EARLINET – ASOS

NA6: Database construction and operation

Holger Linné Max-Planck-Institut für Meteorologie Hamburg, Germany Holger.Linne@zmaw.de





NA6: Contributing partners

• AUTH - Aristotle University of Thessaloniki, Thessaloniki, Greece

•**CNR-IMAA** – Consiglio Nazionale delle Ricerche - Istituto di Metodologie per l'Analisi Ambientale, Potenza, Italy

•IFT – Leibniz Institut für Troposphärenforschung e. V., Physics department, Leipzig, Germany

• LMU – Ludwig-Maximilians-Universität Muenchen, Meteorologisches Institut, Department of Phisics, Munich, Germany

· MPIMet – Max- Planck-Institut für Meteorologie, Hamburg, Germany

•NILU – Norsk Institutt for Luftforskning, Norwegian Institute for Air Research at the Polar Environmental Centre, Tromsö, Norway

•NTUA – National Technical University of Athens, Mathematics and Physical Sciences, Athens, Greece

• UP – Universität Potsdam, Institute of Mathematics, Potsdam, Germany





Outline

- What is in the database ?
 - File format & content
 - Classification of measurement
 - Publication scheme
- Connection to the world ...
- Future work
- · A few actual numbers about the status of the database
- The public user interface
 - Access to the data
 - Download
 - Display
 - Data policy agreement
- The internal user interface for maintenance





- The EARLINET database stores only quantitative information in netCDF files.
 - Only quantitative data are stored (no pr^2 !).
 - No quicklooks in form of plots of attenuated backscatter are stored.
- The files are created by the individual Institutions.
- During upload to the database, the files are checked for technical correctness. Incorrect files are rejected immediately.
- The files are delivered to the endusers as they are. No reformatting is done by the database system.
- The file format is defined for single profiles as well as timeseries of profiles.





netcdf mandatory { dimensions: Length = UNLIMITED ; // (5 currently) // global attributes: :System = "MPI UV-system" : :Location = "Lindenberg, Germany"; :Longitude_degrees_east = 12.345; :Latitude_degrees_north = 54.321; :Altitude meter as I = 123; :EmissionWavelength nm = 351; :DetectionWavelength_nm = 351; :DetectionMode = "analog"; :ZenithAngle_degrees = 0; :ShotsAveraged = 10000; :ResolutionRaw meter = 15 ; :ResolutionEvaluated = "60 m up to 1000m, 500 m above"; :StartDate = 19970701 : :StartTime UT = 130000 ; :StopTime_UT = 133000; :EvaluationMethod = "Fernald"; :InputParameters = "ref. value 1.e-7 1/(m*sr) at 6800 m"; :Comments = "do not believe these dummy data!";





```
variables:
    float Altitude(Length) ;
        Altitude:units = "m" ;
        Altitude:long_name = "Height above sea level" ;
    float Backscatter(Length) ;
        Backscatter:units = "1/(m*sr)" ;
```

```
in b-files
```

or

float Extinction(Length) ; Extinction:units = "1/m" ;

in e-files





```
All (mandatory and optional) variables:
    float Altitude(Length) ;
        Altitude:units = "m" ;
        Altitude:long_name = "Height above sea level" ;
    float DustLayerHeight ;
        DustLayerHeight:units = "m" ;
        DustLayerHeight:long_name = "Top of dust layer above sea level" ;
    float MixingLayerHeight ;
        MixingLayerHeight:AltitudeUnits = "m" ;
        MixingLayerHeight:long_name = "Top of mixing layer above sea level" ;
    float Backscatter(Length) ;
        Backscatter:units = "1/(m*sr)" ;
    float Extinction(Length) ;
        Extinction:units = "1/m" ;
    float Depolarisation(Length) ;
```





```
float ErrorBackscatter(Length) ;
ErrorBackscatter:units = "1/(m*sr)" ;
float ErrorExtinction(Length) ;
ErrorExtinction:units = "1/m" ;
float ErrorDepolarisation(Length) ;
float WaterVaporMixingRatio(Length) ;
WaterVaporMixingRatio:units = "g/kg";
float ErrorWaterVapor(Length) ;
ErrorWaterVapor:units = "g/kg" ;
```





The users may introduce new Variables to the netcdf – files. For this he has to define a variable name starting with 2 underlines. He should also include a long name for this variable to explain the Meaning

These variables are not supported by EARLINET and are never checked For meaning or correctness.

float ___GroundTemperature;

__GroundTemperature_long_name = "Temperature in 5m Height";

GroundTemperature:units = "degC";





Classification of measurements

During upload to the database, the users can specify the file to belong to a special event. Special events currently used in the database are:

climatol rotine measurements establishing the c	climatology
sahadust Saharan dust events	
forfires forest fires	
photsmog photochemical smog events	
dicycles studies of the diurnal cycle	
stratos special stratospheric measurements	
rurban studies of the differences rural/urban ae	erosols
etna studies of the eruption of mount Etna	
cirrus files containing cirrus clod observations	
calipso files containing correlative measurement	nts to Calipso overpasses

Since April 2010 the category "etna" is used for all volcano-events. It will be changed to "volcano" soon.





Publication scheme

It has been agreed on the following schedule for publication of the data:

- Put data into database within 3 months after measurement
- Make data accessible to public as soon as possible (data not made public by originator will be made public automatically 12 months after measurement)
- Approval of the data within 2 years after measurement.
- Data get published after approval in annual or biannual volumes at WDCC (Exception: Datasets from old EARLINET – project skip approval process and get published as soon as possible).

At the moment there are 2 exceptions from this schedule:

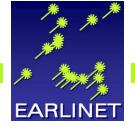
- Data are made public 12 months after measurement if they are in the database since at least 3 months. This exception will be dropped by end of EARLINET-ASOS in 2011.
- The interface to the World Data Center Climate is still under development and hence the publication of data is delayed.





Connection to the world ...

- All data with level "public" or "published" are accessible to everybody through a WEB-based interface from the EARLINET server.
- All data in the database will be published in the CERA database of the WDCC as part of the publication process.
- All (public) data of the database are already searchable from the GEOmon database.
- More on interconnects will be subject of the discussions during GALION meeting on Wednesday





(Near) future work

- Complete rewrite of the Maintenance interface to the database to
 - Better support of automatted uploads from the "Single Cxalculus Chain"
 - Better support of "near realtime" uploads from continuously running stations
 - Gain more flexibility in managing special user needs..
- Extend the visibility of the dataset in a growing number of data catalogs.
 This should be among the points addressed by this workshop.



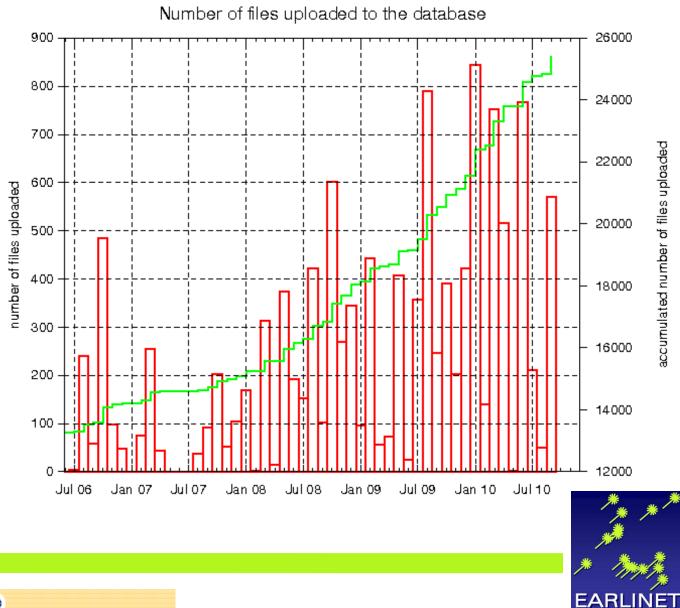


Just a few numbers ...

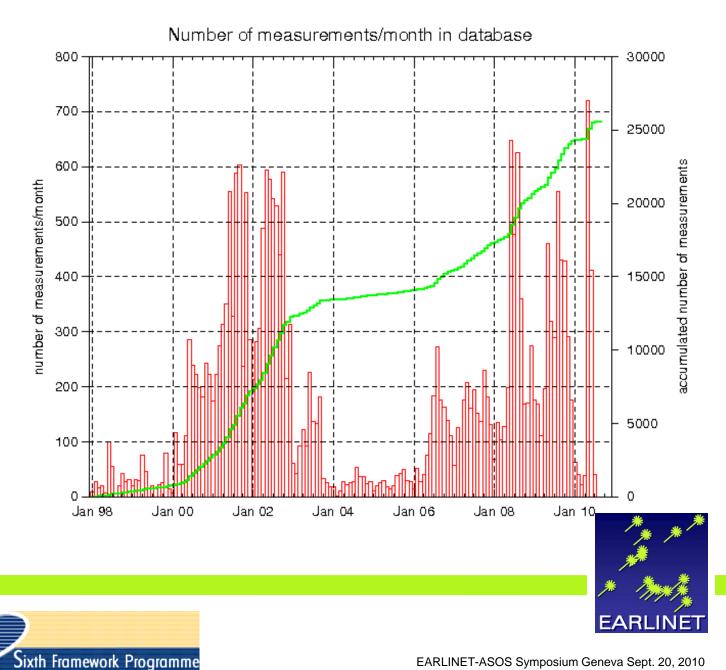
- Number of external users: 32
- Number of stations: 37
- Number of groups contributing to the database: 29
- Number of members:121
- Number of files in the database: 25569
 - internal access only: 2703
 - public accessl: 22866
- Files downloaded since April 2010: 206541
- Categories:
 - cirrus: 1168
 - climatology: 9975
 - diurnal cycles: 1996
 - etna (volcanos): 790
 - forest fires: 313
 - photosmog: 96
 - rural/urban: 622
 - stratosphere: 366
 - calipso: 6011
 - saharan dust: 3666









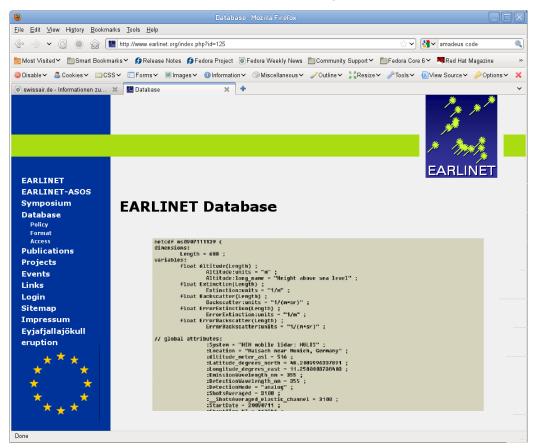


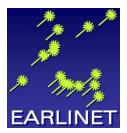
The public user-interface (WEB-access)





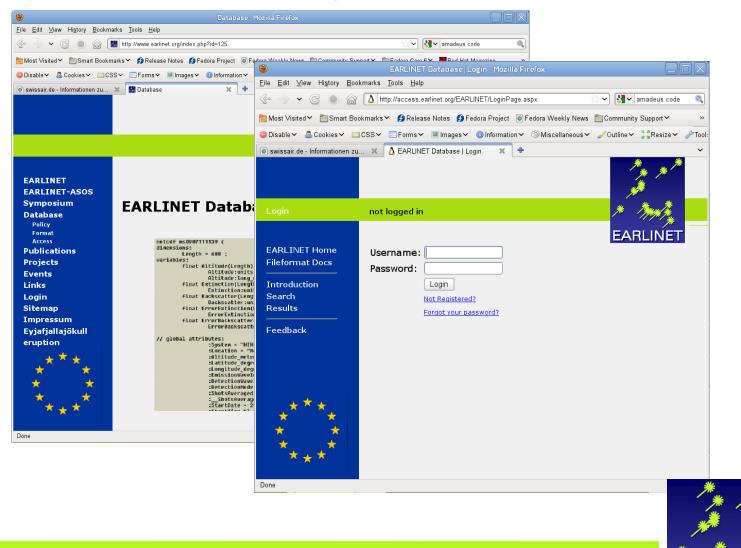
http://www.earlinet.org





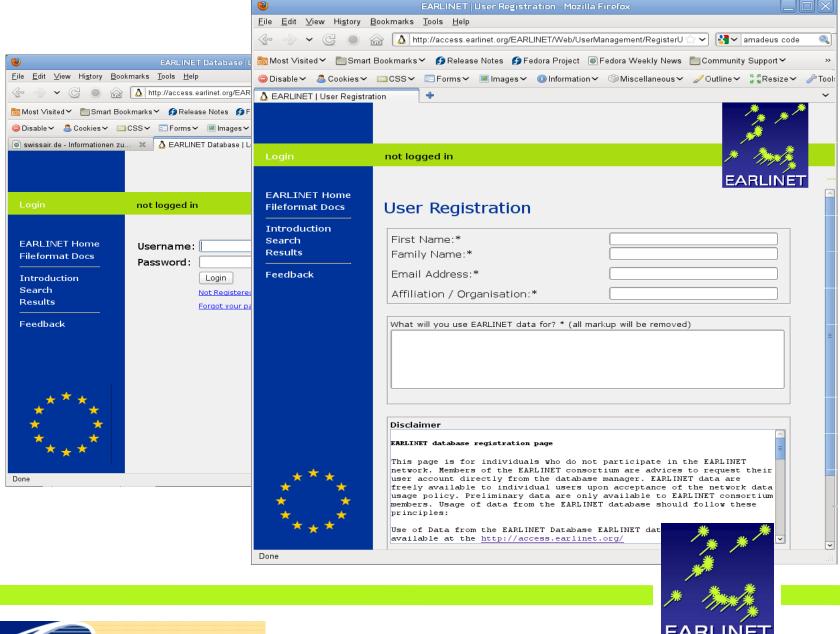


http://www.earlinet.org











EARLINET database registration page

This page is for individuals who do not participate in the EARLINET network. Members of the EARLINET consortium are adviced to request their user account directly from the database manager. EARLINET data are freely available to individual users upon acceptance of the network data usage policy. Preliminary data are only available to EARLINET consortium members. Usage of data from the EARLINET database should follow these principles:

Use of Data from the EARLINET Database

EARLINET data are freely available at http://www.earlinet.org/

Username and password are required to access the EARLINET Database.

Registration is necessary in order to get username and password.

All the requested fields must be filled (name, Institution, area of expertise, reason of access, email address)





Notice to users:

The public domain data you are about to download are contributed by the EARLINET consortium. Each EARLINET site has a Principal Investigator(s) (PI), responsible for deployment, maintenance and data collection. The PI has priority use of the data collected at the site. The PI is entitled to be informed of any other use of that site data. PI contact information can be found on the EARLINET site.

Recommended guidelines for data use and publication

Using EARLINET data: Please consult with the PI(s) of the data to be used.

Publishing EARLINET data: Please consider authorship for the PI(s).

When data from the EARLINET Database are used in a publication, we request the following acknowledgment to be included:

"The authors acknowledge EARLINET for providing aerosol LIDAR profiles available at http://www.earlinet.org/"

and the following reference to cite:





Recommended guidelines for data use and publication (continued)

J. Bösenberg, et al., EARLINET: A European Aerosol Research Lidar Network to Establish an Aerosol Climatology. Max-Planck-Institut Report No. 348 (2003).

EARLINET requests a reprint of any published papers or reports or a brief description of other uses (e.g., posters, oral presentations, etc.) of data downloaded from the EARLINET database. This will help us determine the use of EARLINET data, which is helpful in optimising product development. It also helps us to keep our product-related references current.

Please contact us by e-mail for instructions.





8	EARLINET Database Login - Mozilla Firefox	
<u>F</u> ile <u>E</u> dit ⊻iew Hi <u>s</u> tory <u>B</u> oo	kmarks <u>T</u> ools <u>H</u> elp	
🗞 🗞 🖌 G 💿 🏠	▲ http://access.earlinet.org/EARLINET/LoginPage.aspx ☆ ✔	🛃 ✓ amadeus code 🛛 🔍
🛅 Most Visited 🗸 📋 Smart Bo	okmarks 🖌 👩 Release Notes 👩 Fedora Project 💿 Fedora Weekly News 🛅 Com	nmunity Support 🗸 🧼 »
ᇢ Disable 🗸 🙎 Cookies 🗸 🔤	ICSS ✓	line 🗸 🍹 🖁 Resize 🗸 🥜 Tool:
👌 EARLINET Database Login	÷	× *
Login	not logged in	* /////***
		EARLINET
EARLINET Home Fileformat Docs	Username: Holger.Linne@gmx.de	
· · · · · · · · · · · · · · · · · · ·	Password:	
Introduction Search	Login	
Results	<u>Not Registered?</u> Forgot your password?	
Feedback		
* ****		
* *		
**		
· · · · · · · · · · · · · · · · · · ·		
Done		



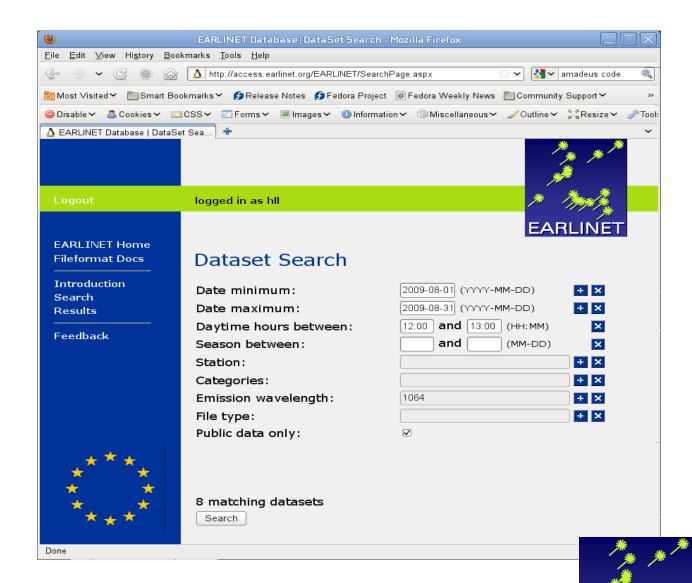


۷	EARLINET Database	ogin - Mozilla Firefox	
<u>F</u> ile <u>E</u> dit ⊻iew Hi <u>s</u> tory <u>B</u> ook	kmarks <u>T</u> ools <u>H</u> elp		
🐵 🗞 🖌 G 💿 🏠	http://access.earlinet.org/EAR	LINET/LoginPage.aspx	☆ ✔ amadeus code 🔍
🛅 Most Visited 🗸 📋 Smart Boo	kmarks 👻 👩 Release Notes 👩 F	erdene Desient 🕞 Endene Marshin Mer	EARLINET Database - Mozilla Firefox
😑 Disable 🗸 🙎 Cookies 🗸 🔤	CSS 🗸 💷 Forms 🗸 🔳 Images 🗸	<u></u>	ols <u>H</u> elp
👌 EARLINET Database Login	+	📀 📎 🗸 🕃 🌒 🍙 🛕 http:/	//access.earlinet.org/EARLINET/Default.aspx
		🛅 Most Visited ❤ 👘 Smart Bookmarks ❤	β Release Notes 🛛 👂 Fedora Project 💿 Fedora Weekly News 🛅 Community Support 🔨 🛅 Fedora Core 6 👻 🤜 Red Hat Magazine
		⊖Disable∽ 🐣 Cookies∽ 📼 CSS∽ 📰] Forms 🗸 🔳 Images 👻 🕘 Information 🔨 🎯 Miscellaneous 🗸 🥒 Outline 🗸 👯 Resize 🗸 🥒 Tools 🗸 🙆 View Source 🗸 🔑 Options 🗸
		🛕 EARLINET Database 🛛 🗍	
Login	not logged in		
EARLINET Home Fileformat Docs	Username: Holger.Linne	Logout	logged in as hll 🥀 🥀
 Introduction	Password: Login		EABLINE
Search	Not Registere		LANLINE
Results	Forgot your p		
 Feedback			EARLINET-ASOS Database
recuback		Introduction Search Results	Welcome to the EARLINET-ASOS database web portal. This is a publ available system that allows scientists to search, download and visu aerosol LIDAR data from the EARLINET network.
****		Feedback	A login account can be obtained through the Login-page . It is nece to read and accept the data access policy before requesting a login password.
****		****	Any feedback on the web portal can be provided to <u>Holger Linne</u> or <u>Aasmund Fahre Vik</u>
Done		★ ★ ★	***



EARLIN

ET





<u>ا</u>		EARLINET Databas	e DataSet Search Resi	ults - Mozilla Firefox			
<u>File Edit ⊻iew His</u> tory	<u>B</u> ookmarks <u>T</u> ools <u>H</u> e						
« · · · C •	http://access	earlinet.org/EARLINET/ResultsP	age.aspx			☆ ∨ <mark>}] ∨</mark> a	madeus code
		ase Notes 🛭 🥵 Fedora Project 🛛					
		🗸 🔳 Images 🗸 🕕 Information	✓ ⁽) Miscellaneous ✓ ₄	🖉 Outline 🗸 💈 🖁 Resize 🗸 🖉	🎤 Tools 🗸 🛛 🛓	View Source 🗸 🤞	🔎 Options 🗸 🛛 🛷 🕕
👌 EARLINET Database	DataSet Sea 📌						* *

Logout	logged in as	hll					* ****
							EARLINET
EARLINET Home							
Fileformat Docs	Curren	t Results					
Introduction Search		<u>File name</u>	<u>Start time</u>	<u>Stop time</u>	<u>Station</u>	Wavelength	Date uploaded
Results	Get	at0908021031.b1064	2009-08-02 10:31	2009-08-02 12:30	at	1064	2009-09-21 18:56
 Feedback	Get	at0908021201.b1064	2009-08-02 12:01	2009-08-02 12:30	at	1064	2009-09-21 18:58
T CCUDUCK	Get	at0908111030.b1064	2009-08-11 10:30	2009-08-11 12:29	at	1064	2009-09-21 19:01
	Get	at0908111201.b1064	2009-08-11 12:01	2009-08-11 12:29	at	1064	2009-09-21 19:03
	Get	be0908171156.b1064	2009-08-17 11:56	2009-08-17 12:26	be	1064	2009-10-21 12:55
	Get	be0908171226.b1064	2009-08-17 12:26	2009-08-17 12:57	be	1064	2009-10-21 12:56
	Get	be0908201136.b1064	2009-08-20 11:36	2009-08-20 12:06	be	1064	2009-10-21 13:00
	Get	be0908201206.b1064	2009-08-20 12:06	2009-08-20 12:36	be	1064	2009-10-21 13:01
	- Download -	Plotti					
		Plot t	ypes:				
,★★★,	Get select		kscatter <u>A</u>	View selected			
× ×			~				

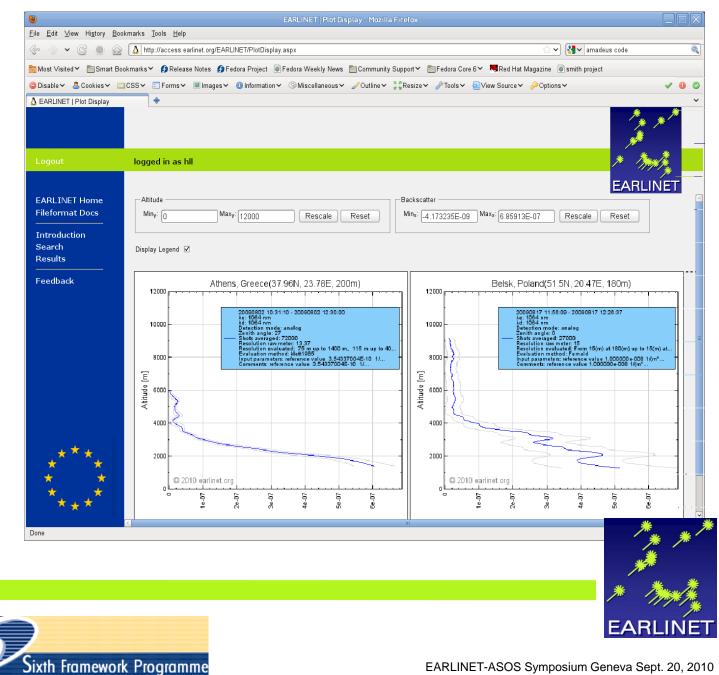
Done							*
Done							* /
							**

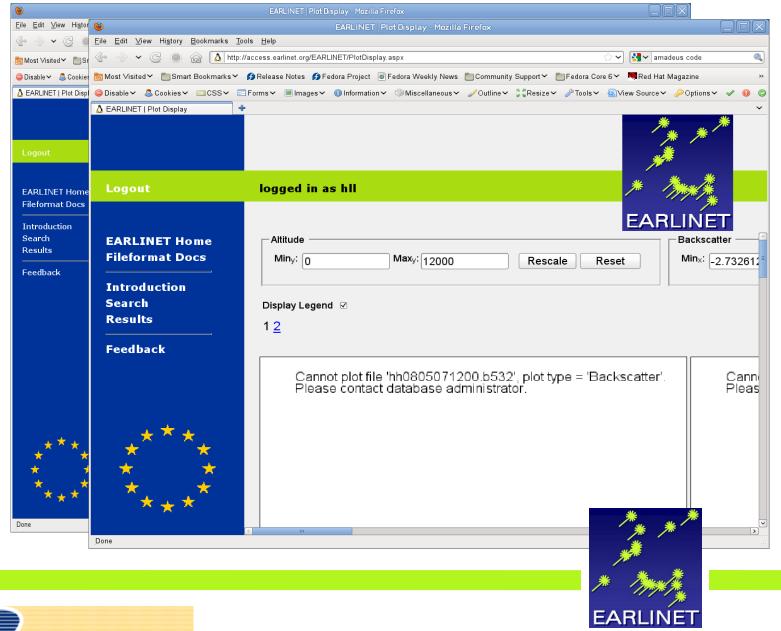


170%

ET

EARLIN





Sixth Framework Programme

<u>ا</u>		EARLINET Databas	e DataSet Search Resi	ults - Mozilla Firefox			
<u>File Edit ⊻iew His</u> tory	<u>B</u> ookmarks <u>T</u> ools <u>H</u> e						
« · · · C •	http://access	earlinet.org/EARLINET/ResultsP	age.aspx			☆ ∨ <mark>}] ∨</mark> a	madeus code
		ase Notes 🛭 🥵 Fedora Project 🛛					
		🗸 🔳 Images 🗸 🕕 Information	✓ ⁽) Miscellaneous ✓ ₄	🖉 Outline 🗸 💈 🖁 Resize 🗸 🖉	🎤 Tools 🗸 🛛 🛓	View Source 🗸 🤞	🔎 Options 🗸 🛛 🛷 🕕
👌 EARLINET Database	DataSet Sea 📌						* *

Logout	logged in as	hll					* ****
							EARLINET
EARLINET Home							
Fileformat Docs	Curren	t Results					
Introduction Search		<u>File name</u>	<u>Start time</u>	<u>Stop time</u>	<u>Station</u>	Wavelength	Date uploaded
Results	Get	at0908021031.b1064	2009-08-02 10:31	2009-08-02 12:30	at	1064	2009-09-21 18:56
 Feedback	Get	at0908021201.b1064	2009-08-02 12:01	2009-08-02 12:30	at	1064	2009-09-21 18:58
T CCUDUCK	Get	at0908111030.b1064	2009-08-11 10:30	2009-08-11 12:29	at	1064	2009-09-21 19:01
	Get	at0908111201.b1064	2009-08-11 12:01	2009-08-11 12:29	at	1064	2009-09-21 19:03
	Get	be0908171156.b1064	2009-08-17 11:56	2009-08-17 12:26	be	1064	2009-10-21 12:55
	Get	be0908171226.b1064	2009-08-17 12:26	2009-08-17 12:57	be	1064	2009-10-21 12:56
	Get	be0908201136.b1064	2009-08-20 11:36	2009-08-20 12:06	be	1064	2009-10-21 13:00
	Get	be0908201206.b1064	2009-08-20 12:06	2009-08-20 12:36	be	1064	2009-10-21 13:01
	- Download -	Plotti					
		Plot t	ypes:				
,★★★,	Get select		kscatter <u>A</u>	View selected			
× ×			~				

Done							*
Done							* /
							**



170%

ET

EARLIN

The internal WEB-interface (maintenance)





http://data.earlinet.org

EARLINET database processor - Mozilla Firefox	- • ×
<u>Eile Edit V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks <u>T</u> ools <u>H</u> elp	
🔹 🗼 🗸 🛃 🔕 🏠 📓 http://data.earlinet.org/	0
👼 Most Visited 🗸 📄 Smart Bookmarks 🗸 🥵 Release Notes 📄 Fedora Project 🗸 📄 Red Hat 🗸 📄 Free Content 🗸	
😌 Disable∽ 🙇 Cookies∽ 🔤 CSS∽ 🔄 Forms∽ 🔳 Images∽ 🕕 Information∽ ⊚Miscellaneous∽ 🖉 Outline∽ 👯 Resize∽ 🎤 Tools∽ №View Source∽	
KARLINET database processor	~
Welcome to the EARLINET database processor Username: Password: Logon	
Done	





http://data.earlinet.org

Done

earlinet c	latabase processor - Mozilla Firefox	_ = ×	
<u>E</u> ile <u>E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks <u>I</u> ools <u>H</u> elp			
< 🗼 🗸 🔁 💿 🏠 📓 http://data.earlinet.org/		☆ 🗸 Google 🔍	
👼 Most Visited ✔ 📄 Smart Bookmarks ✔ 🧬 Release Notes 📄 Fedora	8	EARLINET database processor - Mozilla Firel	fox
⊖ Disable∨ 🚨 Cookies∨ 🔤 CSS∨ 🖾 Forms∨ 🔳 Images∨ 🕕	<u>F</u> ile <u>E</u> dit ⊻iew Hi <u>s</u> tory <u>B</u> ookmarks	<u>T</u> ools <u>H</u> elp	
📓 EARLINET database processor 🛛 💠	💮 📎 🕶 🤤 🙆 📓 h	ttp://data.earlinet.org/index.php	🟫 🗸 🚼 🖌 Google 🔍
		👻 🌀 Release Notes 🌀 Fedora Project 💿 Fedora Weekly News 🛅	🛛 Community Support 🗸 📋 Fedora Core 6 🖌 🤜 Red Hat Magazine 🛸
Welcome to the	⊜Disable∽ 💄Cookies∽ ⊡CSS∽	📰 Forms 🗸 🔳 Images 🗸 🕕 Information 🗸 🍈 Miscellaneous 🗸 🍃	🖌 Outline 🗸 📲 Resize 🗸 🤌 Tools 🗸 💿 View Source 🗸 🔗 Options 🗸
	Real EARLINET database processor	+	~
Us			
Pa	<u>insert a new file</u>	Welcome to the EARLINET databa	ase processor
	remove a file	For a limited time, you still have direct acc	cess to the directories <u>New</u> , <u>Old</u> and <u>Rejected</u> .
	edit categories	The category-files can now be found at cat	egories, a zip - file containing all
	finalize a file	profiles (and beeing kept more or less up t	to date) can be found as <u>all.zip</u> (~104MB). Ime earlinet with the well known password.
		This access will be changed to an access us	
	change password		-
	logout	Some descript	tive text to follow.
		Your suggestions for the improvement of the welcome.	his WEB - based database access are always
			o not hesitate to report this to <u>Holger Linne</u> .
			<u></u> -
Done			



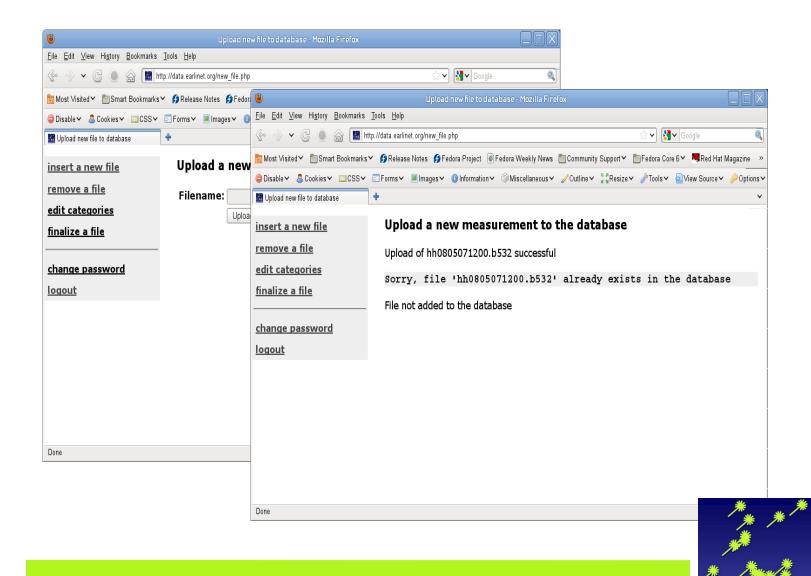
EARLINET-ASOS Symposium Geneva Sept. 20, 2010

EARL

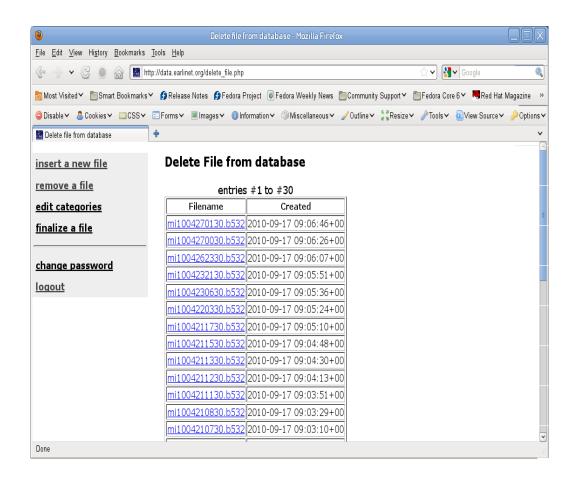
۷	Upload new file to database - Mozilla Firefox		
<u>F</u> ile <u>E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks <u>T</u> o	ols <u>H</u> elp		
🚱 📎 🗸 🥃 🌒 🎧 🚺 http:	/data.earlinet.org/new_file.php	😭 🗸 🚱	Q
🛅 Most Visited 🎽 🛅 Smart Bookmarks 🌱	🚯 Release Notes 🌘 Fedora Project 💿 Fedora Weekly News 🛅 Community Support 🛩	🛅 Fedora Core 6 🗸 📕 Red Hat M	Aagazine »
⊜Disable∽ 💄 Cookies∽ 🖾 CSS∽ 💈] Forms 🗸 🗵 Images 🗸 📵 Information 🗸 🎯 Miscellaneous 🛩 🥜 Outline 🗸 📲 Resize	🗸 🥜 Tools 🗸 🙆 View Source 🗸	⊘Options ∨
🖉 Upload new file to database 🛛 🖣	•		~
insert a new file remove a file edit categories finalize a file change password logout	Upload a new measurement to the database Filename: Browse Upload		
Done			











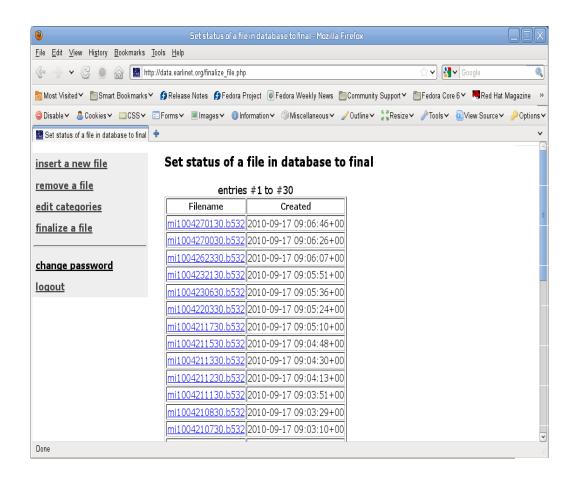




۷	Edit ca	ategories	- Mozilla F	irefox) N
<u>F</u> ile <u>E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks	<u>T</u> ools <u>H</u> elp										
📀 📎 🖌 🤤 💮 🔛 h	ttp://data.earlinet.org/change_catego	ry.php					۲ ۲	· 🖌	Google		
👼 Most Visited 🗡 👘 Smart Bookmarks 🗸 🌮 Release Notes 🎓 Fedora Project 🐻 Fedora Weekly News 🎮 Community Support 🗡 р Redra Core 6 Y 🔍 Red Hat Magazine 🛛 »									ine »		
⊖ Disable ✓ 🔱 Cookies ✓ 🖂 CSS ✓		, _		,	_	2 11	_				
Edit categories		onnation		interes s	2º Outline	. 890	00120 . 0	10010 .		,	~
											- [2]
<u>insert a new file</u>	Edit categories	of m	easure	ement	s in t	he da	Itabas	e			
<u>remove a file</u>				ent	ries #1	to #3	0				
edit categories	Filename	Calipso	Cirrus	Climat.	Diurnal	Etna	ForFire	PhSmog	Rur/Urb	Sahara	Stra≣
<u>finalize a file</u>	mi1004270130.b532	0	0	0	0	Х	0	0	0	0	C
	mi1004270030.b532	0	0	0	0	Х	0	0	0	0	C
change password	mi1004262330.b532	0	0	0	0	Х	0	0	0	0	<u> </u>
logout	mi1004232130.b532	0	0	0	0	Х	0	0	0	0	C
	mi1004230630.b532	0	0	0	0	Х	0	0	0	0	
	mi1004220330.b532	0	0	0	0	Х	0	0	0	0	(
	mi1004211730.b532	0	0	0	0	Х	0	0	0	0	
	mi1004211530.b532	0	0	0	0	Х	0	0	0	0	(
	mi1004211330.b532	0	0	0	0	Х	0	0	0	0	C
	mi1004211230.b532	0	0	0	0	Х	0	0	0	0 -	Ö
	mi1004211130.b532	0	0	0	0	Х	0	0	0	0	C
	mi1004210830.b532		0	0	0	Х	0	0	0	0	-+
Done		I									











Thank you !