Weather

- Weather affects all flight, including UAS
- Important part of pre-flight actions
- Basic weather questions are on the test
- FAA's “Aviation Weather” (AC 00-6A)

Briefings by Phone

- Intended only for manned flights
  - but may have test questions
- 1-800-WX-BRIEF / 1-800-992-7433
- Give basic information on flight
  - Choose “standard,” “abbreviated,” or “outlook.”
- Get briefing in a standard format
  - Adverse conditions, “VFR not recommended,” synopsis, current, forecast, destination, winds aloft, current NOTAMs, ATC delays.

Briefings On-Line

- One official site exists:
  - https://www.1800wxbrief.com/
- Many unofficial sites are helpful for addition information
  - Numerical models, satellite data, and analysis:
    - http://weather.rap.ucar.edu/
  - Radar data:
    - http://radar.weather.gov/
  - Aviation Weather Center:
    - http://aviationweather.gov/
  - The Weather Channel, Weather Underground

Ceiling and Visibility

- Sky clear (SKC), Few, Scattered (SCT), Broken (BKN), Overcast (OVC)
- Ceiling is lowest level of BKN or OVC or Vertical Visibility (VV) into obscuration
- Clear often means “clear below 12,000”
- Visibility is in statute miles
- Greater than 10 usually reported as 10
  - 6 for forecast (P6SM)
- UAS must remain 500' below ceiling, 3sm vis

METARs

- METAR: routine aviation weather report

  METAR KABC 010855Z 12016G20KT 090V150 1SM -RABR BKN015 06/04 A2992

- SPECI: special update (rapidly changing)
- Towered airports have Automatic Terminal Information Service (ATIS) broadcast on radio
- Many untowered have ASOS/AWOS (Automatic Surface/Weather Observing System)
- On-line sources can decode reports
- Wind direction in METAR is true, magnetic on the radio

TAFs

- TAFs: Terminal Area Forecasts
- Standard part of official weather briefing and likely on test, but obsolescent
- If a TAF is unavailable, refer to the Area Briefing
- Point forecast within 5sm of airport

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TAF AMD KBED 141137Z 1412/1512 21005KT P6SM BKN200
    FM141900 26008KT P6SM VCTS BKN060CB
    FM142300 27006KT P6SM BKN120
    FM150700 28004KT P6SM SCT100
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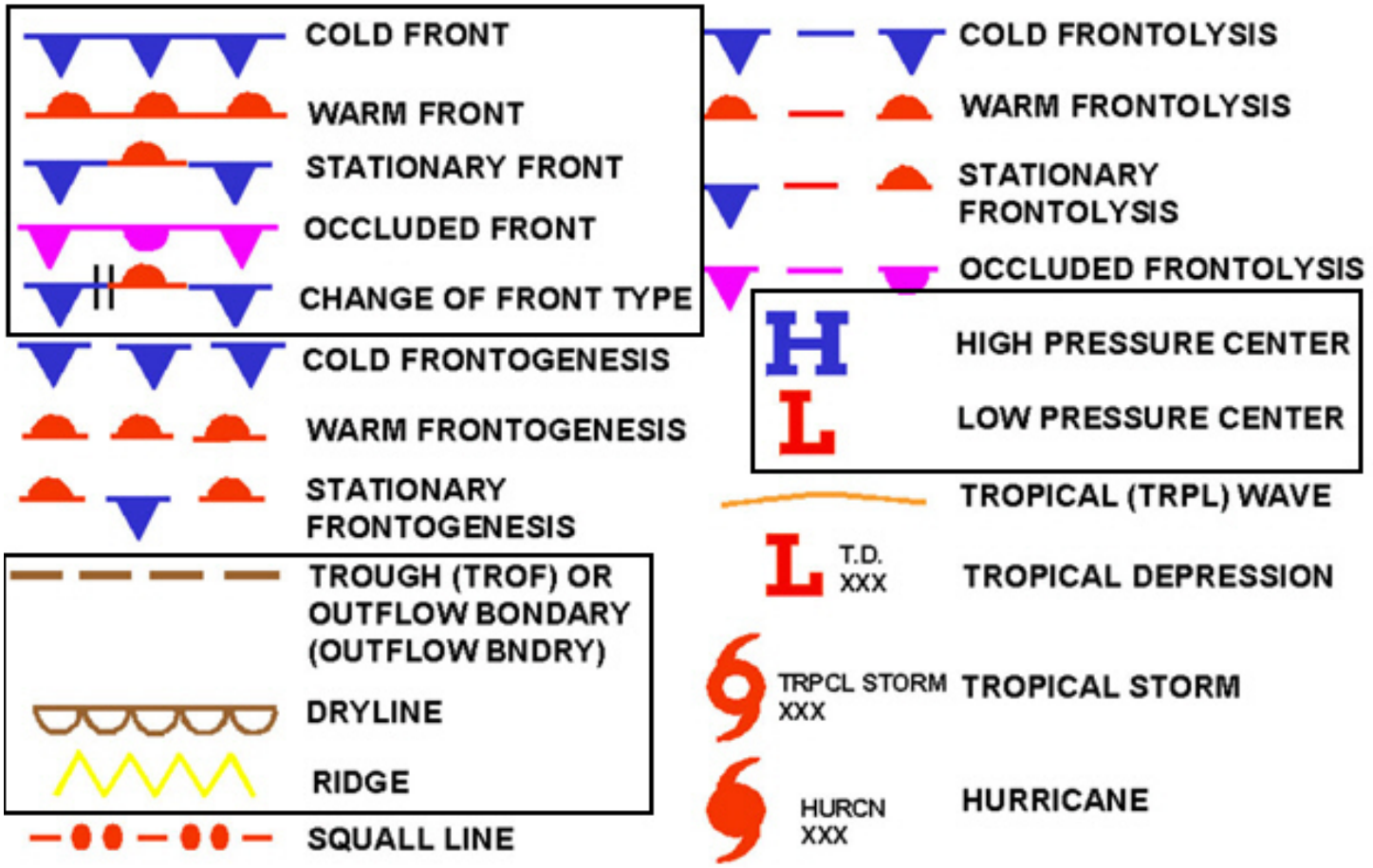
Chart Symbols



Driven by Sun

- Energy for weather comes from solar heating
- Weather caused by uneven heating of surface
  - Rising air (“thermals”) produces low pressure
  - Sinking air produces high pressure
- Wind follows lines of pressure
  - Not straight from high to low
  - Counterclockwise (cyclonic) around low
  - Clockwise (anticyclonic) around high

Atmospheric Stability

- Air mass has horizontally uniform humidity, temperature, pressure
- Dry adiabatic lapse rate 3°C per 1000'
- Stable if high temperature above, unstable if cooler
  - Stable: stratiform clouds, poor visibility, smooth ride, steady winds, rime ice, and warm fronts with steady precipitation
  - Unstable: cumuliform clouds, good visibility, turbulence, gusty winds, clear ice, and cold fronts with showery precipitation
- Heat of condensation helps drive thunderstorms

Fronts and Pressure

- Front is dividing line between two air masses
- Front passage:
  - At least change in wind direction
  - Typically change in temperature and humidity
- Low pressure system associated with fronts
- Fronts and wind move counter-clockwise around low

Surface Analysis

- Low pressure system
- Cold and warm fronts
- Dashes show trough
- Pressures in millibars