

How long does it take to become a skillful forecaster?

- Determine whether a single forecasting laboratory is sufficient for students in the UW Atmospheric Sciences program
- Investigate whether proficiency is gained at different rates for different types of forecasts
- Rationale: Curriculum development



Basic Forecasts

Clouds, Wind & Temp.

(OKC, PIT, FAR, SEA)

Parameter	Categories
Ceiling	(Lo, Med, Hi)
Visibility	(Lo, Med, Hi)
Sky Cover	(CLR, SCT, BKN-OVC)
Wind Dir.	(0-40, 50-90, >90 degrees)
Wind Speed	(0-5, 6-10, 11-15, > 15 knots)
Temperature	(0-3,4-6,7-9,10-12,13-15,>15F)
Dew Point	(0-3,4-6,7-9,10-12,13-15,>15F)

All parameters evaluated at 12 UTC the next day

**Precipitation Forecasts
(OKC, PIT, FAR, SEA)**

Parameter	Scoring
Precipitation	Prob. in %; [Error/10] ²
Thunderstorm	Prob. in %; [Error/10] ²
QPF	(0-Tr,.01-.05,.06-.20,.21-.50, >.50) x 10

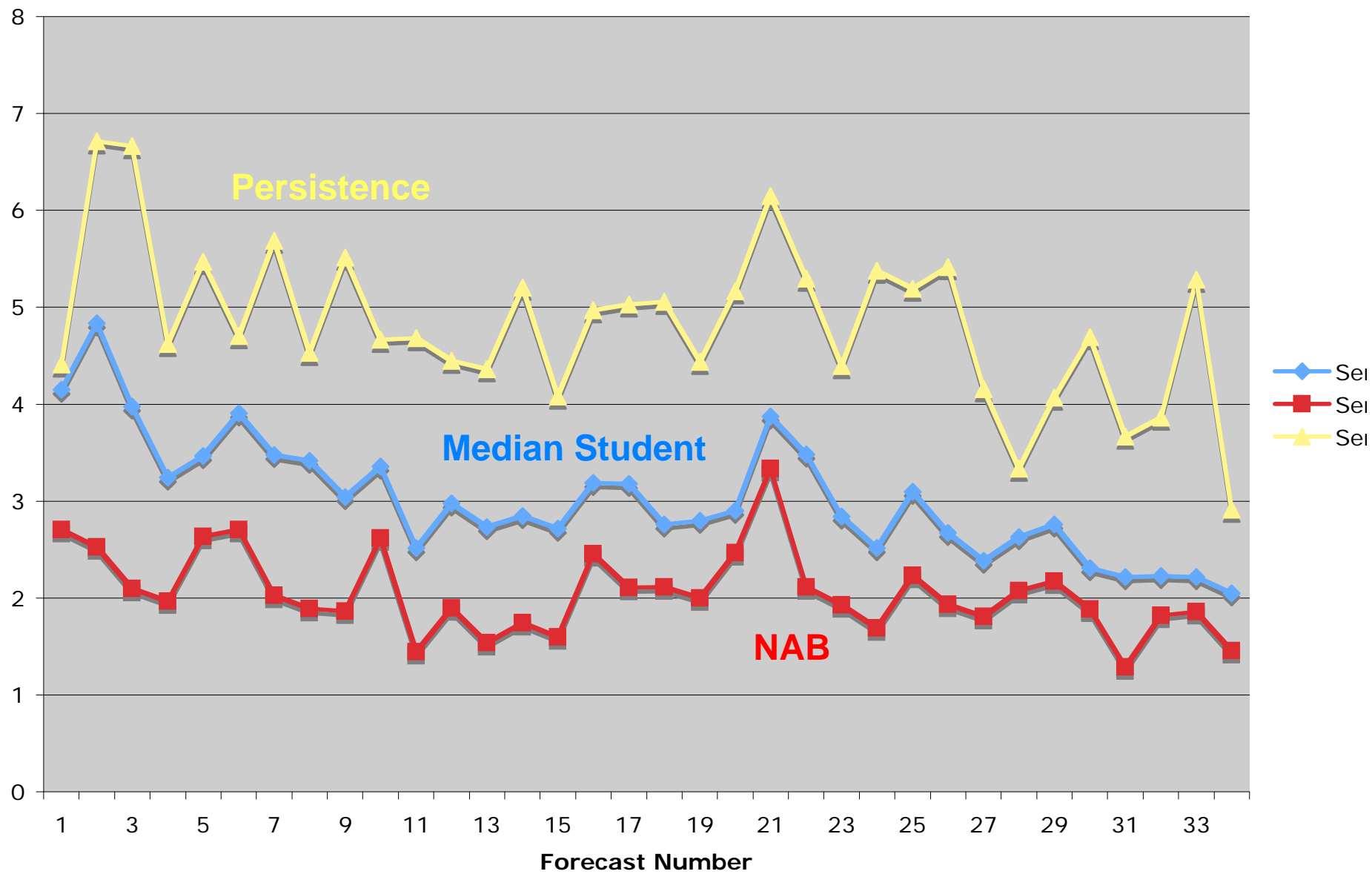
Forecast Period Š 06 through 18 UTC the next day

No MOS Allowed!

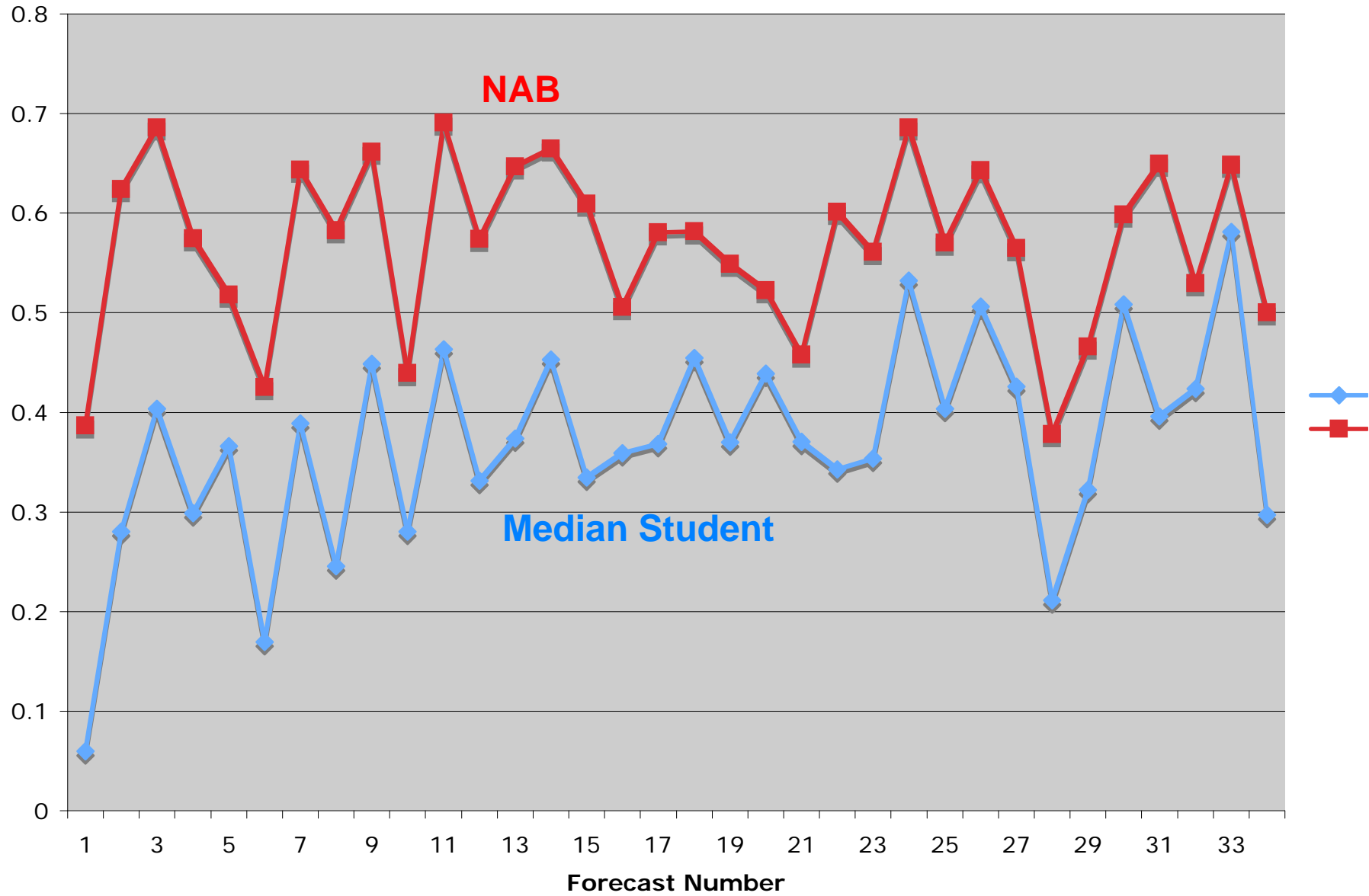
Procedure

- Analyzed daily forecast scores of students in ATMS 452 (1997-2007)
- Computed standardized skill over the course of the period of instruction
- Considered 3 types of forecasts (Clouds, Wind & Temperature; Precipitation; Local (SEA) Wx
- Assessed relationship between forecast prowess and academic standing

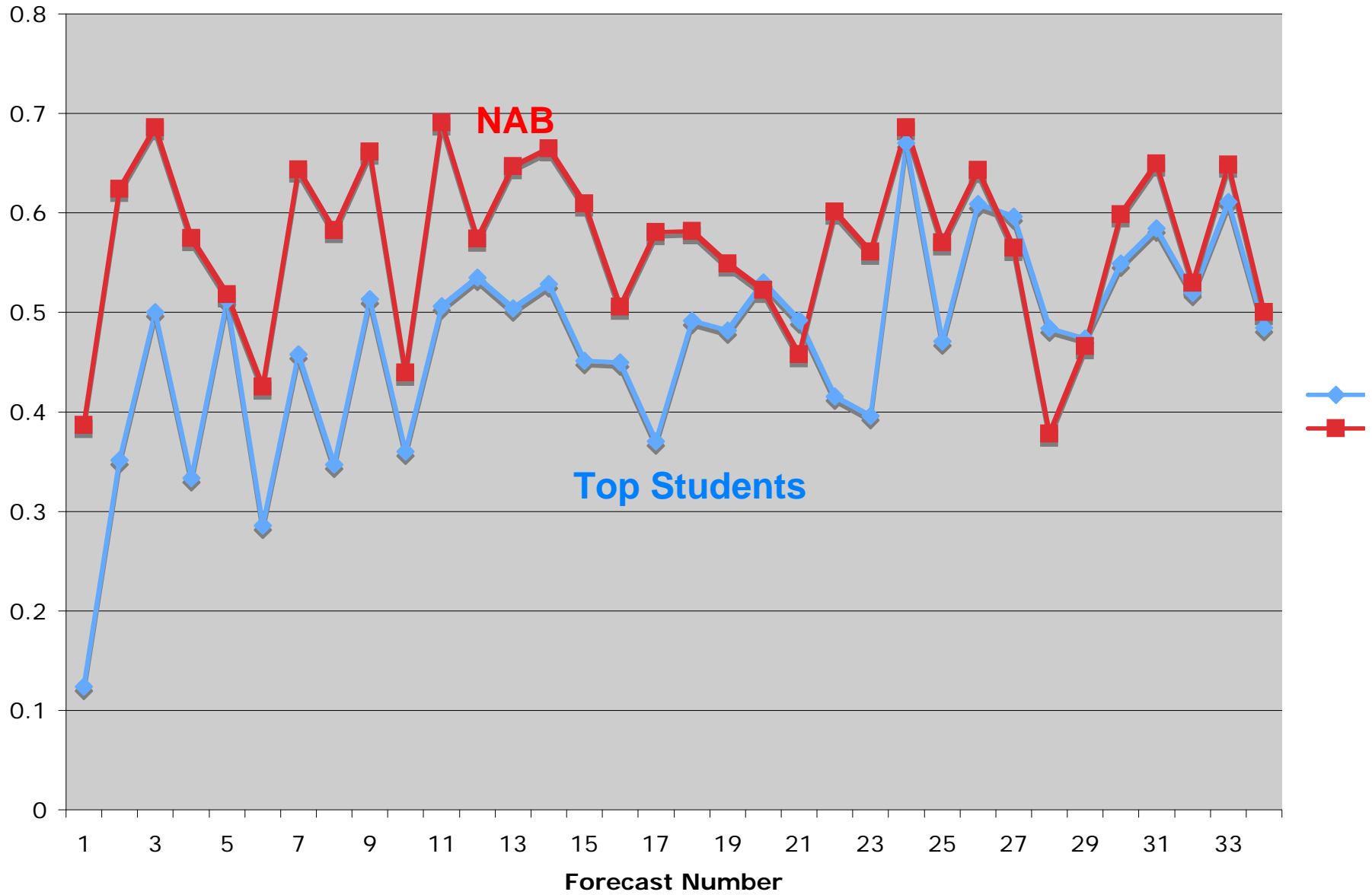
Composite Scores



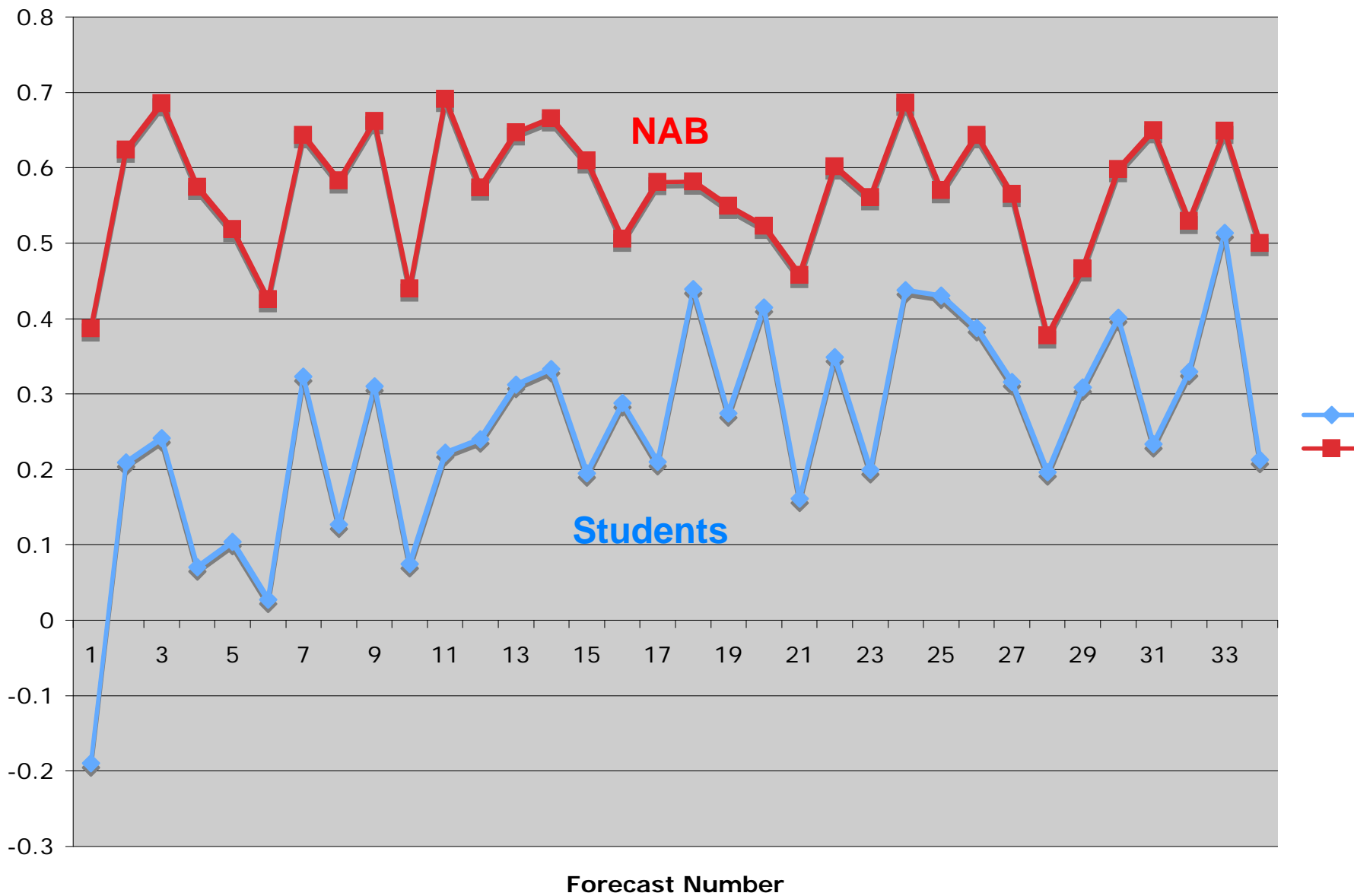
Composite Forecast Skill



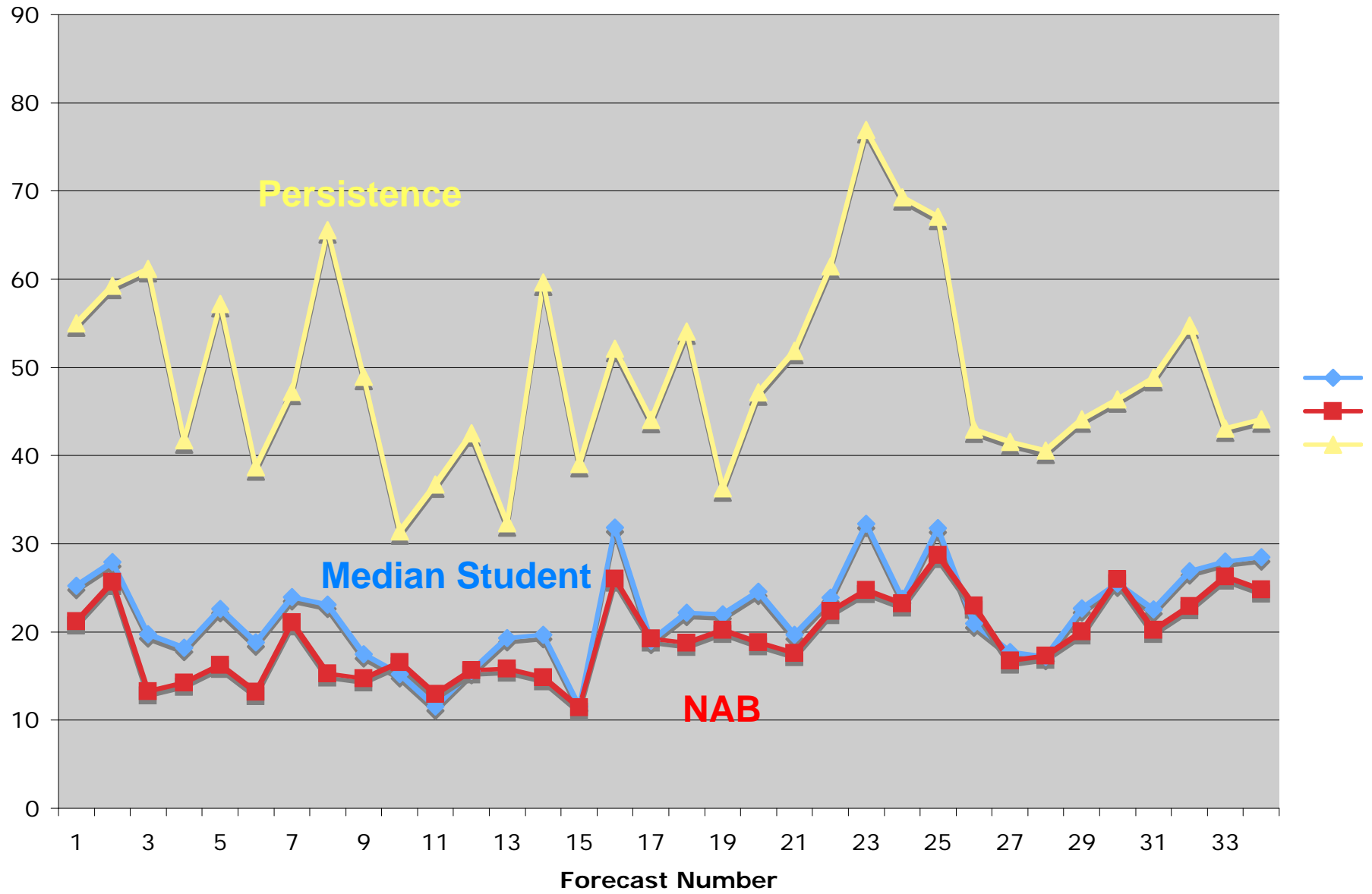
Composite Forecast Skill - Top Forecasters



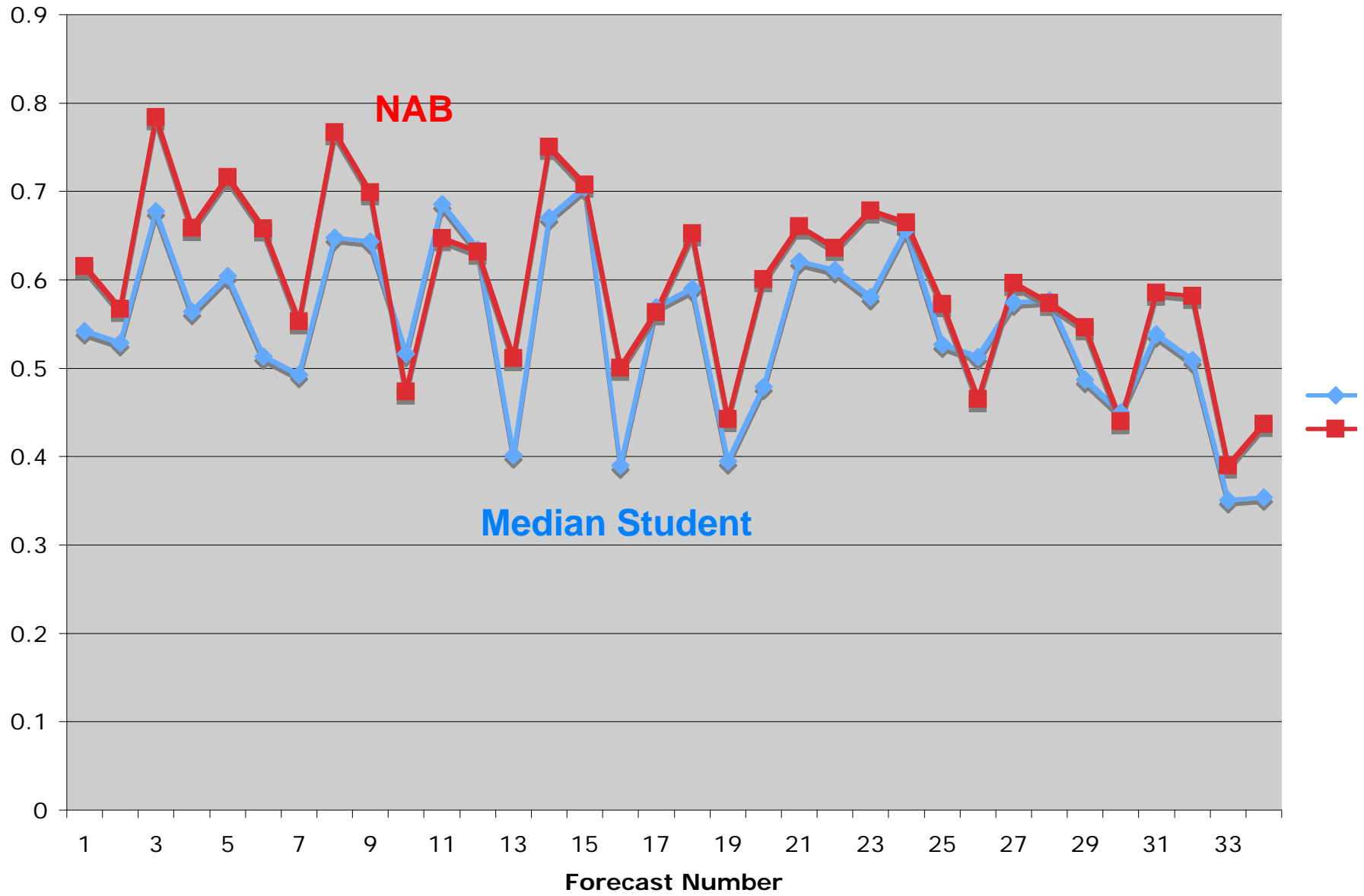
Composite Forecast Skill - Bottom Forecasters



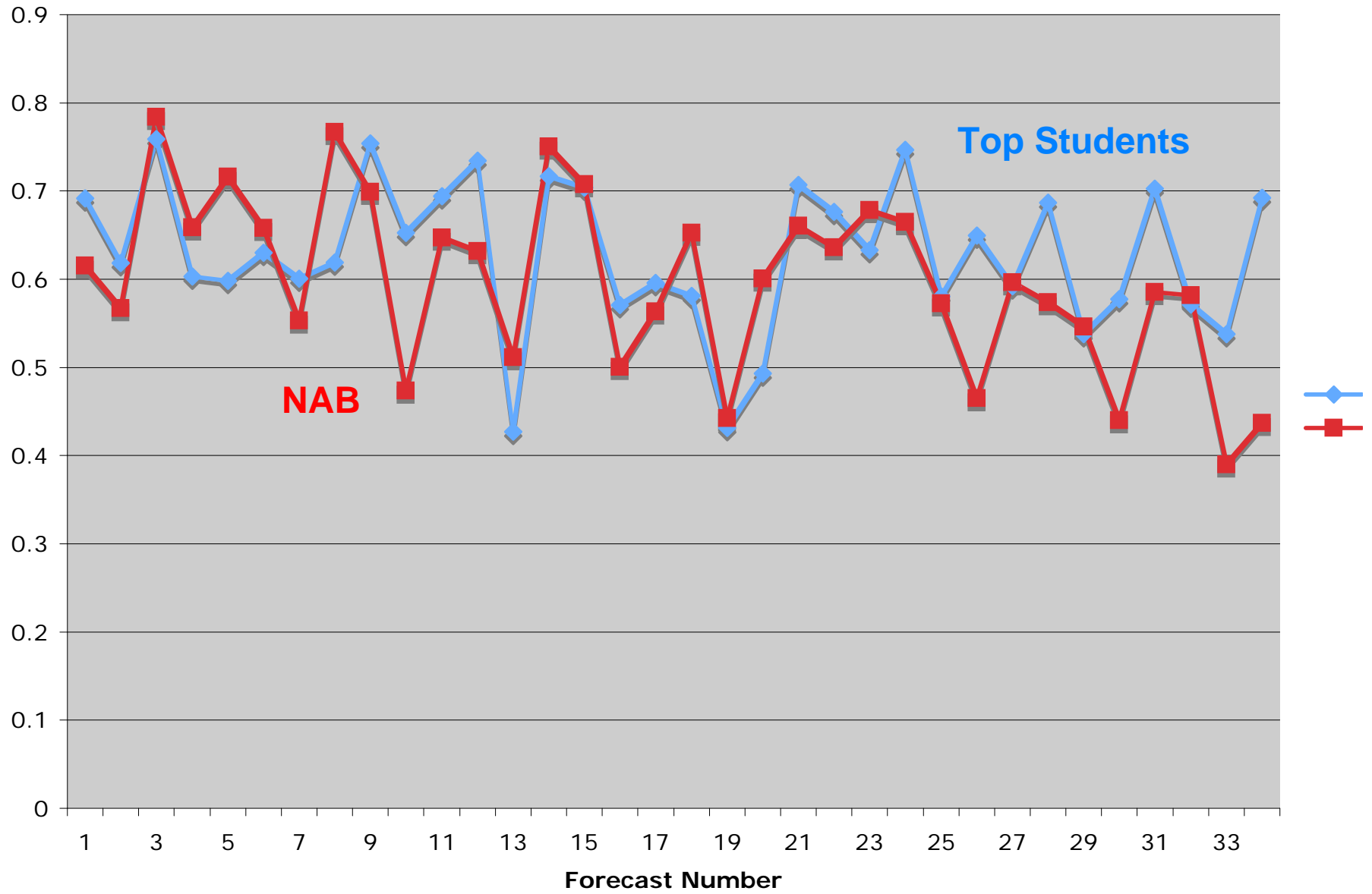
Composite Precipitation Forecast Points



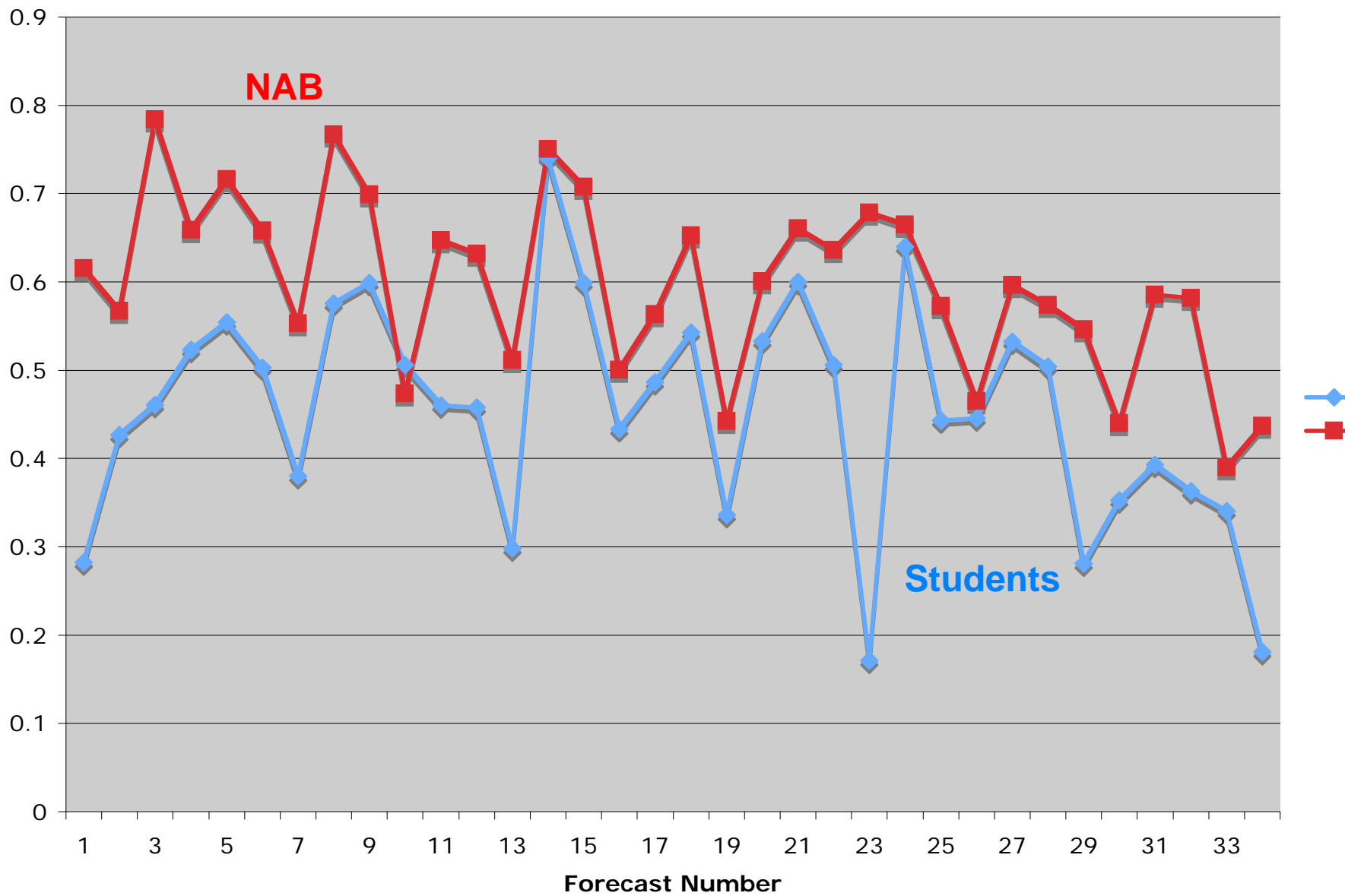
Composite Precipitation Forecast Skill



Composite Precipitation Skill - Top Forecasters



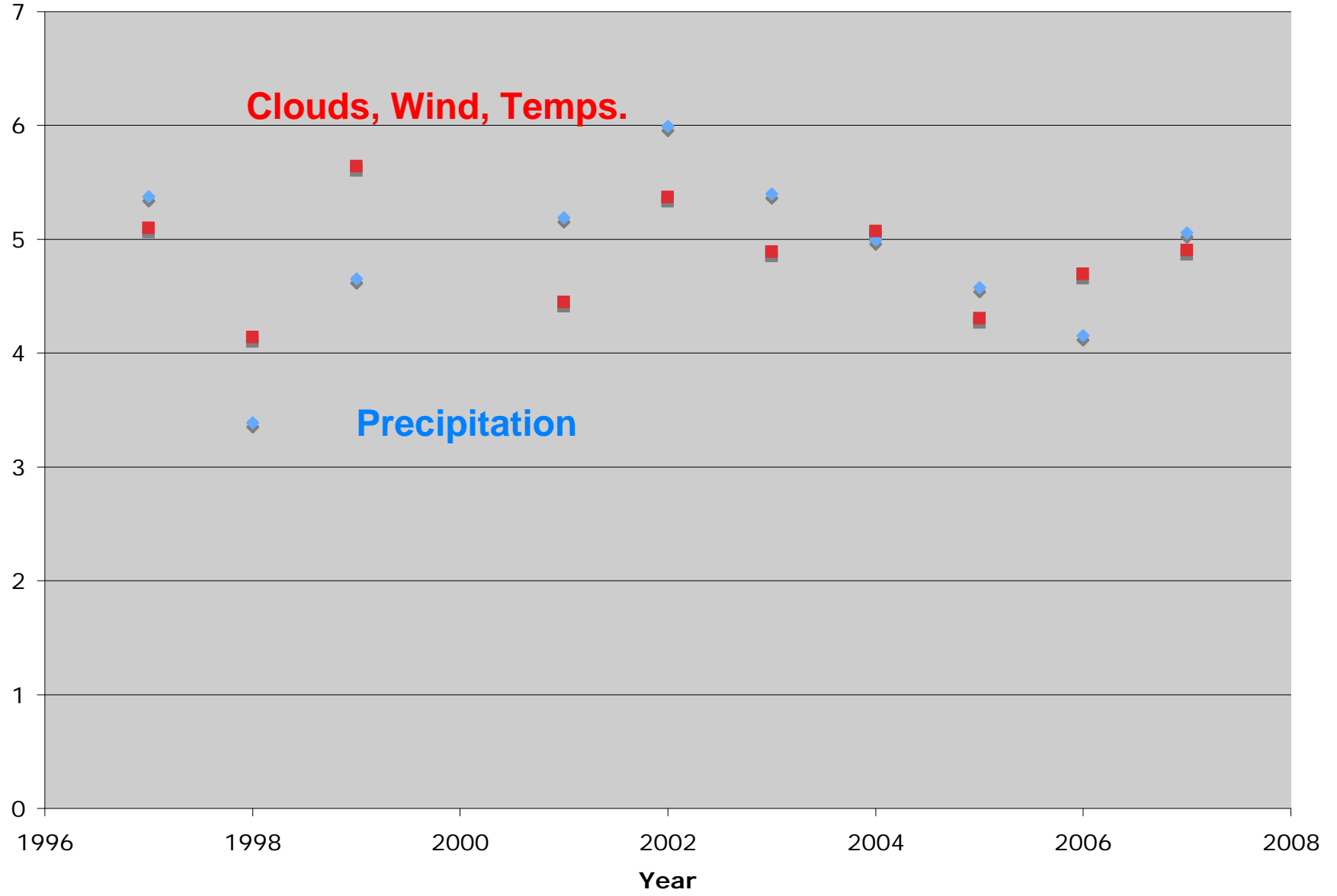
Composite Precipitation Skill - Bottom Forecasters



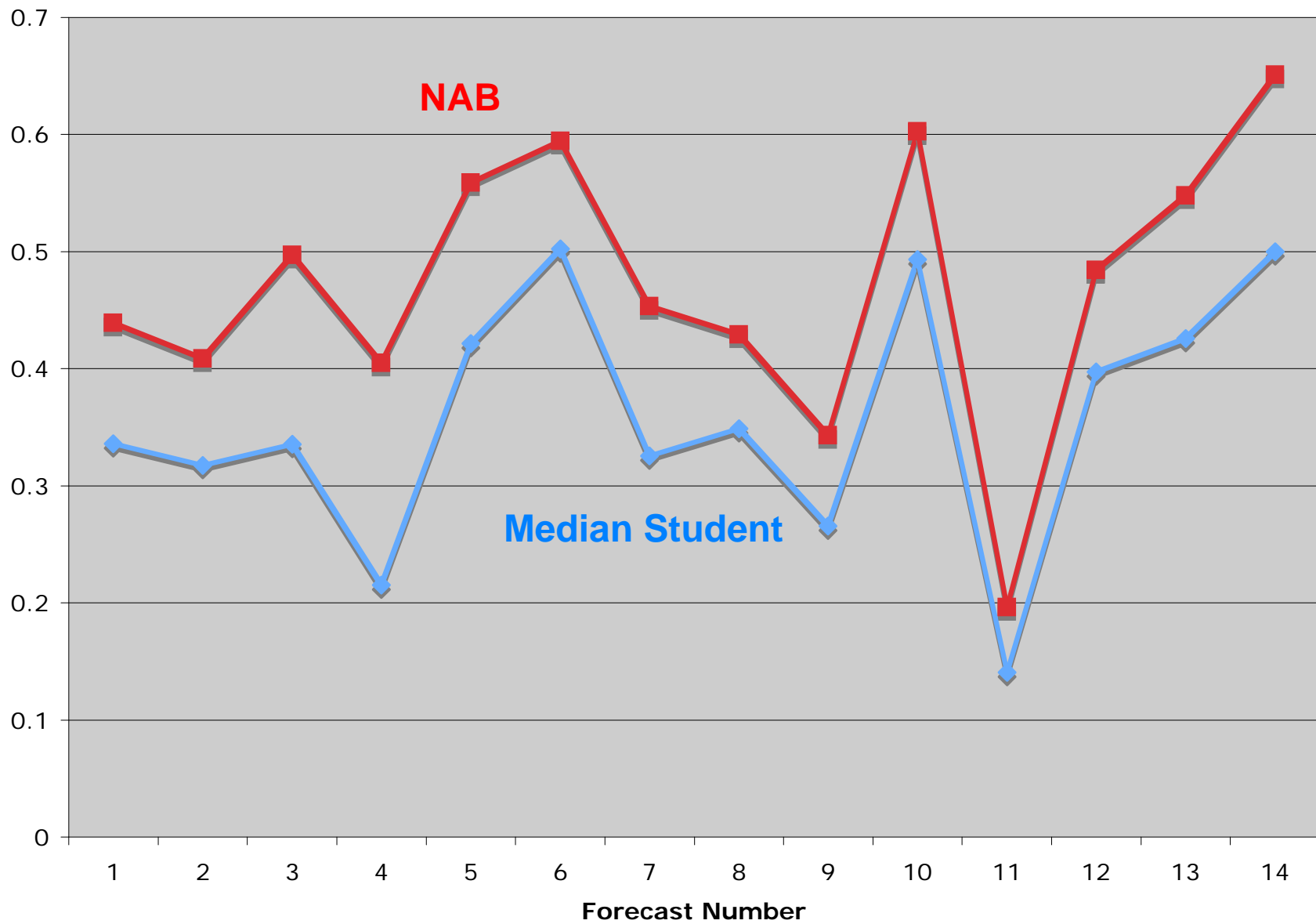
Maintaining the Role of Humans in the Forecast Process (BAMS, Dec. 2007)

- Intuitive scientists - innovative, creative and decisive
- Rule-based scientists - minimal creativity, reliance on guidance, less intuitive
- Procedure-based forecasters - confined to routines, little flexibility in unusual situations
- Procedure-based mechanics - concerned only about product formats and deadlines
- Disengaged - little interest in job

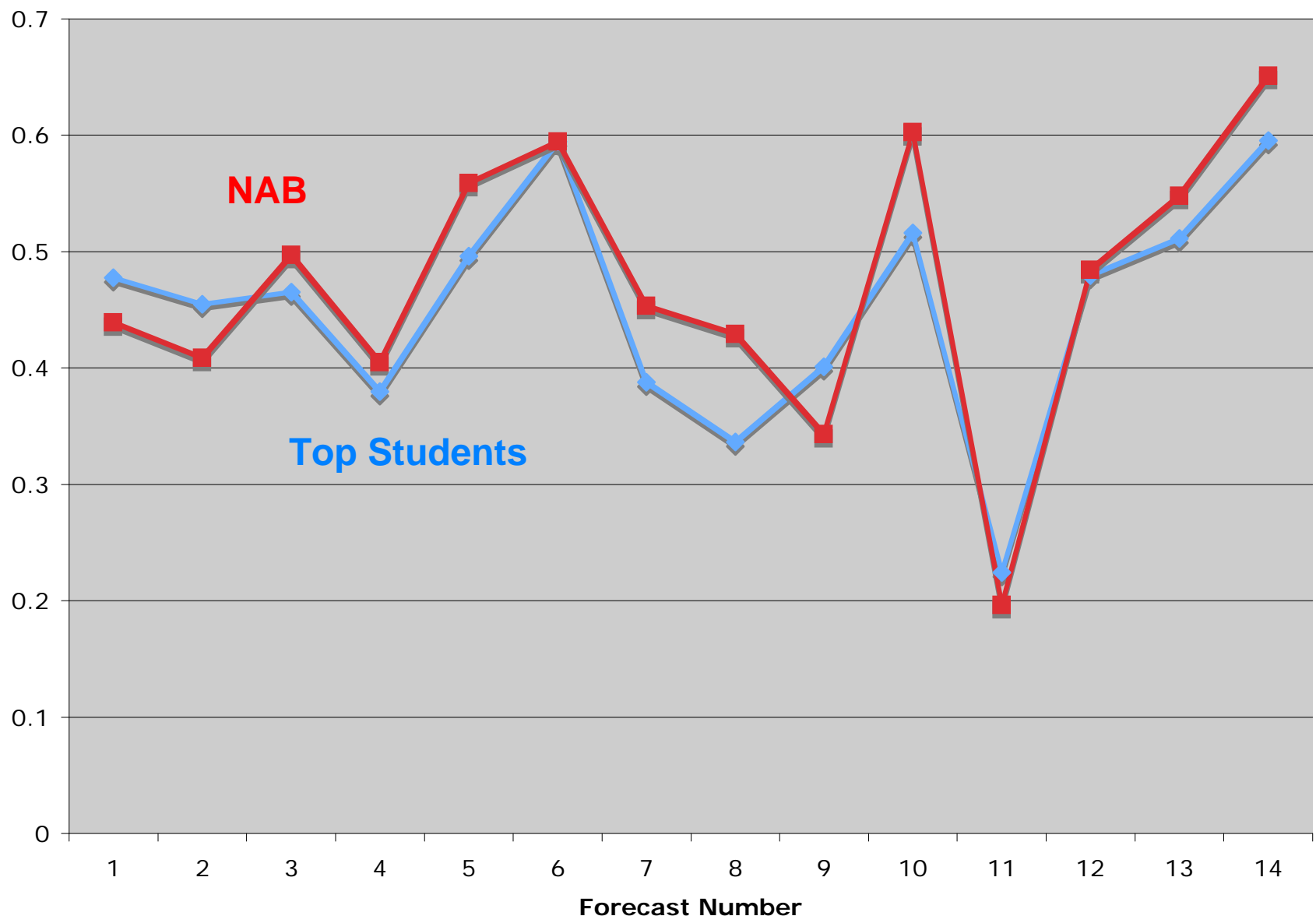
Average Persistence Score



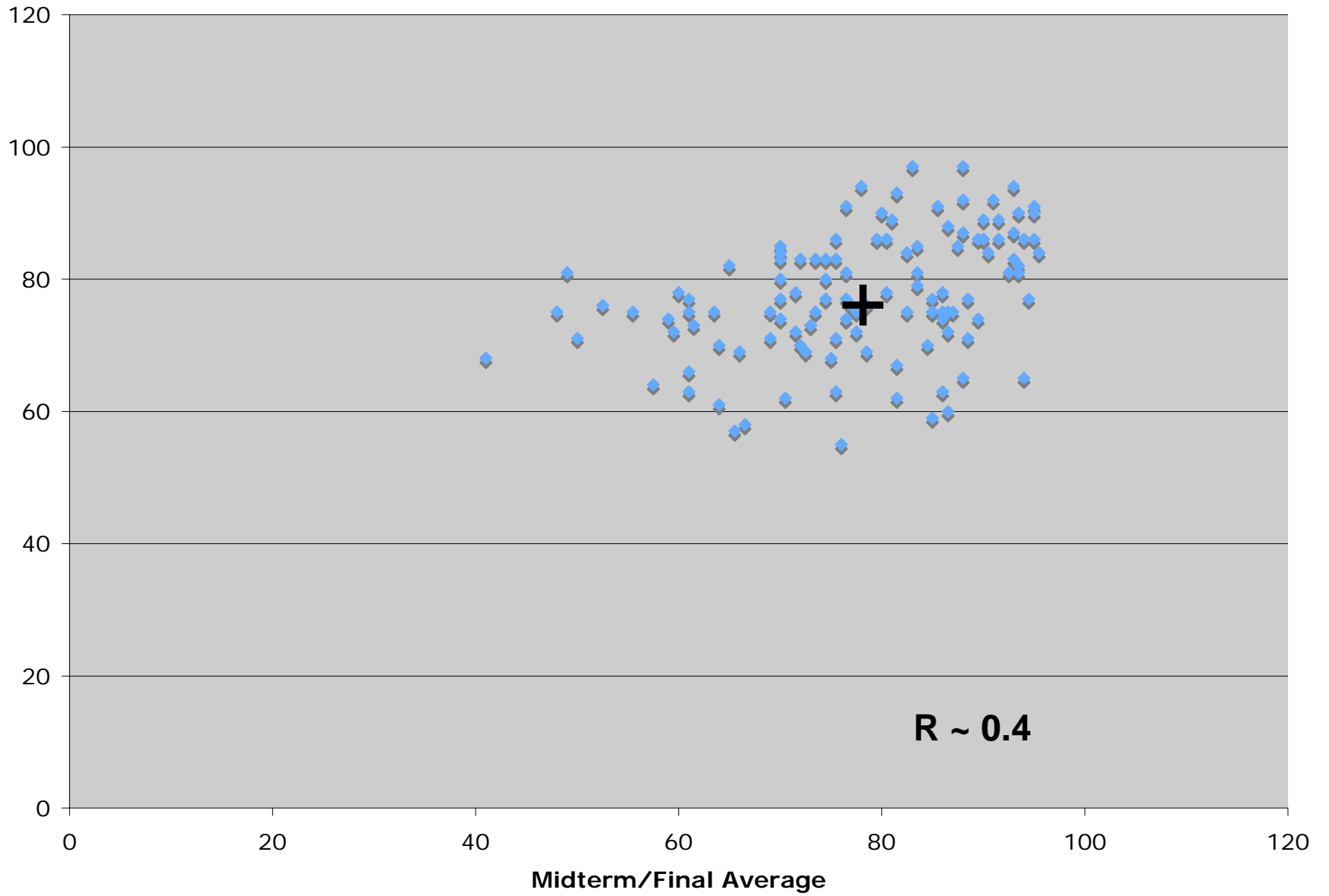
Composite Seattle Forecast Skill



Composite Seattle Skill - Top Forecasters



Forecast versus Test Grades



Interpretation of Results

- Local knowledge provides substantial pay-offs for short-term predictions of clouds, winds and temperatures
- The learning curve in forecasting precipitation is flat, presumably due to the quality of current NWP
- A single, intensive laboratory is sufficient for top students; additional instruction/practice would probably help most students
- The correspondence between forecast prowess and academic standing is modest