

# CIMSS TC Intensity Satellite Consensus (SATCON)

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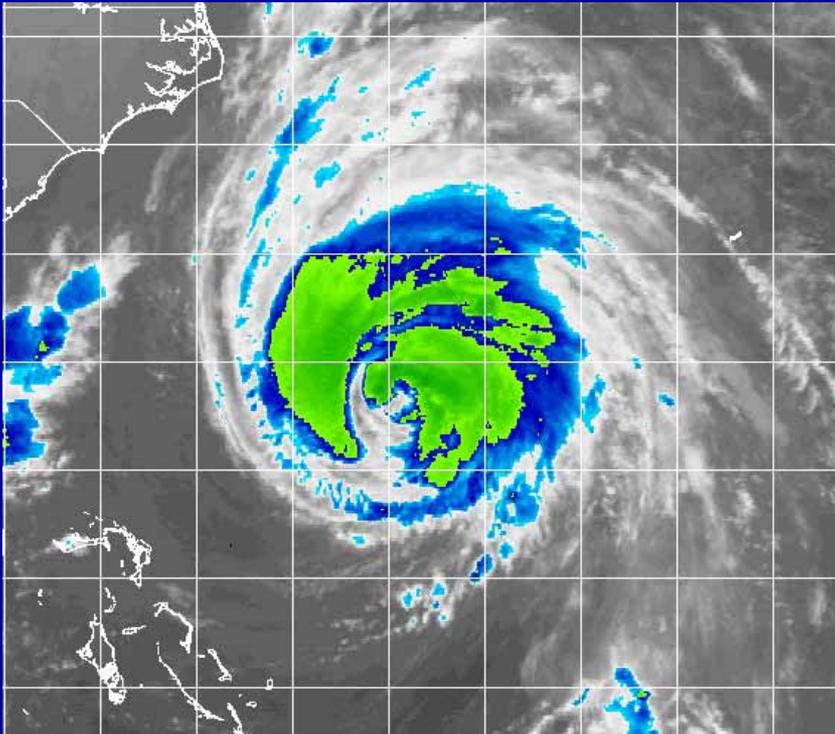


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# Motivation

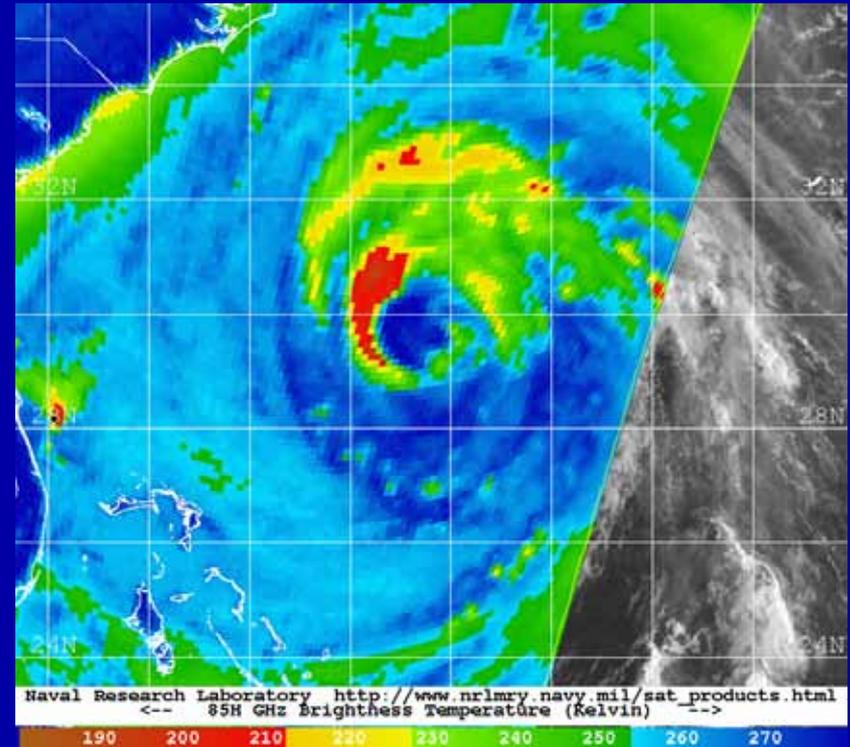
- Accurate assessment of initial intensity is an important component of short term intensity forecasts
- Number of objective TC intensity tools continues to grow
- Assist Forecasters in assimilating objective TC intensity guidance from multiple sources
- Current operational TC intensity is arrived at through ad-hoc merging of subjective Dvorak and objective techniques
- Formalize this procedure using statistical performance of each method

# The Problem: Isabel



Dvorak = 77 kts

ADT = 77 kts

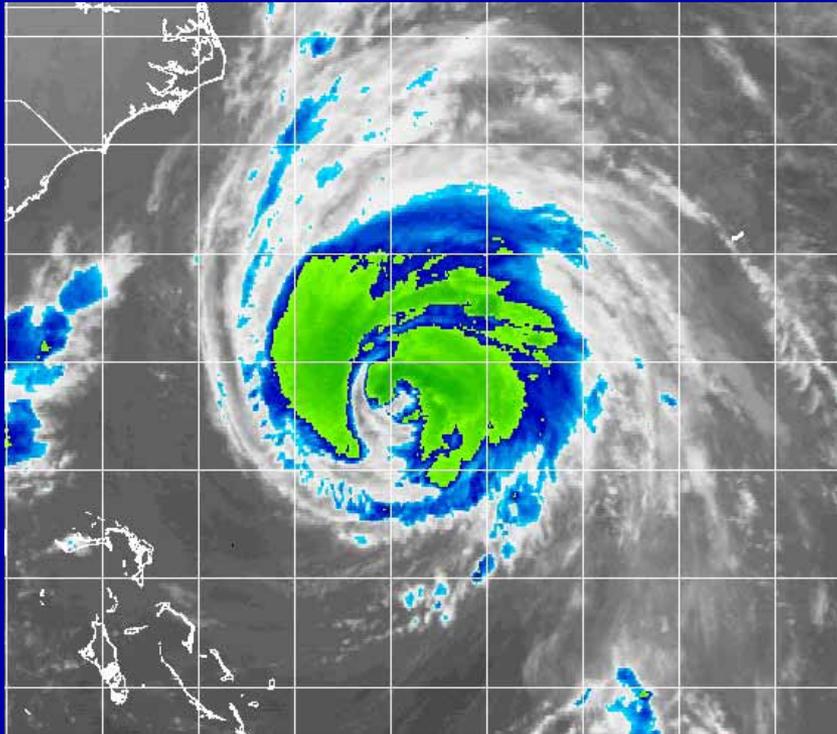


CIMSS AMSU = 105 kts

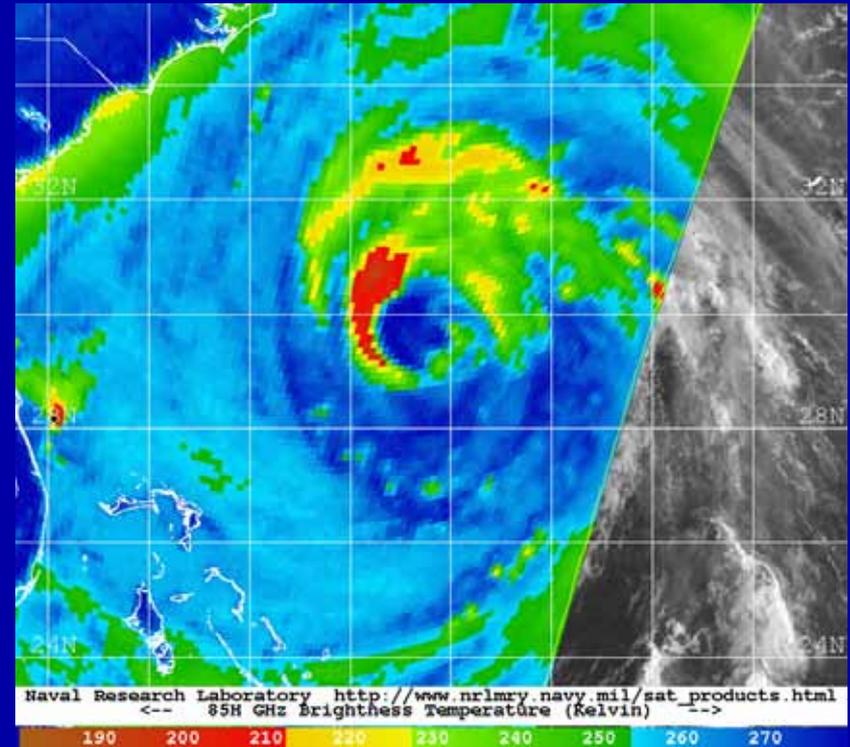
CIRA AMSU = 105 kts

SSMI = ?? kts

# The Problem: Isabel



Average = 91 Knots



“Truth” = 90 Knots

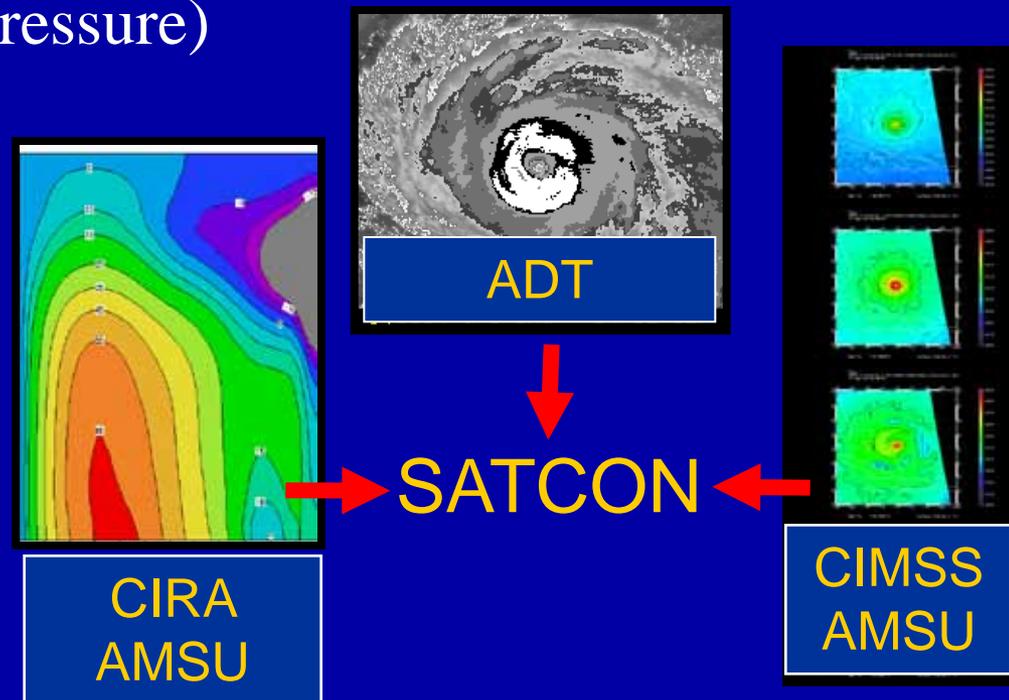
# How It Works

Each method has strengths and weaknesses

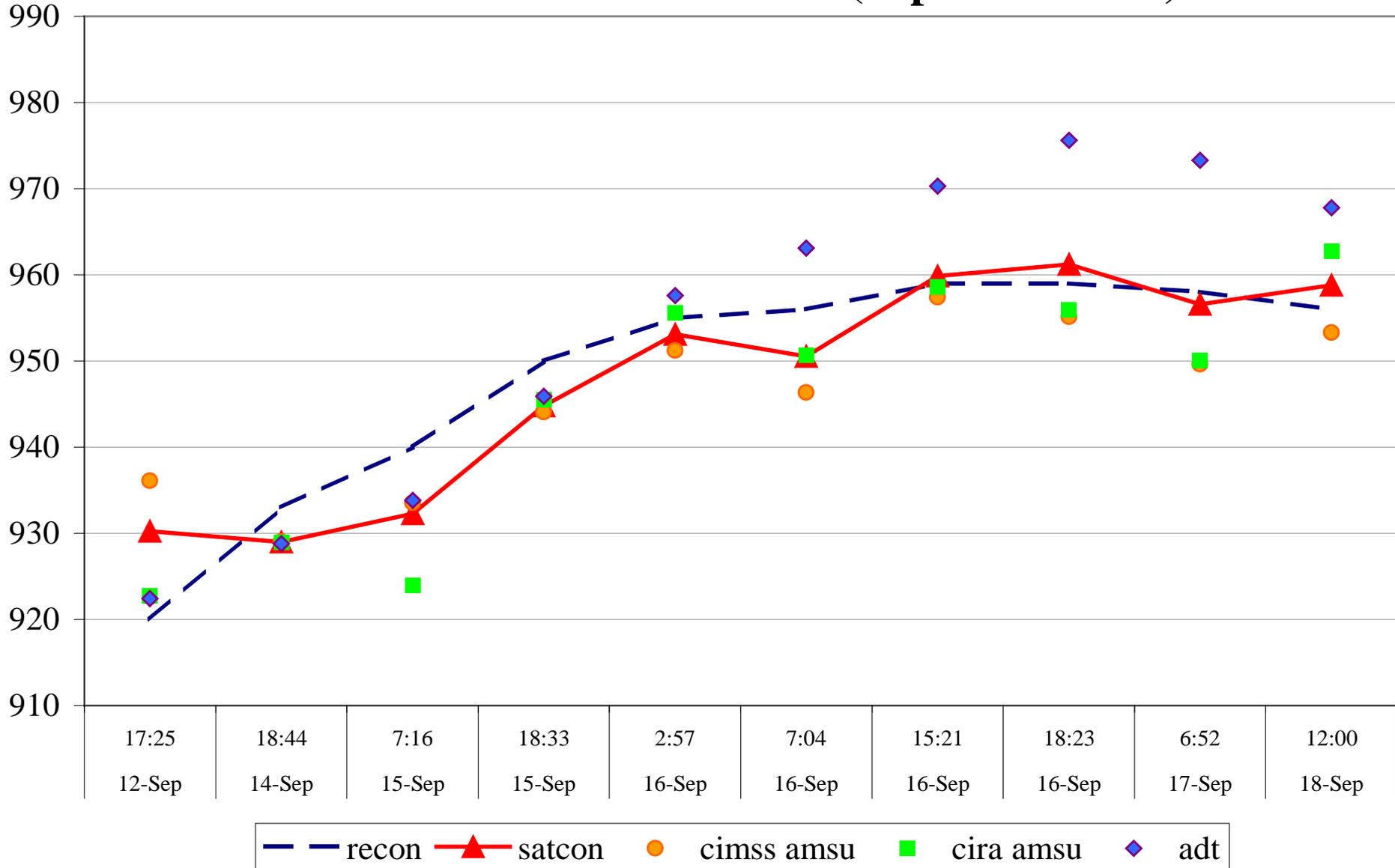
Weight each member in a way that maximizes strengths while minimizing the weaknesses

Training data from 2001-2004 used to develop weights (158 cases vs recon pressure)

Test in real-time for 2005



# SATCON for Hurricane Isabel (dependent case)



# More Skill

# Less Skill

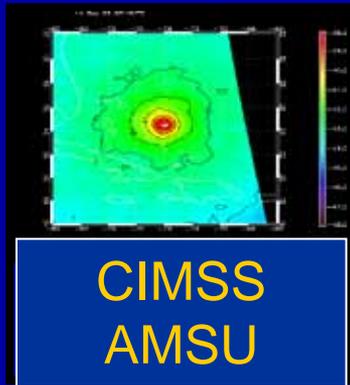
# Parameter



Mature Storms  
Clear Eye  
CDO

Filling Storms  
Shear

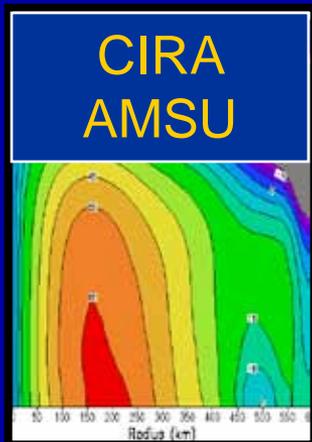
Scene Type



Weak Storms  
Large Eyes

Small Eyes  
ERC's  
Heavy Precip

RMW



Weak Storms  
Higher Lat's

Small Cores  
Heavy Convection  
near core

CLW

# 2005 Stats (Pressure)

	CIMSS AMSU	CIMSS ADT	CIRA AMSU	<b>SATCON</b>
BIAS	-2.5	-2.7	-3.6	<b>-3.7</b>
AVG ERROR	7.1	10.4	7.3	<b>6.8</b>
RMSE	10.4	15.3	11.2	<b>10.5</b>
N	90	90	90	<b>90</b>

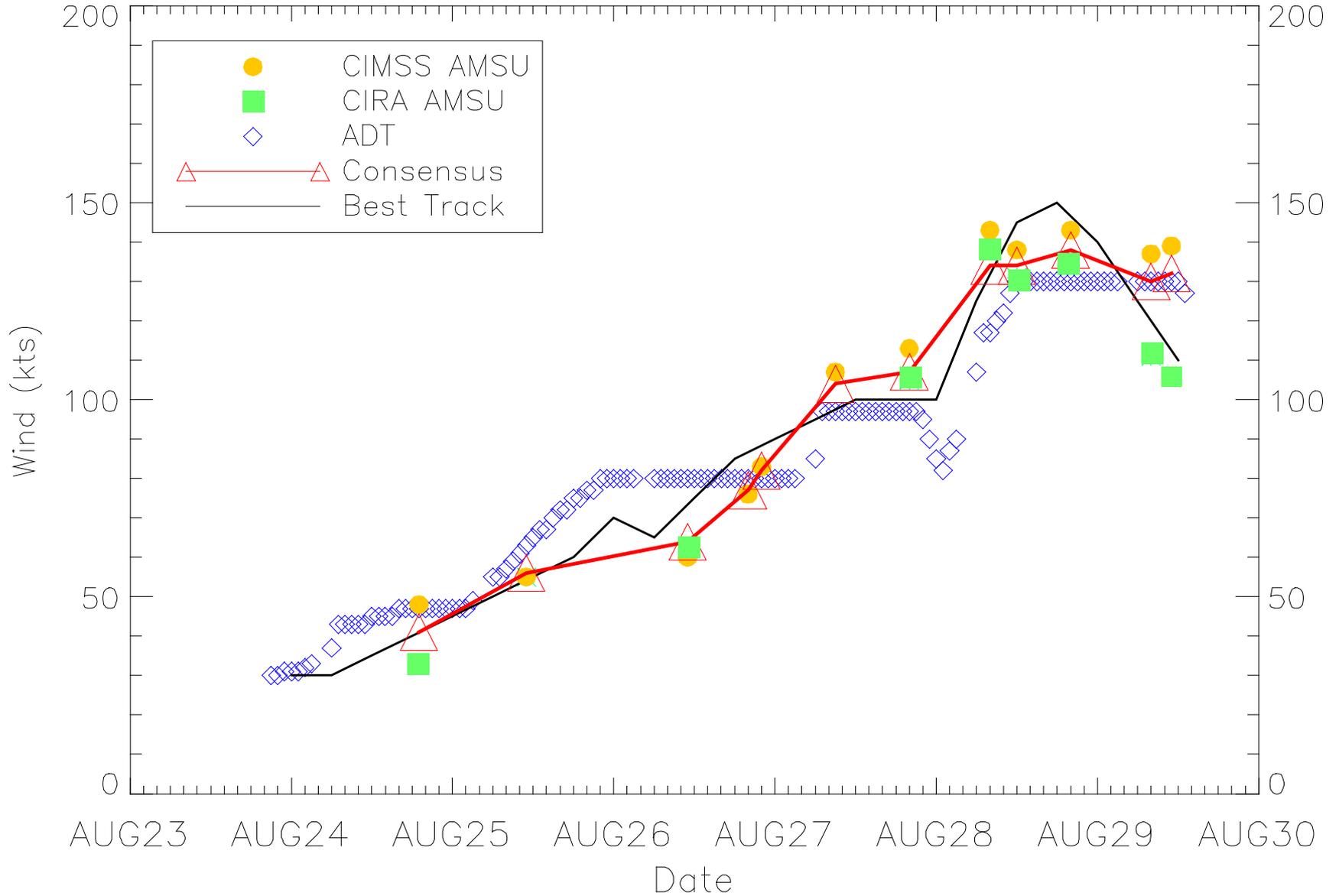
Values in millibars. Validation is aircraft recon pressure +/- 3 hours from estimate time

# 2005 Stats (Wind)

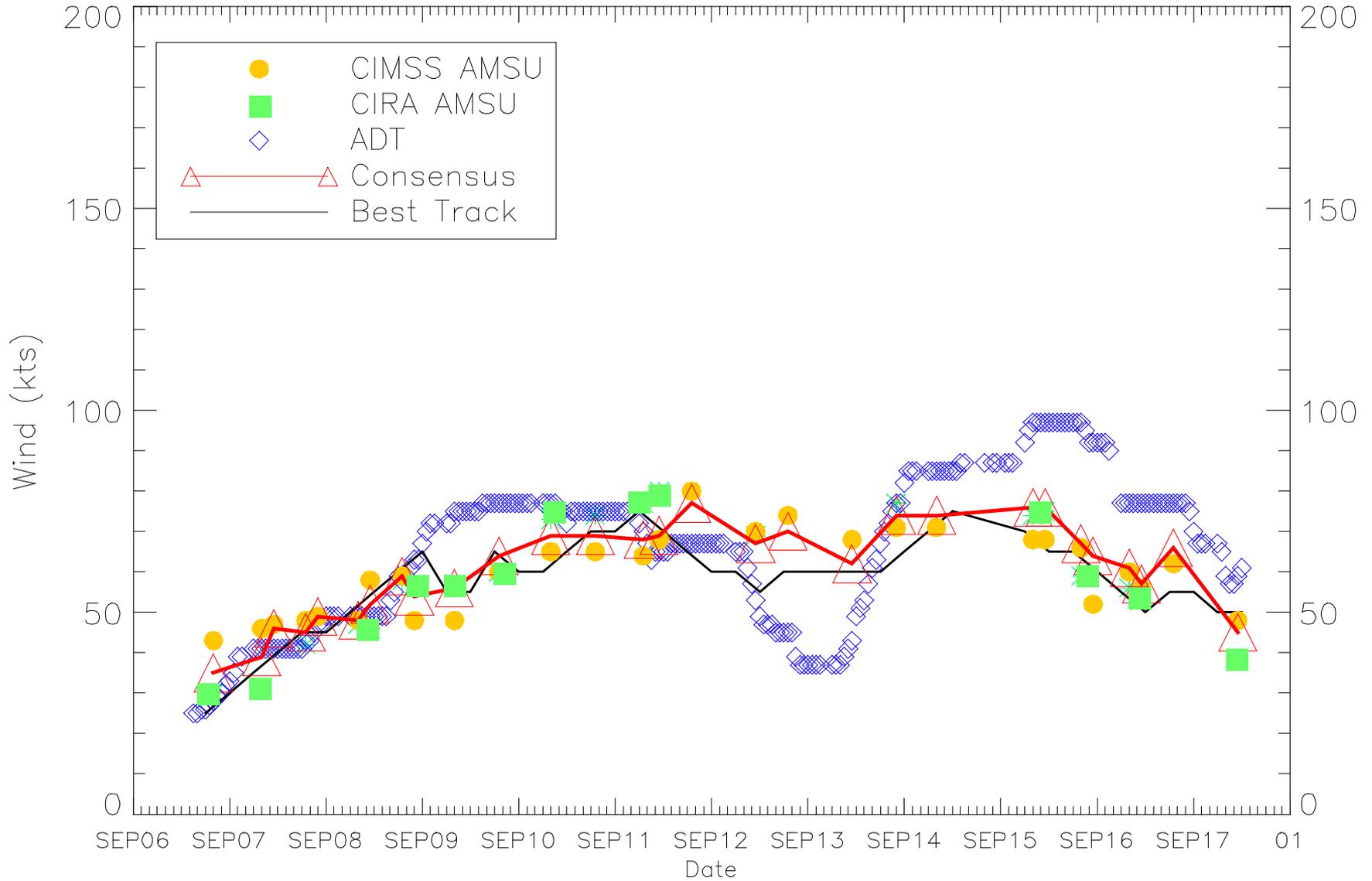
	CIMSS AMSU	CIMSS ADT	CIRA AMSU	<b>SATCON</b>
BIAS	0.6	-0.2	7.0	<b>2.3</b>
AVG ERROR	10.8	10.3	11.1	<b>9.2</b>
RMSE	13.9	13.2	15.7	<b>12.0</b>
N	90	90	90	<b>90</b>

Values in knots. Validation is best track winds coincident with recon  
+/- 3 hours from estimate time

# CIMSS TC Intensity Consensus MSW for KATRINA



# CIMSS TC Intensity Consensus MSW for OPHELIA



# Future Work

- Weights initially developed using pressure validation. Re-derive weights for wind component using Best Track winds
- Full assessment of 2005 cases for each member
- Develop new weights using latest algorithms
- Add additional TC intensity methods (SSMI / TRMM ?)