Maria S Merian 0123 (23 January 2020)

Johannes Karstensen (Chief Scientist)

0123,00:15, Position: 10°50.628'N/059°52.412'W)

1. Objective

Determine Continue eddy survey – crossing west to east across the determined centre (verical structure 0-2000m depth; and dissipation 0-250m). Radiosounding every 4h.Drone flight with met package; Microstructure casts; Cloudkite instruments preparation for first science deployment maybe Thursday (0123);

2. Synoptic Situation

Wind calmed down and so did swell;
The ARTHUS is working! (thanks to the calm weather it could be aligned)

3. Cruise-day Elements

Approx. Time (local)	Operation	Latitude	Longitude	Comm
00:15	MSS – 3 casts	10°50.63'N	59°52.43'W	2000m
03:30	CTD#12 – Bio	10°55.26'N	59°39.89'W	Max z=600m
04:30	CTD#13 – Bio	same		Max z=200m
05:00	CTD#14 – Bio	same		Max z=200m
06:00	MSS – 3 casts	same		
09:00	CTD#15	11°00.00'N	59°27.35'W	2000m
	MSS – 3 casts	same		
12:00	CTD#16	11°04.63'N	59°14.81'W	2000m
	MSS – 3 casts	same		
13:00	Daily Meeting (**Conference room**)			
15:00	CTD#17	11°09.16'N	59'02.27'W	2000m
	MSS – 3 casts	same		
18:00	CTD#18	11°13.79'N	58°49.73'W	2000m
	MSS – 3 casts	same		
21:00	CTD#19	11°18.42'N	58°37.19'W	2000m
	MSS – 3 casts	same		
23:50	CTD#20	11°23.03'N	58°24.65'W	2000m
	MSS – 3 casts	same		

Inter-calibration: no

CTD Stations: biology (shortly before sun rise)

Overflights: no

4. Instrument Status

Operational:

Ocean – ADCP 38 & 75kHz; TSG; X-Band Radar; Underway O2, Chl-a (spectrometer); Incubation (PP; filtration); Nutrient/lab analysis; CTD/O2 +rosette; Moving vessel profiler; Glider ifm09 (https://gliderweb.geomar.de/html/ifm09_depl14_frame.html); Microstructure sonde;

Atmosphere – Halo Wind Lidar; Disdrometer; W-Band Radar. MRR (rain), sun photometer, Cloudcamera; SMPS (Aerosol; ship based); radiosondes; DWD Metrology package (incl. radiation); ARTHUS Raman Lidar; Splash drone (atmospheric state parameters);

In preparation:

Ocean –; uCTD, MIMS (O2/Ar, DSMS), Ferrybox pCO2;

Atmosphere – MPCK+ (atmospheric state parameters+cloud microphysics; Cloudkite); Mini MPCK (atmospheric state parameters and fluxces; Cloudkite); SMPS (Aerosol; Cloudkite);

No functioning:

Ceilometer

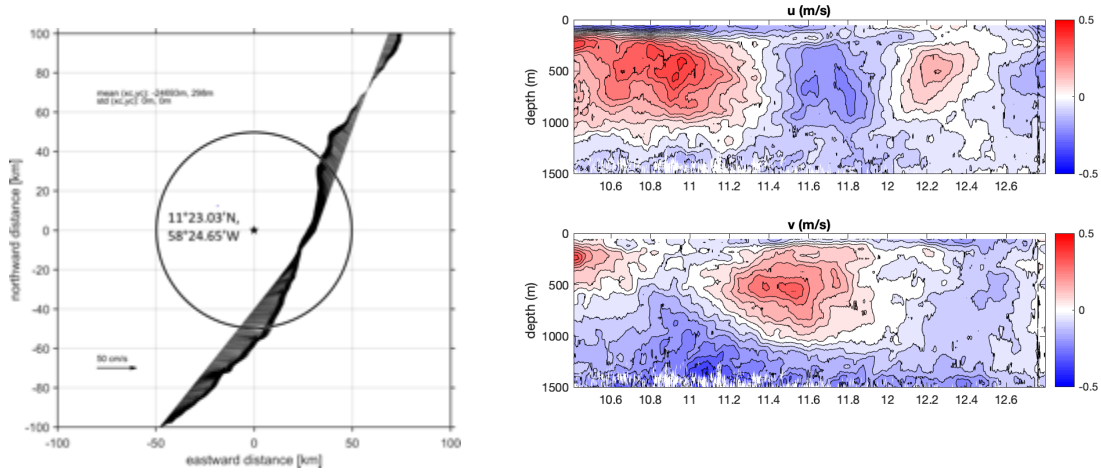
Note: The W Band Radar stable table continues to get stuck sometimes and needs continuous surveillance.

5. Outlook

Good

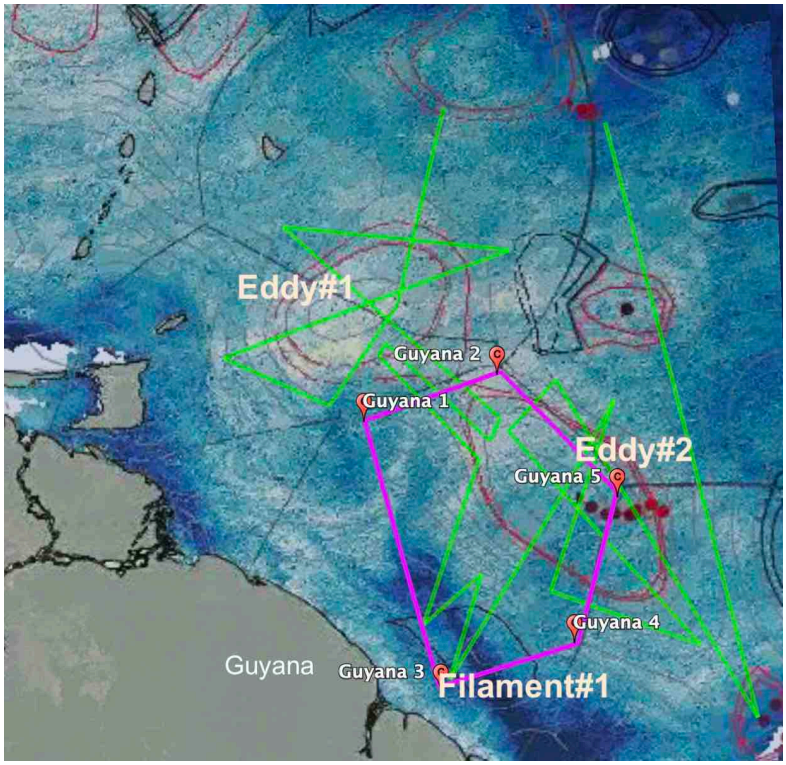
6. Figures

Eddy R#1 survey.



Left: eddy centre determined with Gauss-Newton algorithm applied to a Rankine vortex model optiimized for the observed velcity
Right: observered velocity structure versus Latitude

Rouite Planning sketch -



Proposed cruise track operations (green lines) and edge points with respective polygon (magenta) in Guyana waters. The scientifically interesting features within the Guyana EEZ are Eddy #2 and Filament#1.