

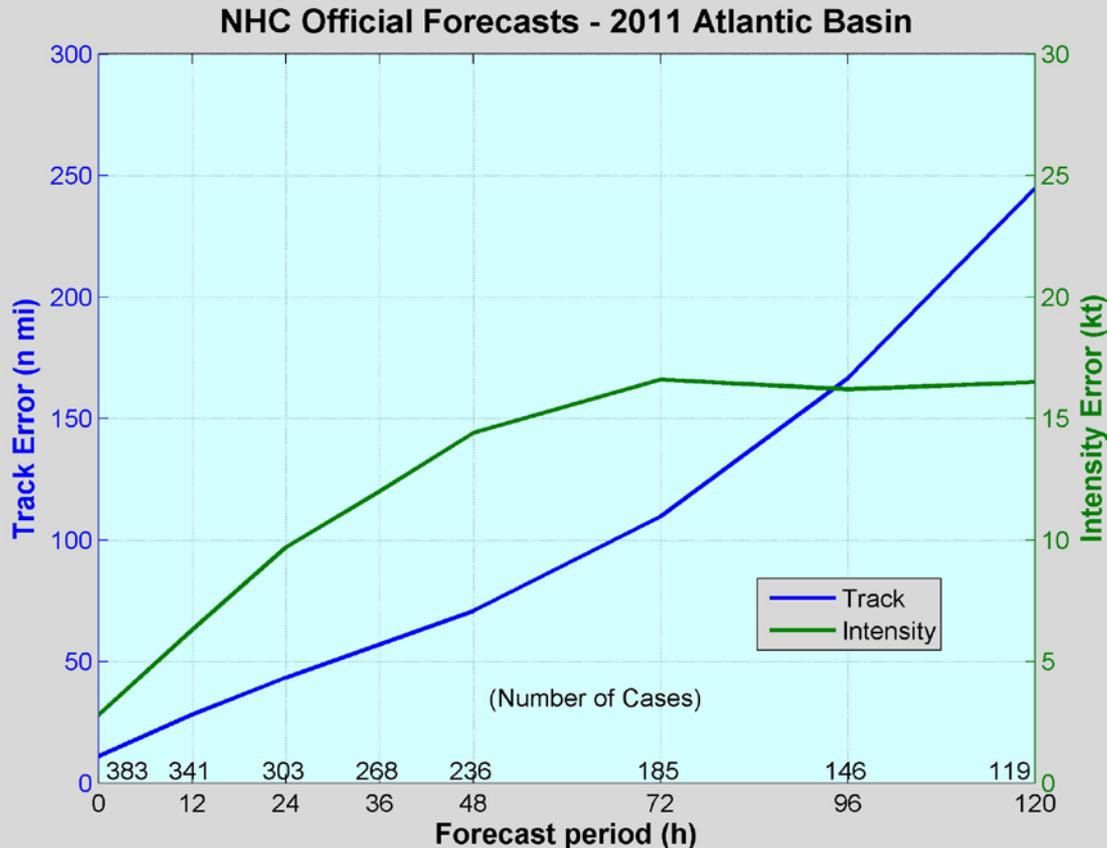
National Hurricane Center 2011 Forecast Verification

John Cangialosi and James Franklin
Hurricane Specialist Unit
National Hurricane Center

2012 Interdepartmental Hurricane Conference



2011 Atlantic Verification



| VT (h) | NT | TRACK (n mi) | INT (kt) |
|-----------|-----|-----------------|-------------|
| 000 | 383 | 11.0 | 2.8 |
| 012 | 341 | 28.2 | 6.3 |
| 024 | 303 | 43.4 | 9.7 |
| 036 | 268 | 57.1 | 12.0 |
| 048 | 236 | 70.8 | 14.4 |
| 072 | 185 | 109.7 | 16.6 |
| 096 | 146 | 166.6 | 16.2 |
| 120 | 119 | 244.7 | 16.5 |

Values in green exceed all-time records.

48 h error GPRA targets

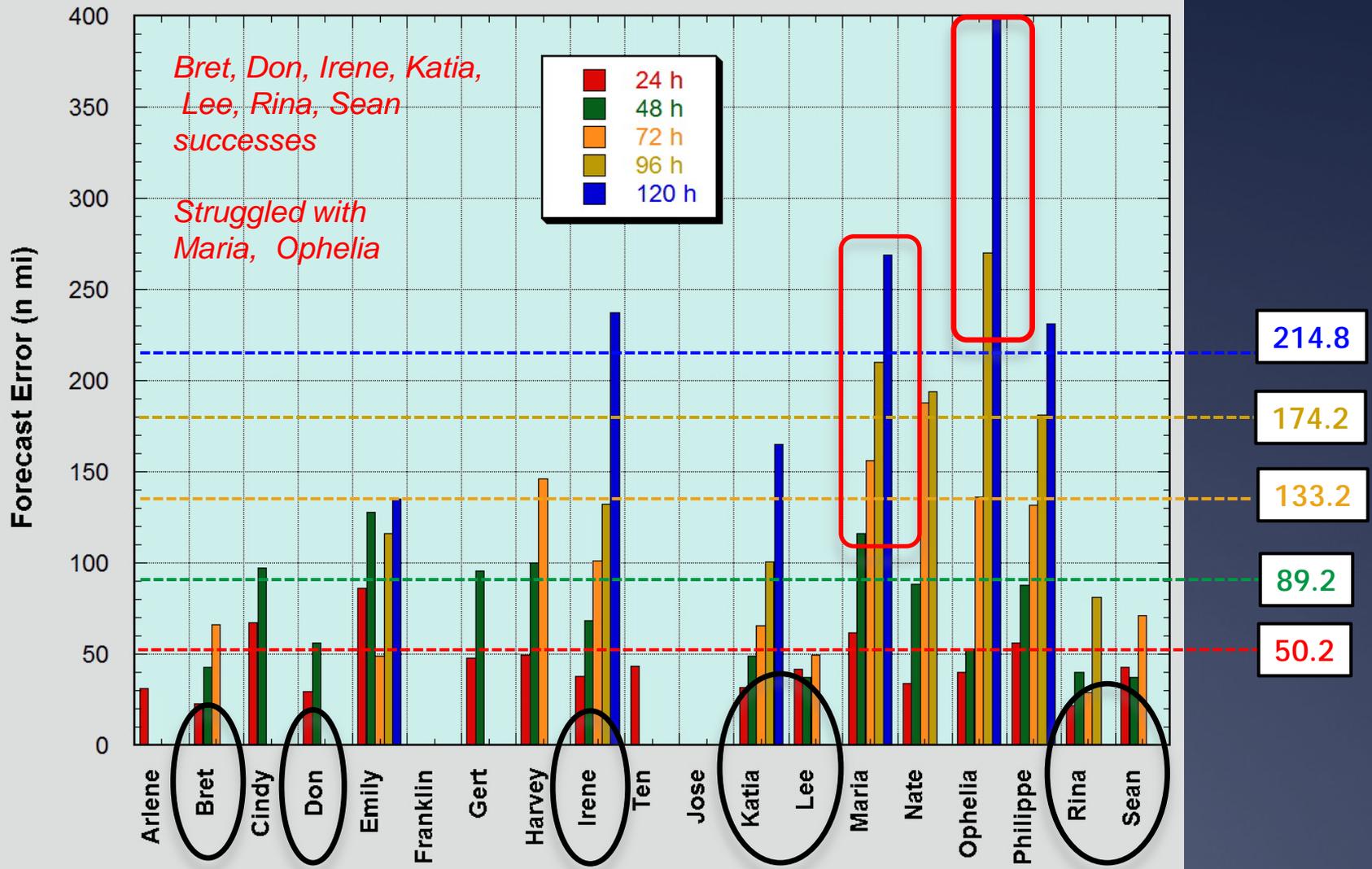
Track: 87 n mi (met)

Intensity: 13 kt (missed)

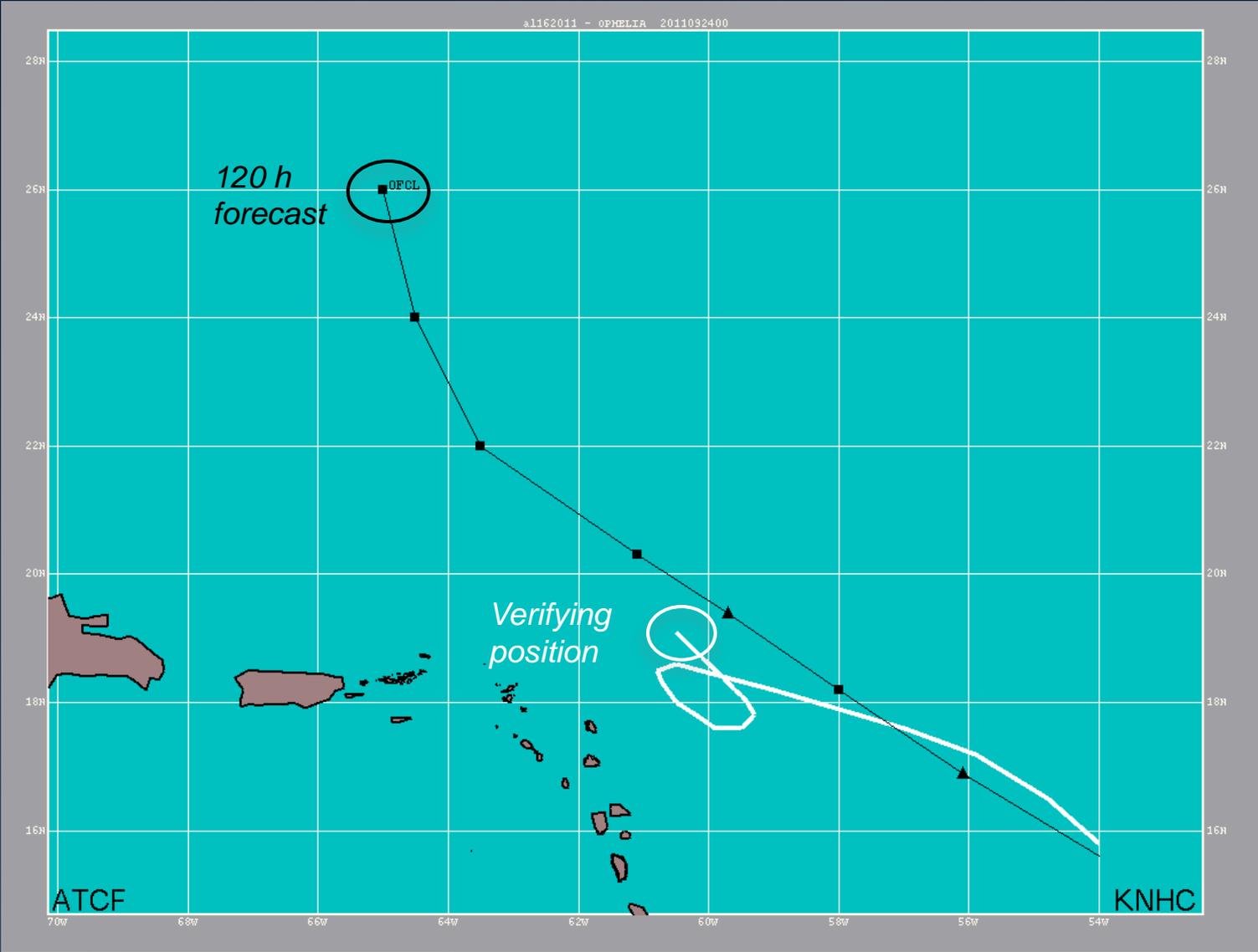
So what else is new?

Atlantic Track Errors by Storm

2011 Official Track Errors By Storm - Atlantic

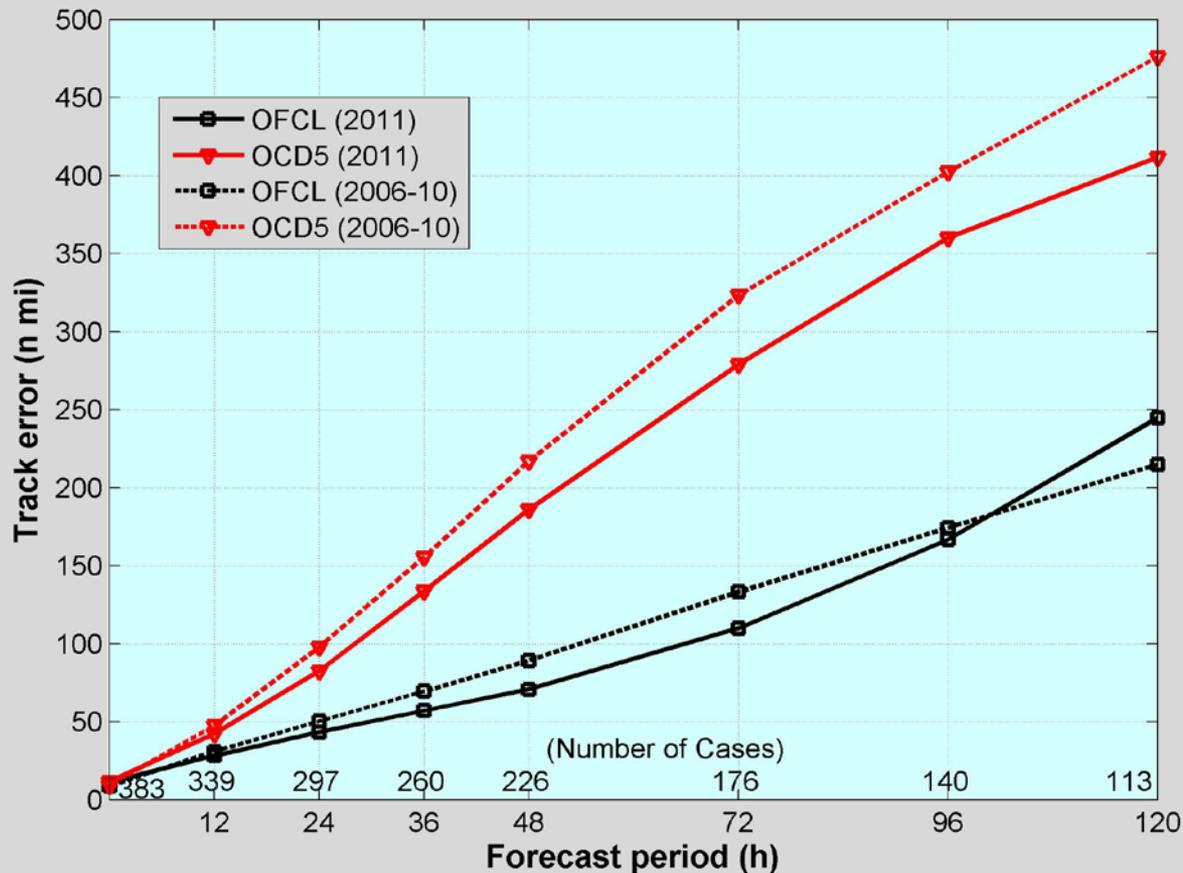


Ophelia's Reformation



Atlantic Track Errors vs. 5-yr Mean

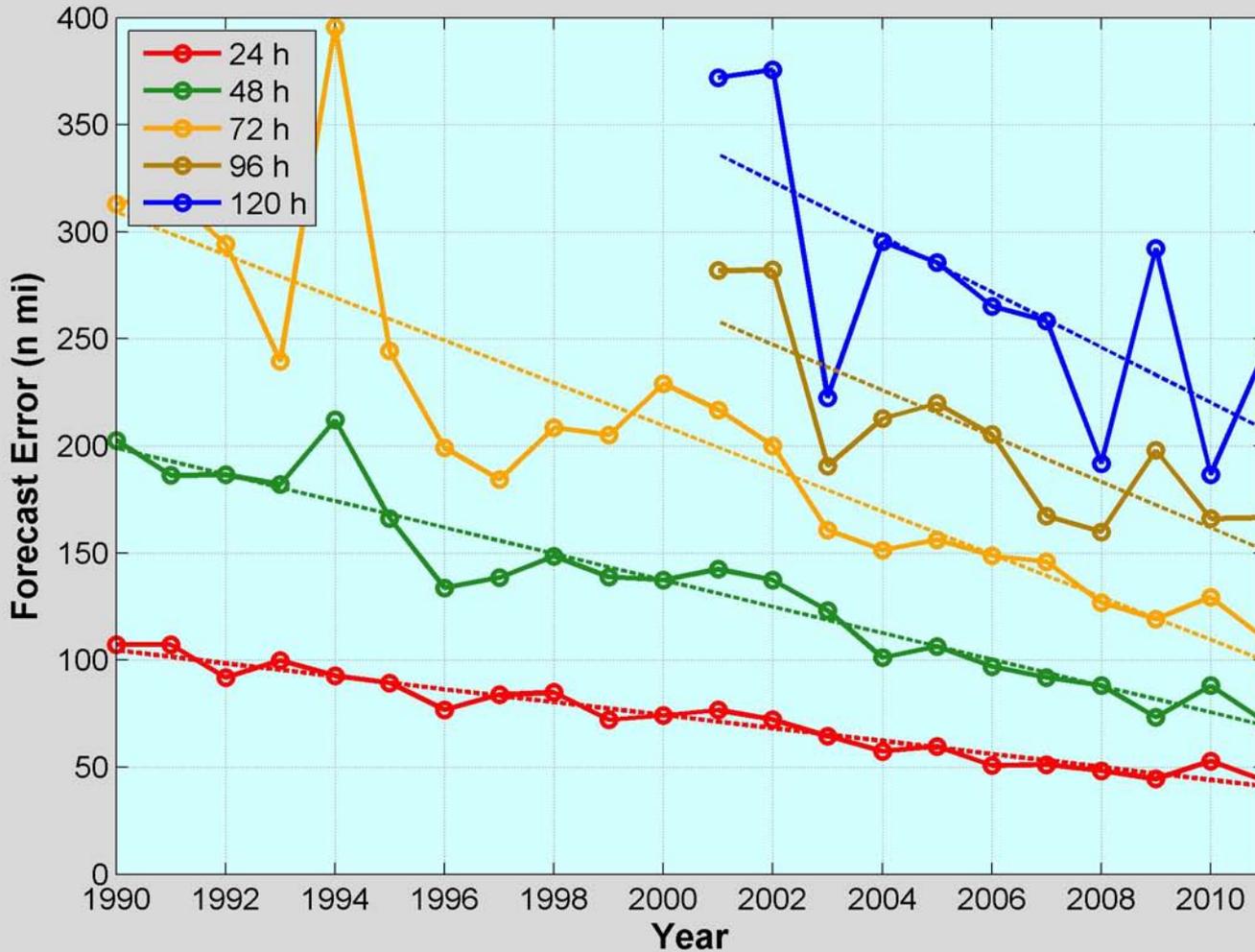
NHC Official vs. CLIPER5 Forecasts
Atlantic Basin



Official forecasts were mostly better than the 5-yr mean, though the season's storms were "easier" than normal.

Atlantic Track Error Trends

NHC Official Track Error Trend
Atlantic Basin



Error
Reduction
since 1990

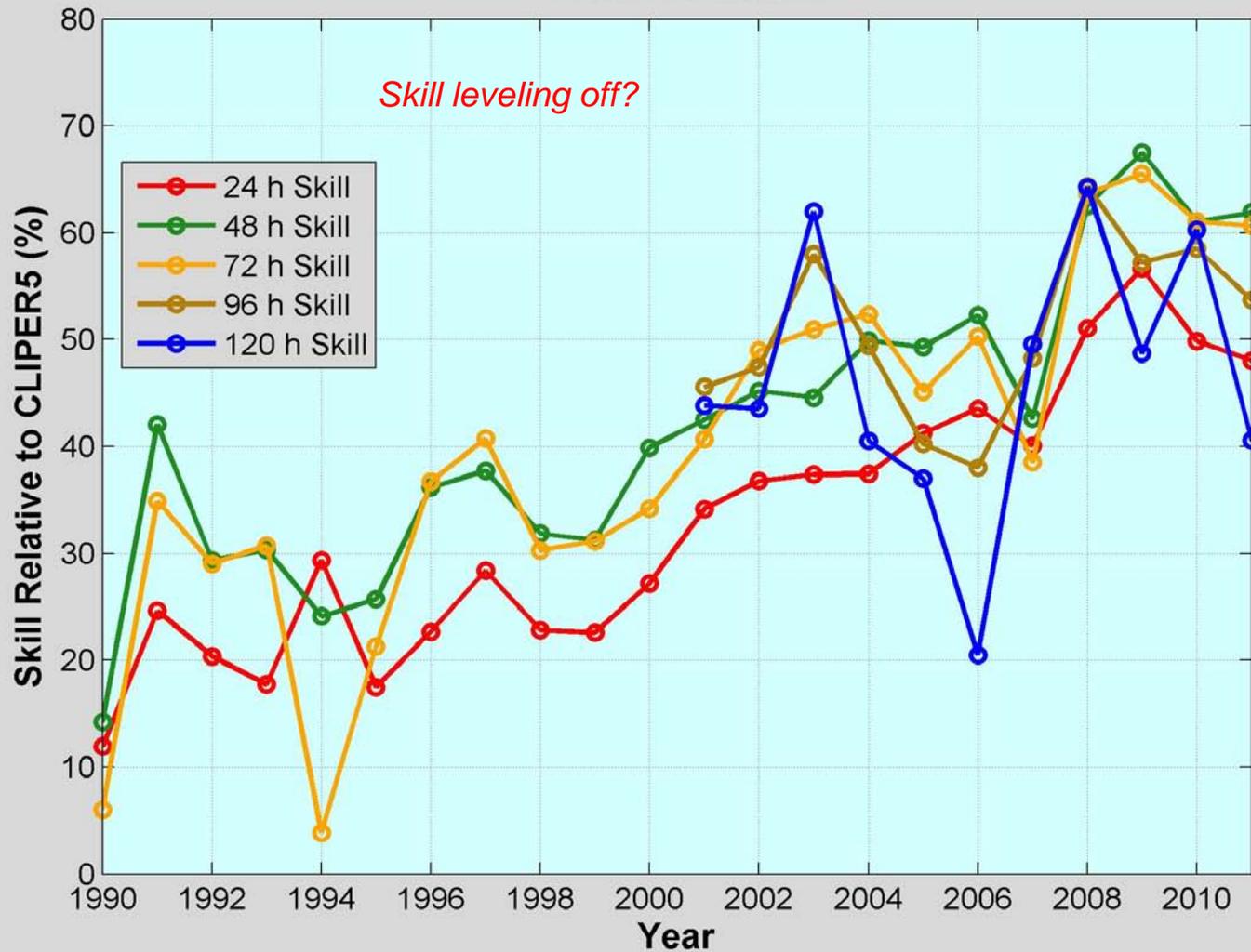
72 h: 65%

48 h: 62%

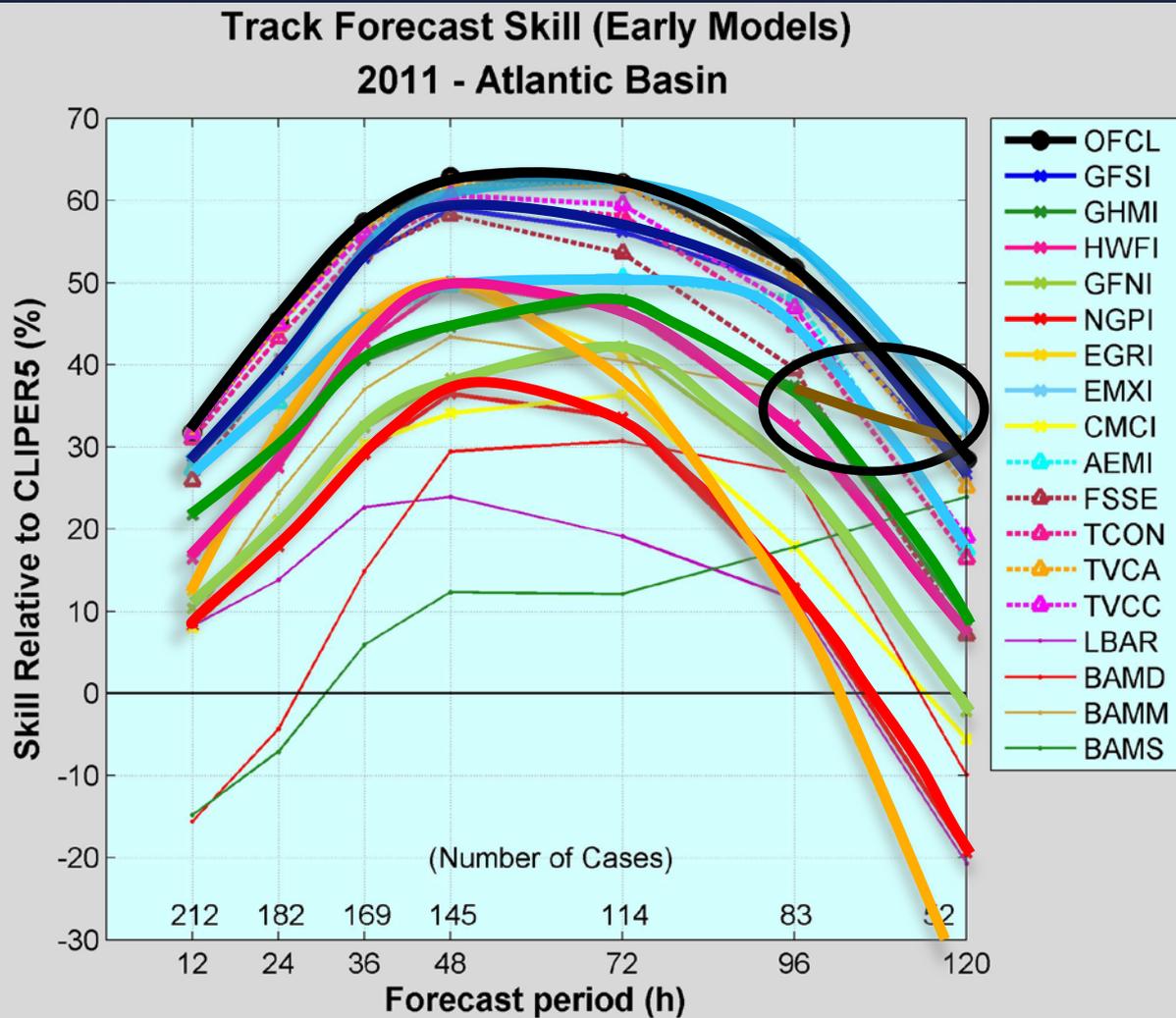
24 h: 57%

Atlantic Track Skill Trends

NHC Official Track Skill Trend
Atlantic Basin



2011 Track Guidance



Official forecast skill very close to consensus aids (even a little better)

EMXI and GFSI best models overall.

GFS ensemble mean not as good as deterministic GFS.

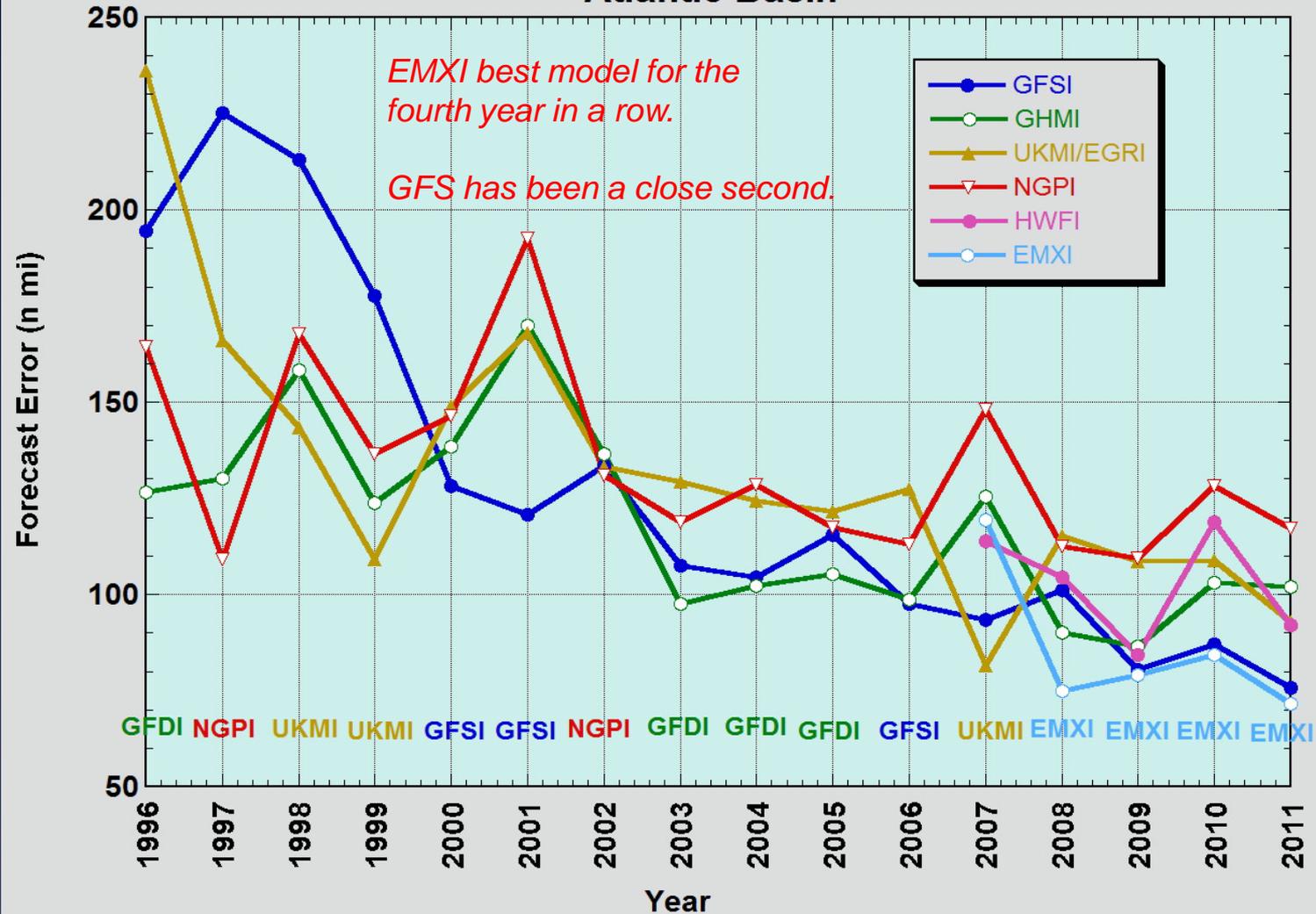
Continued poor performance of GFNI and NGPI. Bad year for EGRI.

HWRF and GHMI middle of the pack.

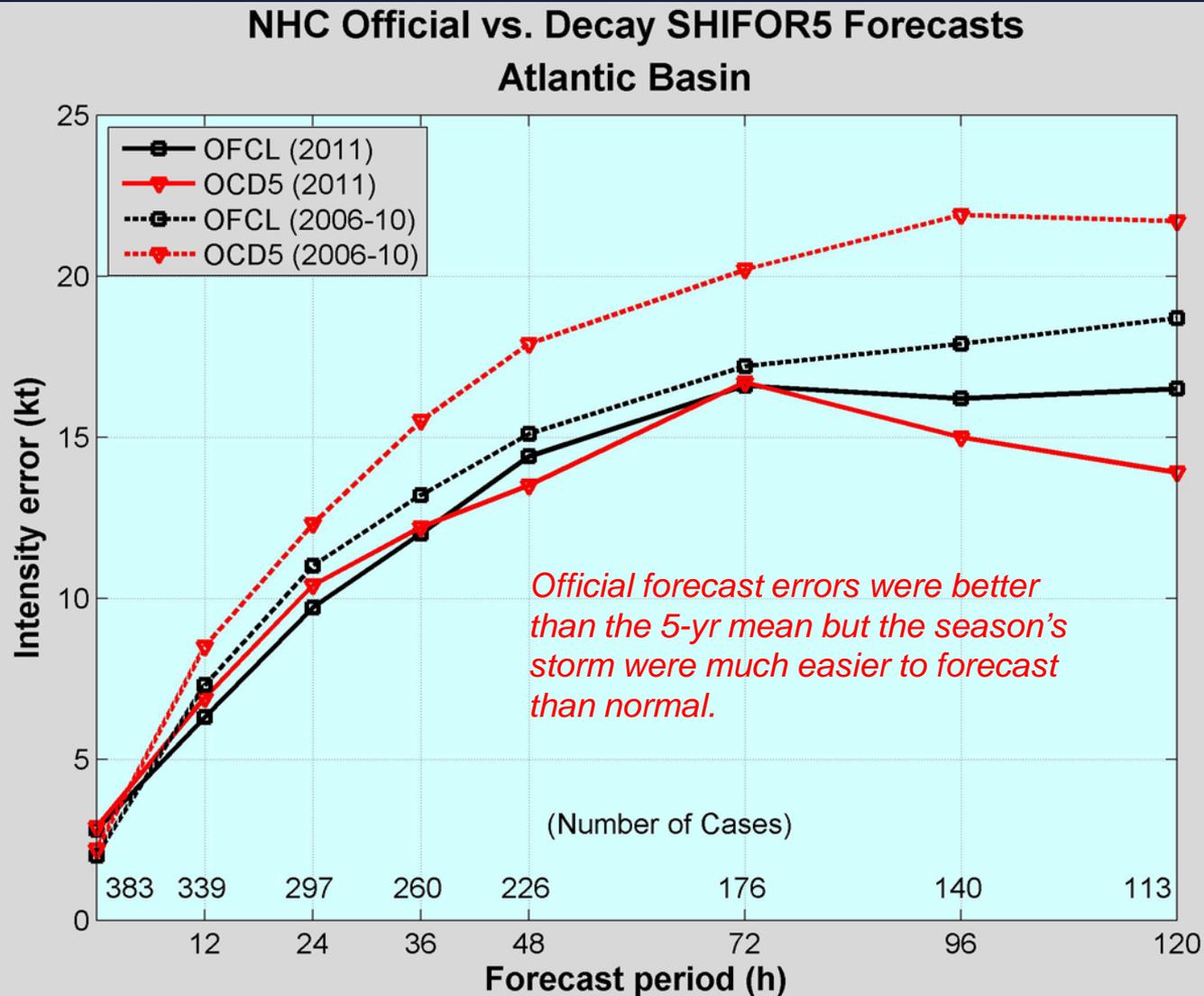
BAMM beat all regional models at 96 and 120 h.

48-h Model Trends

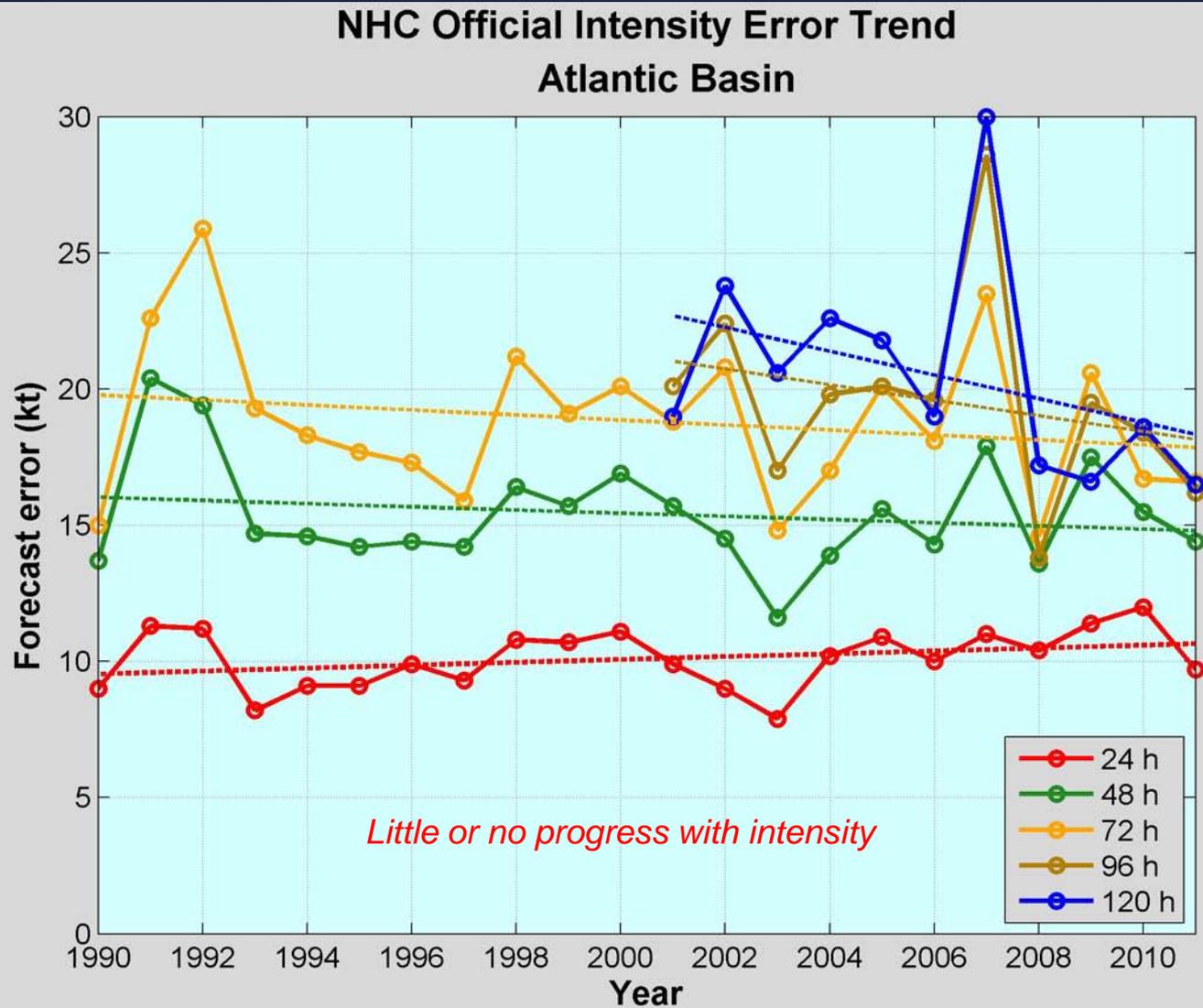
48-h Track Forecast Guidance Trends Atlantic Basin



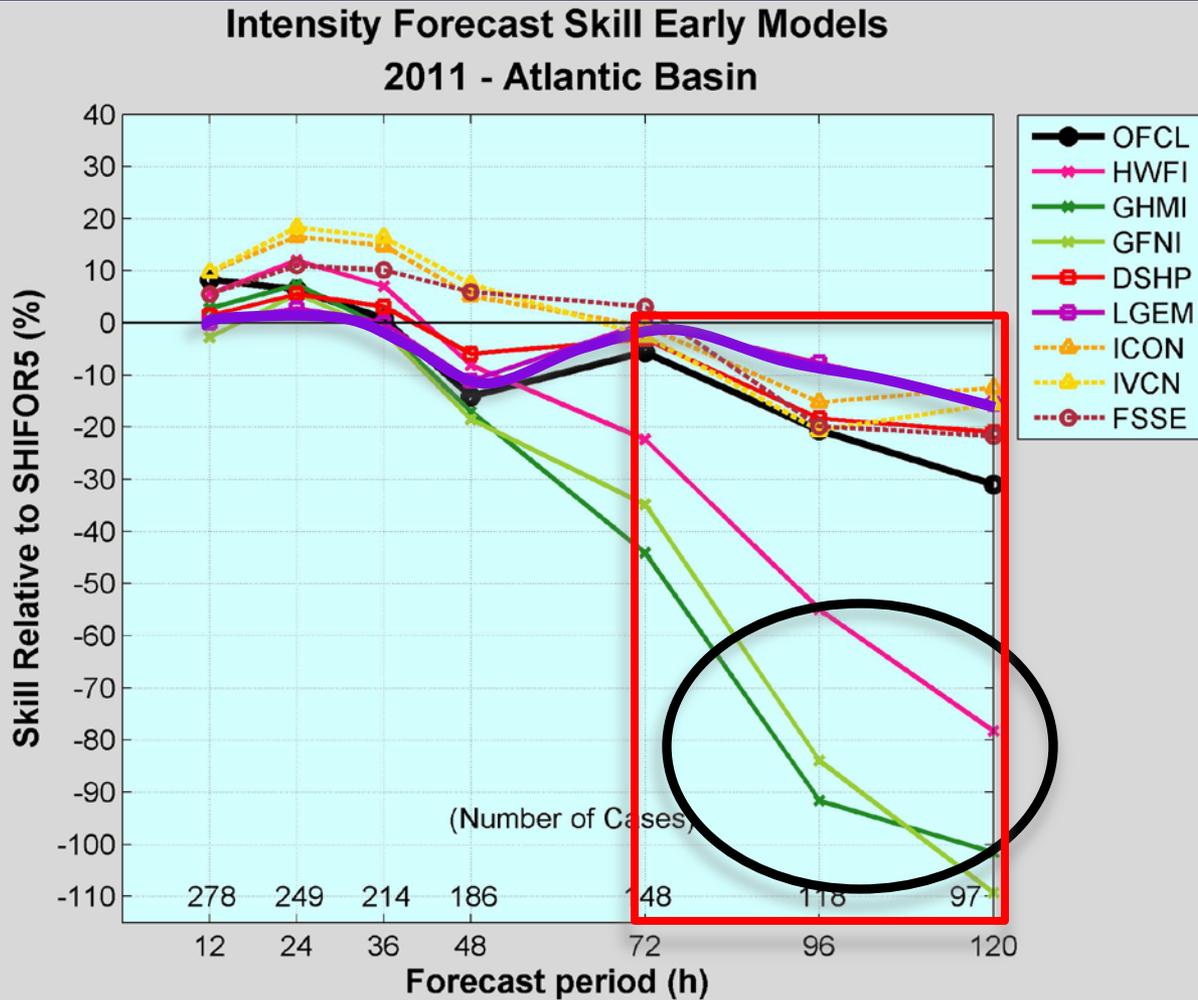
Atlantic Intensity Errors vs. 5-Year Mean



Atlantic Intensity Error Trends



2011 Intensity Guidance



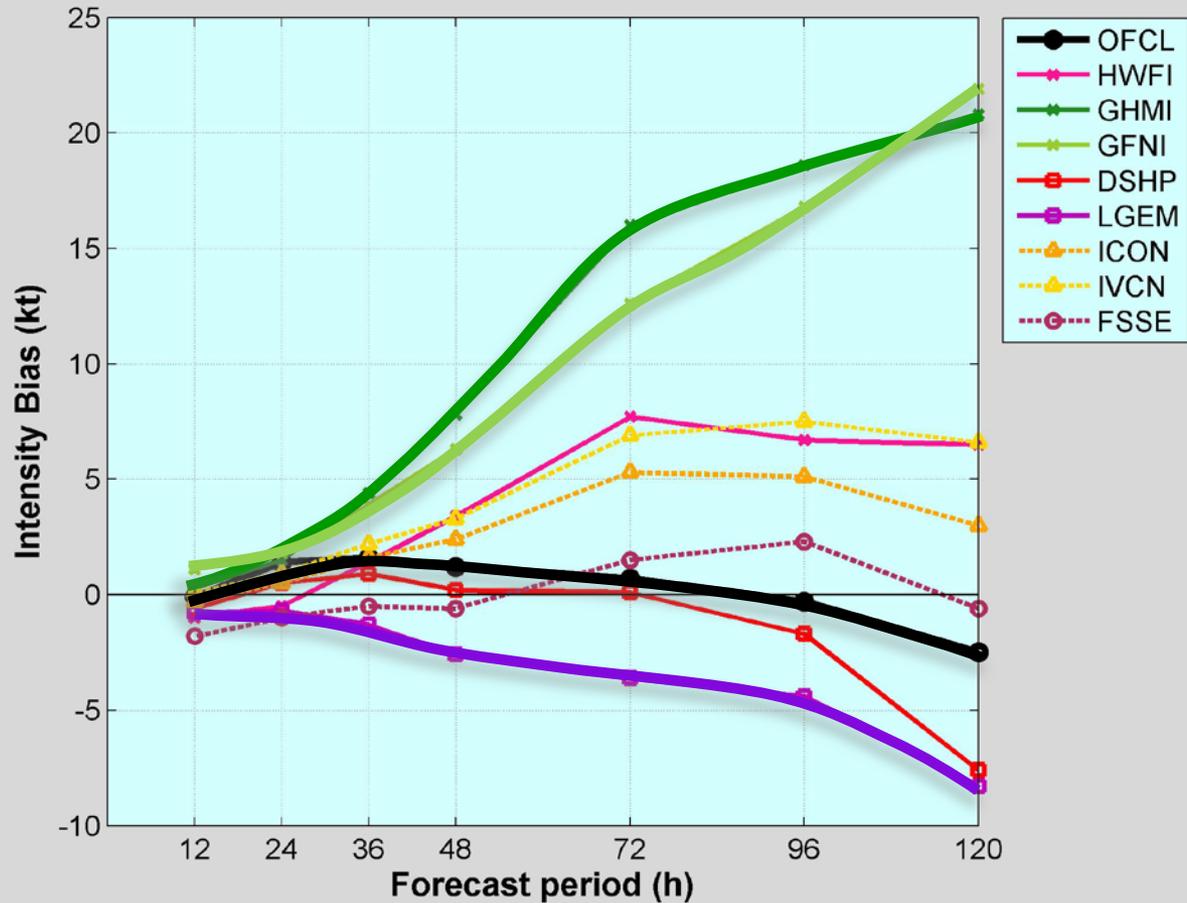
No operational aid was skillful beyond 72 h.

Dynamical models performed very poorly.

LGEM was best individual model overall.

2011 Intensity Bias

Intensity Bias Early Models
2011 - Atlantic Basin

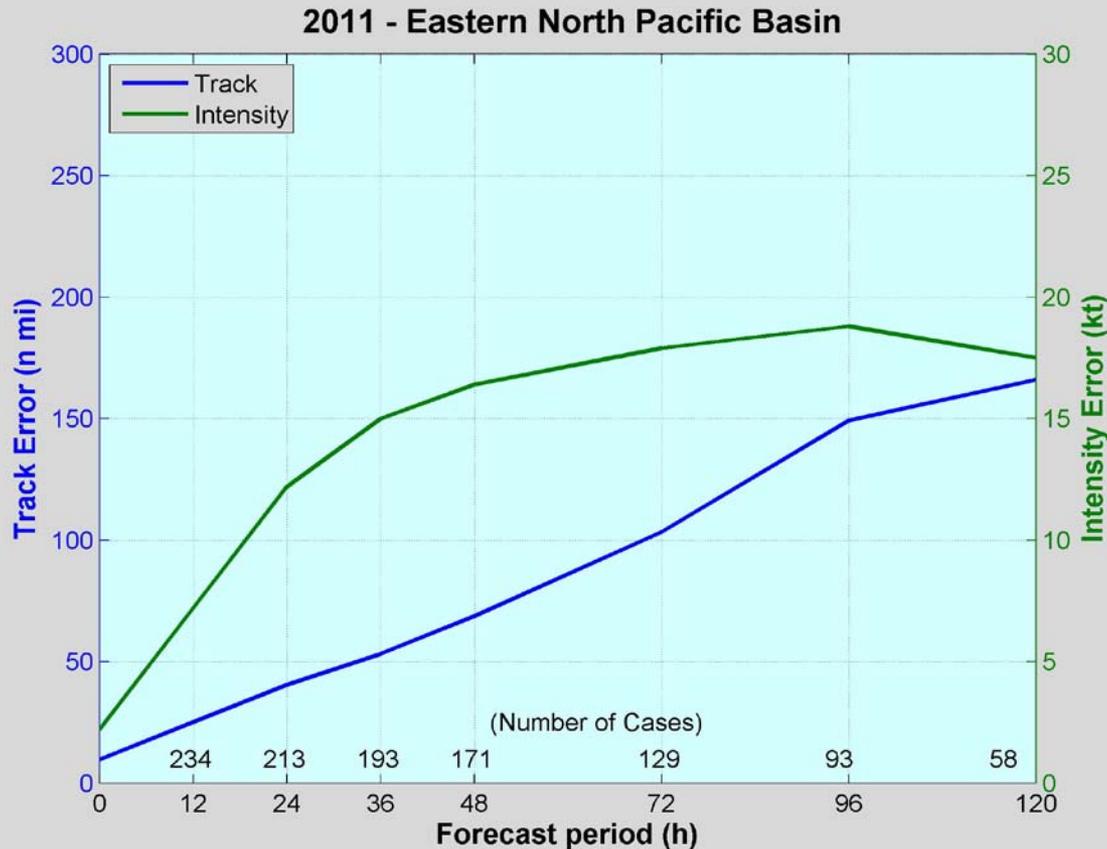


GHMI and GFNI had a substantial high bias

Slight low bias LGEM

OFCL very little bias

2011 East Pacific Verification

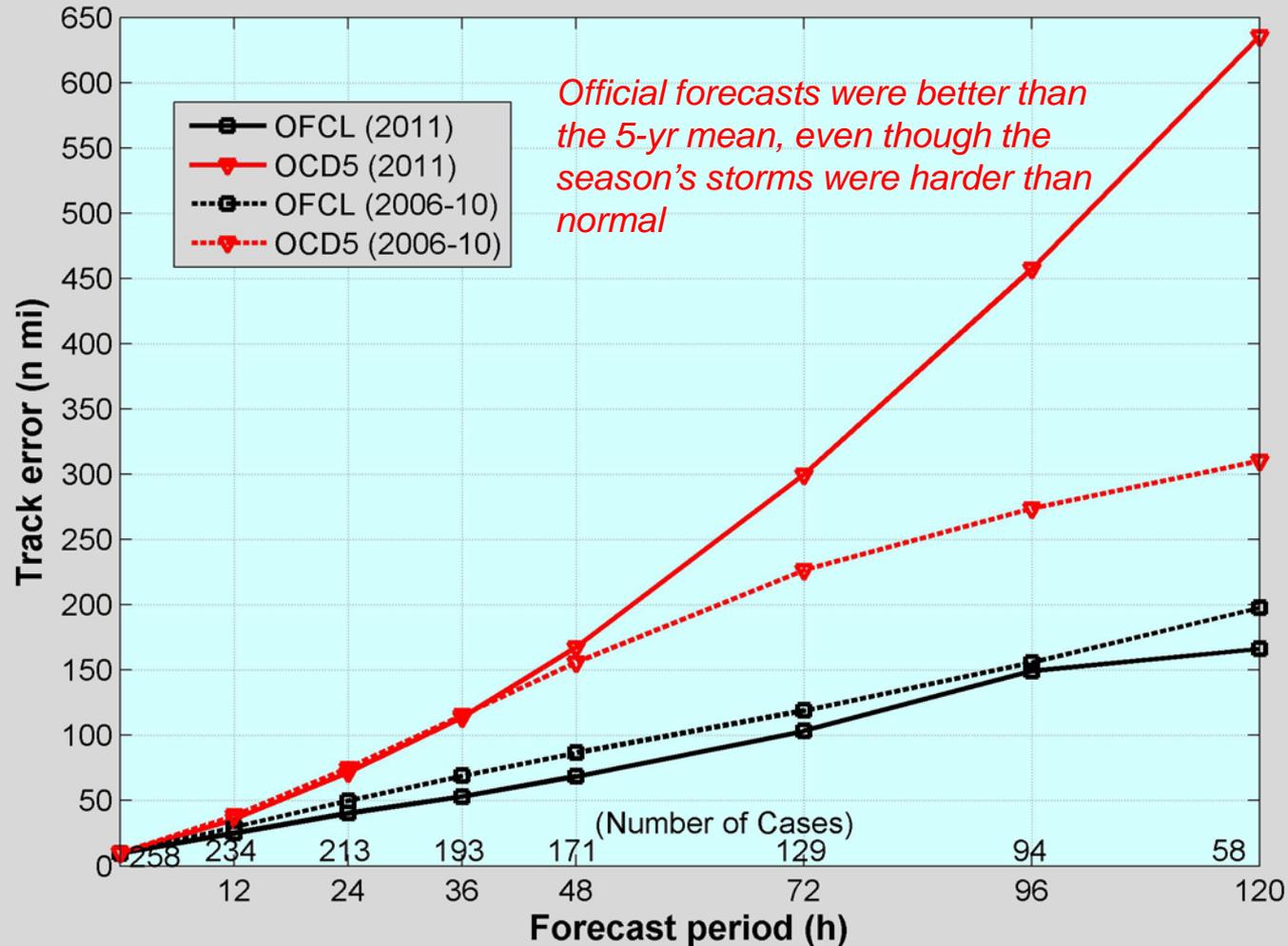


| VT (h) | NT | TRACK (n mi) | IN (kt) |
|-----------|-----|-----------------|------------|
| 000 | 258 | 9.7 | 2.2 |
| 012 | 234 | 25.1 | 7.2 |
| 024 | 213 | 40.4 | 12.2 |
| 036 | 193 | 53.2 | 15.0 |
| 048 | 171 | 68.6 | 16.4 |
| 072 | 129 | 103.3 | 17.9 |
| 096 | 93 | 149.2 | 18.8 |
| 120 | 58 | 166.1 | 17.5 |

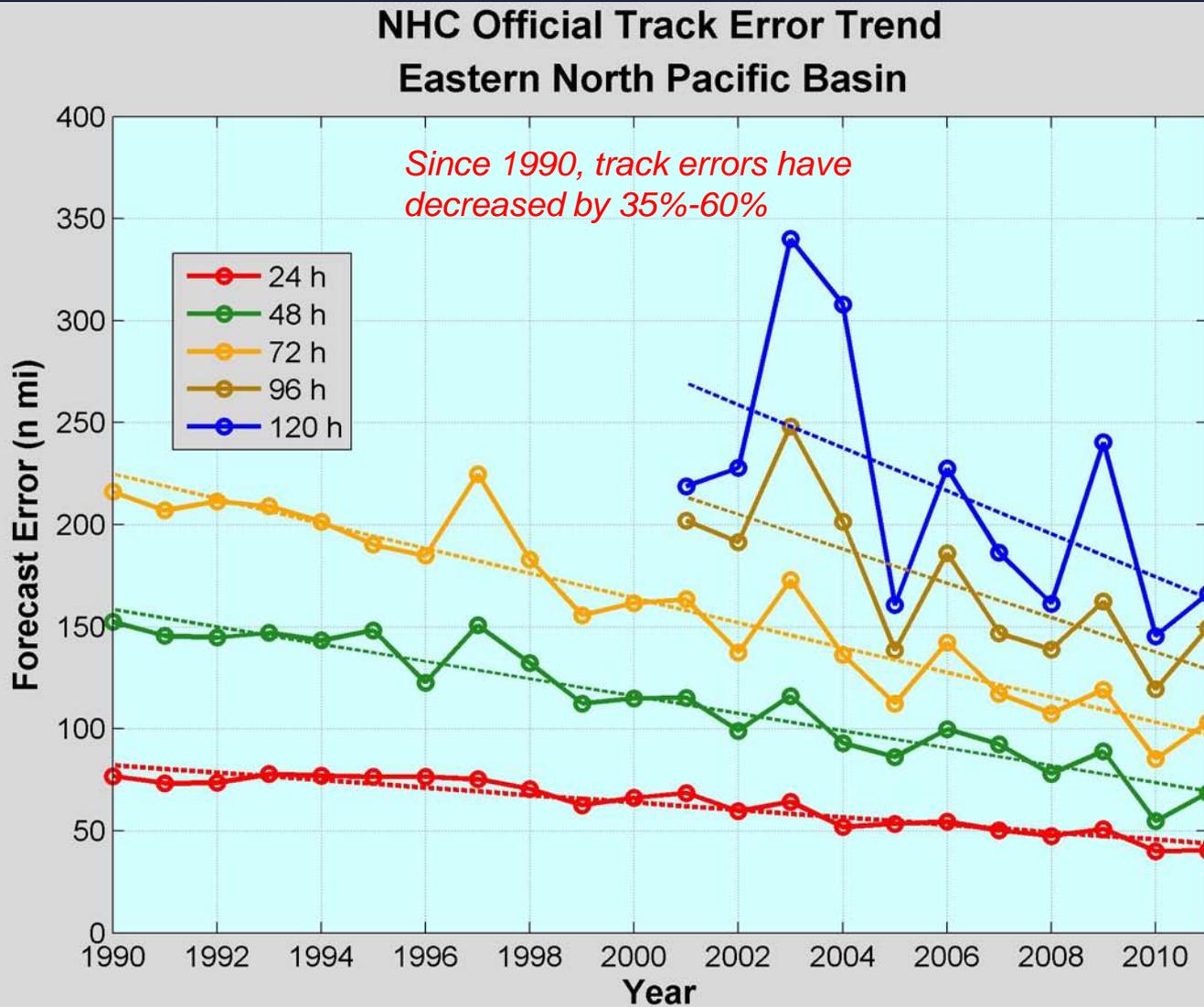
Values in green exceeded all-time lows.

Eastern Pacific Track Errors vs. 5-Year Mean

NHC Official vs. CLIPER5 Forecasts
Eastern North Pacific Basin

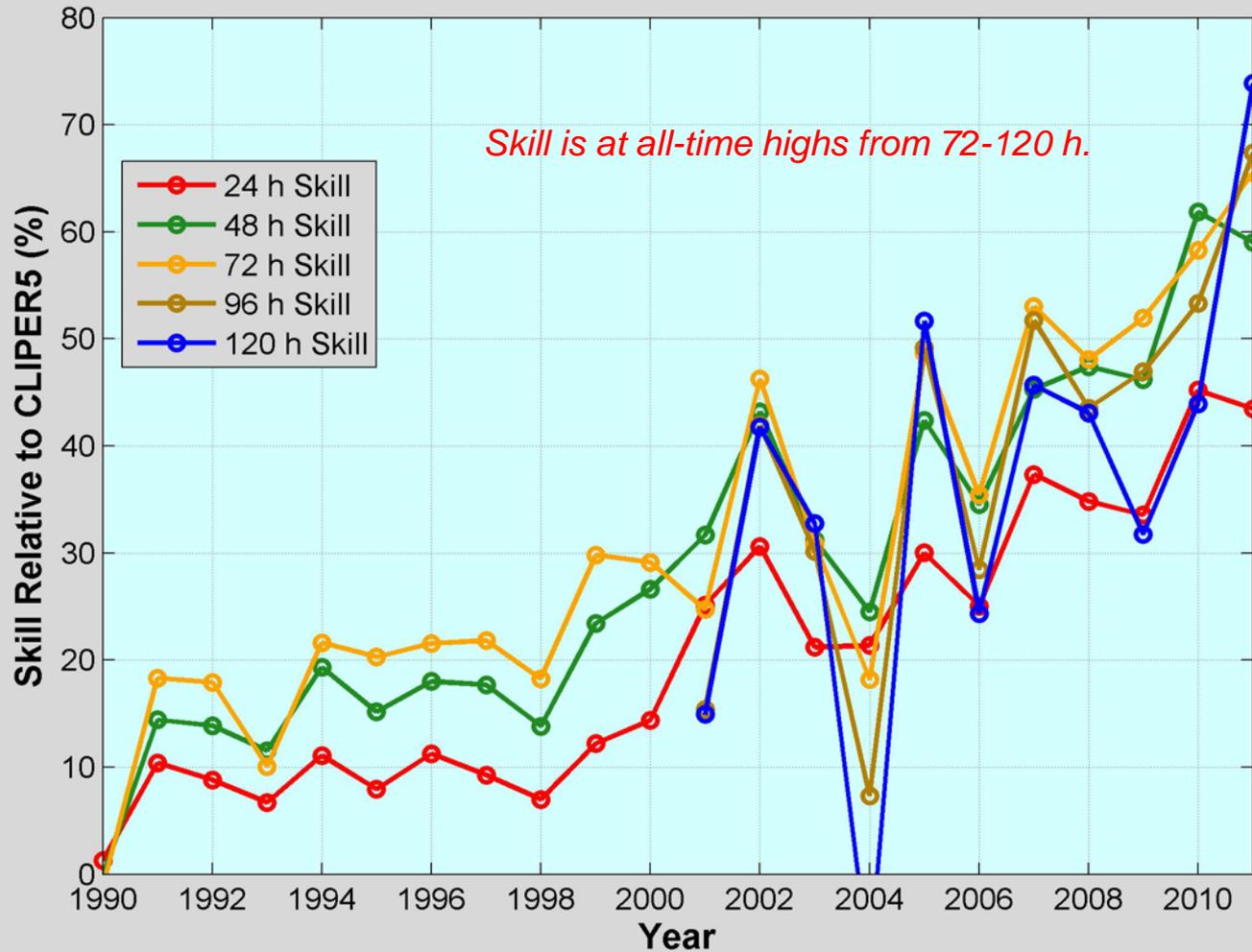


EPAC Track Error Trends



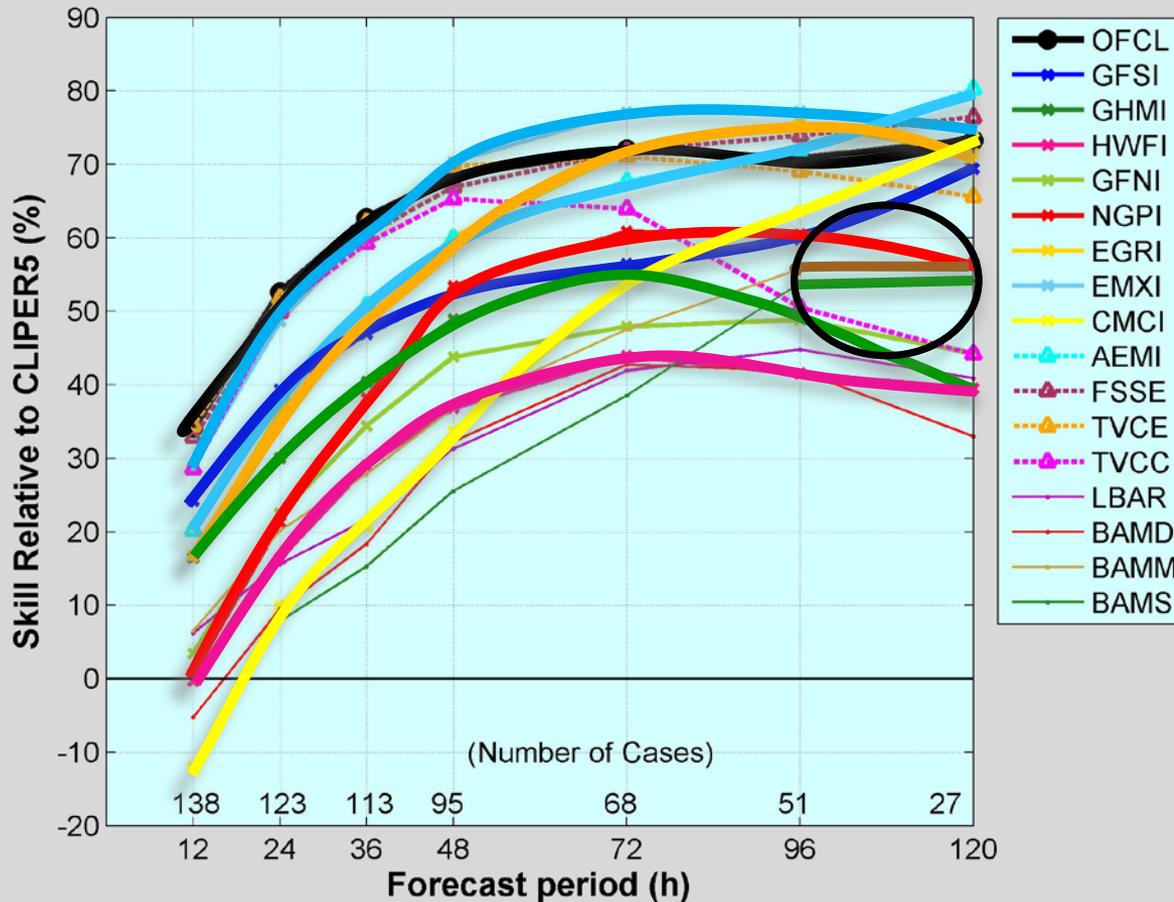
EPAC Track Skill Trends

NHC Official Track Skill Trend
Eastern North Pacific Basin



2011 Track Guidance

Track Forecast Skill (Early Models)
2011 - Eastern North Pacific Basin



OFCL near the TVCE and FSSE.

EMXI best model in this basin too.

GFS ensemble mean is quite skillful and better than the deterministic GFS.

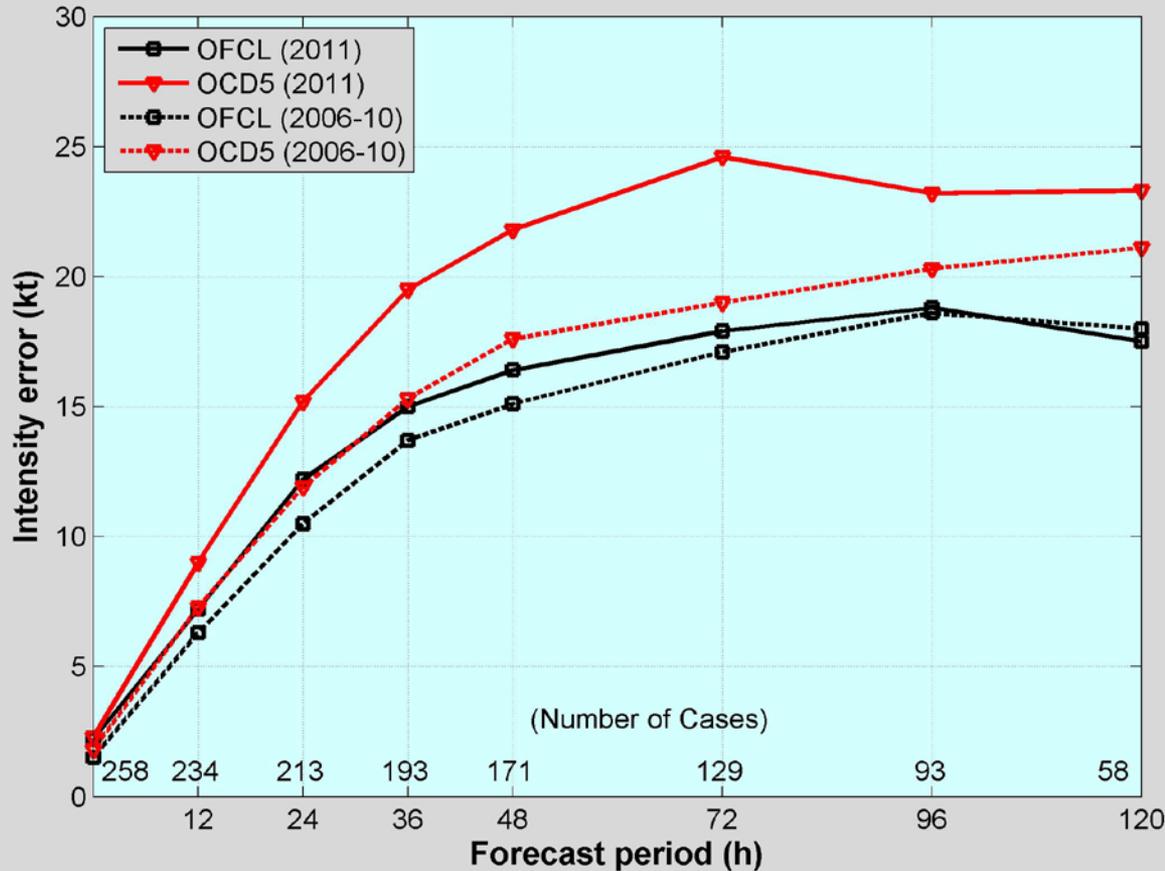
EGRI, NGPI, CMCI performed well in the EPAC.

GHMI middle of the pack, HWRF trails.

BAMS and BAMM beat the regional models at 96 and 120 h.

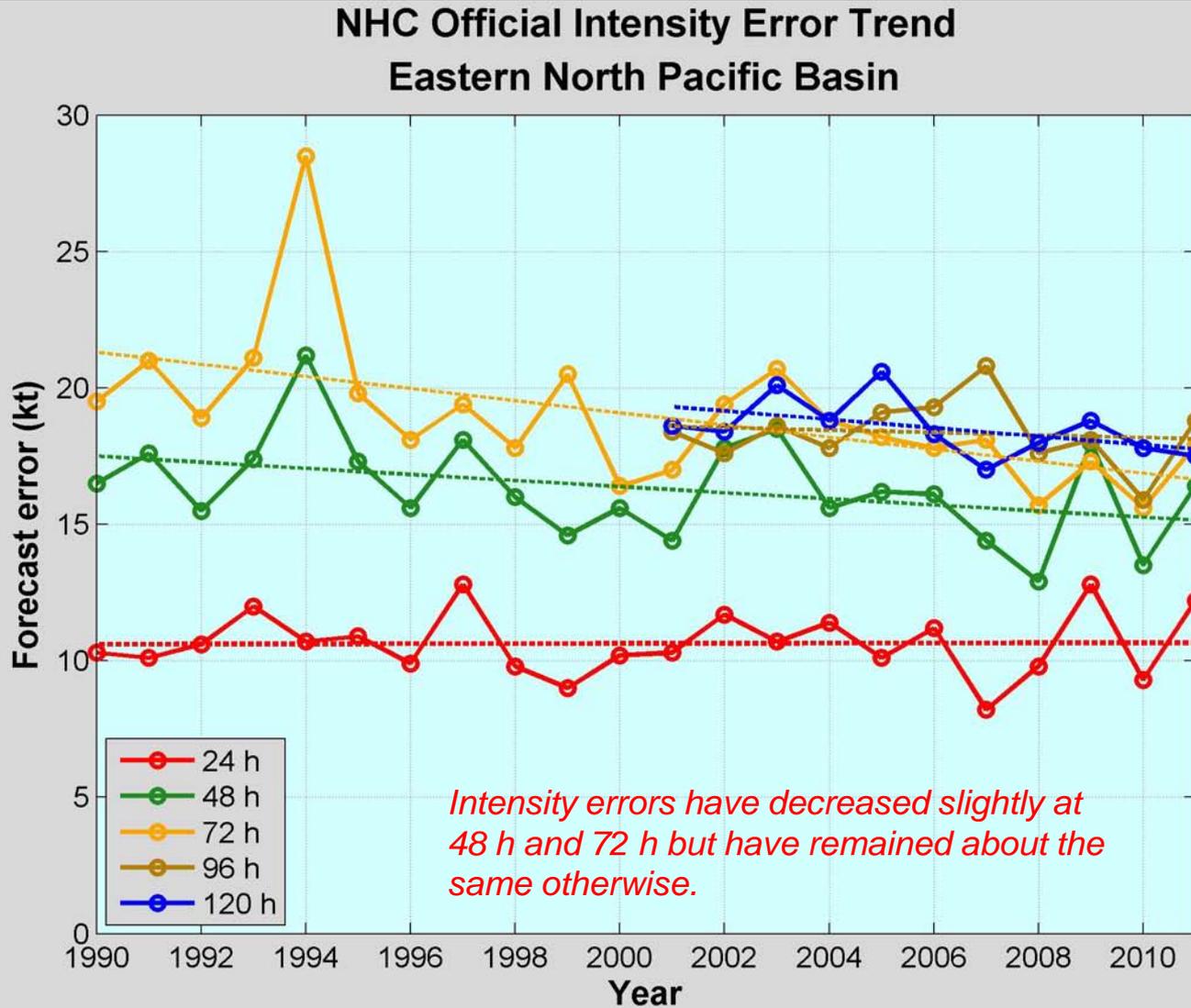
EPAC Intensity Errors vs. 5-Year Mean

NHC Official vs. Decay SHIFOR5 Forecasts
Eastern North Pacific Basin

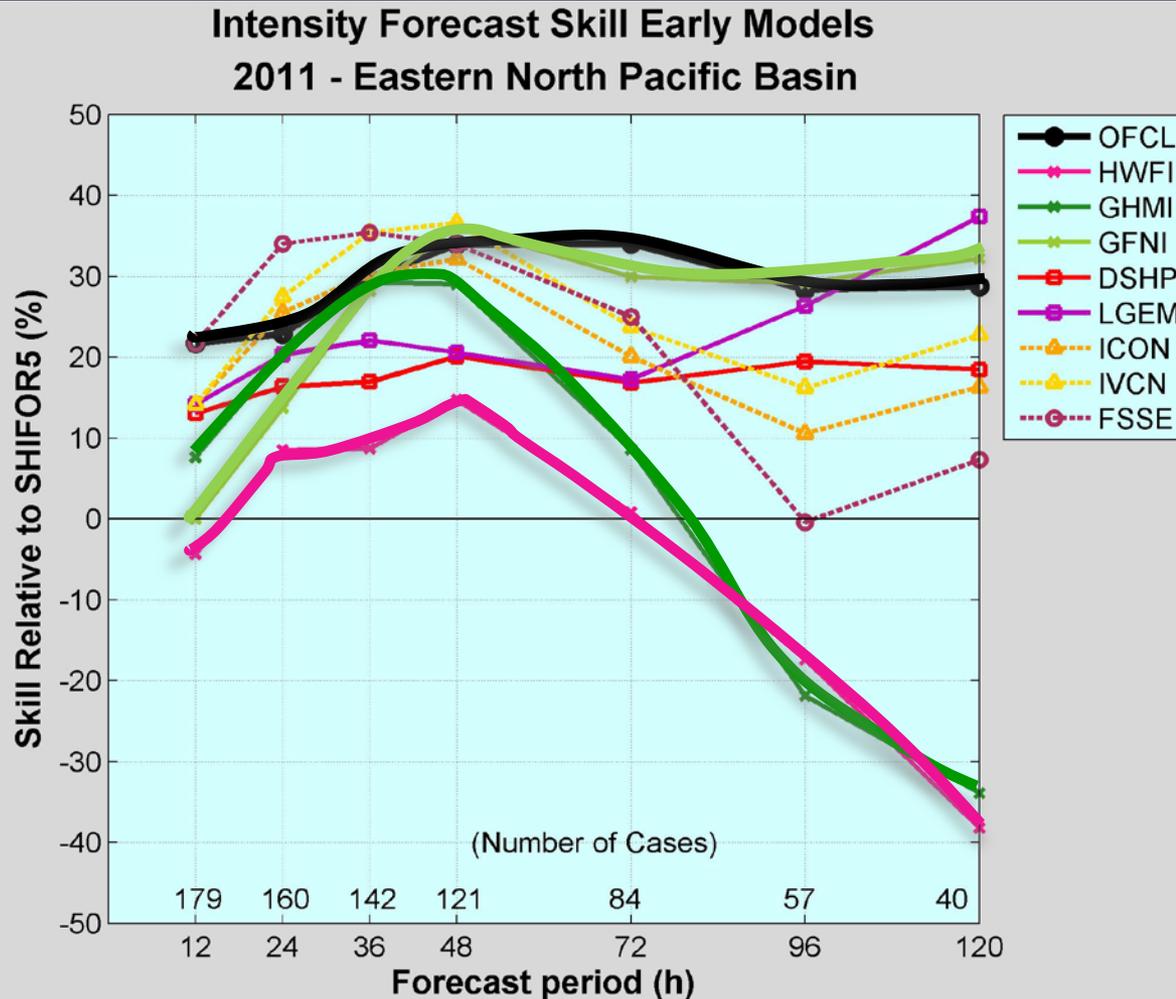


Official forecasts were a little worse than the 5-yr mean, but the season's storms were "harder" than average.

EPAC Intensity Error Trends



2011 Intensity Guidance



Official forecasts performed better than most of the guidance.

Good year for GFNI, much better than GHMI and HWFI.

Statistical and consensus models are pretty close.



Cone Radii – 2012 vs. 2011

Atlantic

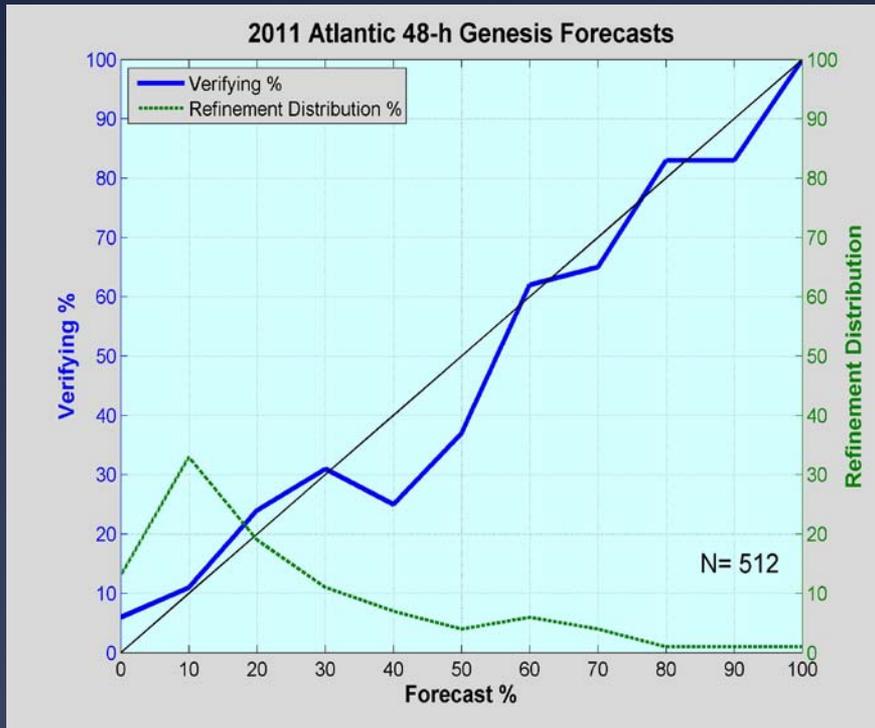
| Forecast Period (h) | 2011 Circle Radius (n mi) ('06 – '10 errors) | 2012 Circle Radius (n mi) ('07 – '11 errors) | Percent Change |
|---------------------|--|--|----------------|
| 12 | 36 | 36 | 0% |
| 24 | 59 | 56 | -5% |
| 36 | 79 | 75 | -5% |
| 48 | 98 | 95 | -3% |
| 72 | 144 | 141 | -2% |
| 96 | 190 | 180 | -5% |
| 120 | 239 | 236 | -1 % |

East Pacific

| Forecast Period (h) | 2011 Circle Radius (n mi) ('06 – '10 errors) | 2012 Circle Radius (n mi) ('07 – '11 errors) | Percent Change |
|---------------------|--|--|----------------|
| 12 | 33 | 33 | 0% |
| 24 | 59 | 52 | -12% |
| 36 | 79 | 72 | -9% |
| 48 | 98 | 89 | -9% |
| 72 | 134 | 121 | -10% |
| 96 | 187 | 170 | -9% |
| 120 | 230 | 216 | -6 % |

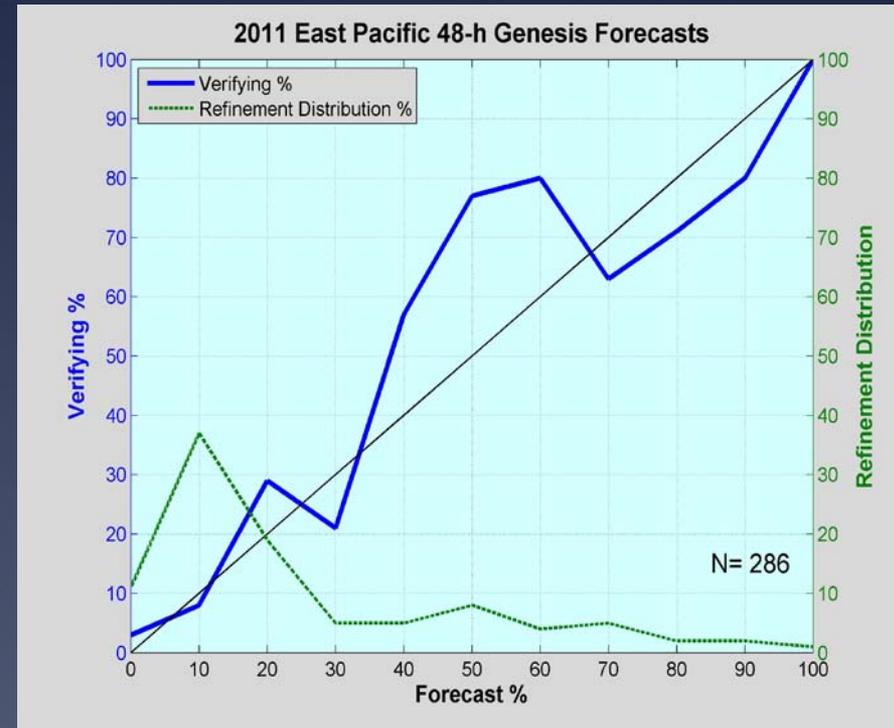
2011 Genesis Forecasts

Atlantic



Forecasts very well calibrated (reliable). Much improved this year.

East Pacific



Inability to distinguish the high from the medium likelihood of development