



# Skating On Thin Ice

## Eight ways global warming is affecting Winter Olympic sports

Every four years, the world's finest winter athletes gather for the top competition on snow and ice. But even as we celebrate competition and athleticism, global warming is undermining the climate conditions that make the Winter Olympics possible.

Nine of the hottest years ever recorded on Earth have happened since 2000.<sup>i</sup> Winter average temperatures across the contiguous United States have warmed more than 2 degrees Fahrenheit since 1970.<sup>ii</sup> The primary cause of this warming is human use of fossil fuels and we need to act now to prevent the worst from happening.

Global warming is affecting Winter Olympic sports in multiple ways:



**Ski seasons are becoming shorter.** The average winter in the past two decades was 10 days shorter compared to winters in earlier decades. In the Northwest and the Southwest United States, winter has shortened by as much as three weeks.<sup>iii</sup> That means that more precipitation is falling as rain rather than as snow – especially during the fall and the spring<sup>iv</sup> – leaving athletes like Bode Miller less time to train for downhill skiing.



**Snow is spending less time on the ground.** As temperatures rise, snow is melting earlier and faster.<sup>v</sup> Without action to slow warming, for example, California's Sierra Nevada could lose 90 percent of its winter snowpack by the end of the century.<sup>vi</sup> In the future, Olympic aerial jumpers might have to land in swimming pools – like they do while training in the summer – instead of landing on a ramp of snow.



**Dry areas are becoming drier.** California's epic 3-year drought has now reached historic proportions, threatening the state's drinking water supply.<sup>vii</sup> Climate scientists warn that events like these could become the new normal without dramatic reductions in carbon pollution. The drought has also meant less snow: The Sierra Nevada only has 12 percent of its normal snowpack as of January 2014.<sup>viii</sup> Alpine Meadows, a ski resort near Lake Tahoe, had only one run open in January – and that run had only man-made snow.<sup>ix</sup> If the Olympics had been held this year in Lake Tahoe (site of the 1960 Games) instead of Sochi, it would be tough to hold the halfpipe competition or the boardercross events without enough snow to fill the course.



**Fewer areas will be able to host the Olympics.** In 2010, Olympic organizers in Vancouver, informally dubbed the "Brown Games," used helicopters and trucks to get snow to venues that otherwise would not have been able to host a ski competition, because temperatures were too warm to manufacture snow.<sup>x</sup> Organizers had to cover slopes with tubes of dry ice to slow down the melting of the imported flakes.<sup>xi</sup> And last February in Sochi, Olympic organizers were unable to host skiing test events due to a lack of snow at the venue. As a result, they stockpiled 16 million cubic feet of snow and stored it under a hundreds of insulated blankets to prepare for the possibility of similar weather conditions this year.<sup>xii</sup> A recent study found that eight former Olympic host cities might not be reliably cold enough to host the games by 2050.<sup>xiii</sup>



**Backyard ice rinks are vanishing.** Imagine if Michael Jordan had grown up without a basketball court. Where would the USA hockey team be without backyard ice rinks? Across ice hockey country, usable ice is disappearing as cold weather becomes less reliable.<sup>xiv</sup> Total winter ice coverage in the Great Lakes, for example, has dropped by almost two-thirds since the early 1970s.<sup>xv</sup>



**Species are facing extinction.** The mascots of the Sochi Games — the polar bear, the hare and the leopard — are threatened by warming-driven habitat change. As arctic ice cover continues to collapse, polar bears are losing the ability to reach the seals they eat for food. As a result, most polar bear communities could be extinct in as little as 30 to 40 years.<sup>xvi</sup> With winter coming later, the snowshoe hare is now donning its seasonal white camouflage ahead of the first snows, leaving it more vulnerable to predators.<sup>xvii</sup> There are only 4,000 to 6,500 snow leopards left in the world; and if temperatures continue to rise, the species could lose almost a third of its habitat in the Himalayan Mountains as tree lines shift.<sup>xviii</sup>



**Mountain vistas are transforming.** Warmer winter temperatures have allowed the pine beetle to reproduce in far greater numbers, triggering a massive beetle outbreak in North American forests.<sup>xix</sup> The beetle epidemic underway is the largest in recorded history. It extends from New Mexico to California to the Yukon Territory in Canada, with tens of millions of acres of trees killed.<sup>xx</sup> Imagine future cross-country skiing or biathlon competitions with a backdrop of brown or gray trees, instead of evergreens.



**Winter is at risk.** Ironically, Olympic venues like Sochi's Shayba Arena — designed to resemble a snowdrift — and Fisht Stadium — built to resemble snowy peaks — might be the only places in the future where sports like skating and curling will be possible — sports which evolved when people sought entertainment outdoors during winter months. These buildings might serve as a reminder of what winter was like before we changed it.

## We must cut carbon pollution now

Challenges at the Winter Olympics are just the beginning when it comes to what global warming means for America. Without action to greatly reduce emissions of climate-altering pollution, scientists warn that our children and future generations could face much worse impacts of global warming — from extreme weather to sea level rise.<sup>xxi, xxii</sup>

And just as we hope our athletes will lead the medal count at Sochi, the United States must play a leading role in carbon reductions, and we know how to do it. We know that the dirty energy that provides most of our electricity is largely to blame: Power plants are responsible for more than 40 percent of the nation's production of carbon pollution — and the top 50 power plants emit more carbon each year than all but six entire countries.

On June 25, 2013, President Obama announced a new Climate Action Plan that directs the EPA to set limits on carbon for power plants, just like they do for smog, soot, and other dangerous pollutants. By supporting this plan and through aggressive implementation, America can clean up its biggest sources of carbon pollution and pave the way for more wind, solar, and energy efficiency.

By acting now to limit climate pollution, we can help protect our children's future — and safeguard the hallowed traditions of winter like the Winter Olympic Games.

### NOTES:

<sup>i</sup> <http://www.ncdc.noaa.gov/sotc/global/2013/13>

<sup>ii</sup> <http://www.climatecentral.org/climate-matters#wtr>

<sup>iii</sup> <http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap2-climate.pdf>

<sup>iv</sup> [http://www.int-res.com/articles/cr\\_oa/c047p123.pdf](http://www.int-res.com/articles/cr_oa/c047p123.pdf)

<sup>v</sup> <http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap3-water.pdf>

<sup>vi</sup> [http://meteora.ucsd.edu/cap/pdf/files/CA\\_climate\\_Scenarios.pdf](http://meteora.ucsd.edu/cap/pdf/files/CA_climate_Scenarios.pdf)

<sup>vii</sup> [http://www.nytimes.com/2014/02/02/us/severe-drought-has-us-west-fearing-worst.html?\\_r=0](http://www.nytimes.com/2014/02/02/us/severe-drought-has-us-west-fearing-worst.html?_r=0)

<sup>viii</sup> <http://www.nytimes.com/2014/02/02/us/severe-drought-has-us-west-fearing-worst.html>

<sup>ix</sup> <http://www.bloomberg.com/news/2014-01-27/ski-resorts-seen-as-buyout-targets-amid-u-s-west-drought.html>

<sup>x</sup> <http://www.nytimes.com/2010/02/10/sports/olympics/10olysnow.html>; [http://seattletimes.com/html/localnews/2011212557\\_olyweather28.html](http://seattletimes.com/html/localnews/2011212557_olyweather28.html)

<sup>xi</sup> <http://news.yahoo.com/russias-sochi-busy-storing-snow-2014-olympics-072919579-oly.html>

<sup>xii</sup> <http://news.yahoo.com/russias-sochi-busy-storing-snow-2014-olympics-072919579-oly.html>; <http://www.nytimes.com/2013/03/26/sports/olympics/with-weather-concerns-organizers-are-storing-snow-for-winter-olympics-in-sochi-russia.html>

<sup>xiii</sup> [https://uwaterloo.ca/news/sites/ca.news/files/uploads/files/oly\\_winter\\_games\\_warmer\\_world\\_2014.pdf](https://uwaterloo.ca/news/sites/ca.news/files/uploads/files/oly_winter_games_warmer_world_2014.pdf)

<sup>xiv</sup> <http://iopscience.iop.org/1748-9326/7/1/014028/>

<sup>xv</sup> <http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap2-climate.pdf>

<sup>xvi</sup> Castro de la Guardia et al. 2013. Future sea ice conditions in Western Hudson Bay and consequences for polar bears in the 21st century. *Global Change Biology*, 19: 2675–2687; Stirling and Derocher. 2012. Effects of climate warming on polar bears: a review of the evidence. *Global Change Biology*, 18: 2694–2706.

<sup>xvii</sup> <http://www.npr.org/2013/09/08/220188619/climate-change-leaves-hares-wearing-the-wrong-colors>

<sup>xviii</sup> [http://wwf.panda.org/who\\_we\\_are/wwf\\_offices/pakistan/news/?205650/Endangered-snow-leopard-habitat-threatened-by-climate-change-WWF-study-shows](http://wwf.panda.org/who_we_are/wwf_offices/pakistan/news/?205650/Endangered-snow-leopard-habitat-threatened-by-climate-change-WWF-study-shows)

<sup>xix</sup> <http://www.jstor.org/stable/10.1086/665007>

<sup>xx</sup> <http://www2.ucar.edu/atmosnews/opinion/9366/bark-beetle-blues>

<sup>xxi</sup> <http://cpo.noaa.gov/Home/AllNews/TabId/315/ArtMID/668/ArticleID/80/Global-Sea-Level-Rise-Scenarios-for-the-United-States-National-Climate-Assessment.aspx>

<sup>xxii</sup> <http://www.nature.com/nclimate/journal/v3/n11/full/nclimate1633.html>; <http://www.nature.com/nature/journal/v470/n7334/full/nature09763.html>; <http://www.nature.com/nature/journal/v470/n7334/full/nature09762.html>