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## GRACE offers broad snapshot of groundwater

By HEATHER HACKING - Staff Writer

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New satellite data showcased at the American Geophysical Union meeting this week in San Francisco illustrated the degree to which groundwater has dropped over the past several years in California's Central Valley.

GRACE, the Gravity Recovery and Climate Experiment, through a partnership with NASA and the German Aerospace Center, tracks the monthly changes in the earth's gravity field caused by the movement of water.

The focus of the presentation was groundwater, and the rate at which groundwater levels have changed from October 2003 through March 2009 in the Central Valley.

The trend for the Central Valley overall is unsustainable, the presentation concluded, with areas in the San Joaquin Valley dropping 2-6 feet a year.

In the Northern Sacramento Valley, these numbers range from .5 to 1.3 feet a year over that time period.

Lester Messina, who works in water issues for the Glenn County Department of Agriculture, said the NASA work is "a good wake-up."

The numbers given in the report for this area, .5 to 1.3 feet of lowered groundwater per year, is "what we are seeing overall," he said.

"We can't say that's not much," Messina said, having just completed a third year with dry conditions.

The information gathered by counties in the Northern Sacramento Valley is much more localized.

There are areas in both Butte and Glenn counties that are still plentiful, as well as areas that have undergone development, Messina said.

Messina said when he looks at the charts created by NASA, he thinks about the need for groundwater replenishment, groundwater storage and "moving forward on more surface storage" like the proposed Sites Reservoir being discussed near Maxwell.

Paul Gosselin, director of the Butte County Department of Water and Resource Conservation, said the analysis used for the GRACE project is helpful and gives a broad snapshot.

From a local perspective, the county does detailed analysis of local groundwater through well monitoring.

"These remote sensing and larger area snapshots are interesting and important," Gosselin said, "but they don't replace the work and detailed analysis that we have within the county."

When talking about California in general, it is sometimes reported that there is no monitoring or analysis of groundwater, but "up here that is categorically false," Gosselin said.

He said there are concerns about the long-term sustainability of groundwater in this area.

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"When you look at longer-term trends, you need to look at a longer period of time."

"We're still somewhat in a delicate balance," he said.

As for the numbers for the Northern Sacramento Valley, which show a much smaller groundwater decline than the southern part of the Central Valley, "what it shows is the work and planning and stewardship in terms of water we have here and how land use and agriculture are working to strike a balance, especially in drought years," Gosselin said.

"The southern San Joaquin is in a different situation."

To view the slide-show presentations and maps of the Central Valley, go to: [www.nasa.gov/topics/earth/features/grace20091214.html](http://www.nasa.gov/topics/earth/features/grace20091214.html).

For a larger illustration, see: [www.nasa.gov/topics/earth/features/gracelmg20091214.html#Groundwater](http://www.nasa.gov/topics/earth/features/gracelmg20091214.html#Groundwater).

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