Appendix S2. OpenBUGS code for implementing the aboveground net primary productivity (ANPP) model described in Box 2 in the main text.

The models for all four case studies were implemented in OpenBUGS (Lunn *et al.* 2009) or WinBUGS (Lunn *et al.* 2000), both of which are free software packages for conducting Bayesian statistical analyses. The OpenBUGS/WinBUGS code for the simplest model (i.e., the ANPP model) is provided below, followed by the data used with the ANPP model. We provide two different versions of the model specification code: (1) original code that directly aligns with the model description(s) in the main text, and (2) reparameterized code that implements the same model, but that uses various computational and reparameterization "tricks" to speed-up the model simulations and to improve convergence of the Markov chain Monte Carlo (MCMC) chains, which we found useful in all four case studies. In particular, for the second option, we centered all covariates about their means (i.e., performed "covariate centering") and created an intentionally non-identifiable model (Gelman & Hill 2007) following the ideas of "parameter expansion" (Gelman 2004), but we compute, monitor, and report the identifiable quantities of interest (e.g., the "original" identifiable current and antecedent effects parameters and antecedent importance weights).

References

Gelman A. (2004). Parameterization and Bayesian modeling. *Journal of the American Statistical Association*, 99, 537-545.

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Lunn D., Spiegelhalter D., Thomas A. & Best N. (2009). The BUGS project: Evolution, critique and future directions (with discussion). *Statistics in Medicine*, 28, 3049-3082.

Lunn D.J., Thomas A., Best N. & Spiegelhalter D. (2000). WinBUGS - A Bayesian modelling framework: Concepts, structure, and extensibility. *Statistics and Computing*, 10, 325-337.

(1) Original model code

```
model{
   for(i in 1:N){
      # Data model (or likelihood) for the observed NPP data:
      NPP[i] ~ dnorm(mu[i], tau)
      # Generate “replicated data” to evaluate model fit.
      NPP.rep[i] ~ dnorm(mu[i],tau)
      # Define model for latent (mean) NPP; Event[,k] represents the amount
      # of precipitation received in different size classes, where k indexes
      # the even size class (k=1 for < 5 mm; k=2 for 5-15 mm; k=3 for 15-
      # 30 mm; k=4 for >30 mm); convert antecedent precipitation (antX) from
      # inches to mm.
      mu[i] <- a[1] + a[2]*antX[YearID[i]]*25.4 + a[3]*Event[i,1] +
         a[4]*Event[i,2] + a[5]*Event[i,3] + a[6]*Event[i,4]

      # Some of the precipitation event data are missing, so specify a simple
      # data model for the Event data for the purpose of estimating the
      # missing data:
      for(k in 1:4){
         Event[i,k] ~ dnorm(mu.ev[k], tau.ev[k])
      }
   }

   # Dirichlet prior for monthly precipitation weights (due to restrictions
   # on when the built-in dirichlet distribution can be used, we are required
   # to use the relationship between the gamma distribution and the dirichlet
   # to assign the dirichlet prior. For each time block into the past, assign
   # the unnormalized weight (deltaX) a gamma(1,1) prior:
   for(j in 1:Nblocks){
      deltaX[j] ~ dgamma(1,1)
   }

  for(t in 1:Nlag){
      # Compute the yearly weights:
      yr.w[t] <- sum(weight[,t])
      alphad[t] <- 1
      for(m in 1:12){
         # Redefine the unnormalized monthly weights to account for post-ANPP
         # harvest period; i.e., 2nd part involving equals and step functions
         # sets weight = 0 if in year 1 and in Oct, Nov, or Dec (i.e., post-
         # ANPP harvest).
         delta[m,t] <- (deltaX[block[t,m]])*(1-equals(t,1)*step(m-9.5))
         # Compute normalized monthly weights, which will be between 0 and 1,
         # and will some to one.
         weight[m,t] <- delta[m,t]/sumD
         # Reorder the weights to go from most recent month (Dec of current
         # year) to “oldest” month (Jan at past year = Nlag).
         weightOrdered[(t-1)*12 + (12-m+1)] <- weight[m,t]
         # For each time into the past, compute the weighted precipitation
         # variable.
         for(i in Nlag:Nyrs){
            antX1[i,m,t] <- weight[m,t]*ppt[i-t+1,m]
         }
      }
   }
```

```
    # Compute sum of deltas (unnormalized weights), to be used to compute
    # the normalized antecedent weights:
    for(t in 1:Nlag){
       sumD1[t] <- sum(delta[,t])
    }
    sumD <- sum(sumD1[])

    # Compute the cumulative monthly weights:
    for(t in 1:(12*Nlag)){
       cum.weight[t] <- sum(weightOrdered[1:t])
    }

    # Compute the month within year weights (alpha's = wP,m in Box 1 in main
    # text); that is, these weights sum to 1 within each past year
    for(m in 1:12){
       for(t in 1:Nlag){
          alpha[m,t] <- delta[m,t]/sum(delta[,t])
       }
    }

    # Compute antecedent precipitation by summing the weighted precipitation
    # variable over months and past years:
    for(i in Nlag:Nyrs){
       for(t in 1:Nlag){
          ant.sum1[i,t] <- sum(antX1[i,,t])
       }
       antX[i] <- sum(ant.sum1[i,])
    }

    # Assign priors to the ANPP regression parameters (covariate effects):
    for(k in 1:6){
       a[k] ~ dnorm(0,0.0000001)
    }

    # Prior for residual (observation) standard deviation, and compute
    # associated precision:
    sig ~ dunif(0,100)
    tau <- pow(sig,-2)

    # Priors for parameters in the Event missing data model:
    for(k in 1:4){
       mu.ev[k] ~ dunif(0,500)
       sig.ev[k] ~ dunif(0,500)
       tau.ev[k] <- pow(sig.ev[k],-2)
    }
}
```

(1) Reparameterized code that implements "tricks" to improve convergence

```
model{
   for(i in 1:N){
      # Data model (or likelihood) for the observed NPP data:
      NPP[i] ~ dnorm(mu[i], tau)
      # Generate "replicated data" to evaluate model fit.
      NPP.rep[i] ~ dnorm(mu[i],tau)
      # Define model for latent (mean) NPP; Event[,k] represents the amount
      # of precipitation received in different size classes, where k indexes
      # the even size class (k=1 for < 5 mm; k=2 for 5-15 mm; k=3 for 15-
      # 30 mm; k=4 for >30 mm); convert antecedent precipitation (antX) from
      # inches to mm; center each covariate about their empirical means
      # (ave.antP, ave.Ev), ave.antP is computed inside the code, and
      # ave.Ev is read-in as data.
      mu[i] <- a[1] + a[2]*(antX[YearID[i]]- ave.antP)*25.4 +
         a[3]*(Event[i,1] - ave.Ev[1]) + a[4]*(Event[i,2] - ave.Ev[2]) +
         a[5]*(Event[i,3] - ave.Ev[3]) + a[6]*(Event[i,4]- ave.Ev[4])

      # Some of the precipitation event data are missing, so specify a simple
      # data model for the Event data for the purpose of estimating the
      # missing data:
      for(k in 1:4){
         Event[i,k] ~ dnorm(mu.ev[k], tau.ev[k])
      }
   }

   # Dirichlet prior for monthly precipitation weights (due to restrictions
   # on when the built-in dirichlet distribution can be used, we are required
   # to use the relationship between the gamma distribution and the dirichlet
   # to assign the dirichlet prior.
   for(j in 1:Nblocks){
      # Assign gamma prior to the unnormalized weights:
      deltaX[j] ~ dgamma(1,1)
      # Compute the identifiable, normalized weights:
      weightX[j] <- deltaX[j]/sum(deltaX[])
   }

  for(t in 1:Nlag){
      # Compute identifiable yearly weights:
      yr.w[t] <- sum(weight[,t])
      # Loop through models (Jan – Dec):
      for(m in 1:12){
         # Compute identifiable monthly weights:
         weight[m,t] <- delta[m,t]/sumD
         # Reorder the weights to go from most recent month (Dec of current
         # year) to "oldest" month (Jan at past year = Nlag).
         weightOrdered[(t-1)*12 + (12-m+1)] <- weight[m,t]
         # Compute the unnormalized monthly weights; 2nd part involving
         # equals and step functions sets weight = 0 if in year 1 and in Oct,
         # Nov, or Dec (i.e., post-ANPP harvest).
         delta[m,t] <- (deltaX[block[t,m]])*(1-equals(t,1)*step(m-9.5))
         # For each time into the past, compute non-identifiable weighted
         # precipitation variable (i.e., use delta as "weight").
         for(i in Nlag:Nyrs){
```

```
         antX1[i,m,t] <- delta[m,t]*ppt[i-t+1,m]
      }
   }
}

# Compute sum of deltas (unnormalized weights), to be used to compute
# identifiable (actual) antecedent weights:
for(t in 1:Nlag){
   sumD1[t] <- sum(delta[,t])
}
sumD <- sum(sumD1[])

# Compute the cumulative monthly weights:
for(t in 1:(12*Nlag)){
   cum.weight[t] <- sum(weightOrdered[1:t])
}

# Compute the non-identifiable antecedent precipitation variable by
# summing over months and past years:
for(i in Nlag:Nyrs){
   for(t in 1:Nlag){
      ant.sum1[i,t] <- sum(antX1[i,,t])
   }
   antX[i] <- sum(ant.sum1[i,])
}

# Compute the mean of the non-identifiable antecedent precipitation
# variable, for use with the covariate centering in the NPP mean model:
for(m in 1:12){
   ppt.meanX[m] <- sum(delta[m,])*ppt.mean[m]
   ppt.mean[m] <- mean(ppt[,m])
}
ave.antP <- sum(ppt.meanX[])

# Compute the identifiable month within year weights (alpha's = wP,m in
# Box 1 in main text); that is, these weights sum to 1 within each past
# year
for(m in 1:12){
   for(t in 1:Nlag){
      alpha[m,t] <- delta[m,t]/sum(delta[,t])
   }
}

# Assign priors to the ANPP regression parameters (covariate effects):
for(k in 1:6){
   # Priors for non-identifiable parameters:
   a[k] ~ dnorm(0,0.0000001)
   # Compute identifiable parameters for the covariate-centered ANPP model
   a.star[k] <- a[k]*((1-equals(k,2)) + equals(k,2)*sumD)
}

# Prior for residual (observation) standard deviation, and compute
# associated precision:
sig ~ dunif(0,100)
tau <- pow(sig,-2)

# Priors for parameters in the Event missing data model:
```

```
    for(k in 1:4){
        mu.ev[k] ~ dunif(0,500)
        sig.ev[k] ~ dunif(0,500)
        tau.ev[k] <- pow(sig.ev[k],-2)
    }
}
```

Data sets:

Data set 1: Data related to sample sizes, covariate centering, and time-steps; e.g., **Nlag** is the number of past years, including the current year, for which antecedent conditions are compute, and **block** indicates the time block that each month is assigned to such that for 60 different months, we are only estimating 38 unique monthly weights.

```
list(N=52,Nlag=5, Nyrs=91, ave.Ev = c(71.83, 124.04, 88.31, 39.67), block =
structure(.Data=c(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,
18, 19, 20, 21, 22, 23, 24, 25, 25, 26, 26, 27, 27, 28, 28, 29, 29, 30, 30,
31, 31, 31, 32, 32, 32, 33, 33, 33, 34, 34, 34, 35, 35, 35, 36, 36, 36, 37,
37, 37, 38, 38, 38),.Dim=c(5,12)), Nblocks = 38)
```

*Remove ave.Ev for the original (option 1) model code

Data set 2: ANPP and precipitation event data for each year, extracted from Lauenroth and Sala (1992).

Year[]	NPP[]	YearID[]	Event[,1]	Event[,2]	Event[,3]	Event[,4]
1939	50	40	NA	NA	NA	NA
1940	NA	41	74	76	106	83
1941	74	42	NA	NA	NA	NA
1942	123	43	NA	NA	NA	NA
1943	123	44	80	159	137	115
1944	75	45	48	64	55	38
1945	66	46	56	133	98	0
1946	67	47	42	148	106	0
1947	96	48	67	117	84	70
1948	50	49	100	93	0	0
1949	82	50	95	169	76	0
1950	54	51	77	163	0	59
1951	70	52	80	126	89	35
1952	95	53	61	130	162	0
1953	73	54	56	88	103	54
1954	22	55	62	45	15	0
1955	32	56	89	74	133	31
1956	50	57	40	117	15	72
1957	64	58	85	182	77	71
1958	77	59	97	155	79	0

1959	83	60	68	146	56	37
1960	57	61	66	109	0	0
1961	76	62	81	152	136	36
1962	81	63	59	134	165	41
1963	80	64	59	86	155	38
1964	25	65	43	65	0	0
1965	48	66	51	193	83	44
1966	49	67	52	120	36	85
1967	90	68	70	174	177	167
1968	77	69	61	161	76	36
1969	86	70	NA	NA	NA	NA
1970	72	71	70	101	71	0
1971	73	72	56	92	114	0
1972	24	73	72	181	55	67
1973	68	74	68	120	53	34
1974	22	75	43	91	64	70
1975	63	76	75	73	142	34
1976	44	77	83	135	42	0
1977	27	78	57	108	83	0
1978	37	79	78	46	126	42
1979	88	80	90	184	184	36
1980	NA	81	62	138	116	45
1981	128	82	77	122	162	36
1982	117	83	74	106	139	155
1983	91	84	61	127	167	73
1984	103	85	85	152	100	70
1985	84	86	119	128	74	0
1986	55	87	108	157	0	0
1987	63	88	107	167	57	0
1988	57	89	76	80	92	86
1989	55	90	72	109	75	44
1990	58	91	96	158	104	0
END						

Data set 3 on next page.

Data set 3: Monthly precipitation data; data were obtained for Fort Collins, Colorado, which is located about 56 miles southwest of the CPER site. Fort Collins' monthly precipitation totals (mm) for 1893-2009 were downloaded from the Western Regional Climate Center. Ideally, we would want to use monthly precipitation from the study site (CPER), but this site did not provide complete monthly records for multiple years prior to the onset of the ANPP measurements.

Year[]	ppt[,1]	ppt[,2]	ppt[,3]	ppt[,4]	ppt[,5]	ppt[,6]	ppt[,7]	ppt[,8]	ppt[,9]	ppt[,10]	ppt[,11]	ppt[,12]
1900	0.25	1.12	1.07	10.56	1.75	0.82	1.14	0.16	1.92	0.15	0.07	0.11
1901	0.19	0.38	1.88	3.62	7.47	2.35	0.71	0.72	2.1	0.36	0.02	1.37
1902	0.32	0.15	1.5	0.61	2.13	2.43	1.31	0.67	7.12	1.15	0.27	0.77
1903	0.16	1.6	1.03	1.5	0.63	2.23	1.06	0.82	0.87	1.7	0.18	0.07
1904	0.04	0.34	0.51	0.89	5.37	1.68	1.99	0.71	1.09	0.39	0	0.12
1905	0.29	0.35	1.75	6.32	4.13	0.64	2.18	1.25	0.28	2.6	0.07	0
1906	0.01	0.03	2.44	4.3	2.39	1.8	1.96	0.8	3.08	1.59	1.35	0.12
1907	0.23	0.36	0.58	2.98	2.44	0.44	2.28	1.27	0.58	0.08	0.44	0.03
1908	0.11	0.01	0.28	0.05	5.83	1.15	3.66	2.12	0.54	1.78	1.06	0.6
1909	0.02	0.91	3.35	1.34	1.06	2.59	1.98	1.45	2.09	0.08	0.79	0.58
1910	0.29	0.16	0.06	0.42	4.75	1.04	0.87	1.92	1.79	1.03	0.11	0.48
1911	0.34	1.52	0.05	1.89	0.72	1.78	1.47	0.59	0.8	0.93	0.43	0.37
1912	0.37	1.65	1.79	0.9	2.84	2.43	2.93	1.26	2.66	2.03	0.59	0.21
1913	0.3	0.94	0.19	1.49	2.04	0.15	2.63	0.41	2.18	0.98	0.17	4.08
1914	0.35	0.3	0.87	3.23	2.76	1.97	1.68	1.27	0.02	1.58	0.12	0.15
1915	0.12	1.41	1.73	3.91	3.78	1.9	2.12	1.56	2.97	1.97	0.1	0.82
1916	0.84	0.11	0.31	0.86	3.85	0.6	0.65	0.71	0.7	2.92	0.98	0.62
1917	0.4	1.04	0.99	1.22	5.79	0.03	1.19	1.21	0.45	0.62	0.4	0.31
1918	0.41	1.05	0.12	3.68	2.95	1.18	4.83	1.91	3.23	0.71	0.9	0.76
1919	0	0.3	1.65	0.92	0.45	0.19	0.64	0.61	2.61	1.9	1.22	0.39
1920	0.54	0.64	0.14	3.6	1.95	0.4	0.58	1.72	0.6	0.5	0.24	0.54
1921	0.96	0.19	0.13	1.63	1.97	3.66	1.36	2.43	0.68	0.37	0.32	0.89
1922	0.35	0.53	0.36	2.8	0.87	1.03	0.8	0.74	0.02	0.74	1.44	0.31
1923	0.19	1.39	2.74	2.18	4.46	6.23	4.5	0.62	1.36	3.55	0.1	0.25
1924	0.51	0.54	1.83	0.93	3.9	0.22	0.21	0.05	0.84	0.78	0.09	0.74
1925	0.27	0.09	0.58	0.1	1.18	1.5	1.85	1.32	1.96	3.26	0.89	1.5

1926	0.25	0.28	1.54	2.99	1.76	1.58	0.93	0.86	1.03	1.15	0.36	0.83
1927	0.04	0.4	1.87	2.69	0.91	2.17	2.19	2.1	1.1	0.92	1	0.25
1928	0.26	0.5	1.38	0.97	3.35	2.73	0.83	0.69	0.09	1.5	1.15	0.06
1929	0.21	0.7	1.78	2.37	1.08	0.61	0.46	2.35	2.13	0.99	0.93	0.09
1930	0.45	0.07	0.7	0.56	4.08	1.5	0.95	5.46	0.16	0.36	0.7	0.14
1931	0	1.26	0.41	1.07	2.55	1.5	0.07	0.81	0.4	1	0.63	0.18
1932	0.08	0.48	1.09	0.88	2.14	1.11	2.13	3.68	0.01	0.34	0.34	0.49
1933	0.16	0.13	0.6	1.86	4.56	0.05	0.71	4.34	2.1	0	0.06	1.03
1934	0.01	1.11	0.7	1.41	1.45	1.25	1.33	0.28	0.79	0	0.06	0
1935	0.07	0.89	0.21	1.24	6.71	0.62	1.14	0.5	3.29	0.61	0.66	0
1936	0.04	0.39	0.71	1.17	1.1	2.9	0.95	1.46	1.11	1.38	0.18	0.38
1937	0.36	0.53	1.14	2.23	1.48	1.94	1.18	0.63	0.09	0.71	0.56	1.52
1938	0.42	0.27	1.32	2.47	2.7	1.81	0.93	0.47	7.34	0.72	0.54	0.76
1939	0.41	0.6	1.6	1.42	1.56	0.43	0	1.01	0.15	0.4	0.03	0.24
1940	1.29	0.54	0.63	1.39	1.83	0.24	1.07	0.32	5.33	0.46	0.59	0.15
1941	0.58	0.04	1.16	3.49	2.01	1.87	0.9	4.19	1.28	1.33	0.18	0.68
1942	0.32	0.88	0.2	4.5	2.26	2.37	0.34	1.48	0.75	6.7	0.5	0
1943	0.22	0.48	0.71	1.45	5.95	1.06	0.93	0.56	0.1	0.29	0.33	0.18
1944	0.45	0.35	2.01	4.1	1.98	1.23	2.25	0.09	0.19	0.14	0.13	0.21
1945	0.73	0.34	0.42	3.02	1.88	2.83	0.44	3.55	1.31	0.8	0.15	0.26
1946	0.13	0.1	0.78	0.43	2.8	1.32	2.93	1.68	0.78	1.23	1.98	0.07
1947	0.42	0.89	0.95	1.41	3.62	4.48	0.8	0.55	0.5	2.64	0.88	0.81
1948	1.01	0.7	0.68	0.67	2.16	1.88	0.36	0.75	0.2	0.72	0.38	0.94
1949	0.35	0.11	1.96	1.53	2.94	6.31	3.13	0.74	0.42	1.24	0	0.06
1950	0.36	0.17	0.36	2	3.91	1.33	1.38	0.6	1.7	0.31	0.5	0.08
1951	0.73	0.7	0.35	1.11	2.59	2.11	1.97	7.39	0.96	2.73	0.66	0.94
1952	0.07	0.08	1.57	1.89	3.71	2.46	0.72	0.97	0.04	0.2	1.03	0
1953	0.19	0.49	1.05	1.87	1.88	2.79	1.23	0.65	0.48	0.12	0.45	0.22
1954	0.11	0.06	0.9	0.35	1.14	0.89	0.95	1.24	0.99	0.35	0.53	0.47
1955	0.36	0.63	1.15	0.22	1.64	2.58	1.23	1.42	1.91	0.19	1.05	0.59
1956	0.7	0.66	0.71	1.67	2.62	0.31	2.23	1.91	0.03	0.05	0.79	0.51

1957	0.7	0.52	0.42	3.94	6.04	1.02	0.43	3.07	0.81	1.99	0.62	0
1958	0.17	0.4	1.87	1.95	5.3	2.3	1.58	1.01	0.46	0.85	0.57	0.98
1959	0.46	0.58	1.36	2.71	3.54	0.39	0.31	0.6	1.97	2.71	0.04	0
1960	0.37	0.53	0.84	0.88	2.5	0.72	0.8	0.03	0.39	2.11	0.28	0.56
1961	0.21	0.64	3.38	1	7.06	1.83	4.27	4	4	1.17	0.62	0.08
1962	1.17	0.7	0.55	1	2.36	2.13	2.07	0.31	0.41	1.75	0.57	0.18
1963	0.67	0.42	1.28	0.5	0.42	3.75	0.13	1.69	2.1	0.3	0.19	0.55
1964	0.31	0.21	0.92	1.69	1.87	0.54	1.04	0.45	0.34	0.06	0.46	0.18
1965	0.66	0.31	0.84	1.19	1.89	5.27	2.29	0.44	2.33	0.51	0	0.44
1966	0.12	0.6	0.01	1.39	0.27	1.6	0.62	0.63	1.16	0.43	0.45	0.06
1967	0.61	0.35	0.61	3.02	4.79	3.26	3.1	1.82	0.93	0.61	1.14	1.05
1968	0.09	0.6	0.9	1.85	3.2	0.86	2.05	2.11	0.09	0.65	0.78	0.13
1969	0.59	0.33	0.59	1.46	3.8	2.56	0.84	1.72	0.63	4.85	0.32	0.02
1970	0.06	0.02	2.65	1.04	0.2	2.44	2.65	0.97	1.61	1.25	0.54	0.16
1971	0.59	0.5	0.51	4.42	2.33	0.2	0.52	0.19	3.55	0.94	0.02	0.21
1972	0.54	0.06	0.43	1.38	0.55	1.4	0.72	2.24	0.51	0.57	0.91	0.6
1973	0.26	0.02	0.79	1.42	1.63	0.34	2.56	0.18	1.7	0.43	2.29	1.17
1974	0.33	0.06	1.05	1.65	0.01	3.01	1.65	0.12	1.08	2.01	0.59	0.06
1975	0.05	0.54	1.57	1.53	4.53	1.77	0.92	2.86	0.39	0.9	0.7	1.31
1976	0.3	0.57	0.64	1.64	1.13	0.95	1.03	1.88	1.94	0.25	0.08	0.15
1977	0.04	0.05	0.13	2.69	1.1	0.32	5.86	1.2	0.14	0.14	0.35	0.11
1978	0.6	0.26	0.44	1.29	6.15	1.39	1.02	0.79	0.12	1.94	0.07	0.8
1979	0.36	0.29	2.33	1.38	5.08	3.13	0.95	3.13	1.03	0.87	2	1.52
1980	1.14	0.89	2.23	2.91	3.53	0.08	1.15	0.62	0.7	0.65	0.54	0.13
1981	0.51	0.06	1.59	1.12	4.21	0.37	1.98	1.5	1.22	0.75	0.1	0.65
1982	0.25	0.05	0.64	0.38	4.98	4.28	4.86	0.45	3.51	0.74	0.48	0.41
1983	0.01	0.04	2.89	4.1	3.21	3.52	1.57	1.02	0.28	0.17	2.13	0.51
1984	0.56	0.39	1.46	3.4	1.84	2.23	1.96	0.57	0.8	2.53	0.02	0.27
1985	0.8	0.25	0.35	2.11	0.97	2.77	3.71	0.24	1.37	1.17	1.38	1.25
1986	0.16	0.26	1.04	2.03	1.45	1.18	0.95	1.21	0.74	1.58	1.53	0.27
1987	0.38	1.28	2.16	0.66	3.15	2.06	0.8	0.76	0.65	0.51	1.61	0.78

1988	0.28	0.51	2.72	1.02	2.66	1.49	1.15	2	1.95	0.13	0.18	1.3
1989	0.53	0.74	0.22	1.37	2.51	1.74	0.93	1.16	2.33	0.73	0.23	0.36
1990	0.59	0.57	5.63	0.98	2.83	0.54	1.39	1.69	1.36	0.57	0.87	0.25

END