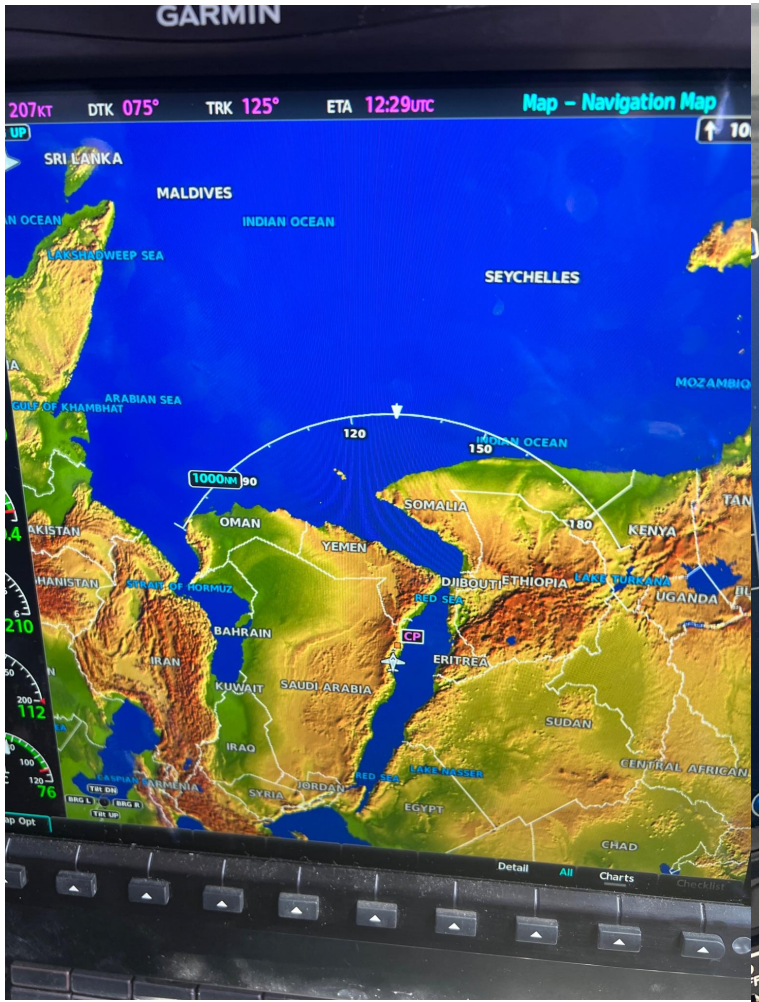
Flight Safety in Weather Modification Operations

Key Flight Segments

- Flight Planning
- Departure
- En-route
- Seeding Considerations
- Landing



Flight Planning

- **Know your Airplane**
  - **Capability**
- **Airworthiness**
- **Serviced**
- **Supplies**
- **Cockpit**

Flight Planning

- Know Your Airports
- Alternates VFR/IFR
- Approaches
- Lighting



Flight Planning

- **Know Your Atmosphere**
- **Stability**
- **Winds**
  - **Storm Motion**
  - **Off-field Landing Options**
- **Forecast**
  - **Duration, Coverage, Intensity**

Flight Planning

- Know Yourself
- Physiology
  - Are you safe to fly?
- Limitations
  - What are your personal minimums?

Flight Takeoff and Landing

- Weather
- Primary hazard is low level wind shear due to:
  - Gust fronts
  - Micro-bursts
- High temperature runway requirements.
- Airport
- Lights
- Obstructions

Flight Departure

- Main hazard is low level wind shear due to:
  - Gust Fronts
  - Micro-bursts
- High temp rwy requirement.

On Station

- What is going to happen?
- What is the forecast?
- What do your eyes tell you?
- What is the timing?
- What is overall picture?
- Projection for your aircraft operations.

On Station

- Where am I?
- Storm Reference
- Target Area Reference
- Other Aircraft
- Clearances

On Station

- What is happening?
- Weather Trend
  - Visual (Tops, Bases, Outflows, Lightning)
  - Radar
  - Communications
- Below-base Conditions
  - Scud, Inflow Strength, Cloud Base Features

On Station – Where is the OUT

- **Bail-out Heading**
- **Radar Help**

Flight Operations

- Emergency Procedures
- FLY THE AIRPLANE
- Gather Facts
- Go to Bail-out Heading
- Communicate
- Leave power alone.
- Need two of the following:
    - Altitude
    - Airspeed
    - Ideas

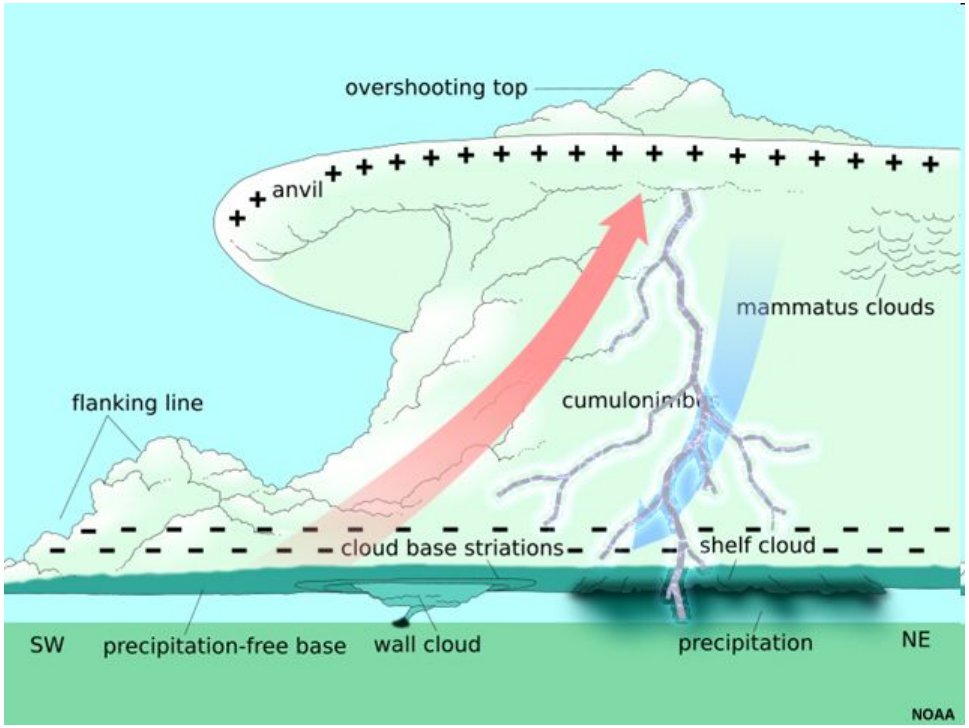
Flight Operations – Top Seeding

- **Maintain attitude and watch airspeed.**
- **Don’t penetrate without knowing what’s on the other side.**
- **Generally penetrate perpendicular to the shear.**
  - **Test the cloud edge if in doubt.**
- **Turn on anti-ice before penetration.**
- **If props ice up, change revolutions per minute (RPM).**

Flight Operations – Base Seeding

- **Don’t get sucked up.**
- **Beware of lowering bases.**
- **Avoid outflow boundaries, back side of storm.**
- **Watch for other aircraft.**

Where is the back side of the storm?



Flight Operations

- Use on-board radar.
- Be careful about penetrating storm with cloud tops greater than 30,000 ft.
- Do not fly through reflectivities more than 50 dBz.
- Do not ever fly toward a radar shado