Space Communications Technology Center
(SCTC)

PROPAGATION MEASUREMENTS IN FLORIDA

HENRY HELMKEN
FLORIDA ATLANTIC UNIVERITY (FAU)
&
RUDY HENNING
UNIVERSITY OF SOUTH FLORIDA (USF)

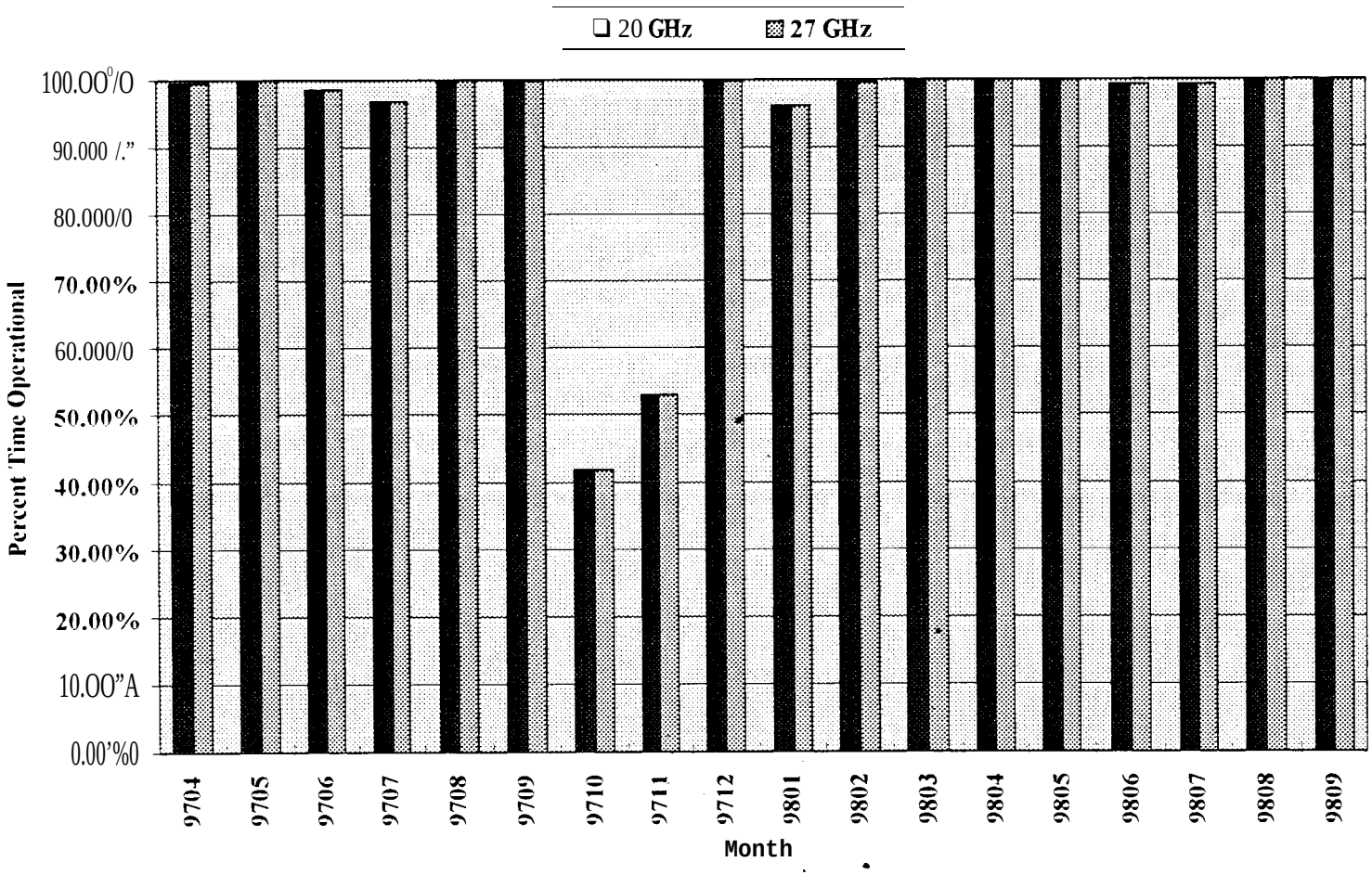
October 22, 1998

OUTLINE

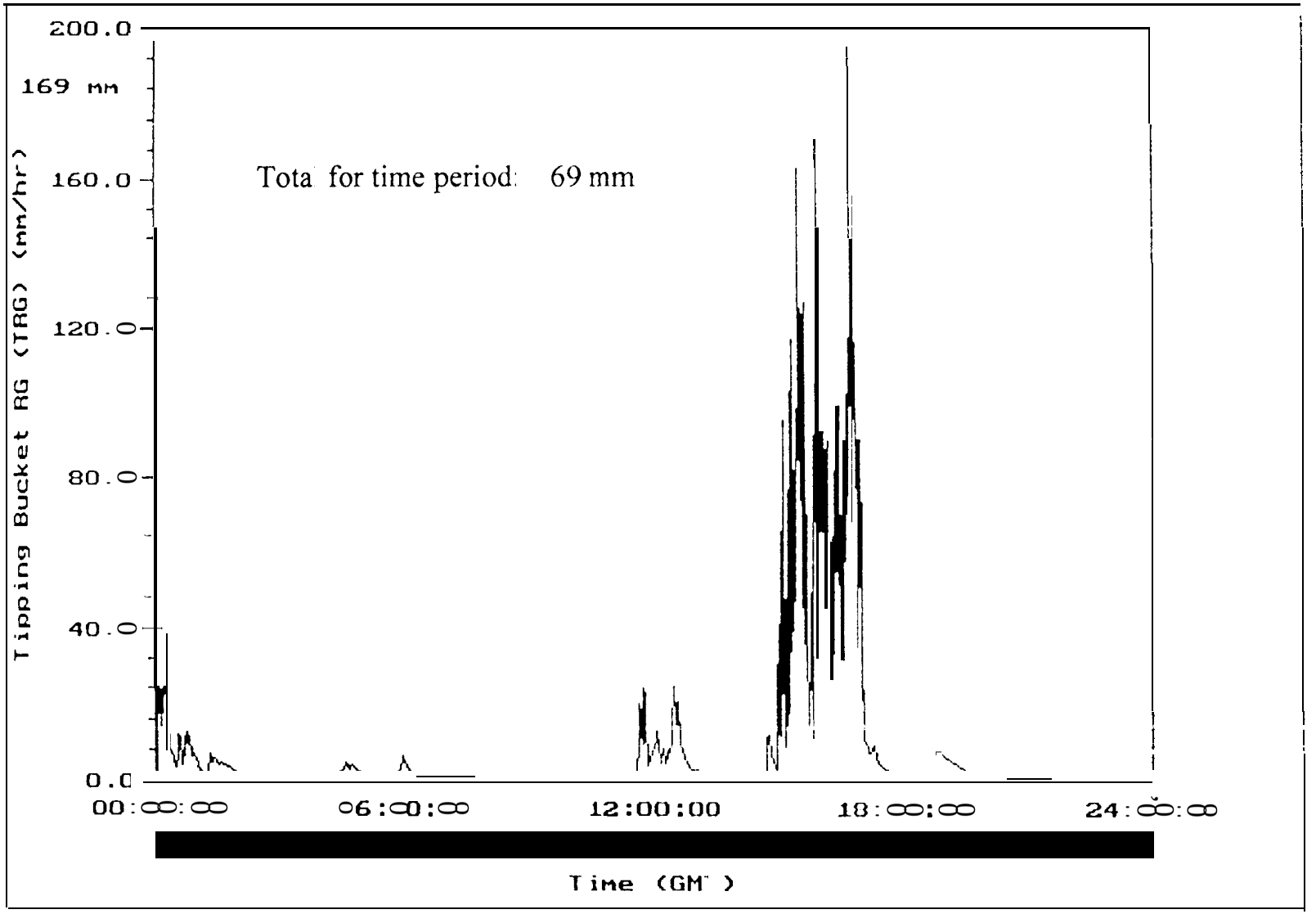
- Florida Program Overview
- Site Operations
- AGA Model Comparisons
- Diversity Program
- Conclusions

FLORIDA PROGRAM GOALS

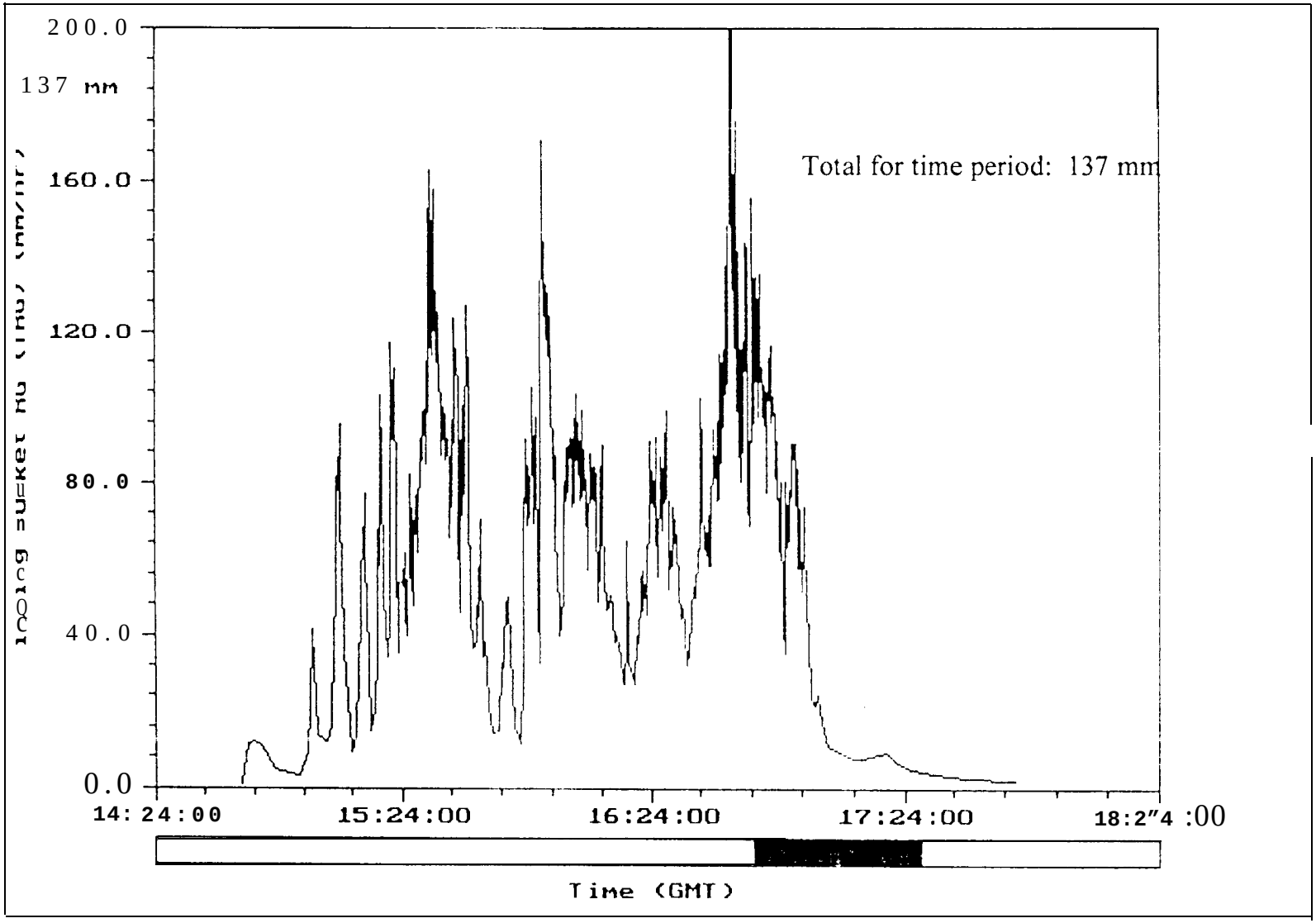
- Generate CDF'S For Sub-tropical Regions
- Sub-tropical Fade Duration Statistics
- Seasonal and Diurnal Statistics
- Diversity Gain
- Sub-tropical Propagation Models



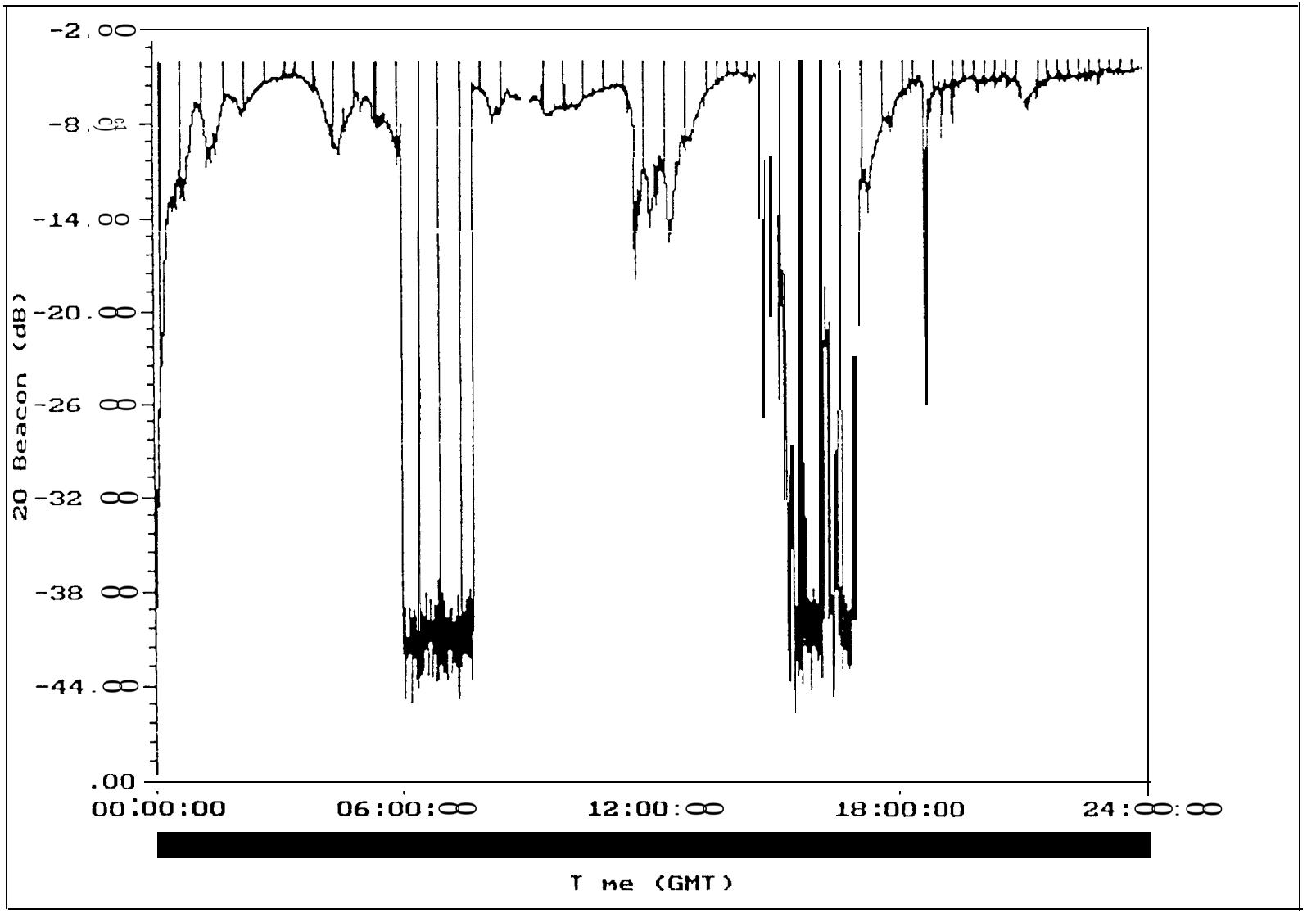
Operational Status of Receiver/Radiometer (04/97-09/98)



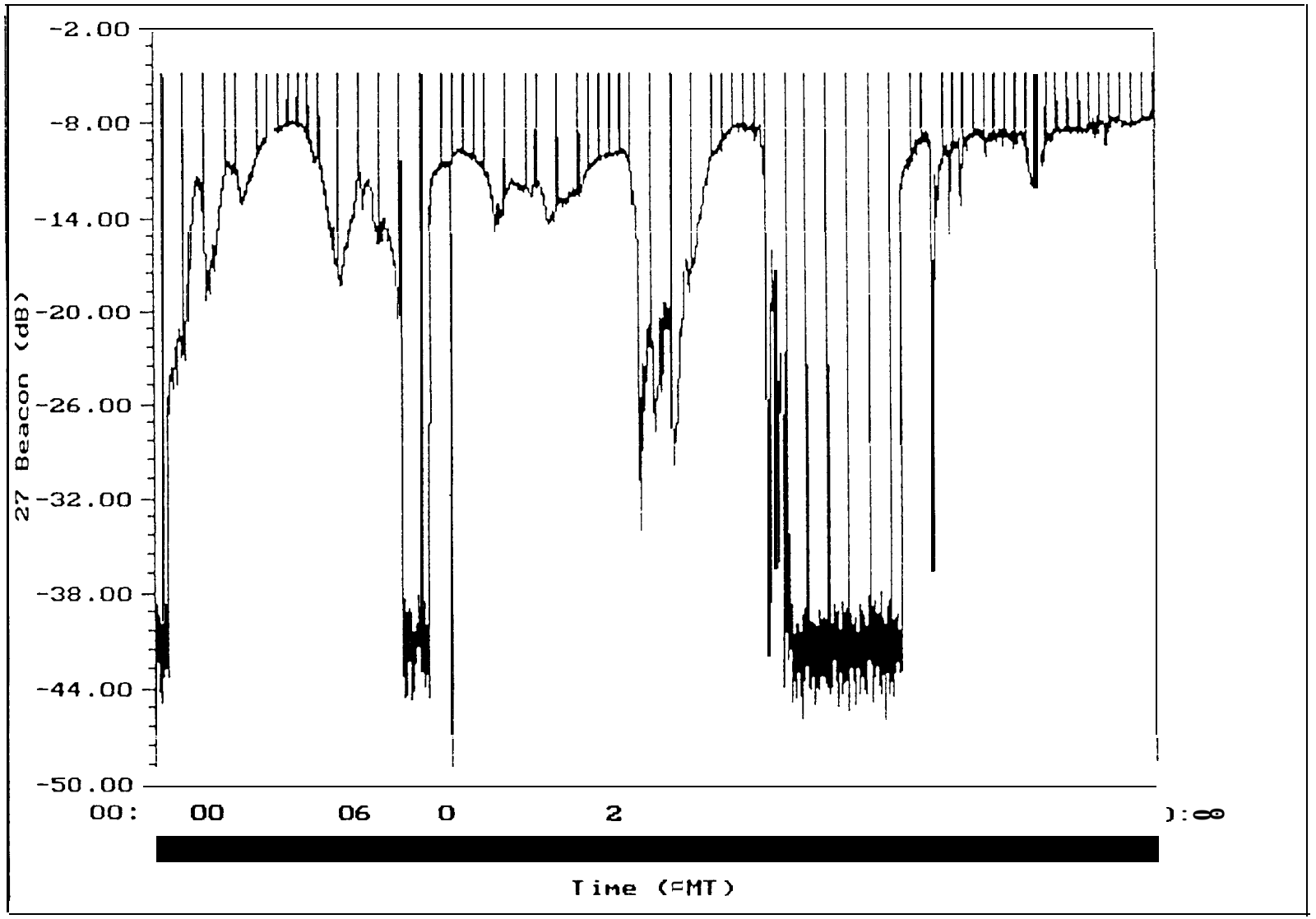
Intense Rain Event (09/20/96)



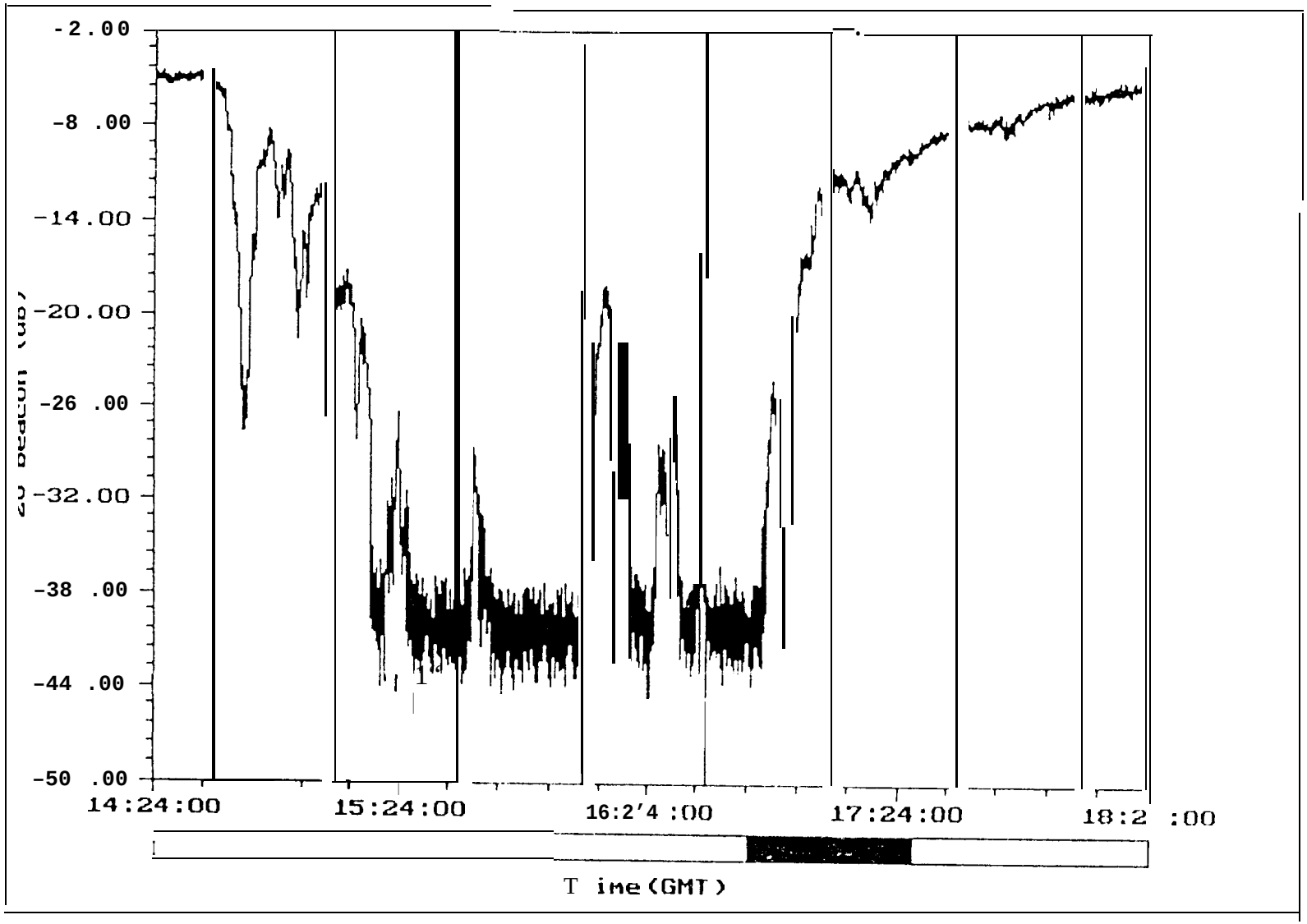
Intense Rain Event (09/20/98)



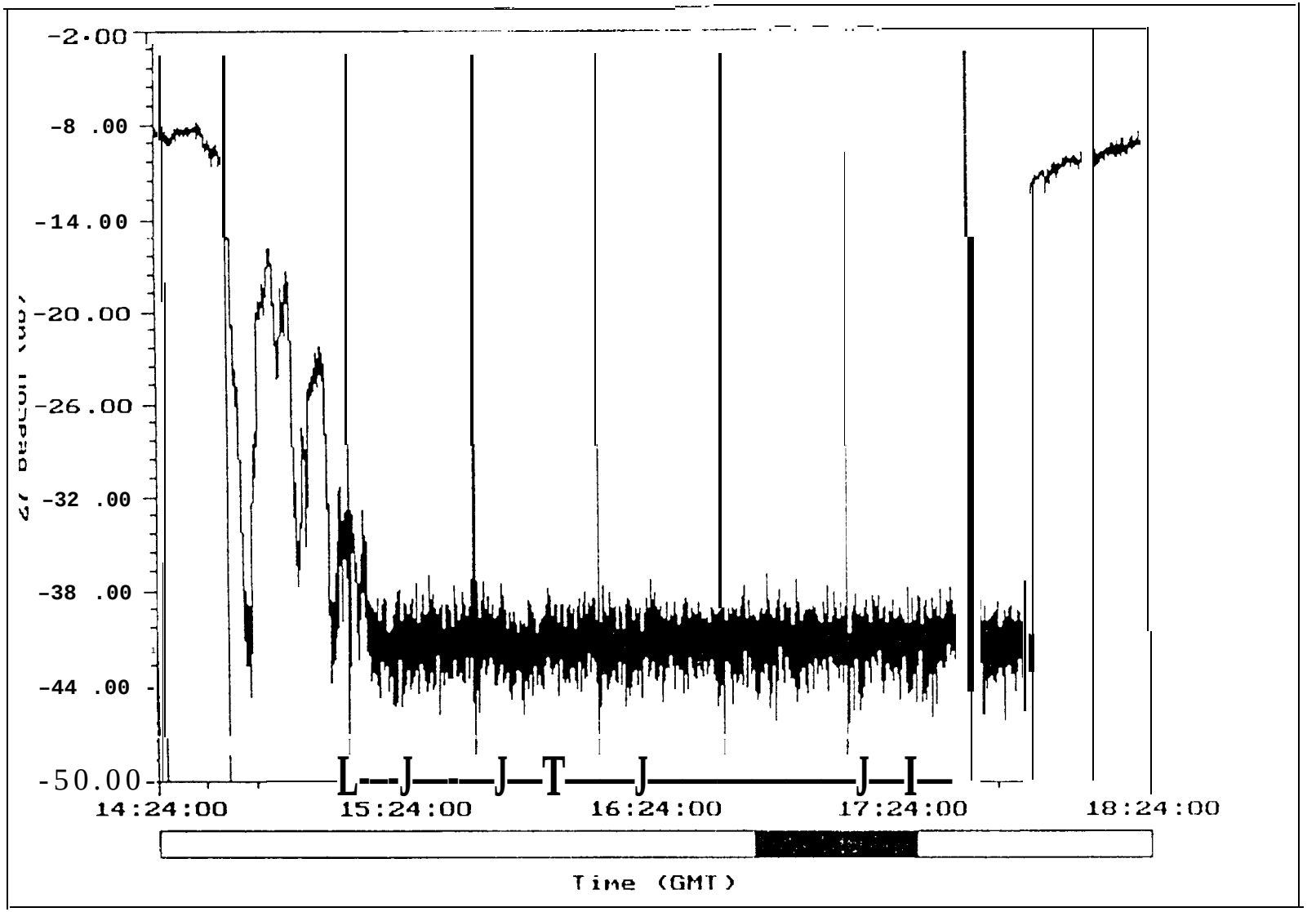
Intense Rain Event (09/20/98)



Intense Rain Event (09/20/98)

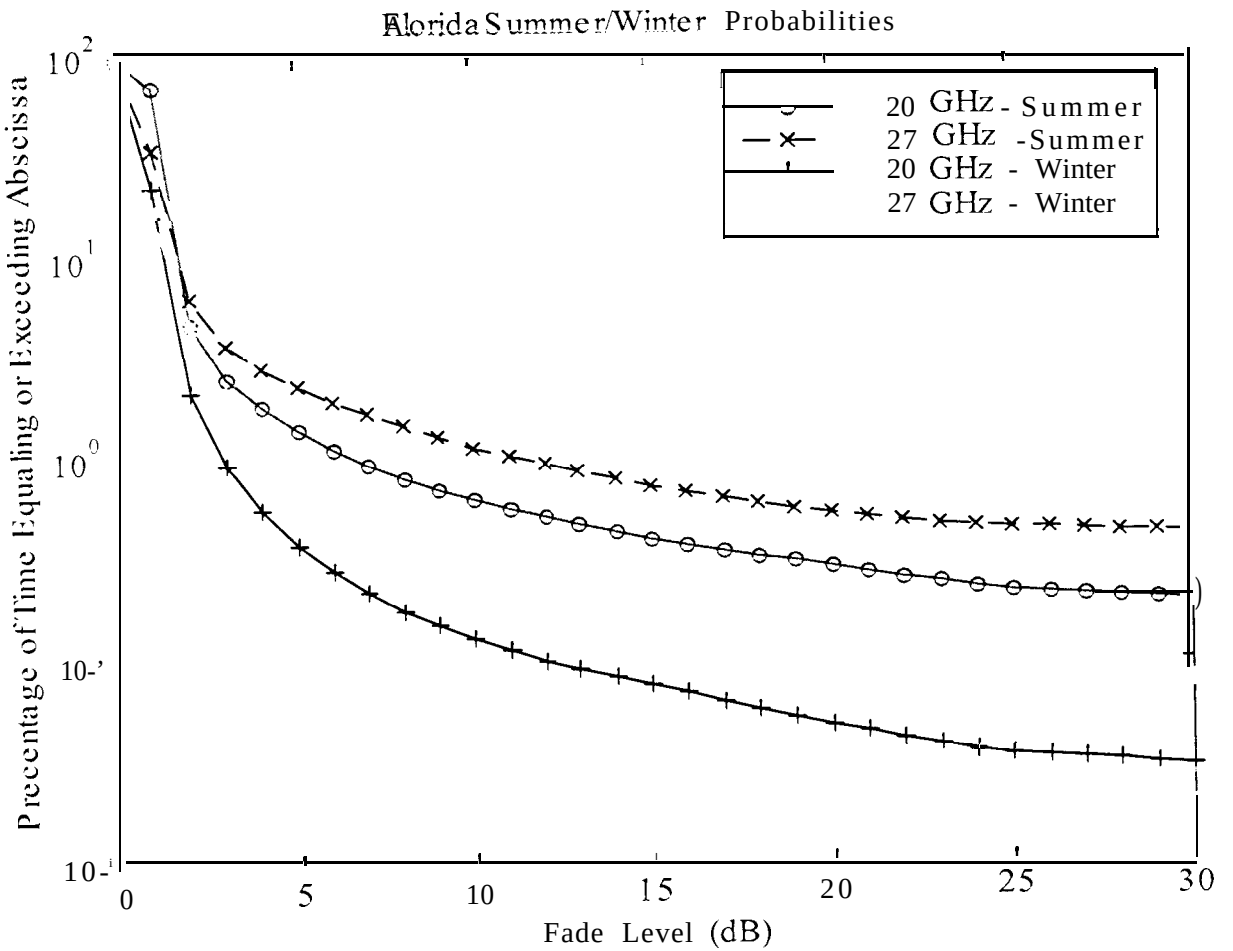


Intense Rain Event (09/20/98)

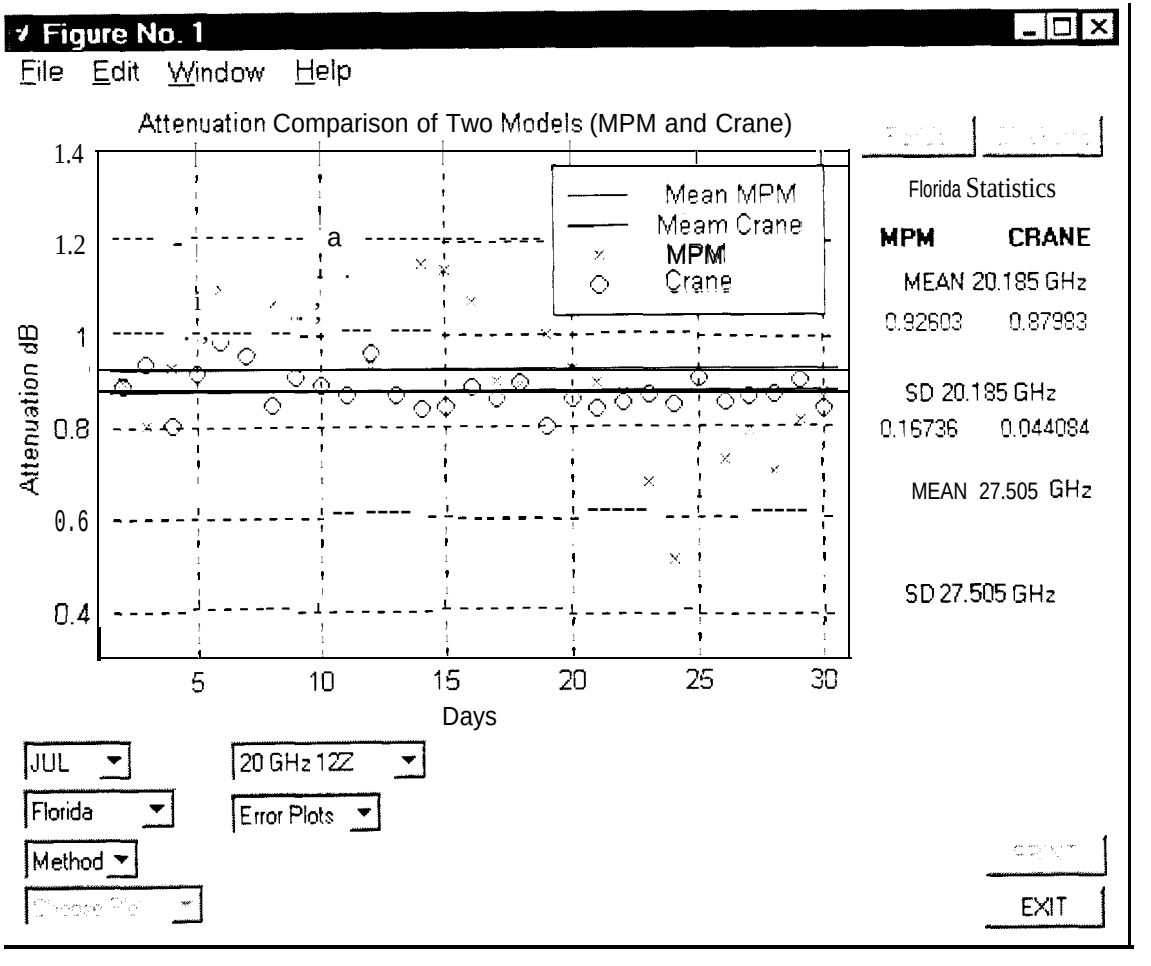


Intense Rain Event (09/20/98)

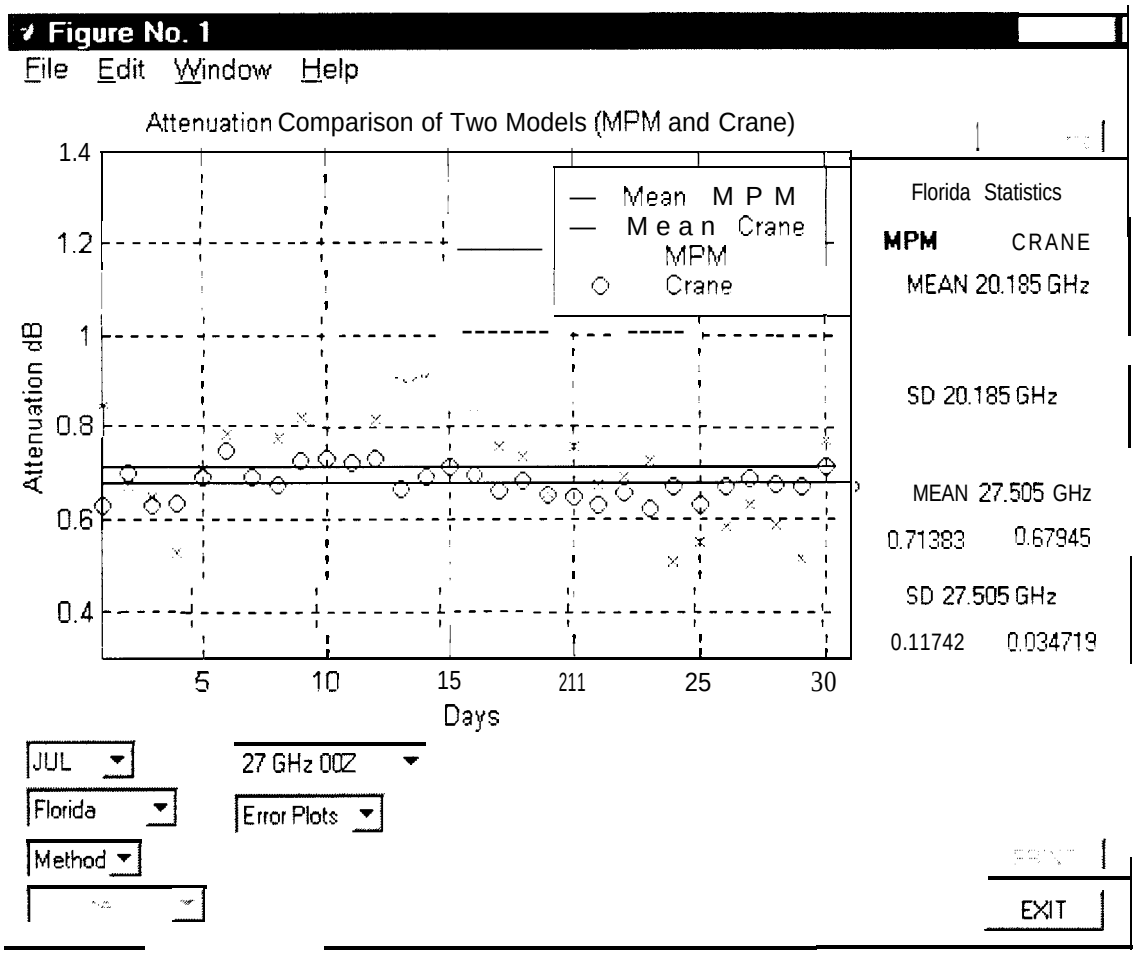
FLORIDA SUMER/WINTER PROBABILITIES



20 GHz Model Comparison - 12Z



27 GHz Model Comparison - OOZ



DIVERSITY PROGRAM

- Diversity Improvement in Tropical Regions
  - 20 GHz Transportable Terminal
    - 1.2 m Prodelin Antenna
    - APT Digital Receiver
- Short Baseline Improvement
  - < 5km Separations
- Spatial Diversity Improvement
  - GBS Satellite 20.7 GHz Beacon at 17W

INCLINED ORBIT OPERATIONS

- Tracking Mount Requirements
  - VSAT Antenna Experience
- Replacement/Refurbished Antenna
  - Mitigate Wet Antenna Effects
  - Validate Florida APT Data Base
- Faculty and Student Support

CONCLUSIONS

- Normal APT Terminal Operations
- Validation of Crane Model for Florida
- Rain Shower Dependence of Diversity Gain
- Recommend Inclined Orbit Operations