December 9, 2005

The Venezuelan Amazon: its rocks and its indenous people

Dr. Don Goddard, Center for Energy Studies-Louisiana State University

Abstract: Venezuela, located at the northernmost part of South America, covers approximately one million km2 (386,000 sq. miles). The northern half of the country consists mostly of Cretaceous and Tertiary rocks and large petroleum producing basins. The southern half, south of the Orinoco River, is a Precambrian Shield that occupies the Venezuelan Amazon and Guyana region and is well known for it's bauxite, iron, and diamond mining. The Shield consists of an igneous/metamorphic basement of mostly granitic rocks overlain by a thick layer (5000 feet) of quartz arenite belonging to the Roraima Formation. Scattered throughout the region are erosional remnants of the Roraima that form spectacular high, flat plateaus called "tepuis" and separated from one another by tropical jungle and river valleys. These topographic features are important for their amazing fauna and flora unique only to these localities. Indigenous people inhabit the lower tropical jungle located between the "tepuis". They belong primarily to the Pemon, Yecuana and Yanomami tribes, each with their own language and customs. Their vast knowledge of the rich flora and fauna within their natural habitat has been extremely enlightening to the few scientists fortunate enough to have been able to work among them.

Biographical Sketch: Don Goddard began his career as a petroleum geologist in 1965 with Mene Grande (Gulf Oil Company) in Eastern Venezuela. Between 1979 and 1990 he worked for Maraven Oil Company (PDVSA affiliate) as an exploration geophysicist, and production geologist, and became manager of geological operations in the Lake Maracaibo Basin region. In 1990, he moved to the USA with his family and soon began working at LSU's Basin Research Institute (BRI). As petroleum research geologist at BRI his work involved the characterization of Tertiary reservoirs in Central Louisiana, and participated on projects in basin analysis of the Gulf Coast Region. In 2000, at LSU's Center For Energy Studies (CES), Don became the Coordinator of the Central Gulf Region, Petroleum Technology Transfer Council (PTTC). Here he is responsible for identifying and transferring upstream technologies to Louisiana independent petroleum operators. As Associate Professor at the LSU/CES, his research focuses on reservoir characterization in mature fields, and regional petroleum basin analyses. Don Goddard received his B.S. degree in geology from Florida State University in 1965 and later studied at the University of London where he obtained M.Sc. and Ph.D. degrees in marine geology and geophysics. He also has a geological engineering degree from the Universidad Central de Venezuela.

November 11, 2005

A NEW LOOK AT THE CHICOT AQUIFER OF SOUTHWESTERN LOUISIANA

Dr. Douglas Carlson, Louisiana Geological Survey, dcarlson@lsu.edu

Abstract: The Chicot Aquifer has been studied since the mid 1950s, but this study presents new data and a more fulsome view of this aquifer. The past three years study of the Chicot Aquifer has included the development and analysis of data sets that define the geologic and hydraulic properties of this aquifer some of which is used for groundwater modeling. Data can be categorized as: geologic, fluxes, and hydraulic properties. In terms of geologic data approximately 1,000 electrical logs, about twice the size of previous model set, were examined to determine hydrostratigraphy, distribution of sands, within the Chicot Aquifer. This study includes analysis of sand texture as determined from approximately 2,500 sieve test results. Thickness of the top confining clay was determined from approximately 20,000 drillers-logs. Two major fluxes have been examined in greater detailed than previously both in spatial and temporal sense. Pumping data has been expanded to include more recent pumping wells, both industrial and public water supply. Spatial distribution of agricultural groundwater use was defined by GIS data. Temporal distribution of agricultural groundwater use was defined by climatic data for the 1990s. Recharge rate, was determined by two different techniques. One, baseflow analysis for 15 watersheds was completed for a 36 year interval between 1965 and 2000. Two, water budget analysis involved GIS data sets of soil textures, slopes, land use and soil hydraulic conductivities and climatic data for approximately 23,000 shape file areas. There are two hydraulic properties, hydraulic conductivity and porosity, that have either new or expanded data sets. Approximately 1,400 hydraulic conductivity values determined from specific capacity data, a big increase from approximately 300 values in the largest previous data set. Approximately 1,000 porosity values have been determined from permeameter tests and analysis of various geophysical logs: neutron, density, and sonic.

October 14, 2005

IMPACT OF RECENT HURRICANES ON COASTAL LOUISIANA AND MISSISSIPPI.

Dr. Paul Kemp, School for the Coast and Environment – Louisiana State University

Biographical sketch: Dr. Kemp is an Associate Research Professor with the School of the Coast and Environment at Louisiana State University where he serves as the Director of the Natural Systems Modeling Group. His area of academic interest includes use of massively parallel numerical models to deal with high-intensity, short-term events like hurricanes and low-intensity long-term phenomena like delta formation, coastal wetland loss, ecosystem change. His work involves applying science to push change in natural resources policy and continues to work on a number of policy oriented boards and commissions. His talk will focus on current research on the impact of recent hurricanes along the Gulf Coast.

September 9, 2005

A brief overview of marsh terracing and hydrologic restoration

Dr. Bill Good, Louisiana Geological Survey-Louisiana State University

Abstract: This presentation will focus on hydrologic restoration (HR) and marsh terracing as means to achieve specific coastal restoration goals. Three projects that were completed in the early 1990's will be presented: the Sabine Terracing Project in Cameron Parish, the Gulf Intracoastal Waterway HR project in Lafourche Parish, and the Jonathan Davis HR Projects in Jefferson Parish. Terracing is a fairly new restoration technique in which a series of ridges are constructed to marsh elevation in shallow coastal ponds or bay bottoms. The first such project was built at the Sabine National Wildlife Refuge in Cameron Parish, Louisiana in 1991. A GIS analysis of aerial imagery spanning 13 years will be presented to illustrate the spatial dynamics of the terraces and of the adjacent pond edges. This analysis indicates that sediment has accumulated sufficiently in the vicinity of the terrace fields to result in a substantial enlargement of many of the terraces and encroachment of some of the adjacent shorelines into areas which were formerly open water. Proximity to sediment supply appears to be a key factor in the observed amount of terrace and adjacent pond-edge expansion. The hydrologic data reviewed is inconclusive in regards to the ability of the two HR projects under discussion to exert a major influence on water exchange across the project perimeter. A conceptual model is discussed that is based on the current description of HR projects as a means to mitigate ecosystem degradation resulting from increased hydrologic interconnections with marine conditions. An alternative conceptual model is proposed that assumes that increasing relative sea level rise is the principle factor driving ecosystem degradation in this area. The implications of these two models will be briefly discussed.

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