

A photograph of a pilot with dark hair, wearing a blue flight suit, sitting in the cockpit of a small aircraft. The pilot is smiling and looking out the windshield. The cockpit is filled with various instruments, including numerous analog gauges and dials on the left side, and a few digital displays in the center. The pilot's hands are on the yoke. The background shows a clear blue sky.

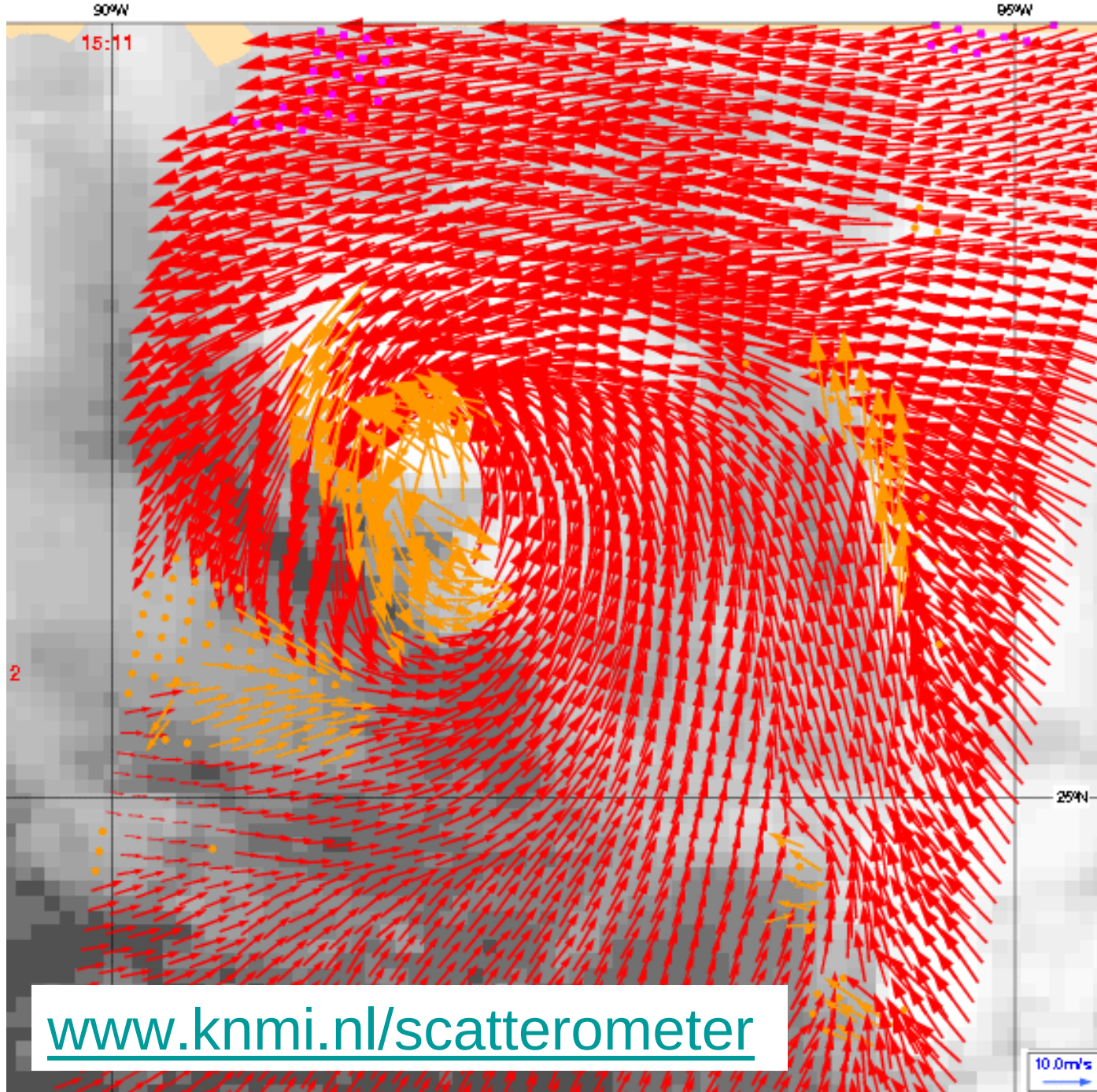
Hanna en Ike

Ad.Stoffelen@knmi.nl

Mijn belevenissen

Na een onstuimige nacht met Hanna
volgden vier turbulente worstelingen
met Ike ...

20091109 15:30Z HIRLAM: 2009110909+6 lat lon: 22.00 -88.11 IR: 16:00



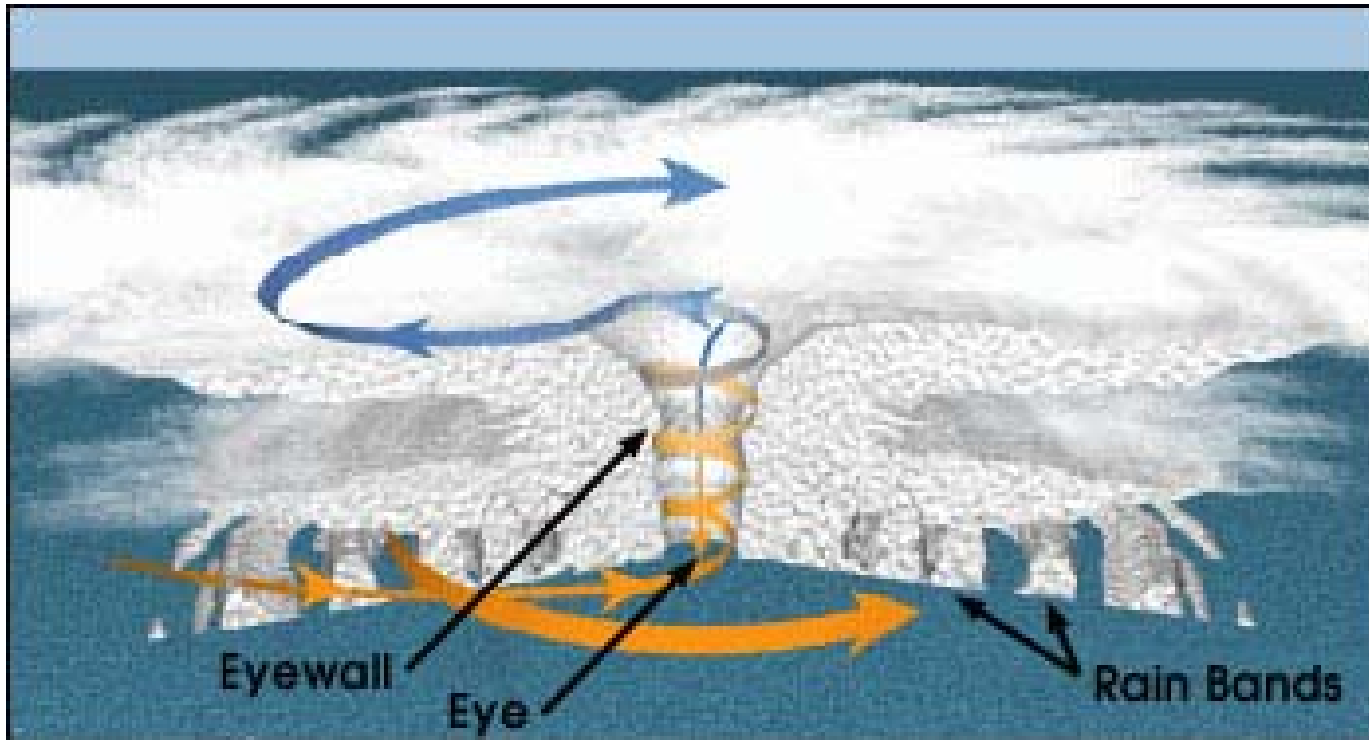
OSI SAF

- Het KNMI maakt namens EUMETSAT wind producten voor ASCAT, SeaWinds, ERS, en later ook ISCAT, CFOSAT

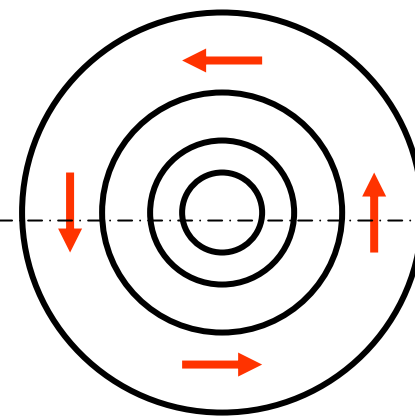
Tropische Orkanen

Saffir-Simpson Scale for Hurricane Classification				
Strength	Wind Speed (Kts)	Wind Speed (MPH)	Wind Speed (m/s)	Wind speed (km/hour)
Category 1	64- 82 kts	74- 95 mph	33-42	119-152
Category 2	83- 95 kts	96-110 mph	43-49	153-176
Category 3	96-113 kts	111-130 mph	50-58	177-209
Category 4	114-135 kts	131-155 mph	59-70	210-250
Category 5	>135 kts	>155 mph	> 70	> 250
Tropical Cyclone Classification				
Tropical Depression		20-34kts		
Tropical Storm		35-63kts		
Hurricane		64+kts or 74+mph		

Structuur van orkanen

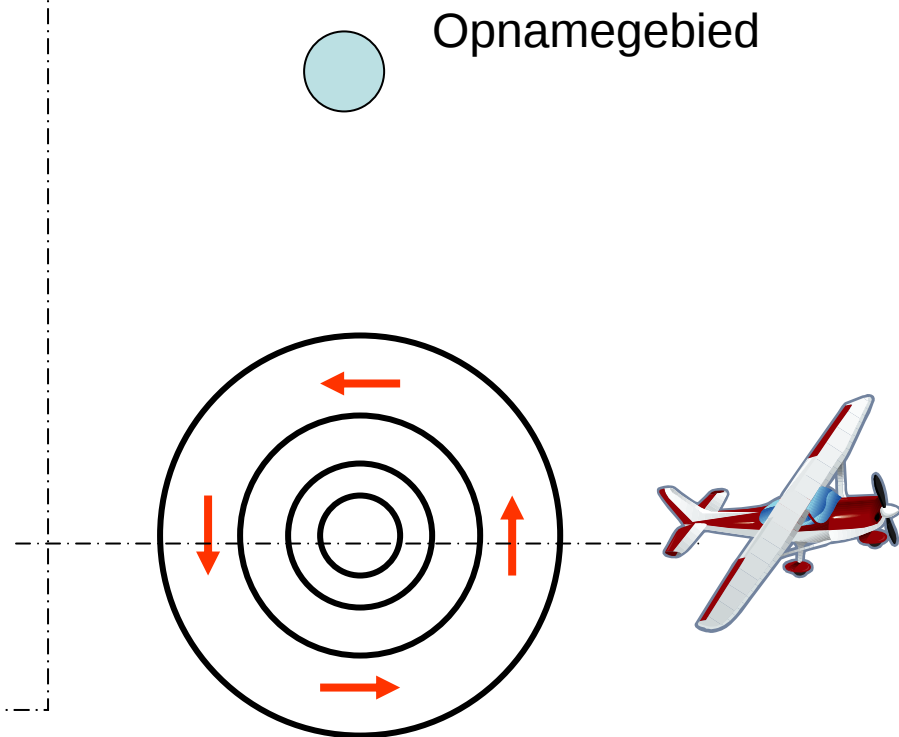


- Bij een doorkruising is de windrichting constant
- De druk piekt in een minimum
- De wind piekt in de eyewall, een muur van wolken rond het oog

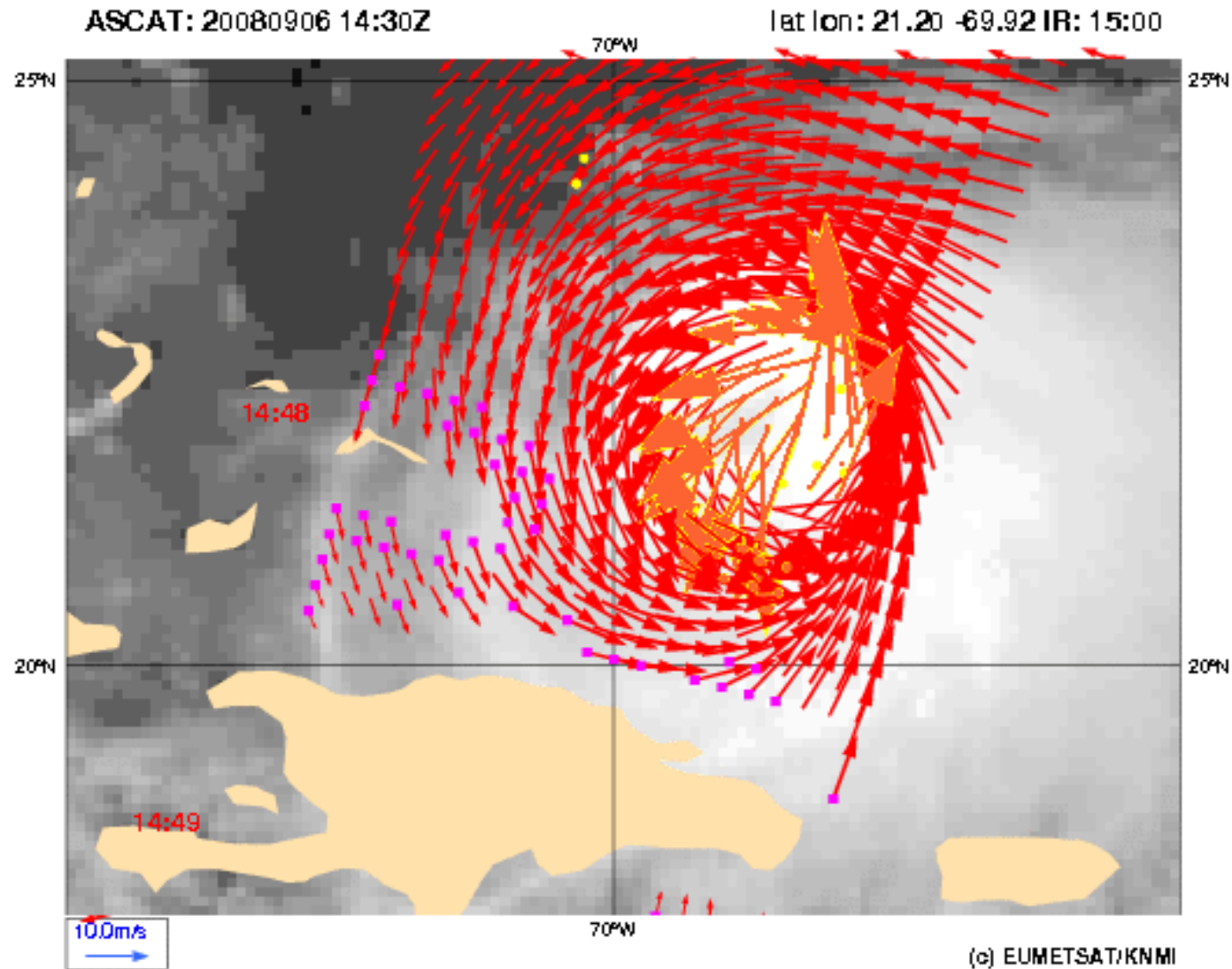


ASCAT scatterometer

- Het opnamegebied van ASCAT is 25 km
- De maximale winden worden uitgesmeerd
- Kunnen we ASCAT verbeteren door kennis op te doen van de kleinschalige structuur bij orkaanwindkracht ?
- Tropen versus onze breedte ?



ASCAT in Ike



- Hoogste wind die ik ooit in ASCAT heb gezien

www.tropicalatlantic/recon



Impression

- Kermit
- Instruments
- Crew
- Ike
- Sea state



Kermit and me

Lockheed Orion P3



Stepped Frequency Microwave Radiometer
Flight level meteo
Nose radar
Dropsonde and XBT gate

www.aoml.noaa.gov/hrd/project2005/sfmr.html







SECURE LOOSE EQUIPMENT AND DON LPU.
TAKE DITCHING STATION AND ADJUST SEAT BELT AND SHOULDER HARNESS.
AFTER STOP, JETTISON RIGHT OVERWING HATCH AND ASSIST LAUNCHING LIFERAFT. EXIT THROUGH RIGHT OVERWING HATCH AND BOARD RIGHT LIFERAFT.

FIRE (AISLE SEAT)

REPORT TO FLIGHT DIRECTOR TO ACT AS MESSAGE RUNNER.

1. SECURE LOOSE EQUIPMENT AND DON LPU.
2. TAKE DITCHING STATION AND ADJUST SEAT BELT AND SHOULDER HARNESS.
3. AFTER STOP, TAKE RIGHT FIRST AID KIT AND EXIT THROUGH RIGHT OVERWING HATCH. BOARD RIGHT LIFERAFT.

FIRE (WINDOW SEAT)

1. REMAIN AT STATION AND INSPECT AREA. STAY CLEAR OF FIRE INSPECTION ACTIVITY.
2. BE PREPARED FOR DUTIES AS ASSIGNED OR DIRECTED BY THE FLIGHT DIRECTOR.

MEDIATE DITCH: IS SIGNALLED BY ONE LONG RING ON THE COMMAND BELL. THE AIRCRAFT COMMANDER HAS DETERMINED A CATASTROPHIC FAILURE HAS OCCURRED AND THE AIRCRAFT MUST DITCH AT ONCE. DESCENT RATES UP TO 6000 FEET PER MINUTE ARE POSSIBLE. IMMEDIATELY SIT DOWN AND STRAP IN AT THE NEAREST DITCHING STATION. AFTER STOP, TAKE NEAREST AVAILABLE LPU AND CARRY OUT THE DUTIES OF YOUR ORIGINALLY ASSIGNED DITCHING STATION.



Kermit has experienced about 80 different TCs each several flights with multiple crossings



Crossing through Ike while moving towards Cuba

H42RF Center Finder

193318z



185389
ZTIME

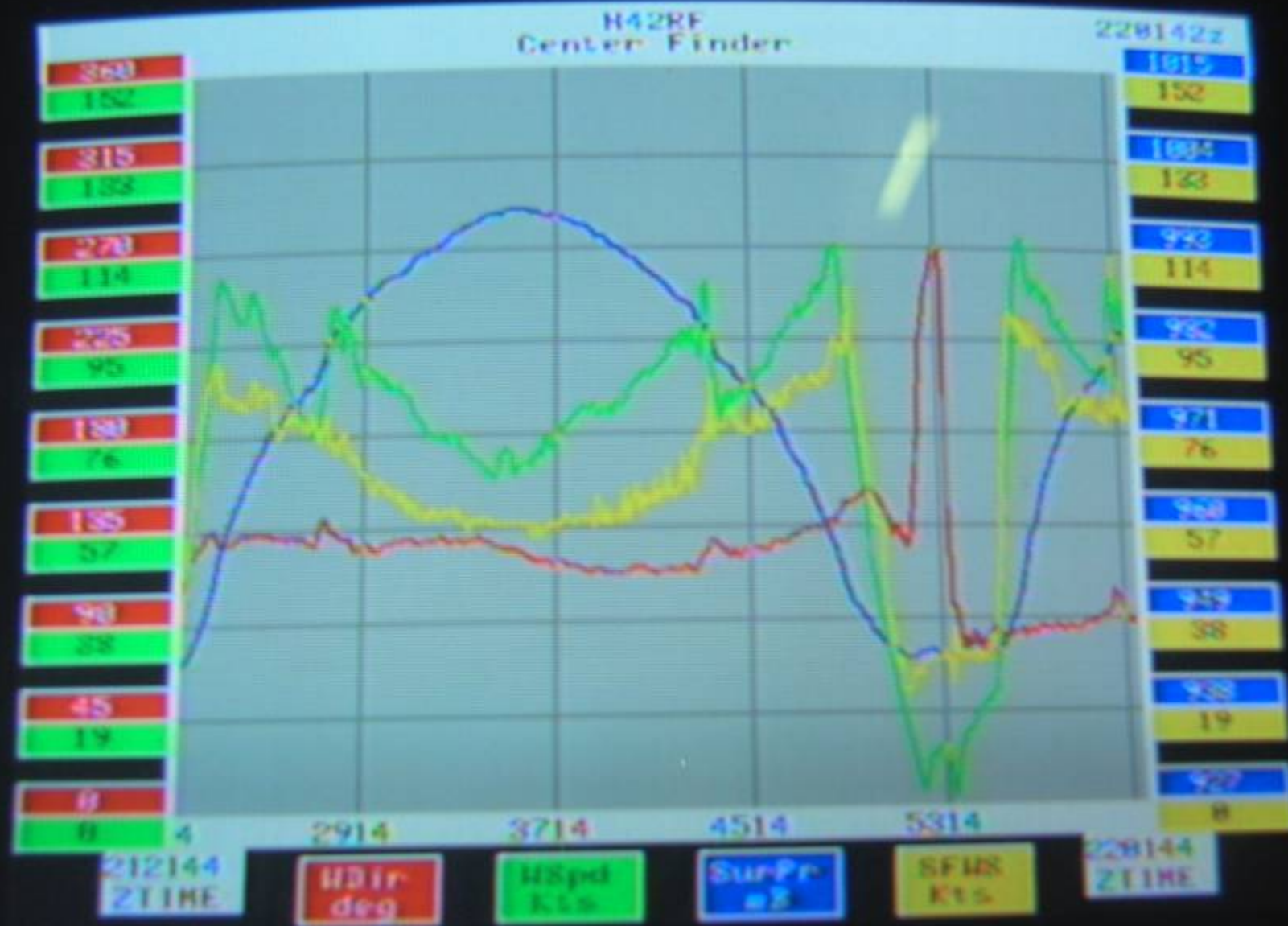
HDIR
deg

USpd
Kts

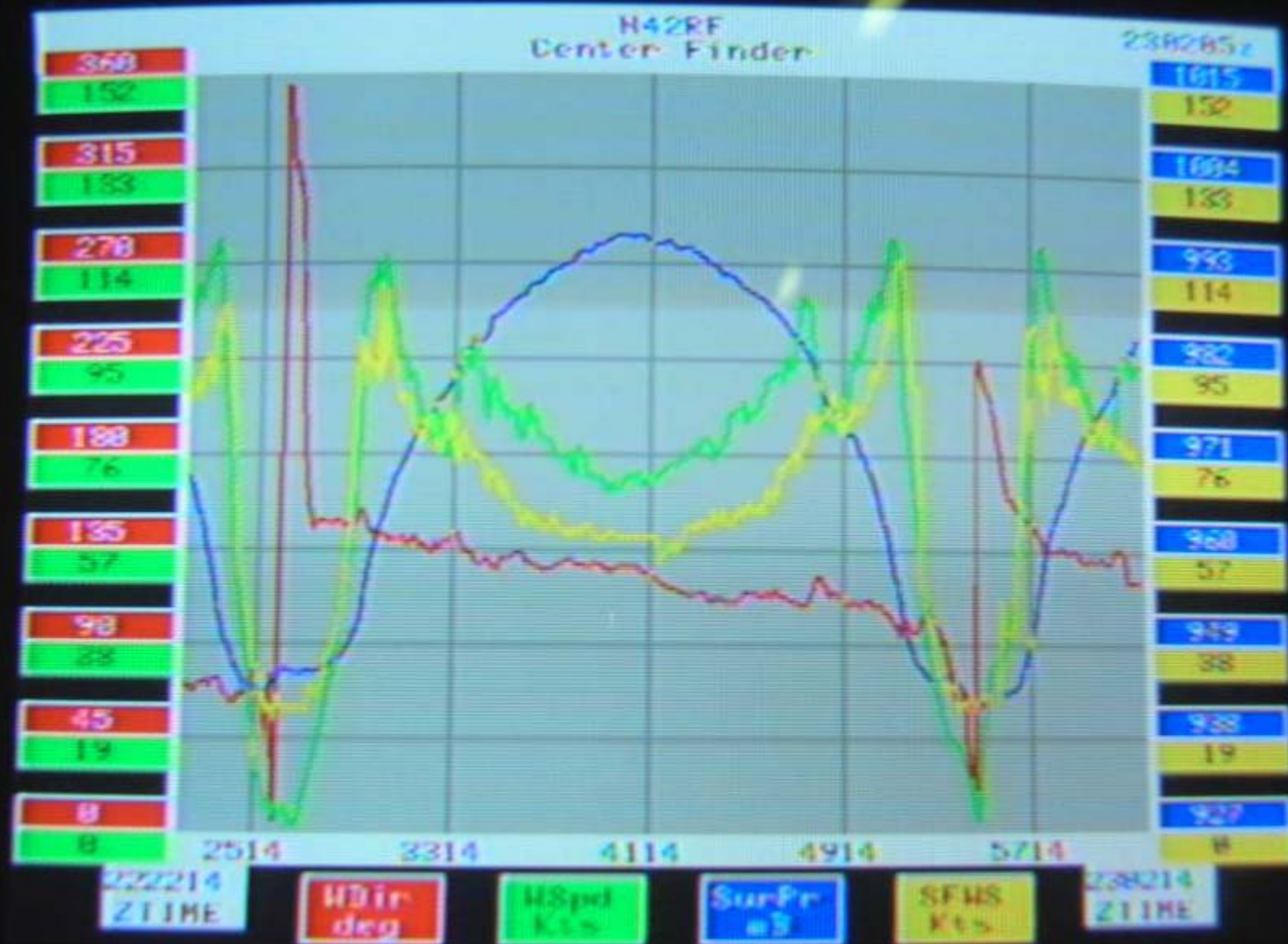
SurPr
mB

SFWS
Kts

193318z
ZTIME



Double Eyewall structure

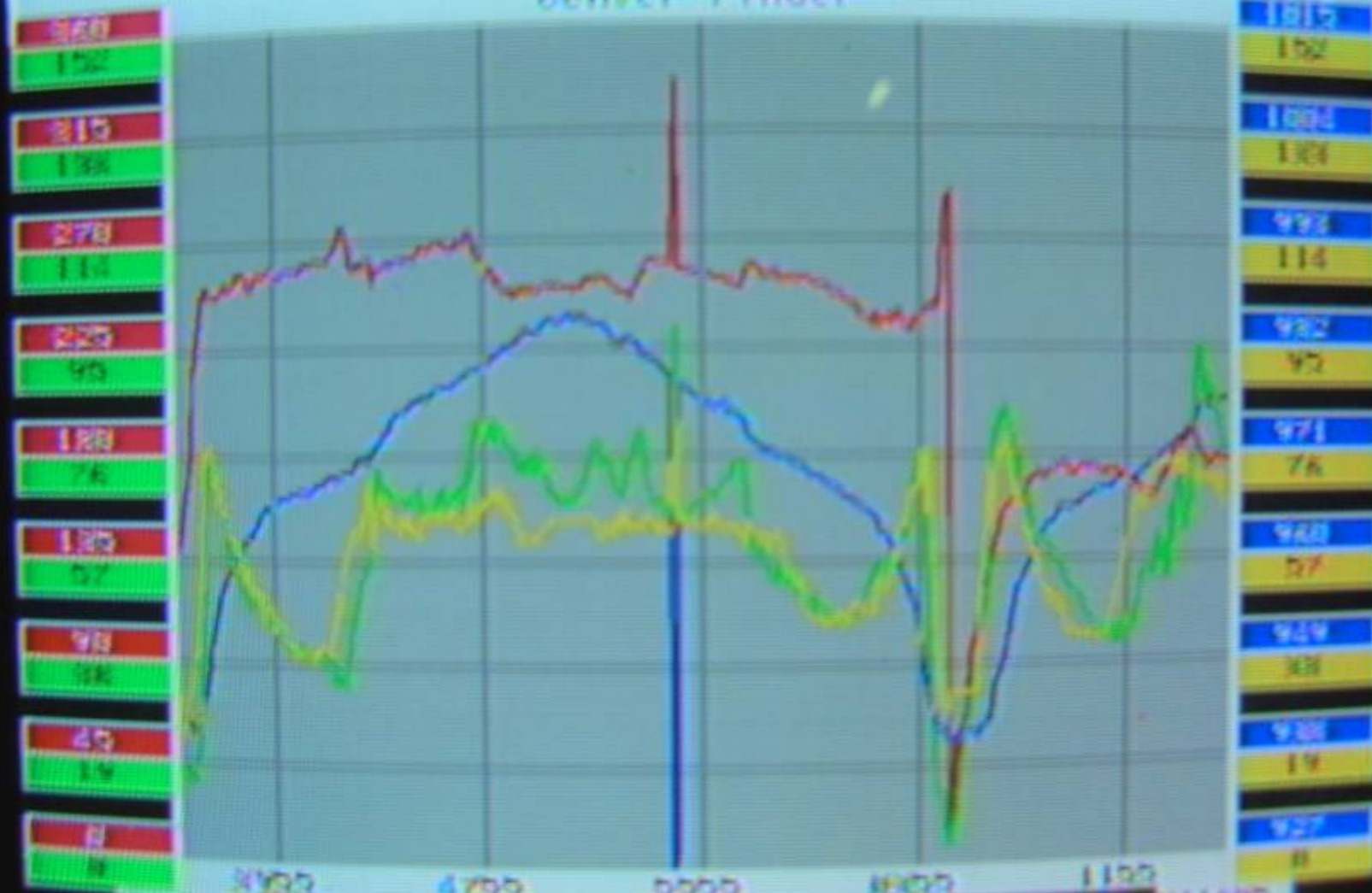




An atypical asymmetric eye of Ike off Cuba

H42RF Center Finder

011684z



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ZLINE

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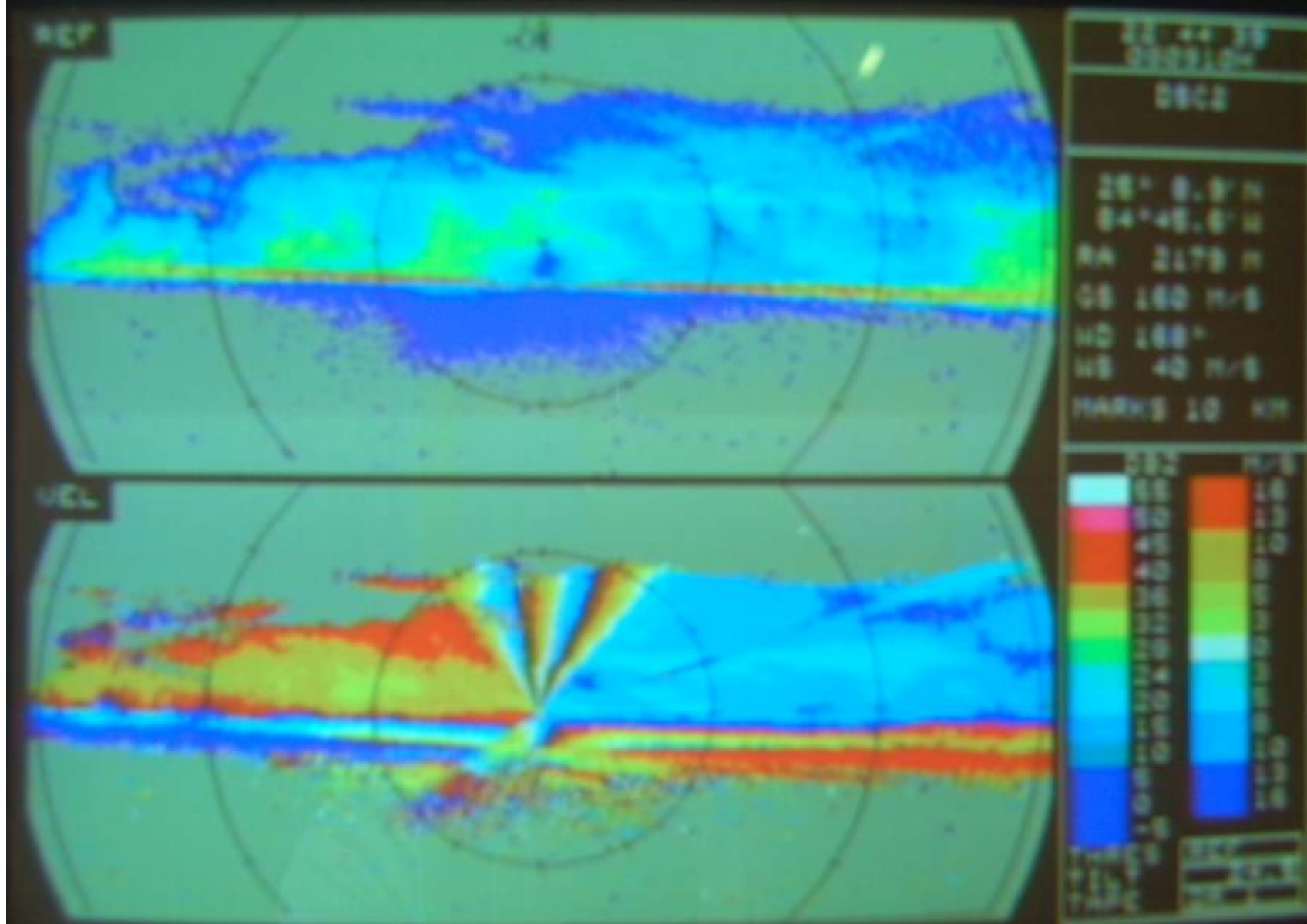
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ZLINE



SST drop of 5 degrees while crossing Ike

Time	2:39:12 Z	Flight ID:	080909H
INE1 Lat	23°21.8'N	Long	84°45.3'W
Track1	104°	Wind Dir	27°
Heading1	95°	Wind Speed	41.8 k
Amb Temp1	16.4°C	Pres Alt	2417 m
Dewpoint2	12.8°C	Geo Alt RNU	2336 m
Rel Humid	79.4 %	Down Rad	18.4°C
CO2 Rad	16.1°C		
		Vert Windg	.7 m/s
Ind Air Spd	217 kt	Sfc Pres	985.3 m
True Air Spd	252 kt	Std Height*	2973 m
Ground Speed	239 kt	D-Value	-81 m
Dynamic P2	78.3 mb	Static P2	754.6 m
Pitch1	1.0°	Roll1	-1.3°
Attack1	1.2°	Sideslip1	-.6°
GPS Lat*	0° 0.0'N	Long*	0° 0.0'E
INE2 Lat	23°21.8'N	Long	84°45.6'W

Tail radar's strength (top) and Doppler (bottom)
Horizontal plateau indicates sea surface return



Prebriefing to plan flight pattern



Plane prebriefing with the crew



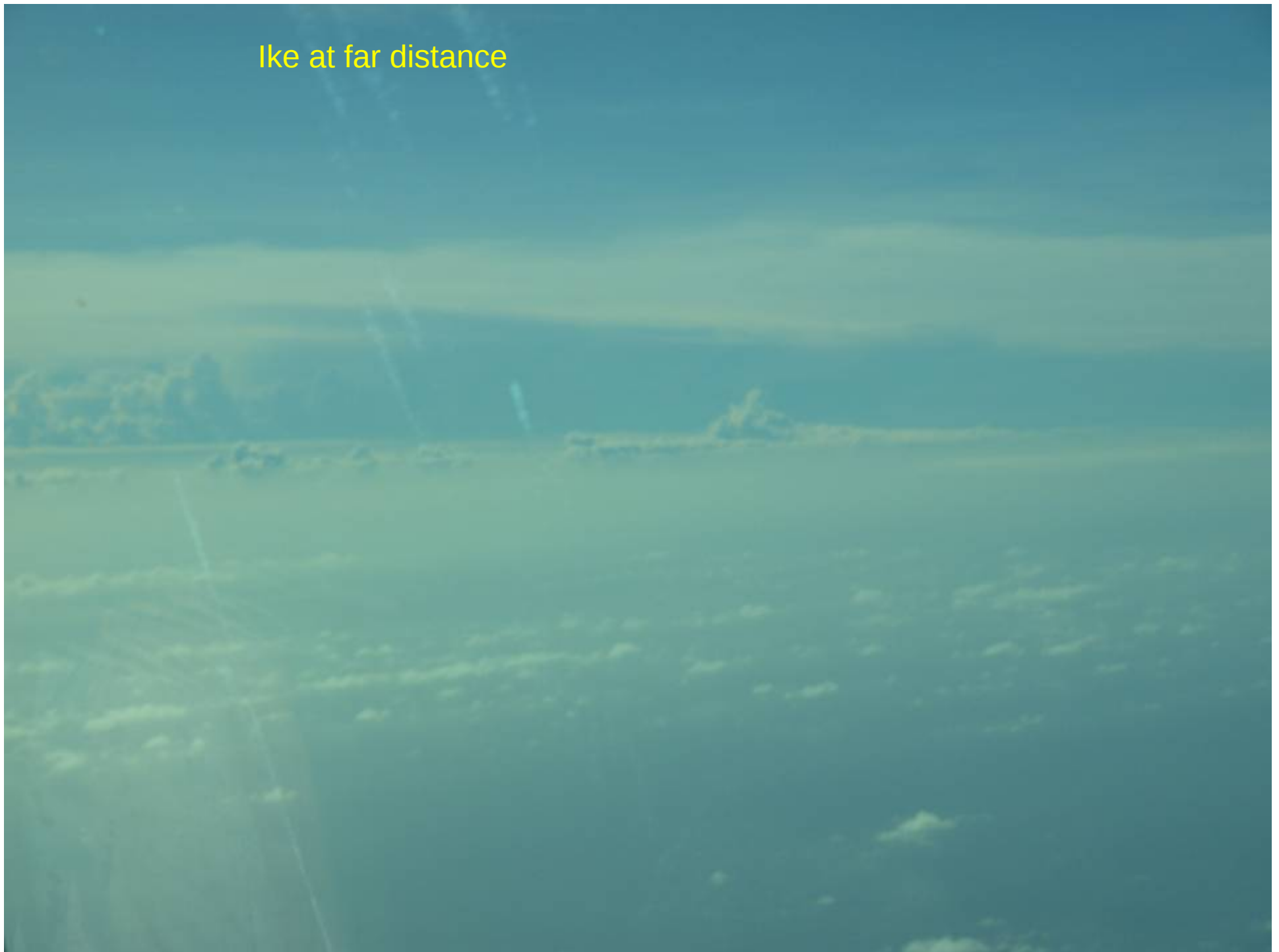
The Kermit scatterometer team



Hurricane hunter
certificate



Ike at far distance



Getting closer



A photograph of a blue sky with wispy white clouds. The clouds are scattered across the upper half of the frame, with some appearing as soft, white streaks and others as more defined, fluffy patches. The sky transitions from a pale blue near the horizon to a deeper blue at the top.

Beneath the outer clouds of Ike

A photograph of a cloudy sky. The sky is filled with various cloud formations, including a large, bright, horizontal cloud band across the middle. The colors range from deep blue to light blue and white. The text "A view inside Ike outwards" is written in yellow at the bottom left.

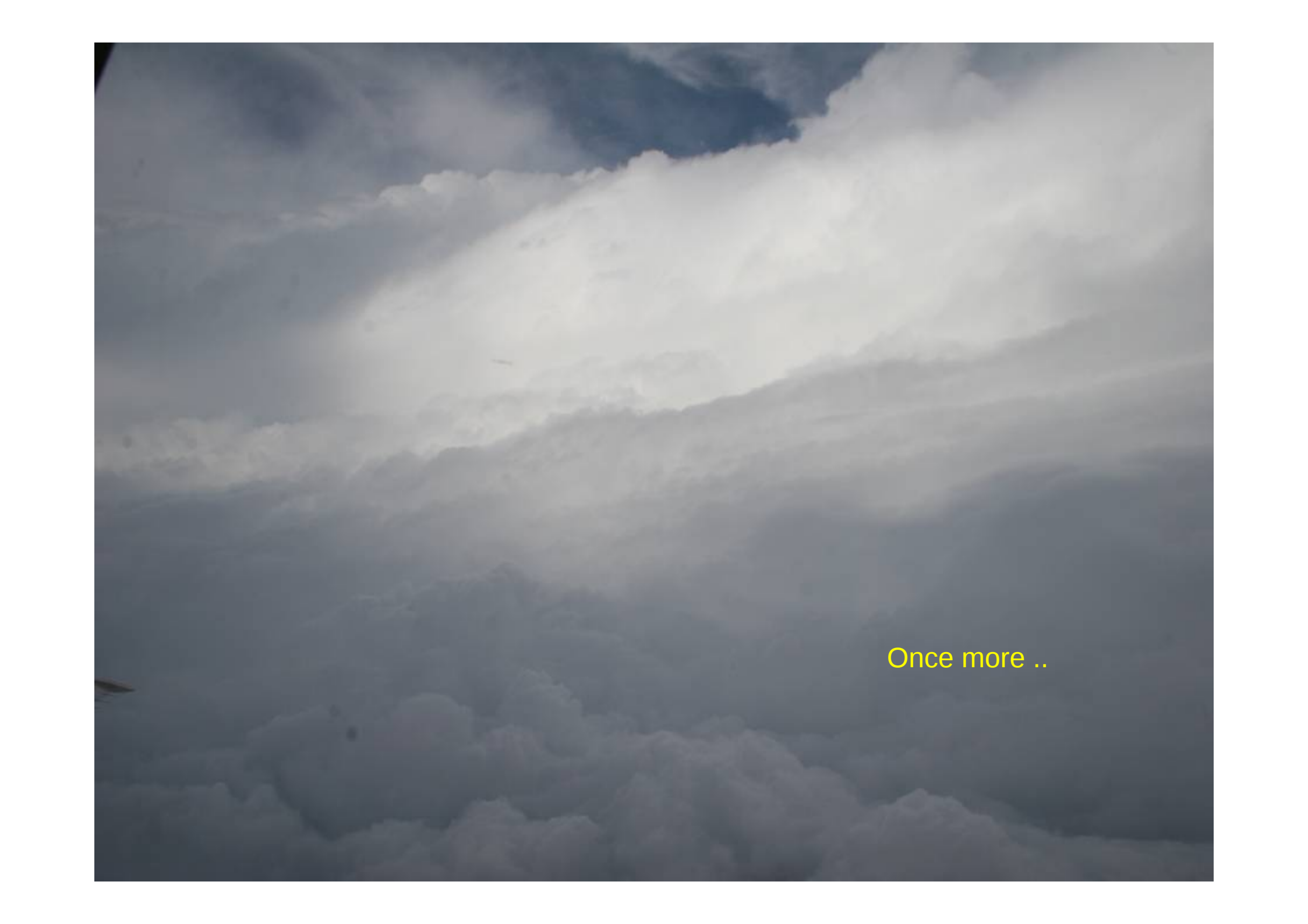
A view inside Ike outwards

Eye





The cloud wall



Once more ..

Spiraling low clouds in the eye above the sea



Backward look away from the eye



Maximum winds

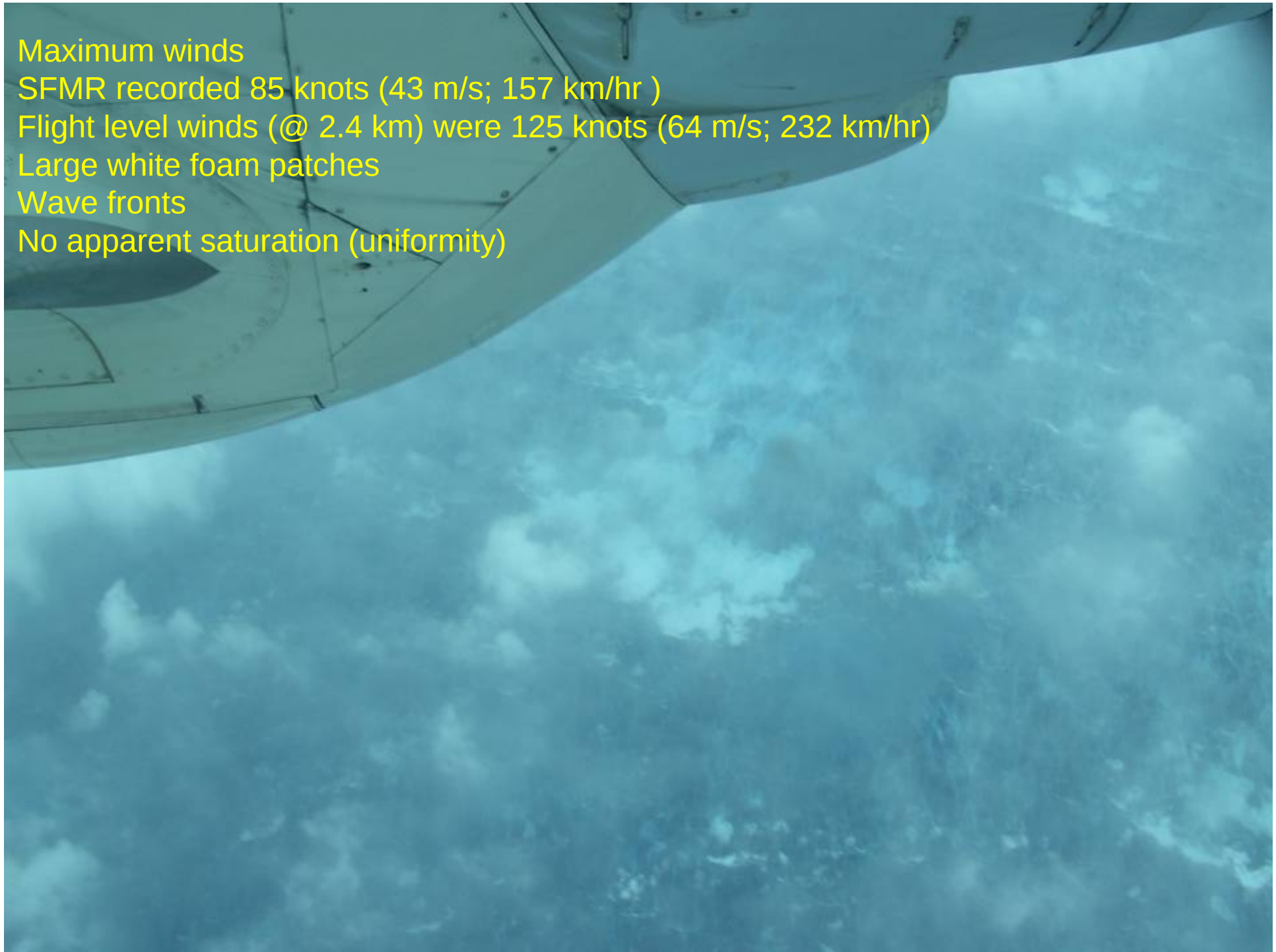
SFMR recorded 85 knots (43 m/s; 157 km/hr)

Flight level winds (@ 2.4 km) were 125 knots (64 m/s; 232 km/hr)

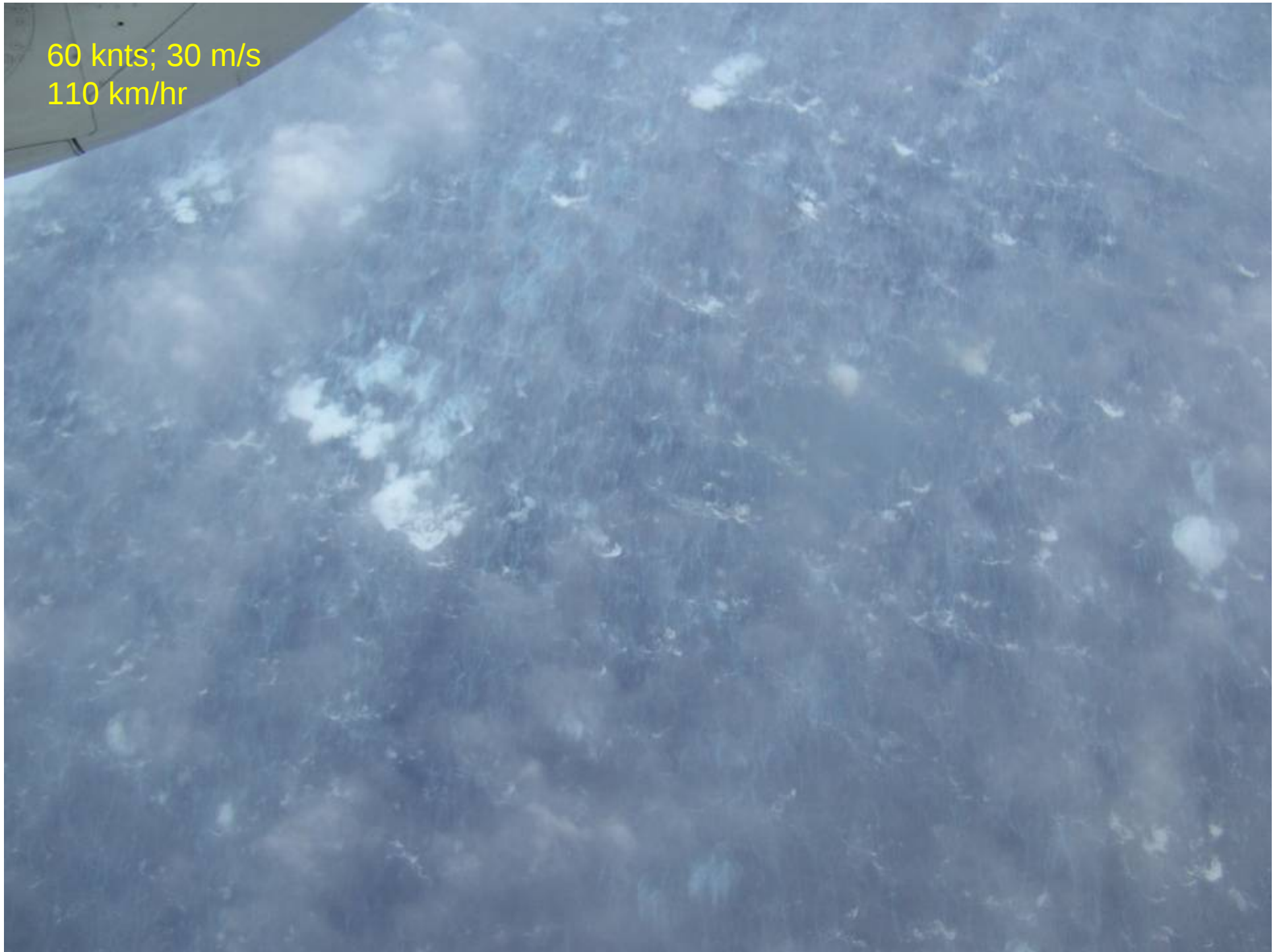
Large white foam patches

Wave fronts

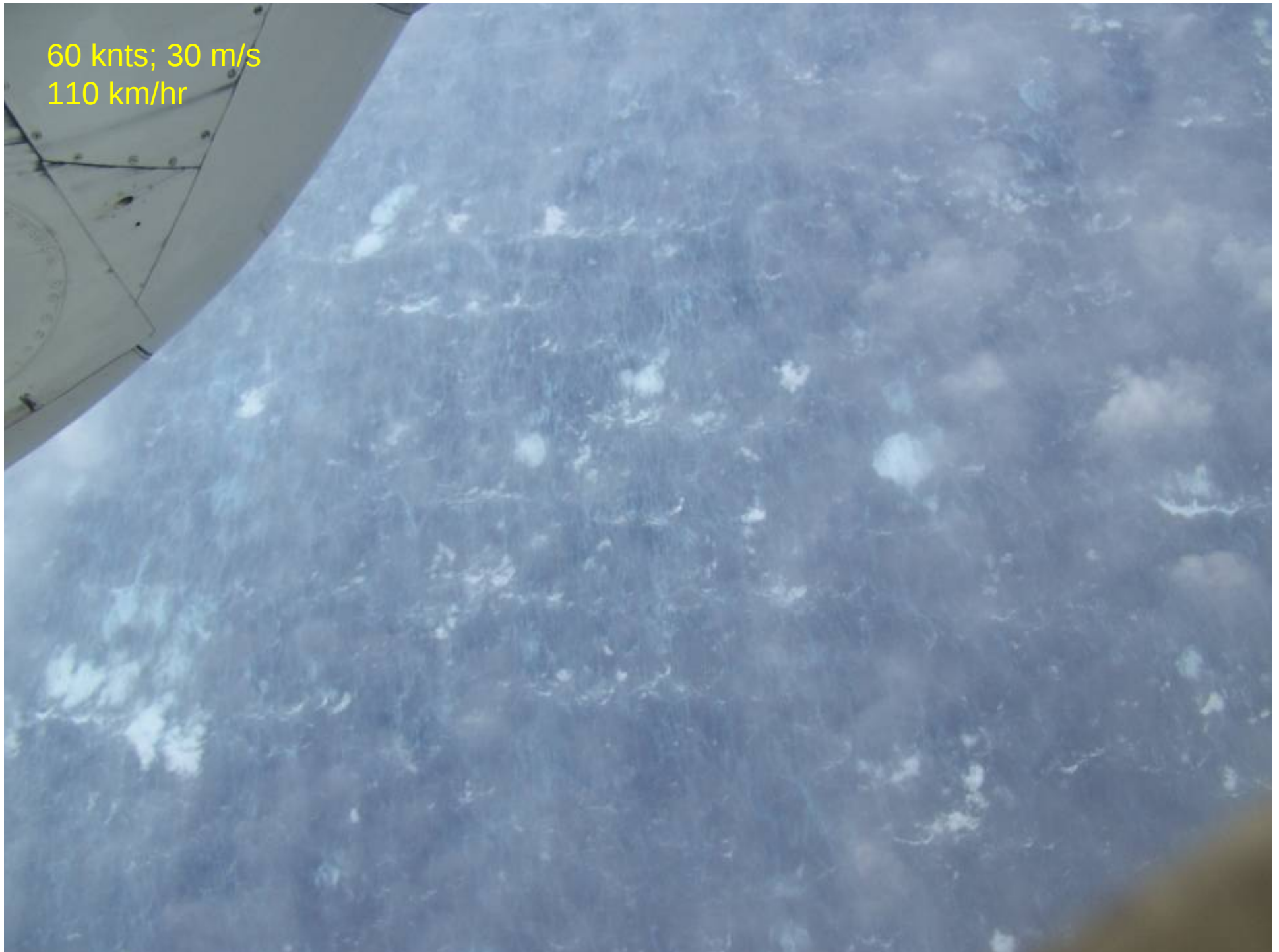
No apparent saturation (uniformity)



60 knts; 30 m/s
110 km/hr



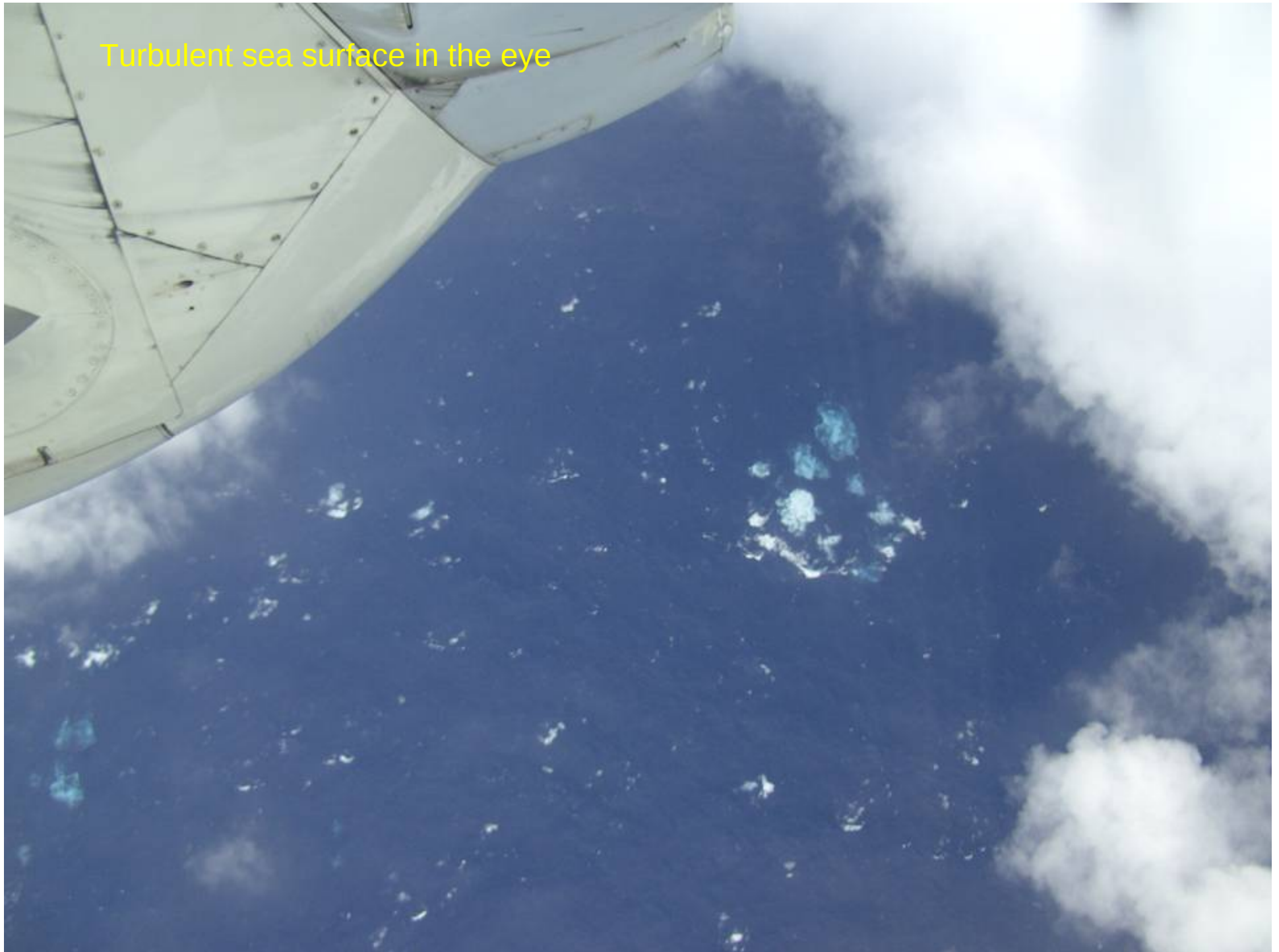
60 knts; 30 m/s
110 km/hr



50 knts; 25 m/s
90 km/hr



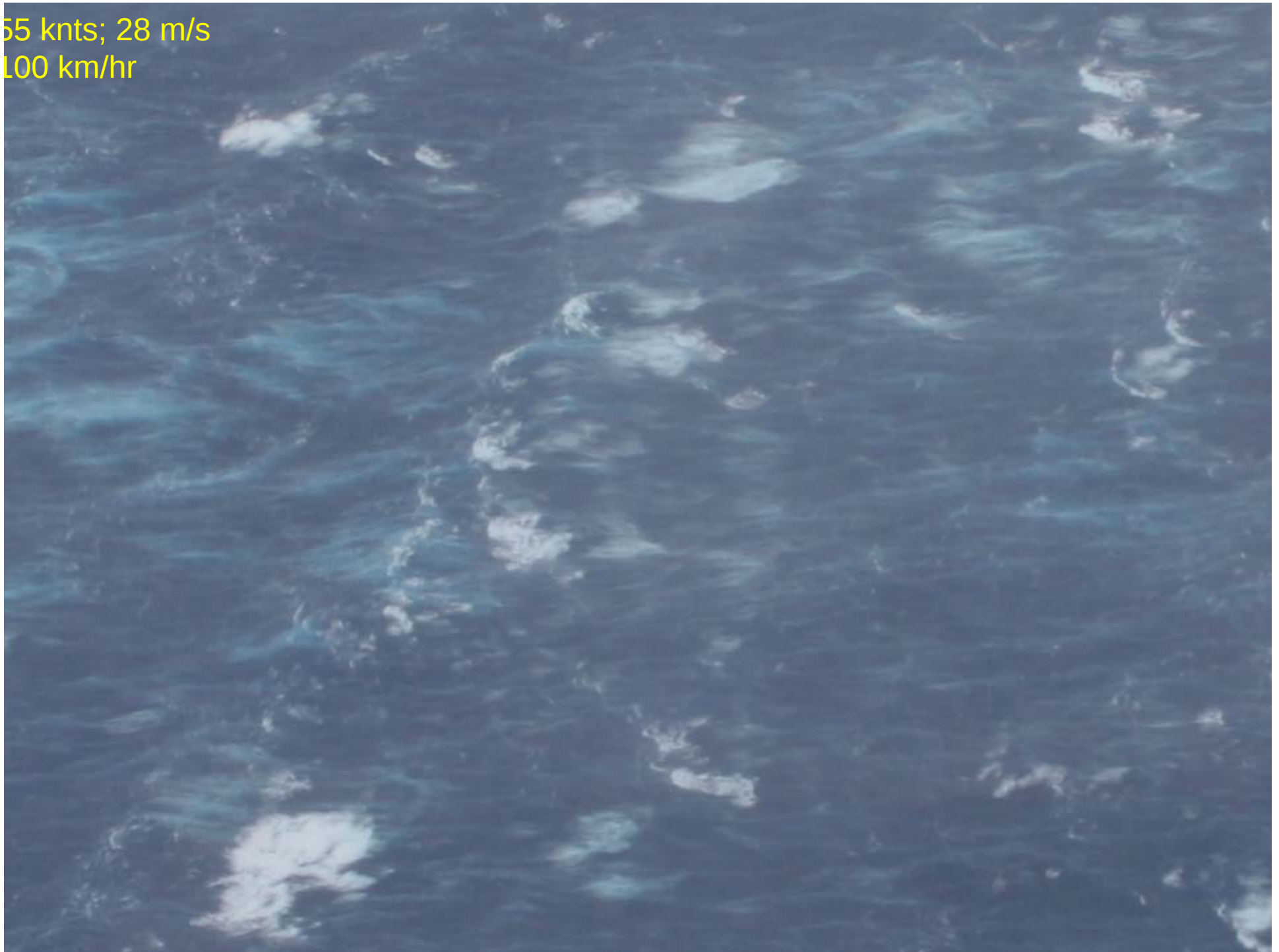
Turbulent sea surface in the eye



55 knts; 28 m
100 km/hr



55 knts; 28 m/s
100 km/hr



Almost 3.5 g !



Hail damage on Kermit





Coral sediment saturated sea after Ike

Bedankt!