the 19th century and even earlier, exploration geophysics first became important about 1922-23 with the mapping of salt domes in the United States and Mexico by torsion balance and seismic refraction methods. This paper will recount highlights of the history and will attempt to explain why events occurred when and as they did, and will speculate on what may be expected in the future.

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Comparison of Solution-Mineral Equilibria with Single-Element and Statistical Methods in Hydrogeochemical Exploration for Uranium

Hydrogeochemical data, generated by the Department of Energy's National Uranium Resource Evaluation program, for the Millett 1° × 2° NTMS Quadrangle in Nevada can be used to identify geologic environments which might contain uranium deposits.

Saturation indices (SI) were calculated for uraninite, pitchblende, coffinite, autunite, tyuyamunite, and carnotite using a modified version of the WATEQF computer program. Uranium mineral SI's correlated well with the logarithm of total U concentration in ground water. Ground waters from the Austin Mining District possess the highest autunite SI values, although undersaturation is indicated. A spring in the Toquima Range (Tertiary rhyolites) is supersaturated with respect to uraninite and coffinite, and has the highest (but slightly undersaturated) SI value for pitchblende.

Samples within the Austin Mining District are anomalous with respect to U, As, Cu, Mo, and U/conductivity. The Toquima Range sample is anomalous in U, Mo, As, Cd, Fe, and U/conductivity. In a factor analysis of the Millett data, water temperature (Tw), U, Eh, Si, and V load on factor 3. High factor 3 scores are found in, but are not restricted to, the Austin Mining District and the Toquima Range. Multiple regression analysis of the data resulted in the equation: $U_{calc} = f(Tw, Cl, Ca, Mg)$. High residuals ($U_{obs} - U_{calc}$) are located in the Austin Mining District and in the Toquima Range.

Calculated SI's reinforce, but are apparently not a substitute for, the standard statistical interpretation of reconnaissance ground water data, and may indicate the type of uranium mineralization present.

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Sedimentary Processes in Restricted Gulf Coast Estuarine System: Corpus Christi Bay, Texas

Corpus Christi Bay is a shallow (< 5 m), restricted estuary that is typical of estuaries on the Texas Gulf Coast. The distribution pattern of bay-floor sediments indicates that the bay's interior is a depocenter for mud derived from multiple sources; the bay's marginal areas are composed mainly of residual sandy deposits derived from shoreline erosion of a Pleistocene substrate (Beaumont Formation) and a modern baymouth barrier (Mustang Island).

Synoptic time-sequence measurements of the bay's suspended sediment and hydrographic characteristics were taken by helicopter at 15 monitoring stations; the measurements represent 8 surveys conducted during a 2-year observation period. The measurements show a high degree of spatiotemporal variability and indicate a wind-dominated sediment-dispersal system. During all surveys, the bay was consistently turbid (mean baywide transmissivity <15%/m); the mean baywide concentration of suspended sediment during individual surveys ranged from 11 mg/l to 52 mg/l. The suspended-sediment concentrations were primarily controlled by wind speed which determines the extent of wave-induced resuspension of bay-floor deposits; wind direction and tidal phase controlled the sediment-dispersal patterns.

Texturally, the baywide mean grain size of suspended sediments during individual surveys ranged from very fine silt to clay (7.63 to 8.22ϕ), and mean silt/clay ratios were within the 0.68 to 1.38 range; the sediment was consistently poorly sorted. In contrast to suspended-sediment concentrations, which largely appear to be a short term response to recent wind conditions, sediment textures appear to be a longer term response to earlier wind conditions, thus suggesting that finer grained particulate matter has substantial residence time within the shallow water column.

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Delta-Front Shelf Storm Deposits of Subsurface Woodbine-Eagle Ford Interval (Upper Cretaceous), Damascus Field, Northern Polk County, Texas: Success from Combined Development Geology and Sedimentologic Core Analysis

Gas production from several, 6 to 23 ft (2 to 7 m), single to multistory sandstone bodies of the Woodbine-Eagle Ford interval, 160 to 200 ft (49 to 61 m) thick at 9,000 to 9,600 ft (2,743 to 2,926 m) in the Damascas field has been developed since discovery in 1976. Subsequent offset drilling resulted in a few gas wells and several dry holes. In February 1979 the entire Woodbine-Eagle Ford interval was cored in the No. 7A Dorrance well. Sedimentologic core study generated a predictive depositional model which has guided field development of the subtle stratigraphic traps at a 5 to 1 well success ratio. Present gas reserves are 40 Bcf with 440,000 bbl of condensate.

The productive area is located slightly southwest of the Sabine uplift and just updip from the Lower Cretaceous continental shelf edge. Seismic sections and foraminiferal paleoecology establish a middle-shelf depositional setting. Bioturbated, silty, shelf shales comprise the upper and lower Woodbine-Eagle Ford interval. The middle is a complex of (1) graded, medium to very fine-grained, massive to laminated sandstone beds; (2) contorted, soft-sediment-deformed intervals; (3) swirled and sheared siltstone beds; and (4) thin diamict conglomerate beds. Genetic units indicate periodic rapid deposition by debris flows and low to high-concentration density currents. The several distinct productive sandstone bodies (porosities 9 to 14%; permeabilities 2 to 10 md) are northward-thickening, dip-oriented lobes.

The localized deposition in the shelf setting was controlled by delta development slightly to the north. Periodic major storms generated delta flooding which contributed high-energy reservoir-quality deposits to the shelf. Similar shelf sand build-ups should occur throughout the area; however, recognition must rely on detailed sedimentologic study of core sequences.

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Cherts in Wishart Formation (Aphebian) of Labrador: Example of Rapid Shallow-Water Silica Sedimentation

The Wishart Formation of the Labrador trough (early Pro-