

# National Operational Hydrologic Remote Sensing Center

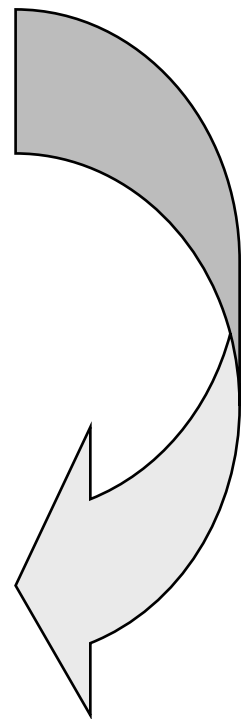


**National Operational Hydrologic  
Remote Sensing Center**



**National Weather Service, NOAA**

***pronounced "no-risk"***



# **NOHRSC Office Personnel**

## ***NWS FTE's (4)***

- Don Cline – Director
- Scientists, Programmers, Support

## ***NOAA Corps Officers (4)***

- CDR Andrea Hrusovsky- Deputy Director
- LCDR David Demers – Chief Airborne Prg
- LT Jason Seifert – Pilot
- LTjg Patrick Didier – Pilot

## ***Contractors (6)***

- GIS Analysts, Programmers, System Administration

**NOHRSC**

# Snow Pack Information

(Continental U.S. and Alaska)

Aircraft

Satellite

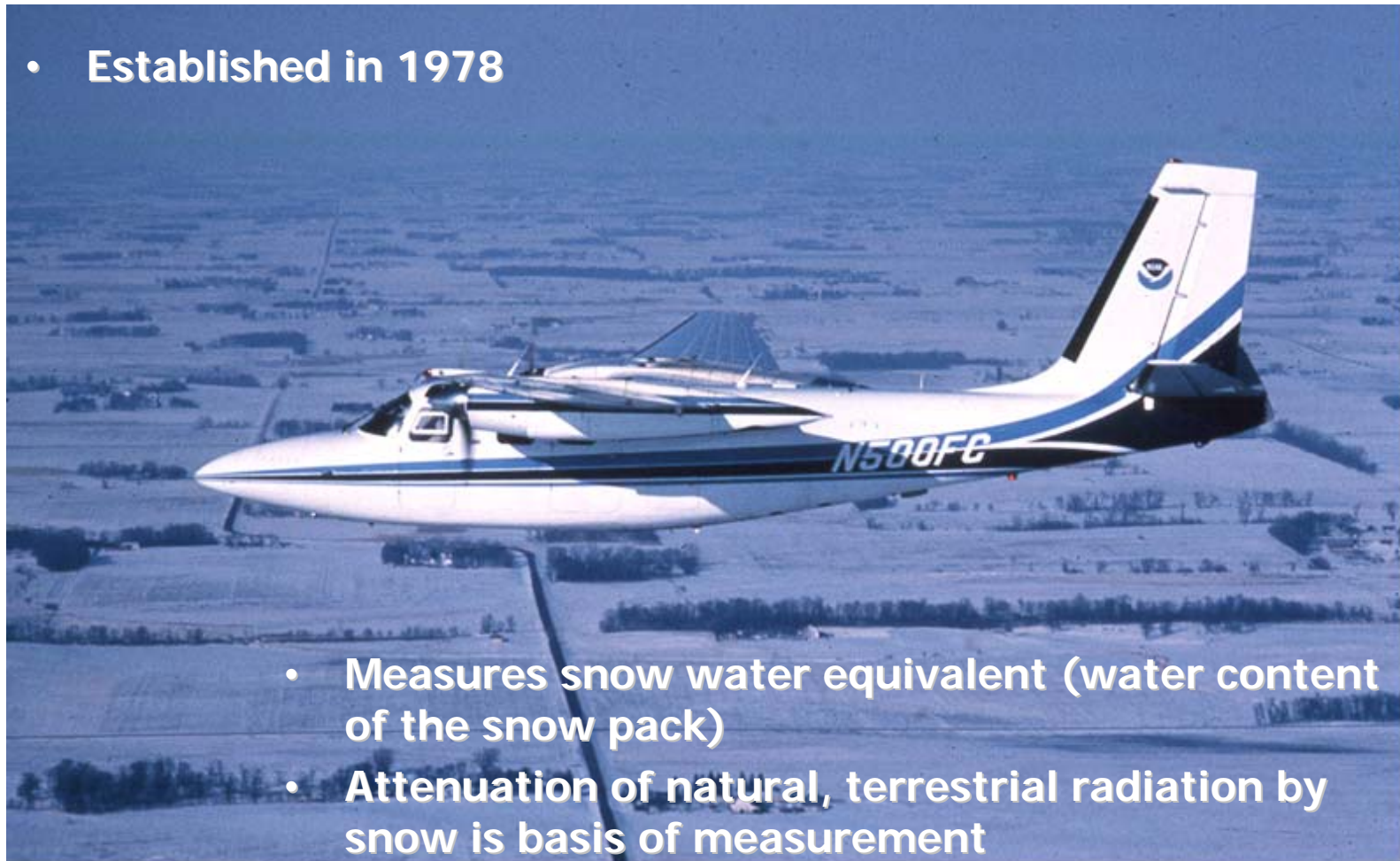
Ground

**River and Flood  
Forecasting**

**Weather  
Forecasting**

# Airborne Snow Survey Program

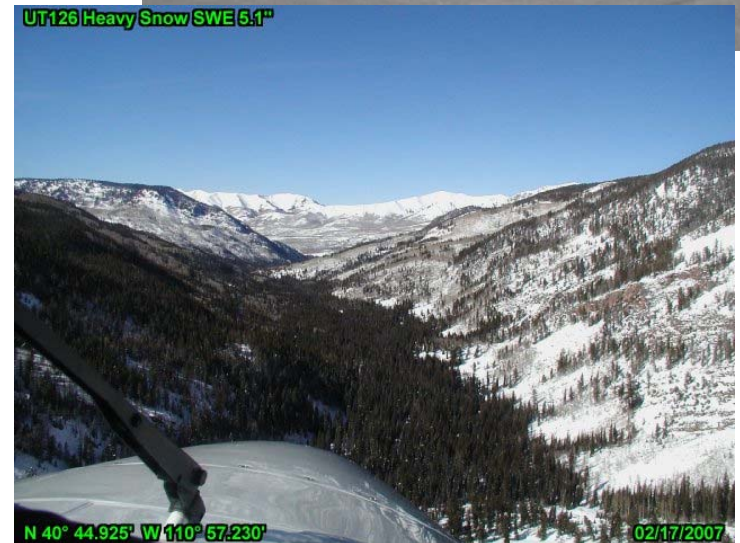
- Established in 1978



# *Jetprop Commander AC-695A*



- Crew: 2 + 4
- Cruise: 290 kts
- Max Weight: 11,250 lbs
- Ceiling: 35,000'
- Range: 1700 NM
- Endurance: 5 hrs
- Snow Survey



***NOAA Aircraft Operation Center***

# *Shrike Commander AC-500S*

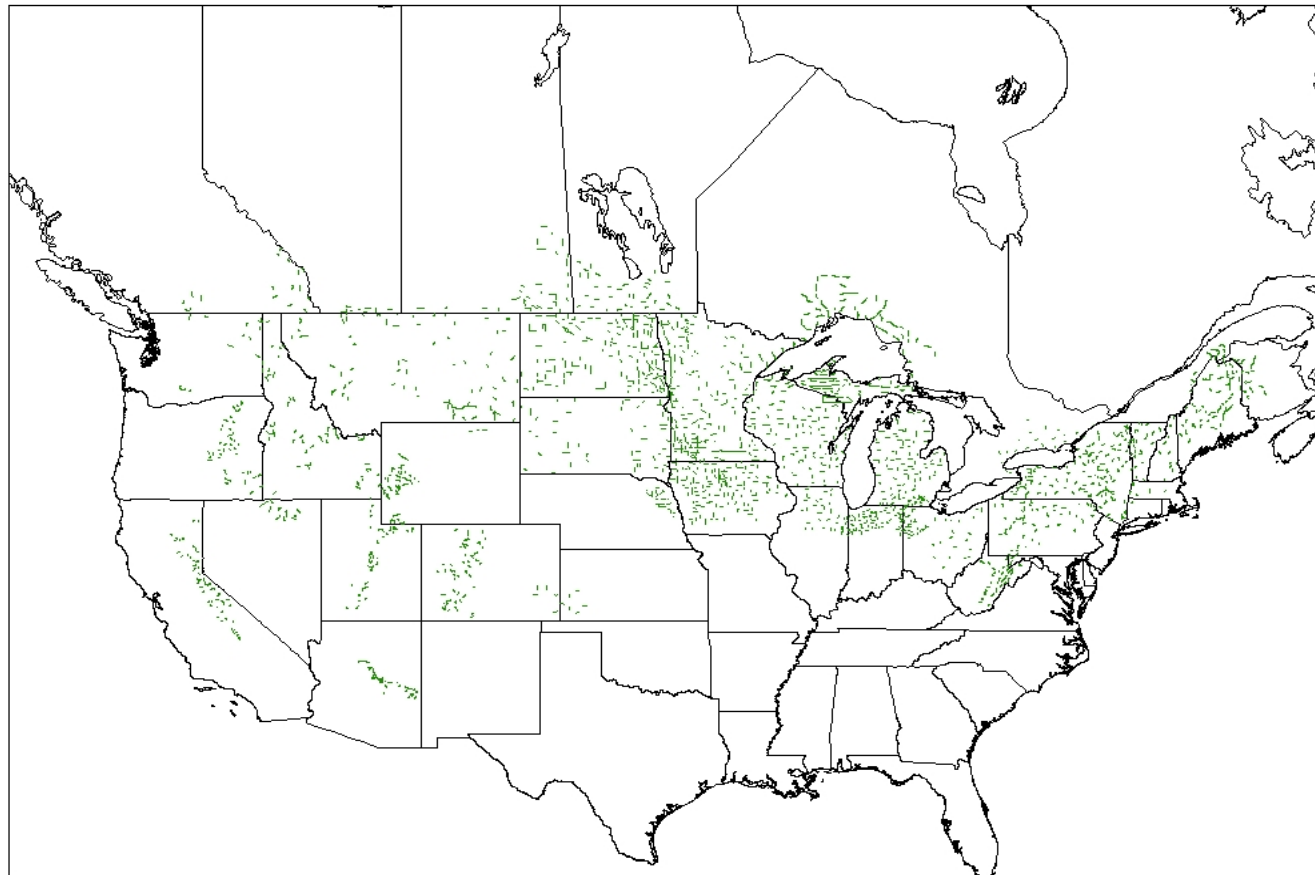


- Crew: 2 + 4
- Cruise: 160 kts
- Max Weight: 6,750 lbs
- Ceiling: 18,000'
- Range: 670 NM
- Endurance: 4.5 hrs
- Snow Survey



***NOAA Aircraft Operation Center***

# Airborne Flight Line Network



0 135 270 540 810 1,080  
Nautical Miles

Survey Map

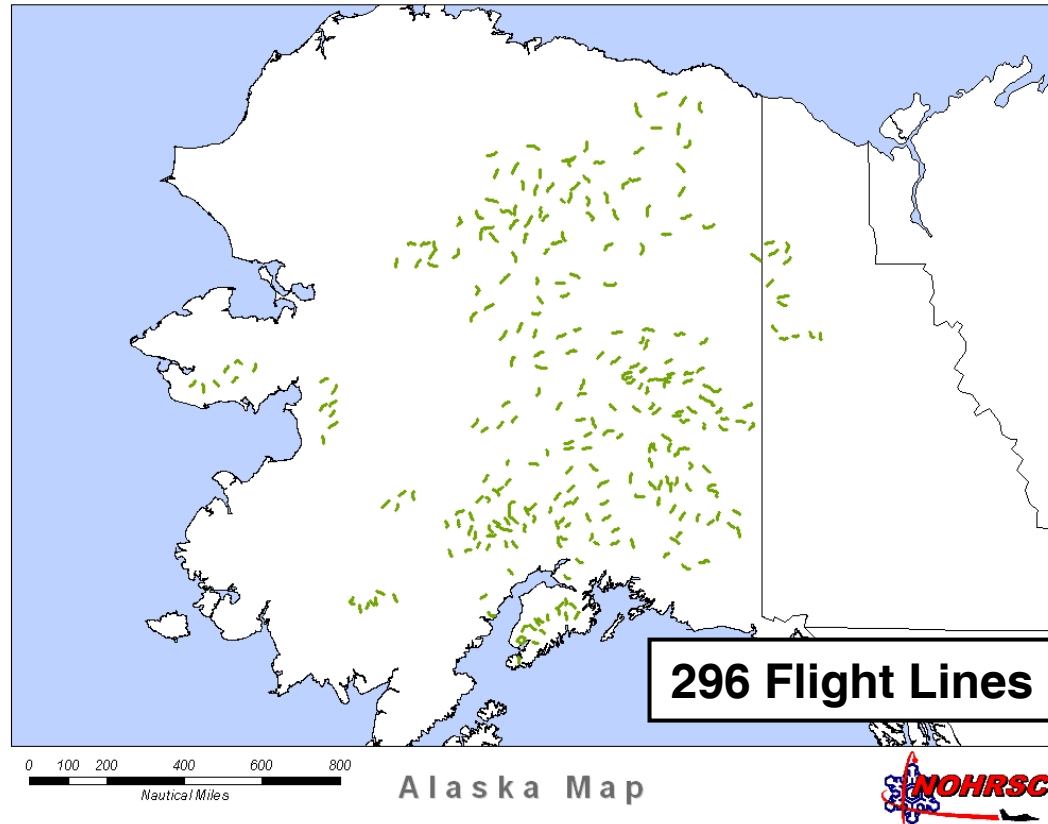


**2,188 flight lines in  
32 states and  
8 provinces and territories**

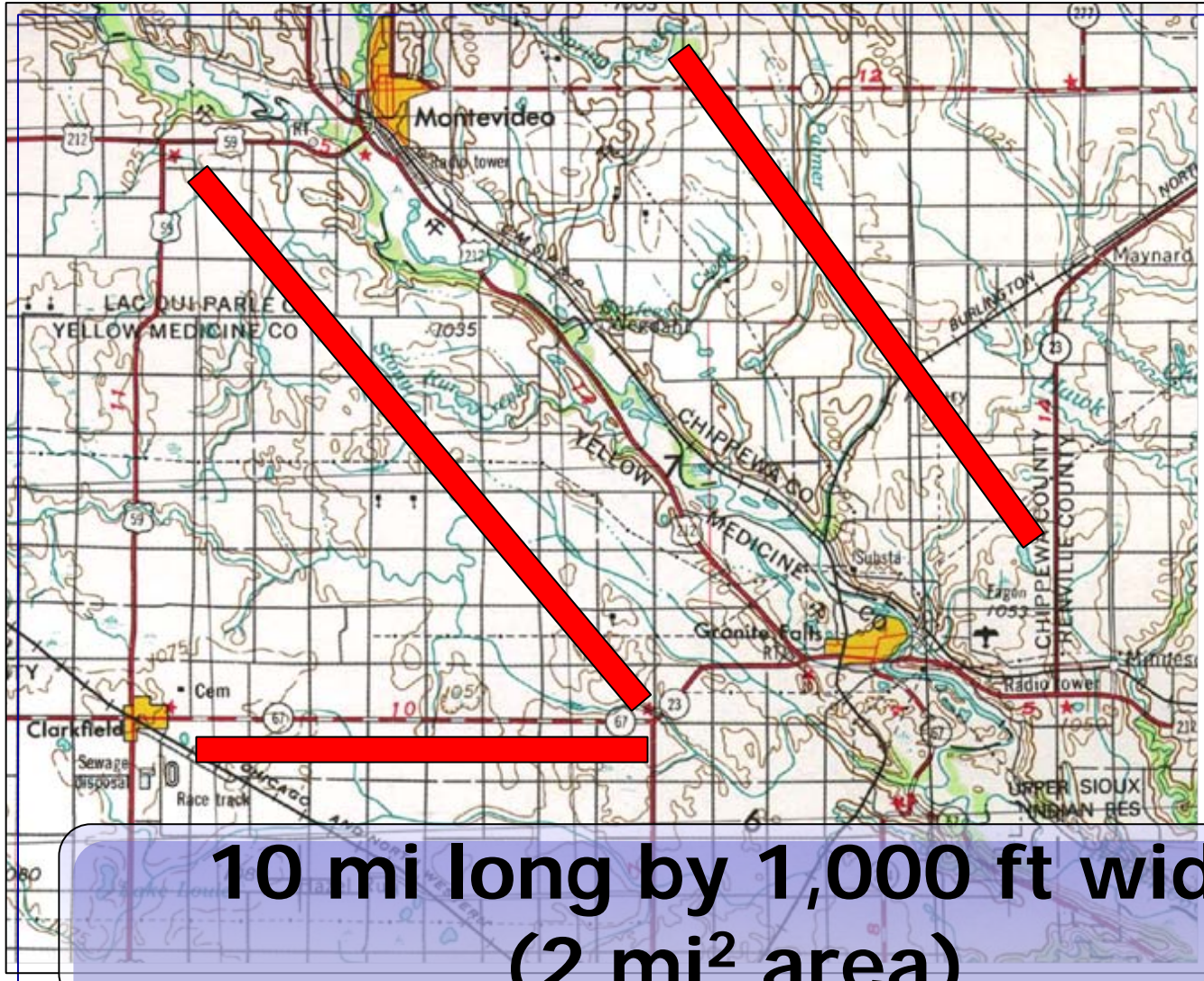


# Airborne Flight Line Network

## Alaska/Yukon Territory Line Network



# Typical Flight Lines



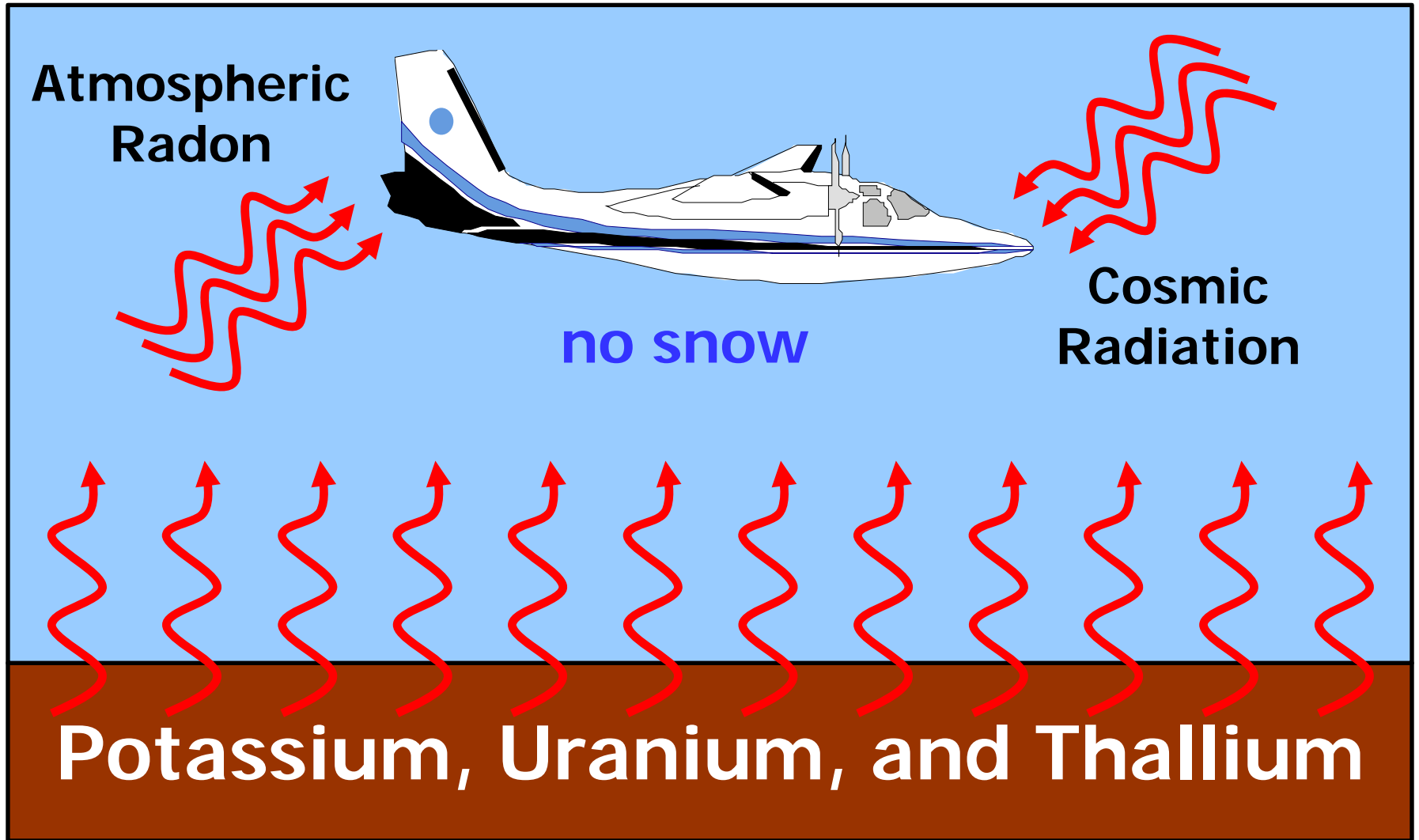
**10 mi long by 1,000 ft wide  
(2 mi<sup>2</sup> area)**

# Gamma detector systems

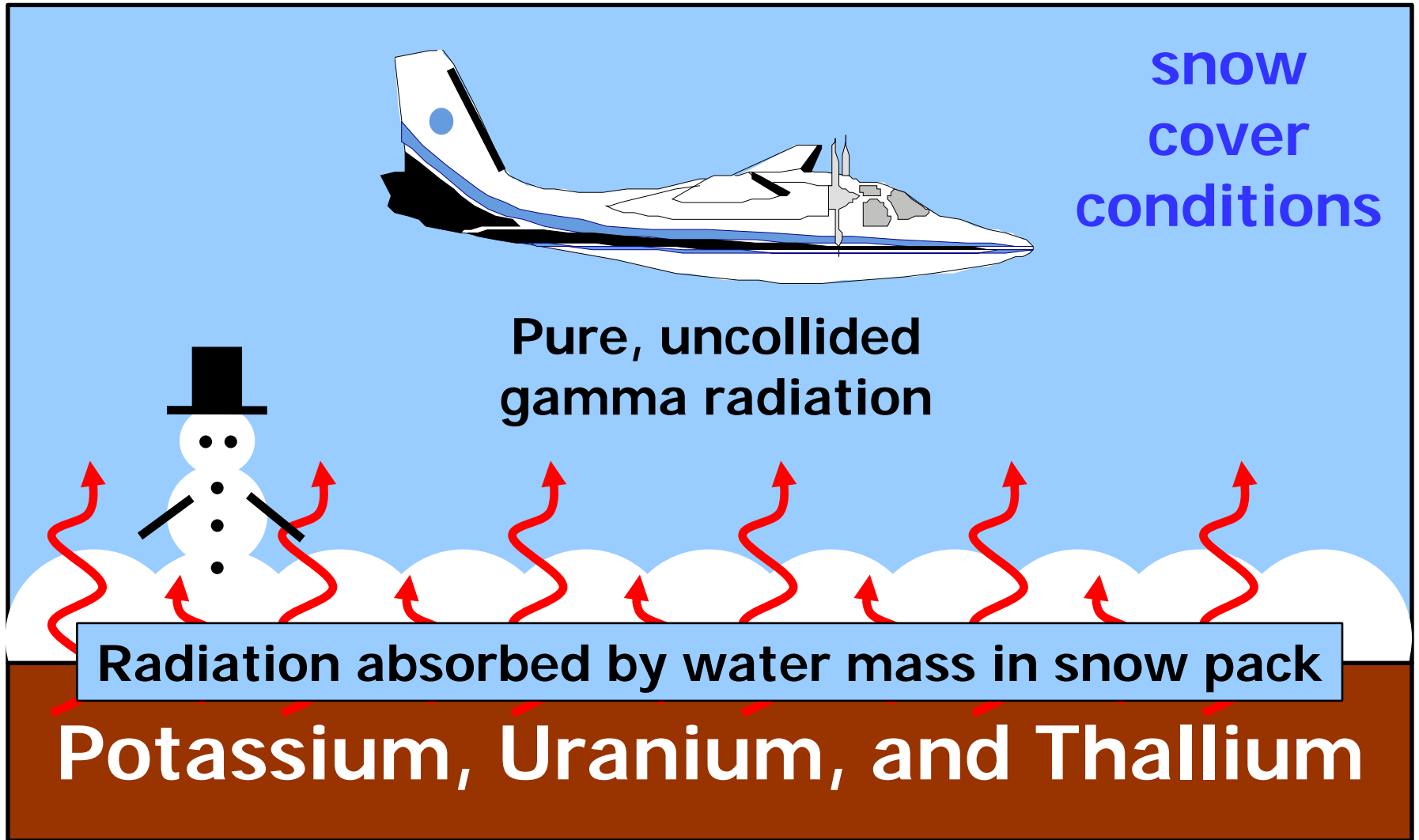
- Old Gamma Systems



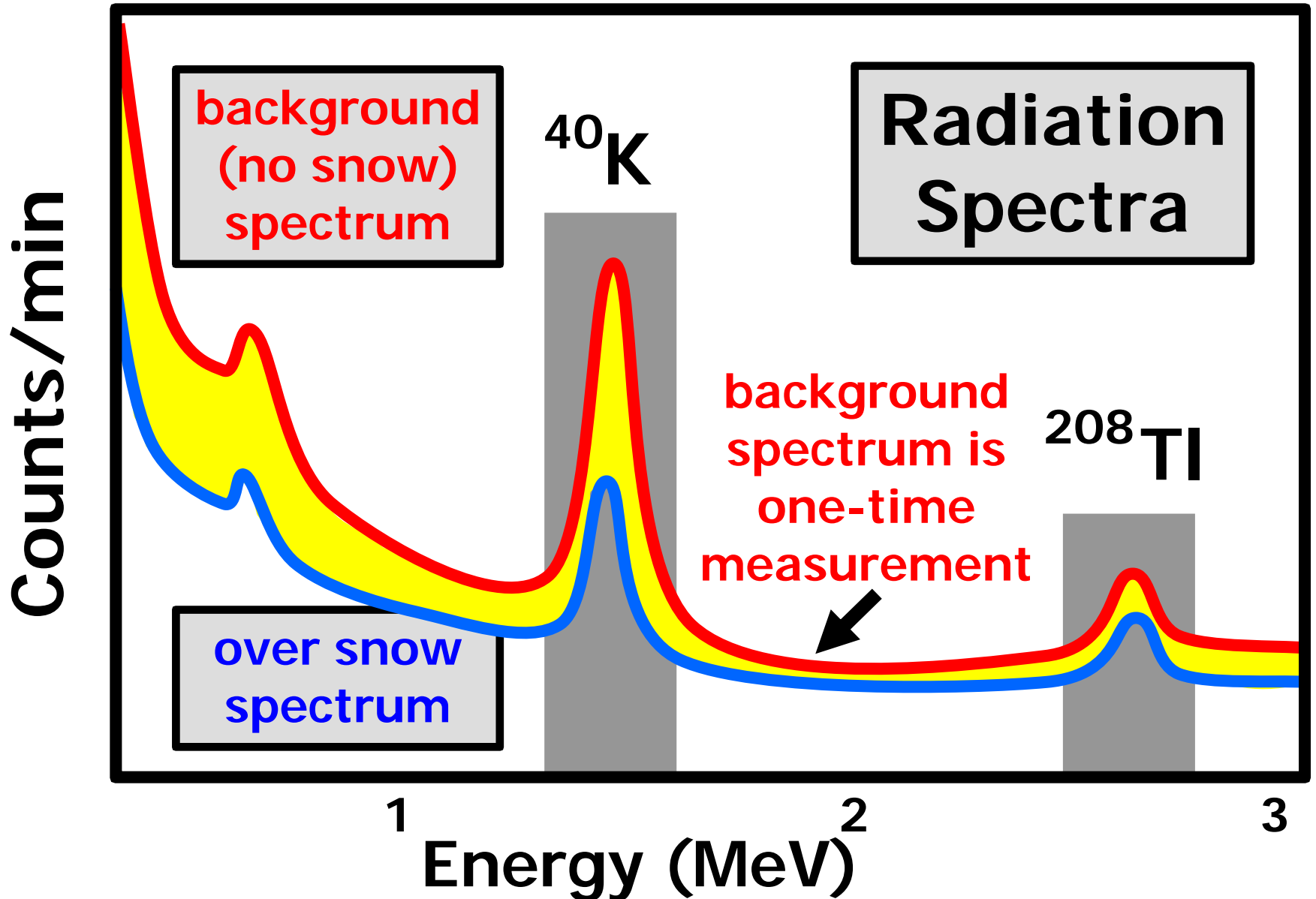
# Natural Terrestrial Gamma Radiation



# Natural Terrestrial Gamma Radiation



# Natural Terrestrial Gamma Radiation



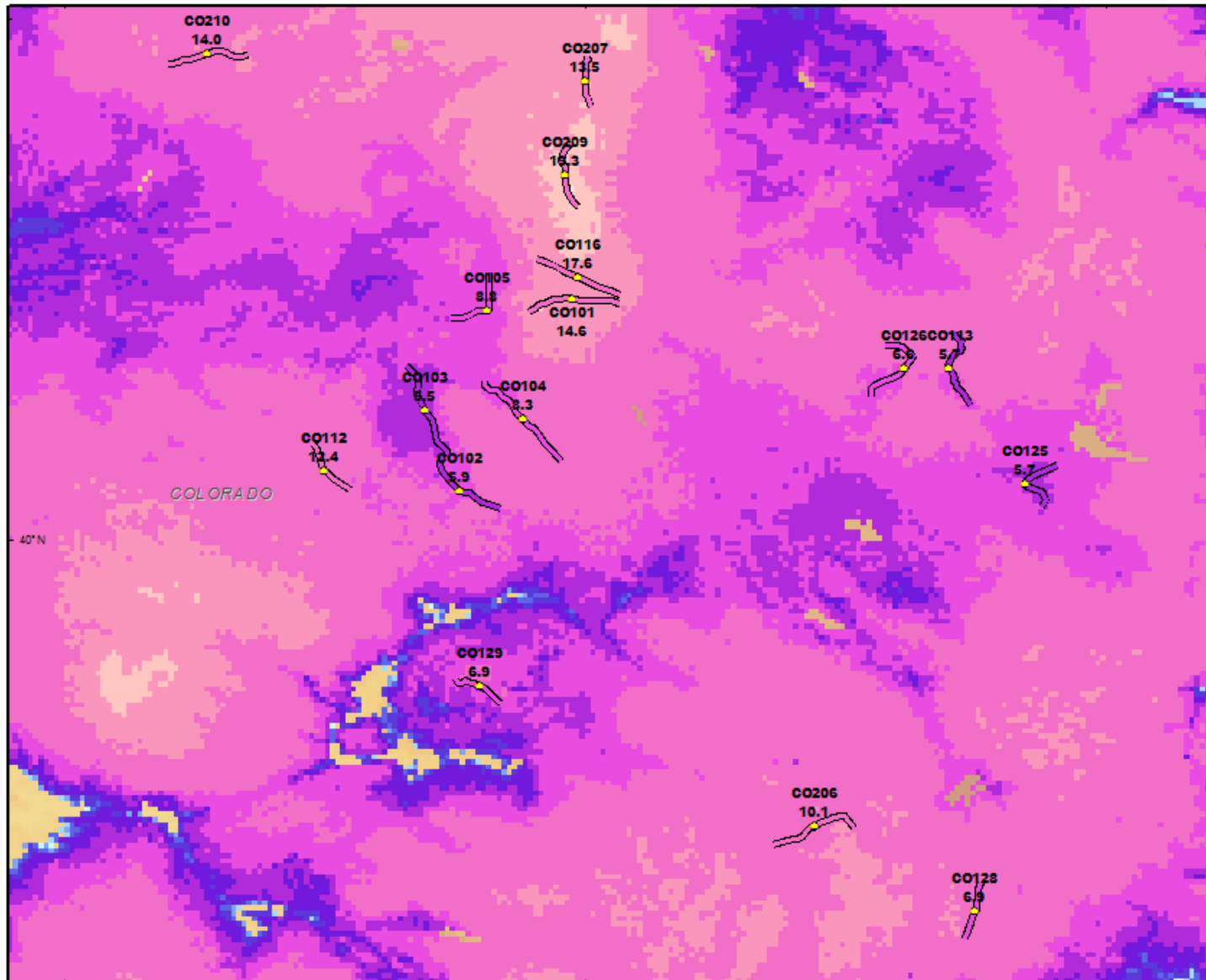
# NSA Snow Water Equivalent

## March 22, 2008

# NOHRSC Snow Survey



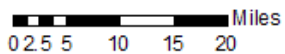
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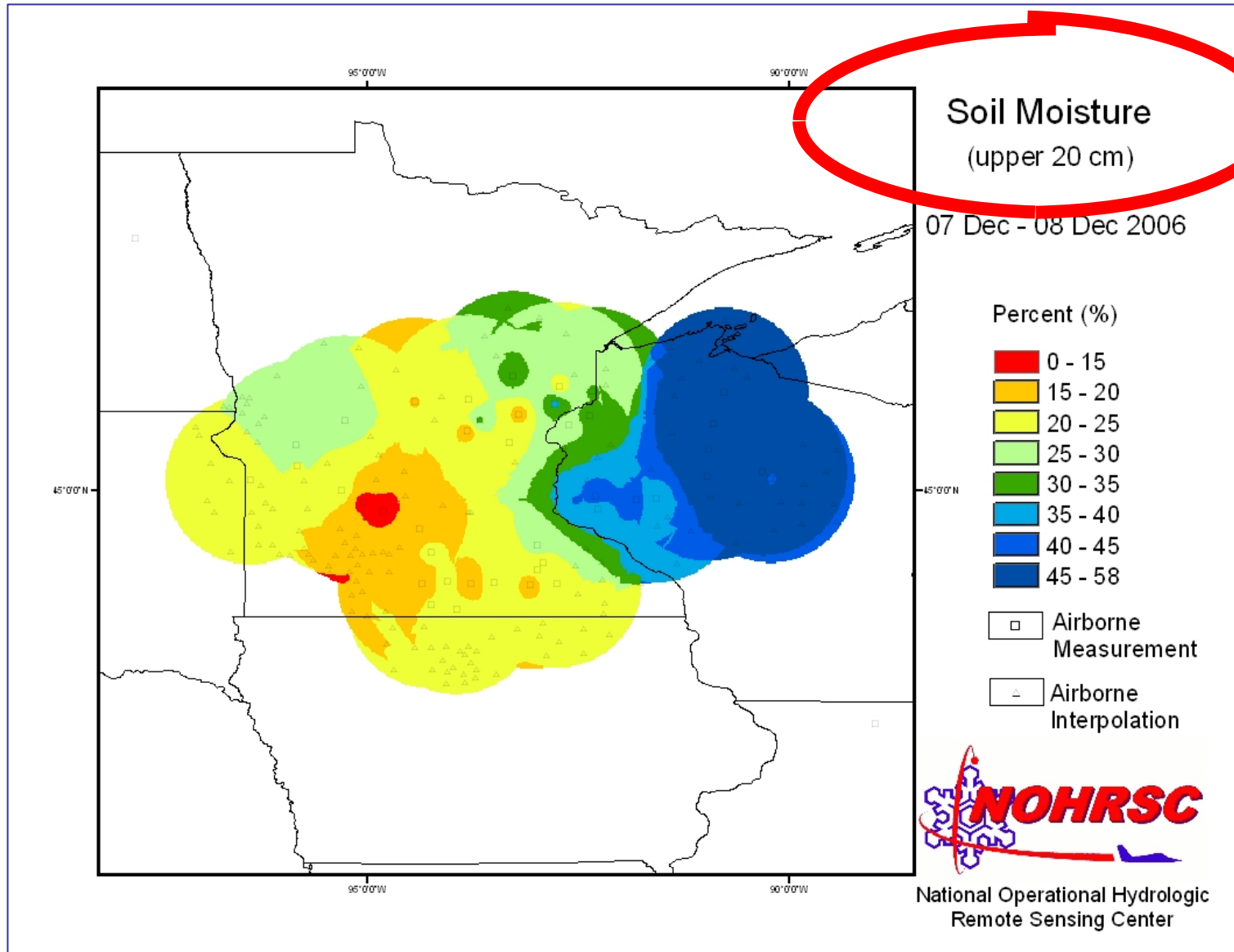
### SNODAS SWE (in)

0 - 0.0039
0.0039 - 0.039
0.039 - 0.1968
0.1968 - 0.393
0.393 - 0.984
0.984 - 1.96
1.96 - 3.93
3.93 - 5.9
5.9 - 9.84
9.84 - 19.68
19.68 - 29.52
29.52 - 39.37
39.37 - 78.74

Office of Hydrology  
National Weather Service, NOAA  
Chanhassen, MN

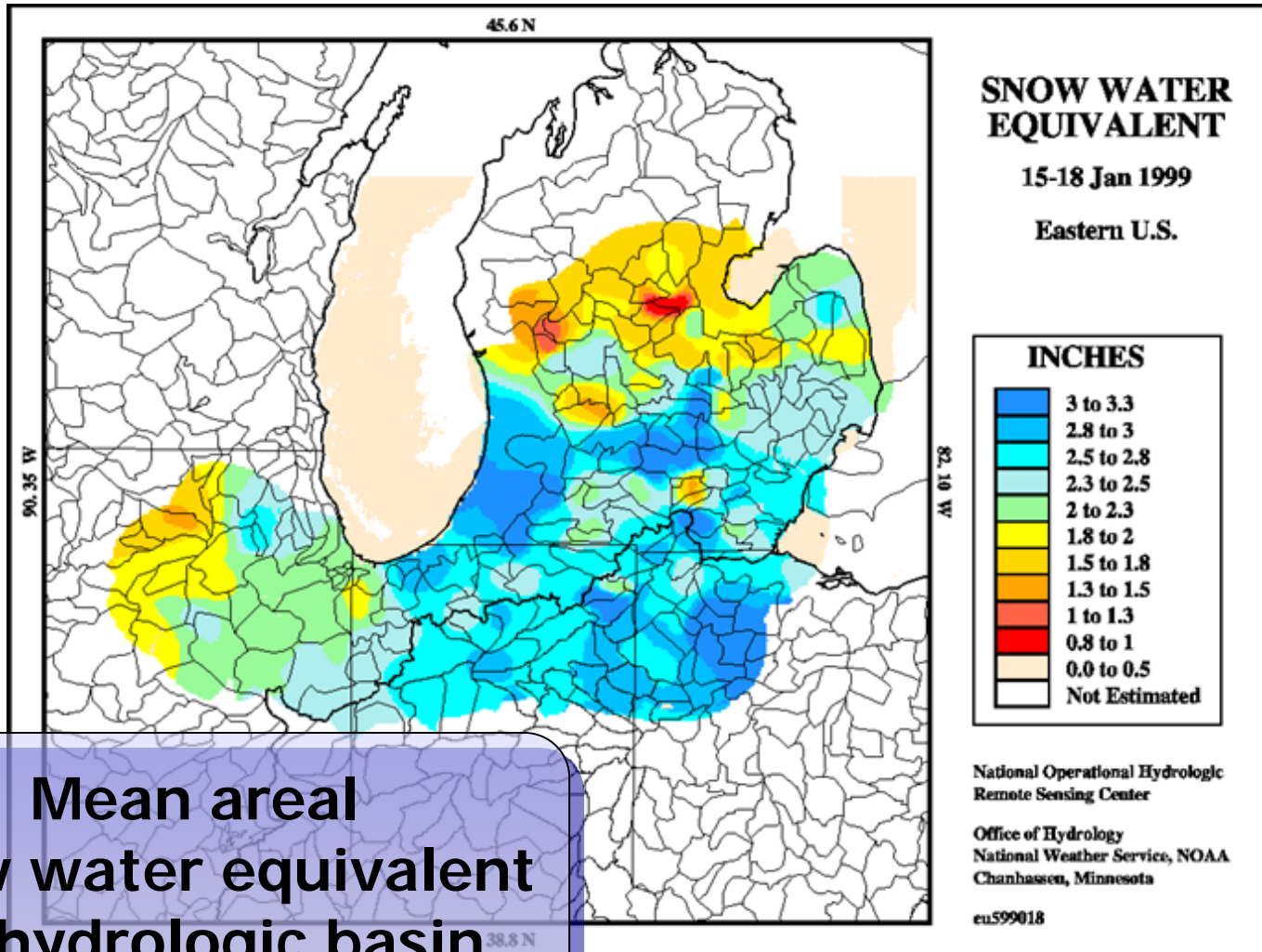


# Airborne Snow Survey Products





# Airborne Snow Survey Products



Mean areal  
snow water equivalent  
by hydrologic basin

# Airborne Snow Survey Products

```
.B GAMMA 990120 /SAIRF/SWIRF
:TO ----- Service Hydrologist (Please give HARD COPY to SH)
:FROM ---- Tom Carroll,
:Visit our web page at w
:SUBJECT - AIRBORNE SNOW
```

## RFC snow accumulation and ablation model

```
:-----
: Total No. of flight li
:-----
```

:Line No.	Survey Date	%SC	SWE (in)	SWE (35%)	%SM (M)	Est Typ	Fall Date	SM	Pilot	Remarks
MI113	DY990120	/ 100	/ 1.8	: .2	, 25	SE				OLD CRUSTY SNOW
MI114	DY990120	/ 100	/ 2.3	: .7	, 25	SE				
MI115	DY990120	/ 100	/ 0.8	: .3	, 25	SE				TOWN LINE RVR FRZ
MI116	DY990120	/ 100	/ 0.7	: .2	, 25	SE				HOUGHTON LAKE FROZEN
MI117	DY990120	/ 100	/ 1.8	: .3						
MI118	DY990120	/ 100	/ 1.6	: .0	, 25	SE	0	, 25		MUSKEGON RVR OPEN 90
MI121	DY990120	/ 100	/ 1.6	: .3	, 25	SE	0	, 25		
MI123	DY990120	/ 100	/ 1.8	: .4	, 25	SE	0	, 25		TWIN RVR PRTLY OPN
MI124	DY990120	/ 100	/ 1.9	: .6	, 25	SE	0	, 25		
MI138	DY990120	/ 100	/ 3.1	: .6	, 25	SE	0	, 25		

imported

into

```
.END
```

Conditions on the ground observed over the survey area were of complete snow cover with frozen lakes and many frozen rivers. Partially open rivers are noted in the survey line comments.

# Major Uses of Airborne Snow Water Equivalent Data

- **River forecast centers** - update snow model (NWSRFS)  
Used to issue spring flood outlooks, water supply forecasts, river and flood forecasts
- **Weather forecast offices**  
Assess local conditions  
Brief emergency management personnel and government officials
- **NWS Office of Hydrology**  
National hydrologic outlooks
- **NWS Office of Hydrology**  
Generate U.S. snow water equivalent map products.