ALINE/LALINET network status

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OUTLINE

- NETWORK ORGANIZATION
- INSTRUMENTAL INVENTORY
- MEASUREMENT AND PROTOCOL IMPLEMENTATION
- FUTURE STATIONS
- CALBUCO EVENT
- FINAL REMARKS

NETWORK ORGANIZATION

LALINET
Latin American Lidar Network

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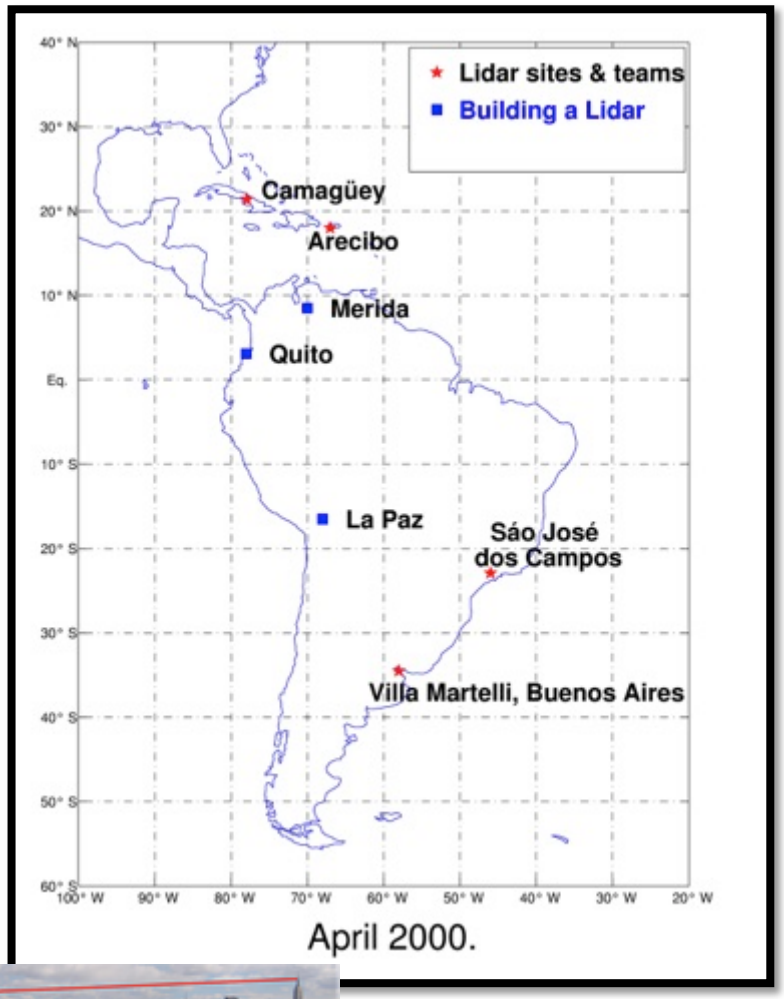
LALINET

Latin American Lidar Network

NETWORK ORGANIZATION



WLMLA (edition)	Local	Atendees				Contributions	
		Latin America	*ROW*	*Total*	*ST*	*Poster*	*Oral*
2001	Camagüey, Cuba	9	14	23	5	5	14
2003	Camagüey, Cuba	13	12	25	13	2	25
2005	Popayán, Colombia	25	6	52	26	6	25
2007	Ilha Bela Brazil	30	12	42	20	16	29
2009	Buenos Aires, Argentina	42	23	65	21	31	31
2011	La Paz, Bolivia	52	12	64	32	15	21
2013	Pucón, Chile	35	11	46	19	24	20
2015	Coco Tryp Cuba	29	12	41	15	26	19
2016(7)	Colombia, Medellin						

LALINET

Latin American Lidar Network

NETWORK ORGANIZATION

Lidar system	City/Country	Coordinates
ba-BA-AR	Bariloche / Argentina	41.15ºS 71.16ºW
not applicable	Camagüey / Cuba	21.4ºN 77.8ºW
co-CEFOP-UDEC	Concepción/Chile	36.84ºS 73.02ºW
cr-CR-AR	Comodoro Rivadavia/ Argentina	43.24ºS 65.33ºW
ma-MA	Manaus / Brazil	2.89ºS 59.97ºW
me-LOA-UNAL	Medellin/ Colombia	6.26ºN 75.58ºW
ne-NE-AR	Neuquén/ Argentina	38.59ºS 68.15ºW
pa-LIPAZ	La Paz / Bolivia	16.54ºS 68.07ºW
sp-CLA-IPEN-MSP-LIDAR-I	São Paulo / Brazil	23.56ºS 46.74ºW
sp-CLA-IPEN-II	São Paulo / Brazil	Variable

Main

LALINET or ALINE

The Latin America Lidar Network (LALINET a.k.a ALINE) is a Latin American coordinated lidar network, established in 2001, measuring aerosol backscatter coefficient and aerosol extinction profiles for climatological studies of the aerosol distribution over Latin America, as well as other atmospheric species such as ozone and water vapor. This federative lidar network aims to establish a consistent and statistically sound database for enhancement of the understanding of the aerosol distribution over the continent and its direct and indirect influence on climate.

LALINET is a contributing network to the GAW Programme.

View Larger Map Download Google Earth KML KMZ. Last updated on 9/Nov/2012.

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LALINET

Latin American Lidar Network

NETWORK ORGANIZATION

LALINET

Latin American Lidar Network

Aline

Commitment

DOWNLOAD ORIGINAL DOCUMENT HERE

LETTER OF AGREEMENT

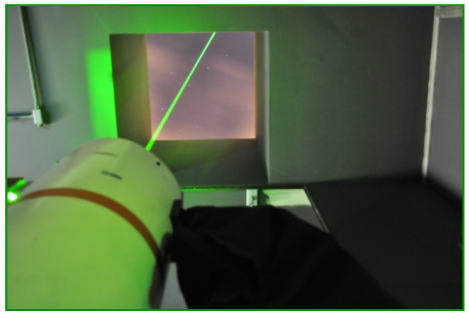
between

Latin America Lidar Network
hereinafter referred to as "ALINE"

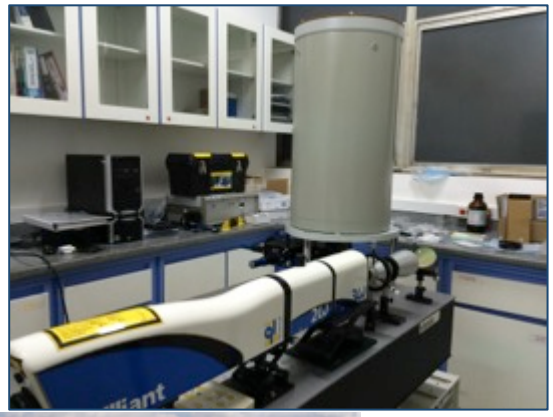
and

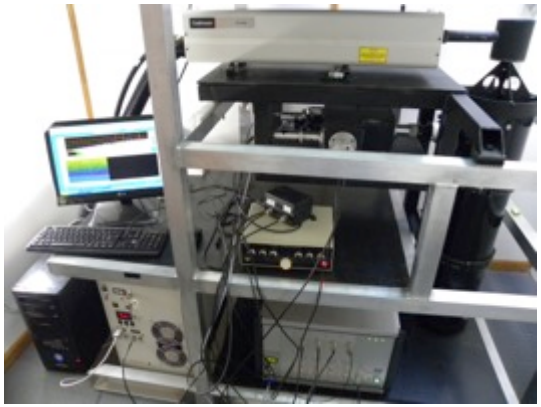
World Meteorological Organization
Global Atmosphere Watch Programme
hereinafter referred to as "WMO/GAW"
hereinafter jointly referred to as the "Parties"

related to
the recognition of ALINE as a contributing network for the World Meteorological Organization Global Atmosphere Watch Programme



INSTRUMENTAL INVENTORY





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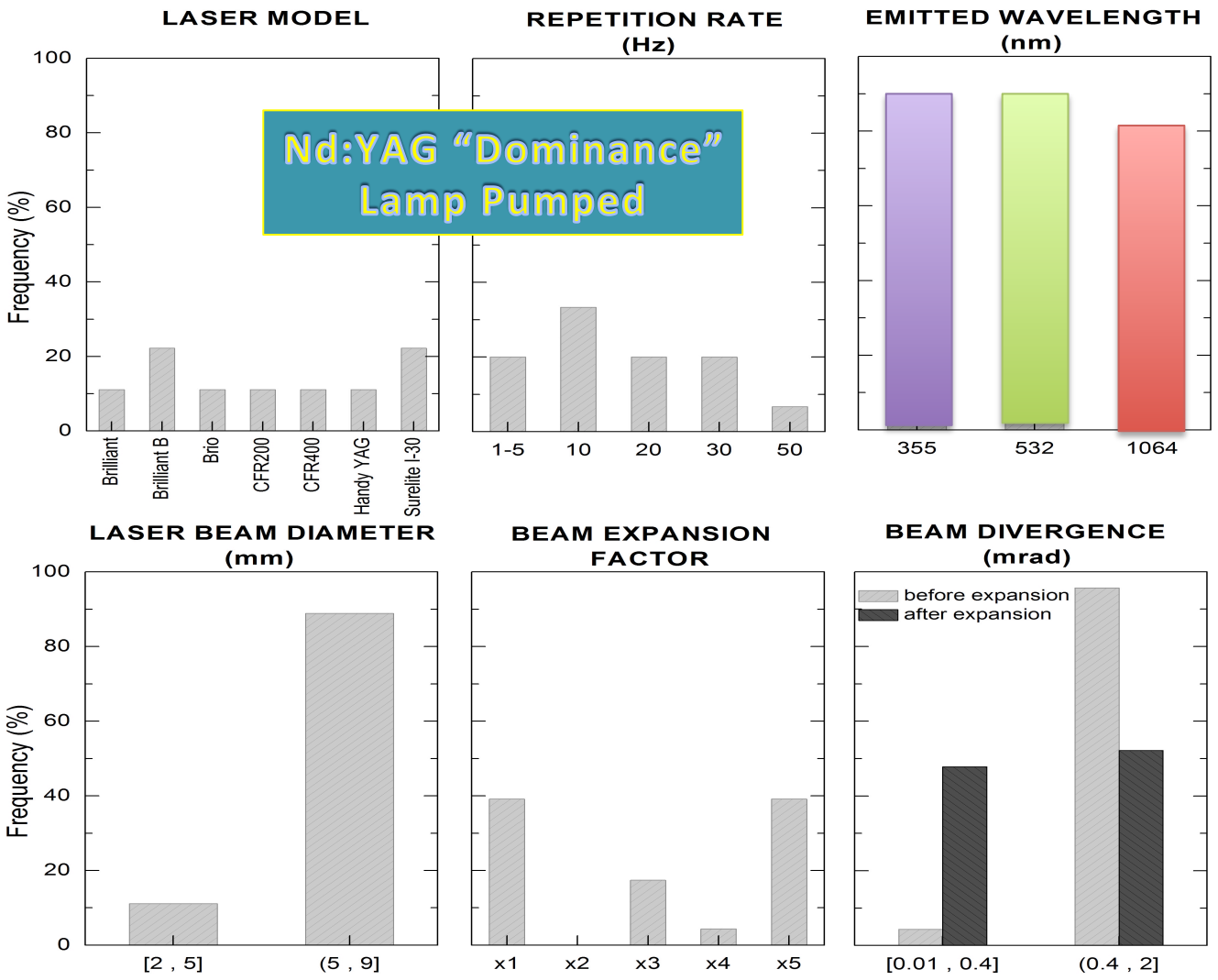
INSTRUMENTAL INVENTORY

Information to be fulfilled for each instrument (~80 different entries):

- **station information**
- **mode of operation**
- **emitter**
- **receiver optics**
- **wavelength detection**
- **data acquisition**
- **auxiliary information**

PUBLISHED : SPIE REMOTE SENSING 2014(Amsterdam) – "Towards an instrumental framework of LALINET" Guerrero-Rascado *et al*.

INSTRUMENTAL INVENTORY



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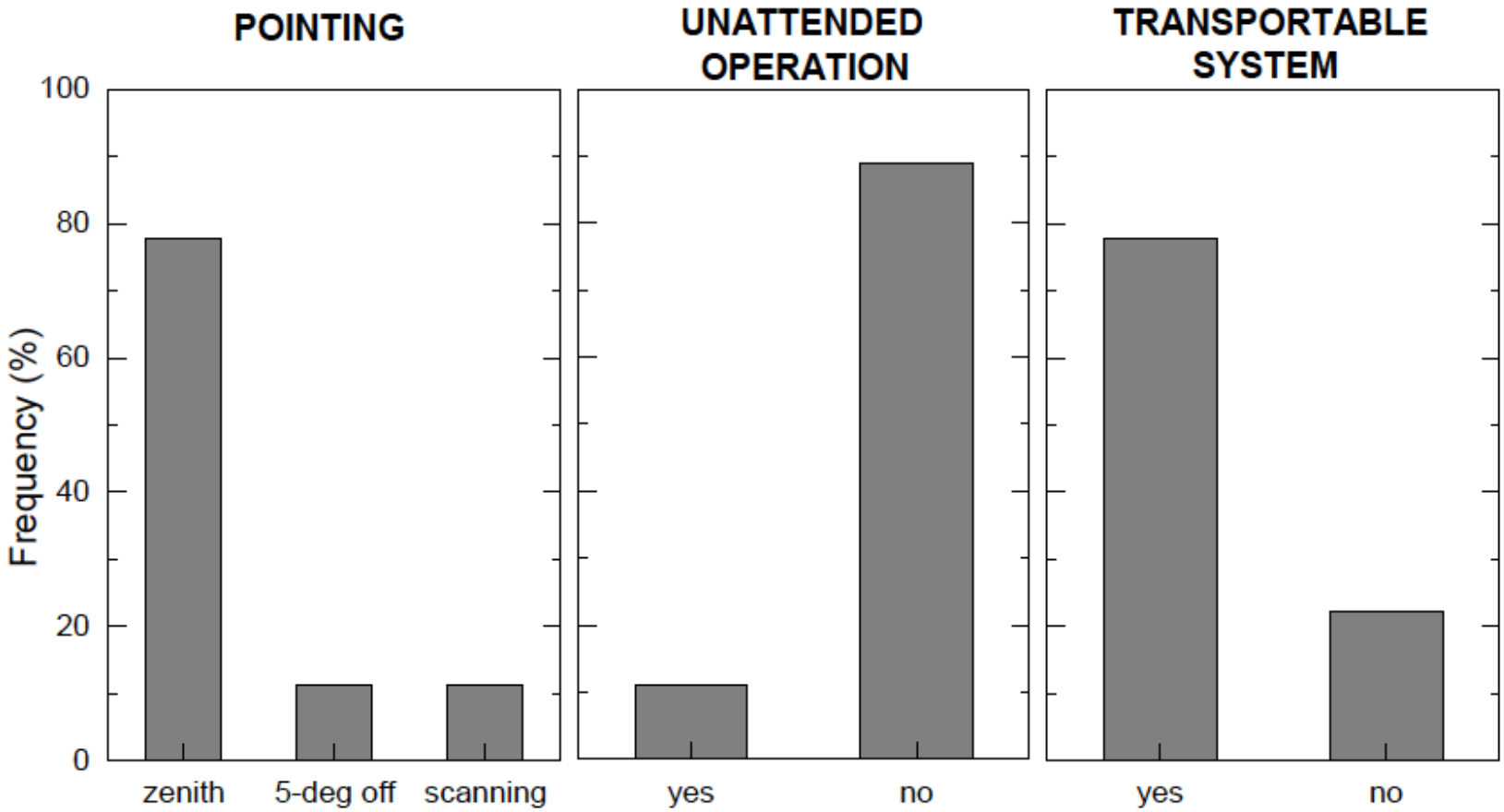
INSTRUMENTAL INVENTORY



Needs improvement

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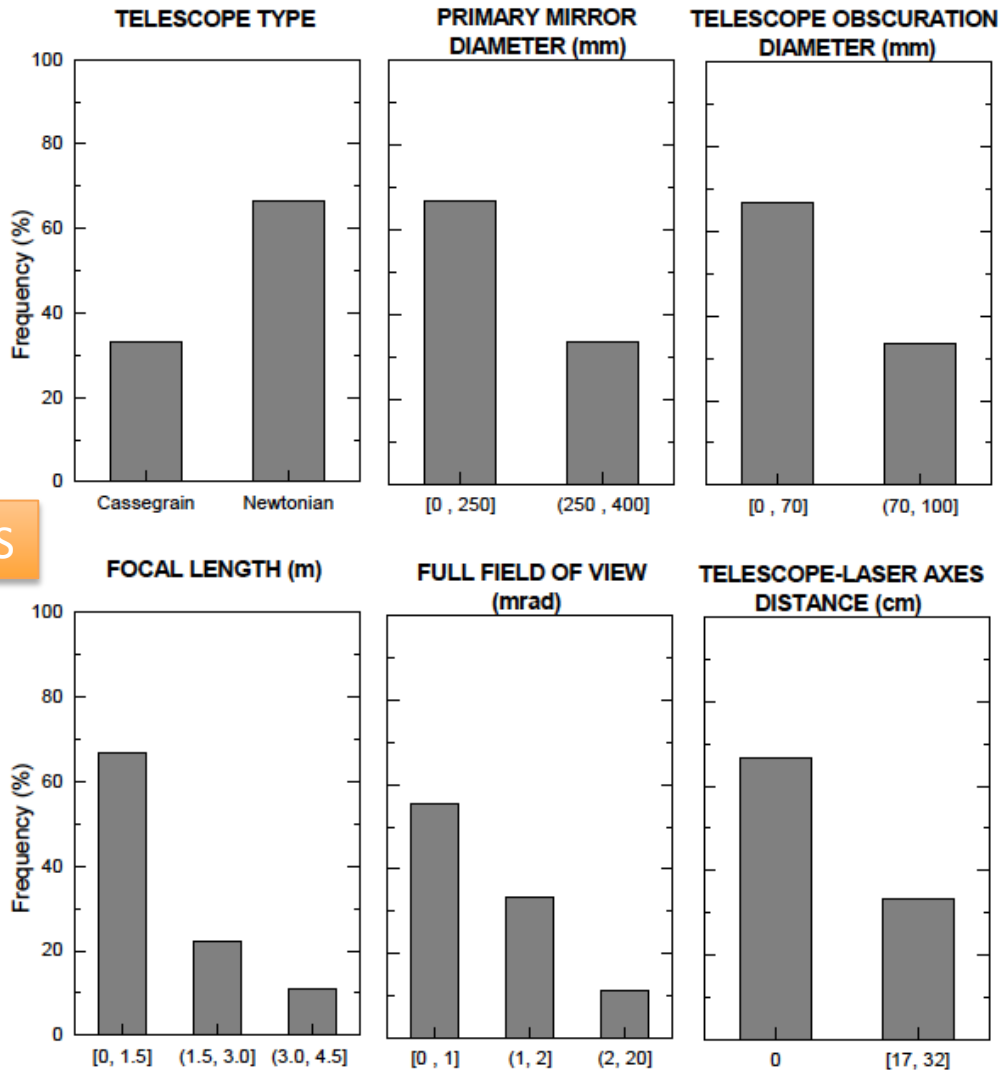
INSTRUMENTAL INVENTORY

COMPACT SYSTEMS



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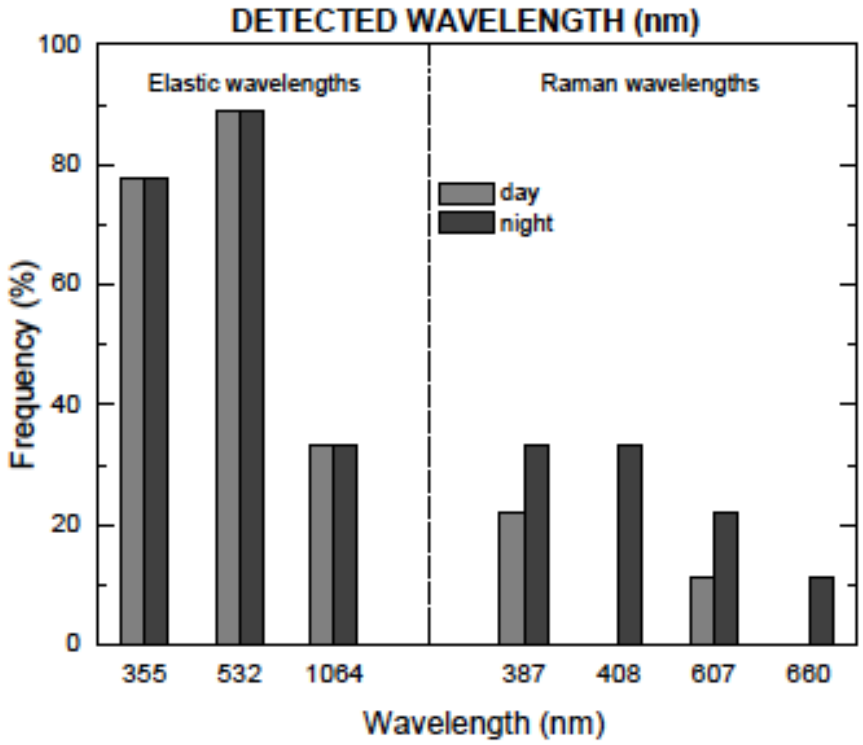
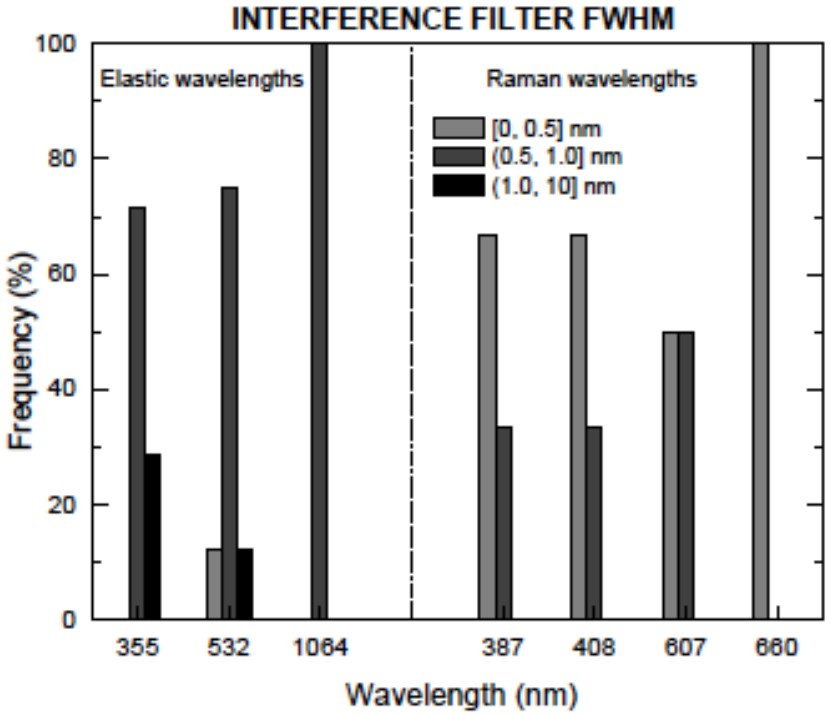
INSTRUMENTAL INVENTORY





POLARIZATION MUST BE INCLUDED

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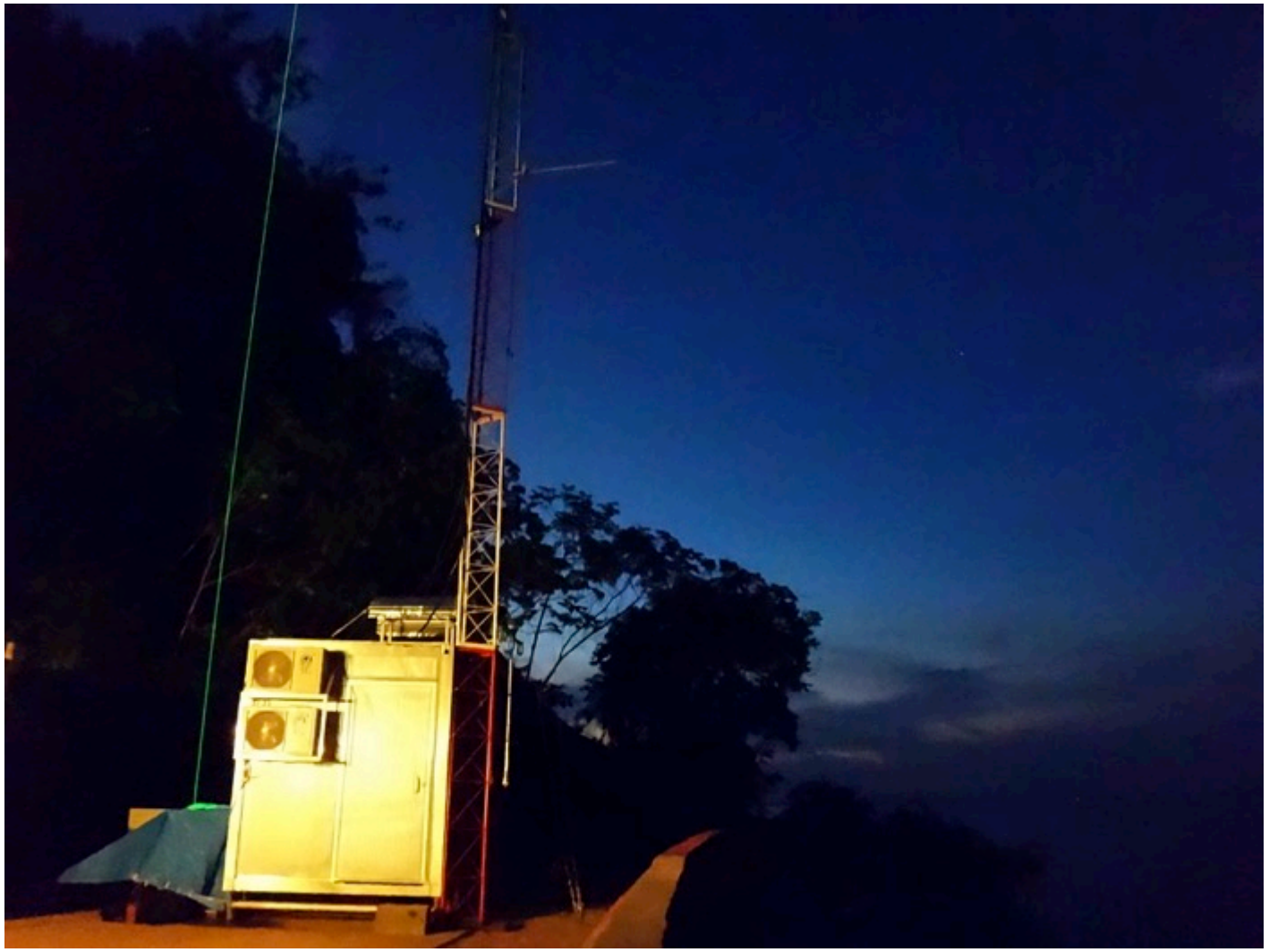
MEASUREMENT AND PROTOCOL IMPLEMENTATION



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MEASUREMENT AND PROTOCOL IMPLEMENTATION

QC & QA

- ***Zero-bin calibration***: Trigger in a lidar is used to fire pulses and also to activate the data acquisition.
- **Zero-bin test**: A target is placed at the output of the laser window in order to produce strong backscattered radiation. Thus, the first intense peak observed by the detector system should correspond to the zero position of our measurements.
- ***Bin-shift calibration***: PC signals saturated in near-range ➔ zero-bin calibration does not allow for unambiguously determining the zero-bin position for these channels.
- ***Dark current***: Response exhibited by a receptor of radiation during periods when it is not actively illuminated.
- ***Rayleigh Fit***: It is a tool to evaluate signal quality at long ranges and look for misalignments and or signal induced noise.

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PILOT CAMPAIGN 2012

- OBJECTIVES
  - MEASUREMENT AND PROTOCOL IMPLEMENTATION
  - DATA ANALYSIS COMPARISON
  - OVERALL SYSTEM PERFORMANCE

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PILOT CAMPAIGN 2012

- 7 of 8 lidar stations depended on a local operator, thus only 4 of 8 were able to do measurements
  - Manaus, 355nm
  - São Paulo, 355 and 532nm
  - Buenos Aires, 355, 532 and 1064nm
  - Concepción, 532nm

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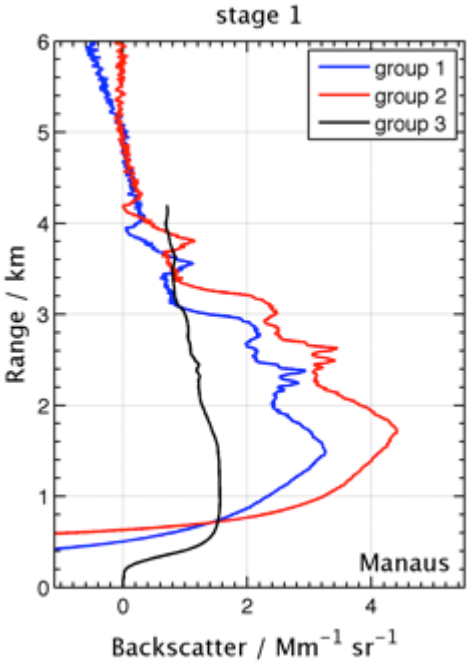
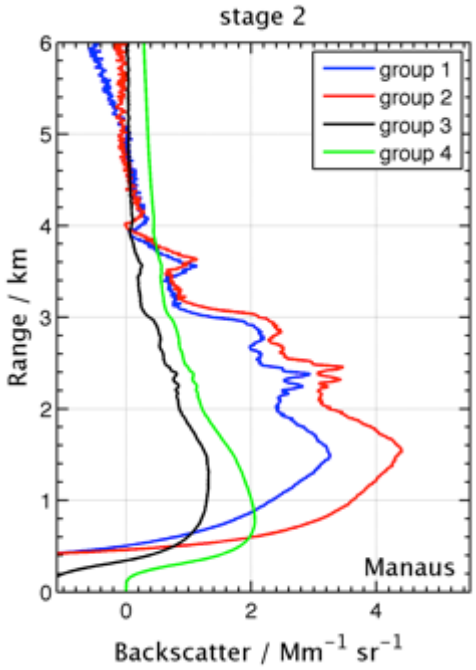
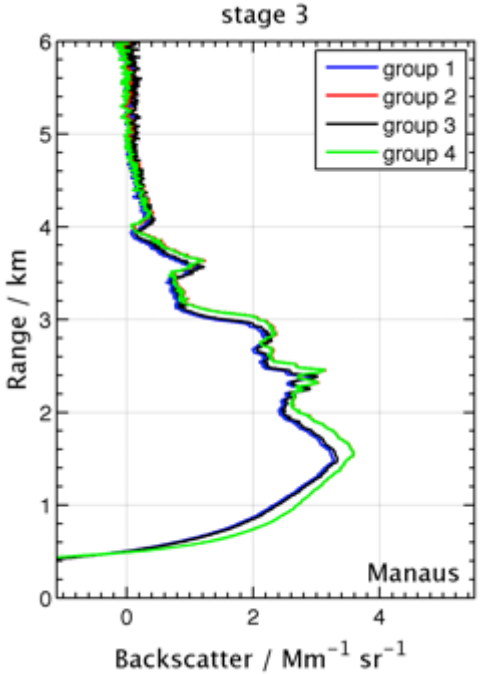
PILOT CAMPAIGN 2012







- Coordination of such simultaneous measurements was very difficult
  - We need more automated stations!
  - We need protocols and quality check
- Coordination of analysis intercomparison even more difficult!!
  - We need to find time for this!
  - We need analysis protocols → 2 WORKSHOPS ON DATA ANALYSIS

FUTURE STATIONS

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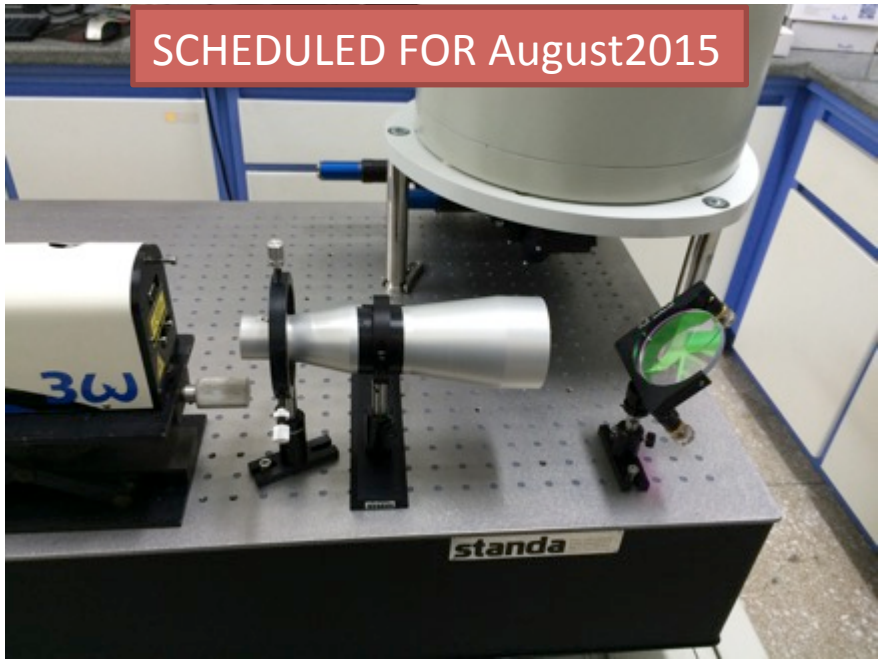
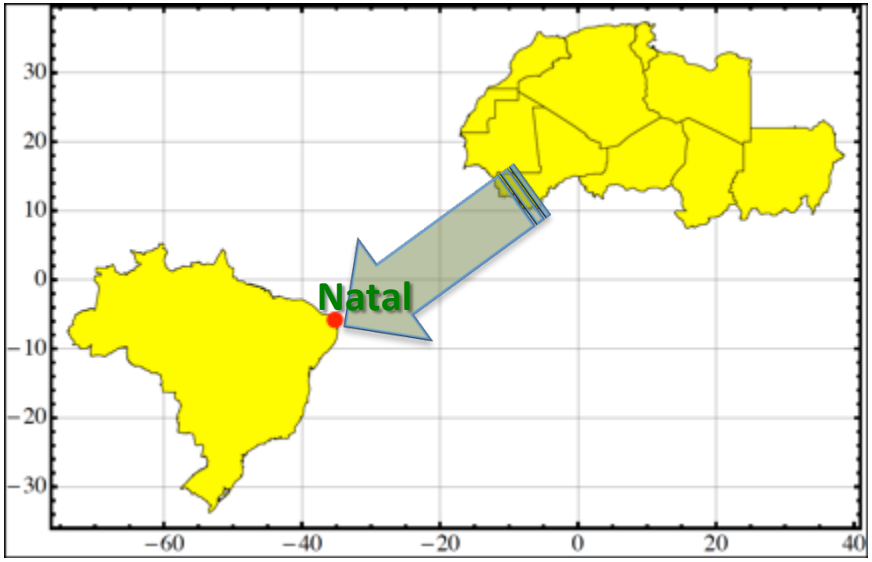
FUTURE STATIONS



1064 nm, 532 nm p+s, 355 nm, 300 mm, Cassegranian, Igor Vesselovski's design

SAHARAN DUST + AFRICAN BB INTRUSION INTO SOUTH AMERICA



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FUTURE STATIONS

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CALBUCO EVENT

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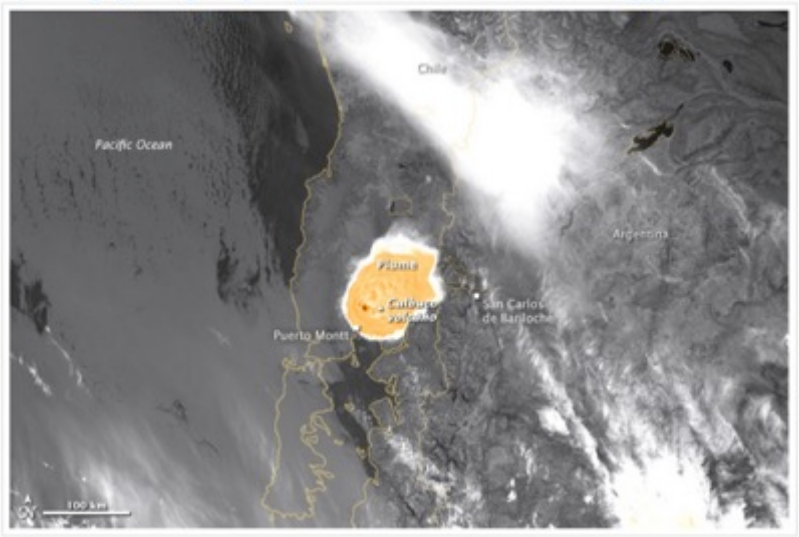
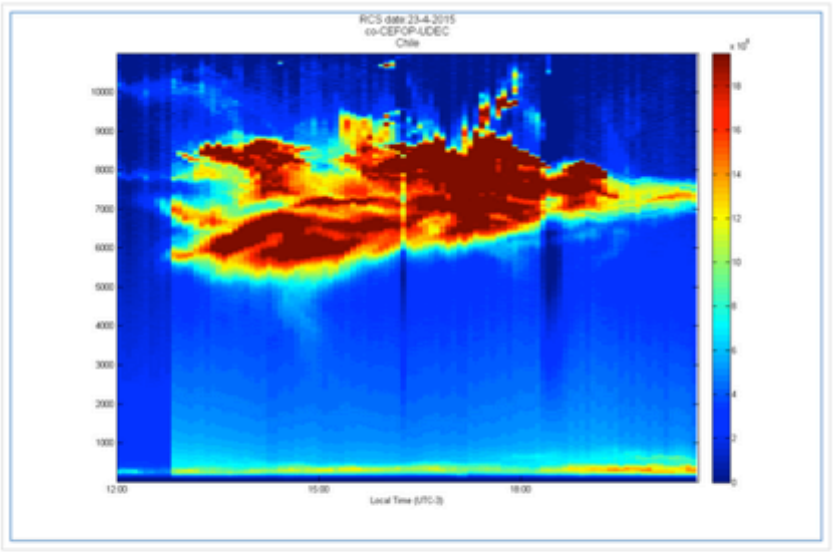
CALBUCO EVENT





Concepcion Station lidar RCS quicklook - dust event observation on April 23rd 2015.

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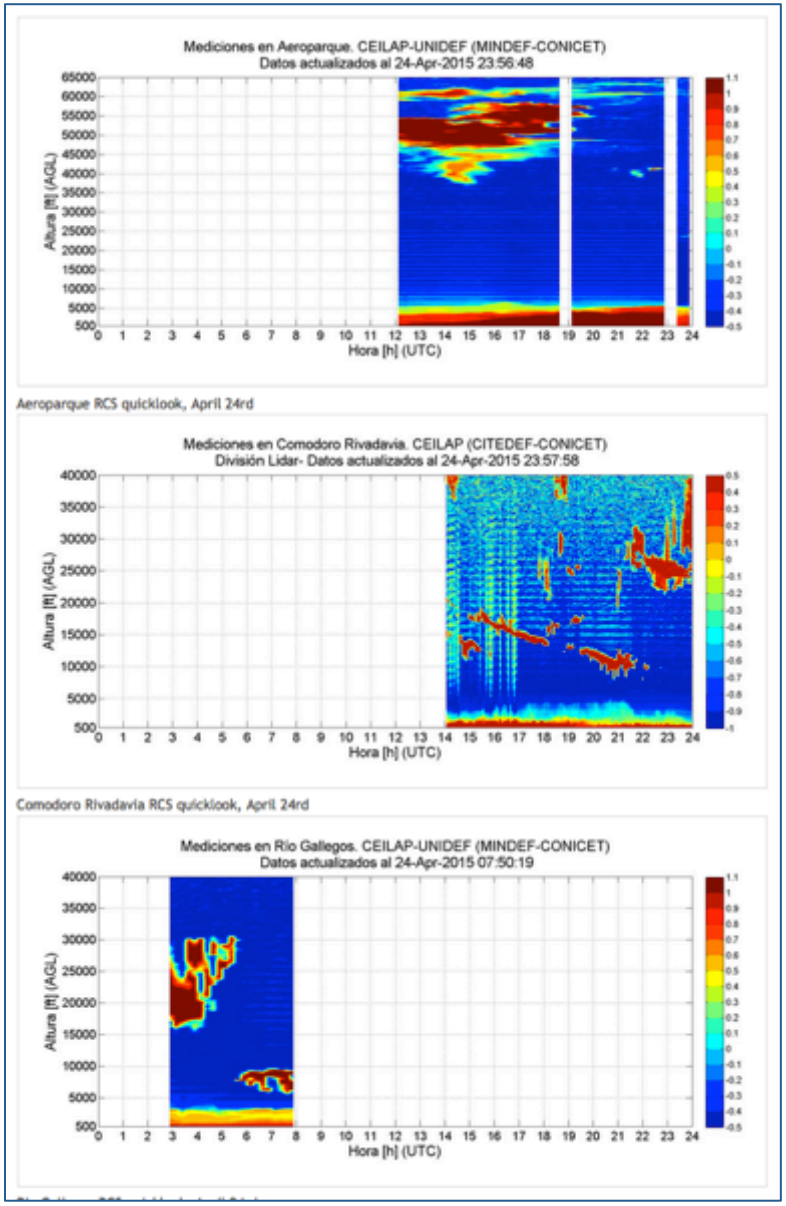
CALBUCO EVENT



PAPER IN PROGRESS

- VOLCANIC PLUME GEOMETRICAL FEATURES
- VP TRACKING
- VP 4 D DISTRIBUTION
  - TOP HEIGHT
  - BASE HEIGHT
- VP OPTICAL PROPERTIES
  - AOD
  - LR
- CALIOP + MODIS + LALINET STATIONS
- MODELLING
  - HYSPLIT

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FINAL REMARKS

- The ALINE/LALINET took several years to consolidate but in past the two has evolved considerably
- The lidar community has somehow increased in LA in the past years as well human resources have emerged
- Considerable technical advice and support has been given through EARLINET, NASA and ESA personally from Gelsomina Pappalardo, Albert Ansmann, Lucas Alados, Juan Guerrero (EARLINET),David Whiteman (NASA – GSFC), Igor Veselovskii (PIC), Errico Armandillo (ESA). RAYMETRICS & LICEL have been very supportive and customized systems when needed
- The improvement of the Quality Assurance should be strictly followed

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ACKNOWLEGDEMENTS

FAPESP

GAW

GOAC

CNPq
Conselho Nacional de Desenvolvimento Científico e Tecnológico

GLEO
Grupo Láseres y Espectroscopia Óptica

World Meteorological Organization
Weather • Climate • Water

CEILAP
CONICET
CITEFA

CALAIRE
Laboratorio de Calidad de Aire

COPOP
Center for Optics and Photonics

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