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Studies

THE "EL NIÑO SOUTHERN OSCILLATION EVENT (ENSO)" AND ITS IMPACT ON COFFEE PRODUCTION

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THE "EL NIÑO SOUTHERN OSCILLATION EVENT (ENSO)" AND ITS IMPACT ON COFFEE PRODUCTION

INTRODUCTION

1. El Niño, a mysterious force of nature, has been active in the tropical Pacific regions since the beginning of 1997, with impacts on weather in various parts of the globe. Among these, one of the most noticeable is heavy rainfall in the Pacific, causing flooding in Peru, Ecuador, Colombia and the Gulf of Mexico. In the western Pacific the phenomenon is responsible for drought conditions and bush fires in Indonesia, Papua New Guinea and Australia.

2. The purpose of this report is to review the information available on the El Niño phenomenon and its impact on world coffee production in order to reach conclusions on the magnitude of the event during the current coffee year (1997/98). It complements information contained in reports already presented by other organisations[1] and may be used as the basis for discussion within the framework of subsequent presentations by meteorological experts. The methodology used for this study consists in an initial summary of expert studies of the phenomenon followed by an analysis of the relationship between El Niño events and world coffee production. An analysis of the first repercussions of the 1997/98 event and prospects for coffee production is given in the last section. The study thus comprises the following three sections:

I. Background on the El Niño Southern Oscillation phenomenon (ENSO)

II. Analysis of the relationship between El Niño events and coffee production

III. The 1997/98 ENSO and prospects for coffee production.

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[1] – *ICCO: Presentation on El Niño phenomenon, September 1997*
– *Association of Coffee Producing Countries: El Niño, an overview, July 1997*

I. BACKGROUND ON THE EL NIÑO SOUTHERN OSCILLATION PHENOMENON (ENSO)

3. An El Niño Southern Oscillation (ENSO) event is caused by the cyclical warming of surface waters in the eastern equatorial Pacific Ocean. It is an occasional dysfunction of the weather system centred in the equatorial Pacific regions. This dysfunction has a short-term effect on weather around the Pacific basin. For a better understanding of the phenomenon we offer a brief description of the changes it produces in the atmospheric circulation pattern known as the "Walker Circulation" after the researcher who studied it during the 1920s[2]. According to this atmospheric circulation pattern, under normal conditions trade winds blow from east to west along the Equator and pile warm water in the western tropical Pacific near Indonesia, Papua New Guinea and Australia. As a result of this accumulation of warm water in the western equatorial Pacific, the atmosphere is heated and convection and precipitation are intensified. Cold waters are found in the eastern Pacific along the Peruvian coast, providing favourable conditions for a large fish population attracted by the temperature of the water and the abundance of nutrients.

4. Every two to seven years, however, violent winds blowing from west to east in the upper levels of the atmosphere – in the opposite direction to the trade winds – block the Walker Circulation and provoke the El Niño phenomenon. Warm waters move towards the eastern Pacific, causing abnormal changes in climate. The waters off the western coast of South America become warmer, usually in the months before Christmas – hence the name "El Niño" meaning "the Christ Child" in Spanish. According to meteorological experts[3], El Niño appears at irregular intervals ranging from two to seven years and the severest events occur once in every ten years. The convection and precipitation normally located in the western equatorial Pacific shift with the warm pool of waters to the eastern Pacific. This

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[2] *Sir Gilbert Walker was the British head of the Indian Meteorological Office and studied the phenomenon during the 1920s in an attempt to predict Indian monsoons.*

[3] *Cf. Goddard Space Flight Center, NASA, United States.*

results in heavier than normal rains in Peru, Ecuador and other areas in tropical South America. In the western Pacific, convection is reduced, and Indonesia, Papua New Guinea and Australia often experience drought conditions.

5. During an El Niño event, the warmer waters heat the atmosphere over a period of many months. The atmosphere responds to this heating by producing alternating patterns of high and low pressure. The low pressure system in the north-eastern Pacific draws up warm air into Canada, some of which may reach the United States, while the low pressure system over the south-eastern United States draws up cold moist air into that region, bringing lower than normal temperatures. The same low pressure system in the south-eastern United States is also responsible for increased precipitation, especially in coastal areas along the Gulf of Mexico.

6. Many other regions of the globe experienced the effects of the El Niño phenomenon. The costal regions of southern Africa were affected by frequent droughts while those of East Africa, particularly in Uganda and Kenya, were affected by heavier than normal rainfall.

7. It should be noted that during certain periods the effects of the El Niño phenomenon may be reversed. When this happens, the cooling of Peruvian and Ecuadorean coastal waters is intensified. This is known as "La Niña" and causes drought conditions in South America and heavier than normal rains in Indonesia, Australia and Papua New Guinea.

8. One of the indexes used to determine anomalies related to El Niño events is the Southern Oscillation Index (SOI) which is the air pressure difference as measured between Tahiti (French Polynesia) and Darwin (Australia). A positive SOI reading indicates a La Niña phenomenon since there is an ocean cooling. A negative reading indicates an El Niño event since there is an ocean warming in the eastern Pacific. Table 1 shows El Niño years recorded since the beginning of the century.

TABLE 1

EL NIÑO YEARS SINCE 1900

1900-1901	1902-1903	1905-1906	1911-1912
1914-1915	1918-1919	1923-1924	1925-1926
1930-1931	1932-1933	1939-1940	1940-1941
1941-1942	1946-1947	1951-1952	1953-1954
1957-1958	1963-1964	1965-1966	1969-1970
1972-1973	1976-1977	1977-1978	1982-1983
1986-1987	1991-1995	***1997/1998***	

9. Graphs 1a and 1b[4] indicate the relative importance of the six most significant El Niño events. Of these six, the first three (1957/58, 1965/66 and 1972/73) reached their peaks before the end of the first year. The 1982/83, 1986/87 and 1991/92 El Niño events took longer to develop, reaching their peaks in the spring of the second year, particularly between March and April. The 1982/83 El Niño event is the strongest ever recorded, with the index dropping below the benchmark of -4 in October/November 1982 and remaining below this level until March 1983, when the event reached its peak (-8). Apart from these six major El Niño events, there were less important El Niño occurrences between 1965 and 1995.

II. ANALYSIS OF THE RELATIONSHIP BETWEEN EL NIÑO EVENTS AND COFFEE PRODUCTION

10. The impact of the El Niño phenomenon on coffee producing areas will be analysed on the basis of a comparison between data on world coffee production from 1965/66 to 1996/97 and El Niño events during this period. The period covers 10 El Niño events, the severest being recorded in 1982/83 and considered to be the worst this century.

World production

11. Graph 2 shows world production in the period under review, both including and excluding Brazil. This presentation makes it possible to separate weather effects specific

[4] *See Annex for all graphs.*

to Brazil, such as frosts and droughts, from the probable impact of El Niño events. A study of the graph shows that Brazilian production is very unstable and this instability affects world production as a whole. From 1965 to 1997 annual world production, including Brazil, averaged around 81.8 million bags.

12. Total world production fell by 27 percent in 1966/67, down from 80.9 million bags in 1965/66 to 59.4 million. This drop was attributable to the fall of 49 percent in Brazilian production. In other words, the total world crop loss excluding Brazil was 6 percent. Table 2 and Graph 3 show annual changes in world production since 1965.

TABLE 2

ANNUAL CHANGES IN WORLD PRODUCTION SINCE 1965

Year	Including Brazil	Excluding Brazil	Year	Including Brazil	Excluding Brazil
1965/66	-	-	1981/82	+24%	+4%
1966/67	-27%	-6%	**1982/83**	**-16%**	**0%**
1967/68	+19%	+15%	1983/84	+5%	-7%
1968/69	-13%	-5%	1984/85	-6%	+2%
1969/70	**+7%**	**+9%**	1985/86	+7%	-4%
1970/71	-11%	+2%	**1986/87**	**-10%**	**+10%**
1971/72	+31%	-1%	1987/88	+33%	-2%
1972/73	**+4%**	**+11%**	1988/89	-16%	+4%
1973/74	-19%	-8%	1989/90	+4%	+3%
1974/75	+24%	+10%	1990/91	-1%	-5%
1975/76	-11%	-7%	**1991/92**	**+9%**	**+13%**
1976/77	**-17%**	**+7%**	**1992/93**	**-13%**	**-17%**
1977/78	+17%	+1%	**1993/94**	**+2%**	**+2%**
1978/79	+15%	+11%	**1994/95**	**+6%**	**+4%**
1979/80	+1%	0%	1995/96	-10%	+7%
1980/81	0%	+7%	1996/97	+18%	+6%

Note : El Niño years are indicated in bold-type face.

13. During the period covered by this analysis, El Niño events occurred in 1965/66, 1969/70, 1972/73, 1976/77, 1982/83, 1986/87 and 1991/92, the latter lasting until 1995. The following annual changes took place in total world production during these years:

- 1969/70	+7% including Brazil	+9% excluding Brazil
- 1972/73	+4% including Brazil	+11% excluding Brazil
- 1976/77	-17% including Brazil	+7% excluding Brazil
- 1982/83	-16% including Brazil	0% excluding Brazil
- 1986/87	-10% including Brazil	+10% excluding Brazil
- 1991/92	+9% including Brazil	+13% excluding Brazil
- 1992/93	-13% including Brazil	-17% excluding Brazil
- 1994/95	+6% including Brazil	+4% excluding Brazil

14. In the year following an El Niño event the following changes can be observed:

- 1966/67	-27% including Brazil	-6% excluding Brazil
- 1970/71	-11% including Brazil	+2% excluding Brazil
- 1973/74	-19% including Brazil	-8% excluding Brazil
- 1977/78	+17% including Brazil	+7% excluding Brazil
- 1983/84	+5% including Brazil	-7% excluding Brazil
- 1987/88	+33% including Brazil	-2% excluding Brazil
- 1995/96	-10% including Brazil	+7% excluding Brazil

15. Production falls are not always linked to El Niño events. Certain El Niño events coincide with an increase in world production. Similarly, during some years following an El Niño event there is also an increase in production. These observations indicate that there is no direct link between El Niño events and falls in total world production. World production seems to be far more sensitive to frosts and droughts in Brazil than to El Niño events. Table 3 provides information on weather problems in Brazil during the period from 1962 to 1997.

TABLE 3

FROSTS AND DROUGHTS IN BRAZIL SINCE 1960

Years	Date*	Severity (Reuters)
1962	25-26 July	light
1963	5-6 August	moderate
1965	not available	light
1966	6 August	grave
1967	8 June	
1969	9-10 July	moderate
1972	8-9 July	moderate
1975	17-19 July	very grave
1978	13-16 August	moderate
1979	1 June	moderate
1981	20-22 July	grave
1984	25 August	
1985	August-November	very light
1988	not available	light
1994	25-26 June/ 9-10 July	Grave/very grave

*The danger period for frosts is 1 June to 15 August.

16. In 1966/67, for example, world production fell by 21.5 million bags in relation to the previous year. Of this fall, 19 million bags are accounted for by Brazilian crop losses attributable to the 1965 frosts. In other words, The El Niño event of 1965/66 could be one of the factors responsible for the fall of 2.5 million bags in world production excluding Brazil. A more detailed analysis can be made by considering changes in world production by region or producing country in relation to El Niño events.

Mexico and Central America

17. Anomalies caused by El Niño events in this region relate mainly to drought conditions, which may last longer in certain countries (from July to September or October).

The principal producing countries in this region are Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and, to a lesser extent, Panama. The coffee harvesting season in these countries begins on 1 October. Graph 4 shows changes in production in the region since 1965. In relation to El Niño events, the region's total production fell only in 1972/73 (-4 percent). Production increased during other El Niño events: in 1982/83 it increased by 22 percent. The most dramatic fall in the region's production occurred in 1975/76 (-20 percent) and is not linked to an El Niño event.

18. Nevertheless, the region's countries have experienced various production changes during these events. Graphs 4a, 4b and 4c show changes in production in the region's principal producing countries. The most significant falls in Mexican production linked to El Niño years were recorded in 1976/77 (-26 percent) and 1992/93 (-28 percent). Guatemalan production fell by 2 percent in 1972/73 and 5 percent in 1982/83 but increased during other El Niño events. With the exception of Guatemala, which lost 5 percent of its production, the 1982/83 El Niño event coincided with production increases in all other countries in the region. Finally, during the lengthy 1990-1995 El Niño event, regional production fell only once: in 1991/92 (-6 percent). Mexican production fell by 39 percent in 1992/93 and production in El Salvador fell in 1991/92 (-12 percent). On the whole, production falls in these countries are not always linked to El Niño events and in some countries there is an increase in production rather than a fall.

South America

19. With the exception of Colombia and Venezuela, whose crop year begins on 1 October, the other countries in the region begin harvesting their coffee crops on 1 April. During El Niño events, the region is usually subject to heavy flooding. North-eastern Brazil, southern Peru and western Bolivia experience relatively dry spells. Graphs 5, 5a and 5b show changes in coffee production in this region whose major producers are Brazil and Colombia. In relation to El Niño years, South American production, excluding Brazil, fell in 1982/83

(-11 percent) and in 1992/93 (-20 percent). During the same two periods Colombian production was down by 15 and 24 percent respectively. In Ecuador and Peru, countries located within the area where El Niño events occur, there was a limited impact on coffee production. In 1982/83, Peru lost 5 percent of its coffee crop while Ecuador and Venezuela registered production increases of 2 and 18 percent respectively. As for Brazil, all significant falls in production are attributable to frosts and droughts, weather phenomena which are different to El Niño events.

Asia/Pacific

20. The Asia/Pacific region is the area most affected by El Niño events. Its effects on the region's weather range from periods of severe drought to bush fires, particularly in Indonesia, Papua New Guinea and the Philippines. The principal coffee producing countries are Indonesia, Vietnam, India, Papua New Guinea, Thailand and the Philippines. Graphs 6, 6a and 6b show changes in coffee production in this region since 1965. Of the most serious production falls recorded since 1965/66, only the fall of 16 percent in 1982/83 coincides with an El Niño event. During this period Indonesia lost 19 percent of its crop, while India and Papua New Guinea lost 18 and 31 percent respectively. During the 1990s, Indonesia recorded two significant crop losses: in 1992/93 (-34 percent) and in 1994/95 (-12 percent). Papua New Guinea lost 23 and 12 percent of its crop in 1991/92 and 1995/96 respectively. The only country in the region that appears not to be influenced by El Niño events is Vietnam, where production has shown spectacular increases since 1980.

Africa

21. In Africa, El Niño events usually bring a combination of droughts and heavy rains. Droughts occur in the southern parts of Africa, particularly in Angola, Madagascar, Zimbabwe and Zambia. In East Africa, heavy rains affect Kenya, Uganda and Tanzania, and are sometimes preceded by long periods of drought. West Africa seems to experience slightly drier conditions than normal but the effect seems to occur only in the year after an

El Niño event. The principal coffee producing countries are Côte d'Ivoire in West Africa; Cameroon and the Democratic Republic of the Congo in central Africa; Uganda, Ethiopia and Kenya in East Africa; and Angola and Madagascar in southern Africa. Graphs 7, 7a, 7b and 7c show changes in coffee production in Africa since 1965. Although changes in African production are influenced by social conflicts in certain areas, it should be noted that in most cases production falls coincide with the years after an El Niño event. Thus, production fell in 1966/67 (-10 percent), 1973/74 (-12 percent), 1977/78 (-17 percent), 1983/84 (-16 percent), 1987/88 (-7 percent) and 1992/93 (-32 percent). Total African coffee production is strongly affected by production in Côte d'Ivoire and Uganda and production falls in these two countries do not coincide with El Niño events.

Conclusions

22. Statistical data on coffee production in major coffee areas since 1965 do not allow us to conclude that there is a close correlation between El Niño events and production changes. There are certain links between El Niño years and production falls in a number of regions but the relationship is not stable. World production excluding Brazil did not show a negative change during the 1982/83 El Niño event. However, certain major producing countries produced smaller crops, particularly Colombia (-15 percent), Indonesia (-19 percent), India (-18 percent) and Papua New Guinea (-31 percent). The Asia/Pacific region lost 16 percent of its total production.

III. THE 1997/98 ENSO AND PROSPECTS FOR COFFEE PRODUCTION

23. The initial repercussions of the 1997/98 El Niño event on world weather conditions were very marked and may have led to exaggerated fears concerning prospects for agricultural production in general and coffee production in particular. The Asia/Pacific region was badly affected by droughts, particularly in Indonesia, Papua New Guinea and the Philippines. The first rains fell only at the end of September 1997. There is a risk that

the Indonesian crop will be 10 to 15 percent lower than in 1996/97. However, production in Vietnam is still growing strongly and may make up for production shortfalls in other countries of the region affected by El Niño.

24. In Mexico and Central America, drought has given way to abnormal rains, which may affect performance in a number of coffee producing countries. Abnormal weather in Mexico has brought snow for the first time in 115 years. The quality of the 1997/98 crop may be affected and the 1998/99 crop will be smaller if the bad weather continues.

25. In South America, Colombia is experiencing drought in certain coffee growing areas. Lack of rain in January and February 1998 will delay flowering and reduce the 1998/99 crop, harvesting of which is due to commence in April/May 1998.

26. The drought affecting East Africa since early 1997 has been broken by abundant rains since November 1997. Kenya, Uganda and Tanzania are likely to suffer crop losses. West Africa is in a different position since an El Niño event has a delayed effect in this Atlantic region.

27. These disturbing crop prospects should, however, be viewed with a certain amount of caution. The significance of the impact of the current El Niño event should be considered by making a comparison with the characteristics of the 1982/83 event, which continues to hold the record as the severest this century. In fact, the economic consequences of the 1982/83 El Niño event were staggering, entailing considerable loss of human life and famine in many parts of the world. According to analysts, the economic damage was estimated at more than US$8 billion. Table 4 below gives some indication of weather anomalies caused by the 1982/83 El Niño event:

TABLE 4

WEATHER ANOMALIES IN 1982/83

Region	Anomaly
Mexico and Central America	Drought
South America	
Ecuador and northern Peru	Floods
Southern Peru and western Bolivia	Drought
Rest of Bolivia	Floods
Southern Brazil and eastern Paraguay	Floods
Asia/Pacific	
Southern India and Sri Lanka	Drought
Indonesia	Drought
Philippines	Drought
Papua New Guinea	Drought
Tahiti	Violent hurricane
Australia	Drought and bush fires
Africa	Drought

28. The strength of the first manifestations of the 1997/98 El Niño event led a number of observers to believe that it would be the "El Niño of the century". Graphs 8 and 9 provide a comparison between the SOI indexes for the 1997/98 El Niño event and those for the 1982/83 and the 1991/92 events. It can be seen, particularly from Graph 8, that the 1997/98 El Niño event developed very rapidly, with anomalies reaching higher peaks than in the 1982/83 event in May/June 1997. It has become progressively weaker, however: at the beginning of November 1997, daily SOI indexes remained positive during a whole week. Some observers consider that the peak reached in June will remain the highest; this would place the current El Niño event well below the 1982/83 event.

CONCLUSION

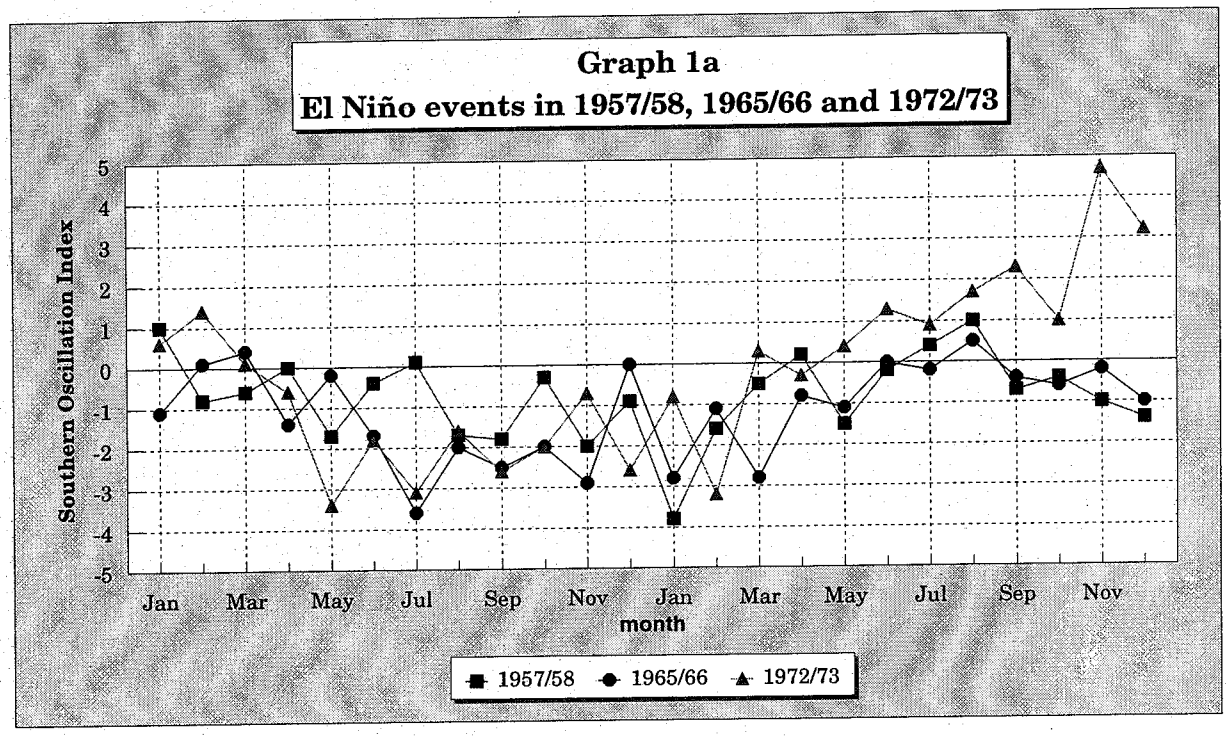
29. Notwithstanding the reduced intensity of the 1997/98 El Niño event, it continues to be unpredictable in terms of its severity and duration. Its impact on total world coffee production will be attenuated by the diversity in the performance of producing countries. Some countries suffered crop losses in 1982/83 while others increased their production.

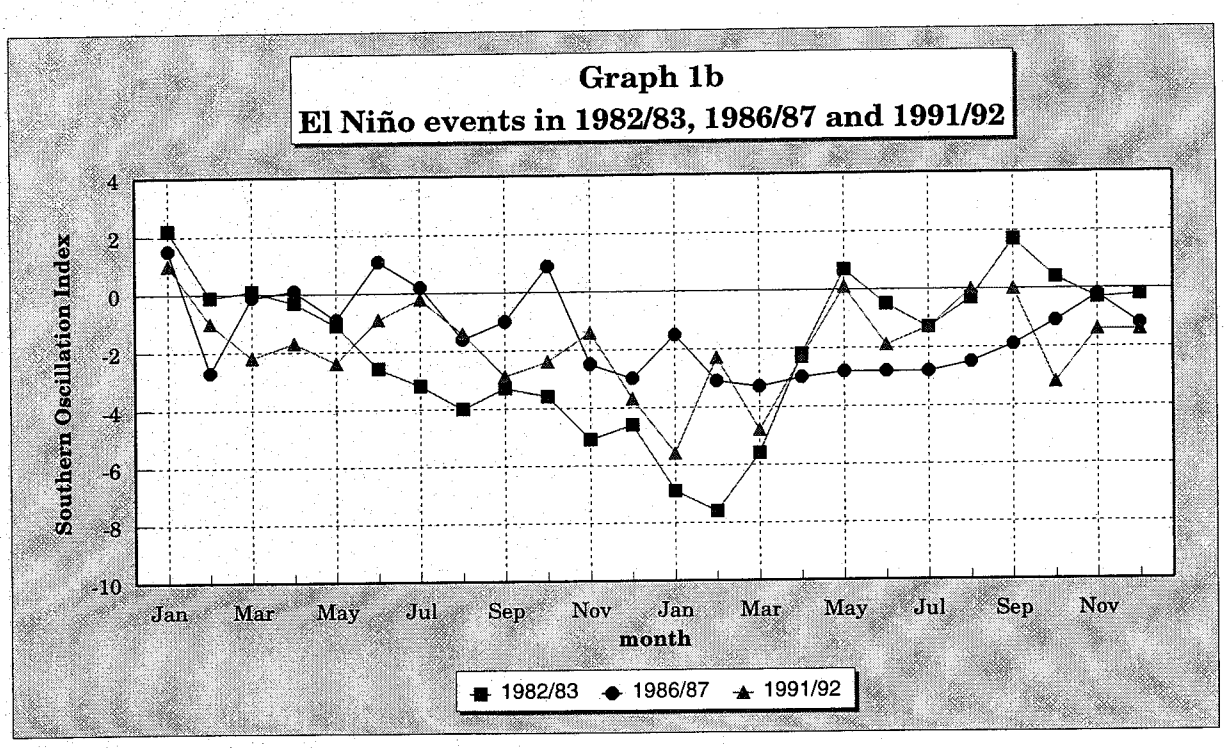
Recent indications are that there are likely to be losses in the Indonesian crop in 1997/98 and even in 1998/99, but performance in Vietnam and many other producing countries will compensate for such losses. It should also be noted that it is difficult to make satisfactory predictions of the impact of the current El Niño event since reliable data on previous events (only around 10) are still insufficient to establish a significant statistical relationship with production changes.

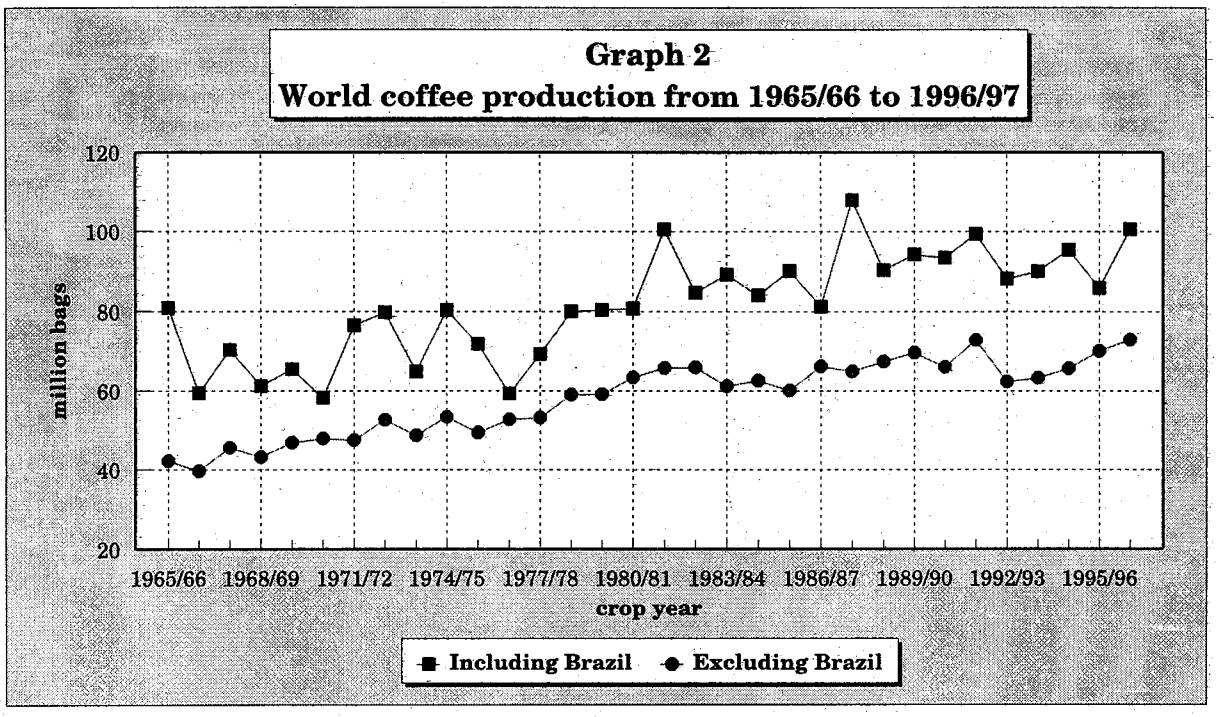
ANNEX

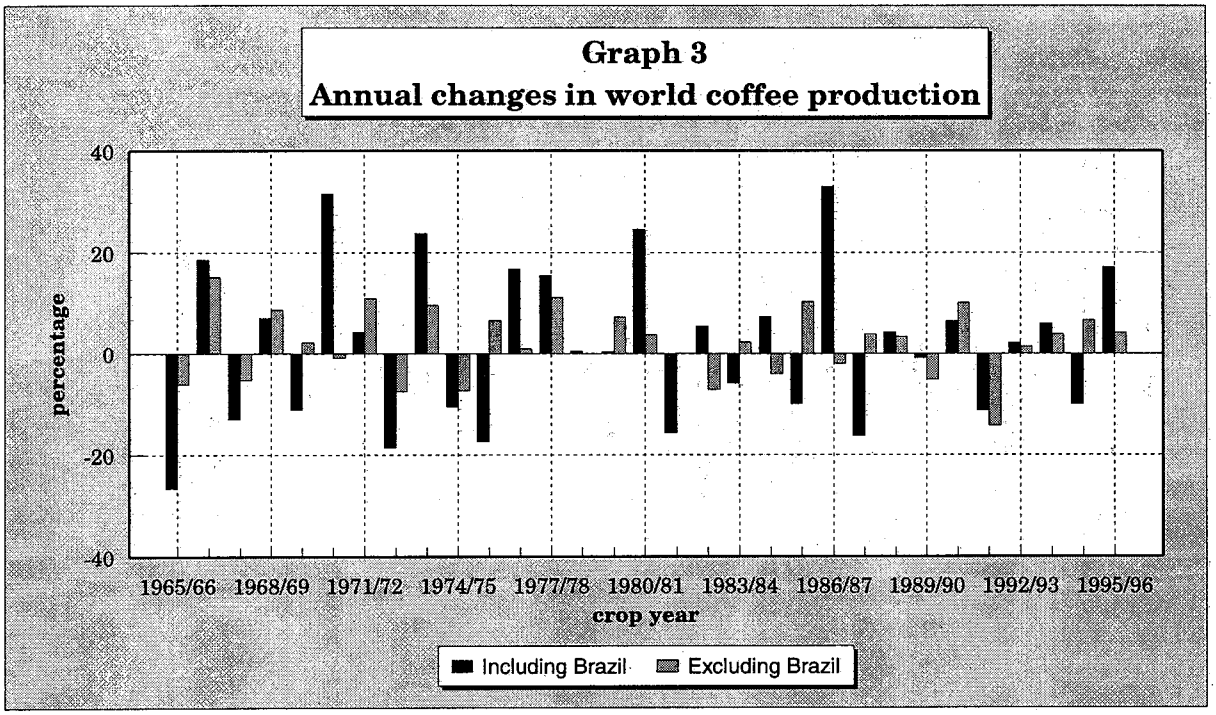
ANEXO

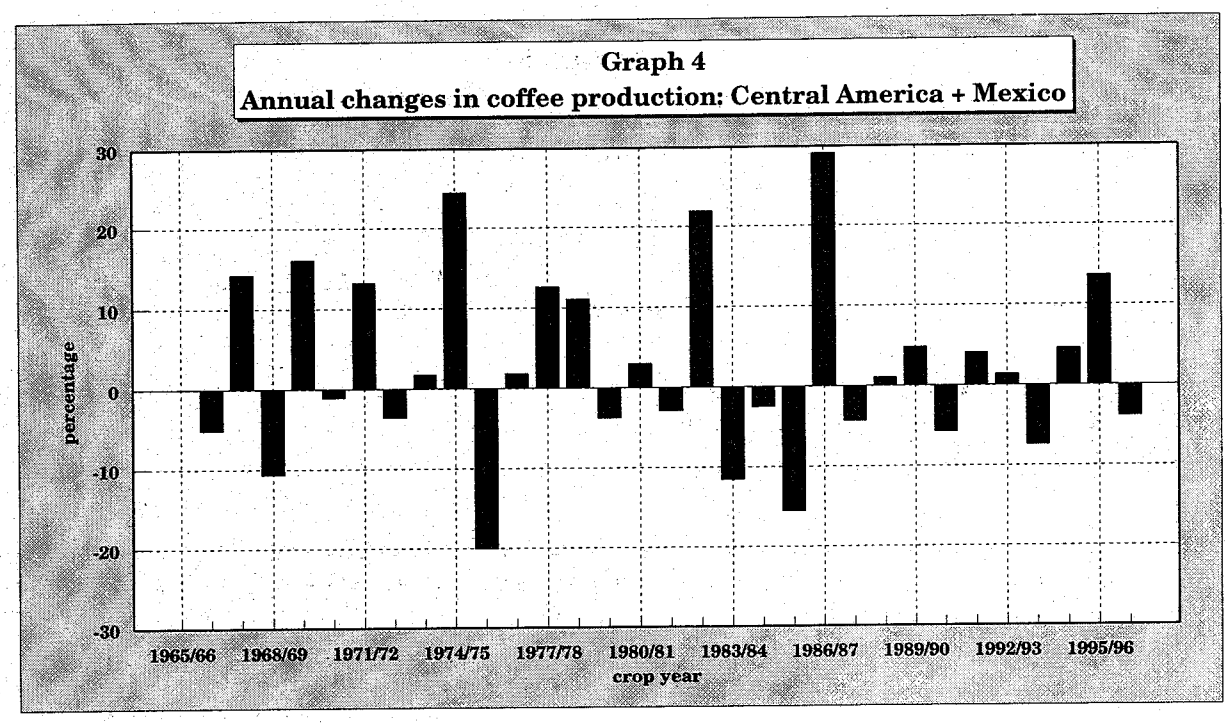
ANNEXE

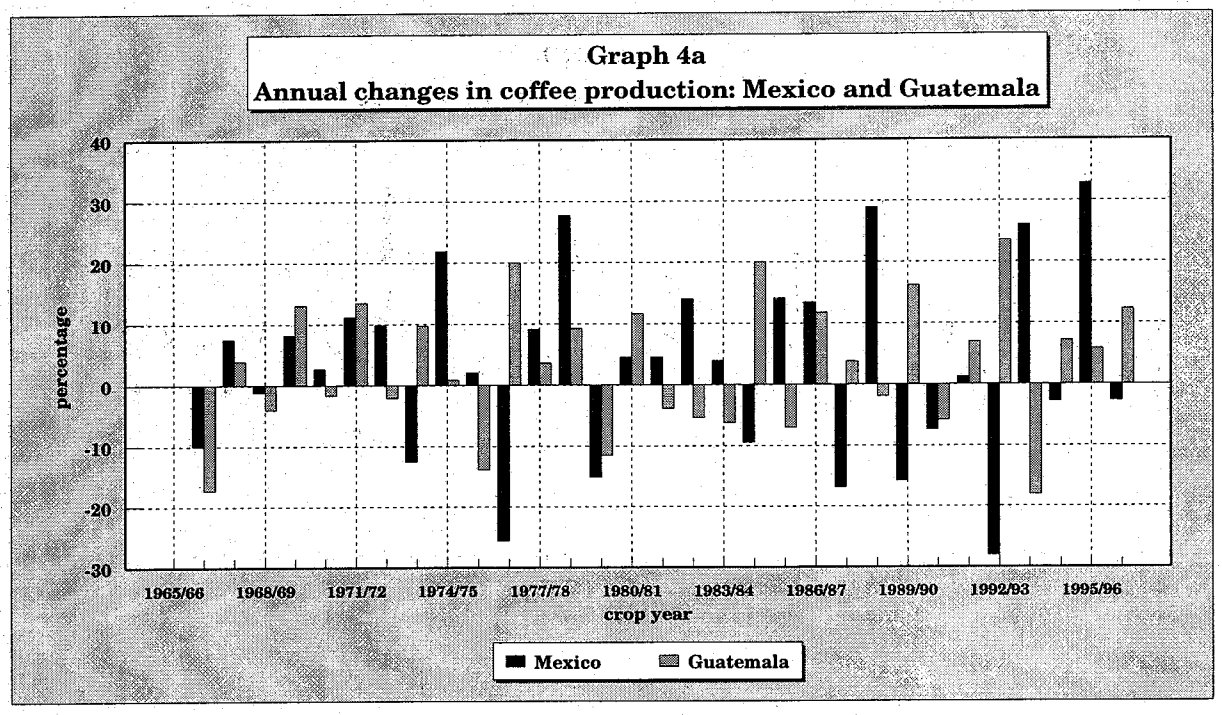

Graph 1a
El Niño events in 1957/58, 1965/66 and 1972/73
Southern Oscillation Index
5
4
3
2
1
0
-1
-2
-3
-4
-5
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
month
1957/58
1965/66
1972/73

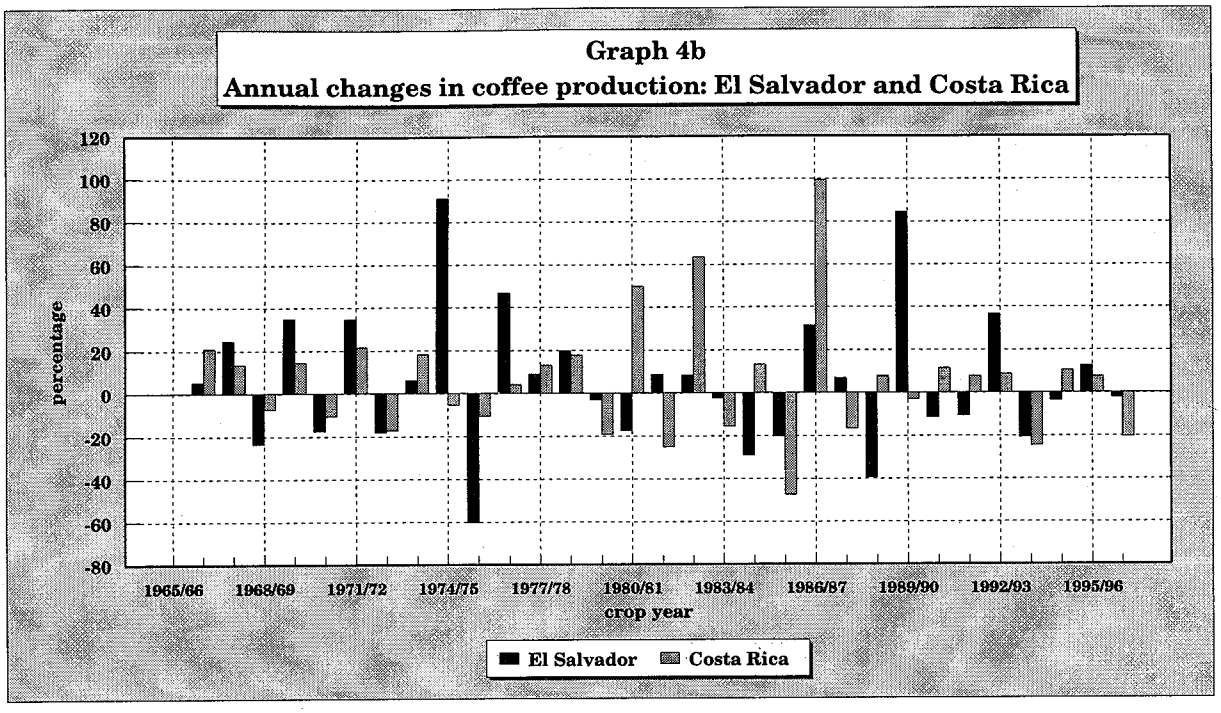

Graph 1b
El Niño events in 1982/83, 1986/87 and 1991/92
Southern Oscillation Index
4
2
0
-2
-4
-6
-8
-10
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
month
1982/83
1986/87
1991/92

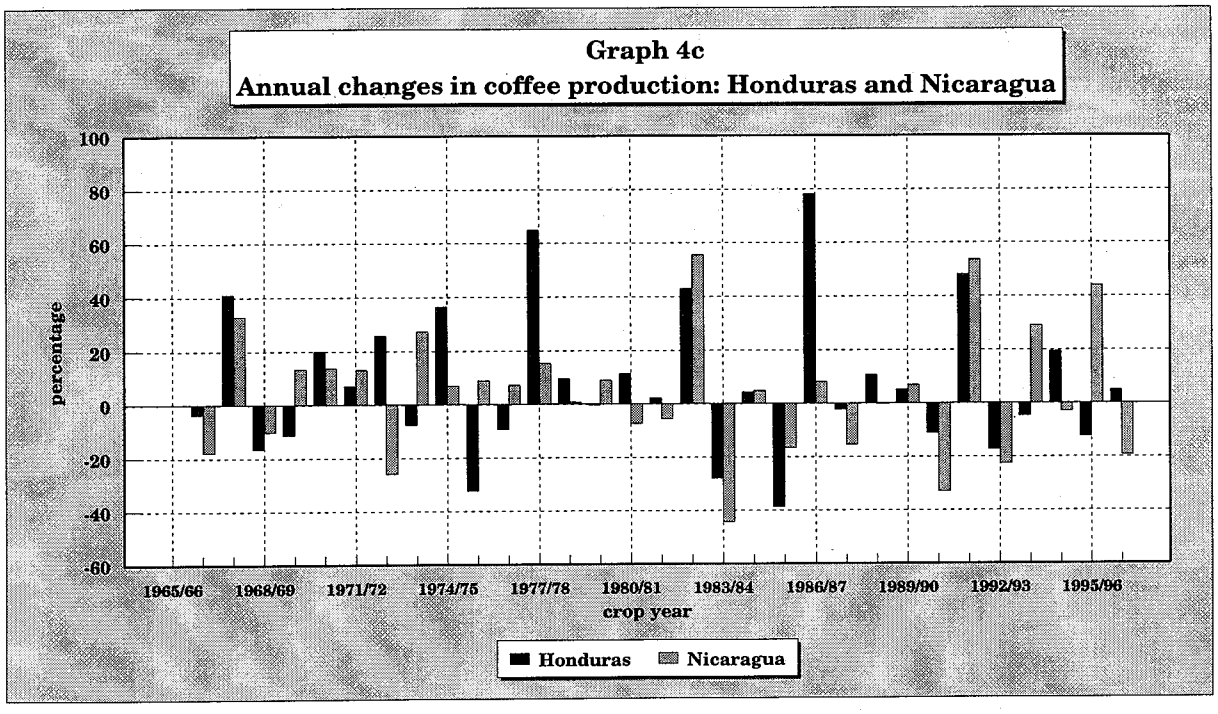

Graph 2
World coffee production from 1965/66 to 1996/97
120
100
80
60
40
20
million bags
1965/66 1968/69 1971/72 1974/75 1977/78 1980/81 1983/84 1986/87 1989/90 1992/93 1995/96
crop year
Including Brazil
Excluding Brazil

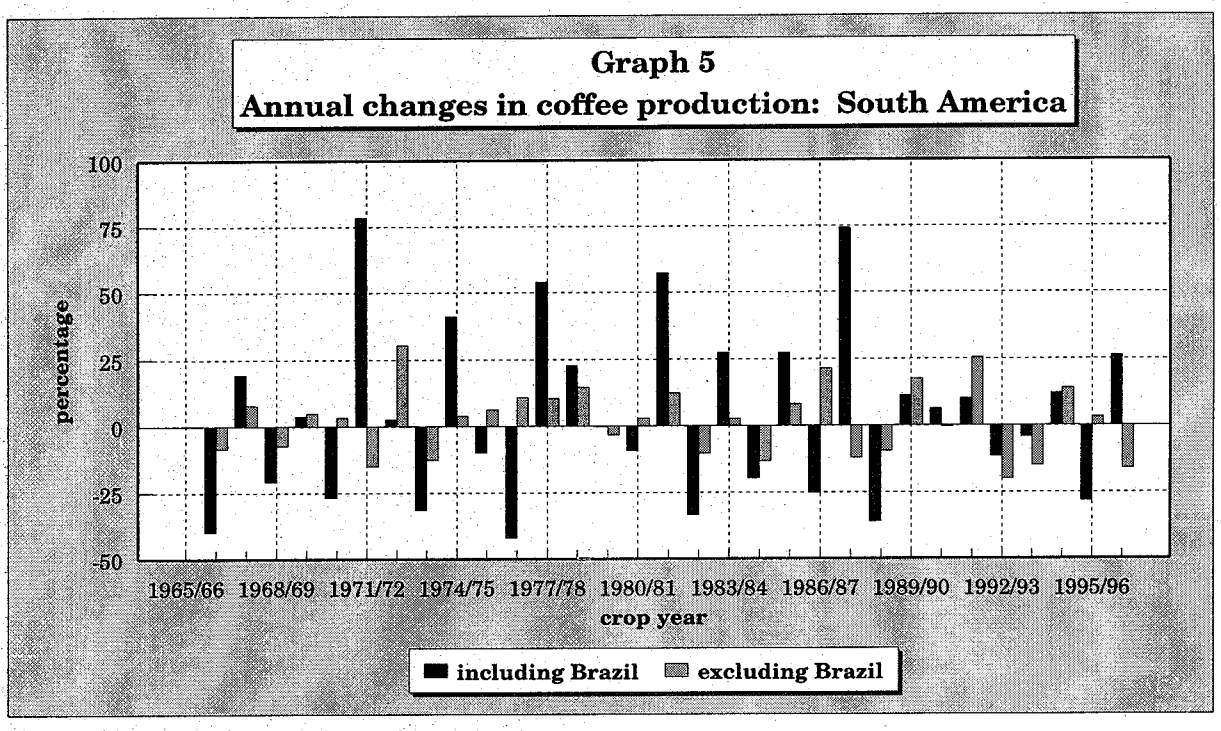

Graph 3
Annual changes in world coffee production
40
20
0
-20
-40
percentage
1965/66 1968/69 1971/72 1974/75 1977/78 1980/81 1983/84 1986/87 1989/90 1992/93 1995/96
crop year
Including Brazil
Excluding Brazil


Graph 4
Annual changes in coffee production: Central America + Mexico
30
20
10
0
-10
-20
-30
percentage
1965/66
1968/69
1971/72
1974/75
1977/78
1980/81
1983/84
1986/87
1989/90
1992/93
1995/96
crop year

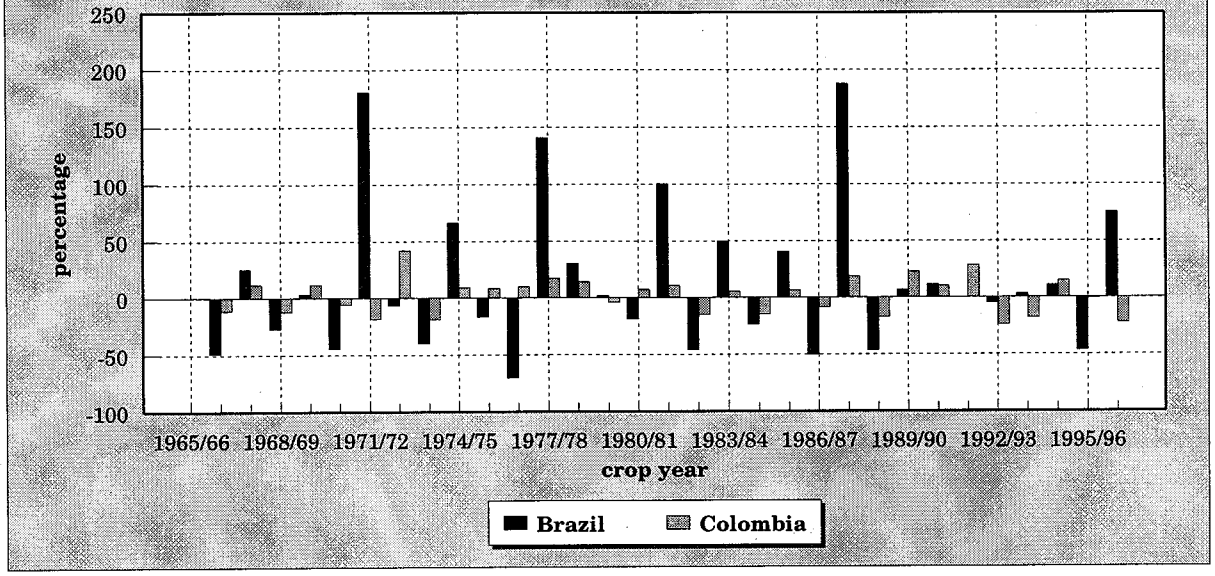

Graph 4a
Annual changes in coffee production: Mexico and Guatemala
40
30
20
10
0
-10
-20
-30
percentage
1965/66
1968/69
1971/72
1974/75
1977/78
1980/81
1983/84
1986/87
1989/90
1992/93
1995/96
crop year
Mexico
Guatemala


Graph 4b
Annual changes in coffee production: El Salvador and Costa Rica
120
100
80
60
40
20
0
-20
-40
-60
-80
percentage
1965/66
1968/69
1971/72
1974/75
1977/78
1980/81
1983/84
1986/87
1989/90
1992/93
1995/96
crop year
El Salvador
Costa Rica

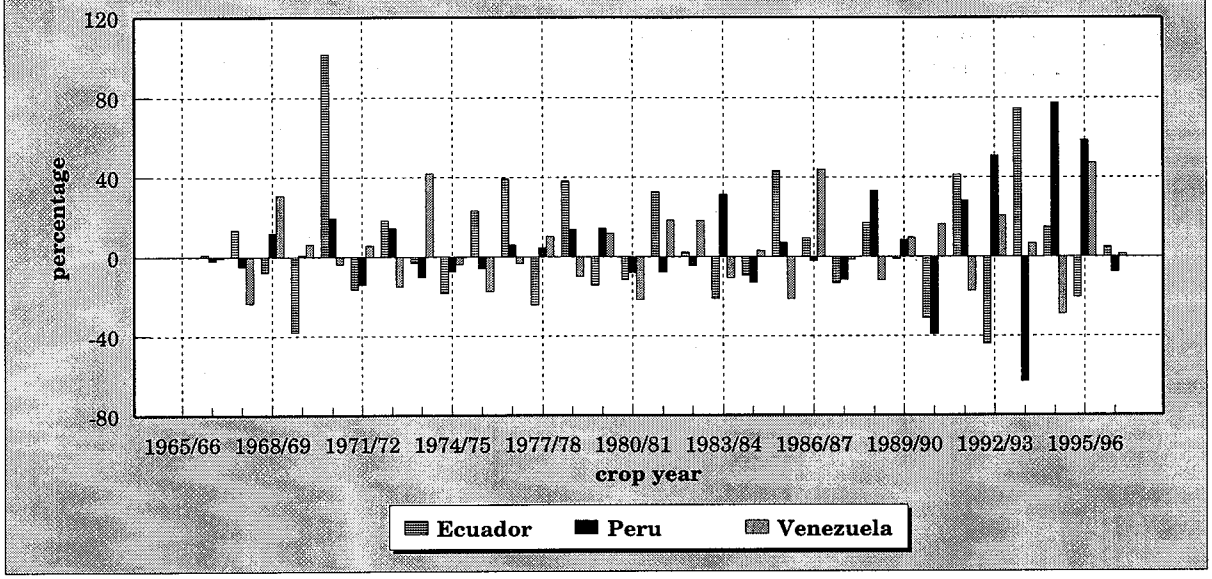

Graph 4c
Annual changes in coffee production: Honduras and Nicaragua
100
80
60
40
20
0
-20
-40
-60
percentage
1965/66
1968/69
1971/72
1974/75
1977/78
1980/81
1983/84
1986/87
1989/90
1992/93
1995/96
crop year
Honduras
Nicaragua

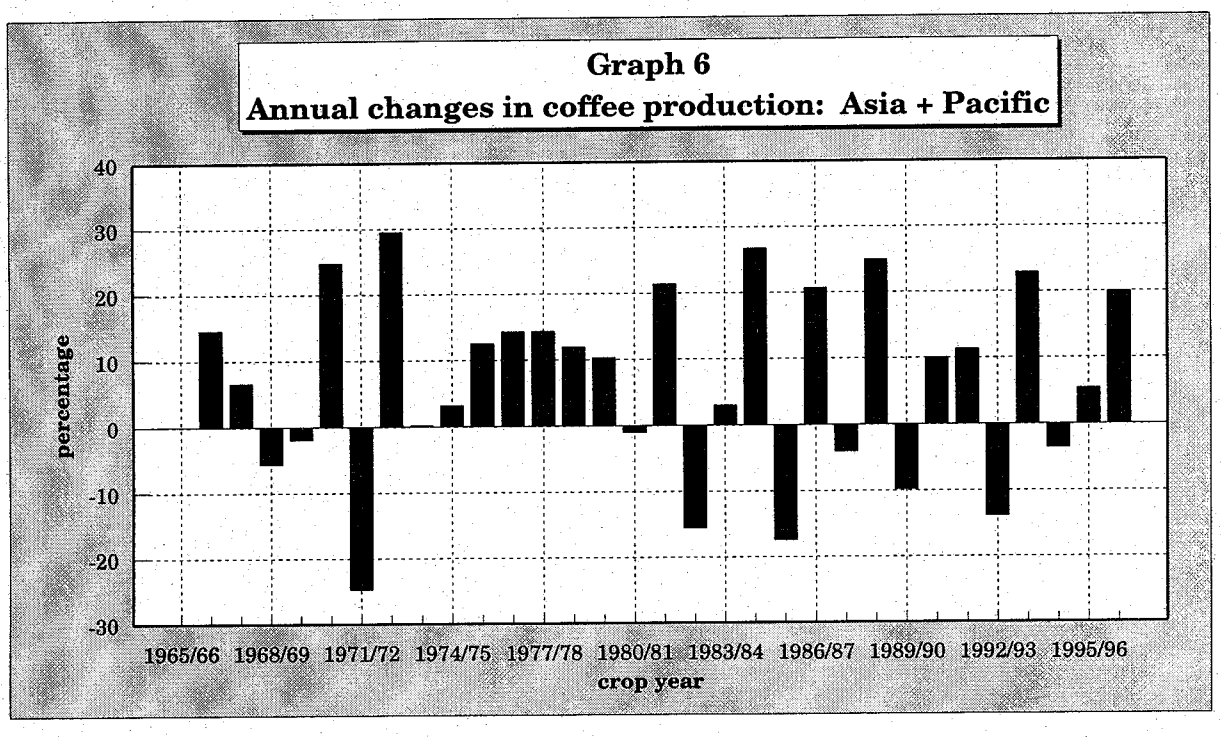

Graph 5
Annual changes in coffee production: South America
100
75
50
25
0
-25
-50
percentage
1965/66
1968/69
1971/72
1974/75
1977/78
1980/81
1983/84
1986/87
1989/90
1992/93
1995/96
crop year
including Brazil
excluding Brazil

Graph 5a
Annual changes in coffee production: Brazil and Colombia



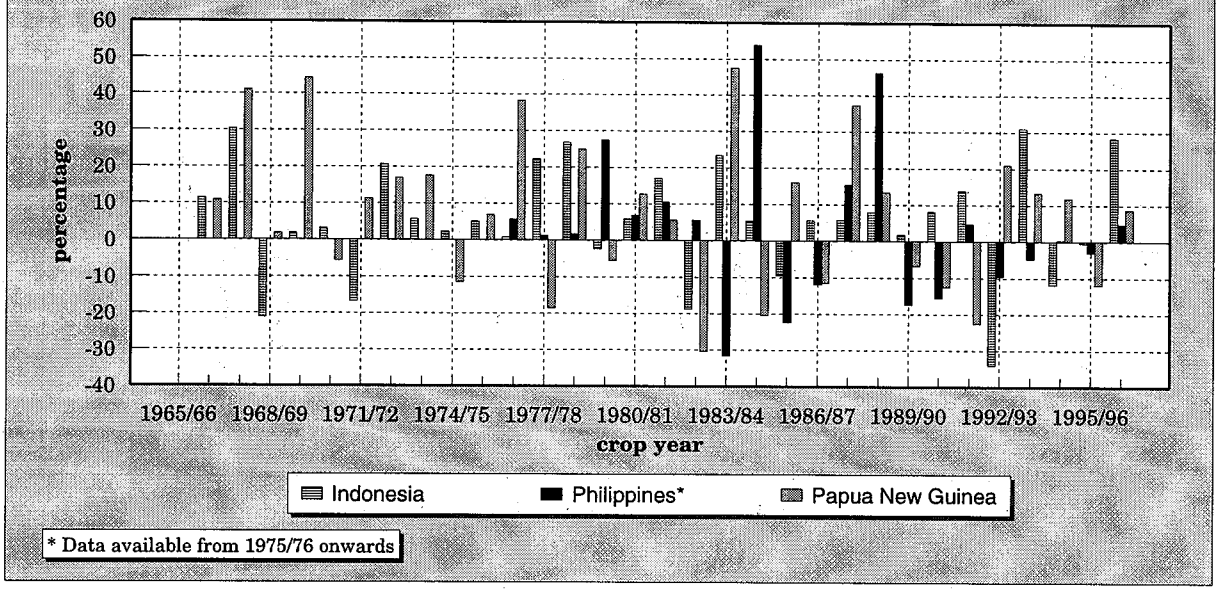
Graph 5b
Annual changes in coffee production: Ecuador, Peru and Venezuela




Graph 6
Annual changes in coffee production: Asia + Pacific
40
30
20
10
0
-10
-20
-30
percentage
1965/66
1968/69
1971/72
1974/75
1977/78
1980/81
1983/84
1986/87
1989/90
1992/93
1995/96
crop year

Graph 6a

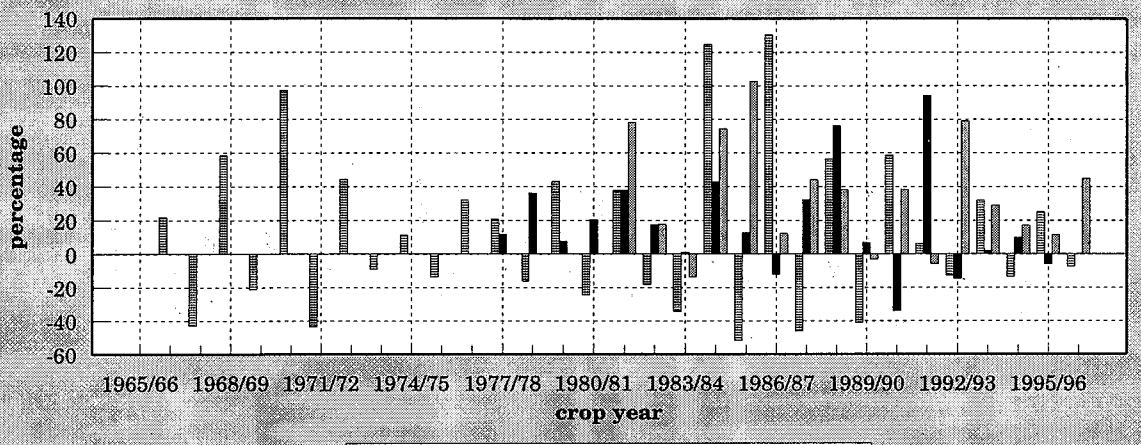
Annual changes in coffee production: Indonesia, Philippines and Papua N. Guinea



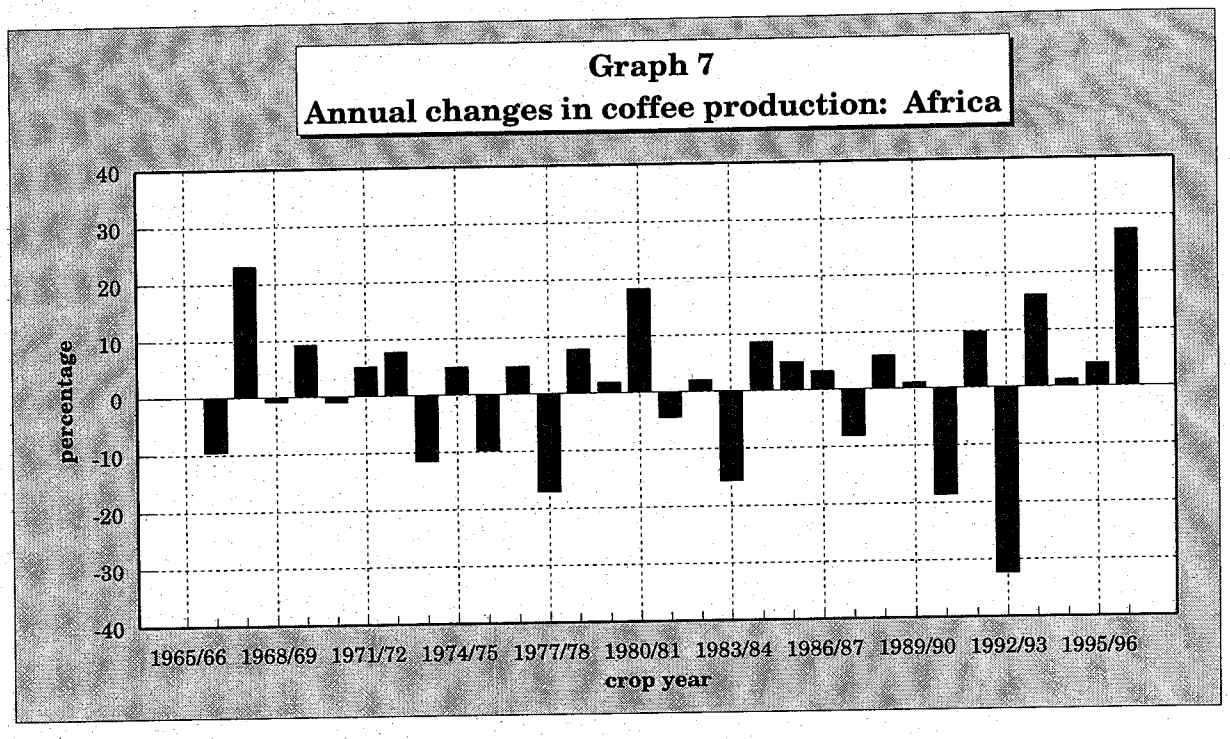
* Data available from 1975/76 onwards

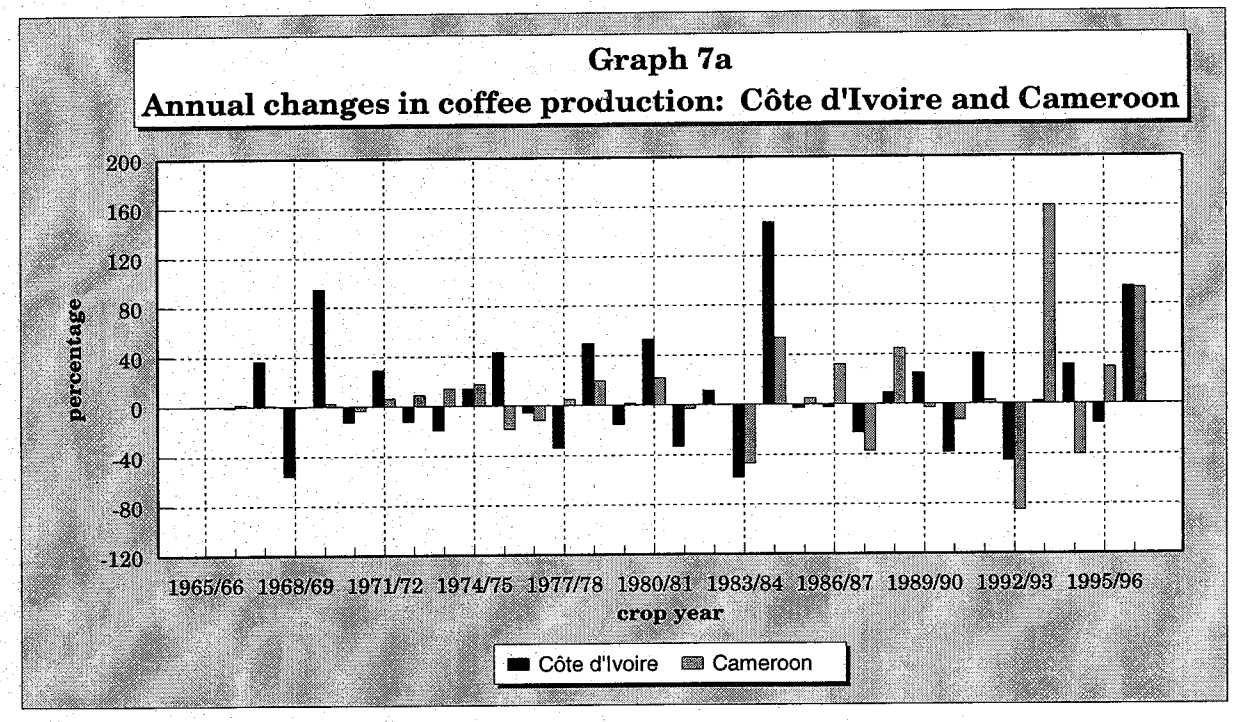
Graph 6b

Annual changes in coffee production: India, Thailand and Vietnam

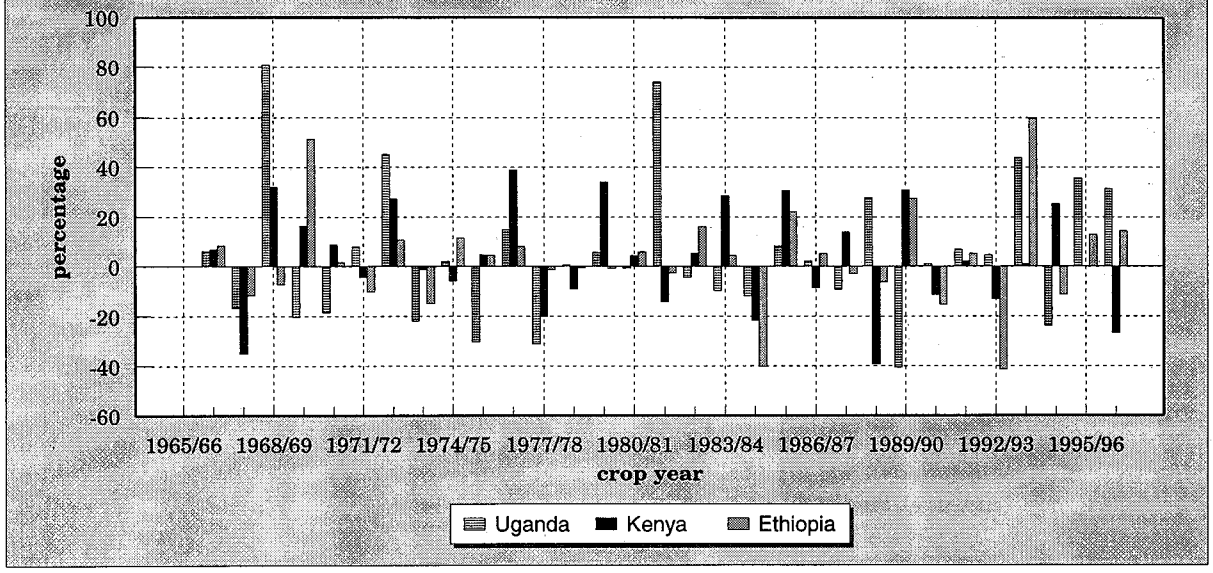


* Data available from 1977/78 onwards
** Data available from 1981/82 onwards

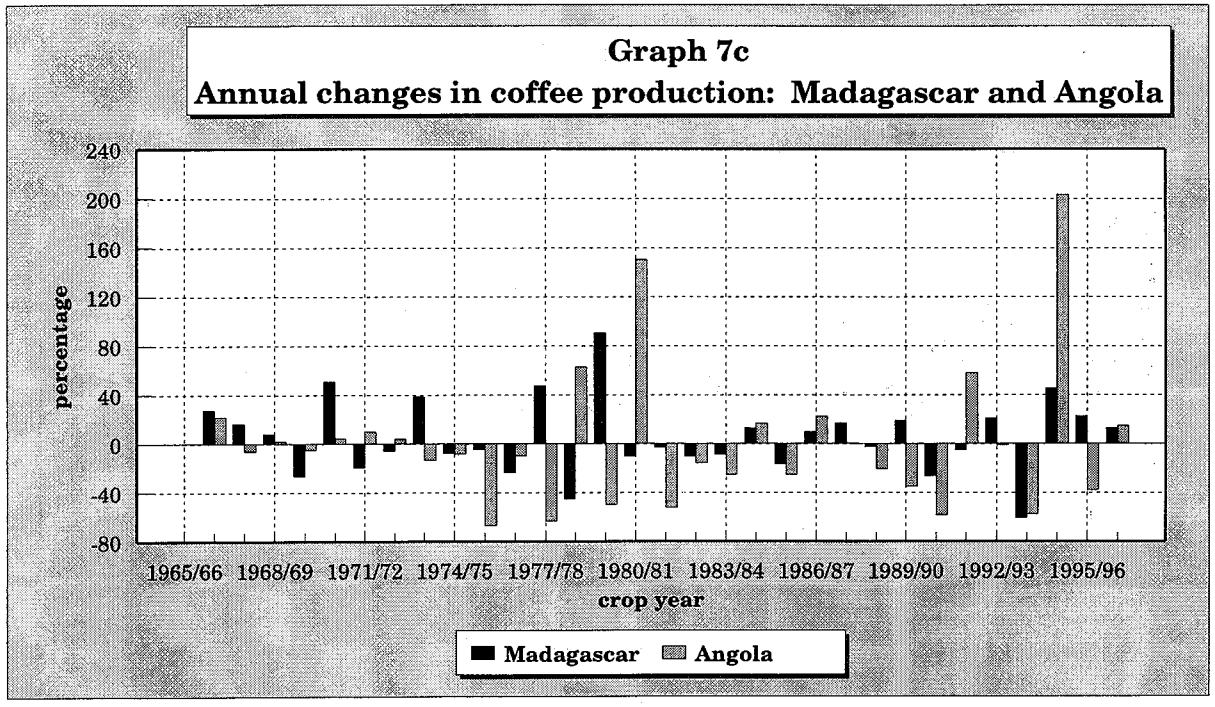

Graph 7
Annual changes in coffee production: Africa
40
30
20
10
0
-10
-20
-30
-40
percentage
1965/66 1968/69 1971/72 1974/75 1977/78 1980/81 1983/84 1986/87 1989/90 1992/93 1995/96
crop year

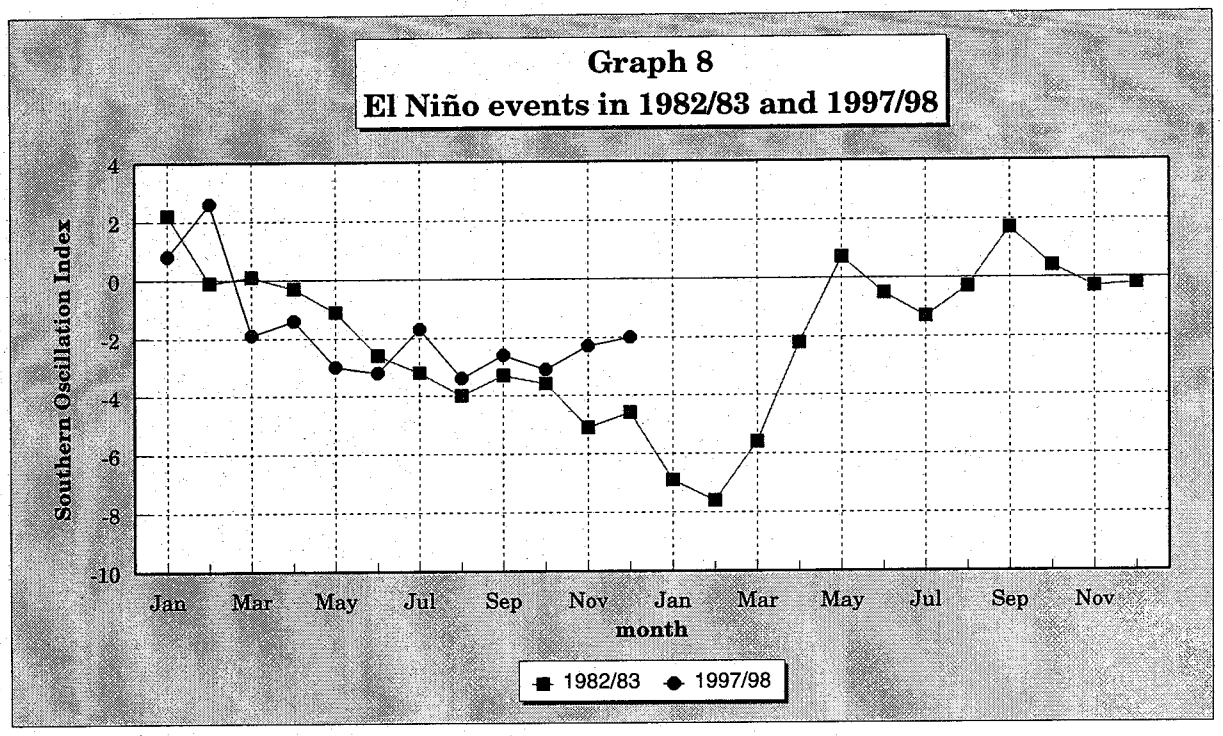

Graph 7a
Annual changes in coffee production: Côte d'Ivoire and Cameroon
200
160
120
80
40
0
-40
-80
-120
percentage
1965/66 1968/69 1971/72 1974/75 1977/78 1980/81 1983/84 1986/87 1989/90 1992/93 1995/96
crop year
Côte d'Ivoire
Cameroon

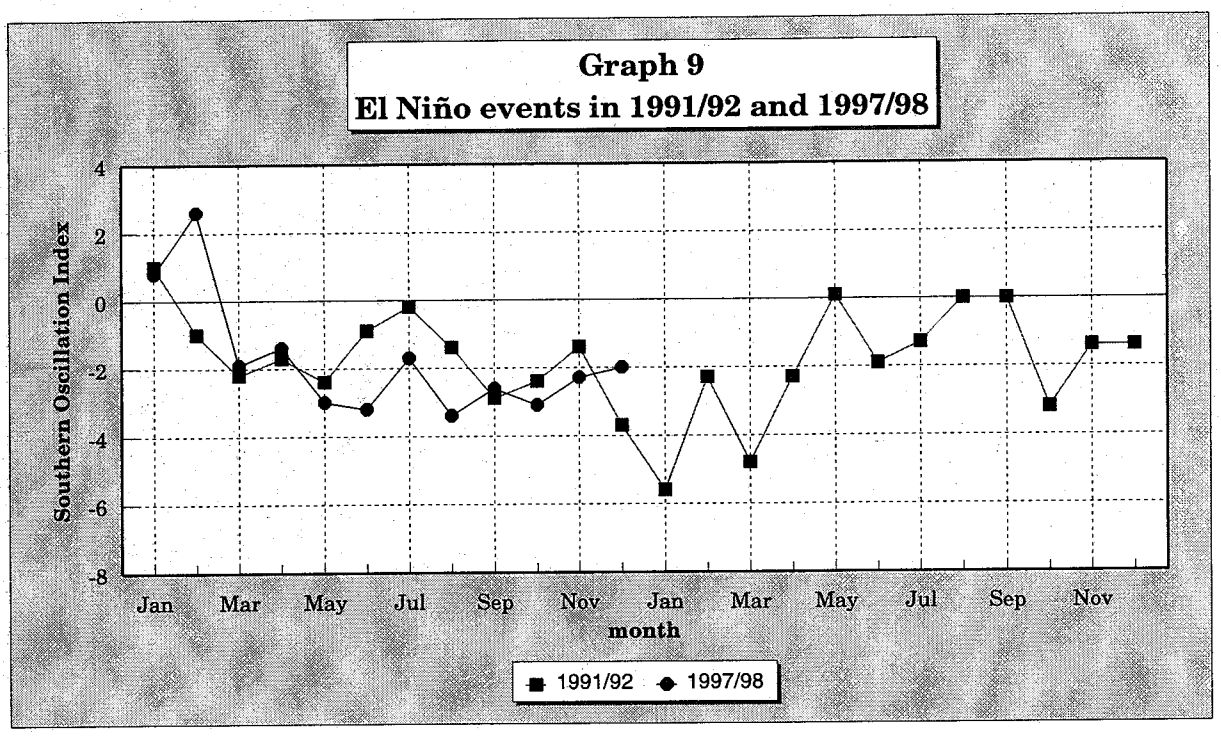
Graph 7b
Annual changes in coffee production: Uganda, Kenya and Ethiopia



Graph 7c
Annual changes in coffee production: Madagascar and Angola




Graph 8
El Niño events in 1982/83 and 1997/98
Southern Oscillation Index
4
2
0
-2
-4
-6
-8
-10
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
month
1982/83
1997/98


Graph 9
El Niño events in 1991/92 and 1997/98
Southern Oscillation Index
4
2
0
-2
-4
-6
-8
Jan
Mar
May
Jul
Sep
Nov
Jan
Mar
May
Jul
Sep
Nov
month
1991/92
1997/98