

Reported Effects of the 1997-98 El Niño

Introduction	1	Eastern Asia	8
Non-Specific Areas	2	Southern Asia	8
USA	3	Middle East	8
West Indies	4	Europe	8
Central America	4	North and West Africa	9
South America	5	East/Central Africa	9
Australia & New Zealand	5	Southern Africa	10
Southeast Asia	6		

The National Drought Mitigation Center is compiling a list of effects of the 1997 El Niño, as reported in news stories through October 30, 1997. It is important to remember that anomalous weather events happen continually. Because of the interdependence of global circulation patterns, it is often difficult to determine whether El Niño is a direct or indirect cause of certain events, or whether it is a factor at all. It is likely that media hype over the current El Niño has resulted in more effects being attributed to the phenomenon than can be scientifically justified.

El Niño's Typical Impacts

In general, when El Niño conditions develop in the eastern Pacific, the first visible impacts include an increase in precipitation in the eastern Pacific, including parts of South America, and a decrease in precipitation for western Pacific locations such as Australia, Indonesia, Southeast Asia, and the Philippines. As the El Niño continues, other impacts include a significant decrease in tropical storm activity in the Atlantic Ocean and a corresponding drought in the Caribbean and Central America. Tropical storm activity increases in the eastern Pacific. Anomalously wet conditions are common across the southern United States and eastern Africa. Severe droughts can also occur in southern Africa and in northeastern Brazil.

The Current El Niño

To date, many of the anticipated impacts from the current El Niño have occurred. Some countries, such as Indonesia, Malaysia, Singapore, and Papua New Guinea have been hard hit by drought. However, timely rains saved valuable crops in Australia and India. In other regions of the world, it remains to be seen whether the impacts associated with the 1982-83 El Niño, such as floods in the southern United States and drought in southern Africa, will materialize.

For more details on El Niño, the Climate Prediction Center in Washington, D.C., has put together a [special climate summary](#) for November 1997 discussing the current El Niño.

For more information, please visit the El Niño section of the National Drought Mitigation Center's web site:

<http://enso.unl.edu/ndmc/enigma/elniño.htm>

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Where	Current Impact	Potential Impact
<p>Non-Specific Areas</p>	<p>Droughts, floods, storms and fires; crop yield reductions; fish catch losses; food shortages; high coffee, cocoa, soybean, corn and other grain prices; stock market fluctuations and investment changes; conferences; task forces established; emergency preparations; air pollution from fires; anomalous inflation rate deviations.</p>	<p>Droughts, storms, floods and fires; 60% disruption in world copper production; decline in winter heating oil prices; insurance losses from floods, storms and agriculture losses; coffee, cocoa, coconut, cereals, soybeans, oil palm, and fish catches yield impacts; increase in financial futures contracts and agriculture commodity trade volumes to offset climatic risks; increased commodity prices; reduction in incomes for some; affected national trade balances; loss of investment in high risk countries; sale of hydro-electric stock shares in drought areas; increase of construction company stock in storm areas; 0.5-1.0% average reduction in GNP for hard hit regions such as Peru; some marine animals could starve because of changing food supplies with shifting ocean currents.</p>

Where	Current Impact	Potential Impact
<p>USA</p> <p>Alaska</p> <p>Arizona</p> <p>California</p> <p>Colorado</p> <p>Hawaii</p> <p>Montana</p> <p>Oregon</p> <p>Pacific Northwest thru Alaska</p> <p>Rocky Mountains</p> <p>Northern States</p> <p>Northern Plains & Great Lakes</p> <p>Northeast States</p> <p>Midwest States</p> <p>Southwest States</p> <p>Gulf States</p> <p>Southern States</p>	<p>Hundreds of thousands of seabirds starved to death due to food shifts by changing sea currents (esp. short-tailed shearwaters, black-legged kittiwakes and murre).</p> <p>Hurricane Nora caused \$150-200 million damage to crops.</p> <p>Hurricane Nora caused \$3-5 million damage to crops; promoting insurance & structure preparation; emergency training and coordination; home repair; construction rush to complete projects; businesses hiring more crisis response personnel; million for state's storm preparations.</p> <p>October blizzard; livestock deaths.</p> <p>Fishing industry impacts from migrating fish populations due to warmer waters.</p> <p>Early blizzards.</p> <p>October blizzard; livestock deaths; millions of dollars in tree damage.</p>	<p>Decrease in Atlantic hurricanes; 5-7% increase in some food prices if drought occurs next summer; drought-resistant seed use.</p> <p>Flooding; droughts; mudslides; winter storms.</p> <p>Above average snowfall; wetter and cooler winter; avalanches; heavy rains and flooding in the spring.</p> <p>Drier.</p> <p>Dry, warm winter (on average 6 degrees warmer and six inches less precipitation).</p> <p>Balmier and sunnier.</p> <p>More blizzards, avalanches, mudslides</p> <p>Warmer winter.</p> <p>Warmer and drier winter.</p> <p>Milder winter.</p> <p>Increased precipitation and/or droughts; floods; mudslides.</p> <p>Cooler than normal temperatures.</p> <p>Increased precipitation, increased temperatures could spread diseases from more tropical areas.</p>

Where	Current Impact	Potential Impact
<p>West Indies</p> <p>Barbados Dominican Republic Jamaica</p>	<p>Drought. Drought.</p>	<p>Drought over the next two years; poor sugar harvests; bleaching of coral reefs; shortages of certain food crops; high temperatures; carrot, onion, and beet seed losses and/or plant loss due to heat in the early spring.</p> <p>Drought; reductions in irrigated rice, unirrigated corn and sorghum crops.</p>
<p>Central America</p> <p>Mexico Costa Rica Panama Honduras El Salvador Guatemala Nicaragua</p>	<p>Making emergency plans; importing essential commodities; granting storm preparation loans.</p> <p>Preparation for storms; increased hurricane activity (Hurricane Pauline caused 230-400 deaths and 50,000 homeless in the State of Guerrero and 250,000 homeless in Oaxaca; malaria, cholera and dengue fever; mudslides; and a loss of tourism).</p> <p>Drought; cattle feed shortages.</p> <p>Drought; future production volumes of corn, sorghum and beans have been damaged.</p> <p>Giant shrimp and lobsters are gone.</p> <p>Flooding in the north and west; deaths. Reduced water for hydroelectric power; 5% increase in electric power tariffs; crop losses; income losses; \$2.5 million in food aid from the U.S. for 12,200 people.</p>	<p>Corn, bean and rice shortages.</p> <p>Coastline storms affect shipping and tourism; warmer temperatures could spread tropical diseases into northern Mexico.</p> <p>Drought; coffee yield reduction in 1997-99 crops.</p> <p>Drought; drop in corn production.</p> <p>Drought; drop in corn production.</p> <p>Drought; drop in cereal production.</p>

Where	Current Impact	Potential Impact
<p>South America</p> <p>Columbia Peru</p> <p>Brazil</p> <p>Chile</p> <p>Ecuador</p> <p>Argentina</p> <p>Bolivia Venezuela</p>	<p>Drought and fire damage. Reduction of fish catch; \$19 million earmarked for El Niño preparation; \$130 million allocated for flood damage prevention in the north; \$250 million loaned to Peru through international banks for preparation work; state of emergency declaration; cooler temps and drought have “ruined harvests” and killed alpaca and llama livestock in the southern highlands; constructing 400 temporary shelters by December.</p> <p>Heat/drought (water shortages in parts; blackouts; fires in the southeast and center of the country; air pollution from the fires; loss of rain forest; reduced humidity levels).</p> <p>Flooding/hailstorms (3,600 people evacuated from flooding in the south; 20,000 people homeless from Uruguay River breach in the south; hailstorms; infrastructure damage; state of alerts; wheat harvest is delayed).</p> <p>Wind (change in wind direction could increase beach erosion).</p> <p>Flooding with 17 deaths, 60,000 homeless and 19 million people affected; \$165 million allocated for flood repair; damage to agriculture and infrastructure.</p> <p>Floods; placed \$7.5 million in prevention measures; “annihilation” of the fishing industry; banana, sugar and rice losses.</p> <p>Floods in the northeast (Uruguay River) with thousands stranded; tornados; hailstorms.</p> <p>State of emergency; hail and flooding. Flooding; coordinating emergency flood responses; agricultural sectors affected.</p>	<p>Drought, floods and fires; reduction in the anchovy catch. Drought, rising tides, floods and fires. Projected economic growth down 1% in 1998; expect \$300 million in agricultural export losses; increase in domestic food prices; flooding along the northern coast; drought in the southern highlands; reduced fish catches and fishmeal exports; 150 million victims anticipated; will relocate 10,500 people.</p> <p>30-60% more rain in the south and southwest of the country; drought in the northeast, southeast and center of the country; changes in the inflation rate; industry losses from water rationing and flooding of many crop regions affecting coffee, maize, soy, rice, beans, wheat, sugar cane, and fruit; general water rationing; flooding could delay soybean planting in the south.</p> <p>Flooding; warmer temperatures could cause the spread of tropical diseases into northern Chile.</p> <p>Rice, corn, soy and cocoa losses.</p> <p>More rain; more snow in the Andes; warmer temperatures could cause the spread of tropical diseases into northern Argentina. Flooding.</p>

Australia	Drought in eastern Australia (though they have had some recent rain); liquidating of livestock (projected sales up 15.8%); disrupted mines; food shortage; increased fires; deteriorating pasture conditions, increased tuna fishing yields.	Predicted wheat loss of \$432 million for the next crop, reduction in GNP of 1.5%, 2% declined in total commodity export growth to June 1998 and a 28% reduction in the total winter crop from last year until recent rain recouped over half of the expected losses ; prawn catches may decline; rock lobster catches may decline in 3 or 4 years.
New Zealand	\$130 million in crop and livestock losses.	

Where	Current Impacts	Potential Impacts
<p>SE Asia</p> <p>Papua New Guinea</p> <p>Indonesia</p> <p>Java East Java Jakarta</p> <p>Irian Jaya</p>	<p>Drought, floods and fires; 500-600 thousand hectares of land burned; loss of sunlight and crops; environmental damage; wildlife deaths; tourism reduction; increased health hazards.</p> <p>Drought; 100 deaths (mainly elderly and children from influenza); \$14 million in internal drought aid; \$2.6 million in aid from Australia. OK Tedi copper mine “force majeure”; disruption to Porgero goldmine production; food shortage; 80,000-300,000 people at life-threatening risk and 500,000-700,000 affected by drought; 50% of schools closed to search for food, businesses and factories; water shortages; air pollution from fires; reduced tuna catch.</p> <p>Drought, flood, land and forest fires; 1.88 million acres burned; \$1.8 billion cost for medical treatment, flight cancellations, timber loss, etc.; food prices up an average of 1.91%; 400 deaths from cholera, diseases and famine with 8,100 needing medical treatment; 20 million people affected by haze; 234 deaths in an air collision and ship collisions from smog; insect and bird deaths from fires; animal health effects and habitat reduction; animal attacks on humans (tigers); animals killed and/or sold (orangutans); coffee reduction in the lowlands; reduction in the latex yield; farm “devastation” and smoke-related problems; importing 300,000 tonnes of corn; postponed September corn planting; a dozen regional airports closed at times; cloud seeding.</p> <p>Maize crop “ravaged”.</p> <p>Drought and fires (130,135 hectares burned); 416 deaths from famine and disease (cholera, malaria, respiratory ailments, diarrhea, dehydration, malnutrition); 90,000 people face food shortages; poor water quality; loss of crops (esp. sweet potatoes).</p>	<p>Primate and other wildlife losses; palm oil yields reduction from 1998 levels.</p> <p>Coffee reduction of 50%, a breakdown of health services possible.</p> <p>Drought; monsoons delayed until Nov-Dec; potential social unrest; increased famine and mortality; 1997 coffee reduction of 30-40%; cocoa reduction by 30-50% in the September harvest; rice harvest reduction of 3% from expected (1.5 million tonnes); 2-4% reduction in agricultural output next year (esp. cassava, sweet potato and maize); delay of Oct-Nov rice harvest until January; coral reef damage from fire-related sediment washing into the sea; increased floods, diseases, insect infestations, and loss of soil fertility after the fires.</p> <p>Corn loss in the September harvest. Nickel loss of 12-17 million lbs. because of power reductions.</p> <p>Drought; coconut reduction next year; importation of rice and corn and reduced rice harvests.</p>

Where	Current Impacts	Potential Impacts
<p>SE Asia (cont.) Malaysia</p> <p>Sarawak Singapore Philippines</p> <p>Burma</p> <p>Thailand</p> <p>Vietnam</p>	<p>A ship collision with possibly 28 deaths; 60% reduction in May-Aug rainfall from 1996 levels; cocoa production affected.</p> <p>Drought; state of emergency. Migrant smog, loss of tourism. Drought and floods; released \$42.2 million for dams, shallow well development, water conservation and recycling efforts; decreased agricultural growth; decrease in unmilled rice yield in early and fall of 1997; cloud-seeding, fast-track construction of small water-impounding facilities and reservoirs (intensified efforts in October), multi-sectoral task forces; fall crops in critical condition in some areas; insect infestations; have restricted dam flows and turned to more coal-fired energy production.</p> <p>Floods and landslides causing thousands of deaths; 2 million people affected and 500,000 forced from their homes; 50% reduction in current rice crop.</p> <p>Drought; “blighted” current sugarcane harvest; over 1.12 million hectares of crop damage.</p> <p>Drought over the last 8 months (though have had rains in Sept/Oct); 4,000 people in the mountains and central Vietnam close to starvation.</p>	<p>Losses in oil palm and rubber crops in 1998; 40-50% loss in domestic Oct-Dec cocoa crops (from 1996) and reduced cocoa exports but increased export earnings due to higher prices; 22.8% fall in value of rubber exports in 1997.</p> <p>“Massive” food shortage.</p> <p>Drought; reduction in cash crops, rice, and sugar over the next eight months; 8% cut from expected in 1997/98 sugar cane yields; 38% reduction in 1998 second rice crop (from 1997 yields); reduced agricultural exports.</p>

Where	Current Impacts	Potential Impacts
<p>Eastern Asia Japan Hong Kong North Korea</p> <p>China</p> <p>Shangdong</p> <p>Southern China</p> <p>Russia Vladivostok</p>	<p>Record rainfall. As of 30 September: Famine from flooding and drought; 17% of children severely malnourished; 48% with diarrhea; and 13% with respiratory diseases; 1.2 million acres of farmland affected by drought. As of 31 October: the condition is improving with donor aid and harvests.</p> <p>Drought; cloud-seeding; overall good summer and autumn harvest but there is drought in the north and along the Yangtze River where 9.3 million hectares of crops are suffering (half of that seriously). \$750 million (30%) farm losses this summer; the affected crops include, soybeans, corn, cotton, peanuts paddy rice, millet, sorghum, and sweet potatoes; dry rivers resulting in 3.5 million rural families and 850,000 head of livestock without adequate water; have suspended planting 1.2 million acres and drought has stunted growth on 1.6 million acres of fruit, walnuts and other cash crops.</p> <p>Flooding and landslides in past months have killed from 140-400 people; 20,000 people injured; 1.25 million people evacuated.</p> <p>Dry summer and autumn; water conservation efforts.</p>	<p>Mild winter. Famine.</p> <p>Maize and cotton reduction in the fall harvest .</p> <p>Autumn crop harvests in jeopardy.</p> <p>Severe reduction in this year's crops.</p>
<p>Southern Asia India</p> <p>Sri Lanka</p>	<p>Overall average monsoon but uneven rainfall distribution (June-Oct); drought in the south;</p> <p>Floods with 14,000 homeless.</p>	<p>Drought; reduction in 1997/98 winter food grain harvest of 1.5% and oilseed harvest of 5.5% from last year in southern states (drought may also affect the same June/July crops in 1997/98).</p>
<p>Middle East Iran Israel Jordan</p>	<p>Floods and related deaths (Oct) Floods, hailstorms and wind; deaths, injuries and homeless (Oct).</p>	<p>50% reduction in the current saffron crop.</p>
<p>Europe</p>	<p>Flooding and warmer temperatures.</p>	

Where	Current Impact	Potential Impact
<p>North and West Africa</p> <p>Algeria</p> <p>Ghana</p> <p>Niger</p> <p>Senegal</p> <p>Ivory Coast</p> <p>Somalia</p>	<p>\$200,000 in crop losses this season.</p> <p>Food shortage in the Northern and Upper-Eastern regions.</p> <p>71,000 villagers face famine in the southeastern Districts.</p> <p>Drought; tens of thousands of cattle deaths and reduced cattle prices.</p> <p>Drought (though recent rains have reduced fears of cocoa reductions).</p> <p>Flooding/drought; human/animal deaths; property destruction; food shortage.</p>	<p>July/Aug drought will affect next harvest. 20% loss in grain production.</p>
<p>East/Central Africa</p> <p>Tanzania</p> <p>Kenya</p> <p>Rwanda</p> <p>Burundi</p> <p>Ethiopia</p> <p>South Tigray</p> <p>Sudan</p> <p>Congo</p> <p>Uganda</p> <p>Egypt</p>	<p>Drought; national food emergency (900,000 metric ton food shortage in Sept.); “skyrocketing” food prices; ban on food exports; opened yellow corn imports; increasing power rationing; food, cattle and cash crop losses in northern Tanzania; widespread crop losses; set aside \$159,000 for buying seeds.</p> <p>Imported 375,000 tons of maize to offset recent drought losses, floods along the coast (20 dead, hundreds displaced, millions of dollars in property damage); food shortages, committee established to study El Niño.</p> <p>Drought in the south; widespread crop failures.</p> <p>Drought; food shortages</p> <p>3.5 million people affected by drought; widespread crop failure (needed 219,000 metric tons of food in Oct); death of thousands of livestock; malnutrition; distress migration of people and animals; lack of drinking water, watering holes drying up; power rationing.</p> <p>171,000 people affected; 14,000 cattle deaths; 74,000 malnourished mothers and children.</p> <p>Drought aid requested for 2.6 million people in the south.</p> <p>Drought; food shortage.</p> <p>Extended 1996-97 Nov-Feb dry season; 50% crop loss of the last season harvest; food shortage; lately thunderstorms and hailstorms in areas.</p> <p>Heavy rains; deaths and injuries (Oct).</p>	<p>Food shortage; 150 million people could be threatened with starvation if drought continues; prediction of 40% 1997/98 coffee crop reduction from last season (but offset to a 4.1% loss by new areas) before the October rains occurred; drought may also affect the 1998/98 coffee crop; will import 150,000 tons of food.</p> <p>50% reduction in maize and wheat in the Rift Valley, 40% in the north Rift region.</p> <p>30-40% reduction in this year’s total main harvest compared to last year; drought in 1998.</p>

Where	Current Impact	Potential Impact
<p>Southern Africa</p> <p>South Africa</p> <p>Zimbabwe</p> <p>Zambia</p> <p>Mozambique</p>	<p>Drought (but also cold and rainy weather in areas lately); 17% reduction in maize from last year; emergency drought planning and fund allocation; developing pre-disaster policy paper and a drought early-warning system; record high temperatures; planting maize to reduce next season crop losses; evaluating optimum crop planting schedules; increase in corn future.</p> <p>\$1.2 billion raised under a drought levy; set aside \$130 million for maize imports; stockpiling drought-resistant seeds; 2,000 points off the ZSE's industrial complex in Aug/Sept over uncertain weather patterns; rising food prices; unusual cold and spring rains.</p> <p>Importing maize to prepare for drought; promoting herd size reductions.</p> <p>Drought planning.</p>	<p>Severe drought Nov-April; \$213 million (50% reduction) in the next corn crop; 15% reduction in wheat over the next 12 months; 1% reduction in the 1998 domestic growth rate; 4% reduction in 1998 interest rates.</p> <p>Drought; normal to below normal sporadic rains; higher temperatures.</p> <p>Drought</p>