

Researchers create model to calculate water volume in snow

By Steve Lundeberg
Oregon State University

CORVALLIS — Oregon State University researchers have developed a new computer model for calculating the water content of snowpacks, providing an important tool for water resource managers and avalanche forecasters as well as scientists.

“In many places around the world, snow is a critical component of the hydrological cycle,” said OSU civil engineering professor David Hill. “Directly measuring snow-water equivalent is difficult and expensive and can’t be done everywhere. But information about snow depth is much easier to get, so our model, which more accurately estimates snow-water equivalent from snow depth than earlier models, is a big step forward.”

The findings, published in *The Cryosphere*, are related to a NASA-funded snow depth project co-led by Hill and also involving Oregon State Ph.D. student Ryan Crumley.

The project is called Community Snow Observations and is part of NASA’s Citizen Science for Earth Systems program. Snowshoers, backcountry skiers and snow-machine users are gathering data to use in computer modeling of snow-water equivalent, or SWE.

The Community Snow Observations research team kicked off in February 2017. Led by Hill, Gabe Wolken of the University of Alaska Fairbanks and Anthony Arendt of the University of Washington, the project originally focused on Alaskan snowpacks. Researchers then started recruiting citizen scientists in the Pacific Northwest. Currently, the project has more than 2,000 participants.

The University of Alaska Fairbanks has spearheaded the public involvement aspect of the project, while the University of Washington’s chief role is managing the data. Hill and Crumley are responsible for the modeling.



Jayson Jacoby / Baker City Herald

Luke Albert, Baker County assistant watermaster, plunges a hollow aluminum pole into the snow near Anthony Lakes in late February.

In addition to snow depth information collected and uploaded by recreationists using avalanche probes, vast amounts of data are also available thanks to LIDAR, a remote sensing method that uses a pulsed laser to map the Earth’s topography.

The new model developed by the Community Snow Observations team and collaborators at the University of New Hampshire calculates snow-water equivalent by factoring in snow depth, time of year, 30-year averages (normals) of winter precipi-

tation, and seasonal differences between warm and cold temperatures.

“Using those climate normals rather than daily weather data allows our model to provide SWE estimates for areas far from any weather station,” Hill said.

Researchers validated the model against a database of snow pillow measurements — a snow pillow measures snow-water equivalents via the pressure exerted by the snow atop it — as well as a pair of large independent data sets, one from western North

America, the other from the northeastern U.S.

“We also compared the model against three other models of varying degrees of complexity built in a variety of geographic regions,” Hill said. “The results show our model performed better than all of them against the validation data sets. It’s an effective, easy-to-use means of estimation very useful for vast areas lacking weather instrumentation — areas for which snow depth data are readily available and daily weather data aren’t.”

OSU curtails logging of old growth in research forests

CORVALLIS (AP) — The head of Oregon State University’s College of Forestry has ordered a temporary stop to the cutting of older trees on the college’s research forests.

The *Gazette-Times* reports the move came after questions were raised about a logging operation near Corvallis that took down multiple

trees more than 200 years old, including one Douglas fir that may date back to 1599.

Interim Dean Anthony Davis announced the moratorium in a college memo July 12, about a month after a logging operation was conducted near Sulphur Springs in the McDonald-Dunn Research Forest.

Davis says they made a mistake in carrying out the harvest by not considering the future research and ecological benefit of the older trees.

The memo says no trees more than 160 years old will be cut down until work is finished on a new comprehensive management plan for the college research forests.

SETTLE

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But Rosenblum’s office said the breach “occurred because Equifax failed to implement an adequate security program to protect consumers’ highly sensitive personal information.”

“Despite knowing about a critical vulnerability in its software, Equifax failed to fully patch its systems,” Rosenblum said. “Equifax also failed to replace software that monitored the breached network for suspicious activity. As a result, the attackers penetrated Equifax’s system and went unnoticed for 76 days.”

Oregonians and others affected by the breach will have access to a \$300 million fund to redress their losses through restitution and credit monitoring. If that amount is exhausted, up to another \$125 million will be available.

The company has agreed to beef up its security protocols in the future.

The \$2.8 million for Oregon goes to the Justice Department’s Consumer Education and Protection Account to help pay for the

department’s work on behalf of the state’s consumers.

The breach, announced by Equifax in September 2017, prompted an outcry on Capitol Hill, where U.S. Rep. Greg Walden, R-Ore., at the time the chair of the House Energy and Commerce Committee, made headlines for questioning the former Equifax CEO.

“How could a major U.S. company like Equifax, which holds the most sensitive and personal data on Americans, so let them down?” Walden said during the hearing in October 2017. “It’s like the

guards at Fort Knox forgot to lock the doors and failed to notice thieves were emptying the vaults.”

Rep. Frank Pallone, D-N.J., current chair of the House Energy and Commerce, said in a statement that the settlement “does not come close to making consumers whole” and shows the Federal Trade Commission is limited in its power to seek “strong penalties and effective redress for consumers.”

Pallone stressed the need for a comprehensive data privacy and security law to hold companies to account

when consumer data is compromised.

Consumers can get email updates on the Equifax restitution and credit monitoring process by signing up at www.ftc.gov/equifax-data-breach, or call 1-833-759-2982 for more information.

Eligible consumers will eventually be required to submit claims.

Drought killing firs in W. Oregon

SALEM (AP) — Oregon’s iconic Douglas-firs are declining as the state’s summers have grown hotter and drier.

The *Statesman Journal* reports that drought also is killing grand fir, and may be contributing to declines in Western red cedar and bigleaf maple.

Oregon has experienced drought each summer since 2012, peaking in 2015. While rainfall and snowpack have been close to average the past two years, temperatures in many areas still were above normal.

Christine Buhl, an entomologist for the Oregon Department of Forestry, said Douglas-firs have been declining since Oregon’s drought began in 2012.

“Now, we’re seeing Doug-fir dying in other areas where maybe they could have lived before,” Buhl said. That includes throughout the Willamette Valley.

Grand fir has been declining for years, especially in the Willamette Valley, as precipitation becomes less consistent.

“We might get a dump of water one day, and nothing for a week,” Buhl said. “At a certain point in size these grand firs reach, they can’t withstand that any longer.”




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