

The South Platte Basin Hydrologic Observatory

The intersection between: (1) the Rocky Mountains and developments occurring in high altitude fragile environments; (2) the metropolitan areas emerging at the interface of the mountains and the plains; (3) the irrigation occurring along rivers as they break from the mountains and snake across the Great Plains; and (4) the grasslands and the dryland farming that covers the vast amount of the Great Plains, represents a dynamic, complex, highly integrated ecosystem, stretching from Montana and North Dakota to New Mexico and Texas. Within this large area, besides tremendous increases in population in metropolitan areas, there are new energy developments, old hard rock mining concerns, new recreation developments, irrigation farms selling water to meet urban demands, new in-stream flow programs, struggling rural areas, and continued *mining* of ground water. The corresponding impacts are creating endangered and threatened species conflicts which require new knowledge to fully understand the measures needed to mitigate harmful ecosystem conditions.

Within the Rocky Mountain/Great Plains interface, water is limiting and land is plentiful, presenting natural resource managers with a number of unique problems which demand a scale of integrated science not achieved in the past. For example, water is imported into a number of the streams flowing east from the Rocky Mountains, complicating the natural systems, on both sides of the continental divide. Nitrogen is deposited in pristine watersheds that rise up high in the Rocky Mountains. Cities capture spring runoff in reservoirs to use at a steady rate over the entire year, putting water into river systems normally moving low flows in the winter. Irrigation of both urban landscapes and farm fields may be at a scale that impacts climate patterns in the region.

The purpose of this South Platte Basin Hydrologic Observatory proposal is to employ the “hydrologic observatory” concept to make the necessary observations in order to advance hydrologic science by studying the South Platte River Basin, as representative of many of the scientific hydrologic issues facing the Rocky Mountain/Great Plains interface watersheds.

With a detailed integration of data sets, from a wide array of study efforts, the South Platte Hydrologic Observatory will produce sound science findings to assist natural resource decision making in the region. In addition, with careful planning and efforts to correlate the South Platte findings with other rivers in the region, the findings will be able to assist decision making from Canada to Mexico.

The South Platte Hydrologic Observatory will coordinate its work with the water institutes in Montana, North and South Dakota, Wyoming, Nebraska, Kansas, Oklahoma, New Mexico and Texas, as part of an effort to extend the knowledge of the Rocky Mountain/Great Plains river system hydrology from Canada to Mexico. This water institute coordination will be organized under the auspices of the National Institutes for Water Resources.