El Niño:
Four Lessons for Canadian Insurers

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El Niño is expected to shift Canada's weather patterns in Winter 2009 and into 2010. Insurers may experience a few months of reduced vehicle collision claims, and the risk of water damage claims may fall temporarily in some regions like Ontario. Unfortunately, this may be partially offset by the increased risk of wildfire damage, and an increased risk of water and wind damage in the Greater Vancouver Area and over much of Vancouver Island. Ultimately insurers should plan for longer-term trends to reassert themselves when the El Niño subsides, trends that have brought more than four decades of rising water and wind damage claims across most of the country.

The sea surface temperature in the eastern Pacific Ocean has warmed by three degrees since January 2009. In the past 50 years, there have been only five other years when the Pacific Ocean warmed as much and as quickly. This warming has brought El Niño conditions that are expected to strengthen through the winter.

The specific changes we will experience in Canada are uncertain. Nevertheless, the five strongest El Niño events over the past 50 years have brought warmer winters across south central Canada and drier winters for some regions (including southern Ontario), with an important exception being a significant increase in rainfall over the Greater Vancouver Area and most of Vancouver Island.

Large losses can occur at any time. Indeed, the 1998 Ice Storm and 1997 Porcupine Hills winter grass fires struck in the midst of a strong El Niño event. The Kelowna wildfire and Hurricane Juan struck in 2003, following a moderate El Niño winter. Despite these large insured loss events, averaged over the past 40 years, there have been fewer severe weather events in El Niño years in most regions of Canada than in non-El Niño years.

WHAT IS EL NIÑO?

The prevailing trade winds typically push warm surface waters across the Pacific Ocean from Peru toward Tahiti. Every two to seven years, on average, the winds falter for several months, resulting in the warm waters shifting from the western Pacific to the east. Scientists describe this phenomenon as the El Niño Southern Oscillation, or El Niño. Mechanisms that drive the oscillation remain a matter of research, but for more than 300 years this has been a quasi-regular feature disrupting global weather.

The impact of El Niño is strongest in South America, South Asia and Australia, but anomalous weather events can occur around the globe. Effects on the weather vary with each event, but developing countries are especially affected if they border on the Pacific Ocean and are dependent on agriculture and fishing.

Current conditions are not as extreme as they were during the El Niño event of 1997-98, and have attracted less attention. Nevertheless, the weather in 2010 should differ from that experienced over the past two years.

HOW WILL EL NIÑO AFFECT CANADIANS?

The impact of the current event is unknown. The experience of the five strongest El Niño events over the past 50 years, adjusted for the effect of

climate change, provides a sense of what we may experience this winter and into next year.

The most evident impact will be a warming of many urban centres across the country. The greatest warming, likely approaching three degrees this winter, will be in the Winnipeg area. Warming of more than one degree may be evident in Toronto, Montreal, Ottawa, Edmonton and Calgary, relative to typical winter conditions. Near-normal average winter temperatures are likely in coastal communities like Vancouver and Halifax.

Past El Niño events brought somewhat drier winters across southern Ontario and the interior of British Columbia. Near-normal conditions were evident on average in Montreal, Ottawa, Edmonton and Calgary. However, there was significantly increased rainfall in Vancouver and most of Vancouver Island.

Changes in Canada's winter weather patterns are due to the forcing of the Polar Jet stream further north. The impacts are larger and more consistent over time in locations closer to the Pacific Ocean, and smaller and more variable in locations closer to the Atlantic Ocean.

HOW WILL EL NIÑO AFFECT INSURANCE CLAIMS?

A largely unmeasured benefit of El Niño for Canadians and Canadian insurance companies has been a reduction in winter vehicle collisions, particularly in western Canada and Ontario. The prospect of warmer and perhaps drier winters in many urban centres this winter and spring may bring a temporary reduction in collisions.

The impact of El Niño on the risk of water and wind damage claims is difficult to assess. El Niño may bring a somewhat drier winter in southern Ontario. However, the risk of unusual winter storm events in Southern British Columbia may increase, including severe wind gusts causing property damage. The largest water and wind damage claims typically coincide with severe summer storms. The influence of El Niño over the risk of summer storm damage is uncertain because: 1) research is ongoing to help understand what links may present between El Niño and storm activity; and 2) it is unclear whether or not El Niño will still be active at that time.

Warmer and drier winters are expected to increase the risk of wildfires. Some increase in the risk of grass and forest fire is likely across most of the country. An increase in the number of wildland fires would increase the risk of fire damage extending into the urban interface and destroying property.

Atlantic Canada and Quebec are the regions in Canada least likely to be affected because they are located a great distance away from the Pacific Ocean. However, the strongest measured El Niño event struck in the winter of 1997-98, coinciding with the Ice Storm in eastern Ontario and Quebec, the most destructive storm in Canadian history. The severity of the Ice Storm was only partially related to the strength of El Niño, but the 1998 event does provide a warning that it remains difficult to anticipate severe weather risks in Canada.

El Niño causes unusually strong upper winds that disrupt the development of Atlantic hurricanes. Indeed over the period since 1925, research by Roger Pielke and Christopher Landsea found that the risk of Atlantic hurricanes making landfall in North America is two or three times greater in non-El Nino years than in El Niño years. This was evident during 2009 with the welcome decline in hurricane activity. Further monitoring is required to determine if the current El Nino is sustained long enough to continue to suppress the risk of hurricane damage through the 2010 season.

How long this El Niño will persist is uncertain. We don't yet know what the event's ultimate strength and specific consequences will be. But there is a strong consensus that unusual weather patterns will prevail through the winter and into 2010.

FOUR LESSONS FOR INSURERS

1. Each El Niño event is unique, but a review of the historical experience suggests insurers should expect a modest overall reduction in damage claims during El Niño events like the present oscillation. In particular, vehicle collisions should decline in urban centres that experience warmer and drier winters.

2. Large events can occur at any time, and have occurred during El Niño events. Nevertheless, the risk of large losses is reduced during El Niño events. The Ice Storm, winter grass fires in southern Alberta, summer forest fires in central British Columbia and Hurricane Juan all struck following an El Niño winter. However, the majority of Canadian severe weather loss events occur during non-El Niño years. It is important that insurers recognize significant risk remains, even if there is some evidence that El Niño somewhat reduces the risk of severe weather events.

3. El Niño events are complex and climate patterns can change quickly. Indeed, the results of a dozen climate models assessed by the International Research Institute forecast that the current El Niño may triple in strength over the next two or three months — or it might decline to only half of its current strength. The El Niño Southern Oscillation remains subject to extensive research and uncertainty. Insurers should confidently anticipate that a moderate El Niño will affect the risk of claims damage this winter, but considerable uncertainty is present for this summer and fall.

4. Most importantly, the impact El Niño on insurance claims in 2010 will not change the longer-term trends that have been increasing the risk of property damage. In particular:

- change in the climate is bringing more large storm events across most of Canada;
- our public infrastructure is collapsing in most communities and unable to provide the historic level of service; and
- rapid growth in urban centres and lifestyle changes resulting in finished basements have been increasing water and wind damage claims for more than four decades.

Insurers should continue to advance their efforts to actively manage this coverage and champion risk reduction.