

CROSS-SECTION OF FREEZE CRSTALLIZATION SPRAY CHAMER (SHIPBOARD)

FREEZING DROPLETS HELD ALMOST STATIONARY BY UPDRAFT OF CHILLED AIR

- LOW SPEED FALL OF DROPLETS GIVE LONG RESIDENCE TIME IN SMALL VERTICAL DISTANCE
- SMALL HEIGHT OF SPRAY CHAMBER PERMITS USE ABOARD SHIP

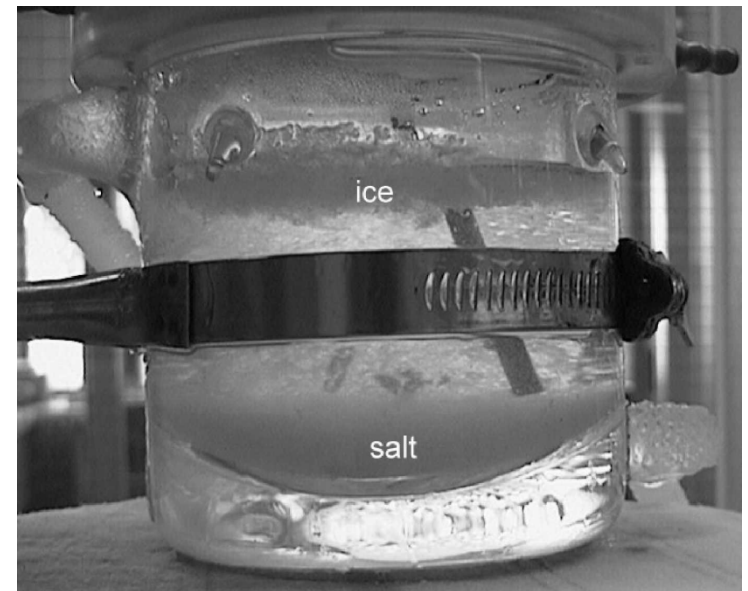
FROZEN DROPLETS ACHIEVE THEIR EUTECTIC FREEZING TEMPERATURE WHILE THE UPDRAFT AIR IS COLDER

- UPDRAFT AIR EXITS AT ABOUT -25°F TO FEED GEN-SET -20°F AIR
- FROZEN DROPLETS AT EUTECTIC TEMPERATURE, SAY, -6°F , CONTINUE FALLING INTO DEAD ZONE

RESIDENCE TIMES

- THERE IS A RESIDENCE TIME REQUIRED FOR FREEZING AND FOR THE SOLUTE (SALT) TO MIGRATE TOWARD AND THROUGH THE DROPLET MIXTURE OF WATER AND SALT. **SMALL DROPLETS** WITH LARGE SURFACE TO VOLUME RATIOS ARE DESIRED TO MEET THE RESIDENCE TIME REQUIREMENTS
- THERE IS A RESIDENCE TIME REQUIRED FOR THE FILM OF BRINE TO DRAIN FROM EACH ICE CRYSTAL AND THEN DRAIN THROUGH THE TORTUROUS OPEN PATHS IN THE ACCUMULATED ICE MASS. **LARGE DROPLETS** WITH SMALL SURFACE TO VOLUME RATIOS ARE DESIRED TO MEET THE RESIDENCE TIME REQUIREMENTS
- A SEPARATE EMPIRICAL TEST IS REQUIRED FOR EACH SOLUTE.

GENERATES COLD FRESH WATER



OVERVIEW OF OUTDOOR SYSTEM (DOWNDRAFT AIR IN SPRAY CHAMBER)

