NEW AVN MOS GUIDANCE

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CAFTI - FEBRUARY 3, 2000

http://www.nws.noaa.gov/tdl/synop/results.htm
http://www.nws.noaa.gov/tdl/synop/cafti.htm
AVN MOS GUIDANCE

A NEW LOOK

- Available for 1000+ Sites in CONUS, AK, HI, PR
- Predictands from Current Observing System
- Predictands to 72 h
- Model Predictors from 95.25 km Grid
- Model Predictors valid every 3 h to 72 h
- 0600 / 1800 UTC AVN MOS Packages
AVN MOS SEASONS

- WARM SEASON (APR. - SEPT.)
  » FINAL EQNS.:
    - APR. 1, 1997 - OCT. 15, 1997
    - MAR. 16, 1999 - OCT. 15, 1999

- COOL SEASON (OCT. - MAR.)
  » FINAL EQNS.:
    - SEPT. 16, 1997 - APR. 15, 1998
    - SEPT. 16, 1998 - APR. 15, 1999
AVN MOS SEASONS-TESTING

- WARM SEASON INDEPENDENT DATA
  - LAST 15 DAYS OF APR., MAY, JUNE, JULY, AUG., SEPT. 1998 (WINDS)
  - APR. 1999 - SEPT. 1999 (TEMP. / DEW PT.)

- COOL SEASON INDEPENDENT DATA
  - LAST 15 DAYS OF OCT., NOV., DEC. 1998; AND JAN., FEB., MARCH 1999
AVN-BASED MOS GUIDANCE

- Wind Speed/Direction
- Max/Min Temperature
- 2-M Temperature/Dew Point
u- and v-wind components, wind speed, 2-m temperature, 2-m dew point - valid every 3h from 6 to 72 h after 00 or 12 Z

Daytime max (0700-1900 LST): ~ 24, 48, 72h after 00 Z; ~ 36 and 60h after 12 Z

Nighttime min (1900-0800 LST): ~ 36, 60h after 00 Z; 24, 48, 72 h after 12 Z
AVN MOS TEMP/WIND PREDICTORS

- MODEL VARIABLES

- OBSERVATIONS AT 03 UTC OR 15 UTC
  - FOR WIND, TO 15H PROJECTION
  - FOR TEMP/DP, TO 39H PROJECTION

- GEOCLIMATIC VARIABLES
  - SINE/COSINE DAY OF YEAR & TWICE DAY OF YEAR
MOS TESTING STRATEGY

- Develop test equations
- Make forecasts on independent data
- Verify ~335 stations clustered by regions
VERIFICATION MEASURES

- WIND SPEED
  - MEAN ABSOLUTE ERROR, HEIDKE SKILL SCORE, PROBABILITY OF DETECTION

- WIND DIRECTION
  - MEAN ABSOLUTE ERROR, CUM. REL. FREQ. OF WIND DIR. ERRORS OF 30° OR LESS

- TEMPERATURE/DEW POINT
  - MEAN ABSOLUTE ERROR
CONCLUSIONS

- AVN MOS WIND GUIDANCE IS SUPERIOR TO NGM MOS
- AVN MOS TEMPERATURE GUIDANCE TENDS TO BE MORE ACCURATE AT $\geq 36$H PROJ. IN COOL SEASON; NGM MOS TENDS TO BE MORE ACCURATE IN WARM SEASON AT $\leq 48$H PROJECTION
- AVN MOS DEW PT GUIDANCE TENDS TO BE MORE ACCURATE THAN NGM MOS
- REGIONAL VARIATIONS EXIST
MOS GUIDANCE

Implementation Plans

- Apr. 2000 - AVN MOS Message (00Z / 12Z)
- Apr. 2000 - New MRF MOS Message
- Oct. 2000 - Complete AVN MOS (No Snow)
- Oct. 2000 - Complete MRF MOS (No Snow)
- Oct. 2000 - Partial AVN MOS (06 / 18Z)
- Oct. 2000 - Eta MOS Thunderstorm Guidance
- Apr. 2001 - NGM MOS Removed
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FUTURE MOS EFFORTS

- Binary Forecast Products (BUFR)
- New Forecast Sites
- Additional Forecast Elements (new weather element definitions, 6/18Z cycles, Eta model)
- Increased Temporal Resolution in Forecasts
- Periodic Update of Forecast Equations
  - After initial implementation, equations will be updated seasonally
  - Seasonal update will be done if archived data indicate a need for the update