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space between clusters? Do we force people out of their cars and into mass transit? Do we prevent development outside defined growth areas? Do we require more dense infill development? Do we require sales taxes to be collected on a metro basis instead of by local governments, thereby removing the

competitive nature of sales tax producing developments? Etc., etc. These are questions that policy makers will have to face.

In the meantime the District will continue to try to keep development out of floodplains, to preserve floodplains to the extent possible, continue to do projects that solve existing problems,

continue to maintain the drainage facilities, continue to work on water quality improvements, and continue restoration efforts. Such efforts should provide future generations with drainageway corridors that are assets and not liabilities.

CoCo RaHS Coming to District

by Nolan Doesken, Assistant State Climatologist, CSU Colorado Climate Center

What is CoCo RaHS? CoCo RaHS is an acronym for the "Community Collaborative Rain and Hail Study". This is a community-based research and education project designed to involve local citizens of all ages in helping scientists study the fascinating and remarkably localized rain and hail patterns from spring and summer thunderstorms. With the help of the Urban Drainage and Flood Control District, CoCo RaHS will be starting up in the Denver area during the spring and summer of 2002. Detailed precipitation maps will be produced for every day of the year to help examine rainfall patterns in the region.

CoCo RaHS was initiated by the Colorado Climate Center at Colorado State University following the devastating flash flood that struck Fort Collins in July 1997. At that time, hundreds of local citizens in Fort Collins and Larimer County assisted the Colorado Climate Center in documenting storm rainfall patterns. With the help of nearly 300 rain gauge reports, precise details of the storm were identified and mapped. The heaviest core of that storm was shown to be only about one mile across and centered over extreme southwest Fort Collins where 14.5 inches of rainfall was measured. This was the heaviest rain ever documented over an urbanized area in Colorado. Just three miles to the east, rainfall decreased to less than two inches and many citizens of Fort Collins had no idea that a raging flood was in progress. Local observations also showed another rainfall core of over 12 inches just northwest of Fort Collins near the town of Laporte.

Since that storm, the Colorado Climate Center has worked together with teachers, students, local utilities, the National Weather Service, and various other organizations to put together a network of hundreds of volunteers that measure rainfall and hail on a daily basis. High school students from Fort Collins created a webpage that allows volunteers to submit their daily observations over the Internet. Rainfall and hail maps are immediately created and displayed that show the data from all volunteers.

Project scientists and sponsors utilize these precipitation maps to help understand the localized nature of storms and their impacts. The maps also are proving to be a wonderful resource for students and teachers in learning about weather patterns here in Colorado. In Fort Collins, where CoCo RaHS has been active for only four years, a monitoring network of more than one station per square mile covers nearly the entire city and surrounding areas. This allows scientists and water managers to truly understand local rainfall patterns and their implications.

CoCo RaHS is becoming a huge help to the Colorado Climate Center, whose job is to accurately monitor Colorado's climate. The Climate Center has done well with only a few weather stations per county across the state, but has always known that precipitation patterns are highly variable and that statewide precipitation estimates have been crude. Since CoCo RaHS started, several hundred precipitation stations are now reporting routinely from northern Colorado and precipitation assessments are getting much better.

Measuring rainfall seems easy, but there is more to it than meets the eye. All volunteers will be equipped with high capacity rain gauges that meet National Weather Service accuracy requirements. The Climate Center will provide excellent training on where and how to set up rain gauges to get accurate readings, while trying to make this a fun and exciting educational experience for all participants regardless of age or background.

CoCo RaHS expansion into the District will begin this spring. A student intern from Metropolitan State College Department of Earth and Atmospheric Sciences will play an important role in the project. Efforts will begin immediately to recruit volunteers, equip them with quality rain gauges and hail measuring devices called "CoCo RaHS Hail Pads", and provide training to all volunteers.

The goal for 2002 will be 150 new volunteers in the Denver metropolitan area to supplement the existing network of over 130 automated rain gauges operated by UDFCD. Together, this should provide a greatly improved ability to track and understand local storms.

It only takes five minutes per day to be a CoCo RaHS volunteer. If you would like to help with this project, please contact the Colorado Climate Center, Department of Atmospheric Science, CSU, Fort Collins, CO 80523, phone: 970-491-8545, fax: 970-491-8449, email: nolan@atmos.colostate.edu.

To learn more about CoCo RaHS, a link has been provided to the website from alert.udfcd.org.