New Warm Season AVN-based MOS PoP Forecasts

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The New AVN-Based MOS PoP System

What's new?

- **MORE STATIONS:**
  - 1060 Forecast Sites
  - Add HI, PR
- **MORE FORECASTS, CONSISTENTLY(!):**
  - Available at projections of 12-72 hours
  - Consistency enforced between 6- and 12-h PoP
- **BETTER RESOLUTION:**
  - Predictor fields on 95.25 km grid
  - Predictor fields available at 3-h timesteps
  - Predictor fields available beyond 48-h projection
  - * No extrapolative forecasts, as with NGM MOS!

CHALLENGE TO NEW MOS DEVELOPMENT:

RAPIDLY EVOLVING NWP MODELS AND OBSERVATION PLATFORMS

Make for:

1. SHORT, UNREPRESENTATIVE DATA SAMPLES
2. DIFFICULT COLLECTION OF APPROPRIATE PREDICTAND DATA

   New observing systems: (ASOS, WSR-88D)
   (Co-Op, Mesonets)

   But "old" predictands

The New AVN MOS PoP System

To ensure that model changes and small sample size had minimal impact on PoP performance, we relied upon…

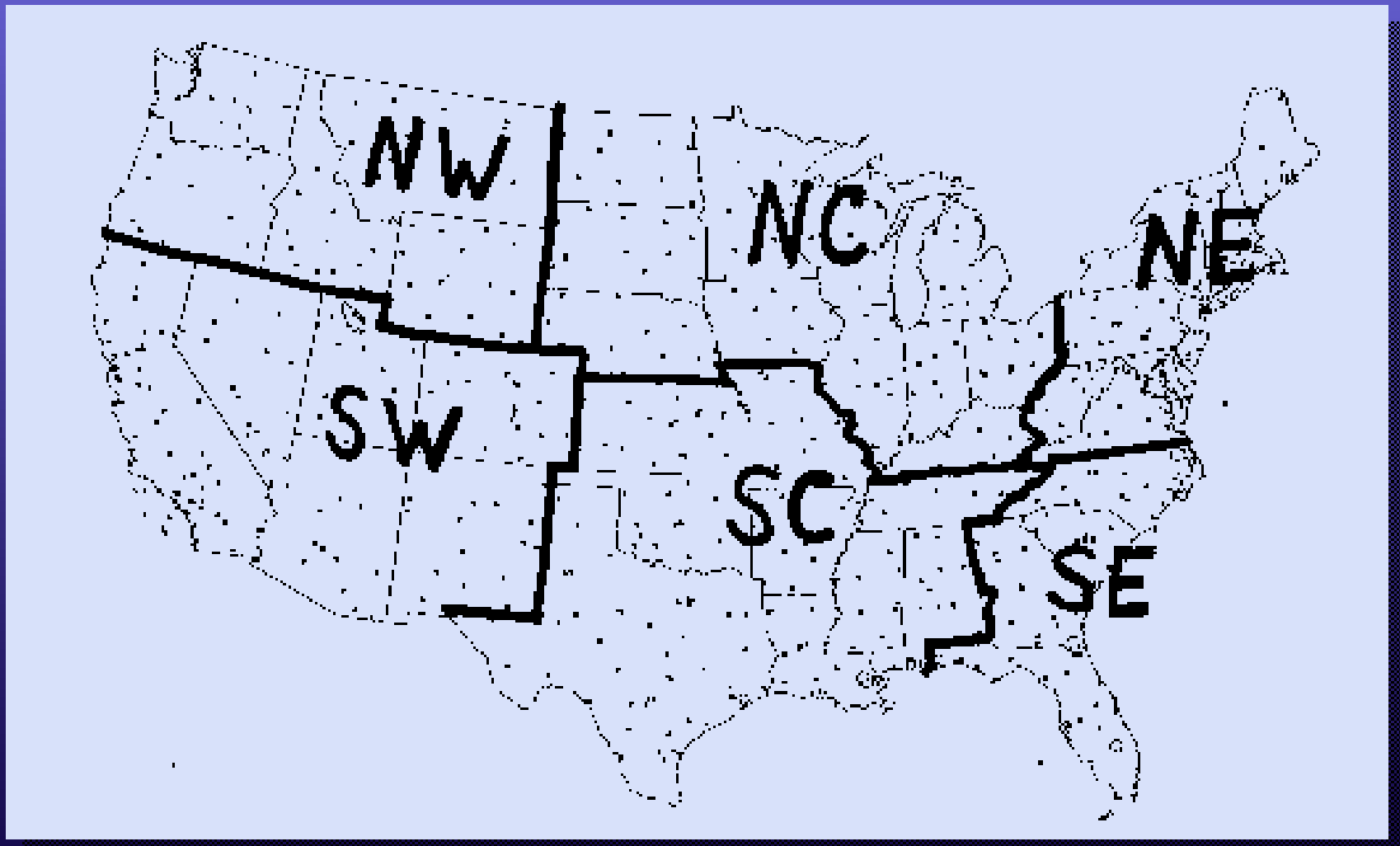
1. **Improved AVN model realism**
   - better model = better statistical system
2. **Consistent archive grid used throughout**
   - smoothing of fine-scale detail
   - constant grid length for grid-sensitive calculations
3. **Enlarged geographic regions**
   - larger data pools help to stabilize equations
4. **Use of "robust" predictor variables**
   - no boundary layer variables
   - variables presumed immune to known model changes

The New AVN-Based MOS PoP System

System Development; AVN vs. NGM

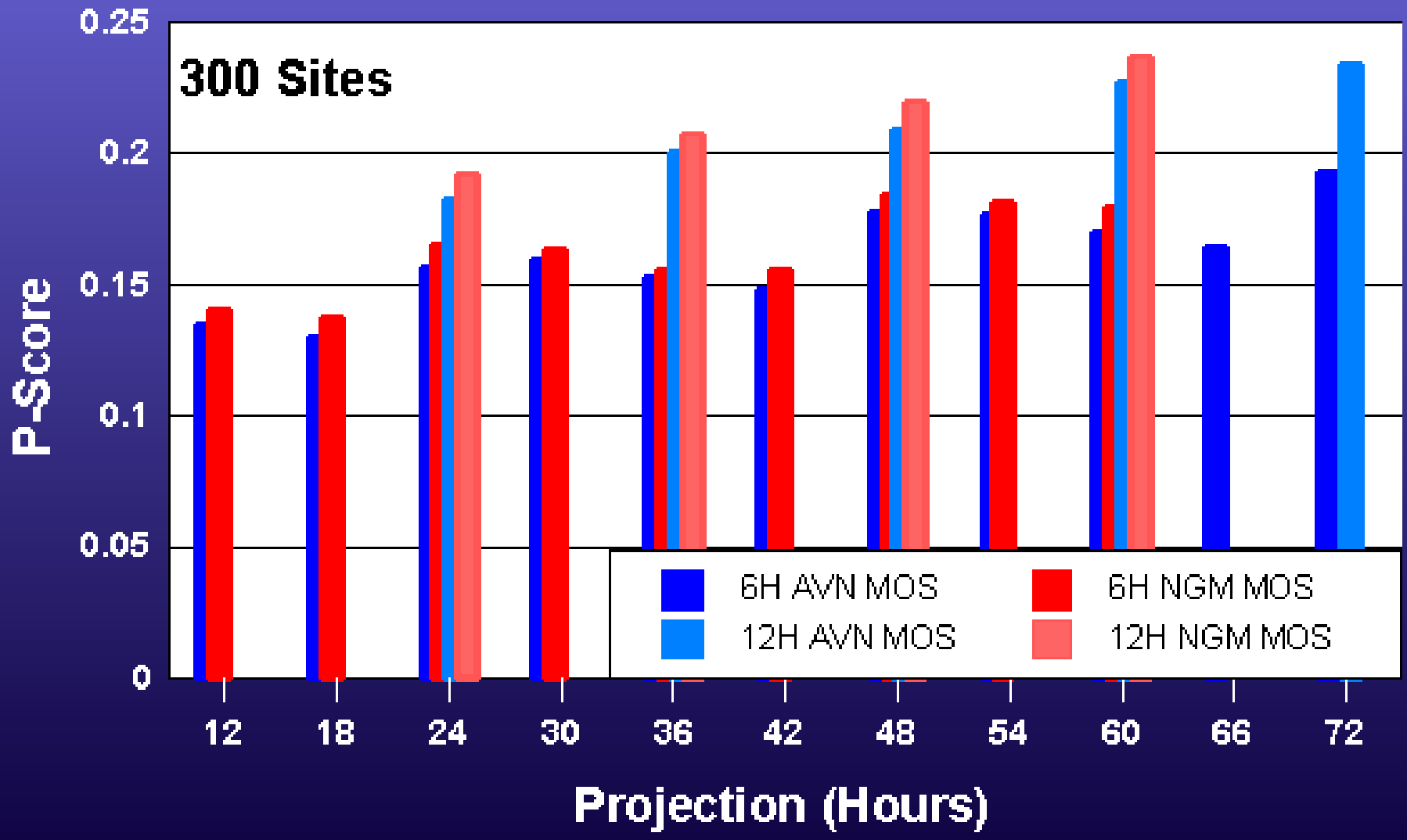
	NGM	AVN
Predictand Data:	SAO; 399 Sites CONUS 27 Sites AK	ASOS; 540 Sites CONUS, HI, PR 27 Sites AK
Sample:	5yr CONUS 8yr AK	3yr CONUS 3yr AK
Regions:	25 CONUS; 8 AK	11 CONUS; 4 AK
Predictors:	NGM Basic Fields NGM Derived Fields NGM Grid Binaries Geoclimatic Variables	AVN Basic Fields AVN Derived Fields AVN Grid Binaries Geoclimatic Variables

Regional Verification



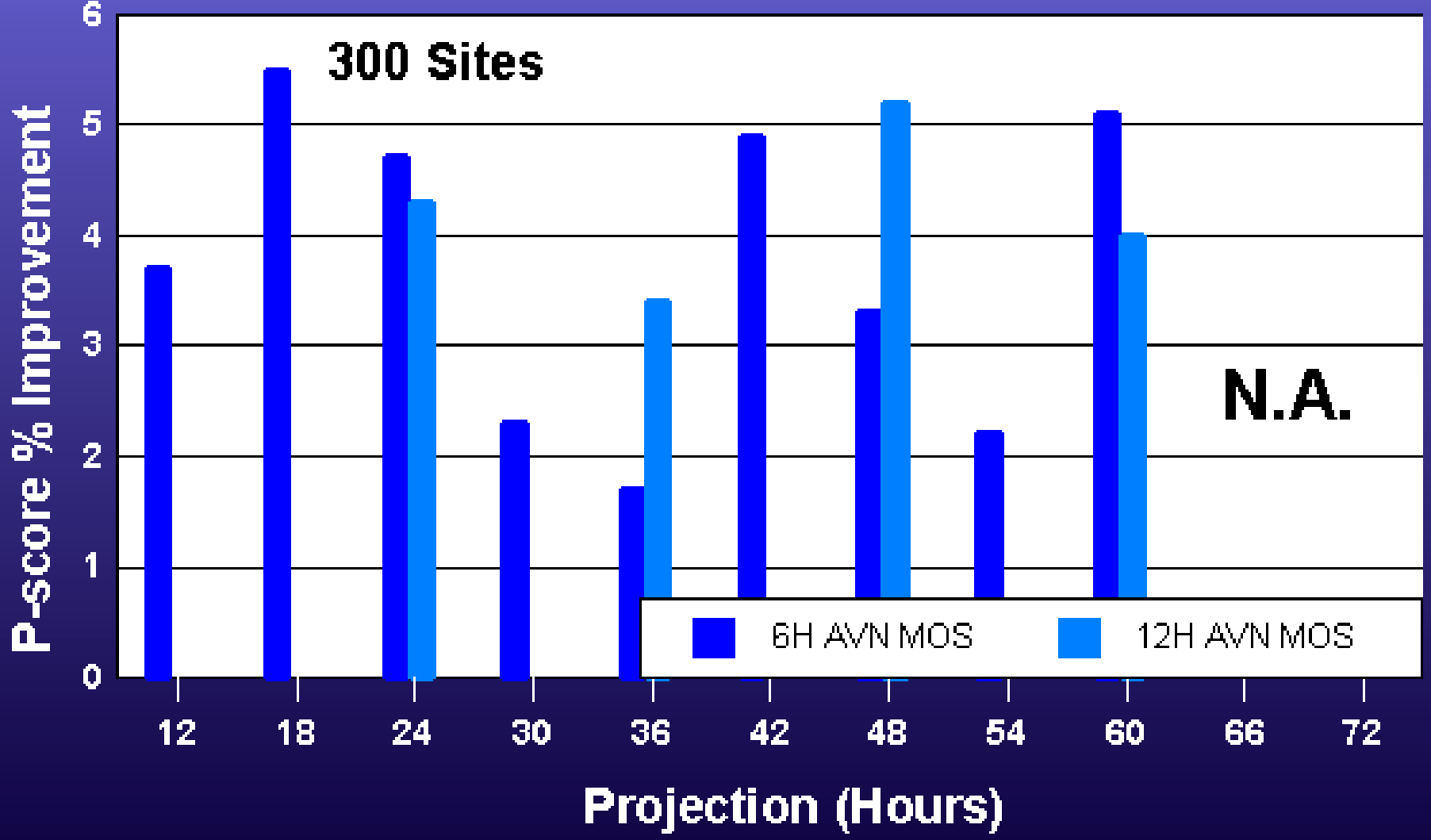
Warm Season PoP (CONUS)

Apr-July, 2000 0000 UTC Cycle



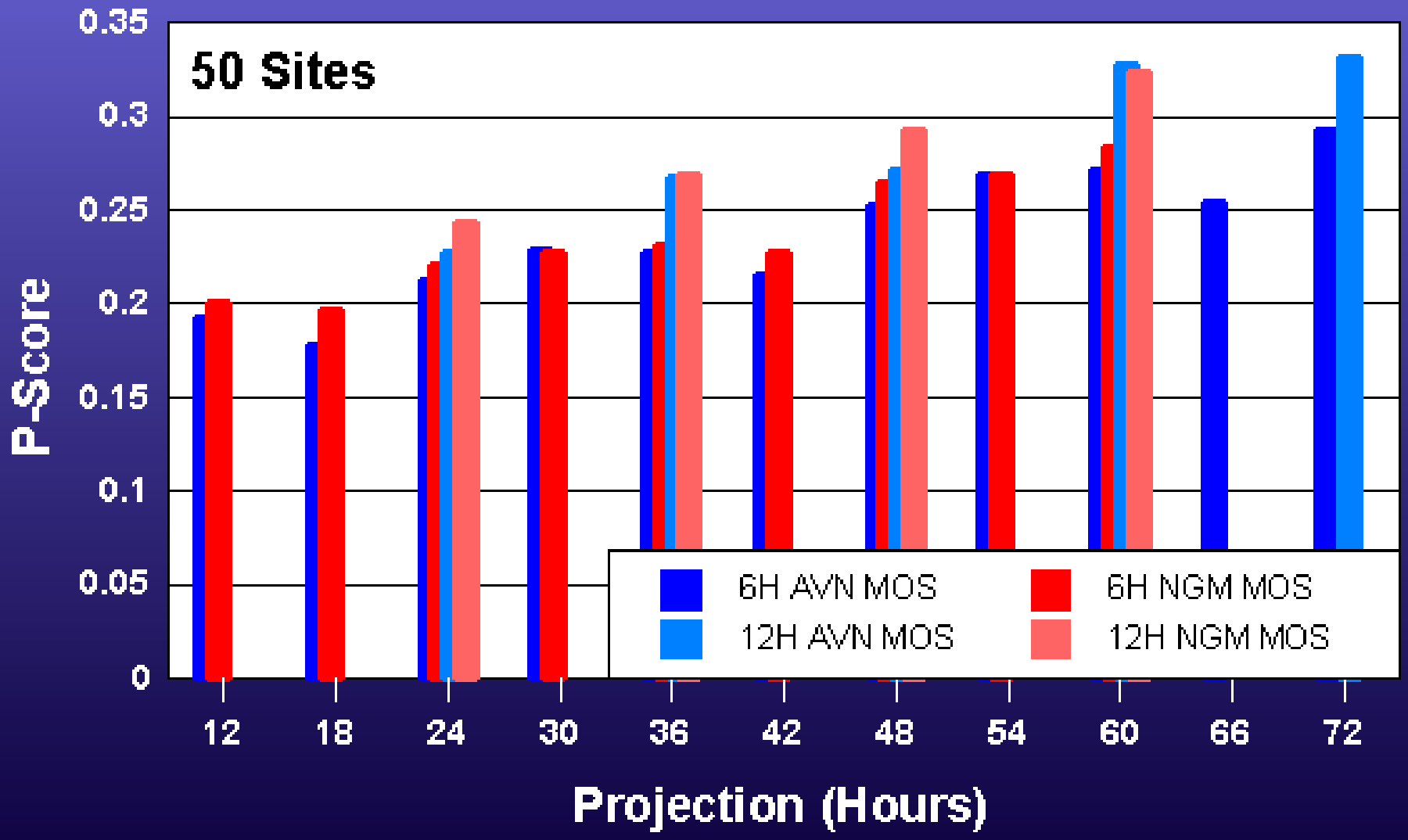
Warm Season PoP (CONUS)

% Improvement over NGM MOS; Apr-July, 2000



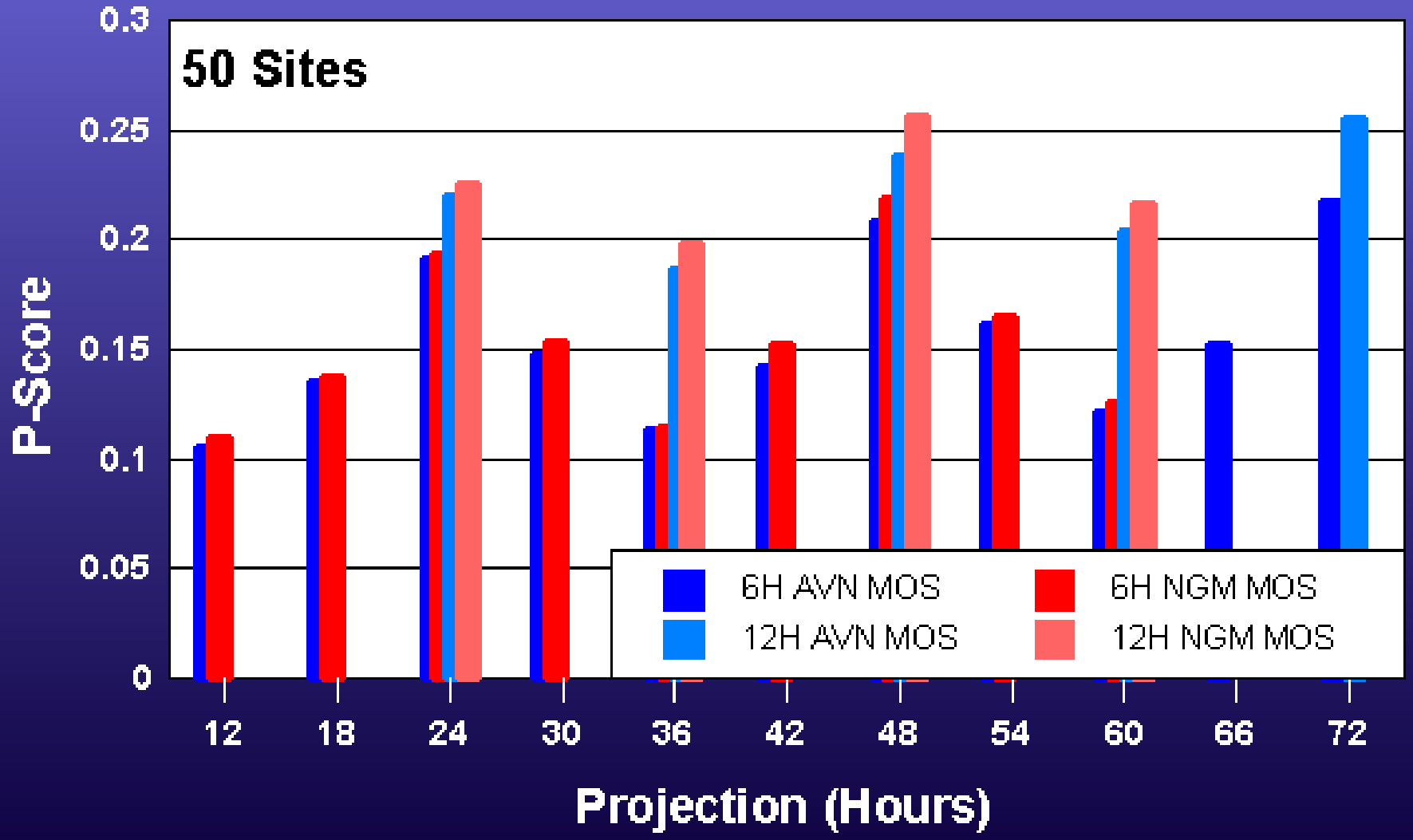
Warm Season PoP (Northeast)

Apr-July, 2000 0000 UTC Cycle



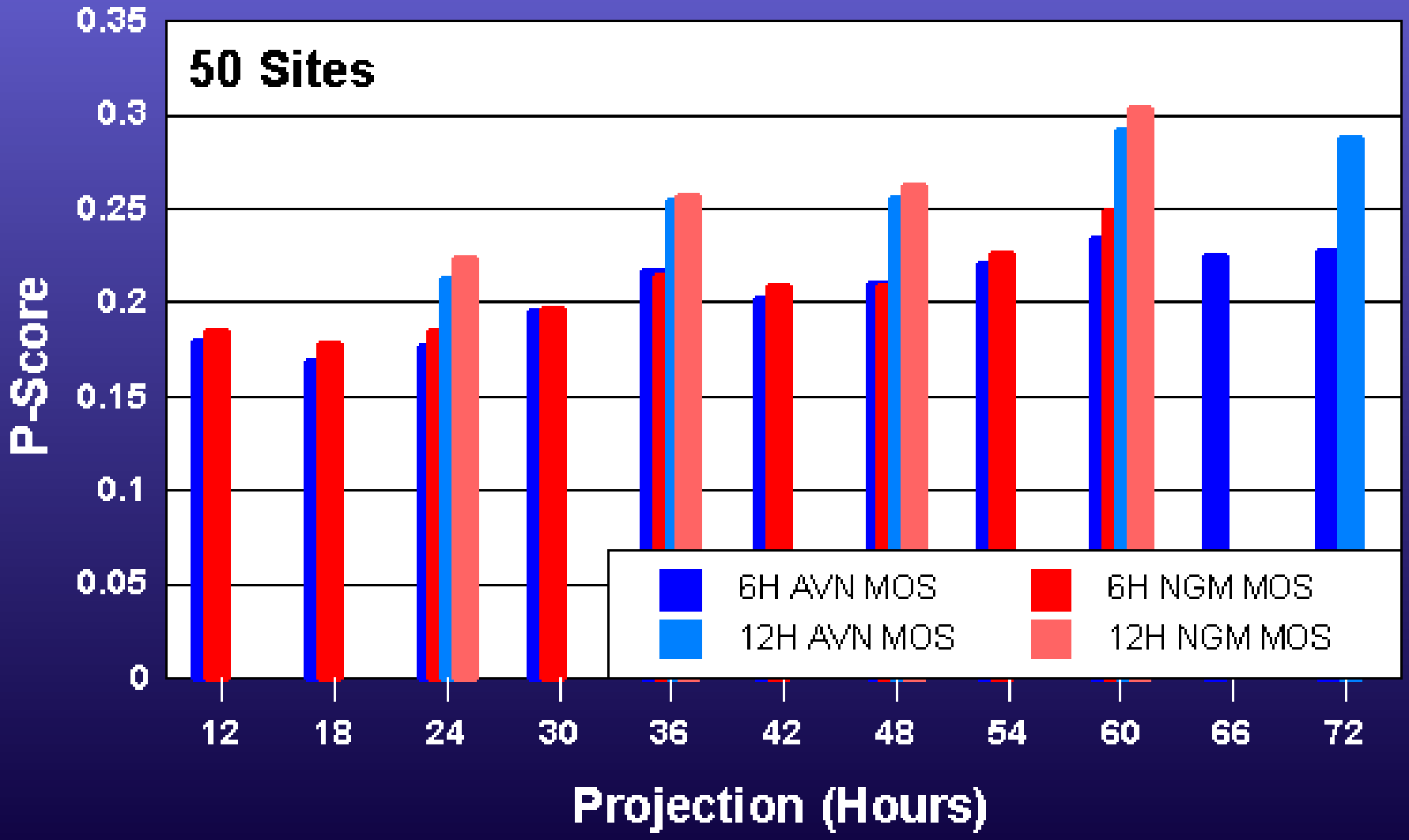
Warm Season PoP (Southeast)

Apr-July, 2000 0000 UTC Cycle



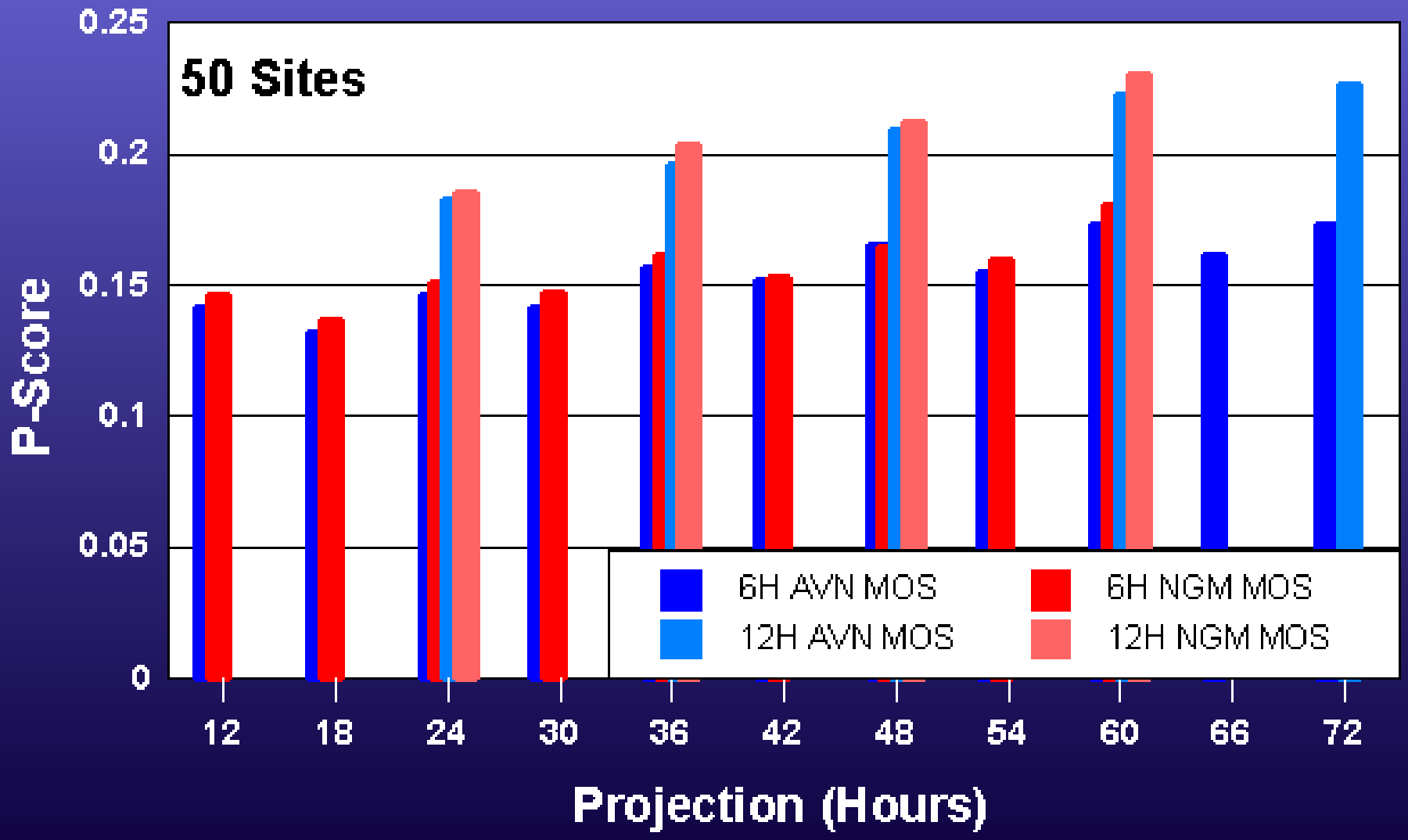
Warm Season PoP (Northcentral)

Apr-July, 2000 0000 UTC Cycle



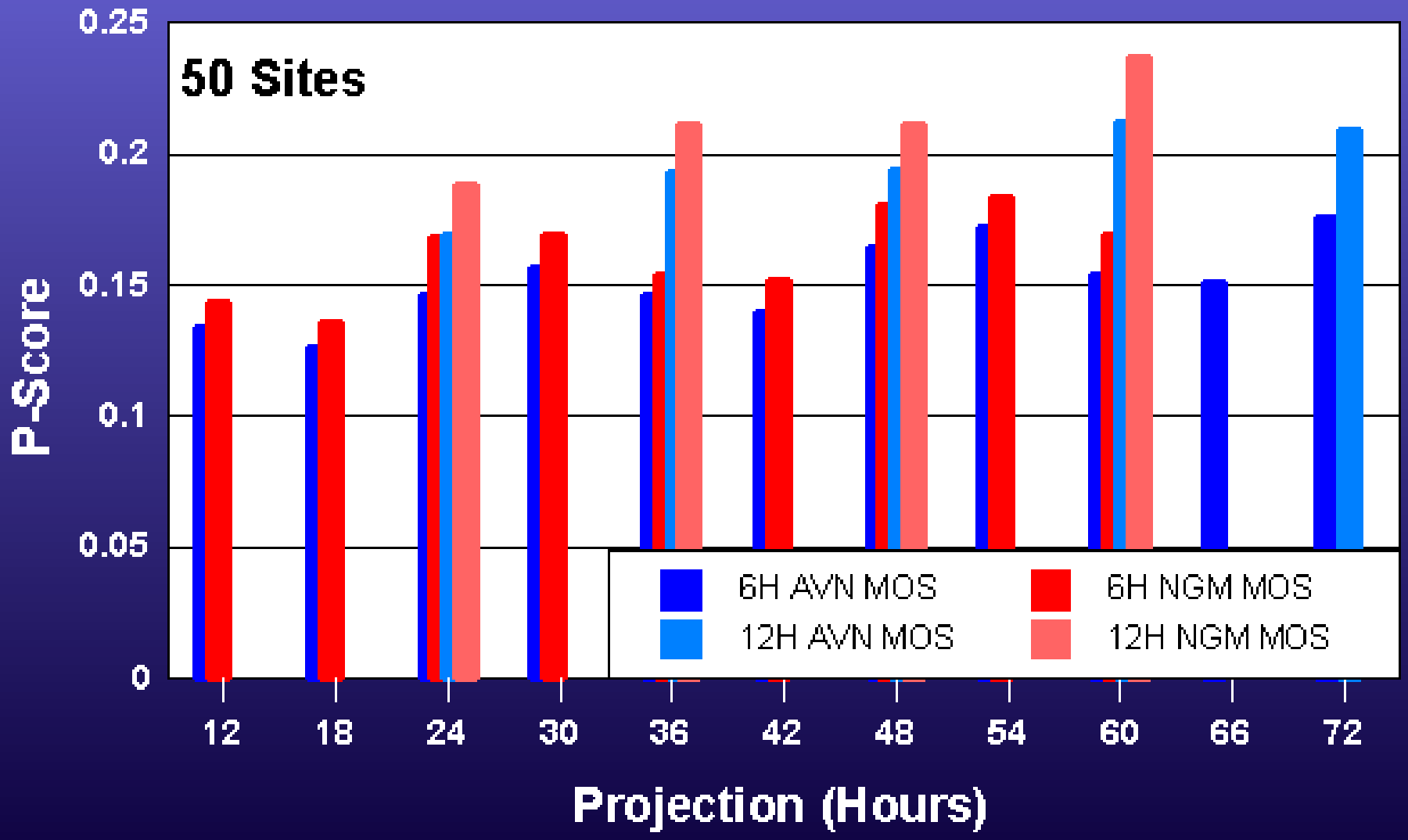
Warm Season PoP (Southcentral)

Apr-July, 2000 0000 UTC Cycle



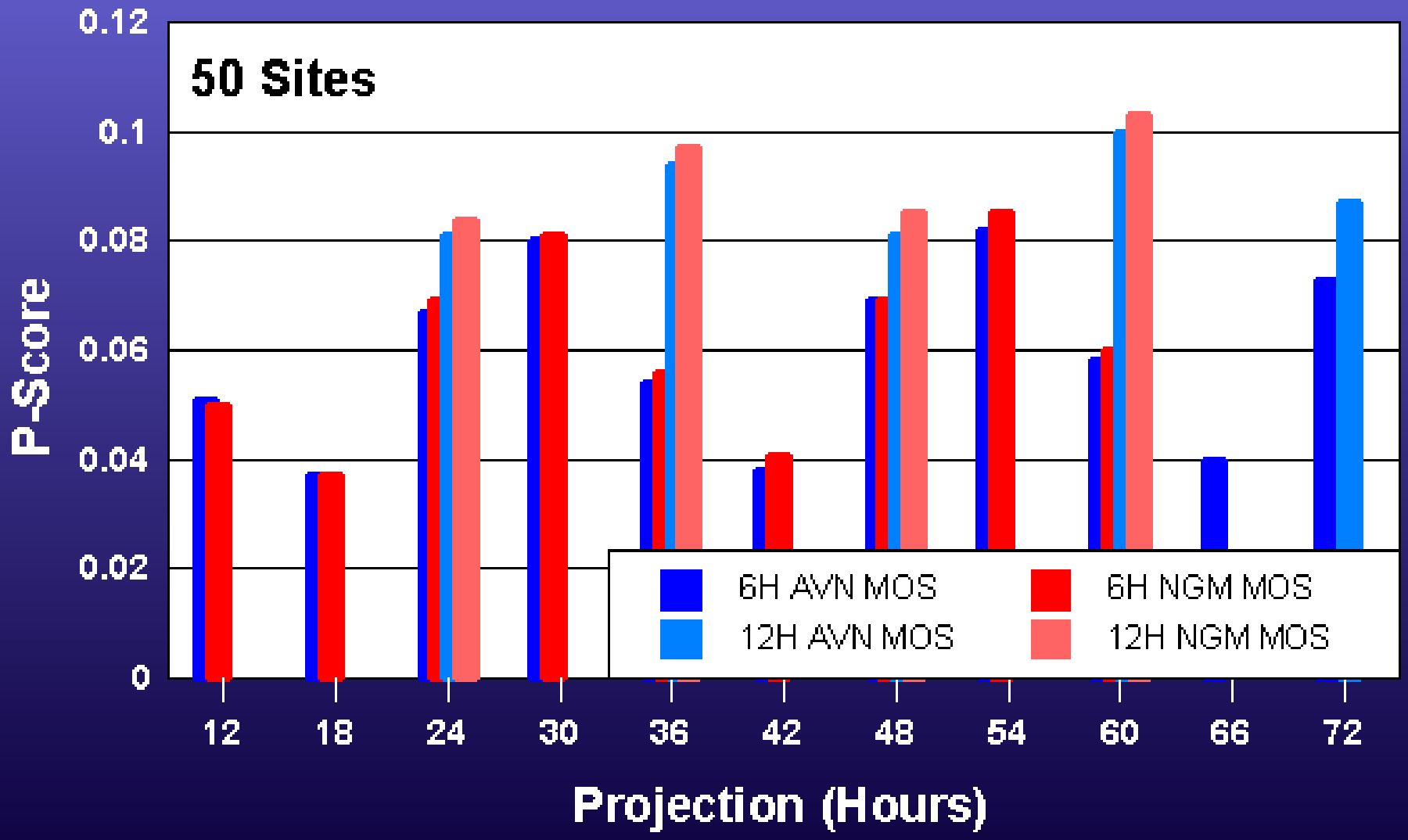
Warm Season PoP (Northwest)

Apr-July, 2000 0000 UTC Cycle



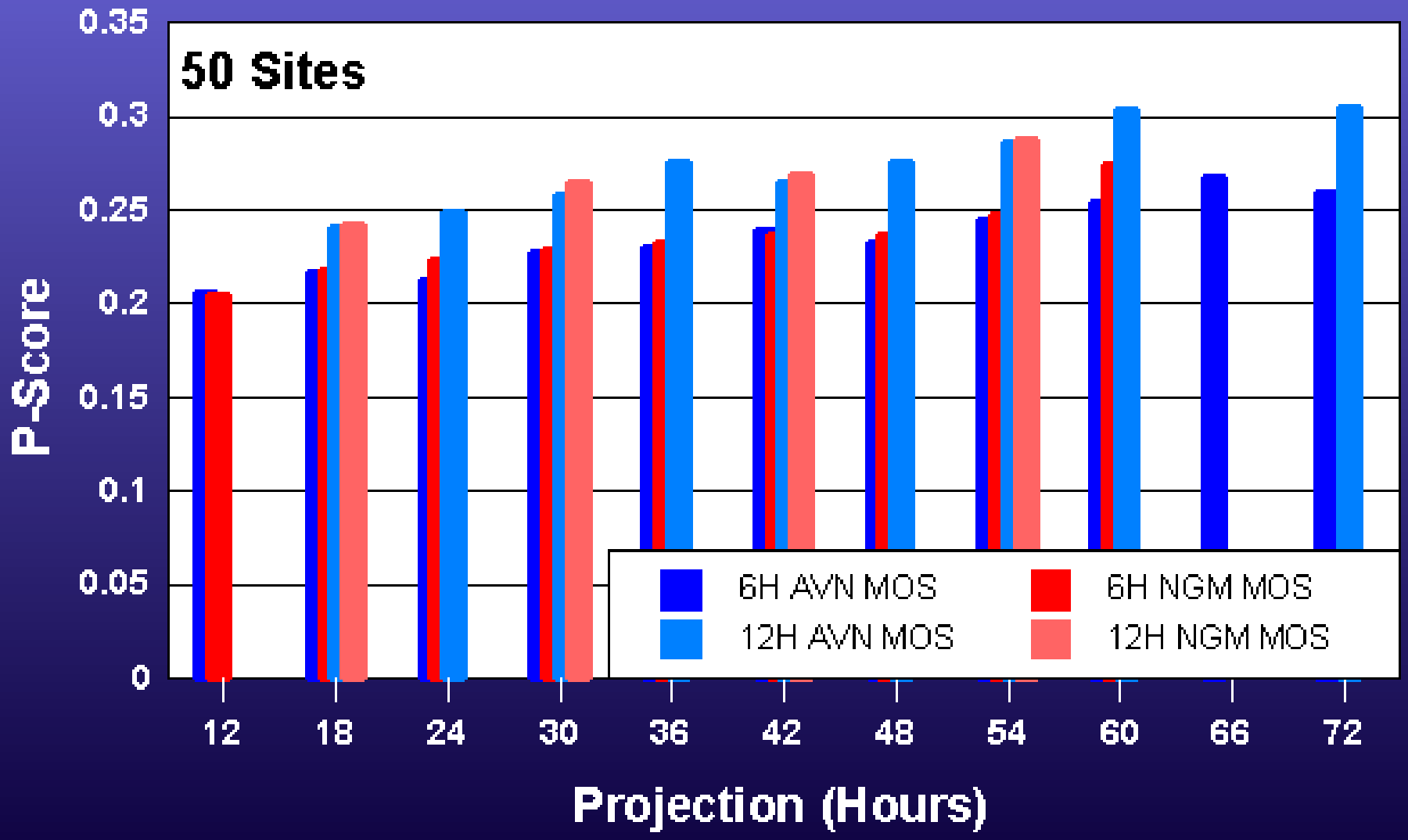
Warm Season PoP (Southwest)

Apr-July, 2000 0000 UTC Cycle



Warm Season PoP (Alaska)

Apr-July, 2000 0000 UTC Cycle



Warm-Season AVN MOS PoP Performance

A Summary

- **AVN MOS PoP outperforms NGM MOS in all regions at most every projection.**

  Overall 2-5% Improvement in P-score, Apr- July, 2000

- **Regional variations exist.**

  Diurnal variations in dry regions: SW,SE

  AVN Improvements greatest in NW;
  Smallest in NE , Alaska
  (Summer 2000?) (Data?)