METEOROLOGY

1. **DESCRIPTION**: This event emphasizes understanding of basic meteorological principles with emphasis on interpretation and analysis of meteorological data.

    A TEAM OF UP TO: 2   **APPROXIMATE TIME:** 50 Minutes

2. **EVENT PARAMETERS:** Each **team** may bring one 8.5" x 11" two-sided page of notes containing information in any form from any source.

3. **THE COMPETITION: The questions will be from the following Everyday Weather topics:**

    a. **The modern atmosphere:** structure, thickness, composition, seasonal variation, variable and permanent gasses, unique characteristics, and atmospheric pollutants
    b. **Solar Radiation and Seasons:** energy balance, atmospheric influences on insolation, surface/atmospheric energy transfer processes, diurnal and seasonal temperature patterns, Earth's revolution, rotation, axial tilt, and atmospheric beam depletion
    c. **Water and its properties as they relate to weather:** specific heat, density, sensible and latent heat
    d. **Air Masses:** origin, temperature, density, moisture, advection, and stability
    e. **Atmospheric moisture:** humidity, water vapor, cloud development and forms, precipitation types, formation, and hazards
    f. **Atmospheric pressure:** horizontal and vertical gradients, highs, lows, and fronts (warm, cold, occluded & stationary), ridges and troughs
    g. **Atmospheric circulation:** three-cell model, Coriolis Effect, friction, gradient winds, jet streams, etc.
    h. **Local wind patterns**: Chinook winds, sea breezes, valley and mountain breezes, Santa Ana winds, Alberta Clippers, panhandle hook, and similar regional weather patterns
    i. **Surface Weather Stations and Surface weather maps:** analysis, construction, and interpretation
    j. **Modern weather instrumentation and technology (use and interpretation):** thermometers, anemometers, barometers, satellite imagery, radiosondes, rawinsondes, Doppler radar
    k. **Weather forecasting:** analysis and interpretation of weather maps, meteograms, stuve diagrams, isopleths, fronts, Doppler, modeling, thermodynamic charts, and vertical atmospheric profiles
    l. **Atmospheric phenomena:** sundogs, rainbows, aurora, virga, crepuscular rays, green flash, etc.
    m. **Temperature indices:** wind chill, heat index, and heating and cooling degree days

4. **REPRESENTATIVE ACTIVITIES:**
    a. Examine a surface weather map of radar, fronts, and data and predict 24-hour weather trends.
    b. Examine surface weather stations on a U.S. Map and interpret local weather conditions.

5. **SCORING**: Points will be awarded for the quality and accuracy of responses, the quality of supporting reasons, and proper use of scientific technique. Highest score wins.
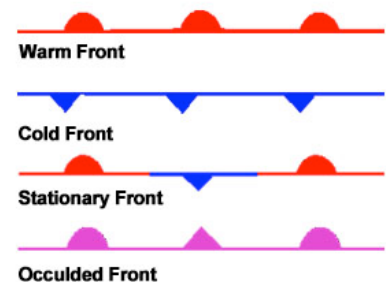
    Recommended Resources: All reference and training resources including the **Audubon Weather (Meteorology) Guide** and **Bio/Earth CD** are available on the Official Science Olympiad Store or Website at www.soinc.org Also see: www.education.noaa.gov/Special_Topics/Science_Olympiad.html

    THIS EVENT IS SPONSORED BY: The National Oceanic and Atmospheric Administration (NOAA)