

# Operational Weather Analysis Exercise

## Objective Analysis Calculation

**Objective:** Use an objective analysis technique to create a synthetic weather observation.

You are an employee of Creative Weather Television (CWT) and must provide a client with an updated local temperature every hour. The coordinates below list your client's location and the table gives the location of routine METAR observing sites in the region. You decide to use a distance-weighted interpolation scheme and nearby METAR observations to create a "synthetic observation" for your client's location.

- a. Use a distance-weighting function equal to  $e$  raised to the power of  $-s^2$ , where  $s$  is the distance from the client's location to the observation point. [ $\exp(-s*s)$ ]
- b. Use a radius of influence equal to 3 grid squares.
- c. Calculate the "synthetic temperature" for your client's site. This may be done manually (using a table), on a spreadsheet, or by writing a computer program.

Client's Location: I=4, J=2.5

METAR Site	I-Coordinate	J-Coordinate	Temperature
A	0.2	4.7	60 F
B	0.7	0.7	70 F
C	1.2	2.6	67 F
D	2.1	5.8	63 F
E	2.5	4.1	66 F
F	3.5	3.5	68 F
G	3.2	1.7	71 F
H	4.5	5.5	69 F
I	4.8	2.3	71 F
J	5.6	0.5	75 F
K	6.2	3.8	72 F
L	7.5	5.5	70 F
M	7.7	1.8	75 F
N	8.5	3.5	73 F

I-J grid spacing is approximately 5 miles.