TURBOWIN+ USER MANUAL: PART 4

COLLECTING, ENTERING AND SENDING WEATHER OBSERVATIONS

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Introduction[1]

1. Marine observations in the broadest definition cover any meteorological and related environmental observations at the air-sea interface, below the sea surface and in the atmosphere above the sea surface (upper-air measurements).

2. These instructions consider observations at the air-sea interface, which include surface measurements, subsurface measurements and visual observations of clouds, weather, visibility, sea conditions and sea ice.

3. Observations from ships of the voluntary observing fleet are considered in situ measurements and require a range of manual observation techniques. These are essentially single-point observations intended to be representative of the surrounding sea area, as for synoptic meteorology.

4. Ships which undertake meteorological observations should be equipped for observing or measuring the following elements:

   (a) Ship position;
   (b) Wind speed and direction;
   (c) Atmospheric pressure, and pressure tendency and its characteristics;
   (d) Present and past weather, and weather phenomena;
   (e) Clouds (amount, type and base height);
   (f) Visibility;
   (g) Air temperature;
   (h) Humidity (dewpoint);
   (i) Sea-surface temperature;
   (j) Ocean sea waves and swell — height, period and direction;
   (k) Sea-ice and/or ice accretion on board ship, when appropriate;
   (l) Ship course and speed.

Navigating TurboWin+ and Entering Observations[2]

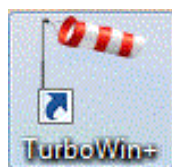1. **Double Click** on the **TurboWin+** desktop icon (Figure 1).

Figure 1: TurboWin+ desktop icon

2. The first screen to appear will ask you if the date and time of the observation is correct (Figure 2). If i**ncorrect** click no, TurboWin+ will ask you to input the correct time (UTC) and date. **Ensure the UTC observation time is correct for the observation being recorded.**
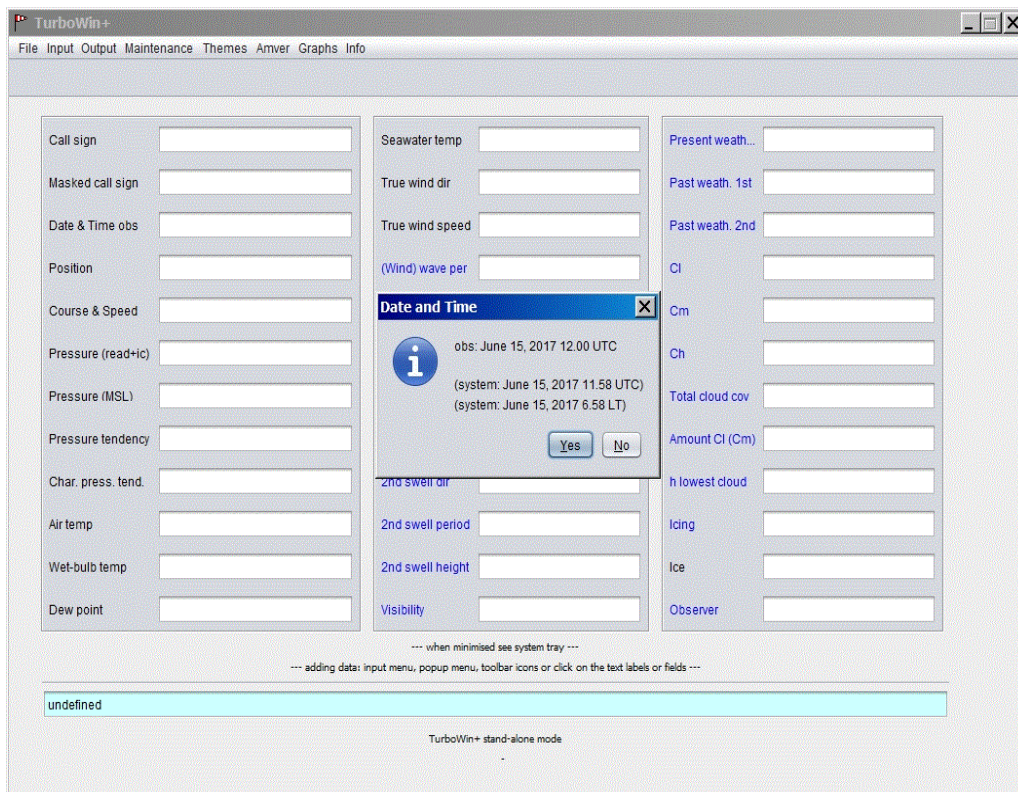
Figure 2: TurboWin+ screen with date and time verification

3. Some installations of Turbowin+ may include interfaced sensors. In this case, some fields may already be populated automatically.

4. Observations can be entered in a number of ways. Individual fields may be selected from the input menu (figure 3), the input icons (figure 4) or by clicking directly in the appropriate field. Alternatively, the full suite of observations can be entered sequentially using the Next Form Automation function.
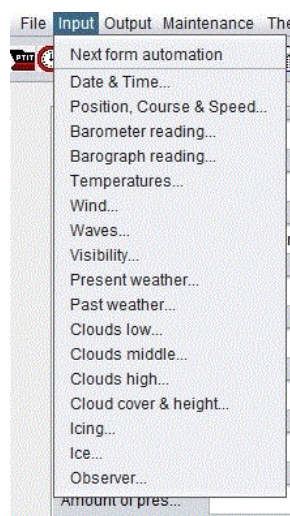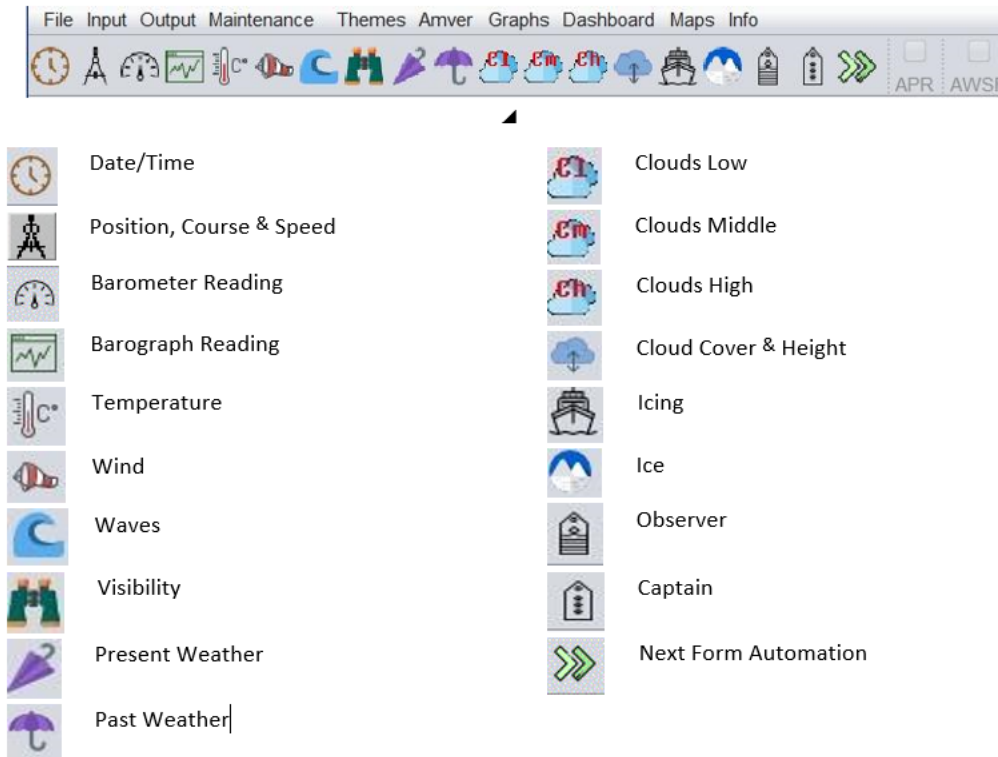

Figure 3: TurboWin+ Input menu

Figure 4: Individual Screen Input Icons

5. To use the Next Form Automation function, select **Input >> Next Form Automation**
   Once you have entered all data on each screen TurboWin+ will automatically navigate to the next input screen, until all data is entered.

6. The buttons at the bottom of each input window allow you to navigate forward or backward, cancel or approve the entered observation, access the Help information or stop the Next Form Automation process.

7. Most observations can be entered in the 15-20 minutes prior to the hour. However, barometric pressure should be recorded as close to the hour as possible.

8. The Help button located at the bottom of each input screen provides additional information as needed for each observation element. Clicking the Help button will open your web browser to view help files.

9. Not all observations are required to generate a valid message. Please take observations of as many parameters as time and conditions allow. Some fields can be left blank if necessary.

10. Ice and Icing observations are not included in the Next Form Automation function as they will not be present in the majority of observing conditions. To access these input screens, please select them via the icons, input list or click directly in the relevant field.

Position, Course and Speed Input Screen

1. The ships latitude, longitude, course and speed are mandatory for NMHS recruited ships. This field may be automatically filled when connected to a GPS or require manual entry based on the ship's instruments (Figure 5).
2. Ships with an Internet connection can choose whether to display a plot of the ship's position on a map by ticking the check box.
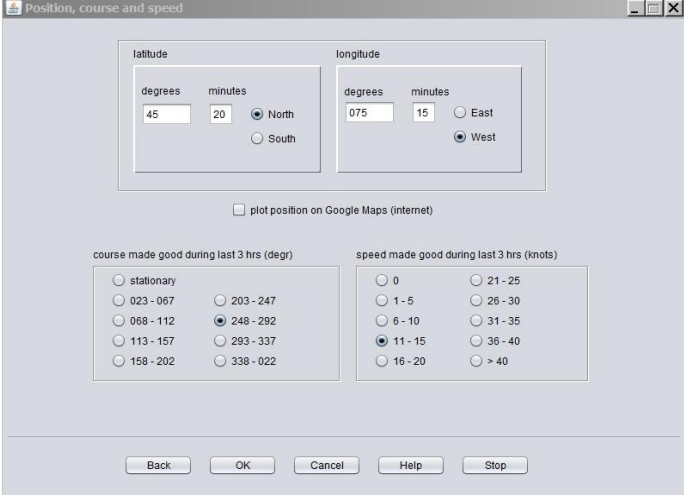

Figure 5: Position, Course and Speed

Barometer Input Screen

1. Ships interfaced with a digital barometer will have the pressure readings automatically filled (Figure 6).
2. Remember to open one or more of the bridge wing doors to allow the air pressure in the bridge to equalise with the outside air.
3. If manual entry is required, enter pressure in hPa to the nearest tenth (0.1 hPa).
4. **Instrument correction should only be adjusted by a PMO**. Check with your servicing PMO if an instrument correction is required. Otherwise this field should be zero.
5. Ships configured to measure Station Level Pressure must enter the draft at the time of observation as well as the reading directly from the barometer. The height correction will be automatically applied to calculate Sea Level Pressure.
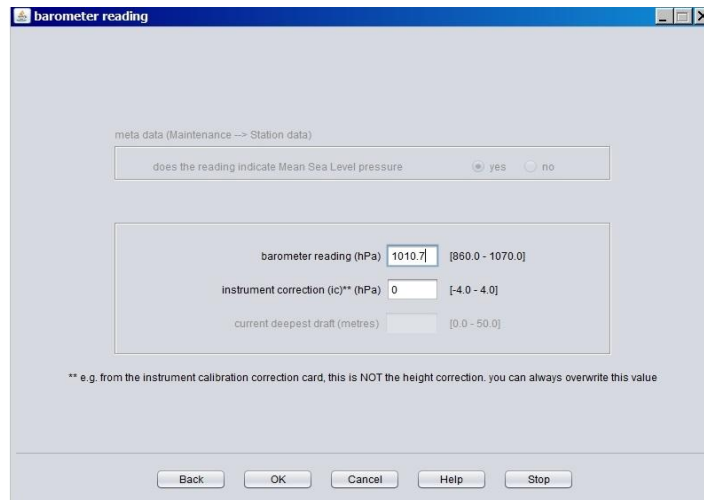
Figure 6: Barometer Reading

Barograph Input Screen

1. Only for ships outfitted with a marine barograph or a digital barometer/barograph that can display pressure tendency (Figure 7).
2. Input 3-hour pressure change and tendency to the nearest tenth (0.1 hPa).
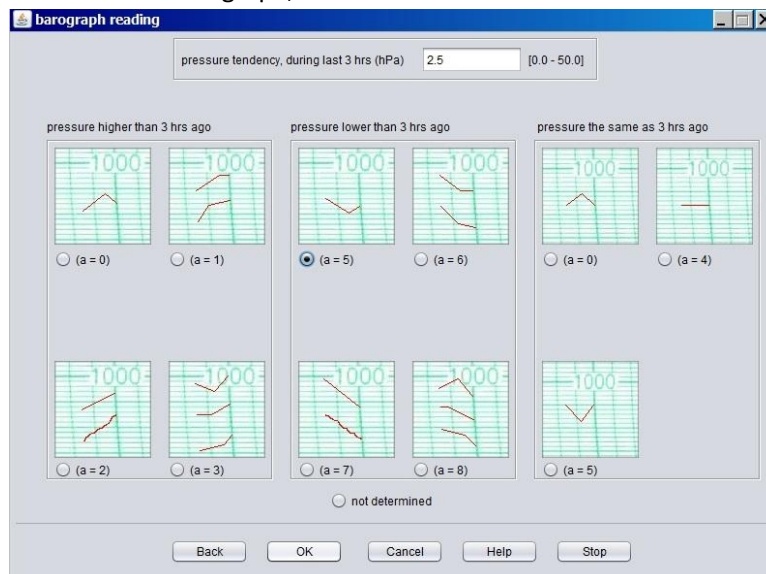3. Ships that do not have a barograph, select "not determined".

Figure 7: Barograph Reading

Temperature Input Screen

1. Enter all temperatures in degrees Celsius to the nearest tenth (0.1 °C).
2. If wet bulb thermometer is in use enter the wet bulb reading.
3. If humidity sensors are in use enter the Relative Humidity reading.
4. Sea water temperatures can be measured by a variety of means. This should be configured in the Station Data and also displayed within the input screen.

Figure 8: Temperatures

Wind Speed and Direction Input Screen

1. **Measured TRUE or APPARENT WIND SPEED AND DIRECTION** can be sourced from the ship's anemometer or one supplied by the NMHS (Figure 9). Wind speed and direction should be observed over a **5-10 minute period**, and then averaged. It should not be an instantaneous reading.

2. **ESTIMATED TRUE WIND SPEED AND DIRECTION** will normally be based upon the visual appearance of the surface of the sea referenced by the Beaufort Scale. Click on the help button for more examples of the Beaufort scale.

3. **Max height deck cargo above the summer load line (meters)**. This information is taken from the Station Data / Wind Metadata page previously configured. If max cargo height is different at the time of the observation, input correct height. This only pertains to Container vessels. All other vessels input zero (0).

4. **Difference between the summer load line and water line (meters)**. This information is taken from the Station Data / Wind Metadata page previously configured. If the distance between the summer load line and water line at the time of observation is different, input the correct height. This primarily occurs on vessels with large draft changes.

    Positive (+) when the Summer Load Line is above the water line, and

    Negative (-) if below the water line.

Figure 9: Wind

Wind Waves and Swell Waves Input Screen

1. Input wave period in seconds, (Figure 10)**.**
2. Input wave height in meters. Conversion table for Meters to Feet located on right side of screen.
3. Beaufort (BF) Force Wind scale located on left side of screen.

Figure 10: Waves

4. Select one of the **Swell Systems** options in this window will allow further entry of Swell data, (Figure 11).
5. Selecting **Swell Not Determined** or **No Swell** will skip directly to the next Input Screen.
6. Report true direction in tenths of a degree from the direction which the swell waves are coming from.
7. Input height in meters. Conversion table for Meters to Feet located on right side of screen.

Figure 11: Swell

Visibility Input Screen

1. Select the Visibility from the options on the input screen (Figure 12).
2. If the reported visibility is below 5 nm, then you **must** report some type of present weather which is obscuring the visibility.
3. When the visibility is not uniform in all directions, determine prevailing visibility by dividing the horizon circle into sectors of visibility. Estimate the highest visibility common to one half or more of the horizon circle.

Figure 12: Visibility

Present Weather Input Screen

1. From one of the top two boxes select a **general weather** condition at the time of observation (Figure 13).
2. Use the top left box if the weather is **DRY** at the time of observation and use the top right box if the weather is **WET** i.e. there is precipitation at the time of observation.
3. Once a selection is made from one of the top two boxes, a **specific weather** condition can be selected from the bottom box. The topmost applicable weather condition should be selected.
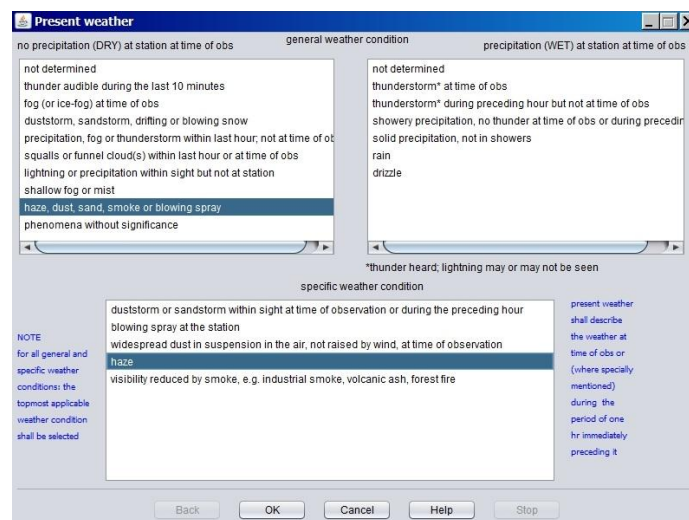

Figure 13: Present Weather

Past Weather Input Screen

1. From the options on the past weather screen select all past weather that has occurred since the time of the last observation (Figure 14).
2. The amount of time between observations that covers past weather will depend on your ship's observation routine.
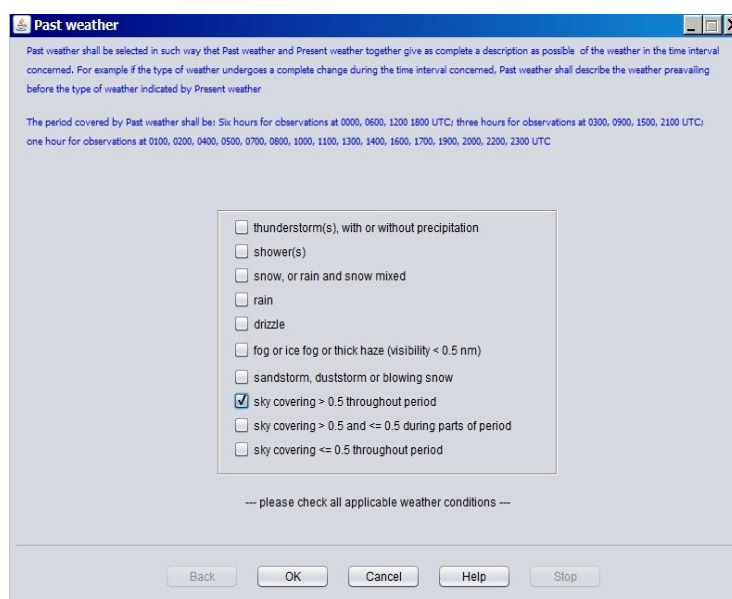

Figure 14: Past Weather

Clouds (Low) Input Screen

Figure 15: Low Clouds

1. Low clouds occur in a height range of **0 – 6,500FT or 0 – 2KM**
2. If more than one low cloud is present, the order of priority for reporting is:

   > *9 – Cumulonimbus with Anvil*
   >
   > *3 – Cumulonimbus without Anvil*
   >
   > *4 – Stratocumulus from the spreading of Cumulus*
   >
   > *8 – Cumulus and Stratocumulus (not type 4) with bases at different levels.*
   >
   > *2 – Cumulus with strong vertical development*

   The next clouds are of equal priority

   > *1 – Cumulus with little vertical development*
   >
   > *2 – Stratocumulus not formed from the spreading of cumulus*
   >
   > *6 – Stratus in layer or ragged shreds, no fractus of bad weather present.*
   >
   > *7 – Stratus, fractus and/or cumulus fractus of bad weather*

3. If two or more low clouds are present and of equal priority, **report the cloud with the greatest coverage**.
4. Cloud heights are affected by latitude, the above heights are typical of mid-latitude regions. Clouds generally occur lower in polar regions and considerably higher in tropical regions.
5. Both cumulus and cumulonimbus clouds may have bases that occur in the middle cloud height level, i.e. above 6500FT
6. See Help file for detailed description of each Low Cloud type.
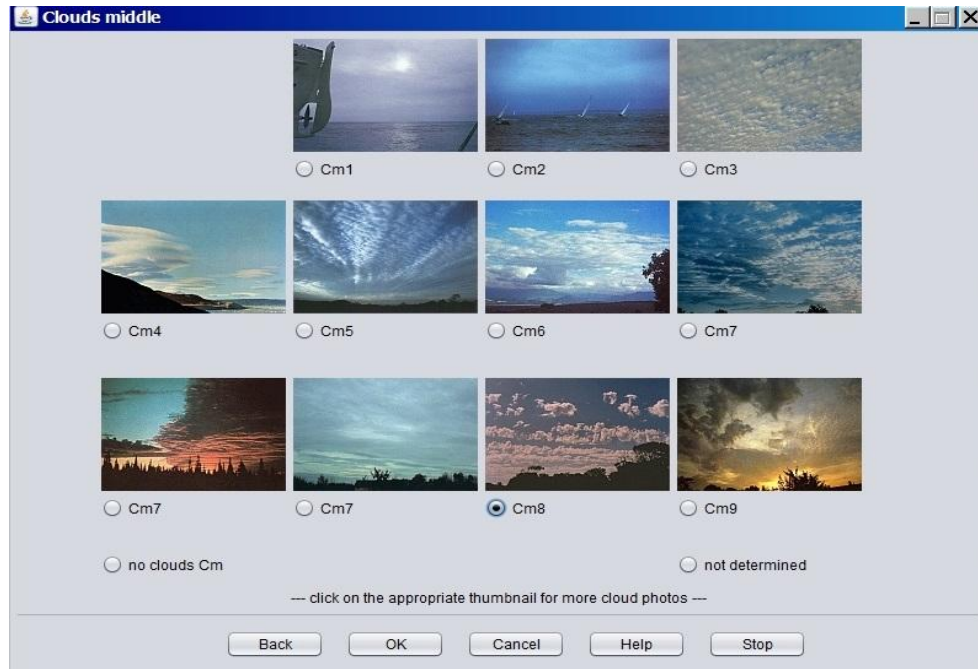
Clouds (Middle) Input Screen

Figure 16: Clouds Middle

1. Middle clouds occur in a height range of **6,500 – 23,000FT or 2 – 7KM**
2. If more than one middle cloud is present, the order of priority for reporting is:

    9 – Altocumulus of a chaotic sky

    8 – Altocumulus with large tufts or turrets.

    7 – Altocumulus in two or more layers, a thick layer, or with altostratus or nimbostratus

    6 – Altocumulus from the spreading of cumulus.

    5 – Altocumulus spreading over the sky and thickening

    4 – Altocumulus in patches often lens shaped (lenticular)

    3 – Altocumulus at a single level with distinct elements

    2 – Altostratus or Nimbostratus (rain bearing) in a thick layer

    1 – Altostratus in a thin layer

3. *Cloud heights are affected by latitude, the above heights are typical of mid-latitude regions. Clouds generally occur lower in polar regions and considerably higher in tropical regions.*
4. *The base of Nimbostratus clouds may extend into the Low Cloud levels, i.e. below 6,500FT.*
5. See Help file for detailed description of each Middle Cloud type.

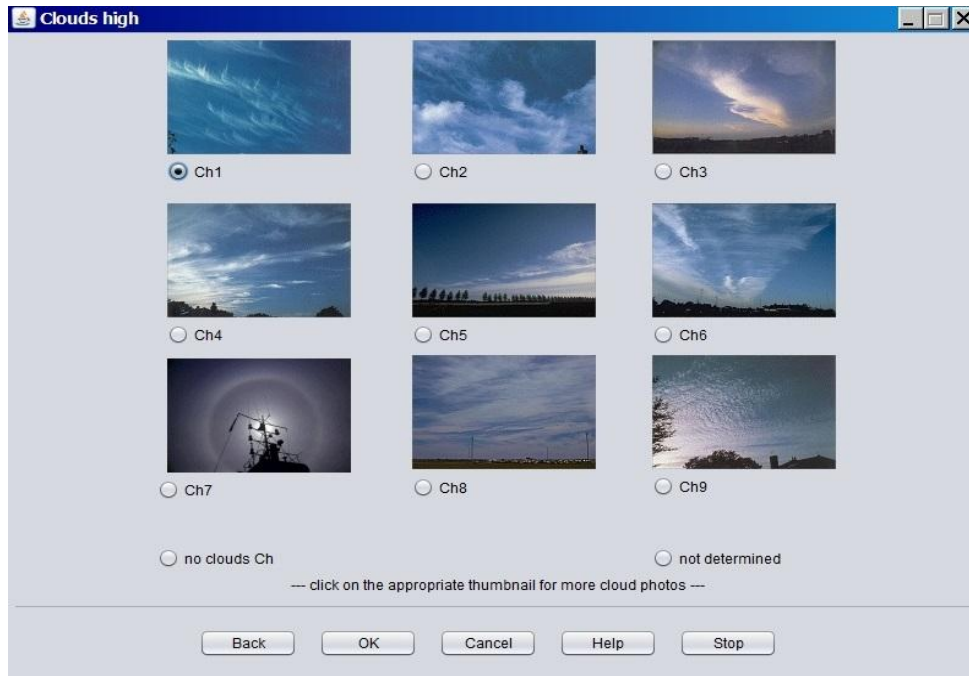# Clouds (High) Input Screen

Figure 17: High Clouds

1. High clouds occur in a height range of **16,000 – 50,000FT or 5 – 15KM**
2. If more than one middle cloud is present, the order of priority for reporting is:
   > *9 – Cirrocumulus (reported if greater in amount than cirrus/cirrostratus if present)*
   > *7 – Cirrostratus covering the whole sky.*
   > *8 – Cirrostratus not covering the whole sky and not increasing*
   > *6 – Cirrus/Cirrostratus invading the sky, thickening, > 45degrees above horizon*
   > *5 – Cirrus/Cirrostratus invading the sky, thickening, < 45degrees above horizon*
   > *4 – Cirrus in hooks, spreading and thickening over the sky*
   > *3 – Cirrus, anvil shaped being remains of upper part of cumulonimbus*
   > *2 – Cirrus in dense twisted forms, not increasing*
   > *1 – Cirrus in filaments, strands, or hooks, not increasing*
3. *Cloud heights are affected by latitude, the above heights are typical of mid-latitude regions. Clouds generally occur lower in polar regions and considerably higher in tropical regions.*
4. See Help file for detailed description of each Middle Cloud type.

Total Cloud Cover, Amount of Low (Middle) Cloud and Height of Base of Lowest Cloud Input Screen

Figure 18: Clouds Cover and Height

1. Select total amount of sky covered by cloud in oktas (Figure 18).
2. Select the amount of Low Cloud covering the sky, or Middle Cloud if no low cloud is present.
3. TurboWin+ will automatically compute the base of the lowest cloud height based on the type of cloud classification, latitude, air temperature, wet-bulb temperature and present weather reported. This can be changed manually by checking another height.

Observer Input Screen

Figure 19: Observer

1. If observer is not listed, click on next blank line. Fill in Surname, full initials, and Rank (Figure 19). This page is "Optional".
2. Tracking observers can be useful when addressing quality issues or monitoring the performance of different observers for presentation of awards.

Main Page – Completed Observation

Figure 20: Main Page with Completed Observation Data

1. The completed observation on the main page will show all the observation data entered from each input window.
2. The coded BBXX message (FM13) is shown at the bottom of the screen.
3. You can go back to any input screen by clicking on the relevant field, icon or by selecting from the Input menu.
4. If ICE is observed, click on the Ice icon to open the Ice Reporting Screens (Figure 21)**.**
5. If ICING is observed, click on the Icing icon to open the Icing Reporting Screens (Figure 21).
6. If no ice accretions or sea ice are present you can skip these input screens

Figure 21: Ice Accretions and Sea Ice Input Screens

Sending Observations

1. Completed Ship observations are sent by a variety of methods. Output options should have been pre-configured during Turbowin+ setup.
2. Configuration and sending ship observations are detailed in TurboWin+ User Manual Part 2
3. From the menu select the relevant output method (Figure 22). Based on your system configuration some output options will be active, whilst others will be greyed out.
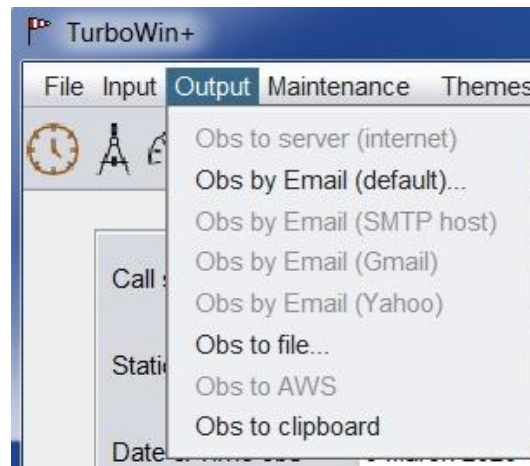

Figure 22: Output Menu

4. Turbowin+ will generate a pop-up window to either confirm the message has been sent or notify the operator of an error.