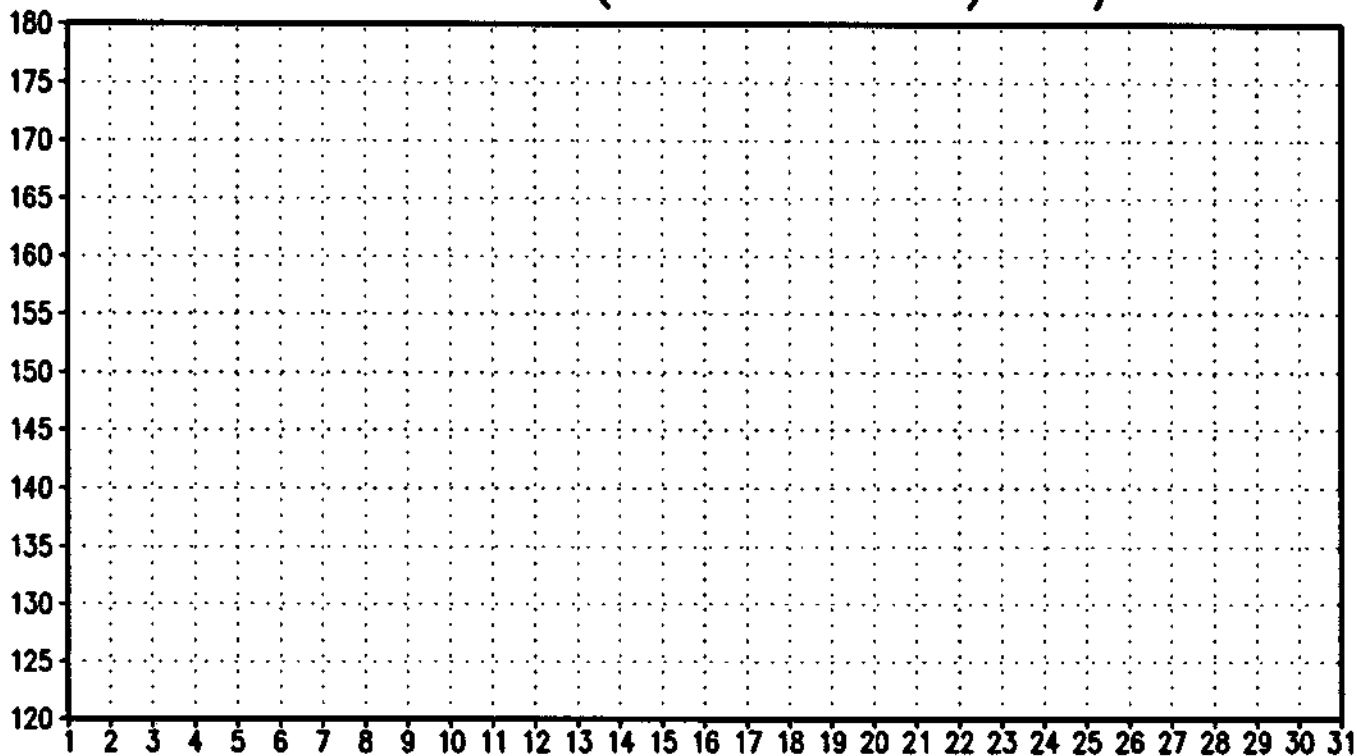
MEDIA DE VALORES (≥ 120 'NE') 06/93 18TMG



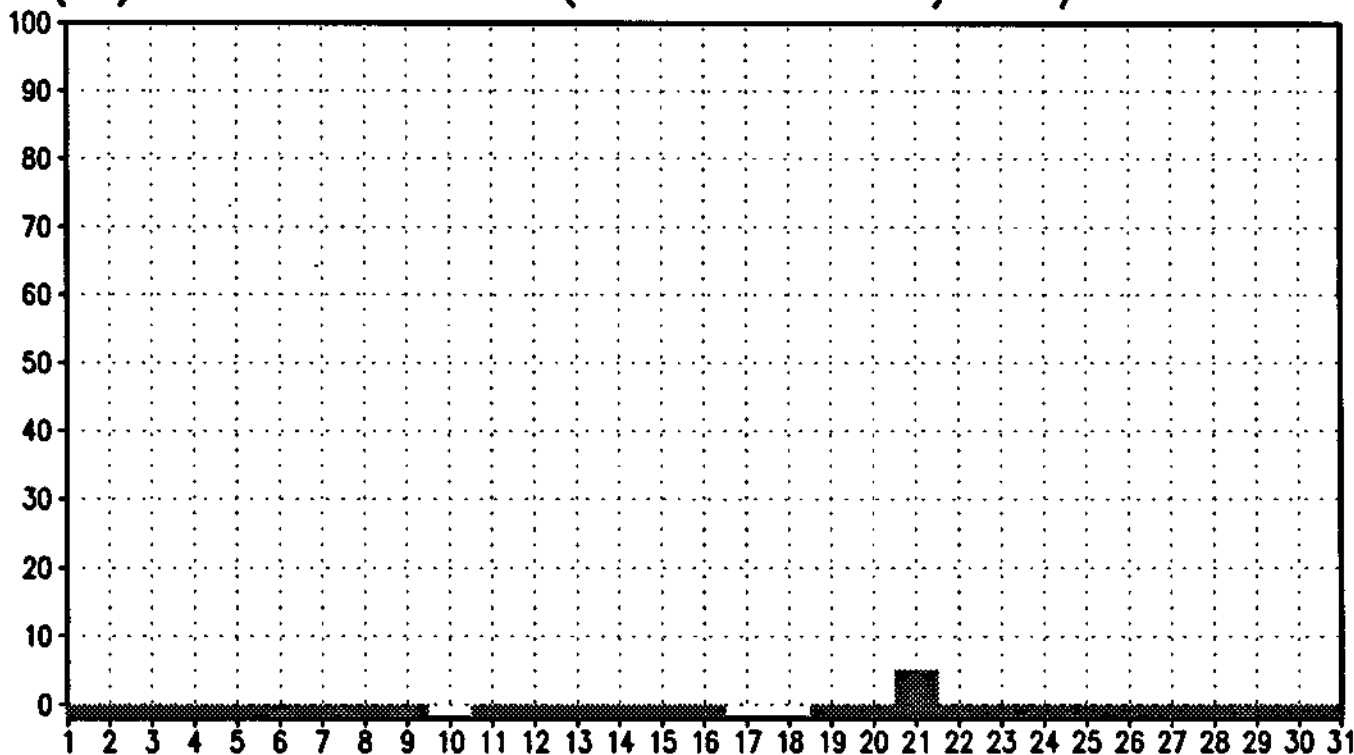
(%) DE VALORES (≥ 120 'NE') 06/93 18TMG



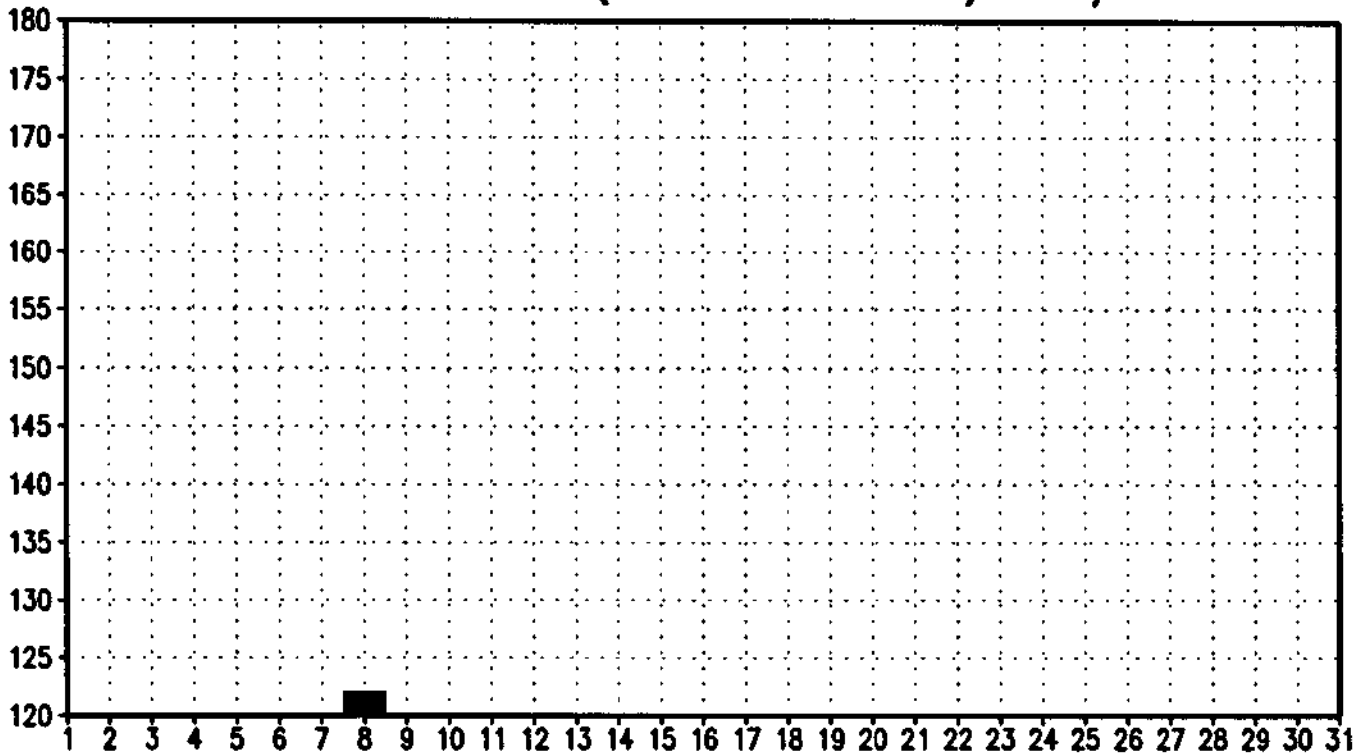
MEDIA DE VALORES (≥ 120 'NE') 07/93 18TMG



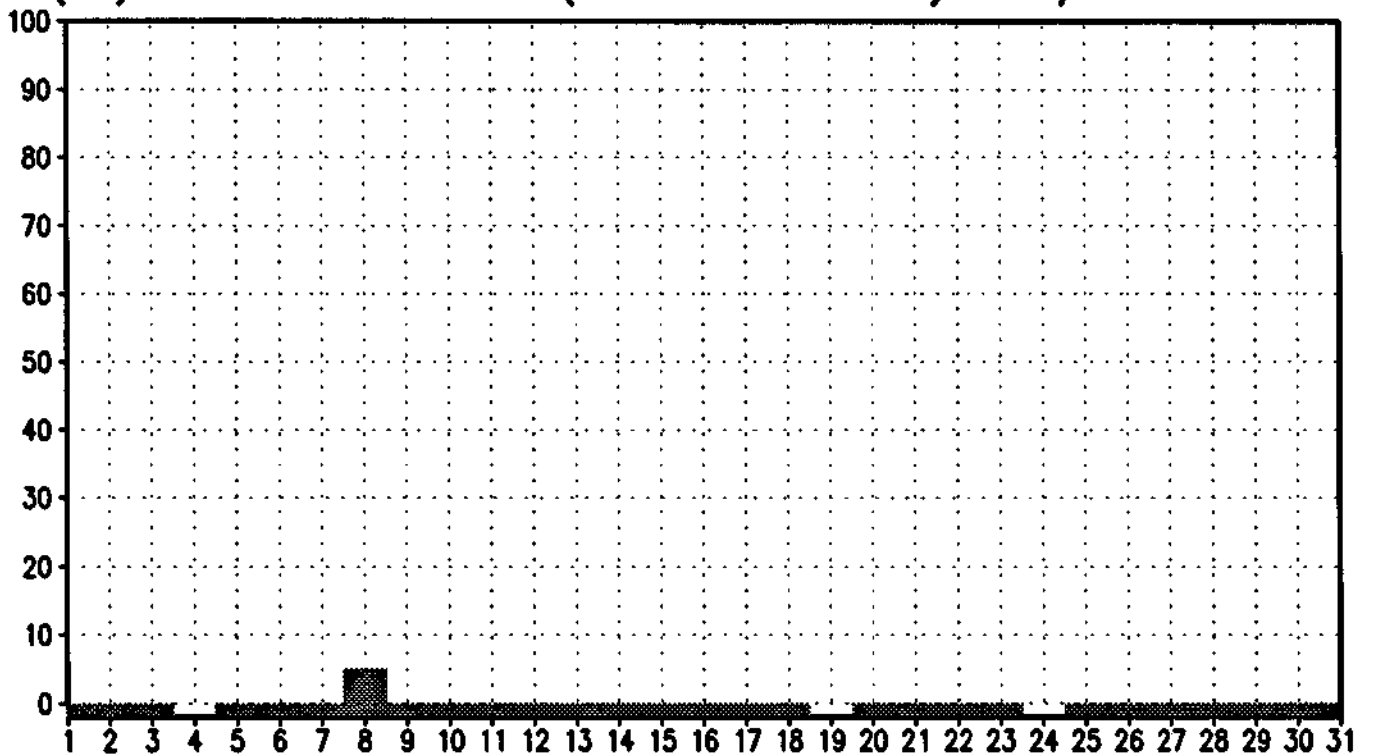
(%) DE VALORES (≥ 120 'NE') 07/93 18TMG



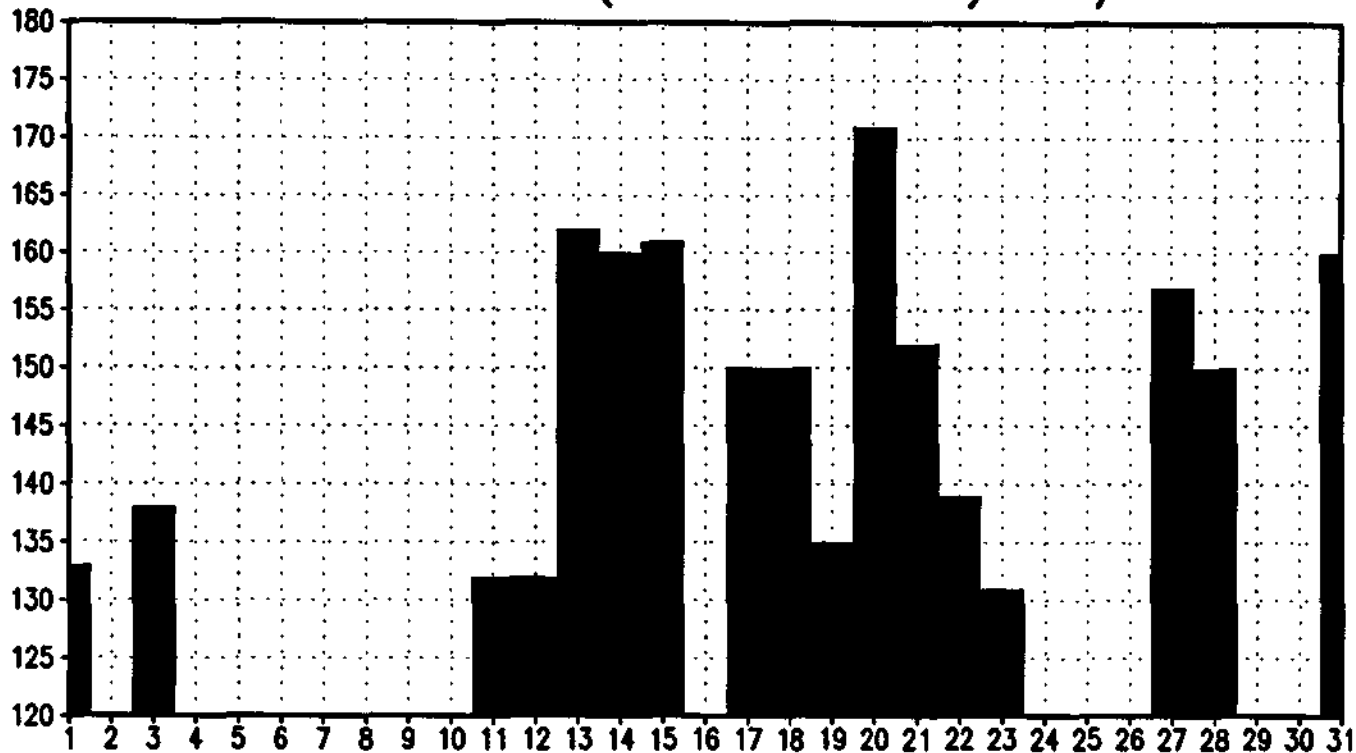
MEDIA DE VALORES (≥ 120 'NE') 08/93 18TMG



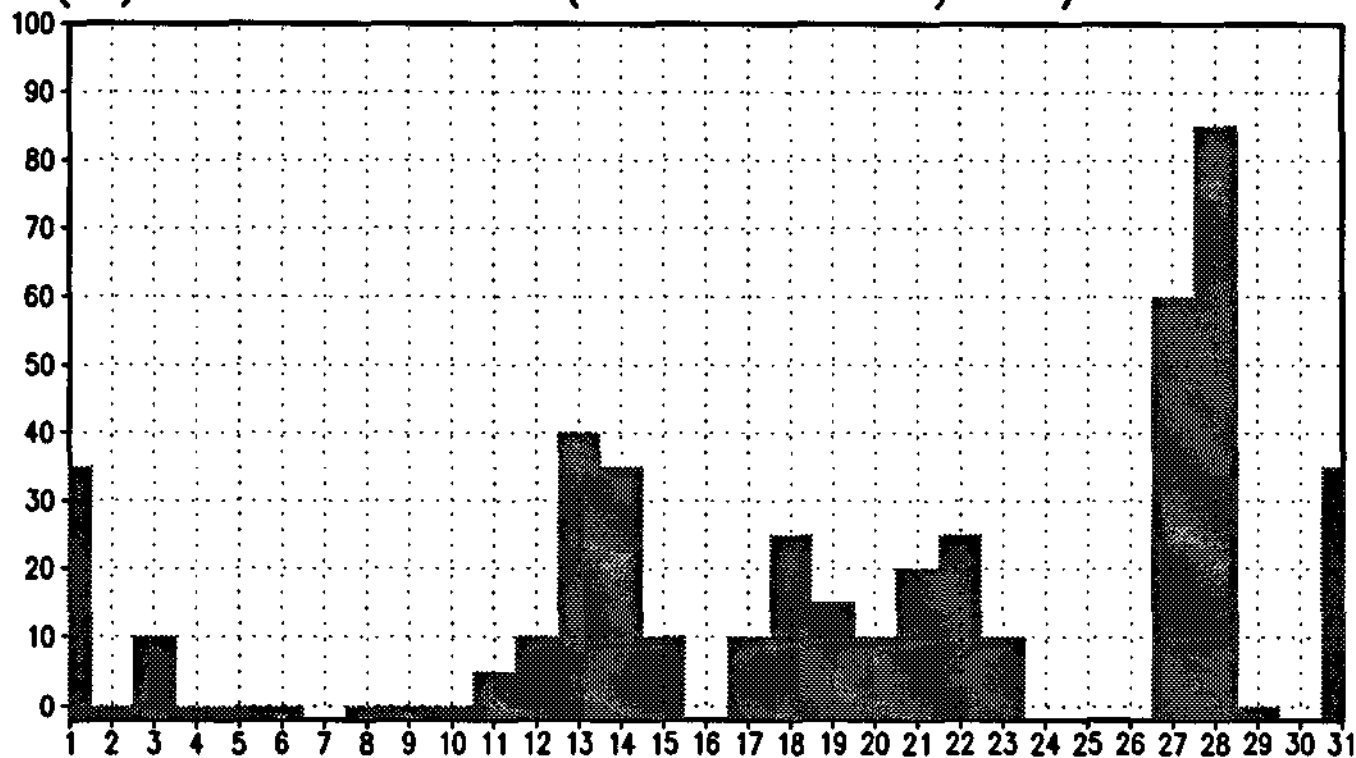
(%) DE VALORES (≥ 120 'NE') 08/93 18TMG



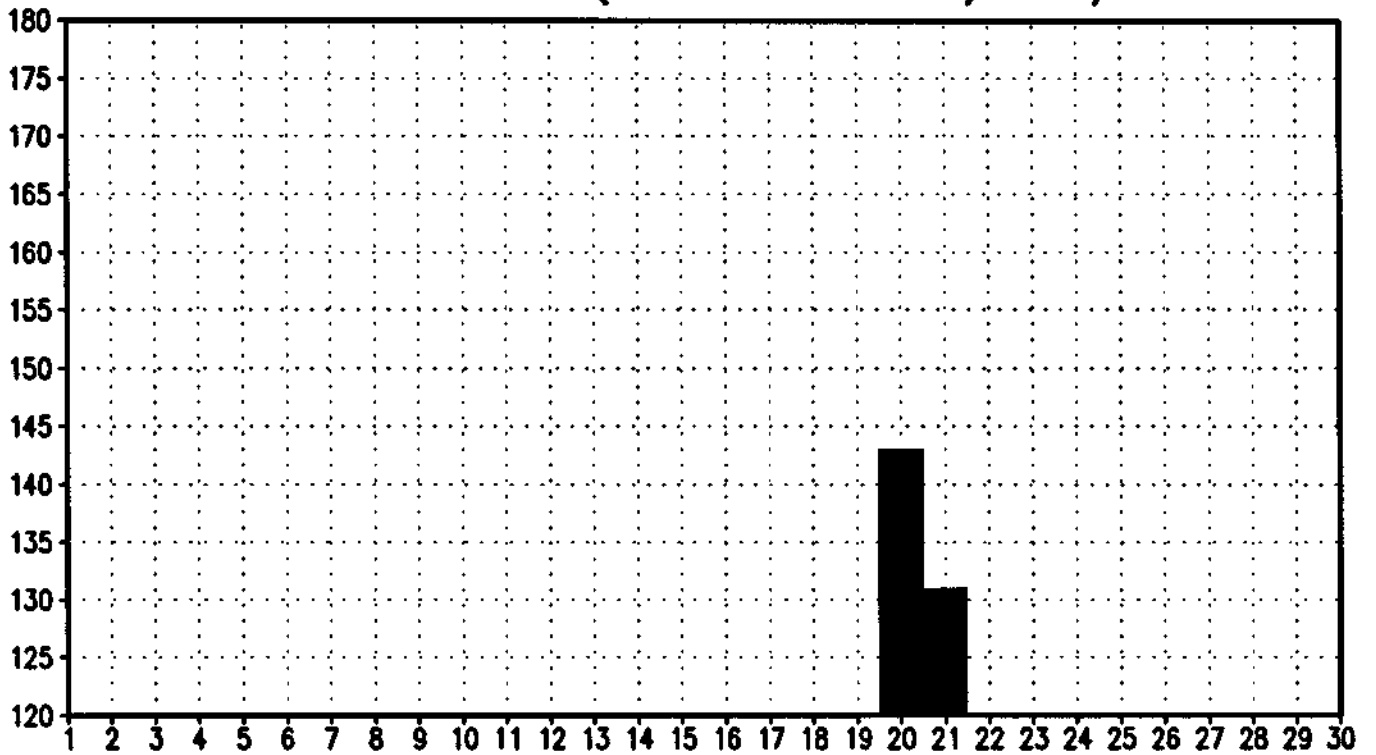
MEDIA DE VALORES (≥ 120 'NE') 12/93 18TMG



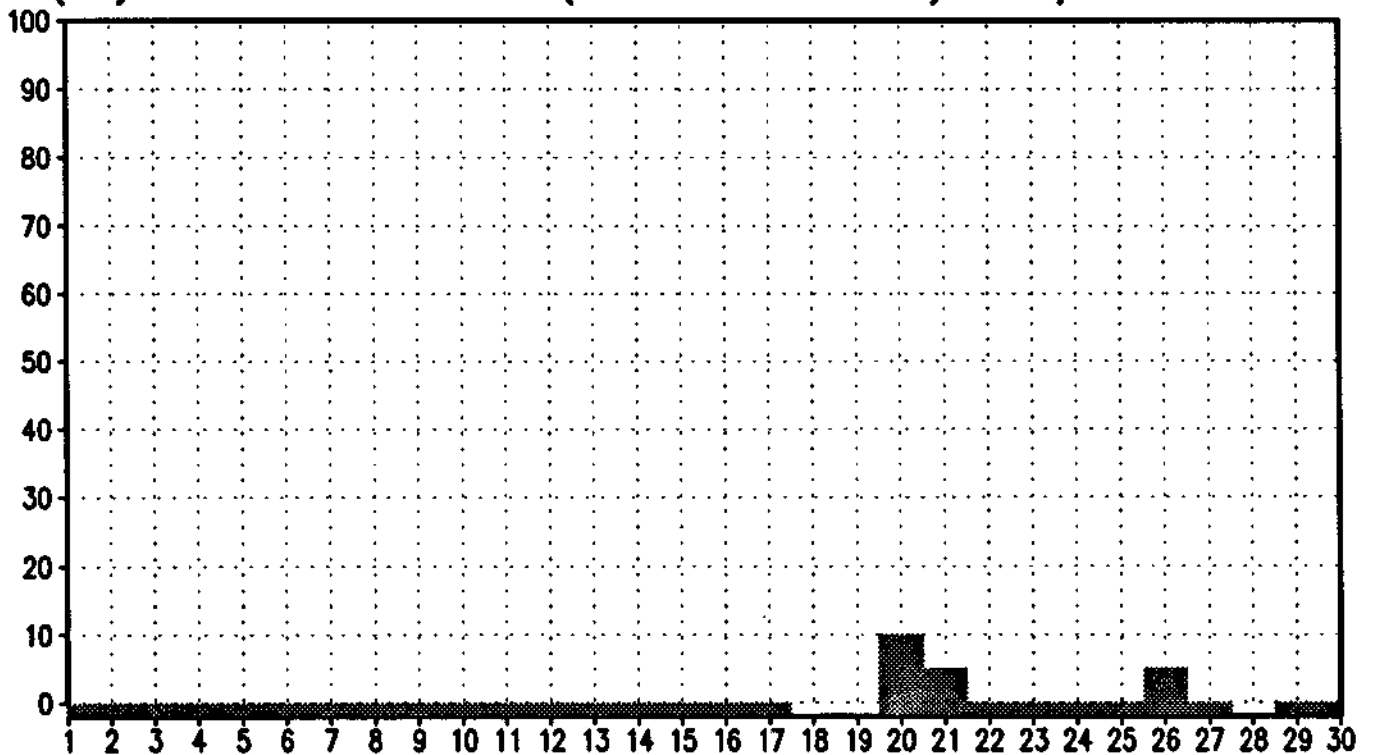
(%) DE VALORES (≥ 120 'NE') 12/93 18TMG



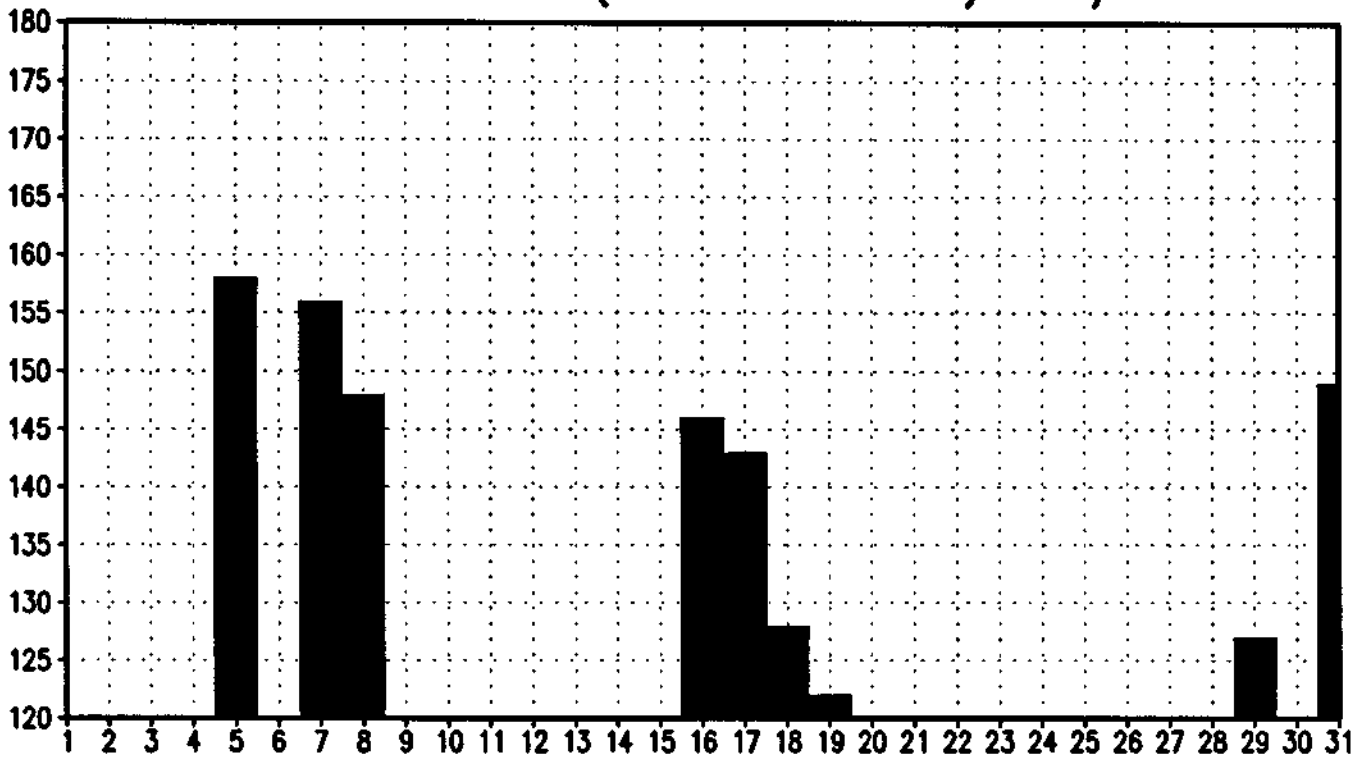
MEDIA DE VALORES (≥ 120 'NE') 09/93 18TMG



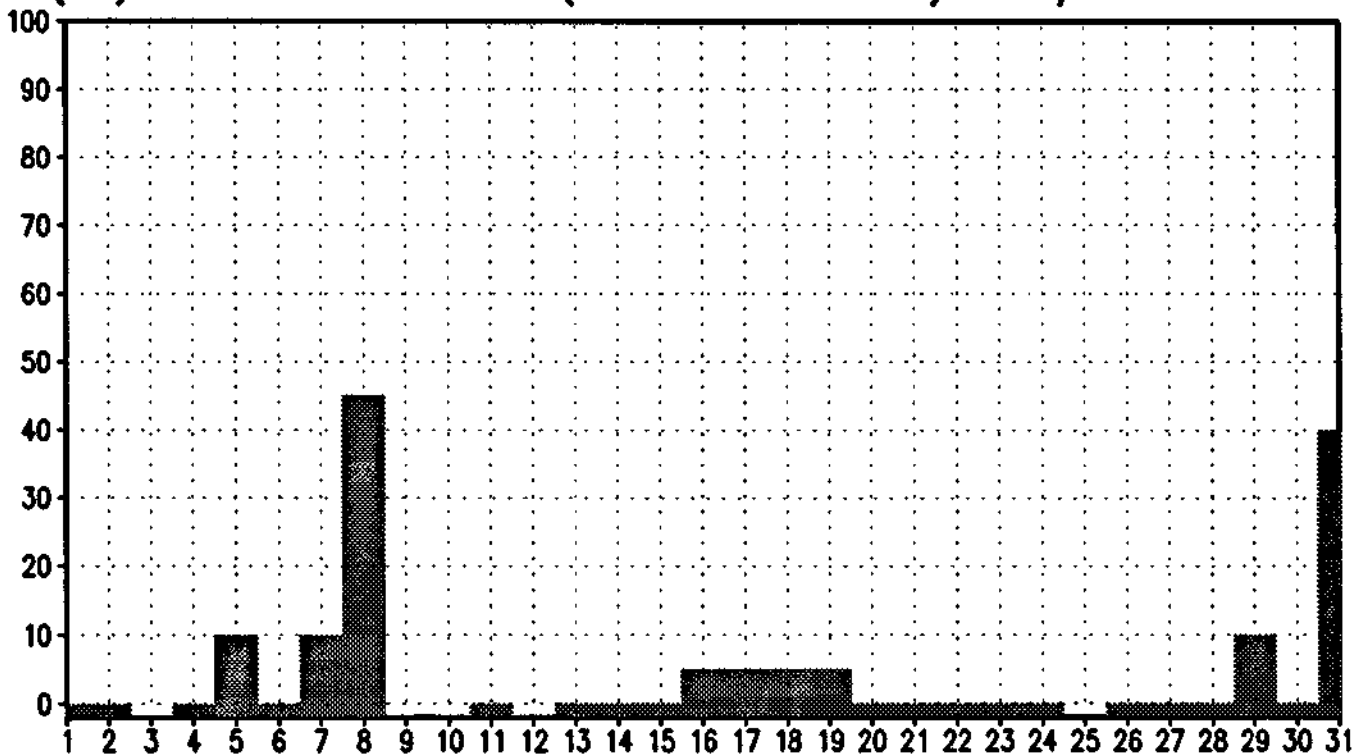
(%) DE VALORES (≥ 120 'NE') 09/93 18TMG



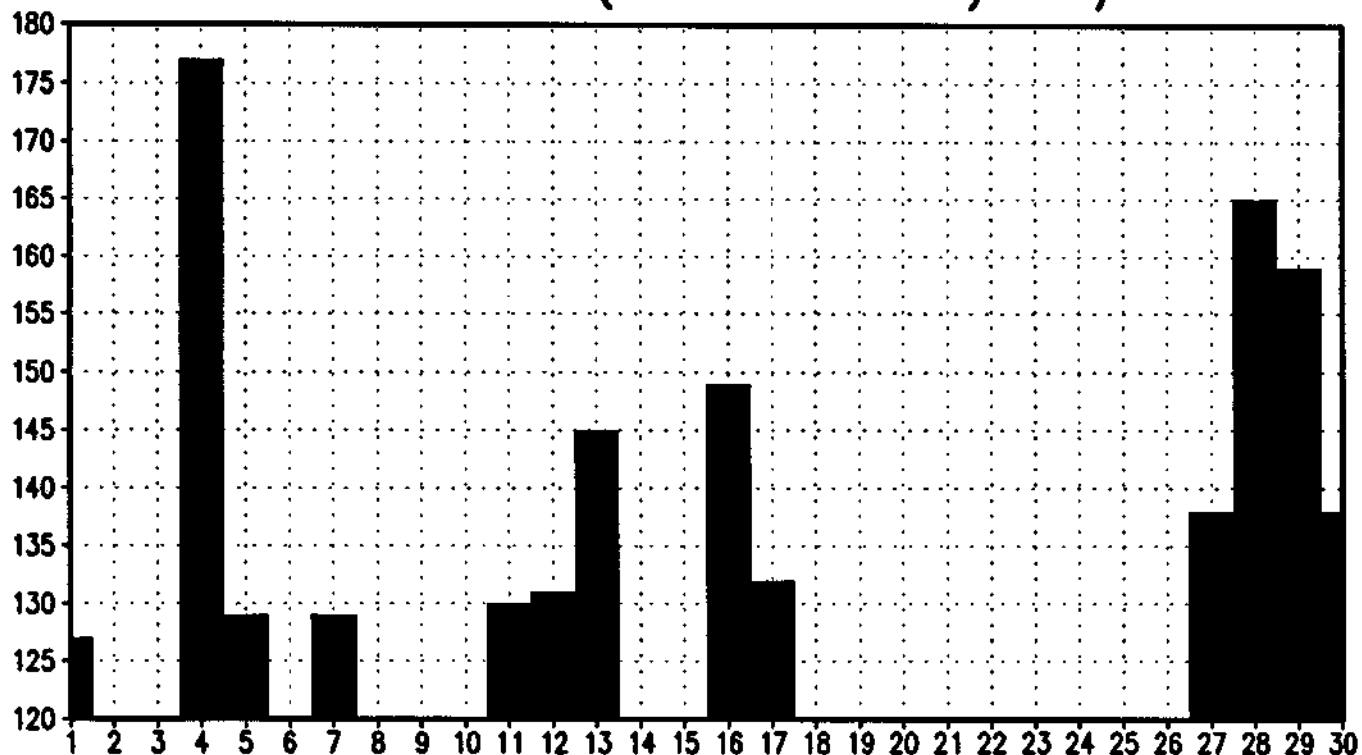
MEDIA DE VALORES (≥ 120 'NE') 10/93 18TMG



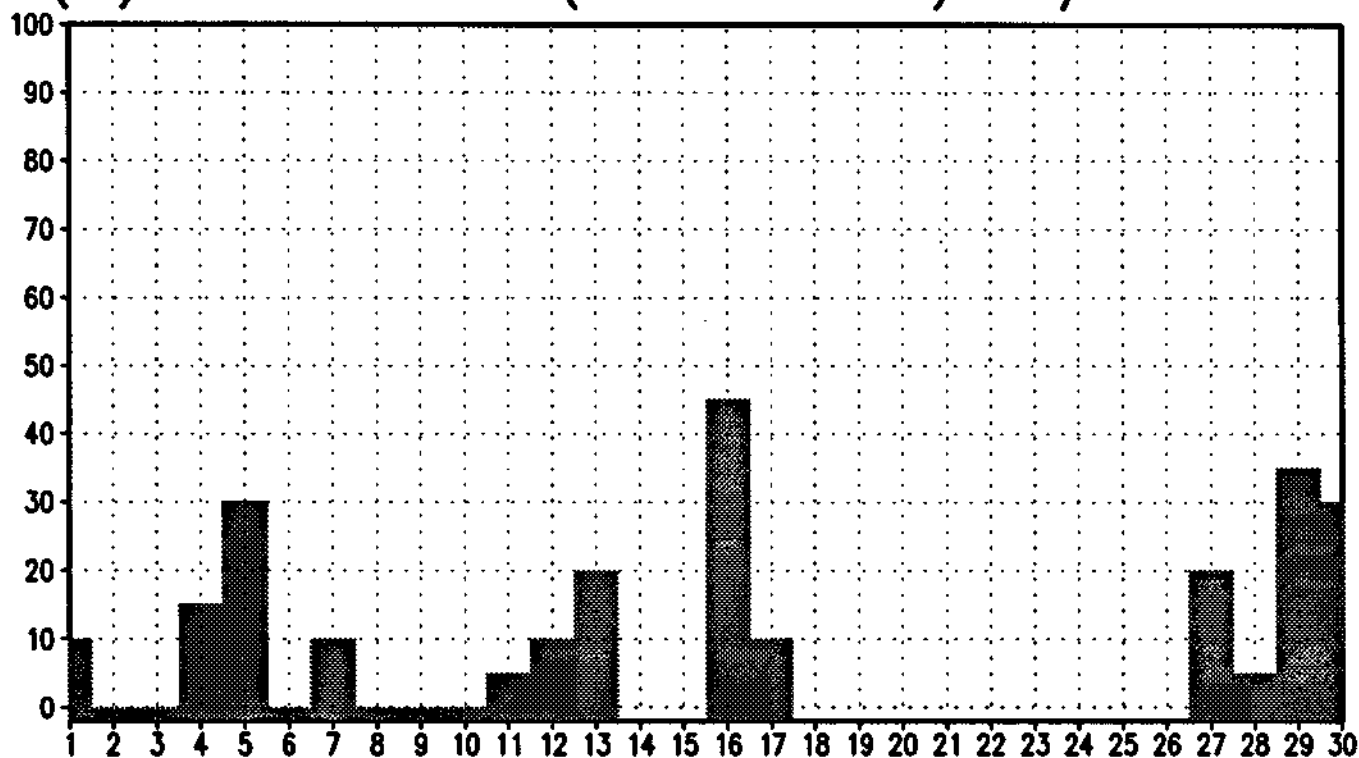
(%) DE VALORES (≥ 120 'NE') 10/93 18TMG



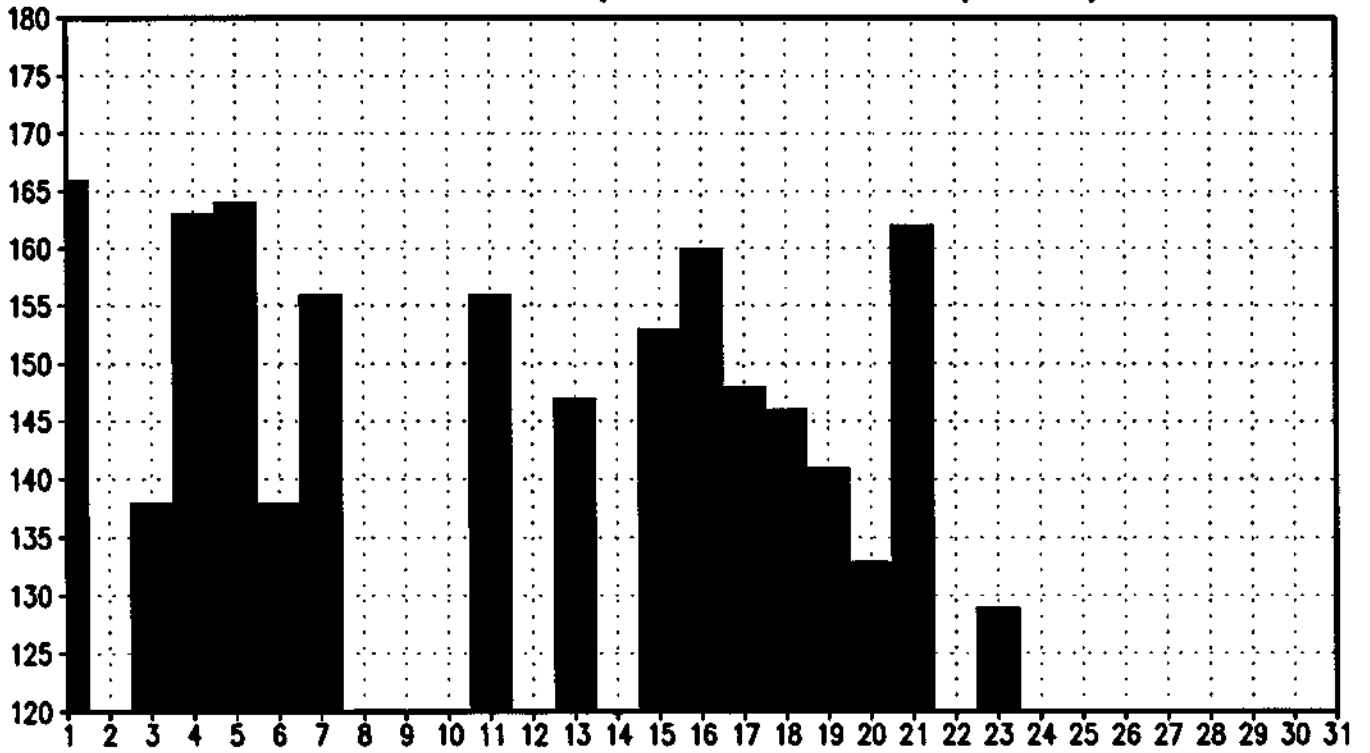
MEDIA DE VALORES (≥ 120 'NE') 11/93 18TMG



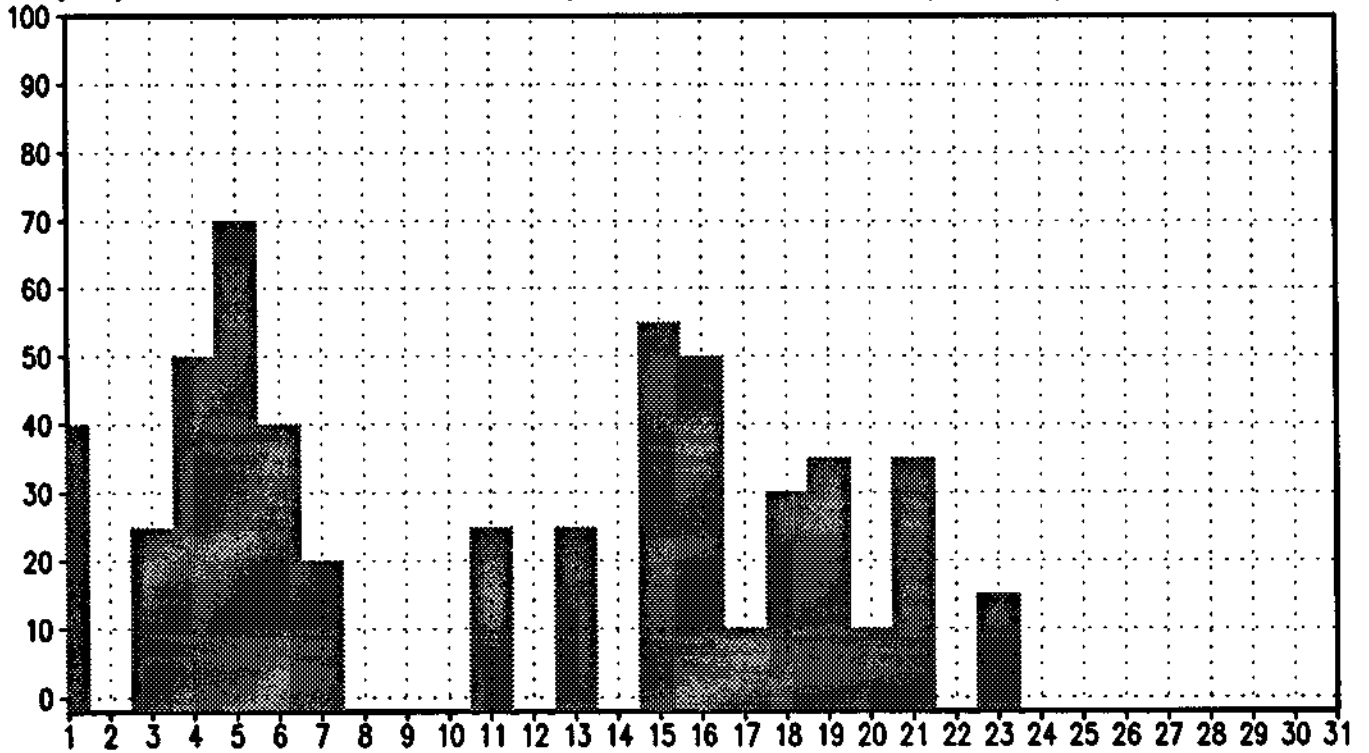
(%) DE VALORES (≥ 120 'NE') 11/93 18TMG



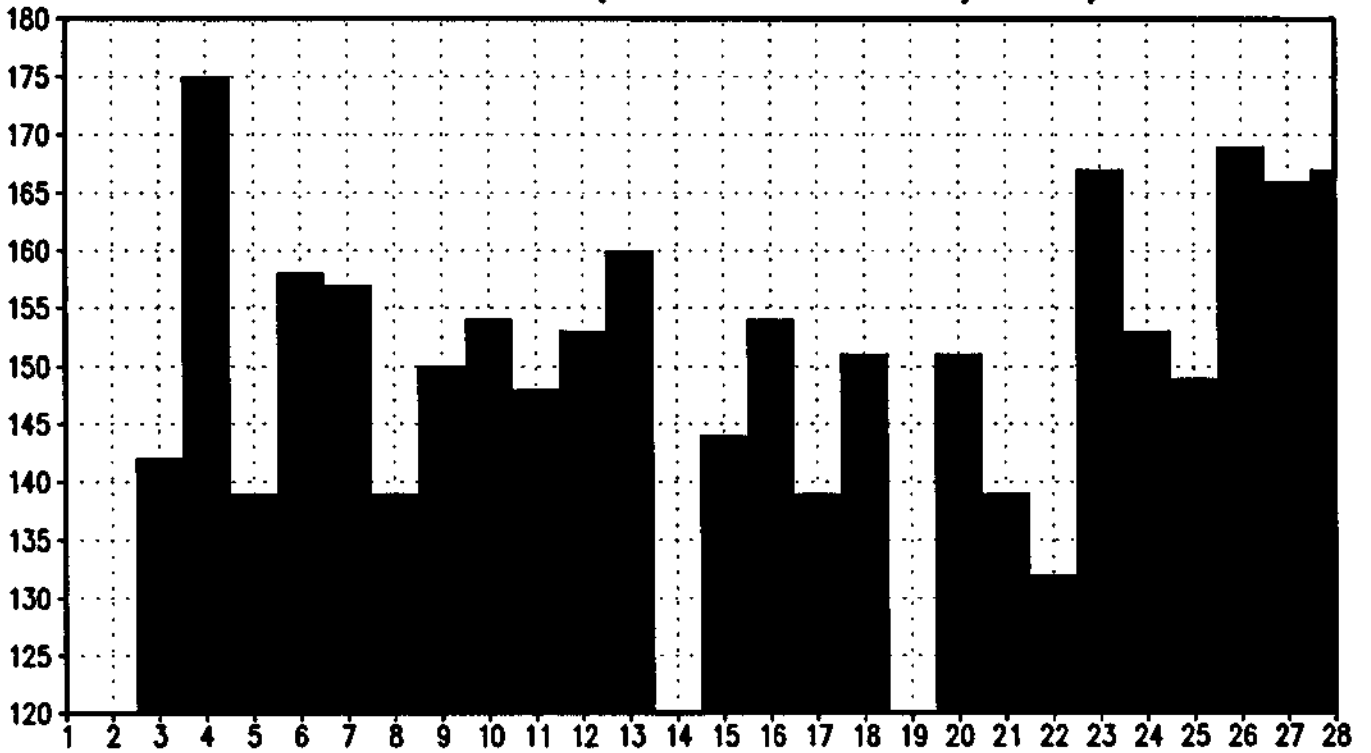
MEDIA DE VALORES (≥ 120 'NE') 01/94 18TMG



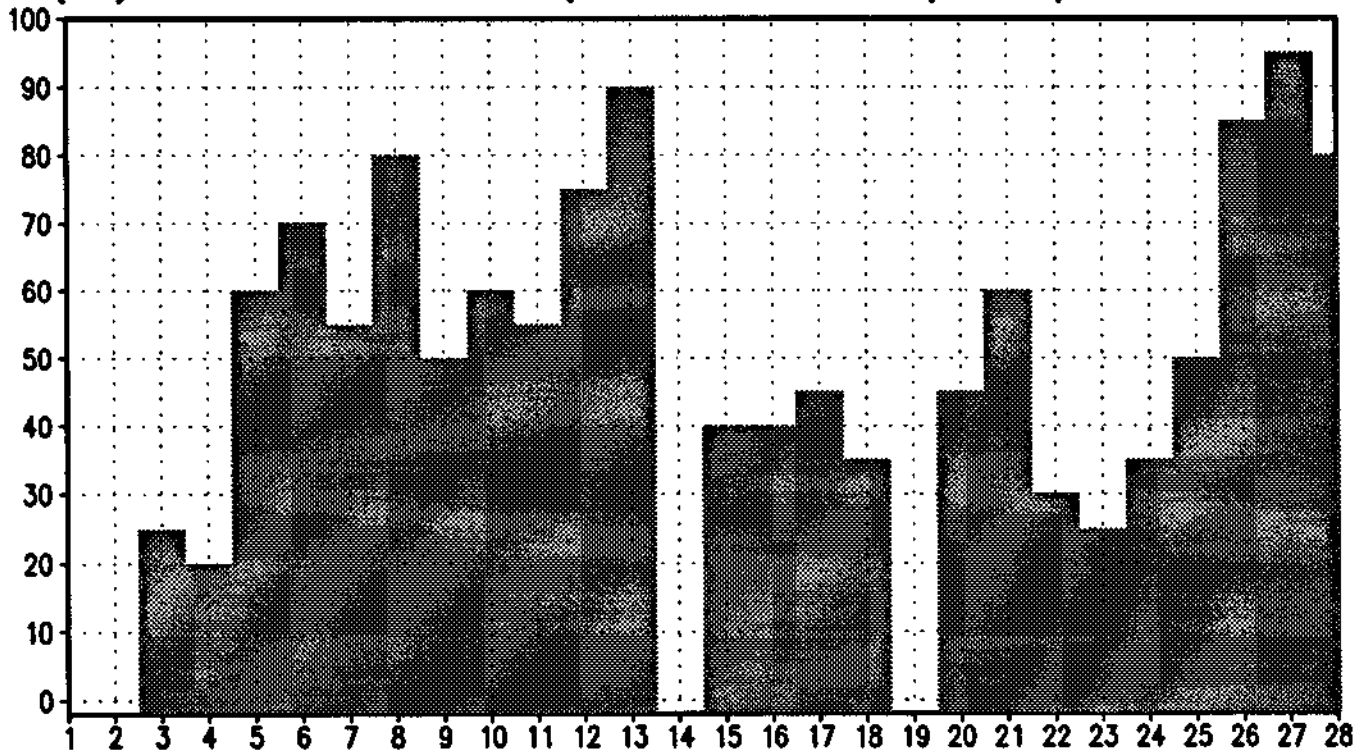
(%) DE VALORES (≥ 120 'NE') 01/94 18TMG



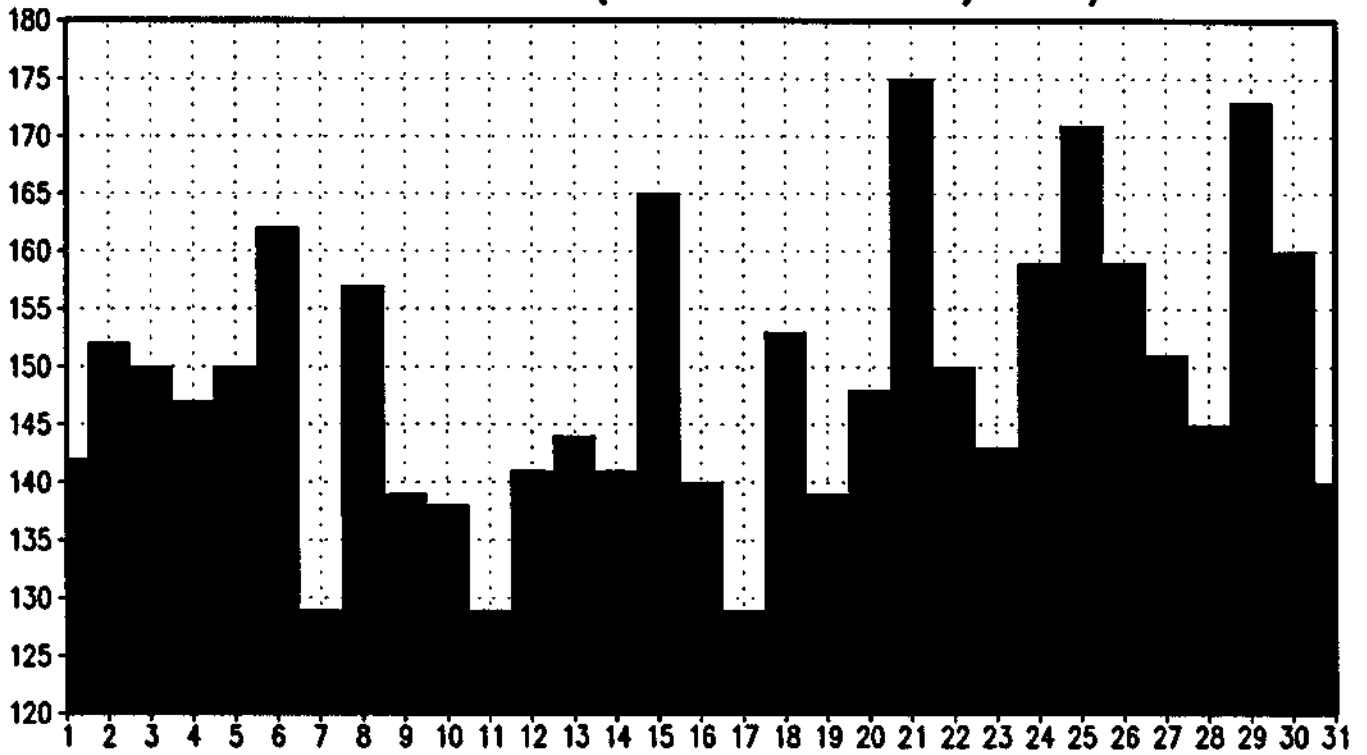
MEDIA DE VALORES (≥ 120 'NE') 02/94 18TMG



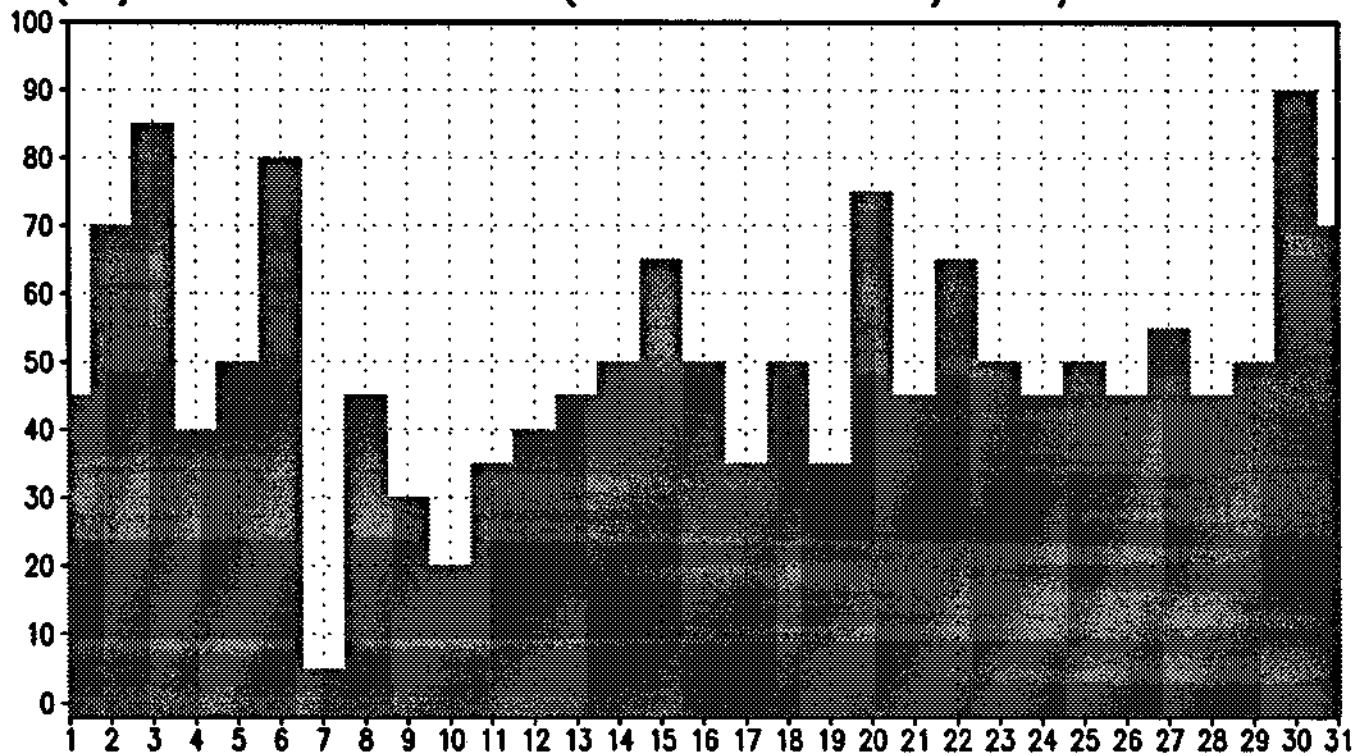
(%) DE VALORES (≥ 120 'NE') 02/94 18TMG



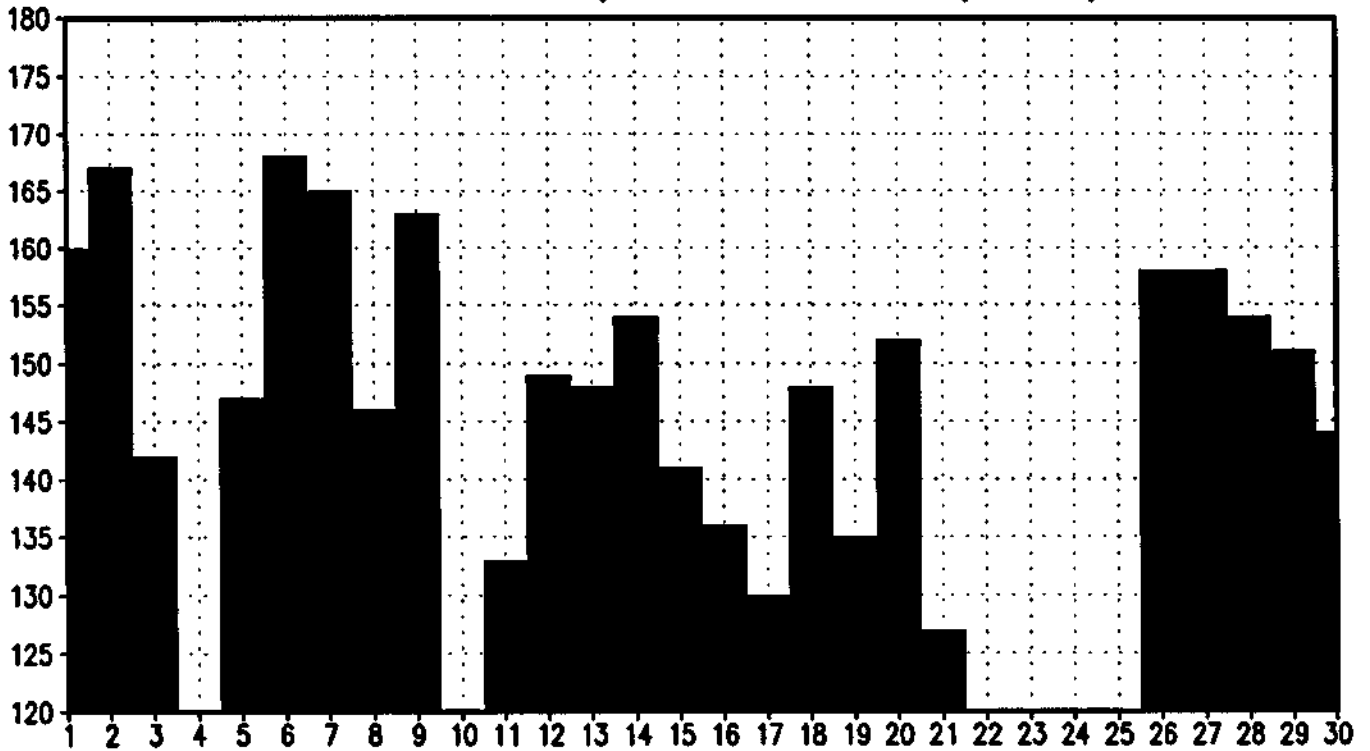
MEDIA DE VALORES (≥ 120 'NE') 03/94 18TMG



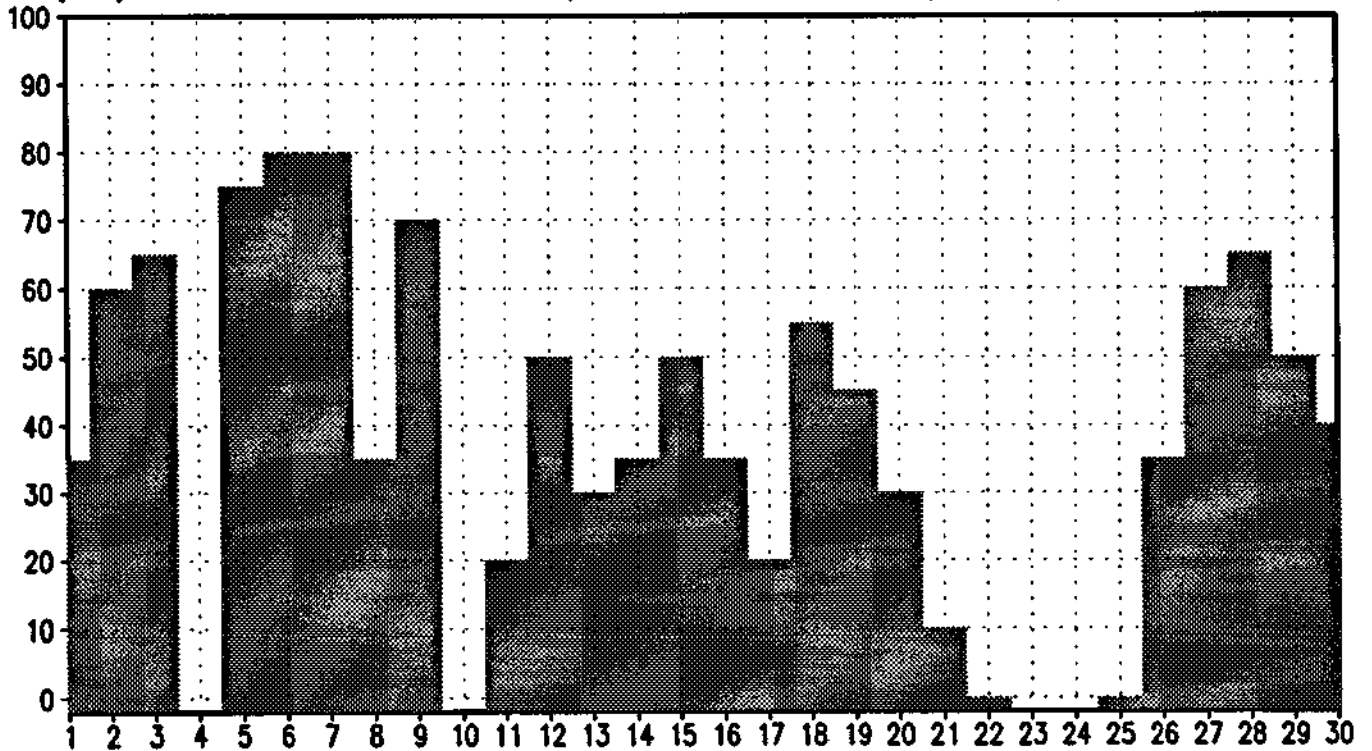
(%) DE VALORES (≥ 120 'NE') 03/94 18TMG



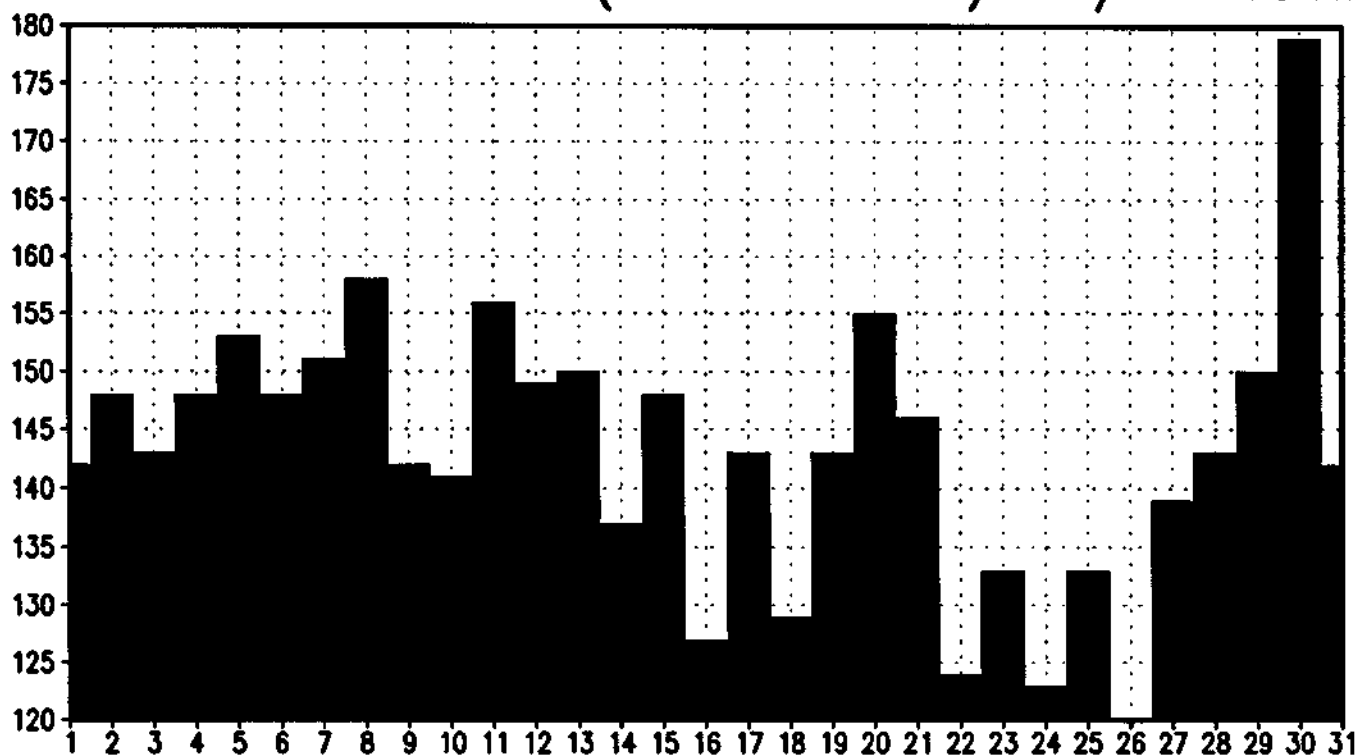
MEDIA DE VALORES (≥ 120 'NE') 04/94 18TMG



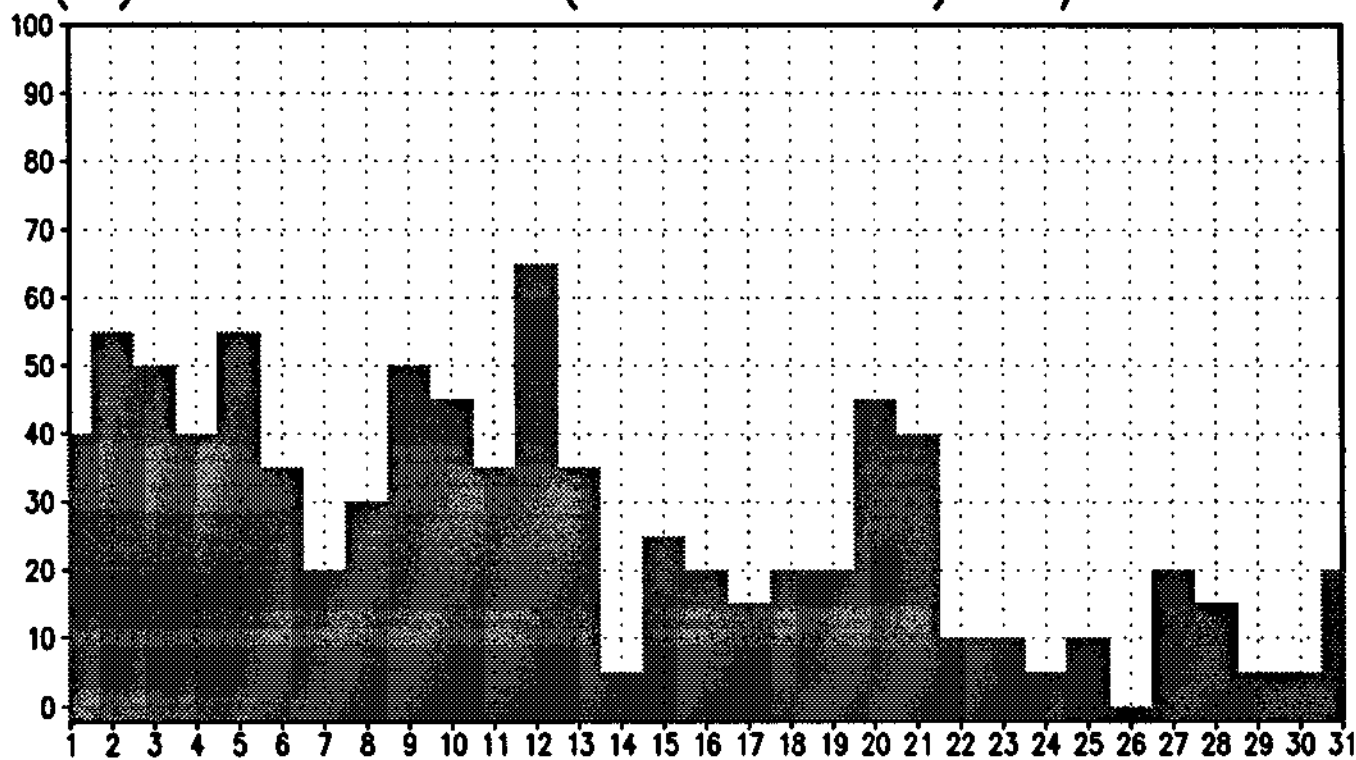
(%) DE VALORES (≥ 120 'NE') 04/94 18TMG



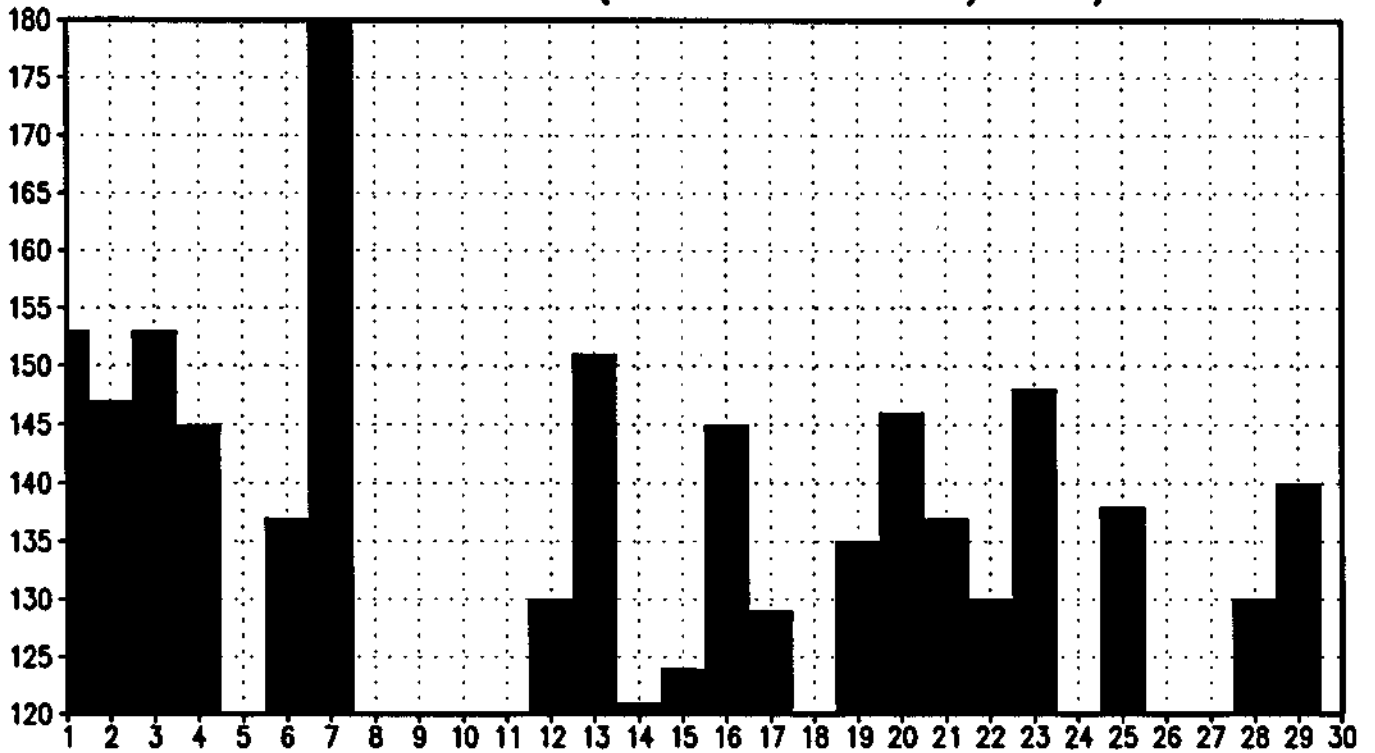
MEDIA DE VALORES (≥ 120 'NE') 05/94 18TMG



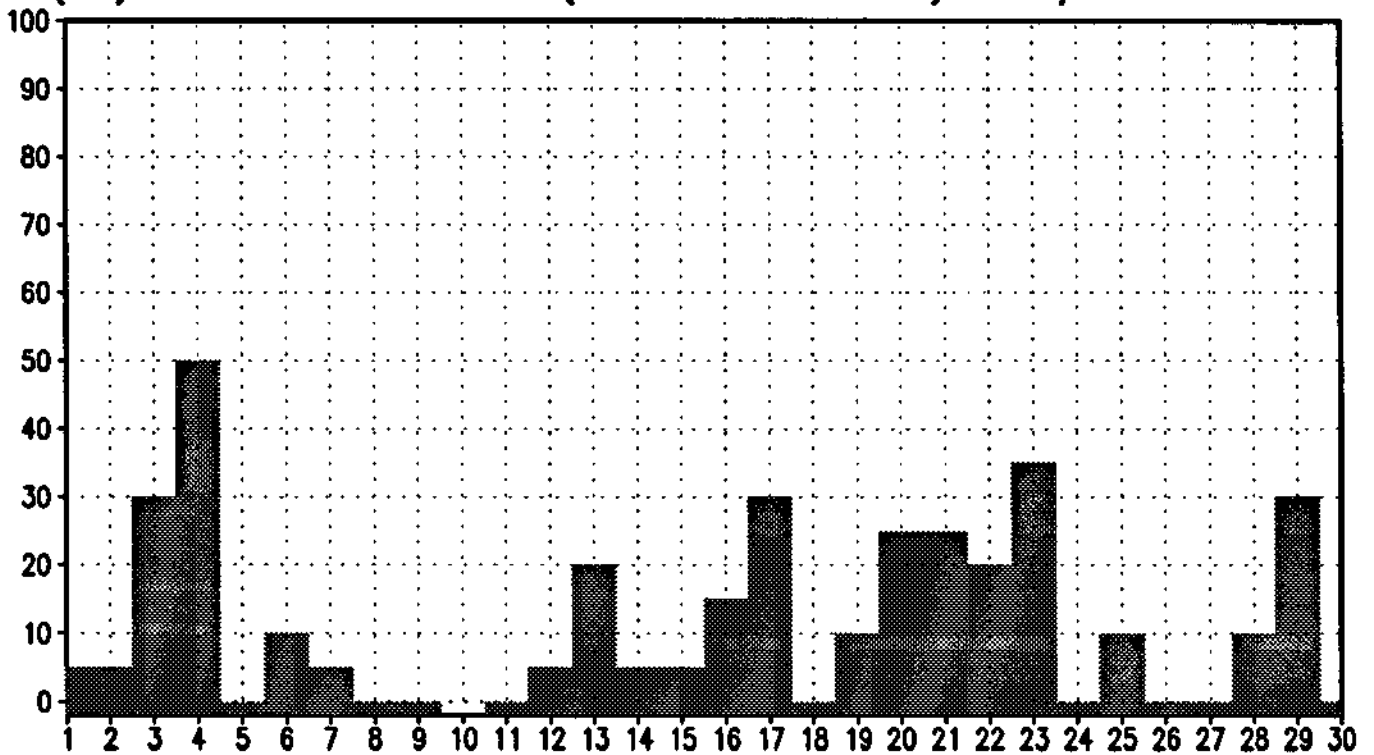
(%) DE VALORES (≥ 120 'NE') 05/94 18TMG



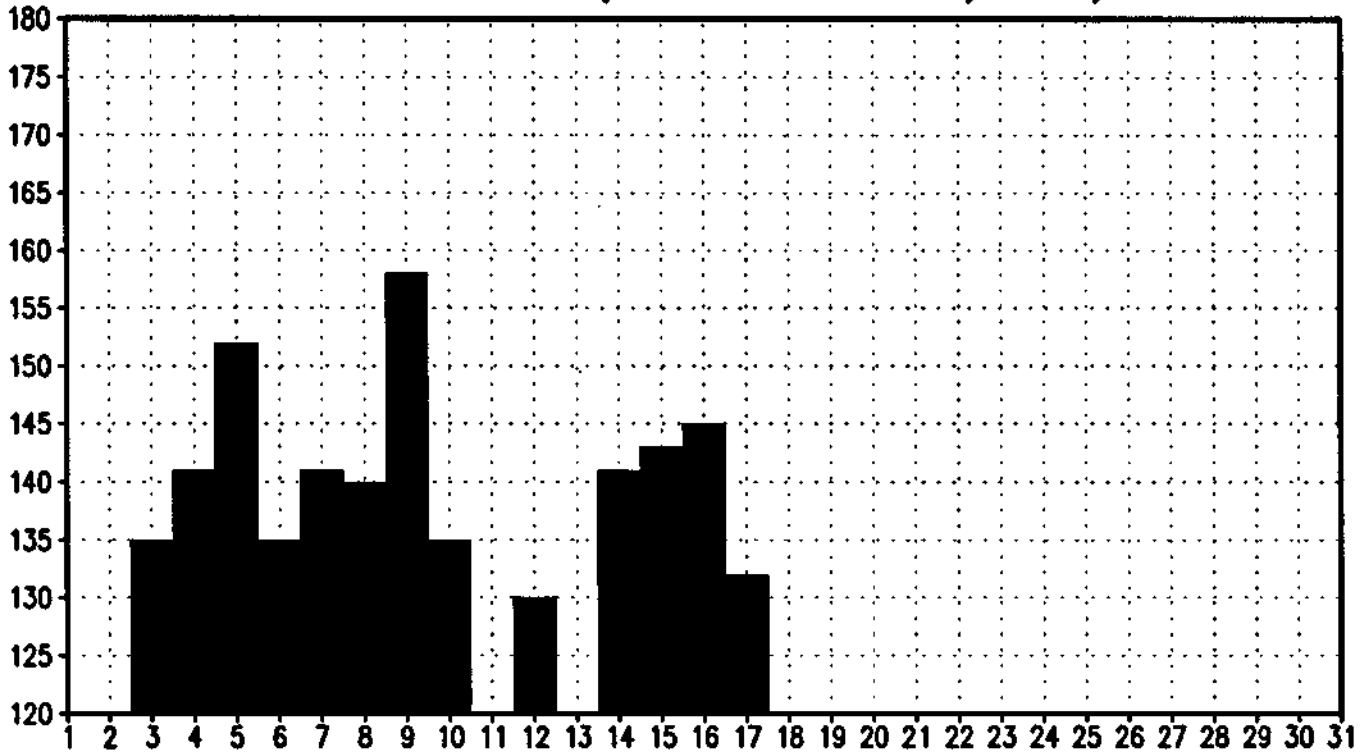
MEDIA DE VALORES (≥ 120 'NE') 06/94 18TMG



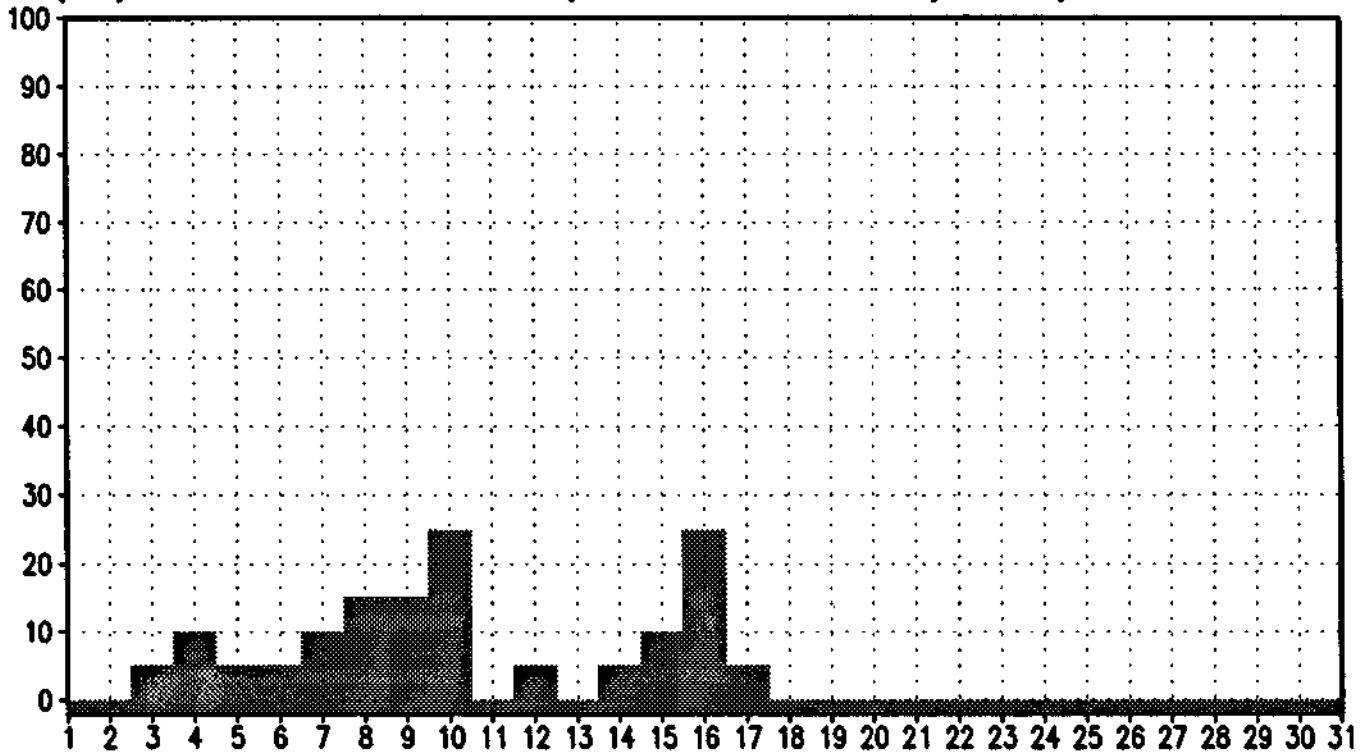
(%) DE VALORES (≥ 120 'NE') 06/94 18TMG



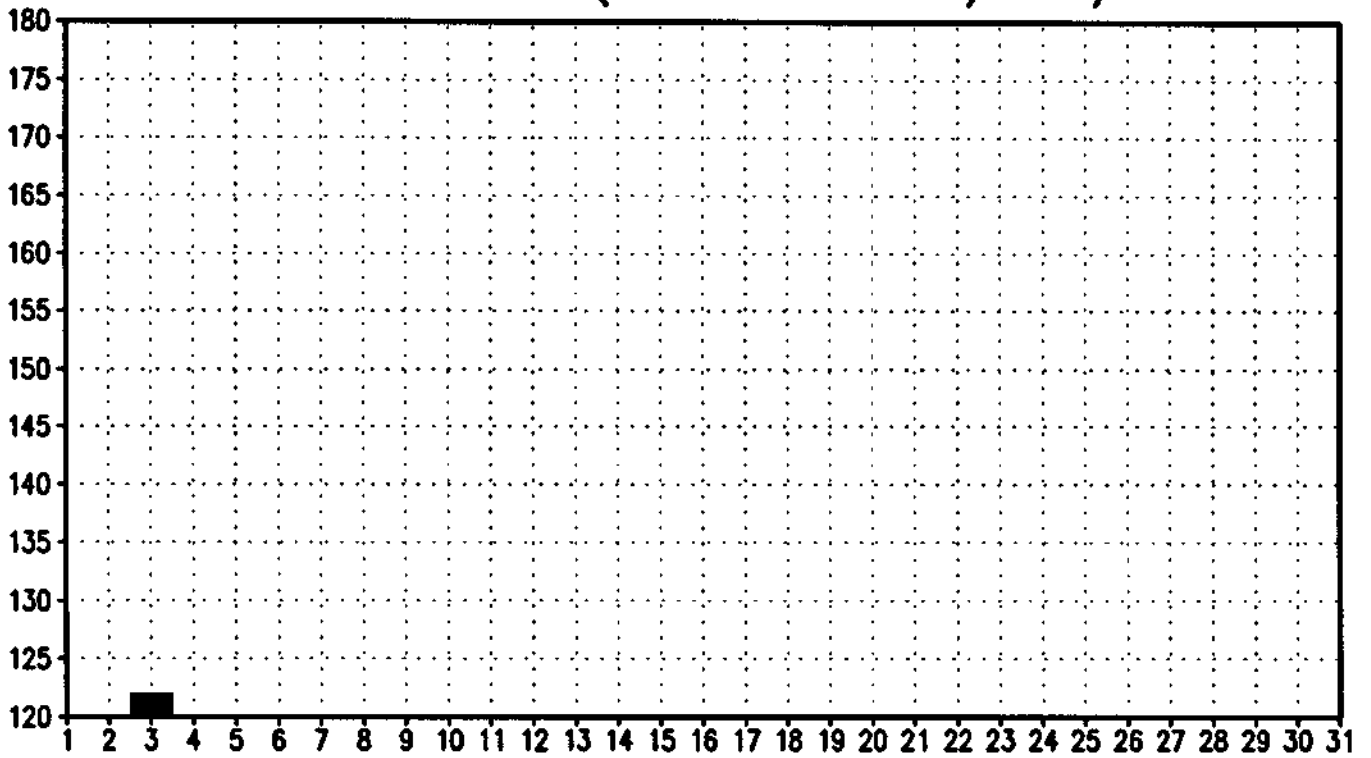
MEDIA DE VALORES (≥ 120 'NE') 07/94 18TMG



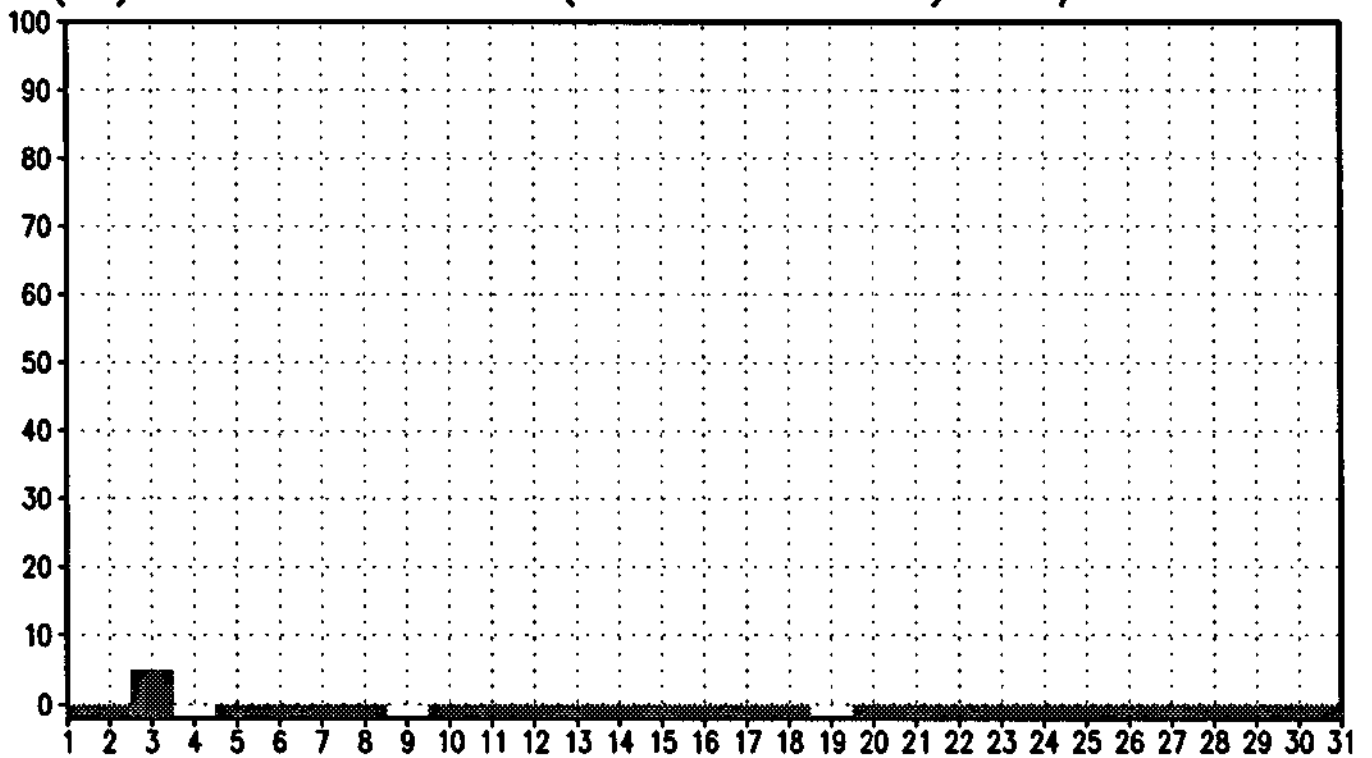
(%) DE VALORES (≥ 120 'NE') 07/94 18TMG



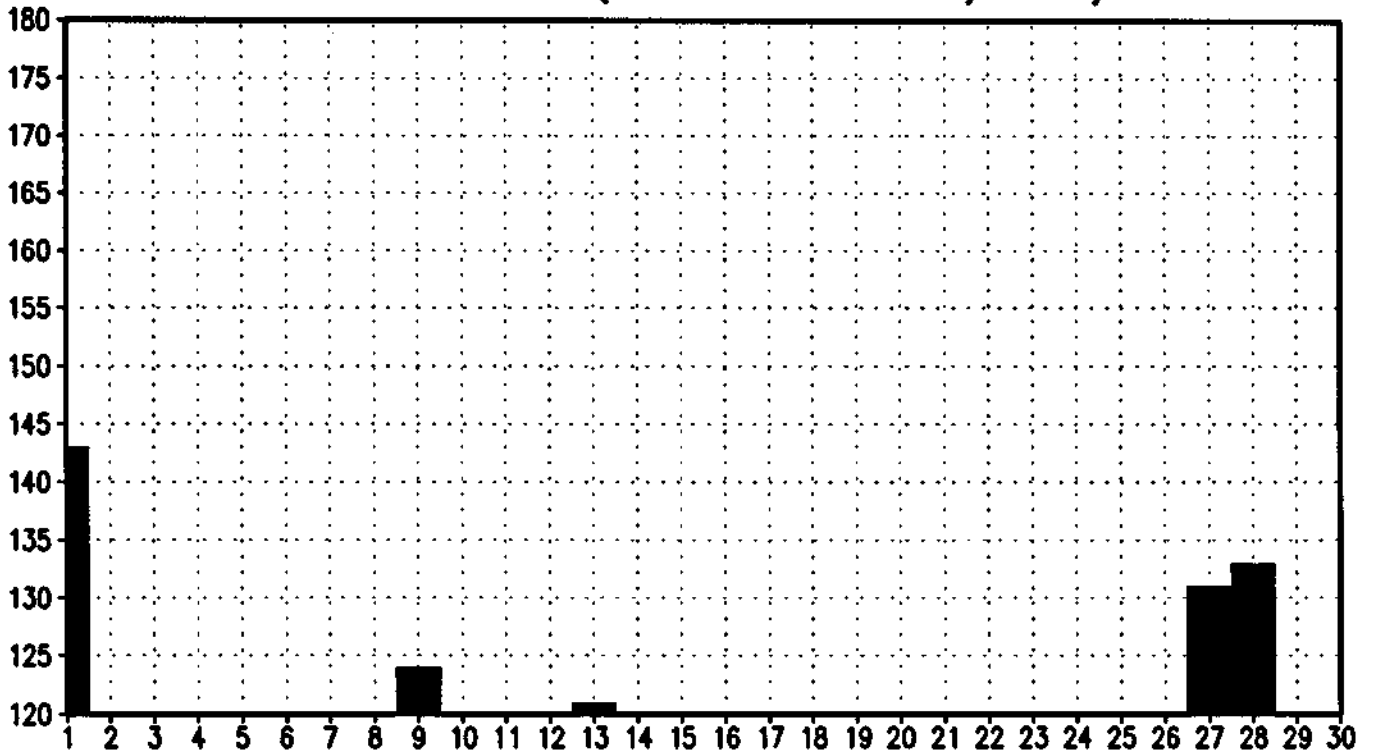
MEDIA DE VALORES (≥ 120 'NE') 08/94 18TMG



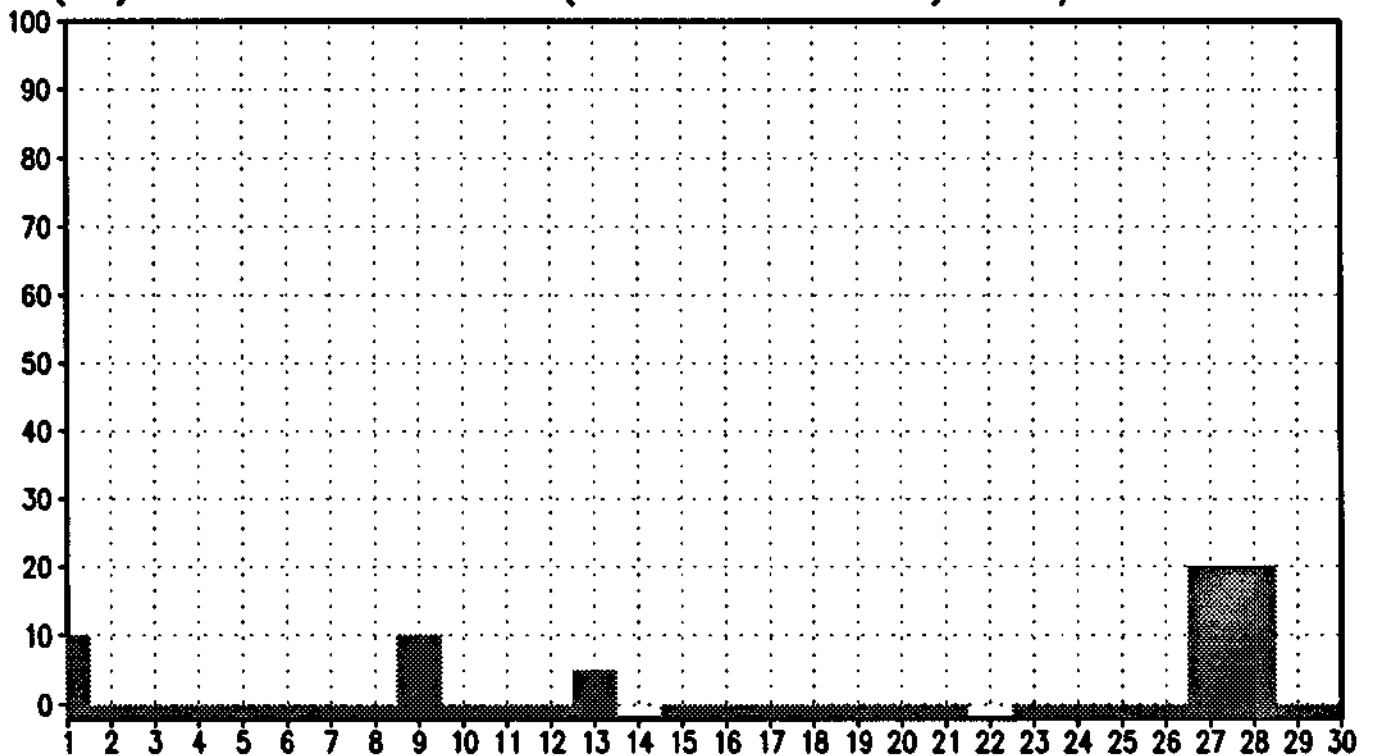
(%) DE VALORES (≥ 120 'NE') 08/94 18TMG



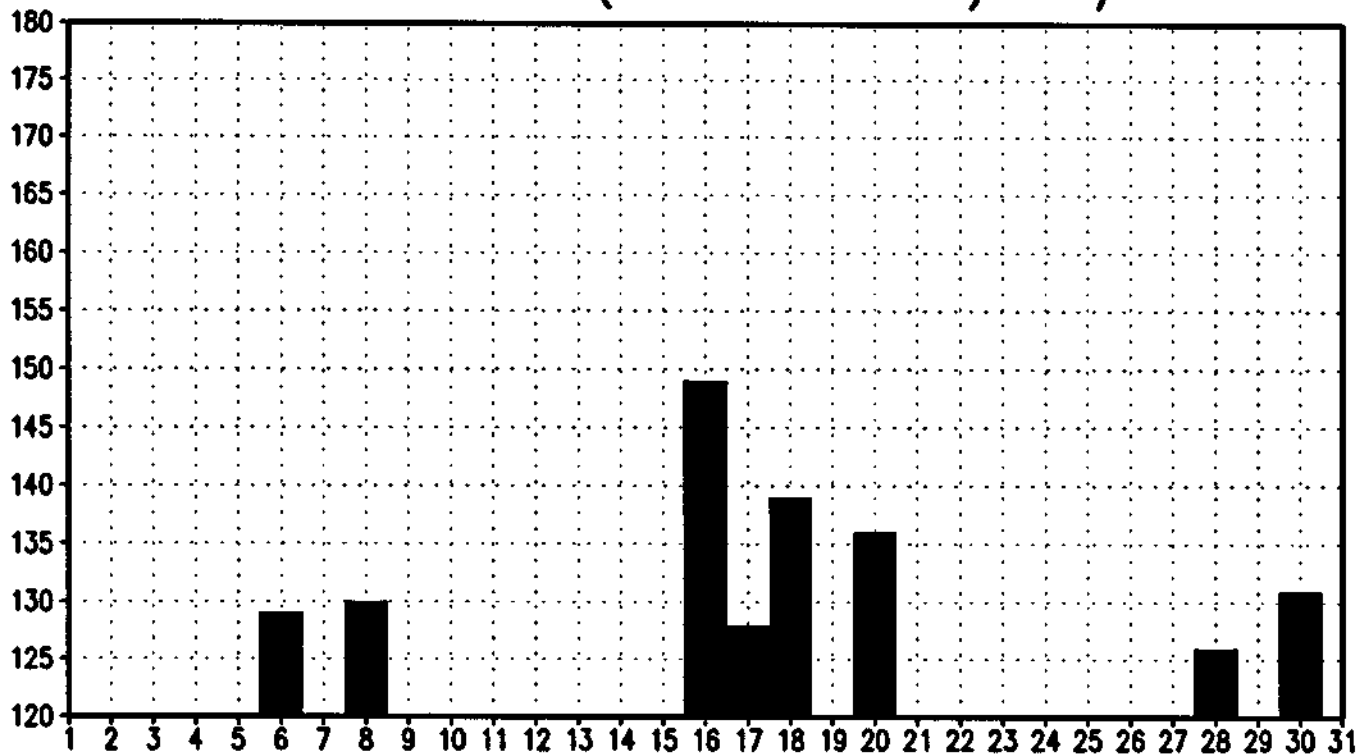
MEDIA DE VALORES (≥ 120 'NE') 09/94 18TMG



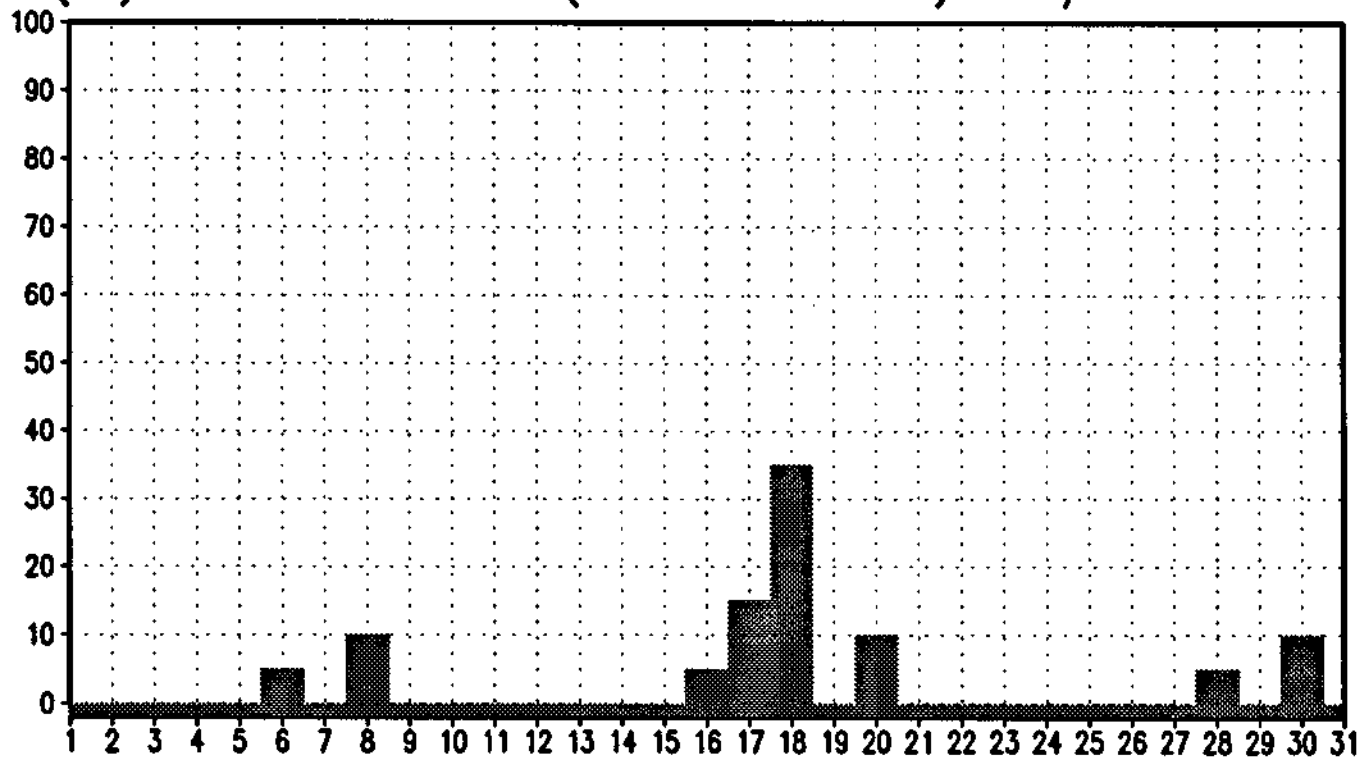
(%) DE VALORES (≥ 120 'NE') 09/94 18TMG



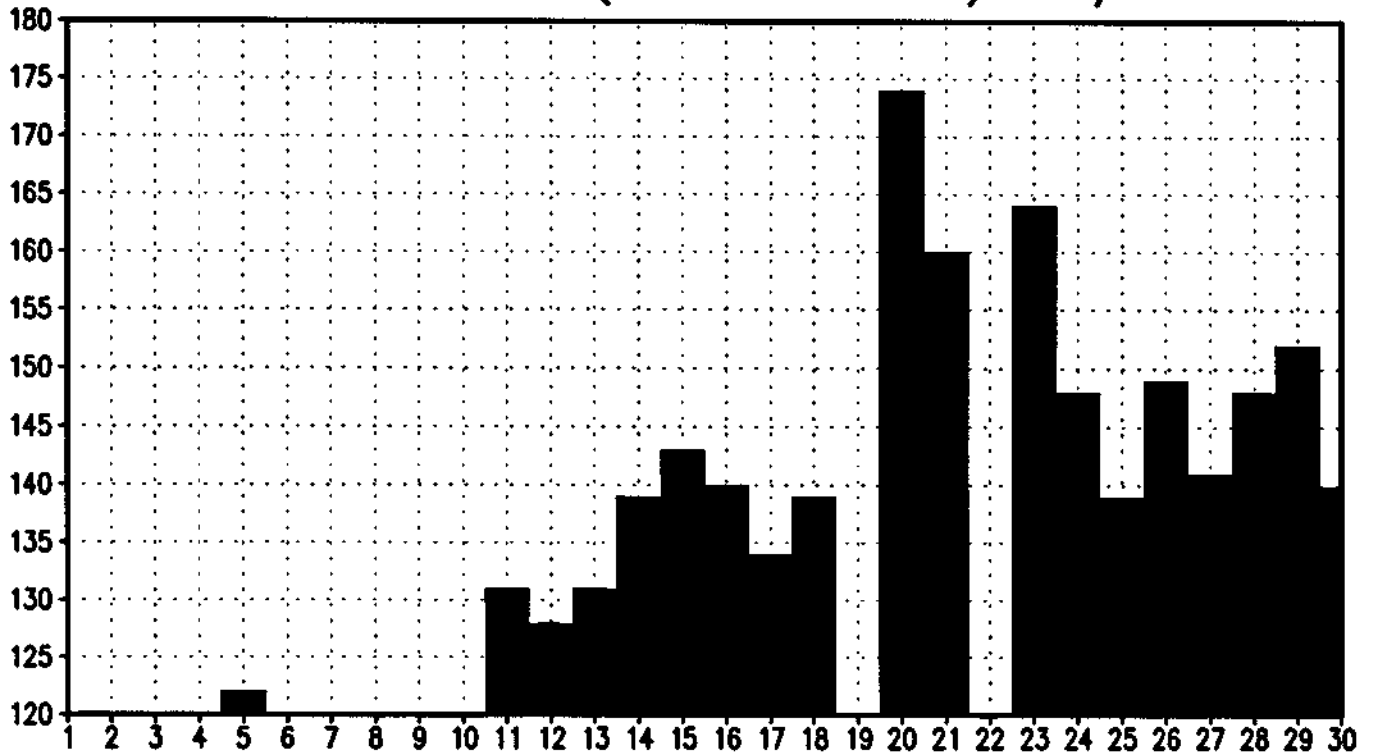
MEDIA DE VALORES (≥ 120 'NE') 10/94 18TMG



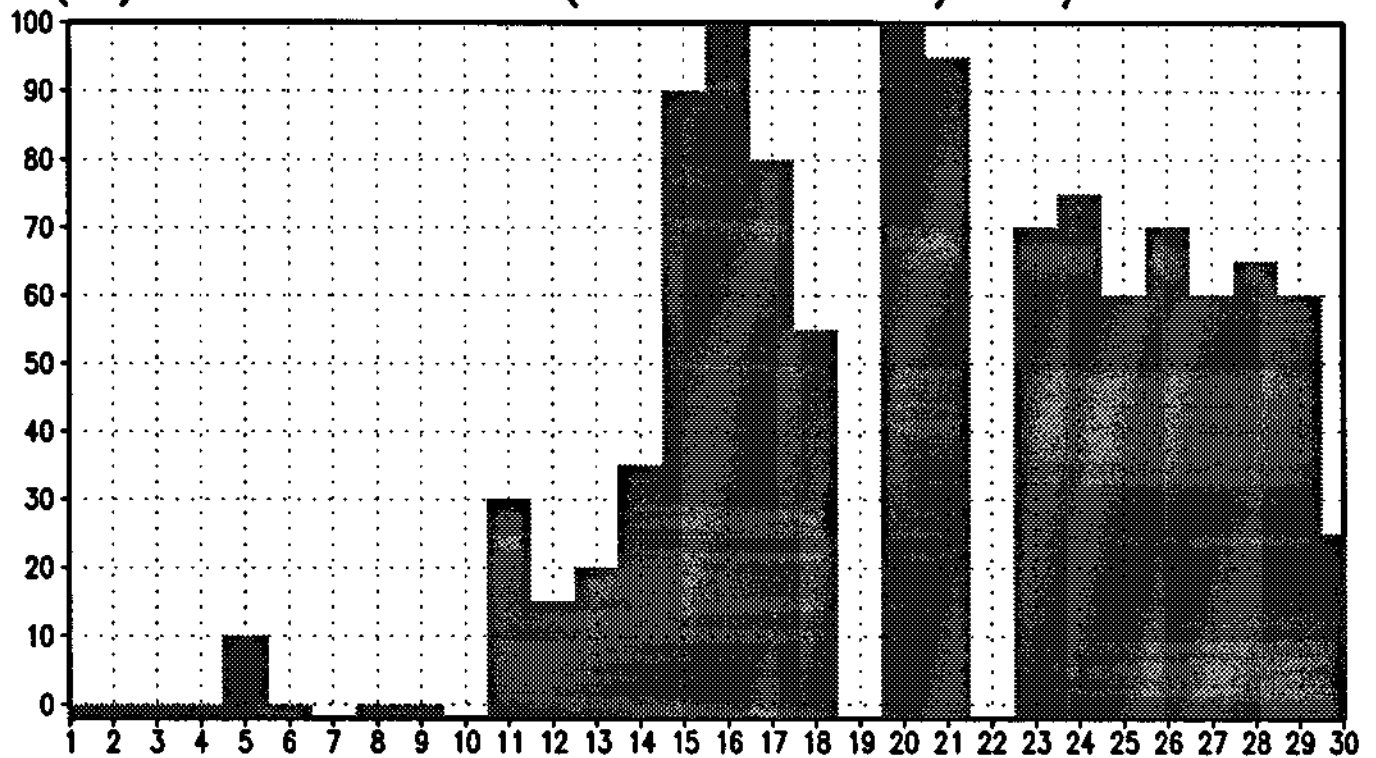
(%) DE VALORES (≥ 120 'NE') 10/94 18TMG



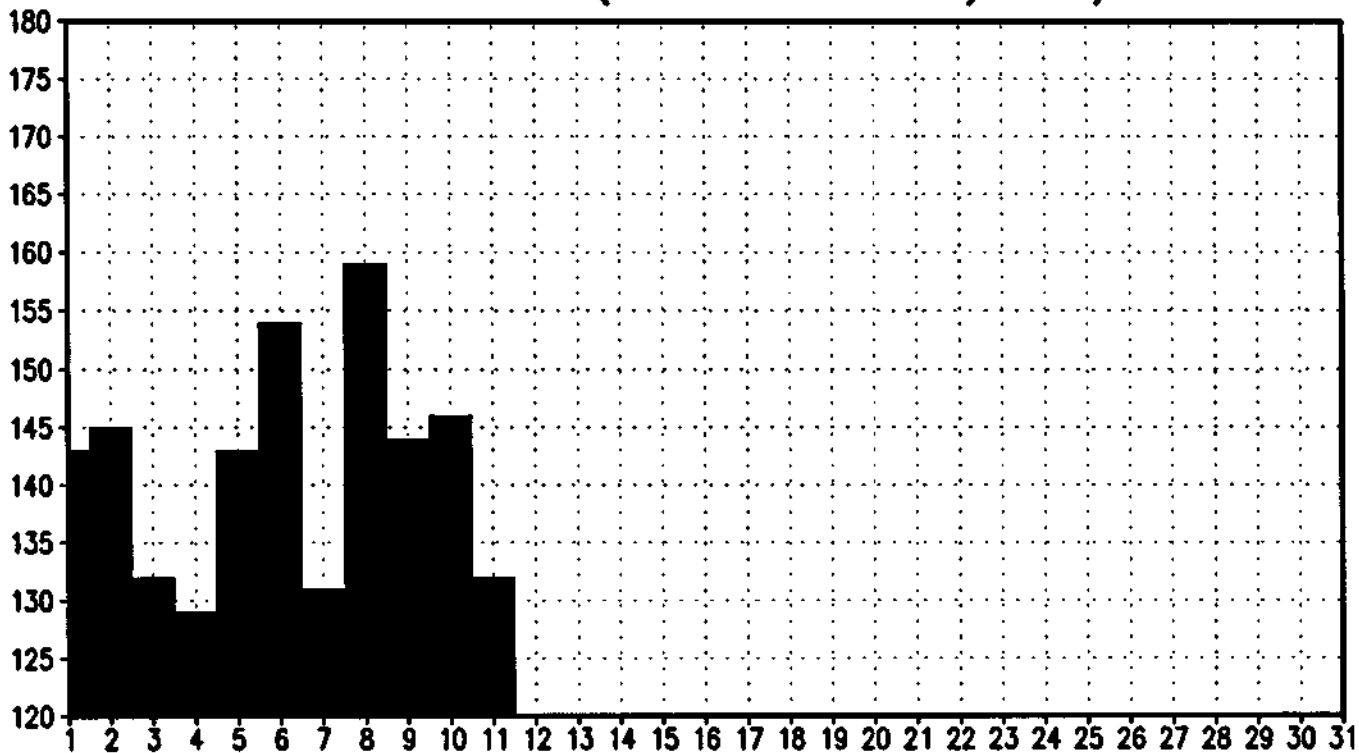
MEDIA DE VALORES (≥ 120 'NE') 11/94 18TMG



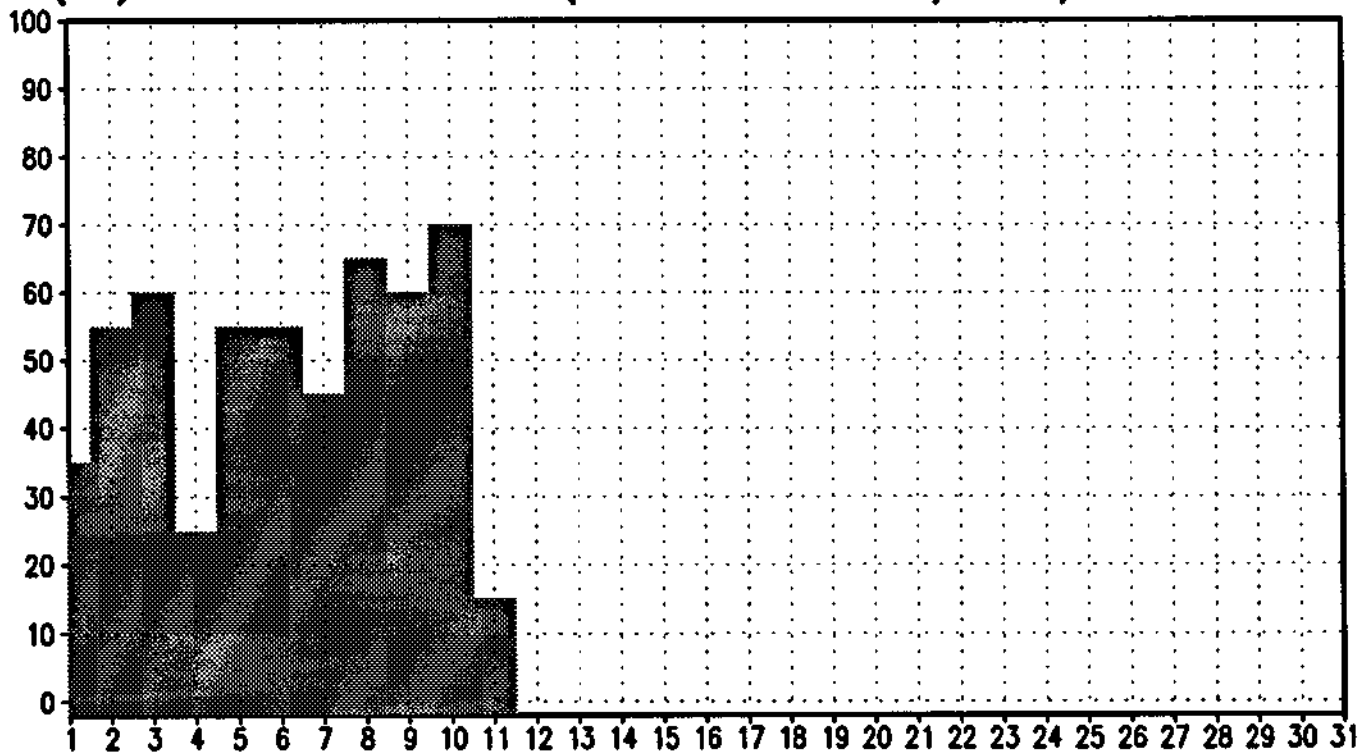
(%) DE VALORES (≥ 120 'NE') 11/94 18TMG



MEDIA DE VALORES (≥ 120 'NE') 12/94 18TMG



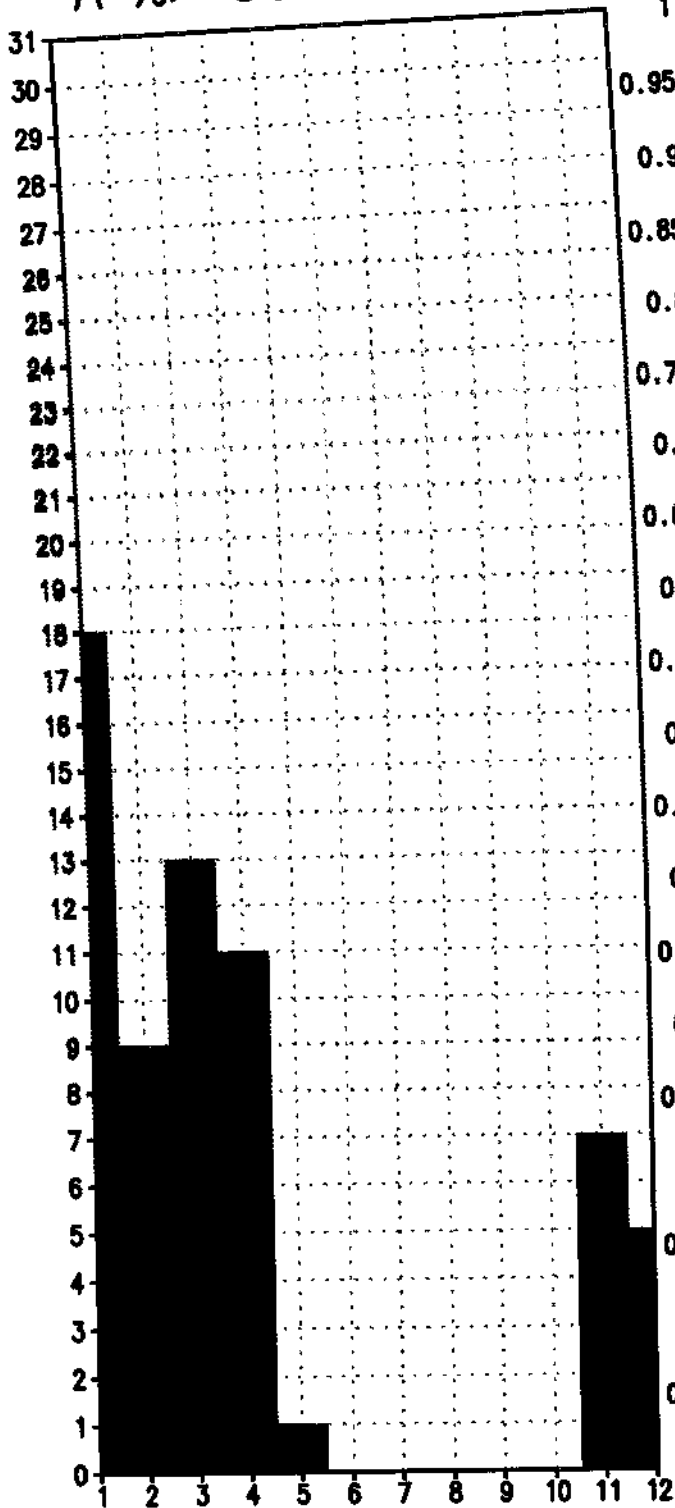
(%) DE VALORES (≥ 120 'NE') 12/94 18TMG



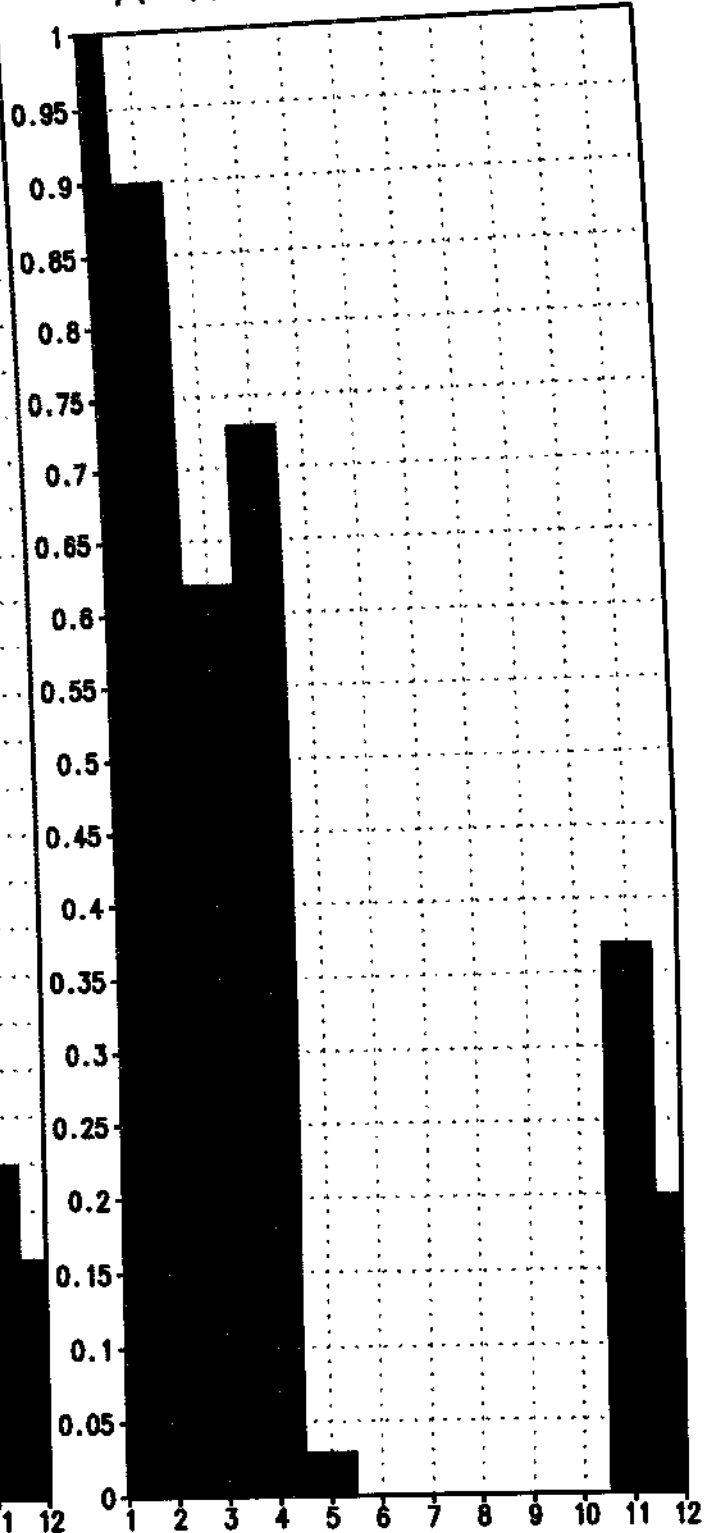
ANEXO III

SEQUÊNCIA DE GRÁFICOS MOSTRANDO O NÚMERO
DE DIAS DOS MESES E O ÍNDICE
CORRESPONDENTE ONDE A PORCENTAGEM DE
VALORES DE PIXELS EM TODAS AS ÁREAS ESTEVE
ACIMA DE 50% PARA CADA MÊS DE 1993 E 1994

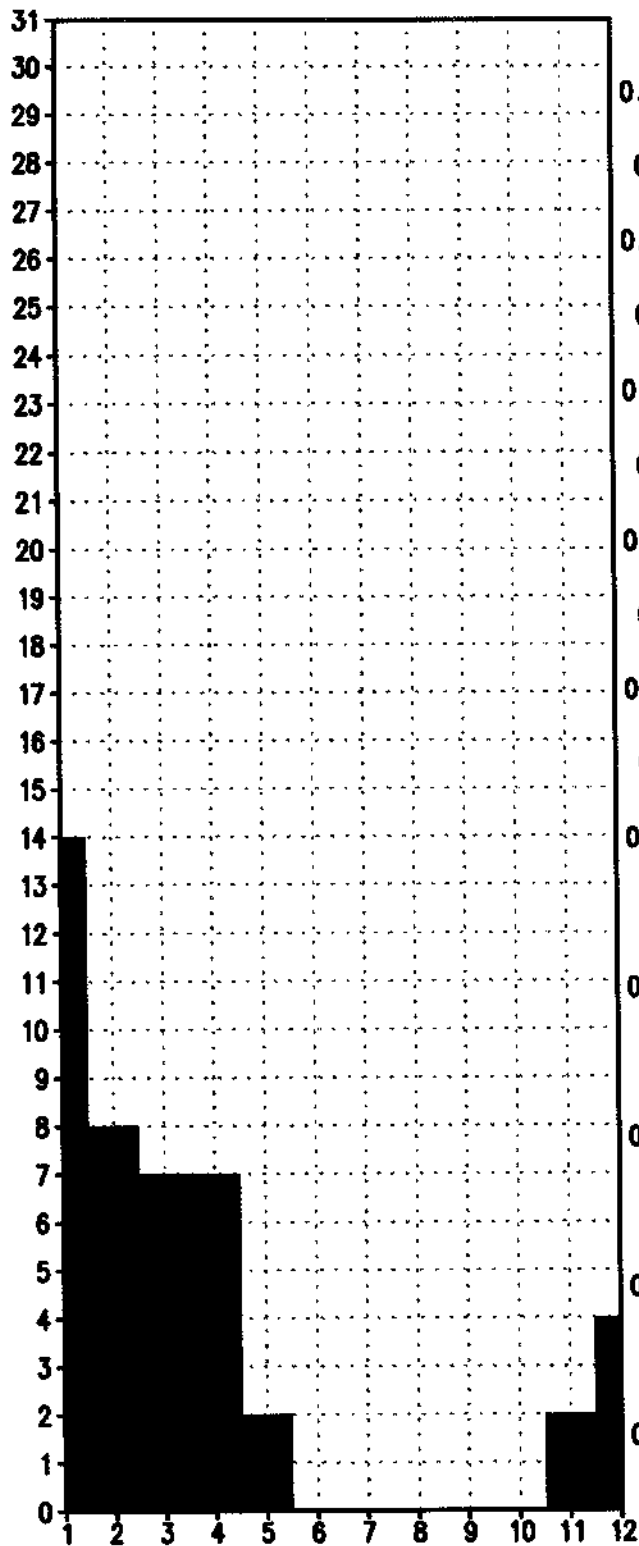
A %>=50 93 18TMG



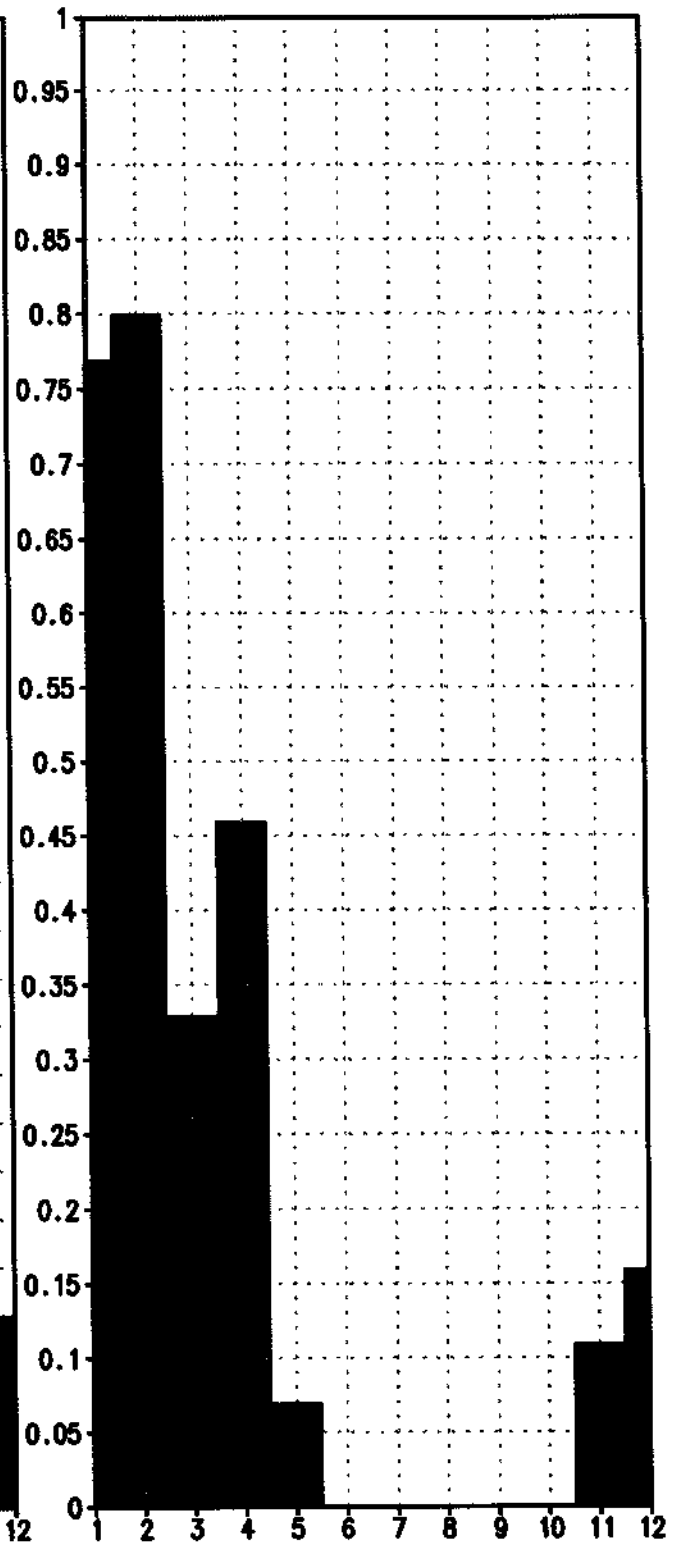
A IND. 93 18TMG



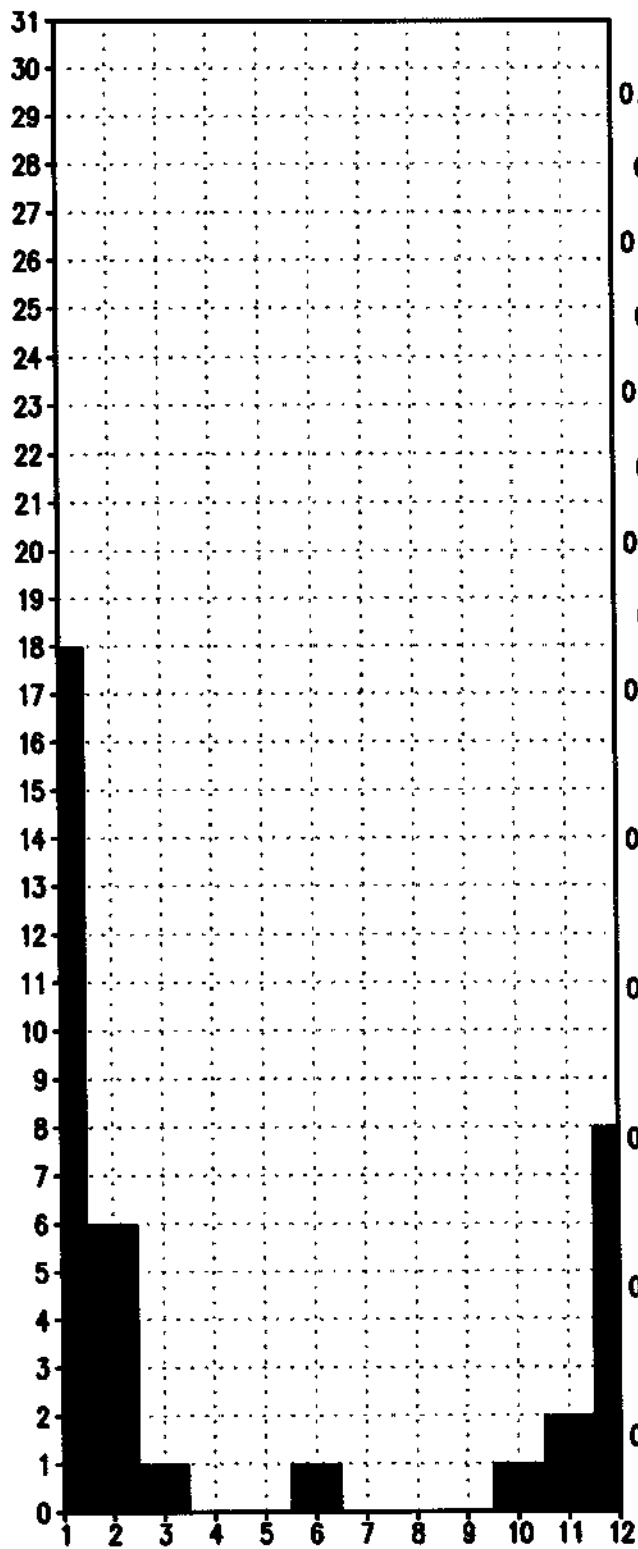
B %>=50 93 18TMG



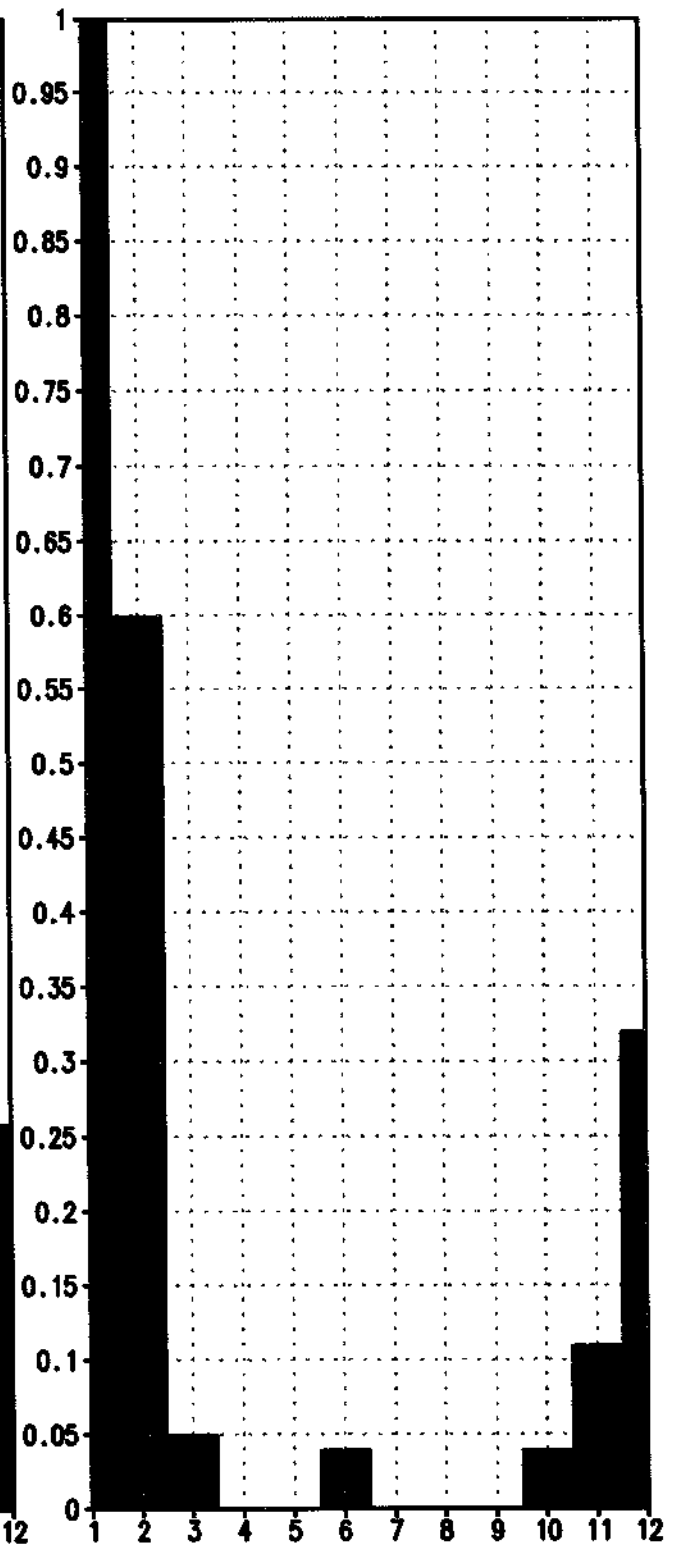
B IND. 93 18TMG



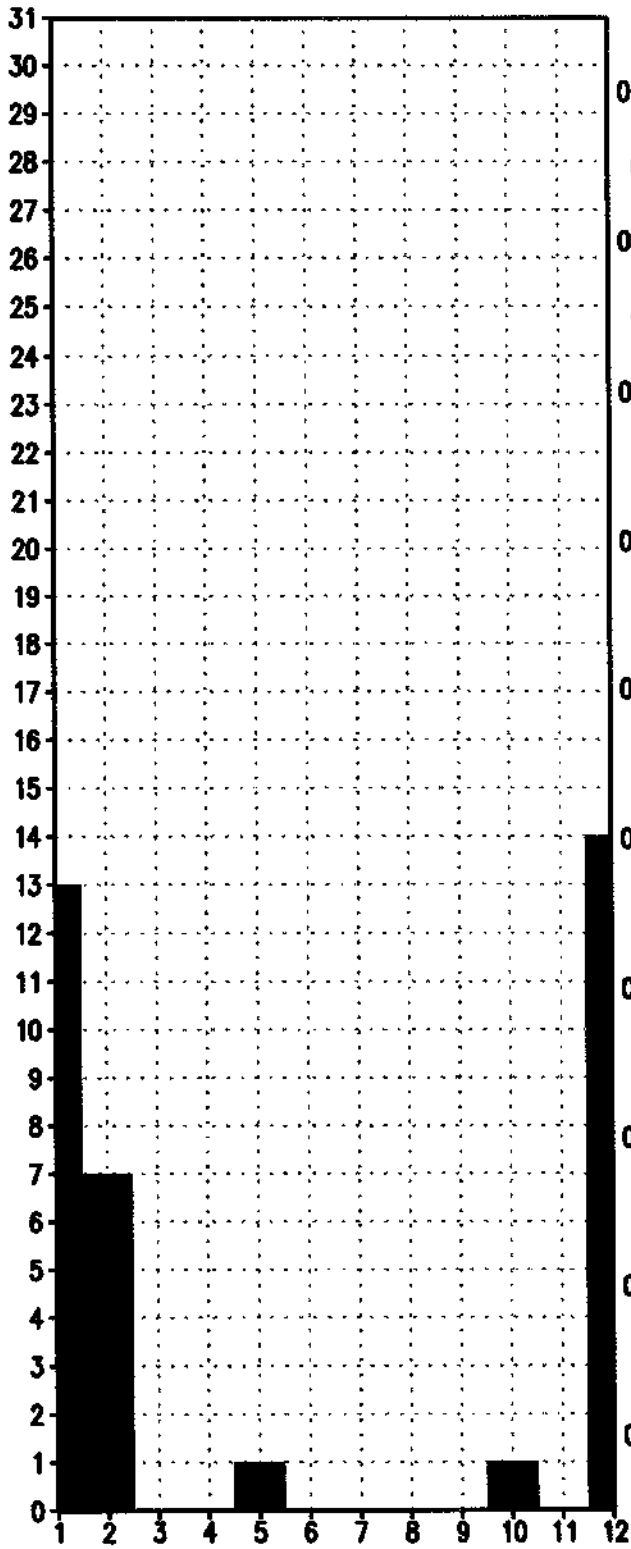
C %>=50 93 18TMG



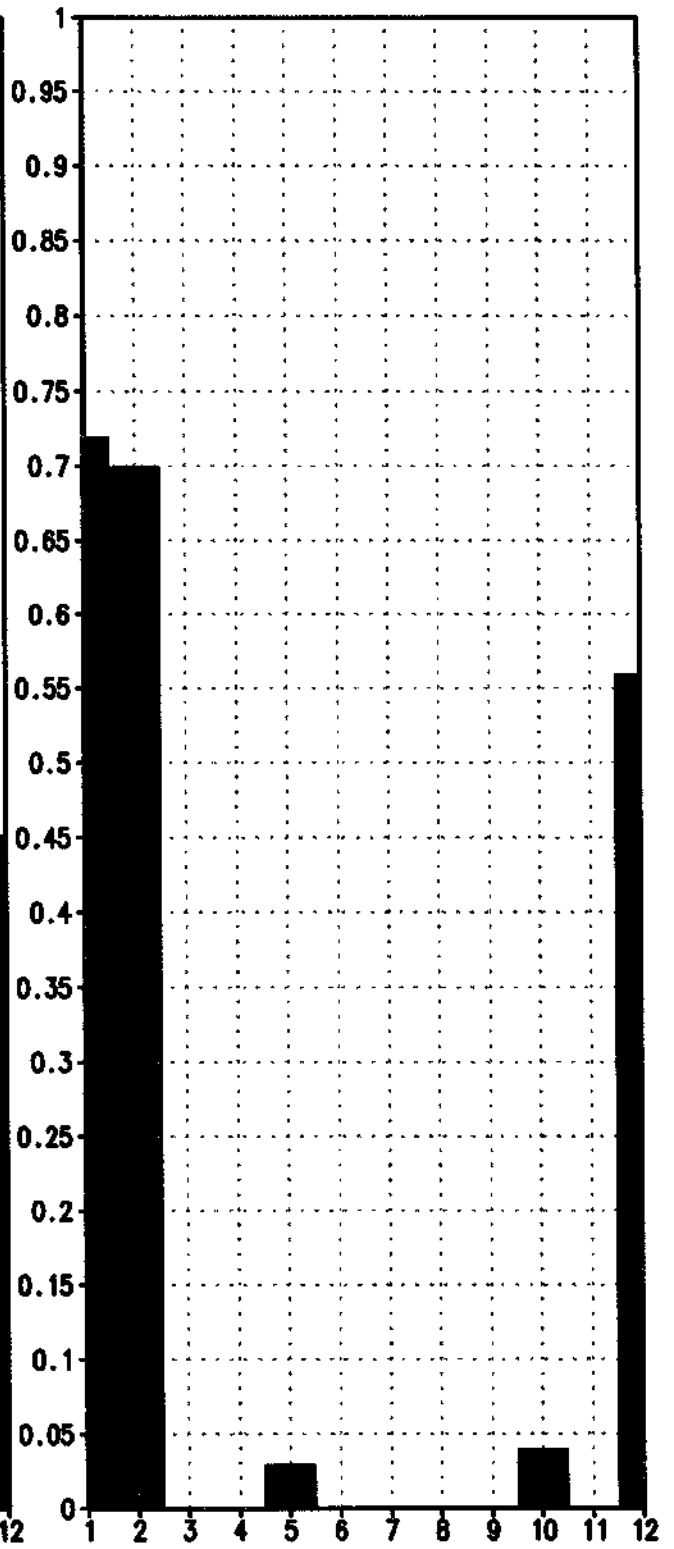
C IND. 93 18TMG



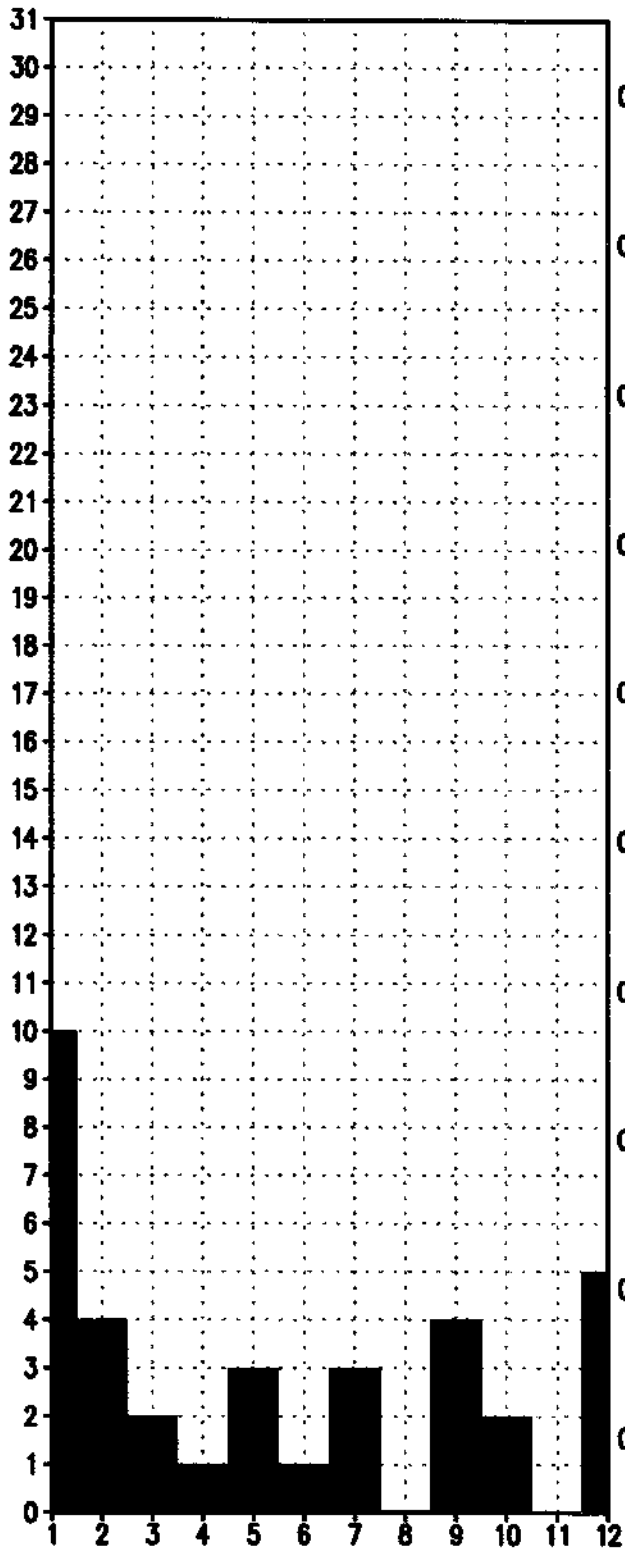
D %>=50 93 18TMG



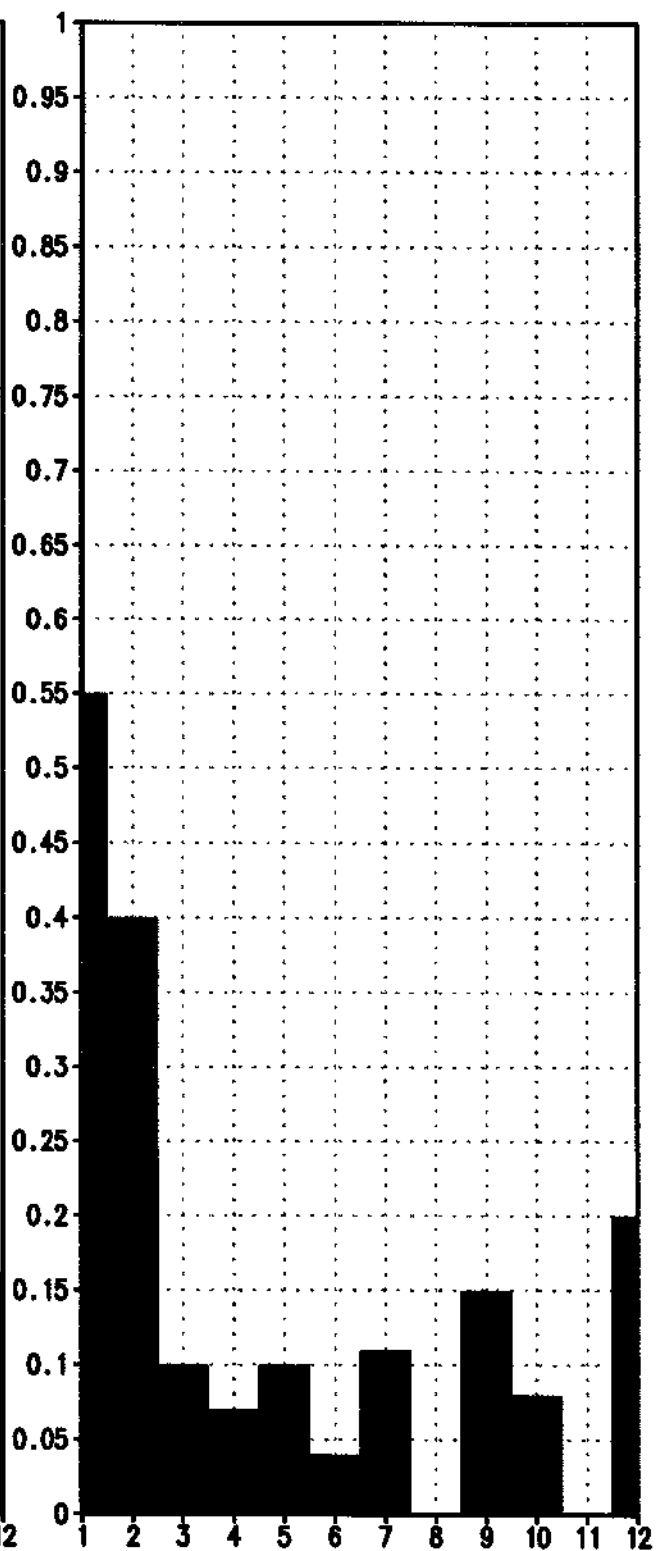
D IND. 93 18TMG



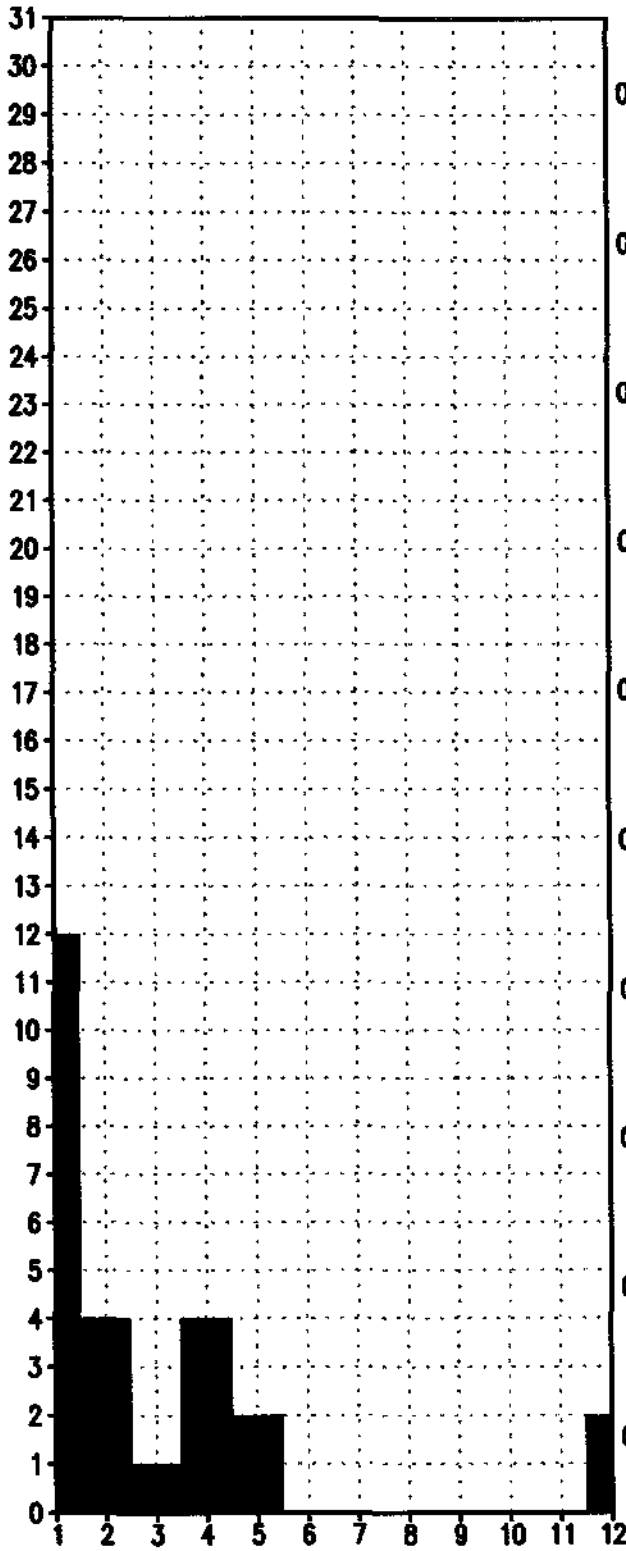
E %>=50 93 18TMG



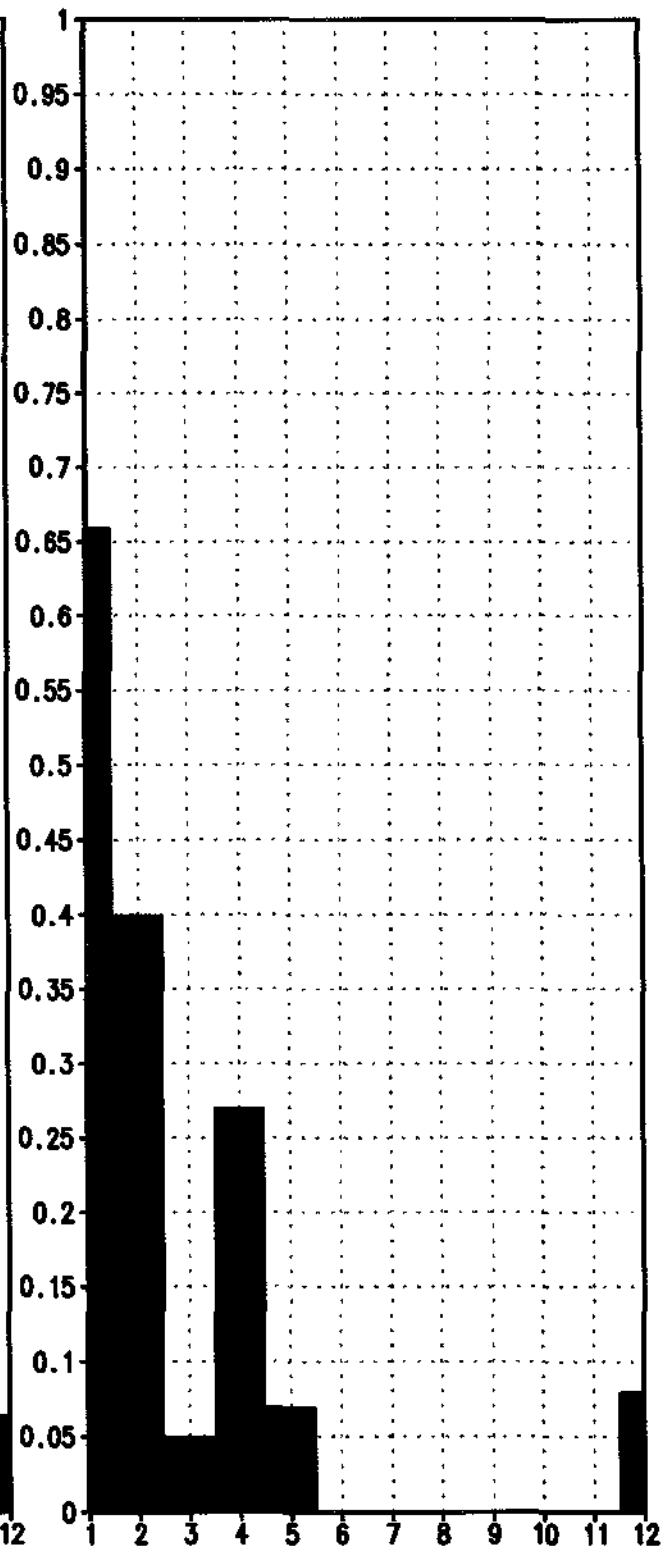
E IND. 93 18TMG



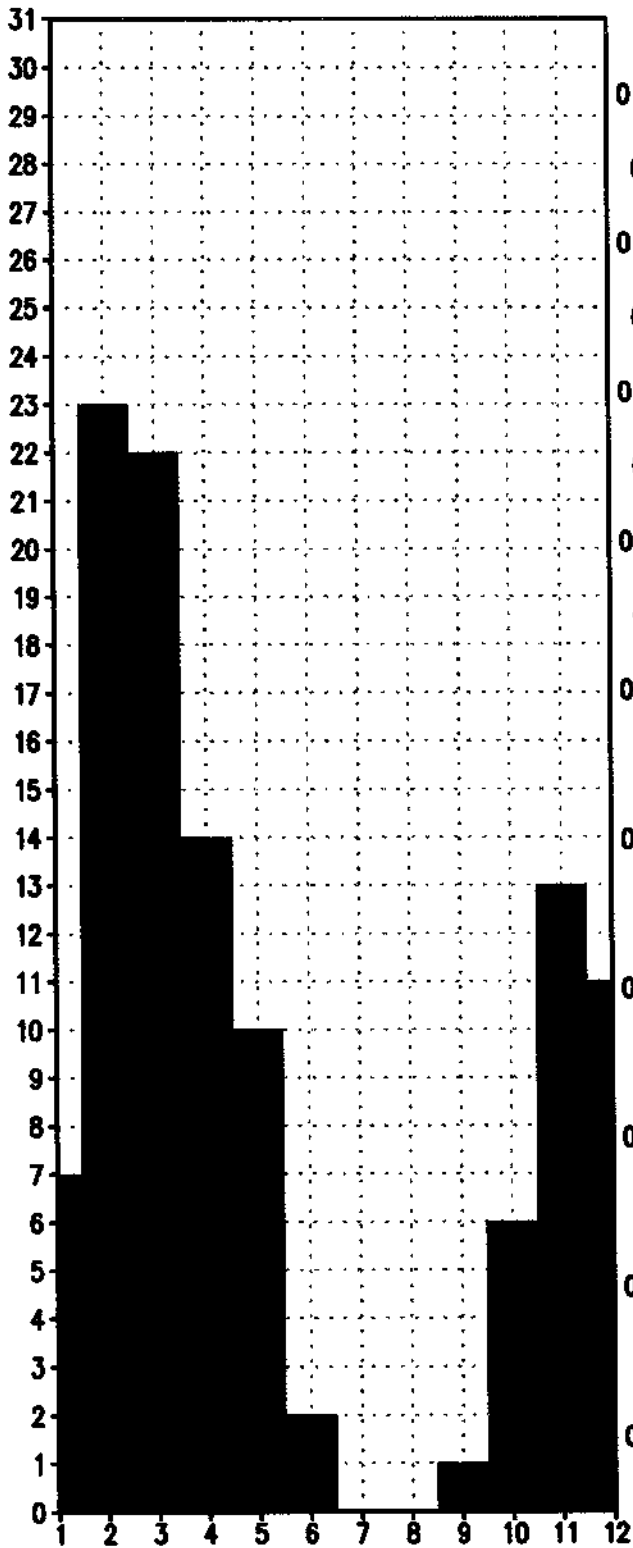
NE %>=50 93 18TMG



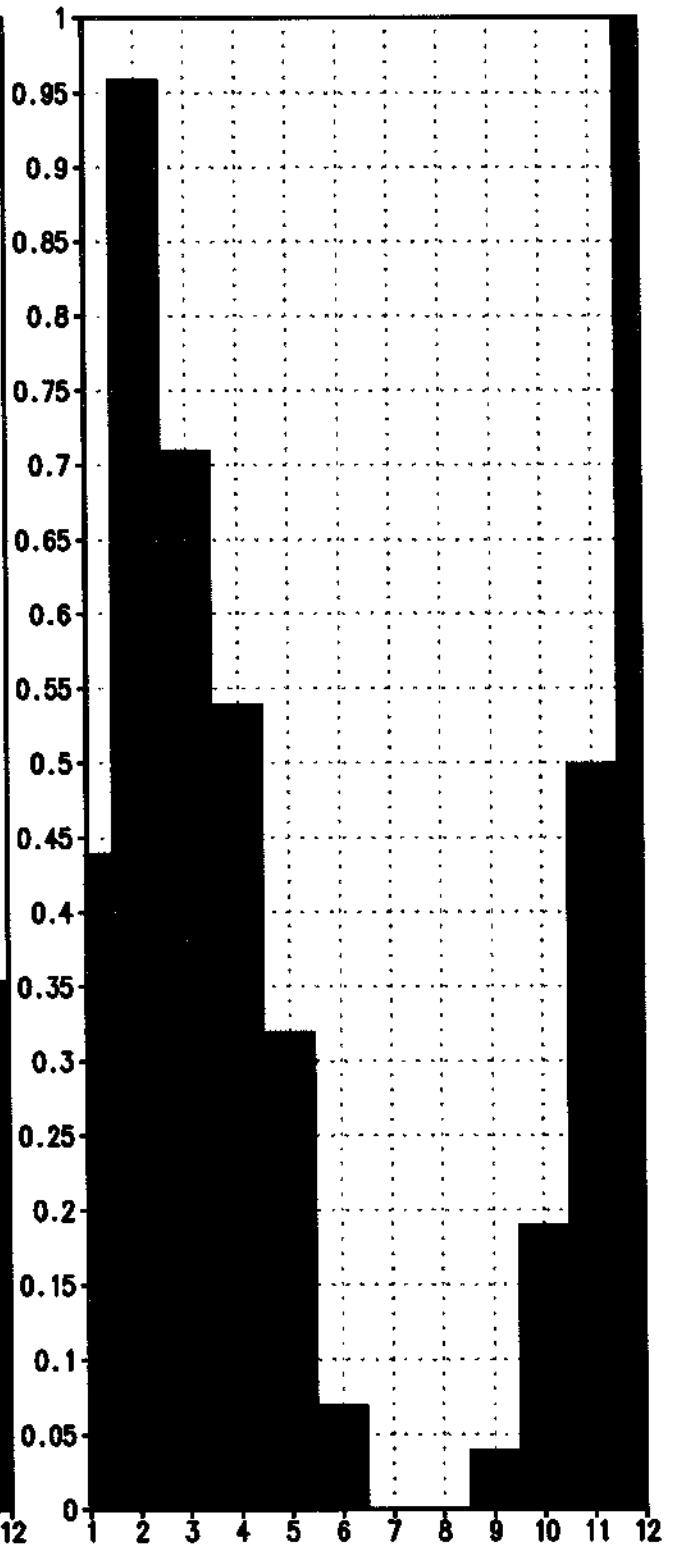
NE IND. 93 18TMG



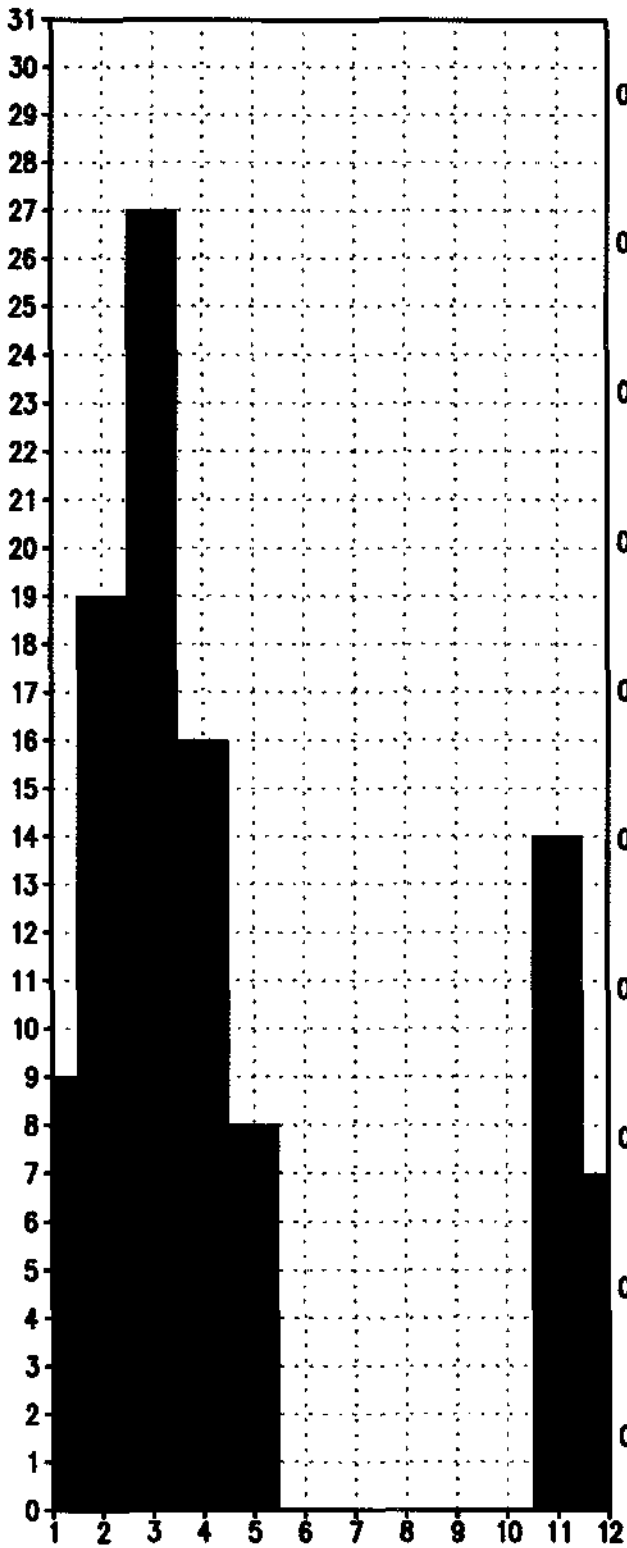
A %>=50 94 18TMG



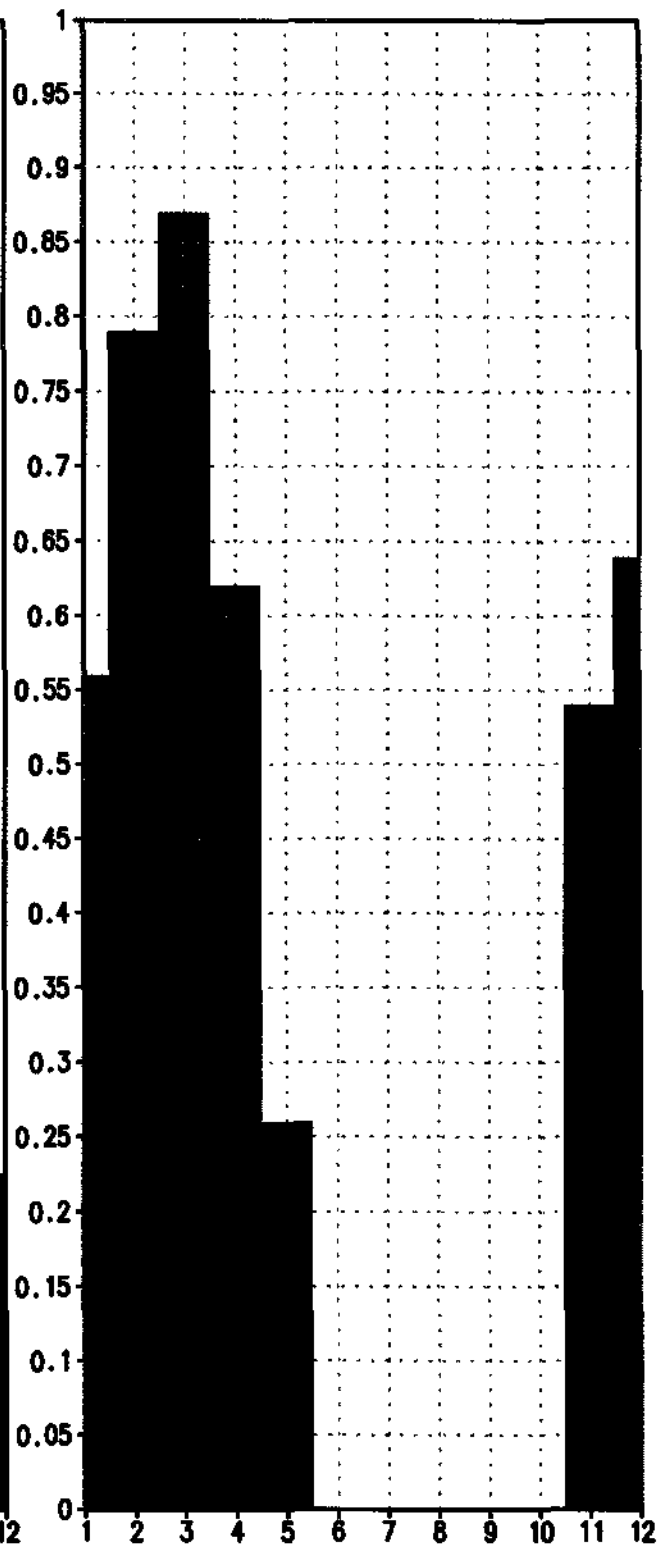
A IND. 94 18TMG



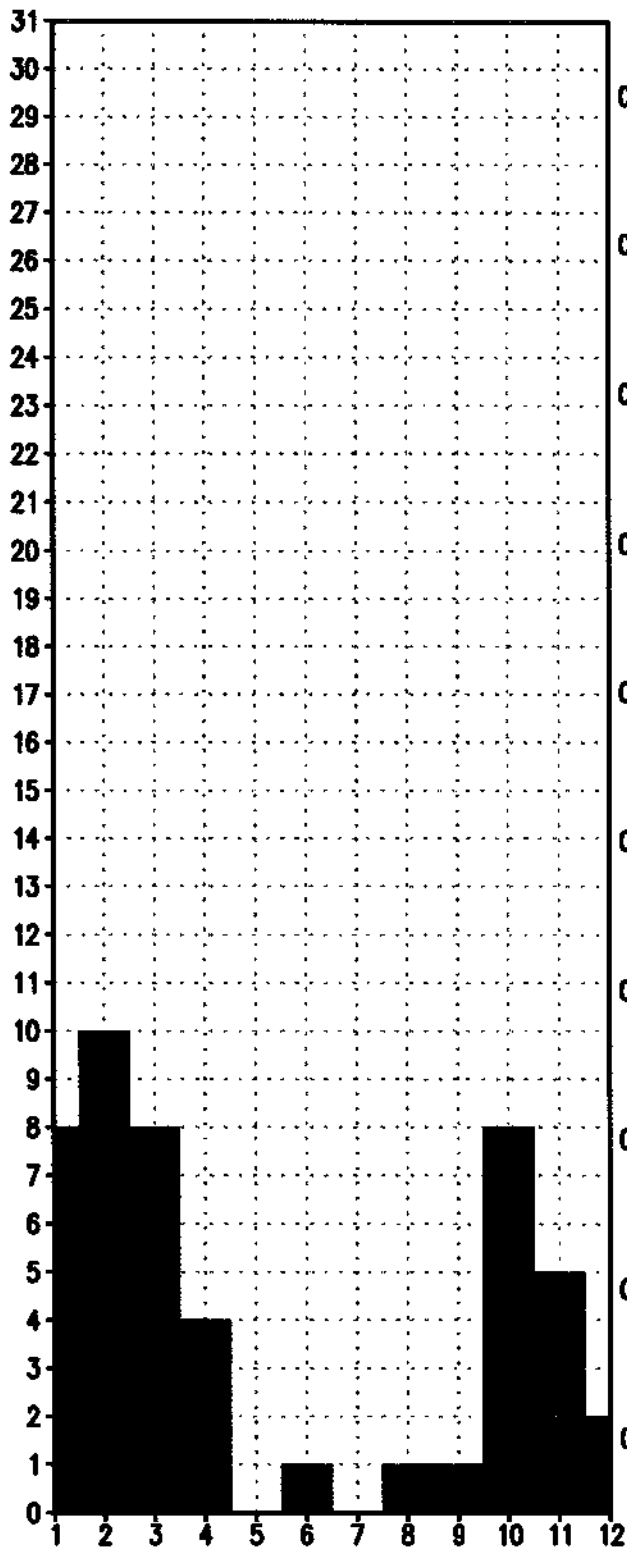
B % \geq 50 94 18TMG



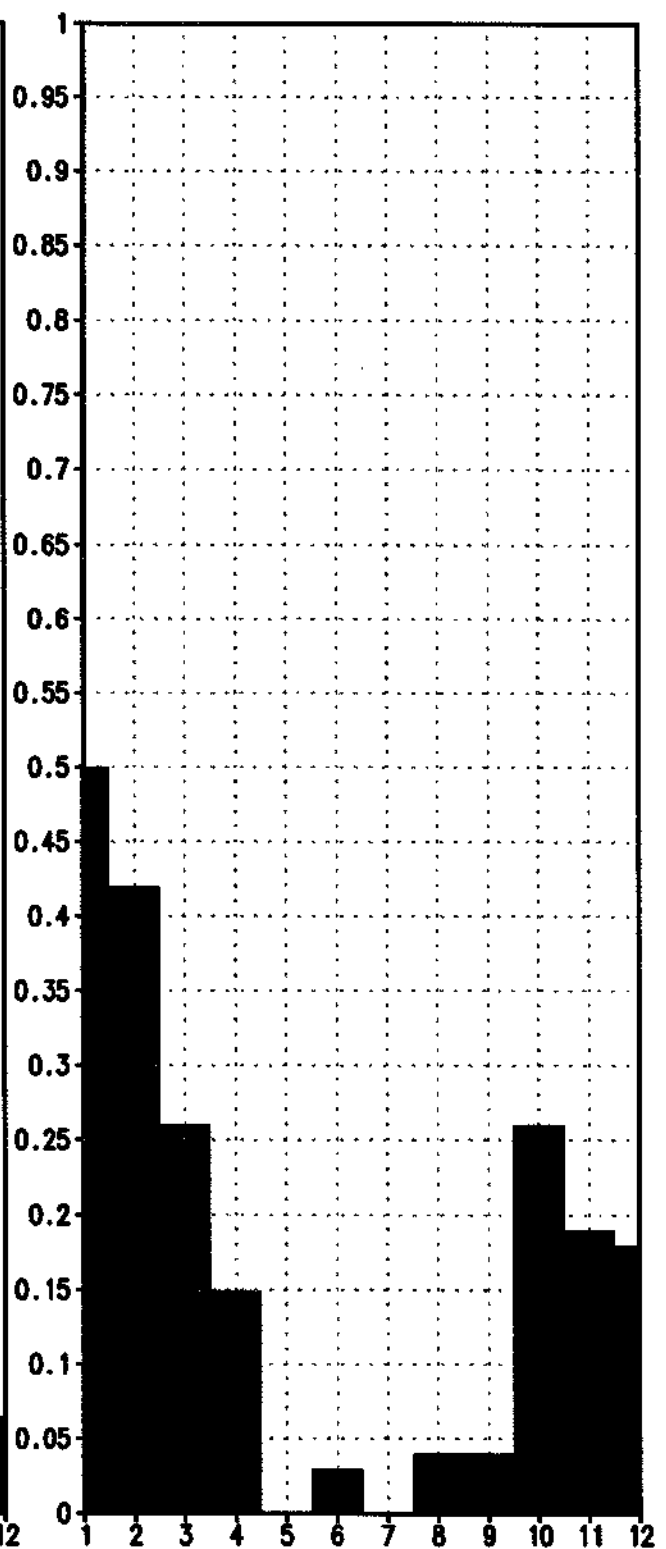
B IND. 94 18TMG



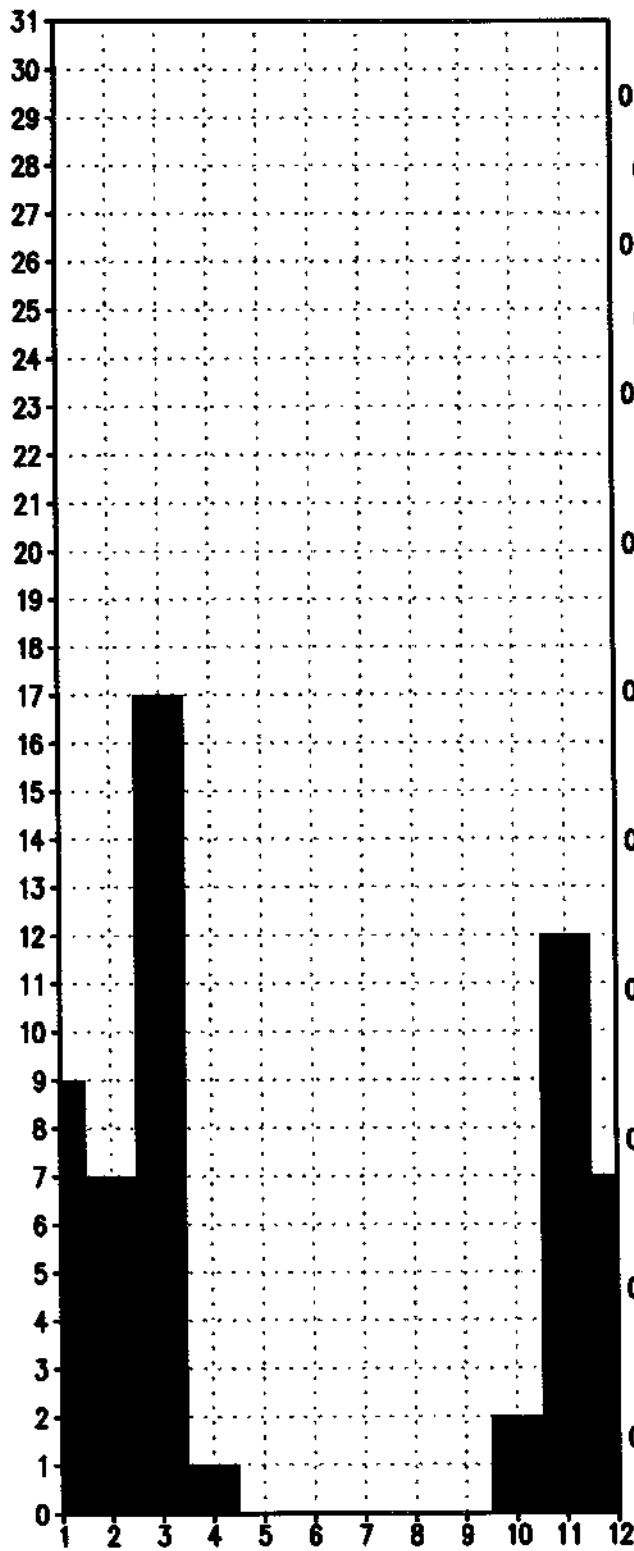
C %>=50 94 18TMG



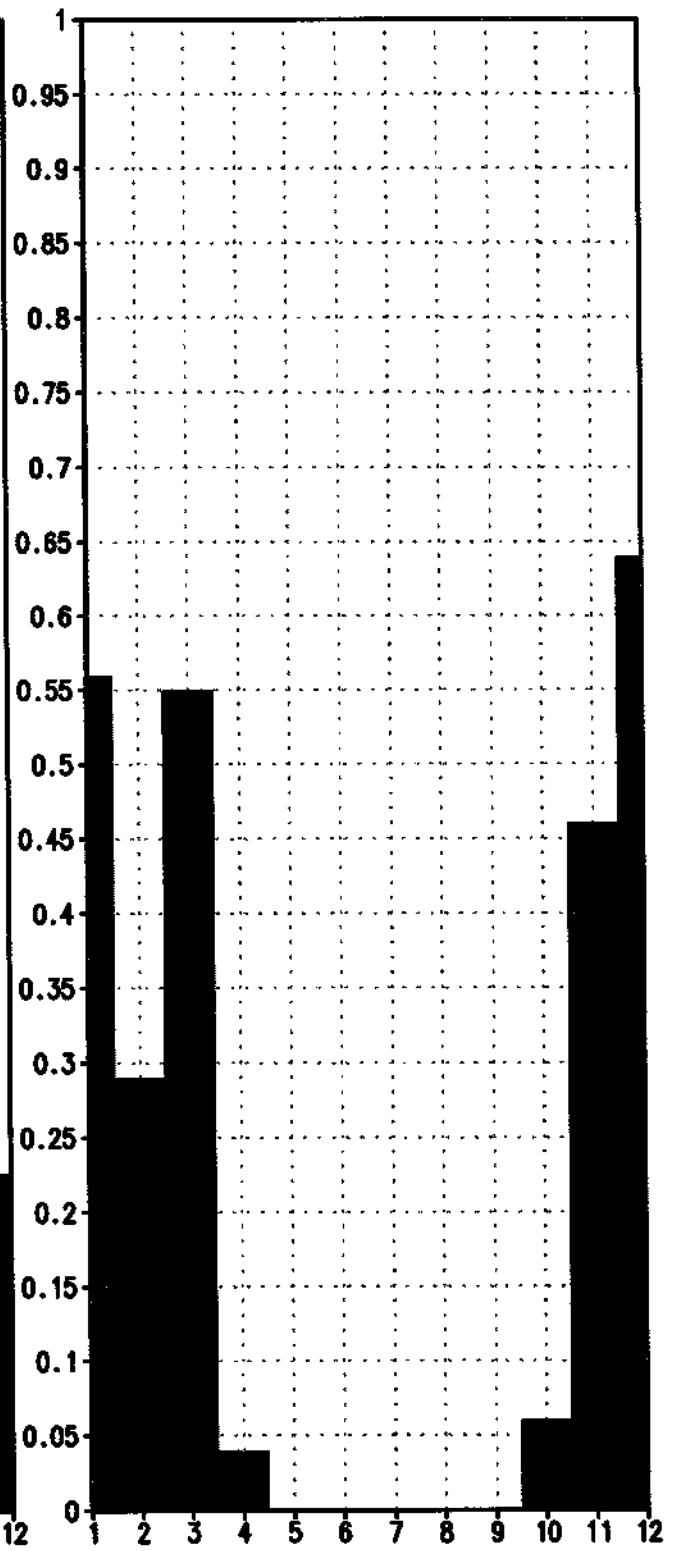
C IND. 94 18TMG



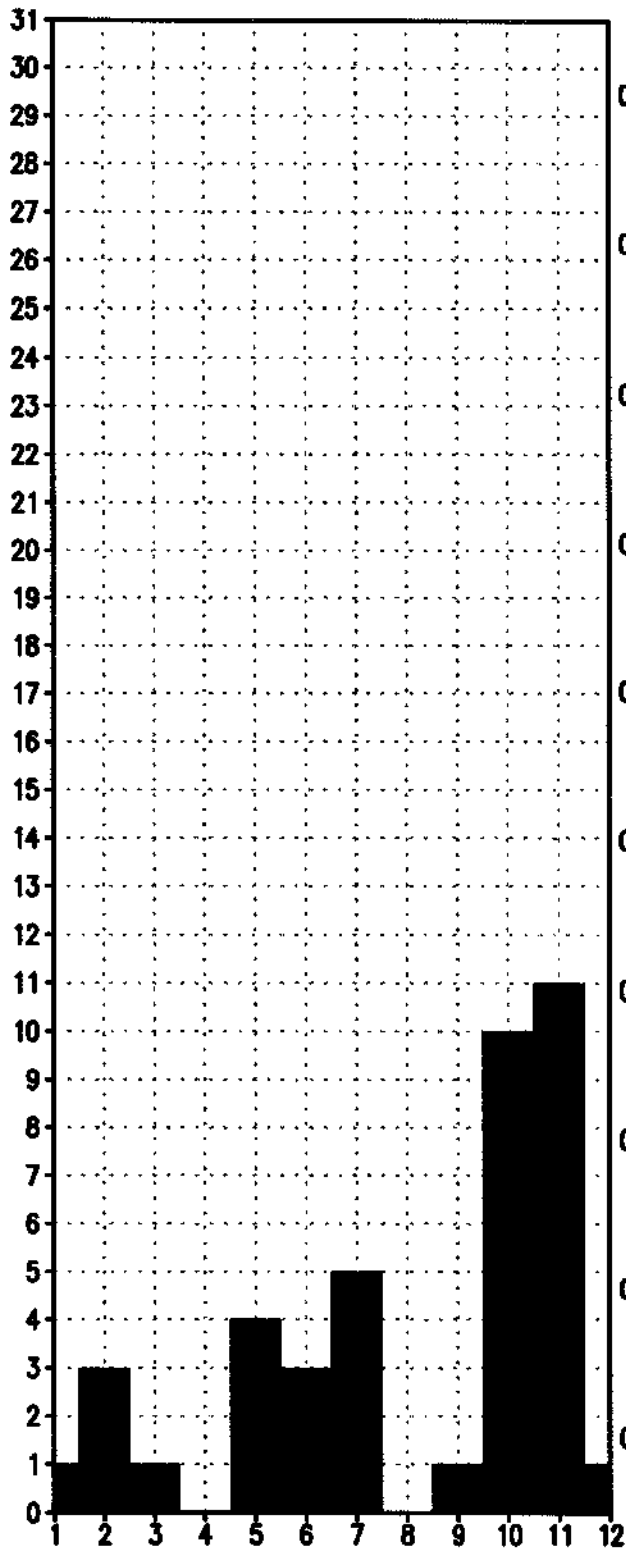
D %>=50 94 18TMG



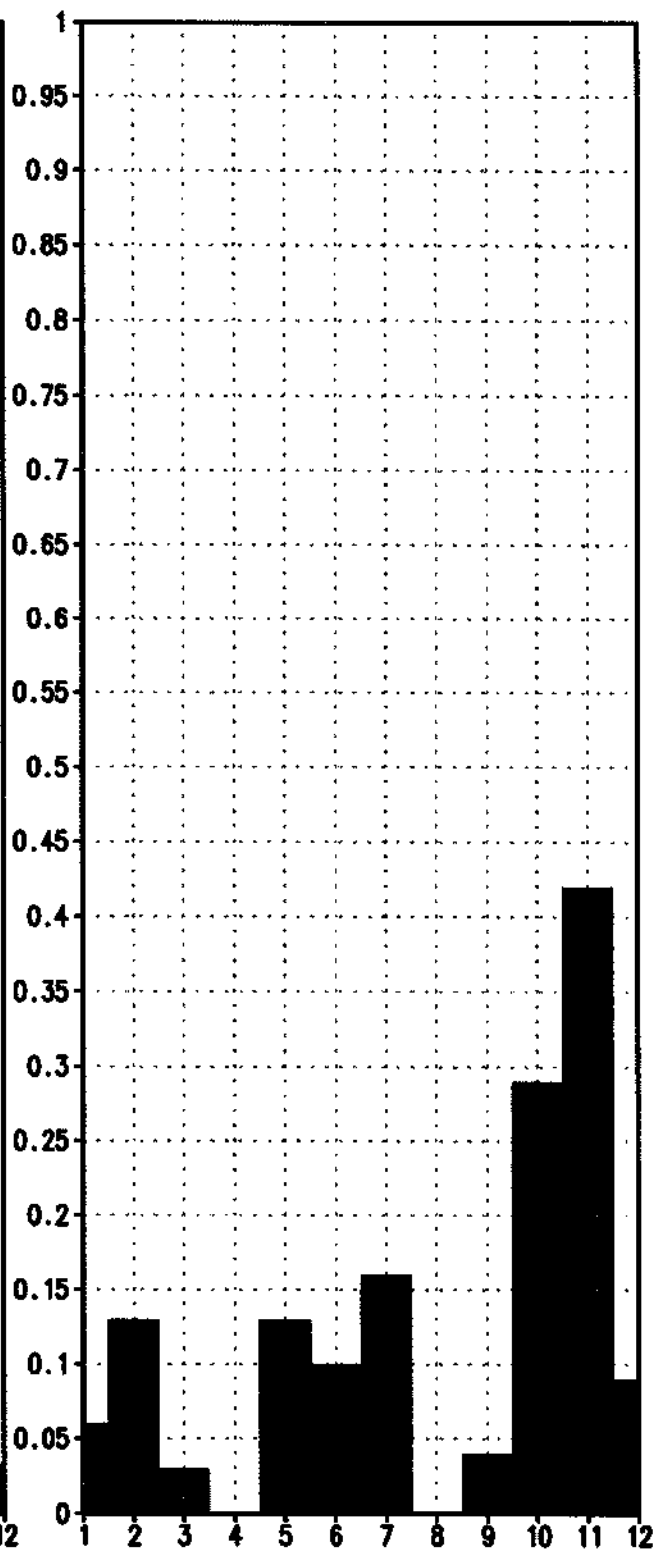
D IND. 94 18TMG



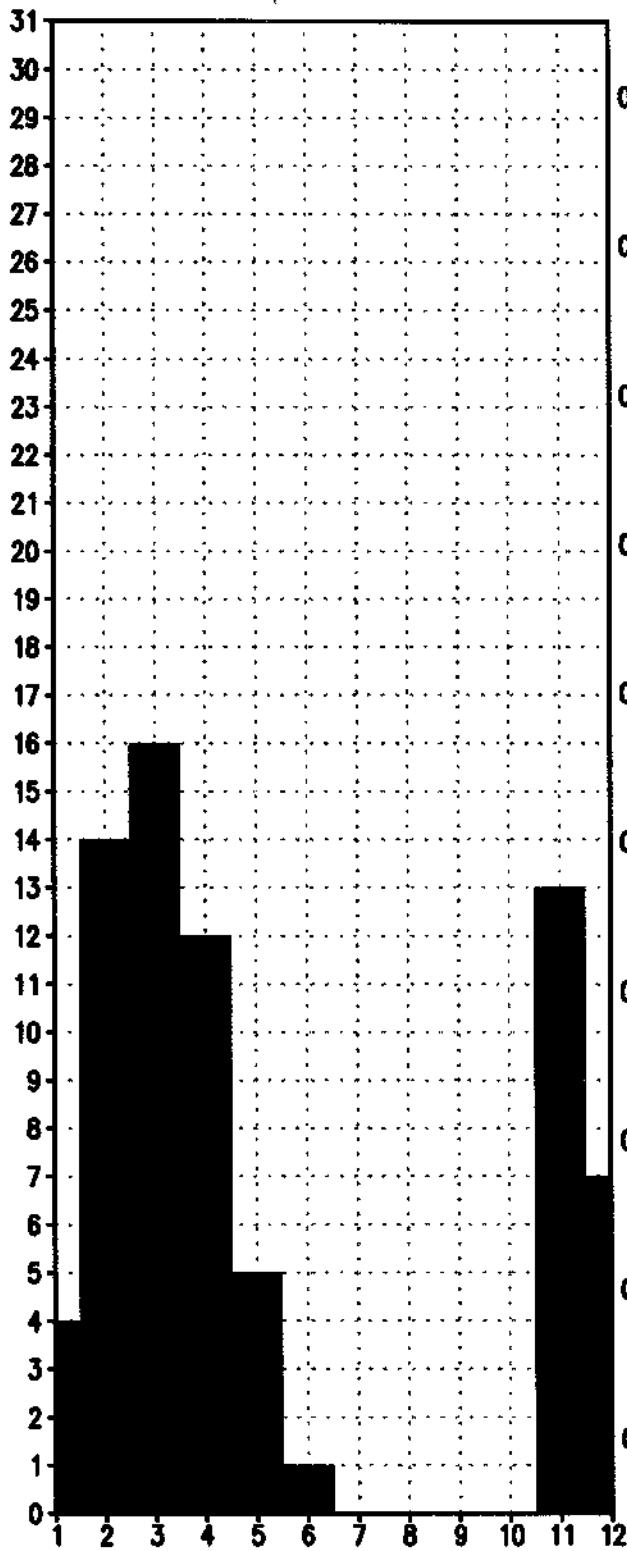
E %>=50 94 18TMG



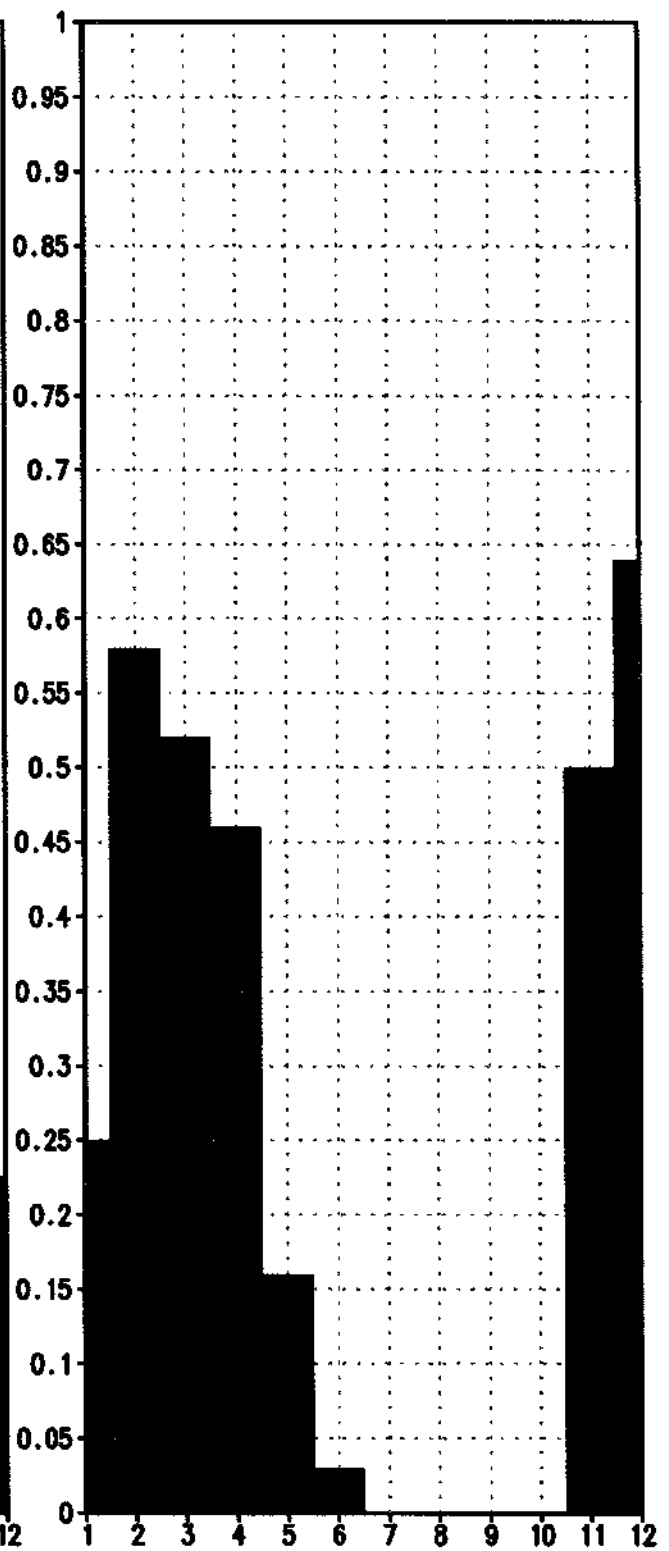
E IND. 94 18TMG



NE %>=50 94 18TMG



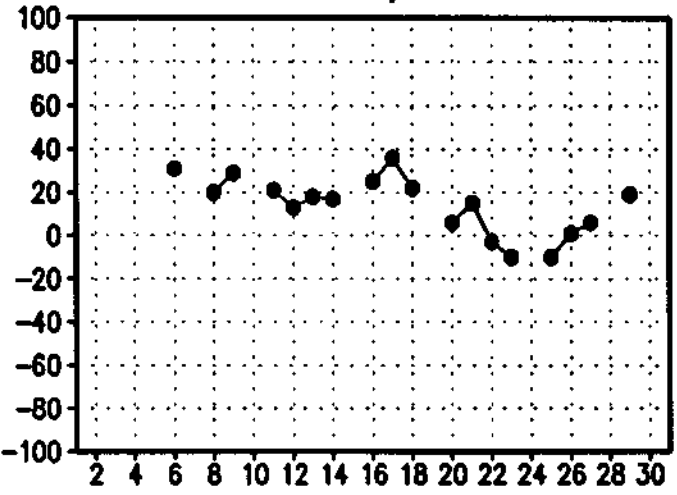
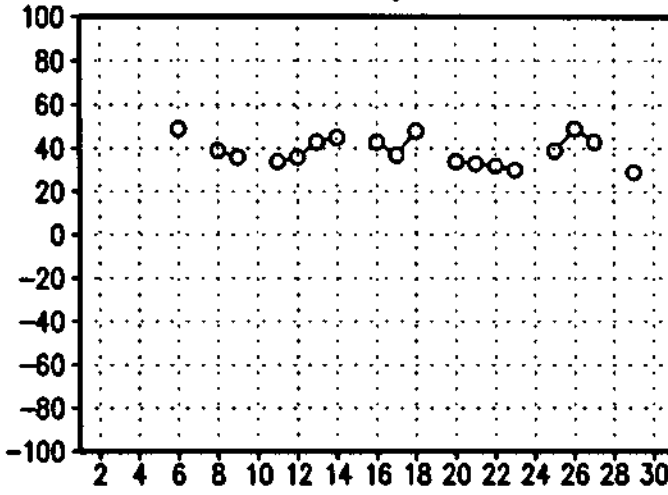
NE IND. 94 18TMG



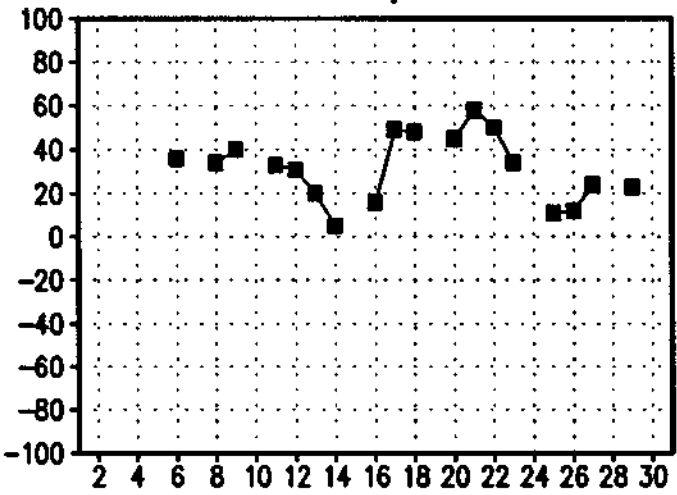
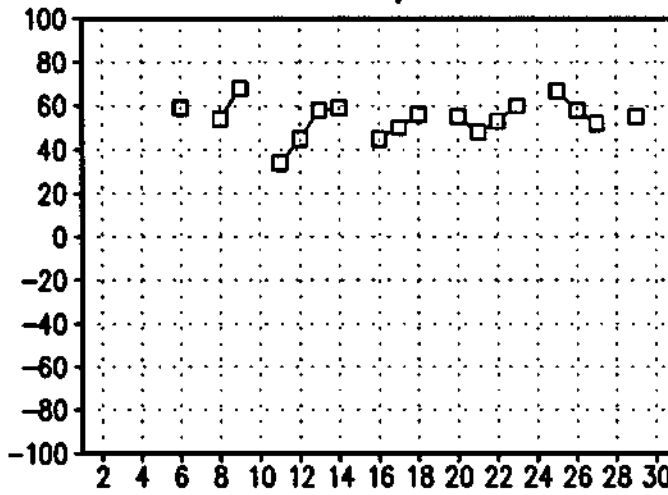
ANEXO IV

SEQUÊNCIA DE GRÁFICOS MOSTRANDO AS SÉRIES
TEMPORAIS DAS ANOMALIAS DIÁRIAS DE TODAS
AS ÁREAS PARA CADA MÊS DE 1993 E 1994.

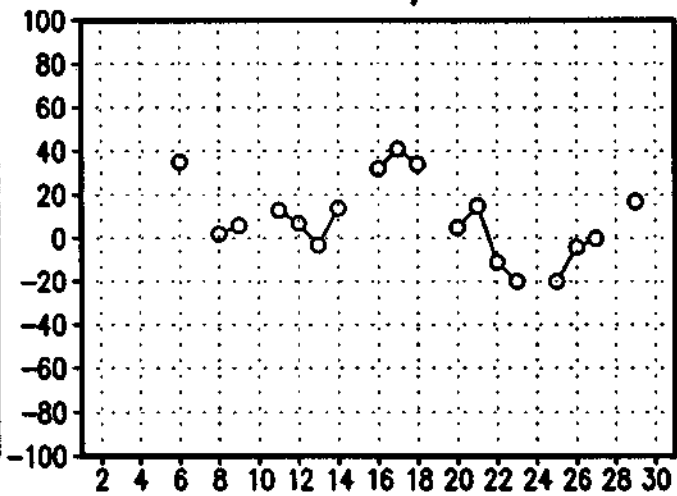
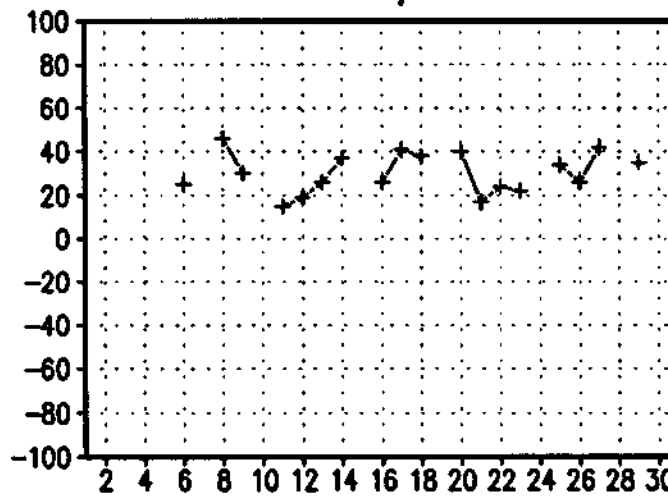
ANOM. A 01/93 18TMG ANOM. B 01/93 18TMG



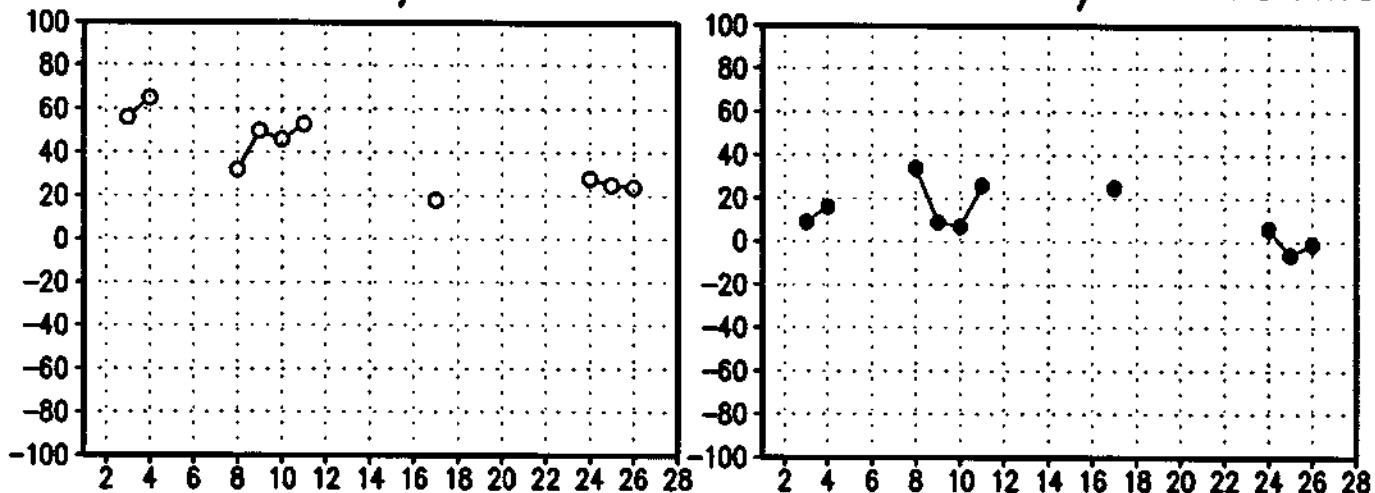
ANOM. C 01/93 18TMG ANOM. D 01/93 18TMG



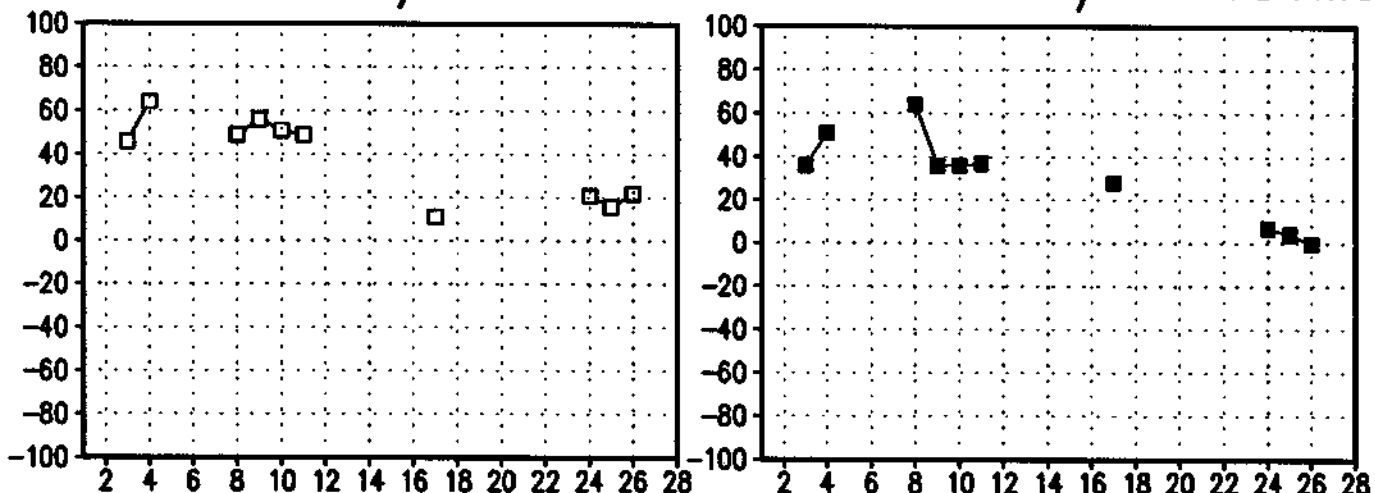
ANOM. E 01/93 18TMG ANOM. NE 01/93 18TMG



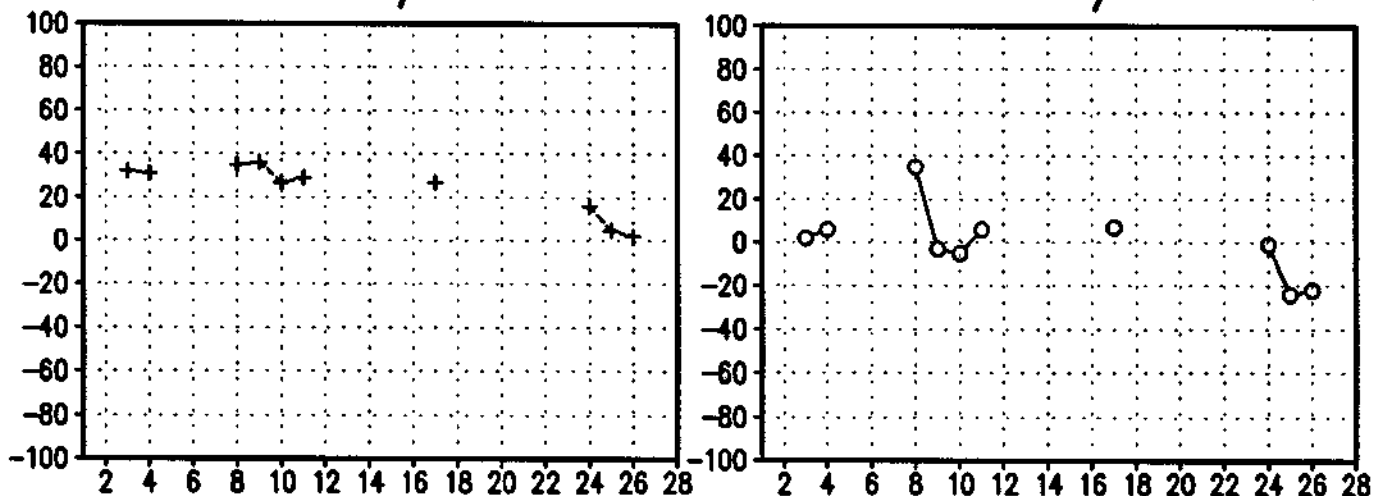
ANOM. A 02/93 18TMG ANOM. B 02/93 18TMG



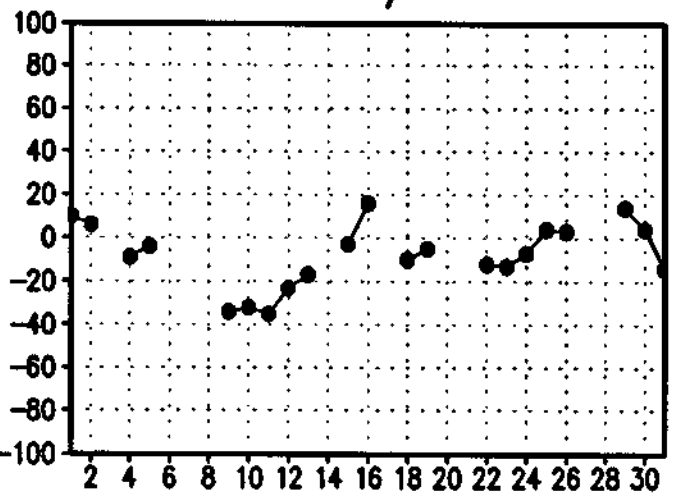
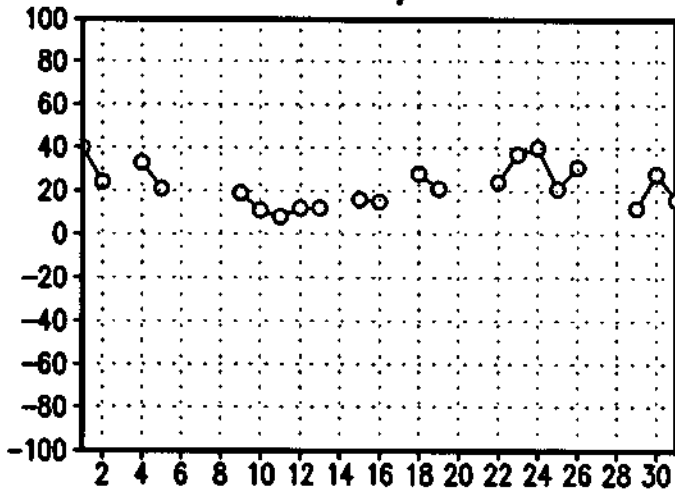
ANOM. C 02/93 18TMG ANOM. D 02/93 18TMG



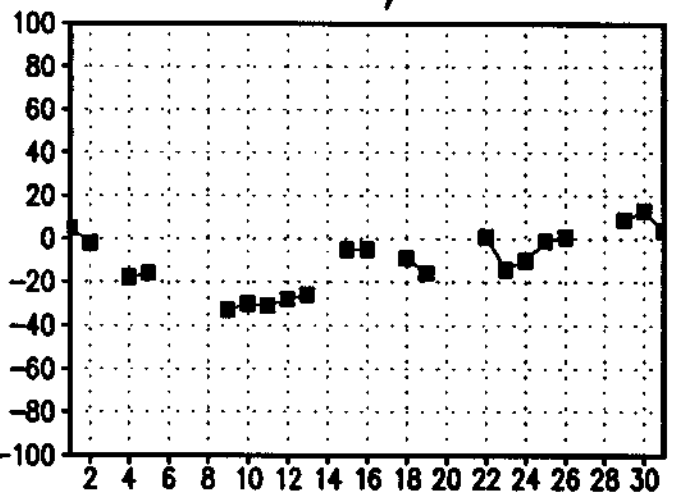
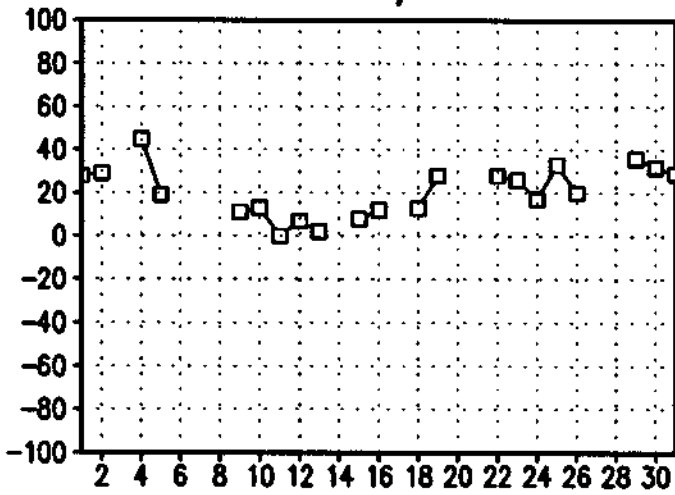
ANOM. E 02/93 18TMG ANOM. NE 02/93 18TMG



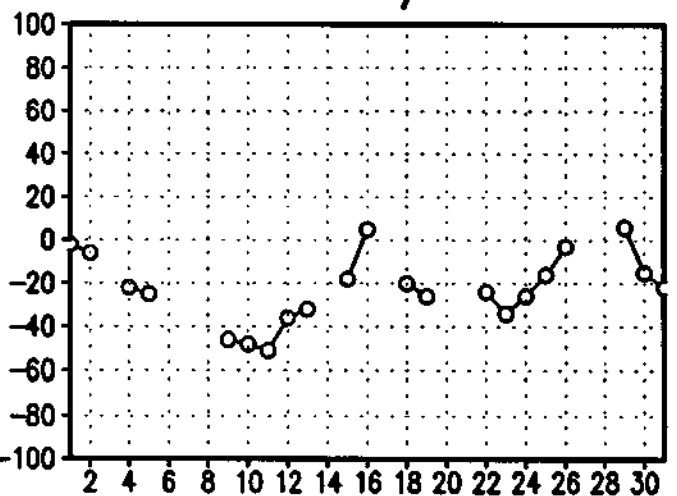
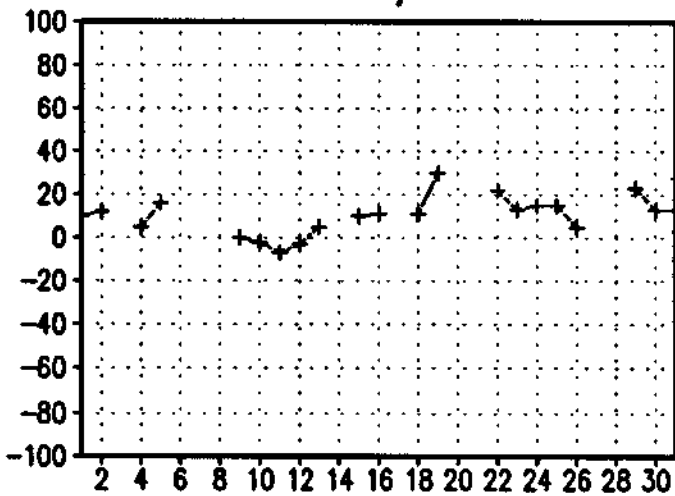
ANOM. A 03/93 18TMG ANOM. B 03/93 18TMG



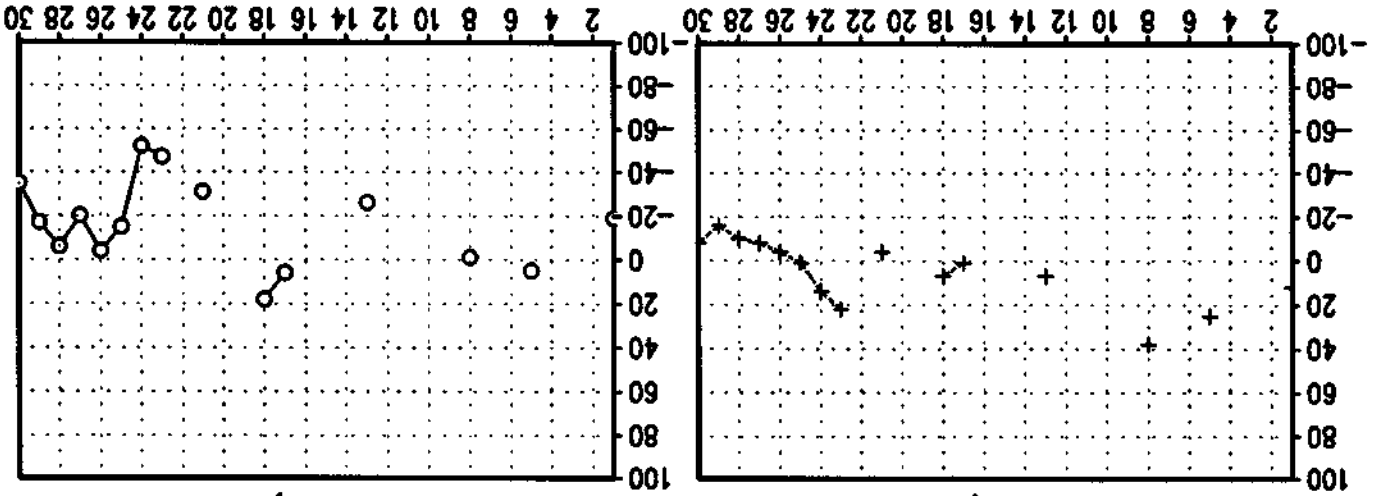
ANOM. C 03/93 18TMG ANOM. D 03/93 18TMG



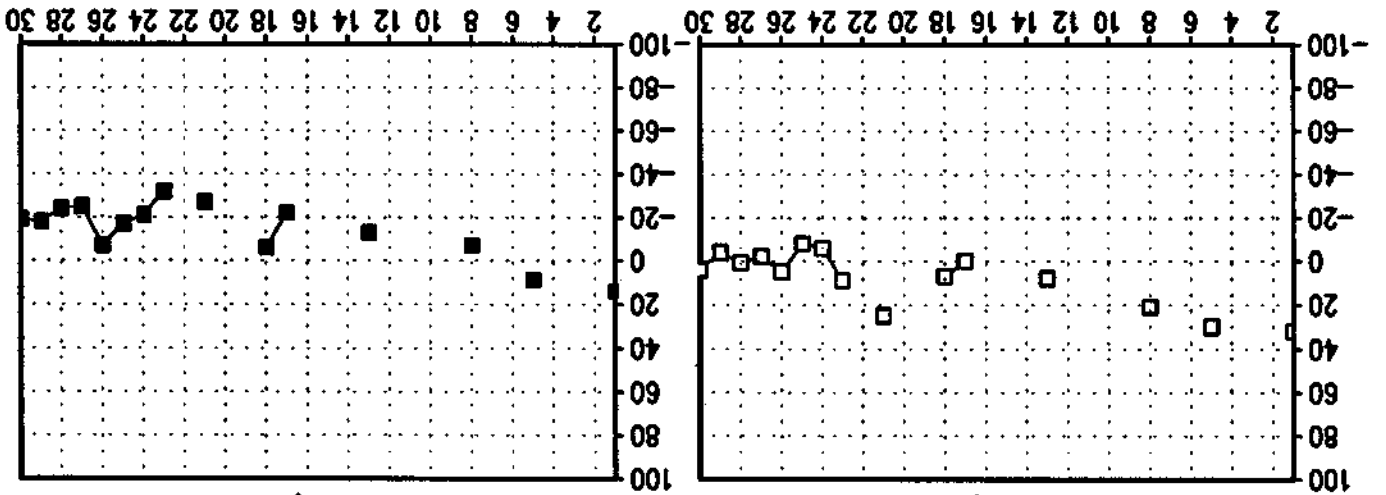
ANOM. E 03/93 18TMG ANOM. NE 03/93 18TMG



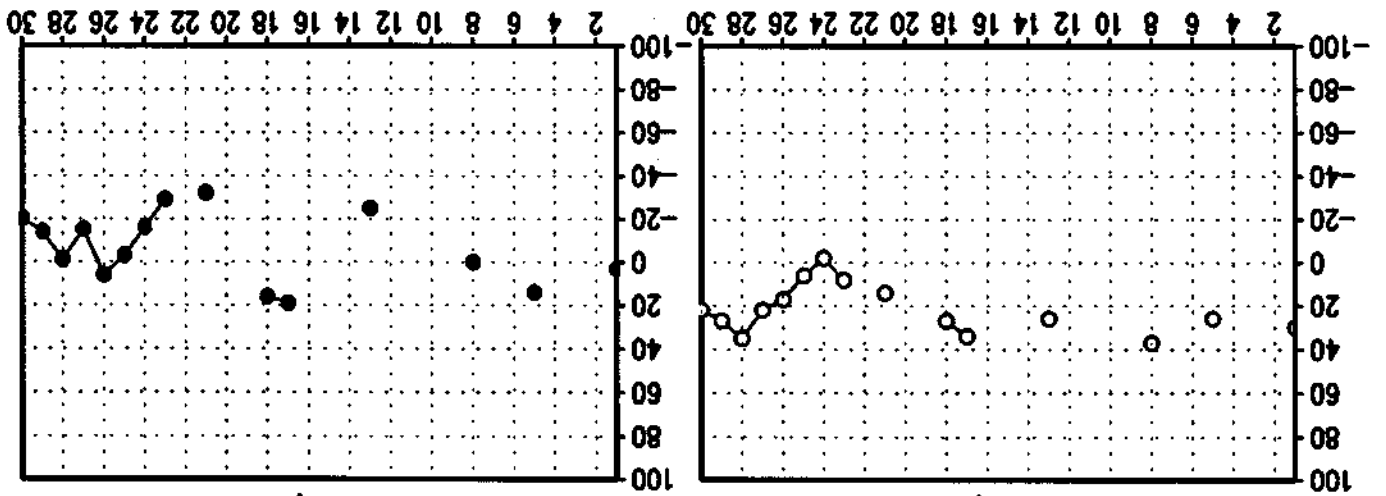
ANOM. E 04/93 19TMG ANOM. NE 04/93 19TMG



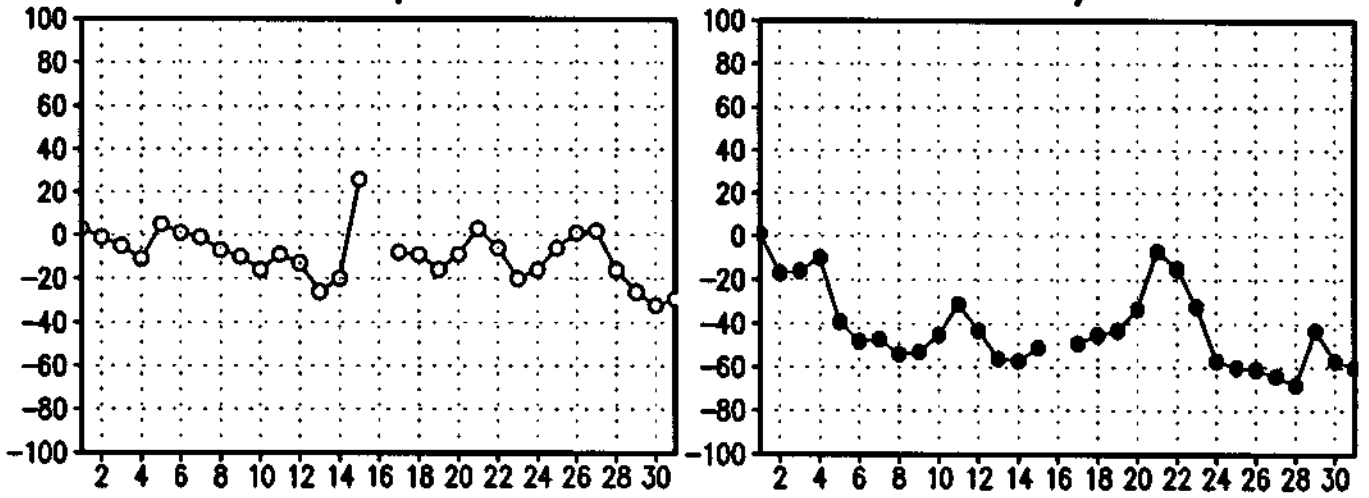
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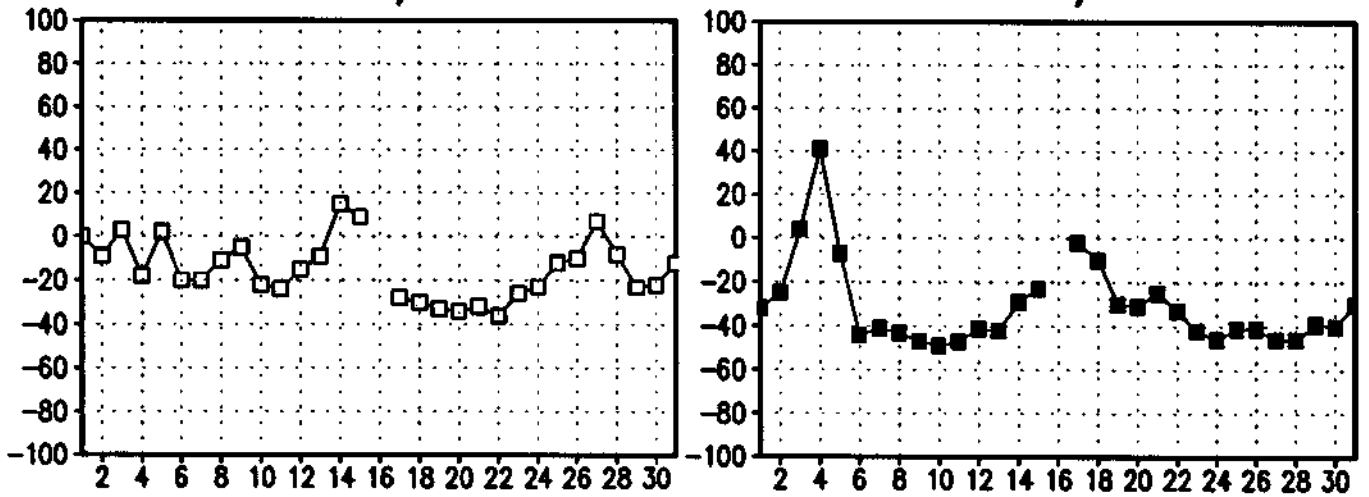
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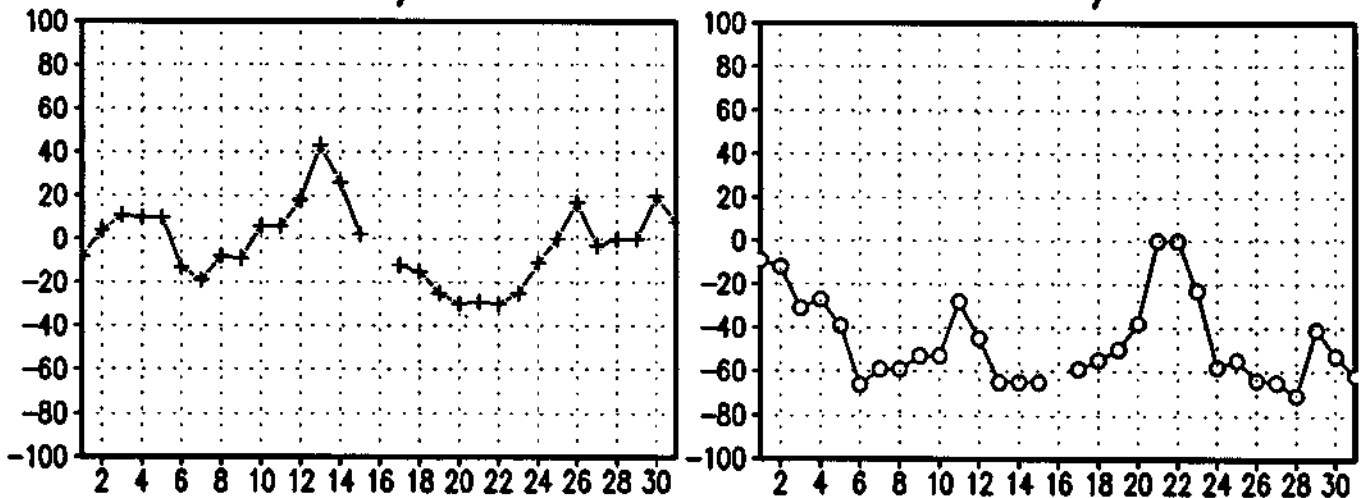
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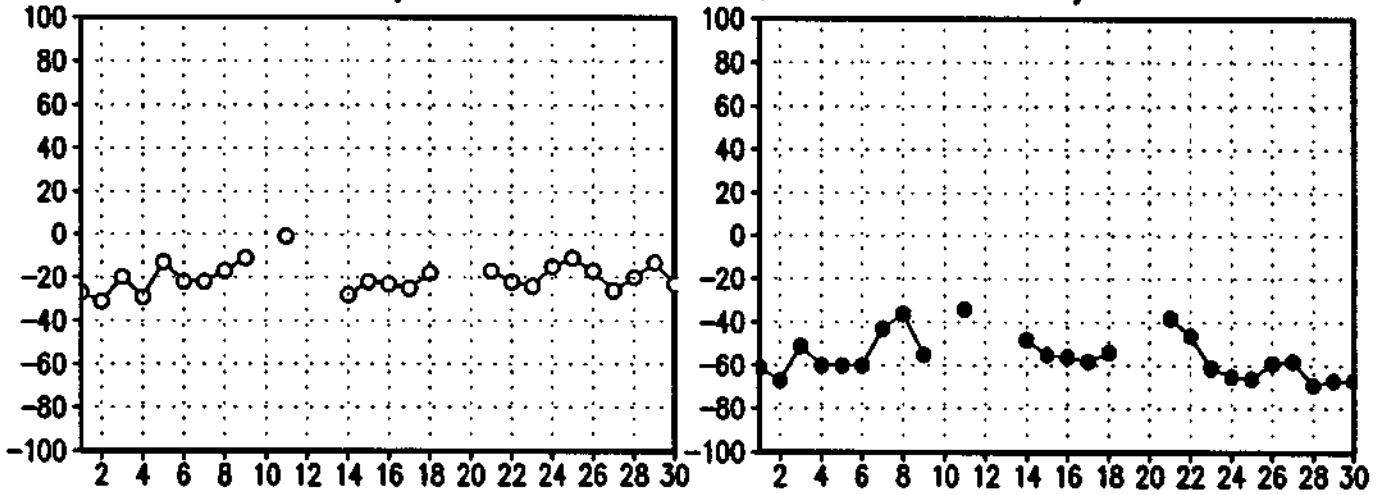
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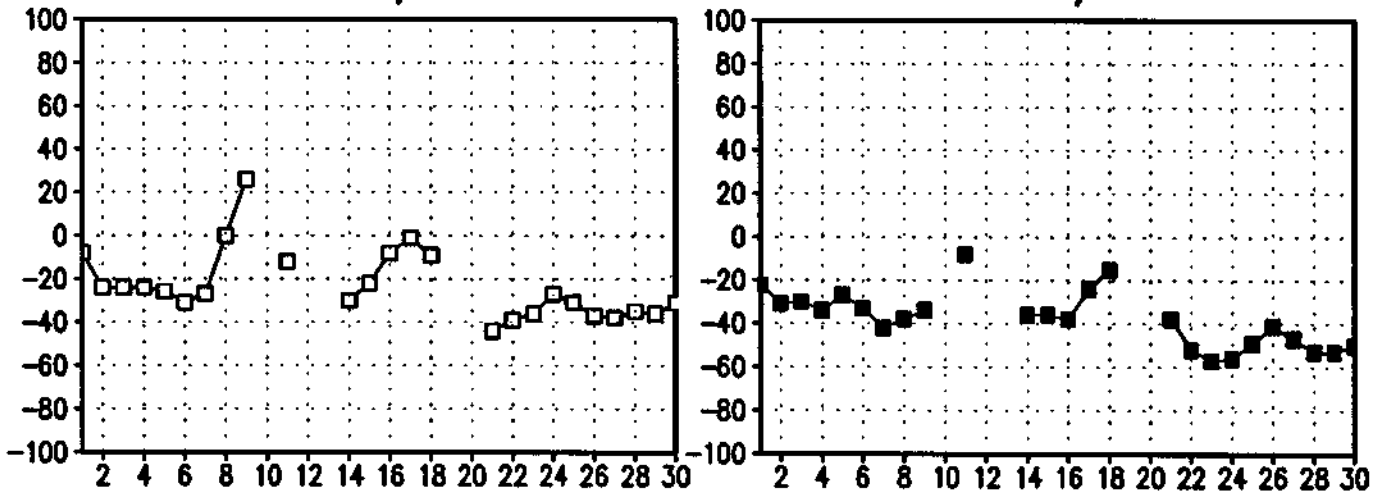
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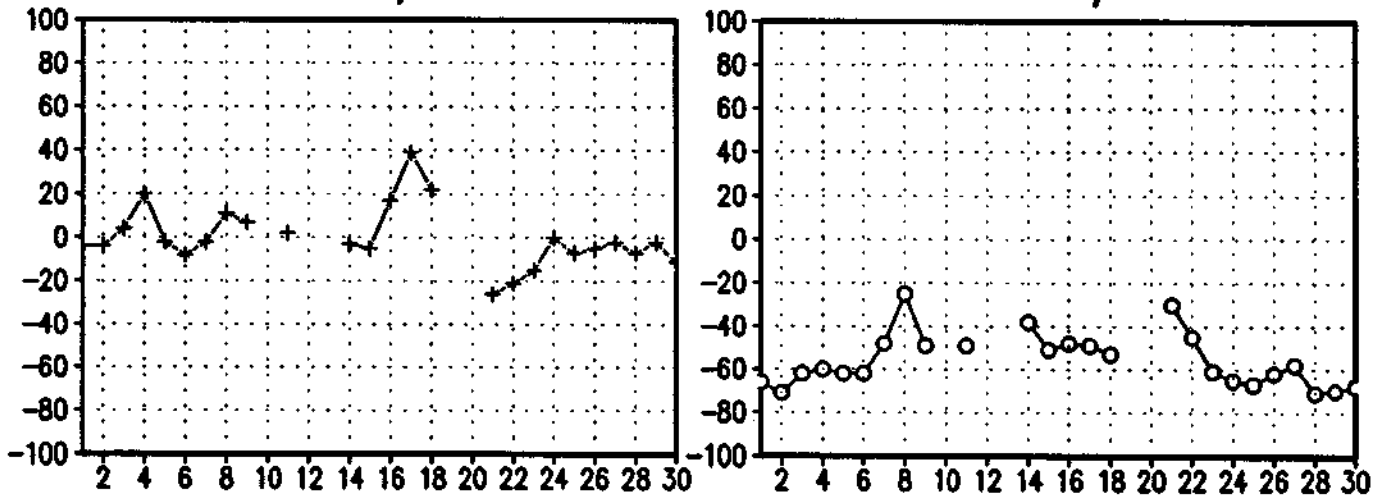
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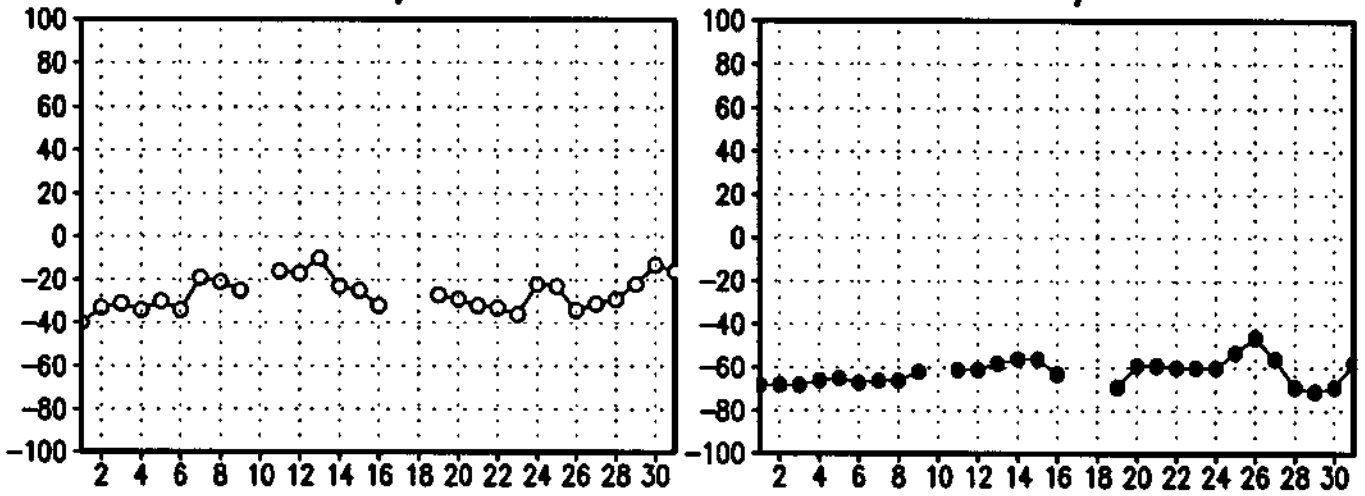
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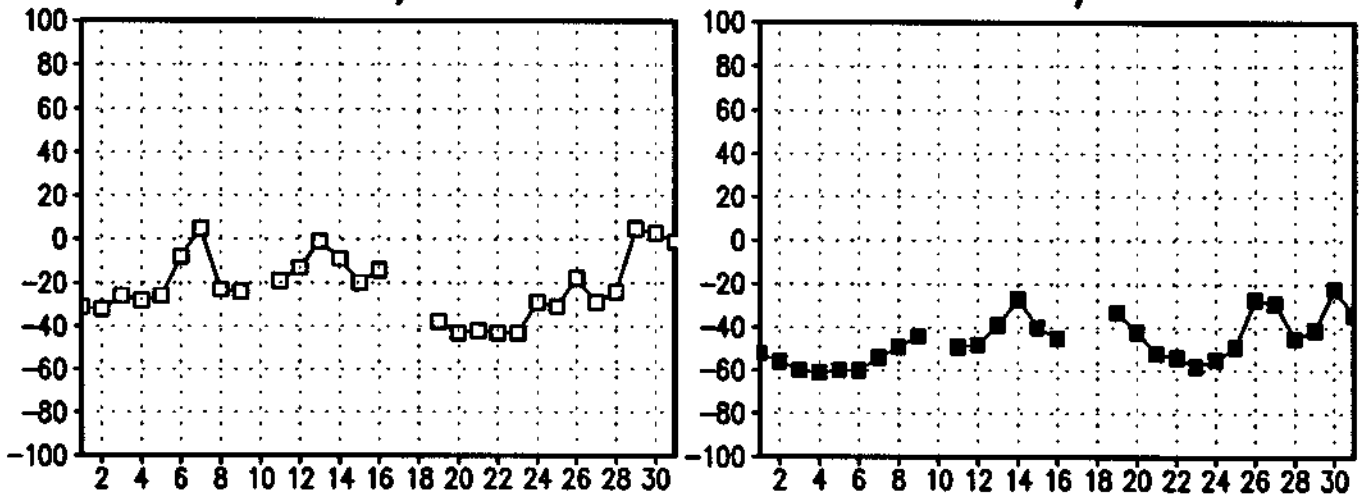
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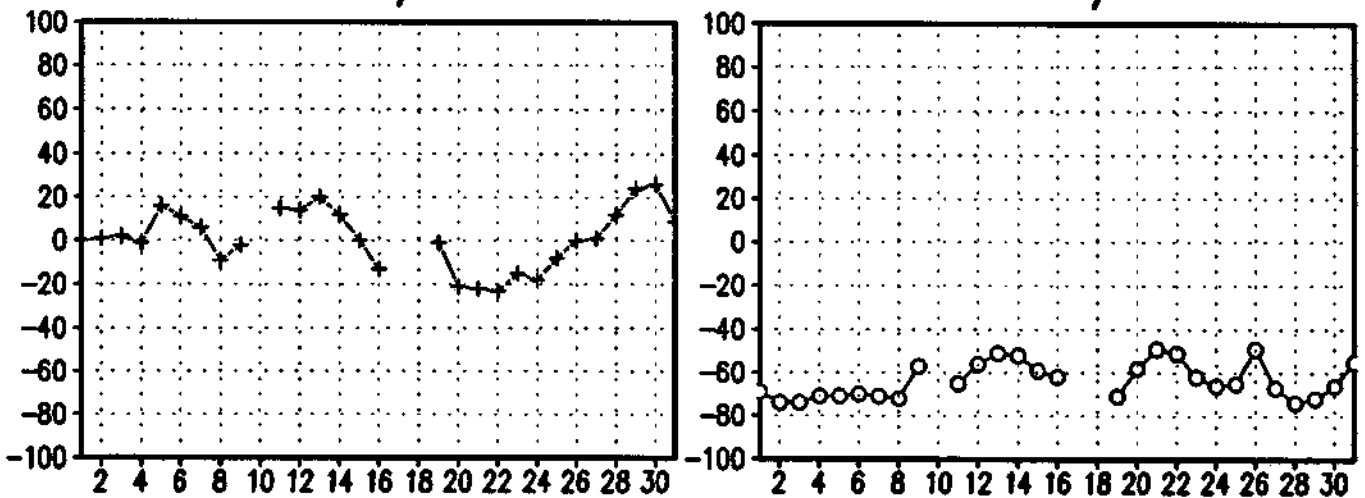
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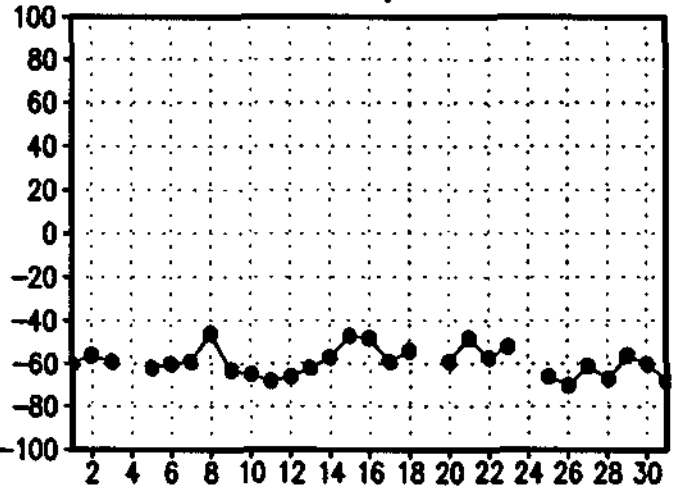
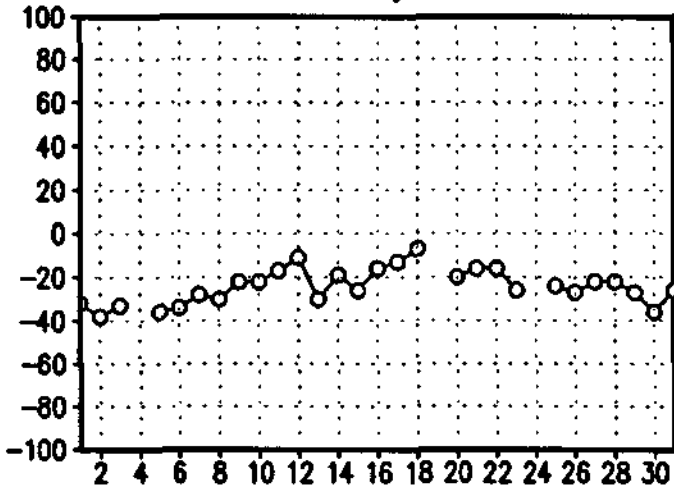
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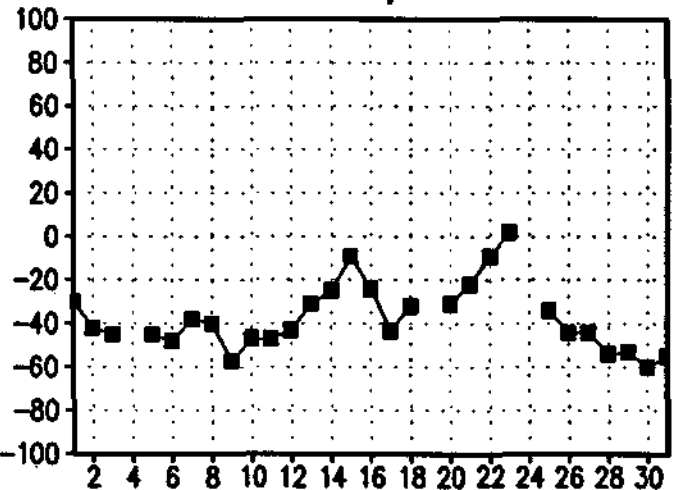
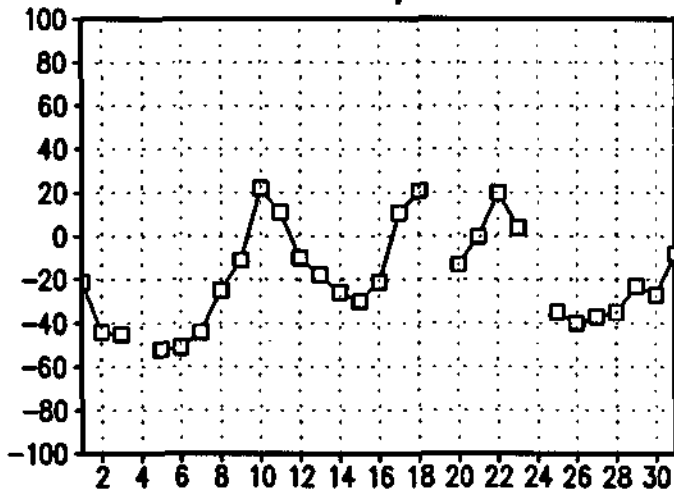
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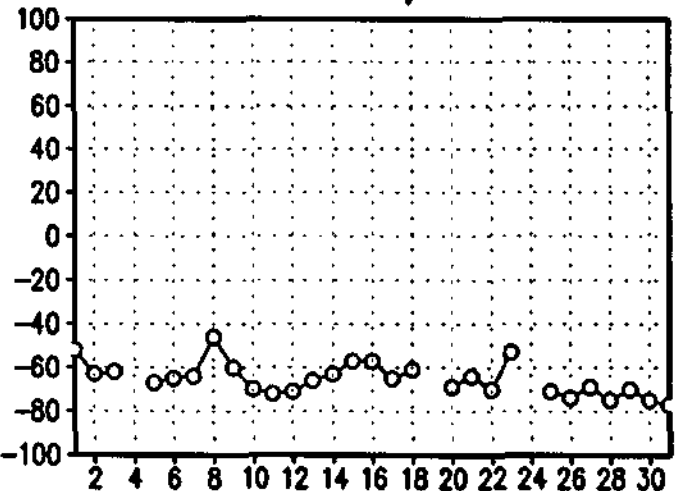
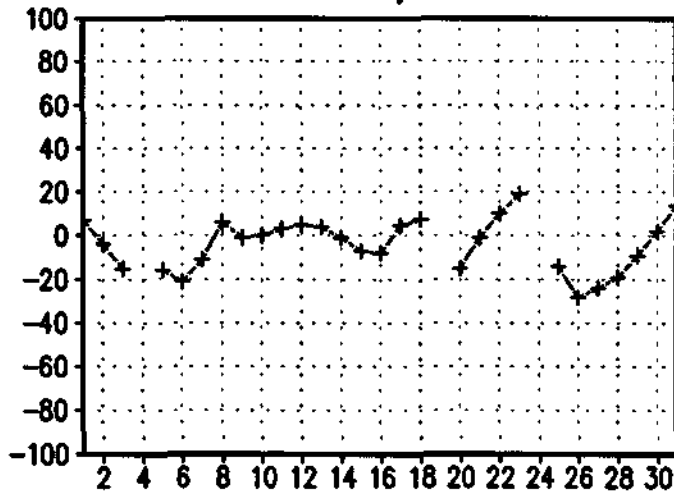
ANOM. A 08/93 18TMG ANOM. B 08/93 18TMG



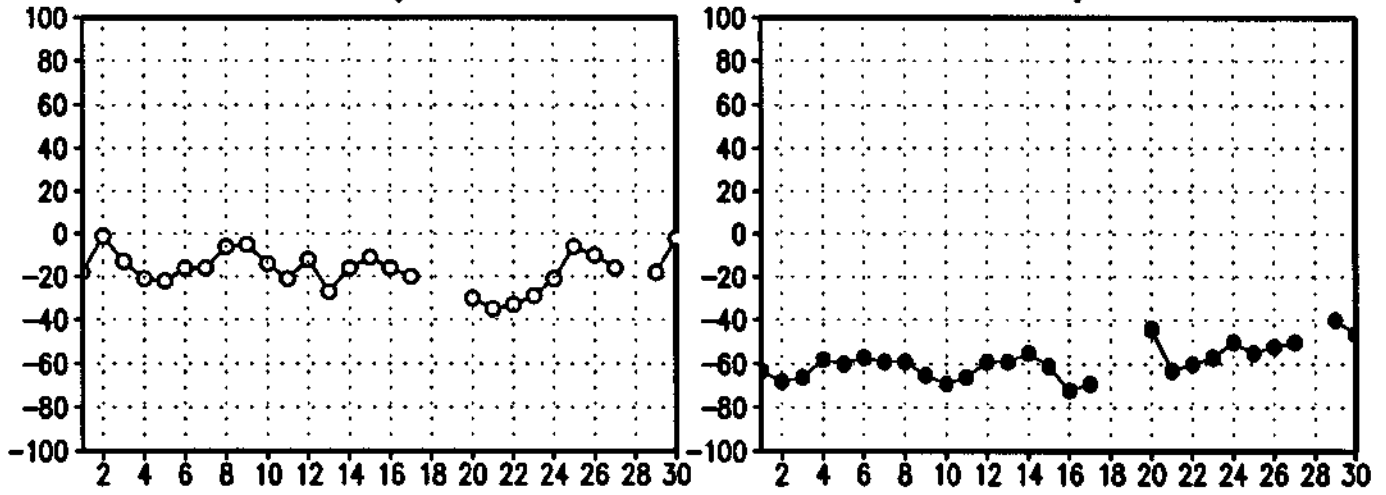
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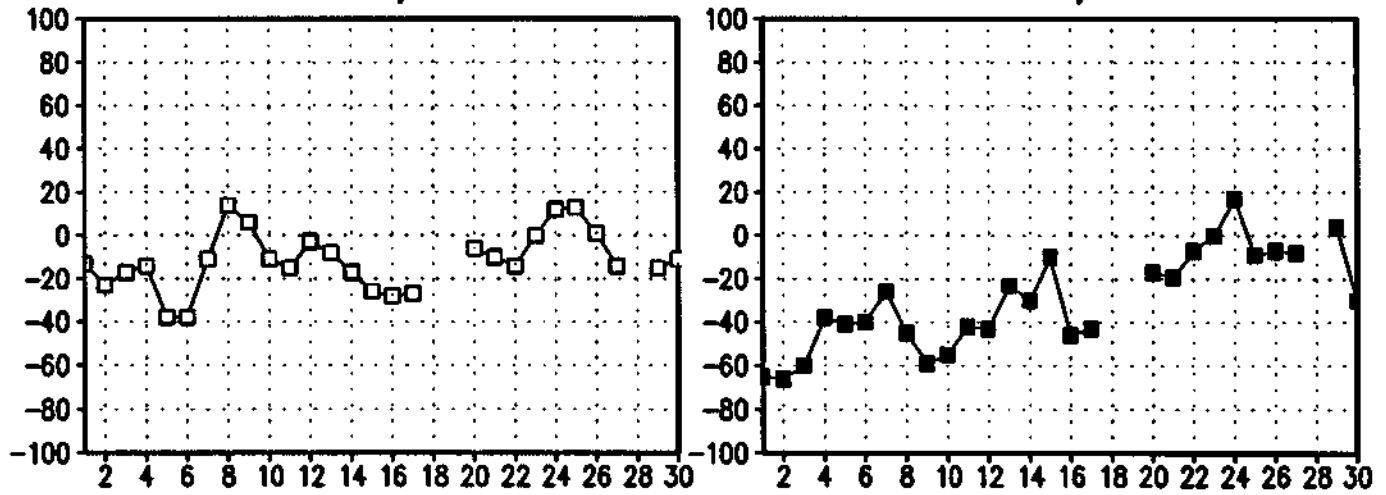
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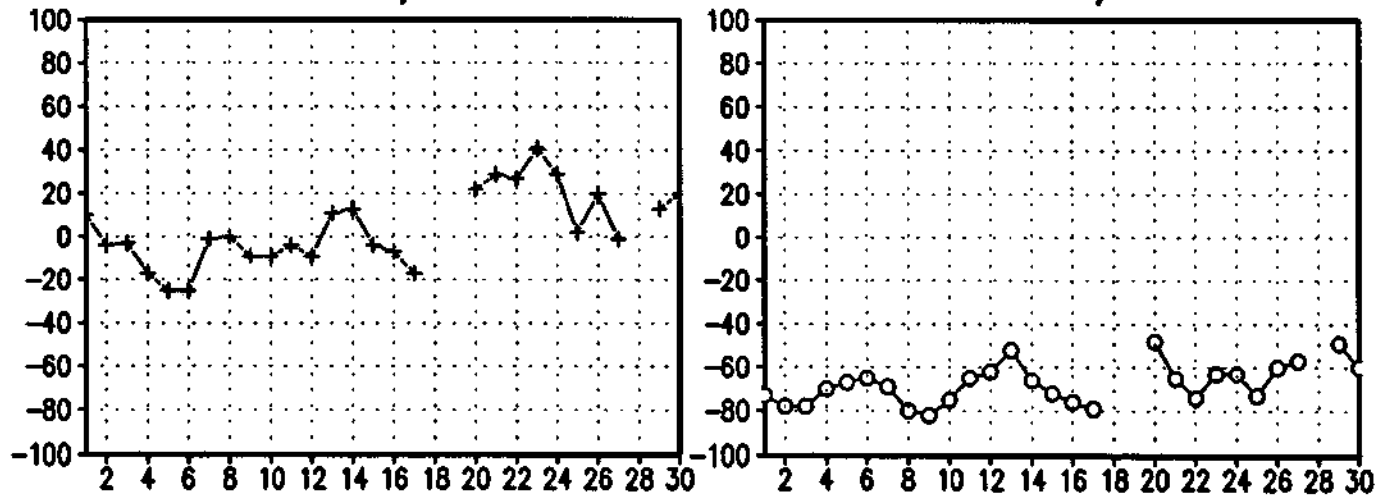
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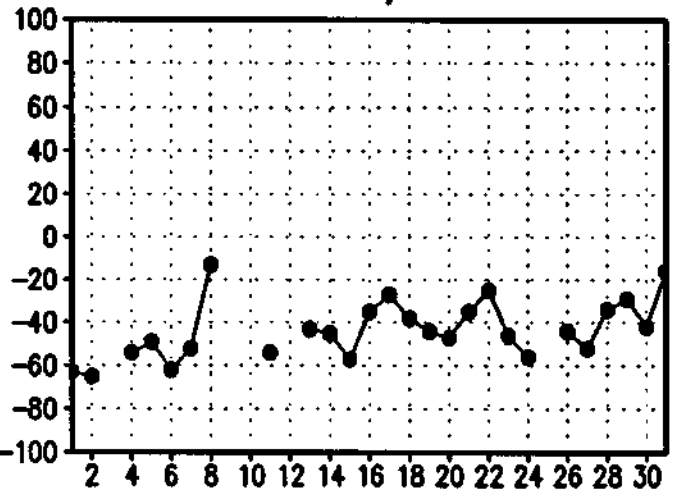
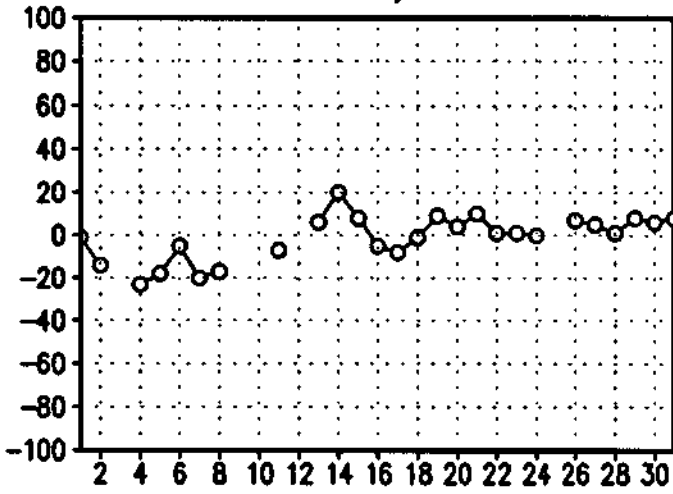
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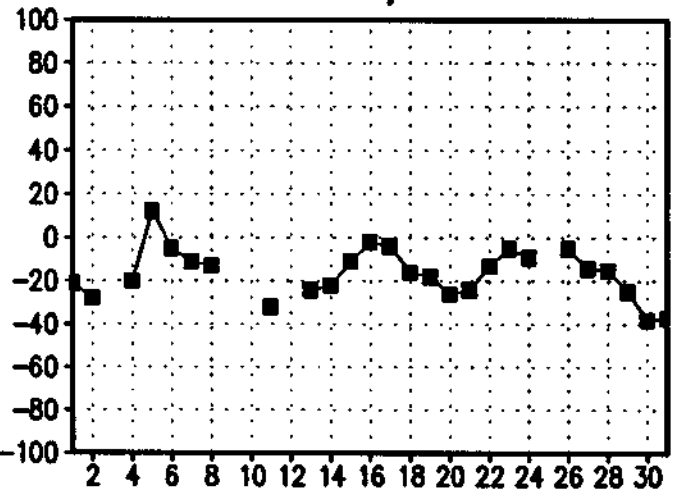
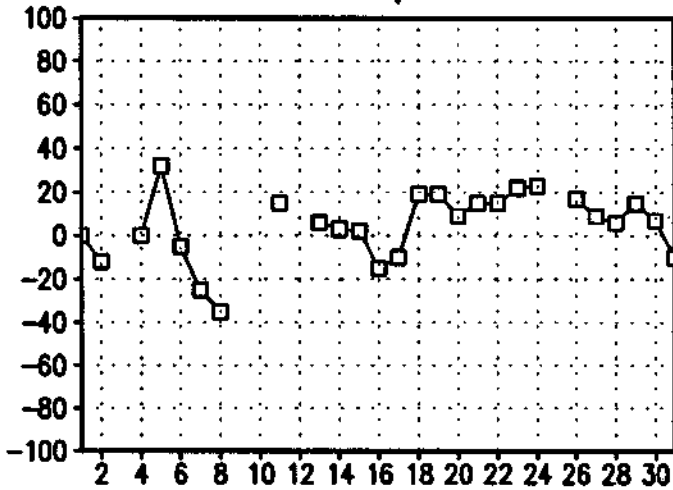
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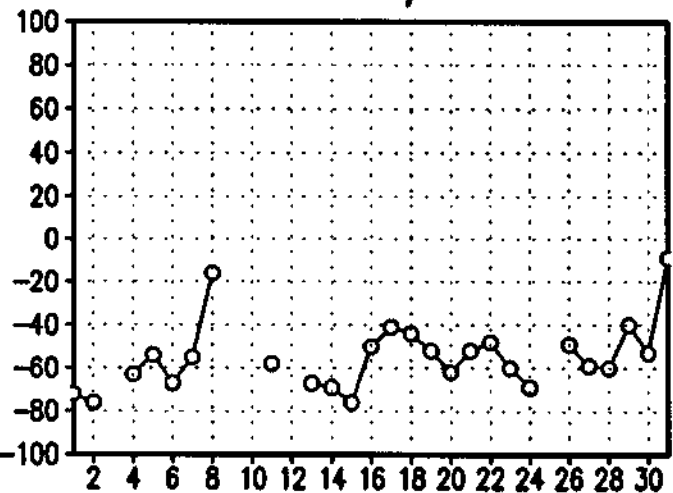
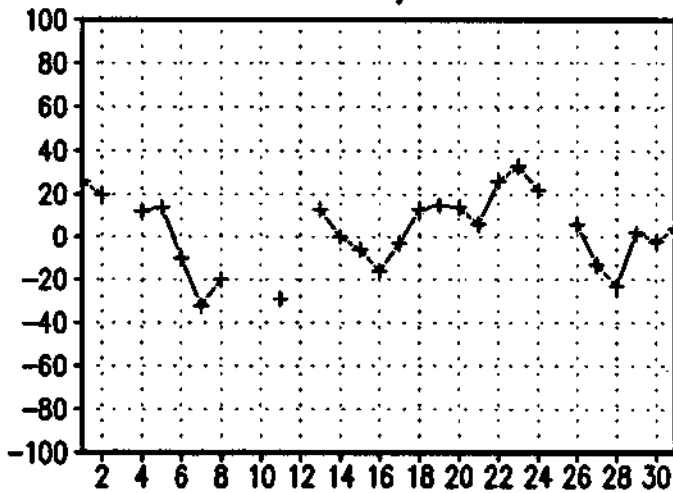
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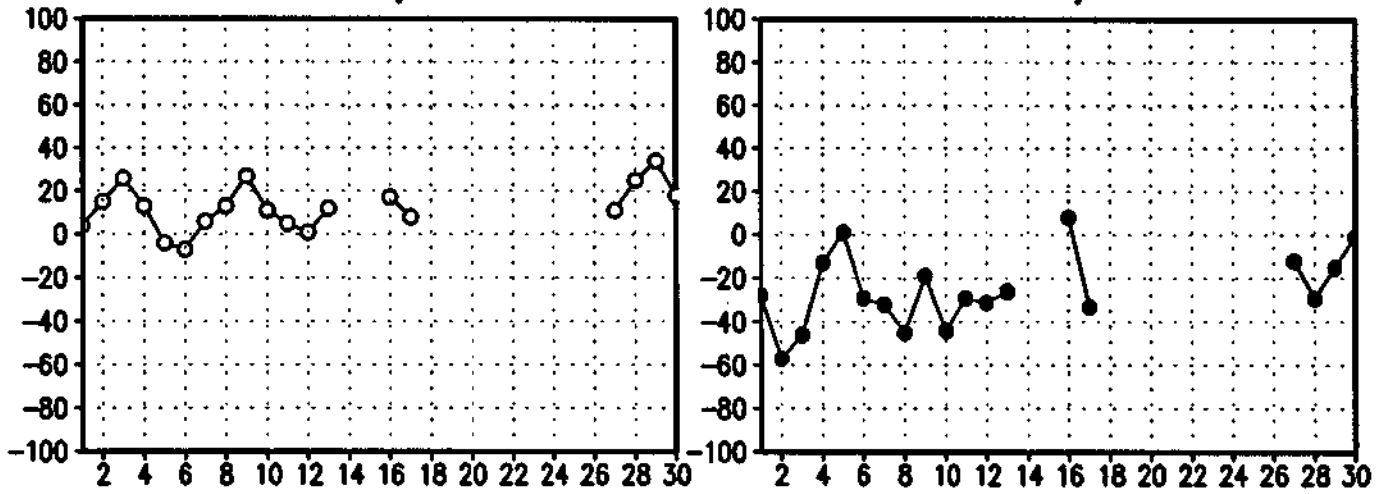
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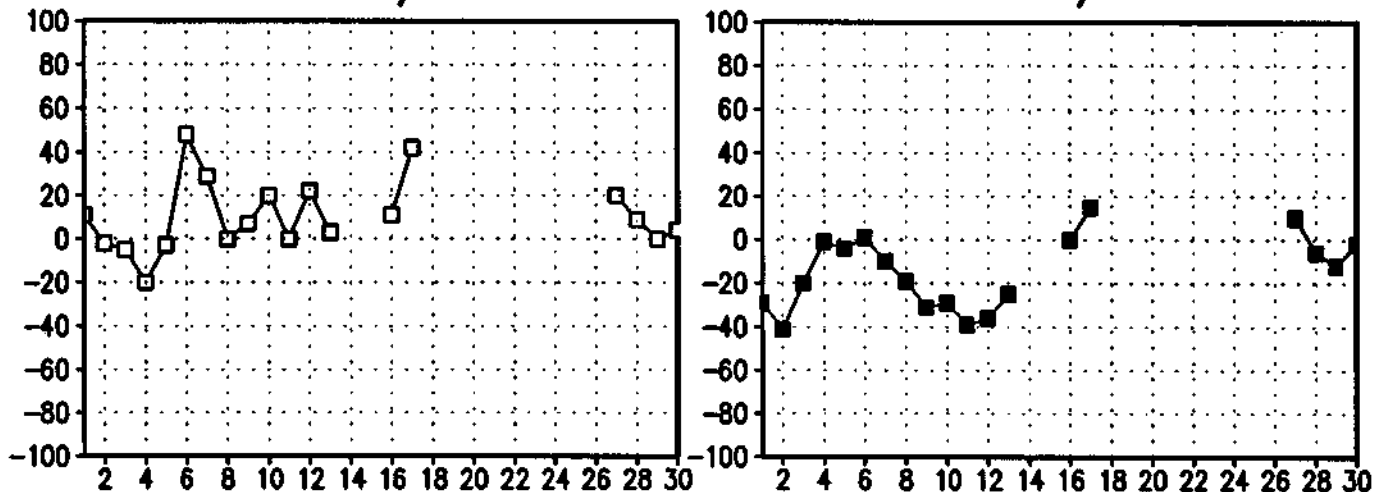
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ANOM. A 11/93 18TMG ANOM. B 11/93 18TMG



ANOM. C 11/93 18TMG ANOM. D 11/93 18TMG



ANOM. E 11/93 18TMG ANOM. NE 11/93 18TMG

