VOCALS
Chilean Coastal Component

Scientific Program Overview / Field Program Strategy

.

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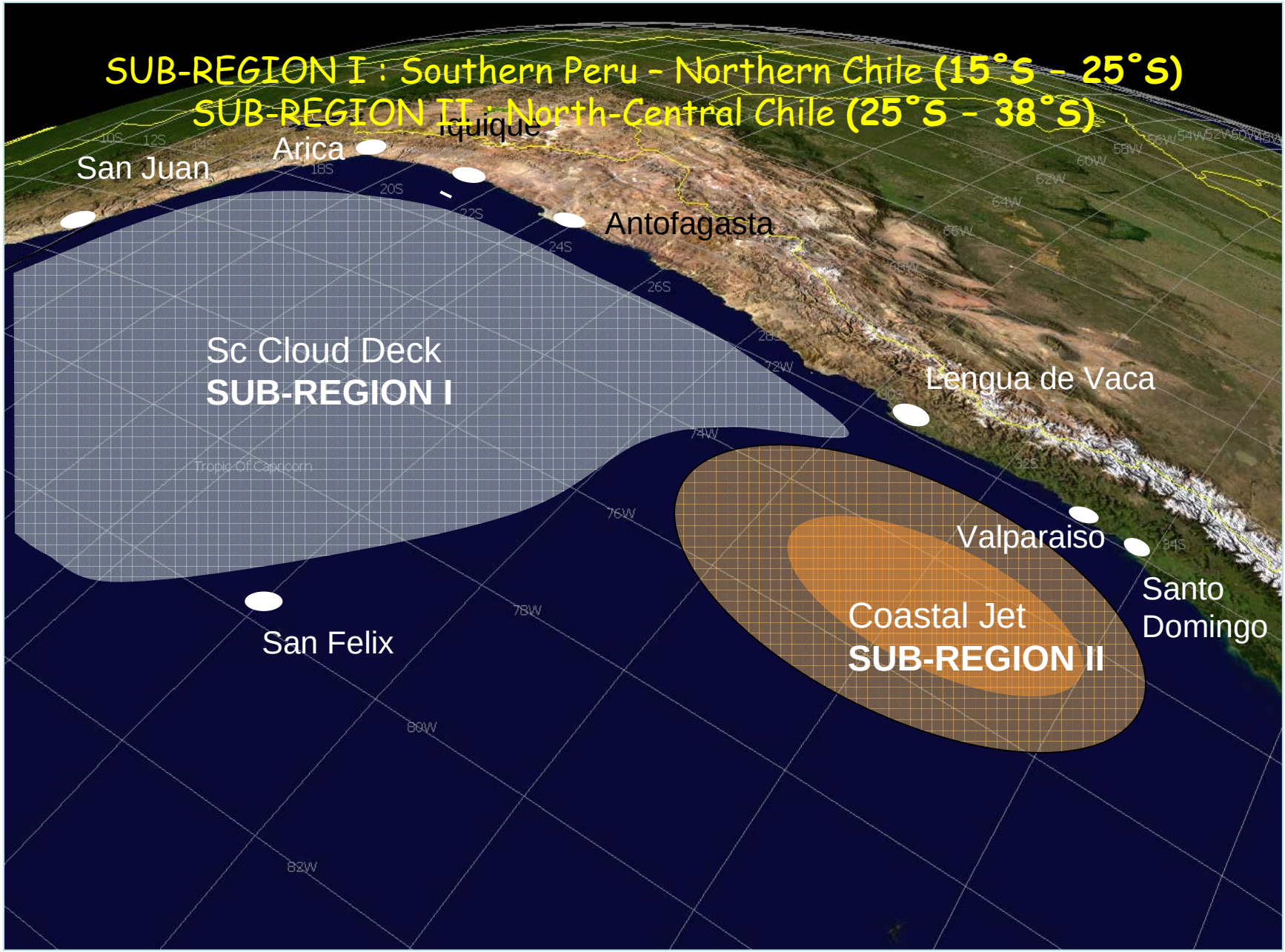
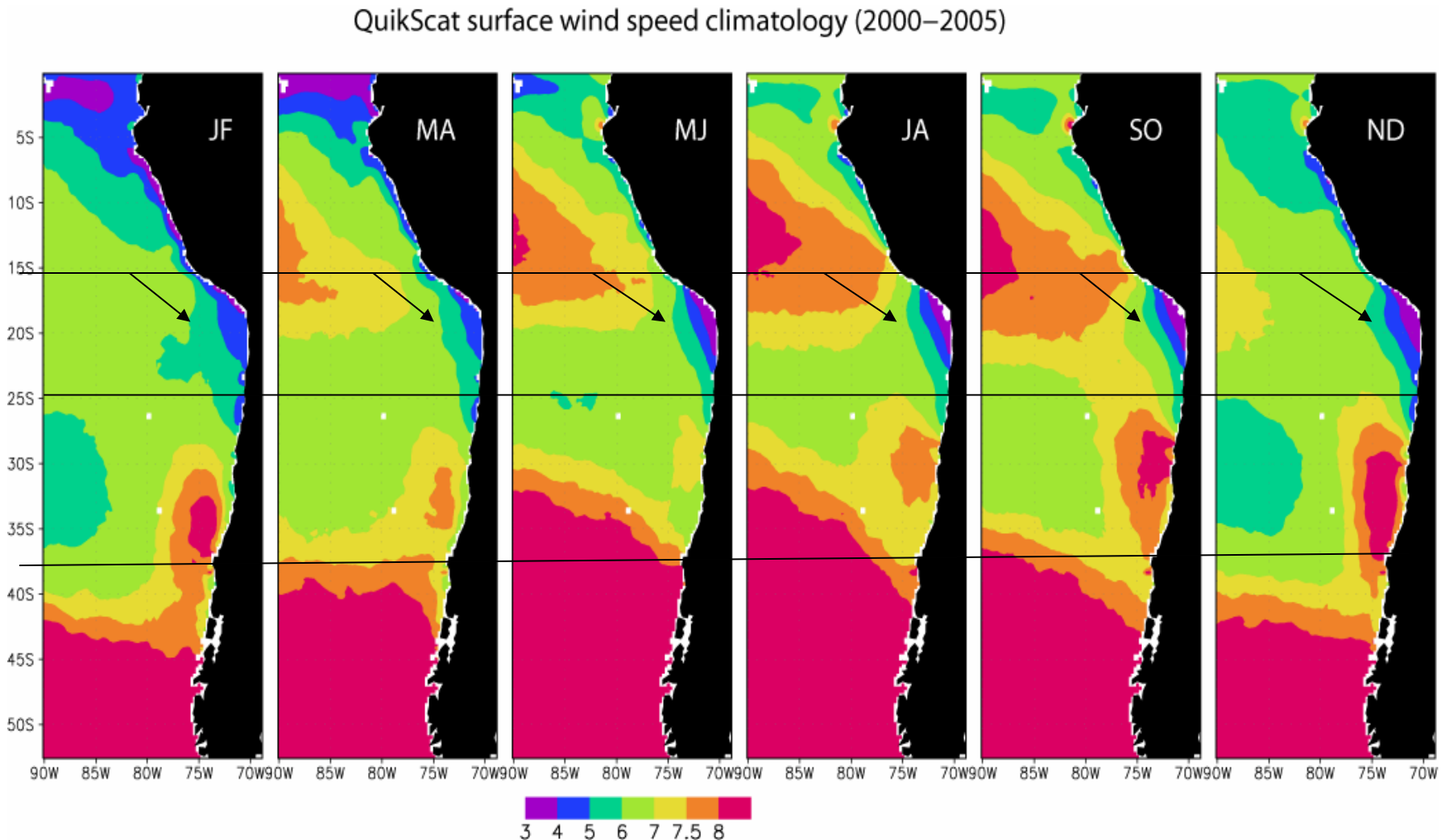

SUB-REGION I : Southern Peru - Northern Chile (15°S - 25°S)
SUB-REGION II : North-Central Chile (25°S - 38°S)
San Juan
Arica
Iquique
Antofagasta
Lengua de Vaca
Valparaiso
Santo Domingo
San Felix
Sc Cloud Deck
SUB-REGION I
Coastal Jet
SUB-REGION II
Tropic Of Capricorn
10S
12S
14S
18S
20S
22S
24S
26S
28S
30S
32S
34S
52W
54W
56W
58W
60W
62W
64W
66W
68W
70W
72W
74W
76W
78W
80W
82W

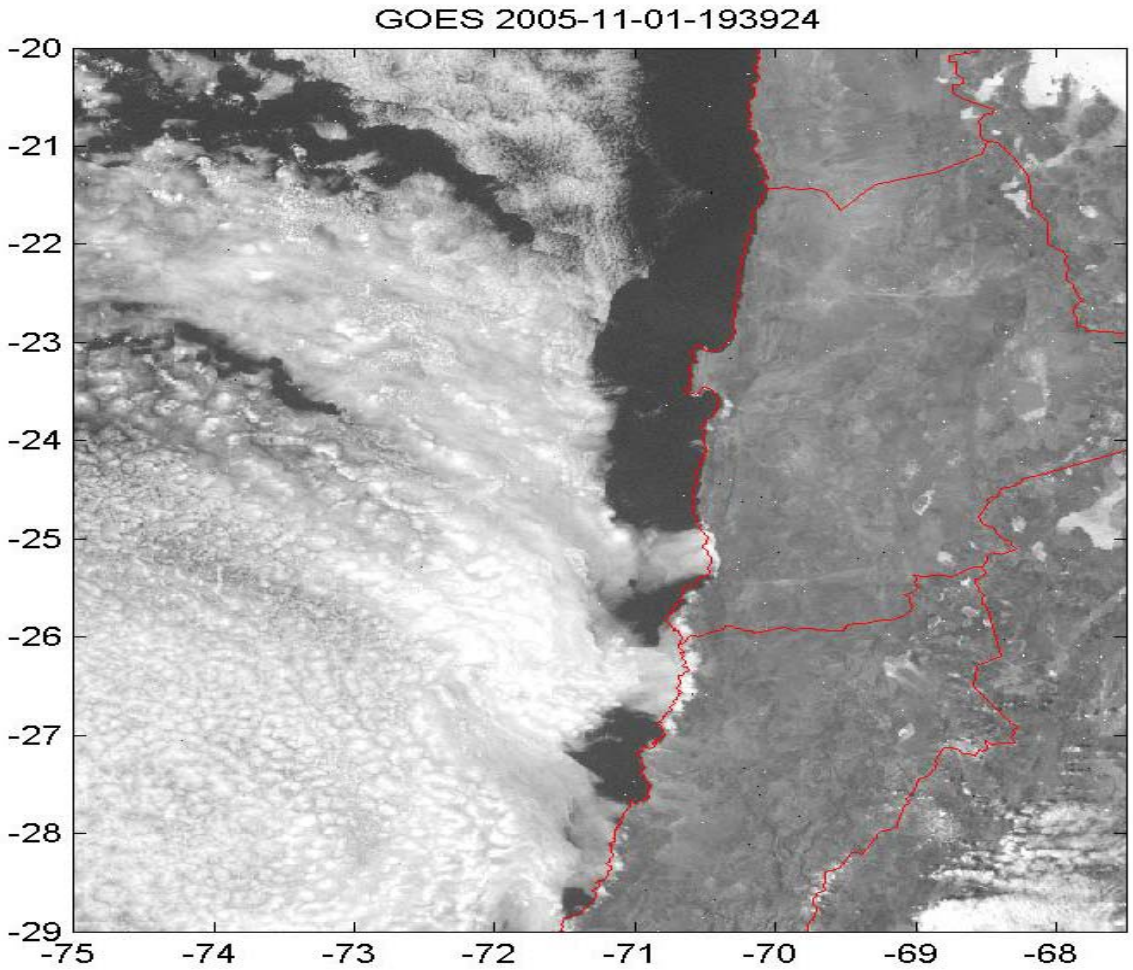
Regional Coastal Component

Climatic/Geographic Features	SUB-REGION I	SUB-REGION II
• Latitudinal span:	• **15°S-25°S**	**25°S-38°S**
• Orographic features: Andes/coast	• high /range-cliff	lower/valleys
• Sc cloud deck (austral spring):	• diurnal cycle	synoptic cycle
• VOCALS REx area:	• yes	south of it
• AMBL circulation: radiative forcing/diurnal cycles:	• strong	moderate
• Afternoon coastal clearing:	• strong	moderate
• Offshore winds/diurnal cycle signal:	• weak/strong	strong/weak
• AMBL circulation: Synoptic-scale forcing/weekly cycles:	• weak	moderate
• Coastal LLJ system:	• no	yes
• Influence of equatorially-sourced CTWs in the ocean:	• strong	moderate
• Ocean eddy kinetic energy generation:	• weak	strong
• Aerosol sources Volc/Smelt/DMS/M-City/dust/seasalt	• y/y/y/n/n/n	n/n/y/y/y/y

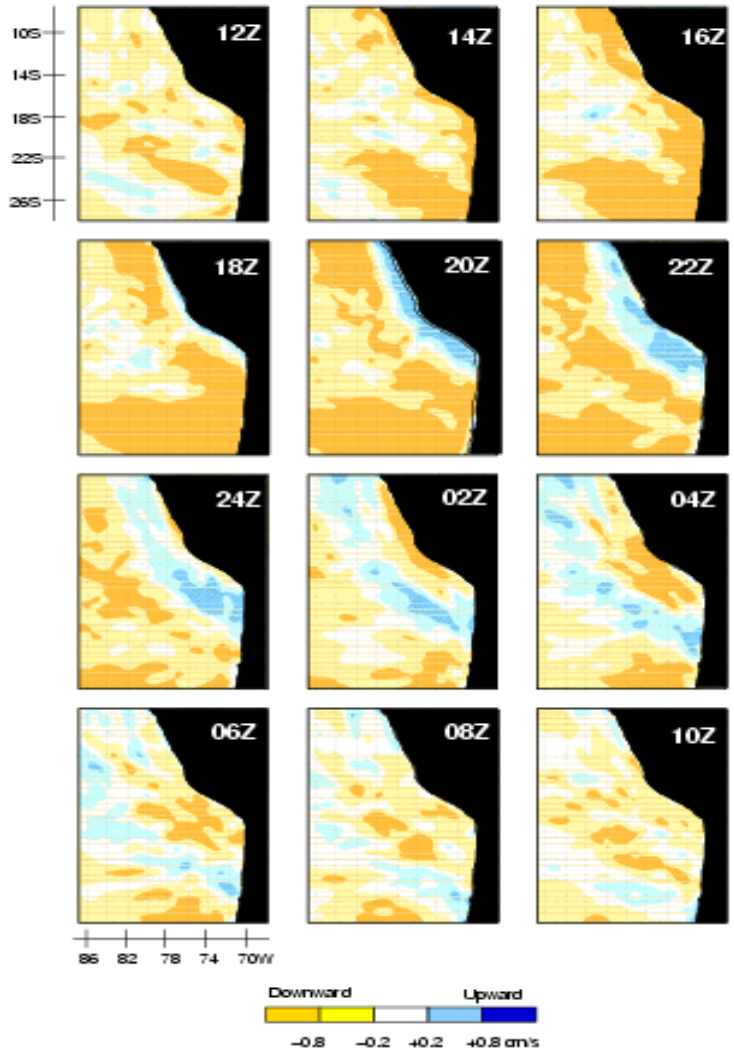
SUB-REGION I : Near-stagnation around the coastal bend at 18°S



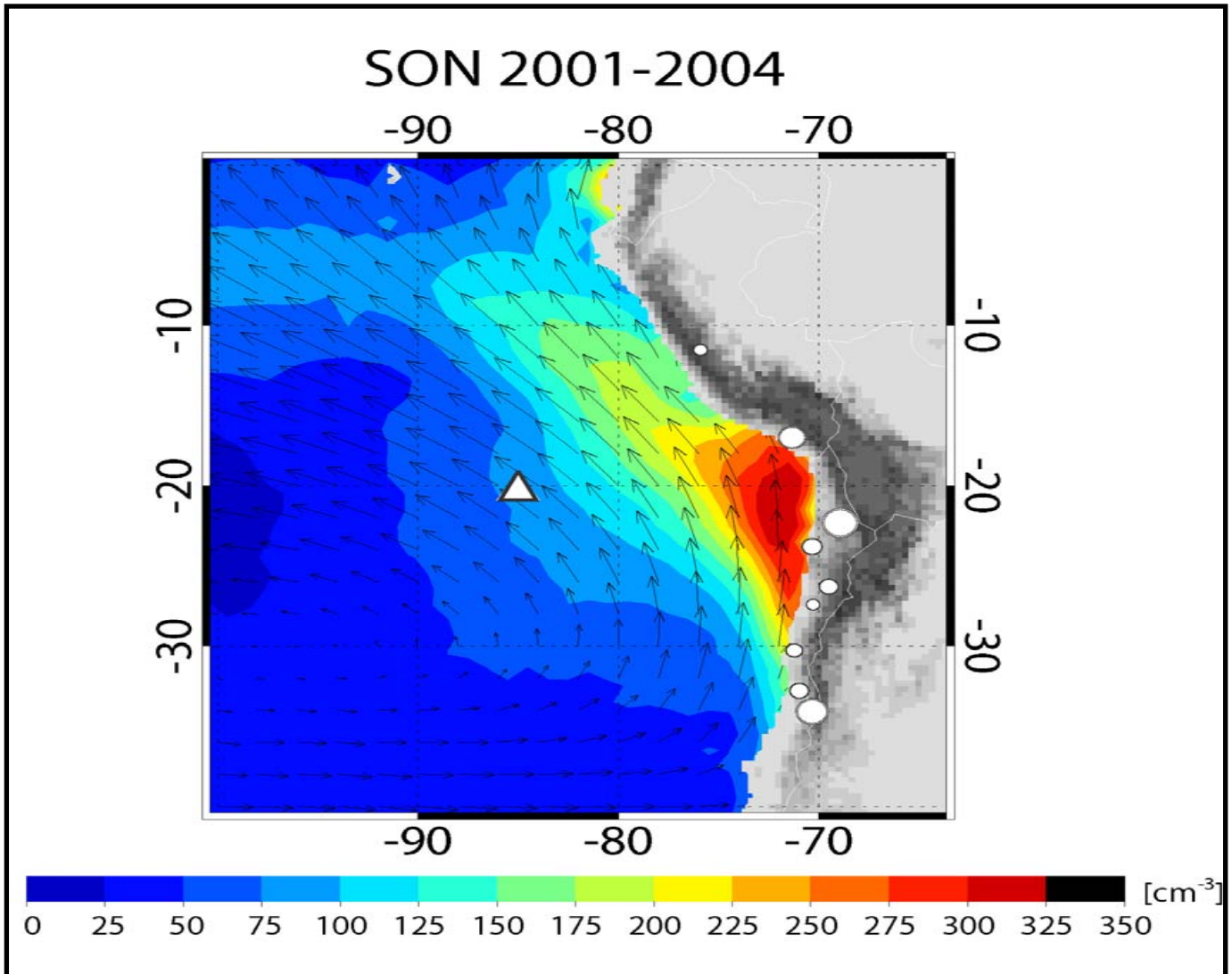
SUB-REGION I : Strong afternoon coastal subsidence enhancement and coastal clearing



SUB-REGION I : The *upsidence* wave off Southern Peru

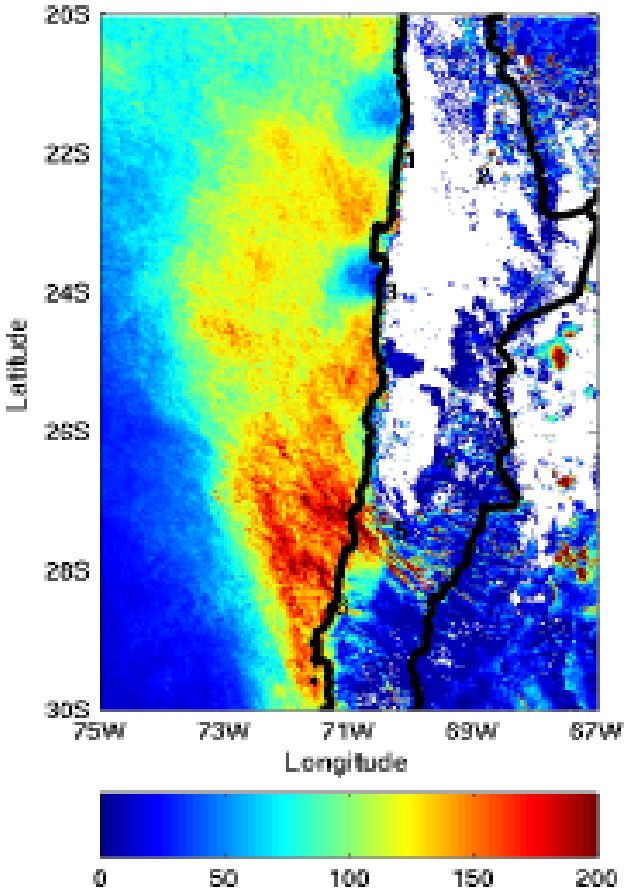


SUB-REGION I : Climatological high cloud-droplet number concentration

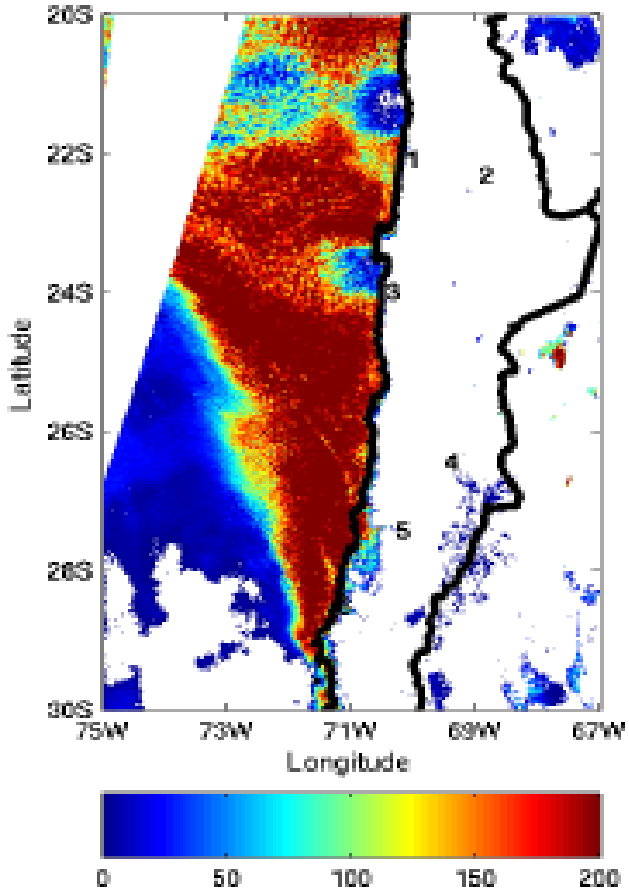


SUB-REGION I : Episode in cloud droplet number concentration during a strong easterly (SE) wind event

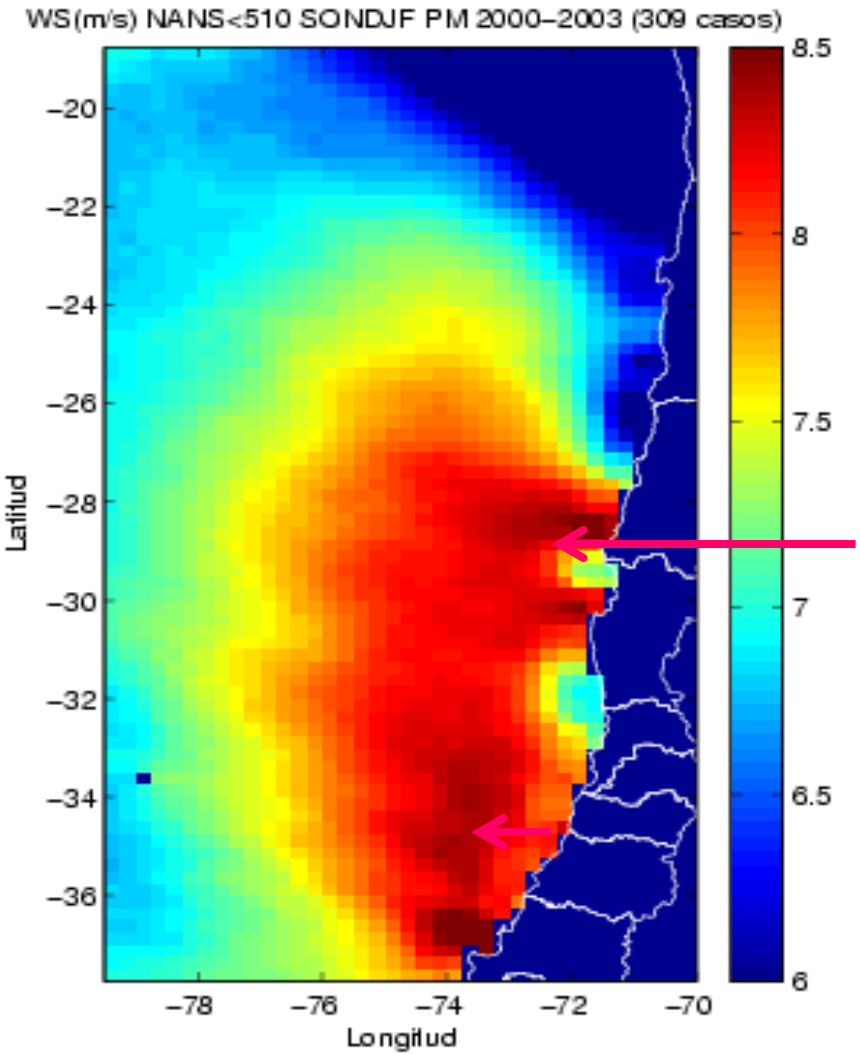
average

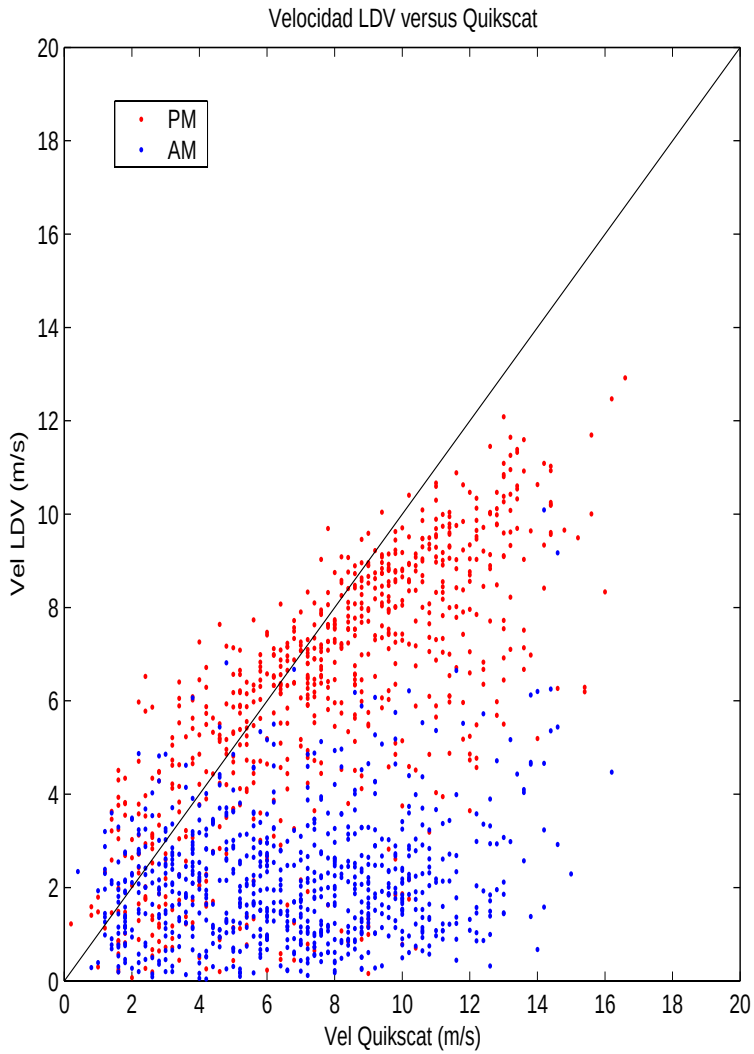


event

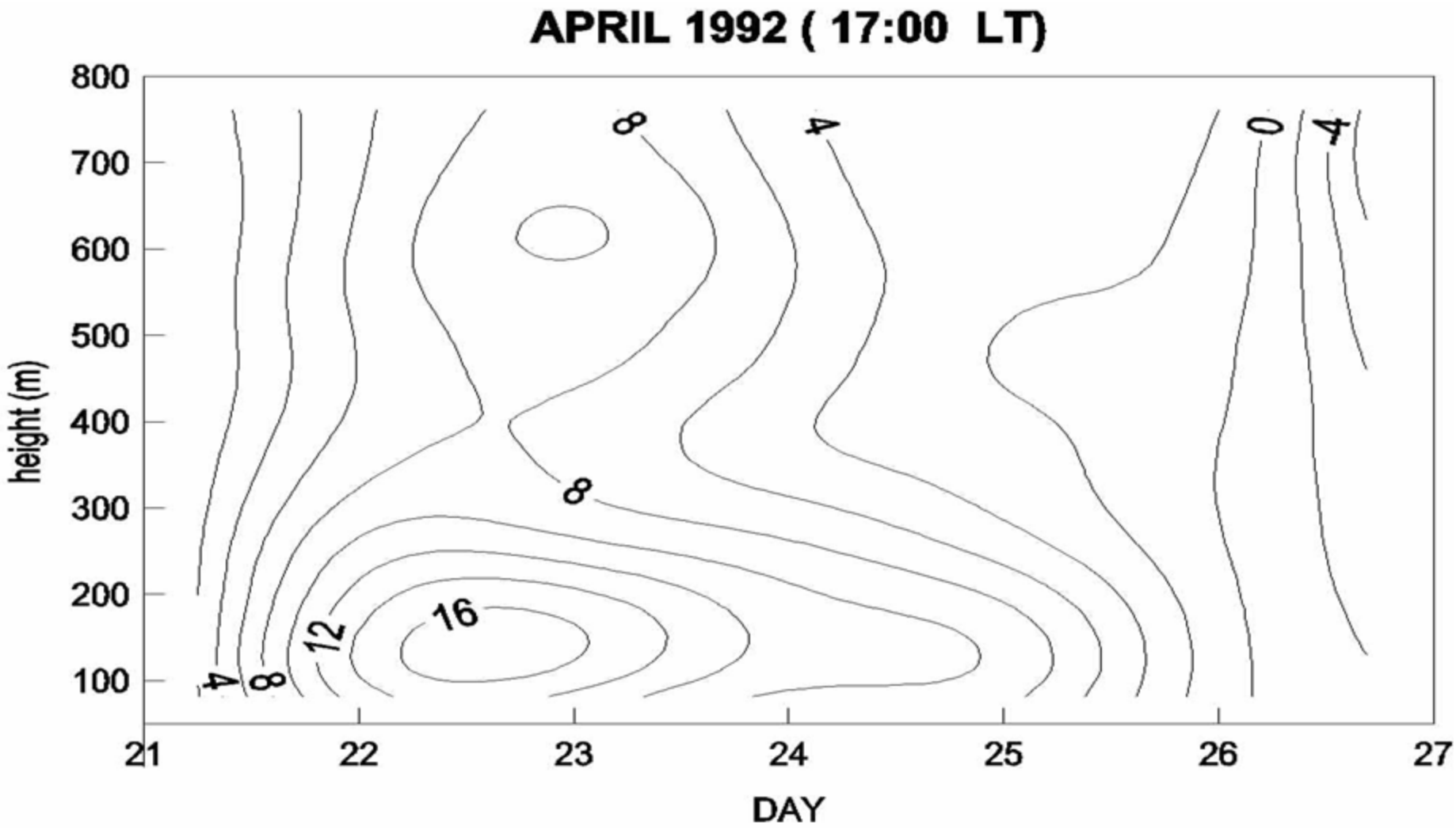


SUB-REGION II : Climatology of the coastal low-level jet system and comparison with coastal winds

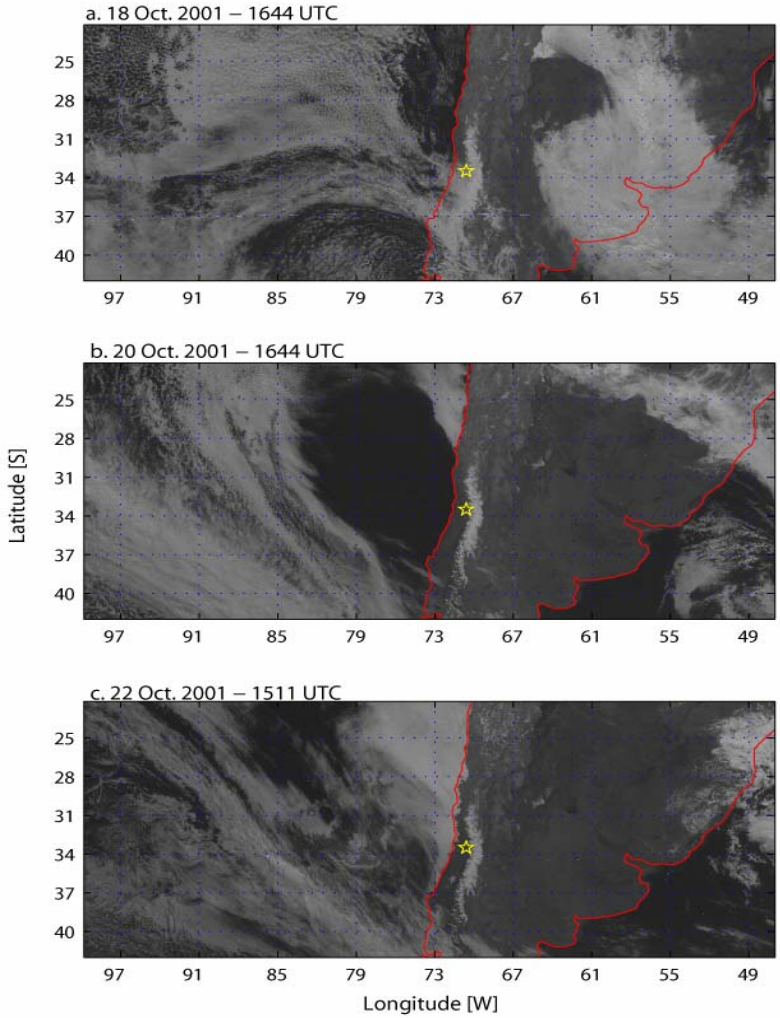




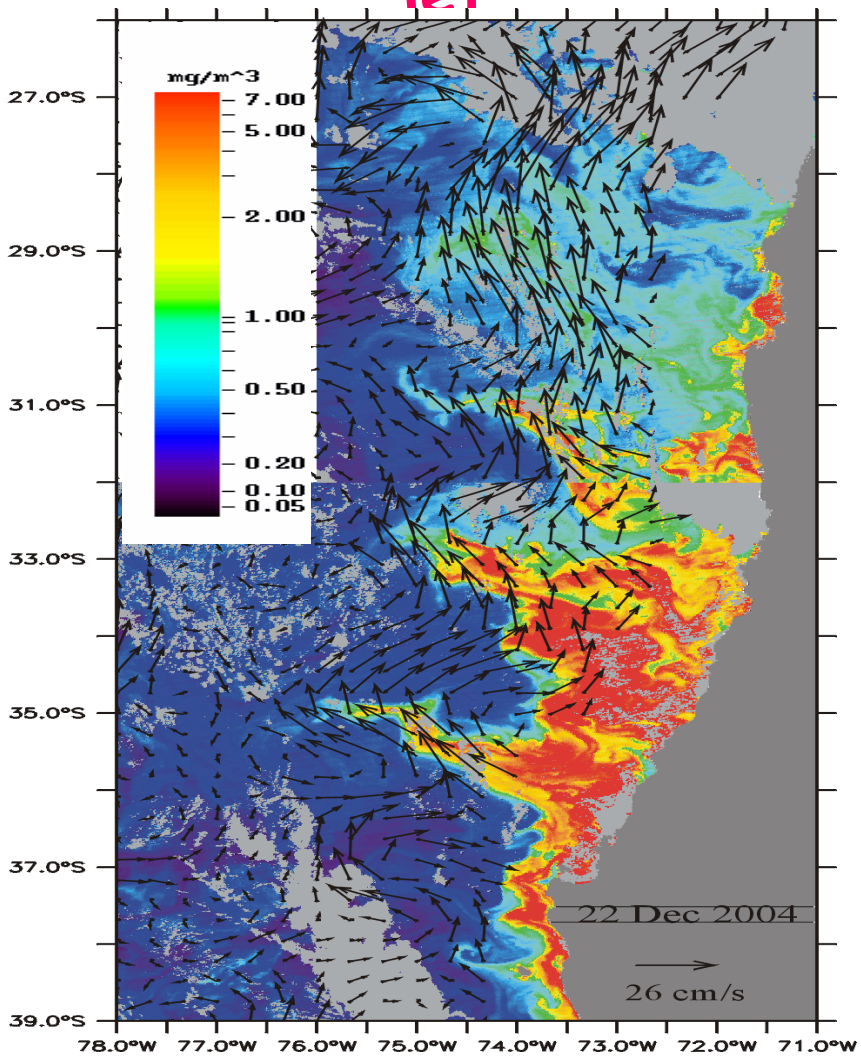
SUB-REGION II : Vertical profiles of the meridional wind component at Point Lengua de Vaca during a southerly wind event



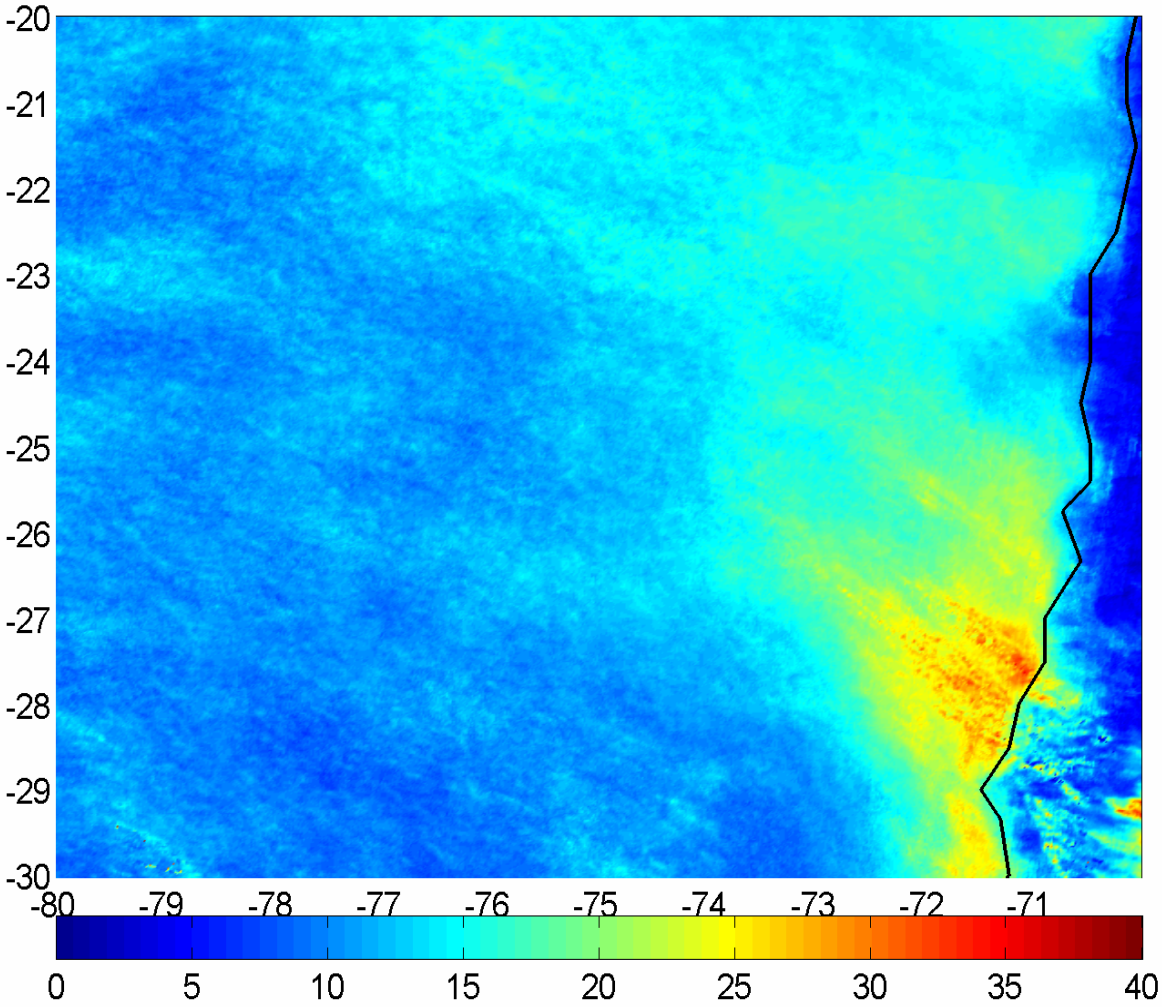
SUB-REGION II : Coastal clearing episode asocciated with a coastal low-level jet event.

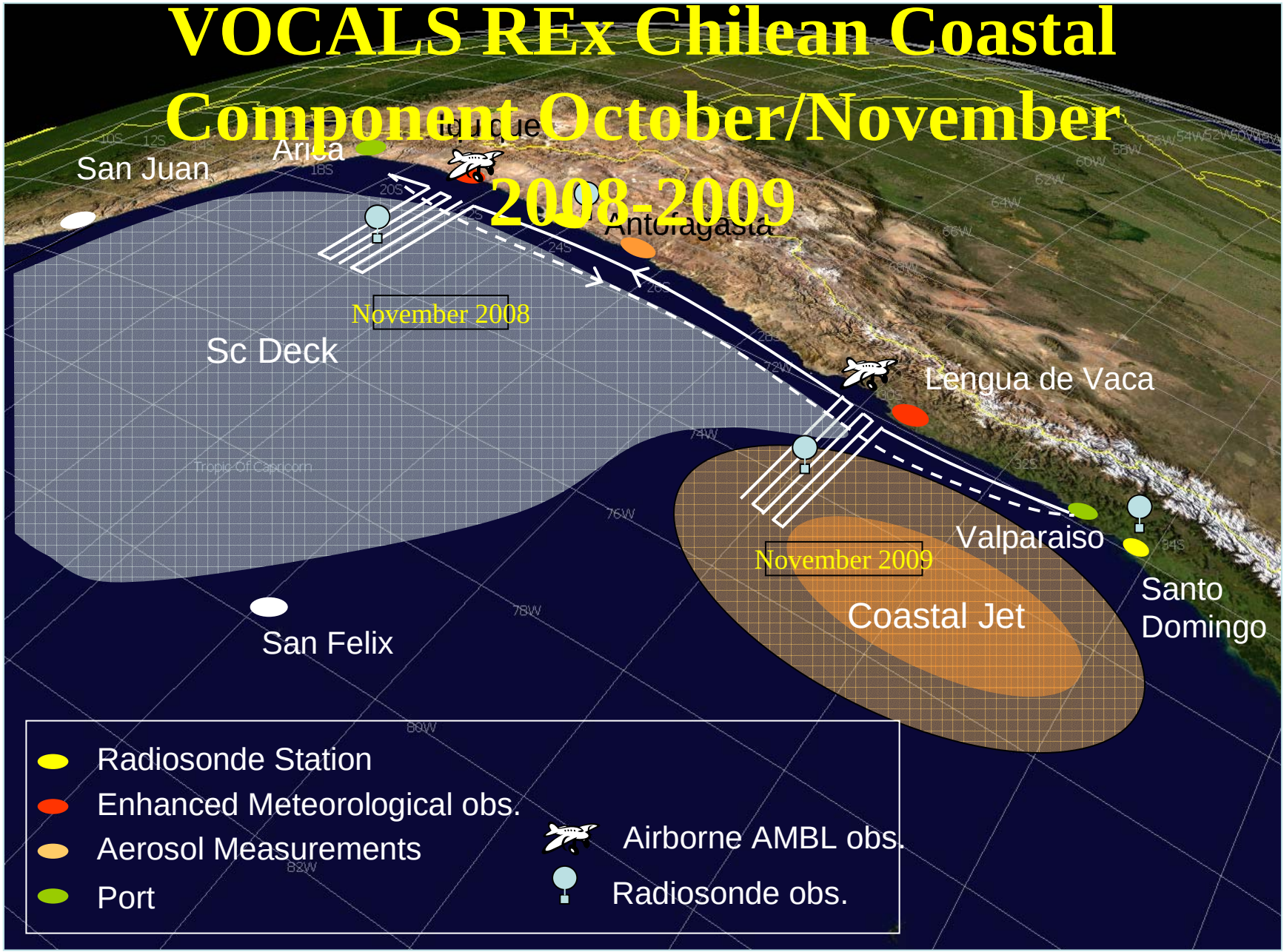


SUB-REGION II : Ocean meandering jet co-located with the climatological coastal low-level jet



Sub-region II: Dust and biogenic aerosols downwind from 30°S




VOCALS REx Chilean Coastal Component October/November 2008-2009
San Juan
Arica
Iquique
Antofagasta
November 2008
Sc Deck
Lengua de Vaca
Valparaiso
November 2009
Coastal Jet
Santo Domingo
San Felix
Tropic Of Capricorn
Radiosonde Station
Enhanced Meteorological obs.
Aerosol Measurements
Port
Airborne AMBL obs.
Radiosonde obs.

FIELD PROGRAM HIGHLIGHTS

Cruises: * 10-12 day radiator patterns : Five ~200 km E-W legs centered at 21°S (October 2008) and 30°S (October 2009). Radiosondes at 06, 12, 18, 24 UTC at selected days, ceilometer, AWS.

Flights: * 21°S (November 2008): Two flights/day in ~50-60 km (upwelling front) E-W legs within and above the AMBL at the extremes of the diurnal cycle (8 AM, 5 PM). Alongshore flights Iquique-Arica

* 30°S (November 2009). One PM flight in ~100-150 km E-W legs within and above the AMBL at the extremes of the quasi-weekly cycle (clear skies/peak of the LLJ; overcast/ relaxed winds).

Enhanced sfc. observations: Radiosondes at 18 and 24 UTC (Cerro Moreno & Sto. Domingo); AWS, wind profiler & ceilometer at 21°S Diego Aracena airport (October 2008), and at 30°S Point Lengua de Vaca (October 2009).

SUMMARY OF REQUIRED INSTRUMENTATION

Platform	Instrument	Available
Research Vessel	CTD-O	YES
	ADCP	?
	Ship-mounted ADCP	NO
	XBTs	YES
	Surface drifters	YES
	Radiosonde receiver & expendables	YES
	AWS	YES
	Ceilometer	YES
Aircraft	PRT (SST)	NO
	Wind, temperature,moisture, pressure	NO
	Aerosol/cloud instrumentation	?
Coastal Stations	AWS	YES
	Micro-barograph	YES
	Ceilometer	NO
	Energy-budget system	YES
	Wind/temp. profiler	NO
	Pibal system	YES
	Standard radiosonde network (additional expendables)	YES