DYNAMIC PLANET - RIVERS & LAKES

DESCRIPTION: This event emphasizes the use of process skills to solve problems and challenges within designated earth science topics.

EVENT PARAMETERS: Participants may bring any type of calculator, one two-inch binder filled with reference materials, plus one reference book.

A TEAM OF UP TO: 2

APPROXIMATE TIME: 50 Minutes

THE COMPETITION:
Participants will be presented with one or more tasks, each requiring the use of process skills. These skills include, but are not limited to, generating inferences, making predictions, problem solving, making and recording observations, formulating and evaluating hypotheses, interpreting data, and graphing.

Topics of study may include, but are not limited to:
Hydrological cycle
Aging of rivers - young, mature, old
Depositional features including floodplains, levees, deltas, meanders
Erosional features including rapids, waterfalls, canyons
Topographic map interpretation as related to river features and actions
River velocity including gradient, channel shape, and channel surface
Stream channel patterns including meandering, straight and braided
Drainage patterns including dendritic, radial, and centripetal
Stream capacity including dissolved load, suspended load and bedload
Stream classification including perennial and intermittent

REPRESENTATIVE ACTIVITIES.

- Sketch an imaginary, meandering river system that includes several tributaries, an oxbow lake, and an alluvial fan. Label the features.
- On a Xeroxed copy of a topographic map, outline the watershed boundaries of a small, identified stream. Label a confluence of a tributary flowing into this stream, wetlands, dams and rapids. Draw several short arrows to indicate the direction of stream flow.
- Given graph paper and all relevant data, create several multi-line graphs depicting seasonal lake temperatures for various depths at several locations. Determine whether thermal stratification is present during one or more of the four seasons. Develop a hypothesis that explains your observations. Culminate with a brief concluding statement to support your hypothesis.

SCORING: Points will be awarded for the quality and accuracy of responses. Several pre-identified questions will serve as tiebreakers.

National Science Education Standards: Earth and Space Science, Content Standard D: Structure of the Earth System (Grades 5-8); Science in Personal and Social Perspectives, Content Standard F: Natural Hazards (Grades 5-8); Science in Personal and Social Perspectives, Content Standard F: Natural Resources (Grades 9-12); Science in Personal and Social Perspectives, Content Standard F: Science and Technology in Local, National, and Global Challenges (Grades 9-12)