

Verification

Water Supply Forecasts

CBRFC - 10/2006

Basins

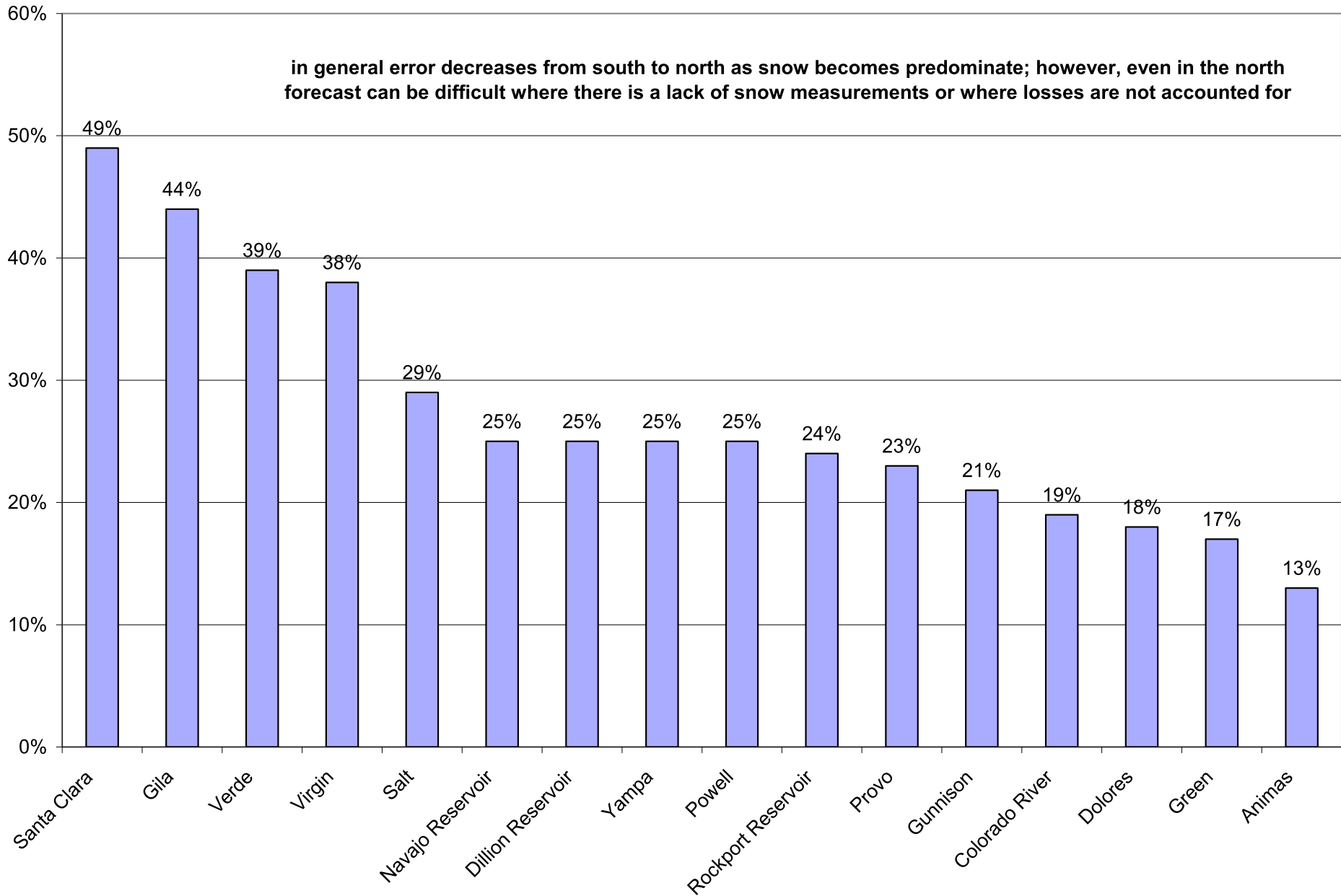
- Lower Colorado
- Virgin
- Eastern Great Basin
- San Juan
- Upper Colorado, Gunnison, Dolores
- Green
- Lake Powell

General Observations

- in general error decreases from south to north as snow becomes predominate; however, even in the north forecasting can be difficult where there is a lack of snow measurements or where losses are not accounted for.
- in general CBRFC water supply forecasts have improved over the years (we have been making water supply forecast since 1947).
- in general April-July water supply forecast improve from January through June.

Absolute Error as Percent for March

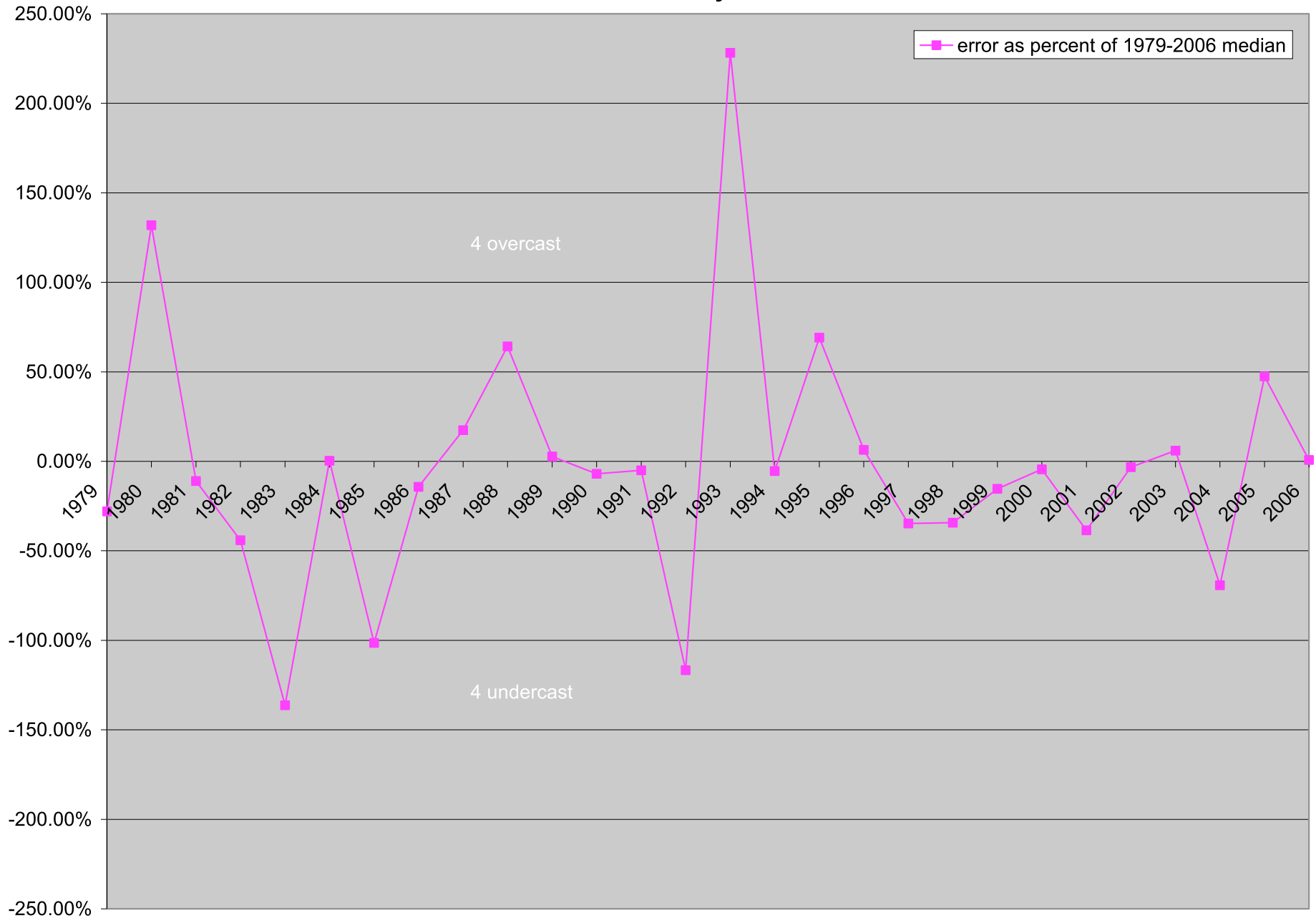
in general error decreases from south to north as snow becomes predominate; however, even in the north forecast can be difficult where there is a lack of snow measurements or where losses are not accounted for



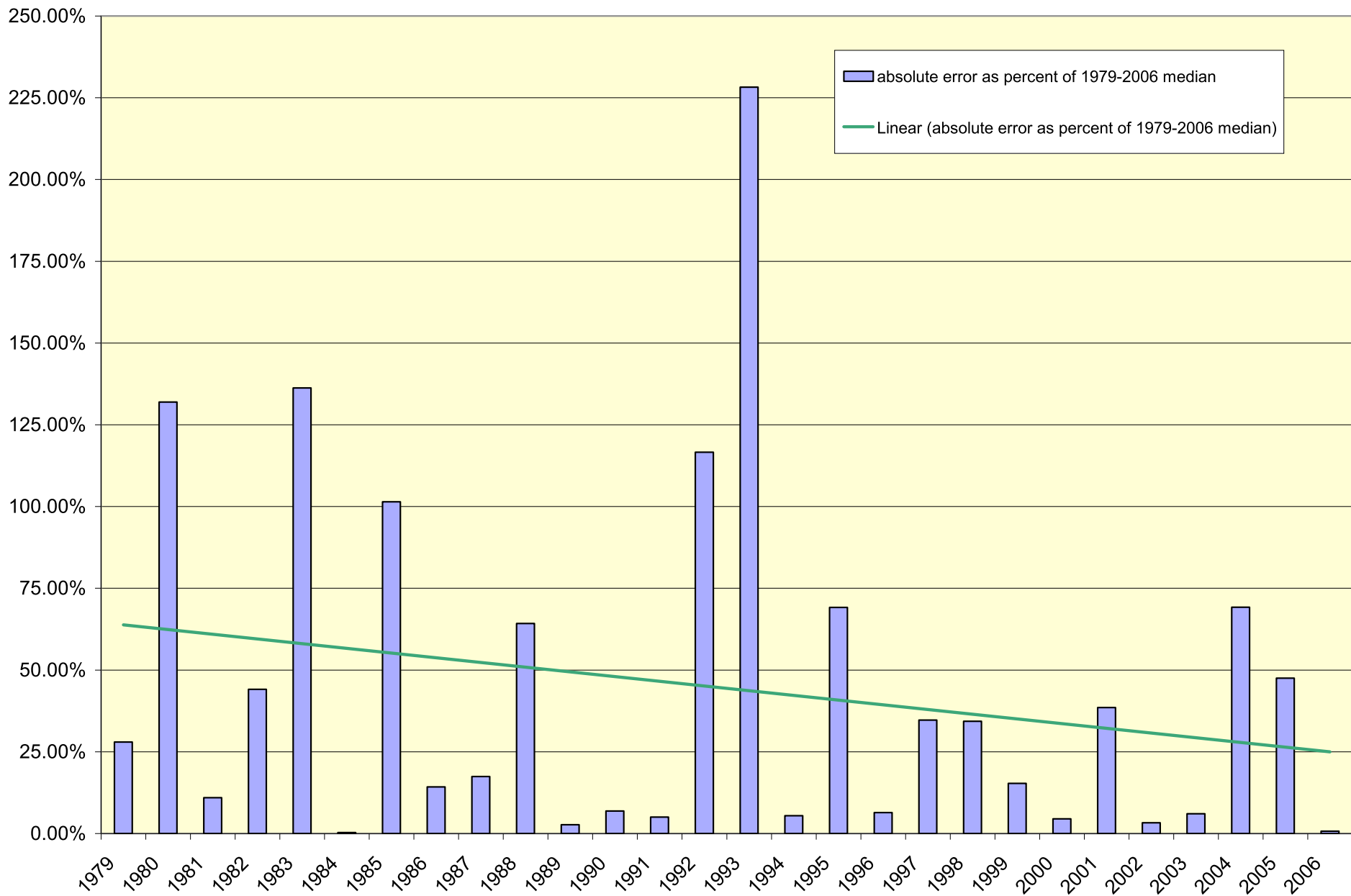
Lower Colorado

- Gila River near Solomon
- Salt River near Roosevelt
- Verde River above Horseshoe Dam

**Verification for Gila River near Solomon
forecast for March-May on March 1st**



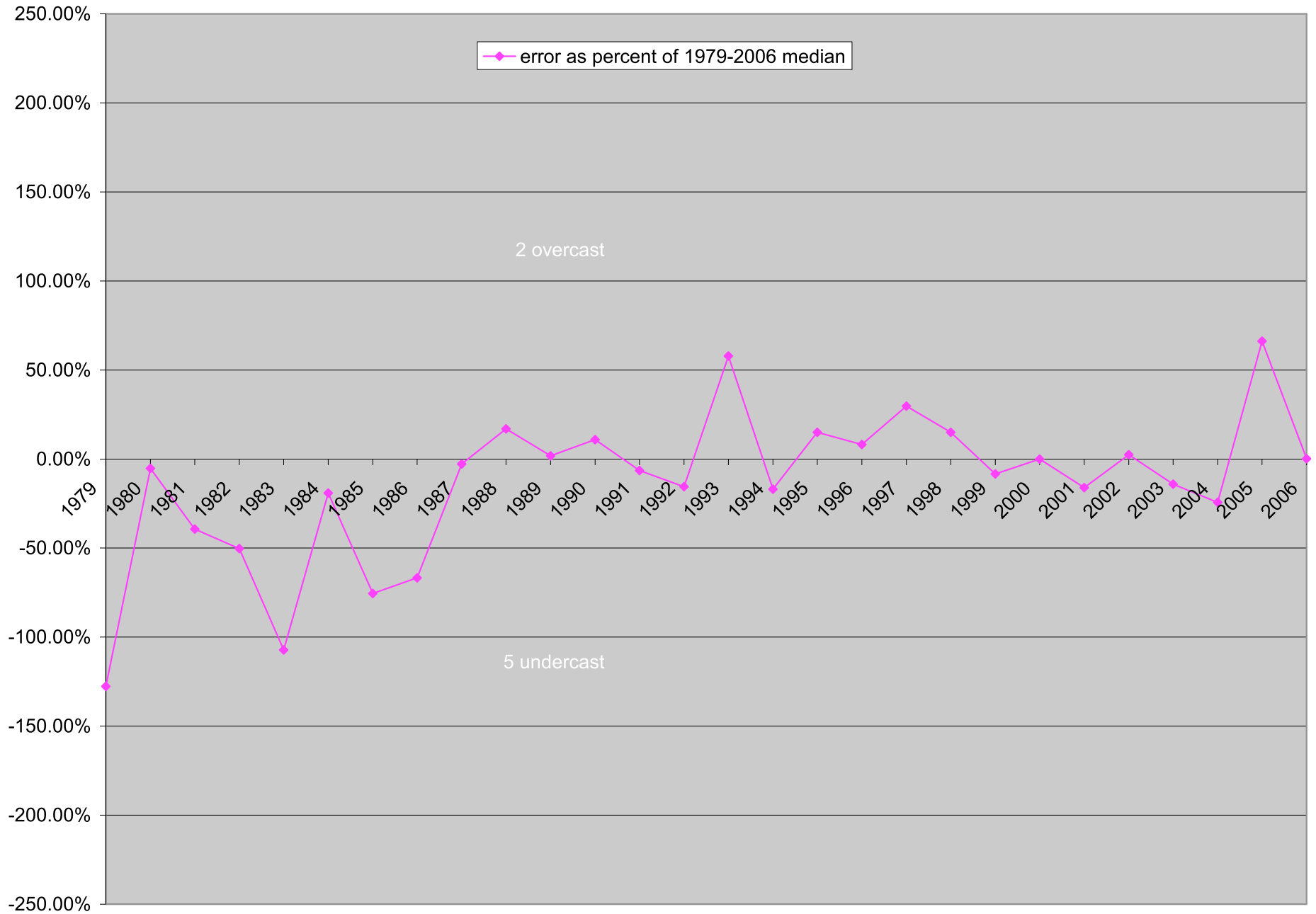
Verification for Gila River near Solomon forecast for March-May on March 1st



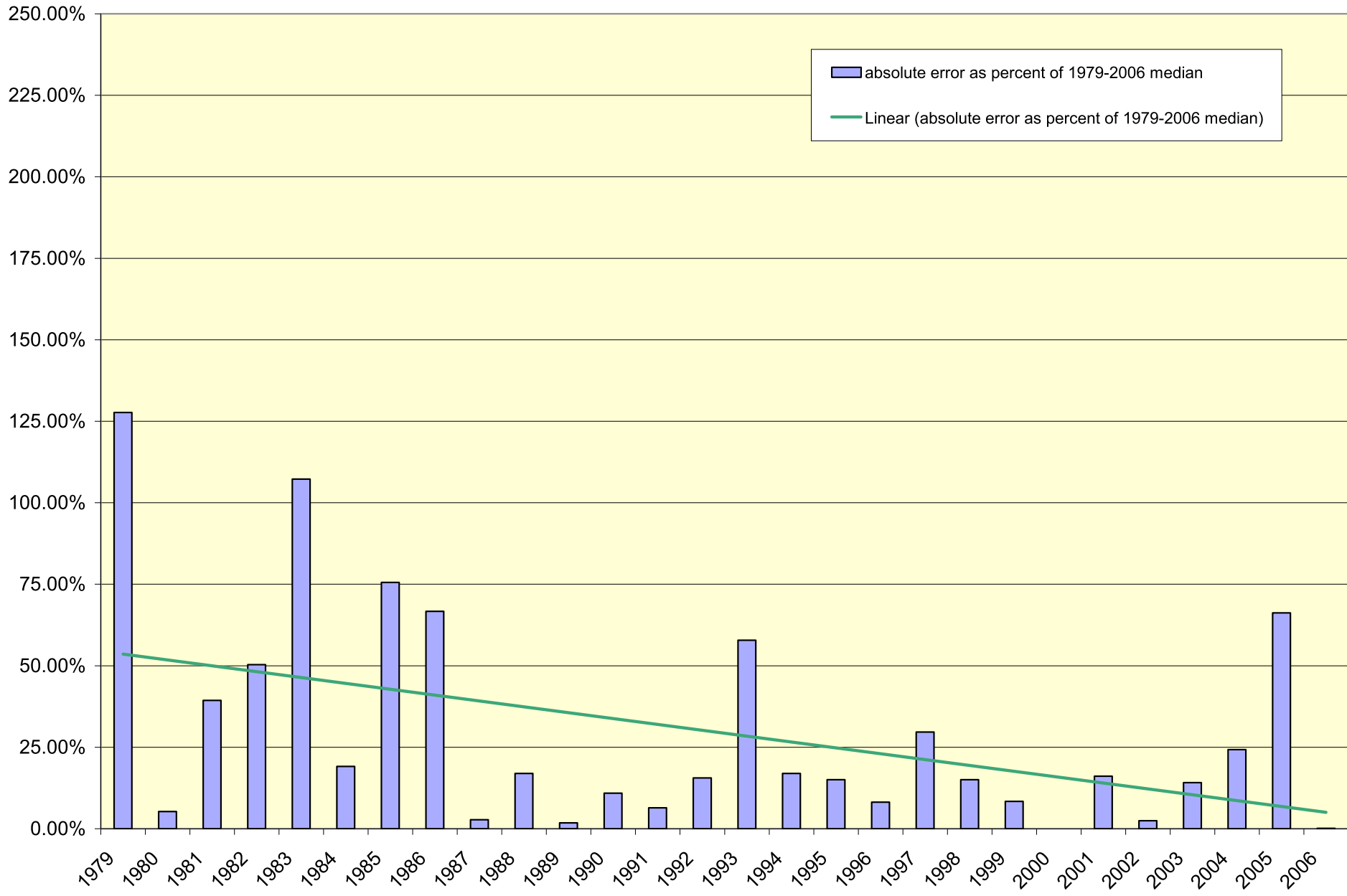
Summary for Gila near Solomon

- Average absolute error for forecast = 44.41%
- Average absolute error for climatology = 95.40%
- Average absolute error for persistence = 128.14%

Verification for Salt River near Roosevelt forecast for March-May on March 1st



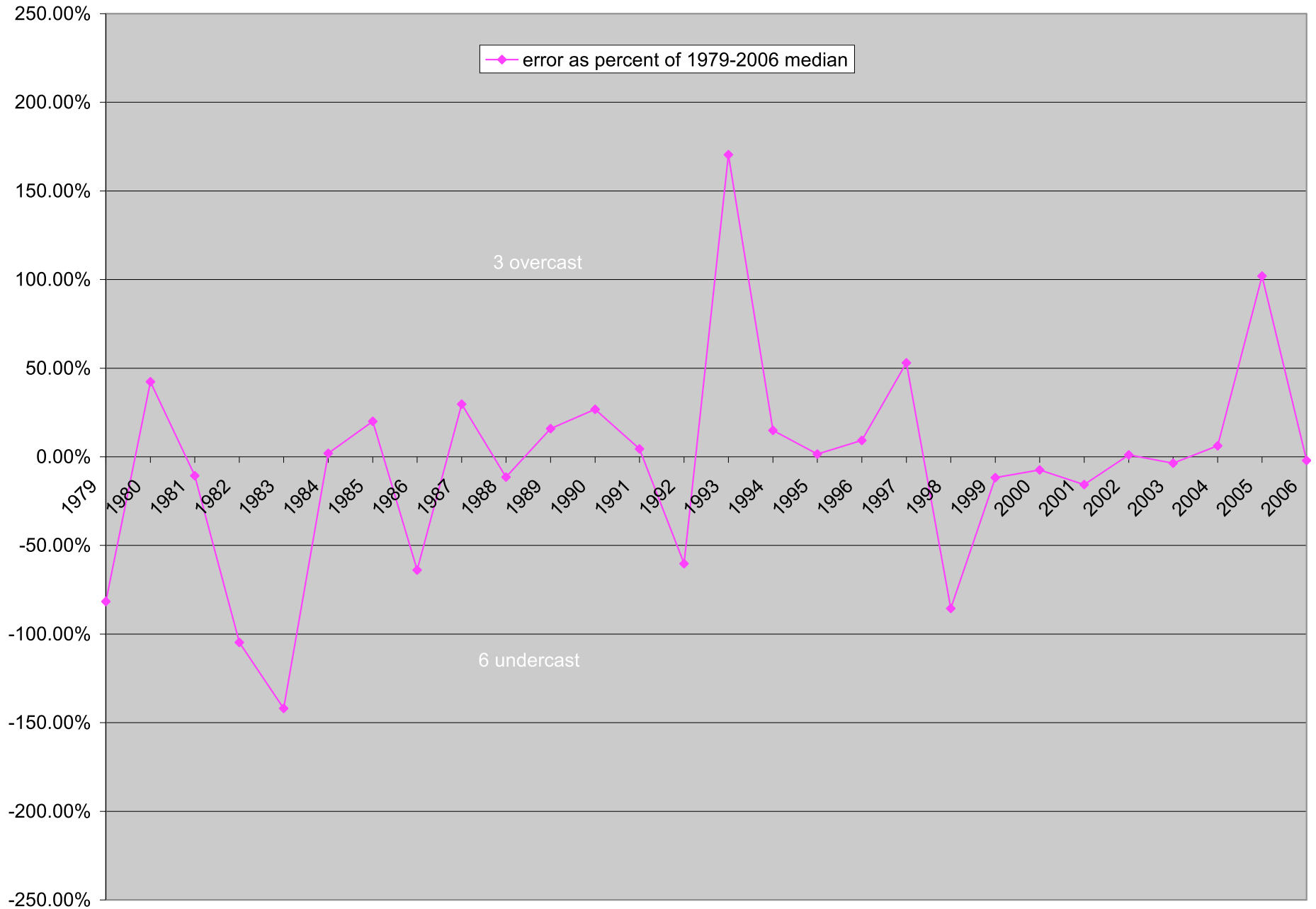
Verification for Salt River near Roosevelt forecast for March-May on March 1st



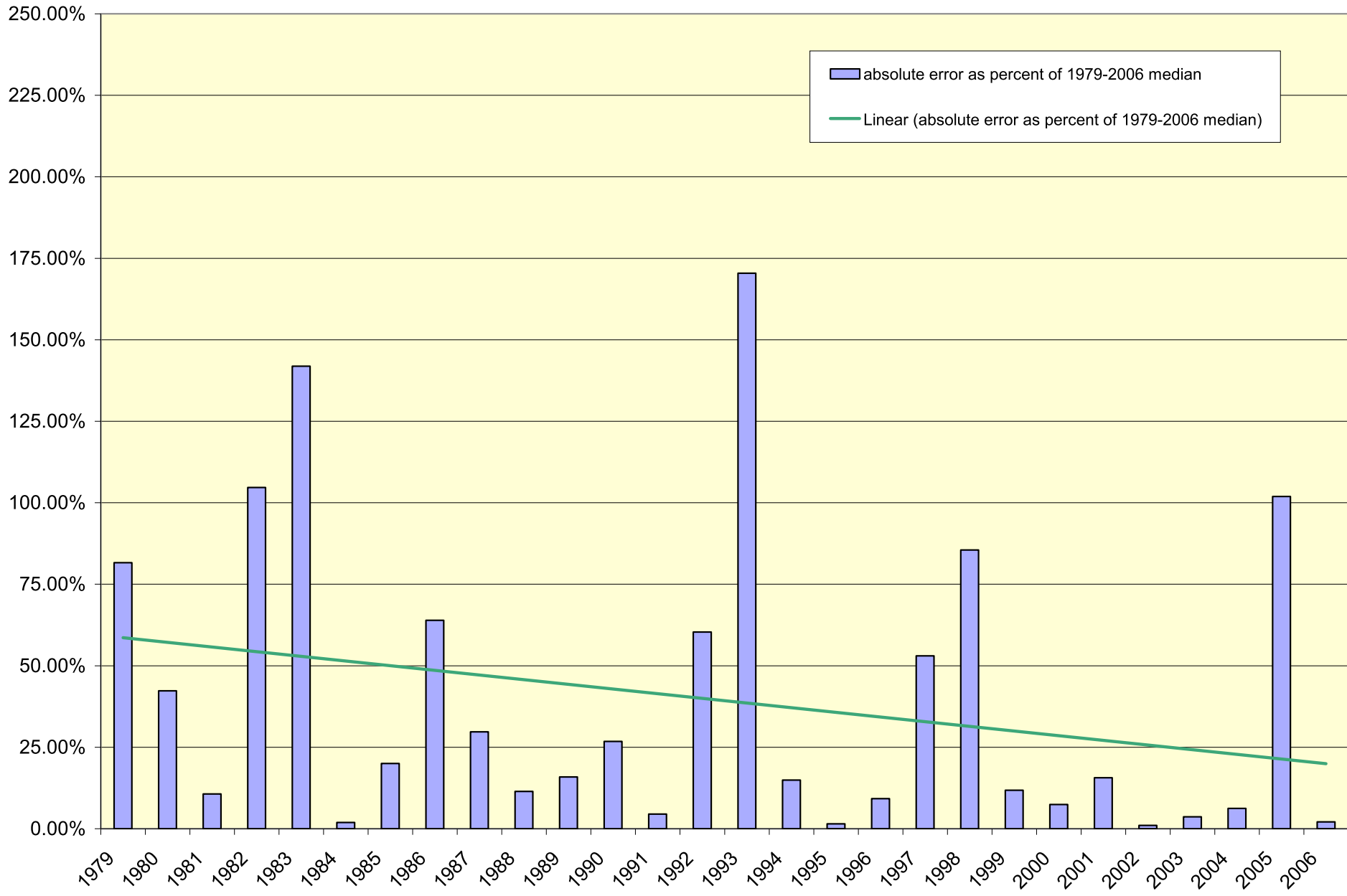
Summary for Salt near Roosevelt

- Average absolute error for forecast = 29.28%
- Average absolute error for climatology = 76.42%
- Average absolute error for persistence = 107.97%

Verification for Verde River above Horseshoe Dam forecast for March-May on March 1st



**Verification for Verde River above Horseshoe Dam
forecast for March-May on March 1st**



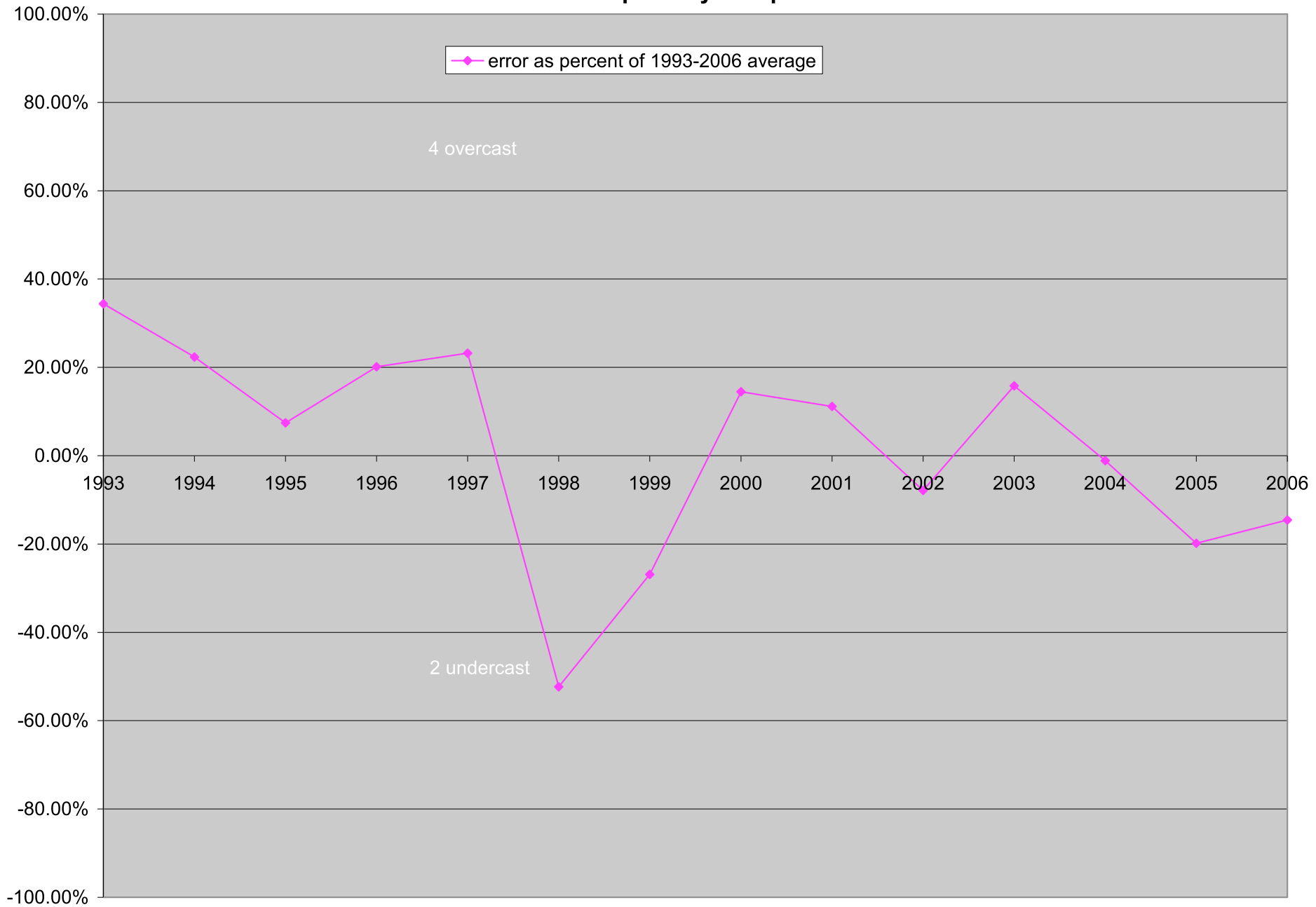
Summary for Verde above Horseshoe Dam

- Average absolute error for forecast = 39.00%
- Average absolute error for climatology = 72.28%
- Average absolute error for persistence = 101.51%

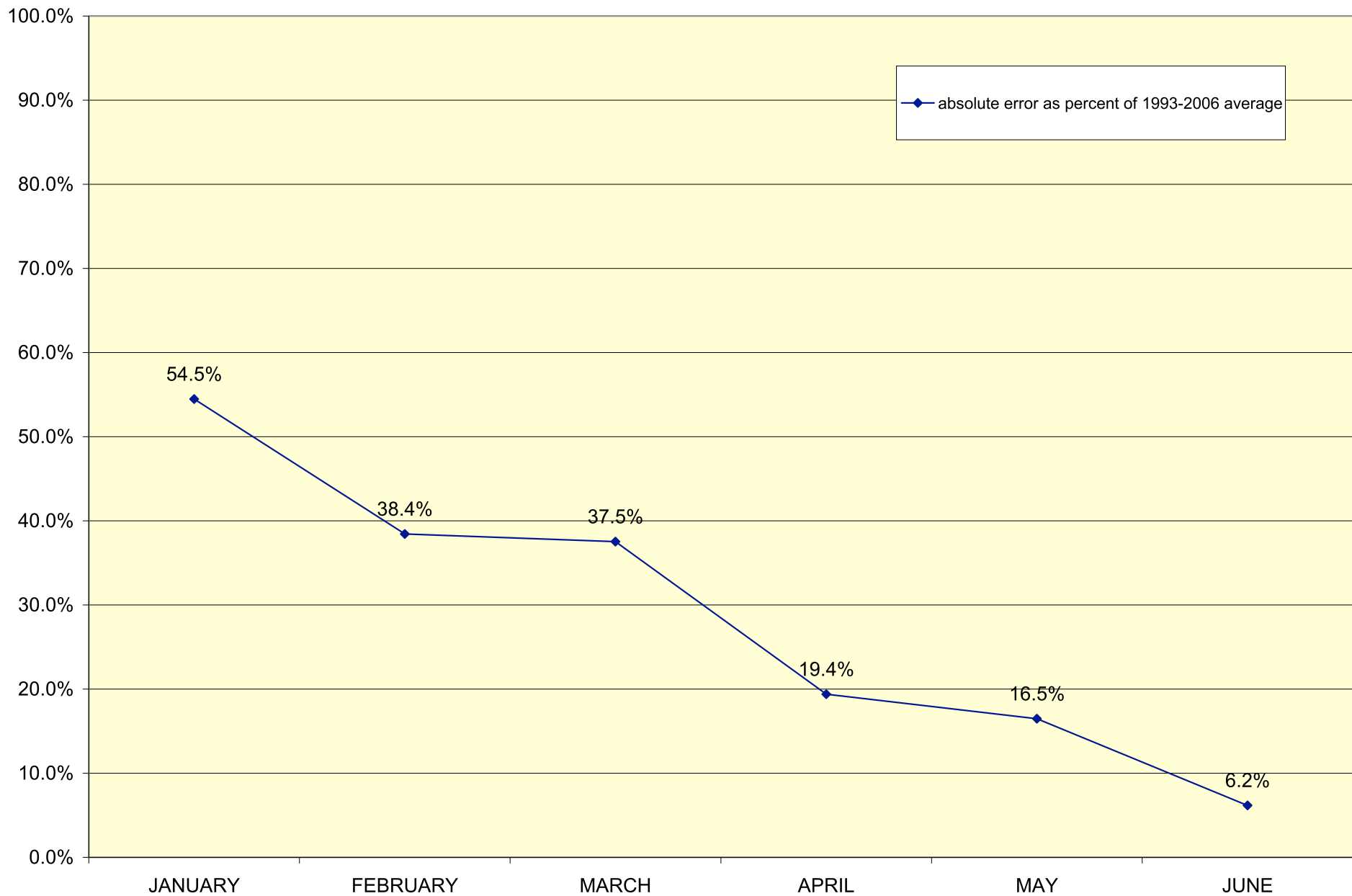
Virgin

- Virgin River at Virgin
- Santa Clara River near Pine Valley

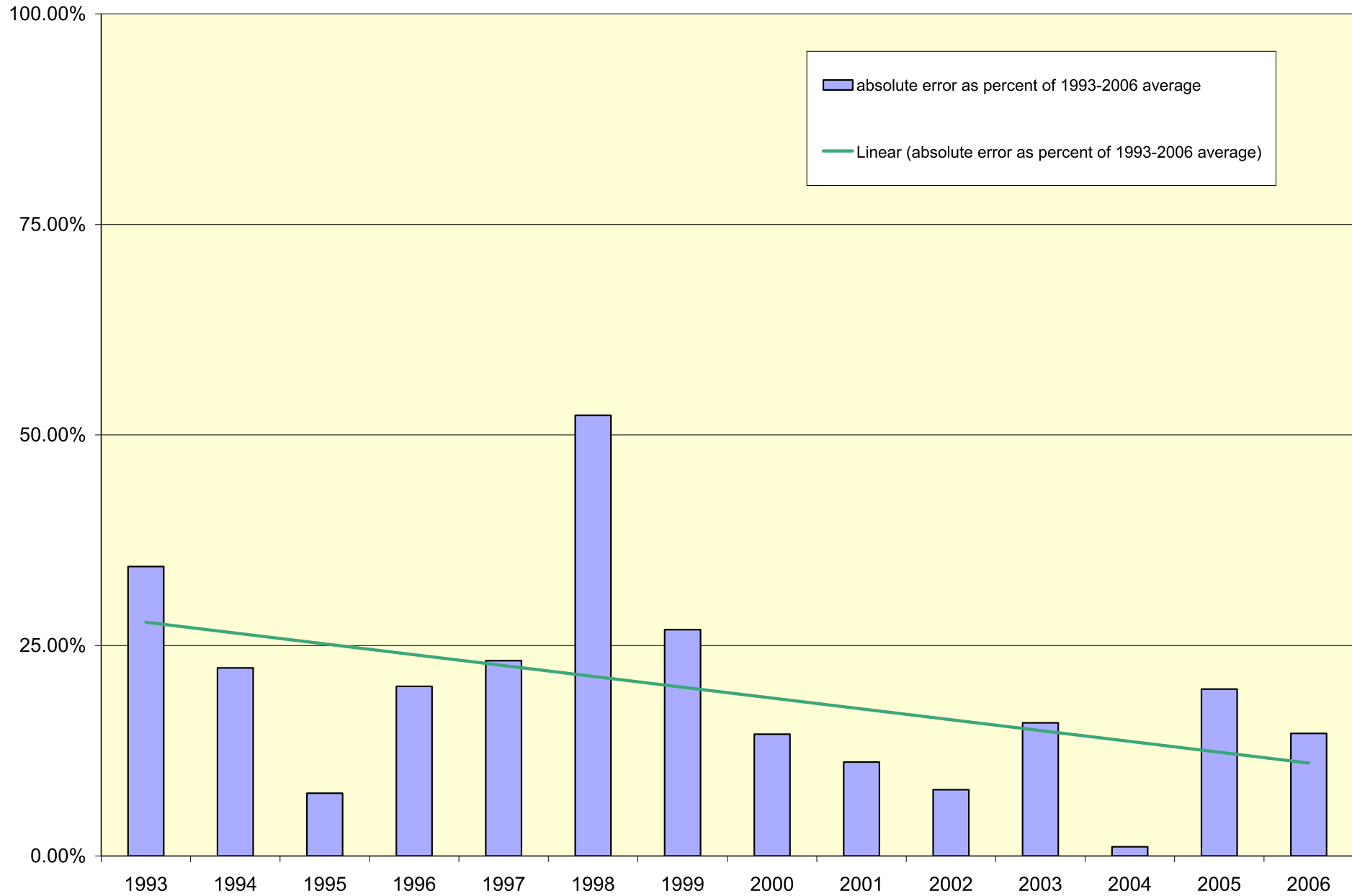
Verification for Virgin River at Virgin forecast for April-July on April 1st



Verification for Virgin River at Virgin Forecast for April-July for Years 1993-2006



Verification of Virgin River at Virgin forecast for April-July on April 1st



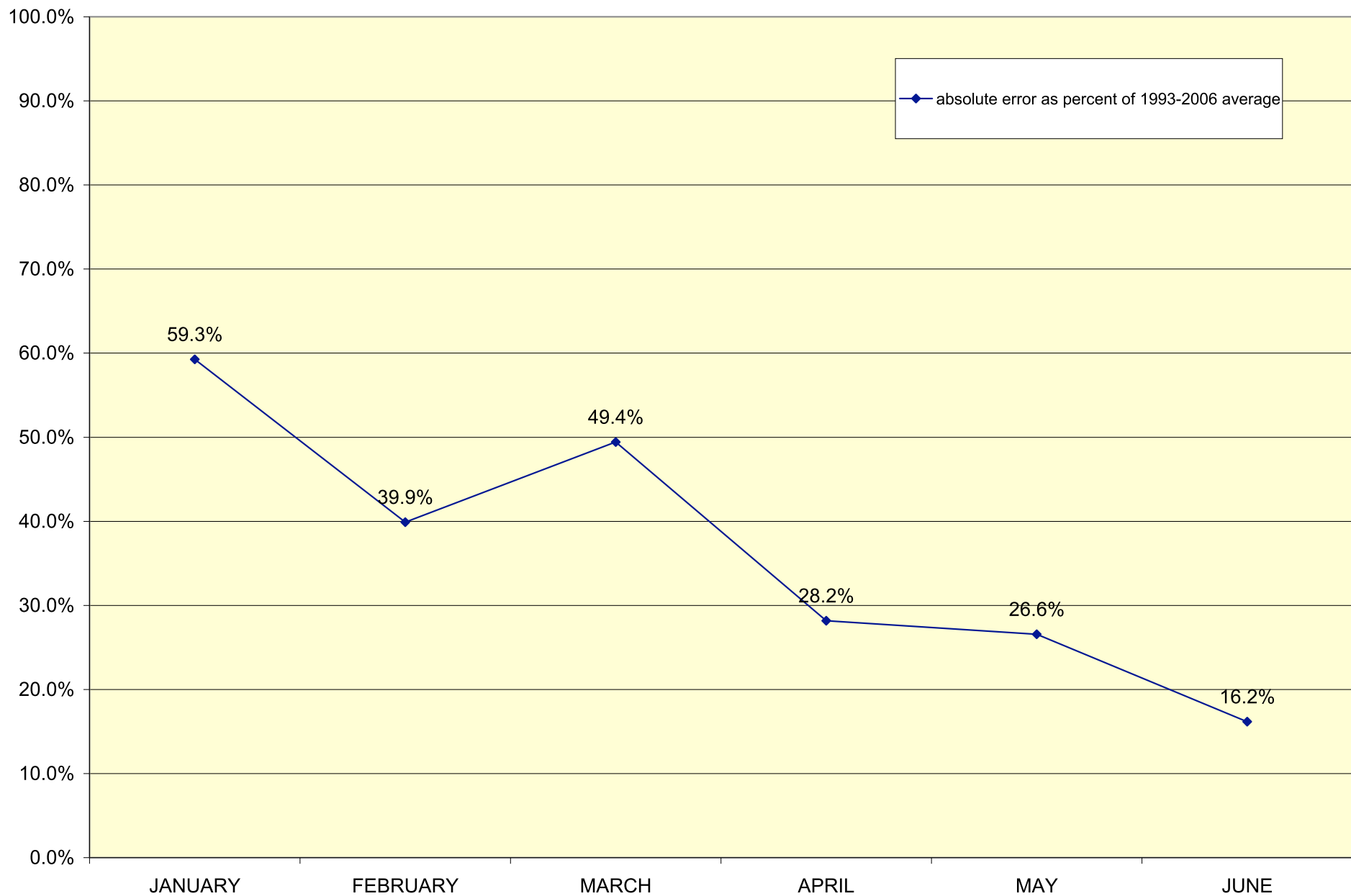
Summary for Virgin at Virgin

- Average absolute error for forecast = 19.40%
- Average absolute error for climatology = 71.67%
- Average absolute error for persistence = 103.74%

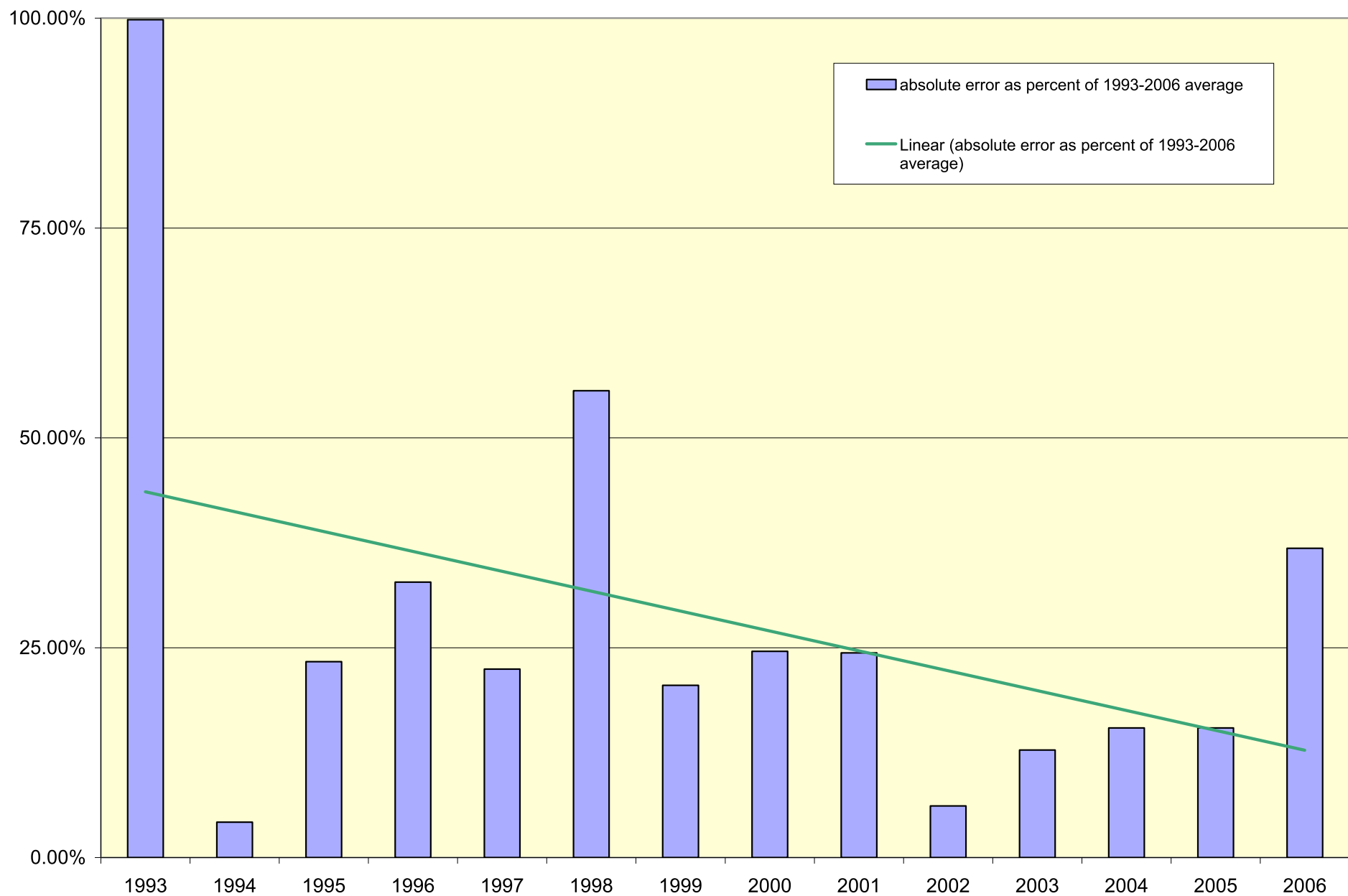
**Verification for Santa Clara River near Pine Valley
forecast for April-July on April 1st**



**Verification for Santa Clara River near Pine Valley
Forecast for April-July for Years 1993-2006**



**Verification for Santa Clara River near Pine Valley
forecast for April-July on April 1st**



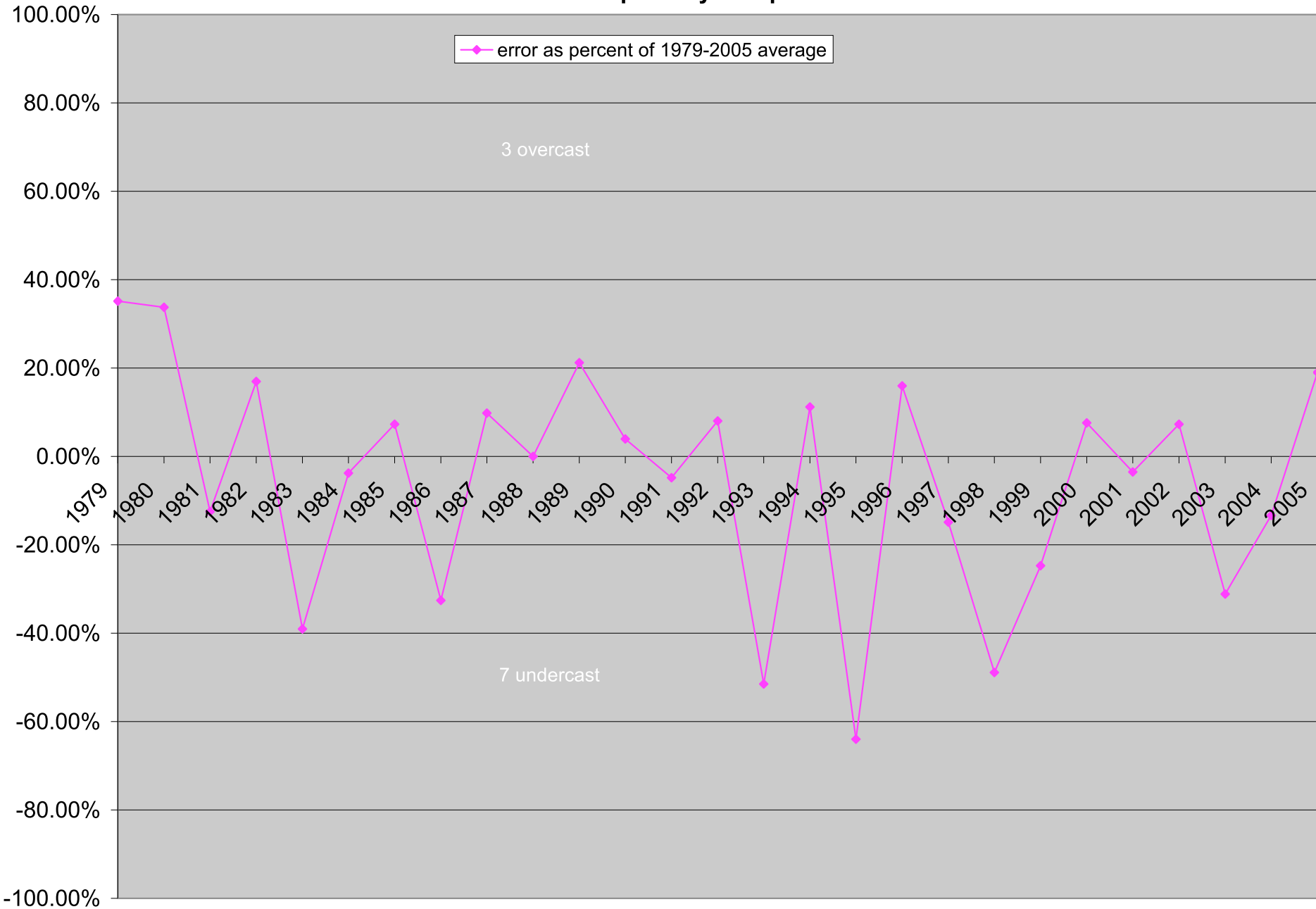
Summary for Santa Clara near Pine Valley

- Average absolute error for forecast = 28.20%
- Average absolute error for climatology = 76.22%
- Average absolute error for persistence = 118.57%

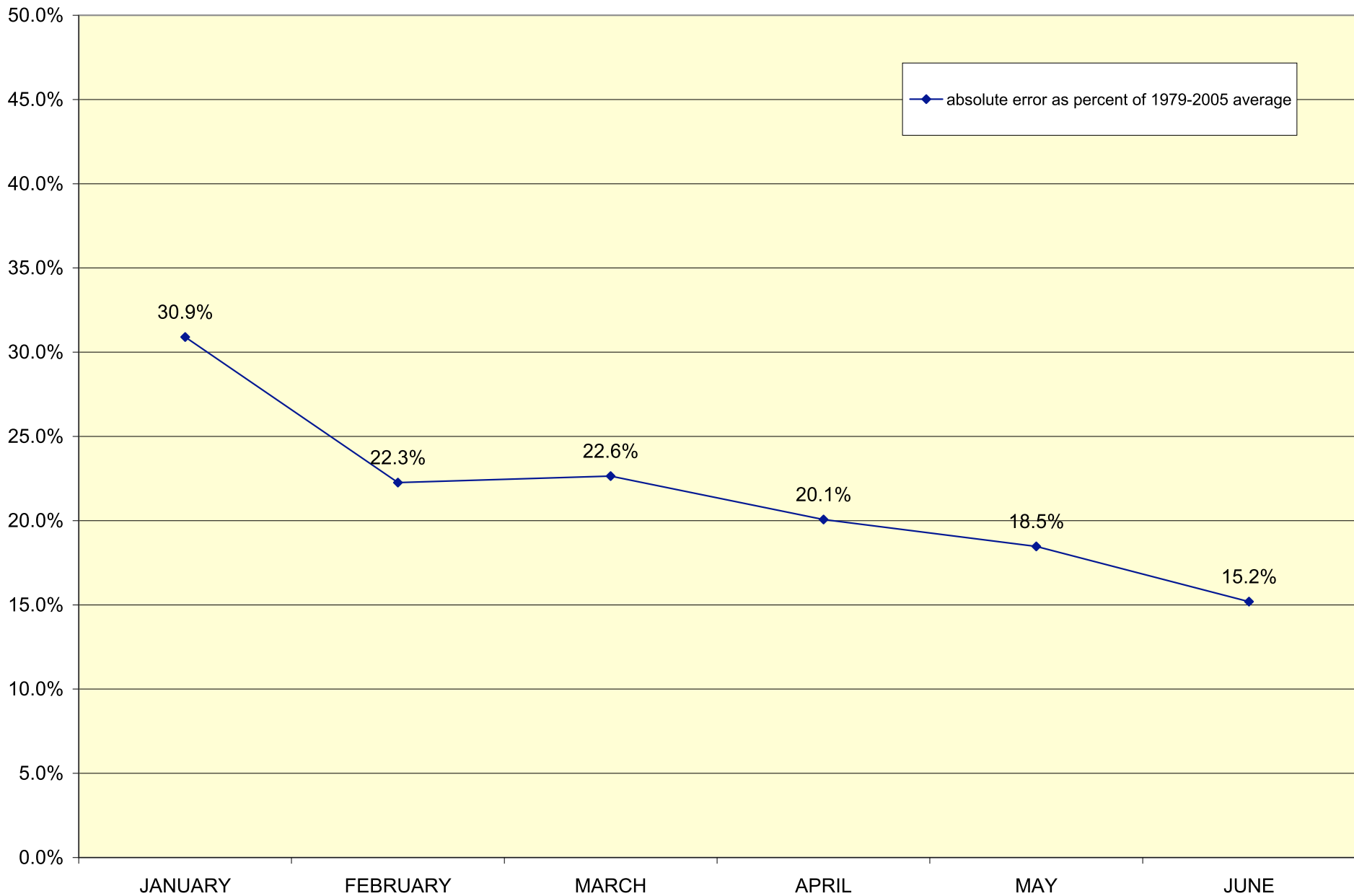
Eastern Great Basin

- Provo River near Hailstone
- Rockport Reservoir

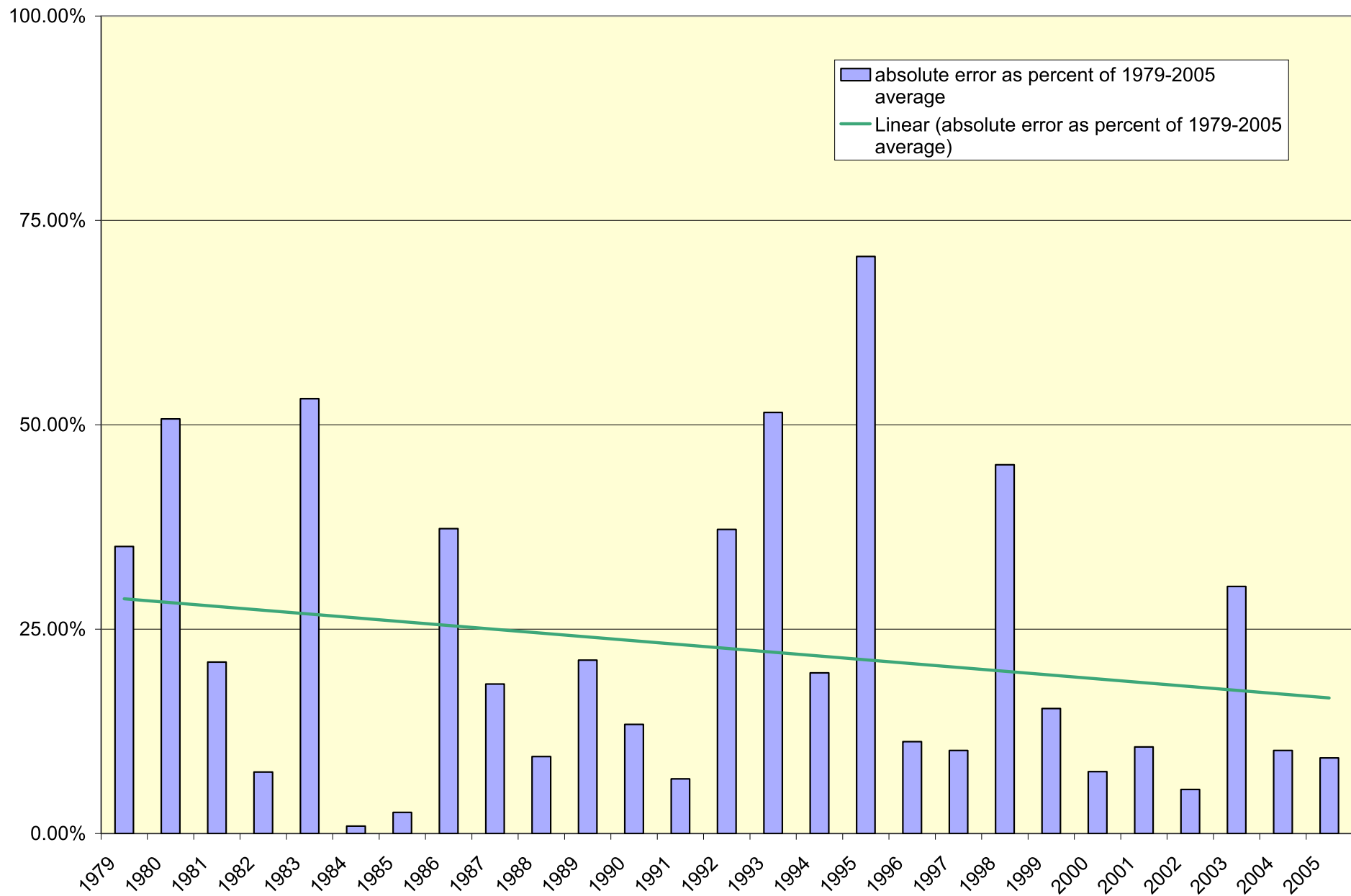
Verification for Provo River near Hailstone forecast for April-July on April 1st



**Verification for Provo River near Hailstone
Forecast for April-July for Years 1979-2005**



Verification for Provo River near Hailstone
forecast for April-July on April 1st



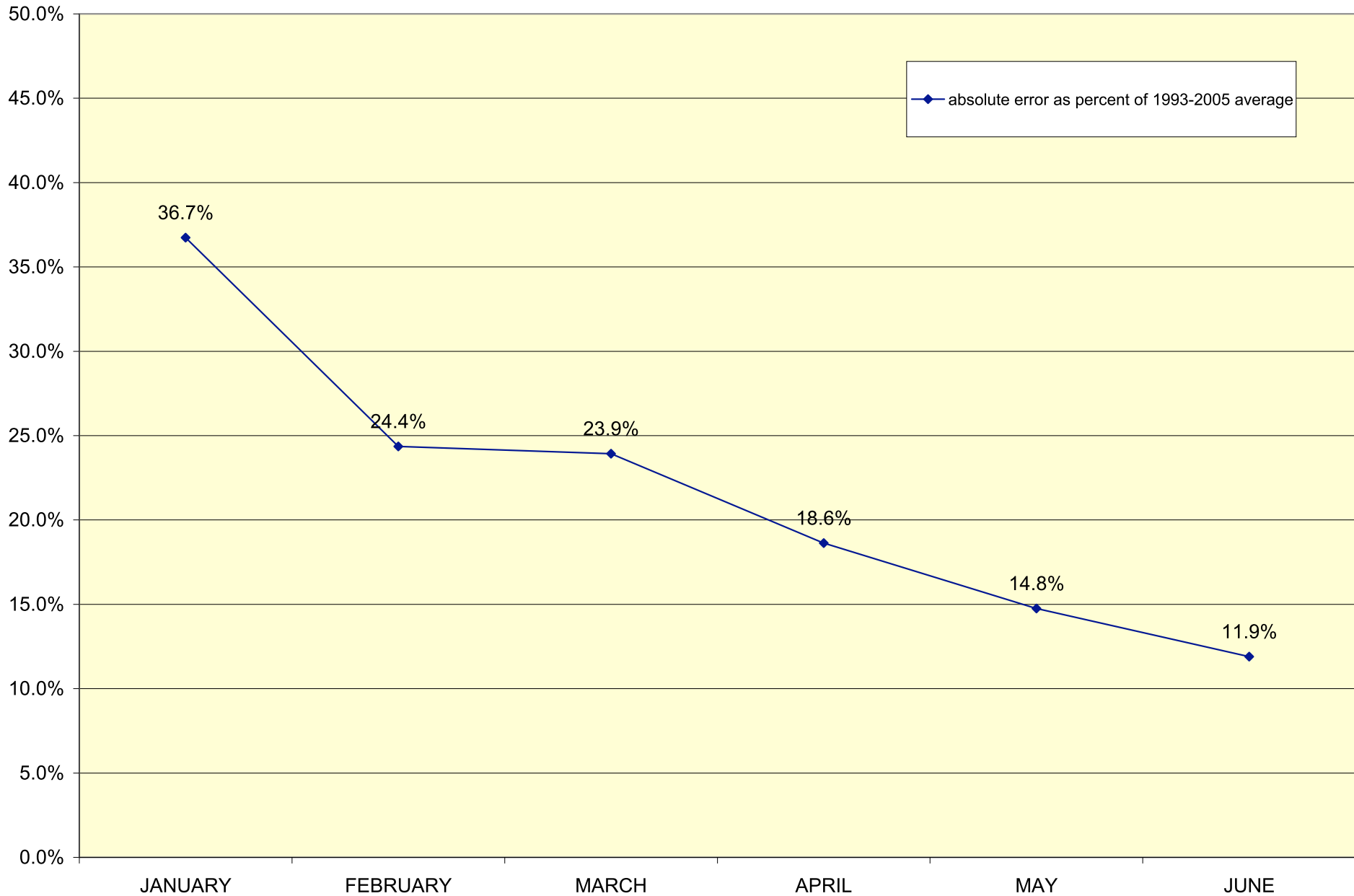
Summary for Provo near Hailstone

- Average absolute error for forecast = 20.10%
- Average absolute error for climatology = 40.85%
- Average absolute error for persistence = 45.68%

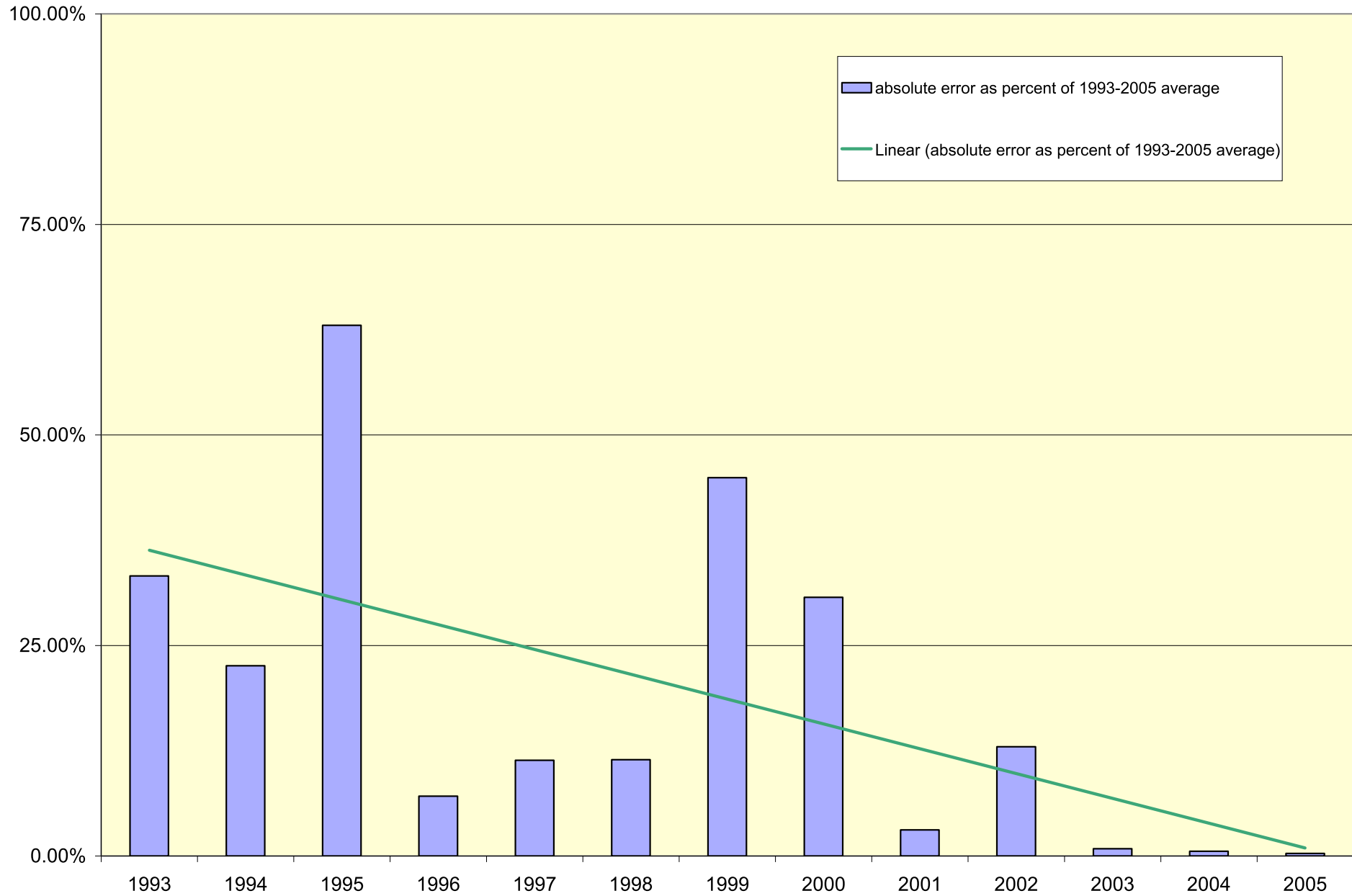
Verification Rockport Reservoir forecast for April-July on April 1st



**Verification for Rockport Reservoir
Forecast for April-July for Years 1993-2005**



Verification for Rockport Reservoir forecast for April-July on April 1st



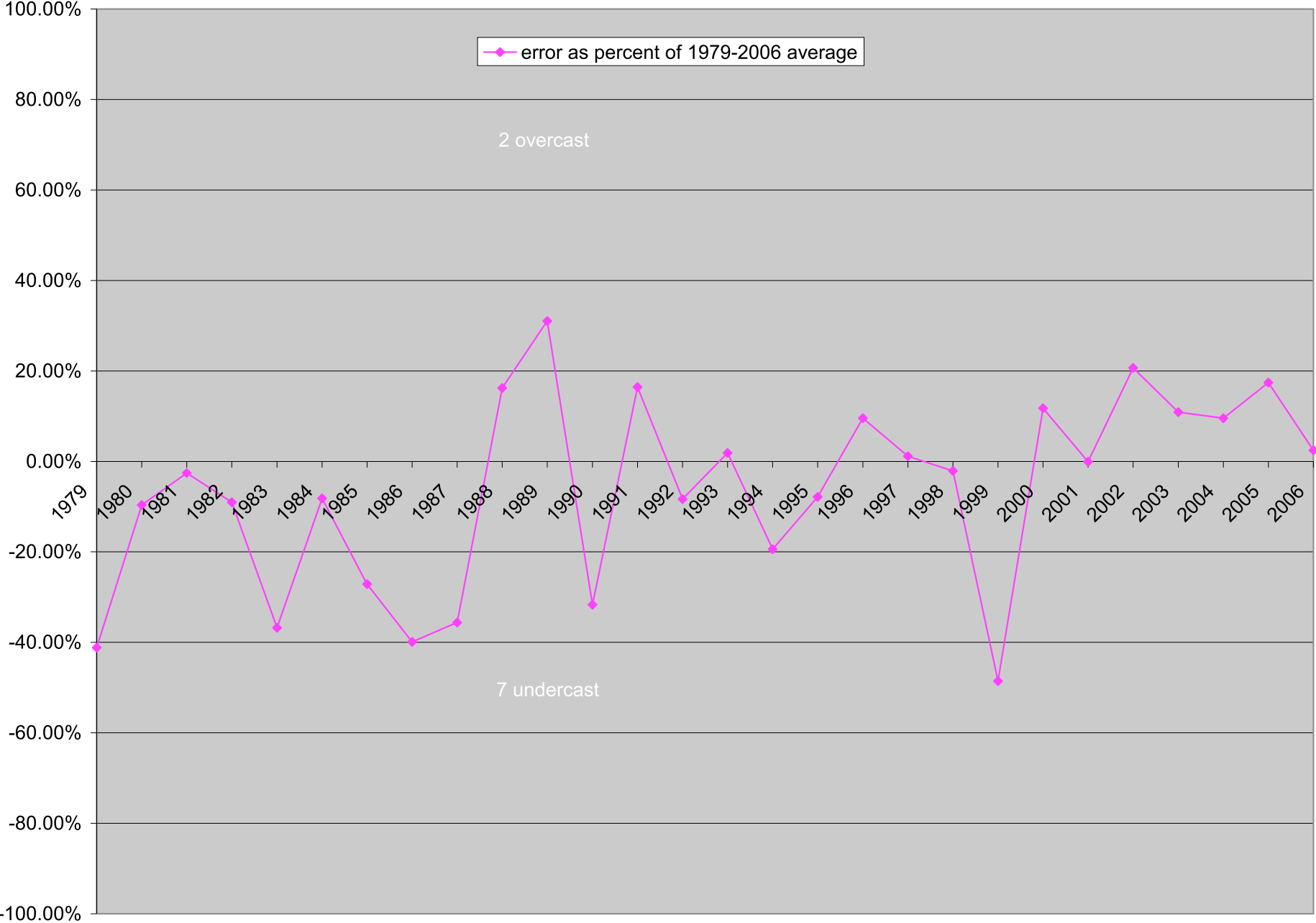
Summary for Rockport Reservoir

- Average absolute error for forecast = 18.60%
- Average absolute error for climatology = 42.55%
- Average absolute error for persistence = 47.08%

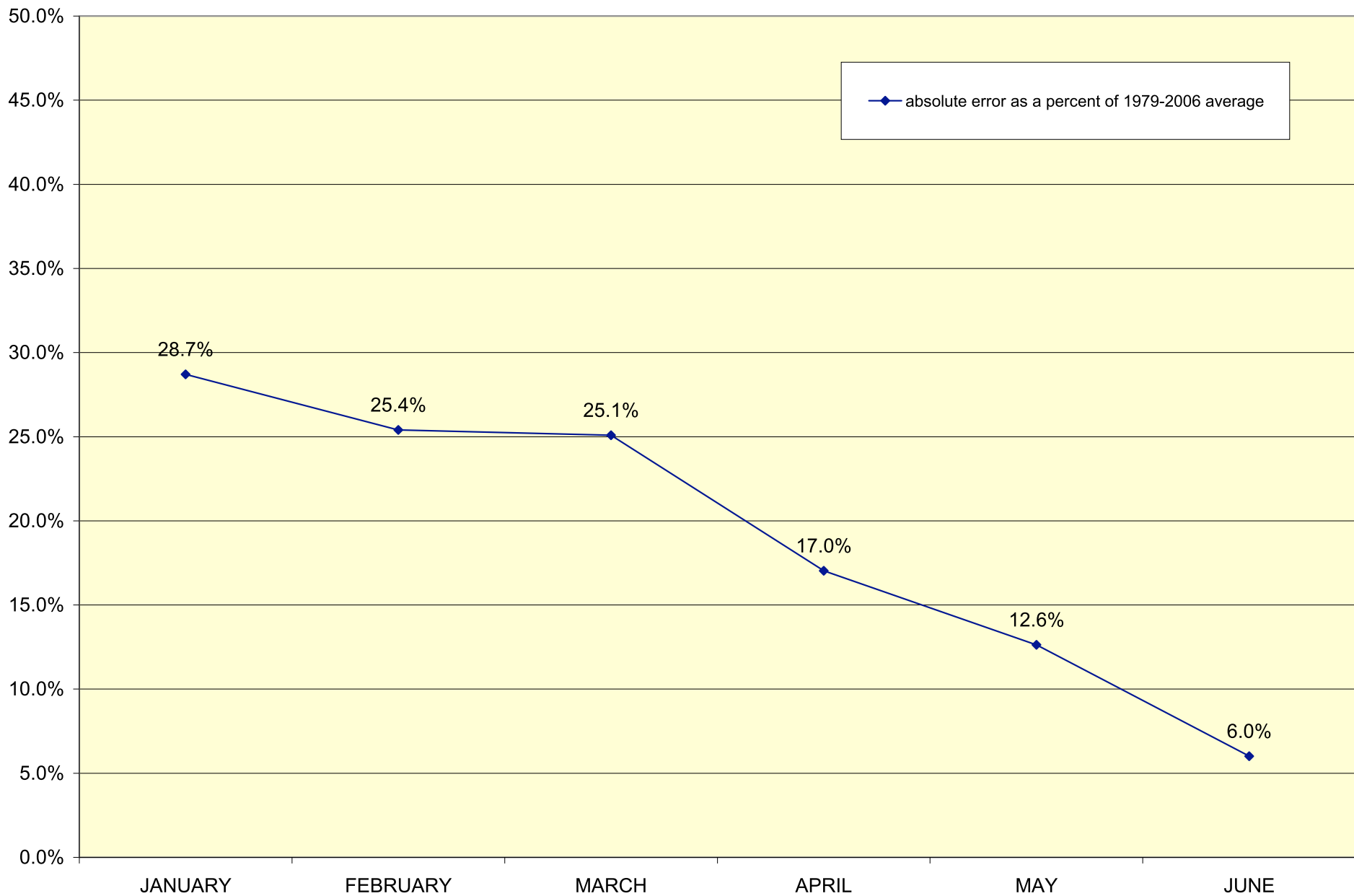
San Juan

- Navajo Reservoir
- Animas River at Durango

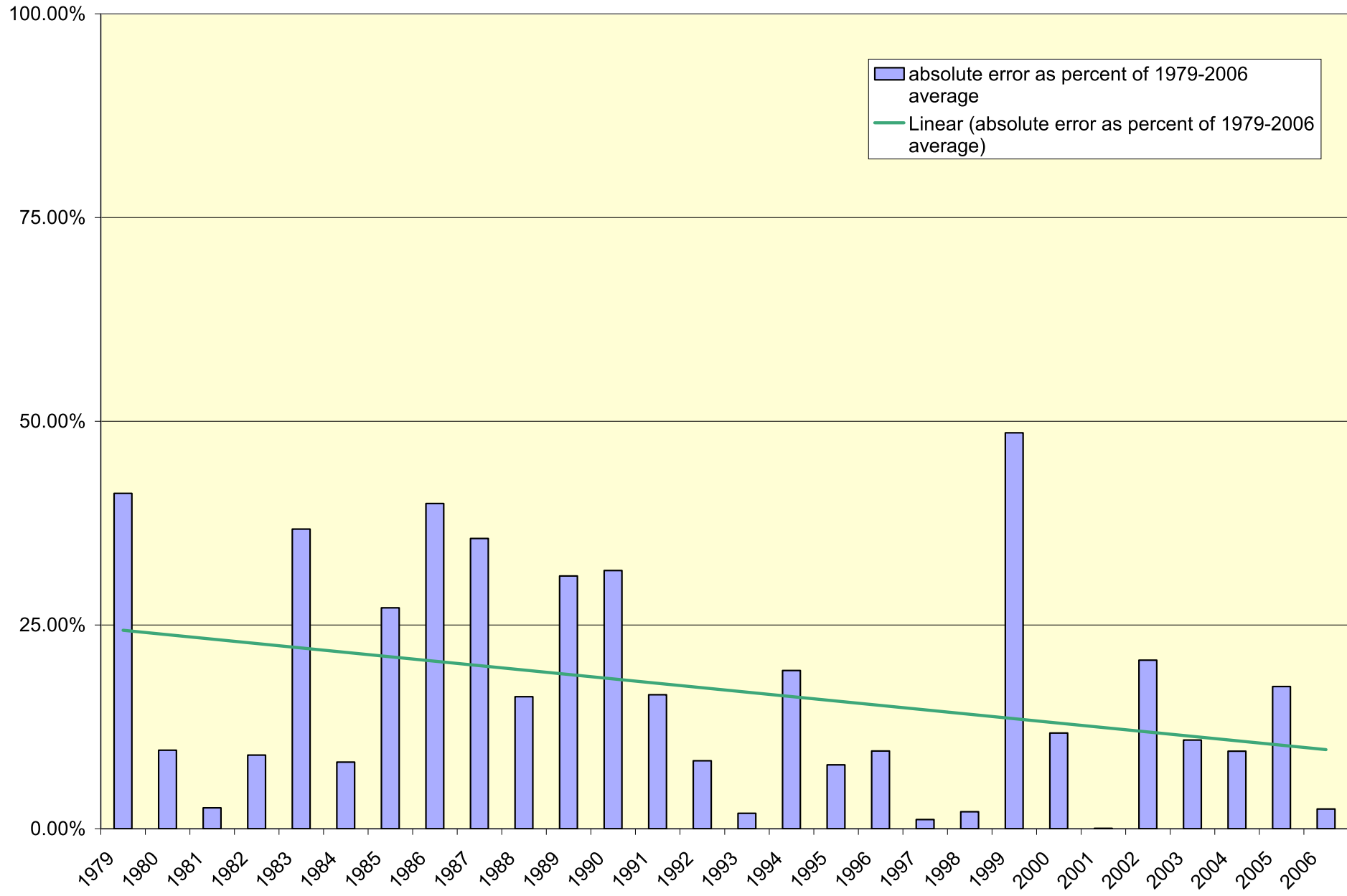
Verification for Navajo Reservoir
forecast for April-July on April 1st



Verification for Navajo Reservoir Forecast for April-July for Years 1979 to 2006



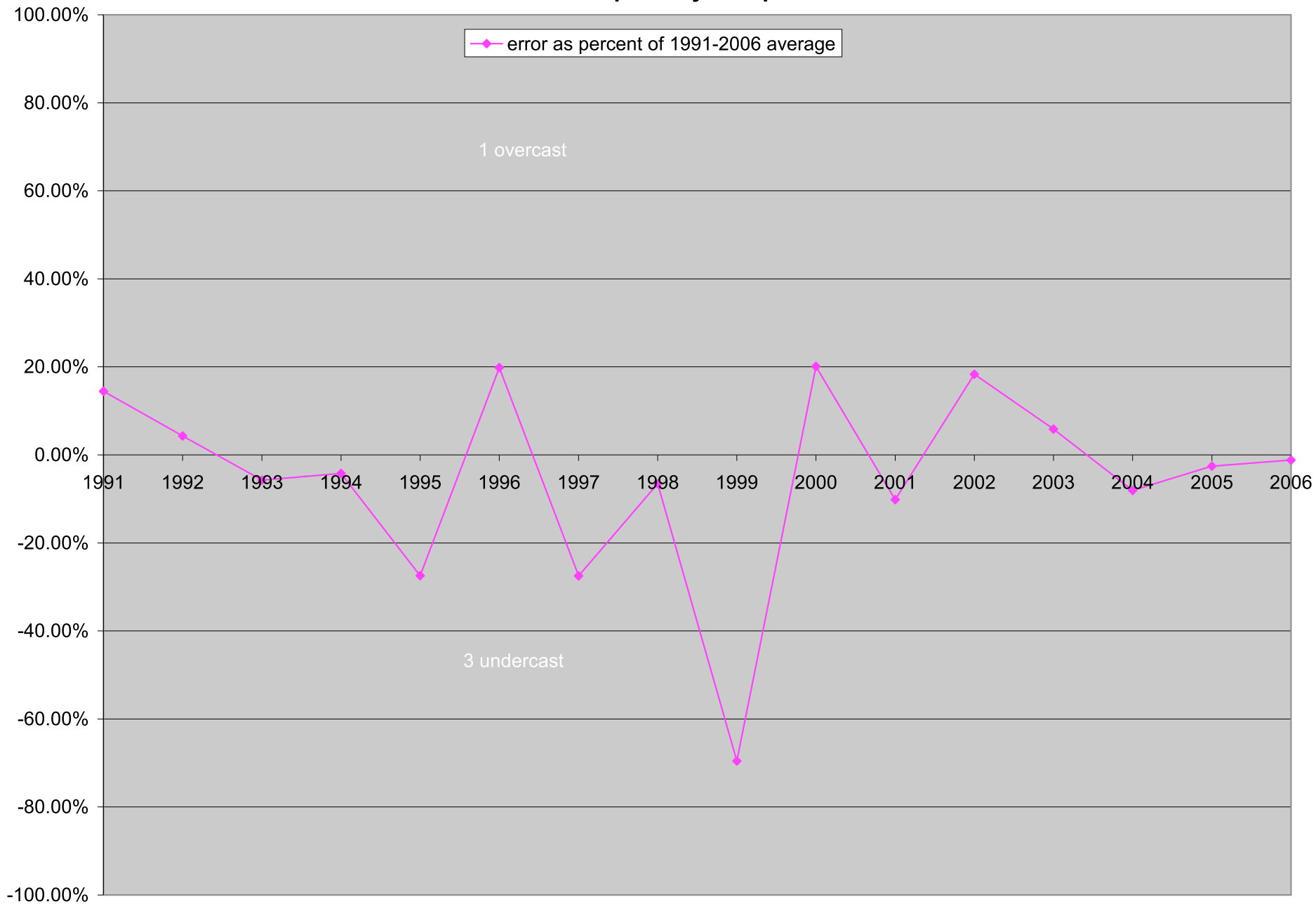
Verification for Navajo Reservoir forecast for April-July on April 1st



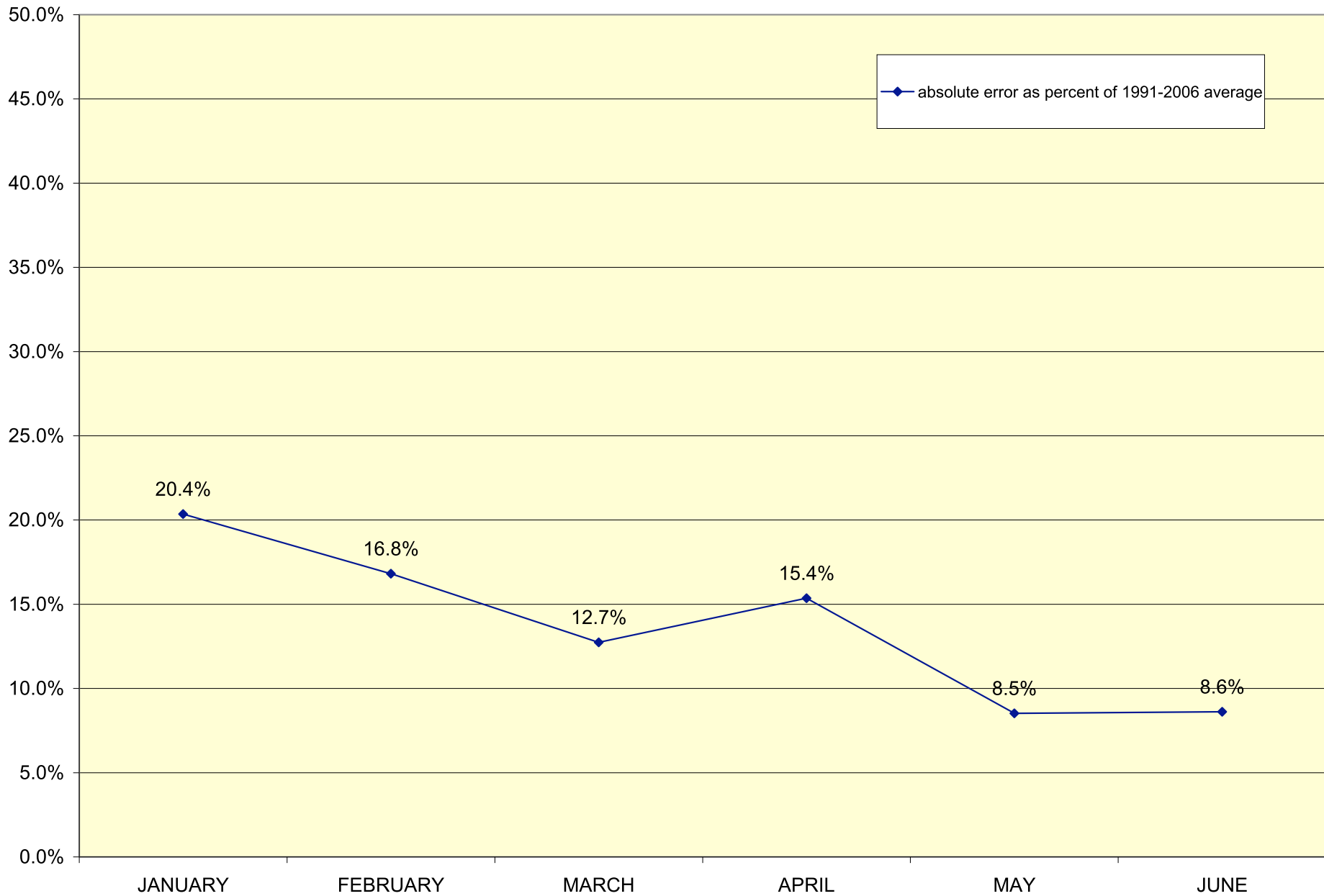
Summary for Navajo Reservoir

- Average absolute error for forecast = 17.00%
- Average absolute error for climatology = 41.15%
- Average absolute error for persistence = 55.11%

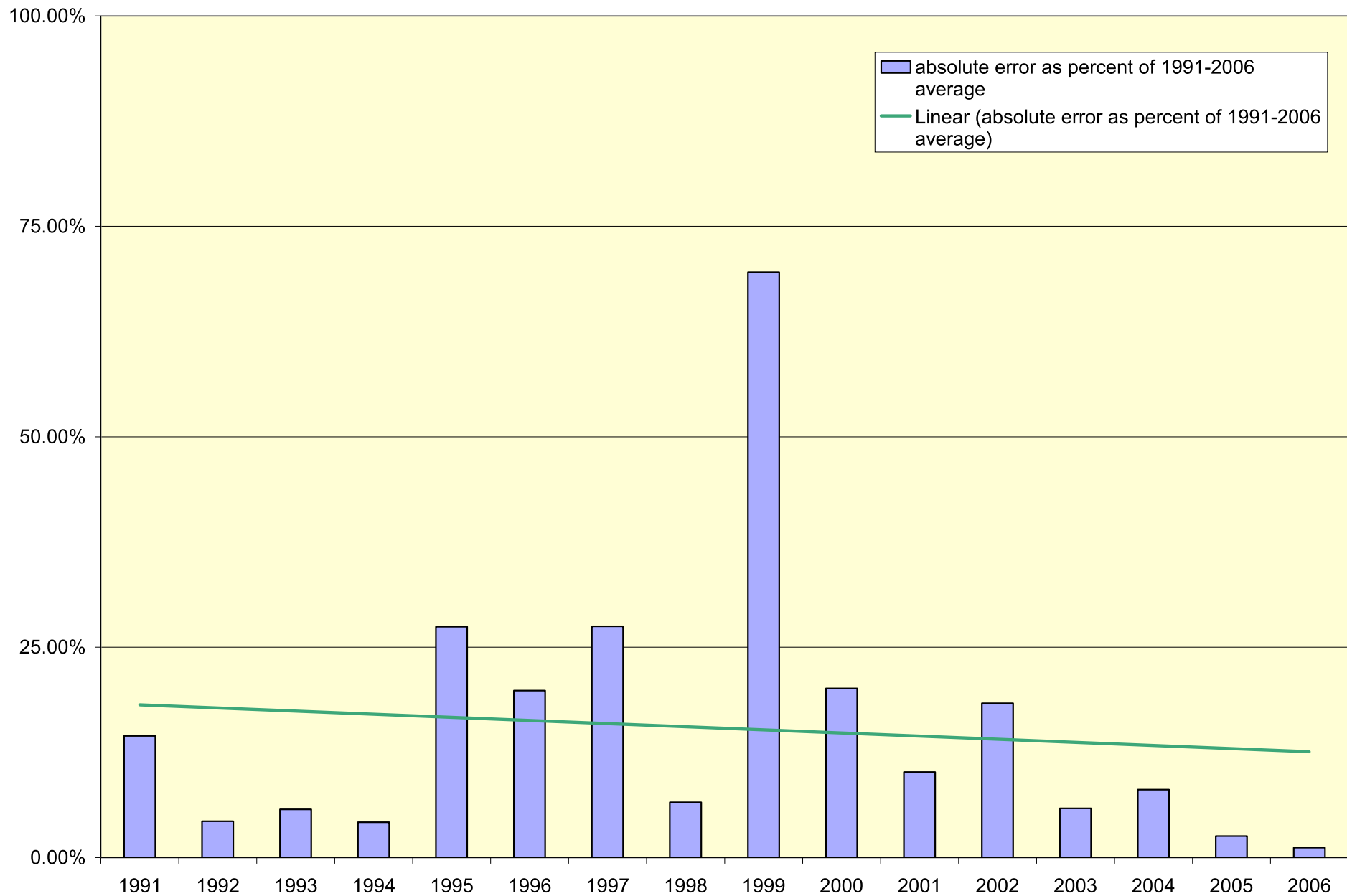
Verification for Animas River at Durango forecast for April-July on April 1st



Verification for Animas River at Durango Forecast for April-July for Years 1991 to 2006



**Verification for Animas River at Durango
forecast for April-July on April 1st**



Summary for Animas at Durango

- Average absolute error for forecast = 15.40%
- Average absolute error for climatology = 30.61%
- Average absolute error for persistence = 53.90%

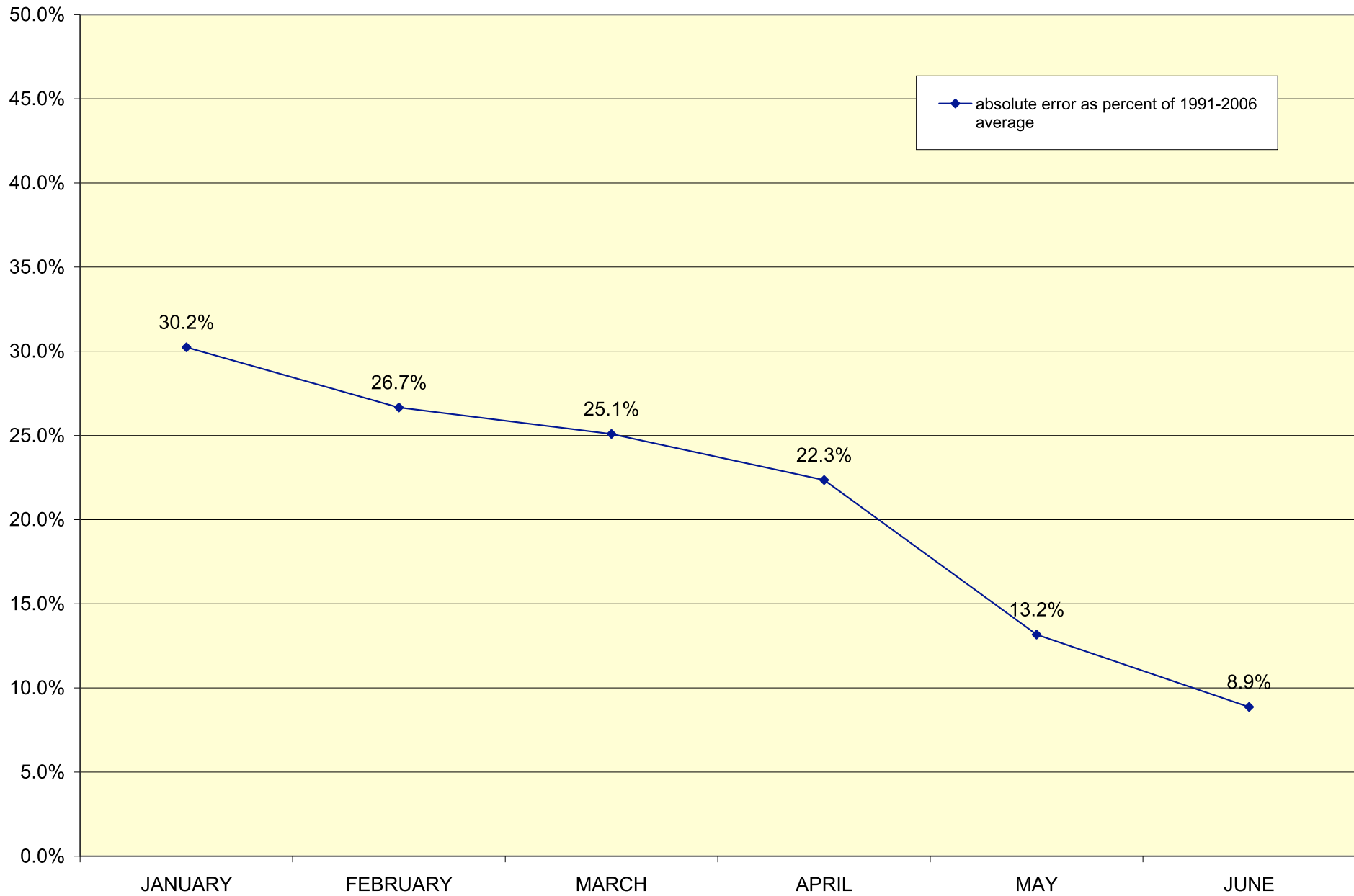
Upper Colorado, Gunnison, Dolores

- Dillion Reservoir
- Gunnison River near Grand Junction
- Colorado River near Cameo
- Dolores River at Dolores

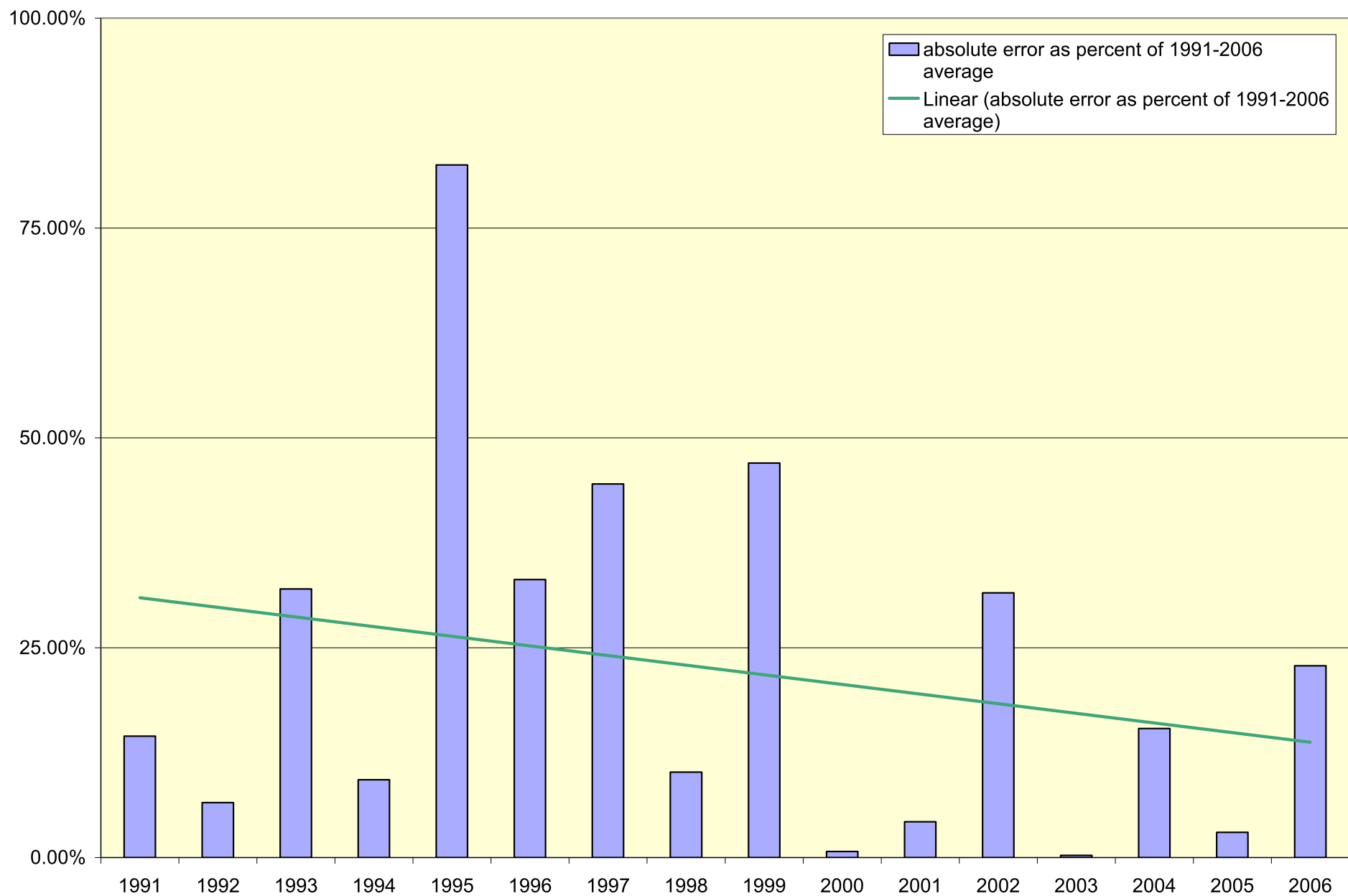
Verification for Dillion Reservoir forecast for April-July on April 1st



Verification for Dillion Reservoir Forecast for April-July for Years 1991-2006



Verification for Dillion Reservoir forecast for April-July on April 1st



Summary for Dillion Reservoir

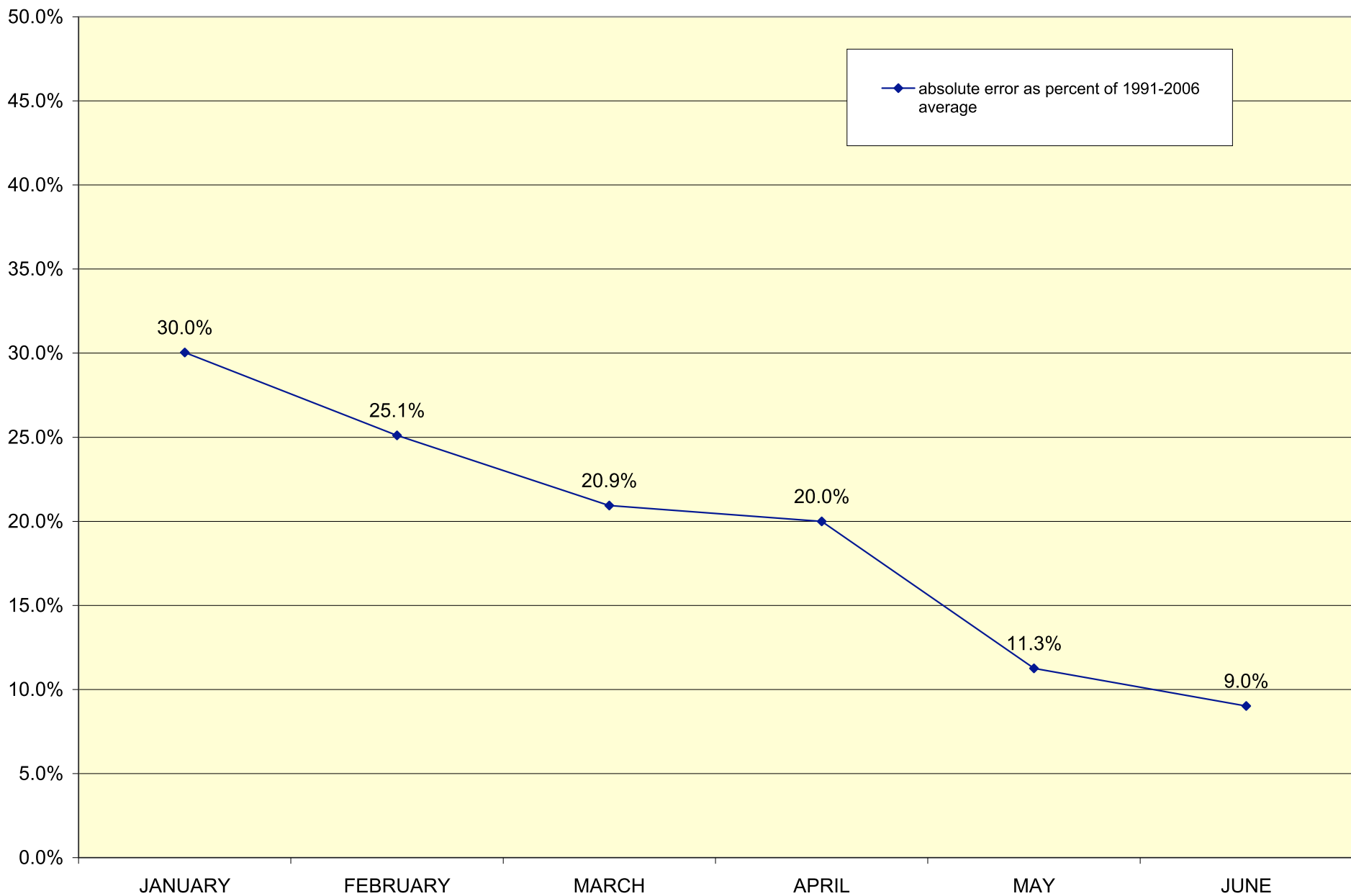
- Average absolute error for forecast = 22.30%
- Average absolute error for climatology = 30.03%
- Average absolute error for persistence = 37.78%

**Verification for Gunnison River near Grand Junction
forecast for April-July on April 1st**

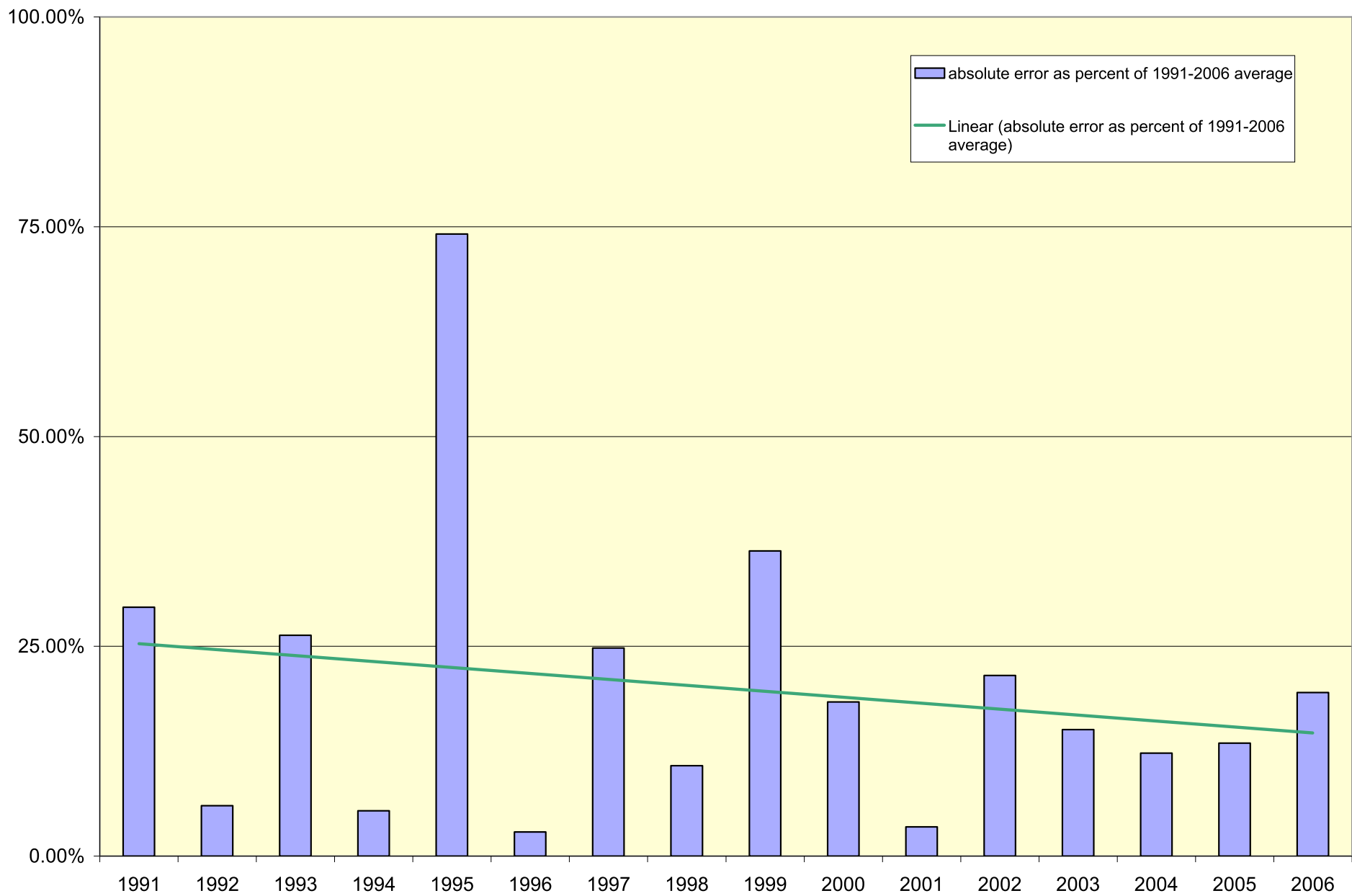


Verification for Gunnison River near Grand Junction

Forecast for April-July for Years 1991-2006



Verification for Gunnison River near Grand Junction
forecast for April-July on April 1st



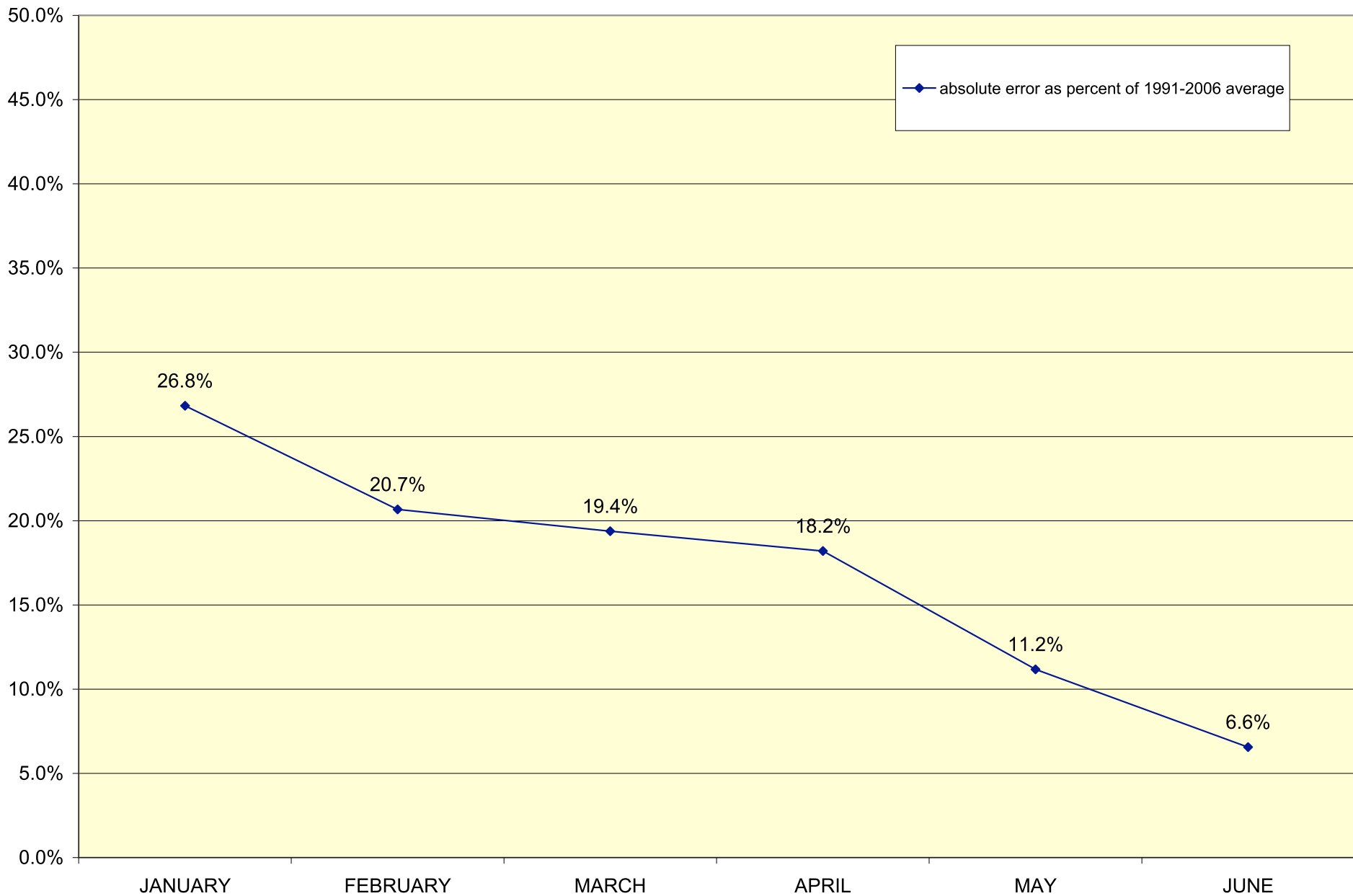
Summary for Gunnison near Grand Junction

- Average absolute error for forecast = 20.00%
- Average absolute error for climatology = 35.29%
- Average absolute error for persistence = 49.84%

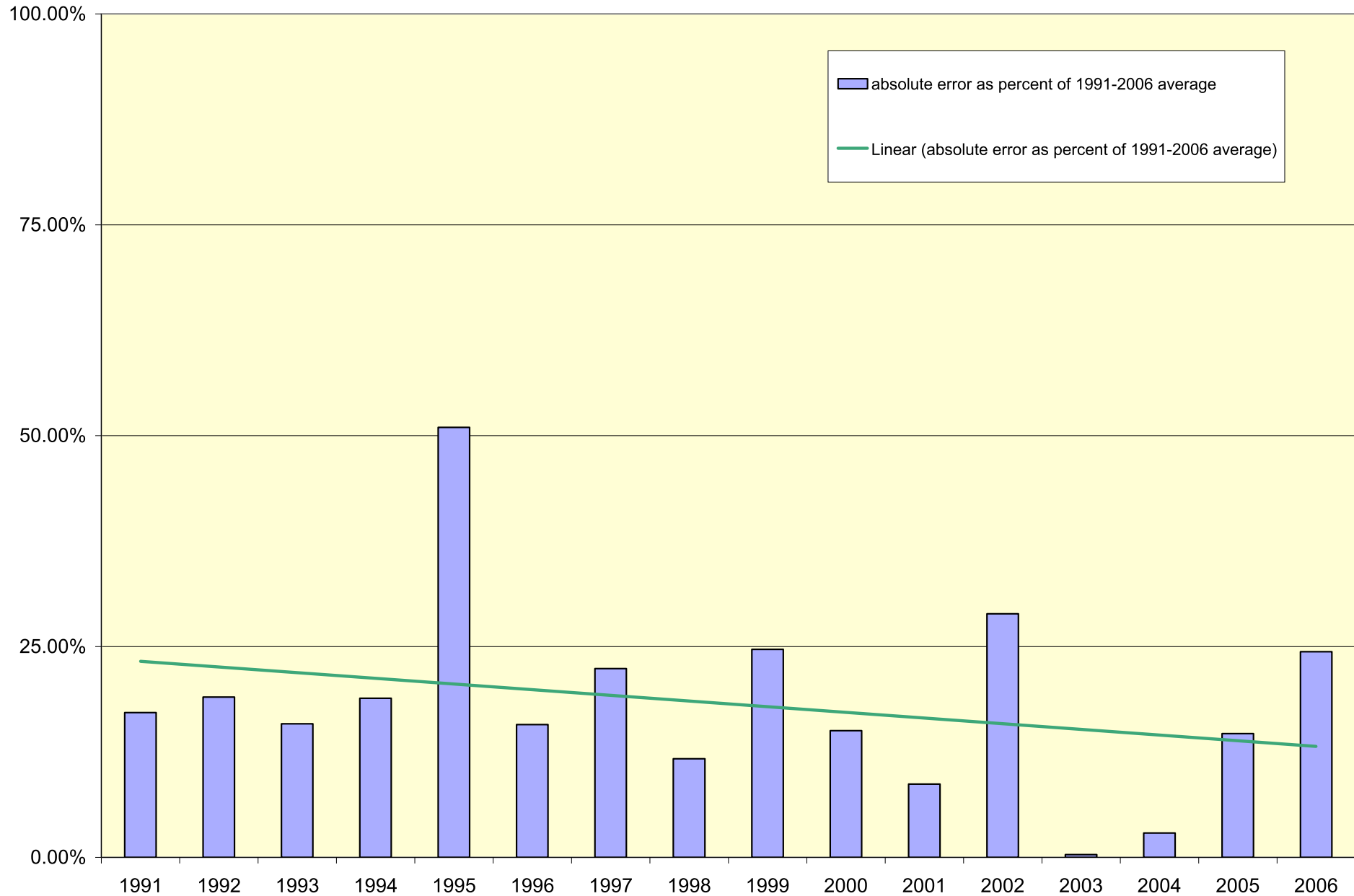
**Verification for Colorado River near Cameo
forecast for April-July on April 1st**



Verification for Colorado River near Cameo Forecast for April-July for Years 1991-2006



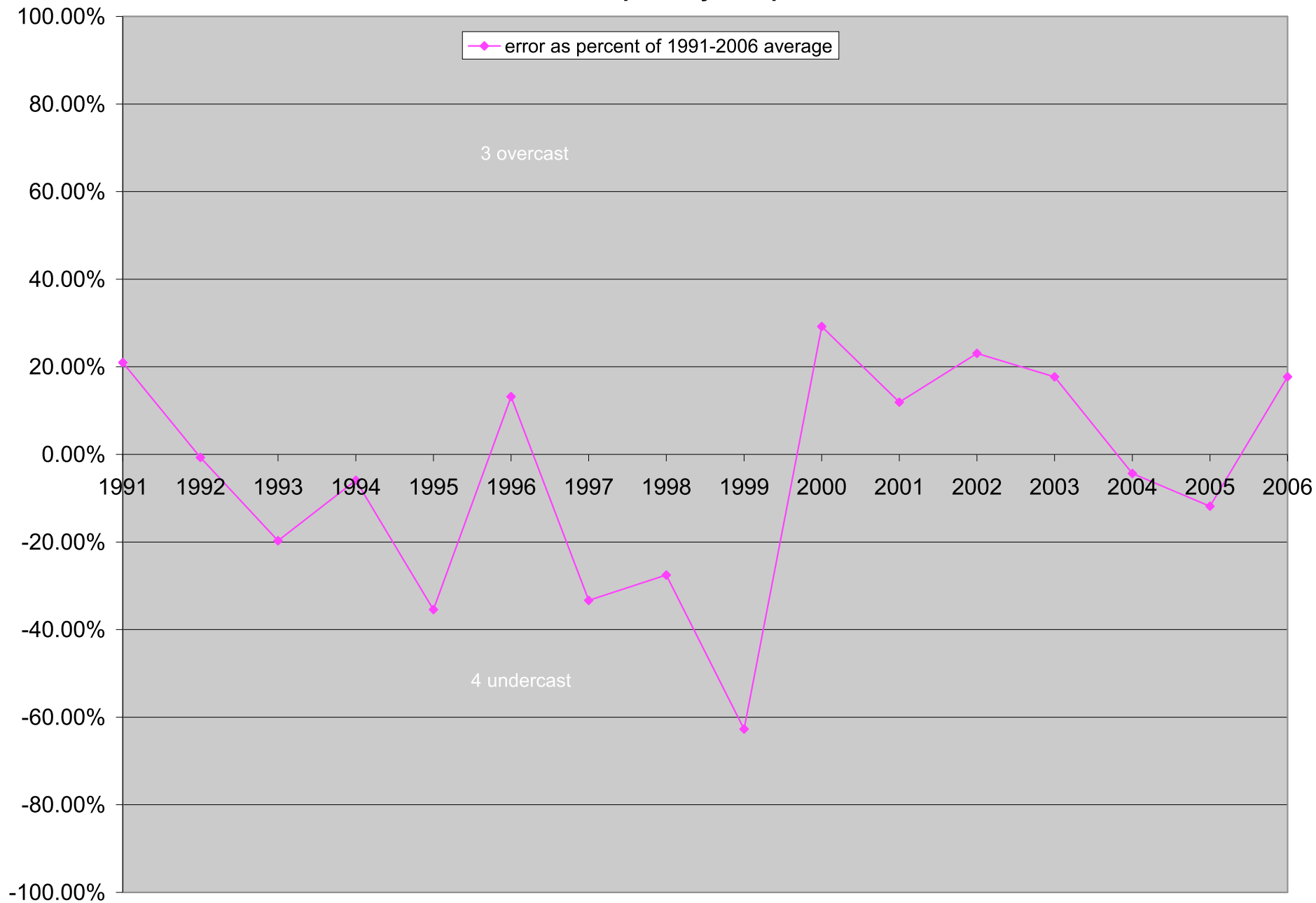
**Verification for Colorado River near Cameo
forecast for April-July on April 1st**



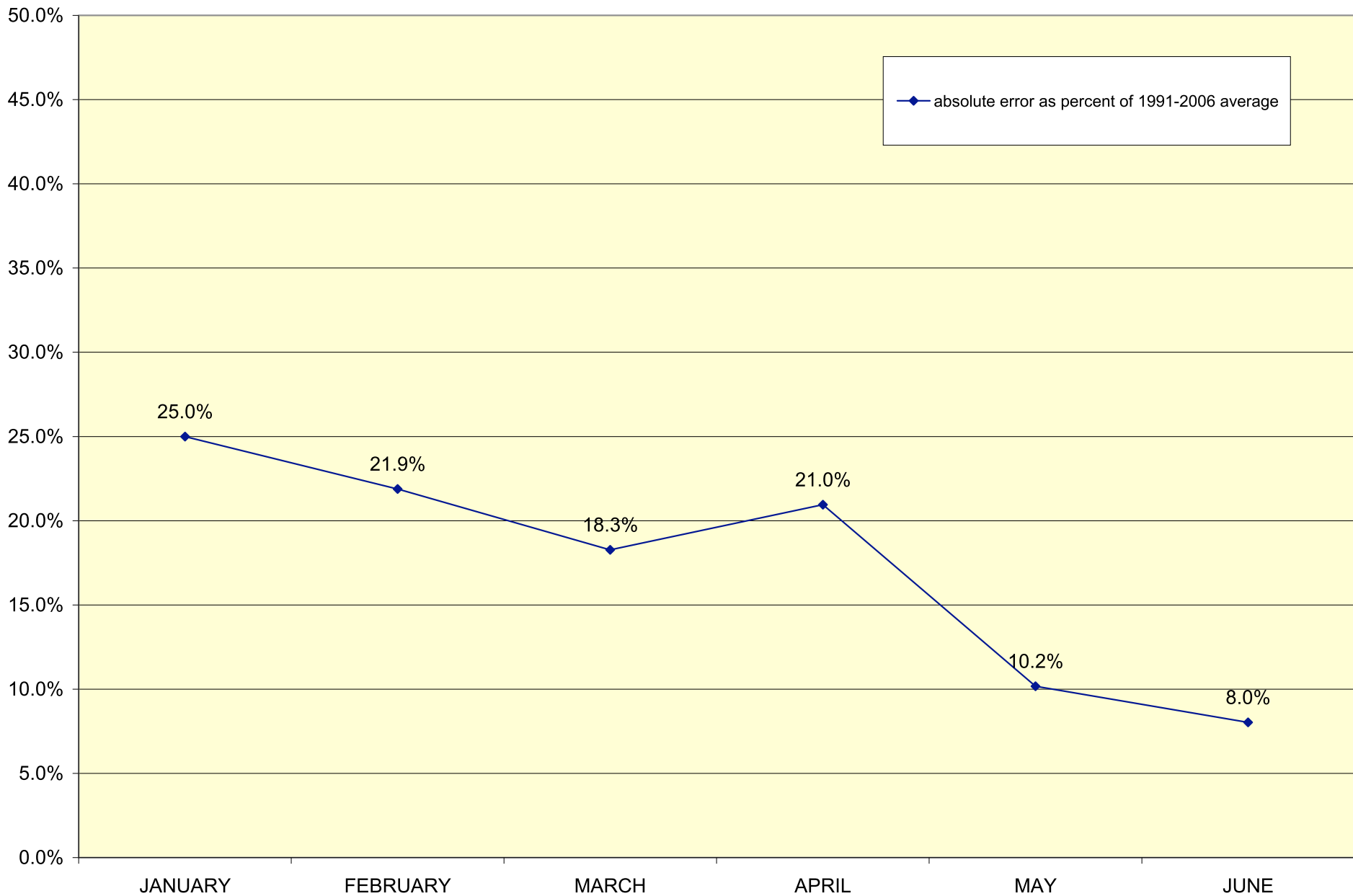
Summary for Colorado near Cameo

- Average absolute error for forecast = 18.20%
- Average absolute error for climatology = 26.63%
- Average absolute error for persistence = 38.43%

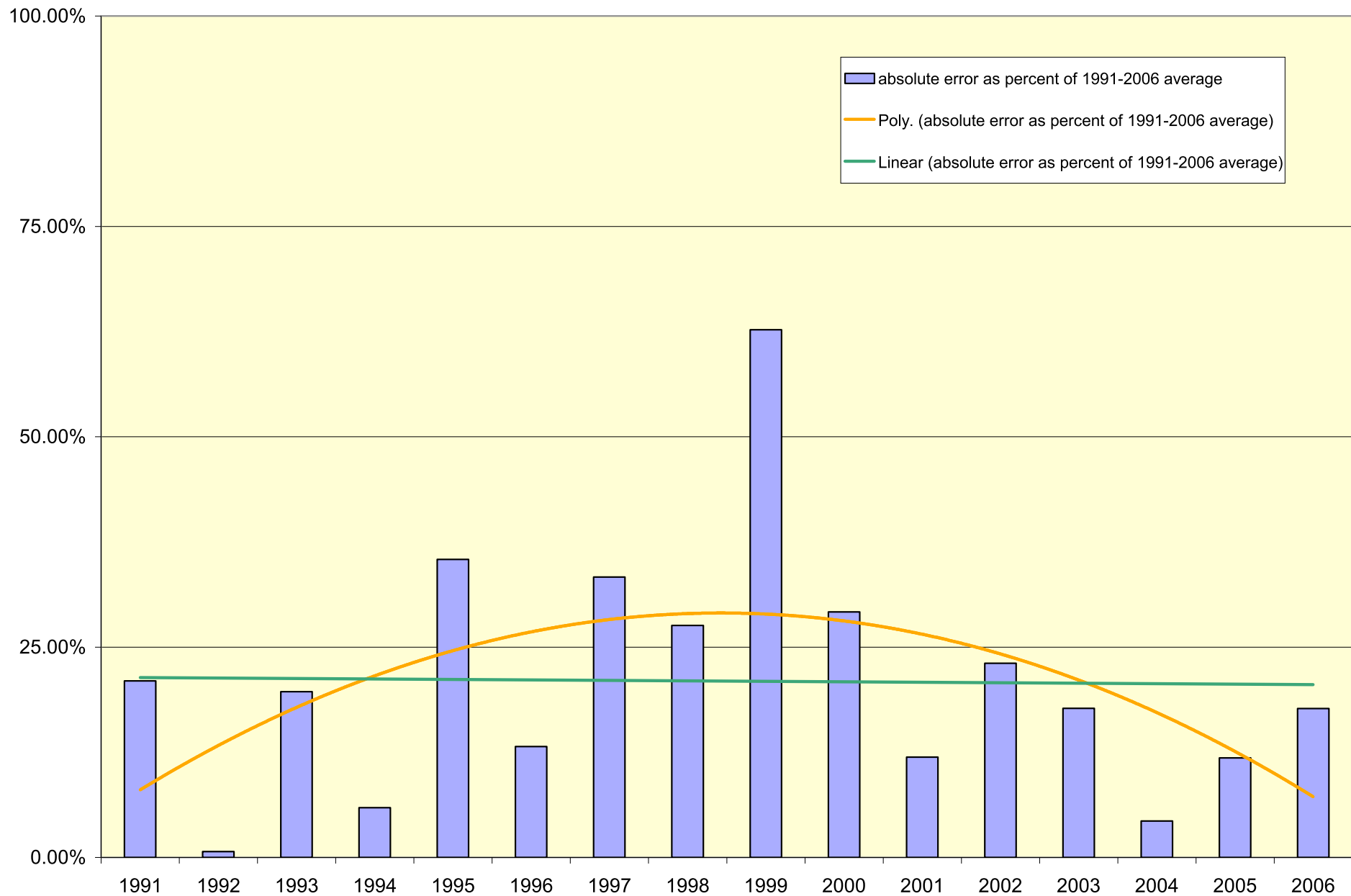
**Verification for Dolores River at Dolores
forecast for April-July on April 1st**



Verification for Dolores River at Dolores
Forecast for April-July for Years 1991-2006



Verification for Dolores River at Dolores forecast for April-July on April 1st



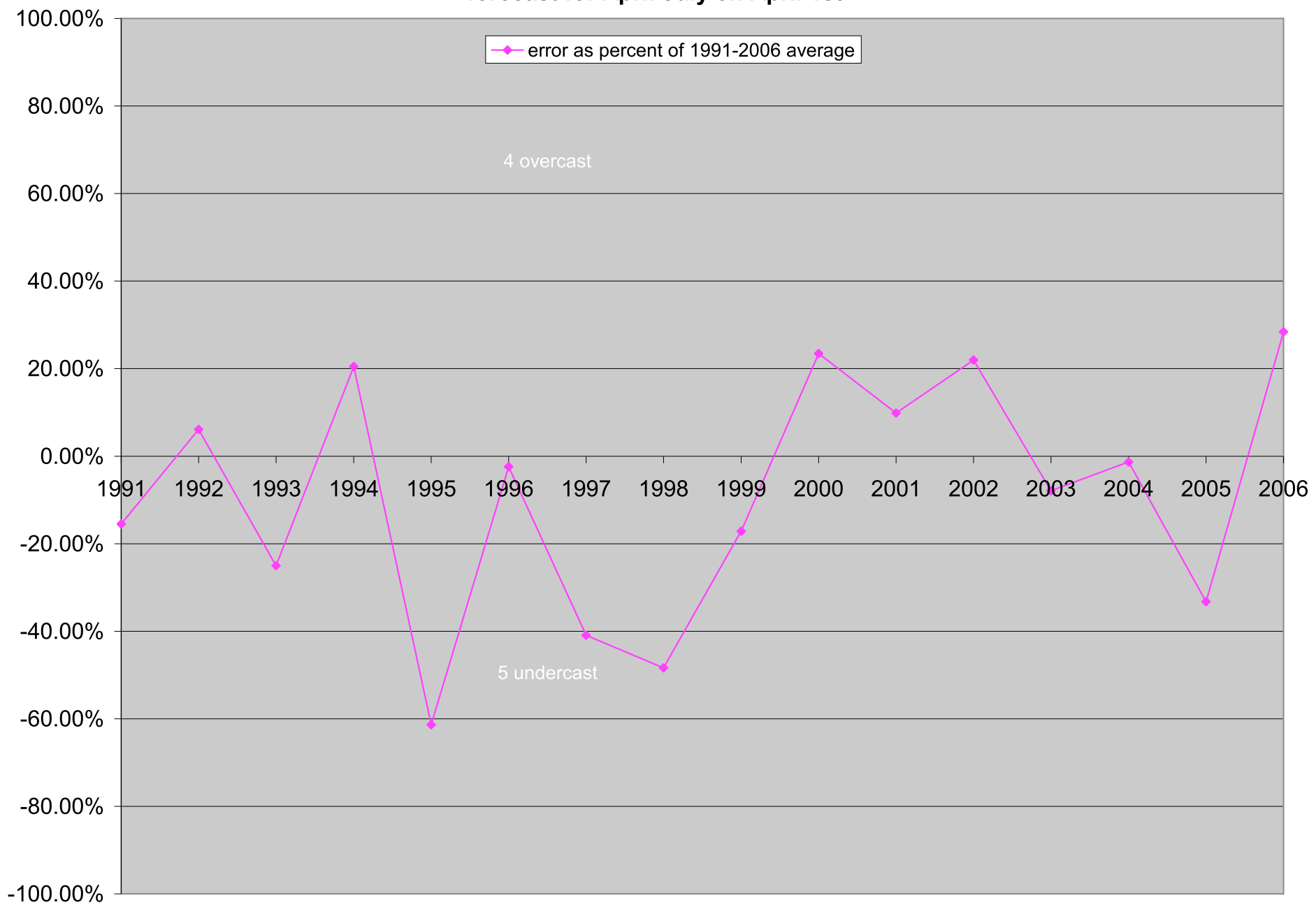
Summary for Dolores at Dolores

- Average absolute error for forecast = 21.00%
- Average absolute error for climatology = 35.12%
- Average absolute error for persistence = 54.24%

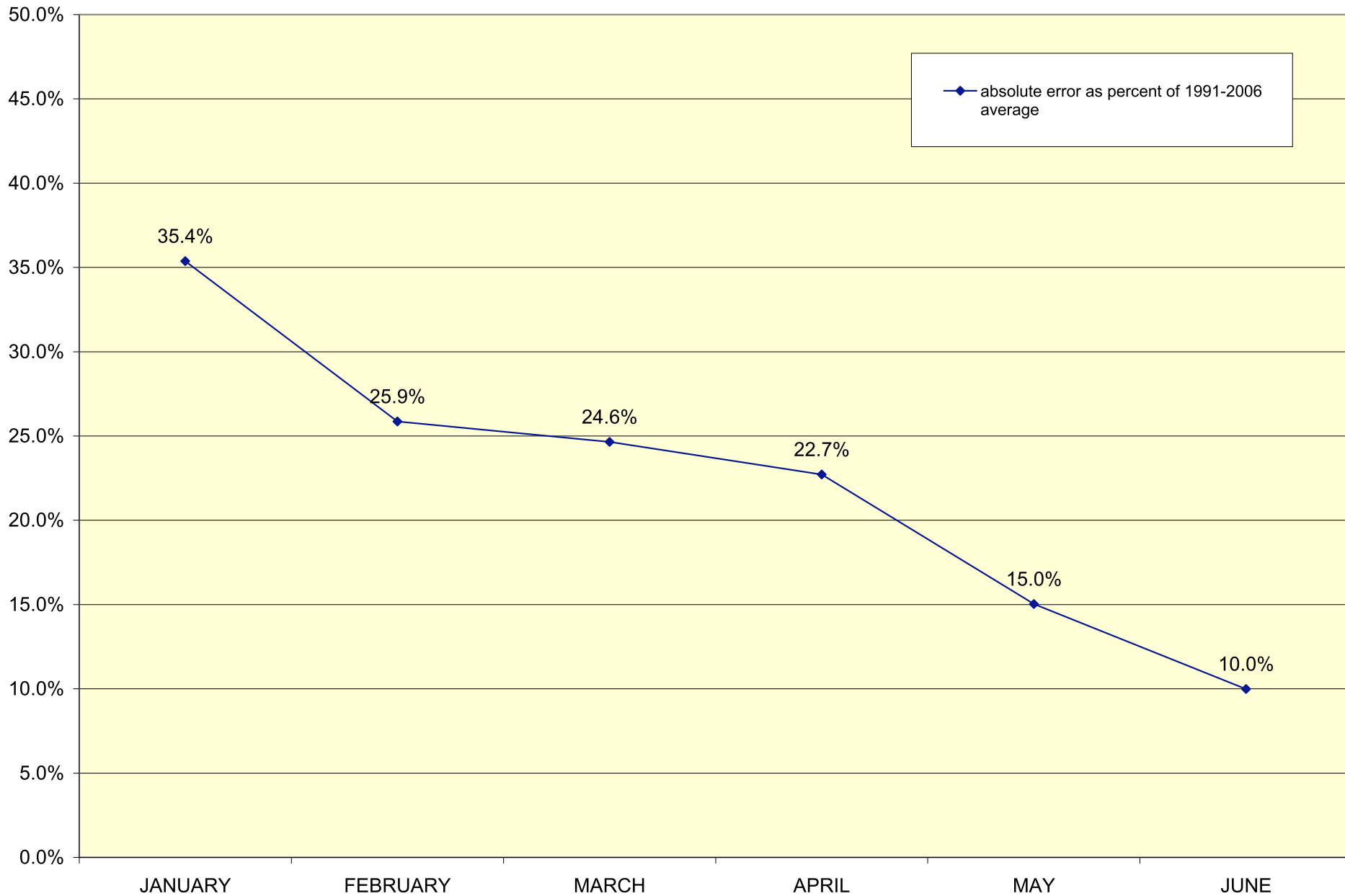
Green

- Yampa River near Maybell
- Green River at Warren Bridge

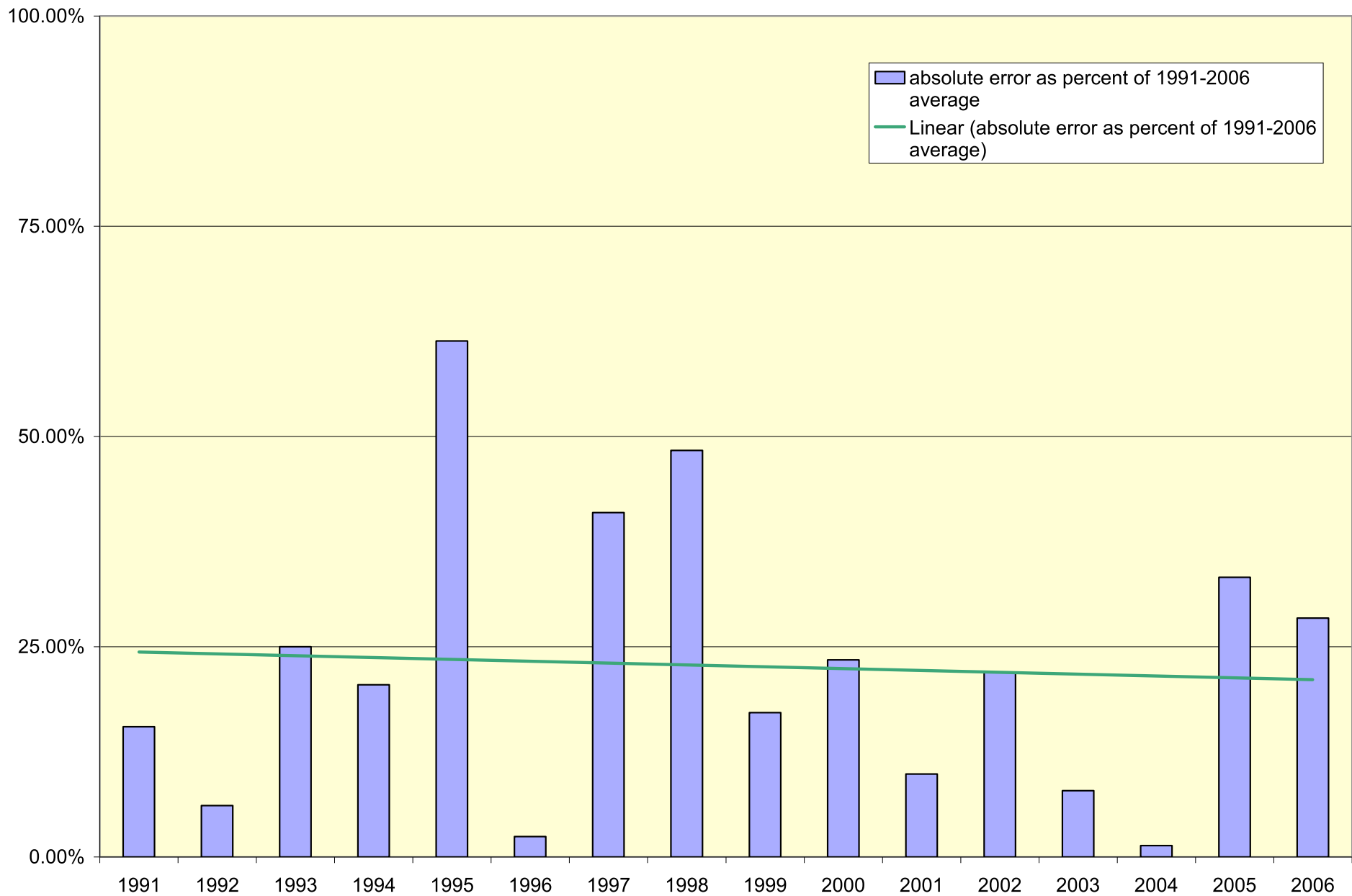
Verification for Yampa River near Maybell forecast for April-July on April 1st



**Verification for Yampa River near Maybell
Forecast for April-July for Years 1991 to 2006**



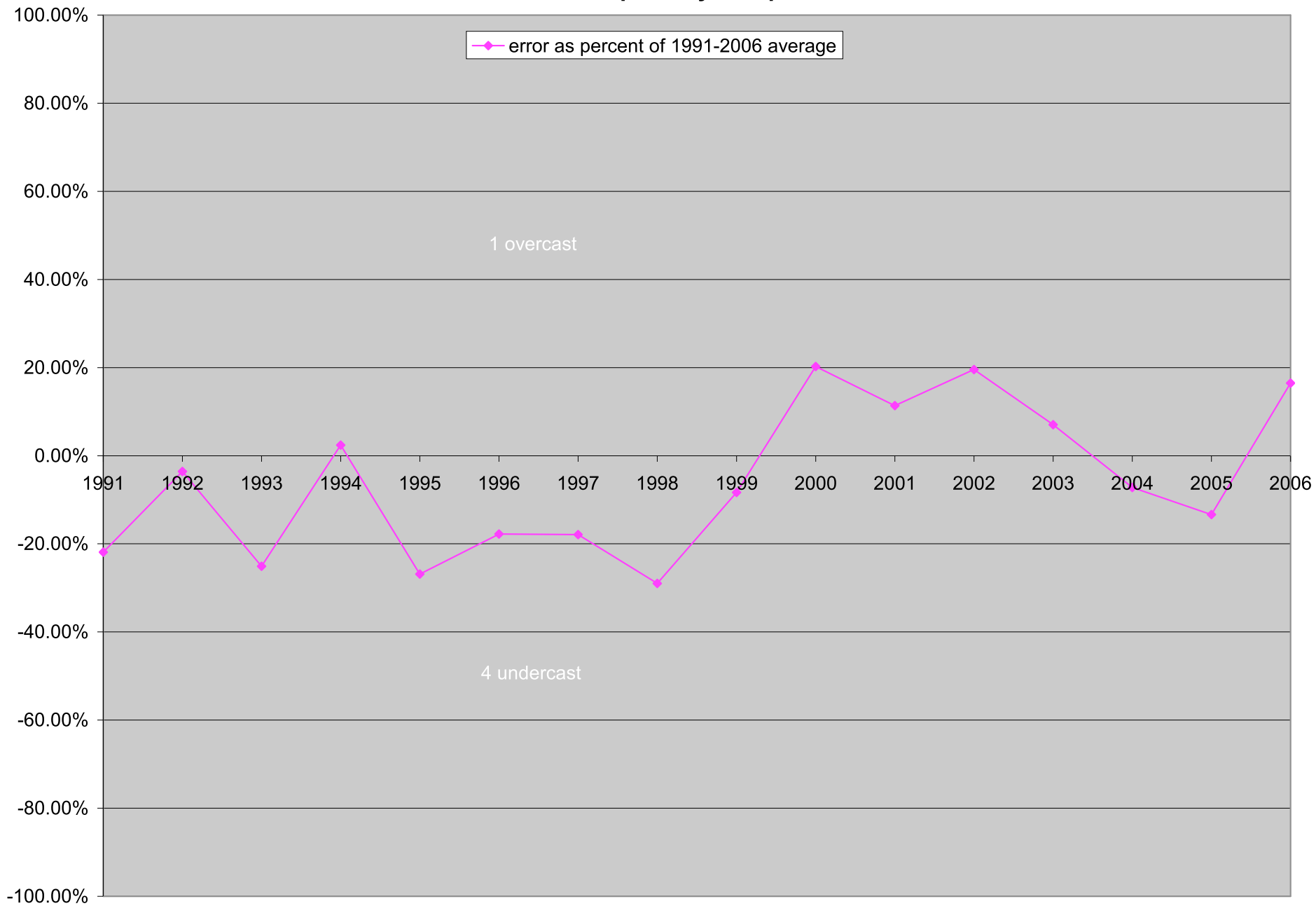
Verification for Yampa River near Maybell
forecast for April-July on April 1st



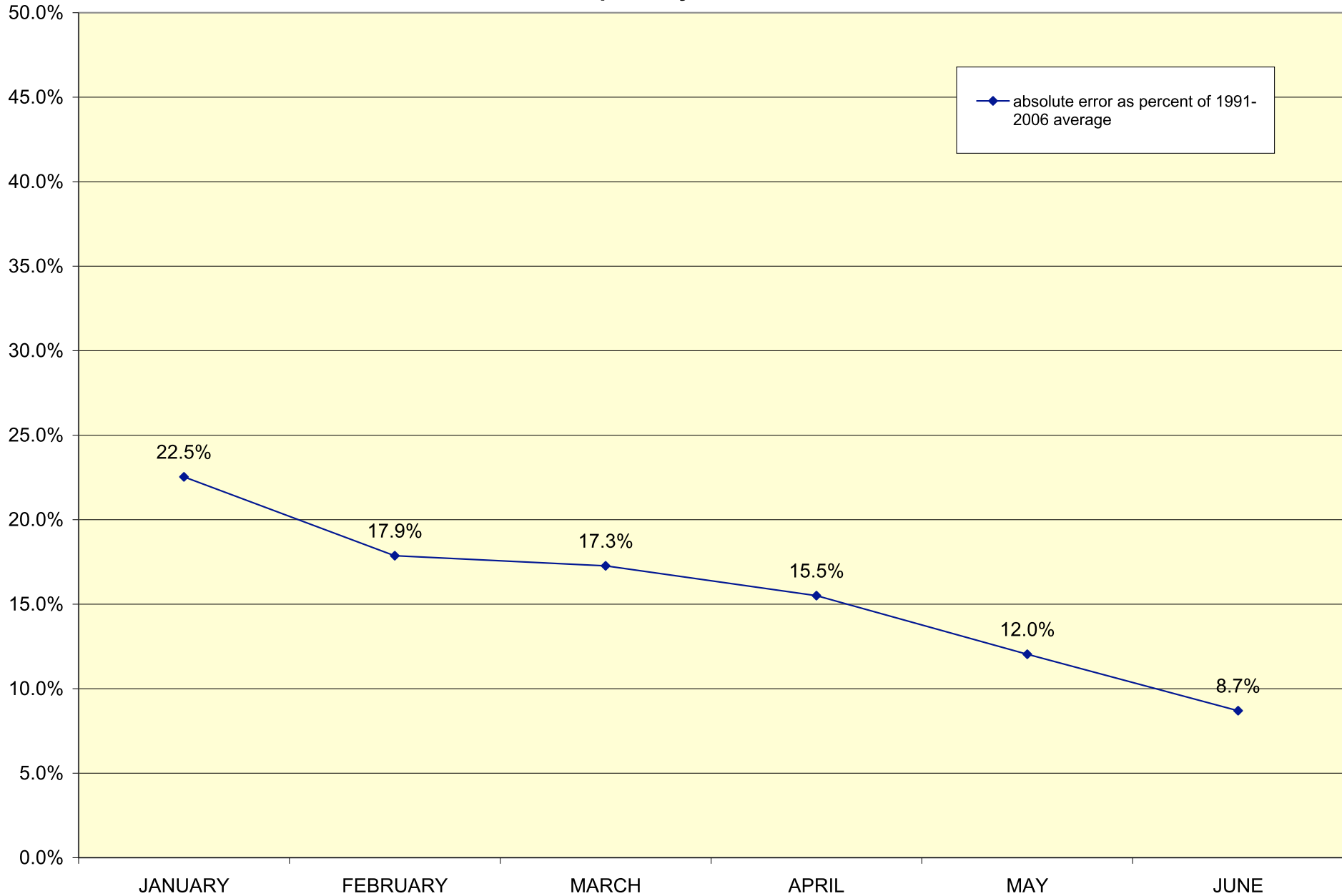
Summary for Yampa near Maybell

- Average absolute error for forecast = 22.70%
- Average absolute error for climatology = 32.47%
- Average absolute error for persistence = 39.40%

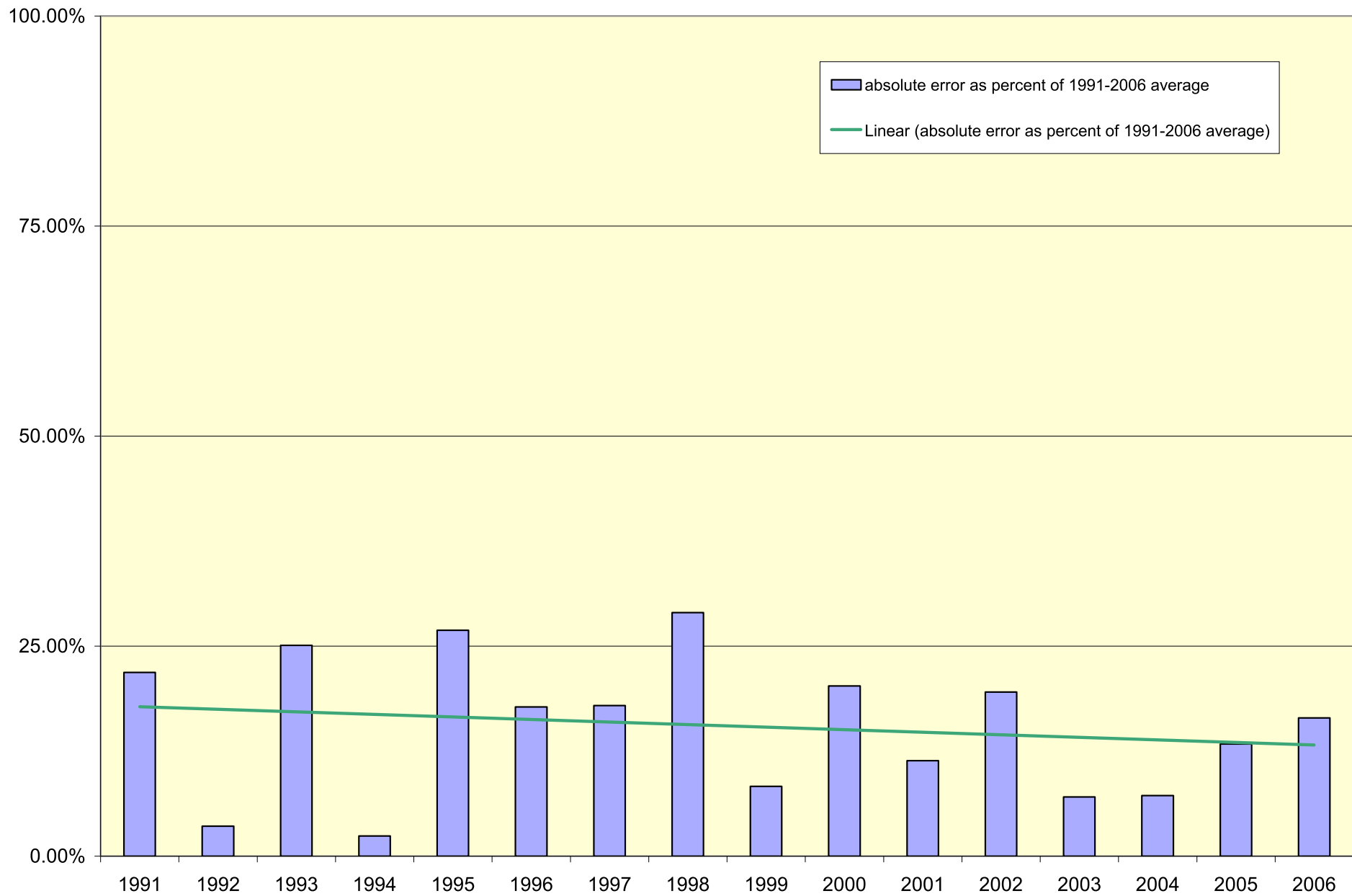
Verification for Green River at Warren Bridge forecast for April-July on April 1st



**Verification for Green River at Warren Bridge
Forecast for April-July for Years 1991 to 2006**



Verification for Green River at Warren Bridge forecast for April-July on April 1st

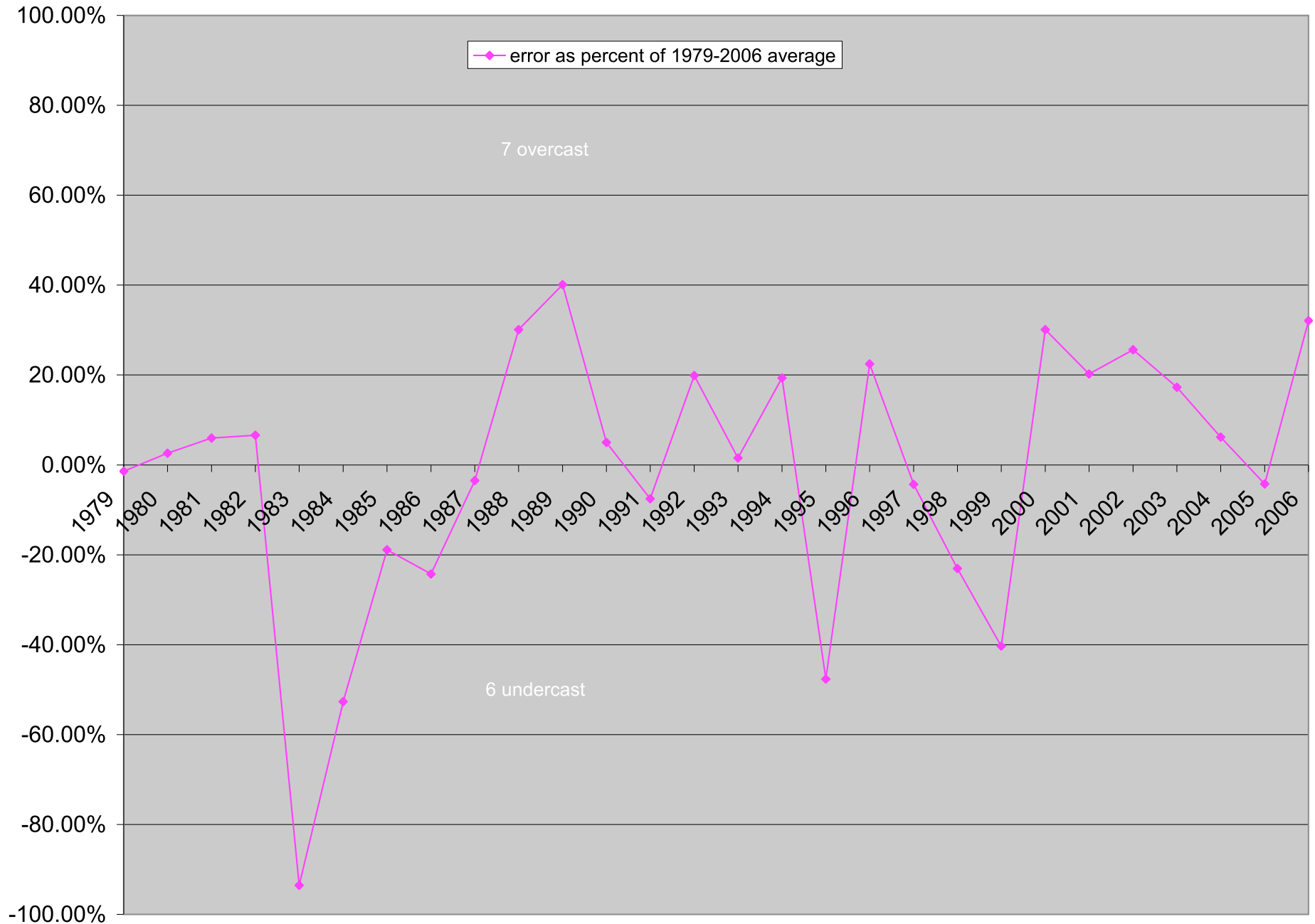


Summary for Green at Warren Bridge

- Average absolute error for forecast = 15.50%
- Average absolute error for climatology = 25.22%
- Average absolute error for persistence = 27.47%

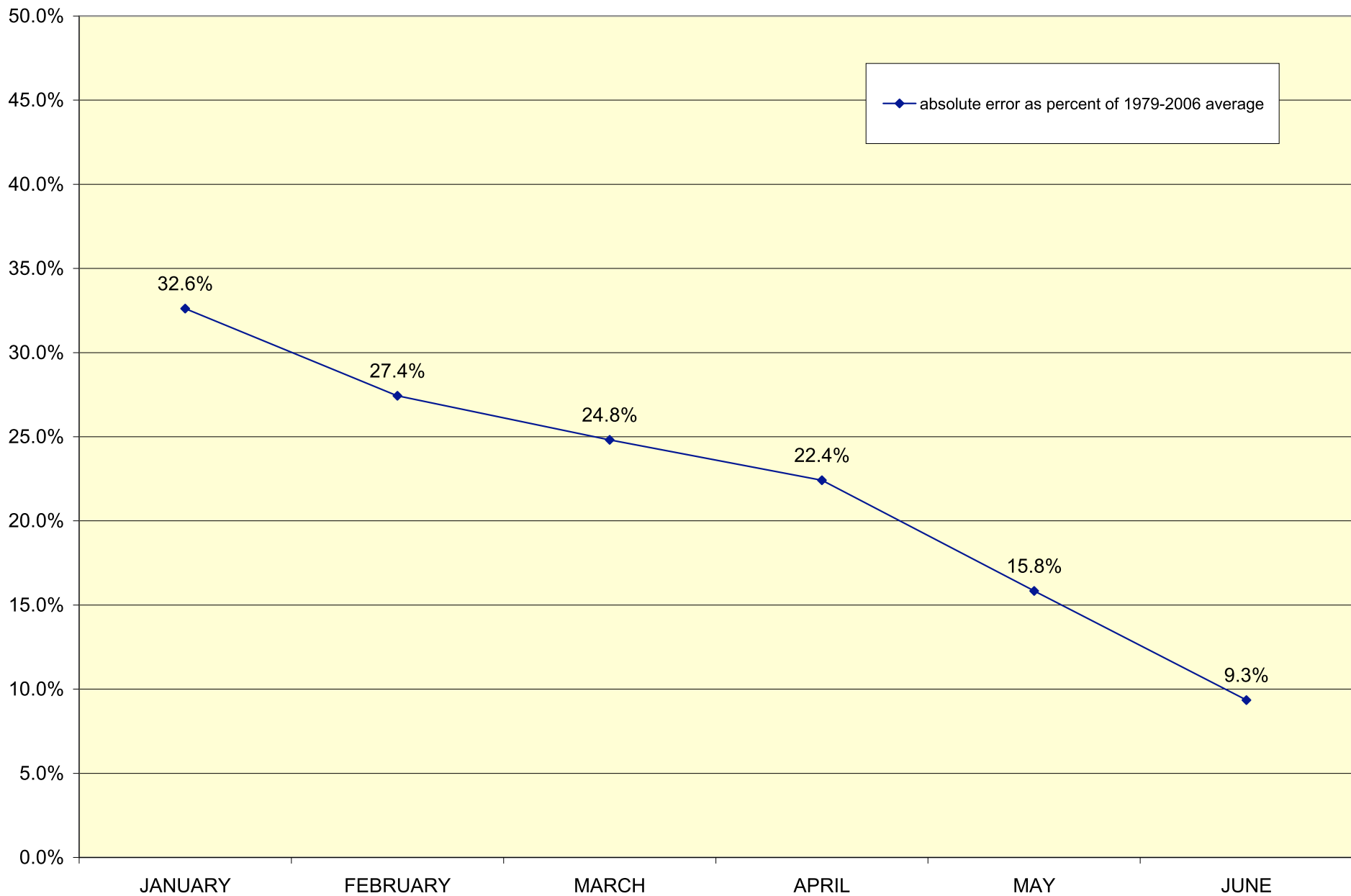
Lake Powell

Verification for Lake Powell forecast for April-July on April 1st

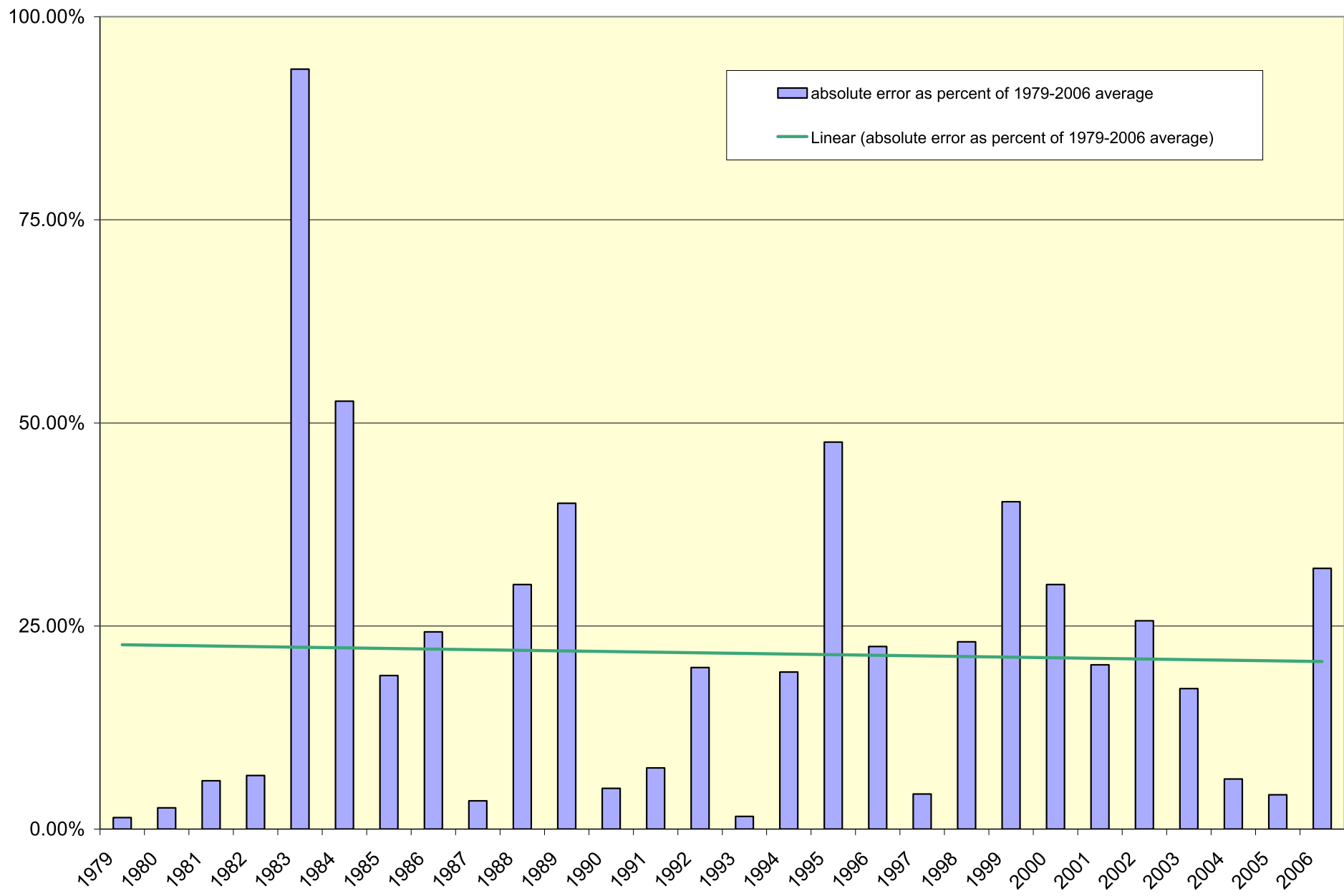


Verification for Lake Powell

Forecast for April-July for Years 1979-2006



Verification for Lake Powell forecast for April-July on April 1st



Summary for Lake Powell

- Average absolute error for forecast = 22.40%
- Average absolute error for climatology = 44.91%
- Average absolute error for persistence = 43.71%

Appendix of Medians or Averages (used in this report only)

Medians

- Gila near Solomon - 95.26 kaf
- Salt near Roosevelt - 263.76 kaf
- Verde above Horseshoe Dam - 142.5 kaf

Averages

- Virgin at Virgin - 65.3 kaf
- Santa Clara near Pine Valley - 5.7 kaf
- Provo near Hailstone - 106.18 kaf
- Rockport Reservoir - 123.05 kaf
- Navajo Reservoir - 794.26 kaf

Averages cont.

- Animas at Durango - 397.45 kaf
- Dillion Reservoir - 160.22 kaf
- Gunnison near Grand Junction - 1359.71 kaf
- Colorado near Cameo - 2170.46 kaf
- Dolores at Dolores - 230.37 kaf
- Yampa near Maybell - 886.72 kaf
- Green at Warren Bridge - 243.02 kaf
- Lake Powell - 7417.37 kaf