# Dvorak Pattern and Trend Exercises

**Objective: To determine cloud patterns and 24 hour development trends of the following examples of tropical weather systems.**

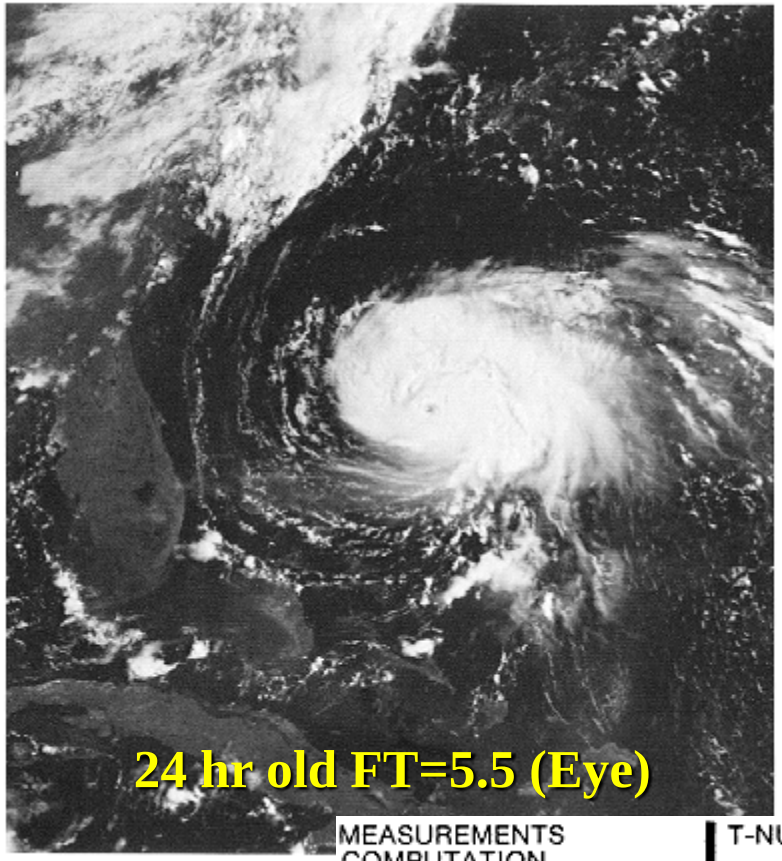
# Clicker Instructions

A) Developing Trend (D)

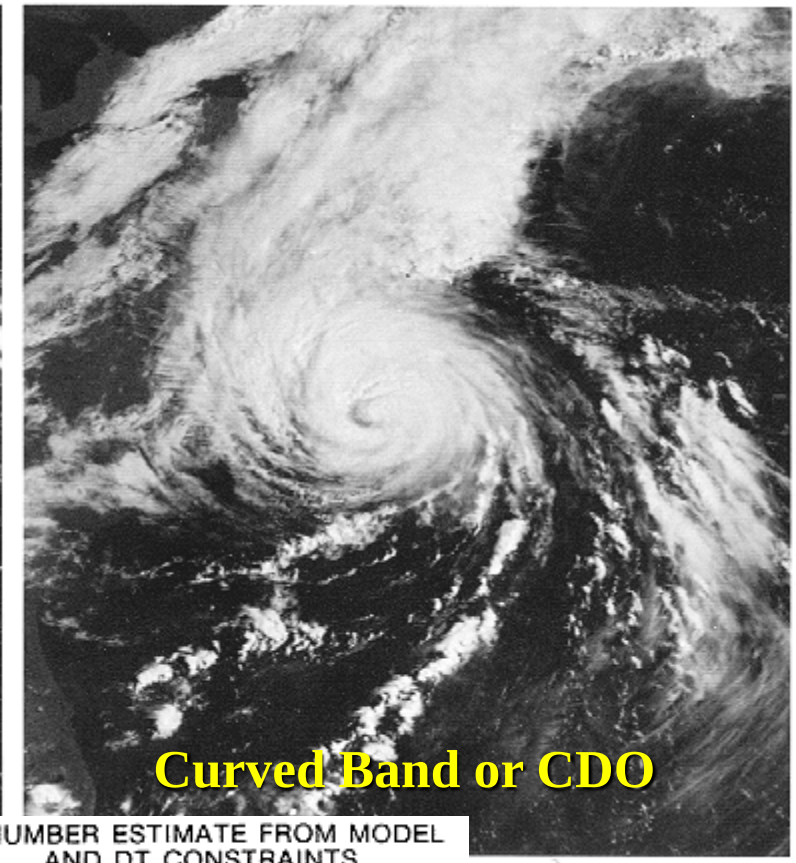
B) Weakening Trend (W)

C) Steady – No Trend (S)

# Pattern and Trend Exercise 1



24 hr old FT=5.5 (Eye)

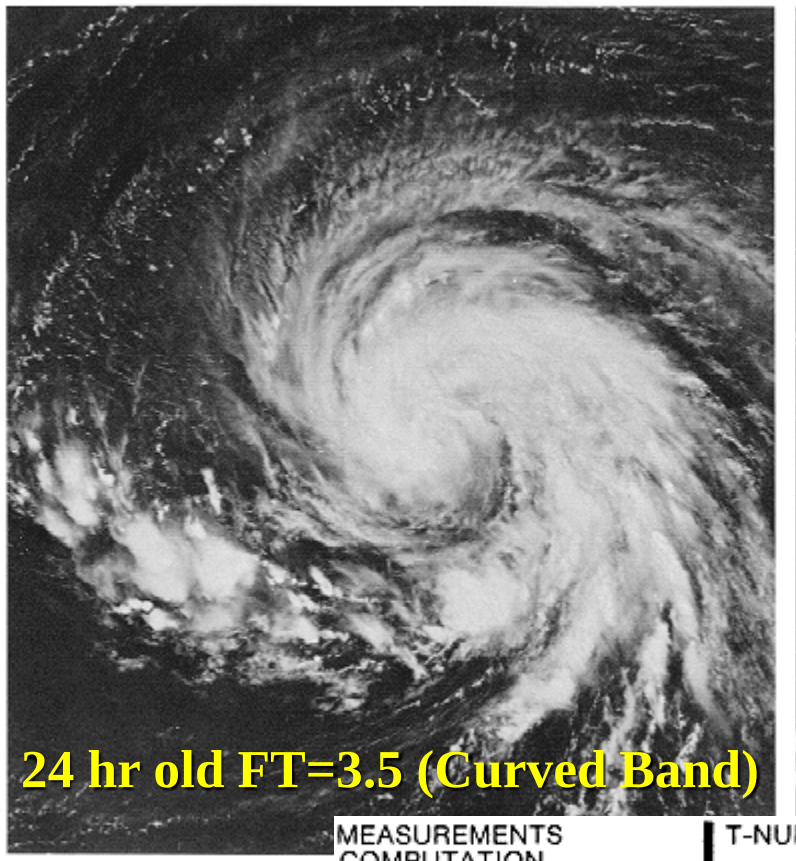


Curved Band or CDO

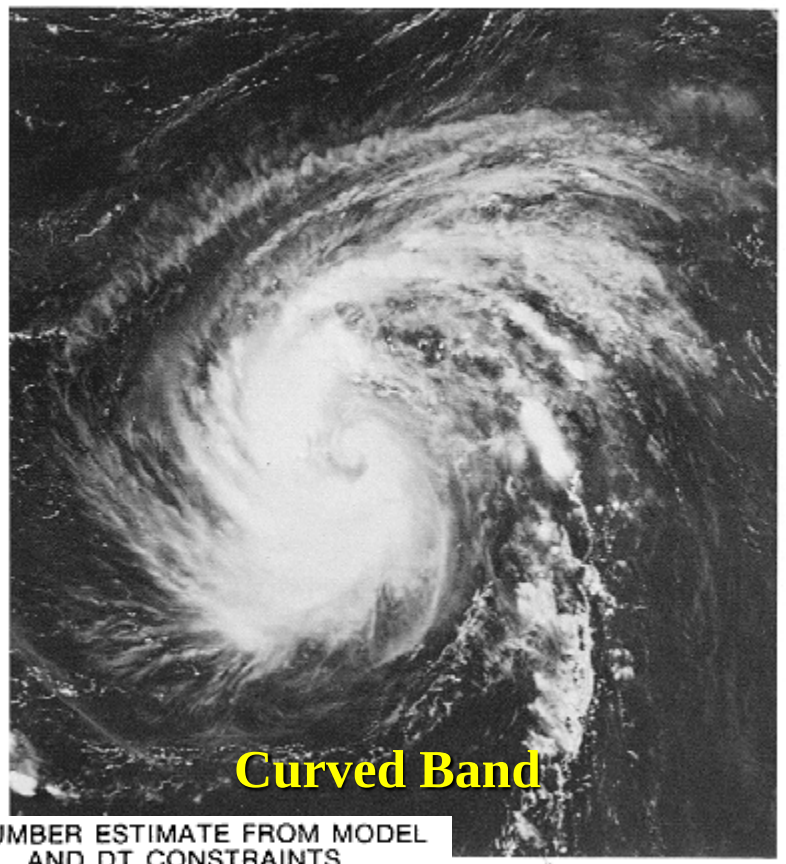
1400 GMT 8 August 1976.

| MEASUREMENTS COMPUTATION | | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | | |
| | +EAdj=CF | CDO | Emb. Centr | | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | | INITIALS |
| | | Use Size | IR/Vis Use Surrounding Temperature | CF+BF=DT | | | | Use Rules | 24-Hr change | | | Use Rules | | Adj. Model Fcst. if nec. | | |
| Rules No | Eye Definition EAdj | Central Dense Overcast | | CF | BF | DT | | Central Cold Cover | D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Final T-Number | Current Intensity Number | Last Rule Used | Forecast Intensity Number | |
| | -24 hr | | | | | | | | | | | 5.5 | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | Now | | | | | 4.5 | | | W | 4.5 | | | | | | |

# Pattern and Trend Exercise 2



24 hr old FT=3.5 (Curved Band)

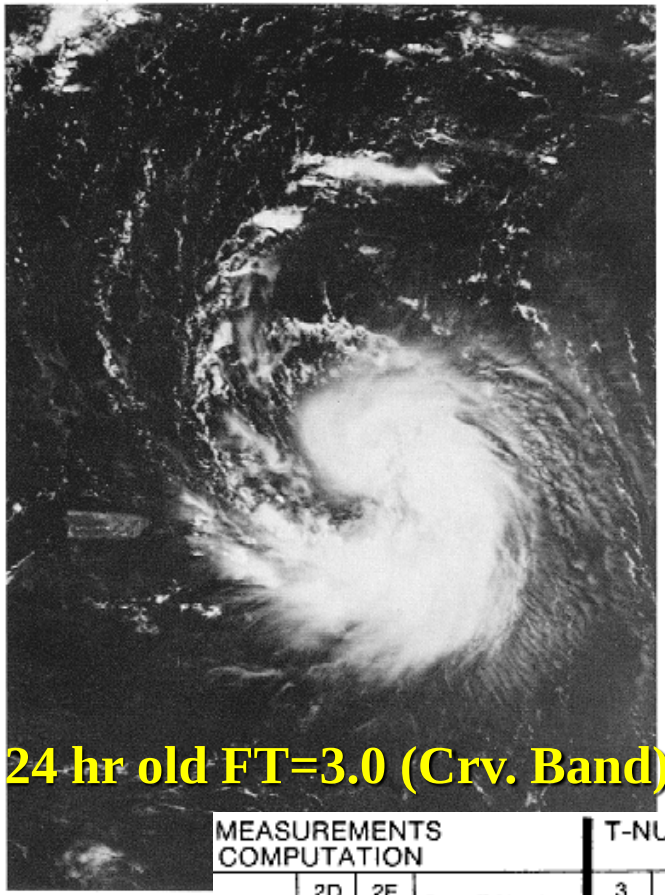


Curved Band

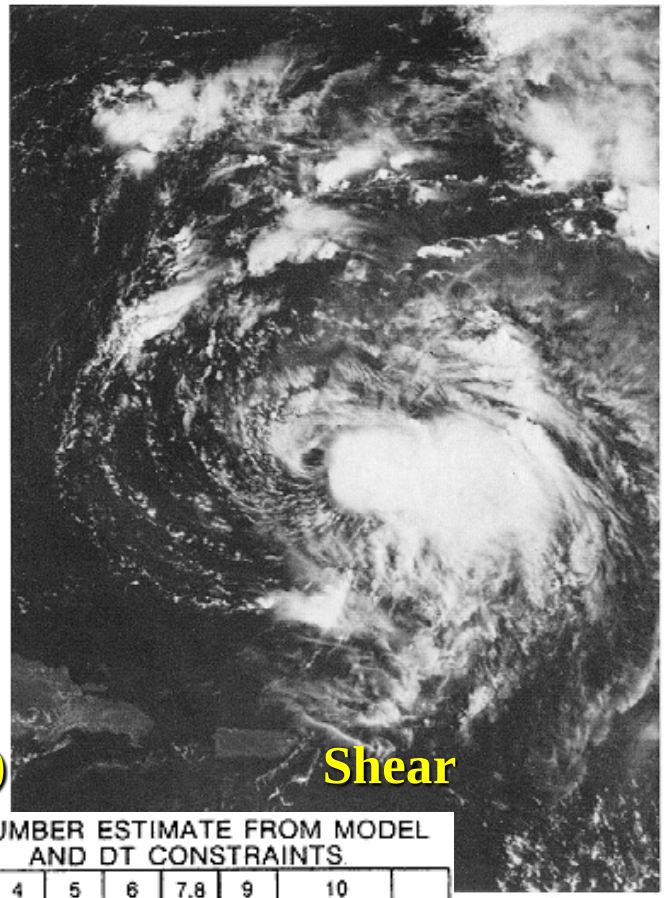
1648 GMT 29 August 1976.

| MEASUREMENTS COMPUTATION | | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | | |
| | +EAdj=CF | CDO | Emb. Centr | | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | | INITIALS |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | IR/Vis Use Surrounding Temperature | CF+BF=DT CF | BF | DT | | Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | |
| | -24 hr | | | | | | | | | | | 3.5 | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | Now | | | | | 4.5 | | | D | 4.5 | | | | | | |

# Pattern and Trend Exercise 3



24 hr old FT=3.0 (Crv. Band)

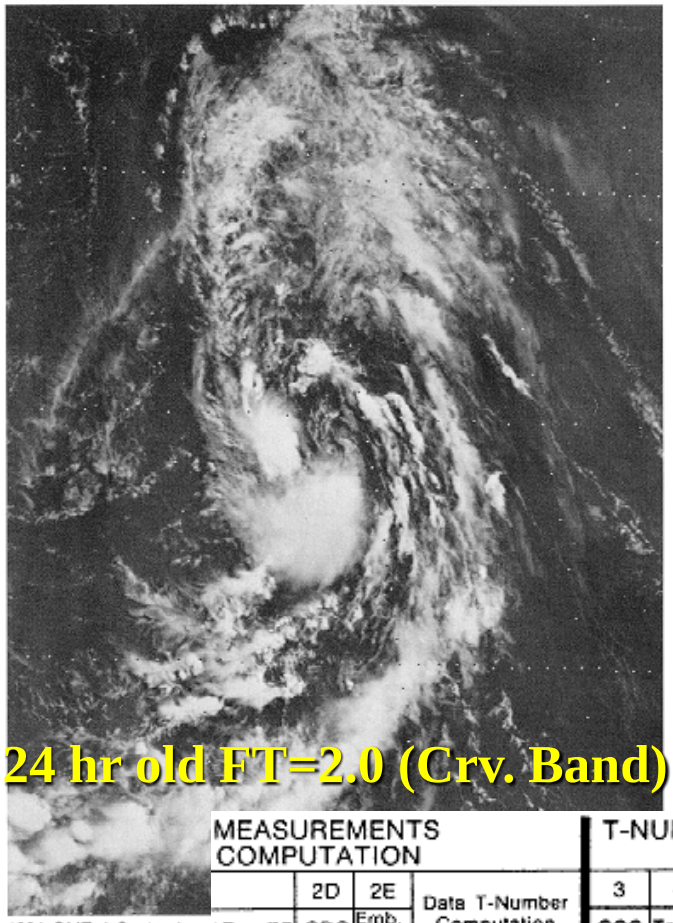


Shear

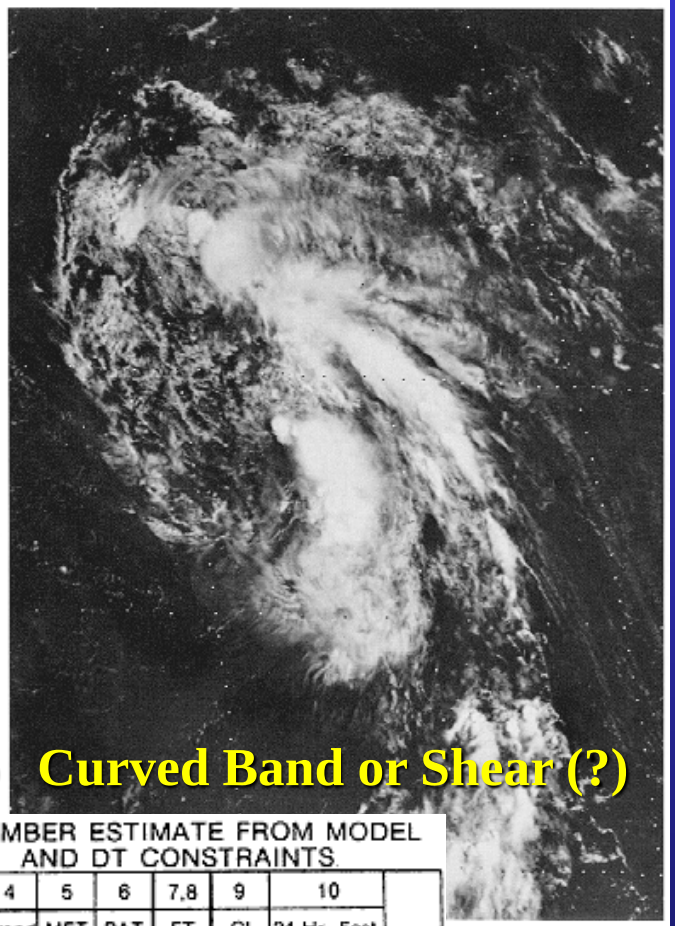
1403 GMT 23 August 1

| MEASUREMENTS COMPUTATION | | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | | |
| | +EAdj=CF | CDO | Emb. Centr | CF+BF=DT | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | | INITIALS |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | IR/Vis Use Surrounding Temperature | CF | BF | DT | | Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | |
| | -24 hr | | | | | | | | | | | 3.0 | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | Now | | | | | 3.0 | | | W | 2.0 | | | | | | |

# Pattern and Trend Exercise 4



24 hr old FT=2.0 (Crv. Band)

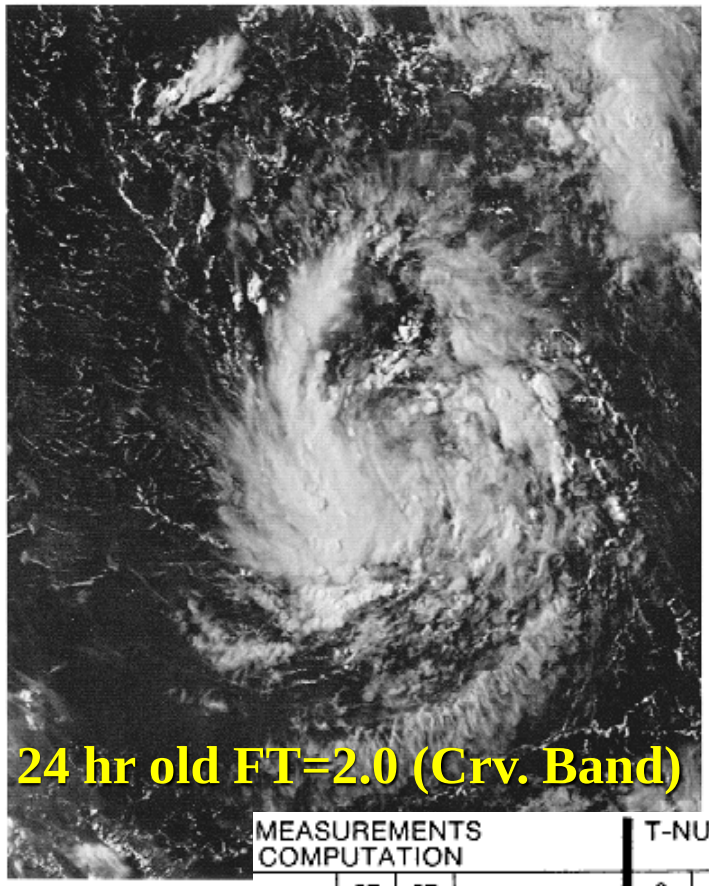


Curved Band or Shear (?)

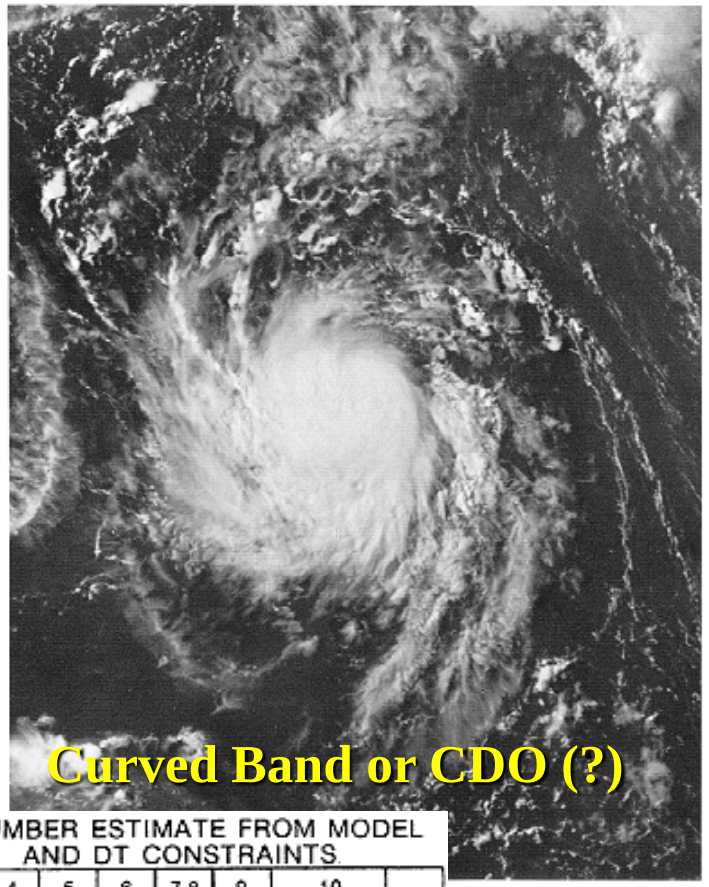
1304 GMT 4 September

| MEASUREMENTS COMPUTATION | | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | |
| | $E_{Adj}$=CF | CDO | Emb. Centr | | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | |
| Rules No | Eye Definition $E_{Adj}$ | Use Size Central Dense Overcast | IR/Vis Use Surrounding Temperature | CF+BF=DT CF | BF | DT | | Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | INITIALS |
| | -24 hr | | | | | | | | | | | 2.0 | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Now | | | | | 1.5 | | | W | 1.0 | | | | | |

# Pattern and Trend Exercise 5



24 hr old FT=2.0 (Crv. Band)

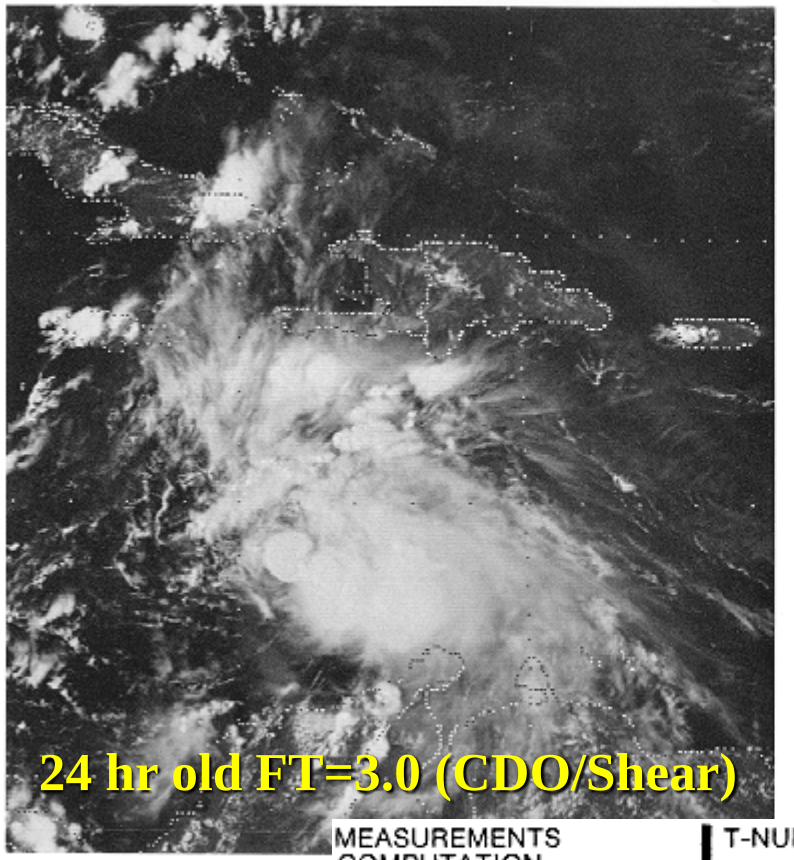


Curved Band or CDO (?)

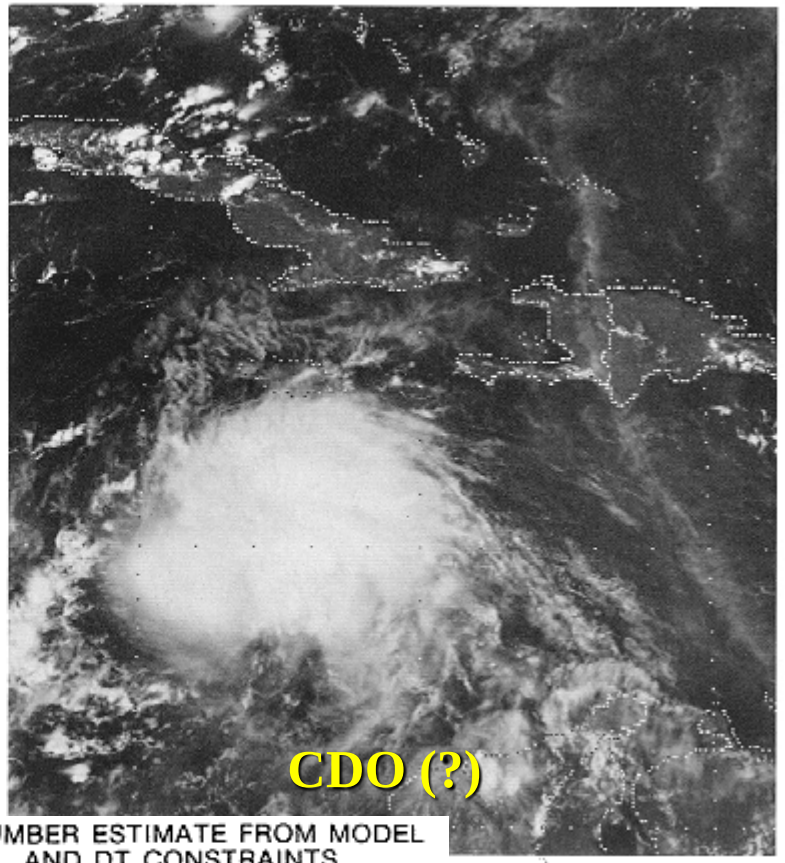
2000 GMT 21 August 1976.

| MEASUREMENTS COMPUTATION | | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | |
| | +EAdj=CF | CDO | Emb. Centr | | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | Use Surrounding Temperature | CF+BF=DT CF | BF | DT | | Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | INITIALS |
| | -24 hr | | | | | | | | | | | 2.0 | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Now | | | | | 3.5 | | | D | 3.0 | | | | | |

# Pattern and Trend Exercise 6



24 hr old FT=3.0 (CDO/Shear)

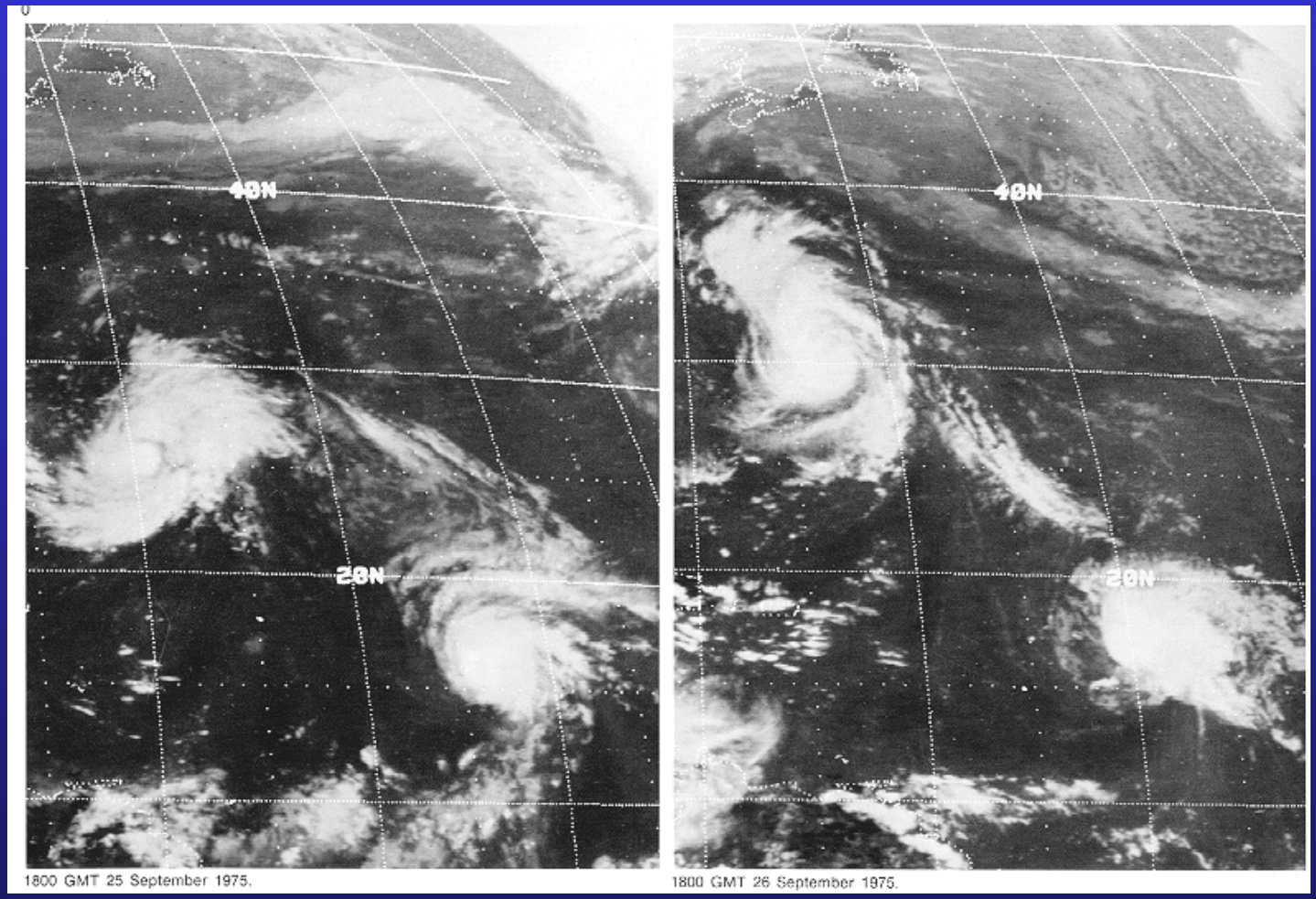


CDO (?)

1903 GMT 15 September 1978.

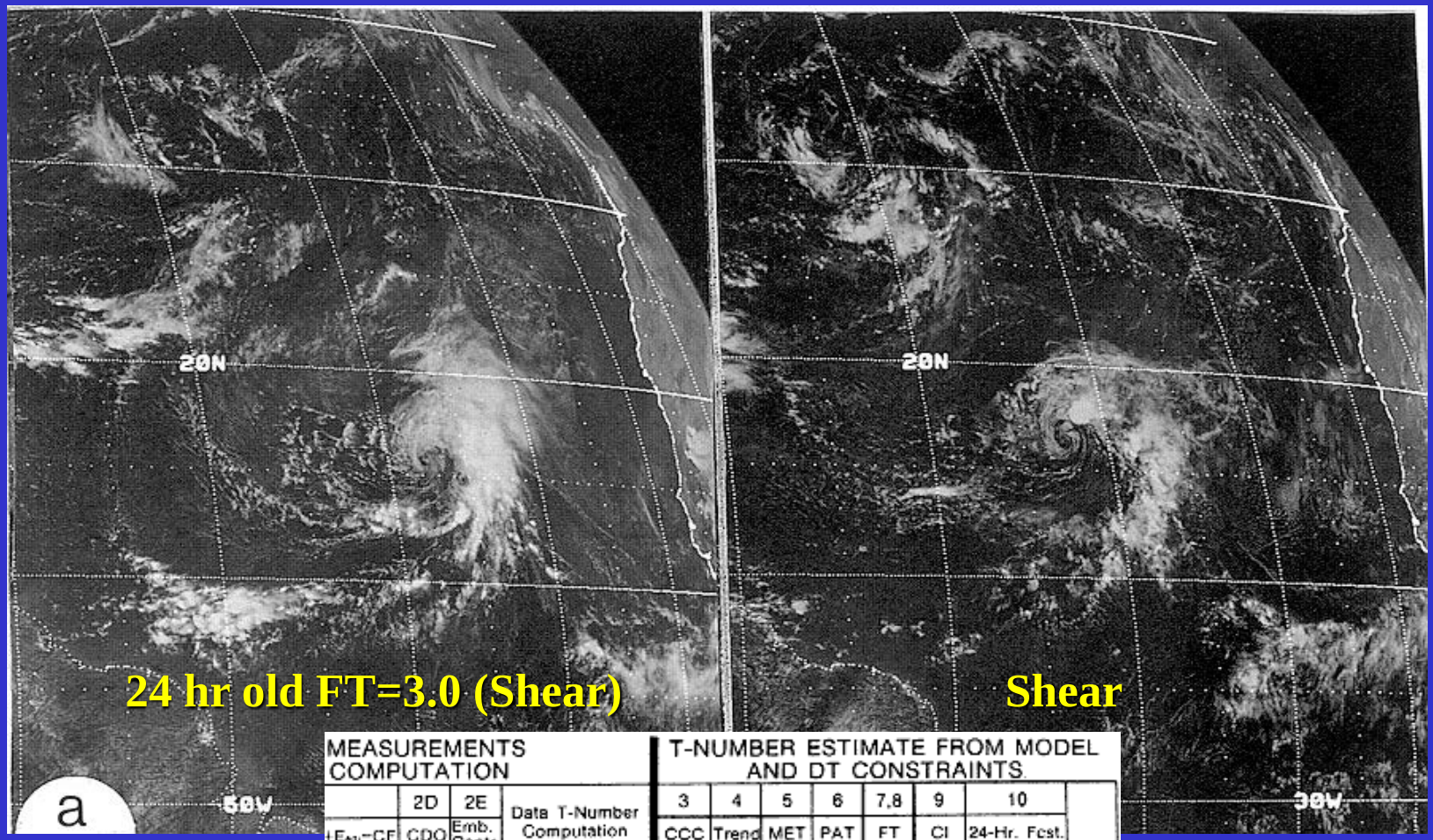
| MEASUREMENTS COMPUTATION | | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | | |
| | +EAdj=CF | CDO | Emb. Centr | | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | | INITIALS |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | IR/Ri Use Surrounding Temperature | CF+BF=DT CF | BF | DT | | Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | |
| | -24 hr | | | | | | | | | | | 3.0 | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | Now | | | | | 4.5 | | | D | 4.0 | | | | | | |

# Pattern and Trend Exercise 7



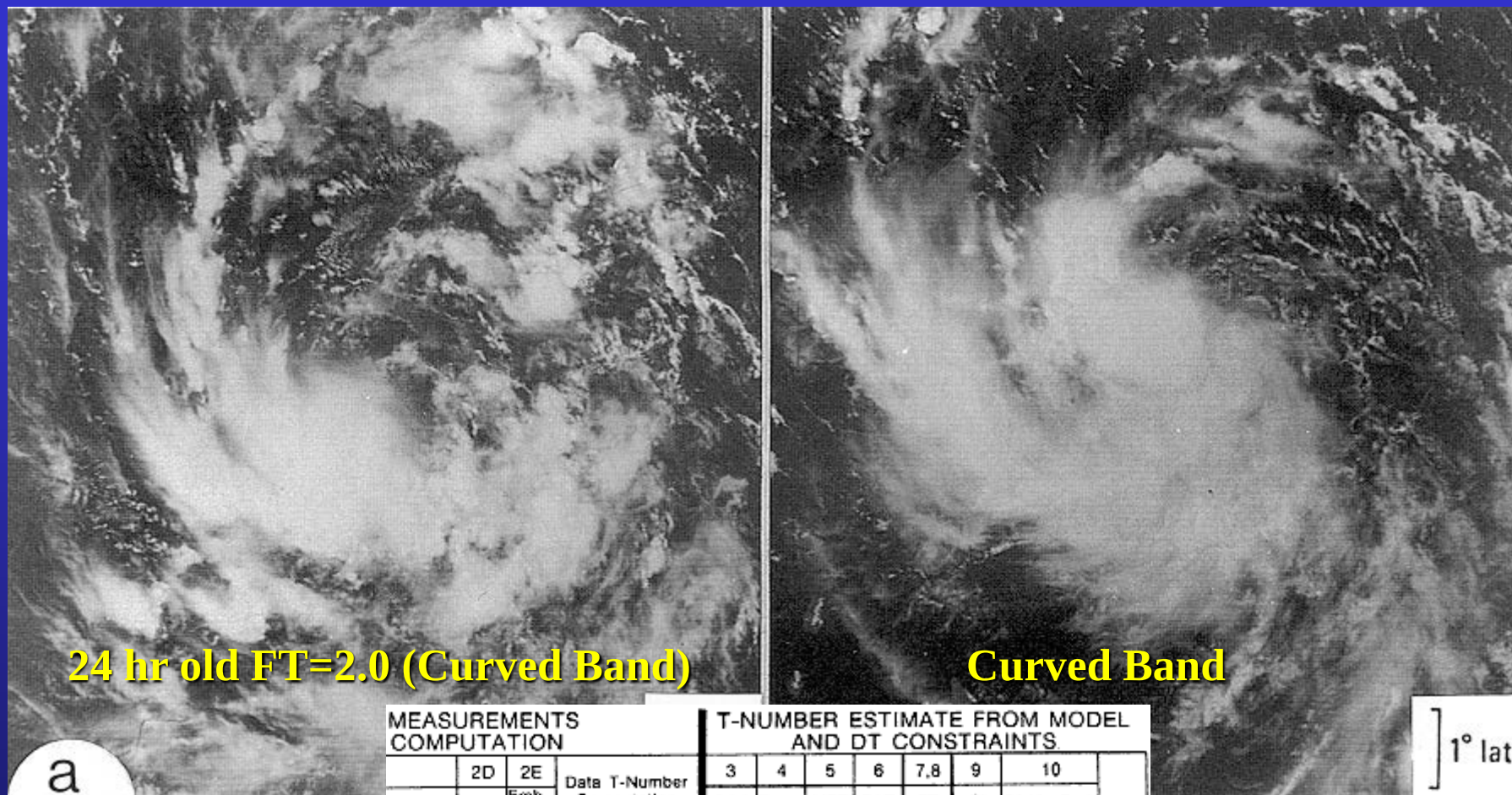

? ? D S or W

# Pattern and Trend Exercise 8



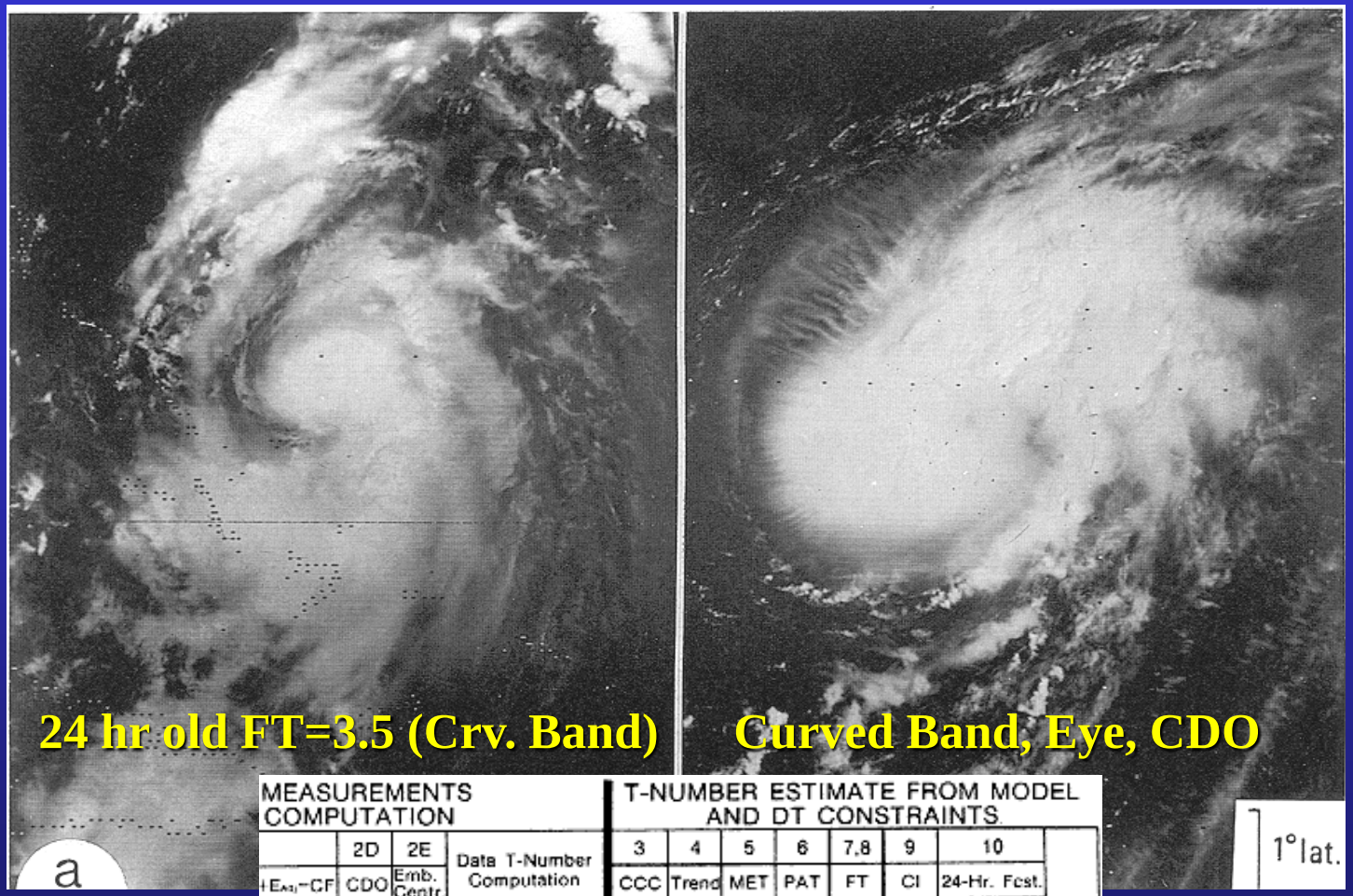

| MEASUREMENTS COMPUTATION | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | |
| | +EAdj)−CF | CDO | Emb. Centr | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | IR/Vis Use Surrounding Temperature | CF | BF | DT | Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | INITIALS |
| | -24 hr | | | | | | | | | | 3.0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Now | | | | | 1.5 | | W | 2.0 | | | | | | |

# Pattern and Trend Exercise 9




| MEASUREMENTS COMPUTATION | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | | |
| +EAdj=CF | | CDO | Emb. Centr. | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | | |
| Rules | Eye Definition | Use Size | (BR) Use Surrounding Temperature | CF+BF=DT | | | Use Rules | 24-Hr change | | | Use Rules | | Adj. Model Fcst. if nec. | | INITIALS |
| No | EAdj | Central Dense Overcast | | CF | BF | DT | Central Cold Cover | D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Final T-Number | Current Intensity Number | List Rule Used | Forecast Intensity Number | |
| | -24 hr | | | | | | | | | | 2.0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | Now | | | | 3.0 | | D | 3.0 | | | | | | |

# Pattern and Trend Exercise 10



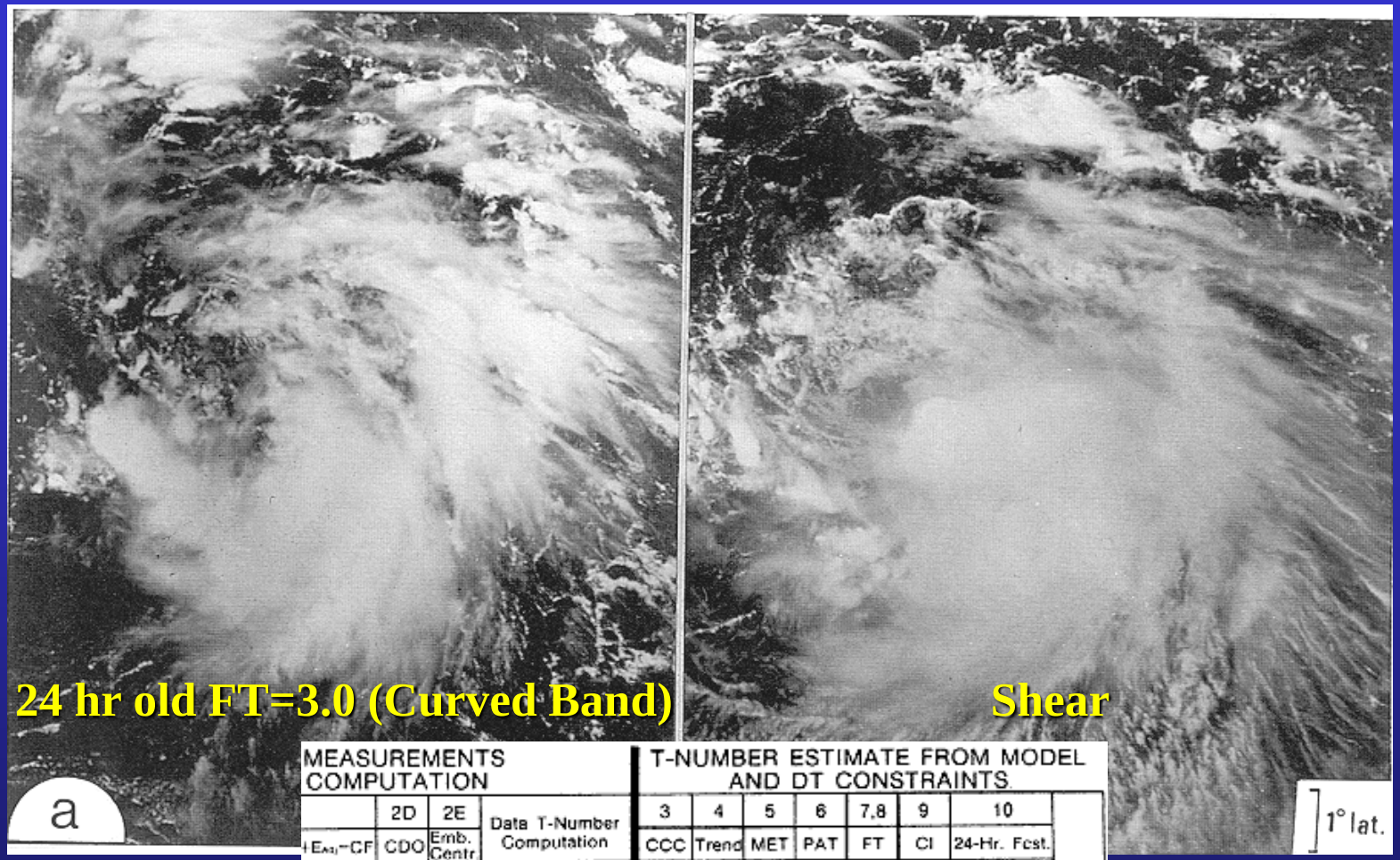

**MEASUREMENTS COMPUTATION**

| | | 2D | 2E | Data T-Number Computation | | |
|---|---|---|---|---|---|---|
| | +EAdj=CF | CDO | Emb. Centr | CF+BF=DT | | |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | IR/Vis Use Surrounding Temperature | CF | BF | DT |
| | -24 hr | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | Now | | | | | 4.5 |

**T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS**

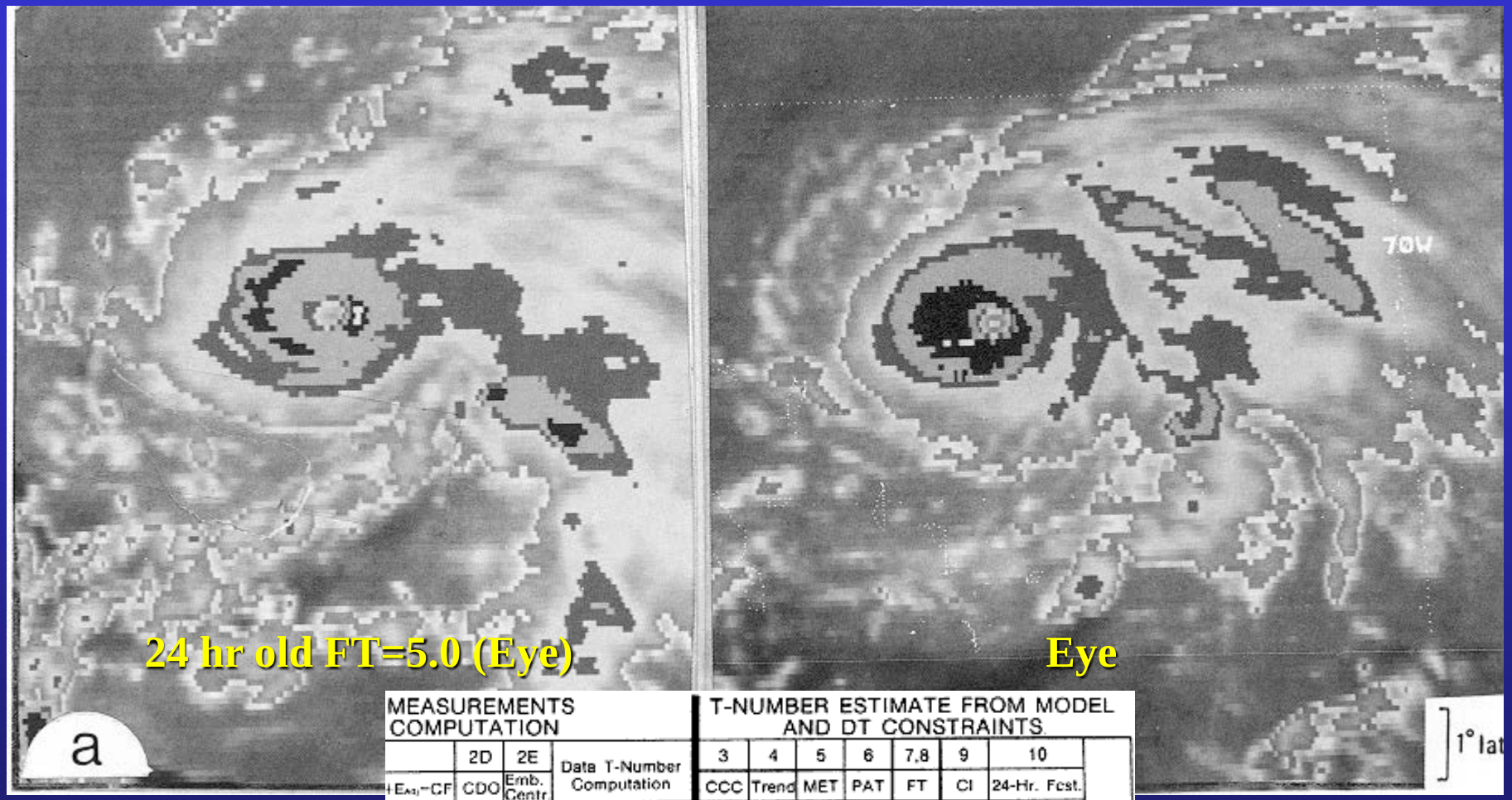
| 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | | |
|---|---|---|---|---|---|---|---|---|
| CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | | INITIALS |
| Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | |
| | | | | 3.5 | | | | |
| | D | 4.5 | | | | | | |

# Pattern and Trend Exercise 11



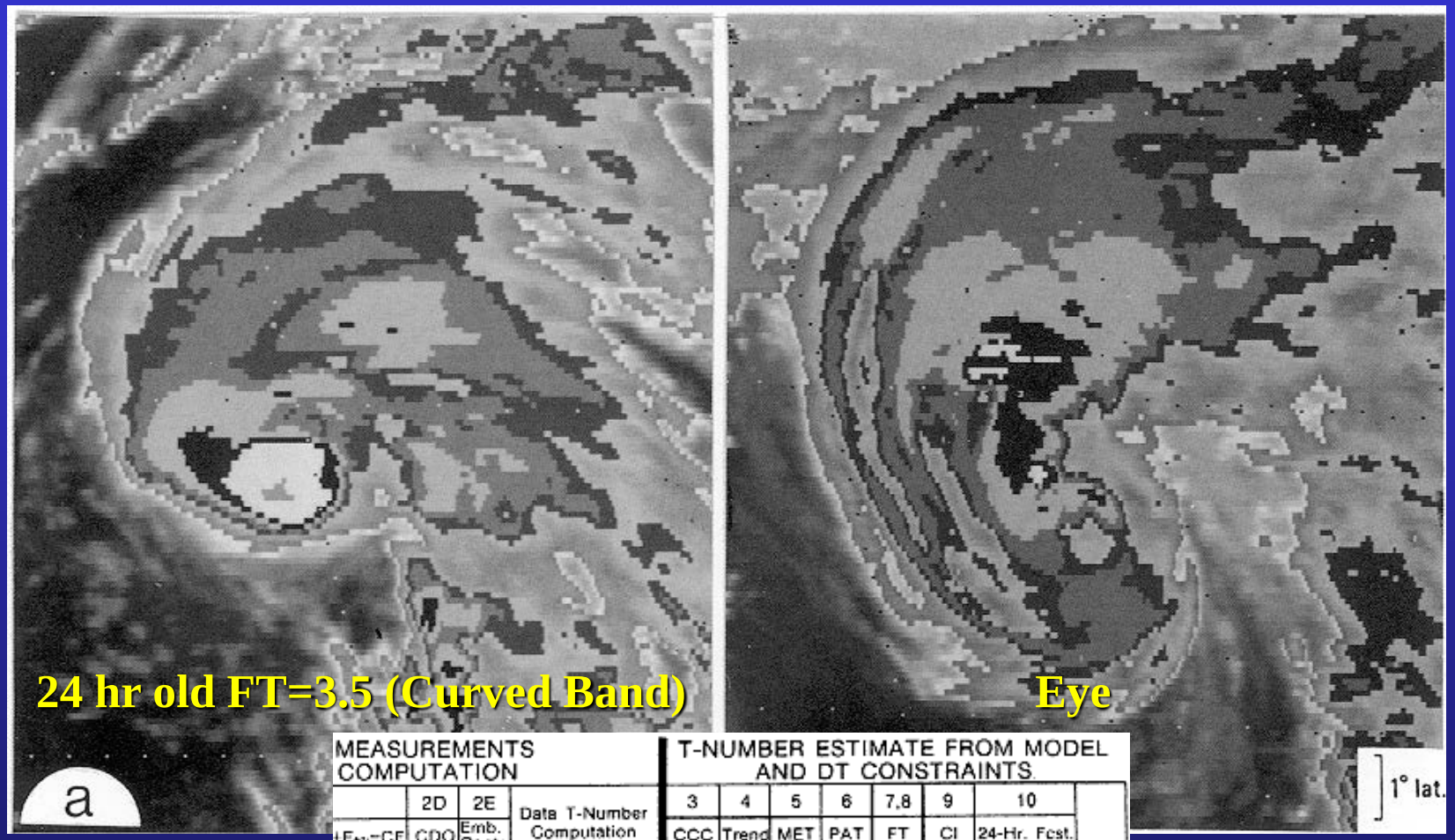

| MEASUREMENTS COMPUTATION | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | |
| | E(Adj)−CF | CDO | Emb. Centr | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | IR/Vis Use Surrounding Temperature | CF+BF=DT CF | BF | DT | Use Rules General Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | INITIALS |
| | -24 hr | | | | | | | | | | 3.0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Now | | | | | 3.0 | | W | 2.0 | | | | | | |

# Pattern and Trend Exercise 12




| MEASUREMENTS COMPUTATION | | | | | | | T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2D | 2E | Data T-Number Computation | | | 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | |
| | | CDO | Emb. Centr | | | | CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | IR/Vis Use Surrounding Temperature | CF | BF | DT | Use Rules General Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | INITIALS |
| | -24 hr | | | | | | | | | | 5.0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Now | | | | | 6.0 | | D | 6.0 | | | | | | |

# Pattern and Trend Exercise 13




MEASUREMENTS COMPUTATION

| | | 2D | 2E | Data T-Number Computation | | |
|---|---|---|---|---|---|---|
| | +EAdj=CF | CDO | Emb. Centr | CF+BF=DT | | |
| Rules No | Eye Definition EAdj | Use Size Central Dense Overcast | Use Surrounding Temperature | CF | BF | DT |
| | -24 hr | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | Now | | | | | 4.0 |

T-NUMBER ESTIMATE FROM MODEL AND DT CONSTRAINTS

| 3 | 4 | 5 | 6 | 7,8 | 9 | 10 | | INITIALS |
|---|---|---|---|---|---|---|---|---|
| CCC | Trend | MET | PAT | FT | CI | 24-Hr. Fcst. | | |
| Use Rules Central Cold Cover | 24-Hr change D-developing W-weakening S-same | Model Expected T-Number | Pattern T-Number | Use Rules Final T-Number | Current Intensity Number | Adj. Model Fcst. if nec. Last Rule Used | Forecast Intensity Number | |
| | | | | 3.5 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | D | 4.5 | | | | | | |