Weather Watchers

CMSES PMC Presentation
Hiller Aviation Museum
8 February 2014
Hiller Aviation Museum

• Located in San Carlos, California
• Extensive Collection With 50 Unique and Historic Aircraft
• Education Programs for School Field Trips
Gallery Tours

• Aerodynamics
• California Aviation History
• Dream of Flight
• Young Aviators
Hands-On Programs

- Elementary
- Middle School
- Flight Sim Zone
Elementary Programs

- Amazing Aircraft
  - Airplane Parts
  - Glider Construction
  - Glider Flights

- Eye on the Sky
  - Water Cycle
  - Cloud Identification
Middle School Programs

- **Flight Simulation**
  - Basic Sim Lab
  - Flight Planning
- **Forces of Flight**
  - Lift
  - Thrust
  - Drag
- **Skyways**
  - ATC Simulation
  - Flight Planning
Flight Sim Zone Programs
Meteorology

- Study of Earth’s Atmosphere
- Weather Observation
- Weather Forecasting
Weather and Aviation

- Affects all Flight Operations
- Familiarity With Weather Required by Regulation
- Determines Runway Usage and Flight Rules
- Contributes to 70% of Delays and 25% of Accidents
Clouds and the Water Cycle
Cloud Types

- Low Clouds
- Middle Clouds
- High Clouds
- Vertically Developed Clouds
Low Clouds

- **Stratus:** Come In Layers
- **Surface to 6,000’**
- **Stable Air**
- **May Require IFR Flight**
- **Nimbostratus:** Rain-bearing Stratus
Middle Clouds

- Alto Clouds
- 6,000’ to 12,000’
- Often in Scattered Layers
- Signal Fair Flying Weather
High Clouds

- Cirrus Clouds
- Above 12,000’
- Water Droplets Frozen to Form Ice Crystals
- Blown by High Altitude Winds
Vertically Developed Clouds

- Cumulus Clouds
- Grow Upwards
- Release Energy Through Condensation
- Clear But Bumpy Skies
Thunderstorms (CBs)
Bringers of Dangerous Weather
Thunderstorm Formation

- Warm Air Rises
- Cooler Temperatures Aloft
- Heat Released as Water Vapor Condenses
- Cloud Stays Warm—Keeps Rising!
Thunderstorm Features

- Strong Up/Down Drafts
- Rapid Vertical Development
- Heavy Precipitation
- Icing
- Lightning
- Tornadoes
Lightning

- Caused by Static Build Up
- Leaps Towards Tall Conductors
Static Charge and Lightning

- Friction from Up/Down Drafts Separates Charge
- Like Charges Accumulate in Ground
- Discharge Occurs When Charge Accumulates
Tornadoes

- Possible Only In Powerful Thunderstorm
- Observed in only 3% of Thunderstorms
- Rapid, Rotating Updraft Reaches Surface
Tornado Features

• Rated With Enhanced Fujita Scale
  - EF0—Under 100 mph
  - EF5—Over 200 mph
• Track SW-NE
• Footprint Diameter Up to 1 Mile
• Track Length Up to Several Hundred Miles
Tornado Safety

- Be Aware of Convective Weather Forecast
  - Convective Sigmet
  - Severe CB Watches

- Monitor Local Warnings
  - NWS Tornado Warning
  - Tornado Sirens
  - Radio Signals

- Seek Shelter
  - Avoid Ridges
  - Find Low Areas
  - Underground/Reinforced Structures
Thank You!