traits are different between species and may influence the interception loss. *A. rigidula* and *A. berlandieri* have the most permeable canopies and therefore the interception losses are lower. The *E. ebano* and Thornscrub intercept more than twice in relation to the *Acacia* canopies. Results suggest that the management of thornscrub, as a resource for water conservation, may play an important role in semiarid regions where water is a limiting factor.

Priority areas for water recharge in temperate forest ecosystems in Mexico. Chávez-González, H., González-Guillén, M., Hernández de la Rosa, P., Escalona-Maurice, M. (*Colegio de Postgraduados, Mexico; chavez.honoria@colpos.mx; manuelg@colpos.mx; pathr@colpos.mx; mescalona@colpos.mx*)**.**

Deforestation and degradation of forest ecosystems put at risk their productivity and permanence, decreasing the ability to recharge aquifers and other environmental services. This, coupled with the limitation of resources and high costs for conservation of large areas, requires the identification of priority areas for conservation. In light of the observed fragmentation of the forestry areas in the Sierra Norte of Puebla at the central region of Mexico, this study was conducted to determine priority areas of water recharge through: (1) detecting land use changes (1986–2010) and the biophysical, social and economic patterns that determine such changes using satellite images, GIS and a probabilistic model. The model, together with demographic information, allowed project changes (2010–2030) of land use in the study area; (2) Identify areas with potential for aquifer recharge throughout criteria and indicators, spatial information and Multicriteria Analysis; and (3) identify priority areas subject to be conserved with the use of GIS. Promote payment schemes for environmental services and land-use planning, are two of the viable management and conservation strategies. The priority areas should be the basis for the implementation of public policies for conservation of natural resources in the studied region.

The effect of plant cover on alimentation areas on spring water chemistry in South of Poland. Małek, S. (*University of Agriculture in Krakow, Poland; rlmalek@cyf-kr.edu.pl*), Żelazny, M. (*Jagiellonian University, Poland; miroslaw.zelazny@uj.edu.pl*), Astel, A. (*Pomeranian University, Poland; astel@apsl.edu.pl*), Siwek, J. (*Jagiellonian University, Poland; janusz.siwek@uj.edu.pl*), Jasik, M., Krakowian, K. (*University of Agriculture in Krakow, Poland; michal.jasik@op.pl; krakowian.k@gmail.com*), Wolanin, A. (*Jagiellonian University, Poland; anna.wolanin@uj.edu.pl*).

In the Western Carpathians (southern Poland), where Norway spruce dieback and changes of plant species composition have occurred, it was expected that the plant cover changes might affect spring water chemistry. Direct fieldwork was done on catchments: in the Silesian Beskid Mts, in the: Gorce, Świętokrzyski and Tatra National Park with different bedrock and plant species composition. Measurements were made of pH and electrolytic conductivity of spring water, and samples were transported to the laboratory, where they were filtered and the content of cations and anions determined by means of the Dionex 320, 2000 and 5000 gas chromatographs. The data obtained were verified and treated by the use of multidimensional data mining techniques in order to recognize mutual dependence between spring water chemistry and forested as well as deforested areas. Results showed that the presence of mixed stands caused an increase in pH values and an increase in calcium and magnesium concentrations compared to the spring waters of Norway spruce monocultures growing on the same geological bedrock. Higher content of base cations were noted in spring waters on afforested areas compared to samples obtained from deforested sites as well as from mountain meadow.

Effects of historic forest disturbance on water quality and flow in the Interior Western U.S. Matyjasik, M. (*Weber State University, USA; mmatyjasik@weber.edu*), Moisen, G. (*U.S. Forest Service, USA; gmoisen@fs.fed.us*), Combe, C., Hathcock, T., Mitts, S., Hernandez, M. (*Weber State University, USA; chelseycombe@mail.weber.edu; teborama@gmail.com; stephmitts93@hotmail.com; mhernandez@weber.edu*), Frescino, T., Schroeder, T. (*U.S. Forest Service, USA; tfrescino@fs.fed.us; tschroeder@fs.fed.us*).

Water quality and flow is affected my many complex factors in the Interior Western U.S. While many studies focus on individual water parameters response to a limited number of changing conditions, little work looks at long term effects of diverse forest disturbances on a broader array of water quality and flow metrics. The U.S. Forest Service Forest Inventory and Analysis program (FIA) is responsible for inventorying status and trends in forested ecosystems nationwide. FIA is currently partnered with NASA and others to develop nationwide maps of forest disturbance annually using the historic Landsat data record. Historic forest disturbance maps have the potential to provide new insights into water resources problems. In this paper, we synthesize the existing literature relating water and forest disturbances. Using temporally dense water samples analyzed by both the Environmental Protection Agency and U.S. Geological Survey in several focus areas in the Interior West, we indicate spatial temporary trends illustrating how forest disturbances affect surface water concentrations of nitrogen, phosphorus, potassium, magnesium, total dissolved solids and suspended solids in conjunction with stream flow dynamics. Presented trends are used to make recommendations of possible use of historic forest disturbance maps coupled with FIA data to predict future effects of forest disturbance on water.

Environmental fragility of the Iguaçu River watershed, Paraná, Brazil. Melo, L., Dalla Corte, A., Klein Hentz, Â., Sanquetta, C., Doubrawa, B. (*Federal University of Paraná, Brazil; laracmelo@gmail.com; anapaulacorte@gmail.com; angelakhentz@gmail.com; carlos_sanquetta@hotmail.com; betaaa_d@yahoo.com.br*).

This work aimed to evaluate the degrees of fragility potential (FP) and emerging fragility (EF) at the Iguaçu River watershed, Paraná, Brazil. The following variables were used to determine the fragility: slope class, soil class, soil use and the presence of riparian strips, according to the methodology proposed by Ross (1994). The thematic maps were analyzed in a Geographic Information System (GIS) and their combinations using ArcGis software. The result was expressed in classes of fragility: very low, low, moderate, high and very high. It was determined that 76% of the watershed fell under the FP very low, low and moderate, while 21.95% are areas of high or very high FP. For the FE, a similar pattern of distribution was observed. The sum of very low, low and moderate corresponds to 90% of the area and 7.5% represents the high or very high classes. It was noted that the very high class of FE was distributed mainly on floodplains, limiting condition for the use of the soil, because of the unstable structural features, with significant erosion from water. Enhancement of vegetation cover or soil conservation practices are recommended, considering the higher propensity to vulnerability.