Ocean Prediction Center
NCEP Production Suite Review

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Science Operations Officer
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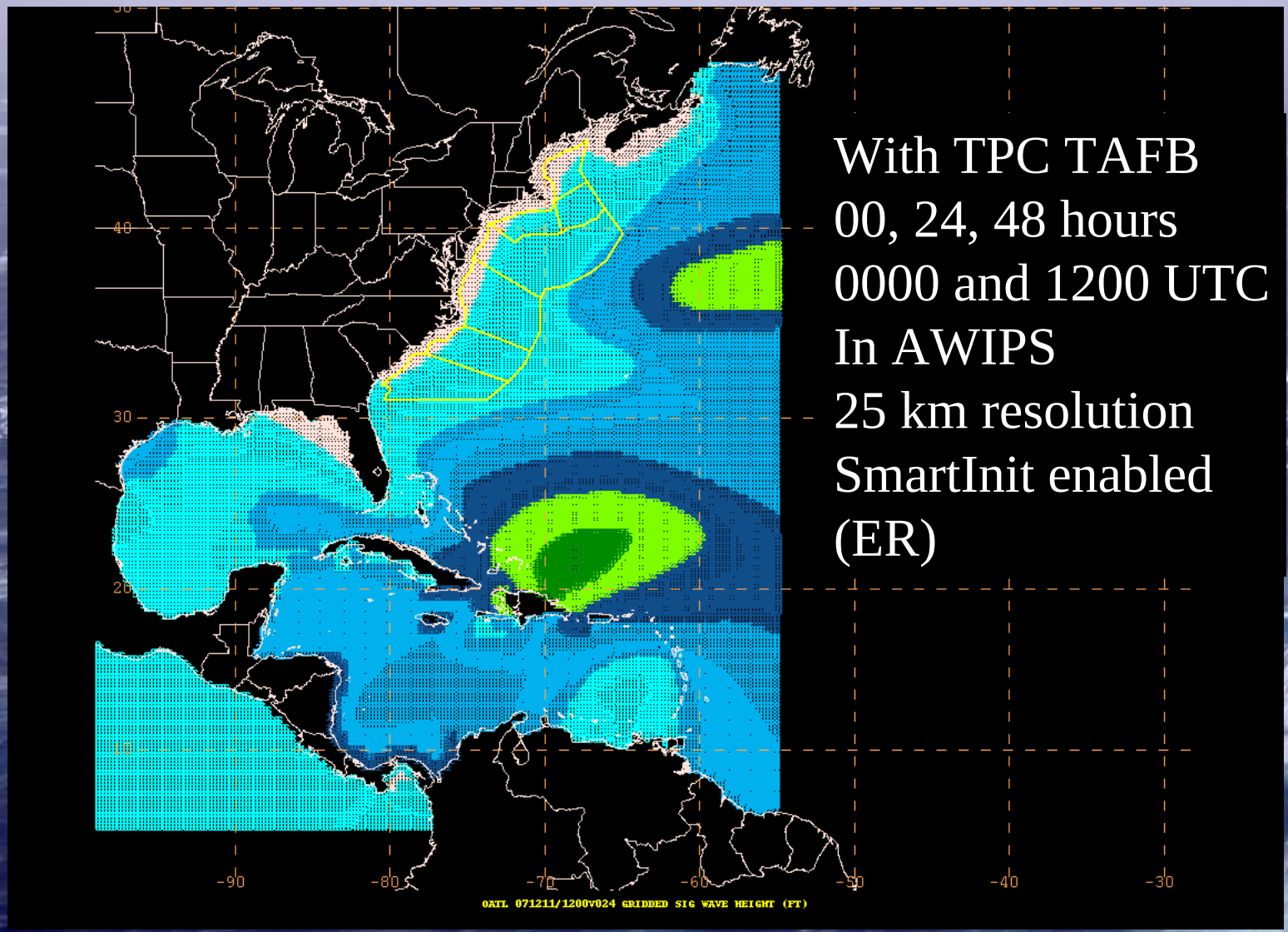
Outline

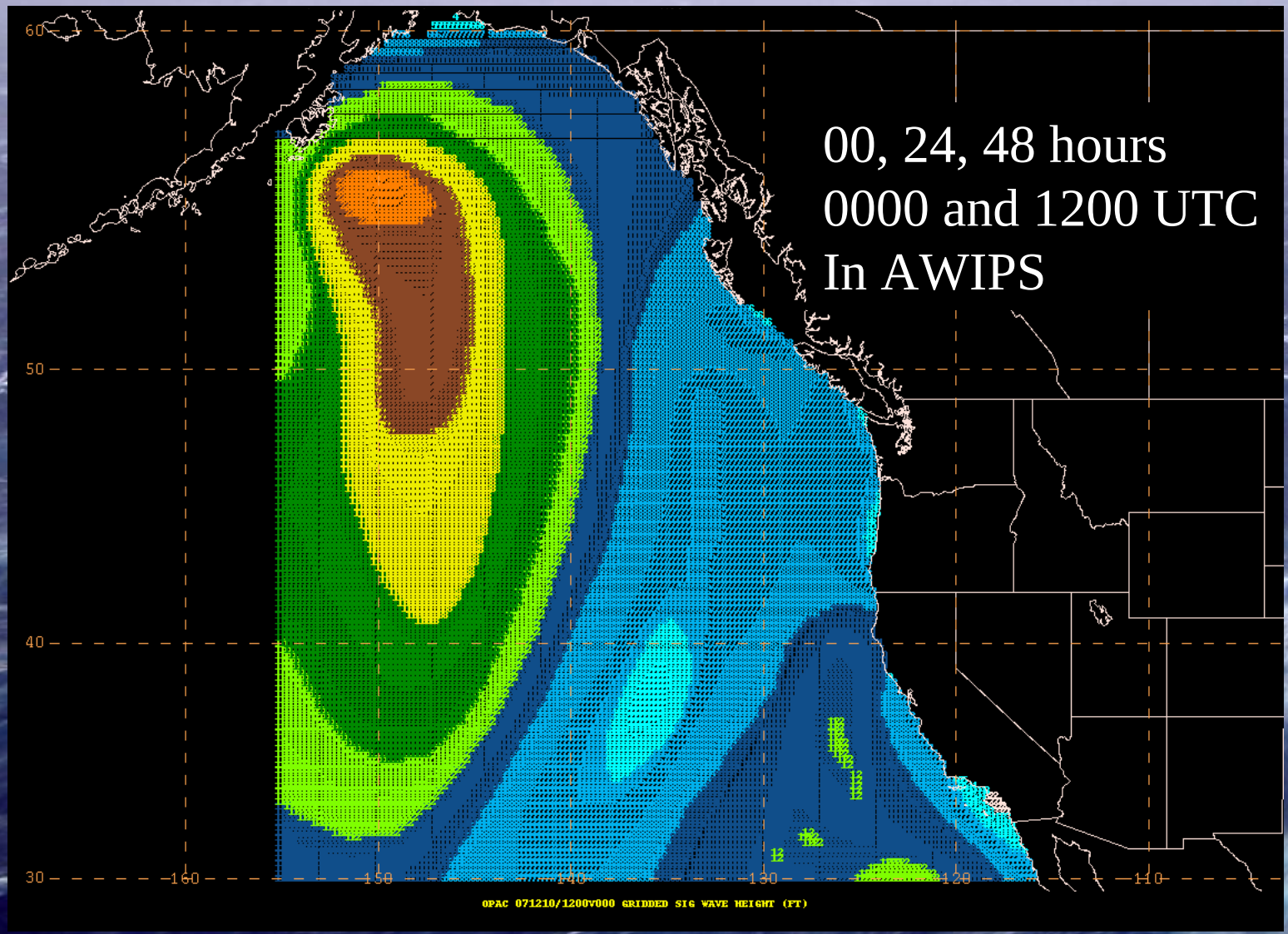
1. **OPC grids**
2. **Multi-grid Wave Model**
3. **Ice Concentration**
4. **Ensembles**
5. **Forecast Verification**
6. **RTOFS_ATL**
7. **SLOSH**

Experimental Wave Height Grids



With TPC TAFB
00, 24, 48 hours
0000 and 1200 UTC
In AWIPS
25 km resolution
SmartInit enabled
(ER)

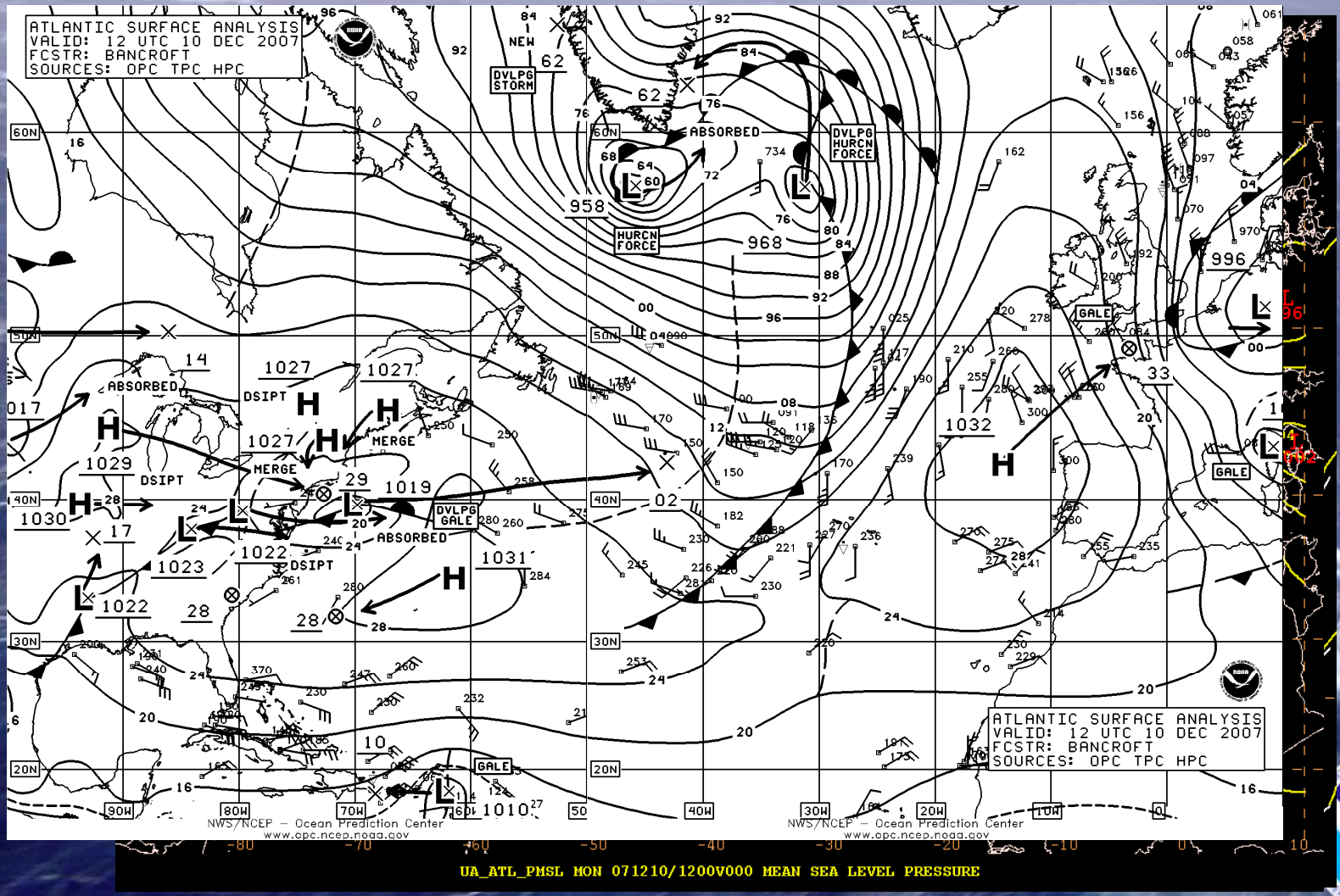
Experimental Wave Height Grids



Experimental PMSL Grids

available via ftp (GRIB2)

25 km, 0000 – 6x day, 48 2x, 96 1x

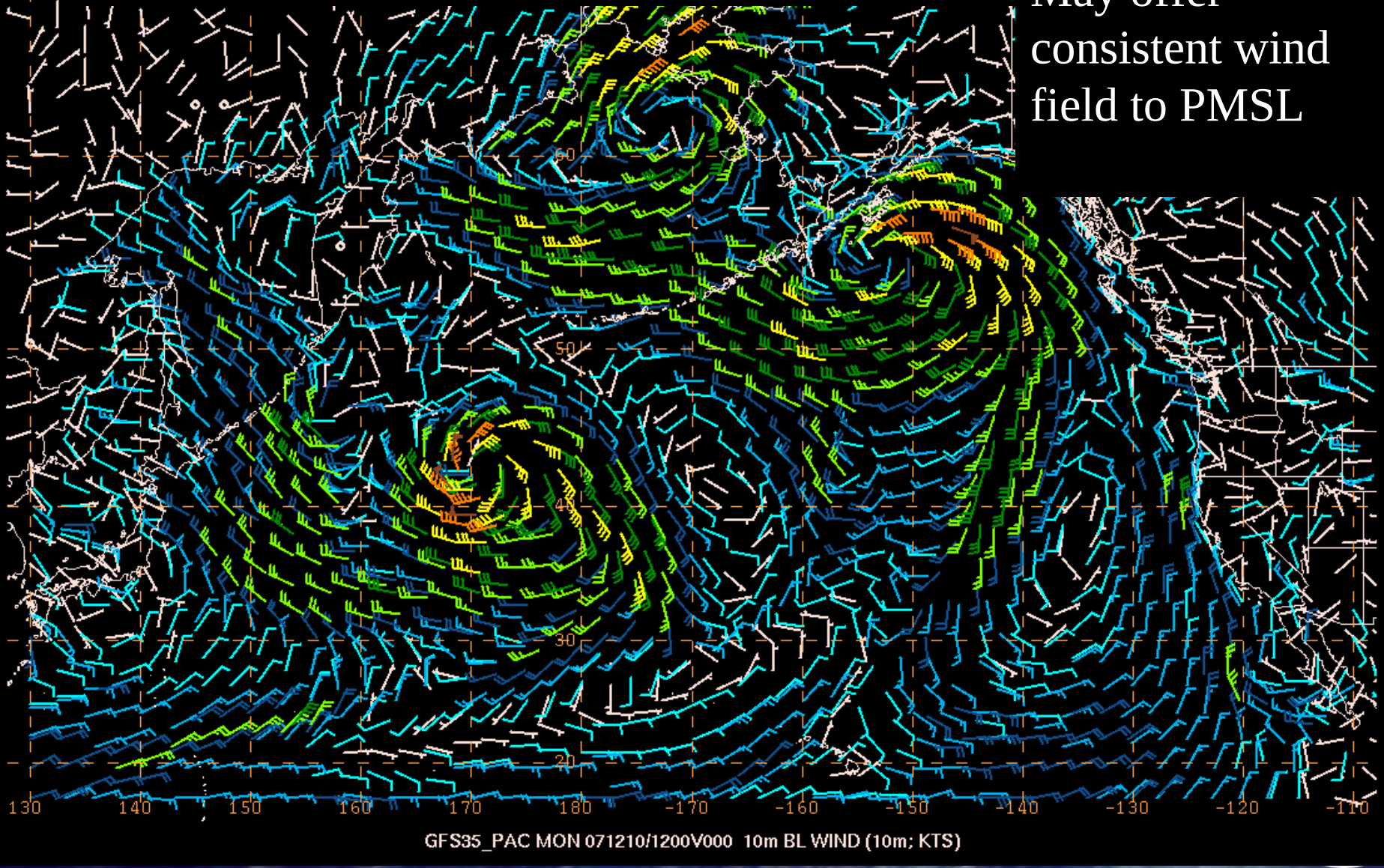


Grid Plans

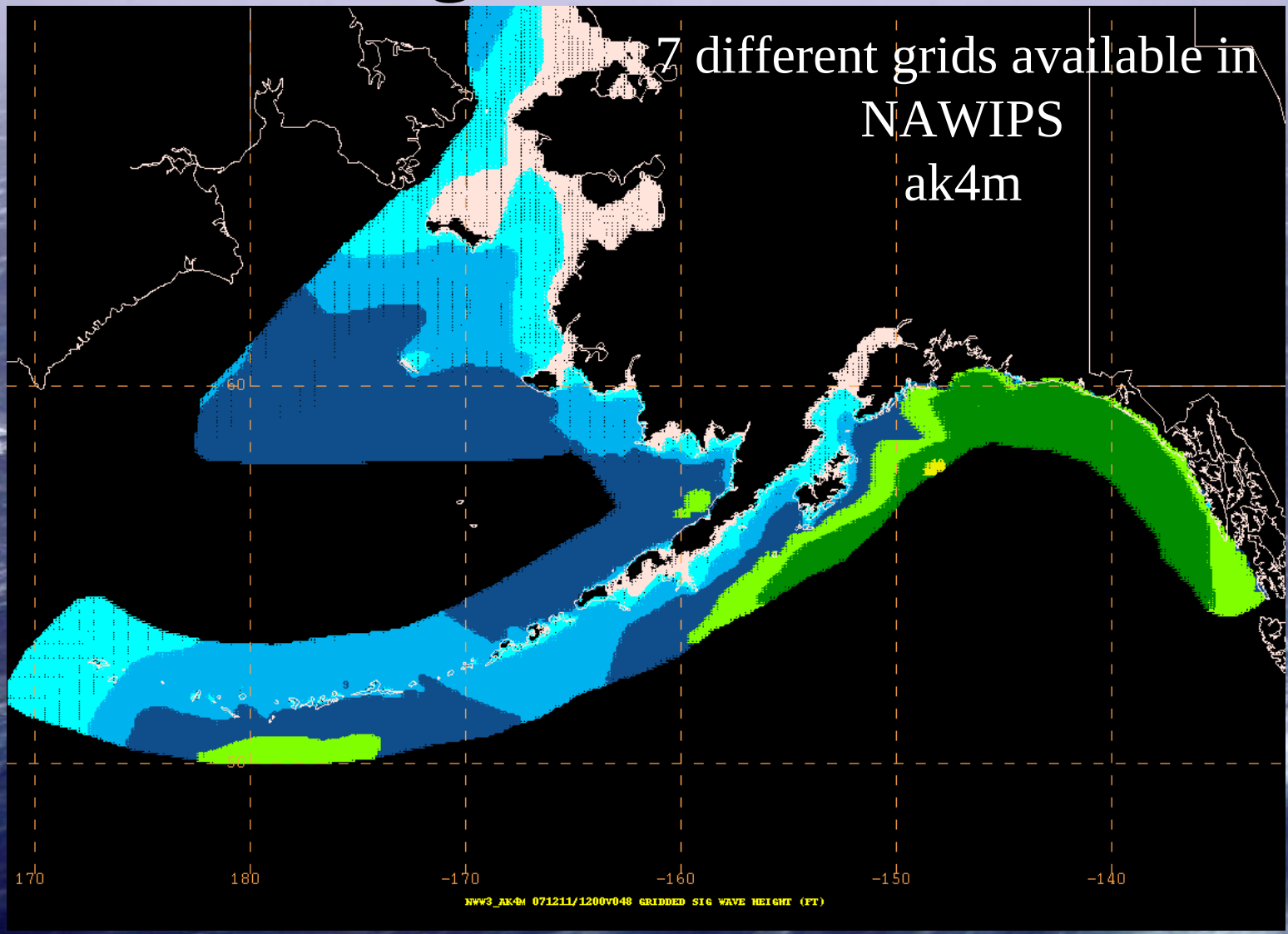
- **Wind grids (24 and 48 hours) next – 4Q FY08**
- **NAWIPS Offshore Text Formatter in final stages of development for winds and waves**
- **Challenge – efficiently produce the volume of grids to “feed” Offshore text formatter**
- **Examining UW PBL Model to derive a forecaster generated wind field (PMSL, 2m T, SST)**

Grid Plans

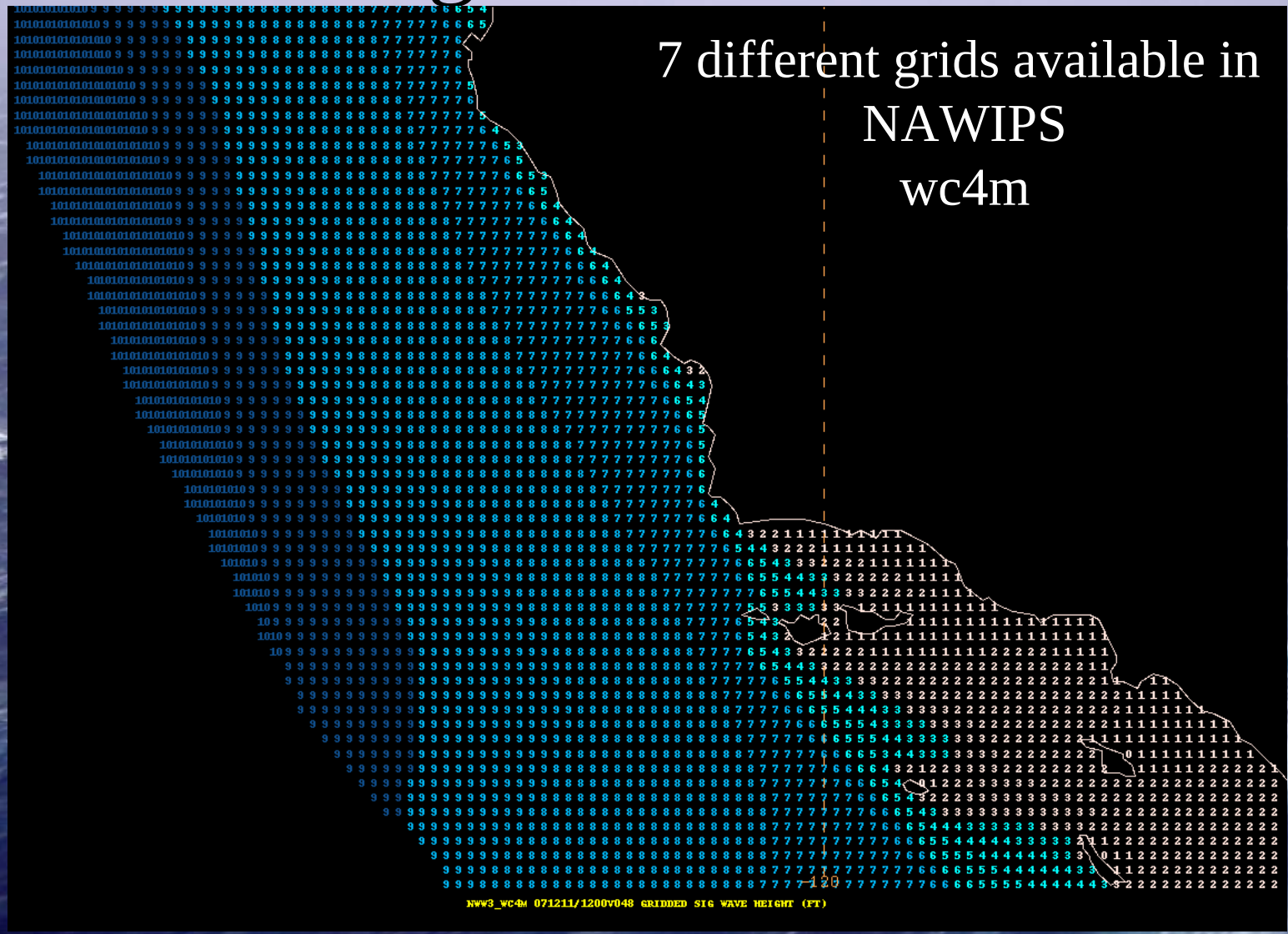
UW PBL
2 m T, SST, PMSL
May offer consistent wind field to PMSL



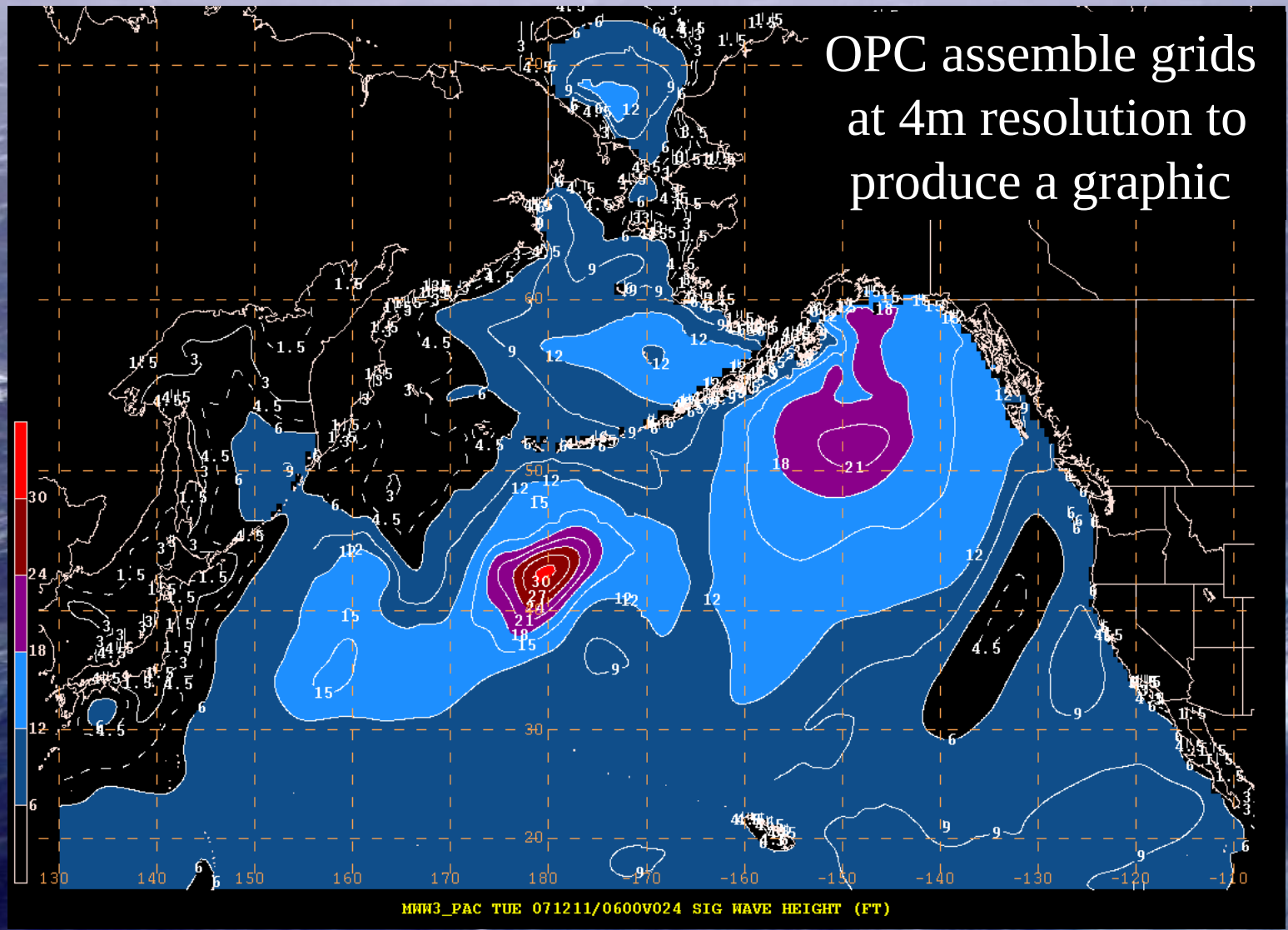
Multi-grid Wave Model



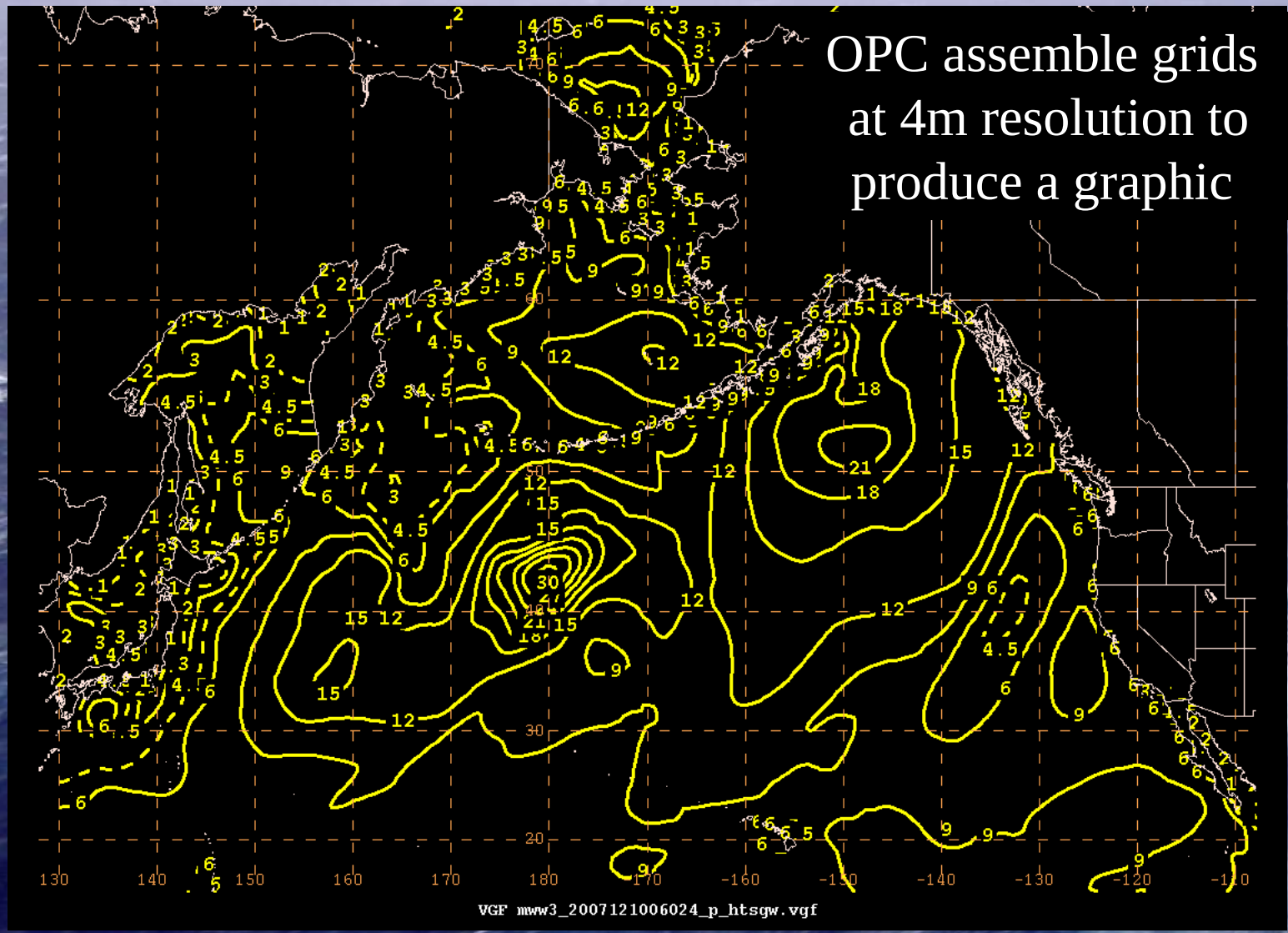
Multi-grid Wave Model



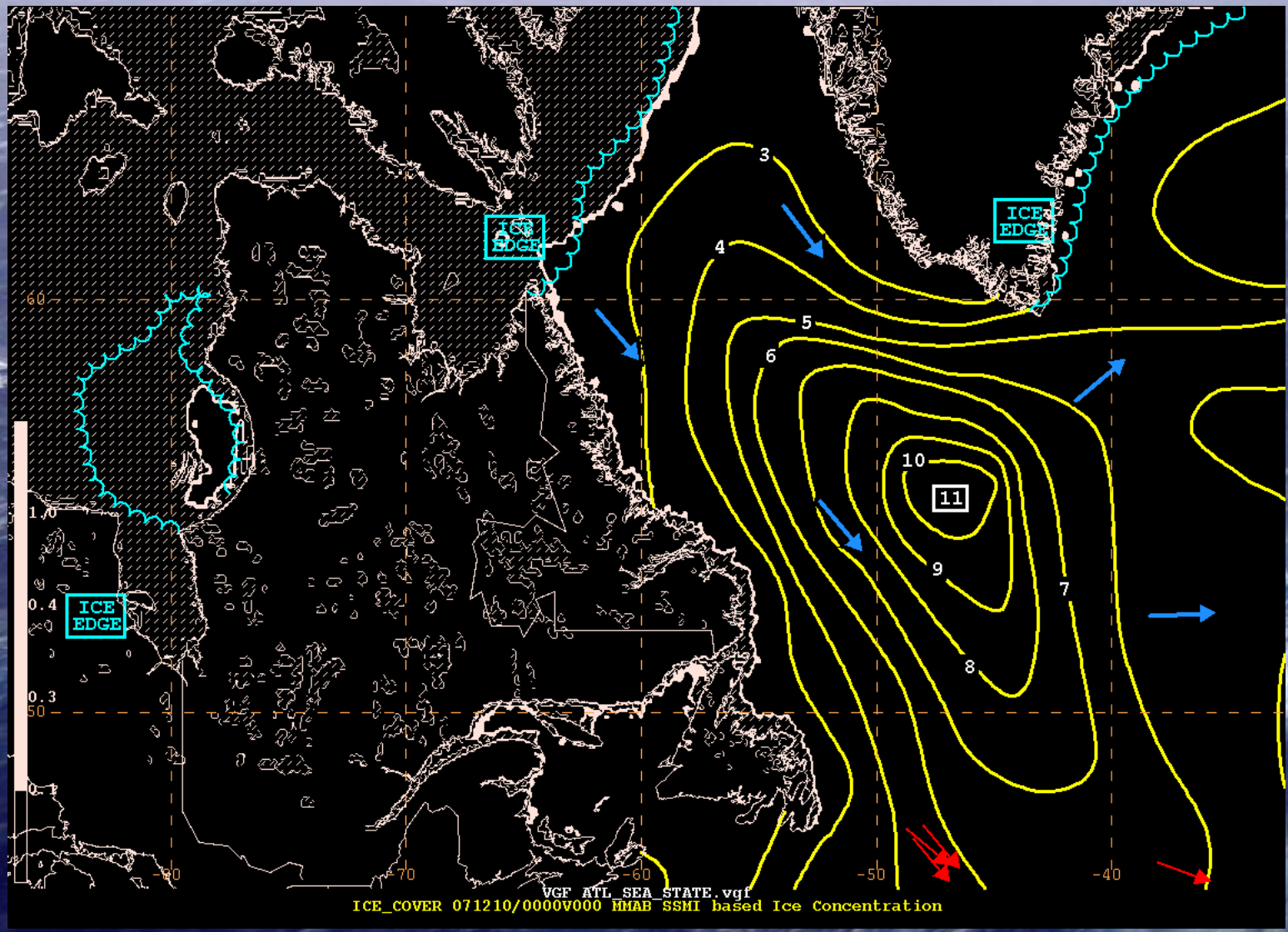
Multi-grid Wave Model



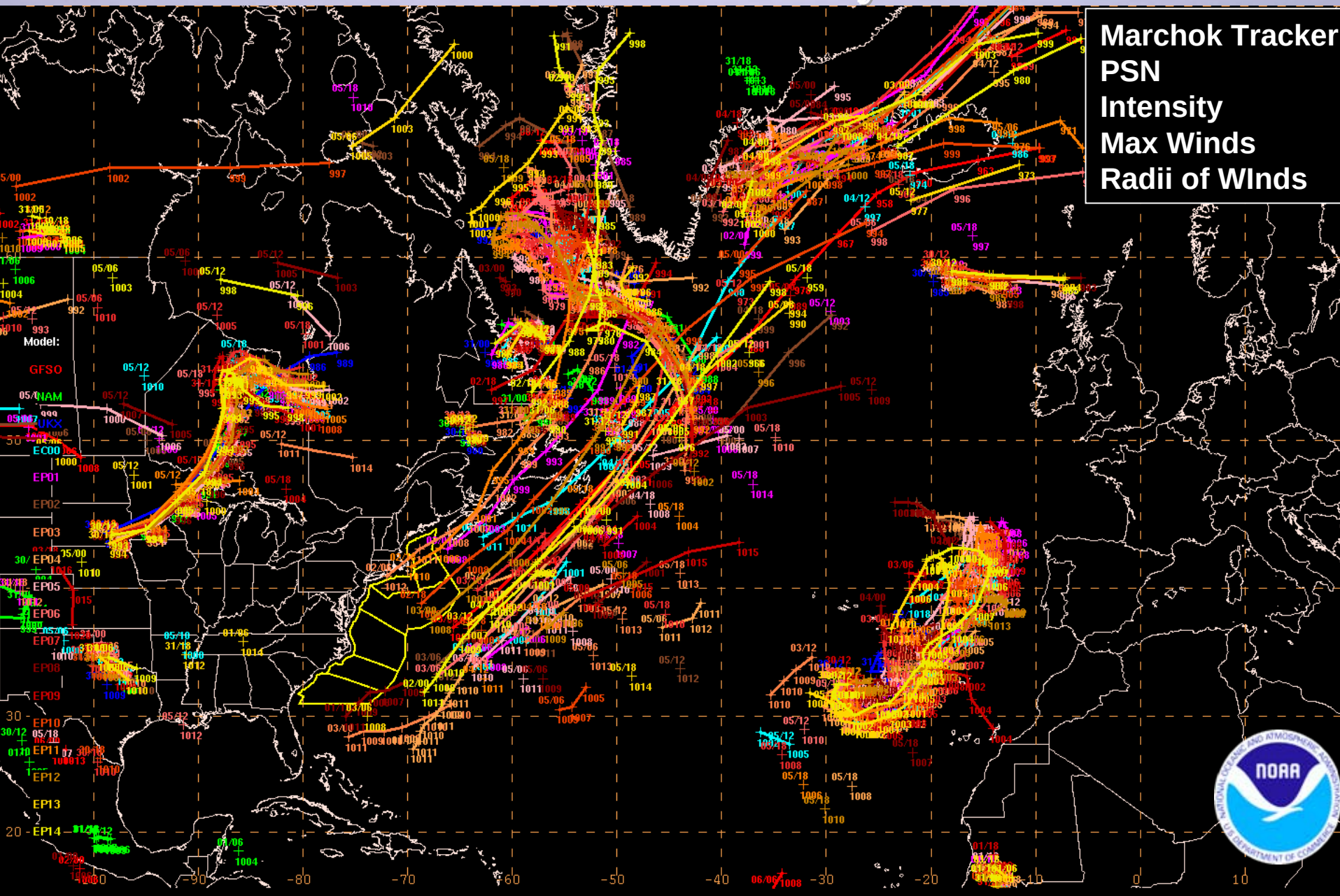
Multi-grid Wave Model



Ice Concentration



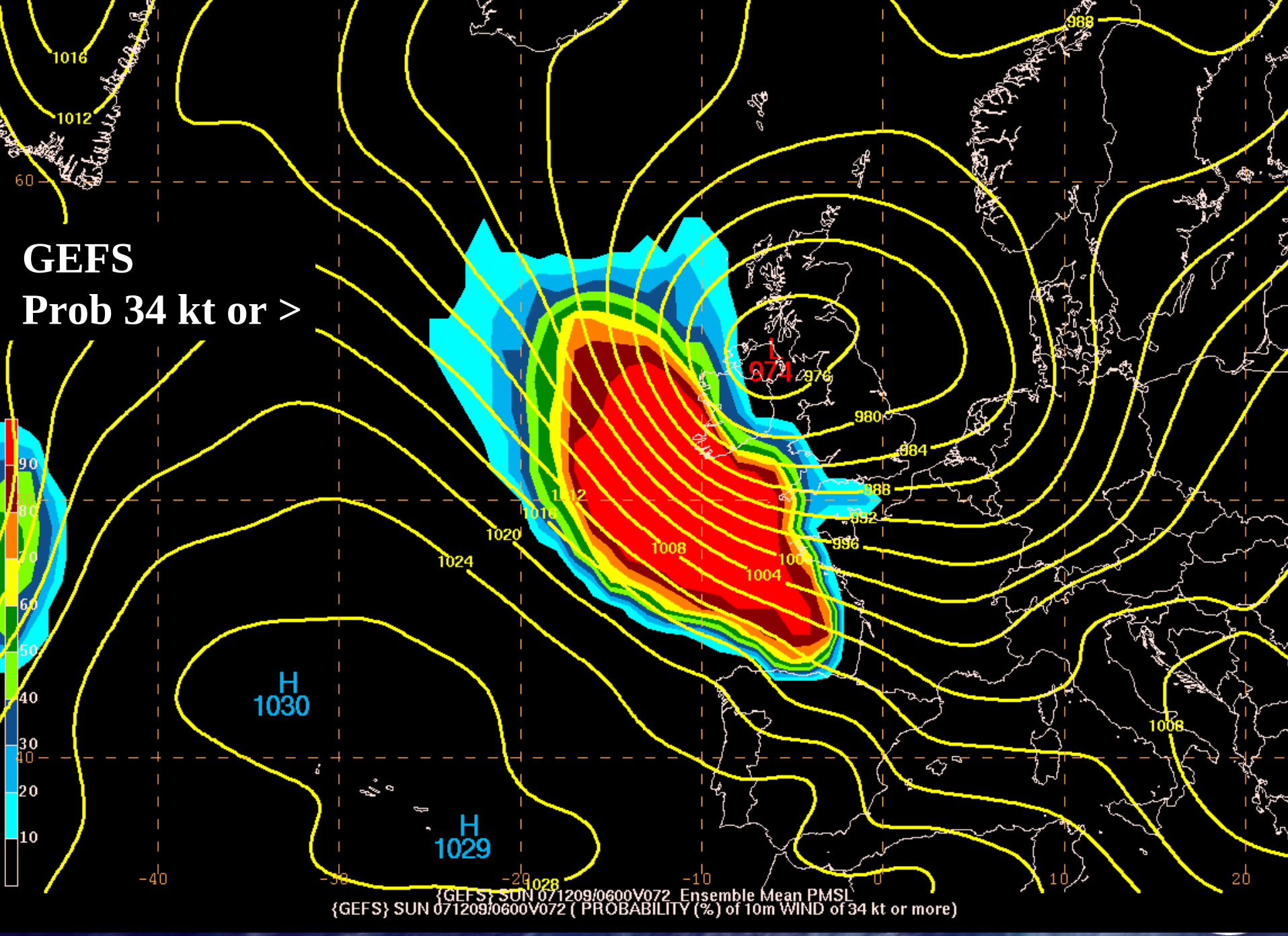
Ensemble Tools – Cyclone Tracks



Ensemble Tools – Cyclone Tracks

Cyclone Tracker

- Limited number of models available
- Can now focus on single timesteps
- Still difficult to get the information needed, quickly
- Tracker excellent, data base complete


GEFS
Prob 34 kt or >
1016
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1016
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1024
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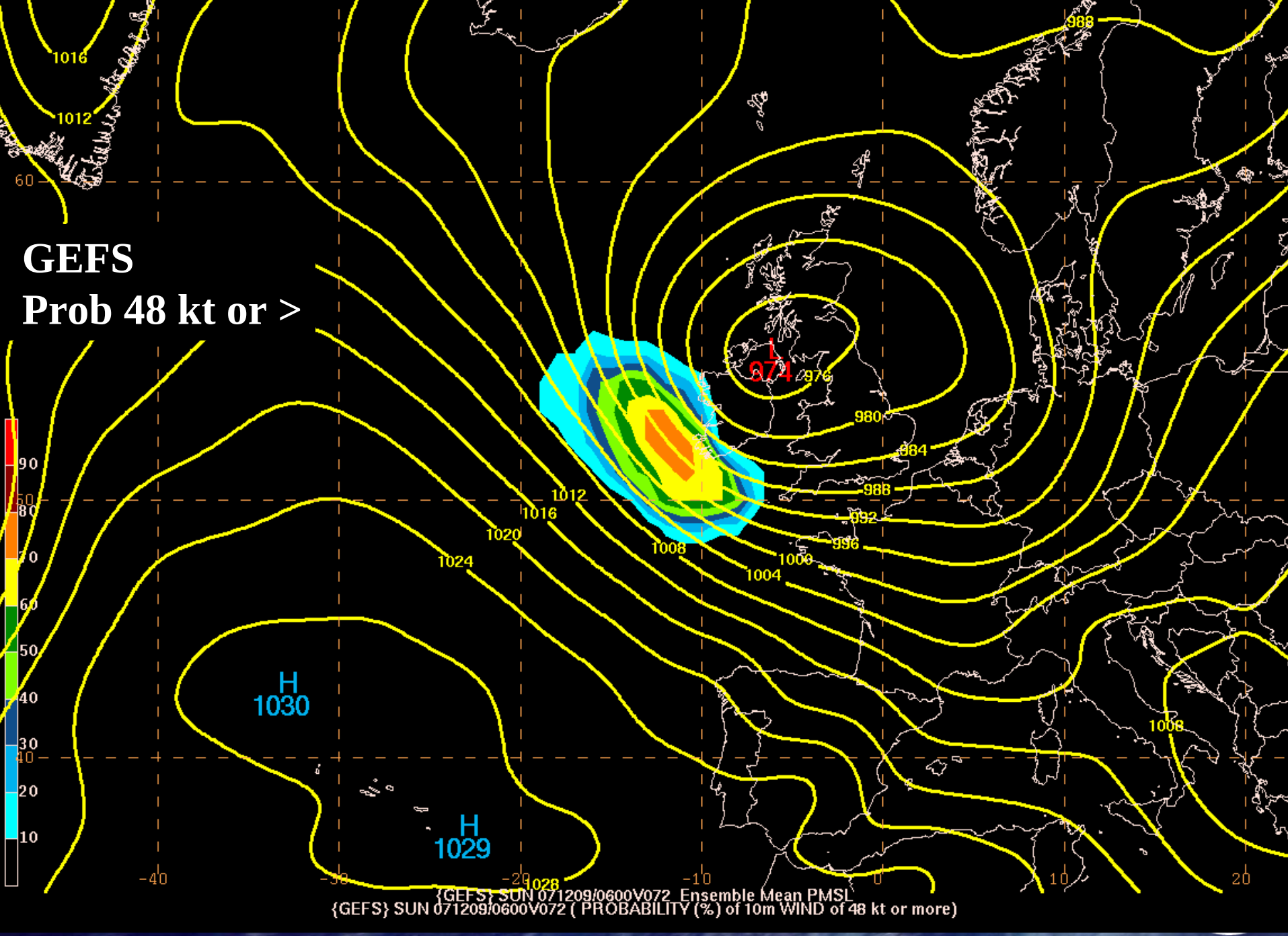
{GEFS} SUN 071209/0600V072 Ensemble Mean PMSL
{GEFS} SUN 071209/0600V072 (PROBABILITY (%) of 10m WIND of 34 kt or more)


GEFS
Prob 48 kt or >
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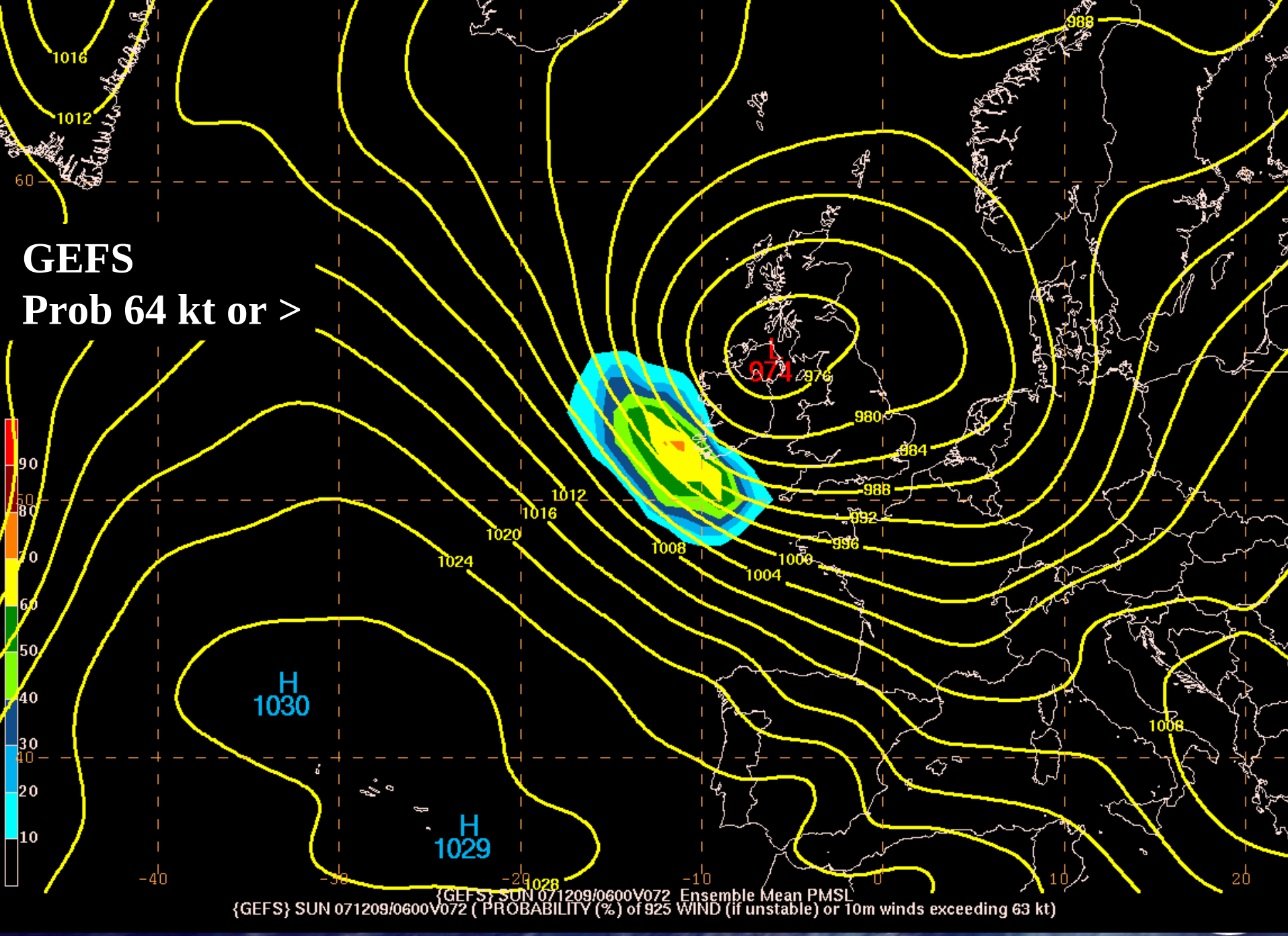
{GEFS} SUN 071209/0600V072 Ensemble Mean PMSL
{GEFS} SUN 071209/0600V072 (PROBABILITY (%) of 10m WIND of 48 kt or more)


GEFS
Prob 64 kt or >
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{GEFS} SUN 071209/0600V072 Ensemble Mean PMSL
{GEFS} SUN 071209/0600V072 (PROBABILITY (%) of 925 WIND (if unstable) or 10m winds exceeding 63 kt)

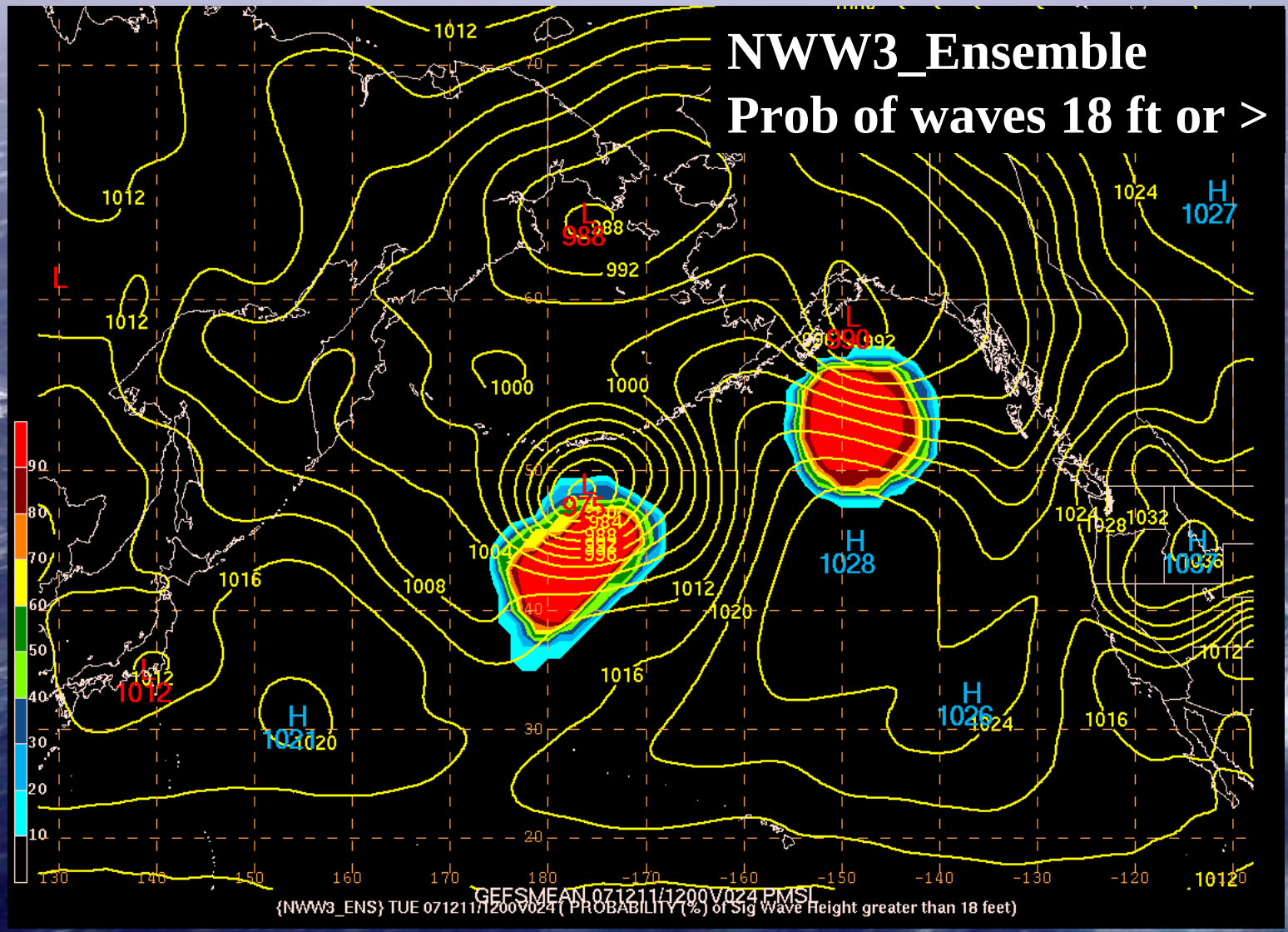
Confidence factor in Marine Weather Discussions

.PZ5 WASHINGTON/OREGON WATERS...

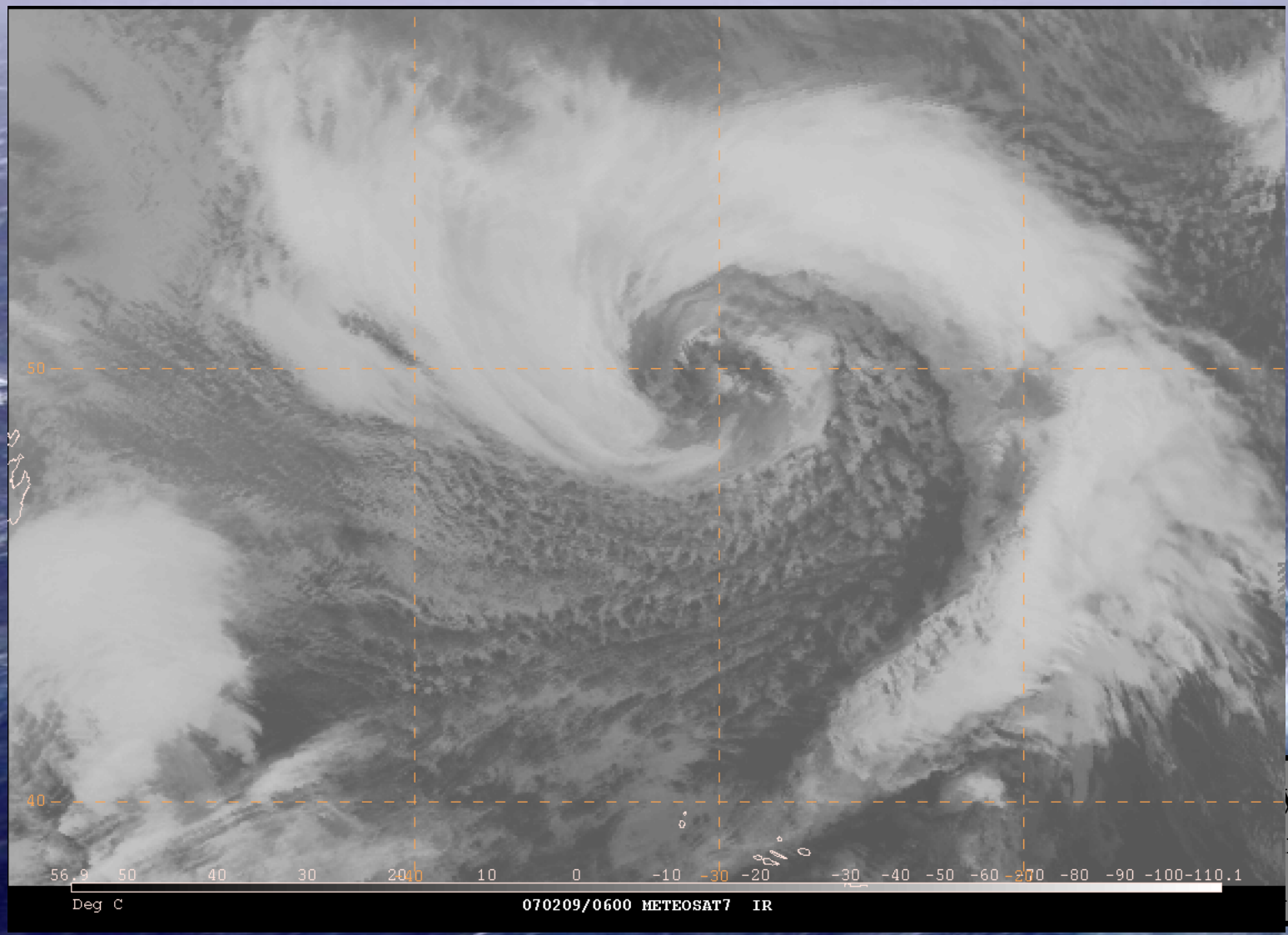
.CAPE FLATTERY TO CAPE LOOKOUT...GALE THU AND FRI...LOW TO MDT CONFDC.

.CAPE LOOKOUT TO POINT ST GEORGE...GALE THU AND FRI...LOW TO MDT CONFDC.

Ensemble Tools – Wave Ensemble



Hurricane Force Extratropical Cyclone



yclones
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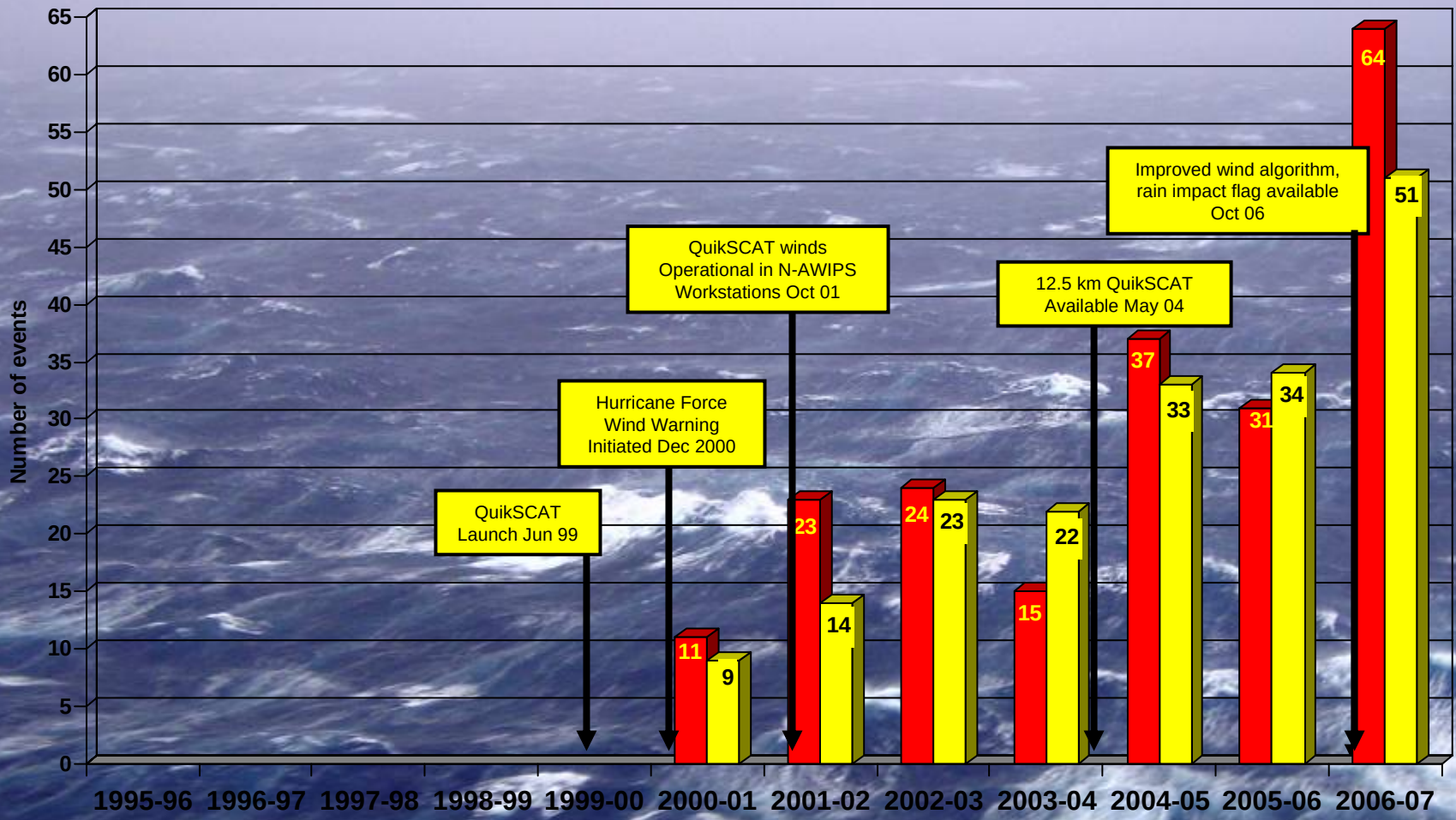
Hurricane Force Extratropical Cyclones Observed



Sep through May 2000-07 (except Dec through April 2000-01)

371 HF Cyclones

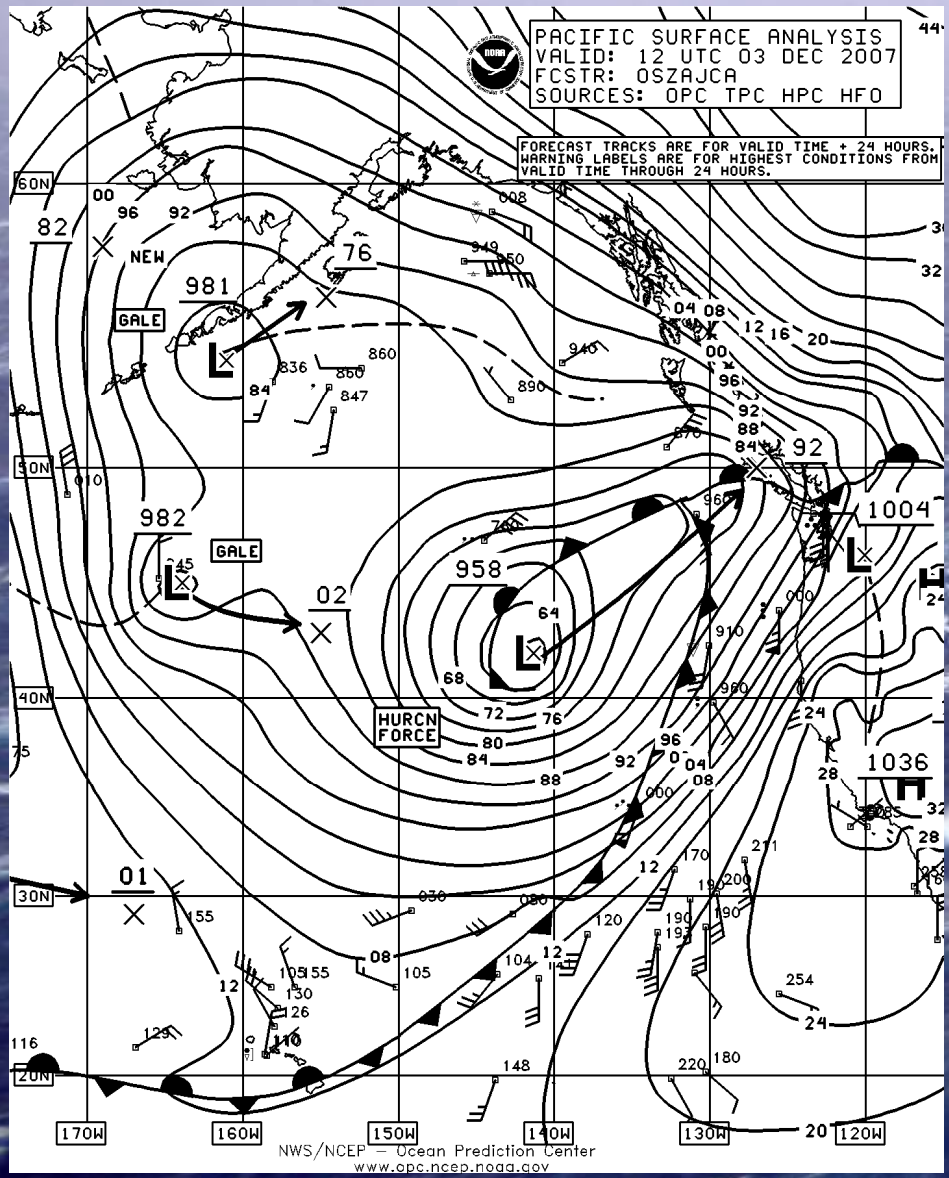
Atlantic -194

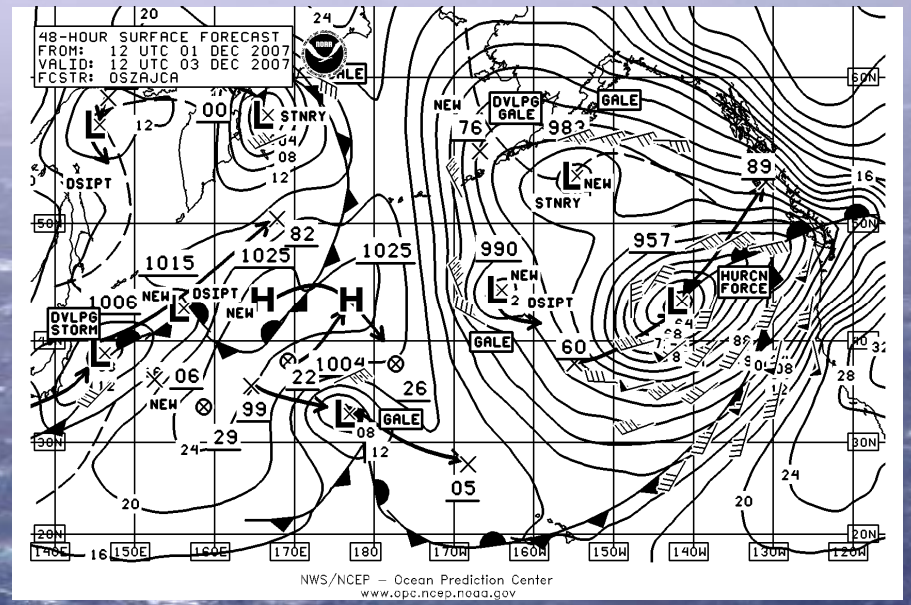
Pacific - 177

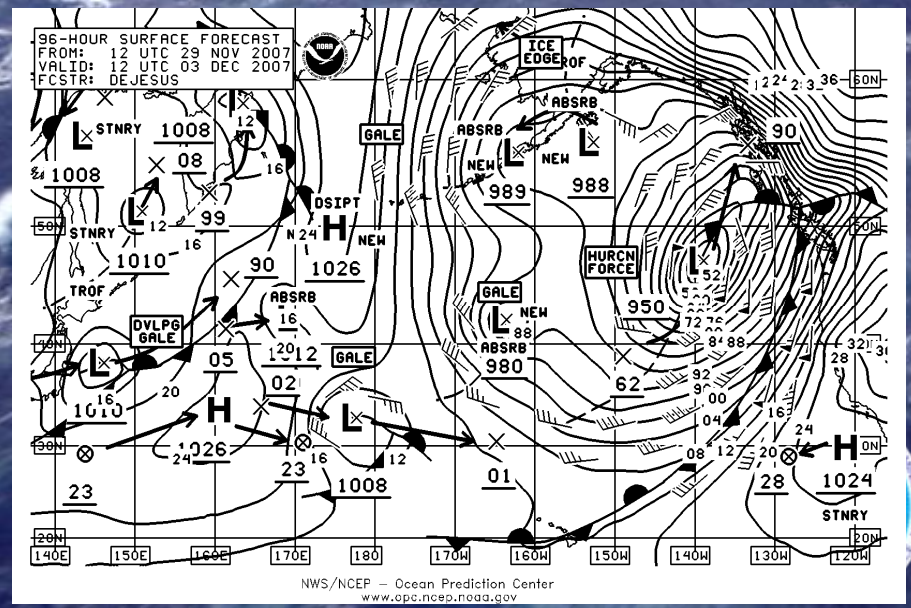
Atlantic

Pacific

OPC Cyclone Forecast Verification







OPC Cyclone Verification
Oct-Mar 2003-2006

48 Hours Atlantic				Atlantic		96 Hours Atlantic	
	N observed	N (fcst)	MSLPE	ST. DEV.	N (fcst)	MSLPE	ST. DEV.
ALL Cyclones	1736	1596(92%)	0.12	4.31	1473(85%)	-1.18	7.69
Hurcn Force	68	65(96%)	-0.46	5.74	63(93%)	-7.17	10.47
		N (fcst)	MPE	ST. DEV.	N (fcst)	MPE	ST. DEV.
ALL Cyclones	1736	1596(92%)	124.74	108.26	1473(85%)	226.97	161.07
Hurcn Force	68	65(96%)	99.65	121.93	63(93%)	244.12	251.98

48 Hours Pacific				Pacific		96 Hours Pacific	
	N observed	N (fcst)	MSLPE	ST. DEV.	N (fcst)	MSLPE	ST. DEV.
ALL Cyclones	2227	2047(92%)	0.58	5.00	1932(87%)	-0.40	7.99
Hurcn Force	62	62(100%)	-0.39	8.10	61(98%)	-8.64	11.49
		N (fcst)	MPE	ST. DEV.	N (fcst)	MPE	ST. DEV.
ALL Cyclones	2227	2047(92%)	148.13	135.91	1932(87%)	260.36	194.67
Hurcn Force	62	62(100%)	100.50	68.95	61(98%)	254.77	205.14

MSLPE – (A-F) hPa (-) negative - underforecast
MPE – n mi

OPC Cyclone Verification
Oct-Mar 2006-2007

48 Hours Atlantic			Atlantic			96 Hours Atlantic	
	N observed	N (fcst)	MSLPE	ST. DEV.	N (fcst)	MSLPE	ST. DEV.
ALL Cyclones	601	585(97%)	-0.02	4.77	514(85%)	0.67	44.07
Hurcn Force	52	51(98%)	-1.76	7.11	51(98%)	-5.37	10.71
		N (fcst)	MPE	ST. DEV.	N (fcst)	MPE	ST. DEV.
ALL Cyclones	601	585(97%)	119.5	108.26	514(85%)	214.3	141.6
Hurcn Force	52	51(98%)	115.17	80.28	51(98%)	216.86	134.27

48 Hours Pacific			Pacific			96 Hours Pacific	
	N observed	N (fcst)	MSLPE	ST. DEV.	N (fcst)	MSLPE	ST. DEV.
ALL Cyclones	734	715(97%)	1.65	38.23	680(93%)	0.75	39.17
Hurcn Force	33	32(97%)	-3.85	6.67	32(98%)	-11.78	12.03
		N (fcst)	MPE	ST. DEV.	N (fcst)	MPE	ST. DEV.
ALL Cyclones	734	715(97%)	152.87	320.07	680(93%)	247.95	345.37
Hurcn Force	33	32(97%)	126.50	131.19	32(97%)	197.22	155.99

MSLPE – (A-F) hPa (-) negative - underforecast
MPE – n mi

OPC Warning Verification – HF Cyclones

Oct-Mar 2003-2006

	ATLANTIC		PACIFIC	
	48	96	48	96
HF	58.1%	22.6%	44.1%	19.7%
STORM	37.1%	51.6%	51.5%	56.1%
GALE	4.8%	21.0%	1.5%	24.2%

% Correct

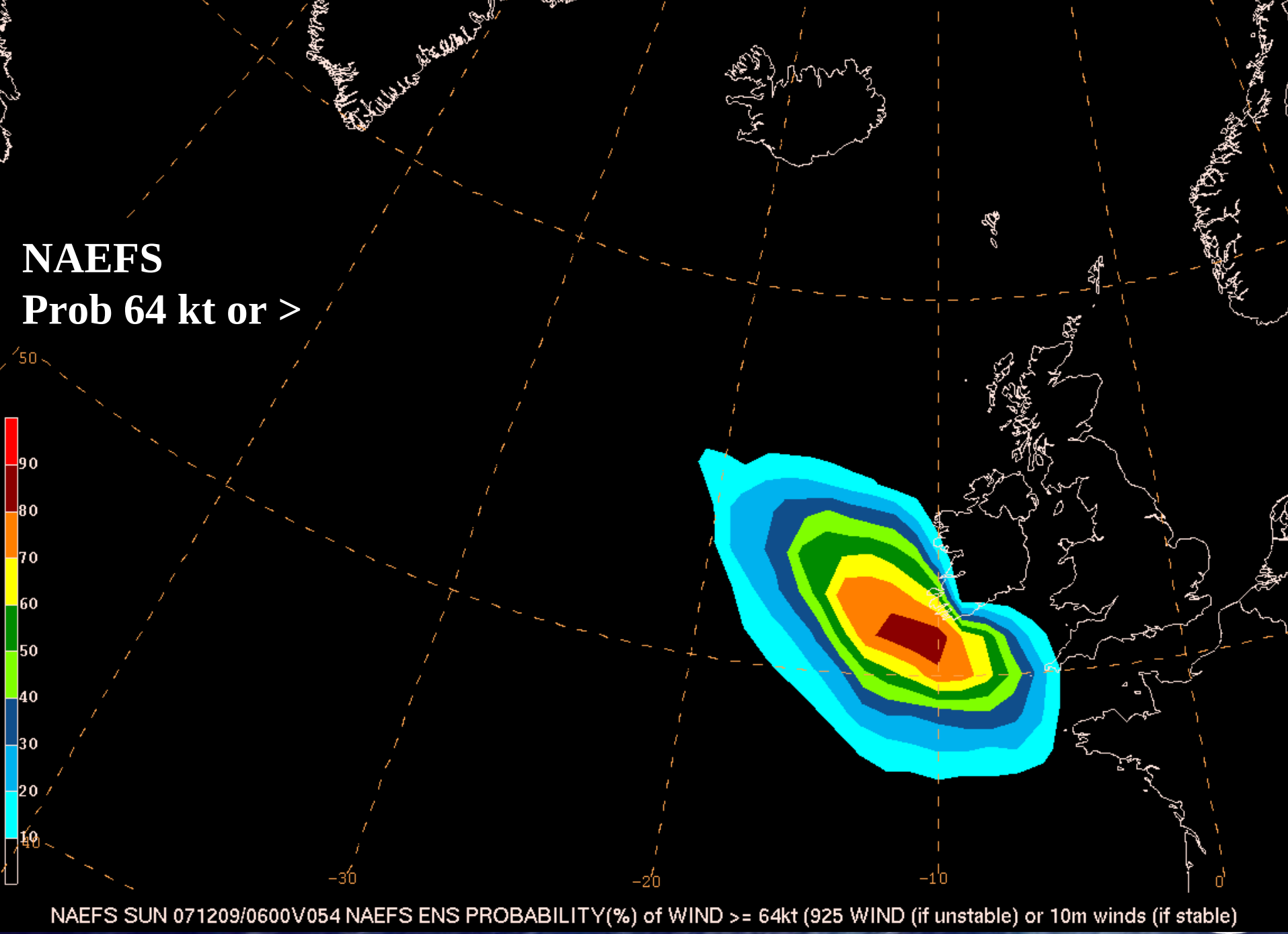
OPC Warning Verification – HF Cyclones

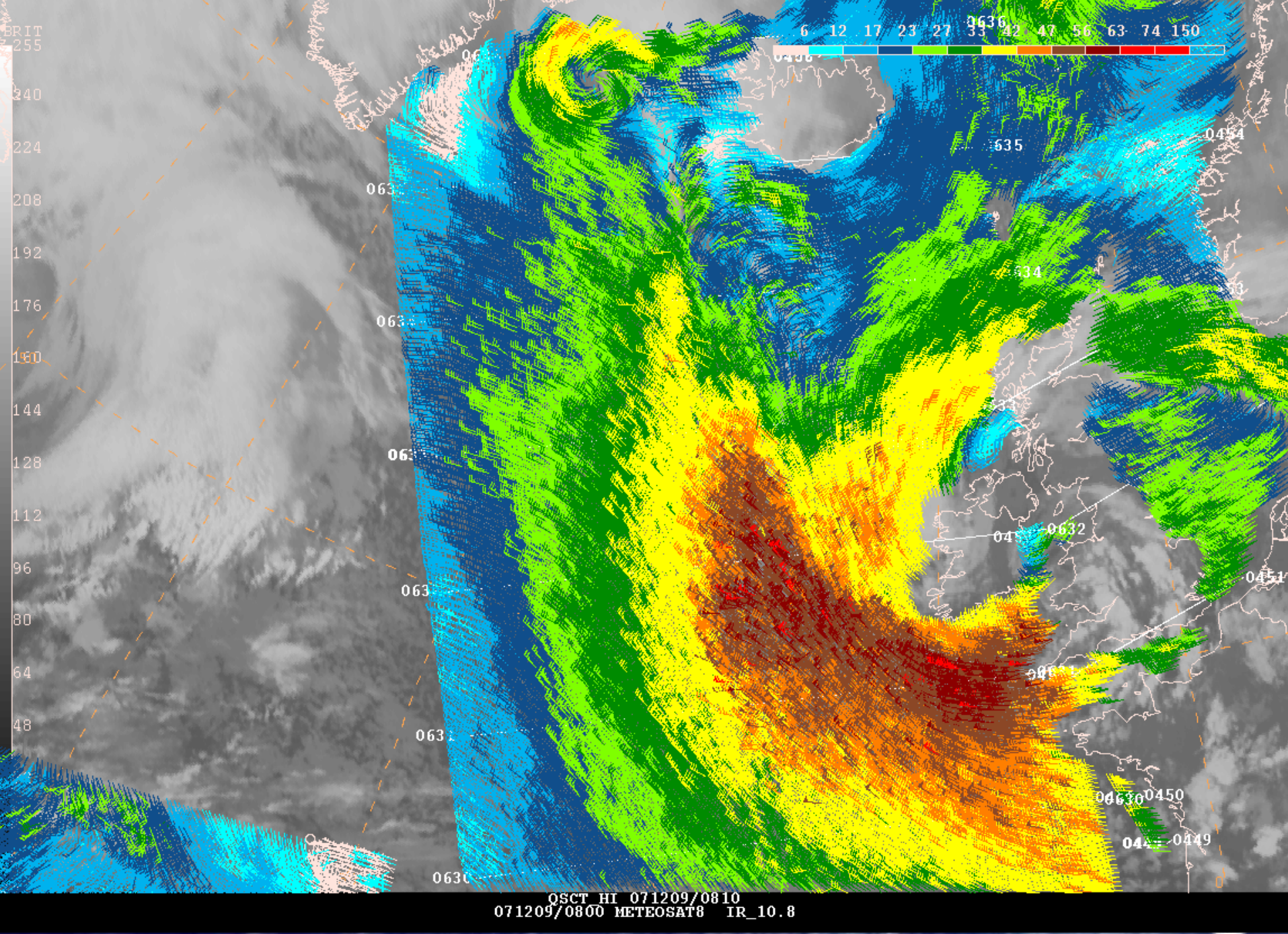
Oct-Mar 2006-2007

	ATLANTIC		PACIFIC	
	48	96	48	96
HF	45%	30%	36%	15%
STORM	53%	58%	61%	55%
GALE	2%	11%	3%	30%

% Correct

NAEFS
Prob 64 kt or >

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QSCT HI 071209/0810
071209/0800 METEOSAT8 IR_10.8

Verification Summary

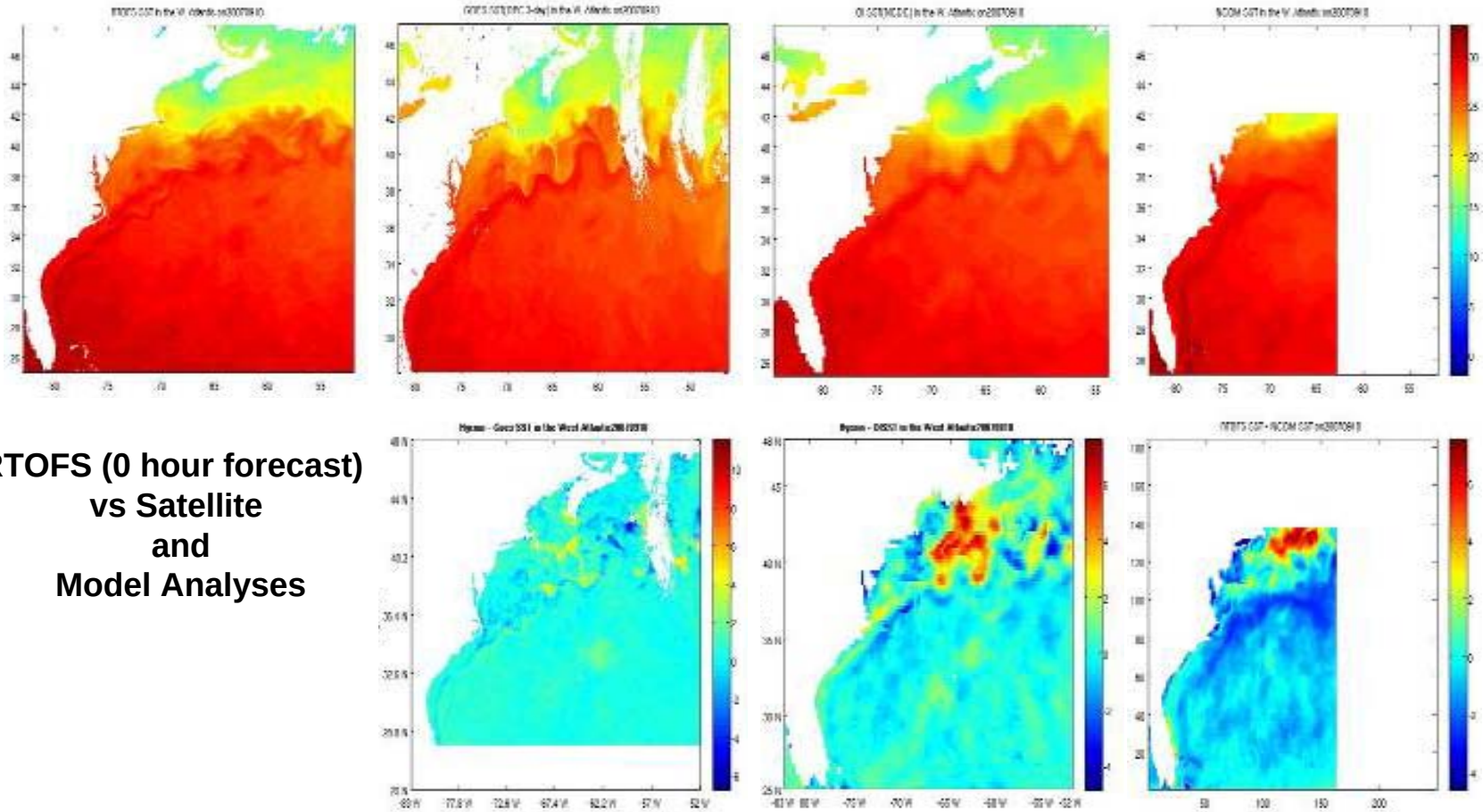
- **Strong cyclones – better or equal track skill**
  - **Too weak at 48 and 96 hours in Atlantic and Pacific (PMSL)**
  - **Warning categories – generally too weak**
    - **by one category STORM vs HURRICANE FORCE**

- **Ensemble Guidance shows promise**
  - **925 hPa winds in low static stability**

Oceanographic Evaluations

Real Time Ocean Forecast System (RTOFS)

RTOFS **SST** **GOES SST** **OI SST (NCDC)** **NCOM SST (Navy Model)**



RTOFS (0 hour forecast) vs Satellite and Model Analyses

RTOFS - GOES SSTRTOFS – OI SSTRTOFS - NCOM SST

Coastal Guidance

Extratopical Storm Surge (SLOSH)

Surge fields into NAWIPS this year

OPC forecasters as guidance – in MWD