Did you know that 1 million people die a year from malaria and that every 30 seconds a child dies from this disease? Malaria is a vector-borne disease that has killed and infected hundreds of thousands of individuals throughout the world. This disease is caused by a parasite from the *Plasmodium* genus. The parasite is transmitted through the bite of an infected female mosquito. The female mosquito becomes infected by the parasite through feeding on the blood of an infected human. The next time a mosquito penetrates the skin of another human they infect that person with the disease. Inside the human the parasite hides from our white blood cells by entering our red blood cells, where it multiples and destroys the cell, destroying the function of our main organs, such as the liver. Fever, chills, headaches, sweats, vomiting and muscle fatigue are just a few of the many symptoms of malaria. If not properly treated the parasite can multiply quickly within the body, leading to death.

Have winters seemed warmer? Was there no snow for Santa last year? These are just a few of the effects our country is seeing as a result of global climate change. The past ten out of twelve years have been the warmest in our earth’s history. Recently it has been seen that a steady increase in rainfall has occurred along with the rise in temperature. You may ask what does this mean for the future of our world? In the case of malaria, we should expect an increase in the risk and spread of this disease. Today malaria is not a significant threat to the U.S, but with temperatures on the rise, it is expected to spread to our country by the year 2020.

**FIGURE 1: Risk of Malaria Transmission** - This map displays the projected risk of malaria transmission in the year 2020 compared with the average risk in the years 1961 to 1990. This projection assumes a global temperature increase of 2°F and no human efforts to contain the spread of malaria. *Source:* Pim Martens, Maastricht University

Recent warming has been found to shorten the developmental period of the mosquito by about 4 days, which leads to an increase in population growth by nine percent. Increases in air temperature speed up the larval development of the mosquito, allowing for more rapid development. A slight change of just .5°C, could lead to a 30-100% increase in
mosquito abundance. As air temperature rises so does the growth rate and abundance of the mosquito. A greater abundance of mosquitoes allows for more possible carriers to transmit the disease, infecting more individuals. An increase in the air temperature also allows for new regions to become suitable for transmission. The parasite that is responsible for malaria cannot be transmitted in temperatures that are lower than 66°F. This suggests that if temperatures continue to rise, areas that were once too cool for the parasite may become more suitable in the future.

Mosquitoes typically lay their eggs in anything that holds water, such as tree holes, barrels, buckets and old tires. Since mosquitoes lay their eggs on the surface of water, increases in rainfall can increase the developmental potential for mosquitoes, as more water becomes available for egg laying. This could lead to an increase in the mosquito abundance.

“So what does all of this mean for our country?” you may ask. As stated previously, malaria is expected to spread to the southern U.S by the year 2020, which is only 8 years away. Our country has been fortunate and has not had to face the issue of malaria in recent years, but with global warming, mosquitoes and the malaria parasite are developing at higher rates, potentially increasing the risk of this deadly disease. The U.S. and other countries need to try to prevent the spread of malaria. One way we can do this is by directly getting rid of the egg-laying opportunities for the mosquitoes. Another is to reduce the likelihood of mosquito bites through the use of bed nets and repellents. Share with your friends, family and co-workers what is happening to our climate and discuss how it might lead to new disease risks in the U.S.