

Dispersal of Cloud seeding Agents



Release of Cooling Agents

- Dry ice is almost exclusively an airborne release substance.
 - Put in hoppers on the aircraft and dispensed in pellet form.
 - Pellets fall from the aircraft through the cloud, so the aircraft must get to altitudes higher than the desired point of nucleation.
 - There are some problems with keeping the dry ice in small pellet form.

Cooling Agents: Liquid Propane

- Main use is in ground releases for fog abatement.
- Obvious drawback is that it is flammable.
- Technically feasible to release from the air.



Release of Ice Nuclei

- Released from ground or air since ice Nuclei is normally produced as smoke.
- Primary advantage of ground release is that it is considerably less expensive.
- Primary advantage of airborne release is that the targeting is much more certain.

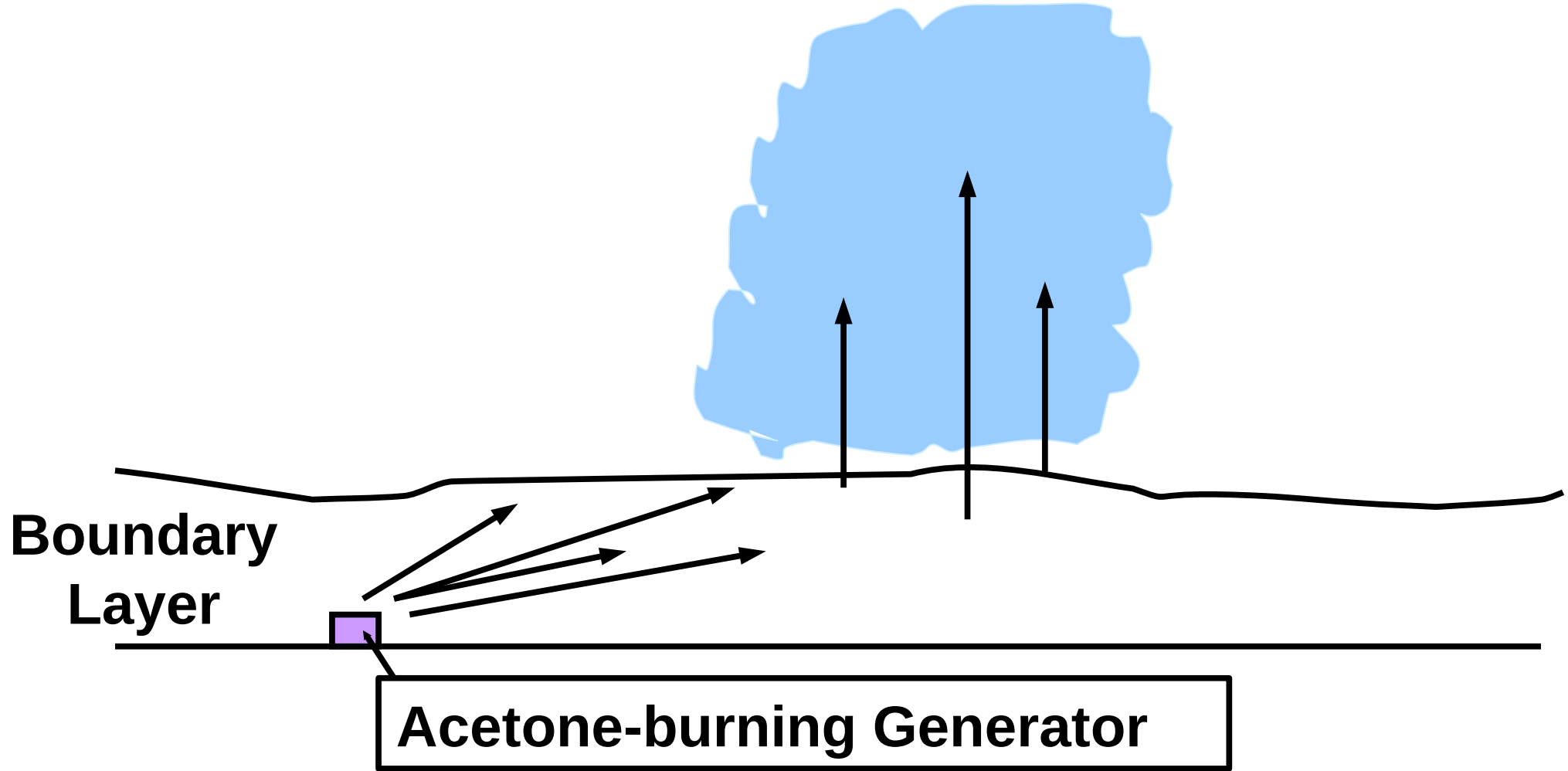


Ground Release of Silver Iodine (AgI)

- Can be released from ground or from air, since it is normally put out as a smoke.
- Primary advantage of ground release is that it is considerably less expensive.
- Primary advantage of airborne release is that the targeting is much more certain.

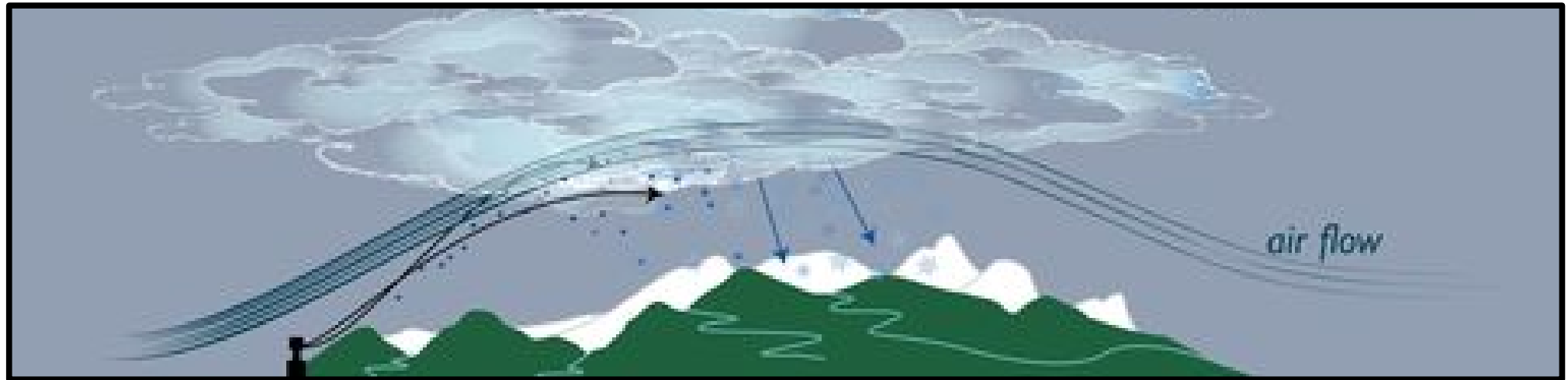


Overview of Ground Release of AgI



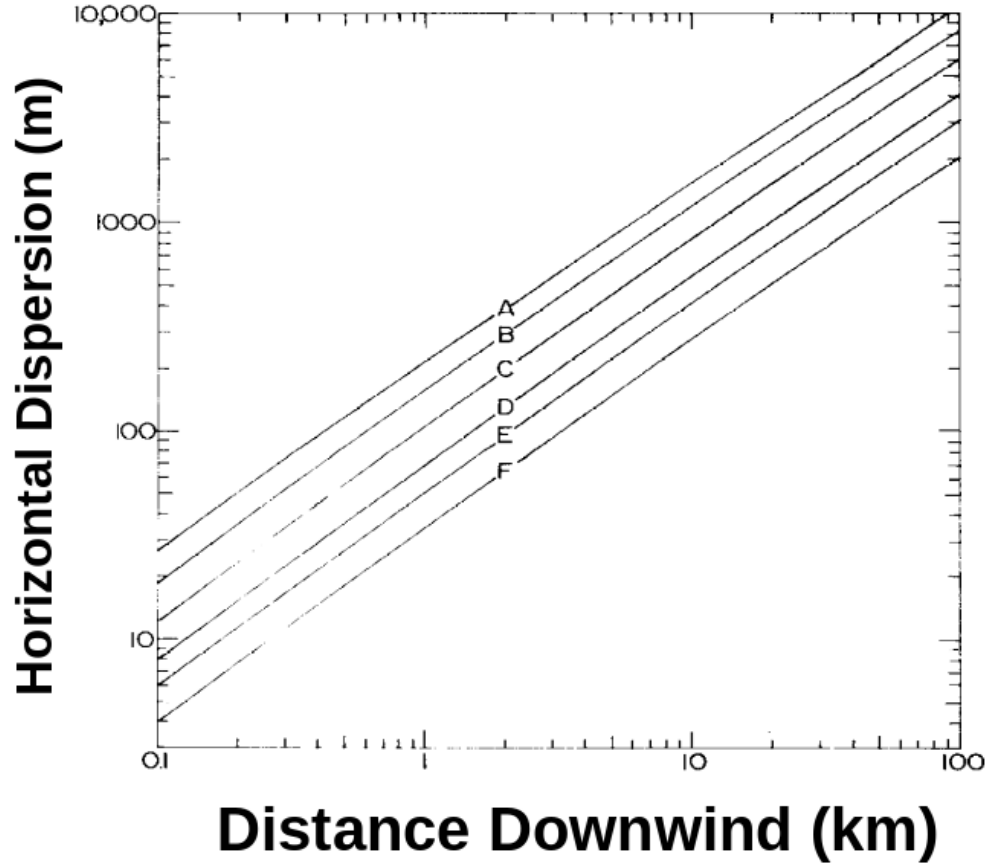
Ground Release of Silver Iodine (AgI)

- Ground releases of AgI are very common in winter orographic seeding.
- Conceptual model for the delivery is that wind carries AgI particles up the slopes of the mountains and into the orographically induced cloud.

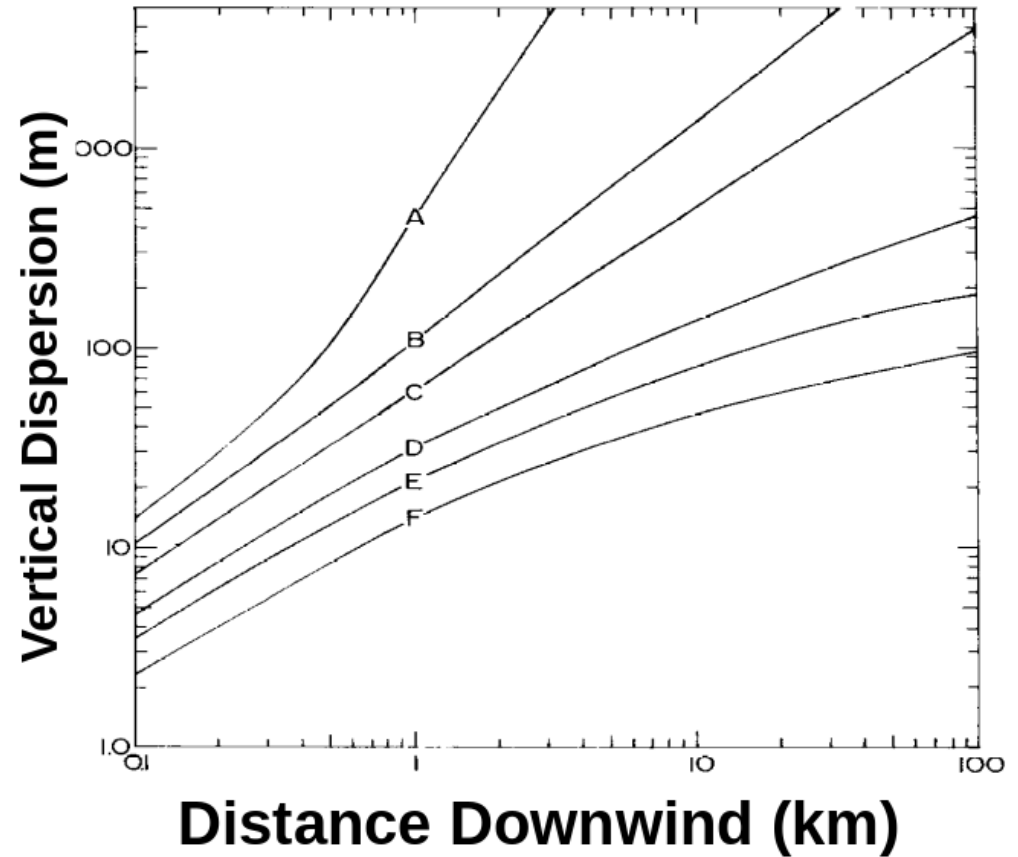


Spread of Seeding Plume

Horizontal Spread



Vertical Spread



Problems with Ground Releases

- Photodeactivation
- Uncertainty in trajectory of AgI with respect to the desired target area.
- In mountains, the generators are often placed below typical inversion levels.



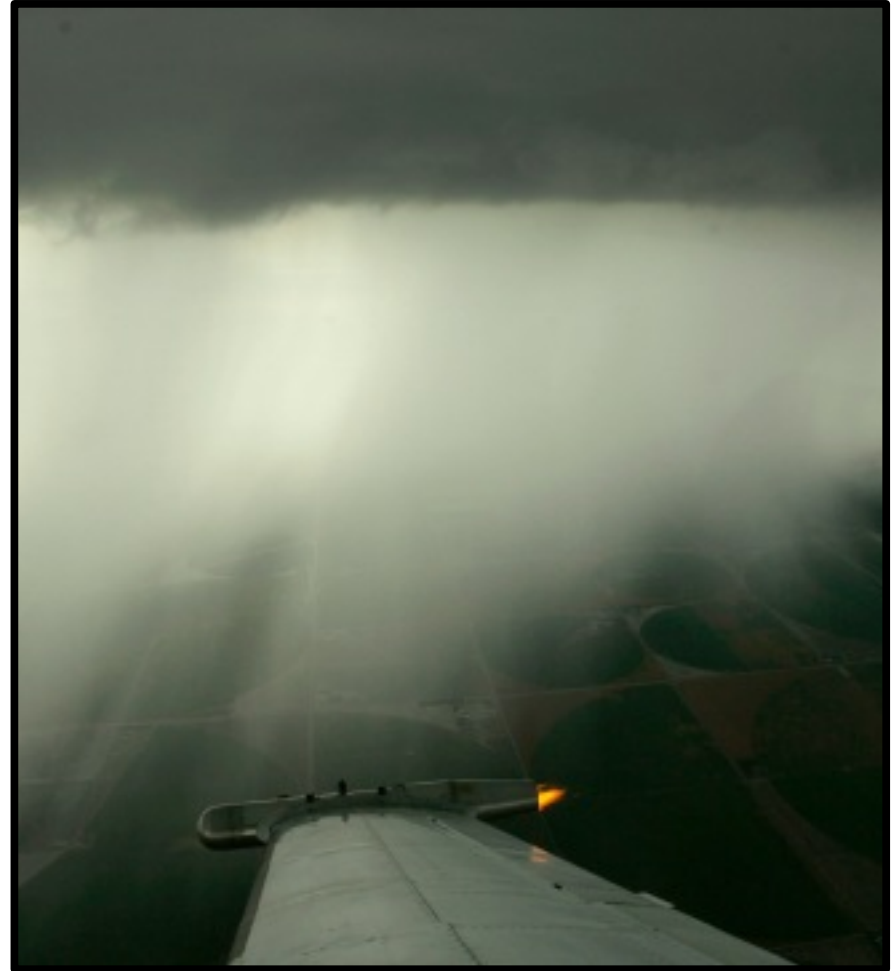
Airborne Research of Silver Iodine (AgI)

- Wing tip or under wing acetone-burning generators.
- Burn-in-place flares.
- Ejectable pyrotechnics.

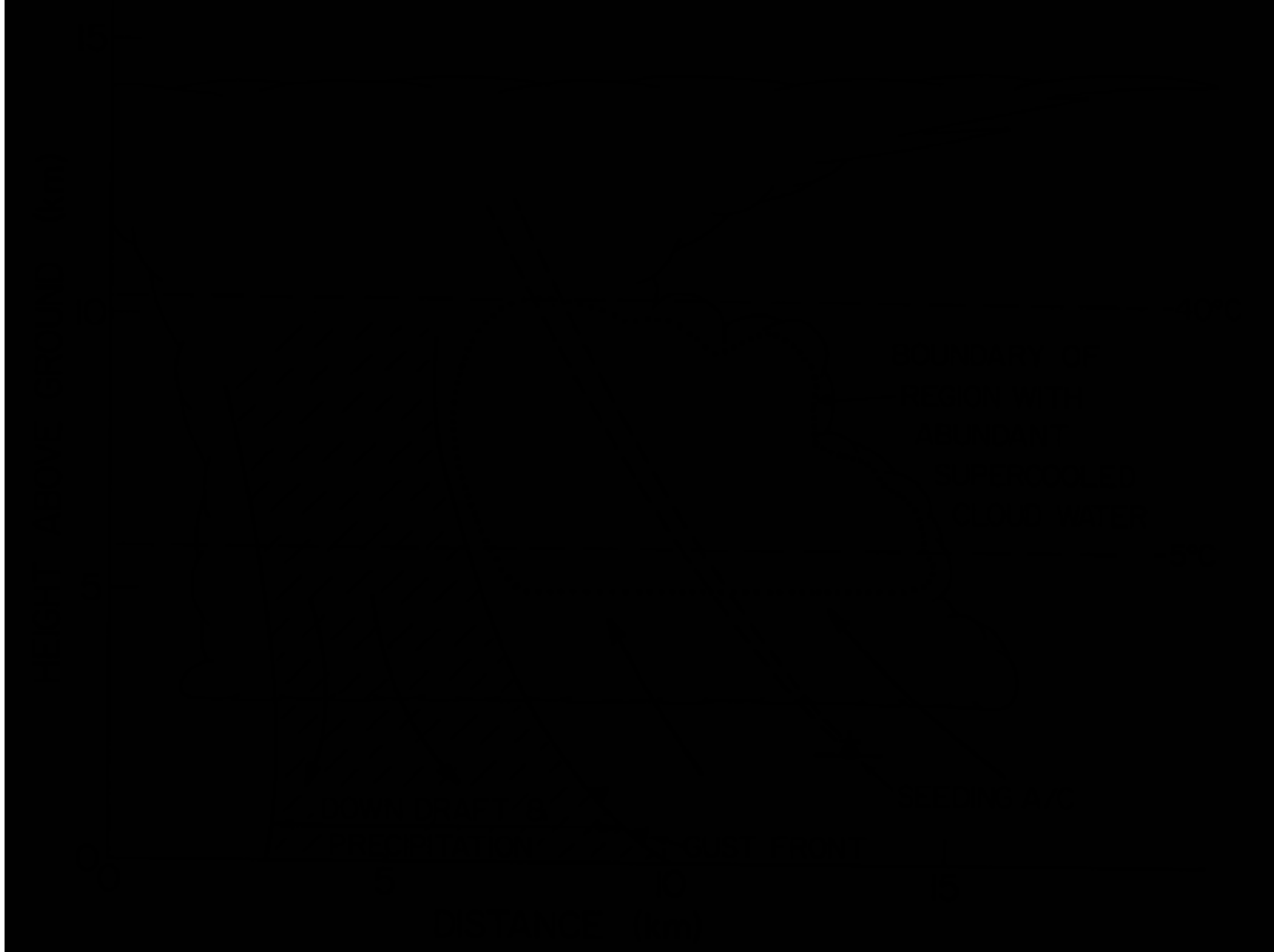


Cloud Base Releases of Silver Iodine (AgI)

- Using acetone-burning generators or burn-in-place flares, aircraft is below the level where AgI is desired.
- Updrafts carry the material up further in the cloud.
- The aircraft will often circle at cloud base with either of these generating systems.



Clouds Base affect 1-2 % of Updraft



Ejectable Pyrotechnics

- When using ejectable pyrotechnics, the aircraft flies above the desired level and lets the burning flare fall through the cloud.
- Produces a curtain of seeding material not a line.
- Dropping dry ice has the same effect.

