



Bigheads: Why incompetent people are so boastful. **SH3**

◀ **Medieval art:** New evidence of women artisans. **SH3**

Star Tribune visuals: Top 10 in the world

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Two Surgeries,
One Procedure

Today on the back page

Health Highlights

— FROM MAYO CLINIC —

SUNDAY, FEBRUARY 3, 2019

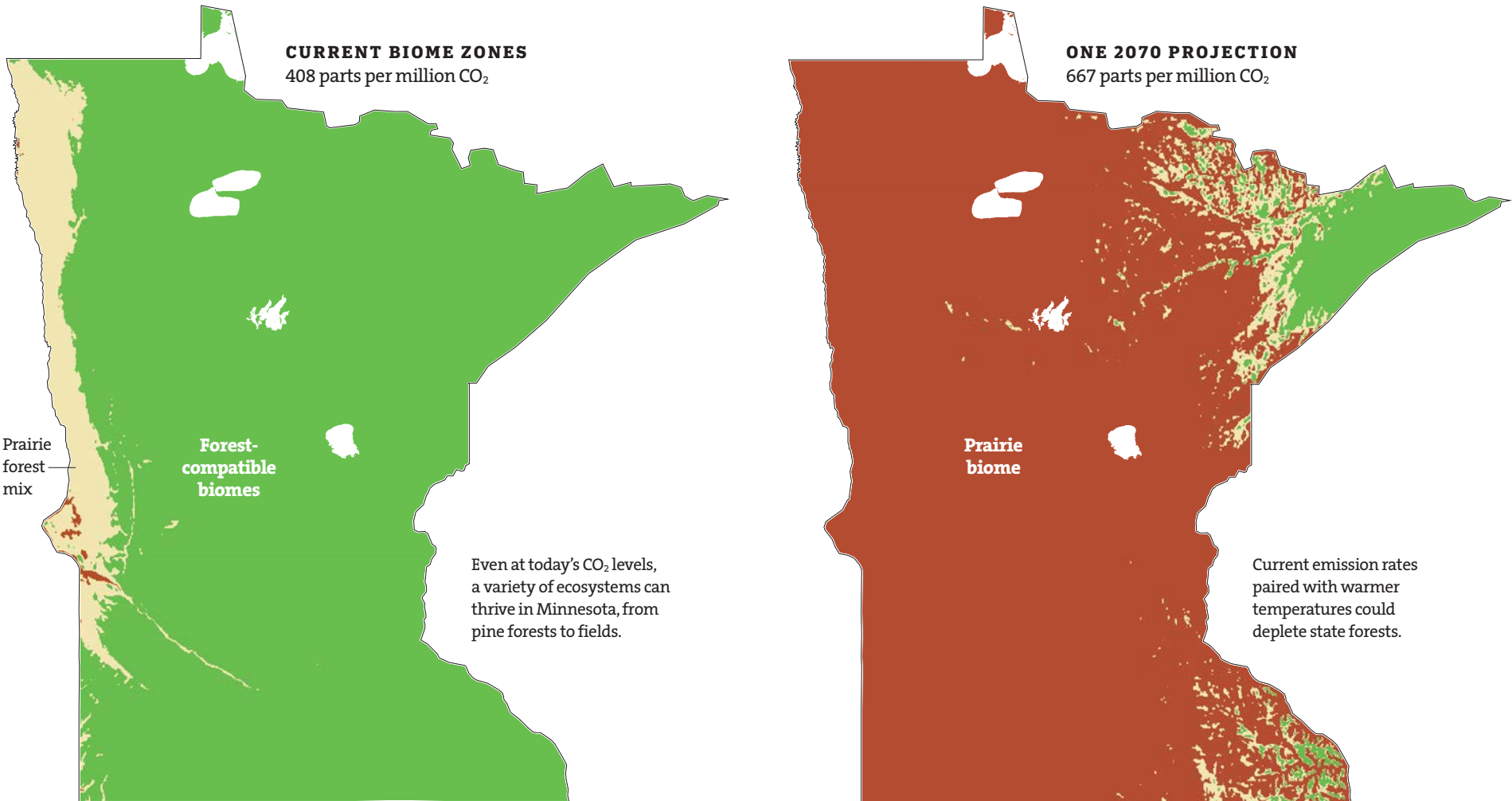
StarTribune

STARTRIBUNE.COM/SCIENCE • SECTION SH

SCIENCE & HEALTH

Today, Minnesota’s climate supports forests and trees

In 50 years, climate change could turn most of it to prairie



Source: University of Minnesota Center for Forest Ecology

OUR FORESTS AT RISK AS CLIMATE WARMS

Scientists at the University of Minnesota say a warming climate and shifts in precipitation threaten Minnesota’s forests by altering the ability of the state’s ecosystems to support tree life. According to their forecasts, Minnesotans can expect more prairie and less forest in coming decades; if we do nothing, the pines of northern Minnesota could become little more than a memory by the end of this century. It won’t happen overnight, but the shift is already underway. New global climate projection models show how radically tree distribution in the state will change if greenhouse gas emissions aren’t checked. Lee Frelich, director of the U’s Center for Forest Ecology, described the worst-case scenario to House lawmakers in stark terms. The Boundary Waters, he said, will look more like Granite Falls in southwestern Minnesota. Said Frelich: “We could literally be the new Kansas.” GRAPHIC, SH2

Clinics score better on child vaccinations

Report card for state also shows gap among clinics.

By JEREMY OLSON
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Minnesota’s medical clinics are getting more toddlers and adolescents up to date on their vaccinations, but the latest state report card shows that the best can do better and the worst are far behind.

An 82-percentage-point gap separated the best- and worst-performing clinics for childhood vaccinations last year, according to MN Community Measurement (MNCM), a nonprofit agency that reports clinic performance on various quality measures. While 85 percent of children at South Lake Pediatrics received recommended shots by age 2 in 2018, only 3 percent of children at Lake Region Healthcare in Fergus Falls received them.

“I always like to focus on

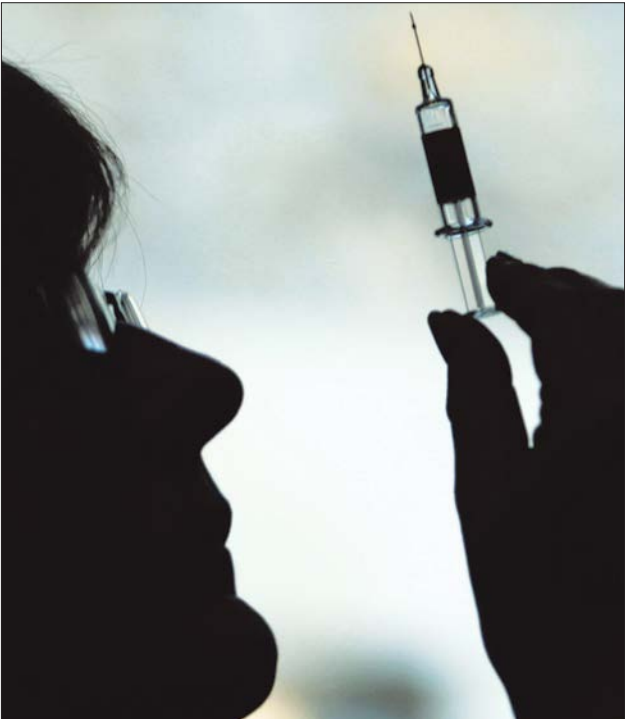
that variation and the fact that some providers have been very successful at achieving very high rates,” said Julie Sonier, president of MNCM. “It means that it’s possible.”

Overall clinic ratings were posted last fall on mnhealth-scores.org, but MNCM has since issued a series of reports focusing on clinics’ performance in key areas, including the “Combo 10” series of vaccinations that children are supposed to receive by age 2. The combination includes shots to protect against measles, polio, hepatitis and influenza.

On average, 60 percent of children received these vaccinations on schedule in 2018, compared to 54 percent in 2017, the data showed. Sonier said the immunization requirements changed recently, so the improved performance shows that clinics are catching up.

The measure for adolescent

See **VACCINATIONS** on SH3 ▶



DAVID CHESKIN • PA

On average, 60 percent of children in Minnesota received vaccinations on schedule in 2018, up from 54 percent in 2017.

Here’s why 10,000 steps may not be right for you

People who faithfully adhere to 10,000 daily steps may be surprised to learn that this widely accepted target did not originate as the result of years of scientific research.

Instead, it grew out of the marketing campaign for a Japanese pedometer invented in 1965. The name of the pedometer was Manpo-kei (10,000-step meter), and the ads said, “Let’s walk 10,000 steps a day!” More than 50 years later, that idea has retained its power.

Many researchers have studied the 10,000-step number to see whether it holds weight. The answer is yes, and no. Although 10,000 steps is not universally appropriate for all ages, genders and levels of physical function, it is considered “a reasonable target for healthy adults,” said a 2011 research review published in the International Journal of Behavioral

Nutrition and Physical Activity.

Here’s why: Most Americans take 4,000 to 6,000 steps through general daily action — working, shopping, walking through parking lots, etc. If you add the 30 minutes of recommended exercise, that’s another 3,000 to 4,000 steps, and gets you close to the 10,000-step goal. It’s basic math. Keeping track of steps can prompt people to do more physical activity using manageable goals.

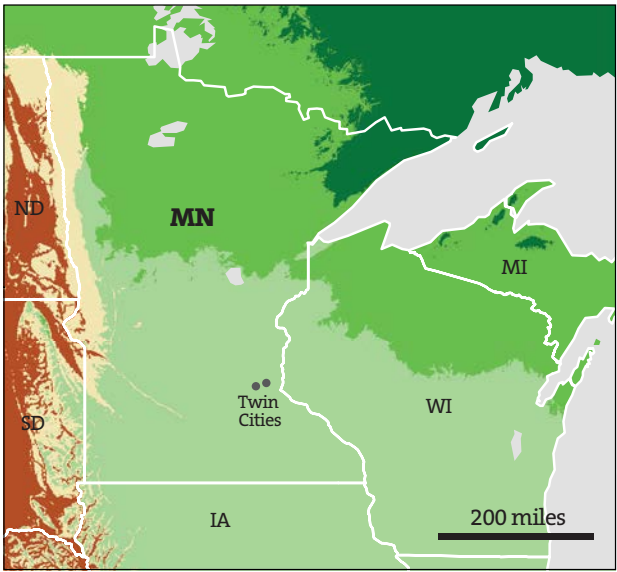
Someone who is less active may set a lower step goal. An increase to 8,000 steps will help an adult who was previously taking only 6,000 (fewer than 5,000 steps a day is considered sedentary). On the other hand, someone who already walks 10,000 steps may aim for 15,000. The idea is to be more aware of your activity level, and increase it as needed.

WASHINGTON POST

THE FORESTS OF OUR FUTURE

By MARK BOSWELL and JENNIFER BJORHUS • Star Tribune

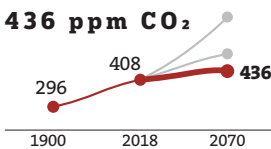
In an effort to understand how climate change could alter Minnesota’s landscape over the next century, researchers at the University of Minnesota’s Center for Forest Ecology have created maps showing what might happen as Earth warms and precipitation changes. They used three scenarios for 2070 (top to bottom on this page): A major cut in the current rate of greenhouse gas emissions; a minor cut; and no decrease. For each scenario, they applied three different computer models borrowed from scientists at other institutions (left to right on this page), each with a slightly different prediction of how hot the Earth would get for any given level of CO₂. In the first scenario, CO₂ levels (measured in parts per million, or ppm) rise only slightly, and Minnesota changes little. But under the third, a warmer and drier prairie ecosystem marches steadily eastward across the center of the state, pushing out the boreal forests, or cold-climate conifers, of northeastern Minnesota. Learn more at startribune.com/climate.



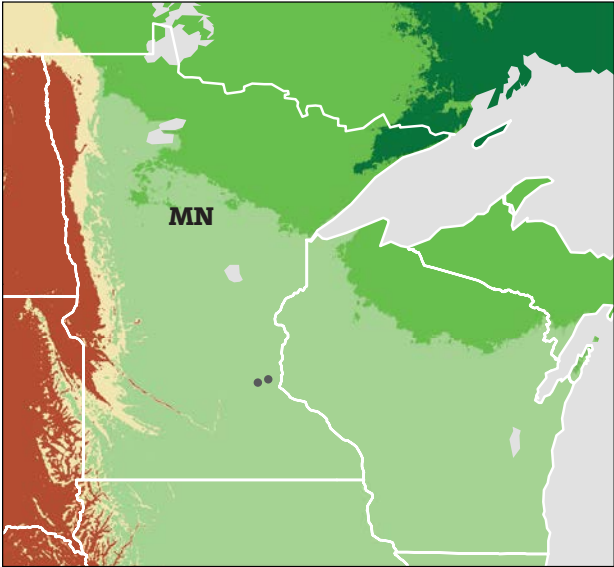
CURRENT BIOME ZONES



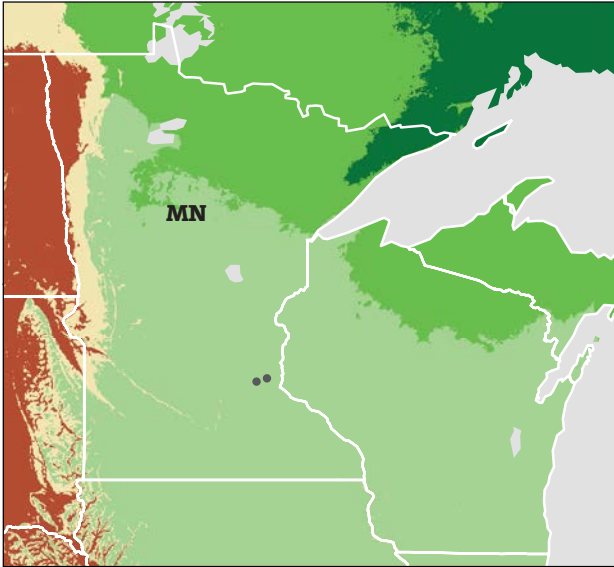
Major decrease in rate of CO₂ emissions



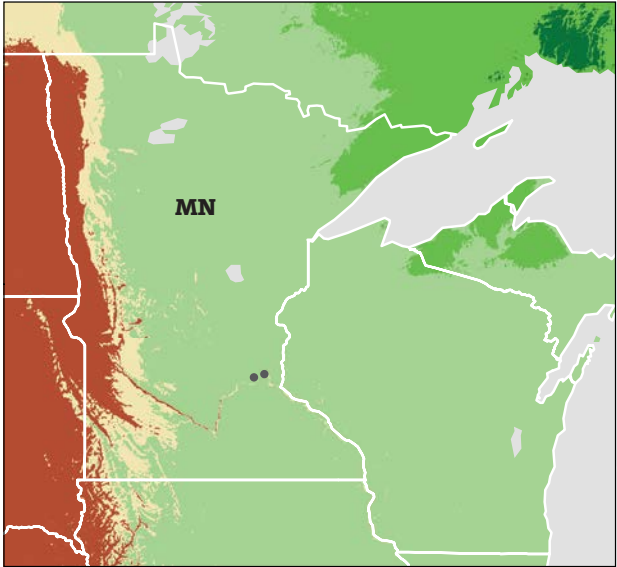
If we make radical reductions: If the world’s rate of greenhouse gas emissions is reduced quickly and significantly, overall carbon dioxide (CO₂) levels in the atmosphere will still rise slightly by 2070, reaching 436 ppm. Prairies would advance slightly and Minnesota would lose some or all of its boreal forest. But Lee Frelich, director of the U’s forest ecology center, notes that this scenario would be very difficult to attain because we are already at 408 ppm of CO₂ in the atmosphere.



WARM MODEL +2° to global summer temperatures

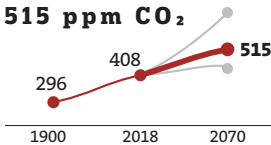


WARMER MODEL +2°

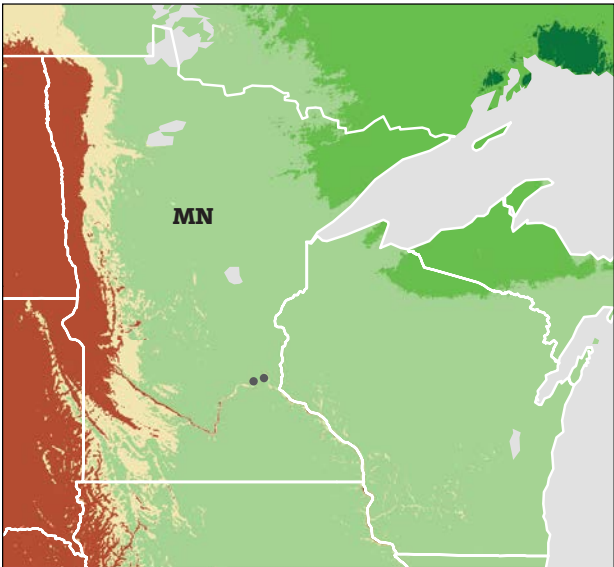


HOT MODEL +5°

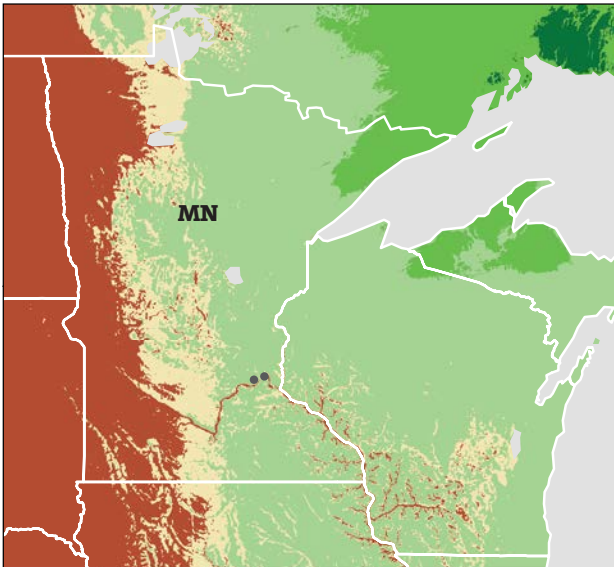
Minor decrease in rate of CO₂ emissions



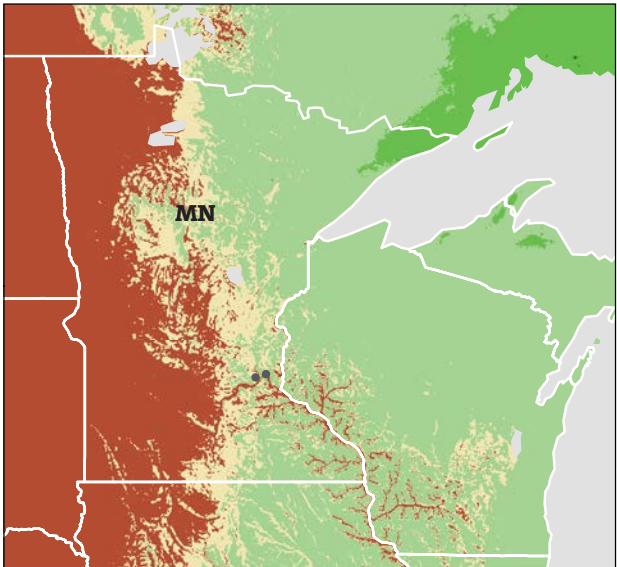
If we make some changes: In this “optimistic scenario,” humanity manages to significantly cut the rate of greenhouse gas emissions, and overall atmospheric CO₂ levels rise to just 515 ppm by 2070. Nonetheless, a prairie ecosystem would encroach on much of the state (depending on how quickly Earth warms), the conifer forest disappears, and much of the state’s eastern half would resemble the mix of grass and oak savanna that covers southwestern Minnesota today.



WARM MODEL +4°

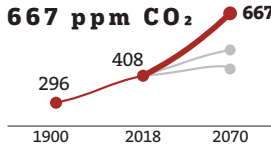


WARMER MODEL +5°

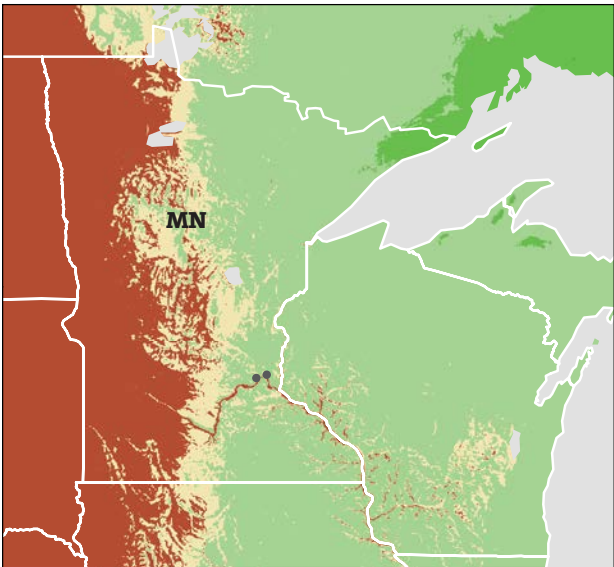


HOT MODEL +7°

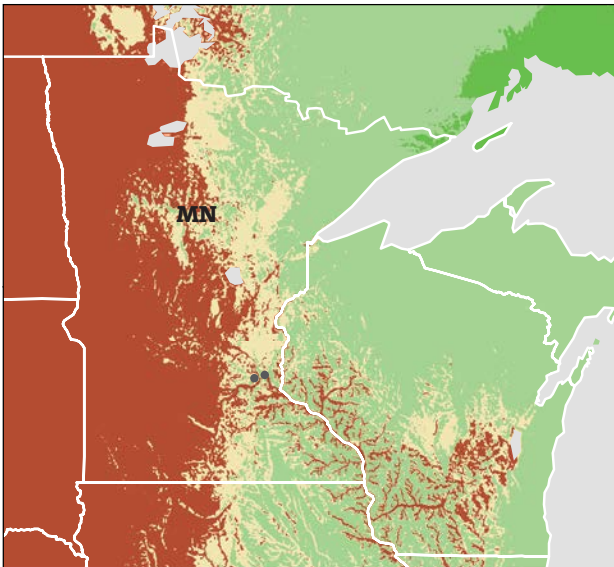
No decrease in rate of CO₂ emissions



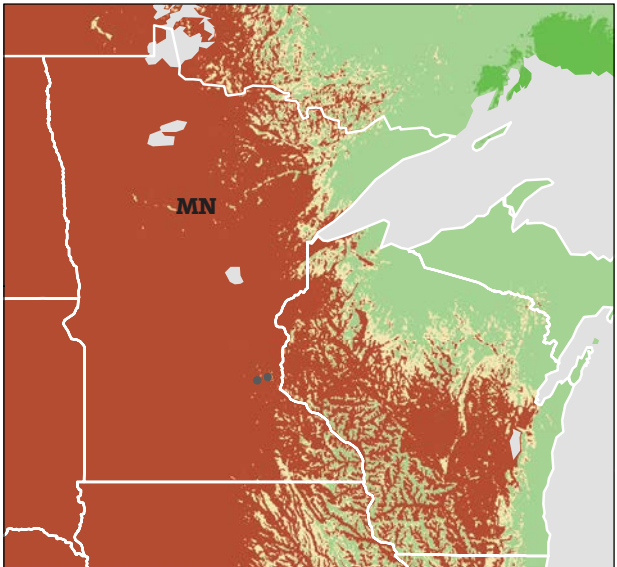
If we make no changes: Under the “business-as-usual” scenario, greenhouse gases continue to pour into the atmosphere at their current rate, pushing overall atmospheric CO₂ levels to 667 ppm by 2070. If temperatures also rise at the pace of the most pessimistic of the three computer models, most of Minnesota’s northern birch and conifer forests would migrate northward out of the state entirely and much of the state would resemble Kansas today.



WARM MODEL +7°



WARMER MODEL +8°



HOT MODEL +10°