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Group studies dust effects

Dirty springs may quicken spring runoff

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Photo by JERRY McBRIDE/Herald
Tom Painter, a scientist with NASA's Jet Propulsion Laboratory, takes a photo Wednesday near Red Mountain Pass of a device called a sun photometer, which analyzes the sun with different colored filters before it looks into the atmosphere to measure dust.

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JERRY McBRIDE/Herald
Chris Landry, left, from the Center for Snow & Avalanche Studies in Silverton, talks to a group of scientists Wednesday about the Swamp Angel study plot near Red Mountain Pass. The instruments

SILVERTON - Eighteen scientists and graduate students, including representatives from Japan and China, met in Silverton to share their research on the effects of airborne dust and soot on mountain and polar snow and ice.

The group, led by Thomas Painter of the NASA Jet Propulsion Laboratory and Chris Landry from the Center for Snow & Avalanche Studies, known as CSAS and headquartered in Silverton, traveled Wednesday to the top of Red Mountain Pass to a snow-science research site.

It was the last day of a three-day workshop in which participants presented research on snow degradation from the Himalayan region, the Tibetan Plateau, Greenland and the United States, including the Rocky Mountains and the Sierra Nevada.

The Swamp Angel study plot in Senator Beck Basin, high above the western side of Red Mountain Pass, maintained by the CSAS, has instruments to measure the ability of the snow to reflect the sun's rays as well as monitor precipitation, snow depth, wind speed and direction, humidity, barometric pressure and the temperature of air, snow and soil.

Recent research has tied soot from industrial emissions to temperature increases in the Arctic and land-use changes in desert regions to dust that causes early and intense snowmelt in mid-latitude mountains such as the San Juan Mountains in Southwest Colorado, Landry said.

Look no further than the San Juans, where dust blowing in from the south and west has turned snow tan. Landry has documented "dust events" annually since 2002-03. The phenomenon is increasingly serious, but it's way too early to show a trend, Landry said.

The Animas River, which rises in the San Juan Mountains, was flowing at 1,300 cubic feet a second Tuesday, less than half its 94-year mean flow for the date.

monitor snow conditions in the plot.

Ming Jing with China's National Climate Center in Beijing, whose interest is the Himalayan region of China, said there is increasing evidence of soot accumulating there. "The concentrations of black carbon (soot) are higher than in the United States or Europe," Ming said.

Matt Jenkins, a graduate student in geology at Central Washington University, is studying soot deposits in the Cascade Mountains. "I think there was consensus here that soot and dust are playing a larger role in affecting snowpacks," Jenkins said.

McKenzie Skiles and Annie Bryant, graduate students in geography at UCLA, are doing research under the tutelage of Painter.

"I'm using data from this study plot (Swamp Angel) to do computer modeling of runoff from snowmelt," Skiles said. "I can determine the impact of dust on snow by determining what clean snow would produce."

Landry said the Center for Snow & Avalanche Studies is supported financially by a variety of sources, including the Animas La Plata Water Conservancy District, the Bureau of Reclamation and the Colorado Water Conservation Board.

Water-management agencies are becoming increasingly interested in the impact of dust and soot on snow because it directly affects their work, Landry said.

A dust storm that blanketed western Colorado on Feb. 15, 2006, made believers of many, Landry said. The dust cover led to an early and intense runoff of what little snow there was that year, he said.

"A single event affected the whole state," Landry said.

In addition to snow studies, the CSAS is inventorying the plant community in Senator Beck Basin every five years. The first survey in 2004 was followed last year by a five-day study that found species not identified in 2004 as well as already-identified in greater or less number.