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# РАСЧЕТНО ТЕРА

# РАСЧЕТНО-ТЕПЛА

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|       |   |                              |
|-------|---|------------------------------|
|       | í     | 2                            |
|       | í     | ...3                         |
|       | í     | ...5                         |
|       | í     | ...6                         |
|       | í     | ...7                         |
|       | 1 ó   |                              |
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CO<sub>2</sub>:

CH<sub>4</sub>:

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CFCs:

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НАВЕКТАМО РЕПАА

|      |      |                         |                               |      |
|------|------|-------------------------|-------------------------------|------|
| 2.4  | 2007 | í í í í í í í í í í í í | ..í                           | ..24 |
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| 4.1  |      |                         | í í í í í í í í í í í         | ..43 |
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| 4.4  |      |                         | í í í í í í í í í í í         | ..47 |
| 4.5  |      |                         | í í í í í í í í í í í         | ..49 |
| 4.6  |      |                         | í í í í í í í í í í í         | 50   |
| 4.7  |      |                         | í í í í í í í í í í í         | ..51 |
| 4.8  |      |                         | í í í í í í í í               | 52   |
| 4.9  |      |                         | í í í í                       | .54  |
| 4.10 |      |                         | í í í í í í í í í í í í í í í | .54  |

4.1

í í í í í í í í í í ..41

4.2

í í í í í í í í í í í 43

4.3

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4.4

í í í í í í í í í í 46

4.5

í í í í í í í í í í 48

4.6

í í í í í í í í í í .49

4.7

í í í í í í í í í í 51

4.8

í í í í í í 52

4.9

í ..í 53

4.10

í 57

4.11

í .í .70

4.12

1980-1984, 1985-1989, 1990-1994, 1995-1999 2000-2004 í ..í í í 71



1.1

(  
 , IPCC, 2008)  
 ,  
 (Rosenzweig et  
 al., 2007).

(Boher-Christensen et al., 2007).

(IPCC, 2008). 50%

1975-2001

( , , , , ( )).

CO<sub>2</sub> ( ).

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2.1

CO<sub>2</sub>

and Druckman,1992).

(Stern, Young,

## 2.2

1992).

(Schneider, Rosencranz and Niles, 2002).

(Stern,

78%

, 21% O<sub>2</sub> 1%

(CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, ).

CO<sub>2</sub>.

CO<sub>2</sub>

CO<sub>2</sub>

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(CFCs)

CO<sub>2</sub>,

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### 2.3

(Stern, Young, and Druckman, 1992).

(CO<sub>2</sub>).

(FCCC, 1992)

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1997) (Boehmer-Christiansen and Kellow, 2002).

2000,

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(FCCC)

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3,1.

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МАТЕМАТИЧЕСКАЯ

3,4.

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2.3.1

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1998)

(E.U. Forestry Strategy). 2006  
Plan 2007-2011)

(15

(Forest Action

al, 2007).

ó

(Schmuck et

1.

Research Centre)

(Camia, et al, 2006).

(Joint

2.

Financial Funds EARDF)

LIFE+,

(European

EARDF

LIFE+

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:  
: EEC No. 2158/1992 (  
2002) EEC No. 804/94 ( EC No.  
1737/2006) (Schmuck, et al, 2007). 1998  
(Forest Fire  
Experts Group) , 2000,  
(European Forest Fire  
Information System EFFIS) (Barbosa, et al, 2006). 2003, EFFIS,  
(EC) No. 2152/2003

2009

(Joint Research Centre)

(EC) No. 1737/2006

EFFIS

(Camia, et al, 2006).

10

1737/2006, ó

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(Schmuck, et al, 2007).

(EC) No. 614/2007

LIFE+,

LIFE+

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2013

1698/2005,  
Agricultural Fund for Rural Development, - EAFRD)

(EC) No.  
(European

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( 9 )  
6  
( 15  
)  
( 18 ) (Council Regulation (EC) no 1698/2005).

(1st Mediterranean-HyMEX workshop, 9-11 Jan. 2007).

-3 18 °C.  
1/3  
CO<sub>2</sub>,  
1970.  
(Workshop), (Sabaudia)

, 2008

(Food Agriculture Organization, FAO)

Centre),

(Joint Research

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**2.4**

**2.4.1**

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1990  
500.000  
2007  
2,5  
24 117 ( )  
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86/1969

998/1979

( , 2006).

( , 1993).  
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ø ( , 2006). . 3208/2003  
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( CITES).  
, . . 67/1981, 437/1981  
796/1981 . 1650/1986 ( , 2006).  
. 1892/1990, . . 189/1981  
190/1981 1726/2003,  
. . 1114/1980 126/1986 . 2169/1993, 2945/2001  
3105/2003.  
. . 1157/1980  
1892/1990.  
. 1845/1989, 2612/1998 (  
;) 1892/1990.  
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(  
, 2010).  
,

3013/2002,

2010).

# РАСЧЕТНО-ТЕПЛА

(2010),

, 2010).

&





2.4: 2007 (Aqua NASA, 25 2007)

### 2.4.2

, 2010).

### 2.4.3

Serpieri, 1923,

Serpieri

dello Stato).

(Corpo forestale

1948 ( . 117),  
( . 3/2001),

353/2000,

. 353/2000

øRangers Corpsö,  
(Carbone and  
Savelli, 2009).  
1995  
1997  
1992 ( . 225/1992)  
1998  
59/1997.

## 2.4.4

1957 (Girelli and Schmithusen, 2000).

, , , , , , , , ( , . . . ). 1978 « » , ( . 148),

1957

1989

(Spanish Forestry Strategy,1998).

## 2.4.5

(Cirelli and Schmithusen, 2000).  
1996,

2003,

(Oliveira, 2005).

( )

(Dimitriou, Mantakas and Kouvelis, 2001).

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**2.4.6**

( , 2010).

50

## 2.4.7

(Coskun and Günes, 2010).

1924 ( )

3116/1937

4785/1945

5658/1950

1956,

1956

6831

169

170,

1982,

169

169



170

(Co kun and Gençay, 2011).

170

4122/1995,  
2873/1983

(Serez, 1995).

(Atmi , Özden and Lise, 2007).

#### 2.4.8

(Bonnel, et al, 2003).

#### 2.4.9

(State Board of Forestry and Fire Protection)

(California Department of Forestry and Fire Protection ó CAL FIRE).

ó

2011).

(Calkin, et al,

(

1.

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(CAL FIRE)

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5.

(CAL FIRE)

(CAL FIRE),

(Strategic Fire Plan 2010).

(CAL FIRE)

(CAL FIRE)

2010.

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Community

Wildfire Protection Plans (CWPP).

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РАМЕТСКО ТЕПЛА

3.1

CO<sub>2</sub>

ПАМЯТНИКО ПЕРПАА

3.2

1.

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### 3.3

(Van Evera, 2001).



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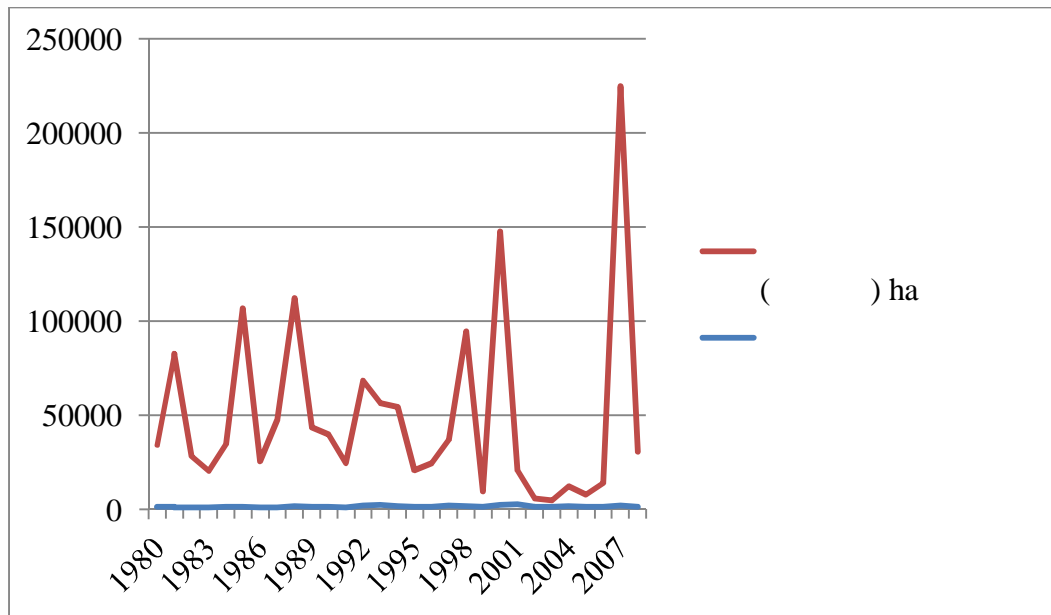
(1)

4.1:

(JRC-IES, Forest

fires in Europe Report No 7/2006)

|      |      | ( ) ha |
|------|------|--------|
| 1980 | 1207 | 32965  |
| 1981 | 1159 | 81417  |
| 1982 | 1045 | 27372  |
| 1983 | 968  | 19613  |
| 1984 | 1284 | 33656  |
| 1985 | 1442 | 105450 |
| 1986 | 1082 | 24514  |
| 1987 | 1266 | 46315  |
| 1988 | 1898 | 110501 |
| 1989 | 1284 | 42364  |
| 1990 | 1322 | 38593  |
| 1991 | 941  | 23574  |
| 1992 | 2042 | 66347  |
| 1993 | 2406 | 54049  |
| 1994 | 1954 | 52603  |
| 1995 | 1493 | 19177  |
| 1996 | 1527 | 22990  |
| 1997 | 2273 | 34781  |
| 1998 | 1842 | 92901  |
| 1999 | 1486 | 8289   |
| 2000 | 2581 | 145034 |
| 2001 | 2658 | 18342  |
| 2002 | 1400 | 4337   |
| 2003 | 1425 | 3263   |
| 2004 | 1755 | 10722  |
| 2005 | 1544 | 6437   |
| 2006 | 1417 | 12661  |
| 2007 | 1992 | 222894 |
| 2008 | 1486 | 29172  |



4.1:

(JRC-IES, Forest fires in

Europe Report No 7/2006)

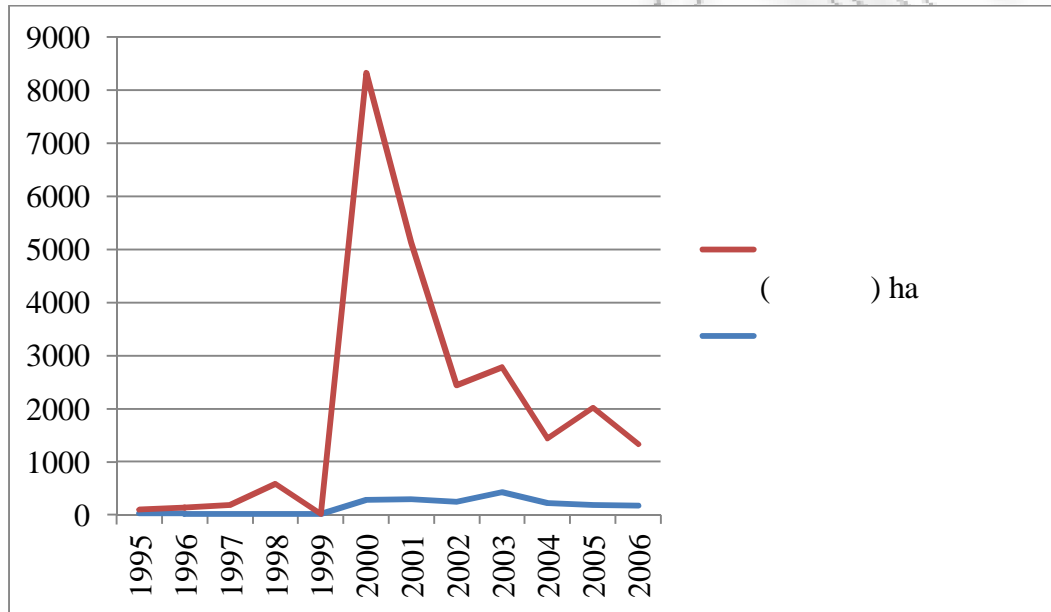
1998 2007)

, 2010).

4.2:

|      |    | ( ) ha |
|------|----|--------|
| 1995 | 24 | 70     |
| 1996 | 20 | 116    |
| 1997 | 19 | 167    |
| 1998 | 19 | 566    |

|      |     |      |
|------|-----|------|
| 1999 | 20  | 3    |
| 2000 | 285 | 8035 |
| 2001 | 299 | 4830 |
| 2002 | 243 | 2196 |
| 2003 | 427 | 2349 |
| 2004 | 221 | 1218 |
| 2005 | 185 | 1838 |
| 2006 | 172 | 1160 |



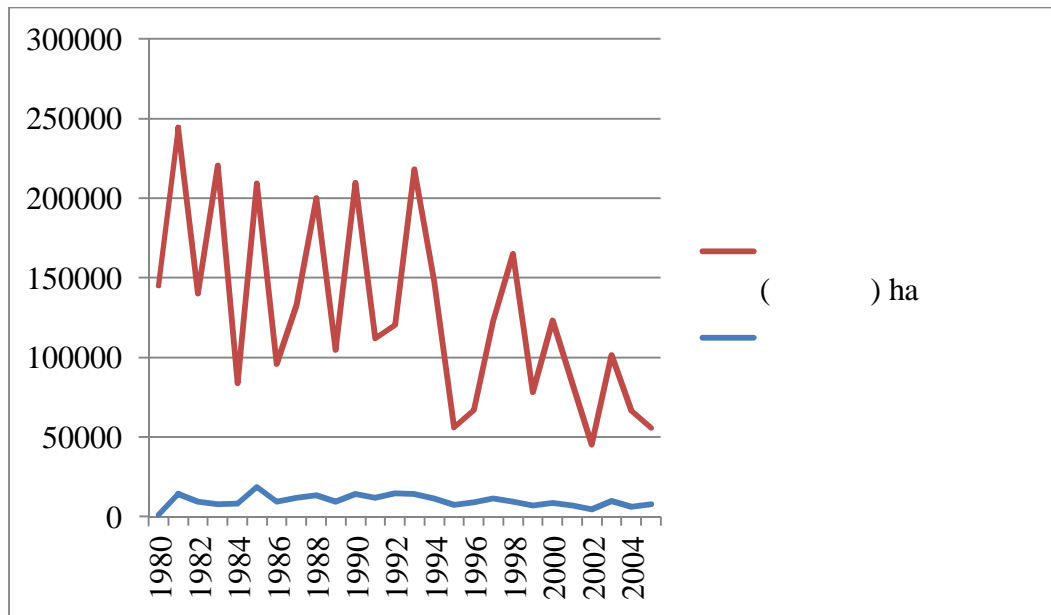
4.2:

### 4.3:

(JRC-IES, Forest

fires in Europe Report No 7/2006)

|      |       | ( ) ha |
|------|-------|--------|
| 1980 | 1163  | 143919 |
| 1981 | 14503 | 229850 |
| 1982 | 9557  | 130456 |
| 1983 | 7956  | 212678 |
| 1984 | 8482  | 75272  |
| 1985 | 18664 | 190640 |
| 1986 | 9398  | 86420  |
| 1987 | 11972 | 120697 |
| 1988 | 13588 | 186405 |
| 1989 | 9669  | 95161  |
| 1990 | 14477 | 195319 |
| 1991 | 11965 | 99860  |
| 1992 | 14641 | 105692 |
| 1993 | 14412 | 203749 |
| 1994 | 11588 | 136334 |
| 1995 | 7378  | 48884  |
| 1996 | 9093  | 57988  |
| 1997 | 11612 | 111230 |
| 1998 | 9540  | 155553 |
| 1999 | 6932  | 71117  |
| 2000 | 8595  | 114648 |
| 2001 | 7134  | 76427  |
| 2002 | 4601  | 40791  |
| 2003 | 9697  | 91805  |
| 2004 | 6428  | 60176  |
| 2005 | 7951  | 47575  |



4.3:

(JRC-IES, Forest fires in Europe

Report No 7/2006)

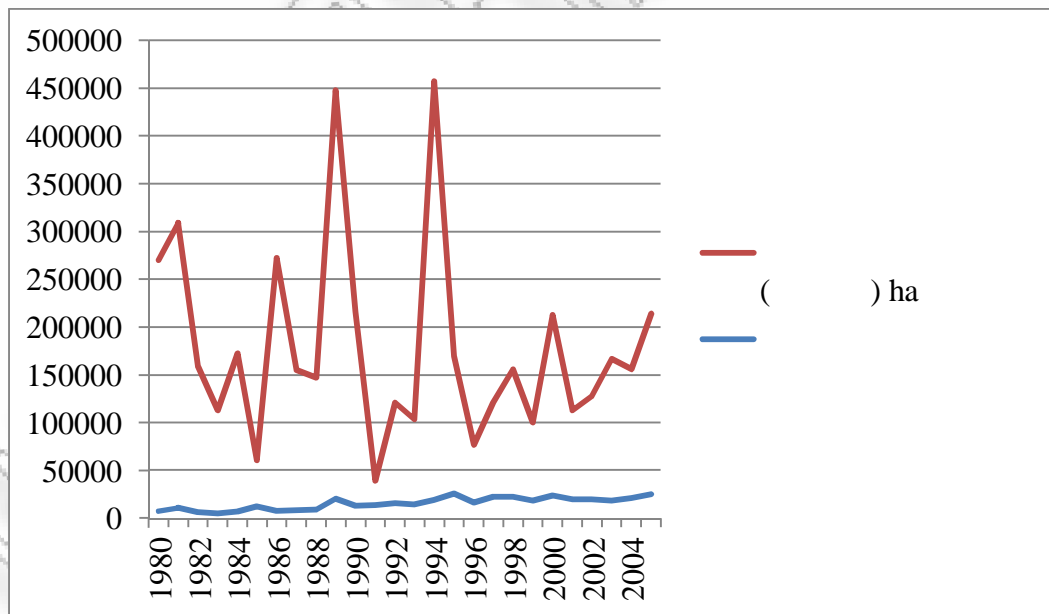
4.4:

(JRC-IES, Forest

fires in Europe Report No 7/2006)

|      |       | ( ) ha |
|------|-------|--------|
| 1980 | 7190  | 263017 |
| 1981 | 10878 | 298288 |
| 1982 | 6545  | 152903 |
| 1983 | 4791  | 108100 |
| 1984 | 7203  | 165119 |

|      |       |        |
|------|-------|--------|
| 1985 | 12238 | 48446  |
| 1986 | 7570  | 264887 |
| 1987 | 8679  | 146662 |
| 1988 | 9247  | 137734 |
| 1989 | 20811 | 426693 |
| 1990 | 12913 | 203032 |
| 1991 | 13531 | 26018  |
| 1992 | 15955 | 105277 |
| 1993 | 14254 | 89267  |
| 1994 | 19263 | 437635 |
| 1995 | 25827 | 143484 |
| 1996 | 16771 | 59814  |
| 1997 | 22320 | 98503  |
| 1998 | 22446 | 133643 |
| 1999 | 18237 | 82217  |
| 2000 | 24118 | 188586 |
| 2001 | 19547 | 93297  |
| 2002 | 19929 | 107464 |
| 2003 | 18616 | 148172 |
| 2004 | 21394 | 134193 |
| 2005 | 25492 | 188697 |



4.4:

(JRC-IES, Forest fires in

Europe Report No 7/2006)

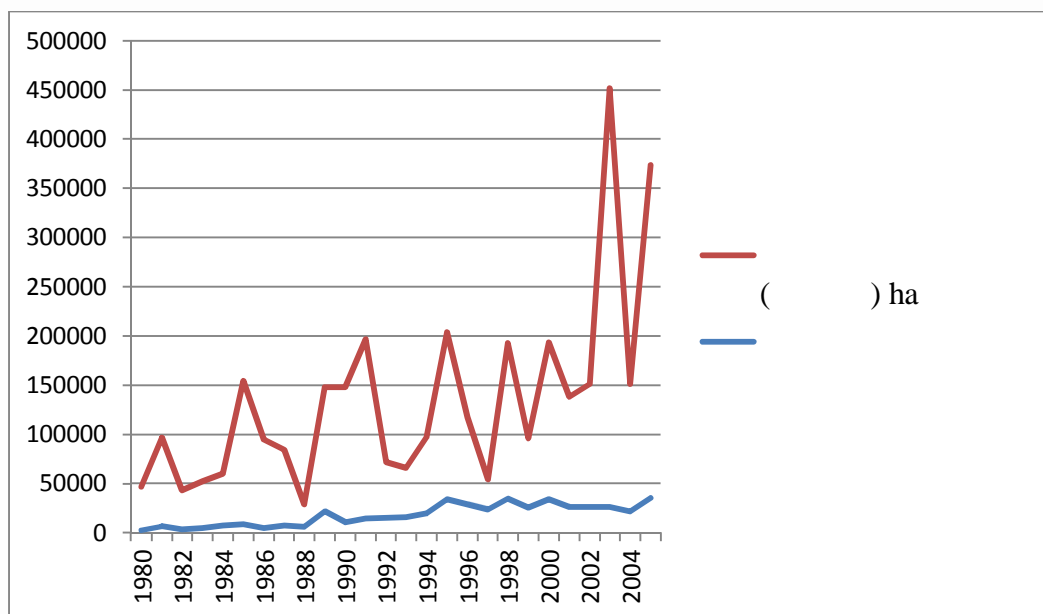


#### 4.5:

(JRC-IES,

Forest fires in Europe Report No 7/2006)

|      |       | ( ) ha |
|------|-------|--------|
| 1980 | 2349  | 44251  |
| 1981 | 6730  | 89798  |
| 1982 | 3626  | 39556  |
| 1983 | 4539  | 47811  |
| 1984 | 7356  | 52710  |
| 1985 | 8441  | 146254 |
| 1986 | 5036  | 89522  |
| 1987 | 7705  | 76269  |
| 1988 | 6131  | 22434  |
| 1989 | 21896 | 126237 |
| 1990 | 10745 | 137252 |
| 1991 | 14327 | 182486 |
| 1992 | 14954 | 57011  |
| 1993 | 16101 | 49963  |
| 1994 | 19983 | 77323  |
| 1995 | 34116 | 169612 |
| 1996 | 28626 | 88867  |
| 1997 | 23497 | 30535  |
| 1998 | 34676 | 158369 |
| 1999 | 25477 | 70613  |
| 2000 | 34109 | 159605 |
| 2001 | 26533 | 111850 |
| 2002 | 26488 | 124411 |
| 2003 | 26195 | 425726 |
| 2004 | 21870 | 129539 |
| 2005 | 35697 | 338262 |



4.5:

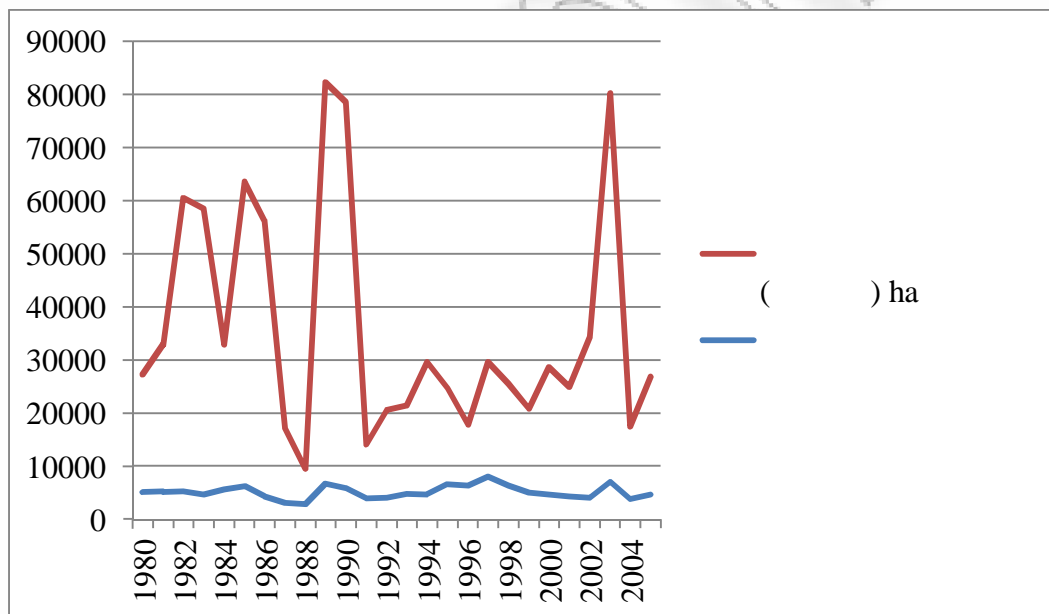
(JRC-IES, Forest fires in Europe Report No 7/2006)

4.6:

(JRC-IES, Forest fires in Europe Report No. 7/2006)

|      |      | ( ) ha |
|------|------|--------|
| 1980 | 5040 | 22176  |
| 1981 | 5173 | 27712  |
| 1982 | 5308 | 55145  |
| 1983 | 4659 | 53729  |
| 1984 | 5672 | 27202  |
| 1985 | 6249 | 57368  |
| 1986 | 4353 | 51860  |
| 1987 | 3043 | 14108  |
| 1988 | 2837 | 6701   |
| 1989 | 6763 | 75566  |
| 1990 | 5881 | 72625  |
| 1991 | 3888 | 10130  |
| 1992 | 4002 | 16593  |

|      |      |       |
|------|------|-------|
| 1993 | 4769 | 16698 |
| 1994 | 4618 | 24995 |
| 1995 | 6563 | 18137 |
| 1996 | 6401 | 11400 |
| 1997 | 8005 | 21581 |
| 1998 | 6289 | 19282 |
| 1999 | 4960 | 15906 |
| 2000 | 4603 | 24078 |
| 2001 | 4309 | 20642 |
| 2002 | 4097 | 30160 |
| 2003 | 7023 | 73278 |
| 2004 | 3775 | 13711 |
| 2005 | 4698 | 22135 |



4.6:

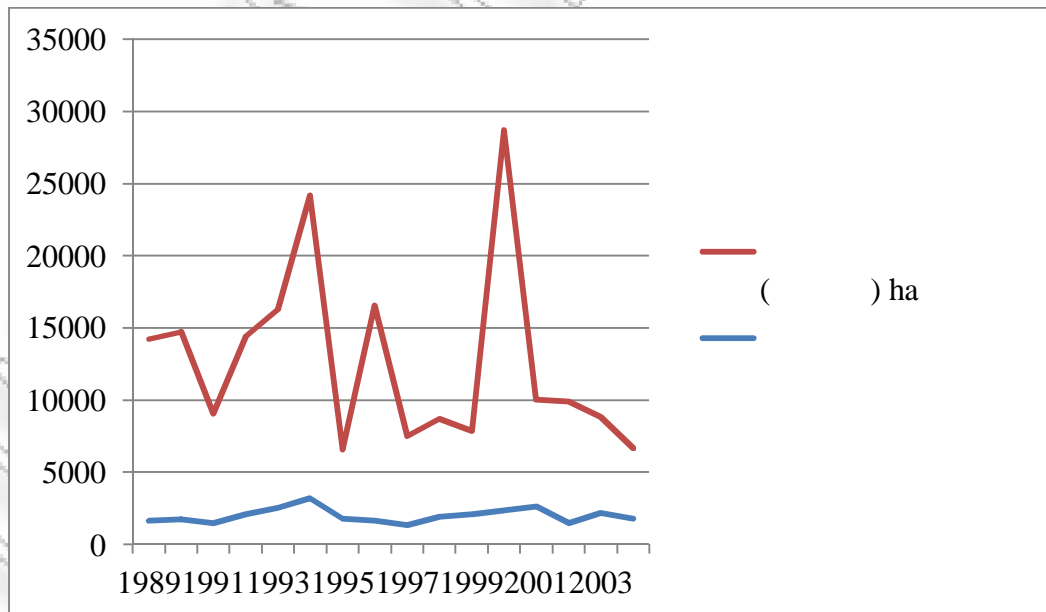
(JRC-IES, Forest fires in Europe

Report No 7/2006)

4.7:

(Serez, 1995)

|      |      | ( ) ha |
|------|------|--------|
| 1989 | 1633 | 12610  |
| 1990 | 1725 | 13000  |
| 1991 | 1448 | 7590   |
| 1992 | 2110 | 12312  |
| 1993 | 2547 | 13734  |
| 1994 | 3218 | 20981  |
| 1995 | 1768 | 4791   |
| 1996 | 1631 | 14922  |
| 1997 | 1339 | 6171   |
| 1998 | 1932 | 6764   |
| 1999 | 2075 | 5804   |
| 2000 | 2353 | 26353  |
| 2001 | 2631 | 7394   |
| 2002 | 1471 | 8413   |
| 2003 | 2177 | 6644   |
| 2004 | 1762 | 4876   |



4.7:

( , Serez, 1995)

2003).

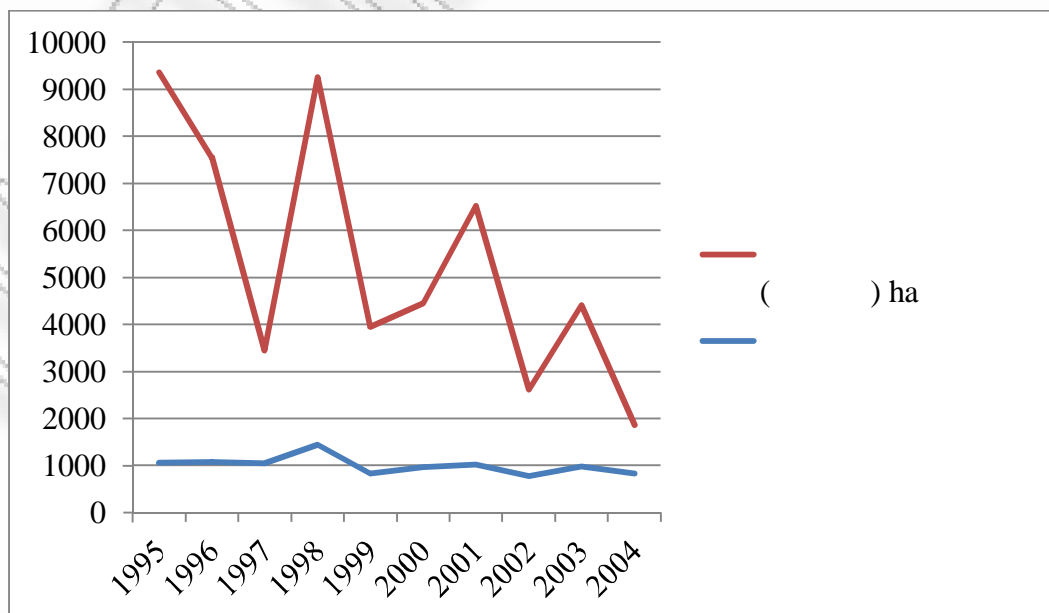
(Bonnell, et al,

( )

4.8:

(Wilkie, M., 2010)

|      |      | ( ) ha |
|------|------|--------|
| 1995 | 1061 | 8288   |
| 1996 | 1075 | 6476   |
| 1997 | 1047 | 2403   |
| 1998 | 1445 | 7813   |
| 1999 | 831  | 3114   |
| 2000 | 972  | 3486   |
| 2001 | 1027 | 5488   |
| 2002 | 779  | 1834   |
| 2003 | 982  | 3429   |
| 2004 | 840  | 1029   |



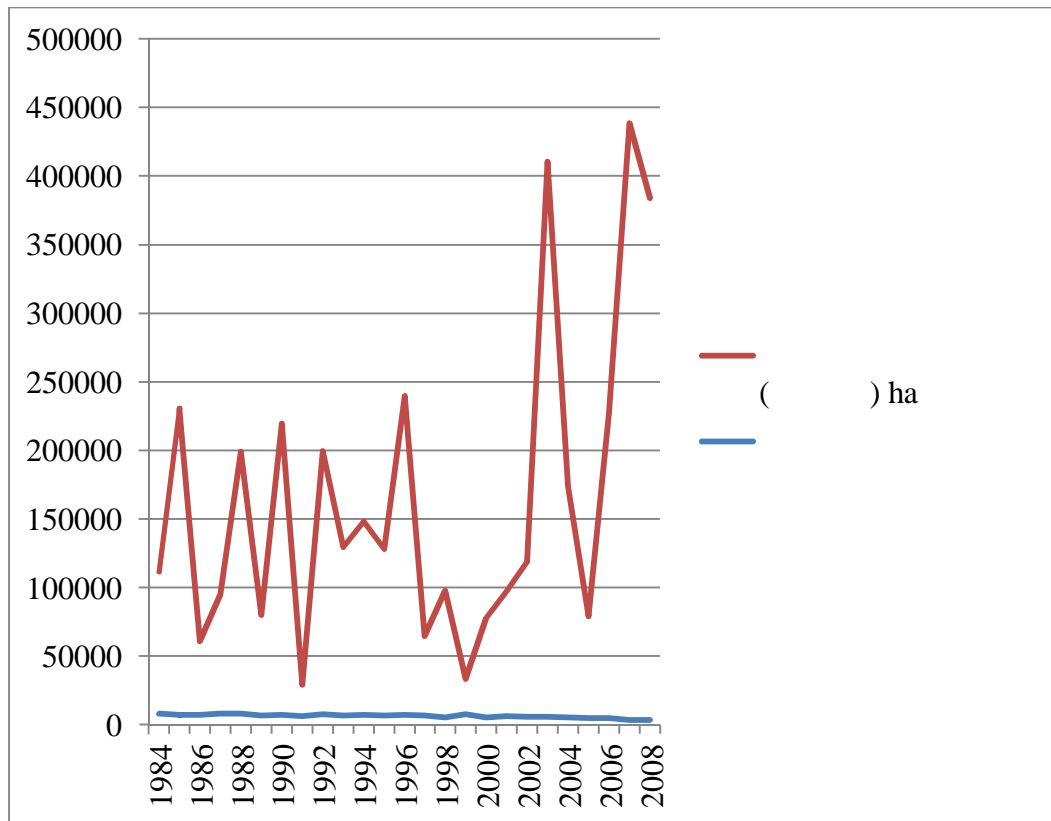
4.8:

(Wilkie, M., 2010)

4.9:

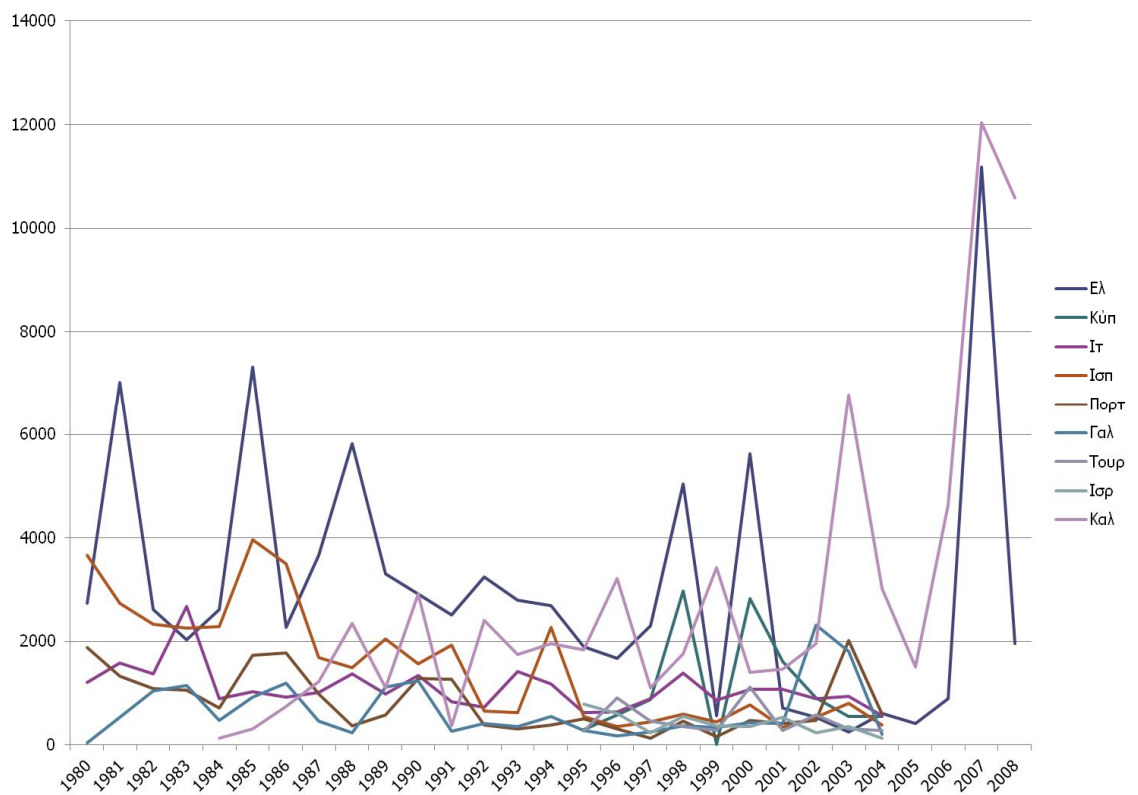
([www.fire.ca.gov](http://www.fire.ca.gov), 2009)

|      |      | ( ) ha |
|------|------|--------|
| 1984 | 7830 | 103670 |
| 1985 | 7238 | 223282 |
| 1986 | 7149 | 53631  |
| 1987 | 8063 | 86945  |
| 1988 | 8130 | 190835 |
| 1989 | 6635 | 73601  |
| 1990 | 7283 | 212142 |
| 1991 | 6238 | 23154  |
| 1992 | 7939 | 191490 |
| 1993 | 6988 | 122606 |
| 1994 | 7207 | 140792 |
| 1995 | 6601 | 121687 |
| 1996 | 7237 | 232624 |
| 1997 | 6835 | 57795  |
| 1998 | 5227 | 92456  |
| 1999 | 7562 | 25834  |
| 2000 | 5177 | 72718  |
| 2001 | 6223 | 90985  |
| 2002 | 5759 | 112810 |
| 2003 | 5961 | 404328 |
| 2004 | 5574 | 168134 |
| 2005 | 4908 | 74004  |
| 2006 | 4805 | 222896 |
| 2007 | 3610 | 434667 |
| 2008 | 3593 | 380310 |



4.9:

([www.fire.ca.gov](http://www.fire.ca.gov), 2009)



4.10:

4.3

( 2)

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100-150

(Boeher-Chriestensen et al., 2007).

Rosencranz and Niles, 2002).

(Schneider,

100-1.000



(Palo, Uusivuori and Mery, 2002).

(Winter, 1996).

(Humphreys, 1996).

(  
CO2 ó O2)

**4.10:**

( &

, 2010, Wilkie, 2010)

|  |            |         | ha     | %    |
|--|------------|---------|--------|------|
|  | 10.787.690 | 131.940 | 81.76  | 50   |
|  | 838.897    | 9.251   | 90.68  | 17   |
|  | 58.126.21  | 301.318 | 192.91 | 37   |
|  | 45.525.002 | 505.150 | 90.12  | 55   |
|  | 10.707.924 | 92.090  | 116.28 | 39   |
|  | 62.851.885 | 547.026 | 114.90 | 28   |
|  | 71.517.100 | 780.580 | 91.62  | 26   |
|  | 7.465.000  | 20.770  | 359.41 | 8.26 |
|  | 33.800.000 | 411.014 | 82.24  | 40   |

#### 4.4

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2007,

300

(Bassi and Kettunen, 2008).

(Standard & Poors)

3 5

1.4%

2.4%

(70%)

ø

|           |                 |                 |
|-----------|-----------------|-----------------|
|           | 1998.           | 1997            |
|           | 40,338,523      | 34,781,0        |
|           | 1998 81,291,269 |                 |
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|           | )               | 2001 88,158,473 |
|           | 1988 9,081,490  |                 |

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(Notaro, Paletto, and Raffaelli, 2008).

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|  | 34.40     | 47.20     | 27.14     | 22.95     | 15.42     |
|  |           |           |           | 9.04      | 12.63     |
|  | 19.10     | 10.73     | 11.05     | 8.93      | 9.08      |
|  | 26.97     | 17.50     | 11.34     | 4.80      | 5.68      |
|  | 11.14     | 9.36      | 6.62      | 3.12      | 7.93      |
|  | 7.19      | 8.85      | 6.09      | 2.79      | 7.30      |
|  |           |           | 6.12      | 4.55      | 4.83      |
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