NILUGraph

User's Manual

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NILUGraph User Manual

1. INTRODUCTION

NILUGraph 1.0 is a computer program for collecting, storing and displaying meteorological and chemical data in near real time. It is a Windows program, implemented using Microsoft Access and runs on a PC. Data is collected from files produced by NILUs data loggers. The number of loggers (or instruments) and chemical or meteorological components can vary, and must therefore be configured during initialization of the program.

The program consists of four main modules:

1) Automatic surveillance
   - Graphical interface showing a graph of, up to 3, pre-defined components for the present day and automatically updated every five minutes.

2) Manual surveillance
   - Graphical interface showing a graph of, up to 3, freely chosen components for a specified time period.

3) Data administration
   - Menu subsystem containing subforms to initialize the program with the correct instruments and components and to look at the measurements in a tabular form.

4) System administration
   - Menu subsystem presently used only to import data not covered by the automatic routines.

2. HARDWARE REQUIREMENTS AND INSTALLATION

NILUGraph requires at least a 66 MHz 486 PC including 16MB and 3MB free disk space for the application and 10 to 20 MB free disk space for the data. The PC must be running MS-Windows 3.01 (or newer) and have MS Access 2.0 and winzip or pkzip installed.

2.1 Installation

1) Insert disk #1 into drive A:
2) Start winzip and choose open archive A:\mbrain1
3) Select any files listed and choose extract to the hard disk drive of your choice.

The program can now be started double-clicking the mbrain1.mdb file in the FileManager, although you are strongly advised to create a new icon for the program and place it in your Program Manager. Consult your Windows manual for instructions on how to do this.

3. STARTING NILUGRAPH

It is assumed that the program icon is installed in a group window in Program Manager. It is further assumed that the icon is named something like MEMbrain, and that the default MS Access icon bitmap is used. The icon should then look something like:

Starting the program

Double click the above mentioned icon, or its equivalent.

MS Access starts up and displays the following window, reflecting the four different modules described in the introduction.
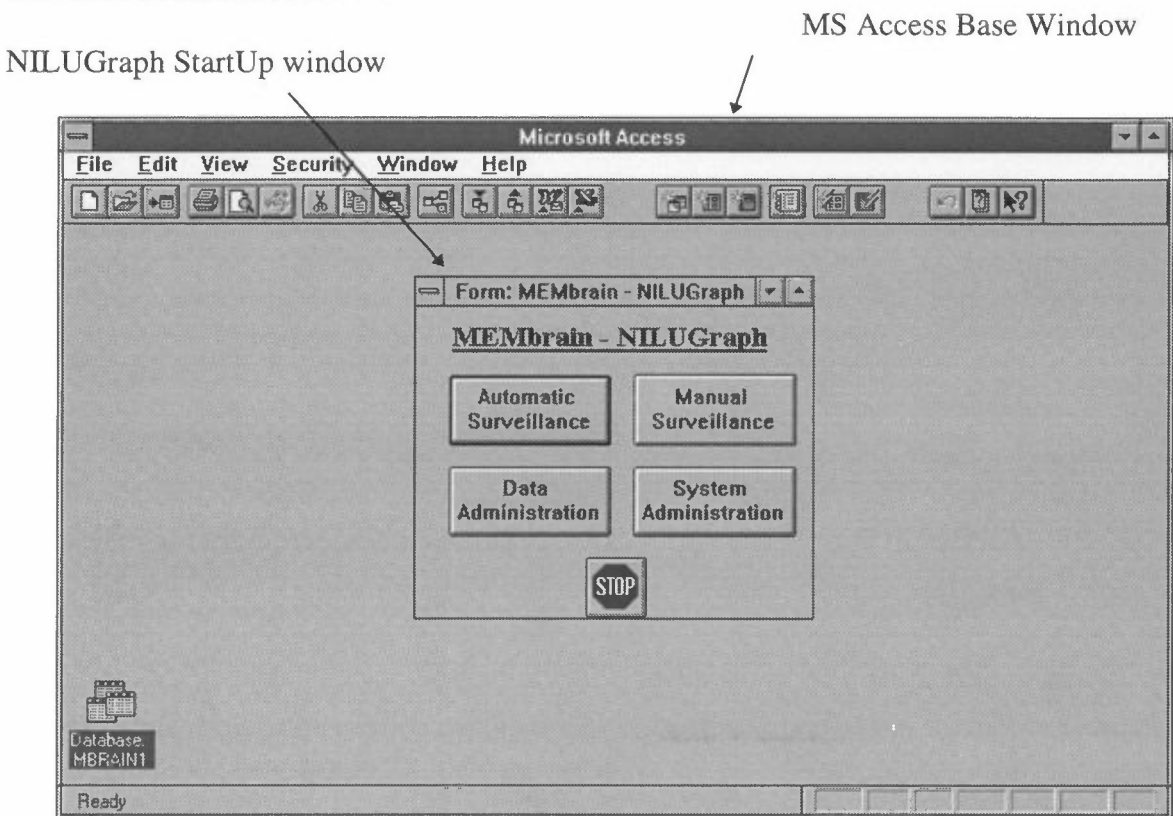

Figure 1: The NILUGraph opening window.

The MS Access Base Window constitutes the background for all other menus and forms described in this documentation. The rest of the documentation will only refer to the application specific objects and the presence of the Base Window is implicit.
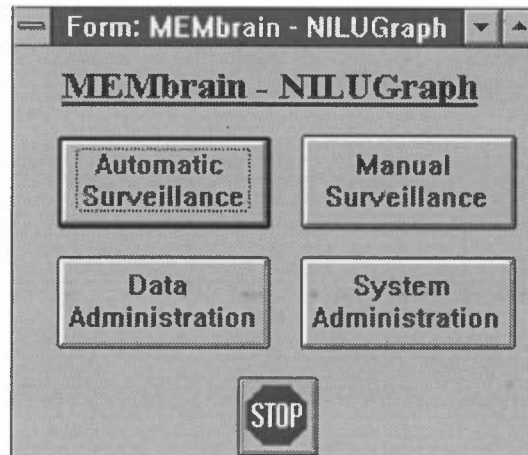
4. OPERATING NILUGRAPH

Figure 2: StartUp Window.

This StartUp window constitutes the basis for all operations within the NILUGraph application.

Clicking the Stop button in the bottom of the form will terminate the entire application. This can only be done from this form. All other forms have an exit button that closes the active form and eventually returns you to this form.

When this window is started it also controls the procedure that automatically updates the database with data from the instruments every 10 minutes.

During initialization of the application: start by going into the Data Administration module. Register the appropriate instruments using the Instrument Window. Register the appropriate components in the Component Window, and if necessary enter some test data in the Measurement Window. Then exit the Data Administration Window and return to this StartUp Window.

If the system is on-line with the instruments or controllers, then you can now choose freely whether you want to start the Automatic Surveillance, the Manual Surveillance or enter into the System Administration subform.

If the system is not on-line, then you can either enter the Manual Surveillance Window to look at historical data already in the database or you can enter into the System Administration subform to load data from files on the PC's harddisk. This requires a system administrator password provided together with the software.
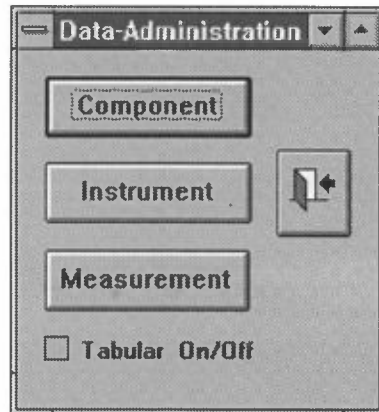
4.1 Data Administration

Figure 3: Data Administration Window.

This Data Administration window contains menu buttons for the three main types of data, which constitutes the basis for this application. In addition there is a radio button called Tabular On/Off. This button determines whether this windows subforms will be opened in single record mode or in a tabular mode.

It makes no difference if you register the components before you register the instruments or vice versa. The Measurement button is mainly for viewing data and making small corrections to it. It is not meant as a tool to register data, although it is entirely possible to do so.

4.1.1 The Component form

This form must be filled in during initialization of the system. The importance of the different fields varies, and some of the fields must correspond to other settings in the system. Some of the fields constitute the basis for several of the functions and fields in the other modules of the application. It is therefor very important to be conscientious about filling out this form.

The only menu button on this form is the exit button, in the upper right corner of the form, with the picture of a door and an arrow on it.
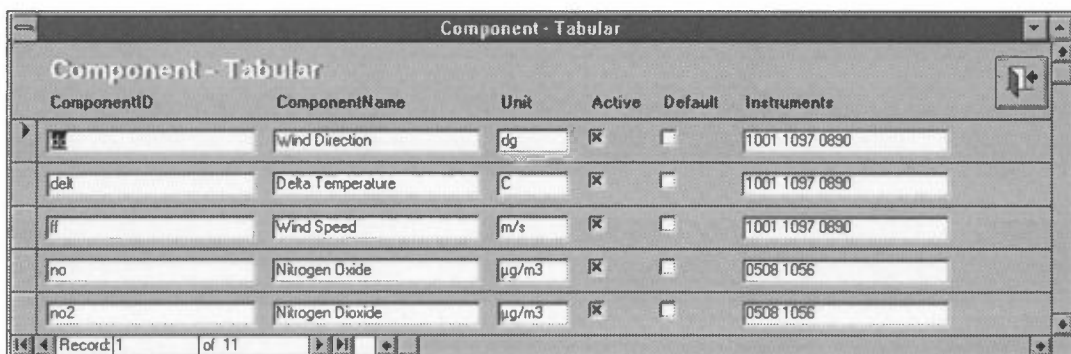
Figure 4: The Component window.

1)   ComponentID
       • This field contains the short name of the chemical or meteorological
         component. The name in the field must correspond to name used in the data
         files delivered from the different instruments.

2)   ComponentName
       • This field contains the long (descriptive) name of the chemical or
         meteorological component. This field is for informational purposes only.

3)   Unit
       • This field contains the unit in which the measured values are displayed. This
         field is for informational purposes only, but is very important since most of the
         components can be presented in different units, and it might not be obvious
         which is currently in use.

4)   Active
       • This field can either be checked out or not checked out. If it is checked out the
         component will be presented in the appropriate fields in the rest of the
         application.

5)   Default
       • This field is for future use only and it makes no difference whether it is
         checked out or not.

6)   Instruments
       • This field contains the InstrumentID for the instrument delivering the measured
         component. If the same component is measured by several instruments, the
         InstrumentID for each instrument must be entered in this field as a comma
         separated list. The InstrumentIDs entered in this field must correspond with the
         values in the InstrumentID field in the Instrument form.

4.1.2 The Instrument form

This form must be filled in during initialization of the system. The importance of the different
fields varies, and some of the fields must correspond to other settings in the system. Some of
the fields constitute the basis for several of the functions and fields in the other modules of the
application. It is therefor very important to be conscientious about filling out this form.

The only menu button on this form is the exit button, in the upper right corner of the form,
with the picture of a door and an arrow on it. This button closes the form.
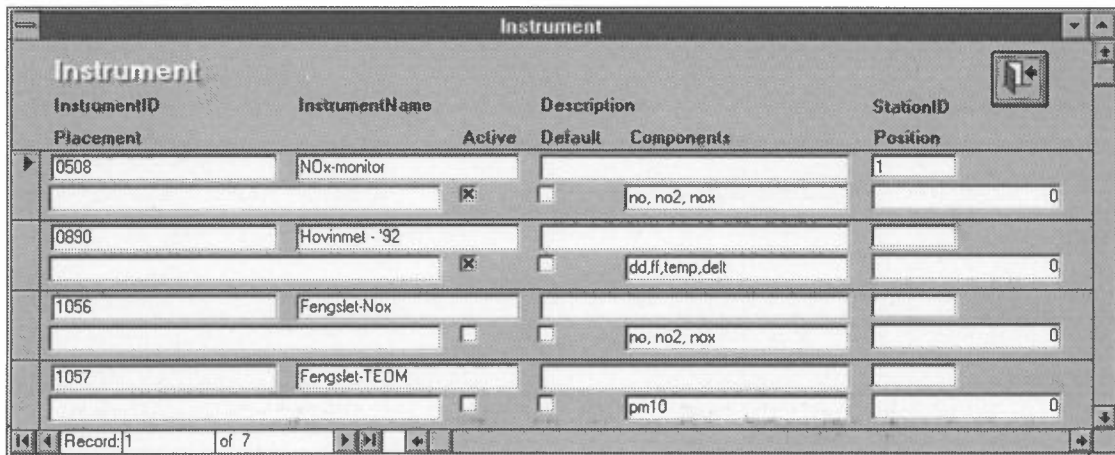
Figure 5: The Instrument window.

1) InstrumentID
   - This field contains the short name of the instrument or the controller. The InstrumentIDs must be unique within the system.

2) InstrumentName
   - This field contains the long (descriptive) name of the instrument or the controller. This field is for informational purposes only.

3) Description
   - This field contains a description of the instrument. The description can be up to 120 characters long. This field is for informational purposes only. This field is for informational purposes only.

4) Position
   - This field contains two decimal numbers describing the location of the instrument. This field is for future use with GIS systems, as well as for informational purposes.

5) Placement
   - This field describes the location of the instrument, either exactly or relative to the container. This field is for informational purposes only.

6) Active
   - This field can either be checked out or not checked out. If it is checked out the instrument will be presented in the appropriate fields in the rest of the application.

7) Default
   - This field is for future use only and it makes no difference whether it is checked out or not.

8) Components
   - This field contains the ComponentID measured by the instrument. If the instrument is measuring several components, the ComponentID for each component must be entered in this field as a comma separated list. The ComponentIDs entered in this field must correspond with the values in the ComponentID field in the Component form.
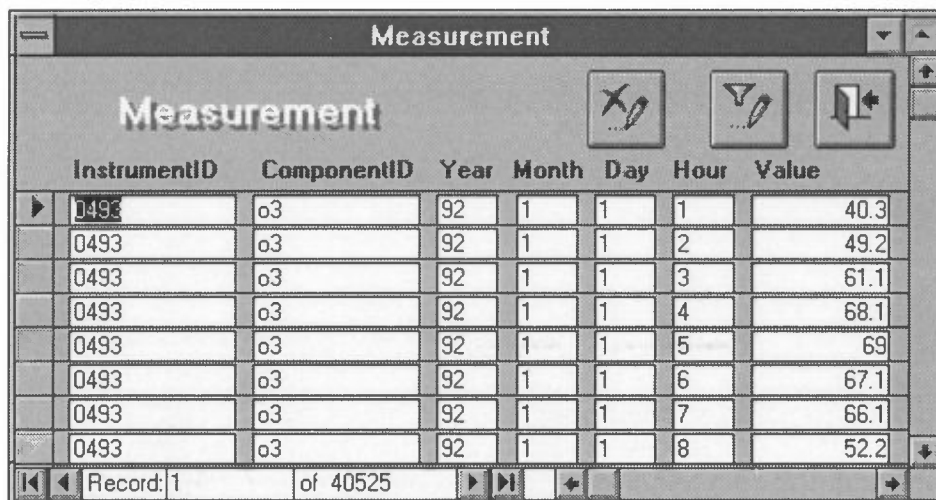
4.1.3 The measurement form

This form is mainly for viewing measured data or making small corrections to the same. It can also be used to enter small amounts of data, i.e. test data, although it is not designed for this purpose. This form does not need any manual interventions during initialization. Its contents will automatically be updated as soon as the NILUGraph application is active.

This form contains three menu buttons:

- The exit button, in the upper right corner of the form, with the picture of a door and an arrow on it. This button closes the form
- The filter button, in the middle of the three buttons, with the picture of a pencil and a funnel on it. This button is used to filter the information listed in the form i.e. according to ComponentID or values grater than a certain amount.
- The delete button, on the left of the three buttons, with the picture of a pencil and a cross on it. This button is used to delete an entire row of information or a multiple of rows.

The remaining contents of this form is assumed to be self explanatory.

InstrumentID	ComponentID	Year	Month	Day	Hour	Value
0493	o3	92	1	1	1	40.3
0493	o3	92	1	1	2	49.2
0493	o3	92	1	1	3	61.1
0493	o3	92	1	1	4	68.1
0493	o3	92	1	1	5	69
0493	o3	92	1	1	6	67.1
0493	o3	92	1	1	7	66.1
0493	o3	92	1	1	8	52.2

Record: 1 of 40525

Figure 6: The Measurement window.

4.2 Automatic Surveillance

This form is created to facilitate near on-line surveillance of a pre-selected set of up to three components. The components will be displayed only for the current day, and is updated every 10 minutes to display the most recent data for the operator.

The window also contains three fields that always display the following meteorological components:

- Wind Speed
- Wind Direction
- Temperature

for the last available measurement time.

There is no easy way for the operator to change the components displayed in the graph. Any changes to this form must be done by the system administrator.
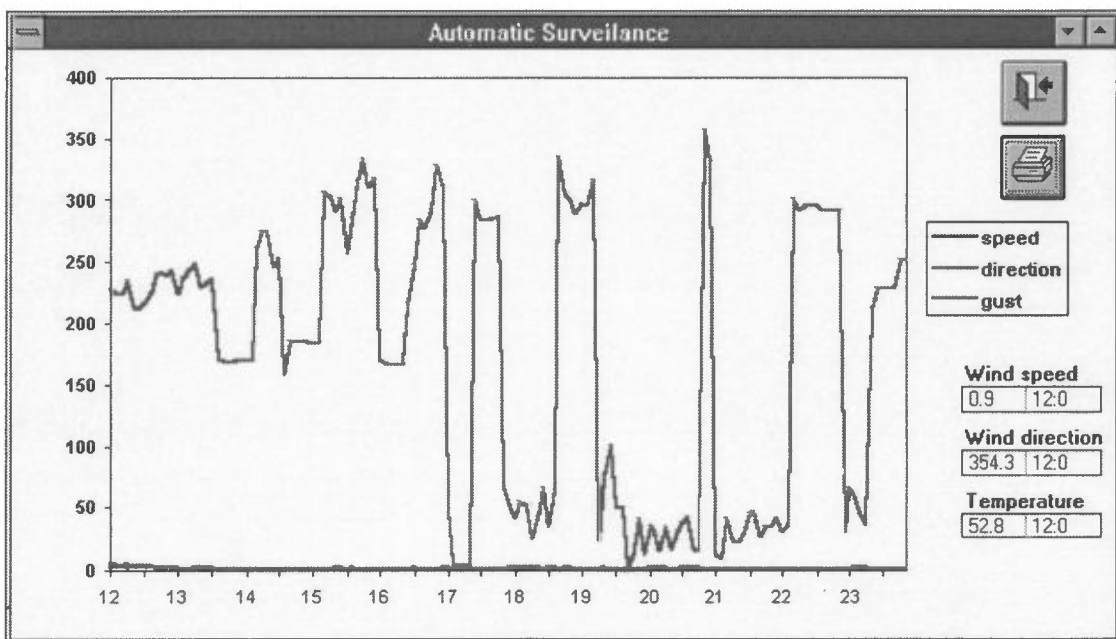
Figure 7: The Automatic Surveillance Window.

4.3 Manual Surveillance

This form is created with the purpose of giving the operator a graphical means to examine all of the available data in the database for any selected time period. The Manual - Surveillance form provides possibilities to choose up to three different instruments and three different components between a StartDate and an EndDate of the operators choice. For longer time

periods it is advisable to limit the number of instruments and components as much as possible, preferably down to only one set, to avoid very long response time.

The Manual - Surveillance form also includes fields that always display the following meteorological components:

- Wind Speed
- Wind Direction
- Temperature

for the last available measurement time, regardless of the selected time period.
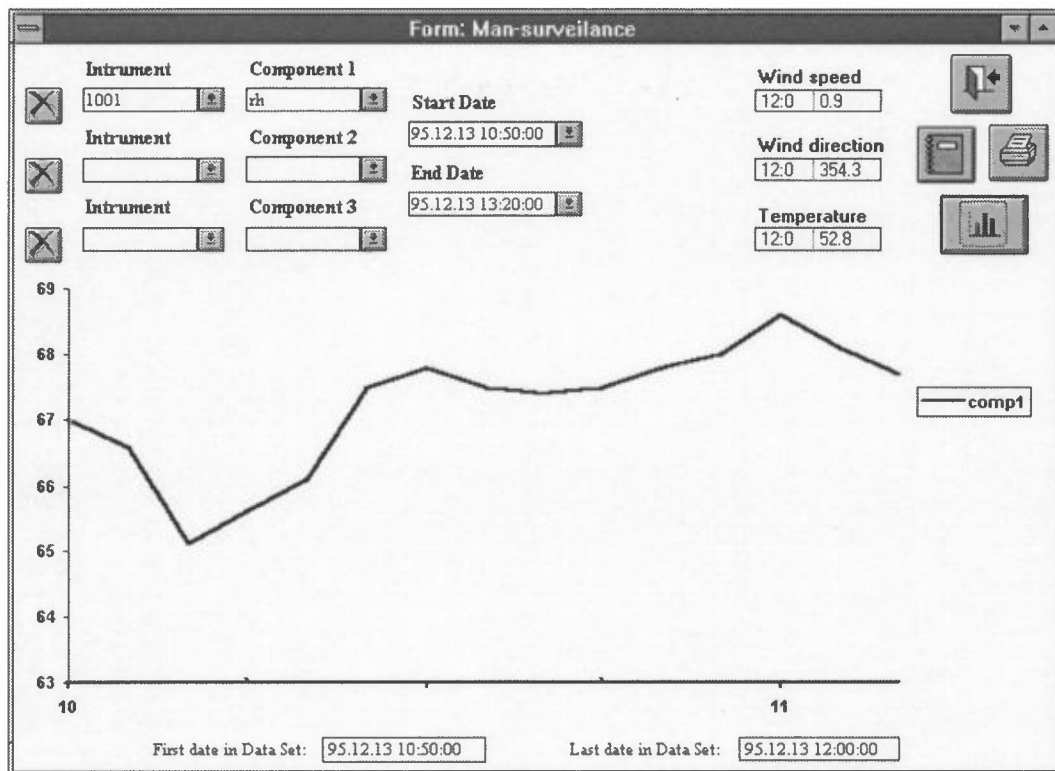
Figure 8: The Manual Surveillance Window.

This form introduces some new buttons in addition to the, by now well known, exit button. In the top left corner of the window there are three buttons with a cross-x depicted on each. These buttons clear the contents of the Instrument and Component fields immediately to the right of the respective button. To change instruments or select components not connected to the presently selected instrument, you have to use these clear buttons first.

In the top right corner of the window, just under the exit button, there is a button with a green book depicted on it. This button produces a simple report containing the numbers for the components selected in this window. The report is first shown on the screen and, if desired, can then be printed.

In the top right corner of the window, just under the exit button, there is a button with a printer depicted on it. This button produces a paper copy of the graph currently displayed in

the window. It is not possible to choose between different printers from this button, it will print on the default windows printer.

In the top right corner of the window, just under the above mentioned buttons, there is a button with a bar-graph depicted on it. This button refreshes the graph in the window. It must be used to display the graph after the first entry of Instrument, Component and Time period specifications, and subsequently every time changes are made to these specifications.

4.4 System Administration

This is the fourth and last of the four modules in the NILUGraph system. The Administrator Password Window. This window contains a field for entering the system administrator password supplied with the software. After entering the password, click the OK button. This Administrator Password Window has been included in this application primarily in anticipation of future system administrator procedures.
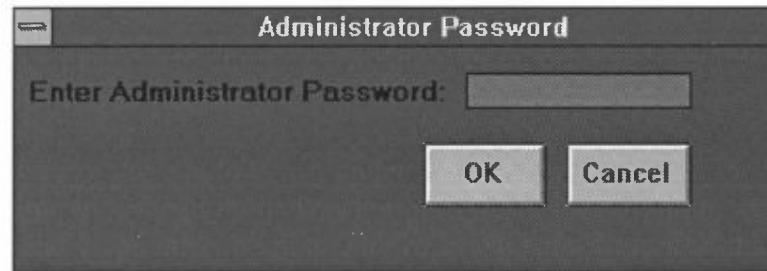
Figure 9: The Administrator Password Window.

After the correct password has been entered, the Data Retrieval Window will be displayed. This window only contains the Load Data button and an exit button. Clicking the Load Data button will retrieve data from files in a pre-defined data directory on the PC. This procedure has been included in the application for the purpose of bringing the system up to date in case the instruments has been running for a while before the NILUGraph application was initialized.

Figure 10: The Data Retrieval Window.

Norsk institutt for luftforskning (NILU)

P.O. BOX 100, N-2007 KJELLER - NORWAY

REPORT SERIES TECHNICAL REPORT	REPORT NO. TR 19/96	ISBN-82-425-0799-6	
DATE *19.12.96*	SIGN.	NO. OF PAGES 13	PRICE NOK 30,-
TITLE NILUGraph User's Manual		PROJECT LEADER Trond Bøhler	
		NILU PROJECT NO. O-92088.MP	
AUTHOR(S) T.-Ø. Gunstrøm		CLASSIFICATION * A	
		CONTRACT REF.	

REPORT PREPARED FOR:
Norwegian Institute for Air Research (NILU)

ABSTRACT

The NILUGraph programme is a graphical user interface to present measurement data in near real time. The programme is written in MS-Access.

This report contains a short description of the different modules in NILUGraph. It gives an introduction of how to use the programme and what features are contained therein. There is also a list of hardware requirements and installation instruction.

NORWEGIAN TITLE

NILUGraph brukermanual

KEYWORDS		
Data presentation	Database	MS-Access

ABSTRACT (in Norwegian)

NILUGraph er et grafisk bruker-grensesnitt for å presentere måledata i tilnærmet "real time". Denne rapporten gir en kort oversikt over de forskjellige modulene i NILUGraph. Den gir en introduksjon i hvordan programmet skal brukes og hva som kan gjøres. Det er også en oversikt over maskinvarekrav og installasjonsinstrukser.

* *Classification*   *A   Unclassified (can be ordered from NILU)*
                       B   Restricted distribution
                       C   Classified (not to be distributed)