

VOCALS Regional Experiment (REx) Sampling Strategy

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many contributors



The aircraft



DoE ASP G-1



CIRPAS Twin Otter



NSF C-130

NERC Dornier 228



UK FAAM BAe-146

The Ships



NOAA Ronald H Brown

IMARPE José Olaya



VOCALS-REx Platforms and Sampling

Aircraft:

NSF C-130

CIRPAS Twin
Otter

DoE G-1

UK BAe-146

NERC Do 228

Ships:

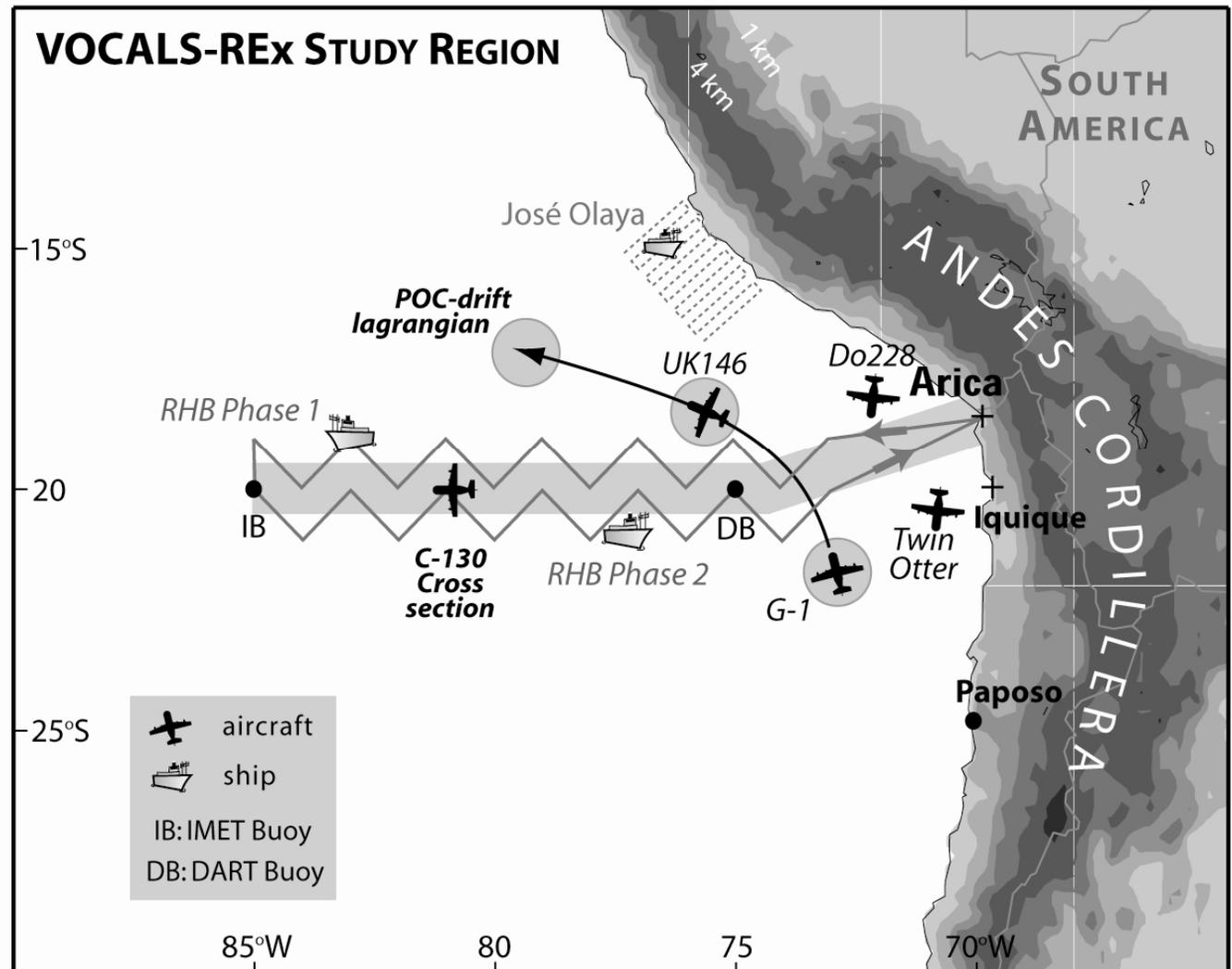
NOAA Ronald H
Brown

José Olaya

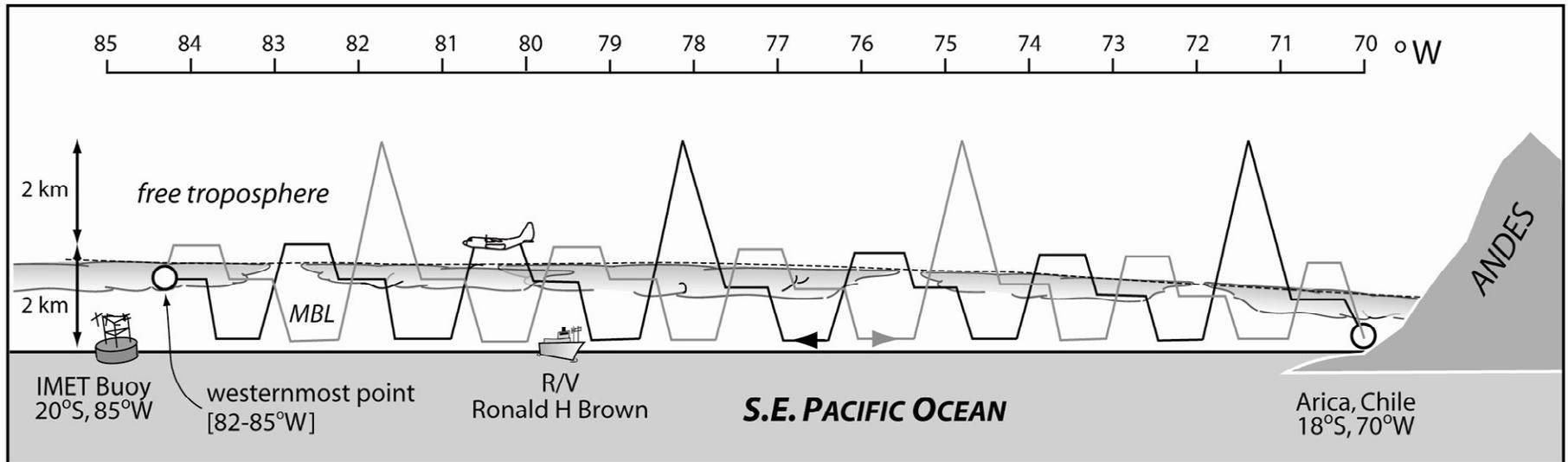
Land sites:

Iquique

Paposo



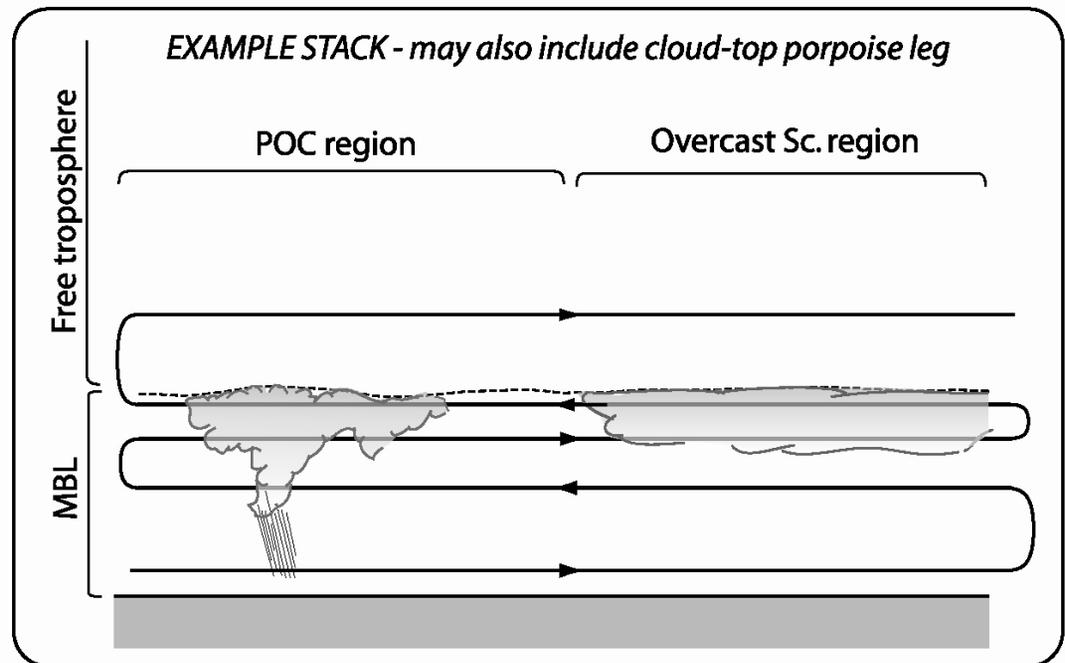
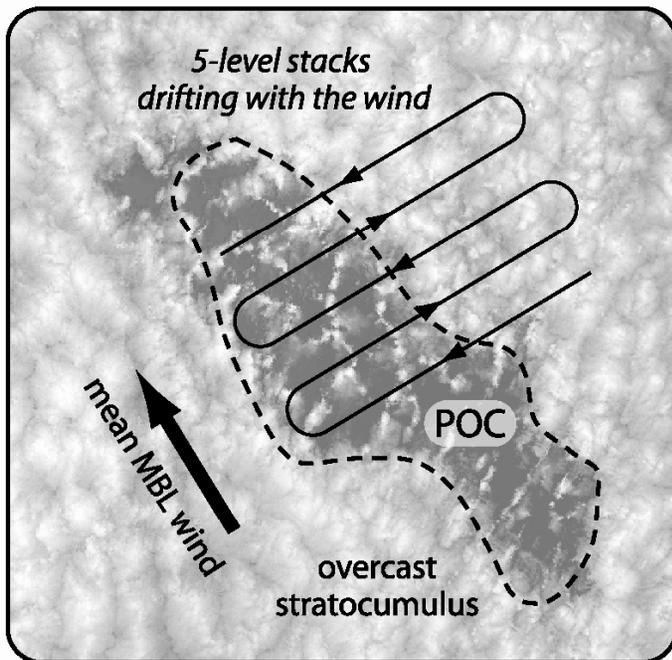
VOCALS-REx Cross-Section



Same local time (Take-off 3 am)
9 hour flight (C-130)
Same latitude (20°S)
5/6 flights in total
Cooperative sampling with 146/G-1
Encounters with RHB



Flight-plan for *POC-Drift* missions



REx Timeline

Legend

Flights

T: Test Flight
 D: C-130 day flight
 N: C-130 night flight
 X: day flight (G-1, 146, T-O)

Ship activities

Eddy Survey 1: westward from 75-85 W
 IMET Buoy: stationary at 20 S, 85 W
 Eddy Survey 2: eastward from 85-75 W
 SHOA Buoy: stationary at 20 S, 75 W
 F: transit to/from Arica
 In Port: Arica
 Eddy Survey 3: stationary near 20 S, 75-80 W

PHASE 1

Date Oct	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3
RHB Status	Eddy Survey 1				IMET Buoy						Eddy Survey 2			SHOA Buoy					F	
C-130 Status	T	T	T		D		D		D	-	-	N		N		N		N	-	D
G-1 Status	T	T	T	X		X		X				X		X		X		X		X
146 Status																				
T-O Status																				

PHASE 2

Date Nov	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
RHB Status	In Port			F	Eddy survey 3																				
C-130 Status					D		D	-	-	N		N													
G-1 Status				X		X		X				X		X											
146 Status																									
T-O Status																									

End of aircraft operations

Cross-platform sampling plans

VOCALS

VAMOS Ocean-Cloud-Atmosphere-Land Study



WCRP/CLIVAR/VAMOS/GEWEX Programme



Cross-platform sampling plans

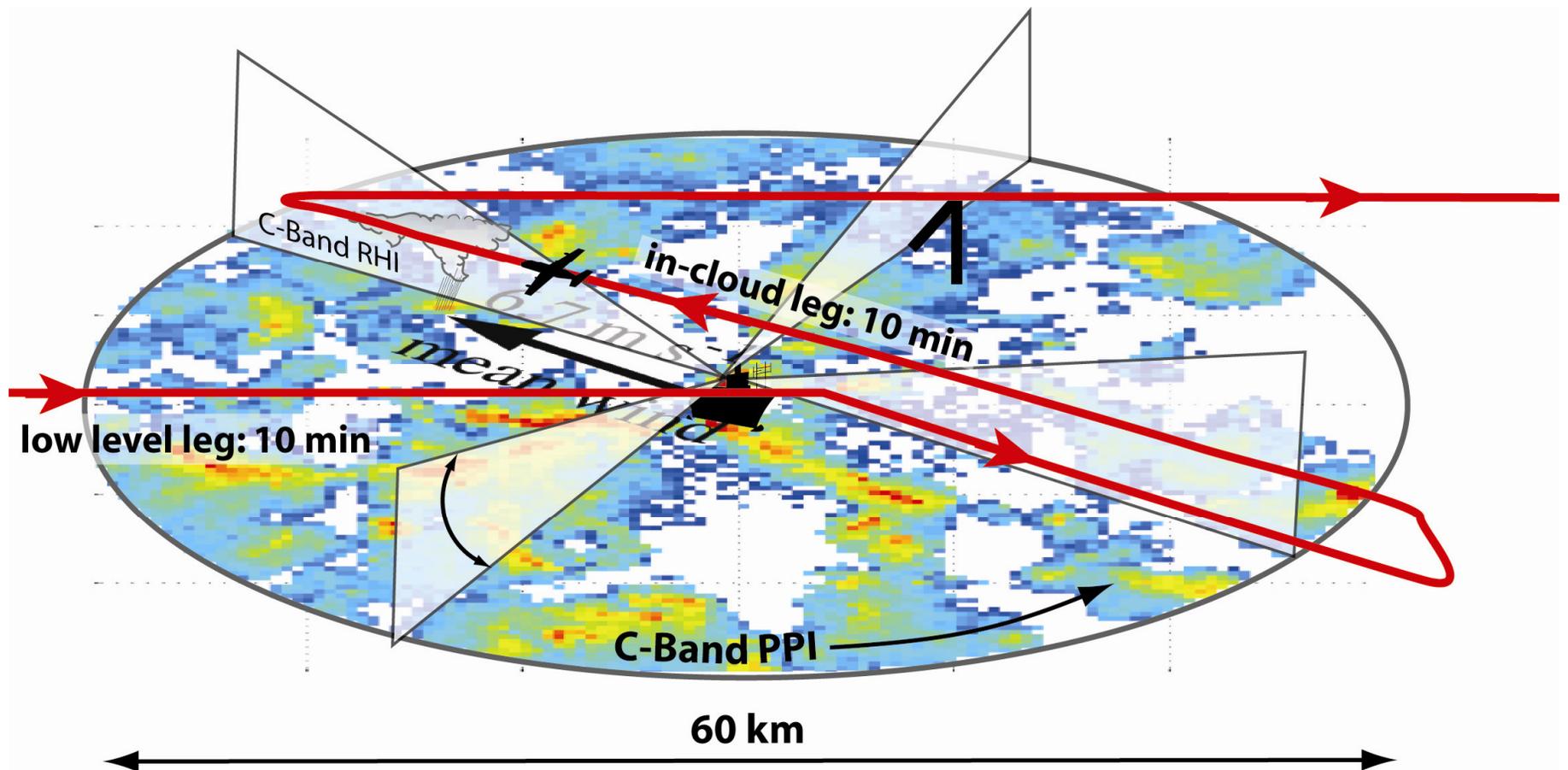
- Intercomparisons
- C-130/RHB
- Cross-Sections (C-130/146/G-1)
- POC drift Lagrangian
- Polluted Lagrangian
- Others?

Intercomparisons

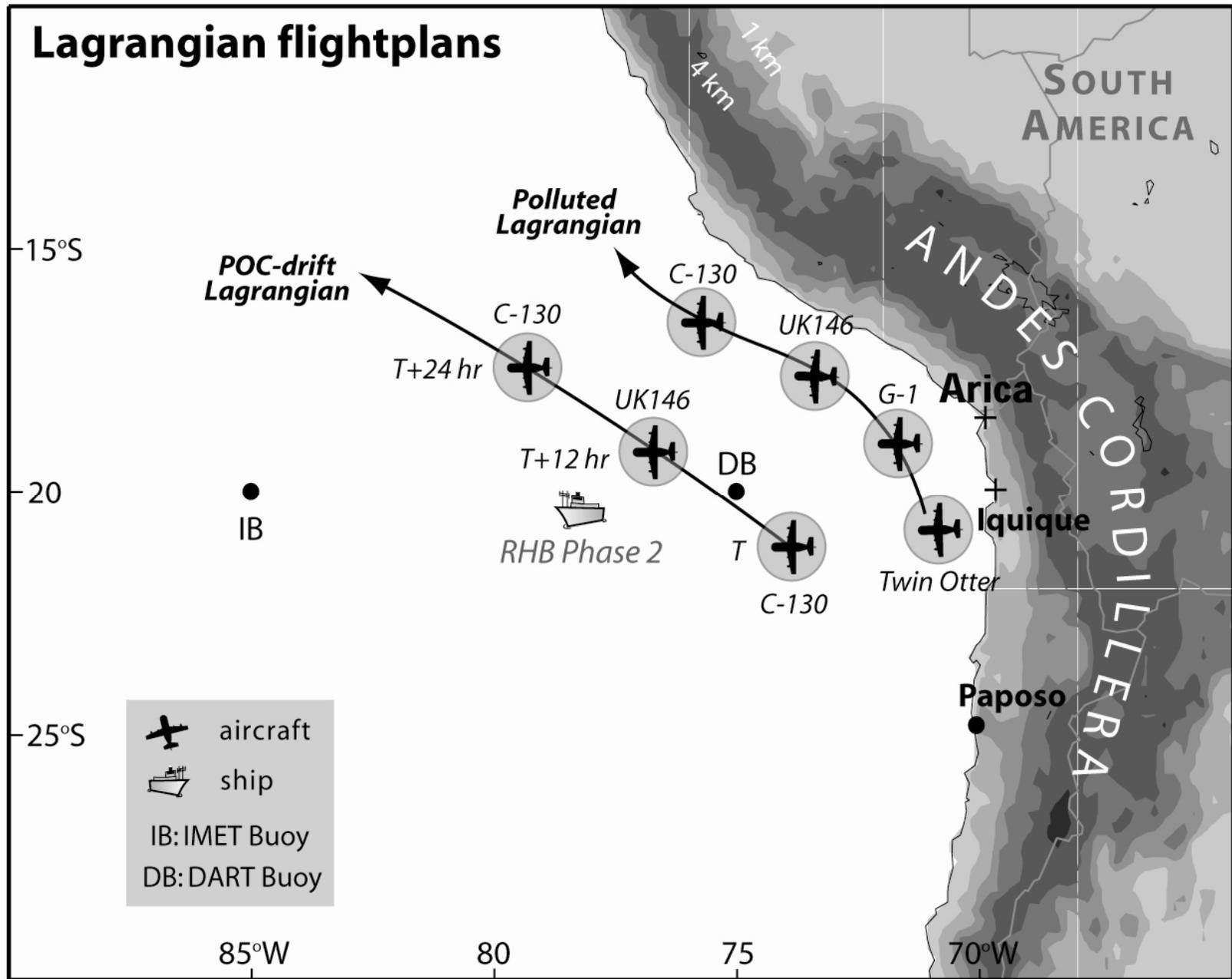
- Test flight period (~Oct 15-20th)
 - Clear air side-by-side aircraft comparisons
 - Aerosol size distribution/composition
 - Cloudy sky comparisons (sequential at same altitude/track)
 - Cloud/drizzle microphysical probes
 - Liquid water probes
 - Aircraft/RHB
 - Aerosol size distribution/composition
 - DMS

C-130/RHB Sampling

- Brief encounters of C-130 with RHB during cross sectional flights would incorporate an additional 30 minutes cosampling



Lagrangian flightplans



Operations meetings/Flight Planning

VOCALS

VAMOS Ocean-Cloud-Atmosphere-Land Study



WCRP/CLIVAR/VAMOS/GEWEX Programme



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PHASE 1

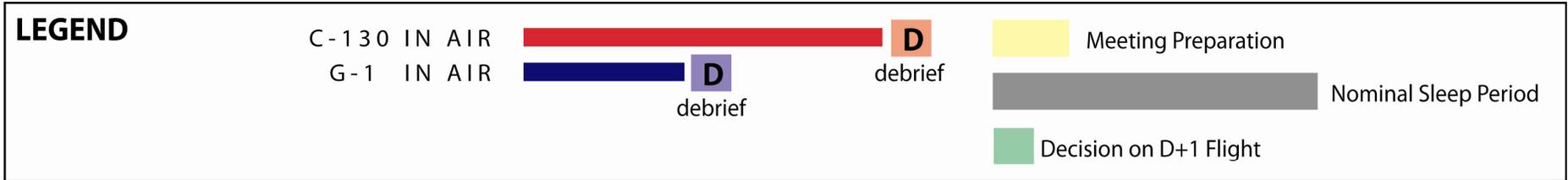
<i>Date Oct</i>	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3
<i>RHB Status</i>	Eddy Survey 1				IMET Buoy						Eddy Survey 2			SHOA Buoy				F		
<i>C-130 Status</i>	T	T	T		D		D		D	-	-	N		N		N		N	-	D
<i>G-1 Status</i>	T	T	T	X		X		X				X		X		X		X		X
<i>146 Status</i>																				
<i>T-O Status</i>																				

PHASE 2

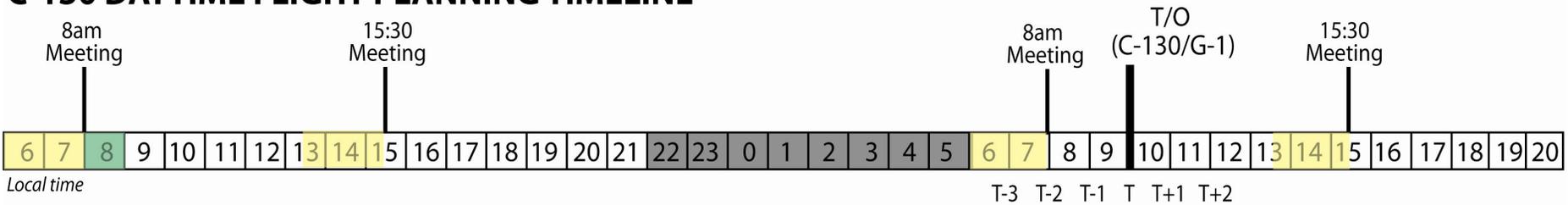
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<i>RHB Status</i>	In Port			F	Eddy survey 3																				
<i>C-130 Status</i>					D		D	-	-	N		N													
<i>G-1 Status</i>				X		X		X				X		X											
<i>146 Status</i>																									
<i>T-O Status</i>																									

End of aircraft operations

Day-to-day planning strawman



C-130 DAYTIME FLIGHT PLANNING TIMELINE



C-130 NIGHTTIME FLIGHT PLANNING TIMELINE

