



Davis High School Junior, Kaiyue “David” Wong, poses with his research poster, “Fighting Global Warming: Optimization Approach of Solar Panels on a Residential Home” that was presented at the recent Synopsys Sacramento Regional STEM Fair.

Kaiyue (David) Wang

Interview by Anya McCann

Kaiyue “David” Wang, a Davis High School junior, will be awarded a 2015 Eco-Hero (Home Energy) award by Cool Davis on April 22, Earth Day. The Cool Davis award selection committee was amazed at his innovative scientific endeavors to increase the efficiency of solar voltaic energy generation for homes.

Inspired by solar panels being installed on a neighbor’s roof, David, wondered how efficient they would be, whether they would really save money, and what the return on investment might be. To help him find answers, his parents introduced him to a scientist at UC Davis in the Institute of Transportation Studies, Hengbing Zhao, who helped him focus his inquiries and introduced David to concepts related to solar energy.

Over the past year, as David learned more about solar energy, he began to focus on the angle of the sun to the earth’s axis and developed a solar energy model (SOLEM) to simulate solar irradiance received by solar panels installed on roofs. The model allows users to learn the optimal tilt angle for wherever they are on earth, by typing in the latitude. It also shows that installing solar panels on different facing roofs each with optimized tilting angles can optimize solar panel efficiency. When compared with the actual 2014 power output of the solar panels measured by a pyranometer in UC Davis’ West Village, David’s calculations matched.

David recently won three awards at the Synopsys Sacramento Regional STEM Fair: the California Air Resources Board Climate Award, SMUD Best in Energy Award, and the ASU Rob and Menali Sustainability Initiative Award.

David notes, “Although solar is costly to install, over time it reaps lots of benefits, such as a lower electric bill and helping the environment.”

When he is not helping to solve our climate crisis, David plays tennis on the Davis High Varsity team and the Stonegate Tennis Academy team. He looks forward to learning more about solar technology this summer and is considering a career in the solar field.