CLPX-Model: Local Analysis and Prediction System: 4-D Atmospheric Analyses, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Liston, G. E. 2003. *CLPX-Model: Local Analysis and Prediction System: 4-D Atmospheric Analyses, Version 1.* [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/9TDTHSWY4KWA. [Date Accessed].

National Snow and Ice Data Center

TABLE OF CONTENTS

1   DETAILED DATA DESCRIPTION

LAPS makes use of a wide range of observational data sets as part of its analyses, including:

- surface observations at specific sites every 5 minutes
- hourly surface aviation observations
- Doppler radar volume scans every 6 minutes
- wind and temperature Radio Acoustic Sounding System (RASS) profiles from the NOAA Demonstration Profiler Network every 60 minutes
- GOES [Geostationary Operational Environmental Satellites] visible data every 30 minutes,
- multi-spectral image and sounding radiance data every 90 minutes
- automated aircraft observations.

However, the LAPS.noaa.gov is no longer available. The experimental LAPS runs were dropped from any further development in the NOAA laboratory.

1.1 Format

LAPS data files are in netCDF format. NetCDF is a general format structure. The detailed format of each data file is self-describing (via 'ncdump'), and is mirrored in a separate static file called the CDL.

LAPS data include the following variables:

Table 1. Hourly LAPS Output Variables

File Extension	LAPS Variable	CDF Variable	Number of Levels	Field (units)
surface: LSX	U	u	1	u Component of Surface Wind (m/s) (grid north)
	V	v	1	v Component of Surface Wind (m/s) (grid north)
	P	p	1	1500 m Pressure (Pa)
	T	t	1	Surface Temp (K)
	TD	td	1	Surface Dewpoint Temp (K)
	VV	vv	1	Vertical Velocity (m/s)
	RH	rh	1	Relative Humidity (%)
	MSL	msl	1	MSL Pressure (Pa)
	TAD	tad	1	Temperature Advection (K/s)
	TH	th	1	Potential Temperature (K)

File Extension	LAPS Variable	CDF Variable	Number of Levels	Field (units)
	THE	the	1	Equivalent Potential Temperature (K)
	PS	ps	1	Surface Pressure (Pa)
	VOR	vor	1	Vorticity (/s)
	MR	mr	1	Mixing Ratio (g/kg)
	MRC	mrc	1	Moisture Convergence (g/kg/s)
	DIV	div	1	Divergence (/s)
	THA	tha	1	Potential Temperature Advection (kg/s)
	MRA	mra	1	Moisture Advection (g/kg/s)
	SPD	spd	1	Surface Wind Speed (m/s)
	CSS	cssi	1	Colorado Severe Storm Index (none)
	VIS	vis	1	Surface Visibility (m)
	FWX	fwx	1	Fire Danger (none)
	HI	hi	1	Heat Index (none)
	TGD	tgd	1	Ground Temperature (K)
temp: LT1	HT	ht	21	Height (m)
	T3	t3	21	Temperature (K)
accum: L1S	S01	s01	1	60 Minute Snow Accumulation (m)
	STO	sto	1	Storm-Total Snow Accumulation (m)
	R01	r01	1	60 Minute Liq Precip Accum (m)
	RTO	rto	1	Storm-Total Liquid Precipitation Accumulation (m)
humid: LQ3	SH	sh	21	Specific Humidity (kg/kg)
humid: LH3	RH3	rh3	21	Relative Humidity (%)
	RHL	rhl	21	Relative Humidity with resp to Liquid (%)
humid: LH4	TPW	tpw	1	Integrated Total Precipitable Water Vapor (m)
wind: LW3	U3	u3	21	u Component of Wind (m/s)
	V3	v3	21	v Component of Wind (m/s)
	OM	om	21	Wind Omega (Pa/s)
wind: LWM	SU	u	1	u Component of Surface wind (m/s)
	SV	v	1	v Component of Surface wind (m/s)

| File Extension	LAPS Variable	CDF Variable	Number of Levels	Field (units)
cloud: LC3	LC3	lc3	42	Fractional Cloud Cover (levels 1-42) (0-1)
cloud: LCB	LCB	lcb	1	Cloud Base (m)
	LCT	lct	1	Cloud Top (m)
	CCE	cce	1	Cloud Ceiling (m)
cloud: LCV	LCV	cco	1	Cloud Cover (0-1)
	CSC	csc	1	Cloud Analysis Implied Snow Cover (0-1)
	CWT	cwt	1	Clear Sky Water Temperature (K)
	S8A	s8a	1	IR Channel 4 (11.2μ) b-temp:averaged (K)
	S3A	s3a	1	IR Channel 2 (3.9μ) b-temp:averaged (K)
	ALB	alb	1	LAPS Derived Albedo (0-1)
soil: LM1	LSM	lsm	3	Soil Moisture (m/m)
soil: LM2	CIV	civ	1	Cumulative Infiltration Volume (m)
	DWF	dwf	1	Depth To Wetting Front (m)
	WX	wx	1	Wet/Dry Grid Point (none)
	EVP	evp	1	Evaporation Data (m/s)
	SC	sc	1	Snow Covered (0-1)
	SM	sm	1	Snow Melt (m^3/m^3)
	MWF	mwf	1	Wetting Front Soil Moisture Content (m^3/m^3)

1.2 File and Directory Structure

Processed LAPS files are available in compressed (tarred and zipped) files, such as `laps-3d.20030610.tar.gz` and `laps-2d.20011214.tar.gz`.

1.3 File Size

The size of the entire data set is 148.3 GB. Daily 2-D files are approximately 38 MB each, and daily 3-D files are approximately 170 MB each.

1.4 Spatial Coverage and Resolution

LAPS data covers the CLPX Large Regional Study Area, shown in the following map. LAPS covers a 10-km horizontal grid.
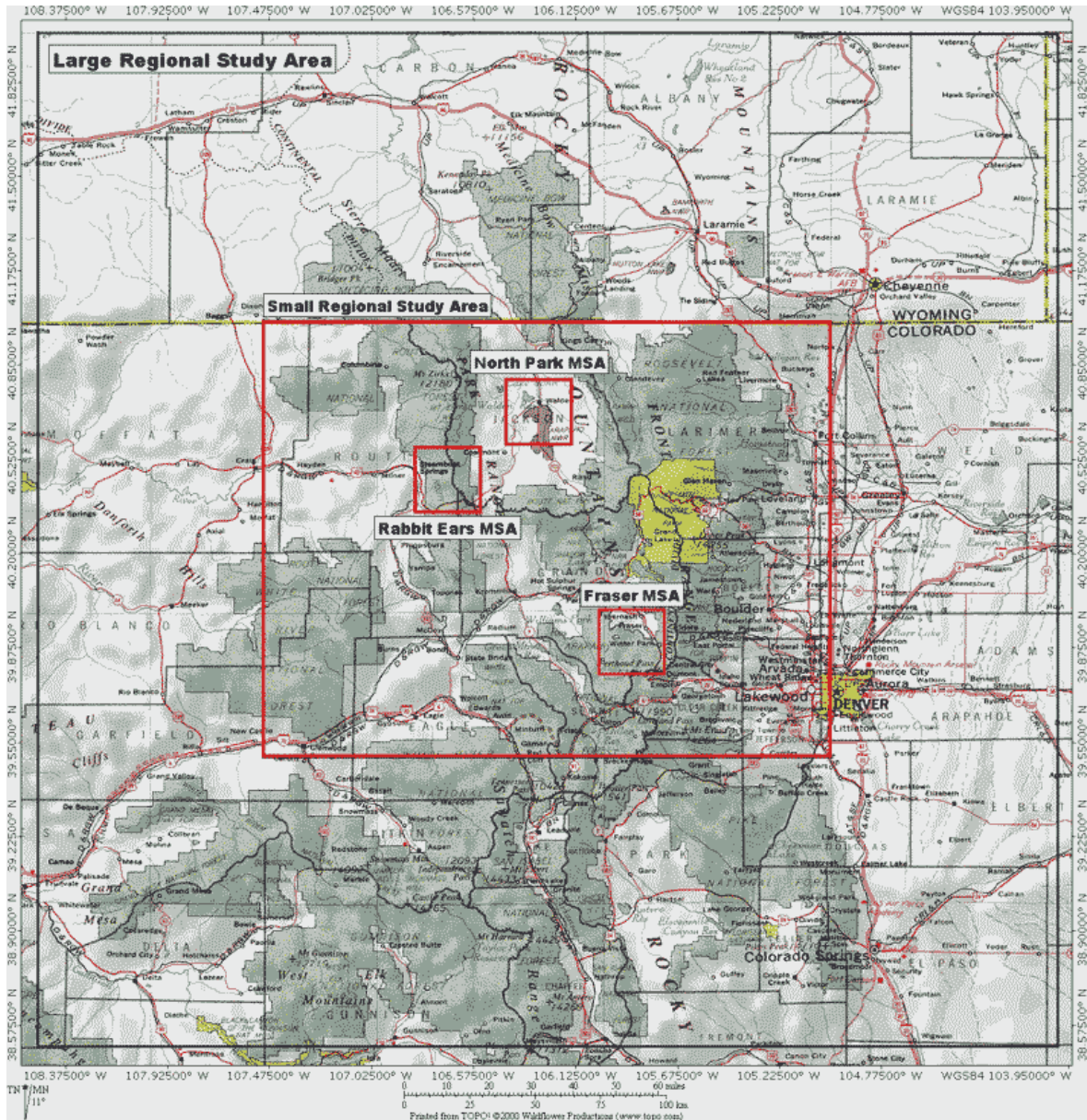
1.5 Temporal Coverage and Resolution

LAPS data were produced hourly from 1 September 2001 through 31 August 2003.

1.6 Parameter or Variable

LAPS parameters are meteorological parameters, as shown in Table 1.

2   SOFTWARE AND TOOLS

2.1 Software and Tools

The NetCDF package required for LAPS is available at https://github.com/Unidata/netCDF-Decoders. Version netcdf 3.3.1 or higher is required.

3   REFERENCES AND RELATED PUBLICATIONS

Albers, S. C., 1995: The LAPS wind analysis. Wea. Forecasting, 10,342-52.

Albers S. C., J. A. McGinley, D. L. Birkenheuer, and J. R. Smart, 1996: The Local Analysis and Prediction System (LAPS): Analyses of clouds, precipitation, and temperature. Wea. Forecasting, 11, 273-287.

Birkenheuer, D., 1999: The effect of using digital satellite imagery in the LAPS moisture analysis. Wea. Forecasting, 14, 782-788.

McGinley, J. A., S. C. Albers, and P. A. Stamus, 1991: Validation of a composite convective index as defined by a real-time local analysis system. Wea. Forecasting, 6, 337-356.

3.1 RELATED DATA COLLECTIONS

All CLPX Data Sets

4   CONTACTS AND ACKNOWLEDGMENTS

Glen E. Liston
Atmospheric Sciences
S205 ATMOS. SCIENCE ANNEX
Colorado State University
Fort Collins, CO 80523

5   DOCUMENT INFORMATION

5.1 Publication Date

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5.2 Date Last Updated

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