(08/15/2022)

The Tail-Doppler Radar (TDR) dataset is comprised of raw Doppler radar data (as recorded on the aircraft) and products derived therefrom for a given flight. Radar data point of contact for Level 1 and 2 data sets: Dr. Paul Reasor (Paul.Reasor@noaa.gov) and Dr. John Gamache (John.Gamache@noaa.gov). Point of contact for Level 3 data set: Dr. Michael Fischer (Michael.Fischer@noaa.gov).

HRD's data use policy should be read before using any of the below TDR data sets: https://www.aoml.noaa.gov/wp-content/uploads/2021/06/Guide-to-AOML_HRD-Data-Accessibility.pdf

References for the synthesis method (3D and vertical profile) and automated QC:

(3D synthesis) Gamache, J. F., 1997: Evaluation of a fully three-dimensional variational Doppler analysis technique. Preprints, 28th Conf. on Radar Meteorology, Austin, TX, Amer. Meteor. Soc., 422–423.

- (3D synthesis) Reasor, P. D., M. Eastin, and J. F. Gamache, 2009: Rapidly intensifying Hurricane Guillermo (1997). Part I: Low-wavenumber structure and evolution. Mon. Wea. Rev., 137, 603–631.
- (Profile synthesis) Lorsolo, S., Zhang, J. A., Marks, F., Jr., and Gamache, J. (2010). Estimation and mapping of hurricane turbulent energy using airborne Doppler measurements. Mon. Wea. Rev.,138, 3656-3670.
- (Profile synthesis) Zhang, J. A., Rogers, F., Reasor, P. D., and Gamache, J. (2022). The mean kinematic structure of the tropical cyclone boundary layer and its relationship to intensity change. Mon. Wea. Rev., in review.
- (Quality control) Gamache, J. F., 2005: Real-time dissemination of hurricane wind fields determined from airborne Doppler radar data. National Hurricane Center, 38 pp. [Available online at http://www.nhc.noaa.gov/jht/2003-2005reports/DOPLRgamache_JHTfinalreport.pdf.]

Filename convention: **YYYY** = 4-digit year; **YY** = 2-digit year; **MM** = 2-digit month; **DD** = 2-digit day; **A** = aircraft ID (N42/3/9=H/I/N); **I** = first (=1) or second (=2) flight of day for given aircraft starting 00 UTC; **HHMMSS** = UTC analysis time in hrs (HH), min (MM) and sec (SS); **HHMM** = UTC analysis time without sec; **HHMM_HHMM** = UTC analysis period (start_end)

Note: For flights crossing 00 UTC, times are reported on a 48-h clock

File format: *.w are legacy binary files. We encourage use of the netcdf-format files which contain additional metadata for analysis interpretation. **IMPORTANT** notes on the netcdf files:

- <u>Gridding and Variable Name Changes</u>: Beginning in 2021, the 3D analysis grids transitioned from regularly-spaced in latitude-longitude [1D position variable names: "lats" and "lons" (and sometimes "lat" and "lon" for older data sets)] to regularly-spaced Cartesian (consistent with the *.w files) [1D position variable names: "x" and "y". New 2D variables "LATITUDE" and "LONGITUDE" contain the latitude and longitude position of each Cartesian grid point and are supplied as additional information.]
- <u>Vertical Levels</u>: Beginning with the 2021 Level 2 products, the lowest level (z=0) is flagged to avoid a prior misinterpretation of that level (fields there are *not* surface fields)
- <u>Storm-relative Mapping and Storm-relative Winds</u>: All analyses employ a system translation (e.g., storm motion), stated in the metadata, to map raw Doppler data to the common analysis time. Files with '_rel' indicate that a constant system motion has been removed from the winds (i.e., "storm-relative" winds). Otherwise, winds should be interpreted as Earth-relative winds.

Level 1a – **Raw TDR radials** with standard real-time QC written to individual 360° SIGMETformat sweep files. P-3 and G-IV flight archives for fore- (*-MA-product_raw.tar.gz) and aftpointing (*-SL-product_raw.tar.gz) antenna are located at

https://seb.omao.noaa.gov/pub/acdata/YYYY/RADAR_TDR/YYYYMMDDAI

Level 1b – **Real-time TDR products** generated on the aircraft using automated QC and synthesis methods, transmitted to a ground server, and archived *as is*. <u>Users must adhere to</u> <u>data use policies for Level 1 products and are strongly advised to perform their own quality</u> <u>control of analyses.</u> P-3 and G-IV flight archives are located at

https://seb.omao.noaa.gov/pub/flight/radar/YYYYMMDDAI

<Execution, O(1M)> Informational text output/error files produced during software execution

YYMMDDAI_HHMM_HHMM_analysis.tar

<Analysis, O(10M)> 3D wind/reflectivity, 2D vertical profile gridded analyses of QC'd TDR data

YYMMDDAI_HHMM_xy.(w)nc.gz

- 3D volume with 2-km (0.5-km) horizontal (vertical) grid spacing extending out 250 km from the grid origin (typically, the center of circulation at flight level)
- For N49, the spacing and domain can vary depending on the flight pattern
- YYMMDDAI_HHMM_xy_rel.(w)nc.gz **Discontinued after 2021 season**
 - Storm-relative wind

YYMMDDAI_HHMM_vert_in(out)bound.(w)nc.gz

- Along-track (1.5-km spacing) vertical profile with 150-m vertical grid spacing
- Wind derived from data up to 10-km from the flight track (see Zhang et al. 2022)
- The user is advised to reference the in(out)-bound flight track for context, as the profiles sometimes do not represent actual radials from the storm center

YYMMDDAI_HHMM_vert_in(out)bound_rel.(w)nc.gz

• Storm-relative wind

YYMMDDAI_HHMM_vert_in(out)bound_fall.(w)nc.gz

• Estimated fall speed (via dBZ-Vt relationship) removed from the Doppler velocity

<AWIPS, O(1M)> Wind and reflectivity products for AWIPS-2 ingest derived from analysis data

AWIPSMaxdb_YYMMDDAI_HHMMz.nc.gz AWIPSWindComponents_YYMMDDAI_HHMMz.nc.gz

<Superob, O(1M)> QC'd TDR data averaged to regular azimuth/radius points about flight track

YYMMDDAI_HHMM_HHMM_radials.so.gz

Level 1b – Real-time TDR graphics generated during flights and archived at

https://www.aoml.noaa.gov/ftp/pub/hrd/data/RTradar/YYYY/YYYMMDDAI

Level 2 – **Post-processed TDR products** generated on the ground after the end of hurricane season using automated QC and synthesis methods. Departures of QC, method and analysis parameters from those used in real time (Level 1b) are noted in a spreadsheet at the end of this document. Each analysis has been inspected and adheres to basic standards for research use. Strictly speaking, only analyses since 2020 are formally part of the Level 2 database. In the future, analyses from prior seasons will be added. <u>Users must adhere to data use policies for Level 2 products and are strongly advised to perform their own quality control of analyses.</u> P-3 and G-IV flight archives are located at

https://www.aoml.noaa.gov/ftp/pub/hrd/data/radar/level2

<Jobfile, 3K> Input parameters to the automated QC/synthesis software

YYYYMMDDAI_HHMMSS_jobfile.tar.gz

<Execution, O(1M)> Informational text output/error files produced during software execution

YYMMDDAI_HHMM_HHMM_analysis.tar

<Analysis, O(10M)> 3D wind/reflectivity, 2D vertical profile gridded analyses of QC'd TDR data

YYMMDDAI_HHMM_xy.(w)nc.gz

- 3D volume with 2-km (0.5-km) horizontal (vertical) grid spacing extending out 250 km from the grid origin (typically, the center of circulation at flight level)
- For N49, the spacing and domain can vary depending on the flight pattern
- YYMMDDAI_HHMM_xy_rel.(w)nc.gz **Discontinued after 2020 season reprocessing**
 - Storm-relative wind

YYMMDDAI_HHMM_vert_in(out)bound.(w)nc.gz

- Along-track (1.5-km spacing) vertical profile with 150-m vertical grid spacing
- Wind derived from data up to 10-km from the flight track (see Zhang et al. 2022)
- The user is advised to reference the in(out)-bound flight track for context, as the profiles sometimes do not represent actual radials from the storm center

YYMMDDAI_HHMM_vert_in(out)bound_rel.(w)nc.gz

- Storm-relative wind
- YYMMDDAI_HHMM_vert_in(out)bound_fall.(w)nc.gz
 - Estimated fall speed (via dBZ-Vt relationship) removed from the Doppler velocity

<AWIPS, O(1M)> Wind and reflectivity products for AWIPS-2 ingest derived from analysis data

AWIPSMaxdb_YYMMDDAI_HHMMz.nc.gz AWIPSWindComponents_YYMMDDAI_HHMMz.nc.gz

<Superob, O(1M)> QC'd TDR data averaged to regular azimuth/radius points about flight track

YYMMDDAI_HHMM_HHMM_radials.so.gz

<O-A, O(1M)> Difference between (average) Doppler radial velocity and TDR analysis value projected onto the radial for each 3D grid cell

YYMMDDAI_HHMM_xy_O_minus_A_aft(fore).w.gz **Added in 2021 reprocessing**

Level 3 – Tropical Cyclone Radar Archive of Doppler Analyses with Recentering (TC-

RADAR) currently contains 914 swaths of TDR observations and 273 flight-merged analyses from the P-3 Level 2 database for storms occurring in the North Atlantic, eastern North Pacific, and central North Pacific basins. Observations span all points of the TC lifecycle, ranging from pre-genesis disturbances, to mature hurricanes, to storms nearing extratropical transition. Please note that TDR analyses prior to 2020 have not undergone the same rigorous examination and, thus, are only loosely regarded as "Level 2". <u>Users must adhere to data use policies for Level 3 products and are strongly advised to perform their own quality control of analyses</u>. The swath and flight-merged netcdf archives and README are located at

https://www.aoml.noaa.gov/ftp/pub/hrd/data/radar/level3

2020 HFP TDR POST-PROCESSING (LEVEL 2) DOCUMENTATION

						Level	_			
				Peak		1b Analysis	Reprocess	Level 2 Analysis	Level 2	
Storm				Intensity During		Time	Level 1b?	Time	Upload Date	
Name	Flight ID	Tasking	Pattern	Flight	Tail #	(UTC)	(Y/N)	(UTC)	(MM/DD/YY)	Reproces
TS				40 kt						Issue: Upper-level noise along flight track; Original: 10 Reconfigured lawnmower analysis, weak w anomaly r
Cristobal	2020060511	EMC	Lawnmower	(TS)	NOAA43	2200	Y	2140	04/12/21	flight level)
										Issue: Upper-level noise along flight track; Original: 10 Reconfigured lawnmower analysis, weak w anomaly r
						2354	Y	2217	04/12/21	flight level)
										Issue: Upper-level noise along flight track; Original: 10
						2510	Y	2455	04/12/21	flight level)
										Issue: Upper-level noise along flight track; Original: 10
						2546	Y	2625	04/12/21	Reconfigured lawnmower analysis, weak w anomaly r flight level)
TS				45 kt		2010	•	2020	01,12,21	ingit lotol)
Cristobal	2020060611	EMC	Butterfly	(TS)	NOAA43	2115	Y			Original: 15/20 dB (aft/fore dBZ mask), 0.9 SQI; Final:
						2206	Y	2206	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.9 SQI; Final:
						2319	Y	2319	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.9 SQI
						2428	Y	2428	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.9 SQI; Final:
TD8	2020072311	NHC	Alpha	35 kt (TS)	NOAA43	2330	Y	2330	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
				, , , , , , , , , , , , , , , , , , ,		2502	Y	2502	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
						2629	Y	2629	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
TS				40 kt		4407			0.4.4.0.10.4	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
Hanna	2020072411	NHC	Alpha	(TS)	NOAA43	1137	Y	1137	04/12/21	period
						1306	Y	1306	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
те				55 kt		1436	Y	1436	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI
Hanna	2020072412	NHC	Alpha	(TS)	NOAA43	2533	Y	2533	04/12/21	period
						2628	Y	2628	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
				70 kt						J A A A A A A A A A A A A A A A A A A A
HU Hanna	2020072511	NHC	Alnha	(Cat 1 HU)	ΝΟΔΔ43	1143	Y	1143	04/12/21	Original: 15/20 dB (aft/fore dB7 mask) 0.75 SOI: Fina
Tianna	2020072011		Alpha	110)		1243	V	1243	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
						1240	V	1240	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Fina
				70 kt		1521		1021		
HU	0000070414			(Cat 1		4000		4000	0.4.4.0.10.4	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI, TS s
Isalas	2020073111	EMC	Butterfly	HU)	NUAA43	1003	Ý	1003	04/12/21	
						1130	Y	1130	04/12/21	Original: 15/20 dB (att/fore dBZ mask), 0.75 SQI; Fina

ssing Notes

- 0/10 dB (aft/fore dBZ mask), 3-km dx, 0.9 SQI; Final: remains along flight track (associated with high-altitude
- 0/10 dB (aft/fore dBZ mask), 0.9 SQI; Final: remains along flight track (associated with high-altitude
- 0/10 dB (aft/fore dBZ mask), 0.9 SQI; Final: remains along flight track (associated with high-altitude
- 0/10 dB (aft/fore dBZ mask), 0.9 SQI; Final: remains along flight track (associated with high-altitude
- Removed and placed in first-pass analysis Absorbed old first analysis into this first pass
- Adjusted center southward
- al: Slightly adjust motion dir for all
- al: Shift center S and W
- al: Extend outbound leg substantially
- al: Slightly adjust motion dir for all, extend inbound
- al: Adjust profile end time
- al: Slightly adjust motion dir for all, extend inbound
- al: Extend outbound leg and add ferry portion
- al: Slightly adjust motion dir for all
- al: Truncate inbound profile
- al: Extend ferry portion
- setting; Final: Hurricane setting for all, truncate inbound
- al: Truncate outbound profile

						1210	Y	1210	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Final portion
				70 kt					,,	
HU Isaias	20200731N1	NHC	Synoptic	(Cat 1 HU)			N			MA only TDR INF uncorrected
150105	20200701111	NIIO	Cynopiic	70 kt	NO/WHO					WAY ONLY TER, INE UNCONCOLOR
HU	2020072412		Dotated Fig. 4	(Cat 1		2146	V	2146	04/10/01	Original 15/20 dB (off/fore dB7 maple) 0.75 SOL TS a
Isalas	2020073112	EMC	Rolaled Fig-4	по)	NUAA43	2140	ř V	2140	04/12/21	Original: 15/20 dB (alt/lote dBZ mask), 0.75 SQI, 15 S
						2313	r V	2313	04/12/21	Original: 15/20 dB (alt/lote dBZ mask), 0.75 SQ
						2410	V	2410	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI
				75 kt		2000		2000	04/12/21	
HU	0000000414		o <i>i</i>	(Cat 1						
Isalas	20200801N1	NHC	Synoptic	HU) 70 kt	NOAA49		N			MA only IDR, INE uncorrected
HU				(Cat 1						
Isaias	2020080111	EMC	Rotated Fig-4	HU)	NOAA43	1010	Y	1010	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI
						1142	Y	1142	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI
						1259	Y	1259	04/12/21	Original: 15/20 dB (aft/fore dBZ mask), 0.75 SQI; Final
						1421	Y	1421	04/12/21	below 6.5 km near center
TS				60 kt						
Isaias TS	20200801N2	NHC	Synoptic	(TS) 60 kt	NOAA49		N			MA only IDR, INE uncorrected
Isaias	2020080112	EMC	Rotated Fig-4	(TS)	NOAA43	2323	Y	2323	04/12/21	pass, use NHC motion despite uncertain center
						2438	Y	2438	04/12/21	Original: 0.9 SQI, TS setting; Final: Add downwind fror
						2550	Y	2550	04/12/21	Original: 0.9 SQI, TS setting; Final: Expand ferry portion
TS	2020090214	EMC	Duttorfly	55 kt		0025	V	0025	04/10/01	Original: 0.0 SOL
150105	2020060211	EINIC	Bullerity	(13)	NUAA43	1051	r V	1051	04/12/21	
						1208	T V	1001	04/12/21	Original: 0.9 SQL Original: 0.9 SQL: Einal: Entand outbound log further
TS				60 kt		1200	I	1200	04/12/21	Onginal. 0.9 SQI, Final. Entend outbound leg further
Isaias	2020080212	EMC	Butterfly	(TS)	NOAA43	2114	Y	2114	04/12/21	Original: 0.9 SQI; Final: Truncate outbound profile
						2236	Y	2236	04/12/21	Original: 0.9 SQI; Final: Remove inbound profile
						2345	Y	2345	04/12/21	Original: 0.9 SQI
I S Isaias	2020080311	EMC	Butterfly	60 kt (TS)	ΝΟΔΔ43	0952	Y	0952	04/12/21	Original: 0.9 SOI: Final: Use 3-km center to anchor an
150105	202000011	LING	Butterny	(10)		1104	Y	1104	04/12/21	Original: 0.9 SOI
						1206	Ŷ	1206	04/12/21	Original: 0.9 SQL
TD13				30 kt		1200		1200	01/12/21	Original: 0.9 SQI, TS setting; Final: Invest setting for a
(Laura)	2020082011	EMC	Butterfly	(TD)	NOAA43	2208	Y	2216	04/12/21	motion (a mess, meteorologically)
						2347	Y	2351	04/12/21	Original: 0.9 SQI
то				10 14		2532	Y	2535	04/12/21	Original: 0.9 SQI
Laura	20200821H1	EMC	Rotated Fig-4	40 KI (TS)	NOAA42	1000	Y	1000	04/12/21	meteorologically)

Truncate outbound	profile and	slightly	extend	ferry
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setting; Final: Hurricane setting for all

al: Shift center S, slightly extend ferry portion

al: Some noise remains near center below 5 km al: Slightly extend ferry portion, significant noise remains

reconfigured alpha-like pattern, add downwind from 2nd

om 3rd pass, remove profile tion

nalysis (shift substantially N and E)

all, center on passes, continue using uncertain fast NHC

ue using uncertain fast NHC motion (...a mess,

						1200	Y	1200	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						1251	Y	1251	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						1406	Y	1406	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
TS Laura	20200821N1	NHC	Synoptic	40 kt (TS)	NOAA49		Ν			MA only TDR, INE uncorrected
TS Laura	2020082111	FMC	Butterfly	40 kt (TS)	NOAA43	2203	Y	2203	04/12/21	Original: 0.9 SQI: Final: Continue using uncertain fas
Eddid	2020002111	Line	Dationity	(10)	110/01/10	2342	Ŷ	2342	04/12/21	Original: 0.9 SQI
						2440	Ŷ	2440	04/12/21	Original: 0.9 SQI
TS Laura	20200822N2	NHC	Synoptic	45 kt (TS)	NOAA49		N			MA only TDR, INE uncorrected
TS Laura	2020082211	EMC	Figure-4	45 kt (TS)	NOAA43	2425	Y	2425	04/12/21	Original: 0.9 SQI; Final: Remove profiles, extend inbo (a mess, meteorologically)
то			NA - 110 - 1			2536	Y	2536	04/12/21	Original: 0.9 SQI; Final: Remove profiles, extend out
15 Laura	20200823H1	FMC	Butterfly	45 Kt (TS)	NOAA42	1100	Y	1100	04/12/21	Original: 10/10 dB (aft/fore dBZ mask): Final: Remov
Eddid	20200020111	Line	Dationity	(10)	110/0112	1200	Ŷ	1200	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
TS Laura	20200824N1	NHC	Synoptic	55 kt (TS)	NOAA49		N		•	MA only TDR, INE uncorrected
TS Laura	2020082411	EMC	Modified Butterfly	50 kt (TS)	ΝΟΔΔ43	1047	V	1044	04/12/21	Original: 0.9 SOI: Final: Shift center S, extend inhour
Laura	2020002411	LINIO	Dutteriny	(10)	10/0140	1219	V	1221	04/12/21	Original: 0.9 SQI: Final: Shift center N and W (south
						1326	Y	1329	04/12/21	Original: 0.9 SQI: Final: Shift center N and W remov
TS				55 kt		1020		1020	04/12/21	original old own, rinal orint contor it and w, remove
Laura	20200824N2	NHC	Synoptic	(TS)	NOAA49		Ν			MA only TDR, INE uncorrected
Laura	2020082412	EMC	Butterfly	55 KL (TS)	NOAA43	2243	Y	2241	04/12/21	Original: 0.9 SQI; Final: Shift center N and W, remove
			,	. ,		2355	Y	2355	04/12/21	Original: 0.9 SQI
						2501	Y	2501	04/12/21	Original: 0.9 SQI; Final: Shift center N
TS Laura	20200825N1	NHC	Synoptic	55 kt (TS)	NOAA49		Ν			MA only TDR, INE uncorrected
HU	20200825H1	EMC	Potated Fig /	65 kt (Cat 1		1044	V	1044	04/12/21	Original: 10/10 dB (aft/fore dBZ mask), TS setting; Fi
Laura	20200025111	LINIC	Notated Fig-4	110)	NOAA42	1151	v	1151	04/12/21	Original: 10/10 dB (aff/fore dBZ mask): Final: Shift ce
						1307	V	1307	04/12/21	Original: 10/10 dB (aff/fore dBZ mask), 1 mail: 0 mit de
						1/20	v	1/30	04/12/21	Original: 10/10 dB (aff/fore dBZ mask): Final Shift ce
нп				70 kt (Cat 1		1423	•	1430	04/12/21	
Laura	20200825N2	NHC	Synoptic	HU)	NOAA49		Ν			MA only TDR, INE uncorrected
HU				80 kt (Cat 1						
Laura	20200825H2	EMC	Rotated Fig-4	HU)	NOAA42	2251	Y	2251	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						2422	Y	2422	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						2528	Y	2528	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)

st NHC motion (...a mess, meteorologically)

oound ferry, continue using uncertain fast NHC motion

tbound ferry

ve profile

nd a bit over Cuba, place end of outbound in 2nd analysis thernmost part likely to fall outside analysis domain) ve inbound profile, extend outbound a bit over Cuba

/e profiles

inal: Hurricane setting for all, add 2nd pass downwind

enter N and E, remove profiles

enter E

							Y	2652	04/12/21	Original: FCU failure -> no Pass 4 TDR Level 1b data
шп				110 kt (Cat 3						
Laura	20200826H1	EMC	Rotated Butterfly	HU)	NOAA42	1057	Y	1057	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						1201	Y	1201	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						1307	Y	1307	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						1426	Y	1426	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						1512	Y	1512	04/12/21	Original: 10/10 dB (aft/fore dBZ mask); Final: Extend
				130 kt						
Laura	20200826H2	EMC	Rotated Fig-4	(Cal 4 HU)	NOAA42	2304	Y	2304	04/12/21	Original: 10/10 dB (aft/fore dBZ mask), no F/A data b
		-	5	- /	-	2410	Y	2410	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						2456	Y	2456	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						2610	Y	2610	04/12/21	Original: 10/10 dB (aft/fore dBZ mask)
						2650	Y	2650	04/12/21	Original: 10/10 dB (aft/fore dBZ mask); Final : Extend
TS				40 kt						
Marco TS	20200822N1	NHC	Synoptic	(TS) 60 kt	NOAA49		N			MA only IDR, INE uncorrected
Marco	20200823N1	NHC	Synoptic	(TS)	NOAA49		Ν			MA only TDR, INE uncorrected
	20200002114		Alaba	50 kt		1050	V	1050	04/40/04	Original, 10/10 dB (aff/fare dBZ maak)
15 Nana	20200902H1	NHC	Alpha	(15)	NUAA42	1050	ř	1000	04/12/21	Original: 10/10 dB (alt/lore dBZ mask)
				75 kt		1200	Ť	1200	04/12/21	Oliginal. 10/10 db (althore dbz mask), Final. Extend
HU				(Cat 1						
Paulette	20200913H1	NHC	Alpha	HU)	NOAA42	2334	Y	2334	04/12/21	Final: Extend ferry portion, move 2nd pass downwind
				50 kt		2442	Y	2442	04/12/21	Final: Extend ferry portion
TS Sally	2020091311	EMC	Rotated Fig-4	(TS)	NOAA43	1532	Y	1532	04/12/21	Original: 0.9 SQI
			5			1657	Y	1657	04/12/21	Original: 0.9 SQI
						1804	Y	1804	04/12/21	Original: 0.9 SQI
						1938	Y	1938	04/12/21	Original: 0.9 SQI
	00000040N4		Cum an tia	50 kt			V	4000	04/40/04	Original: No INE corrections until final pass; Final: Us
IS Sally	20200913101	NHC	Synoptic	(15)	NOAA49		Y	1830	04/12/21	4
							Y	1937	04/12/21	Final: 2nd leg of Fig 4
							ř	2040	04/12/21	Criginal: SL files meetly empty from 222122 to 2251/
							ř V	2304	04/12/21	Einel: Conter page
				50 kt			T	2430	04/12/21	
TS Sally	20200914N1	NHC	Synoptic	(TS)	NOAA49	0645	Y	0645	04/12/21	Final: Use 200914N1_ine_corrections_m.dat for all, 7
						0745	Y	0746	04/12/21	Original: SL files mostly empty from 073352 to 07572
				05.1.1		0849	Y	0840	04/12/21	Original: No SL files after 090713 UTC; Final: Partial
				85 kt (Cat 2						
HU Sally	2020091411	EMC	Rotated Fig-4	HU)	NOAA43	1540	Y	1540	04/12/21	Original: 0.9 SQI, Final: extend ferry portion

ta; Final: Pass 4 analyzed

ferry portion

before 2237 UTC; Final: Slightly adjust motion dir for all

ferry portion

ferry portion, perhaps minimal noise <= 2 km

l leg here

se 200913N1_ine_corrections_m.dat for all, 1st leg of Fig

47 UTC; Final: Partial outer circumnavigation

1st leg of Fig 4, extend inbound portion 25 UTC; Final: Partial 2nd leg of Fig 4 I inner circumnavigation

						1713	Y	1713	04/12/21	Original: 0.9 SQI
						1816	Y	1816	04/12/21	Original: 0.9 SQI, Final: Remove profiles
						1935	Y	1935	04/12/21	Original: 0.9 SQI
HU Sally	20200914N2	NHC	Synoptic	85 kt (Cat 2 HU) 85 kt (Cat 2	NOAA49		N			MA only TDR, No INE corrections file
HU Sally	20200914H1	EMC	Rotated Fig-4	HU)	NOAA42	2205	Y	2205	04/12/21	Final: Extend ferry portion, shift center W
						2343	Y	2343	04/12/21	Final: Shift center S and W
						2444	Y	2444	04/12/21	Final: Truncate outbound profile
						2606	Y	2606	04/12/21	Final: Extend ferry portion
HU Sally	2020091511	NHC	Alnha	70 kt (Cat 1 HU)	ΝΟΑΑ43	1420	Y	1420	04/12/21	Original: 0.9 SOI: Final: Slightly adjust motion dir for all
The Gally	2020001011		Alpha	110)		1516	v	1516	04/12/21	
						163/	v	1634	04/12/21	
						1746	I V	1746	04/12/21	
						1955	T V	1055	04/12/21	
						1000	ř	1000	04/12/21	Original. 0.9 SQL
PT				55 kt		1936	Y	1936	04/12/21	Original: 0.9 SQI; Final: Shift center S and W, remove outbound profile
Teddy	20200915N1	NHC	Synoptic	(TS) 85 kt (Cat 2	NOAA49		N			MA only TDR, No INE corrections file
Teddy HU	20200916N1	NHC	Synoptic	HU) 120 kt (Cat 4	NOAA49		N			MA only TDR, No INE corrections file
Teddy	20200917H1	NESDIS	Figure-4 + OW	HU)	NOAA42	1525	Y	1525	04/12/21	Final: Bit too much WS removed at 1 km in all passes
						1657	Y	1657	04/12/21	
						1738	Y	1738	04/12/21	OW
						1806	Y	1806	04/12/21	OW
						1827	Y	1827	04/12/21	OW; Final: Extend ferry portion
HU Teddy	2020091711	OAR	Butterfly	120 kt (Cat 4 HU)	NOAA43	2245	Y	2245	04/12/21	Original: 0.9 SQI; Final: Extend ferry portion
						2434	Y	2434	04/12/21	Original: 0.9 SQI
						2545	Y	2545	04/12/21	Original: 0.9 SQI
HU Teddy	20200918H1	NESDIS	Figure-4 + OW	110 kt (Cat 3 HU)	ΝΟΑΑ42	1607	Y	1607	04/12/21	
rouuy	20200010111	REODIO		110)		1704	V	1704	04/12/21	
						1757	V	1757	04/12/21	OW
						1101		1151	04/12/21	
						1005	V	1005	04/40/04	

HU Teddy 20200918N1 NHC Synoptic 110 kt (Cat 3 HU (Cat 3 HU) 100 kt (Cat 4 HU)												
HU Tedy 20209918N1 NHC Synoptic 110 kt (Car3 (Car3 HU) NOAA9 NOAA9 2051 (2051 (2051) Q4/1221 Q01/1221 OW Q4/1221 Orginal: No r4 INE corrections before ~1720Z, 3-km for all, Include initial star pattern, 3-km spacing Orginal: No r4 INE corrections before ~1720Z, 3-km for all, Include initial star pattern, 3-km spacing Orginal: No r4 INE corrections before ~1720Z, 3-km for all, Include initial star pattern, 3-km spacing Orginal: No r4 INE corrections before ~1720Z, 3-km for all, Include initial star pattern, 3-km spacing Orginal: No star spacing. Final: 3-km spacing Orginal: No star spacing. Final: 3-km spacing Orginal: No star spacing. Final: 3-km spacing No star spacing. Final: 3-km spacing No Advar 1502 Y 2254 O/1/1221 Orginal: 0.9 SOI, 3-km spacing. Final: 3-km spacing Orginal: 0.9 SOI, 3-km spacing. Final: 3-km spacing No NA42 HU Teddy 2020100811 NHC Alpha MOAA42 Y 1130 Q41/1221 Orginal: 0.9 SOI Final: Extend outbound leg over land HU Delta 20201006H1 NHC Alpha </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1923</td> <td>Y</td> <td>1923</td> <td>04/12/21</td> <td>OW (4 legs)</td>							1923	Y	1923	04/12/21	OW (4 legs)	
HU Teddy 20200918N1 NHC Synoptic IIO R4 (HU) HU NOAA49 1800 Y 2051 04/12/21 0W; Final: Extend frery portion HU Teddy 20200918N1 NHC Synoptic IIO R4 (HU) NOAA49 1800 Y 1800 04/12/21 OW; Final: Extend frery portion HU Teddy 2020091811 OAR Pass + GW 115 kt Cort at (Cat 4 Y 2254 Y 2254 04/12/21 Original: Nostly empty; Final: Remove analysis HU Teddy 2020091811 OAR Pass + GW NOAA43 2254 Y 2254 04/12/21 Original: 0.9 SQI, 3-km spacing; Final: A bit more noise in low-level. HU 20200922H1 NHC Alpha HU NOAA42 1325 Y 1325 04/12/21 Original: 0.9 SQI, 3-km spacing; Final: 3-km spacing Teddy 20201002H1 NHC Alpha HU NOAA42 1325 Y 1325 04/12/21 Original: 0.9 SQI, 3-km spacing; Final: 3-km spacing Teddy 20201005H1 NHC Alpha HU <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>1943</td><td>Y</td><td>1943</td><td>04/12/21</td><td>OW</td></t<>							1943	Y	1943	04/12/21	OW	
HU Teddy 20200918N1 NHC Synoptic HU HU NOAA49 NOAA49 1800 Y 1800 O4/12/21 OW; Final: Extend fary portion HU 20200918N1 NHC Synoptic HU NOAA49 1800 Y 1800 04/12/21 Orginal: No rel. INE corrections before -17202, 3-km for all, include initial store thatm, 3-km spacing Orginal: Mostly empty; Final: Remove analysis HU 2020091811 OAR Pass + GW HU NOAA43 2254 Y 2254 04/12/21 Orginal: Mostly empty; Final: Remove analysis HU 20200922H1 OAR Pass + GW HU NOAA43 2254 Y 2254 04/12/21 Orginal: 0.9 SQI, Final: A bit more noise in low-level orginal: 0.9 SQI, Sm spacing; Final: 3-km spacing; F							2011	Y	2011	04/12/21	OW	
HU Teddy 20200918N1 NHC Synoptic (Gat 3 HU) NOAA9 1800 Y 1800 D4/12/21 Original: No r-t INE corrections before -17202, 3-km for all, include initial star patern, 3-km spacing HU 20200918N1 OAR Pass + GW 1800 Y 2047 N HU 20200918N1 OAR Pass + GW 10 kt (Cat 4 NOAA43 2254 Y 2256 04/12/21 Original: 0.9 SQI, Final: A bit more noise in low-level Original: 0.9 SQI, 3-km spacing; Final: 3-km spacing; Original: 0.9 SQ							2051	Y	2051	04/12/21	OW ; Final: Extend ferry portion	
HU Original: Modified Original: Modified Original: Modified Original: Modified Original: Modified	HU Teddy	20200918N1	NHC	Synoptic	110 kt (Cat 3 HU)	NOAA49	1800	Y	1800	04/12/21	Original: No r-t INE corrections before ~1720Z, 3-km s for all, Include initial star pattern, 3-km spacing	
HU Original: Mostly empty: Final: Remove analysis HU 2020091811 OAR Pass + GW HU NOAA43 2254 Y 2254 Original: Mostly empty: Final: Remove analysis HU 2020091811 OAR Pass + GW HU NOAA43 2254 Y 2254 Original: 0.9 SQI, Final: A bit more noise in low-level 2400 Y 2435 Original: 0.9 SQI, Final: A bit more noise in low-level 2400 Y 22517 Original: 0.9 SQI, Final: A bit more noise in low-level 1 20200922H1 NHC Alpha HU NOAA42 1325 Y 1326 Original: Melting layer height 5 km; Final: Melting layer motion speed TS 60 kt (Cat 1 NOAA42 1130 Y 1130 O4/12/21 Final: Substantially adjust motion speed TS 60 kt (Cat 1 NOAA42 1130 Y 1130 04/12/21 Final: Extend outbound leg over land HU Delta 2020100511 NHC Alpha (Cat 1 Y 1244 Y 1244 Y							1830	Ν			Original: Mostly empty; Final: Remove analysis	
HU Teddy 2020091811 OAR Pass + GW H15 kt HU NOAA43 2254 Y 2254 04/12/21 Original: 0.9 SQI, Final: A bit more noise in low-level Driginal: 0.9 SQI, 3-km spacing; Final: 3-km spacing; HU 20200922H1 NHC Alpha 90 kt (Cat 2 HU 20200922H1 NHC Alpha 90 kt (Cat 2 HU 04/12/21 Original: 0.9 SQI, 3-km spacing; Final: 3-km spacing; Driginal: 0.9 SQI, 3-km spacing; Final: 3-km spacing; Driginal: 0.9 SQI, 3-km spacing; Final: 3-km spacing; F 60 kt (Cat 2 HU 1325 Y 1325 04/12/21 Driginal: 0.9 SQI, 3-km spacing; Final: 3-km spacing; TS 60 kt (Cat 2 HU NOAA42 1325 Y 1502 04/12/21 Final: Substantially adjust motion speed TS 60 kt (Cat 1 HU NOAA43 1330 Y 1330 04/12/21 Final: Extend outbound leg over land T244 Y 1244 Y 1244 04/12/21 Original: 0.9 SQI HU 2020100511 NHC Alpha 120 kt (Cat 4 HU 04/12/21 Original: 0.9 SQI Delta							2047	Ν			Original: Mostly empty; Final: Remove analysis	
Housy 202009101 Oracle Pass Forw From the pass Forw <th form="" t<="" td=""><td>HU</td><td>2020001811</td><td></td><td>Base + CW</td><td>115 kt (Cat 4</td><td></td><td>2254</td><td>V</td><td>2254</td><td>04/12/21</td><td>Original: 0.0 SOL Einal: A hit mara paiza in law laval</td></th>	<td>HU</td> <td>2020001811</td> <td></td> <td>Base + CW</td> <td>115 kt (Cat 4</td> <td></td> <td>2254</td> <td>V</td> <td>2254</td> <td>04/12/21</td> <td>Original: 0.0 SOL Einal: A hit mara paiza in law laval</td>	HU	2020001811		Base + CW	115 kt (Cat 4		2254	V	2254	04/12/21	Original: 0.0 SOL Einal: A hit mara paiza in law laval
HU 2400 Y 2433 04/12/21 Original: 0.9 SQL, 3-km spacing, Final: 3-km spacing, 90 kt HU Teddy 20200922H1 NHC Alpha HU NOAA42 1325 Y 1325 04/12/21 Original: 0.9 SQL, 3-km spacing, Final: 5-km spacing, Fina	Teddy	2020091011	UAN	Fass + Gw	110)	NOAA43	2204	I V	2234	04/12/21	Original: 0.9 SQL 2 km energing: Final: 2 km energing	
HU 20200922H1 NHC Alpha HU 2517 Y 2517 Y 2517 Odd 1221 Original: US SQL, 3-km spacing; Final: 3-km spacing; Original: Mathing layer meight 5 km; Final: Melting layer meig							2400	Y	2435	04/12/21	Original: 0.9 SQI, 3-km spacing; Final: 3-km spacing	
HU Teddy Original: Melting layer height 5 km; Final: Melting layer motion speed Original: Melting layer motion speed Final: Alpha HU NOAA42 1325 Y 1325 04/12/21 Final: Substantially adjust motion speed ISO2 Y 1602 Y 1602 04/12/21 Final: Substantially adjust motion speed ISO2 Y 1602 Y 1602 04/12/21 Final: Substantially adjust motion speed ISO2 Y 1602 Y 1602 04/12/21 Final: Extend outbound leg over land ISO2 Y 1314 Y 1314 04/12/21 Final: Extend outbound leg over land IHU Delta 2020100511 NHC Alpha HU NOAA42 1937 Y 1937 04/12/21 Original: 0.9 SQI IHU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: 0.9 SQI IHU Delta 20201006H1 NHC Alpha HU NOA442 1147 <					90 kt		2517	Y	2517	04/12/21	Original: 0.9 SQI, 3-km spacing; Final: 3-km spacing	
1502 Y 1502 04/12/21 Final: Substantially adjust motion speed TS Gamma 20201003H1 EMC Modified butterfly 60 kt Y 1130 Y 1130 04/12/21 TS 60 kt (TS) NOAA42 1130 Y 1130 04/12/21 Final: Extend outbound leg over land TS 65 kt (Cat 1 1244 Y 1244 04/12/21 Final: Extend outbound leg over land Delta 20201005H NHC Alpha HU NOAA43 1937 Y 1937 04/12/21 Original: 0.9 SQI HU Delta 20201005H NHC Alpha HU NOAA42 1147 Y 1937 04/12/21 Original: 0.9 SQI, Final: Extend ferry portion HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Extend ferry portion HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y	HU Teddy	20200922H1	NHC	Alpha	(Cat 2 HU)	NOAA42	1325	Y	1325	04/12/21	Original: Melting layer height 5 km; Final: Melting laye motion speed	
TS Gamma 20201003H1 EMC Modified butterfly 60 kt (TS) NOAA42 1130 Y 1130 04/12/21 HU Delta 20201005H1 NHC Alpha HU HU NOAA42 1130 Y 1130 04/12/21 HU Delta 20201005H1 NHC Alpha HU NOAA43 1937 Y 1937 04/12/21 Original: 0.9 SQI HU Delta 20201005H1 NHC Alpha HU NOAA42 1937 Y 1937 04/12/21 Original: 0.9 SQI HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: 0.9 SQI, Final: Extend ferry portion HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Extend ferry portion HU Delta 20201006N1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Major hurricane setting; Final: Major hurricane setting; Final: Major hurricane setting; Final: Major							1502	Y	1502	04/12/21	Final: Substantially adjust motion speed	
TS Gamma 20201003H1 EMC Modified butterfly (TS) NOAA42 1130 Y 1130 04/12/21 HU Delta 20201005H1 NHC Alpha (TS) NOAA43 1937 Y 1244 04/12/21 Final: Extend outbound leg over land HU Delta 20201005H1 NHC Alpha HU NOAA43 1937 Y 1937 04/12/21 Original: 0.9 SQI HU Delta 20201005H1 NHC Alpha HU NOAA43 1937 Y 1937 04/12/21 Original: 0.9 SQI HU 20201006H1 NHC Alpha HU NOAA42 1147 Y 2124 04/12/21 Original: 0.9 SQI HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Extend ferry portion 120 kt (Cat 4 HU NOAA42 1147 Y 1147 04/12/21 Original: Hurricane setting; Final: Major hurricane s							1602	Y	1602	04/12/21		
Gamma 20201003H1 ENC Moduled butteriny (13) 1130 1130 04/12/21 Final: Extend outbound leg over land 1244 Y 1244 Y 1244 Q4/12/21 Final: Extend outbound leg over land HU 65 kt (Cat 1 Y 1314 Y 1314 O4/12/21 HU Oetia 2020100511 NHC Alpha HU NOAA42 Y 1244 Y 04/12/21 Original: 0.9 SQI ENC Value 2124 Y 2124 O4/12/21 Original: 0.9 SQI 2124 HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Extend ferry portion 120 kt (Cat 4 1133 Y 1303 Q4/12/21 Original: Hurricane setting; Final: Major	TS	a 20201002U1	ГМС	Madified butterfly	60 kt		1120	V	1120	04/10/01		
HU Bit State Bit S	Gamm	a 20201003H1	EIVIC	Modified butteriny	(15)	NUAA42	1044	ř V	1044	04/12/21	Final: Extend authound log aver land	
HU 65 kt (Cat 1 Delta 2020100511 NHC Alpha HU NOAA43 1937 Y 1937 04/12/21 Original: 0.9 SQI 2124 Y 2124 Y 2124 O4/12/21 Original: 0.9 SQI 2124 Y 2124 Y 2124 O4/12/21 Original: 0.9 SQI HU 2253 Y 2253 O4/12/21 Original: 0.9 SQI, Final: Extend ferry portion 120 kt (Cat 4 1147 Y 1147 Original: Hurricane setting; Final: Extend ferry portion 120 kt (Cat 4 1303 Y 1303 O4/12/21 Original: Hurricane setting; Final: Major hurricane set HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Major hurricane set HU Delta 20201006N1 NHC Synoptic 1458 Y 1458 04/12/21 Interesting: local windspeed max near 4-5 km) HU Delta 20201006N1							1244	ř V	1244	04/12/21	Fillal. Extend outbound leg over land	
HU Delta 2020100511 NHC Alpha (Cat 1 HU) NOAA43 1937 Y 1937 04/12/21 Original: 0.9 SQI Image: Second S					65 kt		1314	Ĭ	1314	04/12/21		
HU 20201006H1 NHC Alpha 120 kt (Cat 4) 1147 Y 1147 04/12/21 Original: 0.9 SQI, Final: Extend ferry portion HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Extend ferry portion HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Odi/12/21 Original: Hurricane setting; Final: Extend ferry portion HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Odi/12/21 Original: Hurricane setting; Final: Extend ferry portion HU Delta 20201006N1 NHC Synoptic 1458 Y 1458 04/12/21 (Interesting: local windspeed max near 4-5 km) HU Delta 20201006N1 NHC Synoptic HU NOAA49 2000 Y 2000 04/12/21 Original: TS setting; Final: Use 201006N1_ine_correct HU Delta 20201006N1 NHC Synoptic HU NOAA49 2000 Y 2000 04/12/21	HU Delta	2020100511	NHC	Alpha	(Cat 1 HU)	NOAA43	1937	Y	1937	04/12/21	Original: 0.9 SQI	
HU Delta 20201006H1 NHC Alpha 120 kt (Cat 4 HU) 1147 Y 1147 04/12/21 Original: 0.9 SQI, Final: Extend ferry portion HU Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 Original: Hurricane setting; Final: Extend ferry portion 100 V 1303 Y 1303 04/12/21 Original: Hurricane setting; Final: Major hurricane setting; Iocal windspeed max near 4-5 km) HU V 1411 Y 1411 04/12/21 (Interesting: local windspeed max near 4-5 km) HU V V 1458 Y 1458 04/12/21 (Interesting: local windspeed max near 4-5 km) HU 20201006N1 NHC Synoptic 125 kt (Cat 4 1633 Y 1633 04/12/21 HU 20201006N1 NHC Synoptic HU NOAA49 2000 Y 2000 04/12/21 Original: TS setting; Final: Use 201006N1_ine_correct 2100 Y 2100 Y 2000 04/12/21 Original							2124	Y	2124	04/12/21	Original: 0.9 SQI	
HU Delta20201006H1NHCAlphaHUNOAA421147Y114704/12/21Original: Hurricane setting; Final: Extend ferry portion1303Y130304/12/21Original: Hurricane setting; Final: Major hurricane setting; F							2253	Y	2253	04/12/21	Original: 0.9 SQI, Final: Extend ferry portion	
Delta 20201006H1 NHC Alpha HU NOAA42 1147 Y 1147 04/12/21 Original: Hurricane setting; Final: Extend ferry portion 1303 Y 1303 Y 1303 04/12/21 Original: Hurricane setting; Final: Major hurricane set 1411 Y 1411 Y 1411 04/12/21 (Interesting: local windspeed max near 4-5 km) 1458 Y 1458 Y 1458 04/12/21 (Interesting: local windspeed max near 4-5 km) HU 1633 Y 1633 04/12/21 (Interesting: local windspeed max near 4-5 km) HU 20201006N1 NHC Synoptic HU) NOAA49 2000 Y 2000 04/12/21 HU 20201006N1 NHC Synoptic HU) NOAA49 2000 Y 2000 04/12/21 Original: TS setting; Final: Use 201006N1_ine_correct 2100 Y 2100 Y 2100 04/12/21 Original: Limited coverage, TS setting; Final: Invest set 2339 Y 2339 Y 2339 04/12/21 Original: 3-km spacing; Final: 3-km spacing <td>HU</td> <td></td> <td></td> <td></td> <td>120 kt (Cat 4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	HU				120 kt (Cat 4							
1303 Y 1303 04/12/21 Original: Hurricane setting; Final: Major hurricane setting; Final: Major hurricane set 1411 Y 1411 04/12/21 (Interesting: local windspeed max near 4-5 km) 1458 Y 1458 O4/12/21 (Interesting: local windspeed max near 4-5 km) 1633 Y 1633 O4/12/21 (Interesting: local windspeed max near 4-5 km) HU 125 kt 125 kt 125 kt 1633 O4/12/21 HU 02001006N1 NHC Synoptic HU) NOAA49 2000 Y 2000 04/12/21 Original: TS setting; Final: Use 201006N1_ine_correct 2100 Y 2100 Y 2100 04/12/21 Original: Limited coverage, TS setting; Final: Invest set 2200 Y 2200 Y 2200 04/12/21 Original: 3-km spacing (outer cirrect Final: Bit too much WS removed at 1 km, but DBZ cle 2339 Y 2339 04/12/21 2020100611 first pass)	Delta	20201006H1	NHC	Alpha	HU)	NOAA42	1147	Y	1147	04/12/21	Original: Hurricane setting; Final: Extend ferry portion	
1411 Y 1411 04/12/21 (Interesting: local windspeed max near 4-5 km) 1458 Y 1458 04/12/21 (Interesting: local windspeed max near 4-5 km) 1633 Y 1633 Y 1633 04/12/21 HU 125 kt 125 kt 125 kt 125 kt Delta 20201006N1 NHC Synoptic HU) NOAA49 2000 Y 2000 04/12/21 Original: TS setting; Final: Use 201006N1_ine_correct 2100 Y 2100 Y 2100 04/12/21 Original: Limited coverage, TS setting; Final: Invest set 2200 Y 2200 Y 2200 04/12/21 Original: 3-km spacing; Final: Invest set 2339 Y 2339 Y 2339 04/12/21 2020100611 first pass)							1303	Y	1303	04/12/21	Original: Hurricane setting; Final: Major hurricane sett	
HU 1458 Y 1458 04/12/21 (Interesting: local windspeed max near 4-5 km) HU 1633 Y 1633 04/12/21 HU 125 kt (Cat 4 Delta 20201006N1 NHC Synoptic HU 125 kt (Cat 4 125 kt (Cat 4 120 Y 2000 04/12/21 Original: TS setting; Final: Use 201006N1_ine_correct 2100 Y 2100 04/12/21 Original: Limited coverage, TS setting; Final: Invest set 2200 Y 2200 04/12/21 Original: 3-km spacing; Final: Invest set 2339 Y 2339 04/12/21 20201006I1 first pass)							1411	Y	1411	04/12/21	(Interesting: local windspeed max near 4-5 km)	
HU 125 kt Delta 20201006N1 NHC Synoptic HU (Cat 4 Delta 20201006N1 NHC Synoptic HU V 2100 Y 2200 Y 2200 Y 2200 Y 2200 Y 2339 Y 2339 Y 2339 Y 2339 Y 2339 Y 2339 Y 2339 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>1458</td><td>Y</td><td>1458</td><td>04/12/21</td><td>(Interesting: local windspeed max near 4-5 km)</td></td<>							1458	Y	1458	04/12/21	(Interesting: local windspeed max near 4-5 km)	
HU (Cat 4 Delta 20201006N1 NHC Synoptic HU) NOAA49 2000 Y 2000 04/12/21 Original: TS setting; Final: Use 201006N1_ine_correct 2100 Y 2100 Y 2100 04/12/21 Original: Limited coverage, TS setting; Final: Invest setting; Final: Invest setting; Final: Bit too much WS removed at 1 km, but DBZ clear 2339 Y 2339 04/12/21 2020100611 first pass)					105 kt		1633	Y	1633	04/12/21		
20201000111 NHC Synoptic NOVARS 2000 1 2000 04/12/21 Original: 10 setting, 1 mai. 0se 20100011 _ inte_correct 2100 Y 2100 Y 2100 04/12/21 Original: Limited coverage, TS setting; Final: Invest setting, 1 mai. 0se 20100011 _ inte_correct 2100 Y 2100 Y 2200 04/12/21 Original: 3-km spacing; Final: 3-km spacing (outer circ Final: Bit too much WS removed at 1 km, but DBZ cle 2339 Y 2339 04/12/21 2020100611 first pass)	HU Delta	20201006N1	NHC	Synoptic	(Cat 4		2000	V	2000	04/12/21	Original: TS setting: Final: Use 201006N1 inc. correc	
2100 Y 2100 04/12/21 Original: Limited coverage, YS setting, Final: Invest setting, Final: Invest setting, Final: Invest setting, Final: Setting, F	Della	20201000111		Cynoptic	10)	110/143	2100	V	2100	0//12/21	Original: Limited coverage TS softing: Einal: Invest of	
2200 Y 2200 Orginal: 3-km spacing; Final: 3-km spacing; Final: 3-km spacing; Final: 3-km spacing; Final: 3-km spacing (outer cin Final: Bit too much WS removed at 1 km, but DBZ cle 2339 Y 2339 04/12/21 2020100611 first pass)							2100	T V	2100	04/12/21	Original: Limited Coverage, 15 Setting, Final: Invest se	
							2339	Y	2339	04/12/21	Final: Bit too much WS removed at 1 km, but DBZ cle 2020100611 first pass)	

spacing; Final: Use 200918N1_ine_corrections_m.dat

dbz along flight track

er height 3 km (only this pass), substantially adjust

n, Major hurricane setting tting

ctions_m.dat for all, Invest setting (non-circumnavigation) setting (non-circumnavigation) rcumnavigation) eaner (inner circumnavigation, coincident with

HU				115 kt (Cat 4						
Delta	2020100611	NHC	Alpha	HU)	NOAA43	2339	Y	2339	04/12/21	Original: 0.9 SQI; Final: extend ferry portion
						2501	Y	2501	04/12/21	Original: 0.9 SQI; Final: Increase SQI from 0.8 to 0.9
						2618	Y	2618	04/12/21	Original: 0.9 SQI
						2724	Y	2724	04/12/21	Original: 0.9 SQI; Final: Shift center N and E
						2831	Y	2831	04/12/21	Original: 0.9 SQI; Final: Remove profile, bit more nois
				100 kt						
Delta	20201007N1	NHC	Synoptic	(Cat Z HU)	NOAA49	0630	Y	0630	04/12/21	Final: Use 201007N1 ine corrections m.dat for all (n
		-	5 1	- /		0854	Y	0902	04/12/21	Original: 2.5-km spacing: Final: 2-km spacing, shift ce
						1000	Ŷ	1000	04/12/21	(non-circumnavigation)
						1000		1000	01/12/21	Original: Incomplete final analysis TDR Level 1b arch
				00.14		1100	Y	1045	04/12/21	position (inner circumnavigation)
нυ				90 Kt (Cat 2						
Delta	20201007H1	EMC	Lawnmower	HU)	NOAA42	1200	Y	1200	04/12/21	Final: Some noise along flight track (DBZ < 2.5 km)
						1228	Y	1228	04/12/21	Original: Hurricane setting; Final: TS setting
						4040	V	40.40	04/40/04	Original: Comms issues led to incomplete Level 1b ar
				75 kt		1342	Ŷ	1342	04/12/21	from NHC 152
HU				(Cat 1						Original: Invest setting; Final: Use 201007N2_ine_cor
Delta	20201007N2	NHC	Synoptic	HU)	NOAA49	2240	Y	2240	04/12/21	extrapolated from NHC 21Z (del MA 2217-2225 since
HU				OD KL (Cat 2						
Delta	2020100711	EMC	Rotated Fig-4	HU)	NOAA43	2408	Y	2408	04/12/21	Original: 0.9 SQI; Final: Shift center N and W
						2620	V	2620	04/10/01	Original: 0.9 SQI, data system issues (2425-2602 UT)
						2020	Y	2620	04/12/21	Originals 0.0 COL incomplete Level 4h anthing on each
				90 kt		2709	Ŷ	2709	04/12/21	Original: 0.9 SQI, incomplete Level 1b archive on seb
HU				(Cat 2						Original: TS setting, SL reported down 0953-1005 UT
Delta	20201008N1	NHC	Synoptic	HU)	NOAA49	0900	Y	0900	04/12/21	Hurricane setting (inner circumnavigation)
ΗU				90 kt (Cat 2						
Delta	20201008H1	EMC	Rotated Fig-4	HU)	NOAA42	1108	Y	1108	04/12/21	Final: Bit too much WS removed at 1 km in all passes
						1221	Y	1221	04/12/21	
						1319	Y	1319	04/12/21	
										Original: Comms issues led to incomplete Level 1b ar
				105 kt		1440	Y	1440	04/12/21	extend outbound leg and analysis end time
HU				(Cat 3						Original: 0.9 SQI; Final: Adjust motion dir for all, inclu
Delta	2020100811	EMC	Rotated Fig-4	HU)	NOAA43	2335	Y	2335	04/12/21	SW edge of eye possibly real)
						2455	Y	2455	04/12/21	Original: 0.9 SQI
						2634	Y	2634	04/12/21	Original: 0.9 SQI (not 100% confident in large DBZ ar
						2758	Y	2758	04/12/21	Original: 0.9 SQI; Final: A bit more noise in DBZ <= 2

to deal with substantial noise

se along flight track (DBZ < 4 km), extend ferry portion

- non-circumnavigation)
- enter S (non-circumnavigation)
- nive on seb (NetCDF); Final: Use NHC 1045Z updated

rchive on seb (NetCDF); Final: Use center extrapolated

rrections_m.dat for all, TS setting, use center e SL down) (inner circumnavigation)

C) so don't use downwind leg data, incomplete Level 1b

o (NetCDF)

FC; Final: Use 201008N1_ine_corrections_m.dat for all,

rchive on seb (rel.w, AL26*, NetCDF); Final: Significantly

de ferry portion (not 100% confident in strong updraft

nomaly E edge of eye at low levels) km

HU				100 kt (Cat 3						
Delta	20201009H1	EMC	Rotated Fig-4	HU)	NOAA42	1130	Y	1130	04/12/21	Final: Slightly adjust motion dir for all (note: no IWG1
						1243	Y	1243	04/12/21	Original: Invest setting; Final: Major hurricane setting,
						1342	Y	1342	04/12/21	
Invest /				25 kt		1459	Y	1459	04/12/21	Original: Comms/transmission issues led to incomple outbound leg and analysis end time (winds a bit comp Original: 0.9 SOL Final: Shift analysis (single) center
TD28	2020102411	NHC	Invest	(TD)	NOAA43	1806	Y	1836	04/12/21	later, reconfigure swaths accordingly
						1928	Y	1952	04/12/21	Original: 0.9 SQI
						2016	Y	2044	04/12/21	Original: 0.9 SQI
						2110	Y	2121	04/12/21	Original: 0.9 SQI
						2148	Y	2154	04/12/21	Original: 0.9 SQI
TD28 / TS Zeta	20201025H1	NHC	Alpha	35 kt (TS)	NOAA42	0611	Y	0611	04/12/21	Original: Invest setting, static center for all; Final: TS profile, center all on best-guess center
						0731	Y	0731	04/12/21	Final: move 3rd pass downwind leg here, remove pro
						0903	Y	0903	04/12/21	Final: Remove profile
						1036	Y	1036	04/12/21	Final: Remove outbound profile
TS Zeta	20201025H2	NHC	Alpha	45 kt (TS)	NOAA42	1824	Y	1825	04/12/21	Original: Static center for all; Final: Center first pass c
						1917	Y	1917	04/12/21	
						2042	Y	2042	04/12/21	Final: Remove profile
TS Zeta	20201025N1	NHC	Synoptic	45 kt (TS)	NOAA49	1950	Y	1950	04/12/21	Final: Use 201025N1_ine_corrections_m.dat for all
						2100	Y	2102	04/12/21	Final: Center on low-level circulation center (overpase
						2200	Y	2200	04/12/21	Final: Expand domain radius to 270 km (keeping 2-km Original: TS setting, 3-km spacing with 375-km radius
				00.14		2330	Y	2330	04/12/21	domain
TS Zeta	20201026H1	NHC	Alpha	60 kt (TS)	NOAA42	0555	Y	0555	04/12/21	Final: Adjust motion, move 2nd pass downwind leg he
						0732	Y	0732	04/12/21	Final: Adjust motion, move part of 3rd pass downwind
						0915	Y	0915	04/12/21	Final: Move 4th pass downwind here
						1035	Y	1035	04/12/21	
TS Zeta	20201026N1	NHC	Synoptic	60 kt (TS)	NOAA49	1050	Y	1050	04/12/21	Final: Use 201026N1_ine_corrections_m.dat for all
				()		1200	Y	1140	04/12/21	Final: Use Neal Dorst's track file
				70 kt (Cat 1						
HU Zeta	20201026N2	NHC	Synoptic	HU)	NOAA49	2209	Y	2209	04/12/21	Final: Use 201026N2_ine_corrections_m.dat for all
				70 kt		2328	Y	2328	04/12/21	Original: Use 4-km spacing; Final: Use 3-km spacing
HU Zeta	20201026H2	EMC	Butterflv	HU)	NOAA42	2209	Y	2209	04/12/21	
	-	-	,	- /		2328	Y	2328	04/12/21	
							•		- · · · _ , _ ·	

data found by app for this pass) , shift center W

lete Level 1b archive on seb (NetCDF); Final: Extend nplex near center at mid levels) r S and W closer to where center is ultimately found 12-h

setting, move 2nd pass downwind leg here, remove

ofile

on the center discovered during 2nd pass, remove profile

ss of low-level center)

km spacing) to get a bit more of wind field us; Final: Invest setting, 2-km spacing with <u>280-km radius</u>

nere nd leg here

						2400	Y	2400	04/12/21	Final: Extend ferry portion
TS Zeta	20201027N1	NHC	Synoptic	60 kt (TS)	NOAA49	1005	Y	1005	04/12/21	Original: 3.5-km spacing; Final: Use 201027N1_ine_co Dorst's track file
TS Zeta	20201027H1	FMC	Rotated Fig-4	55 kt (TS)	ΝΟΔΔ42	1033	Y	1033	04/12/21	Final: Center over land use Neal Dorst's track file re
10 2010	20201027111	LING	rotated rig-4	(10)	NO/VH2	1136	Y	1136	04/12/21	Final: Remove profile
						1237	Y	1237	04/12/21	Final: Remove profile
						1323	Ŷ	1323	04/12/21	
				80 kt (Cat 1		1020		1020	0 17 12/2 1	
HU Zeta	20201028H1	EMC	Rotated Fig-4	HU)	NOAA42	1011	Y	1011	04/12/21	Final: Add ferry portion
						1143	Y	1143	04/12/21	
						1252	Y	1252	04/12/21	
						1422	Y	1422	04/12/21	Final: Greatly extend outbound leg
TS Eta	2020110111	NHC	Alpha	55 kt (TS)		1832	V	1832	04/12/21	Final: Extend ferry portion, truncate inhound profile
TO Ela	20201101111	NIIC	Арпа	(13)	NOAA42	1045	I V	1032	04/12/21	Final: Extend ferry portion, truncate inbound profile
TD 29			Lawnmower+Fig-	30 kt		1945	I	1945	04/12/21	Final. Extend leny polition, truncate outbound profile
(Eta)	20201106H1	EMC	4	(TD)	NOAA42	2020	Y	2105	04/12/21	Final: Combine lawnmower legs into single analysis
						2100	Y			
						2140	Y			
						2220	Y	2220	04/12/21	
TD 00				0011		2300	Y	2300	04/12/21	
TD 29 (Eta)	20201107N1	NHC	Synoptic	30 kt (TD)	NOAA49	0730	Y	0730	04/12/21	Final: Use 201107N1_ine_corrections_m.dat for all (no
						0930	Y	0852	04/12/21	Segment, 2-km spacing, invest setting (outer circumnavigation, 3.5-
							Y	0949	04/12/21	Segment, 2-km spacing, invest setting (outer circumnavigation, 5.5-
						1100	Y	1100	04/12/21	km spacing, TS setting (inner circumnavigation)
						1225	Y	1225	04/12/21	(non-circumnavigation)
TS Eta	20201107H1	NHC	Alpha (Partial/Abort)	55 kt (TS)	NOAA42	2313	Y	2313	04/12/21	Final: Shift center N and W, reduce melting level from 5
TS Eta	20201108N1	NHC	Synoptic	55 kt (TS)	NOAA49	0630	Y	0643	04/12/21	Final: Shift center and center time along track, reduce r (non-circumnavigation)
						0720	Y	0720	04/12/21	Final: Use Neal Dorst's track file, expand domain radius
						0750	Y	0750	04/12/21	Final: Center on flight segment (pattern well E of center
						0831	Y	0831	04/12/21	Original: 4-km spacing; Final: Center on flight segment,
TS Eta	20201108H1	NHC	Alpha	55 kt (TS)	NOAA42	1407	Y	1406	04/12/21	Final: Shift center W, remove profile, change motion dir
						1452	Y	1452	04/12/21	Final: Remove profile (note: center of circ. difficult to pi
						1551	Y	1551	04/12/21	· · · ·
TS Eta	20201108H2	NHC	Alpha	55 kt (TS)	NOAA42	2455	Y	2455	04/12/21	Original: Not confident in analysis around time of loop o

_corrections_m.dat for all, use 3-km spacing, use Neal
, remove profile
(non-circumnavigation)
.5-km spacing, TS setting; Final: Center on flight
.5-km spacing, TS setting; Final: Center on flight
navigation E) Jeal Dorst's track file, expand domain radius to 280 km, 2-
m 5 to 4.5 km for remaining N42 flights be melting level from 5.5 to 5 km for remaining N49 flights
dius to 280 km (pattern N of center)
ent, 2-km spacing (pattern well S and E of center)
dir for first two passes
pinpoint)

op on inbound; Final: Start analysis after loop

						2609	Y	2609	04/12/21	
						2708	Y	2708	04/12/21	
						2801	Y	2801	04/12/21	
						2906	Y	2906	04/12/21	Final: Extend ferry portion
TS Eta	20201110N1	NHC	Synoptic	50 kt (TS)	NOAA49	1113	Y	1113	04/12/21	Final: Adjust motion, use Neal Dorst's track file (inner
TS Eta	20201110H1	NHC/EMC	Rotated Fig-4	55 kt (TS)	NOAA42	2247	Y	2247	04/12/21	Final: Motion uncertain so keep as is (weak), remove i
						2335	Y	2335	04/12/21	Final: Data system issues before 2311 UTC so make
						2417	Y	2417	04/12/21	
						2519	Y	2519	04/12/21	Final: Possible reformation attempt to NE of original ce inbound profile
						2607	Y	2607	04/12/21	Final: Bit of a mess in terms of center finding use ce
				65 kt (Cat 1						
HU Eta	20201111H1	NHC	Pass+Downwind	HU)	NOAA42	1055	Y	1055	04/12/21	Final: Combine pass and downwind into single analysi
						1200	Y			

circumnavigation)

inbound profile

no modifications

center ... use original center as in real time, truncate

enter determined in real time, remove profiles

sis (bit of a mis-match at end of downwind)

2021 HFP TDR POST-PROCESSING (LEVEL 2) DOCUMENTATION

				Dook		Level 1b	Reprocess	Level 2	Level 2	Level 2	
				Intensity		Time	Level 1b?	Time	Date	Upload Date	
Storm			– <i>и</i>	During	Tail			(1) (7)			
Name	Flight ID	Tasking	Pattern	Flight	#	(UTC)	(Y/N)	(UTC)	(MM/DD/YY)	(MM/DD/YY)	Reprocessing Notes: Before / After
									Version	Version	decent coverage
									, ereiteitt	Vereien	Global issue for all aircraft: A filling in "pass shouldn't have been before 2021 season. Ma edge of G-IV circumnavs. This was discover expected to be small. All G-IV data has been Global issues for N42: Too much removed at altitude 4 -> 2.5 Also, to reduce noise, esp of some coverage reduction from real-time): Max. diff. from background 8 m/s -> 7 m/s, m
											Global issues for N43: Elevated w along fligh Global issues for N49: Inside edge winds of analyses have ascent anomaly along flight to flight track between 3 and 7 km / Filling for resolves boundary wind issue; Narrow melti 5.0 km, respectivly) in select cases to mitiga incidence angle that propagates to WS)
											Note: ()* Did not transmit to EMC; ()** generated
Elsa	20210702H1	EMC	Butterfly	75 kt	N42	1633	Y	1633	01/27/22	02/01/22	Storm-rel TDR profile data bad / -
						1755	Y	1755	01/27/22	02/01/22	Storm-rel TDR profile data bad; wind noise near DW / Wind noise mostly removed near turn inb
						1910	Y	1910	01/27/22	02/01/22	Storm-rel TDR profile data bad / -
HU Elsa	20210702N1	NHC	SynSurv	75 kt	N49		N/A				Inadequate coverage for an analysis
TS	2021070341	EMC	Pot Fig /	60 kt	N/12	1614	V	1644	01/27/22	02/01/22	(w artifact along flight track)
LISA	20210703111	EIVIC	NUL FIG 4	00 KI	IN4Z	1044	1	1044	01/21/22	02/01/22	Dbz noise with some wind noise along flight track
						1729	Y	1729	01/27/22	02/01/22	amount of along-track dbz noise remains near 4 Dbz noise with some wind noise along flight trac
						1832	Y	1832	01/27/22	02/01/22	removed near 8 km (maybe a bit of dbz noise re
						1955	Y	1955	01/27/22	02/01/22	Dbz noise along flight track < 5.5 km / Some db
TS Elsa	20210704H1	NHC/EMC	Rot Fig 4	50 kt	N42	1047	Y	1047	01/27/22	02/01/22	- / DW leg added
			5			1312	Y	1312	01/27/22	02/01/22	-/-
						1420	Ŷ	1420	01/27/22	02/01/22	-/-
TS						. 120			0 11 211 22	52, 5 HZZ	·
Elsa	20210705H1	NHC/EMC	Rot Fig 4	55 kt	N42	1040	Y	1040	01/27/22	02/01/22	Check winds S of center @ > 4km / Flow @ > 4 Bad winds near end of coastal run / Truncate im
						1200	Y	1150	01/27/22	02/01/22	eliminated)

flight track is unavoidable if we want to maintain

s 2" of QC (to expand coverage) was left on that ain consequence is anomalous low wind along inner red after P-3 reprocessing, but the impact there is a reprocessed for Level 2 without "pass 2" filling. It upper levels / Apply mask only out N x aircraft b. < 2.5 km, near 4.5 km and near 8 km (at the expense Mask thresh. 18 -> 20 dB, SQI thresh. 0.80 -> 0.83, hin % obs unflagged 1 -> 2.5

ht track / Presently no change from real-time settings inner circumnaviagtion not well constrained; Most rrack above 4 km and windspeed asymmetry across pass 2 turned off, as done in prior seasons -> ing layer depth and adjust height (from ML: 2.0 and ate W/WS issue (basically it's a fallspeed issue at high

d by J. Gamache using special software

r turn inbound < 2 km & likely most levels near begin of bound, but remains near begin of DW

ck near 4.5 and 8 km / Wind noise mostly removed; Small 4.5 km ck near 8 km / Added short inbound profile; Noise mostly emains) oz noise remains

km looks weak but reasonable nmediately after new "center" time (bad winds/dbz

						1255	Y	1255	01/27/22	02/01/22	Wind perhaps a bit noisy in spotty dbz on W side
						1348	Y	1348	01/27/22	02/01/22	Perhaps extend coverage over Cuba / Extended
Invest	0004004014		1	00.14	N140	4050	X				TDR synchro issue. Try a compensating azimut
(PTC6)	2021081011	NHC	Invest	30 Kt	N43	1258	Y				as well.
						1356	Ŷ				
TS						1505	Y				" TDR synchro issue. Try a compensating azimut
Fred	2021081111	EMC	Butterfly	35 kt	N43	1028*	Y				as well.
						1143*	Y				n
						1221*	Y				n
TD			_								Around the island pattern; Uclear extent to which
Fred	20210811H1	EMC	Survey	30 kt	N42	2310	Y	2310	01/27/22	02/15/22	Start 5 min earlier; along-track E side remains
тр						2357	Y	2357	01/27/22	02/15/22	" / No change to analysis period.
Fred	20210812H1	EMC	Butterfly	30 kt	N42	1028	Y	1022	01/27/22	02/15/22	- / Change center pos/time to reflect 2-km circ
			2			1106	Y	1113	01/28/22	02/15/22	- / Change center pos/time to reflect 2-km circ
						1236	Y	1236	01/28/22	02/15/22	-/-
TD											·
Fred	20210812H2	EMC	Butterfly	30 kt	N42	2212	Y	2212	01/28/22	02/15/22	-/-
TD						2327	Y	2327	01/28/22	02/15/22	-/-
TD Fred	20210813H1	FMC	Butterfly	30 kt	N42	0950	Y	0941	01/28/22	02/15/22	- / Change center pos/time to reflect 2-km circ
Tiou	20210010111	20	Dutterity	00 11		1058	Ŷ	1106	01/28/22	02/15/22	- / ": Combine with subsequent analysis
						1120	N/A	1100	01120122	02,10,22	- / Combine with previous analysis
TS						1120	11/7 1				
Grace	2021081411	NHC	Alpha	35 kt	N43	1734	Y	1725	01/29/22	02/17/22	- / Recenter on 2-km vorticity center & Remove
-						1854	Y	1840	01/29/22	02/17/22	- / Recenter on 2-km vorticity center & Remove
IS Grace	20210814N1	HRD	Lawn + Fig 4	35 kt	N/49		V				INE issues Mustuse unblended INE with INE-c
Orace	20210014111	TIND	i ig i	00 Kt	1145		v v				
TS			Dbl Circ		l						
Grace	20210815N1	HRD	+ Fig 4	35 kt	N49	1627	Y	1619	04/08/22	04/25/22	Need INE-corrections / Use 18Z Best Track (12
						1707	Y	1648	04/08/22	04/25/22	" / ML: 1.0,4.5 km; 4-km spacing
						1820	Y	1810	04/08/22	04/25/22	" / ML: 1.0,4.5 km; 2-km spacing
						1910	Y	1910	04/08/22	04/25/22	" / ML: 1.0,4.5 km; 4-km spacing
						2030	Y	2028	04/08/22	04/25/22	" / ML: 1.0,4.5 km; 2-km spacing
TS	2021001511		Alpha	20 kt	NAO	1705	V	1010	01/20/22	00/17/00	/ Marga all into ano analysis contared an notto
Grace	2021061511	NHC	Арпа	30 KI	1143	1025	T N/A	1010	01/29/22	02/17/22	- / Merge all into one analysis centered on patter
						1030	N/A				- / Combine with previous analysis
TD						1925	N/A				- / Compline with previous analysis
Grace	20210816H1	EMC	Fig 4	30 kt	N42	1101	Y	1101	01/28/22	02/17/22	- / Changed from IN to TS; Shift C to N
						1215	Y	1215	01/28/22	02/17/22	- / Changed from IN to TS; Shift C to N&E

e / Spotty noise remains

d 4 min beyond coastline (winds seem good) th correction. Need to implement revised angle corrections

h correction. Need to implement revised angle corrections

h dbz/wind along flight track on E side is meteorological /

profile (w artifact along flight track) profile (w artifact along flight track)

orrections.

7N,66.7W) for all; ML: 1.0,4.5 km; 4-km spacing

ern (w artifact along flight track)

TS Grace	20210817H1	EMC	Butterfly	45 kt	N42	1010	Y	1010	01/28/22	02/17/22	- / -
0.000			20110111			1125	Ŷ	1125	01/28/22	02/17/22	Outbound near coast. / -
						1253	Ŷ	1253	01/28/22	02/17/22	Inbound near coast. / Added short profile
TS											
Grace	2021081711	EMC	Rot Fig 4	50 kt	N43	2201	Y	2204	01/29/22	02/17/22	Not a center pass / Extrapolate center using nex
						2319	Y	2319	01/29/22	02/17/22	- / - (w artifact along flight track)
						2428	Y	2428	01/29/22	02/17/22	 - / - (w artifact along flight track)
						2532	Y	2532	01/29/22	02/17/22	 - (w artifact along flight track)
HU Grace	2021081811	EMC	Butterfly	65 kt	N43	1102	Y	1102	01/29/22	02/17/22	- / - (w artifact along flight track)
											Anomalous dbz along flight track (most evident r It is possible anomalous dbz is related to flying of farther the radar beam has to go through this hig
						1218	Y	1218	01/29/22	02/17/22	attenuated the return above the melting band is.
			511.01			1330	Y	1330	01/30/22	02/17/22	 - (w artifact along flight track)
HU Grace	20210818N1	HRD	Dbl Circ + Lawn	65 kt	N49	2100	Y	2100	04/08/22	04/25/22	Need INE-corrections / ML: 1.0,4.5 km; 3-km s
						2152	Y	2152	04/08/22	04/25/22	km; 2-km spacing
HU	00040040144			70.14	NIG	0450	Ň	0450	04/00/00	00/17/00	Dbz noise with some wind noise along flight trac
Grace	20210818H1	EMC	Butterfly	70 Kt	N42	2152	Ŷ	2152	01/28/22	02/17/22	removed some dbz noise remains
						2313	Y	2313	01/28/22	02/17/22	dbz noise remains (some added near 3 km)
						0400	V	0400	04/00/00	00/47/00	Dbz noise with some wind noise along flight trac
						2422	Ŷ	2422	01/28/22	02/17/22	Possible land contamination near start. Below 5
TS											noise; Wind/dbz noise remains between 7-10 kn
Grace	20210819H1	EMC	Butterfly	55 kt	N42	2205	Y	2205	01/28/22	02/17/22	shortened more)
						2255	Y	2255	01/28/22	02/17/22	remains between 7-9 km (shortening a bit more
											Perhaps extend end time. / Start DW a bit later of
TO						2409	Y	2409	01/28/22	02/17/22	noise mostly removed
Henri	20210819N1	NHC	ey	55 kt	N49	1923	Y	1923	04/08/22	04/25/22	- / ML: 1.0,4.0 km; 3-km spacing
			2			2430	Y	2430	04/08/22	04/25/22	Check for anomalously-low winds along inner-ed
TS			SynSurv								,
Henri	20210820N1	NHC	ey	55 kt	N49	0700	Y	0700	04/08/22	04/25/22	- / ML: 1.0,4.0 km; 3-km spacing
те						1128	Y	1128	04/08/22	04/25/22	Check for anomalously-low winds along inner-ed
Henri	20210820N2	NHC	ev	60 kt	N49	1900	Y	1900	04/08/22	04/25/22	- / ML: 1.0.4.0 km: 3-km spacing
		-	,		-	1956	Y	1956	04/08/22	04/25/22	Primarily an EMC file test / ML: 1.0.4.0 km: 3-km
						2400	Y	2400	04/08/22	04/25/22	Check for anomalously-low winds along inner-ed
TS						2.00				0	Dbz noise with some wind noise along flight trac
Henri	20210820H1	EMC	Butterfly	60 kt	N42	2154	Y	2154	01/31/22	02/16/22	noise introduced near 3 km and below wind n
						2317	Y	2317	01/31/22	02/16/22	somewhat wind noise is removed (difficult to tell v

kt two passes (w artifact along flight track)

near and above 5 km) / " **Here and in below instances**: close to a particularly intense melting band, and the gh reflectivity (the farther from the flight track) the more . (w artifact along flight track)

pacing

dge of circumnav. / Changed from TS to HU; ML: 1.0,4.5

ck below 4.5 km and near 8 km / Wind noise mostly

ck below 2.0 km / Wind noise mostly removed ... some

ck below 4.5 km / Start DW a bit later due to noise earlier; ed

km and between 7-10 km / Shorten inbound to avoid n (would lose too much low-level wind if inbound

en outbound to avoid noise; more limited wind/dbz noise would remove too many good low-level winds) due to noise earlier & Extend outbound a bit; Wind/dbz

dge of circumnav. / ML: 1.0,4.0 km; 2-km spacing

dge of circumnav. / ML: 1.0,4.0 km; 2-km spacing

n spacing

dge of circumnav. / ML: 1.0,4.0 km; 2-km spacing ck below 4.5 km / High-dbz noise removed, but low-dbz noise reduced, but not entirely eliminated ear 4 km and 8 km / Shift C to NE; dbz noise reduced whether low-level winds contain noise)

							2432	Y	2432	01/31/22	02/16/22	Dbz noise with some wind noise along flight track be reduced overall, but some low-dbz noise introduced b
	TS Henri	20210821N1	NHC	SynSurv ev	60 kt	N49		Y	0641	04/08/22	04/25/22	Perhaps analyze outer circ. / ML: 1.0.4.0 km: 4-I
				-,			1120	Ŷ	1121	04/08/22	04/25/22	Check for anomalously-low winds along inner-ed
	TS											Dbz noise with some wind noise along flight track be
	Henri	20210821H1	EMC	Butterfly	60 kt	N42	1006	Y	1006	01/31/22	02/16/22	noise mostly removed
							1121	Y	1121	01/31/22	02/16/22	Minimal dbz noise along DW flight track near 8 k
												km and more substantially below 5 km (but some low
							1244	Y	1244	01/31/22	02/16/22	km
	HU	2021002102	EMC	Buttorfly	65 kt	N/2	2225	V	2225	01/21/22	02/16/22	Dbz noise with some wind noise along flight track be
	пепп	2021002102	EIVIC	Dutterity	00 KI	IN4Z	2235	1 V	2233	01/31/22	02/10/22	Minimal dbz paice clong DW flight track page 9
							2345	ř	2345	01/31/22	02/16/22	Dbz noise with some wind noise along flight track hear 8 k
												removed < 2.5 km, dbz noise somewhat removed near
•				0			2557	Y	2557	01/31/22	02/16/22	remains near 8 km
	TS Ida	20210827N1	NHC	ev	50 kt	N49	0933	Y	0933	04/08/22	04/25/22	- / ML; 1.0.4.5 km; 3-km spacing
				-,								(Radar log incomplete); Check for anomalously-
							1109	Y	1109	04/08/22	04/25/22	km; 2-km spacing
	TS Ida	2021082711	EMC	Rot Fig 4	50 kt	N43	1007	Y	1007	02/14/22	02/17/22	Odd "capping" of DBZ @ 5.5km in profile likely a
							1126	Y	1126	02/14/22	02/17/22	Anomalous dbz along flight track (most evident i
							1232	Y	1232	02/14/22	02/17/22	Anomalous dbz along flight track (most evident i
							1400	Y	1400	02/14/22	02/17/22	Perhaps include >1420Z to coast / Extend after
	HIIIda	20210827N2	NHC	SynSurv	70 kt	ΝΛΟ	2000	V	2000	04/09/22	04/25/22	$-/MI \cdot 10.45$ km $\cdot 3$ km spacing
		20210027112	NIIO	Cy	70 Kt	1145	2000	Y	2400	04/09/22	04/25/22	Check for anomalously-low winds along inner-er
	HIIIda	2021082711	HRD	Rot Fig /	70 kt	N/12	2400	V	2400	02/15/22	02/17/22	Wind poise on outbound below 1.5 km / Wind po
		20210027111		Not Fig 4	70 KL	1142	2102	1	2102	02/10/22	02/11/22	Dbz noise with much wind noise inbound center
												km (over land) / Noise near 8 km reduced only a
							2337	Y	2337	02/15/22	02/17/22	near center below 8 km only reduced somewhat
							2445	Y	2445	02/15/22	02/17/22	/ Wind noise removed
				CB pass			0.455		0.455	00/15/00	00/17/00	
				1/3 CB pass			2455	Y	2455	02/15/22	02/17/22	Used storm motion / Use est. cell motion of 50 k
				2/3				N/A	2504	02/15/22	02/17/22	- / Added CB pass
				CB pass					0540	00/45/00	00/47/00	
				3/3				N/A	2513	02/15/22	02/17/22	- / Added CB pass
				SvnSurv				N/A	2644	02/15/22	02/17/22	- / Added 4th penetration
	HU Ida	20210828N1	NHC	ey	75 kt	N49	0944	Y	0944	04/09/22	04/25/22	Check for anomalously-low winds along inner-ed
	HU Ida	2021082811	EMC	Rot Fig 4	75 kt	N43	0944	Y	0944	02/14/22	02/17/22	- / - (w artifact along flight track)
							1101	Y	1101	02/14/22	02/17/22	- / - (w artifact along flight track)
							1205	Y	1205	02/14/22	02/17/22	- / - (w artifact along flight track)

elow 6 km and near 8 km / Shift C to NE; dbz noise is greatly below 2.5 km ... minimal wind noise remains between 1-1.5 km

km spacing

dge of circumnav. / ML: 1.0,4.0 km; 2-km spacing elow 4.5 km and near 8 km / Dbz noise greatly reduced ... wind

km / Dbz noise mostly removed elow 5 km and near 8 km / Dbz noise reduced somewhat near 8 w dbz noise added) ... some wind noise remains between 6.5-8

elow 2.5 km, near 4.5 km and near 8 km / Dbz noise mostly

km / Low-dbz noise added below 2 km elow 2.5 km, near 4.5 km and near 8 km / High-dbz noise ar 8km, and mostly eliminated near 4.5 km ... some wind noise

low winds along inner-edge of circumnav. / ML: 1.0,4.5

associated with QC / " (w artifact along flight track) near and above 5 km) / " (w artifact along flight track) near and above 5 km) / " (w artifact along flight track) turn N ~ 10 min (w artifact along flight track)

dge of circumnav. / ML: 1.0,4.5 km; 2-km spacing

oise removed

ed near 8km (over land); Wind noise near center below 8 a bit (but increased somewhat above 9 km); Wind noise t (some may be meteorological in eye)

some wind noise below 1.5 km along inbound over land

t at 270 deg

dge of circumnav. / ML: 1.0,4.5 km; 2-km spacing

						1401	Y	1401	02/14/22	02/17/22	- / - (w artifact along flight track)
HU Ida	20210828H1	EMC	Butterfly	90 kt	N42	2113	Y	2113	02/15/22	02/17/22	removed; Some dbz noise below 2.5 km
						2232	Y	2232	02/15/22	02/17/22	- / Include DW leg (before spiral)
						2434	Y	2434	02/15/22	02/17/22	Dbz and wind noise below 3 km / Include DW leg some dbz noise remains
HU Ida	2021082911	NESDIS	Alpha	130 kt	N43	0916	Ŷ	0916	02/14/22	02/17/22	- / - (w artifact along flight track)
			·			1018	Y	1018	02/14/22	02/17/22	- / - (w artifact along flight track)
						1118	Y	1118	02/14/22	02/17/22	- / - (w artifact along flight track)
						1144	Y	1144	02/14/22	02/17/22	-/-
						1203	Y	1203	02/14/22	02/17/22	Anomalous dbz along flight track (most evident r
						1236	Y	1236	02/14/22	02/17/22	Anomalous dbz along flight track (most evident r
						1319	Y	1319	02/14/22	02/17/22	Doublecheck for land artifacts / Extend all the wa
						1401	Y	1401	02/14/22	02/17/22	Doublecheck for land artifacts / Start all the way
						1423	Y	1423	02/14/22	02/17/22	Anomalous dbz along flight track (most evident r
LI Ido	2021092041	חסח	Mod Buttorfly	120 kt	NAO	1000	V	1000	02/15/22	00/17/00	1
TIU lua	20210029111		Dutterny	130 KI	1142	2016	T V	2016	02/15/22	02/17/22	- / -
			MPS+G			2010	I	2010	02/13/22	02/11/22	Use est. cell motion of 35 kt at 20 deg; Dbz and
			W			2120	Y	2120	02/15/22	02/17/22	somewhat; wind noise minimal
HU Larry	20210905N1	HRD	Survey + Circ	105 kt	N49	1046	Y	1046	04/09/22	04/25/22	Anomalous low winds due W of center / Change
			••			1300	Ŷ	1300	04/09/22	04/25/22	Anomalous low winds due E of center / Changed
						1345	Ŷ	1345	04/09/22	04/25/22	- / ML: 1.0.4.5 km: 2-km spacing
HU											
Larry	2021090611	HRD	Butterfly	110 kt	N43	1726	Y	1726	02/16/22	02/17/22	Anomalous dbz along N flight track (most evider
						1918	Y	1918	02/16/22	02/17/22	below 6 km / " (w artifact along flight track)
						2036	Y	2036	02/16/22	02/17/22	Anomalous dbz along N flight track (most evider
			Eyewall				NI/A	2052	02/16/22	02/17/22	/ Just the evenual mixing module
HU			Survey +				IN/A	2032	02/10/22	02/11/22	
Larry	20210906N1	HRD	Circ	110 kt	N49	1718	Y	1718	04/09/22	04/25/22	Anomalous low winds due NW of center / Chang
						1938	Y	1938	04/20/22**	04/25/22	Anomalous low winds due E of center; Bad unfo instead of 0.1 for top/bottom weight: MI : 1.0.4.0
						2036	Ŷ	2036	04/09/22	04/25/22	Anomalous low winds due SW of center / Chance
HU			Star +						000122	00/	Anomalous low winds due N of center / Changed
Larry	20210907N1	HRD	Circ	100 kt	N49	1638	Y	1638	04/09/22	04/25/22	star)
						1800	Y	1800	04/09/22	04/25/22	Just lower star; Anomalous low winds due SE of
НП						1922	Y	1922	04/09/22	04/25/22	Anomalous low winds along inner edge of circun
Larry	2021090711	NESDIS	Alpha	100 kt	N43	1922	Y	1922	02/16/22	02/17/22	below 9 km / " (w artifact along flight track)
						2037	Y	2037	02/16/22	02/17/22	- / - (w artifact along flight track)
						2153	Y	2153	02/16/22	02/17/22	- / - (w artifact along flight track)

reason; Dbz and wind noise below 5.5 km / Wind noise

eg (after spiral); Wind noise substantially reduced, but

near and above 5 km) / "

near and above 5 km) / "

ay W along coast

W along coast

near and above 5 km) / " (w artifact along flight track)

some wind noise below 5.5 km / Dbz noise reduced

ed from TS to HU; ML: 1.0,4.5 km; 2-km spacing d from TS to HU; ML: 1.0,4.5 km; 2-km spacing

nt near and above 5 km) / " (w artifact along flight track) nt near and above 5 km); Dbz noise along flight track

nt near and above 5 km) / " (w artifact along flight track)

ged from TS to HU; ML: 1.0,4.5 km; 2-km spacing olds on first pass / Changed from TS to HU; Used 1.0 0 km; 2-km spacing

ged from TS to HU; ML: 1.0,4.5 km; 2-km spacing d from TS to HU; ML: 1.0,4.0 km; 3.5-km spacing (upper

f center / Full star; ML: 1.0,4.0 km; 2-km spacing mnav. / ML: 1.0,4.5 km; 2-km spacing nt near and above 5 km); Dbz noise along flight track

						2243	Y	2243	02/16/22	02/17/22	Anomalous dbz along N flight track (most evider below 7 km / " (w artifact along flight track)
HU Sam	20210925N1	HRD	Dbl Circ	125 kt	N49	2116	Y	2116	04/11/22	04/25/22	Need INE-corrections / ML: 1.0,4.0 km; 2-km s
						2259	Y	2259	04/11/22	04/25/22	"; Anomalous low winds due N of center / ML: 1. flight track; 2-km spacing
HU Sam	20210925H1	HRD/ONR	Butterfly	125 kt	N42	2207	Y	2207	02/16/22	02/17/22	- / -
						2259	Y	2259	02/16/22	02/17/22	- / -
						2357	Y	2357	02/16/22	02/17/22	- / -
HU Sam	20210926N1	NHC	SynSurv ey	130 kt	N49	2100	Y	2100	04/11/22	04/25/22	Need INE-corrections ; Check for anomalously- km; Introduced some anomalous negative W alc
						2237	Y	2237	04/11/22	04/25/22	Anomalous low winds due N of center / ML: 1.0,
HU Sam	20210926H1	EMC	Butterfly	135 kt	N42	2237	Y	2237	02/16/22	02/17/22	- / -
						2350	Y	2350	02/16/22	02/17/22	- / -
HU						2457	Y	2457	02/16/22	02/17/22	Dbz noise near 4.5 km; Dbz and wind noise nea
Sam	2021092711	EMC	Figure-4	110 kt	N43	1425	Y	1425	02/16/22	02/17/22	Anomalous dbz along N flight track (most evider
			SupSum			1541	Y	1541	02/16/22	02/17/22	Anomalous dbz along N flight track (most evider outbound end (w artifact along flight track)
Sam	20210927N1	NHC	ev	105 kt	N49	2000	Y	2000	04/11/22	04/25/22	Need INE-corrections / ML: 1.0.4.0 km: 3-km s
нп			,			2320	Y	2320	04/11/22	04/25/22	Anomalous low winds along inner edge of circur Introduced some anomalous negative W along f
Sam	20210927H1	EMC	Butterfly	105 kt	N42	2205	Y	2205	02/16/22	02/17/22	but not eliminated
			-			2320	Y	2320	02/16/22	02/17/22	SQI 0.75 & angle corrections different for some
						2433	Y	2433	02/17/22	02/17/22	SQI 0.75 & angle corrections different for some bit; Dbz noise mostly removed
HU Sam	20210929H1	FMC	Butterfly	115 kt	N42	0956	Y	0956	02/17/22	02/17/22	Dbz and wind noise near 8km / Dbz and wind no
Cam	20210020111	2	Buttering	1 IO IR		1147	Ŷ	1147	02/17/22	02/17/22	-/-
						1249	Ŷ	1249	02/17/22	02/17/22	- / -
			GW+MP S			12 10	N/A	1330	02/17/22	02/17/22	′ - / Analyze GW + MPS modules
HU	20240020112	ГМО	Dat Fig 4	105 kt	N4O	0407	V	0407	00/47/00	00/47/00	Dha and wind pains page 4.5 km and page 9km
Sam	2021092902	EIVIC	RUL FIG 4	120 KI	IN4Z	2137	ř V	2137	02/17/22	02/17/22	Dbz and wind noise helaw 5.5 km / Same dbz a
						2249	Y V	2/02	02/17/22	02/17/22	Dbz and wind noise below 5.5 km / Some dbz no Dbz and wind noise below 5.5 km / Dbz and win below 2.5 km
						2402	v	2544	02/17/22	02/17/22	/ Add short DW at end
						2044	1	2044	UZITIZZ	02/11/22	- / Aud Short Div at Chu
Total P-3						111+3*		110+?			
l otal G-IV						35		36+?			

nt near and above 5 km); Dbz noise along flight track

pacing

.0,4.0 km; Introduced some anomalous negative W along

-low winds along inner-edge of circumnav. / ML: 1.0,4.0 ong flight track; 3-km spacing

,4.5 km; 2-km spacing

r 8km / Dbz and wind noise removed

nt near and above 5 km) / " (w artifact along flight track) nt near and above 5 km) / "; Add sampling beyond

spacing mnav. / Changed from TS to HU; ML: 1.0,4.0 km; flight track; 2-km spacing reason; Dbz and wind noise below 2 km / Noise reduced

reason / reason; Dbz noise near 4.5 km / Extend outbound leg a

oise removed

/ Noise removed near 4.5 km, but only reduced near 8 km

oise retained near 4.5 km, but wind noise removed noise greatly reduced, but some wind noise retained